2012

Annual Report &
Financial Statements

The Malta Council for
Science & Technology

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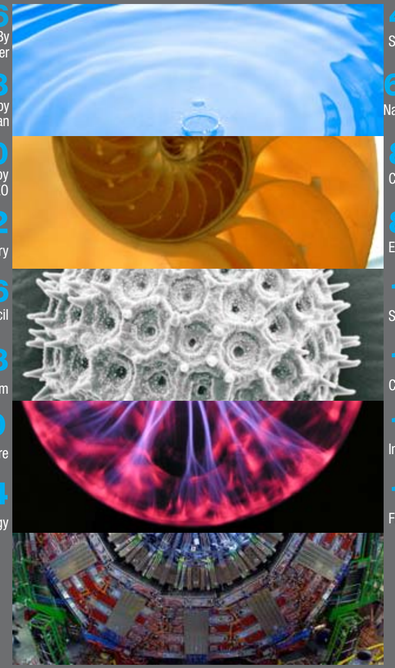

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Mission

To Raise the Profile & Standard of Science Technology, Research and Innovation in Malta

The The Malta Council for Science and Technology was established by central government in 1988 and was given the specific mandate of advising government on Science and Technology policy. The Council has identified four priority areas:

Value-added Manufacturing and Services, with a focus on building SMEs as cluster elements in value-added manufacturing and services provision.

Health and Biotechnology, with a focus on human genetics, bio-informatics, for support of clinical trials, including pharmacogenetic ones and biotechnology, for transition of generic pharma.

Information and Communications Technology, with a focus on software development related to bridging technologies in security, hardware, telecommunications, health, marine and specialised applications.

Energy and Environment, with a focus on solar, wind, and bio energy, together with energy efficiency technologies, as well as water, desalination, waste, rehabilitation technologies, soil and marine management.

Today its remit has developed and the Council's tasks have expanded to include:

- National Research and Innovation Strategy
- Research and Innovation Policy
- National Contact Organisation for the EU 7th Framework , Horizon 2020 and COST programmes
- National Research, Innovation and Technology Commercialisation Funding
- Science Communication

How much is the Malta Council for Science and Technology worth?

€26,000,000 is the construction cost of the Council's Flagship project: the National Interactive Science Centre, partially funded by ERDF Funds

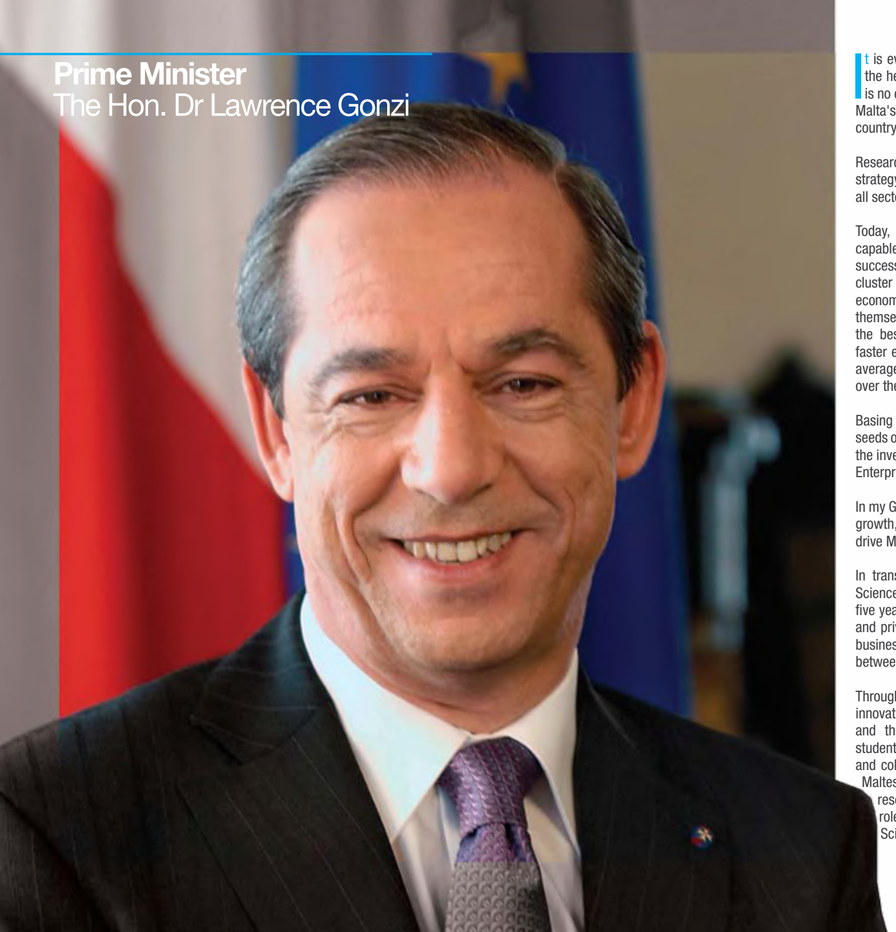
€13,000,000 is the sum the Council attracted to Malta through the FP7 programme

€6,100,000 is the National Research and Innovation fund managed by the Council since 2004

€1,750,000 the amount the council manages of the €4.5m ENIAC Lab4MEMS project

€1,500,000 is the sum managed by the Council for other dedicated ESF and ERDF projects

€900,000 is the average Council running cost per year



Prime Minister
The Hon. Dr Lawrence Gonzi

It is evident that the research-innovation-education triangle lies at the heart of any successful and sustainable path to growth. Malta is no exception. In an ever globalised and highly competitive world, Malta's economic success highly depends on our capacity as a country to invest and prioritise research and innovation.

Research and innovation need to be the cornerstone of our economic strategy more than ever. They remain a cross cutting way of equipping all sectors of our economy to be more competitive.

Today, Malta can pride itself of having a diversified economy capable of weathering global economic turbulence. Malta has successfully managed to establish a high value added manufacturing cluster alongside with a strong and thriving services sector. New economic clusters delivering high quality jobs are today establishing themselves in Malta. All this has helped our country to be one of the best economic performers in the European Union registering faster employment growth and lower unemployment than European averages. In fact, we have managed to create over 20,000 new jobs over these past five years.

Basing ourselves on these positive results, we are today sowing the seeds of tomorrow's economic drivers including life sciences, through the investment in a €38 million life sciences park together with Malta Enterprise, and the digital economy.

In my Government's vision, innovation is about turning new ideas into growth, prosperity, jobs and well-being. These are our tenets that will drive Malta forward.

In transforming our vision into reality, the The Malta Council for Science and Technology plays a key role. Throughout these past five years, the Council has managed to build bridges between public and private sectors, between the world of science and the world of business, between national and international research centres and between science and the general public especially school children.

Through its work, the Council has managed to create a cross cutting innovative culture. Government has invested heavily in education and the Council contributed in bringing science closer to our students at all levels. Through science popularisation campaigns and collaborative agreements with international research agencies, Maltese students today have a number of opportunities to pursue research. The Council will continue to intensify its educational role as work progresses on the €26 million National Interactive Science Centre.

In addition, the Council has assisted Government in integrating a research and innovation culture in the private sector. As part of our strategy, Government launched a number of schemes that have supported enterprises in their research and innovation efforts. We have seen over €30 million in investment in a number of projects which will translate into new investment and new employment opportunities.

On behalf of my Government, I would like to thank the Malta Council of Science and Technology and all its staff for their work and dedication in raising the profile of science, technology, research and innovation.

Research and innovation represent our capacity to create the future we aspire to based on knowledge, prosperity, high quality employment and well-being.

My Government is committed to continue investing in research and innovation because we believe in the potential of our people, our students and our business class.

The Malta Council for Science and Technology is and will remain an important partner and protagonist in translating our national vision into reality.

"My Government is committed to continue investing in research and innovation because we believe in the potential of our people, our students and our business class".

Chairman
The Hon. Dr Jeffrey Pullicino Orlando

It has been a great pleasure to be part of the Council's effort in putting Science and Technology at the forefront of our country's agenda. As in previous years, we have attained the goals that were set out for us with enthusiasm and vigour. We have, once again, shown progress on various fronts. These include, notably, the Research and Innovation (R&I) programme which was at its most successful in 2012, the National Interactive Science Centre and the authorisation of two strategies on research in Health and Value Added-manufacturing.

Having been identified as growth leaders in the Innovation Union Scoreboard 2011, the Council has been able to better identify the existing strengths and weaknesses of our country, as well as highlight any potential areas which Malta can tap into, in order to improve the overall R&I performance. Once finalised, the National R&I Strategy 2020 will continue to address the gaps causing fragmentation on our performance viz-a-vis the EU and international fora. Similarly, yet in a more focused manner, the Health Research Strategy and the Manufacturing Research Strategy have engaged stakeholders in identifying potential niche areas within which Malta may have a competitive edge. The Council has also continued to collaborate with other stakeholders from industry, academia and the public arena, in order to pool efforts in creating a sound basis on which to develop our country's potential.

In line with our National Strategy, the National Research and Innovation programme, established in 2004, continues to provide funding opportunities for research projects prioritising four niche areas, namely, Energy and Environment, ICT, Health-Biotech, and Value-added Manufacturing.

There has been a five-fold increase in the funding available for this programme in the past three years.

Furthermore, recognizing the substantial effort being placed in R&I on a national level, the Council has conceptualised another initiative, the Commercialisation Programme, which aims at bridging what is ominously referred to as the 'valley of death' – the barrier preventing a developed concept from reaching the market.

On a European scale, continued policy work ensured that Malta's position was recognized within Horizon 2020, the financial instrument implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness. Running from 2014 to 2020 with an estimated €80 billion budget, the EU's new programme for R&I shares the drive to create new growth and jobs in Europe.

Thus, Malta's participation is imperative, and continued efforts should be dedicated to exceeding our sixth place in the participants per capita ranking, in the current Framework Programme for research in Science and Technology (FP7).

Internationalisation continues to be given its due importance by the Council, one such result being the strengthening of STMicroelectronics through an industrial research project called Lab4MEMS, supported by ENIAC, a Joint Undertaking in the field of microelectromechanical machines. Scholarships for students in the areas of energy and space, through partnerships with the Fusion 4 Energy Undertaking and the European Space Agency (ESA) respectively, have also been a notable milestone in so far as our internationalisation efforts go.

But a larger project still is that of the National Interactive Science Centre at the Bighi Complex in Kalkara, which underpins the priority our government is giving to science education.

The aim of the Centre is to develop a permanent structure where students and the public will be able to immerse themselves in a unique interactive science experience, increasing the take-up of science-related careers and spurring the entrepreneurial spirit of our youths.

The Centre, which will be developed at a total cost of €25 million, aims at including interactive galleries, a multi-purpose auditorium, a planetarium, laboratories, workshop spaces, a gadget and coffee shop and landscaped gardens. The content will target distinct areas of the national science curricula, but is also aimed at the general public.

Much has been done in the year 2012, and it is no doubt thanks to a collective effort by all the staff members with the full backing of the board. I have no doubt that our work has put the Council on the right path towards fulfilling its crucial role in Maltese society.

"the Council has been able to better identify the existing strengths and weaknesses of our country, as well as highlight any potential areas which Malta can tap into".

V/Chair & CEO
Dr Ing. Nicholas Sammut

Once more, it is my pleasure to reiterate on the Council's achievements, as 2012 has been another remarkable year. Together with the Council's staff, which has enlarged to 42 employees in 2012, many milestones having being reached in solidifying the case for Science and Technology in Malta.

At the Council, policies and strategies in R&I continue to be formulated with the intention of addressing potential openings for the country's development in scientific and technological fields.

Recognizing the necessity in preventing such initiatives from becoming outmoded and dated, the Council has been dedicating its efforts to the National R&I Strategy 2020 which aims to build on progress made and lessons learnt from the 2007-2010 R&I Strategic Plan.

The 2007-2010 Plan identified four priority areas (Energy and Environment, ICT, Health-Biotech, Value-added Manufacturing). In the process of formulating the 2020 Strategy, further exploratory work in these four priority research areas will be continued, with the aim of confirming their validity or otherwise, in light of investments made. Potential for specialisation in these or other areas, otherwise known as smart specialization, will also be given prominence. Incentives for research in industry, incentives for close to market research, technology transfer and commercialization, as well as incentives for public research are some examples of ideas which the new R&I strategic plan will seek to explore. We hope that such incentives will continue to advance Malta's position in the Innovation Union Scoreboard, where our country is currently ranked as one of the growth leaders within the Moderate Innovators Group.

The 2007-2010 Strategy also called for the preparation of a thematic research strategy for each of the above four priority areas. To date, a research strategy for Value-added Manufacturing and Health has been completed. These two National Strategies, named the Health Research Strategy and the Manufacturing Research Strategy, have been endorsed by government in 2012.

The Health Strategy aims to develop an enabling health R&I ecosystem as a springboard for securing sustainable health care, through the identification of areas and opportunities for undertaking health research in processes, diagnosis, treatments and delivery of health care services. The objective is to improve the effectiveness and efficiency in these areas, attracting investment and achieving long-term sustainability.

The Manufacturing Strategy aims to identy how R&I can be leveraged for economic growth, and the steps necessary to promoting and facilitating R&I in the manufacturing sector. The Strategy was delivered through the Manufacturing Research Platform project, awarded through the European Research and Development Fund (ERDF), which saw its completion in 2012.

The Council has also obtained successful results in 2012 from the Funding Programmes that it hosts: the National R&I Programme, the FP7 and COST.

The National R&I programme, aims to support knowledge transfer between academia and industry with a specific focus on the four priority sectors. For the 2012 application period, there was yet another increase in funds by 58%, from €1.1 million to €1.6 million. The application period for 2012 proved to be the most successful, with the number of shortlisted projects for 2012 reaching a total of 37, requesting a sum of €6.6 Million. To date, 53 projects have been successfully awarded funds through the National R&I Programme.

Further to this, our latest addition to the Council is the Commercialisation Programme which has commenced in 2012 with a fund of €200,000. The programme was formed in order to support technology towards reaching a market. A total of 3 projects have so far been funded.

The Seventh Framework Programme (FP7), the EU's largest funding instrument for research in Science and Technology, has provided circa €13 million to Malta in funds for 125 projects involving Maltese entities. In order to further increase the rate of participation, the Council has formulated an incentive scheme which will award 2% - 15% of the total funding obtained by Malta through the FP projects directly to the researchers who get the funding. Moreover, 22 researchers were supported by the Council to attend international brokerage events.

With the FP7 coming to a close in 2014, there has been extensive policy work in ratifying Malta's position vis-à-vis other Member States in light of the new Programme Horizon 2020.

COST, a programme on European Cooperation in Science and Technology, providing excellent networking opportunities at EU level has also seen an increase in participation, with approximately 82 researchers having been actively involved in the last 3 years. There has been an exponential increase in 2012, when one considers that only two researchers benefitted from these funds in 2008.

Furthermore, the Council in collaboration with STMicroelectronics, has through ENIAC, a European public-private partnership focusing on micro and nanoelectronics, initiated an industrial research project called Lab4MEMS to strengthen STMicroelectronics' presence in Malta. This is at par with the need to strategize internationalisation in creating synergies across various fronts, including bilateral and multilateral cooperation, business and academia, training, R&I, knowledge transfer and commercialisation activities. This has been tangibly translated in the number of students who have been selected to attend trainings through schemes such as the Fusion 4 Energy Joint Undertaking, where two students participated in the ITER research project, as well as the participation of three researchers at the European Space Agency (ESA), as a result of Malta's agreement with ESA to be recognized with Observer status in 2012. This has further led to an increased importance in supporting space technologies, due to the extensive funding available in Europe, as well as Malta's potential in tapping into space-related technological projects in areas of ICT and engineering.

The Council also continues to stress the importance of science education and popularisation. This will be realised through the ambitious €26 Million National Interactive Science Centre which aims to address a range of experiences from 'hi-tech' to 'do-it-yourself'. The Centre will serve as an edutainment platform, tackling science topics and making them accessible to the general public, thus bridging the gap between the public and science.

Works and restoration at the Centre will start in 2013. Furthermore, the Council will be placing more emphasis on internationalisation and the use of research infrastructures abroad, and in bringing offshore research funding and private funding for R&I.

On this note, I would like to thank the staff and board for their continuous support to the vision of the Council. I look forward to another year's commitment towards enhancing the profile of Science and Technology in Malta.

"the ambitious National Interactive Science Centre which aims to address a range of experiences from 'hi-tech' to 'do-it-yourself'"

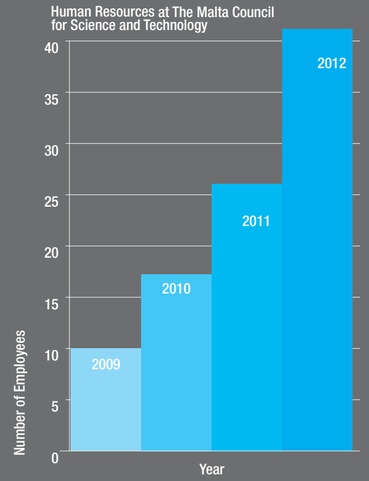
Executive Summary

The Malta Council for Science and Technology was set up in 1988 to raise the profile and standard of Science, Technology, Research and Innovation in Malta. Today, it has become responsible for five main tasks: Policy, Strategy, FP7 and COST, National Funding & Commercialisation and Science Communication.

In 2009, the Council was administered by 10 full timers, but since then has grown exponentially. The number of employees reached 42.

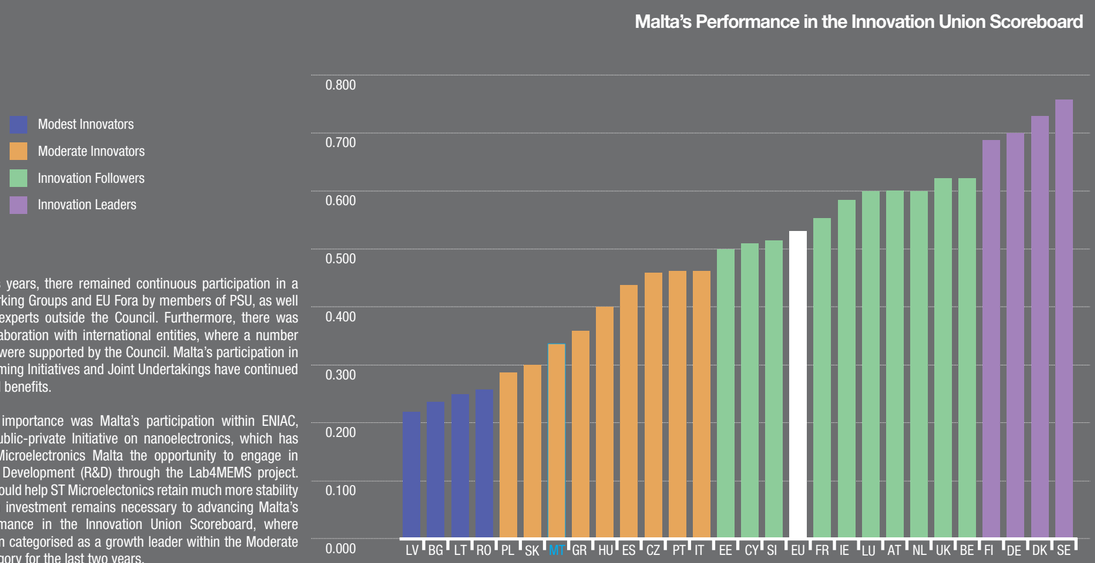
The CEO's Office, which includes Human Resources, Administration Department, Finance, Procurement, Maintenance, Public Relations and Space Technology, had also undergone several developments in 2012 with increased staff.

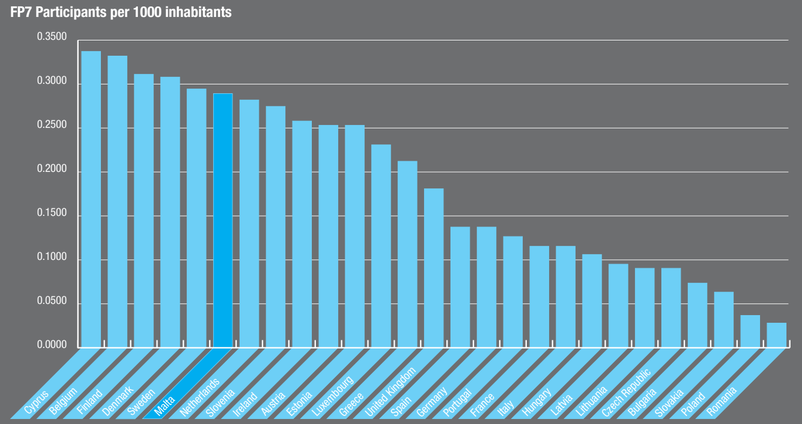
On a policy and strategy level, the Policy and Strategy Unit (PSU) – responsible for advising government on Research and Innovation (R&I) issues – dedicated much effort to the National R&I Smart Specialisation Strategy 2020, foreseen to be completed by mid-2013, in time for the new programming period 2014-2020. Furthermore, the National Health Research Strategy, expected to enhance the potential of the Maltese economy, was approved by Cabinet in the last quarter of 2012.

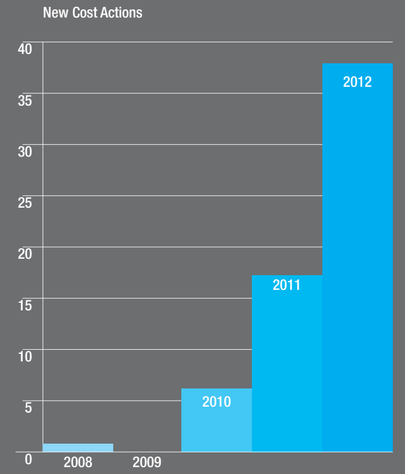


As in previous years, there remained continuous participation in a number of Working Groups and EU Fora by members of PSU, as well as appointed experts outside the Council. Furthermore, there was enhanced collaboration with international entities, where a number of internships were supported by the Council. Malta's participation in Joint Programming Initiatives and Joint Undertakings have continued to reap several benefits.

Of significant importance was Malta's participation within ENIAC, a European public-private Initiative on nanoelectronics, which has provided ST Microelectronics Malta the opportunity to engage in Research and Development (R&D) through the Lab4MEMS project. This project should help ST Microelectonics retain much more stability in Malta. Such investment remains necessary to advancing Malta's overall performance in the Innovation Union Scoreboard, where Malta has been categorised as a growth leader within the Moderate Innovator category for the last two years.





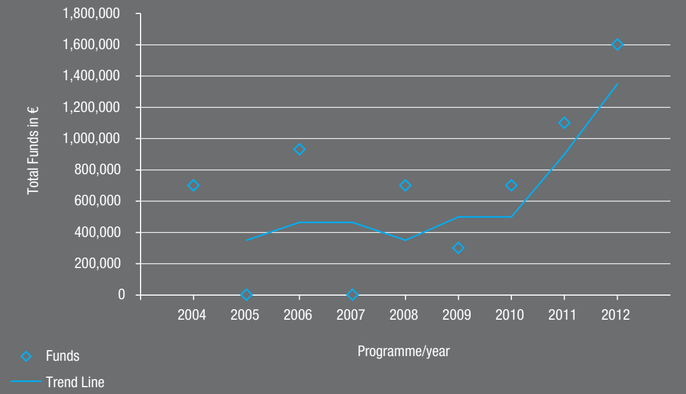


The Seventh Framework Programme (FP7) is the main financial tool through which the European Union (EU) supports Research and Development (R&D) activities covering all scientific and technological disciplines.

In support of FP7 participation on a local front, the FP7 Unit launched the Incentive Scheme in 2012 which rewards Maltese participants within successful FP projects 2% - 15% of the total funding obtained through the project. Furthermore, the FP7 Brokerage Event Scheme was re-launched, supporting 22 researchers. Due to the programme's nearing conclusion, workshops and information sessions on both the FP7 and the forthcoming programme, Horizon 2020, were organised. Furthermore, three international brokerage events were held in Malta throughout 2012, in order to facilitate networking opportunities for local entities. In light of Horizon 2020, continued work on its promotion, including trainings, is foreseen for 2013.

Similarly, COST, an initiative funded through the EU's Framework Programmes, continued to support the organisation of meetings, scientific missions, and training schools for researchers and experts in various fields. In 2012, Malta began to participate in 38 new COST Actions with the new involvement of 56 researchers, bringing a total of 82 new Malta participations in 63 COST Actions since 2008. Malta also hosted COST events in 2012.

The National R&I Programme



When considering R&I funds on a local level, the National Funding Unit responsible for the National R&I Programme, the Commercialisation Programme and an EU Funded Project on Manufacturing Research under the European Research and Development Fund (ERDF), saw an increase in results over 2012. This year proved to be an even more successful year than its predecessors, with a further increase of 58% in funds, amounting to €1.6 million. Furthermore, 2012 saw the largest set of proposals to be shortlisted, a total of 37 in all, in comparison to the 26 proposals shortlisted in 2011. A total of eight proposals were funded, utilising the full €1.6 million allocated to the 2012 calls. A further three proposals, previously submitted under the R&I programme, were supported under the Commercialisation programme, totalling €200,000 in funds.

The graph above shows the increase in funding for the National R&I Programme since 2004.

The Manufacturing Research Platform project supported by the European Regional Development Fund (ERDF), was completed in 2012. The Manufacturing Research Strategy, a deliverable of the Platform aimed at enhancing Malta's potential within value-added Manufacting, was approved by Cabinet at the end of 2012.

The Council has also reached several milestones in the region of science popularization. Recognizing the importance of public engagement and understanding of S&T, the Science Popularisation Unit (SPU) has been geared towards its main task to develop the Council's flagship project - the National Interactive Science Centre (NISC) for Malta. In 2012, the European Regional Development Fund (ERDF) Application was finalized and submitted, and the MEPA Permit for the new architectural plans obtained. The year 2012 also saw the drafting of a number of tenders related to the construction, restoration and finishes of the buildings and all elements of the surrounding external areas, as well as for the design, development, fabrication and installation of the exhibits and other exhibition elements. The €26 Million funding for the NISC is now confirmed.

Furthermore, SPU, signed the Grant Agreement of ESF 4.152 Project – Capacity Building for The Malta Council for Science and Technology under the European Social Fund (ESF), Operational Programme II.

In 2013, it is foreseen that a number of tenders will be issued and new ones drafted, as well as the development of the educational material which will aim to be complimentary to the thematic content of the interactive exhibition spaces in the form of workshops, science shows and trails.

The Council

Dr Jeffrey Pullicino Orlando MP
Chairman

Dr Marisa Cassar

Dr Sue Vella

Prof. Alfred Vella

Mr Anthony Tabone

Dr Ing. Nicholas Sammut
Vice Chairman & CEO

Ing. Silvanna Falzon

Dr Suzanne Gatt

Dr Claire Bartolo

Dr Alec Lapira

Mr Charles Theuma

Prof. Maurice Grech

Mr Charles Saliba

Dr Alex Perici Calascione
Board Secretary

The Team

The Council

Vice Chairman & CEO
Dr. Ing. Nicholas J. Sammut

Strategy and Policy Unit

Director Strategy, Policy & FP - **Nadine Castillo**

Research Policy and Strategy Executive
Ramona Saliba Scerri

Economist / Innovation Policy Exec
Christine Bartolo Perici

International Relations & Policy Executive
Dr Claire Bellia

Consultant (PT)
Dr Jennifer Cassingena Harper

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National FP7/Horizon 2020 Coordinator (Assistant Director)
Anthea Fabri

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Marie Claire Tonna
Denise Bartolo
Alexandra Camilleri (PT)
Laura Sue Armeni (PT)

Ian Gauci Borda (PT)
Dr Brian Warrington (PT)
Dr Mark Mifsud (PT)
Dr Suzanne Gatt (PT)

National Funding Unit

Director R&I National Funding and Technology Commercialisation
Ing. Joseph Sammut

Programme Manager (R&I)
Pierre Hili

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Dr Peter Gatt
Dr Elena Yasnetskaya

Legal Advisor
Dr Maria Perici Calascione (PT)

R&I Support Executive
Monica Farrugia

Science Popularisation Unit

Director Science Popularisation
Melanie Giorgi

Interactive Centre Project Leader
Karl Azzopardi
Vacancy
Vacancy

Interactive Centre
Executive S&T Administration Officer
Gaetano Avallone
Giselle Calleja

Interactive Centre
Executive S&T Officer
Chris Bugeja (unpaid Leave)
Elaine Manicaro
Vacancy
Isabel Fereday (PT)
Elton Micallef (PT)

ESF Project
Rachael Blackburn (PT)
Daniela Priehyba Camilleri

Finance Department

Financial Controller
Charles Attard Bezzina

Accounts Executive
Rosanna Schembri

Accounts Executive
Diane Degabriele

CEO's Office

Personal Assistant & Human Resources Administrator
Christine Grixti

Admin Support Officer
Mario Borg

Receptionist/Secretary
Marion Attard Bezzina

Public Relations Executive
Luke Caruana

R&I Space Technology Director
Dr Ing. Patrick Attard

Procurement & Contract Implementation Manager
Joseph Borg Camilleri

Procurement Executive
Anthony Camilleri

Assistant & Driver to Chairman
Nicholas Schembri

Other staff paid by The Malta Council for Science and Technology
- **Robert Duca** (PT)

Unpaid Affiliates

- **Prof. Ing. Joseph Micallef** – ESFRI and ERIC, ENIAC
- **Prof. Salvinu Busuttil** - EUROCEAN
- **Dr David Zammit Mangion** – FP7 Transport PCM and ETP ACARE
- **Dr Ing. Anton Bartolo** – ERAC Knowledge Transfer Group
- **Dr Brian Warrington** – ERAC SGHRM

- **Dr Ing. Saviour Zammit** –COST National Committee, eIPF
- **Dr Joel Azzopardi** – GMES
- **Dr Aldo Drago** – GMES Committee

- **Dr Maria Attard** – JRC NCP and COST National Committee
- **Dr Joseph Buhagiar** – Coal and Steel Committee
- **Dr Bertram Mallia** – Coal and Steel Committee
- **Dr Marion Zammit Mangion** – Helsinki Group Women in Science

- **Dr Neville Vassallo** – HDHL JPI
- **Dr Michael Borg** – AMR JPI

COST Domain Committee Representatitves

Dr Janet Mifsud – COST National Coordinator

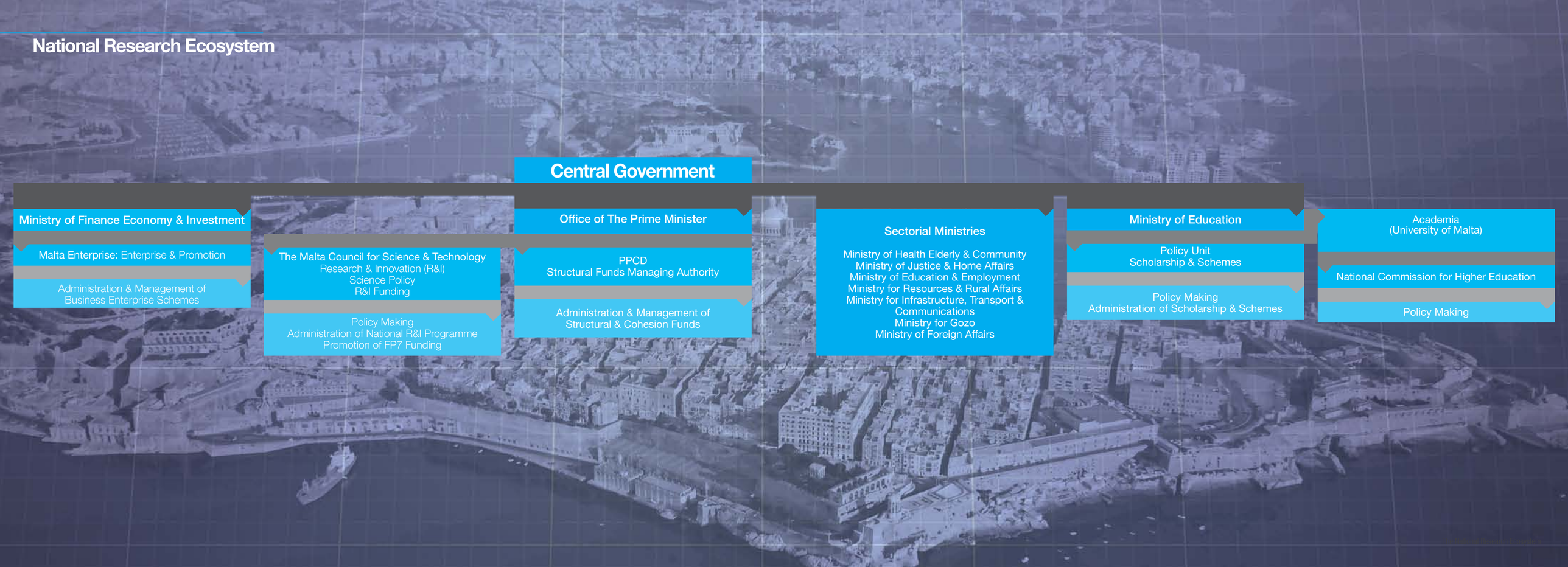
Prof. Giuseppe deGovanni - Biomedicine and Molecular Biosciences (BMBS)
Prof. Joe Grima - Chemistry and Molecular Sciences and Technologies (CMST)
Prof. Ray Ellul - Earth System Science and Environmental Management (ESSEM)
Dr Anna McElhatton - Food and Agriculture (FA)
Mr Larry ShoeMake - Forests, their Products and Services(FPS)
Dr Helen Grech - Individuals, Societies, Cultures and Health (ISCH)
Ing. Saviour Zammit - Information and Communication Technologies (ICT)
Prof. Lucio Mule Stagno - Materials, Physical and Nanosciences (MPNS)
Dr Maria Attard - Transport and Urban Development (TUD)
Dr Vincent Buhagiar - Transdomain Proposals

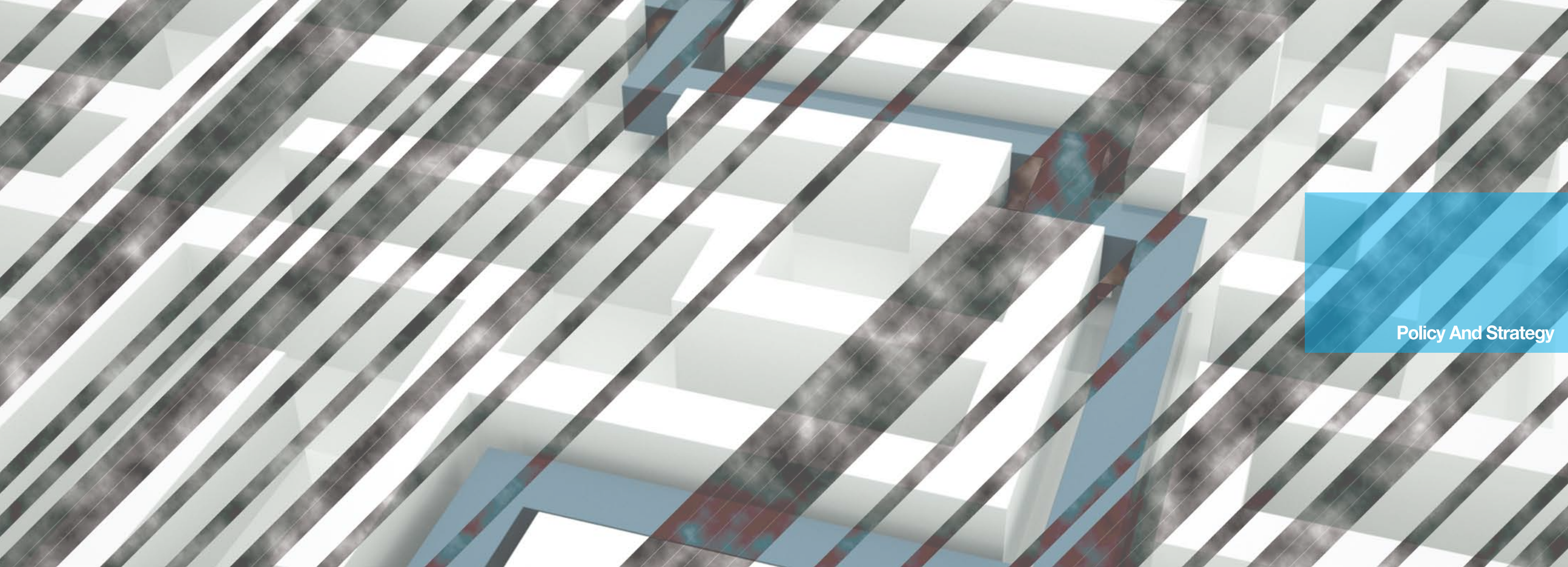
Other support staff not paid by The Malta Council for Science and Technology

Gianni Baldacchino (Messenger)
George Mifsud (Forman)
Alan Ellul (Maintenance)
Mario Falzon (Maintenance)
Jesmond Fava (Maintenance)
Tarcisio Fenech (Maintenance)
Emmanuel Seychell (Maintenance)
Joseph Ellul (Maintenance)
Vanessa Borg (Cleaner)

as at end December 2012

National Research Ecosystem





Policy And Strategy

Policy And Strategy

Dr Jennifer Casingena Harper, Nadine Castillo (Director), Dr Claire Bellia, Ms Ramona Saliba Scerri

The Policy and Strategy Unit (PSU) is the Council's hub for the analysis and formulation of policies and strategies in order to advise government on Research and Innovation (R&I) issues.

Over the past year, the Unit, in conjunction with other entities, was responsible for coordinating the formulation of the National Health Research and Innovation Strategy and also participated in the preparatory activities for the National Manufacturing Research Strategy, the Digital Gaming Strategy, and the ICT R&I ('Digital Growth') Strategy.

The draft 2020 National R&I Strategic Plan has also undergone a second iteration to take into consideration relevant developments and initiatives at EU-level, that will steer Malta's R&I efforts through the next programming period, 2014-2020.

The new R&I Strategic Plan will serve as a guide in strategically positioning Malta to leverage national and international opportunities and will highlight the areas of comparative advantage for future R&I investments.

The Unit informs its policy and strategy development through continuous participation in EU-level fora and by following and providing feedback on European policy developments in R&I. The Policy and Strategy Unit is also responsible for providing support and advice to other Ministries on policy issues in the national R&I context.

Ms Nadine Castillo, the Director of the PSU, heads a team of 3 full-time executives and a part-time consultant. Ms Ramona Saliba Scerri is responsible for research policy, Ms Christine Bartolo Perici is in charge of innovation policy, and Dr Claire Bellia works on internationalisation and policy.

Dr Jennifer Casingena Harper continues to provide her expertise in various areas of the PSU's work.

Throughout 2012, the Unit was also supported by a number of experts in different fields, including, Mr Ian Gauci Borda, Dr Brian Warrington, Dr Ing Anton Bartolo, Ms Martina Pace, Prof Joseph Micallef, and Dr Janet Mifsud.

Strategy Work

The National R&I Strategic Plan 2020

The PSU is currently dedicated to finalising the 2020 National R&I Strategic Plan that will build upon the findings and lessons learnt through the implementation of the Strategic Plan 2007-2010. Initiatives to formulate the 2020 R&I Strategic Plan come at a particularly important time, when the turbulence and uncertainty that have characterised the past few years have re-confirmed the importance of investing in knowledge and innovation. Building a knowledge and innovation-driven economy requires a long-term, ambitious vision based on sustained investments in R&I.

Over the past years, through the National R&I Plan 2007-2010, Malta has made important strides to implement the vision by recommending and securing, among others, increased funding for competitive R&I, capacity building on research infrastructures, support for Research and Development (R&D) and Innovation in enterprise, support to knowledge transfer and scholarships for post-graduate studies.

Nonetheless, more needs to be done to achieve the desired level of investment in R&I and to put into place all the elements necessary for a well-functioning ecosystem that yields the desired outcomes. The 2020 National Strategic Plan will build upon the achievements of the 2007-2010 National R&I Plan and retain consistency in its vision.

The new Plan will remain strongly business oriented, in the firm belief that the more our public and private enterprises invest in R&I in the delivery of more innovative, eco-efficient products and services, the more the economy can become resource-efficient, competitive and attractive to foreign investors and new local entrepreneurs. The direct link between national investments in R&I and efforts to address the challenges that our society is facing, is critical. The Grand Challenges at European level are relevant to the Maltese context but it is also acknowledged that there is the need to derive our own solutions to the local dimension of these challenges. This requires more joined-up policies and coordination among the key players to ensure a vibrant and dynamic ecosystem where local enterprises can seed and flourish.

Along with consistency in its vision, the 2020 National R&I Strategic Plan will retain the same set of strategic principles that delineate the direction towards which the country should be striving in its R&I efforts. These strategic principles are:

- Leveraging national funds to address national challenges through increased focus on priority areas and areas where there is an identified market, as well as procurement for R&I;
- Specialisation through focus of resources, energies and abilities in a select number of areas of economic importance in order to generate sufficient critical mass and obtain value-added R&I; without however losing the flexibility to adapt to the changing landscape and to capitalize on emerging opportunities;
- Leveraging both public and private efforts to enable private and public entities to innovate by developing an ecosystem approach in coordinating public and private resources and efforts in developing the appropriate enabling framework for public and private entities to innovate and flourish;
- Supporting the exportation of locally-generated R&I through the setting up of an enabling framework;
- Expanding Malta's Science, Technology, Engineering and Mathematics (STEM) human capital base, thus investing in Malta's future capabilities for indigenous R&I as well as increasing the attractiveness of the national system for foreign R&I investment;
- Building strong links between knowledge institutions and business, thus facilitating collaboration, joint research and transfer of knowledge, ensuring the best return on investment in new knowledge;
- Supporting the development of a national culture which is supportive of innovation, creativity, risk-taking and entrepreneurship.

Work on the 2020 National R&I Strategic Plan started in October 2010, with an evaluation of activities undertaken over the 2007-2010 period. Several workshops with stakeholders, focus groups, and bilateral meetings took place to this end during 2011, supplementing desktop studies which were also undertaken during this year. Lessons were also drawn from the results of the European Innovation Scoreboard that ranked different Member States (MS) according to their strengths and weaknesses in R&I.

Further work was undertaken to guide the identification of sectors and niches where Malta has strength and/or potential to innovate, as part of the development of a national Smart Specialisation Strategy (RIS3), which is expected to link very closely with the National Strategic Plan. Formulating such a strategy involves an entrepreneurial process of discovery, identifying where a region can gain competitive advantage by specialising in particular economic areas. This can be achieved if the region concentrates its resources on the most promising areas, through clusters, existing sectors and cross-sectoral activities, eco-innovation, high value-added markets, or specific research areas.

In December 2012, the European Commission (EC) appointed a dedicated expert to assist Malta in formulating its Smart Specialisation Strategy, and work is expected to gather farther momentum in the first months of 2013. It is envisaged that this exercise will be completed mid-2013, in preparation for the new Programming Period, 2014-2010.

The National Health Research and Innovation Strategy

Health was identified as one of Malta's priority areas for R&I in the National Strategic Plan 2007-2010. The goal to formulate a dedicated strategy for health R&I began in mid-2010 with the setting up of a steering committee chaired by Dr Alec Lapira. The members of this committee included: Dr Janet Mifsud, Prof Christian Scerri, Dr Gordon Cordina, Dr Nicholas Sammut, Dr Jennifer Casingena Harper, Ms Ramona Saliba Scerri, and Ms Nadine Castillo.

The Health R&I Strategy for Malta aims to develop an enabling health R&I ecosystem that will promote effectiveness and efficiency of healthcare services and ensure long-term sustainability of the health sector. Despite the smallness and inherent disadvantages faced by the Maltese economy, the development of health research in Malta is deemed to be economically viable particularly when considering the challenges brought about by demographic development. Smallness may actually be advantageous for local researches, if they specialize on specific niches which are not easily accessible in larger countries. In addition, health research is expected to enhance the potential of the Maltese economy, diversifying local economic activity. Research improves productivity within the economy while reducing healthcare costs and increasing healthcare effectiveness.

The National Health R&I Strategy identifies the most prominent areas and opportunities for health R&I and the investments required to develop a vibrant health R&I ecosystem. This will provide the springboard for improvements within the local healthcare system, taking into account the structures that are already in place including the relevant infrastructure, policies and initiatives.

Long-term sustainability in the health sector is expected to be attained through a range of capacity-building measures implemented in the short, medium and long-term. Research will focus on enhancing the efficiency and effectiveness of processes, diagnoses, treatments and the delivery of healthcare services. This way, the maximum social and economic benefits from the strategy are attained.

The strategy sets out four goals that will result in an innovative, efficient and effective health research system in Malta.

These Goals are:

1. Developing a vibrant and sustainable health R&I ecosystem;
2. Building the necessary capacity and competence for high quality research to improve well-being;
3. Supporting evidence-based policy-making in human health and ensuring outreach and take-up;
4. Leveraging internationalisation opportunities for economic growth and innovation in the health sector.

These goals can be achieved through the implementation of 10 recommendations:

1. Set up a national governance framework for Health R&I;
2. Increase funding for R&I;
3. Ensure enhanced access to health research facilities;
4. Enhance use of public procurement to stimulate R&I;
5. Attract high quality researchers;
6. Support capacity-building and forward planning;
7. Build critical mass and enhancing the potential of researchers;
8. Ensure dissemination and take-up of results;
9. Enable access to research results and new knowledge;
10. Invest in competitiveness and job creation.

Preparation of the first draft of the Health Strategy document started in 2011. It involved a bottom-up approach that drew upon the expertise and experience, nationally and internationally, of health science and health care experts who are already involved in or who may be potentially involved in health science research. The value-added provided through this approach was to develop a strategy to promote research in health sciences in Malta that will ultimately lead to innovation.

It is considered that this bottom-up approach would complement and add value to the essentially top-down approach that has been pursued in this area so far. The methodology used to formulate the document relied on a two-pronged approach, to cover quantitative and qualitative aspects of research.

Under each approach, the main themes of investigation were those underpinning the structure of this strategy document namely:

1. The identification of areas of specialisation in health research in which Malta has a potential for development;
2. The reasons why Malta enjoys a competitive advantage in health research in general and in particular areas of specialisation;
3. The potential benefits which Malta could enjoy out of such research activity in the short and in the medium term;
4. A gap analysis pointing to the lacunae in the research framework conditions in Malta which are at this stage precluding the country from reaping the full benefits from such activity;
5. Proposals and recommendations on the way forward in this regard.

The quantitative survey was undertaken by means of an online questionnaire in which potentially interested parties were invited to participate. A total of 83 professionals in health science and related professions gave their input to this exercise. From the responses received in the questionnaire, it was decided to form six focus groups, each with a number of specializations:

1. Airway diseases and environment;
2. Social, health behaviour and psychology;
3. Genetics, pharmacogenetics, family related, pharmaceutical production, cancer and dental;
4. Cardiac/coronary, diabetes and obesity;
5. Design of devices/equipment, ICT applications;
6. Neurological, muscoskeletal/ locomotor, mental health.

A number of focus group meetings were held to further amplify the areas of interest, possible hurdles and infrastructure, personnel and funding requirements. In addition to this, a desk review of the papers published with Malta as the affiliation country for at least one author and identified through Pubmed was undertaken.

The first draft formulated using all these sources of information was reviewed and updated during the first quarter of 2012, and approved by the Council's Board in May of that year.

The Office of the Prime-Minister (OPM) Strategic Policy Secreteriat also reviewed the document and approved it prior to its release for public consultation in October 2012.

The deadline for public comment was extended until December 8 2012 to enable time for its promotion at the 8th Malta Medical School Conference held in the first week of December. Any further comments were integrated into the final draft that was submitted and received Cabinet approval in mid-December 2012.

Other Strategies

The Manufacturing Research Strategy

The PSU was also consulted during the preparation of other strategies. The Manufacturing Research Strategy was developed under the guidance of the Council and the steering committee, and was part of a larger project that allowed the launching of a Manufacturing Research Platform administered by the National R&I Unit. These initiatives were supported through European Regional Development Funds (ERDF).

The need for a Manufacturing Research Strategy was identified as one of the key objectives in the first R&I Strategic Plan. This Strategy will act as a guide in the allocation of available resources to ensure that they are used wisely and effectively, and with the best chances of success and return on investment. It will also identify how R&I can be leveraged for economic growth and the steps to be taken to promote and facilitate R&I in the manufacturing sector.

More information on the Strategy is provided under the Section on National Funds in this report.

Digital Gaming Strategy

Members of the PSU were actively involved in the preparation of the Digital Gaming Strategy that was released in early 2012. Work on this strategy started in May 2011 when Malta Enterprise (ME), on behalf of the Digital Games Initiative Group comprising ME, The Malta Council for Science and Technology, the University of Malta (UoM), and the Creative Economy Working Group, started working on the development of a report that would guide a national policy in the setting up of a Digital Games (DG) Industry in Malta. The aim of this report was to attract foreign direct investment and find ways of stimulating, supporting, and expanding the local games industry in Malta.

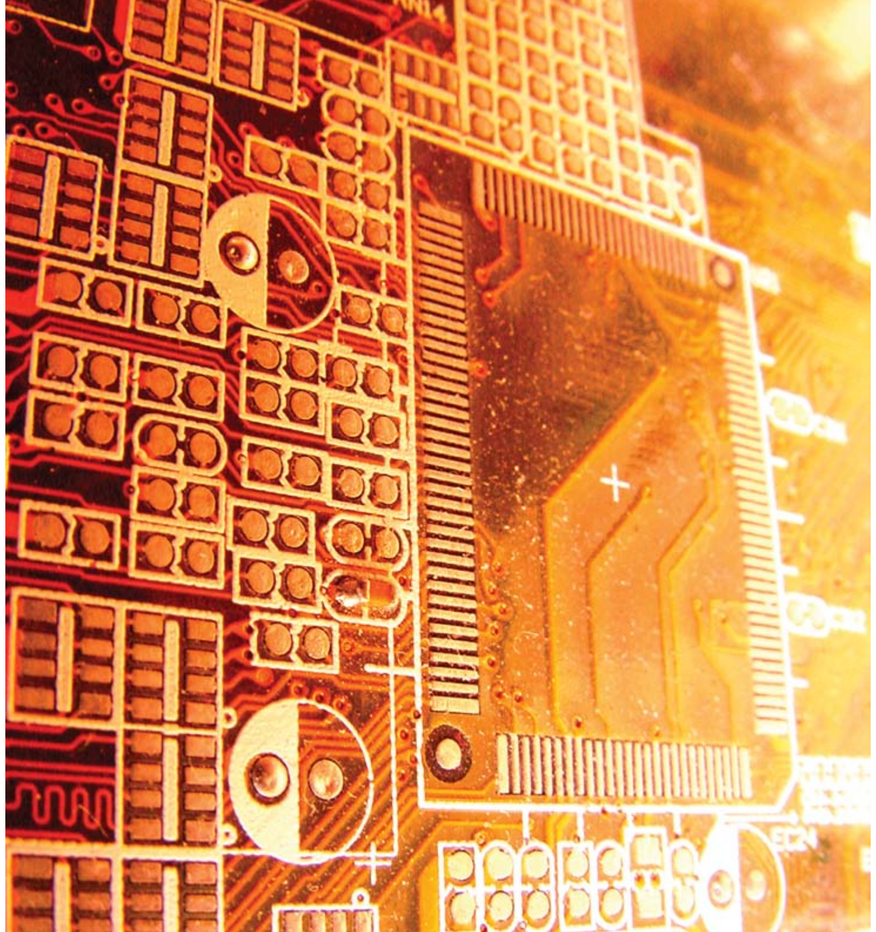
The drive to formulate this strategy stemmed from the recognition of the growing opportunities presented by the expansion of the worldwide games industry. This market is still in its infancy in Malta and many opportunities, as well as challenges are available that will influence its future.

The Strategy was formulated using a combination of techniques, including comparative and gap analyses, as well as modelling to identify the current state of play of the DG industry on a global level and in Malta and to make recommendations for the local DG Industry direction for the next 3 years. The formulation of the Strategy also involved a number of interviews with foreign experts as well as a number of local audits and interviews. The work included an analysis of existing fiscal incentives, such as tax incentives, offered by other territories to attract games companies that could be adapted to the Maltese context.

The Recommendations made in the Strategy for the establishment of a strong DG Industry in Malta included:

1. Attract global games companies through the establishment of fiscal and other support measures that are tailored for the needs of this industry. Information about these measures should be disseminated using the appropriate media and at international events and conferences;
2. Encourage local games start-ups through grants, aiding Angel Investment and using specialist training courses;
3. Enhance education through the design of new targeted courses, and promote the research activity undertaken in this industry;
4. Nurture a games eco-system: Support for the local DG Industry, including fiscal incentives to attract foreign interest in joining the local market should be maintained for over 5 years;
5. Games Areas for Malta to Specialise in: In this report, the areas suggested that should be focused on included: Mobile, Tablet, PC, Console-Downloadable Casual, Flash and other browser games which require smaller teams. This sector of games includes the growing areas of Freemium and Microtransaction games. The report describes the need to use Malta's areas of strength to ensure that we can continue to attract foreign direct investment (FDI) and build connections with our neighbouring regions including North Africa.

The Strategy also presents a detailed timetable for measures to be implemented to enable growth in the DG Industry in Malta over the next 3 years. Within this plan, measures for each quarter of 2012, 2013, and 2014 are given in different areas of the sector being targeted. These include: support measures/incentives, start-up stimulation measures, measures related to press activity/announcements, education measures, research measures, marketing/sales activity measures, and measures related to organisations/trade bodies/events.



ICT Research and Innovation ('Digital Growth') Strategy

In early 2012, the Malta Information Technology Agency (MITA) motivated by developments at EU-level to promote smart specialisation, embarked on a stakeholder consultation process with the aim of developing a dedicated Information and Communication Technology (ICT) R&I Strategy. The goal of the consultations was to identify both the strengths and weakness of the local ICT landscape and develop a set of recommendations that would allow the ICT industry to flourish over the coming years particularly through smarter use of Cohesion Policy funds. The thrust to carry out this work emerged from the increasing emphasis being made at the EU-level on the "smart" use of Structural Funding to boost the economic competitiveness of Member States (MS). The concept of Smart Specialisation is a key element of innovation policy in order to ensure that Structural Funds are directed to areas that can maximise the impact of financial intervention by exploiting the competitive advantages, capabilities, competences and potential areas of excellence of a particular MS.

The rationale used for the importance of investments in ICT stems from its capacity to stimulate employment and promote innovation in various sectors. Digital Growth, as a key enabler of smart specialisation, means that ICT should be embedded in every socio-economic activity, particularly in three areas considered as crucial to ensuring the competitiveness of MS in the global market and to facing current societal challenges, namely, R&I, SME support, and energy efficiency and renewable energies.

The local ICT sector is an important contributor to Malta's Gross Domestic Product (GDP), however, improvements in the local ICT R&I context are needed to ensure that it continues to be an enabler of economic growth and competitiveness. Two workshops were held in March and November 2012 that brought key players together to discuss issues related to R&I. These workshops tackled R&I from two angles: the first is the use of ICT as an enabler of R&I activities, and the second is the role of R&I in the ICT sector as a promoter of economic growth.

The first workshop included entities from the public sector and academia and it was a joint event organised by MITA and the The Malta Council for Science and Technology. A total of 27 participants attended the workshop including academics from the medical, engineering and ICT faculties, industry representatives, educators, government authorities, and healthcare professionals. The discussions centred on the enabling nature of ICT within R&I and the cross-cutting role of ICT in supporting the various sectors of the economy, particularly in terms of its potential in promoting innovation in products, businesses, and industrial processes.

To identify the main strengths and opportunities in the local ICT industry and highlight the areas for improvement, SWOT Analyses were undertaken covering four different thematic areas: e-infrastructure, e-applications, key enabling technologies, and ICT capacity-building. Throughout these thematic discussions, the R&I enabling role of ICT was assessed, with consideration given to Malta's performance on the Digital Agenda Scoreboard.

The second workshop was organised by the eSkills Alliance and the IT Business Section of the Malta Chamber of Commerce, Enterprise and Industry in November 2012 and was primarily directed at ICT industry players and academia. The workshop, entitled, "The eSkills and Innovation Industry Foresight Workshop" was attended by a total of 58 participants, mostly professionals and entrepreneurs from the local ICT Industry. This was an opportunity for industry, as well as academic players to influence the development of policies that would determine the use of ERDF funding in the upcoming programming period. The participants discussed their vision of the future progression of ICT industries in Malta and identified the e-skills and R&I capability requirements to achieve growth in this sector.

During this foresight workshop, four parallel sessions were organised on the following topics:
Session 1 - ICT Entrepreneurship and ICT Start-Ups
Session 2 - Next Generation ICT Infrastructure
Session 3 - Specialist ICT Development and Servicing
Session 4 - ICT Research and Innovation

The Malta Council for Science and Technology was involved in the fourth session on ICT R&I, which was organised to follow-up on the workshop held in March 2012. The outcomes included a SWOT Analysis of the R&I context for ICT and a set of policy recommendations that will inform the development of both the ICT R&I Strategy being drafted by MITA, as well as the National R&I Strategy for 2020 currently being developed by the Council.

Policy Work

National R&I Policy

The Council, through the PSU, continues to contribute to the National Reform Programme. The Unit is responsible for coordinating the proposal of measures by the Council, aiming towards the achievement of the national R&D expenditure target, and provides regular updates on the implementation of these measures. The team also provides feedback to other Ministries on the R&I aspects of EU dossiers falling within their remit, as well as consultation on other national documents.

In 2012, the PSU also assisted in the development of an initiative to attract government entities and local councils to explore the possibility of using public procurement for innovation. This is part of a drive at the EU-level to use governments' need to purchase as a promoter for national innovation efforts. The team was also involved in the national training given on gender mainstreaming and provided the necessary internal support to take this initiative further within the Council.

The R&D Expenditure Survey

In 2012, the Council collaborated with the National Statistics Office to improve data collection for the 2011 Business R&D survey. Nine research interviewers were engaged in June and July 2012 and they underwent a half-day training session to familiarise themselves with the concepts and the questionnaire. Fieldwork was undertaken between July and September 2012 and provisional data indicates that these research interviewers have helped industry to better identify and categorise their R&D activities.

The R&D Expenditure Target

The Europe 2020 Strategy confirms Europe's commitment to reach a research and development expenditure (both public and private) of 3% of the EU's GDP by 2020. Malta's national target in this regard was set at 0.67% in 2010. Provisional data indicates that Malta's R&D expenditure level reached a value of 0.73% in 2011. In 2012, The PSU has evaluated the underlying rationale for this development and has presented its proposals to the Council's Board in this regard. Further discussions at Government level are expected to ensue in the coming months.

Rankings and Indices

The Innovation Union Scoreboard 2011

The Innovation Union Scoreboard, formerly known as the European Innovation Scoreboard, is a well-established tool for assessing innovation performance amongst EU MS and Europe's innovation performance when compared to other major world economies. This mechanism has been used since 2001 and throughout the years various revisions were undertaken in order to reflect the relative strengths and weaknesses of the different EU MS, in terms of R&I. The adoption of the European 2020 Strategy and the Innovation Union Communication in 2010, led to an update of the Innovation Scoreboard. The aim of this update was to enable the use of this tool to assess and monitor the implementation of the Europe 2020 Innovation Union flagship, since the Scoreboard presents a comparative assessment of the innovation performance of the EU27 MS as well as the relative strengths and weaknesses of their R&I systems.

The current Innovation Union Scoreboard is based on the computation of 24 indicators, which are relevant to assess R&I performance of the 27 EU MS as well as Croatia, Serbia, Turkey, Iceland, Norway and Switzerland. These indicators are grouped into three main categories:

- Enablers (covering human resources, finance and support, open, excellent and attractive research systems);
- Firm activities (covering firm investments, linkages & entrepreneurship, intellectual assets); and
- Outputs (covering innovators, economic effects).

The Enablers constitute the basic building blocks necessary for innovation to happen while the indictors within the firm activities measure the innovative level of Europe's firms. The Outputs category reflects the results reaped from the inputs of the R&I system to the economy as a whole. The entire set of indicators feeds in the computation of a Summary Innovation Index (SII) for each MS, the result of which is used to rank the countries accordingly. Following this calculation the Innovation Scoreboard places the 27 EU MS into the following four country groups:

Country Group	Criteria
Innovation Leader	SII is 20% or more above that of the EU27
Innovation Followers	SII is less than 20% above but more than 10% below that of the EU27
Moderate Innovators	SII is less than 10% below but more than 50% below that of the EU27
Modest Innovators	SII is below 50% that of the EU27

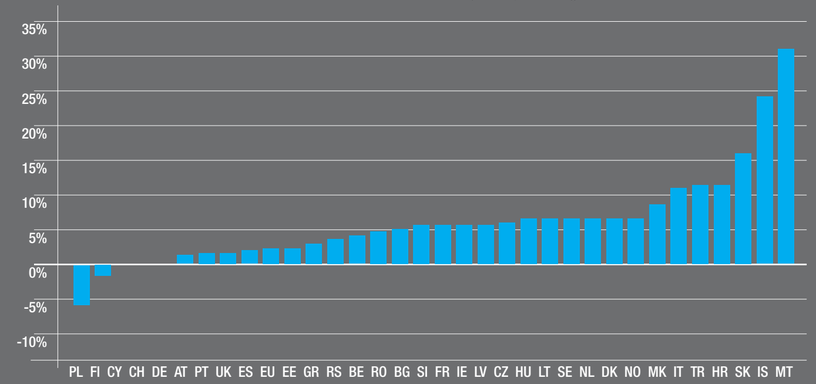
Since 2009 Malta has been classified as a Moderate Innovator and has managed to keep its position within this group since then. This was confirmed in the Innovation Union Scoreboard 2011 Report that was published in early 2012. In this report, Malta is also identified as one of the growth leaders within the moderate innovators group.

In analyzing the Innovation Union Scoreboard, it can be noted that Malta has registered a percentage growth in just over half of the indictors. It has registered a 31.6% increase in the number of new doctorate graduates (see graph below). Another six indicators have registered over 10% increase, namely, top 10% most citied scientific publications [12.4%]; non-EU doctorate students [10.0%]; PCT patent applications [10.2%]; community trademarks [17.9%]; SMEs introducing product or process innovations [15.8%] and knowledge-intensive services exports [16.2%]. Another six indicators have registered a performance increase ranging between 0 and 10%, including, youth aged 20-24 upper secondary level education [1.1%]; international scientific co-publications [9.4%]; public R&D expenditure [4.5%]; non R&D innovation expenditure [6.7%]; community designs [8.6%]; and employment in knowledge-intensive activities [0.2%]. The indicator on SMEs innovating in-house did not register any growth..

Malta's Performance in the Innovation Union Scoreboard

Malta is currently a leader in the Growth Performance for New doctorate graduates aged 25-34

Growth Performance For New Doctorate Graduates Per 1,000 Population Aged 25-34



On the other hand, a decrease was registered in nine indicators, the greatest decline was reported for the indicator measuring license and patent revenues from abroad [16.2%], followed by public-private scientific co-publications [8.6%] and sales of new to market and new to firm innovation [5.7%]. A 3.7% decrease was registered for the indicator on population (aged 30-34) having completed tertiary education while a 2.5% decline was recorded for business R&D expenditure. Out of the nine indicators for which a decrease was registers, four indicators registered a decrease which was less than 1%.

The Council analyses the outcome of the Innovation Union Scoreboard to better understand Malta's R&I performance. In particular, through this analysis the Council notes Malta's existing strengths and weaknesses in the context of these activities. The insights gained through the assessment of the Innovation Union Scoreboard were taken into consideration and will be reflected in the proposed recommendations featured in the upcoming National R&I Strategic Plan for 2020. It is evident that proper policy-making will affect the level of Malta's R&I performance in the long term.

The improvements shown in the local context were also reflected in other rankings and indices:

Global Competitiveness Index

In 2012, The Global Competitiveness Report 2012–2013 published by the World Economic Forum, showed that Malta climbed four places in the Global Competitiveness Index, moving to 47th place among 144 countries. The Report also classified Malta among the leading economies within the innovation-driven category, with its improvement being among the best among the EU-27 countries with only two other MS registering a bigger movement up the rankings.

Amongst others, the Report shows that Malta's significant investment in education and infrastructure is bearing its fruit, with the quality of the education system now classified among the best 20 in the world, and the overall infrastructure improving by a considerable ten places to 35th place.

Malta has also scored highly in the financial services sector - ranking amongst the most advanced nations for availability of financial services, financing through local equity market, ease of access to loans and soundness of banks - as well as for its technological readiness.

Steps forward have also been noted in the key issues raised with regards to doing business, which saw decreases in problems related to bureaucracy, in access to financing, in the availability of educated resources and in taxation.

Global Innovation Index

The Global Innovation Index (GII) relies on two sub-indices, the Innovation Input Sub-Index and the Innovation Output Sub-Index, each built around pillars. The Innovation Input Sub-Index within the GII has five enabler pillars: institutions, human capital and research, infrastructure, market sophistication, and business sophistication. Enabler pillars define aspects of the environment conducive to innovation within an economy. The Innovation Output Sub-Index on the other hand measures the results of innovative activities within the economy. This is based on two pillars, knowledge and technology outputs and creative outputs. Although the Output Sub-Index includes only two pillars it has the same weight in calculating the overall GII scores as the Input Sub-Index.

Malta ranked 16th in the GII 2012 and scored 1st among the 16 countries added to the GII this year. Malta achieved 4th position in the Output Sub-Index and 27th in the Input Sub-Index. Noteworthy, it ranked 1st in creative goods and services, with good scores across all indicators. This is a reflection of Malta's appeal as a tourist destination, which has a direct impact on the production and consumption of recreation and culture. Although labour productivity is still low at 0.5% (ranked 99th defined as growth of GDP per person engaged), Malta scored 5th and 6th in new businesses and the adoption of conformance certificates with the ISO 9001 quality standard respectively. This leads Malta to score at the 10th position in knowledge impact. The country's two major strengths are its 3rd and 6th positions in knowledge absorption and diffusion. The major areas of concern are its low rankings in human capital and research and in investment.

In addition to the GII, which is calculated as the average of the Input and Output Sub-Indices, there is the Innovation Efficiency Index. This is calculated as the ratio of the Output over the Input Sub-Index. The relationship between the GII and the efficiency ratio is positive and the more efficient countries are, they tend to achieve better GII scores. The Innovation Efficiency Index is designed to be neutral to the countries' stages of development and the analysis by income group for efficiency ratios is particularly crucial, because economies might reach a relatively high efficiency ratio because of particularly low Input scores.

Together with China, India, the Republic of Moldova, Switzerland, Paraguay, Serbia, Estonia, Netherlands, and Sri Lanka, Malta was classified among the top 10 countries in the Innovation Efficiency Index. These are countries particularly good at surmounting relative weaknesses on their Input Sub-Indices, with robust output results.

Overall three groups of countries can be identified by their innovation performance in relation to their income levels. Malta scored 1st among the high-income countries group and was classified as one of the Innovation Leaders. Among the Innovation Leaders, we find high-income countries such as Switzerland, the Nordic countries, Singapore, the UK, the Netherlands, New Zealand, Israel, and Estonia. The economies classified under this group have succeeded in creating well-linked innovation ecosystems where investments in human capital thrive in fertile and stable innovation infrastructures to create impressive levels of innovation outputs.

Furthermore, it should also be noted that the EU12 group is led by Malta followed by Estonia in the top 20, Slovenia, the Czech Republic, and Latvia in the top 30, and Hungary, Lithuania, Slovakia, Bulgaria, Poland, and Romania.

It is a well-known factor that the current economic crisis has slowed down the introduction of new products and processes due to business uncertainty. However R&D and Innovation cannot be stopped and then continued after the economy has recovered. Such hysteresis effects in innovation lead to innovation being less dynamic even when the economy has recovered. More attention needs to be given to the interplay of institutions and the interactive processes in the creation, application, and diffusion of knowledge, human capital, and technology. Policy makers should push for further transfer of scientific results and inventions and apply them to address societal challenges.

The European Dimension of R&I Policy

Preparation for and participation in the Competitiveness (Research and Space) Council

The PSU continued to support Malta's participation in the Competitiveness (Research and Space) Council through the preparation of instruction notes, briefing notes, and lines to take for Research Working Parties, COREPER I, and Competitiveness Council Meetings. In 2012 the Competitiveness Council discussed several important dossiers, including the European Research Area (ERA) Framework Communication, the Communication on International Cooperation and the Horizon 2020 legislative package.

The Policy and Strategy team was also responsible for drafting Malta's position for bilateral meetings and informal EU12 meetings, preparing IMC memos, reviewing European Parliament reports, Committee of Regions reports, CION questionnaires, ERAWATCH reports, participating in the Salzburg Group and the UN Commission on Science and Technology for Development. Through its work, the Policy and Strategy Unit ensures broad participation in a number of different fora in a consolidated way, representing Malta as a united front in matters of R&I.

Participation in Other European Forums and Working Groups

European Research Area Committee (ERAC)

During 2012, the PSU continued participating in the European Research Area Committee (ERAC) and ERA-related groups. Members of the Unit or nominated individuals attended meetings, followed-up on recent developments, and provided feedback. Malta's delegates to ERAC are Dr Ing. Nicholas Sammut and Ms Nadine Castillo, with Mr Ian Gauci Borda and Ms Ramona Saliba Scerri as alternates. During 2012, the Council provided input to discussions and analyses which took place in ERAC, including the review of the ERAC mandate, the evolution of R&D investment and the draft ERAC opinion on ERA and Horizon 2020.

The ERAC Working Group on Knowledge Transfer

In 2012, the ERAC set up a group on knowledge transfer to act as an advisory body to ERAC. The aim of this Group is to improve knowledge exchange within Europe and with Europe's international partners and to make an effective contribution to Europe "2020" vision and objectives. To that purpose, the group has two main functions. Firstly, it will act as a strategic advisory body to ERAC on knowledge transfer. Secondly, it will develop relevant initiatives and ensure that these are delivered effectively.

The group is composed of representatives of Member States and Associated Countries including policy makers, senior representatives of research and innovation agencies and intellectual property (Patent) offices and reports to ERAC at least once a year.

The group's main activities will be directed at the implementation of:

1. The European Research Area;
2. Commission Recommendation and Code of Practice on knowledge transfer;
3. The Innovation Union.

In 2012, Malta was represented at the ERAC Working Group on Knowledge Transfer meetings by Dr Ing Anton Bartolo, Ms Martina Pace and Ms Christine Bartolo Perici.

Steering Group on Human Resources and Mobility (SGHRM)

The SGHRM has been active since 2002 and is tasked with the responsibility to promote, monitor and report on the implementation of the Researchers' Partnership at EU and national levels and on other ongoing researchers-related activities (e.g. EURAXESS activities, the European Charter and Code of Conduct for the Recruitment of Researchers, and the "Scientific Visa"). In 2011 a number of working groups were established, covering HR issues, portability of grants, researchers' training, monitoring and indicators and during 2012 it is expected to see the results of these efforts.

Furthermore, in 2012 the SGHRM continued work on topics such as the European Framework for Research Careers, the Mapping Exercise on Doctoral Training, and Portability of Grants. Malta's delegate to the Steering Group on Human Resources and Mobility is Dr Brian Warrington.

European Strategic Forum on Research Infrastructures (ESFRI)

ESFRI is the European Strategy Forum on Research Infrastructures, which is a strategic instrument to develop the scientific integration of Europe and to strengthen its international outreach. The competitive and open access to high quality Research Infrastructures supports and benchmarks the quality of the activities of European scientists, and attracts the best researchers from around the world.

Malta's National Delegate for ESFRI is Prof. Joseph Micallef, Department of Microelectronics and Nanoelectronics in the Faculty of ICT at UoM.

Strategic Forum on International Scientific and Technological Cooperation (SFIC)

The main objective of SFIC is to facilitate the further development, implementation and monitoring of the international dimension of ERA by sharing information and consultation between the partners (MS and the Commission) in order to identify common priorities which could lead to coordinated or joint initiatives. In addition the group is also responsible for coordinating activities and positions vis-à-vis third countries and within international fora.

In 2012, International Cooperation at EU level was given a new dimension. The proposed Horizon 2020 gives International Cooperation a significant horizontal nature. Coupled with this, during 2012, the Commission issued a new proposal on Internationalization of the ERA. During the same period, SFIC continued its work on the externalisation of research beyond the EU, with specific events targeted towards the pilot countries: China, US, and India. In 2012, a new focus on Brazil and Russia had been launched.

In October 2012, the Council launched an expression of interest among the research community in Malta and received valuable feedback from academia and industry on how the community foresees its relationship with the United States. This information was used during the Council's presentation in the SFIC event in San Francisco in December 2012 (Destination Europe) which resulted in a number of new contacts mainly in ICT and engineering.

Malta also took an active role (through its participation in an ad-hoc group set up for this purpose) in the discussions on mobility of researchers and contributed to an issues paper drafted by SFIC in this regard. Malta's delegate to SFIC is Mr Ian Gauci Borda.

The Monitoring Committee for Euro-Mediterranean Cooperation in RTD (MoCo)

The Monitoring Committee for Euro-Mediterranean Cooperation in RTD (MoCo) was set up by the Council in Barcelona in 1995 to promote cooperation in R&D and to support sustained development of the Mediterranean region. The MoCo has played an important role in determining the EU-Mediterranean priority areas of cooperation in the past and current EU Research Framework Programmes. MoCo has also supported regional R&D cooperation through exchange of information on bi- and multilateral Euro-Mediterranean activities.

During 2012, the Council hosted the 17th MoCo meeting in Malta on the 19 and 20 November 2012. During this meeting, also attended by the Prime Minister, the main focus was on launching discussions related to the possible move toward the Article 185 initiative for the Mediterranean. Malta's delegate for MoCo is Mr Ian Gauci Borda.

Enterprise Policy Group (EPG) Subgroup on Innovation.

The EPG Subgroup agreed to maintain their effort to promote innovation in the future to ensure the business and industry orientation of European innovation policies, including Horizon 2020. On these grounds, the mandate of the EPG subgroup has been extended to post 2013.

As part of the discussions leading to the development of an Action Plan to boost demand for innovations, a three-phase development was proposed by the group. The phases included: the identification of possible market or sectors; the development of strategic roadmaps of demand-side actions in these sectors and the implementation of the roadmaps and monitoring of policy measures.

On a national level, a series of meetings with the Department of Contracts and the Association of Local Councils were organised in order to promote Innovation Procurement and Pre-Commercial Procurement. Further information on these initiatives is found in the 'Buying Innovation' section of the Annual Report.

Ms Christine Perici and Mr Joe Borg Camilleri are Malta's representatives in the EPG Sub-Group on Innovation.

E-Infrastructures Policy Forum

The e-Infrastructures Policy Forum (e-IPF) provides a forum for debate and early information exchange between its Members with a view to align national and EU policies and initiatives and promote an enhanced cooperation between national e-Infrastructures and stakeholders.

e-IPF brings together policy-makers, ministries and funding agencies of the Member/Associated countries to exchange information and best practice on e-Infrastructure policies and programmes. The Council began participating more actively in the e-IPF in 2012 through the nomination of Dr. Ing. Saviour Zammit to the forum and his commencement of participation to the forum's meetings.

Internationalisation

In 2012, the internationalisation drive was given prominence with efforts focusing on the design of a more coordinated approach and the launch of actions to enhance the Council's and Malta's international profile. These related primarily to the identification of key initiatives at EU level which can support the sectoral strategies in health and manufacturing. This lead to Malta's participation in a number of Joint Programming Initiatives (JPIs), and the ENIAC Joint Undertaking (ENIAC JU).

Ms Nadine Castillo and Dr Jennifer Casingena Harper, were responsible for promoting Malta's participation in a number of EU-level initiatives through personal participation or the nomination of expert delegates, and established various collaborations with foreign R&I institutions. Dr Claire Bellia was welcomed as a new member of the team and will be responsible for promoting and coordinating further participation in both EU and international-level fora with a dedicated internationalisation budget.

The main rationale for the Council's investment in international cooperation in R&I is to deploy it as a key resource in order to strategically enhance competitiveness, world class research excellence, and critical mass in key priority areas of national importance. The Council identifies five main reasons to pursue such internationalisation efforts:

- Increase international visibility of Malta's R&I strengths and potential;
- Gain access to required resources, know-how and expertise particularly in support of national capacity-building in R&I;
- Expose our leading researchers (and potential ones) to leading research infrastructures and facilities abroad;
- Attract outstanding researchers (young and experienced) from abroad and provide facilities to retain them in Malta;
- Gain best practice in R&I policy through interactions with leading counterpart organisations.

Throughout 2012, efforts to expand the borders of Malta's R&I included participation in Joint Programming Initiatives and in the Joint Undertaking, ENIAC. The Council was also instrumental in promoting and supporting the participation of Maltese researchers and students in traineeships and internships organised by foreign institutions and research centres.

High-Level Group on Joint Programming

The High Level Group for Joint Programming (GPC - Groupe de Programmation Conjointe) is responsible for identifying the themes for joint programming across Europe. During 2012, the Council enhanced its commitment in the GPC by increasing its level of participation at both GPC and at JPI levels. During GPC meetings MS discussed the mandate of the Commission Expert Group, which was in charge of the review of the Joint Programming process. The mandate of the Group included the drafting of a report intended to guide the Commission in better planning support for the Joint Programming process through Horizon 2020 and the ERA Framework. The overall conclusion of the expert group was that it was satisfied with the high level of participation from member states, and the aims set for JPIs can only fully succeed if commitment and financial support from the national administrations and councils continues.

The GPC also finalised the Biennial Report 2012 which aims at providing details of the main activities carried out and an assessment thereof in order to give guidance to ERAC, the Council and the Commission regarding follow up requirements and options of the work carried out by the GPC itself. Also, the GPC adopted new rules of procedure. The main changes in the procedure consist in new governance based on the election of a chair and a vice-chair for a period of two years, and the introduction of a 24-month rolling work programme.

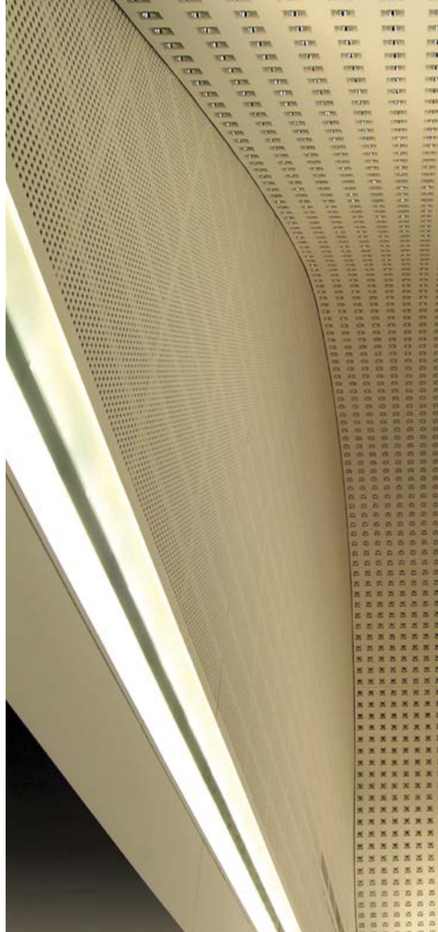
Malta's delegate to the GPC is Mr Joe Borg Camilleri.

Joint Programming Initiatives (JPIs)

Part of the Europe 2020 Strategy stipulates that "in order to avoid decline, the EU must add value on the global scene. The EU can only influence global policy decisions if it acts jointly through internal coordination". The creation of JPIs aims to reduce fragmentation in R&D and tackle the challenges that cannot be solved solely on the national level and allows MS to participate in those joint initiatives where it seems useful for them. The MS are also expected to reform national R&I systems to implement joint programming. When JPIs launch actions where funding is required, this is mainly guaranteed via national sources with some support for research governance by European RTD Framework Programme funding. JPIs do not receive Framework Programme funding for research projects as such but there is an added potential of funding through the creation of Framework Programme and future Horizon 2020 consortia.

Currently, Malta has been granted observer status in two of the ten JPIs. These are the Joint programming Initiative on Neurodegenerative Diseases (JPND) and the Joint Programming Initiative on Antimicrobial Resistance (JPIAMR). Maltese delegates nominated by the Council have participated in meetings organised by the two JPIs. JPND is a Member State-led initiative that aims to increase coordinated research investment between participating countries aimed at finding causes, developing cures, and identifying appropriate ways to care for those with neurodegenerative diseases while JPIAMR aims to foster trans-national cooperation in antimicrobial drug resistance.

Malta is also a founding member of another JPI called Urban Europe which was led by Transport Malta. This JPI aims to transform urban areas to centres of innovation and technology, realize eco-friendly and intelligent intra- and inter-urban transport and logistic systems, ensure social cohesion and integration, reduce the ecological footprint and enhance climate neutrality.



Joint Undertakings (JUs)

The European Commission, through FP funding, supports the establishment of long-term public-private partnerships in the form of Joint Technology Initiatives (JTIs). These are implemented through the creation of legal entities called Joint Undertakings (JUs). Members of a Joint Undertaking include the European Commission, a not-for-profit industry-led association, and, in some cases, Member/associated States. Small and medium-sized enterprises (SMEs), research organisations (including universities) and corporate members are all welcome to join the industrial associations. By joining forces and pooling resources, industry, especially SMEs, can accomplish far more than through individual effort. From a practical point of view, members can vote in elections, participate in key decisions, and shape the policies and evolution of the Strategic Research Agenda. Participation in JUs provides access to an extensive network of respected research partners. Several Joint Undertakings were set up for a period up to 31 December 2017, aimed at mobilising and pooling European, national and private efforts.

The Commission and Member States that are part of the Joint Undertakings will annually commit funds from their research budget. Industry will commit matching in-kind contributions and funds 50% or more of the total costs of the projects to carry out the research.

ENIAC Joint Undertaking

The ENIAC JU is a public-private partnership focusing on nanoelectronics that brings together Member/Associated States, the Commission, and AENEAS (an association representing European R&D actors in this field). Nanoelectronics, as well as nanotechnology in general, has been identified as one of the Key Enabling Technologies (KETs) behind the future innovative products and services and it is amongst the technologies that are generally considered as the main supporters of European industrial competitiveness and sustainability in the future.

ENIAC coordinates research activities through competitive calls for proposals to enhance the further integration and miniaturization of devices, and increase their functionalities while delivering new materials, equipment and processes, new architectures, innovative manufacturing processes, disruptive design methodologies, new packaging and 'systemising' methods. It will drive and be driven by innovative high-tech applications in communication and computing, transport, health care and wellness, energy and environmental management, security and safety, and entertainment.

The ENIAC JU was set up in February 2008 and will allocate grants throughout 2013 and will execute the projects selected for funding till 31 December 2017. The total value of the R&D activities generated through this partnership upon its conclusion is estimated at €3 billion. ENIAC JU defines and implements a Research Agenda, notable by awarding funding to participants in selected projects following competitive calls for proposals, by promoting a public-private partnership, and by achieving synergy and coordination of European R&D efforts in the field on nanoelectronics.

In 2012, a call for proposals for a KET Pilot Line was opened. This call promotes the implementation of pilot lines in industry in KET. A KET Pilot Line could be distributed in more than one building or geographic location; for example, in a project including both Front End of Line and Back End of Line operations, although they are technologically a single sequence, the two parts could be at different locations.

Eligible proposals for this call were those that showed the use of an innovative technology to develop innovative products, meet social challenges, and establish a new, realistic R&D environment, a facility capable to manufacture demonstrators in small volume in order to establish their value and potential, while including a deployment plan to a real life European manufacturing site. The legal entities from Malta eligible for funding included commercial companies, higher education institutions and non-profit research institutions.

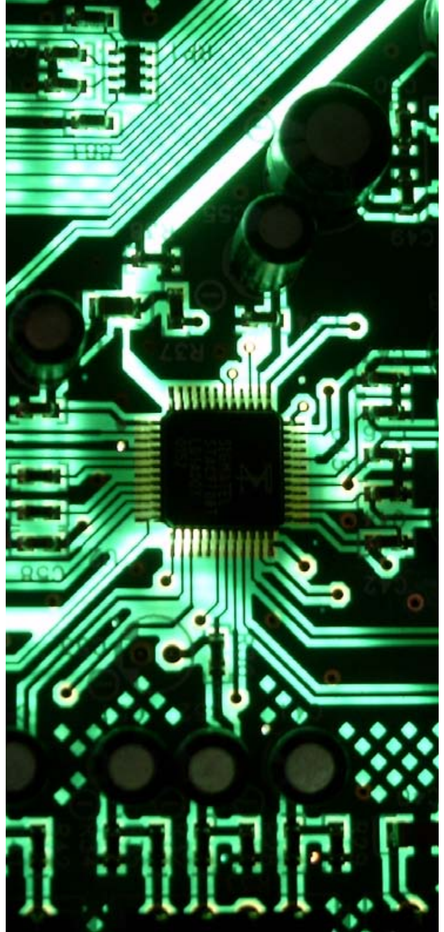
The National contact Points for this call were Prof. Joe Micallef and Ms Nadine Castillo.

Lab4MEMS

One of the projects submitted for ENIAC's call for proposals for a KET Pilot Line was the Lab4MEMS project, a project coordinated by ST Microelectronics s.r.l. (Italy) Lab4MEMS aims to develop novel, innovative manufacturing methods for various materials, including magnetic and piezo materials, and packaging technologies for state-of-the art microelectromechanical systems (MEMS) devices, sensors, and 3D packaging.

Lab4MEMS proposes the implementation of two pilot lines one in ST's facility in Agrate (Milan) Italy and the other in ST's facility in Malta. Following an evaluation of their proposal, and a complex voting procedure, Lab4MEMS was ranked second in ENIAC's evaluation of the proposals submitted under the KET Pilot Line Call.

The Lab4MEMS project involves 21 multinational partners receiving a total of €28million over the next 2.5 years. Lab4MEMS will continue to be coordinated by STMicroelectronics s.r.l. (Italy). The total cost for implementing part of the project in Malta is €4.5million and the funding will be split between various sources: 15% will be provided by the JU, 50% by industry (in this case, STMicroelectronics, Malta), and 35% will be made available through National funding.



Fusion for Energy (F4E) Joint Undertaking

Fusion for Energy (F4E) is a Joint Undertaking created specifically to support fusion research and development initiatives in Europe and provide Europe's contribution to ITER. ITER, which means "the way" in Latin, is the world's largest scientific partnership that aims to demonstrate fusion as a viable and sustainable source of energy. ITER brings together seven parties that represent half of the world's population – the EU, Russia, Japan, China, India, South Korea and the US. By working together, these parties are committing themselves to a global response to a global challenge – assuring sustainable energy resources.

ITER will be thirty times more powerful than the Joint European Torus (JET) which is currently the largest comparable experiment operating in the world. It will allow scientists and engineers to develop the knowledge and technologies needed to proceed to a next phase of electricity production through fusion power stations. ITER is being constructed at Cadarache in the South of France. Europe, as the host party, and France, as the host state, has special responsibilities for the success of the project. In particular, Europe supports 45% of the construction cost and 34% of the cost of operation, deactivation and decommissioning of the facility as well as preparing the site. Europe's contribution to ITER is managed by the F4E Joint Undertaking.

2012 marked important milestones such as the signing of the €160 million contract for the ITER radial plates, a variety of infrastructure works on the Cadarache site, good progress on the Neutral Beam Test Facility, and the signing of the first contracts of the first wall panel semi-prototypes and the ITER pre-compression rings. A framework partnership agreement was also signed for the ITER Plasma Position Reflectometry. The Prime Minister of France, Jean-Marc Ayrault, also signed the official decree authorising ITER to proceed with the construction and installation of its nuclear facility on French territory.

F4E was established on the 19 April 2007, for a period of 35 years and is located in Barcelona, Spain. It will ultimately contribute to the construction of demonstration fusion reactors. The F4E Governing Board is responsible for taking a number of important decisions, as well as the supervision of F4E in the implementation of its activities. The Board decides and makes recommendations on a wide range of matters related mainly to Fusion and its main activity, that is, the ITER project.

During 2012, the Council through Mr Ian Gauci Borda, served on a dedicated configuration of the Governing Board relating to the annual assessment of the organisation. Eventually the work of this group was presented to the Ministers at the Competitiveness Council, who had asked for the annual report to keep track of the implementation of the project. Malta's delegates for the Fusion for Energy Governing Board are Mr Ian Gauci Borda and Dr Ing. Nicholas Sammut.

Fusion For Energy (F4E) Summer Student Programme

The summer studentships that F4E organized in 2012 enabled students to participate and gain some experience in the daily work of F4E, for periods of 2 to 3 months. A maximum of 13 studentships for EU or Swiss nationals were made available in 2012, specifically designed for students following studies in fields linked to F4E activities. Students following a university programme had the chance to receive short-term training at the F4E offices in Barcelona in order to promote awareness, knowledge and understanding of F4E's role in the ITER project and within the European context.

During 2012, two Maltese students from the University of Malta, attended the F4E summer student programme. The Council was instrumental in marketing this initiative and encouraging Maltese students to attend. Jean-Paul Vella worked on the software for the IVVS (in-vessel viewing system) simulator for the ITER remote handling system and Anne-Marie Muscat worked in the Technical Support Services of F4E.

Other Traineeships and Internships
France - Malta Scholarships - CNRS

Short internships between 1-3 months were jointly offered and supported by the Embassy of France to Malta, the French National Centre for Scientific Research (CNRS) Office of European Research and International Co-Operation, and the Council in conjunction with the University of Malta (UoM).

Grants and travel support were offered to Maltese students/teachers/lecturers/researchers interested in carrying out research/training in a French laboratory or research institution in all areas of science and related areas. This scholarship programme aims at strengthening cooperation between the universities and research institutes situated in France and the UoM by intensifying exchanges of students and academics and increasing competences and transfer of knowledge in the field of research. Several students applied for these internships, from which four students were chosen:

Stavros Assimakopoulos
Senior Lecturer, Institute of Linguistics
Internship: Institut des Sciences Cognitives, Lyon
Research: Focused on behavioural research in the area of lexical meaning. Carried out a pilot study on the interpretation of adjectives, which could then be translated into Maltese and adapted, so that it would be carried out with participants in Malta.

Luke Formosa
Master of Science in Engineering
Internship: Ecole Des Mines de Douai, Douai, France.
Research: Concerned a material known as MTA (Mineral trioxide aggregate) which has numerous applications in the dental field of endodontics. Analysis of cement-based materials, namely a mercury-intrusion porosimeter, a laser-diffraction particle-size analyser and a calorimeter specifically designed for measurements on cementitious materials. In addition, I was able to make use of sample preparation apparatus (grinders, lapping machines and polishers) equipped with cement-specific consumables (discs and abrasives), and finally a scanning electron microscope with a high end backscattered-electron detector and the facility to carry out energy-dispersive X-ray spectroscopy (EDX/EDS).

Alex Smyth
Dept: Atmospheric Research Unit, University of Malta (Gozo Campus)
Internship: Laboratoire des Sciences du Climat et de l'Environment (Gif-sur-Yvette, Paris)
Research: Detailed determination of aerosol sources, for example from Saharan dust, ship emissions, and long range transport of European and African anthropogenic pollution. Use the facilities available at LSCE to carry out chemical and microscopic analysis of these filters, as well as weigh the post-sampled filters. Learn the principals of chemical analysis, particulate matter microscopy and the techniques required to measure the filters, to a precision of 0.1µg.

Rosalyn Bonetta
M.Phil/Ph.D Biochemistry Student
Internship: CEA Saclay in France
Research: Involved the application of high frequency electro-paramagnetic resonance (HFEPR) to study the active-site of Mn(II)-containing enzymes called superoxide dismutases (SODs) at a sub-atomic level. SODs protect cells against the harmful effects of superoxide radicals. Conducting such studies involved merging various scientific disciplines including computational and synthetic chemistry, biochemistry and molecular biology. Besides producing HFEPR spectra of SOD proteins which I had previously over-expressed and purified at the University of Malta, quantum chemical methods were also employed to calculate magnetic spin parameters and test the spectroscopic measurements recorded.

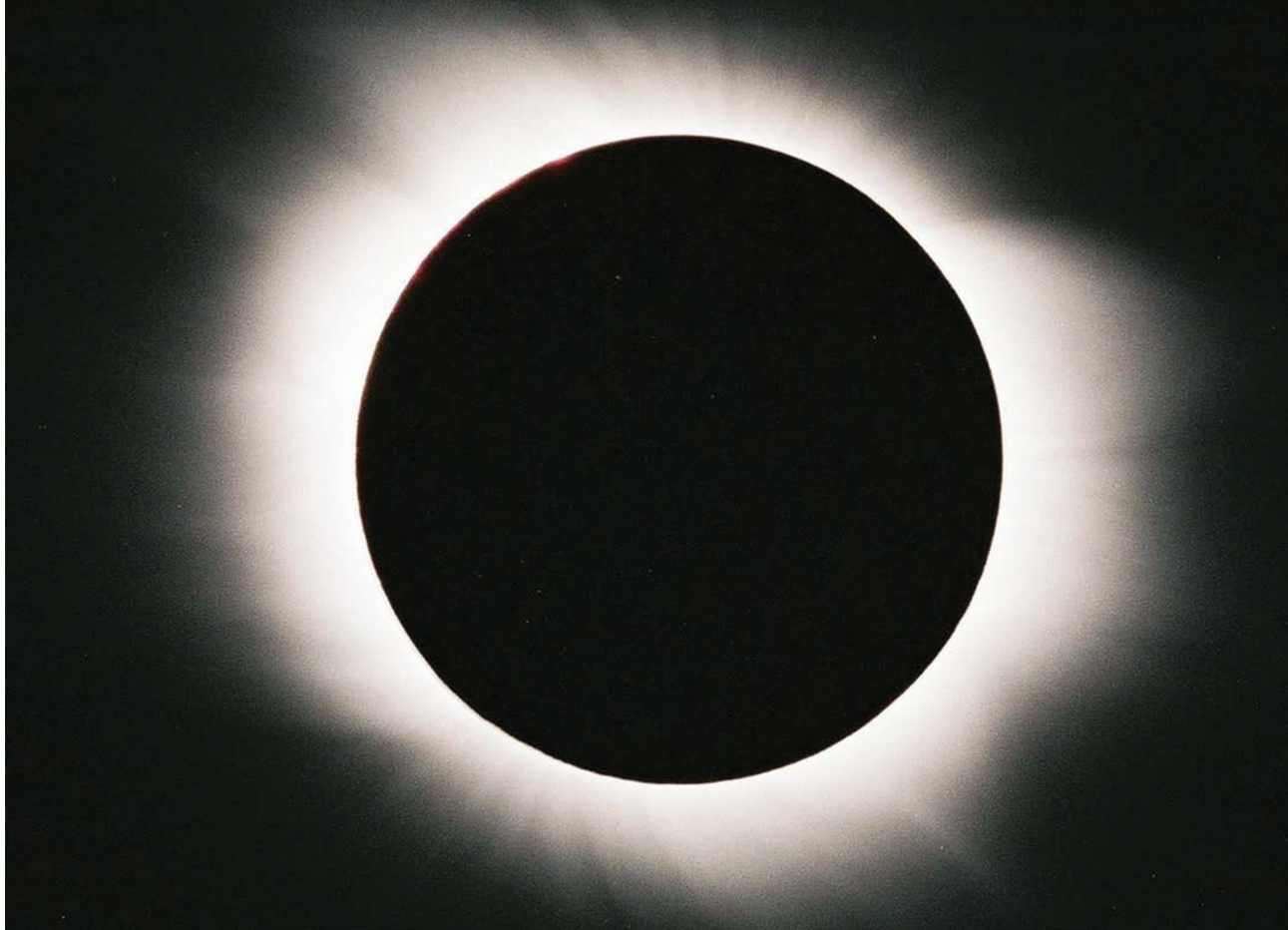
Following the success of the first call for applications another call was launched at the end of 2012, the results of which still have to be evaluated.

GID-EMAN Solar Energy Workshop
Following the European Academies Science Advisory Council policy report issued in November 2011 on Concentrating solar power, the InterAcademic Group for Development (GID, Paris) and the Euro Mediterranean Academic Network (EMAN) with the assistance of the Advanced Technology Centre for Renewable Energies (CTAER, Andalucia, Spain) and the Moroccan Agency for Solar Energy (MASEN) organised an international advanced training course. This course aimed to evaluate the prospects of this new technology, together with the economic and technical progress and the eventual deployment in Mediterranean countries.

This course, which was held in Seville in November 2012 at the Escuela Superior de Ingenieros, aimed at linking advanced scientific and technological knowledge with the needs and constraints of technical jobs and professions within specific social contexts. The seminar was intended for young professionals, either already employed or about to start their career in the area of solar thermal electricity. Following a call for participation, three Maltese researchers were selected to represent Malta at this seminar, Mr Charles Yousif, Mr Ronald Mangion, and Mr Sarmenio Saliba.

GID-EMAN Advanced Training Course in Mediterranean Archeology
During the summer months of 2012, the Council was also responsible for promoting Malta's participation in an advanced training course in Mediterranean Archeology being organised by GID-EMAN. This training course, which was held in Rome in October 2012, responded to the GID-EMAN's fundamental mission of fostering science and culture in the Mediterranean region and of promoting excellence and social development in countries belonging to three continents. In view of its unique identity, which is a blend of biogenetic unity and cultural diversity, the Mediterranean region is an ideal laboratory for shared scientific and social sciences.

The training course on Mediterranean Archaeology was an opportunity for advanced scientific training and sharing of experiences in archaeological conservation and restoration. It was therefore conceived as a combination of frontal lectures and focused seminars by eminent experts in the field of Archaeology (held at the Accademia Nazionale dei Lincei), and practical training comprising teaching and hands-on activities focused on specific conservation issues in a unique and ideal archaeological site, the palace of Emperor Nero called the Domus Aurea. From Malta, Dr. Reuben Grima, Lecturer, Built Heritage of the Faculty for the Built Environment at the UoM, had the opportunity to participate in this advanced training course.



Seventh Framework Programme (FP7)

Seventh Framework Programme (FP7)

Diana Spiteri, Alexandra Camilleri, Laura Sue Armeni, Anthea Fabri, Denise Bartolo, Marie Claire Tonna

The Seventh Framework Programme (FP7) is the main financial tool through which the European Union (EU) supports Research and Development (R&D) activities covering almost all scientific and technological disciplines. Given the fact that FP7 is a key tool to respond to Europe's needs in terms of jobs and competitiveness, and to maintain leadership in the global knowledge economy, activities funded under the FP7 must have a "European added value". Undeniably many research challenges are so complex that they can only be addressed at a European level.

With a total budget of over €54 billion devoted to grants for projects including partners from all over Europe and beyond, FP7 will last for seven years from 2007 through 2013.

This programme has two main strategic objectives:

- to strengthen the scientific and technological base of European industry;
- to encourage its international competitiveness, while promoting research that supports EU policies.

The FP7 is comprised of four specific programmes covering all scientific and technological areas. These are:

Cooperation: to encourage cooperation and improve links between industry, universities, public entities and research centres. The programme has nine themes, which are managed autonomously but are all together complementary in terms of implementation.

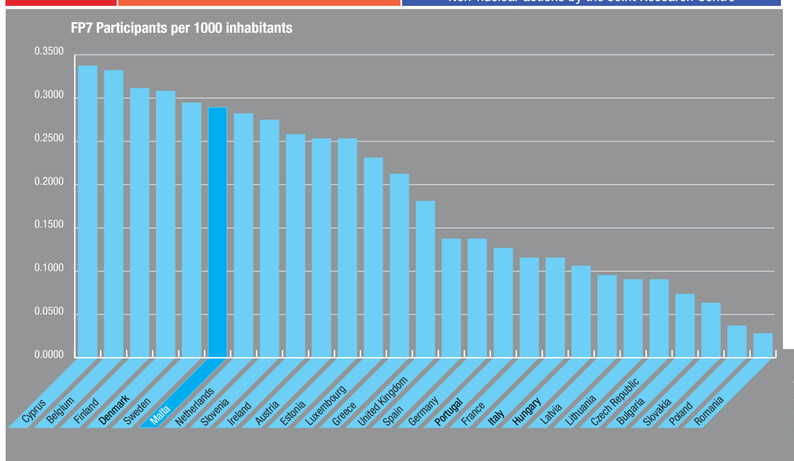
People: to improve the career prospects of researchers in Europe and attract more high-quality young researchers.

Ideas: to enhance European research excellence by promoting competition and risk-taking through bottom-up frontier research.

Capacities: to boost the quality and competitiveness of European research. This programme also reflect the importance of international cooperation in research and the role of science in society.

Funding is determined on the basis of calls for proposals and a peer review process, which are highly competitive in nature. Consequently, a newcomer might indeed get lost in the panoply of themes, activities, funding schemes, etc.

COOPERATION	Health	IDEAS	European Research Council
	Food, Agriculture and Biotechnology	PEOPLE	Initial Training
	Information and communications technologies		Life-Long training
	Energy		Industry academia
	Environment (including Climate change)		International dimension
	Transport (including aeronautics)		Specific Actions
	Socio economics and the humanities	CAPACITIES	Research Infrastructure
	Security and Space		Research for the benefit of SMEs
			Regions of Knowledge
			Research potential
			Science in Society
			Coherent development of research policies
			International Co-operation
		Non-nuclear actions by the Joint Research Centre	



FP7 Funding Unit

This Unit has been established for the sole purpose of offering comprehensive information and expert assistance to local researchers and organisations who are interested in participating in the FP7.

Five National Contact Points (NCPs) and Programme Committee Members (PCMs) have been appointed to raise awareness on existing opportunities within the FP7 among the Maltese research community.

This Unit provides:

- Advice, assistance and training to Maltese participants in the form of workshops and seminars;
- Individual coaching, from project preparation to the dissemination of research results;
- Broadcasting the latest material and dates of current and forthcoming FP7 calls;
- Marketing Maltese scientific and technological excellence in other FP7 participating countries; and
- Support to Maltese FP7 participants in finding eligible European partners.

The goal of this Unit is to support innovative ideas and research initiatives and to help transform them into tangible, successful projects – quickly and flexibly!

By the end of 2012, Malta has had a total of 125 FP7 Projects since the conception of the FP7, tapping into approximately €13 million in funds.

According to data presented in the "Fifth FP7 Monitoring Report, 2011" published by the European Commission in 2012, Malta ranked 6th amongst the EU-27 Member States in terms of number of FP7 participants per capita.

One-to-one Meetings

To best understand the needs of local researchers and organizations, the Unit offers one-to-one meetings to ensure that the right funding scheme with maximum benefits is exploited. These meetings prove to be mutually beneficial as they provide critical feedback on potential partnerships within FP7 proposals.

In 2012, an average of 300 meetings were held with potential FP7 participants. These meetings varied in nature, ranging from the explanation of the FP7 rules of participation within specific funding schemes, to the guidance and review of project proposals.

FP7 Workshops and Information Sessions

In 2012, tailor-made activities both for FP7 newcomers and experienced participants were organized with the purpose of giving an overview of the programme, including aspects of participation and information on how to get support. These interactive events welcomed participants from different research fields and organizations, each coming with diverse questions helping us to better understand their needs.

On the 18 April 2012, an information session on the forthcoming new programme Horizon 2020, that will run for 2014-2020, was held. For this session, Mr Alan Cross from Directorate General Research and Innovation, at the European Commission (EC) was invited to give a general overview of the programme, including current affairs on its legislative status.

A General Information Session on the last big round of calls in FP7 was held on the 11 June 2012 for which around 40 attendees participated. With all relevant details about the application procedure at hand, participants had the chance to get useful advice on how to turn their ideas and project plans into a success. The presentations were followed by individual questions and discussions, as well as an exchange of practical tips by experienced participants.

This Information session was followed by two other workshops on Proposal Writing and Financial Issues. The Proposal Writing workshop was held on the 19 July 2012 for entities interested in submitting a proposal under the FP7 or who were considering collaborating as partners within a consortium. This workshop was held to train researchers in writing professional and competitive proposals for the FP7 by tackling common problems in proposal writing, including tips on how to collect information, on how to select strategic partners, and on how to avoid duplication in writing a proposal.

The Financial Issues Workshop, held on the 24 July 2012, covered topics related to funding schemes and regimes, eligible and ineligible costs, payment modalities, project implementation, financial audits and controls and financial reporting. The targeted audience was that of finance and administration staff, researchers and project managers who were already involved or were interested in getting involved in FP7 projects.

Fact Box

125 FP7 funded projects with Maltese beneficiaries by October 2012

146 Maltese participants in FP7 projects by Oct 2012

€13.1 million obtained from FP7 by Maltese beneficiaries by Oct 2012

Over **300** one-to-one meetings held by the FP7 team in 2012

126 researchers who attended one of the information sessions/ workshops organised by the FP7 team

74% of participants very satisfied overall after attending an FP7 information session (from feedback forms)

22 researchers supported by The Malta Council for Science and Technology to attend brokerage events in 2012

21% success rate for Europe

Brokerage Event Scheme 2012

Holding Brokerage Events in Malta acts as a platform to increase the visibility of our local researchers and to promote all the resources that Malta has to offer in various fields related to science and technology. Brokerage Events attract key players from all over Europe, proving over the years to be starting points for newcomers to build affiliations with potential partners to collaborate with in an FP7 project.

A total of 3 Brokerage Events were held in Malta in 2012, congregating participants from EU Member States (MS) and International Cooperation Partner Countries (ICPC), giving the opportunity to local attendees to meet these experts and key players at no expense. The events held in Malta were:

- The Malta 2012 FP7 ICT Brokerage Event, 28 June 2012; Villa Bighi
- ENV-NCP-Together Brokerage Event Malta 2012 (Environment), 31 August 2012; Corinthia Hotel
- Euro-Mediterranean Energy Cooperation, 11 September 2012; Victoria Hotel

Nonetheless, it is of crucial importance for our Maltese researchers to be able to travel to attend these fundamental meetings that create great opportunities to attain recognition. Therefore, the Council, once again, re-launched its Brokerage Event Scheme available for supporting researchers' attendance at these events.

In 2012, 22 researchers benefitted from this scheme using a total of €14,000. The applicants were chosen following an evaluation process of their application, assessing expertise, effort and scientific profile. Some of the events attended where the following:

- ICT Proposer's Day 2012, Warsaw
- Meet4LifeSciences, Basel
- IN2Societies 2012, Brussels
- Inspiralia, Madrid
- Renewable UK 2012 Conference, Glasgow
- Info Day and Brokerage Event on Call FP7-KBBE-7-2013, Brussels
- Information Days on Transport Research 2012, Brussels

Transition from FP7 to Horizon 2020

Research and Innovation (R&I) helps deliver jobs, prosperity, quality of life and global public goods. They generate the scientific and technological breakthroughs needed to tackle the urgent challenges society faces.

Horizon 2020, the new funding programme for R&I in science and technology will focus resources on three distinct, yet mutually reinforcing, priorities, where there is clear Europe added value so as to ensure that these challenges are professionally tackled to help bridge the gap between research and the genuine single market.

Running from 2014 to 2020 with an estimated €80 billion budget, Horizon 2020 will go beyond FP7 in scope and ambition. Unlike in FP7, where the importance was given to applied research, Horizon 2020 will also focus on the value of the market. This market-driven approach will include creating partnerships with the private sector and MS to bring together the resources needed:

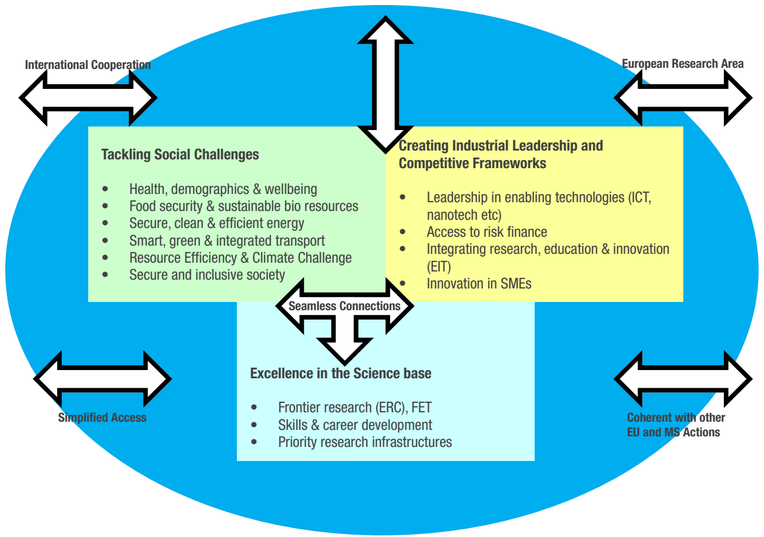
- **Excellent Science:** It will support the best ideas, develop talent within Europe, provide researchers with access to priority research infrastructure, and make Europe an attractive location for the world's best researchers;
- **Industrial Leadership:** It will provide major investment in key industrial technologies, maximise the growth potential of European companies, thus aiming at making Europe a more attractive location to invest in research and innovation;
- **Societal Challenges:** This reflects the policy priorities of the Europe 2020 strategy and addresses major concerns shared by citizens in Europe and elsewhere.

Horizon 2020 will be the financial instrument implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness.

Simplification in Horizon 2020 will target three overarching goals: to reduce the administrative costs of the participants; to accelerate all processes of proposal and grant management and to decrease the financial error rate. Simplification will be of particular benefit to SMEs, as they often lack the resources to cope with high administrative burdens.

In preparation of the new programming period, FP7 is already tackling many of the challenges that Horizon 2020 has committed to, by tailoring its calls for proposals in such a way as to provide the necessary groundwork.

European 2020 Priorities



Activities undertaken in 2012

The year 2012 saw the final and biggest ever set of FP7 calls for proposals. The FP7 Unit attended various meetings organised by the EC, as well as project meetings and trainings organized by the NCP support networks. Trainings offered courses related to project management, proposal writing, evaluation and communication skills, all targeted towards sharing existing best practices across the board. These were also developed in light of Horizon 2020 and the changes it will have on current procedures. These trainings and meetings ensure that NCPs are continuously informed of the most recent developments within the programme, necessary to the successful coaching and mentoring of FP7 participants.

Due to the approaching closure of the programme, an even more rigorous promotion of the opportunities available under the programme was required. Aside from the day-to-day activities of the FP7 Unit mentioned above, a number of promotional initiatives were implemented to further gear up organisations and researchers for their last chance to participate in the FP7.

As reaching the public through local scenarios is necessary to a better understanding of the mission behind FP7, 2012 saw to the compilation of articles for press, where a number of successful FP7 stories were published through various channels.

In 2012, the Council also participated in Researcher's Night, a Europe-wide annual event bringing together the public and researchers together for science-related activities. The FP7 Unit assisted the organizers of this event by helping set up a series of attention-grabbing live science shows with experiments for all ages. Interactive hands-on science exhibits were also made available.

For the purpose of providing information on other research-related programmes or initiatives to local researchers, The Council's website was utilized to upload useful links and funding calls information on other EU programmes such as COST, CIP/COSME and EUREKA. A scholarship repository was also compiled to provide researchers and other interested bodies a list of Universities offering scholarships in the fields of S&T.

Plans for 2013

The year 2013 sees the conclusion of FP7, where extensive evaluations and comparative analysis of FP7 participation apropos other participating countries are expected to take place. This will assist the NCPs in identifying where Malta stands in relation to other countries, particularly those characterized as the EU12.

Aside from the Unit's goal to strengthen Malta's participation in FP7, in 2013, the FP7 Unit will also prepare the groundwork and focus on the identification of challenges and strategies of mitigation in light of Horizon 2020 to ensure a smooth transition from one programme to the next. On the local level, an overall strategy of how to improve participation in Horizon 2020 will be carried out through consultations with researchers and stakeholders.

To further enhance participation, the NCPs will be professionally trained on Horizon 2020's rules and regulations. And as in 2012, information sessions and workshops will be organized in preparation for Horizon 2020 to inform researchers of the new changes to take place within the new programme.

Incentive Scheme

To incentivize researchers to participate more actively and effectively in the last and biggest FP7 calls, the Council introduced a National FP7 Award Scheme. This scheme is targeted at researchers participating in successfully funded FP7 projects from Malta-based academic institutions, public and private sector organisations, non-governmental organizations and individual researchers. The scheme is envisaged to run up to the end of FP7 and is applicable to successful projects submitted after 1st October 2012.

Under this scheme, the rewards are based on 2% - 15% of the total funding obtained by the Maltese participants within successful FP projects. The percentage of the reward depends on the type of project and the applicant's role within the project. The bonus will be given directly to the researcher, in his/her own personal capacity.

Cooperation

With a budget of €32,413 million, Cooperation is recognized as the largest specific programme within the FP7. It is sub-divided into ten diverse themes, each identifying and addressing research areas necessary to the progress of important fields in S&T.

These autonomous thematic areas are broadly defined at relatively high level, such that they can adapt to evolving needs and opportunities that may arise during the lifetime of FP7. Furthermore, they mainly support collaborative research across Europe and other partners, while also giving scientific support to policy work and emerging areas. Cooperation is sub-divided into the following themes:

- Health
- Food, agriculture and fisheries and biotechnology (KBBE)
- Information and communications technologies (ICT)
- Nanosciences, nanotechnologies, materials and new production technologies (NMP)
- Energy
- Environment (including climate change)
- Transport (including aeronautics)
- Socio-economic sciences and the humanities (SSH)
- Space
- Security

Support has been provided to trans-national cooperation in different forms across the EU and beyond. International co-operation between the EU and third countries has also been an integral part of this action. Effort has been directed towards improving industrial competitiveness, with a research agenda that addresses European social, economic, environmental and industrial challenges. The programme has targeted research institutes and universities as well as companies of all sizes. These specific measures are complemented by activities in the 'Cooperation' programme.

Health

The theme Health is aligned with the fundamental objectives of EU research policies: improving the health of European citizens and increasing competitiveness of European health related industries and services, as well as addressing the socio-economic dimension of health care and global health issues.

The priority setting for 2012 responded to the major health-related socio-economic and societal challenges in view of the new orientations given by the Europe 2020 Strategy including complementing efforts undertaken by the Innovation Union flagship initiative and the European Innovation Partnership (EIP) for "active and healthy ageing". Research priorities for 2012 included: brain research, antimicrobial drug resistance and comparative effectiveness research, complemented by topics from other areas such as developing personalised medicines approaches, cardiovascular research, safety and efficacy of therapies, cancer and public health research and a horizontal activity for translating research results into innovative applications for health.

A total budget of €820 million was allocated to the Health Theme in 2012.

National Contact Point

Due to the high level of interest in the Health thematic, 3 Health Information sessions at Mater Dei Hospital were organised by the Health NCP in 2012.

The Council also continued to participate actively in the Health NCP Net (HNN) project which is the NCP support network for Health NCPs. In 2012, the Health NCP assisted in the coordination of the Networking Event organised with The Israeli Directorate for EU FP (ISERD) in February 2012 in Lisbon. Furthermore, the Health NCP participated in several other events including: a health-specific training session organised by the HNN also held in February 2012 in Lisbon which focused on the 2-stage submission procedure particular to the Health theme, with a focus on 1st stage submissions and clinical trials; the Health Information Day & Brokerage Event held in Brussels in May 2012 which provided general information on the Health theme; and the Training on Communication, Dissemination and Exploitation of Project Results held also in Brussels in November 2012, which looked at international cooperation and intercultural competencies; communicating European health research through the use of communication and dissemination tools; as well as tackling an exploitation strategy and a business plan module.

The National Contact Point for Health is Diana Spiteri, (diana.a.spiteri@gov.mt).

Food, Agriculture, Fisheries, and Biotechnology (KBBE)

In line with the Strategy 'Innovating for Sustainable Growth: a Bio-economy for Europe' which the EC adopted in February 2012, the overall priority of KBBE in 2012 was to mobilise bio-resource efficiency, in order to support the shift towards a society which sustainably relies on biological resources (including waste) not only to produce safe food and feed, but also bio-based materials and bio-energy.

In this regard, 2012 did not only support research activities in food, agriculture, fisheries, and biotechnologies, but also the development of bio-economy markets and EU competitiveness, through activities focused on innovation and demand-side measures.

The year 2012 also saw to an effort to boost the design and implementation of creative ways in meeting social needs. Several topics have been designed to lead to social innovation, for example in wiser decision making in the forestry sector, or in supporting mental well-being through healthy diets. New approaches to stimulating innovation, such as the European Innovation Partnership on 'Agricultural Productivity and Sustainability', were also established in 2012.

A total budget of €387,04 million was allocated for KBBE in 2012.

National Contact Points KBBE

During 2012, the Council also continued to participate in the KBBE NCP Network project, called BIO-NET.

In May 2012, the NCPs for KBBE attended an NCP Staff Exchange in Bonn. This presented the opportunity to work closely with German NCPs and exchange best practices in assisting their local researchers and stakeholders.

In June 2012, the KBBE NCPs took part in the BIO-NET Final Meeting which took place in Basel. The KBBE NCPs also partook in the Meet4LifeSciences Conference that combined partnering meetings with company visits, offering the latest R&D, market and financial trends in life sciences for innovators in the health and agro food sectors. Innovators and decision makers from universities, research institutes and the industry from all over Europe gathered there.

The goal behind the conference was to offer an international platform to companies and research institutes for innovation and research cooperation in health (diseases, drugs & treatments, biotechnology & bioinformatics) and agro-food (agriculture, food, bio-based industries).

The National Contact Points for KBBE are Diana Spiteri, (diana.a.spiteri@gov.mt) and Alexandra Camilleri, (alexandra.a.camilleri@gov.mt)

Information and Communication Technologies (ICT)

ICTs are critical to improve the competitiveness of European industry and to meet the demands of its society and economy, where ICTs are understood as having a catalytic impact on productivity and innovation, by facilitating creativity and management; modernisation of public services, such as health, education and transport; and advances in science and technology, by supporting cooperation and access to information.

Recognizing the role of new enabling technologies and applications in promoting cultural understanding between citizens, initiating seed innovation in institutions and creating competitive advantage for businesses in the future, FP7 ICT in 2012 continued to emphasize four key areas which include:

- Internet and cloud computing;
- Micro- and nano-electronics;
- Advanced interfaces and;
- Intelligent and smart environments.

These novel technologies will continue to play an important role in providing responses to major societal challenges such as an ageing population, health and social care, sustainable energy, inclusion, education and security, influence policies and drive economic, societal and cultural development for the decades to come.

A total budget of €942 million was earmarked for ICT in 2012.

National Contact Points ICT

As a member of the IDEALIST2014 support network for ICT, the ICT NCP in 2012 has been trained on various fronts including proposal writing, proposal evaluation, and in the delivery of trainings. Furthermore, through the IDEALIST2014 funds, the Council supported five local participants to attend the annual FP7 ICT Conference, ICT Proposer's Day held in September 2012 in Warsaw, with each participant being scheduled for one-to-one meetings at the event's dedicated brokerage event.

In October 2012, the ICT NCP has also embarked on an international mission in Mexico as a European representative for IDEALIST2014 in order to channel opportunities between Europe and Mexico in ICT. Significantly, in June 2012, the ICT NCP organised the Malta 2012 FP7 ICT Brokerage event jointly with the Slovenian Ministry of Education, Science, Culture and Sport. Supported by IDEALIST2014, this event resulted in the attendance of 22 foreign participants from several European countries. Activities at this international event included organisation presentations, presentations by the EC, and training and tips on proposal writing by foreign experts.

The National Contact Point for ICT is Marie Claire Tonna, (marie-claire.tonna@gov.mt).

Nano-sciences, Nano-technologies, Materials and New Production Technologies (NMP)

The objective of the NMP thematic area has been to improve the competitiveness of the European industry by ensuring its transformation from a resource-intensive (relying on raw materials, labour, energy, etc.) to a knowledge-intensive industry, by generating and implementing decisive changes in knowledge for new applications at the crossroads between different technologies and disciplines. These activities are primarily concerned with enabling technologies which impact all industrial sectors and many other FP7 themes, thus affecting both new, high-tech industries and higher-value, knowledge-based traditional industries.

In 2012, the NMP theme focused on smart and sustainable growth, for a greener industry. The issue for growth and employment is how industry can incorporate knowledge into products with high added value, and highly efficient processes. Sustainability and societal challenges have always been implicit in NMP strategies, but have received increased attention during the year 2012.

A total budget of € 615,30 million was allocated for NMP in 2012.

National Contact Points NMP

During 2012, the Council continued to participate in the NMP support network, NMP Team 2. The NMP Team 2 project aims at assisting the NMP NCP network to provide good quality and high standard services to the proposers and therefore helping simplify access to FP7 calls, lowering the entry barriers for newcomers, and raising the average quality of submitted proposals.

In May 2012, the NCP participated in a NCP training, organised by the NMP Team 2 project in Malaga. The training covered Legal & Financial issues, Proposal Writing, Reporting and Intellectual Property Rights (IPR) issues. In June 2012, the NCP also took part in the advanced training on Project Management of European projects. This training was combined with a two day visit to the Industrial Technology Fair in Aarhus, Denmark. Over 70 high profile industrial and academic speakers discussed the economic and technological impact of industrial technologies, with topics including low emission transportation, integrated systems, improving the environment, energy generation and storage, healthcare and construction.

The National Contact Point for NMP is Alexandra Camilleri, (alexandra.a.camilleri@gov.mt).

Energy

There is an urgent need of bringing new, high performance technologies to the market and to ensure the European leadership on low carbon energy technologies. Thus, a technological shift in the EU's current energy system is necessary to realise the ambitions to largely decarbonise energy sectors by the year 2050. With this in mind, the thematic area Energy aims to adapt the current energy system into a more sustainable one, less dependent on imported fuels and based on a diverse mix of energy sources, in particular renewables, energy carriers and non-polluting sources. It also aims to enhance energy efficiency, and to address the pressing challenges of security of supply and climate change.

In 2012, continued efforts were made in supporting European Energy and Climate Policy initiatives, through the implementation of the SET-Plan – the decision-making support tool for European energy policy. Moreover, special emphasis on a cross-cutting approach in support of the new European Innovation Partnership on Smart Cities and Communities, Renewable energy sources, Smart grids and energy storage, Carbon Capture and Storage (CCS) as well as cross-thematic priorities such as Oceans of the future, Raw materials and Bio-resource efficiency.

While completing the portfolio of FP7 activities in 2012, the Energy thematic saw to bridging FP7 research topics and support actions to Horizon 2020.

Tthe total budget allocation for the Energy thematic in 2012 was €382,01 million.

National Contact Points Energy

During 2012, the Council was active in participating in the FP7 C-Energy+ support network by regularly attending project management meetings, a few of which provided essential updates related to the Participant Portal & Submission Electronic Portal, Horizon 2020, and 2012 evaluation results. Trainings organised for the Energy NCPs on proposal writing and financials issues were also attended. In September 2012, the following two C-Energy+ events were also held in Malta: C-Energy+ NCP Training, and the Euro-Mediterranean Energy Cooperation: working together for a better policy and sustainable energy. The latter event covered aspects related to: FP7-ENERGY-2013 Calls, International Cooperation (INCO) funded projects and OCEAN funded projects involving Mediterranean countries. This event was widely attended by researchers from all over the world making it the right opportunity for Maltese researchers to network with established project coordinators. A total of 25 Maltese entities registered for this event.

The National Contact Points for Energy are Diana Spiteri, (diana.a.spiteri@gov.mt) and Alexandra Camilleri, (alexandra.a.camilleri@gov.mt).

Environment

With an overall expected impact of addressing major societal challenges of coping with climate change and protecting citizens from environmental hazards, the primary aim of this thematic area is that of sustainably managing the natural and man-made environment and its resources. To advance our knowledge of the interactions between human activities, climate and ecosystems, the need is to address all actions and global environmental issues in a cohesive manner.

Emphasis has been placed on the prediction of climate variability, as well as ecological, earth and ocean systems changes, and the development of tools and technologies for monitoring, preventing and mitigating environmental pressures and risks. These technologies promote sustainable consumption and production, and help deliver sustainable growth by means of eco-efficient solutions to environmental problems of different scales, importantly, by protecting our cultural and natural heritage.

The focus in 2012 was to foster new ideas, supporting world class teams tackling significant societal challenges and on ensuring that the fruits of our investments can be properly exploited. Exploitation of R&I data and results in policy, industry and society are crucial missions in order to attain the objectives of Europe 2020 and the flagship Initiatives 'Innovation Union', particularly 'A Resource Efficient Europe'.

A total budget of €336,51 million was earmarked in 2012 for the Environment theme.

National Contact Point Environment

Throughout 2012, the Council continued its participation in the support network, ENV-NCP-TOGETHER, which aimed to reinforce the cooperation between NCPs responsible for the Environment theme. In August 2012, the Council hosted an Environment Brokerage Event in Malta at the Corinthia Hotel, St. Georges Bay. This event focused on the challenges of the FP7 Environment, including the related scheme on Climate Change and also provided the occasion to present, discuss and develop new project ideas on climate change and related topics. The brokerage event provided networking opportunities at an international level to initiate cross-border contacts. Maltese speakers and researchers were also invited for this event to increase Malta's visibility and partnership potential.

The National Contact Point for Environment is Denise Bartolo, (denise.bartolo@gov.mt).

Transport

Recognizing the need to address and respond to major social challenges, the Transport theme has taken a holistic 'transport system' approach in addressing the challenges and the innovation dimension, by considering the interactions of vehicles or vessels, networks or infrastructures and the use of transport services.

Such an approach aimed at necessitating the integration and demonstration of new concepts, knowledge and technologies, and the support to bringing them to the market within a socio-economic and policy context. Given the different structure and focus of the sectors, the theme is divided into further sub-themes (accordingly with the Specific Programme) and socio-economic research and cross-cutting issues:

- Aeronautics and Air Transport (AAT);
- Sustainable Surface Transport (SST) including the 'European Green Cars Initiative';
- Socio-Economic Research and Cross-Cutting Issues and;
- Galileo.

In the year 2012, the Transport theme looked to achieve critical mass, leverage effect and obtain EU added value, by focusing on three major socioeconomic challenges: Eco-innovation; Safe and seamless mobility; as well as Competitiveness and growth through innovation. A total budget of €524 million was allocated for Transport (including Aeronautics) in 2012.

National Contact Points Transport

During 2012, the Council also continued to participate in the Transport support network ETNA. In January 2012, the NCP for Transport attended an NCP Training on European Technology Platforms (ETPs) & Networks held in Tel Aviv and visited the following Research hubs: Better Place and Technion Israel Institute of Technology. The Council also hosted the ETNA Training for NCPs in September 2012 in Malta. The Training covered various issues related to the project life cycle. Around 15 international NCPs participated in this activity held in Malta. The National Contact Point for Transport is Diana Spiteri, (diana.a.spiteri@gov.mt)

Socio-economic Sciences and Humanities (SSH)

Against the backdrop of the current economic situation, increased global competition and the Europe 2020 Strategy to support growth and job creation, the focus of SSH has been in fostering new ideas and supporting world class teams in tackling significant societal challenges. In FP7, the SSH thematic area has emphasized on the following eight areas:

- Growth, employment and competitiveness in a knowledge society;
- Combining economic, social and environmental objectives in a European perspective;
- Major trends in society and their implications;
- Europe in the world;
- The citizen in the European Union;
- Socio-economic and scientific indicators;
- Foresight activities;
- Strategic activities.

In 2012, a strong commitment was made to public sector reform, smart cities and bio-resource efficiency. A number of other strategic social challenges reflecting priorities in smart and inclusive growth, and more horizontal actions supporting the development of external policies of the EU, were also prioritised in 2012.

A total budget of €106 million was allocated for SSH in 2012.

National Contact Points SSH

During 2012, the Council also continued its active participation in the NET4SOCIETY2 support network. Over 60 SSH NCPs from almost 50 countries participate in this project.

In May 2012, the Council hosted the NET4SOCIETY2 Consortium Meeting and a Training Session on Legal and Financial Issues for SSH NCPs. Over 40 SSH NCPs from around the globe participated in these activities.

The SSH NCPs also participated in two other events: an international conference and brokerage event, “Active ageing – the potential for society” which was organised by the network in July 2012, Dublin. The conference programme and the brokerage event promoted and encouraged engagement between SSH researchers; and a training session on Project Management organized by NET4SOCIETY2 in December 2012, for new NCPs together with the project’s final consortium meeting in Brussels.

The National Contact Points for SSH are Anthea Fabri, (anthea.fabri@gov.mt) and Denise Bartolo, (denise.bartolo@gov.mt)

Space

In order to garner for the competitiveness of the European Space Industry, the Space thematic was formulated with two main priorities in mind: to strengthen further technology developments related to the Global Monitoring of the Environment and Security (GMES) through R&D and to further strengthen action areas related to space science and exploration, space technologies and transportation and security of space assets. Centralised around three main activities, the thematic looks at the need to develop space based applications and technologies, as well as to exploit European space science and exploration data. Horizontal or ‘cross-cutting’ themes have also been considered, so as to attend to existing fragmentations in space policy and to further complement the efforts by other MS and key players, such as the European Space Agency (ESA).

The year 2012 saw to ensuring more extensive utilisation of space data from existing and future generations of Union space systems, a priority identified by Horizon 2020, as are the demonstration and validation of new technologies and concepts in the space and terrestrial analogue environments. Furthermore, it is expected that all societal challenges and industrial technologies within Horizon 2020 shall contribute in their actions to sustainable development and climate related issues. Therefore, R&D working towards the need for enterprises to adapt to a low-carbon, climate-resilient, energy and resource efficient economy through the use of sustainable products, such as “green fuels” was also prioritized in 2012.

A total budget of €126 million was earmarked for the Space theme in 2012.

National Contact Points Space

Under the Space support network COSMOS, the Council in 2012, was responsible for the overall coordination of an International Space Conference, which included networking opportunities with other space players, NCPs and the EC, as well as receiving first-hand information on space affairs within and outside the FP7. Held in January 2012 in Brussels, three local participants were supported through the project to attend the event, two of which were selected to present their research capabilities during the conference’s sessions. Furthermore, Malta’s capacities in space research were exhibited in the format of a country poster. In February 2012, the follow-up support network COSMOS+ was launched, in which the Council is also involved.

The National Contact Point for Space is Marie Claire Tonna, (marie-claire.tonna@gov.mt).

Security

The thematic Security has sought to drive a competitive European industry by supporting specific mission areas centering on infrastructures and utilities, intelligent surveillance and border security, crisis management and restoration and above all, ensuring the security of Europe’s citizens. Further to these missions, this thematic looks at cross-cutting themes, necessary to policy-making and strategies. Some cross-cutting themes include security systems integration, interconnectivity and interoperability, the coordination and structuring of security research and studies on the interrelatedness of security issues within society.

Recognizing the societal impact of security concerns, the MS together with the Commission have devised a societal checklist which ensures that security research meets the needs of society, benefits society and does not have negative impacts on society.

In 2012, emphasis continued to be placed on supporting more topics aimed at generating knowledge in support of delivering new and more innovative products, processes and services.

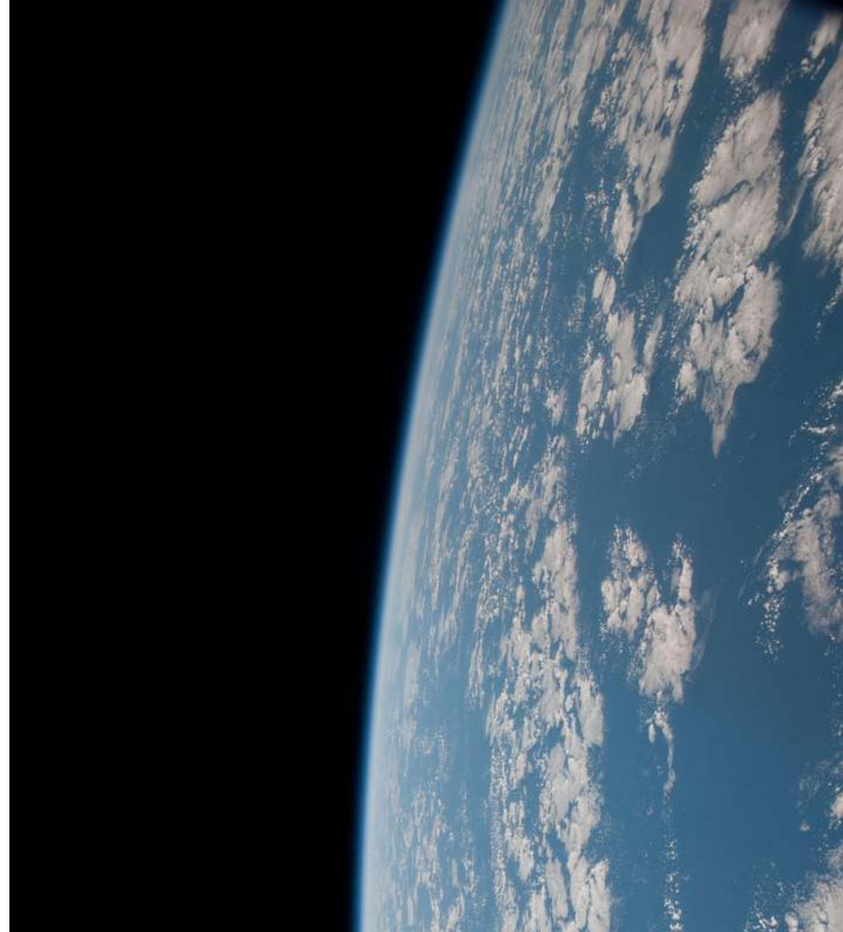
For this reason the topics requiring significant testing, validation and demonstration activities were included. Pre-operational validation topics and the increased involvement of SMEs were also two primary objectives of the thematic area in 2012.

A total budget of €299,33 million was earmarked for the Security theme in 2012.

National Contact Points Security

As members of the SEREN2 NCP support network, the Council in 2012 has participated in an Information Day and Brokerage Events dedicated to the Security theme, held in July 2012, Brussels. The NCPs have also attended a training held in March 2012 in Mallorca, on security-specific issues, resulting in the sharing of best-practices across NCP organisations, in the form of handbooks and guidelines. The SEREN2 support network continues to be successful in providing NCPs with various tools, including an e-learning course on the support network’s dedicated website.

The NCPs for Security are Marie Claire Tonna, (marie-claire.tonna@gov.mt) and Denise Bartolo, (denise.bartolo@gov.mt).



People

Marie Curie Actions

The People specific programme acknowledges that one of the main competitive edges in science and technology is the quantity and quality of its human resources. The overall objective of the Programme is thus, to make Europe more attractive for researchers by strengthening the human potential in research and technology in Europe.

This programme is implemented by a coherent set of Marie Curie Actions which particularly take into account the EU added value in terms of their structuring effect on the European Research Area (ERA).

The Marie Curie Actions have long been one of the most popular and appreciated features of the Community Framework Programmes and have developed significantly in orientation over time, from a pure mobility fellowships programme to one dedicated to stimulating researchers' career development.

The People Programme is implemented by systematic investments in people, mainly through a coherent set of Marie Curie Actions, particularly taking into account the EU added value in terms of their structuring effect on the ERA:

- Initial Training of Researchers to improve mostly young researchers' career perspectives;
- Life-long training to support experienced researchers in complementing or acquiring new skills;
- Industry-academia partnership and pathways to stimulate inter-sectoral mobility;
- International dimension to contribute to the life-long training and career development;
- Researchers' Night to showcase science to the public in a relaxed and friendly atmosphere.

In 2012, the general approach of the People Programme was to support the implementation of the Europe 2020 Flagship Initiatives 'Innovation Union', 'Youth on the Move' and 'An Agenda for new skills and jobs' and in particular to bring education, research and innovation closer to each other to attract, train and retain in Europe the next generation of researchers who will be able to address major societal challenges.

Over a seven year period until 2013, the overall budget the People Programme is of more than € 4.7 billion. In 2012, €987,22 million were earmarked for this Specific Programme.

National Contact Points People

Throughout 2012, the PeopleNetwork+ project, the support network for the People Porgramme, continued to support People NCPs throughout the world. The project was launched in February 2012 and a number of activities and events were organised throughout the year including a training session on the International Research Staff Exchange Scheme (IRSES) Call which was attended by the People NCPs in November 2012, Istanbul.

The National Contact Points for People are Anthea Fabri, (anthea.fabri@gov.mt) and Alexandra Camilleri, (alexandra.a.camilleri@gov.mt)

Ideas

The Ideas specific programme is implemented by the ERA , consisting of an independent Scientific Council which operates according to the principles of scientific excellence, autonomy, efficiency, transparency and accountability and supports investigator-driven projects in 'frontier research', carried out by individual teams competing at European level within and across all fields of science.

Investigator-driven 'frontier research' within the framework of activities is commonly understood as 'basic research' and is a key driver of wealth and social progress, as it opens new opportunities for scientific and technological advance and is instrumental in producing new knowledge leading to future applications and markets.

Despite the many achievements and a high level of performance in a large number of fields, Europe is not making the most of its research potential and resources. The objective of the Ideas Programme is therefore to reinforce excellence, dynamism and creativity in European research and improve the attractiveness of Europe for the best researchers from both European and third countries, as well as for industrial research investment.

Being 'investigator-driven' or 'bottom-up' in nature, the programme allows researchers to identify new opportunities and directions for research rather than being led by priorities set by politicians. This approach ensures that funds are channeled into new and promising areas of research with a greater degree of flexibility.

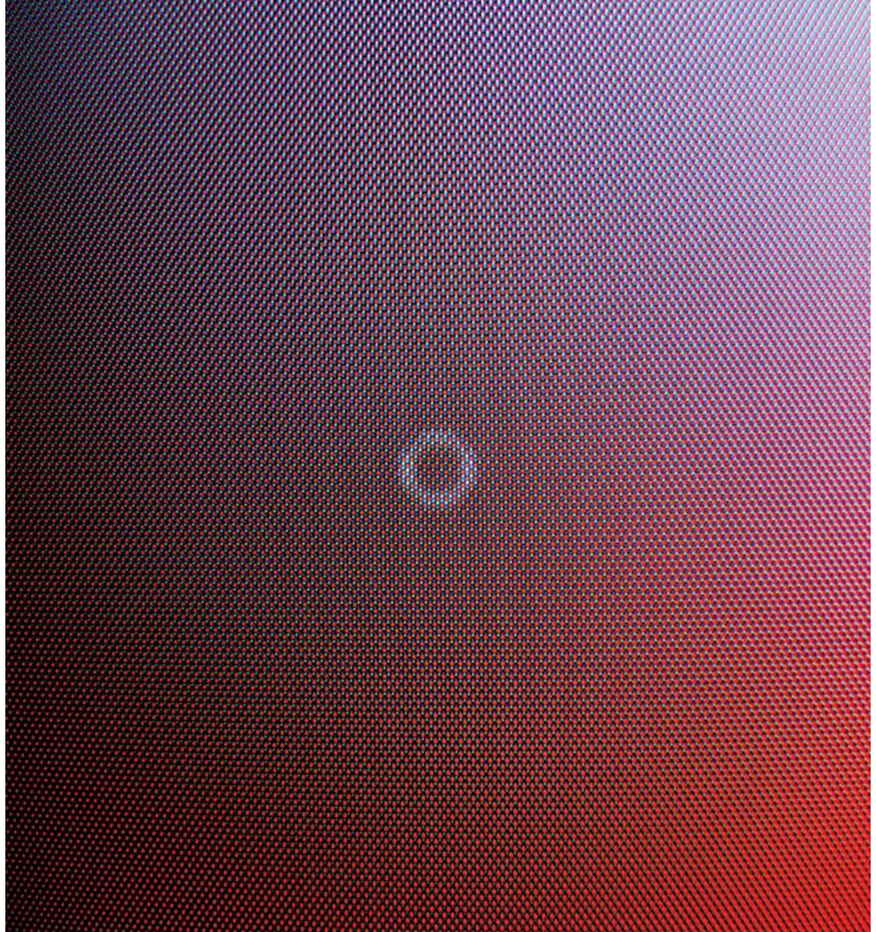
The main aims of the European Research Council are to:

- Support the best scientific efforts in Europe across all fields of science and engineering;
- Encourage the work of the established and next generation of independent top research leaders in Europe;
- Reward innovative proposals by placing emphasis on the quality of the idea rather than the research area;
- Harness the diversity of European research talent and channel funds into the most promising ideas;
- Raise the status and visibility of European frontier research and the best researchers of today and tomorrow; and
- Put excellence at the heart of European Research.

The overall budget for the ERC over the duration of the programme is of €7.5 billion. €1754,96 million were allocated for the 2012 calls.

National Contact Points Ideas

The National Contact Point for Ideas is Anthea Fabri, (anthea.fabri@gov.mt)



Capacities

The aim within this specific programme is to develop R&I capacities throughout Europe to ensure their optimal use, to strengthen and consolidate Europe's research infrastructures and to facilitate more participation by SMEs in research.

By augmenting the knowledge capacities, the programme is meant to contribute to the realisation of Europe's full research potential and to foster European competitiveness. With a budget of €4.07 billion, the building of an effective and democratic European Knowledge society has and will be done through actions that include support for:

- Research infrastructures: to optimise the use and development of the best research infrastructures existing in Europe;
- Research for the benefit of SMEs: to strengthen the research and innovation capacity of SMEs;
- Regions of knowledge: to strengthen the research potential of European regions through research-driven clusters;
- Research potential: to stimulate the research potential of the Convergence and outermost regions of the EU;
- Science in society: to stimulate the integration of scientific and technological endeavour and research policies into European society;
- Specific activities of international cooperation: to improve the global role of the EU in relation to science and technology.

Cooperation and Capacities are complementary to each other as the first one is structured according to the ten themes while the second is structured according to horizontal issues at a bottom- up approach providing interesting opportunities for all kinds of scientific stakeholders.

Research for the Benefit of SMEs and SME Associations

The thematic Research for the Benefit of SMEs was formulated with the intent of providing SMEs support in solving technological problems and acquiring technological know-how. In order to provide SMEs with the opportunity to research any scientific or technological area of interest, this scheme is recognized for its bottom-up approach, where topics are not prescribed, unlike the thematic areas under the Cooperation Theme. Furthermore, the scheme prioritises the SMEs' needs by emphasizing the necessity of obtaining full ownership of results emanating from the project. This is to be achieved by the creation of a consortium consisting of SMEs and research entities otherwise known as RTDs, the latter which would be subcontracted to undertake the research on behalf of the SMEs, in exchange for the ownership of the results. The awarded projects are recognized as having clear exploitation and economic benefits of the SMEs involved.

This scheme Research for the Benefit of SME Associations aims at developing technical solutions to problems common to a large number of SMEs in specific industrial sectors or segments of the value chain, through research that could not be addressed under Research for SMEs. Projects can, for example, aim to develop or conform to European norms and standards, and to meet regulatory requirements in areas such as health, safety and environmental protection. Driven by SME Associations, these projects also allow for the subcontracting of research to RTD performers in order to acquire the necessary technological knowledge for their members.

In 2012, this scheme continued to promote and increase these activities. Furthermore, 2012 saw to the simplification of the 'Demonstration Action', which allowed participants who had already taken part in this scheme to take their prototype to the next level.

The total budget earmarked in 2012 for this scheme was €252,31 million.

National Contact Points SMEs

In 2012, the Council continued its participation in the NCP support network, TranCoSME. In December 2012 in Düsseldorf, the SME NCPs attended a training on SME-specific measures, including those related to the forthcoming programme Horizon 2020. The SME NCPs have provided participants the opportunity to profit from the effective partner search tool in order to find suitable partners for their consortium and have also offered guidance on how to write a competitive proposal when consulting the pioneering SME Model Proposal.

The NCPs for the scheme Research for the Benefit of SMEs and SME Associations are Marie Claire Tonna, (marie-claire.tonna@gov.mt) and Denise Bartolo, (denise.bartolo@gov.mt).

Science in Society (SiS)

A view to building an open, effective and democratic European knowledge-based society is one of the main objectives of this thematic area. The ability of European societies to develop themselves in a positive and sustainable way depends, to a large extent, on their capacity to create and exploit knowledge and to innovate. To this end, this thematic aims to build an open, effective and democratic

European knowledge-based society.

SIS seeks to deepen the relationship between science and society and reinforce public confidence in science by promoting science education and by making scientific knowledge more accessible. The SIS Programme also supports new ways to interest young people in science and in research careers, and to achieve greater gender equality in science.

The focus in 2012 was dedicated to enabling society to better meet future societal challenges through citizen engagement, especially through the mechanism of Mutual Mobilization and learning Action Plans. Emphasis has been placed on research on ethics in science and technology and the reciprocal influence of science and culture, amongst other activities such as the connection between science, democracy and law; the role and image of scientists; science education methods; and science communication.

In 2012, a total budget of €63,37 million was allocated to SiS.

National Contact Points SiS

The SiS.net support network provides high quality services to SiS stakeholders, authorities, research institutions and enterprises on the opportunities offered by FP7 to boost integration of scientific achievements into society. The science in society initiative aims to stimulate a harmonious integration of scientific and technological endeavour and associated research policies in European society.

The Council, being a participant within this network, attended various SiS-related meetings and trainings covering various issues. It is worth noting that the 2nd European Gender Summit held in Brussels in November 2012, was also attended by the SiS NCPs.

The National Contact Points for SiS are Denise Bartolo, denise.bartolo@gov.mt and Marie Claire Tonna, marie-claire.tonna@gov.mt.

Research Infrastructures

The theme Research Infrastructures aims to optimise the use and development of the best research infrastructures existing in Europe, and to help create in all fields of science and technology new research infrastructures of pan-European interest. This is necessary to the European scientific community in order to remain at the forefront of the advancement of research, and able to help industry to strengthen its base of knowledge and its technological know-how.
The Innovation Union highlights the increasing relevance of world-class research infrastructures to enable ground-breaking R&I and stresses the need of pooling resources across Europe to build and operate research infrastructures in view of their cost and complexity. It commits MS together with the EC to complete or launch by 2015 the construction of 60% of the priority European research infrastructures currently identified by the European Strategy Forum on Research Infrastructures (ESFRI) and to increase the potential for innovation of research infrastructures.
The Digital Agenda for Europe, another flagship initiative of Europe 2020, highlights the role and the need for reinforcement of e-Infrastructures as well as targeted development of innovation clusters for building Europe's innovative advantage.

This thematic, in 2012, dedicated its efforts to building a strategic approach for existing and new research infrastructures undertaken in previous years, taking into account the orientations set out in the Europe 2020 strategy and its two flagship initiatives: Innovation Union and Digital Agenda.

The total budget allocation in 2012 was that of €176,25 million.

National Contact Points Research Infrastructures

Moreover, the Council throughout 2012 has been actively participating in the EuroRIsNet+ Project. EuroRIs-Net+ builds on the Network of NCPs for the Research Infrastructures programme to provide value-added services, which will facilitate transnational cooperation of NCPs, promoting the effective implementation of the RI programme, highlighting opportunities offered by Research Infrastructures - at the European and international level - and their impact on e-science.
The network develops observatory functions for the European Commission and national Research Infrastructures policies, programmes and initiatives, supported by an efficient dialogue scheme for RI NCPs with the RI ecosystem and a sustainable and comprehensive RI knowledge repository.

The National Contact Points for Research Infrastructures are Alexandra Camilleri, (alexandra.a.camilleri@gov.mt) and Diana Spiteri, (diana.a.spiteri@gov.mt).

International Cooperation (INCO)

This thematic area aims at raising awareness and visibility in third countries through strategic partnerships in selected fields of science. These partnerships will provide more efficient research access to scientific research carried out elsewhere out of Europe. In this context, the terms mutual benefit and mutual interest come into play to tackle more effectively significant societal challenges through joint activities between FP7 participating countries.

The FP7 also includes strategic activities underpinning the building of an ERA open to all countries that require a policy dialogue with major regions of the world. Moreover, it boosts true partnerships with those countries with which a S&T Cooperation agreement has been signed.

Specific support has been split into the following areas:

- Bi-regional coordination of S&T, including bringing together policy makers and the scientific community from both EU and third countries to prioritise policy decisions;
- Bilateral coordination to enhance the development of S&T partnerships, including sharing best practices via forums such as workshops;
- Supporting the coordination of the national policies of EU MS and Associated Countries, with the aim of improving the coordination of national or regional research programmes.

In order to maximise impact, international activities across all Specific Programmes of FP7 continued to be prioritized in 2012, in a complementary and synergistic manner. The Cooperation Programme dedicated efforts to supporting research cooperation between different global research partners in collaboration with European researchers, while the Capacities Programme saw to support a range of activities to support S&T cooperation policies and strengthen research capacity in the European scientific community and other regions of the world.

The People Programme undertook responsibility in fostering both incoming and outgoing international mobility of researchers, whilst the Ideas Programme continued to support excellence in frontier research and sought to enable top international researchers to participate in European teams.

A total budget of €12,3 million was allocated for INCO in 2012.

National Contact Points INCO

INCONTACT – One World is the official support network of NCPs for INCO Activities. The aim is to support scientific cooperation, to address the needs and the opportunities of an interconnected world, to reinforce and expand the networks of the INCO NCPs and to further increase global awareness about the FP7. In 2012, the Council retained its interest in activities organised by this network.

The National Contact Points for International Cooperation are Denise Bartolo, (denise.bartolo@gov.mt) and Ian Gauci Borda, (ian.a.gauci-borda@gov.mt).

Regions of Knowledge & Research Potential

The 'Regions of knowledge' initiative has been to strengthen the research potential of European regions, in particular by encouraging and supporting the development, across Europe, of regional 'research-driven clusters', associating universities, research centres, enterprises and regional authorities. Activities of this thematic have included analysis, development and implementation of research agendas for regional or cross-border clusters, as well as mentoring of regions with a less-developed research profile by highly developed ones.

The aim of'Research potential' is stimulating the realisation of the full research potential of the enlarged EU by unlocking and developing the research potential in the EU´s 'Convergence regions' and outermost regions, and helping to strengthen the capacities of their researchers to successfully participate in research activities at EU level. Activities of this theme have included trans-national two-way secondments of research staff in the convergence regions; the acquisition and development of research equipment in selected centres; the organisation of workshops and conferences to facilitate knowledge transfer, and 'evaluation facilities' for research centres in the 'Convergence regions' to obtain an international independent expert evaluation of their research quality and infrastructures.

A total of €126 million had been allocated to funding these themes over the duration of the FP7.

National Contact Points Regions of Knowledge & Research Potential

The National Contact Point for Research Potential on Convergence Regions is Marie Claire Tonna, (marie-claire.tonna@gov.mt).

Joint Research Centre (JRC)

As the Commission's in-house science service, the Joint Research Centre's (JRC) mission is to provide EU policies with independent, evidence-based scientific and technical support throughout the whole policy cycle.

Working in close cooperation with policy Directorates-General, the JRC addresses key societal challenges while stimulating innovation through developing new methods, tools and standards, and sharing its know-how with the MS, the scientific community and international partners.

Key policy areas include: environment and climate change; energy and transport; agriculture and food security; health and consumer protection; information society and digital agenda; safety and security, including nuclear; all supported through a cross-cutting and multidisciplinary approach.

The JRC has seven scientific institutes, located at five different sites in Belgium, Germany, Italy, the Netherlands and Spain, with a wide range of laboratories and unique research facilities. Through numerous collaborations, access to many facilities is granted to scientists from partner organisations.

The JRC employs around 2750 staff coming from throughout the EU, and its budget comprises €330 million annually. Further income is generated through the JRC's participation in indirect actions, additional work for Commission services and contract work for third parties, such as regional authorities and industry.

The JRC has around 200 operational collaboration agreements with public and private research organisations, universities and national and international bodies. The majority of these agreements are bilateral, concern joint research, information sharing and sometimes the exchange of personnel.

Board of Governors of the JRC

This was another important year for the JRC.
The JRC most notably issued scientific results on the following:

- Screening of Africa's renewable energies potential;
- The importance of the Congo basin for climate change and biodiversity;
- The new policies and EU reactions to the Fukushima nuclear accident;
- Studies on the state of the art strategic energy technologies;
- Studies on maps on water demand and supply;
- Guides to green products and services;
- A cooperation agreement with the US on climate, weather, oceans and coasts; studies on the levels of CO2 emissions;
- Studies on the effectiveness of EU policies on air quality in harbours;
- Publication of new methods in noise assessment methods;
- Studies on pooling information to combat the threat of alien species in Europe;
- A review on the measurement method for nanoparticle measurements; and
- Studies on the media and content industries from a benefit and revenue point of view.

Malta's delegate to the Board of Governors of the Joint Research Centre is Dr. Nicholas J. Sammut. (ceo.mcst@gov.mt)

National Contact Points JRC

The JRC has put in place a network of NCPs with the aim of promoting the JRC among the scientific community in respective countries. The JRC NCP, in 2012, attended two meetings organized for the NCPs to get together for signposting and feedback.

The National Contact Point for JRC is Alexandra Camilleri, (alexandra.a.camilleri@gov.mt)

2012 Successful FP7 Projects

HEALTH

RD-CONNECT: An integrated platform connecting registries, biobanks and clinical bioinformatics for rare disease research

Duration of the Project: 1 November 2012 to 31 October 2018

Despite examples of excellent practice, rare disease (RD) research is still mainly fragmented by data and disease types. Individual efforts have little interoperability and almost no systematic connection between detailed clinical and genetic information, biomaterial availability or research/ trial datasets. By developing robust mechanisms and standards for linking and exploiting these data, RD-Connect will develop a critical mass for harmonisation and provide a strong impetus for a global trial-ready infrastructure ready to support the IRDiRC goals for diagnostics and therapies for RD in close collaboration with the successful A/B projects.

This large-scale integrating project will build on and transform the current state-of-the-art across databases, registries, biobanks, bioinformatics, and ethical considerations to develop a quality-assured and comprehensive integrated hub/ platform in which complete clinical profiles are combined with -omics data, sample availability for RD research and cutting-edge bioinformatics tools for data analysis. All patient data types will be linked via the generation of a unique identifier (RD-ID) developed jointly with the US NIH.

The RD-Connect platform will be one of the primary enablers of progress in IRDiRC-funded research and will facilitate gene discovery, diagnosis and therapy development. RD-Connect has the RD field at its heart and brings together partners with a strong track record in RD research (gene discovery and development of innovative treatments), as well as committed IRDiRC funding partners and representatives of all major international RD initiatives (EU/US/AU/JP) spanning patient organisations, research and public health, and to maximise impact to RD patients.

The Coordinator of the project is the University of Newcastle upon Tyne, United Kingdom and the Maltese Partner is the University of Malta.

The total cost of the project is of €17,564,885 with an EU contribution of €11,997,111.

NMP

EE-WISE: Energy Efficiency Knowledge Transfer Framework for Building Retrofitting in the Mediterranean Area

Project Duration: from 1 October 2012 to 30 September 2014

Energy Efficiency (EE) in the construction sector is nowadays the best chance to boost green economy in Europe, generating new business opportunities that will foster high quality employment creation helping to recover a strategic sector ruined by crisis.

However, there is a fundamental barrier that is preventing this from happening: SMEs presence in the construction sector is remarkable with a fundamental impact on the sector's performance. Continuous progress in technologies and solutions to improve energy efficiency in buildings do not reach companies in order to implement them. Therefore, the current main problem must be solved since knowledge transfer isn't flowing effectively among agents in the value chain of the EE market (particularly SMEs), thus knowledge sharing is a necessity to overcome technological and economic barriers.

ee-WiSE aims to develop an EE Knowledge Transfer Framework (KTF) in building retrofitting with special attention to SMEs, applied to a specific geographic area, the Mediterranean, due to its particular weather conditions which require EE to be analyzed by considering specific and not generic solutions.

EE-wise will provide a useful methodology to imagine, design and validate EE enhancement measures in the Mediterranean environment to develop EE market and related business.

The Project Coordinator is Consorcio para la Gestion del Instituto Technlologicico de Rocs Ornamentales y Materiales de Construccion and the Maltese Partner is Projects in Motion Ltd.

The total cost of the project is of €1,345,792 with an EU contribution of €1,199,984.

NEWBEE: Novel Business model generator for Energy Efficiency in construction and retrofitting

Duration of the Project: From 1 October 2012 to 30 September 2015

The increasing cost of traditional energy sources and the availability of new emerging building technologies in lighting, heating, ventilation, air conditioning, isolation, energy monitoring and management of the buildings, are expected to increase the global market for low carbon solutions.

The overall aim is to develop the NewBEE system enabling SMEs to generate new performance based business models for cost and Energy Efficient construction works with special incidence in retrofitting. The NewBEE system will be composed of a methodology and working handbook as well as the ICT platform: set of ICT tools.

The main innovation emerges from the seamless integration for the first time, all actors in the value chain of energy efficiency in construction industry (paying special attention to the retrofitting works where most of the savings in energy efficiency can be achieved) by the use of a new working methodology fitted to the new paradigm efficiently supported by an ICT set of tools.
Another important innovative issue is the creation of a system which will benefit from previous knowledge in order to enable SMEs to find an easy way of generating new business opportunities and also provide them the means to develop them.

The Project Coordinator is Fundacion Tecnalia Research & Innovation and the Maltese Partner is ACROSSLIMITS Ltd.

The total cost of the project is of €4,568,810 with an EU contribution of €3,350,000.

TRANSPORT

ACROSS: Advanced Cockpit for Reduction Of StreSs and workload

Duration of the Project: from 1 January 2013 to 30 June 2016

Outstanding safety level of air transport is partly due to the two pilots' standard. However, situations where difficult flight conditions, system failures or cockpit crew incapacitation lead to peak workload conditions, the amount of information and actions to process may then exceed the crew capacity, therefore, systems alleviating crew workload would improve safety.

In this context, the large-scale integrating project ACROSS, Coordinated by Thales Avionics SAS, will develop new applications and Human Machine Interface (HMI) in a cockpit concept for all crew duties from gate to gate. Human factors, safety and certification will drive this approach. The new system will balance the crew capacity and the demand on crew resource.

ACROSS workload gains will be assessed by pilots and experts. A Crew Monitoring environment will monitor physiological and behavioural parameters to assess workload and stress levels of pilots. A new indicator will consolidate flight situation and aircraft status into an indicator of the need for crew resource.

ACROSS groups a large team or around 34 key European stakeholders who are committed to deliver innovation in the field of air transport safety. Malta's partner is the University of Malta.

The total cost of the project is of €30,255,456 with an EU contribution of €19,482,059.

HILDA: High Integrity Low Distortion Assembly

Duration of the Project: from 1 September 2012 to 31 August 2015

The Project HILDA will deliver a cost effective, low distortion welding process for EU shipyards to allow them to maintain competitiveness and produce light, strong, more fuel efficient vessels. The solid state technique will enable the modular construction of dimensionally accurate, high strength, corrosion resistant fabrications across the entire range of steels, enabling the introduction of stronger, tougher, corrosion resistant steels into the industry.

HILDA will develop the fundamental metallurgical knowledge required to predict the complex phase changes and stress regimes present in welding steel. This will enable the proven, energy efficient, low hazard and environmentally benign technology of friction stir welding, widely deployed in aluminium construction for the aerospace and rail industries, to be transferred to steel shipbuilding.

To achieve this breakthrough, HILDA will use real world data from friction stir welding high strength low alloy steels as an input to develop a computer model of the thermo-mechanical processing process at the heart of the solid state welding technique. This model will predict the phase changes, heat variations and resultant stresses associated with welding steel and generate guidelines for producing high strength welds with minimal distortion.

HILDA will generate technical, economic, safety and environmental benefits for EU shipyards.
HILDA will advance EU computational modelling capability in the field of multi-phase simulation and produce weld codes useful to many other industries fabricating steel.

The Coordinator of the project is the University of Strathclyde and the Maltese partner is the University of Malta.

The total cost of the project is of €2,774,746 with an EU contribution of €2,097,445.

KBBE

TRANSDOTT: Translation of Domestication of Thunnus Thynnus into an Innovative Commercial Application

Duration of the Project: 1 April 2012 to 31 March 2014

Due to declining stocks and increased fishing pressure there are serious concerns that the present fisheries and fattening industry for Bluefin Tuna (Thunnus thynnus) is not sustainable and that every effort should be made to develop BFT aquaculture.

TRANSDOTT represents a top-down approach from one Enterprise, four SMEs and three non-SMEs to build on the scientific results obtained from two previous projects REPRODOTT in (FP5) and SELFDOTT (FP7) and to translate them into a commercially viable innovative marketable application for tuna aquaculture. Starting in April 2012, based on an already established brood-stock in a central Mediterranean major SME in Malta, fertilized tuna eggs will be provided in June 2012 and 2013 for larval rearing in three industrial scale hatchery SME/s for rearing scenarios in Spain, Israel and Italy together with two experimental hatcheries in Malta and Israel.

RTD will involve the validation of existing protocols with the generation of fingerlings in late summer to be transferred from the industrial hatcheries to grow-out sea cages. Previously tried and tested, successful weaning and grow-out diets from SELFDOTT will be supplied by the Enterprise partner. The economic viability of these methodologies will be studied and used for the development of commercialization and capitalization of this process to provide sustainable Tuna Aquaculture.

The Coordinator of the project is the Heinrich-Heine-Universitet, Dusseldorf Germany and the Maltese partners are the Ministry for Resources and Rural Affairs and Malta Fish Farm Ltd.

The total cost of the project is of €1,181,928 with an EU contribution of €892,196.

SPACE

MYOCEAN2: Prototype Operational Continuity for the GMES Ocean Monitoring and Forecasting Service

Duration of the Project: from 1 April 2012 to 30 September 2014

The main objective of the MyOcean2 project will be to operate a rigorous, robust and sustainable Ocean Monitoring and Forecasting component of the GMES Marine Service (OMF/GMS) delivering ocean physical state and ecosystem information to intermediate and downstream users in the areas of marine safety, marine resources, marine and coastal environment and climate, seasonal and weather forecasting.

The Project will ensure a controlled continuation and extension of the services and systems already implemented in MyOcean, a previously funded FP7 project that has advanced the pre-operational marine service capabilities by conducting the necessary research and development. To enable the move to full operations as of 2014, MyOcean2 is targeting the prototype operations, and developing the necessary management and coordination environment, to provide GMES users with continuous access to the GMES service products, as well as the interfaces necessary to benefit from independent R&D activities.

MyOcean2 will produce and deliver services based upon the common-denominator ocean state variables that are required to help meet the needs for information of those responsible for environmental and civil security policy making, assessment and implementation. It is also expected to have a significant impact on the emergence of a technically robust and sustainable GMES service infrastructure in Europe and significantly contribute to the environmental information base allowing Europe to independently evaluate its policy responses in a reliable and timely manner.

The Project is coordinated by Mercator Ocean Societe Civile and the Maltese partner is the University of Malta.

The total cost of the project is of €41,133,416 with an EU contribution of €27,999,446.

NEXT1KOAT: Novel high performance, waterbased high solidsand bio-based industrial wood coating

Duration of the Project: from 1 January 2013 to 31 December 2015

The stringent Solvent Emission Directive (1999/13/EC), fully transposed in 2007, imposes limitations of emissions of volatile organic compounds (VOC) due to the use of organic solvents in paints and varnishes. The most economical way of limiting VOC emission is using water-based coating formulas in which water replaces a substantial amount of the organic solvents traditionally used.

Unfortunately, water-based formulas have deficient properties in comparison to solvent-based, primarily as a consequence of using water as a solvent. Coatings (varnishes and paints) are of key importance to the final products of our industries: coatings define the visual aspect and softness of the furniture piece, influencing its effective purchase; also the durability and resistance of a coating is a measure of the quality of the whole piece.

The aim of NEXT1KOAT is to give European woodworking and furniture manufacturers a long-lasting solution by developing the first triple system (exterior uses impregnation; interior uses undercoat and topcoat) of one-component (1K) high solids (>70%) water-based coatings.

NEXT1KOAT will be produced by 10 European SME coating manufacturers due to its affordable chemistry based on seaweed polymers, and it has been designed for European woodworking and furniture small and medium coating installations. NEXT1KOAT will have the following advanced properties: Less water content (30%), reduced drying time and less grain raising, improved wood wetting without the use of surfactants, less foam formation, a more glossy final aspect, as well as increased hardness.

This project is coordinated by the Asociacon Empresarial de Investigacion Technologico del Muebley la Madera de la Region de Murcia and the Maltese partner is the Malta Furniture Manufacturers Organisation.

The total cost of the project is of €2,469,568 with an EU contribution of €1,861,000.

RESEARCH FOR SMES

TACMON2: Development of a very low-cost Interactive Graphical Tactile Display as advanced user interface for visually impaired

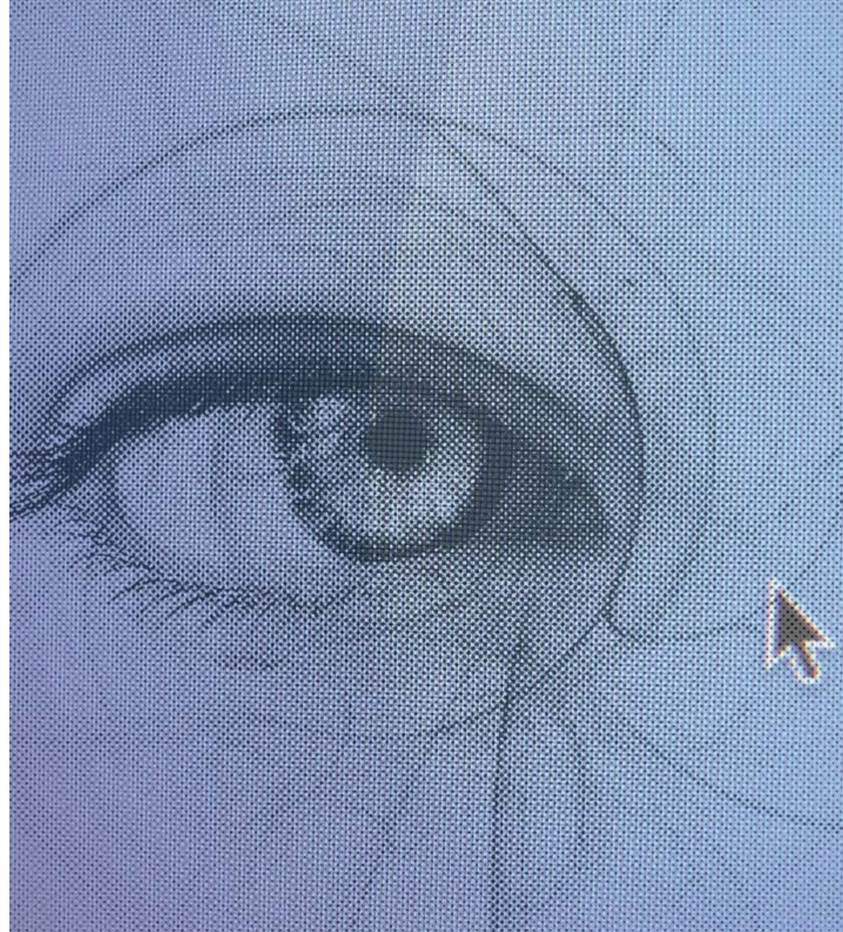
Duration of the Project: from 1 September 2012 to 28 February 2015

The TACMON2 project aims to develop an innovative technology for the low-cost realization of a large area Interactive Graphical Tactile Display as a computer periphery for visually impaired people, providing them a new dimension of access also to graphical oriented electronic information and to a wider range of PC applications. The proposed Graphical Tactile Display will consist of a fine matrix of tactile (haptic) accessible for the human touch sense, therefore, it is applicable for the visually impaired people. The concept of the cost reduction is the application of technologies, which allow the batch production of the actuator matrix on the surface without the need for individual assembly of actuators for each tactile dot.

The TACMON2 project intends to increase SME competitive advantage in the special needs sector by offering innovative and cost-effective technology. There are 7.4 million visually impaired people in the EU. High unemployment amongst the visually impaired is therefore, a serious social and economic problem. In this context, it is evident that there is a need for effective assistive technology to facilitate employment of the visually impaired and for industry to be better able to meet anti-discrimination legislation, as well as to avoid the increasing exclusion from the increasingly visual / graphical oriented of ICT.

This project is coordinated by MFKK Feltalaloi es Kutato Kozpont Szolgaltato KFT and the Maltese partner is the Foundation for Information Technology Accessibility.

The total cost of the project is of €2,267,289 with an EU contribution of €1,716,000.



INCO

MED-SPRING: Mediterranean Science, Policy, Research & Innovation Gateway

Duration of the Project: from 1 February 2013 to 31 January 2017

The MED-SPRING Project is a Coordination Support Action and aims to contribute to the quality of the Euro-Mediterranean research area, with a particular focus on the bi-regional Euro-Mediterranean S&T cooperation, R&I, policy dialogue and cooperation monitoring. The proposal aims at tackling the key issues and policy objectives outlined in the Work Programme by creating a dialogue and coordination platform of governmental institutions, research organizations, associations and NGOs helping integrate society in the institutional dialogue.

To this end, the Project foresees a comprehensive analysis of selected societal challenges and will address capacity building to increase research capacity, shared knowledge and cooperation. It will also support synergies and networking to strengthen joint activities and EU MS – Mediterranean Partner Countries (MPCs) cooperation in EU programmes, as well as a monitoring of regional RTD cooperation and policies.

In particular, the proposal is structured to address three societal challenges: energy, high quality affordable food, scarcity of resources. These challenges have been selected on the basis of the result of the long-standing and ongoing EU-MPCs policy dialogue and represent the most significant areas of common interest in current Euro-Mediterranean cooperation.

The Project, therefore, aims to enhance EU-MPCs co-ownership in research cooperation; creating synergies in order to reduce fragmentation of research actions; involving the civil society in the institutional dialogue on research and innovation; developing cooperation instruments to tackle societal challenges with a view to sustainability; supporting research and innovation capacity building through comprehensive training and contributing build an Euro-Mediterranean shared knowledge space in order to develop common EU-MPCs planning capacity and a sustainable regional RTD policy and cooperation.

The Project is coordinated by Centro Internazionale di alti studi Agronomici Mediterranei – Istituto Agronomico Mediterraneo di Bari and the Maltese partner is the The Malta Council for Science and Technology, Office of the Prime Minister.

The total cost of the project is of €4,480,222 with an EU contribution of €3,999,944.

FCHR: Fluid Foods Pasteurizer and Homogenizer based on Centrifugal Hydrocavitation Reactor

Duration of the Project: from 1 September 2012 to 31 August 2014

The FCHR project proposes the implementation of an integrated pasteuriser and homogenizer for fluid foods based on an alternative approach induced only by mechanical means: hydrodynamic cavitation, which consists in the generation of huge amounts of energy in the form of shock waves, due to the turbulence produced in a fluid by pressure fluctuations.

In contrast to the currently studied alternatives, such as pulsed electric field or ultrasound cavitation, FCHR is highly scalable, due to the absence of electric field or ultrasound emitters. Substituting thermal pasteurization with a process working at lower temperature, it will deliver a safe product that preserves the sensory characteristics and freshness, while reducing processing cost, thanks to improvement in energy efficiency in the manufacturing steps (pasteurization and homogenization)..

This project is coordinated by WIXTA Industries SRL and the Maltese partner is Electric Cars Ltd.

The total cost of the project is of €1,182,560 with an EU contribution of €895,000.

THRIVE-RITE: Natural Compounds to enhance Productivity, Quality and Health in Intensive Farming Systems

Duration of the Project: from 1 August 2012 to 30 September 2014

Pig and poultry farming are amongst the most important agricultural activities in the EU, and significant performance gains were previously achieved through the use of in-feed antibiotics.
As antibiotic growth-promoting effects are no longer available to the industry, there is an urgent need to find innovative and long term solutions to maximising the growth performance and efficiency within the pig and poultry sectors to ensure the benefits of safe, wholesome and a sustainable supply of quality food products to the end user.

The THRIVE-RITE project aims to provide a strong competitive advantage in these sectors by maximising the performance using natural feed additives as alternatives to the use of in-feed growth promoting antibiotics, which were recently banned in agriculture.

The THRIVE-RITE project will address these issues by undertaking a comprehensive programme of nutrition research to inform the industry of the benefits of functional foods derived from natural sources as additives to animal feed. Natural feed additives produced by a consortia of SME's will be assessed by research partners to determine: their impact on infectious agents, the antioxidant value to pig and poultry meat and to enhance the safety of meat products

The project will be of benefit to and impact on primary livestock producers, animal health and welfare, SMEs provide a higher quality product to the end consumer. THRIVE-RITE provides a clear potential for alternatives to in-feed antibiotics and the program is designed to ensure that the information is disseminated to provide effective tools and long-term solutions to the industry for livestock health and production management.

This project is coordinated by BIOATLANTIS and the Maltese partner is Clasado Ingredients Ltd.

The total cost of the project is of €1,688,104 with an EU contribution of €1,295,999.

SCIENCE IN THE CITY & MARES (Mad About RESearch): Researchers Night, Malta held on 28 September 2012

Duration of the Projects: From 1 May 2012 to 30 November 2012

In 2012, two projects were funded to coordinate Researchers Night: Science in the City and MARES – Mad About Research. In this context, both projects were combined to hold one effective event held in the City on 28 September 2012.

The consortium, which was solely comprised of Maltese partners ,was coordinated by the University of Malta and Where's Everybody Ltd. The Maltese partners included the Ministry for Justice, Dialogue and the Family, the Public Broadcasting Services Ltd., Valletta Local Council, and 'Fondazzjoni Centru ghall-Kreativita'.The Malta Council for Science & Technology also contributed to the event.

The nationwide event finally entitled 'Science in the City' reached 75% of the population and placed researchers on centre stage by filling Malta's capital Valletta with the wonders of science. The streets of Valletta were bustling with activities including science busking, interactive science-inspired art installations and a special carnival parade inspired by science.

The overall objective was to bridge the gap between researchers and the public by improving public perception of the role of researchers in our everyday lives; increasing the value that society places on the work and lives of researchers; combating stereotypical images of researchers and science; demonstrating that a career in research is rewarding; and showing that researchers as other professionals are ordinary people. Therefore, this event promoted scientists and their work by emphasizing the importance of investing heavily in science.

Researchers Night was a truly entertaining and memorable event for a large audience, entertaining all ages.

The total cost of the event was of €179,191 with an EU contribution of €125,000.

PRI-SCI-NET

"Networking primary science educators as a means to provide training and professional development in Inquiry-Based-Learning"
PRI-SCI-NET is an EU funded FP7 (Call SiS-2010-2.2.1.1) on teacher training on IBL teaching methods at primary level on a large scale in Europe.

Pioneered by The The Malta Council for Science and Technology with the direction of Prof. Suzanne Gatt, a science educator, PRI-SCI-NET aims to develop and research IBL teaching methods for use in both local and European primary school classrooms. With a total participation of 14 EU MS and a total budget of €3,182,780 million, the project is expected to run over 3 years and has been working to develop two network platforms for primary science educators and teacher-trainers across Europe, science activities through the use of Inquiry-Based science education (IBSE), national and international training courses and conferences.

PRI-SCI-NET recognizes teachers' and researchers' achievements in implementing Inquiry-Based Learning in science and provides an opportunity for teachers and academics to share their experiences and successes. The project includes several previous projects, mainly: using an already developed theoretical pedagogical model for the teaching of science at primary level and for developing teaching resources (developed as part of Comenius 1 and 2 projects).

Currently into its second year of implementation, the project has already seen the development and trialing of 45 IBSE activities, the delivery of two National Training Programs in 14 European Countries and one International Training Program held in January 2013. In addition, project leaflets and presentations have been disseminated in various conferences and seminars across Europe, generating increased awareness in the field.

The project will, in 2013, launch a Europe-wide network for professionals and academics in the area of Primary Science Education. This platform, at European level, will network professionals as well as support the organization of training courses. It also recognizes teachers' and researchers' achievements in implementing Inquiry-Based Learning in science, as well as provides an opportunity for teachers and academics to share their experiences and successes.

National Funding

National Funding

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Each year the Government finances a number of projects in support of the National Strategic Plan for Research and Innovation. One of the main funding instruments is the Research and Innovation Programme (R&I). Through these funds, the Council issues a call for applications, where interested academic researchers together with the industry submit their proposals with the scope of marrying academia and industry.

Since its conception in 2004, the programme has focused on four priority areas as identified in the National Strategic Plan for Research and Innovation which are: Environment and Energy Resources, ICT, Value-Added Manufacturing and Health and Biotechnology. However, in 2012, Offshore Solar Technology as a fifth priority area was introduced.

All the projects which fall under the R&I Programme are administered by the National Funding Unit which, apart from the R&I Programme, also administer the Commercialisation Programme and an EU Funded Project on Manufacturing Research under the European Research and Development Fund (ERDF).

One can say that 2012 was a busy year for the National Funding Unit since it bid farewell to a number of R&I projects, which arrived at their final stages. At the same time, 2012 proved to be busy as the largest batch of applications were evaluated since the start of the programme.

Furthermore, the ERDF project was also finalised, shedding light on the importance of identifying opportunities within Manufacturing research in Malta, in order to be better able to increase competitiveness through improved efficiency, as well as through the development of new and improved products and processes.

R&I Programme 2004-2012

The National R&I Programme 2012 saw an increase in funds over the previous years, since the funding increased from €1.1 million to €1.6 million. This year can be described as the most successful year for this programme when compared to previous years both in terms of number of submissions, as well as in terms of quality of proposals.

A total of 46 proposals were received, of which three were double (same proposal, different participant) and four, a resubmission from last year.

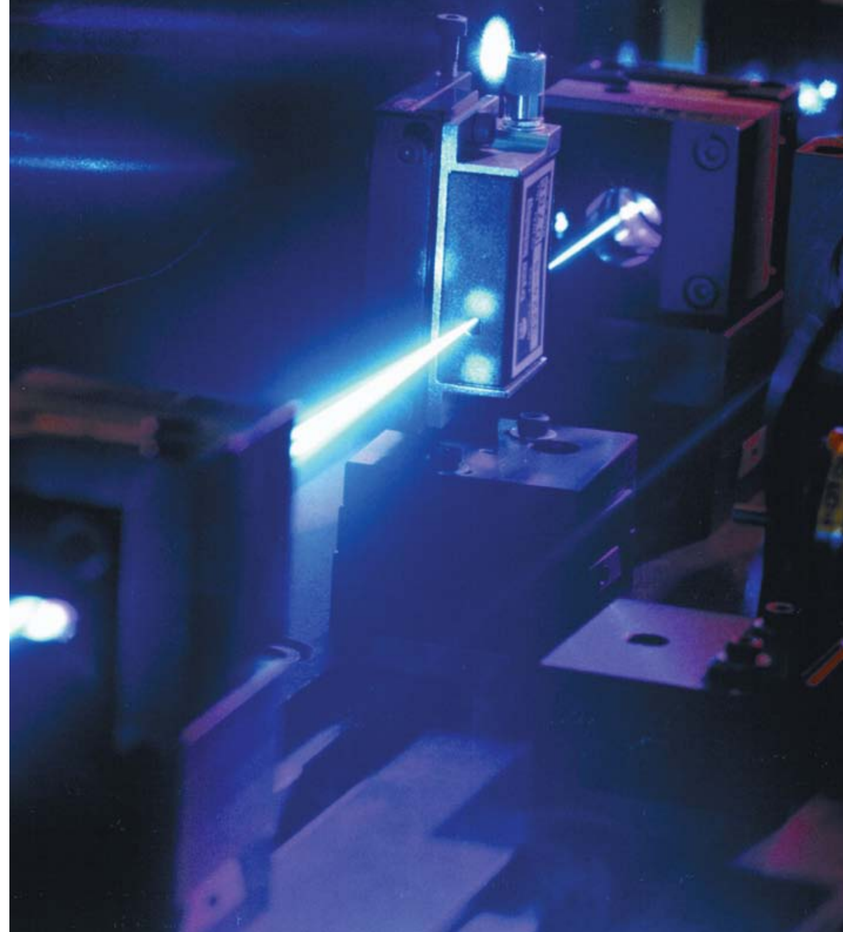
In total, €8.3 million was requested in funding in 2012 as opposed to the €5.8 million in 2011.

The table below portrays a breakdown of submission by Thematic Area for 2012. Taking into consideration the category of the coordinating entity, results showed that 61% of the proposals were to be coordinated by academic partners, with 39% by industrial partners.

Area	No of Proposals	Amount Requested
Energy & Environment	11 (24%)	€1,958,517
Health & Biotechnology	08 (17%)	€1,471,305
ICT	21 (46%)	€3,906,040
Offshore Solar Technology	02 (04%)	€399,800
Value-Added Manufacturing	04 (09%)	€585,698
Grand Total	46	€8,321,360

The screening of applications was performed in line with the evaluation criteria, by foreign experts. 37 applications were short-listed for the 2012 call for applications, requesting a total of €6.6 million. From these applications, eight projects were selected for funding.

Since 2004, 53 proposals were financed with a total request of €6.6 million. These projects are at various stages of progress, with some having been completed to date, and others in either initial, intermediate, or final stages . A comprehensive list is provided overleaf (for the years, 2005 and 2007 the Programme was not issued)l. More information about the approved projects in 2012 is given in the following section.



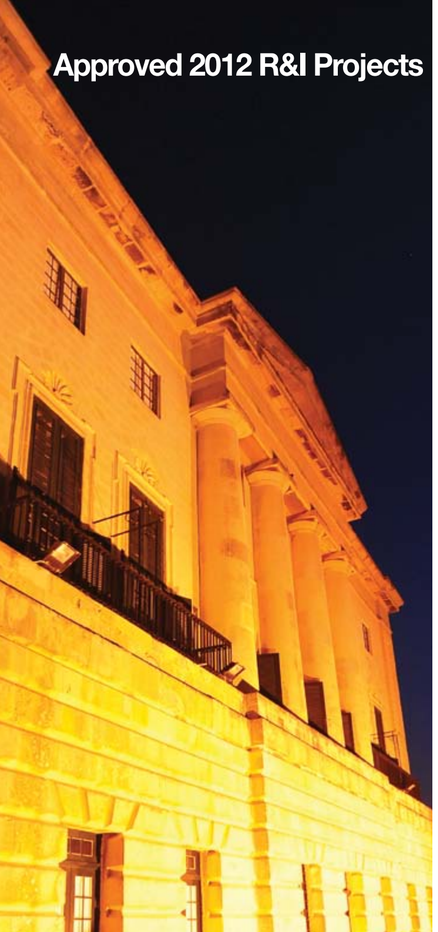
Project No.	Contact Person	Name of the project
RTDI-2004-005 COMPLETE	Prof. Robert Ghirlando University of Malta	High Temperature Air Combustion (HiTAC)
RTDI-2004-008 COMPLETE	Dr. Suzanne Gatt University of Malta	Tackling the Image of Scientists
RTDI-2004-012 COMPLETE	Prof Christian A.Scerri University of Malta	Identification of Genetic Factors Contributing to Coeliac Disease in the Maltese Population - COELIGENE
RTDI-2004-017 COMPLETE	Dr Anthony Fenech University of Malta	Transcriptional Regulation and Promoter Genetic Variation of the Chemokine Receptor 4 (CCR4) gene with special Pharmacogenetic relevance to novel therapeutic targets in asthma
RTDI-2004-022 Suspended	Shane A. Hunter AquaBioTech Group	Intensive Vertical Shrimp Culture
RTDI-2004-026 COMPLETE	Dr Simon G Fabri University of Malta	Computational Intelligence Techniques for Control of Complex Systems
RTDI-2004-033 COMPLETE	Prof Joseph N.Grima University of Malta	Modelling of Materials with Unusual Mechanical and Thermal Properties
RTDI-2004-034 COMPLETE	Mr Thomas Galea Mosta Technopark	3DHead - Low Cost Rapid 3D Head Acquisition
RTDI-2004-039 COMPLETE	Dr. Victor Buttigieg University of Malta	Content Based Multimedia Retrieval with Ordered Relevance Feedback
RTDI-2004-054 COMPLETE	Dr. Sandra Scicluna University of Malta	Dealing with Female Victims of Domestic Violence: An Evaluation of Services in Malta/Gozo and the Provence of Trapani (Sicily)
RTDI-2004-061 COMPLETE	Prof. Christian Scerri University of Malta	Purchase of Real Time PCR Equipment.
RTDI-2004-072 COMPLETE	Dr. Claire Shoemake University of Malta	The Design of a Series of Non-Steroidal Oestrogen and Androgen Receptor Antagonists
RTDI-2004-074 COMPLETE	Dr Everaldo Attard University of Malta	Screening of Maltese Medicinal and Aromatic Plants for Pharmacological Activity
RTDI-2004-082 COMPLETE	Mr Mike Rosner University of Malta	The Maltese Language Resource Server (MLRS)

2006 Project No.	Contact Person	Name of the project
R&I-2006-006 FINAL	Ing.Michael Attard University of Malta	Application of copper carbon nanofibre composites in the thermal management of solid state relays and power modules
R&I-2006-009 FINAL	Ing. Marco Cremona University of Malta	Development of an Innovative Wastewater Recycling Process for Hotels / Large Commercial Buildings / Isolated Communities for environmental protection and cost recovery
R&I-2006-015 INITIAL	Joe Grima Baxter Ltd	Modular Intravenous Set
R&I-2006-026 FINAL	Mr Joe Sultana Ascent Ltd	Bio-Structor: a portable software tool for biological visualization
R&I-2006-027 FINAL	Dr Stephen Abela University of Malta	Desalination of Sea/Brackish Water by Decentralized Solar Energy Units
R&I-2006-045 FINAL	Dr Ing. Michael Saliba University of Malta	A rationalization of industrial automation requirements and service provision in Malta, with a focus on the development of new modular reconfigurable industrial automation systems
R&I-2006-046 FINAL	Dr Ing. Jonathan C. Borg University of Malta	Intelligent Design and Manufacture of Micro-Parts for Biomedical Applications: Case Study – The development of a laparoscopic surgery tool
2008 **Project No.**	**Contact Person**	**Name of the project**
R&I-2008-006 FINAL	Dr Stephanie Bezzina Wettinger. University of Malta	Inflammation Atherosclerosis and Myocardial infarction in the Maltese population
R&I-2008-025 FINAL	Dr Alexiei Dingli University of Malta	PINATA - Pervasive Nursing And docToral Assistant
R&I-2008-026 FINAL	Mr Michael Bonello, University of Malta	Solar Hot Water controller so as to automatically control the use of elecrical energy through the use of back-up heater in inclement weather, thereby reducing energy consumption and C02 release
R&I-2008-037 FINAL	Prof. Joseph Grima University of Malta	Manufacture, modelling and testing of foams, with particular emphasis on a new manufacturing method for the production of 'value-added' auxetic foams
R&I-2008-052 FINAL	Dr Gordon J. Pace University of Malta	Dependability and Error-Recovery in Security Intensive Financial Systems
R&I-2008-059 FINAL	Dr Lilian M.Azzopardi University of Malta	Increasing the yield in the production of slow release pellets in the manufacture of tablets and capsules
R&I-2008-068 FINAL	Dr Neville Vassallo University of Malta	Identification of Neuroprotectants from terrestrial and marine plant extracts in newrodegenerative disorders of the amyloid type
R&I SP 2008-001 Suspended	Claudette Gambin Ministry of Resources and Rural Affairs	Valorisation of the Indigenous Vine Varieties of Malta: Conservation, Assessment and Innovation

2009 Project No.	Contact Person	Name of the project
R&I-2009-003 FINAL	Dr. Tonio Sant University of Malta	Design and Analysis of an Innovative Offshore Wind Turbine Support Structure for Deep Water Applications in the Maltese Islands
R&I-2009-010 FINAL	Dr Ing. Duncan Camilleri University of Malta	Innovative Fibre Reinforced Composites Designed For Higher Structural Performance
R&I-2009-019 FINAL	Mr Charles Saliba University of Malta	Investigation of chaperone modulators as regulators of diabetes, cancer and stem cell expansion.
2010 **Project No.**	**Contact Person**	**Name of the project**
R&I-2010-019 FINAL	Ing. Vince Maione MCAST	The Development of an Integrated Personal Mobility Device
R&I-2010-024 INTERMEDIATE	Mr Noel Gauci Dexawave Energy Malta Ltd	Converting wave energy into electriclal energy - focusing on mediterranean region and climate
R&I-2010-025 INTERMEDIATE	Ing.Michael Attard IMA Engineering Services Ltd	Investigation of Advanced Metal – Diamond Composites for Thermal Management Applications
R&I-2010-030 INTERMEDIATE	Mr Adrian Bugeja Douglas University of Malta	Molecular Characterization and Authentication of Maltese Honey
R&I-2010-038 INTERMEDIATE	Mr Alberto Miceli Farrugia Architecture Project Ltd	No-discharge Energy-efficient Prototype for Treatment of Urban Municipal Effluent (for water self-sufficiency in Public Gardens)
2011 **Project No.**	**Contact Person**	**Name of the project**
R&I-2011-002 FINAL	Dr Claire De Marco University of Malta	Fabrication of advanced hybrid composite sandwich panels – testing & simulation
R&I-2011-010 FINAL	Dr Ing. Saviour Zammit University of Malta	Digital Gaming Clouds for Mobile Users
R&I-2011-011 INTERMEDIATE	Ing. Ryan Xuereb Econetique Ltd	Development of a family of Augmented Lift - Self Adjusting - Vertical Axis Wind Turbines (VAWT) for urban wind context
R&I-2011-018 INITIAL/ SUSPENDED	Analiza Abdilla S-TECH Ltd	MARine LOgging Notebook
R&I-2011-019 INITIAL/ SUSPENDED	Analiza Abdilla S-TECH Ltd	Realtime Portable Reconfigurable Power Management Interoperable System
R&I-2011-021 FINAL	Ing. Kenneth Chircop University of Malta	Cleaner flight operations in departure and approach in Maltese Airspace
R&I-2011-022 INITIAL	Ing. Marco Cremona Sustech Consulting	Research on the use of infiltration boreholes for flood mitigation and to enhance groundwater recharge
R&I-2011-024 INITIAL	Prof. Joseph N. Grima University of Malta	Stent – manufacture, architecture, research, treatment

2012 Project No.	Contact Person	Name of the project
R&I-2012-002 INITIAL	Dr. Ing. Philip Farrugia University of Malta	Exploiting Multi-Material Micro Injection Moulding for Enhancing Manufacturing Competitiveness
R&I-2012-024 INITIAL	Dr Stephanie Bezzina Wettinger University of Malta	Harnessing and Maximising the Potential of Next Generation Sequencing Technology. NGS
R&I-2012-041 INITIAL	Prof. Luciano Mule'Stagno University of Malta	Innovative photovoltaics on water (SolAqua)
R&I-2012-057 INITIAL	Prof Kenneth p.Camilleri, University of Malta	Robust, Cost-effective Eye Gaze Technology for Assisted Communication
R&I-2012-058 INITIAL	Ing.Mario Galea Galea Curmi Engineering	Development of a Hollow Concrete Block with improved thermal properties, having same dimensions and load bearing characteristics as the traditional HCB.
R&I-2012-061 INITIAL	Dr Ruben Gatt University of Malta	Improved Meshing Designs for Skin Grafting
R&I-2012-065 INITIAL	Prof. Ing. David Zammit-Mangion, University of Malta	Advanced flight guidance and management using emerging interactive display technologies
R&I-2012-066 INITIAL	Dr Ruben Cauchi, University of Malta	In vivo drug discovery targeting mitochondria in animal models of Alzheimer's Disease, Parkinson's Disease and Diabetes Mellitus

Approved 2012 R&I Projects



Project Title	Exploiting Multi-Material Micro Injection Moulding for Enhancing Manufacturing Competitiveness (EX-MMIM)
Coordinator	Dr. Ing. Philip Farrugia
Coordinating Organisation	Department of Industrial and Manufacturing Engineering, UoM
Consortium	Playmobile Malta Ltd, Techniplast Ltd., Tek-Moulds Precision Engineering
Grant Amount	€142,651

The demand for micro-products or products with micro features has been rapidly increasing. Such products offer competitive advantages to many companies and also highly contribute to the creation of a sustainable economy. The trend towards product miniaturization has brought with it a number of associated product development trends and challenges. In particular, designers tend to develop new products, whose components, collectively integrate a variety of functions, thus broadening the products' application areas without increasing significantly their weight or overall size. In many cases, such components can be satisfactorily fabricated from polymers. Within this context, there is a demand for industrial technologies capable of mass producing micro components, and at the same time meeting the performance metrics of a product, in particular cost, time and quality. Thus there is a need to develop further replication technologies, such as microinjection moulding (µIM) to be able to manufacture these multi-material components.

In Malta's Vision 2015, Advanced Manufacturing has been clearly identified as one key target sector. Within this context and given that Malta already has a strong plastic manufacturing base employing thousands of people, the overall goal of the EX-MMIM project is to contribute towards making a quantum leap in injection moulding to result in higher value-added manufacturing i.e. that of Multi-Material Injection Moulding at the micro-scale level.

In view of this scenario, the EX-MMIM project aims at generating and sharing new knowledge on the design and manufacture of multi-material micro components fabricated by injection moulding. By exploiting multi-material micro injection moulding, it is expected that the competitiveness of the Maltese manufacturing industry will be enhanced since, for instance, assembly of micro components can be partially or fully eliminated. In addition, by involving industrial partners with complementary expertise, this project will contribute towards clustering a number of relevant Maltese companies to catalyse local multi-material micro injection moulding expertise.

Project Title	Harnessing and Maximising the Potential of Next Generation Sequencing Technology (NGS Project)
Coordinator	Dr. Stephanie Bezzina Wettinger
Coordinating Organisation	Department of Applied Biomedical Sciences, UoM
Consortium	Mater Dei Hospital
Grant Amount	€199,980

Whereas publication of the first human genome sequence required years of work of several labs, with the advent of Next Generation Sequencing (NGS) technology, it is possible to sequence an entire human genome within days. This technology allows high throughput analysis of both DNA and RNA, the intermediate between DNA and protein expression, thus also enabling transcriptome studies. The technology is being successfully applied in family studies to determine the genetic cause of diseases caused by DNA changes in a single gene, and it has generated new hopes that it can help decipher the mutations underlying more common and complex diseases.

Through ERDF funds the University of Malta has invested in a NGS platform. In this project medics and scientists can apply to test patient and family samples with next generation sequencing technology to identify gene defects that cause diseases. Initially the research will be focused on Mendelian or relatively simple single gene disorders which will be selected based on the chances of determining novel genetic causes. Local expertise in this technology and in analysing the massive volumes of data generated will increase, allowing more complex traits or diseases to be studied. In such complex diseases typically many genes, together with the effect of lifestyle or what is typically referred to as the 'environment', interact together. For these traits transcriptome analysis may be particularly useful, since RNA profiles differ in people affected with particular diseases, possibly serving as a 'fingerprint' to identify people at risk before disease develops. Some funds has been specifically allocated to the study of myocardial infarction where testing of novel markers and further subphenotyping will be performed to improve selection of samples for NGS from the MAMI (Maltese Acute Myocardial Infarction)

Study collection is being set up through R&I funds. Novel ways of analysing data for complex inheritance will be developed. Genes, or candidate genes, causing diseases will be determined, with potential for development of improved diagnostic tests, risk markers, and eventually possibly improved disease treatments.

Project Title	Advanced flight guidance and management using emerging interactive display technologies (TOUCHFLIGHT)
Coordinator	Prof. Ing. David Zammit Mangion
Coordinating Organisation	Faculty of Engineering, UoM
Consortium	Quaereo Thales
Grant Amount	€136,835

Touch Flight aims at developing new techniques of how pilots of commercial aircraft can interact with the aircraft flight and navigation systems. With current state-of-the-art technologies, pilots input data and program the flight management and guidance systems through a keyboard and a set of buttons, whilst they set speed, altitude and aircraft heading via knobs. With the advent of robust touch-screen technologies in aircraft, more convenient and flexible methods of programming and interacting with the aircraft systems can be developed. This is evidenced by examples in the consumer industry, such as car satellite navigation systems and the tablet.

Touch Flight will focus on developing new and innovative techniques of displaying mission management and flight navigation information and accompanying methods of interacting with the aircraft systems using touch-screen technologies. The work will build on the ODICIS single cockpit display concept, which was developed jointly by Thales Avionics, Alenia Aeronautica, Diehl Aerospace, Optinvent, IMEC, Alitalia, DTU, TEIP and the University of Malta and part funded by EU's FP7. This concept affords a step improvement in display and interaction capability over current state-of-the-art (such as the Airbus A380 and Boeing 787) and represents the future in cockpit displays.

However, major challenges exist, as applications of touch-technologies in the cockpit need to be carefully designed to cater for the stringent safety requirements and harsh operational conditions that will also require the pilot to still be able to input data correctly on the touch screen in turbulence and in stressful and emergency conditions. The Touch Flight project will see to addressing this challenge whilst using industry-standard methodologies in close collaboration with the international industry, with the aim to transfer Maltese technology to key international stake-holders for eventual introduction in the cockpit.

Project Title:	SolAqua – Innovative photovoltaics on water (SolAqua)
Coordinator	Professor Luciano Mule' Stagno
Coordinating Organisation	Institute of Sustainable Energy, UoM
Consortium	Pandia Energy Ltd, General Membrane Ltd
Grant Amount	€199,702

Malta's has committed to 10% of its energy from Renewable Energy (RE) sources by 2020. To attain this, this project will be looking at three proven renewable energy generation technologies – Wind (on and off-shore), biomass and photovoltaic (PV). Due to Malta's limited landmass and population, there will not be much opportunity to go beyond the currently planned installations for Wind and Biomass. While the 10% RE use is a 2020 target, the EU has already started looking beyond 2020 and Malta will have to come up with a long-term plan in the near future.

The recent dramatic reduction in the price of photovoltaic panels has led us to aggressively pursue more PV installations – but we are mostly limited to rooftops and relatively small parcels of land. A 10MW solar farm takes roughly as much area as 30 football fields – which is a challenging situation, given the small-size of the Maltese islands. Looking at offshore installations would be the next logical step, be it floating solar or floating wind turbines or wave energy. Any offshore installation has to face similar problems such as rough seas, and the corrosive effect of sea water. However floating PVs have the advantage that they do not have any moving parts and therefore maintenance should be more manageable. Floating solar PVs will make sense as long as these can be deployed safely and generate power at a similar cost as land based systems. This is what SolAqua is trying to achieve.

The consortium proposes three streams of research - two involving traditional PVs with innovative ways of deploying them at sea, while the third involves PV panels made specifically for floatation. All three streams could potentially lead to a technically feasible and commercially viable solution enabling the commercialization of the most promising of the three. The project aims to develop and assess the best solution and optimize its output. It also aims to develop an innovative new type of PV panel designed specifically for sea use and innovative ways of floating conventional panels. The first results should be available after the first year of the project. Granting the success of the project, not only will it open new possibilities for renewable energy generation for Malta and similar land-limited places, but also open a new field of research and industry in which Malta will be the front-runner.

Project Title:	Development of a Hollow Concrete Block with improved thermal properties, having same dimensions and load bearing characteristics as the traditional HCB. (HCB)
Coordinator	Ing. Renzo Curmi
Coordinating Organisation	Faculty of Engineering, UoM
Consortium	JCR Ltd., Institute of Sustainable Energy UoM
Grant Amount	€179,921

This project aims to develop an alternate to the Hollow Concrete Block (HCB) currently being used extensively in the construction industry in Malta. The proposed HCB would significantly reduce the rate of loss of heat of buildings (U-value – improved by 10 to 30%), while keeping the same dimensional and load bearing characteristics of the HCBs currently available on the local market. Low U-values reduce heating and cooling bills, improve comfort inside the building and reduce the building's carbon footprint. These aspects become more significant when one considers the sharp rise in the cost of energy over the last three years and the current discussions on climate protection targets. The need for such improvement in the insulation characteristics of the traditional HCB becomes more evident when one compares the U-values of the different building materials currently used in Malta, to the ones used in other EU countries. Additionally, this project also aims to develop thermal rendering products which can be applied over the thermal HCB to further improve the U-Value.

The initial stage of the project involves research for the innovative compositions for the development of load bearing HCBs with thermal performances superior to the traditional ones, as well as thermal rendering base coat material. The next stage involves the testing of the thermal properties of the thermal HCB and the rendering material to determine U-value (or conductivity) at different humidity levels.

An important aspect of this project is to identify a practical and cost effective way of producing the innovative HCB and thermal rendering base coat, achieved by utilizing readily available composition materials while keeping the deviation of the manufacturing process to a minimum when compared to the standard process. Once this aim is reached, the product will present a breakthrough, since its environmental and economic benefits will far outweigh the inherent price difference when compared to the traditional HCB and other conventional rendering materials.

Project Title	Improved Meshing Designs for Skin Grafting (SMESH)
Coordinator	Dr Ruben Gatt
Coordinating Organisation	Metamaterials Unit, Faculty of Science, UoM
Consortium	Mater Dei Hospital
Grant Amount	€172,944

The skin is the largest organ of the human body and covers its entire exterior. It has inherent mechanisms to regenerate and heal itself from minor wounds, however, if the skin is severely damaged, such as in the case of major burns, it will not be able to heal quickly enough and the body becomes susceptible to infections, fluid loss and serious scarring. Such areas are typically treated through a surgical intervention known as a skin grafting procedure, where a uniform layer of epidermis and dermis is shaved off from areas known as donor sites. Skin grafting poses a number of significant challenges, which include problems such as the accumulation of fluids under the grafted skin, reduced drapability around body curvatures, availability of healthy skin, a problem with major burn patients and contraction of the grafted skin.

In the present day, the challenges posed by skin grafting are surmounted to a certain extent by the insertion of vertical slits in the grafted skin, a process which is usually referred to as skin meshing. This project is based on the idea of modifying the meshing pattern in order to create superior grafts which are proposed to produce larger grafts from an equal area of donor skin and be better suited to accommodate curved parts of the body i.e. they will have a better drapability.

The modified skin graft pattern will be achieved by modifying existing skin meshers (the apparatus which produces the incisions in the grafted skin). This means that the surgical technique will remain the same and thus, there will be no need to retrain surgeons, something which is an advantage on rival technologies.

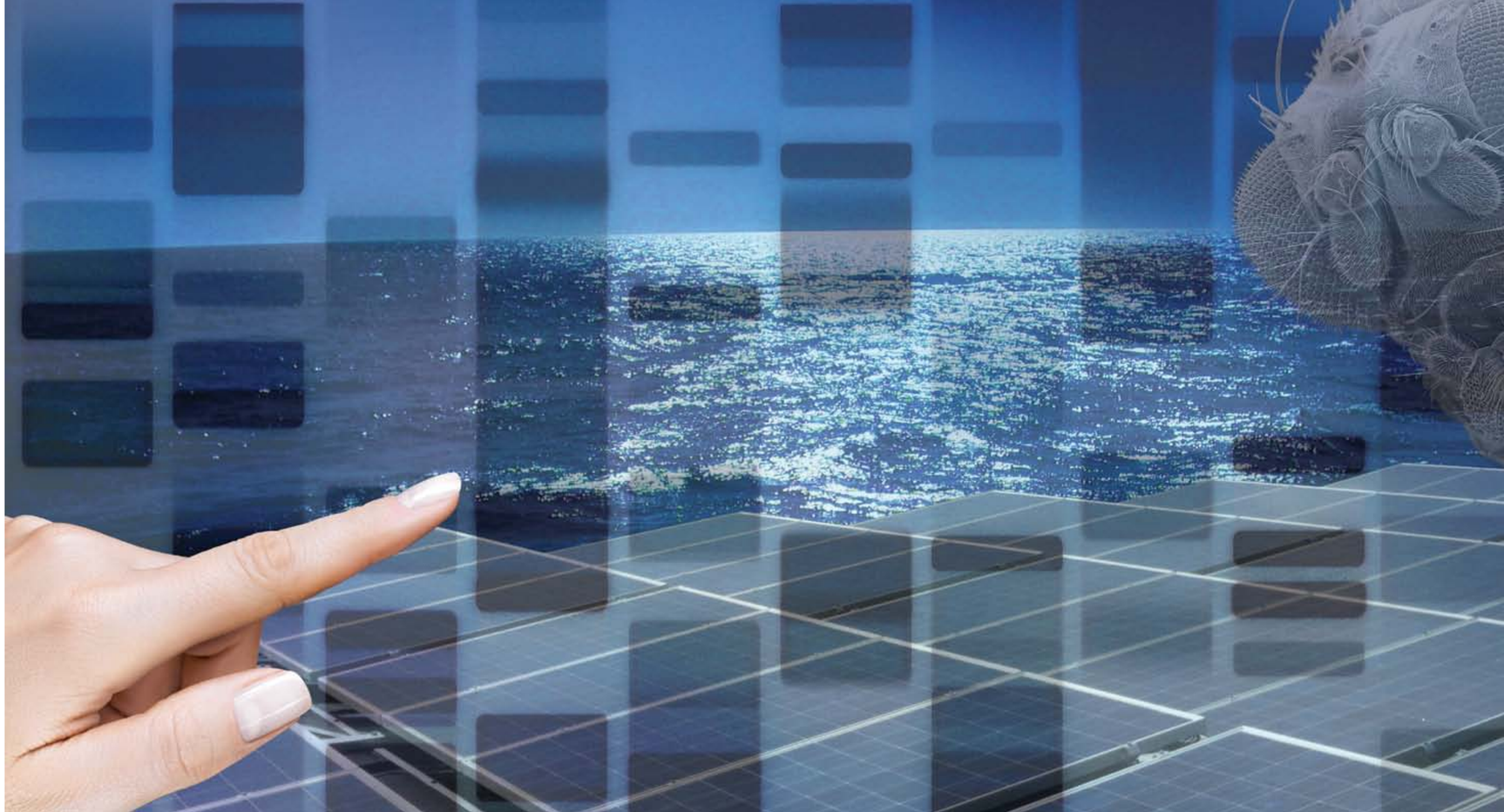
Project Title	In vivo drug discovery targeting mitochondria in animal models of Alzheimer's Disease, Parkinson's Disease and Motor Neuron Disease (MODIFLY)
Coordinator	Dr Ruben Cauchi
Coordinating Organisation	Department of Physiology & Biochemistry, UoM
Consortium	Consortium: Institute of Cellular Pharmacology Ltd.
Grant Amount	€186,128

What do Alzheimer's disease, Parkinson's disease and Motor Neuron Disease have in common? All three are among the most catastrophic of human disorders that destroy nerve cells (or neurons) responsible for our memories and for controlling our body movements. Ultimately, they erode one's independence and make life hard to bear.

It is presently known that the culprits responsible for devastating the human brains are sticky protein clumps that wreak havoc inside, and outside, neurons. In particular, these clumps attack the energy powerhouses of nerve cells, thousands of tiny organelles called mitochondria. This eventually leads to an energy blackout which translates into neuronal death and worsening of the clinical symptoms for the patient. The exact molecular mechanisms underlying this inexorable neurodegenerative process are still, however, unclear.

Unfortunately, at present there are no drugs that can either slow or halt the progression of the disease. Consequently, tackling these neurodegenerative conditions is one of the top priorities of present-day medicine. Disease animal models are vital for accelerating the discovery and investigation of drugs that halt the neurodegeneration described above. Fruit flies (Drosophila) are frequently the model of choice, not only because of their short life span, fast breeding cycles and abundant genetic tools, but also due to the fact their brain machinery closely mimics that of humans.

Earlier studies carried out at the University of Malta have robustly shown that small-molecule compounds which are particularly abundant in Mediterranean diet, as well as a specific Mediterranean alga, may hold great promise as effective drugs for neurodegenerative diseases. Thus, the R&I funded project 'MODIFLY', aims to be pioneering the use of fly models of neurodegenerative disease to validate such drug-like compounds in vivo. Importantly, the focus will be on identifying those drugs that shield mitochondria from damage by protein aggregates, followed by an investigation of the key pathways through which this is actually achieved.



Manufacturing Research Platform ERDF 083

Manufacturing is and will remain an important contributor to the Maltese economy and employment market, and has received increasing attention from government. One of the fundamental requirements is for industry to embrace R&I as a means of increasing competitiveness through improved efficiency, as well as through the development of new and improved products and processes. Energy efficiency, leveraging of ICT and innovation can all contribute to this goal.

The Manufacturing Research Platform Project managed by the Council, with the aid of ERDF funding, managed to establish a research platform in the area of manufacturing, to assist the transformation of the local industry to higher value-added activity. This was done by engaging academia, jointly with industry, to undertake three research projects related to Energy Efficiency in Manufacturing, ICT in Manufacturing and Innovation in Manufacturing. In order to identify the concerns and interests of industry, a number of industrial partners with substantial ongoing involvement in the local manufacturing industry, were consulted. These include: Andrew's Feeds, Techniplast, FXB, Toly Products Ltd., Rayair, Playmobil and Fraunhofer Institute.

The results obtained from the different projects were of a high technical level. In fact, in most cases, there were academic publications as additional deliverables to the project. The achievements were very effective and went beyond the project commitments.

Two conferences were organised to disseminate the information throughout the project. These conferences aimed at giving information about the project activities and research results among the manufacturing and research community. The attendance was a fruitful one, where leading representatives from local industries, academia and the public sector were present.

The main focus of the conferences was on the importance and benefits of Industry-Academia collaboration and how such benefits contribute to the competitive Manufacturing Industry. A number of workshops also took place, where all participants discussed and shared their views on topics related to the Manufacturing Industry. The final deliverables of the projects were presented during the second conference. Further dissemination was also catered for through the website setup for this scope. The the website provided access to information on the manufacturing research project to all interested parties.

The project's three main objectives were also reached. These were:

- To establish a Manufacturing Platform open to stakeholders from government, academia and industry interested in the manufacturing sector;
- To address three of the most pressing problems affecting the competitiveness and viability of local industry, namely: energy efficiency, exploitation of ICT to improve competitiveness and innovation in manufacturing.
- To develop a Manufacturing Research Strategy which included an analysis of the local manufacturing scenario, a roadmap to guide the undertaking of manufacturing research, including the identification of possible focus areas and the recommendations which enabled the strategic objectives to be achieved.

Manufacturing Research Strategy

The Council developed a national Manufacturing Research Strategy in collaboration with the Policy & Strategy Unit, which identified how R&I can be best used for economic growth. The Strategy also served to highlight the steps to be taken to promote and facilitate R&I in the manufacturing sector.

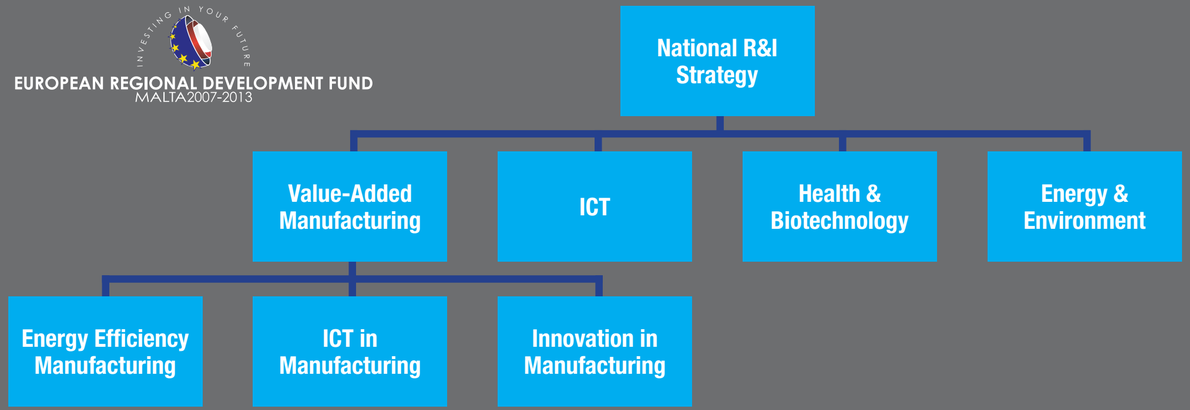
Several main points arose from the Manufacturing Strategy:

- It established a strategic direction for growth in the manufacturing sector and pointed out a clear road map of Malta's goals in the sector. This step also helped to stimulate local R&I industry growth;
- It identified weaknesses, issues and barriers and made appropriate recommendations that sync with the National Strategic Plan for R&I;
- It identified existing R&I activities in order to bring together the industry and academia;
- It assessed existing skills capacity and identified knowledge gaps and established goals

The Manufacturing Research Strategy was considered a crucial objective in the National Strategic Plan for R&I and it was drawn up after a process of consultation meetings with stakeholders in 2011. The Strategy was also approved by Cabinet in December 2012.

The recommendations included the following:

1. Innovation Villages and Innovation Island: The local communities as well as the national population can help investors trial out new technologies within a contained market. This use of communities as a controlled "technology test-bed" can help local and foreign innovators trial out and further develop their products and services. The technologies can vary from IT and Green Technologies on a village scale, up to Clinical Pharma on a national scale.
2. Technology Platforms: The establishment of a technology platform would be to help value-added manufacturers to work together in identifying and resolving challenges on a local context. They would primarily consist of independent technical and multi-disciplinary work groups set up specifically for this purpose. Examples of such platforms could be Advances Materials Platform, Renewables Platform, and Production Technology platform.
3. Shared Research Infrastructures: The establishment of a database of local Research Infrastructures would better help researchers put together research efforts. Taking the format of a virtual-network, research equipment, expertise and even research opportunities can be shared more effectively.



Commercialisation Programme

The Council has charted the way forward in R&I through the formulation of a strategic plan. Currently, a substanial effort at national level is being placed on funding R&I at the various stages of the development process, mainly through the National R&I Programme administered by The Council, and other initiatives administered by Malta Enterprise.

The Commercialisation Programme supports technology towards reaching a market in order to generate wealth, which can than be cycled back into R&I investment, making it sustainable. This programme offers funding in the form of grants to assist researchers, individuals and innovative companies to access specialist advice and services to build their skill, knowledge, networks and potential for commercialisation. The government has committed €200,000 for this funding programme.

Priority in this programme is given to technologies previously funded through the National R&I Programme. Selection and funding of projects under the programme is on a competitive basis, through the issuing of calls for proposals. Such proposals are then evaluated by the Council and its agents, in accordance with the procedures and criteria.

The Programme is aimed at assisting participants in evaluating their commercialisation options based on their specific technologies and to develop a solid market entry plan that will allow the conversion of their Intellectual Property (IP) into a commercial venture. Its aim is to address gaps that exist in the current commercialisation status of the product/process or service by allowing the participant to prepare a compelling case for the right channel, and develop a clear understanding of potential customers, partners, investors and competitors.

In addition to the above funded activities, the Council, together with its agents, may provide workshops, individual mentoring and consulting sessions, as well as access to events at which consortia can present their technologies to the likes of investment communities, potential strategic partners and licenses.

By the end of the Programme, the consortium should have a solid understanding of the commercial value of their technology, and also how it can be positioned in the current market landscape.

To date, 3 projects have been chosen to be supported by the 2012 Commercialisation Programme with the total grant amount of €200,000.

Project Title	International Commercialisation of the HOTER wastewater recycling process for hotels and large commercial establishments - HOTER
Coordinator	Ing. Marco Cremona
Coordinating Organisation	HOTER Ltd.
Grant Amount	€60,000

HOTER, a proprietary innovative wastewater recycling process, was designed to eliminate the inherent inefficiencies of conventional water supplies by providing water of the right quality, on-site and on demand at a fraction of the cost of conventional sources. The appeal of such process has been such that the inventor of the process achieved international accolades for the business idea.

Although HOTER Ltd. has managed to have its first installation in Malta, the market for HOTER lies beyond Malta's shores. HOTER Ltd. has established that the local market is not ideal for the commercialisation for HOTER due to the low tariff structure for the supply of water. As a result, the commercial benefits of taking to market the HOTER process only come to fruition in international markets. Nevertheless, it is believed that HOTER has enormous international potential, also confirmed by the fact that HOTER was chosen as one of three finalists in the prestigious CNBC Good Entrepreneur Competition in 2009.

The HOTER process treats wastewater and produces safe useable water. The process, therefore, provides an alternative to conventional water sources, such as municipal water and, in the case of Malta, desalination through Reverse Osmosis. HOTER has the edge over these conventional sources because there are no losses in distribution with HOTER, because the water is produced in-house, unlike municipal water; there are no issues with the sustainability of the national water resources with HOTER, unlike municipal water which is mainly sourced from groundwater and unlike desalination, HOTER generates two benefits from a single process – it treats wastewater and produces safe useable water.

HOTER project, coordinated by Ing. Marco Cremona, will utilise the The Malta Council for Science and Technology Commercialisation Grant to carry out market research to identify key (international) markets for the HOTER process and develop and implement a business strategy so as to exploit the international potential of the invention. HOTER Ltd. will also engage specialists to determine the patenting potential of HOTER.

Project Title	Market Research for 'value-added' auxetic foams - FOAMS
Coordinator	Dr Reuben Gatt
Coordinating Organisation	University of Malta
Grant Amount	€69,968

Auxetic foams behave differently to conventional foams and it is expected that the enhanced behaviour can be exploited commercially. While the technology is in a fairly advanced state of development, a single market has not yet been identified, and therefore nor has a product range. This has been a hurdle to date, due to the large number of different applications possible: protective equipment, cushioning, filters and sound-proofing.

Auxetic materials have unusual mechanical and thermal properties, so they react opposite to what one might expect. For example, when stretched, they become thicker. One type of material developed is auxetic foam; however, this foam can be used in a variety of different products in different sectors. The technology developed under the National funds for R&I involves a novel way of converting conventional to auxetic foam and entails the use of solvent instead of heat. This is advantageous in terms of product cost, as the process is more energy efficient and solvents used may be re-used several times.

The process which was developed can be divided into three steps:

- Wetting foam with appropriate solvent
- Compressing the foam volumetrically by 30%
- Allowing the foam to dry well

The principle idea behind FOAMS C project, coordinated by Dr Ruben Gatt, is to assist the University of Malta in finding a market for auxetic foam technology. Furthermore, the auxetic foams which may be produced by the technology owned by the University of Malta, may be employed to produce tuneable filters, wherein the pore size may be controlled by the application of a stress. Moreover, such auxetic filters will have the added advantage that they can be easily declogged by the application of a stress, facilitating cleaning and re-use. The findings obtained from this project will lead the University to define a range of products and set up a consortium in order to enter the market. In addition, any Intellectual Property (IP) worth protecting will be identified and protected.

Project Title	Pervasive Nursing and doctoral Assistant - PINATA
Coordinator	Dr Alexei Dingli
Coordinating Organisation	University of Malta
Grant Amount	€67,954

PINATA C, coordinated by Dr Alexei Dingli, is based on providing monitoring for Ambient Assisted Living in the Health and Remote Home Care sectors. PINATA is a fully automated system which can be operated 24/7 to localise patients through a proximity card or an active wrist band uses technologies such as wi-fi, cameras and intelligent systems. It can also retrieve information on the fly in order to act as a medical tool and assist in the administration of medicines using RFID.

The system has been developed to issue alerts to hospital or nursing staff in the event that a patient needs assistance, without the need of having a person constantly watching through cameras. This eliminates issues related to privacy and high monitoring staff costs, allowing staff to be better equipped to improve the quality of care of patients without increasing the cost. While the original idea came from work being carried out by Fraunhofer, a further challenge was to be surmounted, as their research idea focused on developing high tech systems which were high in cost. A PINATA prototype which stimulated patient movement with active cards was developed and installed at St. James Hospital where it was validated over 6 months utilising existing wi-fi hotspots.

Such monitoring is of a low cost, flexible, modular solution which can easily be adapted and reduce health care costs while improving the quality of care. The main outcomes of the project will be the following: to define a business model and market entry plan, to package the product and promote with potential market partners or clients overseas, to develop a product pipeline for future versions of the product based on market feedback and to identify any IP worth protecting and to protect it. It is foreseen that 1 patent will be registered.

cost
EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY

Dr Janet Mifsud

Dr Anne McElhatton

Prof Joe Grima

Mr Larry Shoemake

Dr Claire Bellia

Dr Maria Attard

Prof Giuseppe deGiovanni

Dr Helen Grech

Since the early 70s, the European Cooperation in Science and Technology programme (COST) has brought researchers from various countries together to promote transnational coordination of nationally-funded research. This is a unique approach which enables the sharing of concepts and scientific developments across 35 European countries and has even attracted the participation of many non EU countries. Funded through the EU's Research and Technological Development Framework Programmes, COST supports the organisation of meetings, scientific missions, and training schools for researchers at all levels and experts in various fields working within academia and industry.

There are three main features that make COST a unique tool:

1. Capacity: COST acts to connect high-quality scientific minds across Europe and internationally, and enables the creation of communities of research in various fields;
2. Networking: This networking platform allows researchers to meet and build consortia that can lead to the submission of transnational project proposals for funding from the EU's Framework Programme. This networking is interdisciplinary, facilitating the participation from researchers outside the academic community, such as SMEs, public entities and NGOs.
3. Impact: COST enables the formulation of publications and promotes the dissemination of information that increases impact on policy-makers and decision-making bodies.

Dr. Janet Mifsud, assisted by Dr. Claire Belia, is the COST National Contact (CNC) for COST in Malta and also represents Malta in the Committee of Senior Officials (CSO). The Council has appointed Domain Committee (DC) representatives that represent Malta in the following Domains:

- Biomedicine and Molecular Biosciences (BMBS) - Prof Giuseppe deGiovanni;
- Chemistry and Molecular Sciences and Technologies (CMST) – Prof Joe Grima;
- Earth System Science and Environmental Management (ESSEM) – Prof Ray Ellul;
- Food and Agriculture (FA) - Dr Anna McElhatton;
- Forests, their Products and Services (FPS) – Mr Larry Shoemake;
- Individuals, Societies, Cultures and Health (ISCH) - Dr Helen Grech;
- Information and Communication Technologies (ICT) – Eng Saviour Zammit;
- Materials, Physical and Nanosciences (MPNS) – Prof Luciano Mule Stagno;
- Transport and Urban Development (TUD) - Dr Maria Attard;
- Transdomain Proposals Standing Assessment Body (TDP-SAB) - Dr Vincent Buhagiar;

COST operates through Actions that are grouped under the 10 domains depending on the area of research they cover. Each Action lasts for four years and requires a minimum participation of 5 COST Member countries. To retain the bottom-up approach, proposals for the creation of an Action can be submitted by any type of institution through a bi-annual open call for proposals. These are then evaluated by the relevant DC or Trans-Domain Proposal Standing Assessment Body, through a number of steps, including peer-review of full proposals and organisation of oral presentations (DC Hearings). The CSO is ultimately responsible for deciding on whether or not to fund the Actions, a decision which takes about 8 months from the proposal collection date. Following approval by the CSO, the Action starts within the next 3 months. Researchers from different countries, who were not involved in the original consortium can also apply to join the COST Action, once it has been approved by CSO, by submitting applications to their CNC.

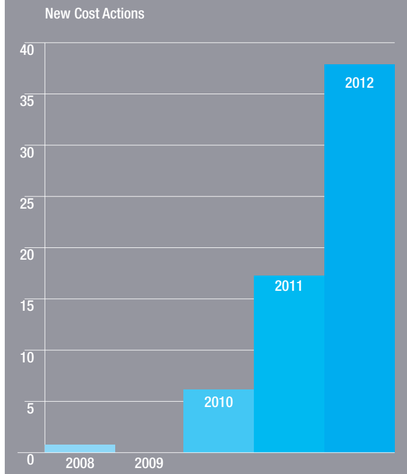
Require minimal administration, Maltese researchers can apply for COST by completing a simple application form available on the Council's website. These applications are then evaluated by the CNC, the relevant Domain Representative, and the Council's Executive Board. Once the researcher's application is approved, Malta formally accepts the memorandum of understanding of the COST Action and the participant's details are uploaded on the COST action website. The participant is then nominated as an MC member. S/he is then able to participate fully in the COST Action and its working groups, being reimbursed for travel and subsistence expenses related to the attendance of COST meetings. Two representatives from each COST country can be represented on the MC of each COST Action, as well as a number of substitute MC members can be nominated. The activities of each Action are set-up and organised by the MC which is appointed once the Action is launched. Presently, the COST Office and European Social Fund (ESF) support services are responsible for both the administration and scientific coordination of the COST Actions and the handling of reimbursement procedures.

There are four main Action activities which are financed by COST and which researchers can participate in:

1. Meetings: The MC organises meetings in any of the COST countries participating in the Action. These include MC meetings, Working Group meetings, Workshops, and Conferences;
2. Short-term Scientific Missions: Scientists participating in a COST Action have the opportunity to participate in missions or exchange visits to institutions or laboratories in another COST country. These are organised in order to allow participants to build collaborations, learn new techniques, or access instruments or methods not available in their country. These are particularly targeted to early stage researchers;
3. Training Schools: These activities allow training or re-training for researchers, particularly those at an early stage of their career, in a new emerging subject relevant to the Action. These are usually hosted by institutions or laboratories which have the equipment or know-how to support the training;
4. Dissemination, Publications: The COST Office offers funding for publications, electronic media, news, events, success story releases, and e-mail notifications. The dissemination of information on Action activities is key to ensure awareness of these activities by international scientific communities and to reach policy-makers and decision-making bodies.

New Malta Participation in COST actions in 2012

In 2012 Malta began to participate in 38 new COST Actions with the new involvement of 56 researchers, bringing a total of 82 new Malta participations in COST Actions since 2010. These covered all the domains described below. Researchers from Malta have also contributed to COST publications and to the organization of training schools and conferences. The following sections gives a short description of the 38 new COST Actions Malta began to participate in throughout 2012, as well as details of two COST actions where an additional MC member was appointed in 2012. In addition, Malta was the host of four COST events in 2012 as described below.



BMBS Biomedicine and Molecular Biosciences

BM 1105 GnRH deficiency: Elucidation Of The Neuroendocrine Control Of Human Reproduction: Prof Josanne Vassallo, Dr Robert Formosa, Faculty of Medicine & Surgery, University of Malta

The Action will investigate the neuroendocrine mechanisms that are integrated at the hypothalamic level and regulate the complex organ network controlling reproduction. Implicated genes/pathways have been identified through genetic investigations of rare patients with isolated GnRH deficiency who display reproductive failure. Despite knowledge of 16 disease genes, multiple additional genes/mechanisms remain undiscovered, requiring higher-order collaborations for full elucidation. European leadership in reproductive research/medicine will be augmented by the Action's anticipated benefits which includes collaboration among previously competing groups; shared use of cutting-edge genetic methodologies; and recruitment/training of young investigators.

BM 1106 The Genes in Irritable Bowel Syndrome Research Network Europe (GENIEUR): Dr Mario Vassallo, Department of Medicine, Mater Dei Hospital

Irritable bowel syndrome (IBS) is a highly prevalent functional gastrointestinal (GI) disorder with a major impact not only on the healthcare system but also on the patient's quality of life. (Epi-) genetic factors contributing to the pathogenesis of IBS have not further been specified and knowledge is still poor. The search for (epi-) genetic factors in IBS is hampered by the fact that only a few groups worldwide have just recently started to perform genetic analyses in small cohorts. Consequently, contradictory results have been reported due to low statistical power. This COST Action will foster the establishment of a pan-European, interdisciplinary network with the major goal being the creation of guidelines for patient / control recruitment as well as phenotypic characterization by defining quantitative traits as intermediate phenotypes for the following identification of genetic factors in the pathogenesis of IBS. This Action will represent a solid basis for novel diagnostic and therapeutic approaches and will significantly improve the insight into IBS pathophysiology, and, hence, help identify new targets for treatment with the ultimate goal of increasing quality of life of affected patients.

BM 1201 Developmental Origins of Chronic Lung Disease: Dr Cynthia Jones, Dr Brendan Caruana Montalto, Department of Medicine, Mater Dei Hospital

Chronic lung diseases (CLD) are a major cause of death in the Western world but curative therapies do not exist. Recent studies indicate that the risk to develop CLD is modified by early exposures during critical developmental windows. This concept opens unique opportunities for the pre- or early postnatal modification of later disease risks, but the underlying molecular mechanisms are largely unexplored. To close this gap, a highly cross-disciplinary approach involving scientists from basic and clinical research is required. Several European institutions study early origins of CLD with adequate national funding, but these efforts are not integrated and lack a comprehensive platform for synergistic collaboration. This COST Action will allow the creation of a coordinated and highly translational research program. This will bring forward a novel understanding of CLD pathogenesis and build the prerequisites for the successful development of early interventions and/or innovative therapies.

FA
Food and Agriculture

FA 1105 Towards a Sustainable and Productive EU Organic Greenhouse Horticulture: Mr Mario V. Balzan, Institute of Applied Science, Malta College of Arts, Science and Technology

Organic greenhouse horticulture (OGH) (i.e the production in greenhouses or polytunnels) in the EU should improve its sustainability, production and productivity. Emissions of nutrients and its footprint should be reduced. Production and productivity are too low to meet the demand of the society. The scientific challenges are to design sustainable irrigation and fertilization strategies, to reveal the mechanisms of resilience, robustness and suppressiveness for the management of pests and diseases, to integrate crop management, energy saving, renewable energy sources and new techniques and combinations with other activities and business to realize climate neutral production. This COST Action coordinates, strengthens and focuses the activities of the partners. It improves the communication, offers a common agenda, more and better knowledge for less money, sharing new techniques, an improved dissemination to OGH, basis for further collaboration in joint research proposals and support in the development of EU standards for OGH.

FA 1202 A European Network For Mitigating Bacterial Colonisation and Persistence On Foods and Food Processing Environments: Dr Vasilis Valdramidis, Department of Food Studies & Environmental Health, University of Malta

Persistent bacteria on foods and processing sites are of great concern in the food industry causing continuous recontamination and safety problems. Removal of persistent bacteria and biofilms requires costly efforts leading to lost productivity and environmental issues. There is a need to combine and re-evaluate current scientific knowledge on persistence of bacteria and to introduce new engineering approaches for controlling pathogens. The objective of this Action is to enable the development/promotion of targeted solutions for controlling risks associated with persistent bacteria and biofilms in the food industry. It involves a multidisciplinary network which will expand our knowledge on colonization and persistence, and validate/identify appropriate methods for monitoring colonisation patterns. Known and emerging intervention methods will be explored and re-evaluated. The knowledge obtained will be promoted to the relevant food industries and the scientific community.

FA 1208 Pathogen-Informed Strategies for Sustainable Broad-Spectrum Crop Resistance: Mr Mark Causon, Ms Katarina Kohutova, Europe Direct Malta

Restrictions on the use of pesticides mean that there is a need for new, sustainable pest control methods. Exploiting natural plant disease resistance is highly attractive, as it reduces the dependency on pesticides. However, the use of crop resistance is bound by two factors: the limited number of resistance sources against important diseases in major crops and the frequent breakdown of resistance due to rapid evolution of pathogens. Both issues can now be addressed by innovative and powerful approaches developed on the basis of recent and unprecedented progress in research on plants and their pathogens fostered by the revolution in next generation sequencing and the investigation of pathogen effector proteins. The challenge is to implement these novel pathogen-informed strategies for the generation of sustainable broad-spectrum crop resistance.

Hence, this COST Action aims to create a European network of scientists and breeders for the translation of breakthroughs in plant-pathogen interaction research into effective breeding strategies for durable disease resistance in cereal and Solanaceous crops which are of primary importance for European agriculture.

FPS
Forests, their Products and Services

FP 1204 Green Infrastructure Approach: Linking Environmental with Social Aspects in Studying and Managing Urban Forests: Dr Joseph Buhagiar, Department of Biology, University of Malta

Green Infrastructure (GI) has recently gained prominence as a planning tool at regional and local levels. GI provides a range of ecosystem services, and new initiatives can build on state-of-the-art research and on delivery mechanisms such as urban forestry (UF). However, greater attention is needed on integrating the environmental and social benefits produced, particularly in the context of climate change adaptation and mitigation. This Action aims to: increase the understanding of the role of UF in the context of GI from a scientific and a socio-economic perspective, in terms of the ecosystem services provided to people and to the urban environment; to identify priorities and challenges for future research in the field; to provide indicators and/or thresholds to be included by policy makers in local, national or international regulations about GI and UF; to develop guidelines for GI planners and managers on how to implement GI approaches with an emphasis on linking the environmental and social services of UF.

Undertaking an Action on this topic is crucial because of the diversity of GI and UF approaches at European level and because of the need to create a structured interaction among scientists, citizens, policy makers and managers.

ESSEM
Earth System Science and Environment Management

ES 1104 Arid Lands Restoration and Combat of Desertification: Setting Up a Drylands and Desert Restoration Hub: Mr Daniel Sultana, Malta Environment and Planning Authority

There is great need to restore existing despoiled drylands and to combat increasing desertification. Restoring habitats improves biodiversity, increases carbon sequestration, enhancing the quality of life for people. An essential measure is the planting of and reestablishment of vegetation. The successful establishment of vegetation in arid areas is complex requiring the multi-disciplinary skills of arid land experts with various capabilities (soils, hydrology, ecology etc.) However, vegetation restoration techniques in arid areas requires review and development.

This Action is required as access to information is acutely limited, disjointed and new techniques are available and not universally tested. Furthermore, it aims to create an 'Arid Lands Restoration Hub' to provide the science and practical guidance for dryland restoration and combat of desertification through a dynamic and productive international network of initially 29 participants from 15 COST countries and 2 partners from outside Europe.

ES 0905 Basic Concepts for Convection Parameterization in Weather Forecast and Climate Models: Dr Charles Galdies, Institute of Earth Systems, University of Malta

The main objective of the Action is to provide clear theoretical guidance on convection parameterizations for climate and numerical weather prediction models. It achieves this objective by creating a core theoretical group to address the fundamental issues of convection parameterization. Furthermore, it proposes a clear pathway for more coherent and effective parameterizations by integrating existing operational schemes and new theoretical ideas. Proposed alternative approaches intend to replace conventional tuning-based approaches.

The Action responds particularly to urgent needs which have arisen from increasing the resolutions of forecast models. In these new-generation models, not only the traditional approximations break down, but associated physical processes become increasingly complex. Thus, the parameterization must be extensively re-formulated with more sophisticated physics under new constraints. The Action contributes to reduce uncertainties in weather forecasts and climate projection by overcoming the often weak physical basis of the current parameterizations. Particular benefits will be in prediction of highly unusual extreme weather events, such as local heavy precipitation, tropical cyclone trajectories etc.

ES 1106 Assessment of EUROpean AGRIculture WATer Use And Trade Under Climate Change (EURO-AGRIWAT): Dr. Eman Calleja, Institute of Applied Sciences, Malta College of Arts Sciencce and Technology

The COST Action EURO-AGRIWAT will focus on the assessment of water footprint (WF) and virtual water trade (VWT) of key food and no-food agricultural products, including their uncertainties, as well as scenarios concerning WF and VWT under future climatic conditions. The use of advanced tools and data such as remote sensing, updated climatic databases, climatic projections/scenarios and agrometeorological models represents the base of the activity. The use of such instruments will allow a detailed analysis of interactions between crops, climate and management that will be taken into account in the WF assessment.

An important component of the Action will be the preparation and dissemination of recommendations and guidelines for enabling a more efficient water resource management in relation with agricultural activities under climate change and variability. The framework of a COST Action represents the most suitable way for facing the outstanding and multi-faceted problem of sustainable water use, being characterized by a non-competitive and interdisciplinary environment of high scientific level.

ES 1206 Advanced Global Navigation Satellite Systems Tropospheric Products For Monitoring Severe Weather Events And Climate (GNSS4SWEC) Dr Charles Galdies, Institute of Earth Systems, University of Malta

Global Navigation Satellite Systems (GNSS) have revolutionised positioning, navigation, and timing, becoming a common part of our everyday life. Aside from these well-known civilian and commercial applications, GNSS is now an established atmospheric observing system which can accurately sense water vapour, the most abundant greenhouse gas, accounting for 60-70% of atmospheric warming.

This Action will address new and improved capabilities from concurrent developments in both the GNSS and meteorological communities. For the first time, the synergy of the three GNSS systems (GPS, GLONASS and Galileo) will be used to develop new, advanced tropospheric products, exploiting the full potential of multi-GNSS water vapour estimates on a wide range of temporal and spatial scales, from real-time monitoring and forecasting of severe weather, to climate research. In addition the action will promote the use of meteorological data in GNSS positioning, navigation, and timing services.

MPNS
Materials, Physics and Nanosciences

MP 1204 TERA-MIR Radiation: Materials, Generation, Detection and Applications: Dr Louis Zammit Mangion, Prof Charles Sammut, Department of Physics, University of Malta

The main objective of this action is to advance novel materials, concepts and device designs for generating and detecting THz (0.3 THz to 10 THz) and Mid Infrared (10 THz to 100 THz) radiation using semiconductor, superconductor, meta-materials and lasers and to beneficially exploit their common aspects within a synergetic approach. We shall use the unique networking and capacity-building capabilities provided by the COST framework to unify these two spectral domains from their common aspects of sources, detectors, materials and applications.

The main emphasis will be on new fundamental material properties, concepts and device designs that are likely to open the way to new products or to the exploitation of new technologies in the fields of sensing, healthcare, biology, and industrial applications. End users are: research centres, academic, well-established and start-up Companies and hospitals.

MP 1209 Thermodynamics in the Quantum Regime: Dr Andre Xuereb, Faculty of Science, University of Malta

Modern technologies, that now miniaturise to the nanoscale and into the quantum regime, have the potential to revolutionise many upcoming socio-economic challenges. Historically, thermodynamics has been highly successful, enabling the development of technologies that changed our lives, ranging from fridges to jet planes. While these applications involve macroscopic systems, described accurately by the laws of classical physics, little is known about the applicability of standard notions of thermodynamics in the quantum regime.

The aim of the Action is to establish and grow the scientific basis that underpins future thermodynamic technologies at the nanoscale. Central for this is the understanding of fundamental thermodynamic processes for small ensembles, particularly in the quantum regime, in- and out-of equilibrium. These are topics of the emerging cross-over field, “quantum thermodynamics”, which is overwhelmingly pioneered by researchers currently located in Europe, many at an early stage in their careers.

However, this research across Europe is fragmented and needs large-scale coordination to path the way for swift progress.

This Action is designed to bring researchers from different backgrounds together, foster interdisciplinary exchange and coordinate domestically funded European research to create an internationally leading knowledge base in this emerging and technologically important field.

MP 1210 The String Theory Universe, Dr Ivan Debono, International Research Fellow, European Space Agency

Although String Theory has been around for more than forty years, it has never been so important for physical reality as it is now, due to its novel outstanding applications to different areas of Physics and Mathematics.

While the Large Hadron Collider (LHC) narrows down the experimental limits on supersymmetric particles and satellite missions such as WMAP and PLANCK probe the very early Universe, this Action aims at creating a strong European Network focused on fundamental, forefront research exploring the role played by String Theory in Particle Physics, Cosmology and Condensed Matter Physics.

ICT
Information and Communication Technology

IC 1203 European Network Exploring Research into Geospatial Information Crowdsourcing: software and methodologies for harnessing geographic information from the crowd (ENERGIC) Dr Maria Attard, Institute of Sustainable Development, Dr Matthew Montebello, Department of Intelligent Computer Systems, University of Malta

This Action aims to go beyond the nationally oriented memory studies that tend to reify the bond between culture, nation and memory. Instead we investigate the transcultural dynamics of memory in Europe today. Studying how memories of the troubled twentieth century are transmitted and received across Europe, the Action explores the tension between attempts to create a common European memory, or a unitary memory ethics, on the one hand and numerous memory conflicts stemming from Europe’s fragmentation into countless memory communities on the other.

Drawing on recent theoretical insights that point to the importance of memory migration, mediation and new media the Action seeks to develop new methods for studying and comparing effects of memory transmission over cultural borders. Furthermore, it aims to develop European memory studies theoretically and methodologically by focusing on transculturality, agency and reception - and to contribute to finding ways of accommodating memory conflicts.

IC 1201 Behavioural Types for Reliable Large-Scale Software Systems (BETTY): Dr Adrian Francalanza, Department of Computer Science, University of Malta

Modern society is increasingly dependent on large-scale software systems that are distributed, collaborative and communication-centred. Correctness and reliability of such systems depend on compatibility between components and services that are newly developed or may already exist. The consequences of failure are severe, including security breaches and unavailability of essential services. Current software development technology is not well suited to producing these large-scale systems, because of the lack of high-level structuring abstractions for complex communication behaviour.

This Action will use behavioural type theory as the basis for new foundations, programming languages, and software development methods for communication-intensive distributed systems. Behavioural type theory encompasses concepts such as interfaces, communication protocols, contracts, and choreography. As a unifying structural principle it will transform the theory and practice of distributed software development.

IC 1205 Computational Social Choice: Dr Patrick J Camilleri, Faculty of Education, University of Malta; Dr Ernest Cachia, Department of Computer Information Systems, University of Malta

The COST Action on Computational Social Choice will address the fundamental new challenges in the design and analysis of methods for collective decision making raised by recent technological advances in areas such as social networks, electronic commerce, webpage ranking, and e-governance. Computational Social Choice is a novel and innovative research trend that is now gathering substantial momentum, especially in the European research arena. It combines methods from Computer Science with insights from Economic Theory.

The Action will provide a much needed framework for coordinating research efforts in this important new field at the European level. The scientific programme will focus on four thematic areas: voting and elections, fair division, information merging, and matching mechanisms. In organisational terms, the Action will particularly emphasise the close involvement of Early-Stage Researchers.

IC 1206 De-identification For Privacy Protection In Multimedia Content: Prof Joseph Cannataci, Department of Information Policy & Governance, University of Malta

De-identification in multimedia content can be defined as the process of concealing the identities of individuals captured in a given set of data (images, video, audio, text), for the purpose of protecting their privacy. This will provide an effective means for supporting the EU’s Data Protection Directive (95/46/EC), which is concerned with the introduction of appropriate measures for the protection of personal data. The fact that a person can be identified by such features as face, voice, silhouette and gait, indicates the de-identification process as an interdisciplinary challenge, involving such scientific areas as image processing, speech analysis, video tracking and biometrics. This Action aims to facilitate coordinated interdisciplinary efforts (related to scientific, legal, ethical and societal aspects) in the introduction of person de-identification and reversible de-identification in multimedia content by networking relevant European experts and organisations.

IC 1207 PARSEME: PARSing and Multi-word Expressions. Towards Linguistic Precision And Computational Efficiency In Natural Language Processing: Ms Claudia Borg, Institute of Linguistics, University of Malta; Dr Mike Rosner, Department of Intelligent Computer Systems, University of Malta

The Action, PARSEME, aims at increasing and enhancing the support of the European multilingual heritage from Information and Communication Technologies (ICT). This general aim is addressed through improving linguistic representativeness, precision and computational efficiency of Natural Language Processing (NLP) applications.

The Action focuses on the major bottleneck of these applications: Multi-Word Expressions (MWEs), i.e. sequences of words with unpredictable properties such as "to count somebody in" or "to take a haircut". A breakthrough in their modelling and processing can only result from a coordinated effort of multidisciplinary experts in different languages. Fourteen European languages will be addressed from a cross-theoretical and cross-methodological perspective, necessary for coping with current fragmentation issues. Expected deliverables include enhanced language resources and tools, as well as recommendations of best practices for cutting-edge MWE-aware language models.

The Action will lead to a better understanding of the nature of MWEs. It will establish a long-lasting collaboration within a multilingual network of MWE specialists. It will pave the way towards competitive next generation text processing tools which will pay greater attention to language phenomena.

ISCH
Individuals, Societies, Cultures and Health

IS 1105 NETwork of experts on the legal aspects of MARitime SAFEty and security (MARSAFENET): Capt Anand Dayal, Maritime Institute, Malta College of Arts, Science and Technology

Maritime safety and security have become matter of concern for many States and for the international community as a whole. However, the existing international legal framework does not yet recognize maritime safety and security as specific and autonomous legal regimes, and the practice also mirrors the weakness and the fragmentation existing in the field. This Cost Action will take an in-depth look at current urgent maritime matters focusing on four main issues: i.e., shipping and marine environmental protection, new developments of economic activities at sea, maritime international security and border surveillance and, finally, protection of fragile and semi-enclosed seas.

The Action aims to bring together experts in international law of the sea in order to increase the knowledge on these topics and to develop a common conceptual and methodological framework with the goal of contributing to filling the above-mentioned gaps and of transforming scientific results into feasible solutions for ensuring safety and security at sea. The Action also is intended to foster the identification and exploitation of synergies between EU policies on maritime safety and security.

IS 1106 Offender Supervision in Europe: Dr Sandra Scicluna, Department of Criminology, University of Malta; Ms Mariella Camilleri, Department of Probation and Parole, Ministry of Justice, Dialogue and the Family

Offender supervision in Europe has developed rapidly in scale, distribution and intensity in recent years. However, the emergence of 'mass supervision' (i.e. in the community) has largely escaped the attention of legal scholars and social scientists more concerned with the 'mass incarceration' reflected in prison growth. As well as representing an important analytical lacuna for penology in general and comparative criminal justice in particular, the neglect of supervision means that research has not delivered the knowledge that is urgently required to engage with political, policy and practice communities grappling with delivering justice efficiently and effectively in fiscally straitened times, and with the challenges of communicating the meaning, legitimacy and utility of supervision to an insecure public. This Action aims to remedy these problems by facilitating cooperation between institutions and individuals in different European states (and with different disciplinary perspectives) and will thus provide a European forum on offender supervision for academics, policy makers, practitioners and interested citizens.

IS 0907 Childbirth Cultures, Concerns, and Consequences: Creating a Dynamic EU Framework For Optimal Maternity Care: Ms Marika Connor, Department of Primary Health, Ministry for Health, the Elderly and Community Care; Dr Rita Borg Xuereb, Department of Midwifery, University of Malta

The main objective of the Action is to advance scientific knowledge about ways of improving maternity care provision and outcomes for mothers, babies and families across Europe by understanding what works, for who, in what circumstances , and by identifying and learning from the best.

Around 4.7 million European women experience childbirth annually. Optimal maternal and infant health is critical to societal well-being. Survival rates have improved, but there are now concerns about iatrogenic morbidity. There are significant cross-EU differences in maternity care cultures, philosophies, organisation, uptake, and outcomes.

This Action will advance scientific knowledge about ways of improving maternity care provision and outcomes by examining what works, for who, in what circumstances, and by identifying and learning from the best. The work will include an examination of first trimester prenatal diagnosis, routine intrapartum interventions for low risk women, and care for migrant women.

IS 1104 The EU in the New Complex Geography of Economic Systems: Models, Tools and Policy Evaluation: Prof Joseph Falzon, Dr Frank Bezzina, Faculty of Economics, Management & Accountancy, University of Malta.

The uneven geographical distribution of economic activities is a huge worldwide challenge. For the EU regions this is shown by the deep differences within and across nations. Spatial inequalities are evolving through time following complex patterns determined by economic, geographical, institutional and social factors. The New Economic Geography approach, which was initiated by P. Krugman in the early 1990's, describes economic systems as very simplified spatial structures.

The Action aims at developing a more sophisticated modelling of the EU visualised as an evolving trade network with a specific topology determined by the number and strength of national, regional and local links. Economic policies should be specifically designed to take into account this pervasive network structure assessing the position of backward locations within the network and focussing on instruments that favour interconnections. The expected results will provide a basis for an improved evaluation of such policies, in particular for the European Cohesion policy, considering their impact on the welfare level of EU citizens and its geographical distribution.

IS 1202 Dynamics of Virtual Work: Dr Mark Micallef Department of Computer Science, University of Malta, Dr Anna Borg, Centre for Labour Studies, University of Malta; Dr Patrick Camilleri, Mathematics, Science & Technical Education, University of Malta

ICTs have had a major impact on the content and location of work. Digitisation of information has transformed labour processes whilst telecommunications have enabled jobs to be relocated globally. But ICTs have also enabled the creation of entirely new types of 'digital' or 'virtual' labour, both paid and unpaid, shifting the borderline between 'play' and 'work' and creating new types of unpaid labour connected with consumption and co-creation of services. This affects private life as well as transforming the nature of work. Because of the gender division of labour, this affects women and men differently.
The changing geography of virtual work and the emergence of new value-generating virtual activities have major implications for economic development, skills and innovation policies. However these are poorly understood because they have been studied in a highly fragmentary way by isolated researchers.

This Action will distil knowledge to enable policymakers to separate facts from hype and develop effective strategies to generate new employment and economic development in Europe. It will bring together experts in the fields of communications, innovation, management, digital media, creative industries, technology, employment, economics, sociology, geography, gender studies and cultural studies to consolidate theory, map this emerging field, support early stage researchers and develop new research agendas.

IS 1203 Transcultural Migration: Dr Simon Mercieca, Mediterranean Institute, University of Malta

This Action aims to go beyond the nationally oriented memory studies that tend to reify the bond between culture, nation and memory. Instead we investigate the transcultural dynamics of memory in Europe today. Studying how memories of the troubled twentieth century are transmitted and received across Europe, the Action explores the tension between attempts to create a common European memory, or a unitary memory ethics, on the one hand and numerous memory conflicts stemming from Europe's fragmentation into countless memory communities on the other.

Drawing on recent theoretical insights that point to the importance of memory migration, mediation and new media the Action seeks to develop new methods for studying and comparing effects of memory transmission over cultural borders. The Action aims to develop European memory studies theoretically and methodologically by focusing on transculturality, agency and reception - and to contribute to finding ways of accommodating memory conflicts.

IS 1205 Social Psychological Dynamics Of Historical Representations In The Enlarged European Union Dr Emmanuel Buttigieg, Department of History, University of Malta; Dr Gordon Sammut, Department of Psychology, University of Malta

Social representations of history are vital to form a group's identity. They have a wide social and political impact as they provide some of the cultural contents that accompany identity changes following societal transformations. In Europe, these representations are fragmented between nations or ethnic groups. They elicit group-based emotions that influence behaviours and may lead to intergroup conflicts or reconciliation

The aim of the COST Action is to advance knowledge on the role played by social representations of history in processes of ethnic, national, and European identities construction and intergroup conflicts. It will coordinate research on the psychological antecedents of lay representations of history; their content and structure; their transmission through history textbooks and other media; and 4) their social psychological effects in shaping attitudes.

The Action will stimulate scientific cooperation among social psychologists and historians sharing an interest for history education from a wide range of countries. This will be done through four Working groups, two international conferences, Short-Term Scientific Missions, a summer school and a dedicated website. The Action will have an impact in both scientific and public domains through academic and public dissemination.

IS 1208 Collaboration of Aphasia Trialists (CATs) Dr Ritienne Grima, Department of Communication Therapy, University of Malta

Aphasia, a language problem due to stroke, affects the understanding and expression of spoken and written language. Communication with families, friends and the wider community may be severely affected. Altered social interaction isolates the person with aphasia and impacts on their emotional wellbeing. Aphasia contributes to poorer functional recovery, mobility, discharge destination and return to employment. With an aging population and improved stroke survival, the societal and economic burden of aphasia will rise. Effective management and rehabilitation of aphasia is vital.

Aphasia research faces methodological and infrastructural challenges. Typically it remains language, region and discipline specific limiting the efficiency, strength and broader relevance of any research. This Action aims to establish a network of leading European multidisciplinary aphasia investigators in rehabilitation, social science, linguistics and language research.

IS 1209 Comparing European Prostitution Policies: Understanding Scales and Cultures of Governance (ProsPol) Mr Trevor Calafato, Department of Criminology, University of Malta

ProsPol will compare and disseminate knowledge about the multiple contexts, features and effects of prostitution policies at the European, national and local levels. Due to the combined pressures of globalisation and changing patterns of migration, trafficking and the commercialisation of sex, prostitution has received unprecedented levels of attention in the last three decades. This has led to a heightened demand for effective models of regulation, for legal harmonization and sharing practice across jurisdictions. Nevertheless, much is contested in this field, with countries adopting varying approaches in light of their own particular political, social and legal cultures. At present there are no efficient strategies to address these complex issues and their comprehensive analysis remain fragmented, with little communication amongst researchers from different countries and between researchers and policy makers.

This Action will fulfil the pressing need to exchange knowledge and develop comparative approaches on prostitution policies, their effects and the complex contexts influencing them. It will provide an innovative platform of exchange to enhance understanding of how concepts, policies and practices transfer across national cultures and local contexts, and the implications this has for knowledge exchange and coordination in the field.

IS 1201 Disaster Bioethics: Addressing Ethical Issues Triggered by Disasters: Prof Pierre Mallia, Department of Family Medicine, University of Malta; Dr Ray Zammit, Department of Moral Theology, University of Malta

Disasters overwhelm local and often national capacity to respond effectively. Significant imbalances result between needs and available resources. Disasters have become more frequent and more costly, trends predicted to continue. As a result, disaster risk reduction and management are important priorities for national, European and global agencies. Ethical decisions must be made throughout disaster planning and in responses. High levels statements stress the importance of disaster ethics to put people first in disasters. Yet few resources are available for disaster ethics decision-making. Policy makers, humanitarian agencies and individual responders seek ethical guidance and training materials to better address the challenging and distressful ethical dilemmas in disasters. Evidence-based knowledge is required to promote high-quality ethical decision-making.

This Action aims to improve ethical decision-making for disasters by gathering knowledge of the ethical dilemmas and issues, carefully examining them, and developing training materials and published resources to address disaster ethics. These outputs will assist policy-makers, humanitarian organisations, healthcare professionals, researchers and the public.

TUD
Transport and Urban Development

TU 1104 Smart Energy Regions: Perit Reuben P. Borg, Construction & Management Unit, University of Malta

Low carbon technology is advancing. Government policy throughout the world needs to achieve considerable reductions in CO2 emissions over a relatively short time scale to avoid catastrophic climate change. The built environment needs to play a major role in CO2 reductions and needs to be addressed at a large scale.

A broad set of issues have a significant impact on the successful adoption of new technologies and processes on a larger scale to create a low carbon built environment, including a lack of flexibility and shortage of skills in the supply chain, a misunderstanding of capital and operational costs, where technologies can be implemented, the impact on quality of life and policy and planning for the future. These need to be understood to enable technologies to be widely applicable and transferable within and between regions.

This Action will investigate the drivers and barriers that may impact on the long term creation of low carbon regions in Europe. It will identify what can be done to assist the large scale implementation of low carbon technologies and processes. The main focus will be on new and retrofit of existing buildings, their operation, embodied energy and potential for using low and zero energy supply.

TU 1102 Towards Autonomic Road Transport Support Systems: Dr. Kenneth Scerri, Department of Systems & Control Engineering, University of Malta

A current, well recognised societal problem is the frequent failure of road transportation networks, resulting from traffic incidents, system overloading and lack of optimised support systems. The aim of this Action is to unite and align groups across Europe from computer science, engineering and transport studies into a world leading research community that will develop new ways of designing Road Transportation Support (RTS) systems based on the ideas of autonomic systems. If used as a platform on which to implement leading edge RTS technologies, such systems have the potential to deliver savings in the cost of system configuration, maintenance, and infrastructure, while potentially improving network efficiency and reducing the chances of human error. Using an autonomic approach to RTS is a novel and very ambitious idea requiring interdisciplinary community building, hence the need for COST, and a European dimension.

This Action will bring together disparate strands of research into an integrated discipline, putting Europe at the leading edge of autonomic transportation system development. Additionally it will have the wider benefit of producing a transformative change within the field of autonomic systems itself that will translate to other application areas such as energy management.

TU 1209 Transport Equity Analysis: Assessment and Integration of Equity Criteria in Transportation Planning (TEA): Ms Deborah Mifsud, Institute of Sustainable Development, University of Malta

Understanding the equity implications of transport policies and investments is becoming increasingly important, as underscored by social movements around the world. This poses a major challenge in the assessment and appraisal of transport projects and policies, in which equity issues are currently hardly addressed. In fact, current evaluation methods in transport do not account for equity issues, and this topic is not dealt with in EU guidebooks for project evaluation. Only Germany, as an exception, considers equity between regions (Läender), but not in terms of accessibility to key life activities within an urban region. This Action proposal contributes to the body of research by bringing together new approaches to incorporate equity consideration in transport project evaluation and decision making. The approaches consist of the measurement of accessibility with the literature on social justice, travel behaviour models and socio-economic impacts analysis in line with mainstream welfare economics.

TDP
Trans-Domain Proposals

TD 1201 Colour and Space in Cultural Heritage (COSCH): Dr Claire Baluci, Conservation Division, Heritage Malta: Ms Jacqueline Micallef Grimaud, Institute of Business and Commerce, Malta College of Arts, Science and Technology, Mr Herman Bonnici, International Institute for Baroque Studies, University of Malta

True, precise and complete documentation of artefacts is essential for conservation and preservation of our cultural heritage (CH). By ensuring access to the best possible documentation of artefacts we are contributing to the enhanced understanding of material CH and help its long-term preservation. We are all responsible for ensuring that this heritage is passed on to future generations.

Documentation of CH involves researchers, scientists and professionals from multiple disciplines and industries. There is a need to promote research, development and application of non-contact optical measurement techniques (spectral and spatial) – adapted to the needs of heritage documentation – on a concerted European level, in order to protect, preserve, analyse understand, model, virtually reproduce, document and publish important CH in Europe and beyond.

Research in this field typically relies on nationally-funded projects with little interaction between stakeholders. This Action will simplify the usage of high-resolution optical techniques in CH and define good practice and stimulate research.

TD 1203 Food Waste Valorisation For Sustainable Chemicals, Materials & Fuels (EUBis) Dr Everaldo Attard, Mr Adrian Bugeja Douglas, Institute of Earth Systems, University of Malta

Food supply chain waste (FSCW) creates huge environmental, economic and social problems. There is now a growing recognition that the twin problems of waste management and resource depletion can be solved together through the utilisation of waste as a resource, using green and sustainable technologies. The EUBis Action represents a timely opportunity to develop novel strategies for the valorisation of FSCW to new, sustainable and functional feedstocks.

The symbiotic organisation of a COST Action will greatly benefit EU research in this field, and will focus on key areas to provide cohesive direction on the valorisation of FSCW within a multidisciplinary and multinational collaborative network. The overall aim of EUBis is to bring about a critical mass of researchers and stakeholders to harness the potential of FSCW as an alternative carbon source to produce commercially viable chemical commodities.

TD 1202 Mapping and the Citizen Sensor, Dr Matthew Montebello, Department of Intelligent Computer Systems, University of Malta

Accurate and timely maps are a fundamental resource but their production in a changing world is a major scientific and practical grand challenge. Remote sensing provides images for mapping at unparalleled rates but the ground reference data needed in map production and evaluation are difficult to acquire. The rise of citizen sensors (e.g. volunteers contributing information from remote devices) provides immense potential to radically change mapping. The quality of citizen sensor data, however, is highly variable and activity is uncoordinated. A major internationally recognised mapping challenge is how to deal with the vast amounts of image data and large bank of uncoordinated citizen sensors in a way to allow accurate mapping.

This Action will evaluate the utility of citizen sensors in mapping, debate means to encourage standardisation, coordination of activity and identify how mapping can proceed with imperfect data. It will produce protocols for the collection and use of volunteered data, encouraging good practices while not constraining volunteers.

TD 1206 Development and Implementation of European Standards on Prevention of Occupational Skin Diseases (StanDerm): Prof Joseph Pace, Founder President Maltese Dermatology Association

In Europe occupational skin diseases (OSD) represent up to 30% of occupational diseases. OSD related costs exceed €5 billion/year in the EU by loss of productivity and cause extensive suffering for affected workers. Recently, the EU commission defined lacking prevention of OSD a top priority problem. There are isolated efforts in some countries; however, prevention programmes are poorly validated and there is no coordinated action between the stakeholders at national and international levels. Surveillance and diagnostics of OSD are hampered by lack of common monitoring of new allergens in workplaces.

The proposed COST Action comprising 26 countries aims to coordinate activities relevant for OSD prevention, including basic sciences (aetiology and individual susceptibility), epidemiological surveillance, transnational and applied clinical research. This involves regulatory issues (e.g. REACH), development of interdisciplinary workers' education concepts, identifying individual susceptibility markers enabling tailored prevention and pre-employment counselling.

TD 1209 European Information System for Alien Species: Prof Patrick Schembri, Department of Biology, University of Malta

Invasive Alien Species (IAS) threaten biodiversity, society, human-health, well-being and the economy. The economic impact to Europe is estimated €12.5 to €20 billion (annually). Initiatives to collate information on IAS have resulted in the development of many databases differing in their geographic, taxonomic and ecological coverage. There are a number of constraints that might limit the effective use of existing databases: data obsolescence, lack of interoperability and uncertainties for long-term sustainability of the various tools.

This COST Action will facilitate enhanced knowledge gathering and sharing through a network of experts, providing support to a European IAS information system which will enable effective and informed decision-making in relation to IAS. An overarching priority will be to identify the needs and formats for alien species (AS) information by different user groups and specifically for implementation of EU 2020 Biodiversity Strategy. Correspondingly early warning tools and rapid response protocols will be developed.

TA 1201 Gender, Science, Technology and Environment (genderSTE) Prof Marie Therese Podesta Camilleri, Department of Anatomy University of Malta; Dr Marion Zammit Mangion, Department of Physiology and Biochemistry, University of Malta

genderSTE is a new COST initiative to advance the state of the art in knowledge and policy implementation on gender, science, technology and engineering through creating a network of policy-makers and experts on gender, science and technology.

Specifically it will enhance the implementation of gender-focussed policy measures for structural change in science and technology institutions and integration of sex and gender dimensions in the content of science and technology. It aims to develop knowledge and resources regarding the sex and gender dimensions of technological development and innovation processes, with specific attention to the Grand Challenges identified in Horizon 2020 and the Joint Programming Initiative (JPI) Urban Europe.

genderSTE aims to overcome two challenges:

- The lack of implementation of previously-elucidated gender in science and technology roadmaps and best practice guidelines throughout many COST countries, in two specific and interrelated aspects: structural change of institutions for promoting women's careers; integration of sex and gender analysis in the content of research and technology;
- The need to develop discipline-specific gender roadmaps and best practice guides for important fields such as the Horizon2020 Grand Challenges and Urban Europe.

New Researchers participation in Ongoing Actions in 2012

IS 1103 Adapting European health systems to diversity (ADAPT), Dr Sandra Buttigeg, Faculty of Health Sciences, University of Malta; Dr Claire Bellia, The Council (newly appointed in 2012); Dr Maria Pisani, Integra Foundation (newly appointed in 2012)

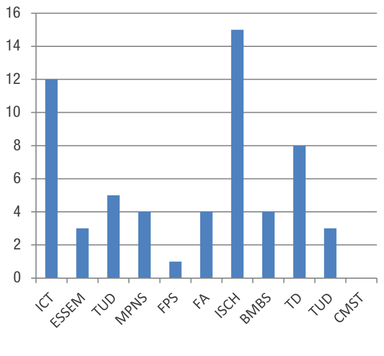
European societies are becoming ethnically and culturally more diverse, yet their health systems are failing to keep pace. This Action aims to promote the adoption and implementation of policies responding to this increased diversity. It builds on the achievements of COST Action IS0603 (Health and Social Care for Migrants and Ethnic Minorities – HOME), which reviewed health inequalities among migrants and ethnic minorities as well as the measures designed to remedy them. ADAPT will take this work forward, identifying obstacles to translating this knowledge into action as well as 'levers for change'.

Despite a remarkable increase in research and innovation in this area, as well as significant backing from international bodies, the pace of change in Europe remains slow. Few countries have adopted national policies on migrant and ethnic minority health

and even where they have, implementation has encountered many obstacles. This Action will make practical recommendations for promoting change in effective policy making and organisational change, not only in health but also in other fields of public policy.

IC 1106 Integrating Biometrics and Forensics for the Digital age: Mr Ramon Cassar, Forensic Lab Malta Police ; Ms Joanna Vella, Lab of Molecular Genetics, University of Malta (newly appointed in 2012)

Since many such questions boil down to identifying, or verifying the identity, of people allegedly involved in some action, a clear relationship exists between forensics and biometrics. Biometrics developed a number of techniques which can clearly facilitate the identification of people involved in criminal actions or civil incidents. Thus, although the two communities have traditionally often operated in relative isolation, there are many scenarios where the synergic cooperation of multimodal biometrics and forensics can be successfully applied. To address such multifaceted areas it is important to develop an interdisciplinary network with complementary competences, to foster the birth of a new community which can develop novel technological solutions to crucial issues and new challenges in forensic science.
The Action will promote new partnerships, will provide education and training, will contribute to develop new standards and best practices, will produce awareness of the potential benefits of advanced technologies for evidence analysis in forensic cases and will stimulate improved mutual understanding of collaborative working models linking the academic and industrial sectors.



Meetings and Training Schools Organised in Malta in 2012

In 2012, Maltese MC members in COST Actions were also responsible for organising three events related to their respective Actions on our Islands. The following sections give some information about these meetings.

TD 0902 Submerged Prehistoric Archaeology and Landscapes of the Continental Shelf (SPLASHCOS) - Training School in Underwater Site Recording & Conservation

SPLASHCOS Training School, held in Malta in November 2012, was organised as part of the SPLASHCOS COST Action TD0902. The goal of this COST Action is to promote the coordination of the work of archaeologists, marine geoscientists and heritage managers, and focus on the significance of this type of submerged evidence, which has remained peripheral to all three disciplines. The Action also aims to promote systematic methods for underwater survey, mapping and excavation of submerged landscapes and settlements, including underwater archaeological techniques, data recovery involving divers and underwater recording methods. Finally, SPLASCOS encourages a young generation of researchers with the skills, interests and training to develop this new field of research in an inter-disciplinary manner and embed it into programmes of teaching, research and management of underwater cultural heritage. This training school focused on some of the technologies available for those working on dive sites already discovered and in need of more detailed recording. The event was coordinated by Dr Timothy Gambin, Department of Classics and Archaeology, University of Malta.

Themes for the Training School included underwater photography, photogrammetry, coring, and remote operated vehicles. Practical sessions were followed up by class-based lectures. Work was focused on natural features including underwater sink-holes off the coast of Malta. The event, attended by 14 international participants, kicked off on 6 and 7 November 2012, with briefing of the participants and equipment fitting for the dives that were organised. Several dives took place over the next few days, including visits to underwater caves and shipwrecks. During the dives, practicals were undertaken, and supplemented with the information given during the series of 11 lectures. Site visits to a number of heritage sites, including Ghar Dalam and Hagar Qim also took place. The Training School had a number of objectives:

- To provide a small group of early stage researchers with the opportunity to participate in real field-work and offshore data-recording;
- To provide this group with training in data post-processing and management;
- To provide an opportunity to develop skills in the latest site recording techniques;
- To provide an overview of conservation methods for objects from an underwater context;
- To provide the group with an opportunity to garner more knowledge on the prehistory of the central Mediterranean;
- To provide exposure to local approaches cultural heritage management (in a European context);
- To cover some aspects of conservation of objects from an underwater context.

Contributors to the organisation of the Training School included: Dr N. Vella (University of Malta), Dr P. Drap (CNRS, France), Mr A. Catania (Heritage Malta), Mr J. Licari (Heritage Malta), Dr F. Antonioli (ENEA), Dr S. Furlani (University of Trieste), Ms L. Sorbi(Universita' Le Marche), Dr A. Micalleff (University of Malta), Dr M. Montebello (University of Malta), and Ms V. Lo Presti (University of Palermo).

MP 1006 - Fundamental Problems in Quantum Physics and MP0905 - Black Holes in a Violent Universe Quantum Malta 2012: Fundamental Problems in Quantum Physics

Two COST Actions were brought together during the 'Quantum Malta 2012: Fundamental Problems in Quantum Physics' conference, held in Valletta, Malta, on 24-27 April 2012, in parallel with another event entitled, 'Black Holes: From Quantum to Gravity'. This joint conference saw the convergence of around 200 of the world's leading theoretical physicists to Malta to discuss foundational problems with the current understanding of the nature of reality. The event was organized by two Europe-wide networks, namely COST Action MP1006 - Fundamental Problems in Quantum Physics and COST Action MP0905 - Black Holes in a Violent Universe. These were put together to address problems in the two extreme scales, where our way of thinking about the world breaks down. The first part of the joint conference dealt with the very small, where things happen so fast and on such a small scale that they violate our common intuition. The second part looked into problems on a very large scale, particularly those that come about from black holes and their many consequences. The major areas of research covered in this conference, reflecting the current state of the art in research included:

- Quantum Theory without Observors;
- Effective Descriptions of Complex Systems;
- Quantum Theory meets Relativity;
- From Theory to Experiments.

The scope of the joint conference was to:

- Increase networking between European researchers in the field of foundational problems;
- Discuss potential solutions to open problems to the community;
- Broaden the discussion by including the black holes community in the conference.

The organisers included Dr Angelo Bassi (Departmet of Physics, University of Trieste), Prof Detlef Durr (Mathematisches Institut, Ludwig-Maximilians-Universitat, Munchen), and Mr Jackson Said (Department of Physics, Malta).

A number of presentations took place during the conference. Three speakers from each Action were invited to give talks on a variety of topics. Another 26 speakers also gave 30-minute presentations on various topics. The event was attended by 40 PhD students and young researchers who had the opportunity to present a poster. The conference did not have a poster session but posters were positioned so as to be seen by participants during extended coffee breaks. A proceedings document that includes information about the conference as well as over 60 papers that were presented at the event have also been drafted and is available on the following website: http://www.equantum.eu/events/event/nn/quantum-malta-2012-fundamental-problems-in-quantum-physics/.

TU 0904 International Fire Engineering and Response: Fire Engineering Conference and PhD Training School

In April 2012, the Department of Civil and Structural Engineering at the University of Malta hosted a 5-day International Conference on Fire Engineering, followed by a PhD Training School. The week long activities were organised by IFER (International Fire Engineering and Response COST Action TU 0904), a European research group made up of experts from 23 countries, including the main academics, and representatives of fire brigades in different European countries.

The latest advances in fire engineering research were presented at this international conference which was followed by the training school for PhD students and researchers. The foremost experts, academics, researchers and professionals in Fire Engineering participated in the events. The conference involved two parts: lectures and brainstorming sessions. The lecture session was led by various practitioners and academics in fire engineering focusing on topics of fire behaviour, integrity design, life and structural safety.

For students in attendance, these presentations gave a unique opportunity to hear from various academics and those in industry about their research and consulting experiences. The topics covered a wide range of themes such as modelling progressive collapses in structural fires and experimentation of structural systems in fire. What students found particularly helpful was that lectures provided a window into professional thought; such as what it takes for new research results to be accepted or rejected. The practitioners and academics provided expertise on what the duties of young researchers should be. These presentations widened, inspired, and comprehensively pushed their knowledge establishing a more thorough and solid research background for integrated fire engineering.

The brainstorming session that followed included nearly 30 student presentations of research projects being conducted throughout Europe (mostly PhD projects but also some Masters projects also). These presentations covered diverse topics from passive fire resistance, fire development, and risk assessment. The presentations all allowed for some flexible but yet intense and interesting discussion, where ideas, knowledge and opinion were exchanged by the young researchers, practitioners and academics. Participants in this conference were also invited to a number of sites in Malta after the conference.

The conference and the PhD Training School were coordinated by Perit Ruben Paul Borg of the Department of Civil and Structural Engineering of the Faculty for the Built Environment, University of Malta. The conference was opened by the Chairman of the Research Group Prof Frantisek Wald of the University of Prague, the Vice Chairman of the Group Prof Ian Burgess of the University of Sheffield, together with Perit Ruben Paul Borg of the University of Malta, management committee member of the Research group. At the opening of the conference, Dr Janet Mifsud COST Coordinator in Malta delivered an opening address on behalf of the Malta College of Science and Technology (The Malta Council for Science and Technology) and Mr Patrick Murgo, the Director of Civil Protection presented fire safety concerns in Malta.

EUROCEAN

Access to information on marine science and technology is necessary for industry and also for policy makers engaged on a European, national and local level. In order to address the present fragmentation of data between European organisations focused on marine research, The Centre for Information on Marine Science and Technology (EurOcean) joined efforts with 14 other countries, including Malta, represented by the Council.

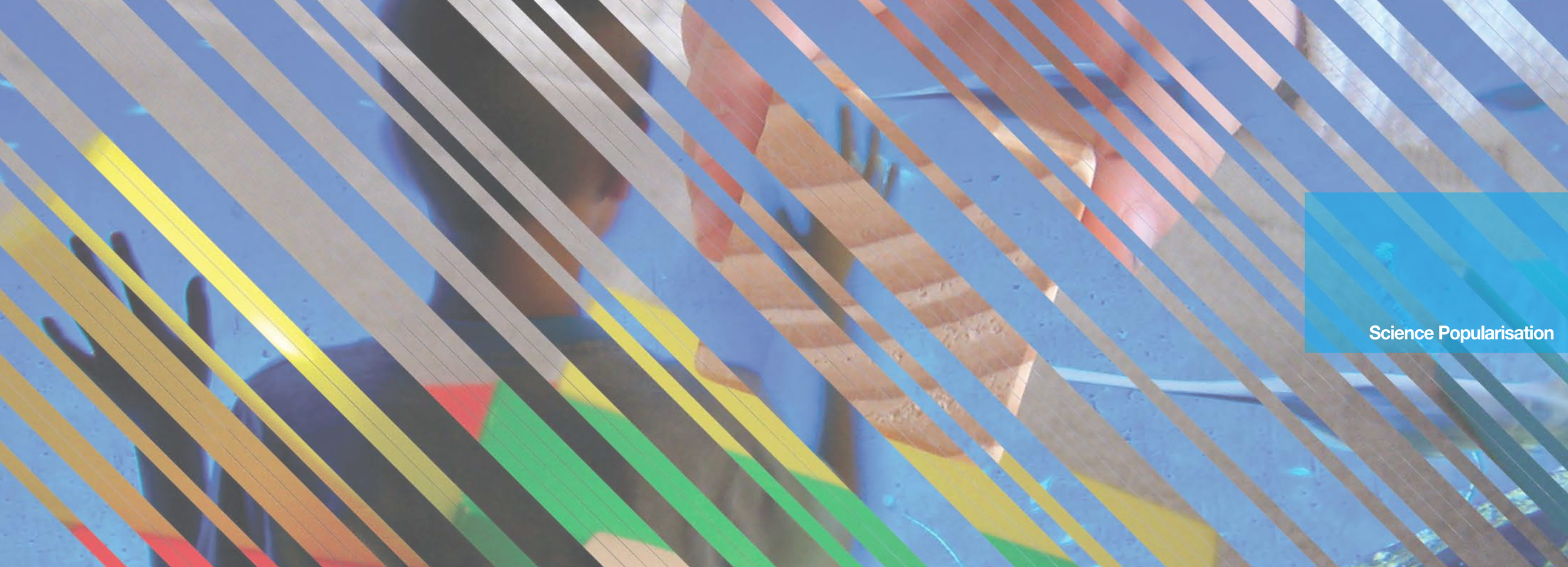
Having a common goal in the promotion of marine research, the Malta Council for Science and Technology has been involved in promoting the EurOcean concept and network to other relevant local institutions such as the International Ocean Institute (IOI), International Maritime Law Institute (IMLI), The Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC), University of Malta and Fondation de Malte.

In light of this initiative, the Council has also taken to supporting local researchers specialised in marine science, and in doing so, strengthening the Maltese marine scientific community.In the same collaborative spirit, EurOcean, in collaboration with its partner CESAM – Centre for Environmental and Marine Studies of the University of Acerio, Portugal, started in 2012 the slection of two new Maltese candidates for two new training activities at the abovementioned research organisation, one in Marine Geology and the other in Marine Biology/Ecology.

Both these activities are to take place in the first semester of 2013, depending on the timelines of the research activities and the availability of the selected candidates. As done previously, EurOcean will support financially these activities in collaboration with the hosting organisation.

On a broader basis, during 2012, EurOcean developed several relevant activities. The following may be highlighted:

- Launch of the EurOcean Marine Knowledge Gate: an InfoBase that allows all interested users to know what research has been funded in Europe in all marine/maritime fields and some of their results;
- Organisation of the International Conference "How to Communicate Marine Science and Technology? Bridging Marine Information": am international high level conference which discusses how to maximise the impact of marine research in Europe;
- Award of the Professor Mario Ruivo Prize: The Prize, named as a tribute to EurOcean's first President, had as the objective to reward an original short movie under the theme: Seas and Us – Links between Ocean and Daily Life Activities.



Science Popularisation

Science Popularisation Unit

Elton Micallef, Christopher Bugeja, Daniela Priehyba Camilleri, Isabel Fereday, Melanie Giorgi (Director), Giselle Calleja, Elaine Manicaro, Gaetano Avallone, Rachel Blackburn

Established as a new unit in the second half of 2010, during the restructuring process of the Council, the purposely appointed team in the Science Popularisation Unit (SPU) has been actively taking Science into the community alongside setting in motion the larger project and its main task of developing the Council's flagship project - the National Interactive Science Centre (NISC).

Science communication activities carried out in the community during 2012 have targeted the need to enhance citizen's abilities in understanding the relevance and importance of science in everyday life. The recorded positive interaction and feedback received from the public at these events demonstrates how science topics presented in an innovative and interactive manner can contribute towards a greater public interest in the role of science in our lives. The planned National Interactive Centre will provide a permanent platform for Malta's communities to discuss and engage with topical science.

The concept of an interactive science centre began to spread in the USA and Europe during the 1960s, where a need was identified for a type of museum that emphasises a hands-on approach, featuring interactive exhibits that encourage visitors to experiment and explore.

In September 2012 after months of extensive research and preparations, the SPU submitted the NISC project proposal for funds to the 15th call under the European Regional Development fund) ERDF 2007 - 2013, Operational Programme 1 'Investing in Competitiveness for a Better Quality of Life' Priorty Axis 1 - Enhancing Knowledge and Innovation; focus areas Investment in Research and Technological Development (RTD) and RTDi -related Infrastructure and ICT. This area of intervention aims at supporting Science and Technology related investments in the formal and informal education streams, including infrastructure to increase the Science and Technology cohort in the long-term. With the confirmation of National Funding received at the beginning of 2012 and the success of securing the ERDF funds in the first quarter of 2013 the total budget for this project stands at 26 million Euro.

To prepare staff for the tasks ahead the Science Popularisation Unit has sought resources to build human capacity at the Council. In this regard, the ESF4.152 Capacity Building for MCST project was part-financed by the EU's Structural Funds - European Social Fund, under Operational Programme II, Cohesion Policy 2007-2013: Empowering People for More Jobs and a Better Quality of Life. The SPU submitted this proposal under Priority Axis IV – Strengthening of Institutional and Administrative Capacity. The training aims at ensuring success in the development of the NISC by enhancing the project team's knowledge base and level of expertise in Project Management and specifically in development of Science Centres.

National Interactive Science Centre

The SPU's day-to-day business during 2012 concentrated on the planning of the project from inception to opening, including operations for the first 5 years of the NISC's life.

The team investigated the operations and procedures of science centres in Europe in order to plan the NISC's activities. The future management of the NISC was explored and analysed and extensive market research was carried out to be able to determine the operations and activities to be held in the Science Centre throughout the year.

The start-up costs to launch and run the NISC and the ensuing operational costs were detailed and resulted in estimated budgets. The initial costs included allowances for the interior design of exhibition spaces, exhibits, IT software and hardware, initial outlay for educational programming such as science shows and workshops, as well as the branding and marketing of the new NISC.

Post opening expenditure had to be forecast and estimates where reached for the annual costs related to the Science Centre's planned activities and projected operational costs such as staff wages, outreach, stocks for gadget and coffee shops and so forth.
This exercise was crucial to draw up a comprehensive procurement list of expected number of tenders to be published. This included a projected contracting and disbursement schedule detailing when and how the overall NISC funds will be spent.

The Project impact on carbon neutrality was also addressed. The NISC aims at adopting an energy efficient and sustainable philosophy as much as possible in order to reduce the energy and resource consumption. The Project engineers have designed several interventions and have taken measures in order to promote energy efficiency.

Obtaining the MEPA Permit

The key to transforming the Royal Naval Hospital Bighi into tomorrow's Scientific Gem.

This flagship project will be housed in the presently dilapidated Bighi Complex in Kalkara, formerly the majestic Royal Naval Hospital. The restoration/conservation and re-use of the existing buildings required a Full Development Permit (FDP) from the Malta Environment and Planning Authority (MEPA). The process was set in motion in 2010, under Outline Development Permit number PA3956/10. With the appointment of the official architects in 2011, drafting of brand new plans was necessary in order to be able to obtain this indispensable FDP.

Much consideration and care was taken to retain the historic fabric and merge it into a newly restored and refurbished structure aimed at children and families. The NISC project has been designed having accessibility for all in mind and through its consultations with Kunsill Nazzjonali Persuni b'Dizabilta' (KNPD), it has been ensured that there will be no physical constraints preventing individuals from accessing the whole site.

Once the new plans were drafted and submitted to MEPA a long consultation process began in 2012.

Through the outcome of the discussions with MEPA all required changes requested by the process were made by the architects and the SPU. During the last quarter of 2012, the Development Planning Application Report (DPAR) issued by the Case Officer, favourably recommended the NISC project. The FDP was obtained on 4th October 2012 - an important milestone for the SPU.

This permit has paved the way for the restoration and works tenders to be issued in 2013 by public procurement procedures, marking the beginning of the construction phase. It is planned that once the actual works begin, archaeological and MEPA monitors will be engaged to oversee the proceedings.

The NISC Complex

The complex is a site of over 22,000 square meters and consists of a large outdoor area as well as four structures on a high promontory, overlooking the Grand Harbour, and one building at shore level facing the Kalkara creek.

The architectural design proposal of the NISC includes an extended pedestrian walkway and waterfront promenade that widens into a large open space between two of the five structures that make up the complex. The spaces by the Planetarium building (previously known as the Auxiliary Hospital) and Cot Lift are intended to provide a stopping or end point in the Kalkara/Cottonera waterfront walkway. These spaces shall be embellished by appropriate street furniture to create a desirable social meeting place especially for locals. This re-design ensures both a pedestrian-friendly route to the promenade and Science Centre.

1 – The Hub (currently known as the Mental Ward)

Due to the location of this building, the Hub was designated as the point from which visitors will enter as it is adjacent to a main public road. The building will house the main reception area, ticketing and an open plan Science Gadget shop. An outdoor and indoor cafeteria will be located on the 1st and 2nd floor respectively, both of which offer picturesque views of the Grand Harbour and the Kalkara Creek.

2 – Main Exhibition Building (currently known as the West Wing)

During 2012, the SPU content team along with the engaged international consultants, compiled a provisional exhibition floor plan and a wish list of exhibits. This work took into consideration various factors such as cultural and societal interests, the educational framework and Malta's vision for a rich and varied human workforce in science fields.

The Main Exhibition Building is the largest of the buildings within the NISC complex and shall serve as the main exhibition space with key visitor amenities. The building consists of three levels, namely the basement, ground floor and mezzanine.

The ground floor and a new mezzanine level are exhibition spaces designated for all ages with a variety of hands-on exhibits covering a wide range of science phenomena. The ground floor will deal with the fundamental scientific disciplines with each of the two halls and adjacent rooms, having a distinct ambience.

The Mezzanine will deal with creativity, science and technology products that affect our daily lives and present us with challenges for the future. The Basement Level will have directed content aimed at the youngest visitors aged 0–8; the design and content will satisfy the developmental needs of these early years.

Below is a provisional plan of Thematic Areas and their hands-on exhibits.

GROUND FLOOR HALL A
- Zone B – Orientation Area having a welcome video wall
- Zone C – Electricity and Magnetism with specific reference to their intricate existence and some of their real life occurrences and everyday uses
- Zone D – The Earth's Phenomena encompassing an area dedicated to the geology of Malta
- Zone E – Eco Life examining our modern lifestyle habits and their environmental impact
- Zone F – Human Biology concentrating on the Digestive, the Circulatory and the Respiratory Systems

GROUND FLOOR CORRIDOR
- Zone G – Reserved for temporary exhibitions about contemporary scientific topics
- Zone H – *Passage of Time* featuring a multi-media interactive walk-through showing connections between man and different scientific matters through the ages

GROUND FLOOR HALL B
- Zone J – Principles of Motion and Forces exploring topics such as moments, pressure, compression and transfer of energy
- Zone K – Light and Optics with opportunities to manipulate and discover the nature, behaviour and wonders of this natural marvel

MEZZANINE – How Science & Technology shape our lives
- Zone L – Illusions and an exploration of how the visitors' senses can be deceived to create illusions
- Zone M – Music and how sound, science and music are all related. A Musical Corridor will cross over from one side to the other of the Mezzanine
- Zone N – Nature of Matter focusing on the atomic and molecular make up of materials and chemical reactions
- Zone P – Various disciplines of Engineering – electrical, mechanical and civil
- Zone Q – The scientific aspects of telecommunication and our reliance on science and technology in day-to-day communication
- Zone R – Media Studio concentrating on the technologies used in the classic mass media

BASEMENT – For our youngest visitors to *Explore Think Imagine.*
- Zone S and Zone T – Under 8s areas to encourage our youngest visitors to explore, think and imagine through age-appropriate experiences

3 - Activity Centre (currently known as the Zymotic Block)

The Activity Centre, which is another prominent building located adjacent to the Main Exhibition Building, will serve as the key programming space. The activities at the NISC will include a comprehensive education programme to ensure that every visit supports Malta's National Curriculum and provides a varied and exciting learning experience for all ages. This building is designed to be a flexible space equipped with all the necessary audio-visual equipment in order to cater for various events such as group hands-on workshops, science shows, exhibitions, discussions, and other edutainment activities.

GROUND FLOOR
- Science shows/ hands-on workshops

UPPER FLOOR
- Workshop Area – accommodating up to 60 persons at any one time

4 - Cot Lift

The Cot Lift, which is located behind the Activity Centre, played a major role towards the operation of the naval hospital by connecting the hospital grounds to the shore level. In honour of the buildings being renovated to contain the NISC, an exhibition entitled *Villa Bighi and its Medical History* will be displayed at the Cot Lift Building. The unique use and historical importance of the cot lift makes it the ideal place to host this exhibition. The exhibition will be a tribute to the people who worked, lived and were treated here and will examine the medical technology practised throughout the operational years of The Royal Naval Hospital Bighi.

The Cot Lift will also be used as an alternative entrance for visitors arriving by boat, hence aiding in decreasing the traffic congestion by land.

5 - Planetarium Building (currently known as the Auxiliary Hospital)

Located at shore level, facing the Kalkara creek, this building shall house the planetarium Theatre and a Universe exhibition. The Universe exhibition is divided in two rooms: the Cosmos which will introduce the visitors to outer space, and the phenomena occurring within the universe; and Life in Space which will deal with the life of astronauts in outer space and space exploration.

The planetarium structure shall be in the form of a full sphere positioned in the collapsed part of the building. The sphere will be made to appear as if floating on a veil made out of a malleable mesh. The ground floor and first floor below the planetarium theatre will be used as temporary exhibition space.

The planetarium complex will become an icon symbolising the nature of the NISC to observers from a distance particularly from Vittoriosa and even Valletta across the harbour. For this reason a spectacular lighting scheme will be used to highlight the planetarium area utilising the stainless steel mesh as the light reflecting medium. The external face of the sphere is to be detailed with laminated glass having a double curvature to form the sphere face. The glazing will incorporate a backlighting system to light up the sphere as well and achieve a uniform glow effect.

The planetarium will host shows that bring science closer to society to appreciate and regard science as enjoyable, enticing, intriguing and accessible. A second reception/ticketing area will be located at the planetarium building so that this may function independently from the rest of the Science Centre and be able to open at different times.

6 - External Areas

The Outdoor Area surrounding all the buildings will deliver an exploration experience, where the visitor can engage with nature and various interactive exhibits. Along the paths, which connect all of the buildings, there are various external areas designated for different purposes. The external areas overlooking the Grand Harbour have two main uses – a Science Playground for 8 year olds and under, as well as an explorative continuation from the indoor exhibition, to include a sea vessel, underground spaces and ride-on vehicles with a viewing platform for their guardians, to both watch their children and enjoy the harbour views.

The area dividing the Main Exhibition Building and the Activity Centre shall include an outdoor exhibition space aimed at extending the internal experience. It will contain several themed areas such as the Water and Music Area. The covered walkway that will connect the Exhibition Building, Activity Centre, Cot Lift, Entrance Hub and Cafeteria takes the visitors through more experiences and hands-on exhibits as well as a dedicated workshop area for planting and potting and a landscaped garden with endemic and Mediterranean plants.

Further along past the covered walkway and towards Kalkara creek, one finds the largest drop in levels. The journey through this path will lead the visitor to pass by a multi-purpose outdoor meeting space envisaged to be suitable for forums and outdoor presentations / discussions. To satisfy the need for refreshments during a visit to the Science Centre which could easily stretch to a whole day, there is a cafeteria with indoor and outdoor seating that sits just below the Main Entrance. Finally, a Science Adventure Garden for ages 8 and older is located close to the Planetarium building's upper level.

Tenders

During 2012, the Works tender was drafted, which included the construction, restoration and finishes of the buildings and all elements of the surrounding external areas. It is planned that the Works tender will be issued in 2013. A second tender will be procured for the construction of a public Parking Area to serve the new NISC and Kalkara residents.

The SPU content team drafted the tenders for the design, development, fabrication and installation of the exhibits and other exhibition elements during 2012. The provisional exhibition floor plan and Zone Content documents containing the exhibit wish list and the general learning outcomes expected for each topic have been outlined for inclusion with the tender documents. These were prepared taking into consideration the Core Ideology of the NISC, which is a document that outlines the Vision, Mission, Objectives and Values of the project.

The exhibition content tenders will be issued in 2013 and will use *competitive dialogue* tendering procedure, which involves a dialogue with interested bidders and allows for creative input from exhibition fabricators and designers, resulting in an evolved floor plan of each exhibition space.

The NISC project will also be launching a Brand Strategy and subsequently a Marketing Campaign – highlighting the importance of an inclusive society and steering away from stereotypes. Creating a connection with people is important for all organisations and a brand can embody attributes which consumers will feel drawn to. To achieve its objectives the NISC needs a well devised brand. A tender has been prepared for the development of a unique brand strategy which will be published during 2013.

EU Funds Application under the European Regional Development Fund

Further to the initial drafting of the EU application in 2011, considerable work was carried out in 2012. This was necessary to further develop the proposal according to finalised architectural plans, research in the fields of EU and education policy, newly finished operational plans and a complete list of service and supply tenders. Finalising and submitting the Application in September was one of the major achievements in 2012 for the administration team within the SPU. A lot of energy was spent in ensuring that the application was precise and complete. The results of the application process were issued at the beginning of 2013, informing the Malta Council for Science and Technology, that ERDF funding was awarded for the NISC project.

Studies in support of ERDF application

A number of studies were required to ascertain the feasibility of the project, therefore three firms were contracted through Government Procurement Regulations; one to develop an initial Business Plan, which was then greatly elaborated and concluded by members of the SPU team; a specialist consultant to undertake the Cost-Benefit Analysis; and another to undertake a study commissioned to assess Traffic Impact of the NISC Project.

The Business Plan investigated and evaluated the financial stability of operating the proposed Science Centre as a business undertaking. It established the operating expenditure required to manage and operate a Science Centre of such a scale and how or what could be done to generate sufficient revenue to cover the running costs.

The Cost-Benefit Analysis (CBA) report presented a cost-benefit assessment for the development of the NISC. The CBA analysed the financial and economic feasibility and implications of the proposed project in order to justify public and EU funding. Indeed the NISC project is economically beneficial to Malta as it will increase the number of S&T professionals, which contributes towards the creation of human capital. The importance of the project is also to be viewed within a context where Malta is putting significant priority on the reduction of the relatively high rate of early school leavers and where higher education achievement is important for Malta's competitiveness potential. Human capital creation in the field of S&T is extremely important due to the process of industrial restructuring from low value added to higher value-added production, which require a higher and more technical level of skills within this area. Also included in the CBA is an analysis of the following: demand, site and size options, risk and sensitivity as well as a comprehensive review of National and European policies.

A study on traffic impact was commissioned in response to MEPA's request for a Traffic Impact Statement (TIS). The purpose was to ascertain the likely traffic generation resulting from the proposed works for the conversion of the buildings into the NISC. It was also necessary to be able to better understand how to distribute the development of traffic on the road network and provide estimates of the additional number of vehicles likely to use the roads and junctions in the vicinity of the site. It also assessed any effects on the environment. Following the recommendations, a public parking area adjacent to the NISC was identified and works will ensue to embellish and increase the number of parking spaces.

An online survey was designed specifically to explore the teachers' and senior school managements' requirements and opinions to popularise science in Malta and their expectations for the NISC after its opening. The survey was sent to all schools in Malta and Gozo in the beginning of 2012. A total of 180 responses were registered online. The main focus was to receive as many replies from as many different schools as possible so as to have a representative picture. The conclusion of the survey confirmed a desire and enthusiasm for a permanent structure such as the NISC to be established in Malta in order to entice students towards the sciences and take-up science related subjects at school.

ESF4.152 Capacity Building for MCST

Following the project application submission in 2010, the Grant Agreement was signed in September 2012 for the ESF4.152 capacity building for MCST project aimed at addressing the lacunae in the knowledge base and level of expertise of the staff at the Malta Council for Science and Technology. The Project is part-financed by the European Union's Structural Funds under Operational Programme II Cohesion Policy 2007-2013 : Empowering People for More Jobs and a Better Quality of Life, Priority Axis IV – Strengthening of Institutional and Administrative Capacity.

The Project Leader from within the SPU team was assigned the responsibility of implementing the project and a Project Manager was specifically recruited to assist in the day-to-day running of the two training components: Project Management Training for The Malta Council for Science and Technology and the NISC Management Development Training for the Science Popularisation Unit.

All procurement related to the project's activities was completed in 2012 and two tenders were drafted and submitted for both training programmes.

The NISC Management Development Training Tender was awarded at the end of 2012. The training will be delivered during the first half of 2013 by international experts both on-site and abroad at an established Science Centre. International expertise is required for this training as it is completely unique and innovative in its compilation of subject matter. It involves the exploration of four main areas, Science Communication, Exhibition Development, Science Centre Text writing and Practical Science Centre Management. This bespoke training will provide the Science Popularisation Unit with the possibility to observe, analyse and apply the theoretical and practical knowledge gained from the study of the various areas for the development, management and operations of the NISC. The training content has been designed by means of extensive research into the areas involved in science centre management. This expertise will then be passed through NISC induction programmes for future recruits.

The Project Management Training Tender reached the last stage of the procurement process in 2012 and is expected to be awarded at the beginning of 2013 when the training material and the delivery dates of the training will then be established. The training will be delivered in its entirety in Malta by experts in project management, and will consist of 2 levels: Introduction to Project Management shall provide participants with a foundation of the principles and practices of project management and Applied Project Management shall provide participants with all the tools needed to become project management practitioners regardless of project scale, organisation, geography or culture.

The staff will gain an internationally recognised industry-standard certification and the Council will be able to boast of a unified Project Management approach which will be a great asset considering the nature of the Council's remit.

The Next Steps - The NISC Project in 2013

During 2013 the NISC project will move from planning and design to implementation phase.

Tenders

The tenders for the design, fabrication and installation of interactive exhibits and for the design, supply and installation of a Planetarium will be published and the interested bidders will partake in the competitive dialogue procedure. Following award, content team members from SPU will be in continuous liaison with fabricators to ensure that the design of all of the interactive Zones and the Planetarium will be of the utmost quality and conforming to pre-set specifications outlined in the tender documents. The main stages of this process will include discussion of science Zone/Planetarium briefs and thematic content; approval of designs and layouts; endorsement of prototypes of modified and new exhibits; ensuring adequate testing is carried out; final approval of all science Zones/Planetarium including exhibits, audio-visuals and multimedia components.

In parallel, on award of the Works tender, efforts will start at preparing the Bighi Complex site for the NISC. These works will include restoration, civil, mechanical and engineering, finishes and landscaping. Key team members from within the SPU will be in constant contact with the contracted Project Management team for the duration of this phase.

Other important work will include the publication and awarding of the Branding Strategy tender for the NISC and its implementation throughout 2013 and 2014. In addition during 2013 the SPU will be drafting numerous supply and service tenders, which will complement the NISC project. It is expected that until opening the SPU will publish around 50 tenders in total.

Developing the programming and education material

In 2013, the SPU content team will start developing educational material which will aim to be complementary to the thematic content of the interactive exhibition spaces in the form of workshops, science shows and trails; and implementing an outreach programme in order to market the NISC throughout Malta. Other educational supporting resources will include material such as debate and discussion guides, exhibition trails, online and offline teacher resources for pre and post visits.

Vision, Mission and Values

We aspire to cultivate a culture of scientific curiosity and creativity by igniting a passion for questioning, investigation and discovery through encouraging our staff and visitors to explore, think, imagine and appreciate.

To Restore, Construct and Finish the proposed buildings within Bighi Complex.

To set up the National Interactive Science Centre (NISC) as an informal learning infrastructure.

To attract more Students towards Science by improving their attitudes and perceptions about learning and doing science and therefore increasing the Uptake of Science related Subjects at Secondary Level.

To enhance the Teaching of Science through Interactive Experiences and Inquiry-Based Learning and therefore contribute towards Innovation in the Maltese Education System.

To increase Human Capital in science and technology fields in Malta.

NISC to become a Science Communication Hub for the Community.

To bridge the gap between the World of Science and the General Public.

To serve as a Research Infrastructure by offering a Research Base set-up in form of a Live Lab, where research in the fields of Social Science and Humanities could be carried out.

CEO's Office

CEO's Office

Mario Borg, Diane Degabriele, Marion Attard Bezzina, Dr Ing. Patrick Attard, Dr Ing. Nicholas Sammut (CEO), Joseph Borg Camilleri, Christine Grixti, Charles Attard Bezzina, Rosanna Schembri

The CEO's Office includes the Human Resources Unit, the Administration Department, the Finance Department, the Procurement Unit, the Maintenance Team, the Public Relations Unit, and the Space Technology Unit.

2012 saw a marked expansion in the personnel compliment. A total of 11 new recruits joined the Council, involving close coordination with the Employment and Training Corporation, advertising on newspapers, job interviews, issuing of employment contracts, and the organisation of new recruit job inductions.

Additionally, the Human Resources Unit handled more than 85 parliamentary questions, and administered the 14 sponsorship deals which the Council made with various individuals/entities in 2012. All this required very close coordination between the Council, the Office of the Prime Minister and the Management Personnel Office.

More than 10 press releases dealing with issues central to the Council's remit, where also published.

Work also continued on the restructuring, restoration and refurbishing of Villa Bighi, coordinated by the Administration Department, with new lighting systems installed, and an expansion of the security alarm system. Furthermore, the Maintenance Team continued the meticulous laying of specially-selected flagstones in the offices in the villa's lower grounds. This was an extension of the project started during the previous year, when the Main Hall was restored. Villa Bighi's constant exposure to the sea and natural elements necessitate constant maintenance, which is also proficiently handled by the Maintenance Team.

A number of events were organised at the Council during 2012, making optimal use of the Villa's lower grounds. Incorporating of a 90-seat Conference Hall equipped with a PA system and projection, Villa Bighi hosted 11 workshops, 13 conferences, two of which had an international scope, 7 information sessions and various press conferences. The Maintenance Team works hand in hand with the Administration Team and is tasked with the preparation works required for these events.

The active and dynamic environment at the The Malta Council for Science and Technology necessitated the separation of the Council's major procurement tasks from the rest of the administrative duties, and a new Administration Support Officer joined the team. The Procurement Unit could therefore concentrate on the complicated purchasing tasks involved with the preparation work for the setting up of the National Interactive Science Centre project.

The new Administration Support Officer assumed responsibility for coordinating the Villa's maintenance and restoration tasks, the IT and website administration, the coordination of the Council's general policies and departmental procedures, and the handling of minor procurement duties. The Administration Department is also responsible for all travel arrangements of Council staff and associates.

Also, in 2012, the Directorate for Space Technology was set up towards the end of the year focusing on building relationships with foreign space agencies, the Maltese government, industry and the educational sector. It aims to act as a bridge and catalyst in the long-term, and explore the use of space applications for businesses and the educational sphere, amongst others. This, in part, resulted from the Cooperation Agreement Malta signed with the European Space Agency (ESA) on 20 February 2012. This agreement which allows Malta and ESA to create the framework for more-intensive cooperation in ESA projects in the future. Malta was also granted Observer Status at the ESA Ministerial Meeting, where Malta endorsed ESA's Political Declaration towards the European Space Agency that best serves Europe.

Following the agreement with ESA, The Malta Council for Science and Technology, in collaboration with the Lifelong Learning Directorate at the Ministry for Education under the direction of Mr Mario Azzopardi, issued calls for applications for one-year traineeships at the European Space Agency. Two candidates were selected. Mr Thomas Gauci will be following specialised training in structures used in space applications, and Mr Stephen Grixti will follow training in on-board software development.

The Finance Department kept up the momentum, and was in a position to keep producing up-to-date monthly reporting consistently. The audited financial statements for 2012 were presented at the February board meeting and the auditors did not feel the need to issue a management letter.

Buying Innovation InnoPro Group

Much of the public procurement underway in Malta can be leveraged to promote innovation, through the application of existing procurement regulations. All that is necessary is the willingness of an organisation to be pro-innovation and procure new technologies from external inventors that address the particular needs of the organisation. Local SMEs have the potential to produce innovative solutions and there is a need for procurers to purchase these innovations and create a demand for these SMEs. In this regard the organisation will be the first buyer or lead consumer of such innovative solutions.

Although organisations are aware that innovation yields efficiency and effectiveness, there seems to be a hurdle which prevents such entities to procure innovation, in particular, the implementation of internal procuring processes. This may be due to various reasons, including:

- the lack of encouragement for an innovation culture in line with the organisation strategy through an idea management system
- the lack of ownership from unit managers who are comfortable with the current products and practices and do not realise the importance of improving them and consider the development of new products and alternative ways of carrying out current processes
- not having a proper understanding of organisation-wide innovation procurement process
- not having the necessary resources, training and coaching to carry out the innovative process
- the lack of developing criteria and metrics in advance

Innovation is the key to success in today's business environment. It helps organisations to become more efficient and effective. The world is changing very rapidly, creating new demands and expectations. Innovation is a response to this overall change. If there are much more rapid and unpredictable changes, then the importance of innovation within this environment is really critical. This is even so in the light of the current economic crisis. The role of innovation within this context is crucial since the only way that economies can grow at any reasonable and respectable level is through innovation.

When we speak about innovation we are not only talking about technology innovation, but also commercial innovation where a business model is innovated without implementing any technological developments. Innovation can be defined as the development of a new or significantly improved product (good or a service), process, marketing method, or organisational method.

There are various procurement strategies provided by the Public Procurement Regulations (LN 296 of 2010) which can be used depending on the need in question. The idea is to adopt the optimal procurement process that can meet the needs of the organisation and reach the ultimate goal of buying an innovative solution.

As a preliminary stage, the InnoPro Group encourages consultations with end-users in order to identify the requirements that will help them improve the quality and efficiency of their tasks (hence leading to a more effective service rendered and reduction in unnecessary costs). The rationale is based on the notion that end-users, through their hands-on approach, are a source of valuable infomation on how to improve goods and services they use regularly and purchase through procurement procedures. Consultation with the end-users provides multiple advantages. On the one hand motivation to work and relationships between management and end-users improve, and on the other hand it assists procurers to identify the specifications of the innovative solution to be procured.

The specifications identified through consultation with end-users are then discussed in an internal focus group within the organisation to discuss the problem definition and establish the requirements that are not being addressed by current procurement, thus arriving at the 'Wouldn't It Be Good If' (WIBGI) product. The InnoPro-Group at the Council offers advice and carries out a market research to analyse the feasability of the technical specifications.

The InnoPro Group can offer the necessary support to identify the organisation's innovation needs and the process involved to choose the best procurement procedure that can be applied for the particular project. In addition, the following assistance will also be offered:

- Run external procurement processes for technologists to come up with new technologies as a solution to meet the WIBGI
- Guide the applicant on licensing of the IPRs whilst ensuring that the Contracting Authority retains the rights in using the technology. This guidance is particularly relevant when 3rd parties are required to bid for the building and installation of the technology
- In case a prototype proves to be successful, the new product can be offered in response to future tenders along with conventional technologies
- Professional assistance during discussions on improvement of technical specifications in the Terms of Reference
- The InnoPro Group believes that in addition to the benefits enjoyed by the organisation procuring the innovative solution, the community at large can also benefit, since:
- Technologists can apply their skills and expertise to real market needs thereby increasing the chances of their technologies being commercially successful
- Commercialisation of the innovative solution can lead to the creation of new jobs locally as well as increase in the level of exports and income generated from abroad
- The general public would benefit from a better economy since innovation is a strong tool which can make a difference. This will have an eventual positive effect on society's quality of life
- Success stories would be publicised in order to promote best practice in innovation procurement

Interested parties are invited to contact the InnoPro Group at the The Malta Council for Science and Technology for further information. Members of the InnoPro Group are: Ing. Joe P. Sammut, Mr. Joe Borg Camilleri and Ms. Christine Bartolo Perici.

Calendar of Science Communication Events 2012

School visits: (May & December Kalkara Day)

The Council has hosted groups of students who visited the ESF 1.40 – Science Popularisation Campaign permanent exhibition of interactive exhibits at Villa Bighi and participated in a science show, which was delivered by a member of the SPU team. In May, students from De La Salle College and Tarxien Girls Secondary School attended, while in December students from Kalkara Primary school visited as part of the Kalkara Day celebrations.

Outreach

Some Science Exhibits were loaned to Santa Venera Primary School and Siggiewi Primary School. These formed a roving exhibition that was held as part of the Science Popularisation Outreach activities.

Notte Bianca & Science in the City (September)

A series of live science shows have been presented during the Malta Science and Art Festival 'Science in the City' event (Researchers' Night - 28th September) and the Notte Bianca (29th September). Three tents were also set up to house about 18 exhibits. The Council participated in both events through a Science Fun Fair in the Car Park of the Central Bank. There were about 12 shows presented, which attracted well in excess of 700 visitors. Children and adults alike were entertained. Feedback from visitors and third parties was very positive. According to this feedback, our stand was the one which attracted most people during the Science in the City event.

Zigu Zajg Fringe (16th – 18th November) - Dance

This year the Council participated in the ZiguZajg Fringe Arts Festival for Children & Young people with Dance. The event was held in collaboration with Choreographers Douglas Comley, Wales and Sandra Mifsud, Malta. They presented a dance piece which took the form of an audio and visual narration and presentation using dance. The Big Bang is a dance piece about the creation of the universe according to the Big Bang theory and the discovery of the Higgs Boson together with other particles. The dancers were students from various local vocational dance schools, participants of an annual residential workshop called Living Dance (2012). There was a good turnout and the performance was very well received by the audience and the organisers alike.

TV Series

A TV series on exciting science experiments was filmed by Reel 8 Productions for a children's TV programme and aired over 39 slots on NET TV. Each slot was 5 minutes long and was broadcasted during each programme throughout the full series.

Robot Wars (Sunday 25th November 2012)

The Malta Council for Science and Technology supported and sponsored the ever popular Robot Wars Event organised annually by the IEEE (Malta Student Branch). The competition was held at the KSU Common Room at the University of Malta.

The challenge was for competitors to design the best robot with the best weapon, high maneuverability and strength. Ten student teams, who have worked hard in designing and constructing mobile robots, tested their engineering skills, perseverance and limits of stamina all at one go in the majorly competition. Teams competed in a series of knockout tournaments.

2012 in Pictures

January

Preparation of a new National Research & Innovation Strategic Plan 2011-2020 - Public Consultation

February

The Prime Minister, the Hon. Lawrence Gonzi, delivers a speech and presides over the signing of a collaboration agreement between the Council and the ESA.

President's visit to Villa Bighi to learn of the Council's efforts

March

SELFDOTT, FP7 success story, highlighted in Research*EU publication

The Hon. Tonio Fenech, Minister of Finance, the Economy and Investment, delivers a speech at the Launch of Digital Games Strategy

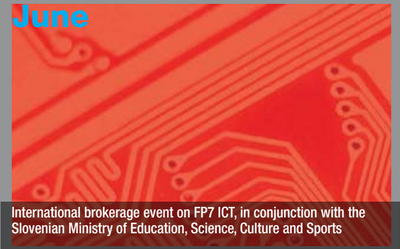
Launch of Commercialisation Programme

Leader of the Opposition, Joseph Muscat, is briefed on the Council's work

April

Information Session organized by the FP7 Unit on the Forthcoming EU R&I funding programme for research in science and technology

June



International brokerage event on FP7 ICT, in conjunction with the Slovenian Ministry of Education, Science, Culture and Sports

September

Live science-show at Researcher's Night, a Europe-wide annual event bringing together the public and researchers together for science-related activities.

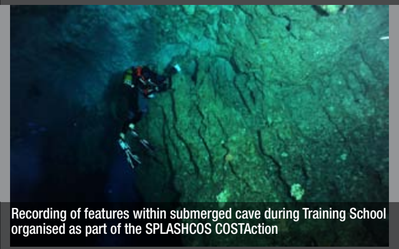
October

SEVENTH FRAMEWORK PROGRAMME

Launch of EU 7th Research Framework Programme (FP7) Successful Project Bonus Scheme

November

The Hon. Lawrence Gonzi, Prime Minister, is briefed on research projects undertaken by the Council



Recording of features within submerged cave during Training School organised as part of the SPLASHCOS COSTAction

December

MANUFACTURING RESEARCH PLATFORM MALTA

Conclusion of the ERDF project and approval of the National Manufacturing Research Strategy by Cabinet

The Malta Council for Science and Technology
Annual Report And Financial Statements For The Year Ended 31 December 2012

	Pages
Chairman's report	120
Independent auditor's report	121
Income and expenditure account	122
Balance sheet	123
Statement of changes in equity	124
Cash flow statement	125
Notes to the financial statements	126 - 131

Chairman's report
For the year ended 31 December 2012

The Chairman presents his report and the audited financial statements for the year ended 31 December 2012.

Principal activities
The The Malta Council for Science and Technology (hereafter referred to as the Foundation), is responsible for the development of science and technology in Malta.

Review of the business
The level of business and the Foundation's financial position is in line with expectations, and the Council expects that the present level of activity will improve in the foreseeable future.

Council
The members of the Council were:

Chairman:	Hon. Dr. Jeffrey Pullicino Orlando
Vice Chairman & CEO:	Dr Ing. Nicholas Sammut
Secretary:	Dr Alex Perici Calascione
Members:	Mr Anthony Tabone
	Prof. Maurice Grech
	Dr Susanne Gatt
	Prof. Alfred Vella
	Dr Marisa Cassar
	Dr Claire Bartolo
	Dr Alec Lapira
	Mr Charles Theuma
	Mr Charles Saliba
	Ing. Silvana Falzon
	Dr. Sue Vella

Statement of Council's responsibilities

The Council is required by the Charter Document of the Foundation to prepare financial statements which give a true and fair view of the state of affairs of the Foundation as at the end of each financial period and of the surplus or deficit for that period.

In preparing the financial statements, the Council members are responsible for ensuring that:

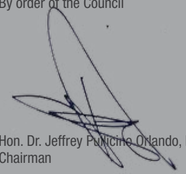
- appropriate accounting policies have been consistently applied and supported by reasonable and prudent judgments and estimates;
- the financial statements have been drawn up in accordance with the Accountancy Profession (General Accounting Principles for Smaller Entities) Regulations, 2009 and the Schedule accompanying and forming an integral part of those Regulations;
- the financial statements are prepared on the going concern basis unless it is inappropriate to presume that the Foundation will continue in business as a going concern.

The Council is also responsible for keeping proper accounting records which disclose with reasonable accuracy at any time the financial position of the Foundation and to enable the council members to ensure that the financial statements comply with the Charter Document of the Foundation. They are also responsible for safeguarding the assets of the Foundation, and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

Auditor

A resolution to reappoint the firm Mercieca, Azzopardi & Co. as auditors of the The Malta Council for Science and Technology will be proposed at the forthcoming meeting at which these financial statements are approved and authorised for issue.

By order of the Council



Hon. Dr. Jeffrey Pullicino Orlando, B.Ch.D.(Hons), M.P.
Chairman

"Villa Bighi"
Kalkara
Malta

21 February 2013

Independent auditor's report

Report on the financial statements

We have audited the accompanying financial statements of the The Malta Council for Science and Technology set out on pages 120 to 129, which comprise the balance sheet as at 31 December 2012, the income and expenditure account, statement of changes in equity and cash flow statement for the year then ended, and a summary of significant accounting policies and other explanatory information.

Council's responsibility for the financial statements

The Council is responsible for the preparation of financial statements that give a true and fair view in accordance with the Accountancy Profession (General Accounting Principles for Smaller Entities) Regulations, 2009 and the Schedule accompanying and forming an integral part of those Regulations and for such internal control as the council members determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with International Standards on Auditing. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control.

An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the council members, as well as evaluating the overall presentation of the financial statements.

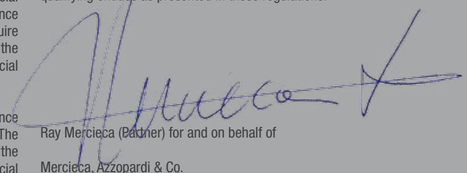
We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements give a true and fair view of the financial position of The Malta Council for Science and Technology as at 31 December 2012, and of its financial performance and its cash flows for the year then ended in accordance with General Accounting Principles for Smaller Entities.

Report on Other Legal and Regulatory Requirements

In our opinion, the financial statements have been properly prepared in accordance with the Accountancy Profession (General Accounting Principles for Smaller Entities) Regulations, 2009 and the Schedule accompanying and forming an integral part of these Regulations, for qualifying entities as presented in these regulations.



Ray Mercieca (Partner) for and on behalf of

Mercieca, Azzopardi & Co.
Certified Public Accountants
San Gwann
Malta

21 February 2013

Income and expenditure account
For the year ended 31 December 2012

	Notes	2012	2011
		€	€
Project income		**1,753,967**	3,487,438
Project expenses		**(1,784,914)**	(3,657,100)
Gross deficit		**(30,947)**	(169,662)
Administrative expenses		**(1,293,669)**	(1,253,660)
Operating deficit	3	**(1,324,646)**	(1,423,322)
Other income	5	**1,171,949**	1,736,849
Investment income	6	**1,982**	1,676
Interest payable and similar charges	7	**(430)**	(1,058)
(Deficit)/Surplus for the year		**(151,145)**	314,145

Balance sheet at 31 December 2012

	Notes	2012	2011
		€	€
Assets			
Non-current assets			
Property, plant and equipment	9	**640,825**	260,760
Investments in associated undertaking	10	**-**	7,761
		640,825	268,521
Current assets			
Trade and other receivables	11	**357,297**	62,499
Cash and bank		**704,354**	1,596,549
		1,061,651	1,659,048
Total assets		**1,702,476**	1,927,569
Equity			
Reserves			
Accumulated fund		**265,506**	416,651
Liabilities			
Non-current liabilities			
Trade and other payables	12	**455,708**	-
Current liabilities			
Trade and other payables	12	**981,262**	1,510,918
Total liabilities		**1,436,970**	1,510,918
Total equity and liabilities		**1,702,476**	1,927,569

The financial statements on pages 118 to 127 were authorised for issue by the Council on 21 February 2013 and were signed on its behalf by

Hon. Dr. Jeffrey Pullicino Orlando
Chairman

Dr Nicholas Sammut
Vice Chairman & CEO

Statement of changes in equity for the year ended 31 December 2012

	Accumulated fund	Total
	€	€
Balance at 1 January 2011	102,506	102,506
Surplus for the year	314,145	314,145
Balance at 31 December 2011	416,651	416,651
Balance at 1 January 2012	416,651	416,651
Deficit for the year	(151,145)	(151,145)
Balance at 31 December 2012	**265,506**	**265,506**

Cash flow statement for the year ended 31 December 2012

	Notes	2012	2011
		€	€
Cash flow from operating activities:			
Operating deficit		(1,324,646)	(1,423,322)
Adjustments for:			
Depreciation of property, plant and equipment		57,889	81,195
Impairment of investment in associate undertaking		7,761	-
Deferred grants released to income for year		-	(38,657)
		(1,258,996)	(1,380,784)
Changes in working capital			
Trade and other receivables		(294,798)	1,006
Trade and other payables		(529,656)	449,154
Cash used in operations		(2,083,450)	(930,624)
Interest received		1,982	1,676
Interest paid		(430)	(1,058)
Other income		1,171,949	1,736,849
Net cash (used in)/generated from operating activities		(909,949)	806,843
Cash flows used in investing activities			
Purchase of plant, property and equipment		(437,954)	(257,262)
Cash flows generated from financing activities			
Contribution from government grants		455,708	-
Movement in cash and cash equivalents		(892,195)	549,581
Cash and cash equivalents at beginning of year		1,596,549	1,046,968
Cash and cash equivalents at end of year	13	704,354	1,596,549

Notes to the financial statements

1 Basis of preparation

The financial statements of the The Malta Council for Science and Technology have been prepared in accordance with the Accountancy Profession (General Accounting Principles for Smaller Entities) Regulations, 2009 and the Schedule accompanying and forming an integral part of those Regulations ("GAPSE").

Basis of measurement

The financial statements are prepared in accordance with the historical cost convention.

Functional and presentation currency

The financial statements are presented in euro, which is the Foundation's functional currency.

2 Significant accounting policies

Property, plant and equipment

Recognition and measurement

The cost of an item of property, plant and equipment is recognised as an asset when it is probable that the future economic benefits that are associated with the asset will flow to the entity and the cost can be measured reliably. Property, plant and equipment are initially measured at cost comprising the purchase price, any costs directly attributable to bringing the assets to a working condition for their intended use, and the costs of dismantling and removing the item and restoring the site on which it is located. Subsequent expenditure is capitalised as part of the cost of property, plant and equipment only if it enhances the economic benefits of an asset in excess of the previously assessed standard of performance, or it replaces or restores a component that has been separately depreciated over its useful life.

Property, plant and equipment is carried under the cost model, that is at cost less any accumulated depreciation and any accumulated impairment losses.

Depreciation

Depreciation is calculated to write down the carrying amount of the asset on a straight line basis over its expected useful life. Depreciation of an asset begins when it is available for use and ceases at the earlier of the date that the asset is classified as held for sale (or included in a disposal group that is classified as held for sale) in accordance with Section 24 of GAPSE or the date that the asset is derecognised. The depreciation charge for each period is recognised in profit or loss. The rates of depreciation used are based on the following useful lives:

	%
Improvements to building	10
Office equipment	10
Soft furnishings	10
Technical equipment	20
Furniture, fixtures and fittings	10
Motor vehicles	20
Computer hardware and software	33.33

No depreciation is being provided for on the National Interactive Science Centre. Government funds are available to set up the National Intereactive Science Centre at the Bighi complex in Kalkara. The science centre has so far incurred expenses relating to design and in accordance with Section 7.20 of GAPSE no depreciation is being provided for until the asset in made available for use.

Impairment

The carrying amounts of the Foundation's property, plant and equipment are reviewed at each balance sheet date to determine whether there is any indication of impairment. If any such indication exists, the asset's recoverable amount is estimated.

Whenever the carrying amount of an asset exceeds its recoverable amount, an impairment loss is recognised and the carrying amount of the asset is reduced to its recoverable amount. Impairment losses are recognised immediately in profit or loss, unless they relate to an asset which is carried at revalued amount, in which case they are treated as a revaluation decrease in accordance with the applicable Section in GAPSE.

The carrying amounts of the Foundation's assets are also reviewed at each balance sheet date to determine whether there is any indication that an impairment loss recognised in prior periods may no longer exist or may have decreased. If any such indication exists, the asset's recoverable amount is estimated. An impairment loss previously recognised is reversed only if there has been a change in the estimates used to determine the asset's recoverable amount since the last impairment loss was recognised. When an impairment loss subsequently reverses, the carrying amount of the asset is increased to the revised estimate of its recoverable amount, to the extent that it does not exceed the carrying amount that would have been determined had no impairment loss been recognised for the asset in prior years. Impairment reversals are recognised immediately in profit or loss, unless they relate to an asset which is carried at revalued amount, in which case they are treated as a revaluation increase in accordance with the applicable Section in GAPSE.

Investment in associate undertakings

An associate is an entity over which the foundation has significant influence and that is neither a subsidiary nor an interest in a joint venture. Significant influence is the power to participate in the financial and operating policy decisions of the associate but is not control or joint control over those policies.

Investments in associates are initially measured at cost. After initial recognition, the investment may be carried under the cost method, or under the equity method, that is at its initial recognition amount, subsequently adjusted to recognise the foundation's share of the profit or loss or changes in equity of the associate after the date of acquisition, and to recognise impairment losses.

After initial recognition, investments in associates are carried under the cost method. Under the cost method, the investment is measured at cost less any impairment losses. Distributions received are recognised as investment income in profit or loss when the foundation's right to receive the dividend is established.

Trade and other receivables

Trade and other receivables are carried forward at anticipated realisable value. An estimate is made for doubtful receivables based on a review of all outstanding amounts at year end. Bad debts are written off during the year in which they are identified.

Trade and other payables

Trade and other payables are stated at their nominal value.

Cash and cash equivalents

Cash and cash equivalents comprise cash balances and call deposits. Bank overdrafts that are repayable on demand and form an integral part of the Foundation's cash management are included as a component of cash and cash equivalents for the purpose of the statement of cash flows.

Revenue

Revenue is recognised upon performance of services and is reported in the financial statements as project income.

3 Operating deficit

The operating deficit is stated after charging the following:

	2012	2011
	€	€
Depreciation of property, plant and equipment (note 9)	57,889	81,195
Staff costs (note 4)	967,779	902,502
Auditor's remuneration	1,700	1,700
Movement in provision for irrecoverable debt	2,357	-

4 Staff Costs

	2012	2011
	€	€
Wages and salaries	825,382	771,482
Social security costs	60,941	50,174
Council members' emoluments	81,456	80,846
	967,779	902,502

Average number of full time equivalents employed during the year:

	2012	2011
	€	€
Administration	41	39

5 Other income

	2012	2011
	€	€
Government of Malta subvention	945,210	1,409,856
Grants related to capital expenditure	29,318	-
Refund of salaries and expenses	193,685	169,397
Refund of overheads	-	90,544
Government grants released to income for the year (note 12)	-	38,657
Sundry income	3,736	28,395
	1,171,949	1,736,849

6 Investment income

	2012	2011
	€	€
Interest receivable on bank balances	1,982	1,676

7 Interest payable and similar charges

	2012	2011
	€	€
Bank interest payable and similar charges	430	1,058

8 Income tax

No provision for Malta income tax has been made in these financial statements as the The Malta Council for Science and Technology is exempt from Malta income tax.

9 Property, plant and equipment

	Improvements to building	National interactive science centre	Office Equipment	Soft Furnishings	Technical Equipment	Furniture, fixtures & fittings	Motor vehicles	Computer hardware & software	Total
	€	€	€	€	€	€	€	€	€
Cost									
At 1 January 2011	282,695	-	47,010	18,682	85,810	140,143	32,926	179,780	787,046
Additions	180,181	-	390	699	590	58,444	-	16,958	257,262
At 1 January 2012	462,876	-	47,400	19,381	86,400	198,587	32,926	196,738	1,044,308
Additions	10,290	362,300	467	227	-	19,623	-	45,047	437,954
Released on disposal	-	-	-	-	-	-	(24,074)	-	(24,074)
At 31 December 2012	**473,166**	**362,300**	**47,867**	**19,608**	**86,400**	**218,210**	**8,852**	**241,785**	**1,458,188**
Depreciation charge									
At 1 January 2011	243,866	-	42,606	17,078	84,202	114,791	32,926	166,884	702,353
Charge for the year	46,288	-	2,700	1,621	663	16,848	-	13,075	81,195
At 1 January 2012	290,154	-	45,306	18,699	84,865	131,639	32,926	179,959	783,548
Charge for the year	20,372	-	378	119	663	10,481	-	25,876	57,889
Released on disposal	-	-	-	-	-	-	(24,074)	-	(24,074)
At 31 December 2012	310,526	-	45,684	18,818	85,528	142,120	8,852	205,835	817,363
Net book value									
At 31 December 2012	162,640	362,300	2,183	790	872	76,090	-	35,950	640,825
Net book value									
At 31 December 2011	172,722	-	2,094	682	1,535	66,948	-	16,779	260,760

10 Investment in associated undertaking

	2012	2011
	€	€
Investment in associated undertakings at cost	-	7,761

Name	Registered office	Principal activities	Percentage of shares held 2012	2011
Euromediti Limited	Villa Bighi, Kalkara, Malta	Development of new technologies	33%	33%

Euromediti Limited has given notice in accordance with Article 265 (1) of the Companies Act, 1995 that it has passed an extraordinary resolution dated 25 January 2012, for its dissolution and consequential voluntary winding up.

11 Trade and other receivables

	2012	2011
	€	€
Trade receivables	2,914	6,768
Prepayments	8,355	9,245
Accrued income	229,840	46,486
Indirect taxation	116,188	-
	357,297	62,499

12 Trade and other payables

	2012	2011
	€	€
Non-current		
Government grants		
At beginning of year	-	38,657
Additions	455,708	
Released to income and expenditure account (note 5)	-	(38,657)
At end of year	455,708	-
Current		
Trade payables	73,672	19,027
Contingency	2,578	2,578
Accruals	104,772	80,525
Deferred income	800,240	1,392,514
Other payables	-	16,274
	981,262	1,510,918

In accordance with the Foundation's accounting policies relating to grants received for the purchase of tangible non-current assets, grants are included with non-current liabilities and are credited to the income and expenditure account when the asset is available for use, on a straight line basis over the expected useful lives of the related assets. The additions in the current year refer to grants granted by the Government of Malta to the Foundation for the design and construction of the National Interactive Science Centre.

13 Cash and cash equivalents

For the purposes of the cash flow statement, the cash and cash equivalents at the end of the year comprise the following:

	2012	2011
	€	€
Cash at bank and in hand	704,354	1,596,549

14 Contingent Liabilities

At 31 December 2012, guarantees amounting to €4,659 (2011: €5,659) were given by the Foundation during the normal course of operational activity in favour of third parties over which no loss is expected to arise.

Design Solutions Limited have initiated legal proceedings against the Foundation, claiming for the National Interactive Science Centre contract be awarded to them. The Malta Council for Science and Technology has requested a retrial which is currently being heard. The Foundation's lawyers are unable to quantify any potential contingency arising from the said case due to the nature of the claims.

15 Related party transactions

The Malta Council for Science and Technology is a public Foundation funded by the Government of Malta. Transactions with the Government of Malta during the year arose as shown hereunder:

	2012	2011
	€	€
Other funding	945,210	1,409,856

Fees and salaries payable to the Council Members have been disclosed separately in note 4.

The networking meetings among experts, professors and researchers in the field together with the various dimensions of human migration has broadened my theoretical understanding of the realities related to migrant health issues. Over time this has contributed to an improvement in the access to health care services for migrants and a source for professional development to a number of health care professionals who are showing an interest in this field.

Marika Podda Connor, Migrant Health Unit, Primary Healthcare

The people of The Malta Council for Science and Technology are always present:
to support on identifying and networking with key partners delivering stimulating and interactive workshops - WORKSHOPS inspiring with their continuous enthusiasm and positiveness bridging the communication with Brussels for clarifying technical proposal issues stimulating our efforts to participate to research proposals'

Vasilis Valdramidis, University of Malta

My experience with The Malta Council for Science and Technology was: SWAP! Synergy - Welcoming - Availability – Professionality

Anna Gallo, Researcher

The only way to keep abreast in the manufacturing industry is to be involved in research as it sets higher goals to leading edge technology. Research is the tool for innovation, a passport to networking and gives direction towards the creation of new business opportunities.

The Malta Council of Science and Technology through the R&I programme has given IMA Engineering Services Limited and its' employees the opportunity to look ahead and invest its resources in the nanotechnology field for carrying out research in innovative composite materials with applications in the electronics industry.

Ing. Michael Attard, IMA Engineering Services

Participating in COST Action IC1106 "Integrating Biometrics and Forensics for the Digital Age" is very important for me as it is very difficult to work in the field of forensic science in Malta. It is giving me the opportunity to expand my knowledge in digital forensics particularly fingerprint analysis. Through the different working groups of the Action I'm networking with world experts in this field, sharing and testing new ideas. Research in forensic science is non existent in Malta and I think this is a stepping stone for further research through a partnership between the University of Malta and the Malta Police Force.

Joanna Vella , University of Malta

This experience was crucial in establishing good international links with other colleagues abroad. For instance, we took part in two FP7 research project proposals and one of the members of my department, benefitted from a short term scientific mission (STSM) at the HPA in Chilton. The established links were also very important from the point of view of providing technical support to the Ministry for Health, the Elderly and Community Care as well as the Occupational Health and Safety Authority during difficult discussions taking place in Brussels on the new directive 2004/40/EC which is concerned with safeguarding workers from overexposure to electromagnetic fields.

Charles V. Sammut, University of Malta

The Council have and are still assisting MIIS in European Funded FP7 projects and other Calls, especially by providing information about open and future calls and helping in partner searches. Their response is very quick and efficient.

Nicholas Borg, Malta Industrial Innovation for SMEs

Writing an FP7 project proposal for the first time was a daunting activity to our team. The assistance provided by The Malta Council for Science and Technology gave us the necessary spark to take our proposal to the next level and try to tap EU funding.

Daniel Micallef, Econetique

Throughout the program the people responsible were extremely helpful and diligent in their field of expertise. We were offered guidelines and recommendations regarding formulation of reports to the requirements of the agreements when the grant offer was awarded. Their dedication and sheer determination to the cause of increasing, and seeing successfully through, R&D projects in Malta is exemplary. We would like to thank the The Malta Council for Science and Technology staff for their continuous support and to express our best wishes for more success in the future.

Ryan Xureb, Econetqiue Ltd.

My experience with the R&I unit within The Malta Council for Science and Technology has so far been very positive. I have always found members of the team extremely helpful and supportive from the preliminary pre-submission process to the final audit of projects. They are always willing to discuss how to make best use of the available resources and to assist us with all we need, from finance management and budgeting to publicity and outreach. THANK YOU!

Joseph N. Grima, Uniervsity of Malta

Your support was invaluable. Having some experience of grant applications abroad I can say that the external expert advice I received from The Malta Council for Science and Technology was readily accessible and of a high standard. The staff at The Council helped us attain this goal.

Joe Psaila, Ministry for Health, the Elderly and Community Care

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Credits

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Other photos: ESA, EC Audiovisual Services, European Parliament Audio/Visual, Stock.XCHNG, MTA
NISC Artist Impressions: DTR

Xjenza

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