
ANNUAL REPORT

20
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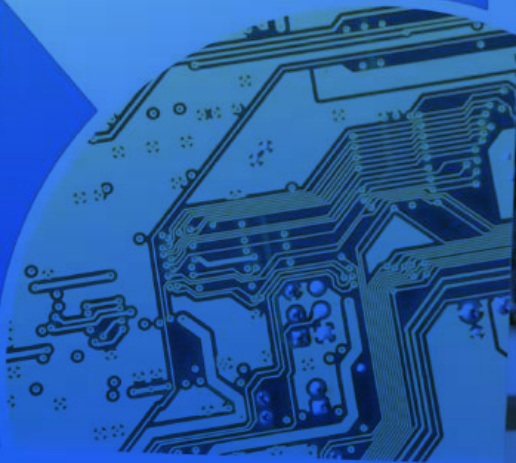
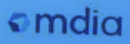
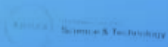
The Malta Council for
Science & Technology



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STRENGTHENING
**R & I in the
Digital Sector**



Leaping into the Future

The Honourable Keith Azzopardi Tanti
Parliamentary Secretary for Youth,
Research and Innovation



During 2023, the Malta Council for Science and Technology, which falls under my purview as Parliamentary Secretary for Youth, Research and Innovation in the Ministry for Education, continued with its sterling work in contributing to the execution of the planning and strategic vision for Malta's progress and continued development in the crucial areas of research and innovation, the areas that I am responsible for at the political level. Decision-making and future direction by the Government is fed the necessary information and data by the strategic and policy units of the MCST, which are part and parcel of its vision for the future. During the year under review, I am happy to underline the fact that the cooperation between the political arm of government and the technical departments in this sector continued to grow in a spirit of one common goal, the furtherance of research and innovation in their role as one of the cornerstones for the Maltese economy.

The relationship between these two arms is one of mutual support. While the technical leaders continued to provide input by sharing their expertise, know-how and advice with the political structures, we, the Government, maintained our commitment and support to the sector in greater concrete terms. The much-needed funds for the operations of MCST and Esplora were well-budgeted for and provided as necessary. However, what is ultimately most noteworthy is how the government, always through the MCST, increased its injection of funds into the economy, new businesses and projects through FUSION, the national funding programme for research and innovation. In 2023, this programme saw

its budget allocation increased to €4.3 million. With my Secretariat and the whole Government's support, the actual spend for 2023 shot up to €5.6 million, reflecting a substantial 310% increase compared to the 2022 budget spend of €1.8 million. This was possible because not only was the whole of the allocated €4.3 million budget for the year utilised, but an additional reserve fund of €1.3 million was allocated, after tapping in to 2022 FUSION budget funds which had remained unspent due to the circumstances and situations immediately following the COVID pandemic. This meant, in project terms, that we financed 70 new R&I projects through the FUSION Programme in 2023, marking a significant 240% rise from the 29 projects allocated the previous year.

In the budget for 2023, the Government had included plans for a FUSION Technology Extension Support Programme, which MCST launched in May 2023 to promote collaboration between Maltese industries and higher education institutes, facilitating advancements in product and process development. The Government had also planned to upgrade its institutional relationship with the European Space Agency (ESA) by joining the 'Plan for Cooperating States'. In full cooperation between the political and the technical arms, this was achieved in October 2023, with the financial support being provided to MCST by the Government in the form of the required annual contribution of around 1.7 million. With this upgrade to Malta's status within the context of European Space matters, we have now placed our country at par with the key players in this sector, an area in which there is a lot of fertile ground for

investment in both upstream and downstream activities, for benefits in the agricultural, transport, maritime and other sectors.

Another area in which a greater success was registered in 2023 was the participation of Maltese stakeholders in the EU Framework Programme, Horizon Europe. This participation continued to grow, with over 200 proposals involving Maltese beneficiaries submitted for the 2023 deadlines. Out of these, 28 proposals were approved for direct funding by the EU through Horizon Europe. This significant increase into funds channeled towards Maltese entities engaged in scientific research and innovation would not have been possible without the Horizon Support Schemes offered by the Government through the MCST. These schemes boost Malta's involvement in Horizon Europe by offering support in specific aspects, enhancing networking opportunities and assisting in the preparation of proposals by Maltese coordinators. Throughout the year under review, I am proud to underline the fact that the National Contact Points continued to support Maltese researchers, holding over 400 one-on-one meetings and organising 22 events and training sessions to assist them in navigating Horizon Europe. These efforts aimed to enhance their understanding of the programme, improve proposal development, and strengthen their chances of securing funding.

The Government that I form part of is committed to encourage, support and facilitate R&I cooperation with foreign countries. In February 2023, on behalf of the Government of Malta, I signed a Memorandum of Understanding with H.E. Abdulla Nasser Lootah, Deputy Minister of Cabinet Affairs for Competitiveness and Experience Exchange of the United Arab Emirates (UAE), through twenty (20) senior management officials working within the Maltese Public Service participated in the Executive Leadership Programme (ELP 2023) led by UAE professionals. This international training programme aimed to further improve the local capacities in the public service. We also concluded another MoU on cooperation in Research and Innovation with the Kingdom of Spain.

The MCST also helped to realise the Government's vision for science, research and innovation in the internationalisation sphere. We launched three new Horizon Europe Co-funded Partnerships on research addressing the clean energy transition, transformation needed towards a climate-neutral, sustainable, productive and competitive blue

economy, and on the transformation of health and care systems. MCST represented the Government in these Partnerships and is managing the seven-year national investment of €10.5 million to support local successful researchers. We also launched the Maltese BlueMissionMed Hub, which aims to instil a sense of ownership within the local community on marine pollution in the Mediterranean Sea. Furthermore, existing bilateral cooperations saw their budgetary allocations increased, namely the SINO-Malta and the MCST-TÜBİTAK agreements with the Chinese Ministry of Science and Technology (MOST) and the Turkish Scientific and Technological Research Council (TÜBİTAK). We upped the national contribution to these two agreements to a total of €1.7 million, a sum that will be matched by our Chinese and Turkish partners. This budgetary increase was accompanied by a parallel broadening of the thematic focus to include more priority areas outlined in Malta's Smart Specialisation Strategy 2021-2027. Another significant milestone that we achieved in November 2023 was the Cabinet of Ministers' adoption of the National R&I Strategic Plan 2023-2027, the final version of which was officially launched during a national public event in early 2024. This Plan aims to ensure that a stronger governance framework, as well as the necessary resources, are in place for the expanded role of R&I as a driver of economic development. The Plan is designed to ensure a lasting impact on the national R&I landscape, if adequate levels of resources are attributed for its correct and timely implementation. Efforts to lay the groundwork for its implementation were actively ongoing throughout 2023, in collaboration with various stakeholders, and its actual implementation started in 2024.

Finally, a word about the future. With the ever-increasing importance of science, research, innovation and Space-related issues in the Maltese economy and society, we felt that a more robust structure was needed to assume the responsibility for the exponentially growing involvement and investment in these sectors. During 2023, we started working on the setting-up of such a body in the form of an Agency to take over to continue to build on what the MCST had managed to achieve. This Agency, Science Malta, was launched on the 1 July 2024, and its reception, and the formal administrative and legal structure involved in its set-up, augur well for the future. We look forward to the future knowing that Malta and its people shall be reaping the success of our endeavours in the field for many years to come.

Forward Planning

Silvio Scerri
Science Malta Chief Executive Officer



2023 saw some changes at the helm for the Malta Council for Science and Technology (MCST), since as from the 1 January 2023, I was appointed to the role of Chief Executive Officer within the Council. As I already wrote in last year's report, my brief was to build on the foundations and the work that had been done previously, while at the same time looking ahead to see what changes needed to be made for the future.

The momentum built up over the years needed to be maintained, and any changes to be made needed to be done in a gradual process of transition, giving no shocks to the system so as not to interrupt or hamper existing levels of output. The main responsibilities for the Council remained twofold – the first is the popularisation of science among the general population, using a disseminative approach, sowing seeds for increased awareness of science in our society and its presence in daily lives. This activity in our younger generations would sow the seeds among many students for them to engage more with the crucial STEM subjects, namely Science, Technology, Engineering and Mathematics. Thus, the MCST, in close coordination and collaboration with the country's education authorities at all levels, would be contributing to the creation of a new, growing population of graduates in the sciences. This is a key factor in the Government's strategic vision for an economy that benefits more and more from the Research and Innovation sector. The Council also enjoyed a role as the go-to institution for

all matters Science, Research and Innovation. It has built itself up to be the acknowledged leader in the field and offers maximum support in the form of funding and in the area of knowledge-sharing, to the research and innovation business and academic community. This also includes participation in international and European initiatives on behalf of Malta by specialists employed by the Council, and involves administering National and European (and other bilateral) funding programmes on behalf of the Government.

MCST also set up, using European Union funds, Malta's National Interactive Science Centre, Esplora at the ex-Naval Hospital in Bighi, Kalkara. While annually attracting an ever-growing number of visitors to its interesting, exciting and educational exhibits, it has also developed as the hub for a large number of outreach activities, taking science to communities. The MCST premises at Kalkara also offer myriad opportunities for commercial activity, since the venue itself is ideal for conferences, and even weddings.

All these responsibilities are a far cry from when the Council was first established in 1988, as a public body of an undefined administrative nature, established by the government with the mandate of advising it on science and technology policy. With its much-expanded remit always having been piled on to the initial body, it was becoming felt that its formal setting-up was lacking in the legal and administrative instruments

that it enjoyed. Suffice it to mention that the Council was responsible for administering and disbursing millions of Euros in public (National and European) funds, was engaging in direct commercial activity at its premises, was signing bilateral and multilateral agreements on Malta's behalf and many other such matters.

Therefore, upon my taking up office, a series of consultative exercises with the relative authorities was embarked upon to determine what sort of *persona* was required for all these activities and responsibilities to be handled legally and efficiently. This would take up a lot of time over the year under review, as the plan was for the necessary changes to be implemented, and a new set up established, in 2024. This exercise was successful as on the 1 July 2024, all this preparatory work came to fruition with the formal establishment of *Xjenza Malta* (Science Malta) as a government Agency. This new agency would assume responsibility for strategy formulation, funding administration and coordinating National Research and Innovation programmes and for the running of Esplora and the commercial elements of the Bighi complex. 'L.N. 112 of 2024: Public Administration Act (Cap. 595); Science Malta (Establishment as an Agency) Order, 2024.' meant that it would henceforth bring together under its responsibility all activities related to Research and Innovation, including Policy Development and Implementation, Funding Programmes and Space-related matters.

The work of MCST was not interrupted by this planning. On the contrary, results show that it continued to grow. The Esplora exhibits, which had remained unchanged up till then due to the requirements and obligations of their EU funding, were now needing upgrades, so in our efforts to improve the service offered at our flagship facility, we made sure that we would make both quantitative and qualitative improvements – Esplora needed to have MORE and BETTER exhibits and activities.

This will be better explained further on in this report, which is divided in two sections. In the first section, we will see how the MCST, through its

Technical Units continued to perform its function as the National body entrusted with all matters relating to science. These Units continued to contribute to the Government's strategy formulation, combining policy perspectives the European Union, bi-lateral, regional and international frameworks in which these policies must be implemented. The details of all supported projects, along with the respective investments, can be found in the tables within this report. It is worth noting that both financial and technical support were provided to private and public stakeholders alike, including our institutions of higher learning, such as the University of Malta and the Malta College of Arts, Science, and Technology (MCAST). The hard work, commitment and dedication of the staff of all the technical units have produced tangible results, all of which are presented in full detail in the subsequent pages of this Report. This work that continued to be carried out, and indeed expanded upon, at the technical level in 2023, meant that the MCST remained the key player in Malta's science sector.

The second section of this report will go into much detail about the operations of Esplora, which enjoyed a greater visitor presence from both the local community (of all ages and backgrounds) and even visitors to our shores, thus providing its contribution as a value-added element of Malta as a tourist destination. Besides the investment into the upgrading of exhibits, no month would go by without Esplora hosting, or outreaching, for some novel activity aimed to attract different age groups – from grandchildren to grandparents – in its mission to popularise science among the general population.

We are now functioning as an Agency. The future looks bright and all of us here at Science Malta look forward to continuing our efforts to strengthen science in our communities, in our institutions and in our economy, for the common benefit of all.

1.0 Strategy and Policy Unit

The Strategy and Policy Unit (SPU) team plays a key role in advising Government on matters concerning research, innovation and Space, both locally and within the wider context of the EU and international arenas. This unit is also responsible for formulating relevant strategies within the realm of research and innovation. Additionally, it ensures that the fundamental principles conveyed therein are reflected in other pertinent and complementary national policies and strategies.

Amongst the key strategic documents developed and overseen by the SPU are the National Research and Innovation Strategy, the Smart Specialisation Strategy and the National Open Access Policy. Team members represent the Government in numerous EU-level fora and provide support and advice in the process of developing a national position on research, innovation, space and related initiatives.

1.1 The National Research and Innovation (R&I) Strategy

The draft National R&I Strategic Plan 2023-2027 was launched for public consultation in December 2022. Following the closure of the public consultation phase in January 2023, amendments were made to incorporate stakeholder feedback and perspectives. The final version of the Strategic Plan was adopted by the Cabinet in November 2023 and will be officially launched during a national public event in early 2024.

The Strategic Plan aims to ensure that a stronger governance framework, as well as the necessary resources, are in place for the expanded role of R&I as a driver of economic development. The Plan is designed to ensure a lasting impact on the national R&I landscape, if adequate levels of resources are attributed for its correct and timely implementation. Efforts to lay the groundwork for its implementation was actively ongoing throughout 2023, in collaboration with various stakeholders. These included preparatory work for the establishment of a Community of Practice for Research Funding Organisations, collaboration with the Ministry for Foreign and European Affairs and Trade on a mapping exercise of Maltese diaspora researchers and collaboration with the National Commission for Promotion of Equality on gender issues in R&I. Furthermore, the Unit worked on the submission of a Horizon Europe application (Coordination and Support Action) in the area of procurement for innovation, as well as the preparatory work for a study on R&I support schemes. This study will be formally launched in early 2024.



1.2 Smart Specialisation Strategy

Smart Specialisation is a key principle underpinning the European Commission Cohesion Policy for the period 2021-2027 in the Research, Technology, Development and Innovation priority. Similarly to the 2014-2020 programming period, the existence of a Smart Specialisation Strategy is an enabling condition to access European Regional Development Funds in this field. The RIS3 2021-2027 was launched in January 2022. Six expert Thematic Committees, one per RIS3 area, were set up in July 2022 to bring together the relevant actors of the quadruple helix (government, academia, business and civil society) during the implementation stage of the Smart Specialisation Strategy. The Thematic Committees were appointed to advise the Ministry for Education, Youth, Sport, Research and Innovation on the operationalisation of key actions in each sector to unlock the innovation potential identified in the RIS3 by assessing the adequacy of available instruments, proposing new measures if needed and making other recommendations as necessary.

During 2023, this unit continued providing technical support to all the six committees in line with the outcomes of the Action Plans that the committees had submitted in late 2022. Furthermore, the SPU supported actions relating to the horizontal elements of concern which emerged from the Action Plans, such as skills gaps. To this end, this unit supported the National Skills Council in their application for a Targeted Support Instrument (TSI) for the Flagship on Skills, supported by the European Commission's DG REFORM.

Another horizontal issue, which this unit focused on in 2023, was improving Malta's level of inter-regional cooperation activities in the RIS3 areas. To this end, in September 2023, the Unit oversaw the application for a Targeted Support Assignment (TSA) on Interregional Collaboration with the Smart Specialisation Strategy Community of Practice (S3 CoP). The aim of this TSA is to improve Malta's awareness of and access to interregional collaborative networks and platforms, and review the current practices followed by specific recommendations for improvements. The expert visit will take place in June 2024, with a final report to be presented by October 2024. Lastly, the SPU7

sought to increase its networking with peers in RIS3 by becoming more actively engaged in the RIS3 Community of Practice, specifically on the working groups on inter-regional cooperation and on industrial transition.

1.3 The National Open Access Policy

The development of a National Open Access Policy was a measure in the 2017 Electoral Manifesto, which identified the need for supporting the broader dissemination of research results built on the principles of public access of scientific knowledge, while also aligning with high-level developments in global and European research policy. This Policy builds on the recommendations of a report from a group of experts, appointed in 2019 under the auspices of the European Commission's Policy Support Facility (PSF), who were tasked with providing contextualised external advice and operational recommendations on defining the vision, goals and scope of a national open access policy in Malta.

Following the Cabinet's endorsement of the National Open Access Policy, a governance structure, in the form of an Executive Committee, was set up in June 2022. The Executive Committee is comprised of high-level stakeholder representatives to support the implementation of the Open Access Policy, and to ensure that the respective actions for each stakeholder are followed up. During 2023, the Unit continued supporting the work of the Executive Committee not only in terms of meetings but particularly by raising awareness of the need for further engagement at the right level, and the need for the necessary resources to be made available to stakeholders. The SPU continued to build its knowledge base and networking in the area through its continued participation in the Council for National Open Science Coordination (CoNOSC), a network of national Open Science coordinators in the UN-European region.

1.4 EU Affairs

Throughout 2023, the SPU continued to advise and support Government in all matters related to the EU's research and innovation (R&I) and Space policies. The unit maintained a close relationship with colleagues in the Permanent Representation to the EU in Brussels, and collaborated closely

with the Ministry responsible for R&I to ensure the appropriate scrutiny and cross-government oversight of all pertinent EU files, providing regular input on policy areas such as Digital, the Internal Market, the Environment and Health.

In the area of EU R&I, the unit's focus primarily centred on several important legislative and non-legislative dossiers. This included the adoption of Council Conclusions on high-quality, transparent, open, trustworthy and equitable scholarly publishing. Additionally, Council Conclusions were adopted on the impact of R&I on policymaking and on research valorisation as a tool for economic and industrial recovery and resilience. The SPU also contributed to the EU reaching political agreements for a Council Recommendation on a European framework to attract and retain research, innovation and entrepreneurial talents in Europe, and on the continuation of the Union's participation in the European Partnership for Research and Innovation in the Mediterranean Area (PRIMA).

In the area of Space, the work largely revolved around the adoption of Council Conclusions on the fair and sustainable use of space and on space traffic management. Moreover, the unit provided advice and direction for debates on the EU's broader Space priorities and policies.

SPU continued to represent Malta in various expert groups and international fora, including the European Research Area and Innovation Committee (ERAC), the ERA Forum, the European Strategic Forum on Research Infrastructures (ESFRI) and the European Research Infrastructure Consortium (ERIC).

The unit's work also extended to supporting engagement with governance structures related to the European Research Area (ERA). This involved supporting activities connected with the implementation of the ERA Policy Agenda (2022-2024) and the ERA's overall monitoring. Furthermore, the Unit became an Associated Partner to the Inspiring ERA Horizon Europe CSA project, which began in December 2023.

Through these efforts, the unit consistently worked to ensure Malta's active participation and influence in shaping EU policies related to research, innovation and space.

1.5 Policy Intelligence: Monitoring and Analysis

During 2023, SPU worked on the development of the first Monitoring Report for Malta's Smart Specialisation Strategy 2021-2027. The report is intended to inform the RIS3 Committee Chairs, and to provide a baseline snapshot of the priority Thematic Areas' performance at the start of the Strategy's implementation.

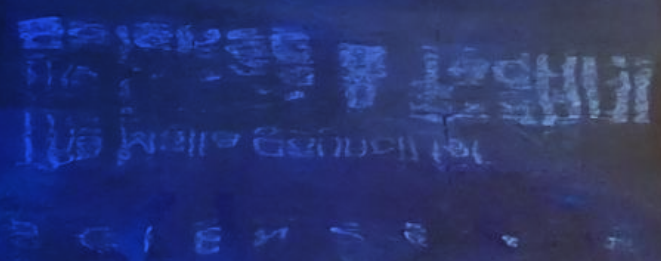
During 2023, the unit participated in a Mutual Learning Exercise (MLE) on the 'Whole of Government Approach' in R&I and attended several thematic sessions on this topic, during which experiences and lessons learned were shared, and best practices were identified and discussed. The work on this MLE will spill over into 2024, when it's expected to be concluded.



ENGAGE

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2.0 National R&I Funding Unit

2.1 FUSION – The National R&I Programme – 2023

FUSION is the national funding portfolio that drives and supports local Research and Innovation (R&I) and provides the necessary support for researchers and technologists to turn their innovative ideas into a market-ready reality. FUSION is supported through Malta Government funds and, during the year under review, was managed by MCST as the Managing Authority. The main objectives of FUSION are:

- To raise the level and profile of locally funded research;
- To ingrain R&I at the heart of the Maltese economy;
- To spur knowledge-driven and value-added growth; and
- To sustain improvements in the quality of life.

These can be achieved since research results and innovation have the potential of translating themselves into commercial activities, which generate a multiplier effect on the economy by increasing Malta's competitiveness through the creation of additional high-value and knowledge-intensive employment opportunities in Malta's priority industries.

FUSION is composed of various programmes. These programmes are designed in a way to offer the necessary mentoring and financial support for researchers and technologists to develop their ideas for the betterment of society.

2.2 FUSION R&I: Research Excellence Programme – 2023

The primary aim of the Research Excellence Programme (REP) is to spur the growth of new knowledge through experimental evidence following scientific hypotheses. The REP does this by funding novel, early-stage research that boasts a high degree of scientific excellence, through a bottom-up approach. The programme is intended to support projects of national and international relevance with the possibility of commercial applications, which could add more value to the Maltese economy.



Figure 1: Research Excellence Programme Logo

MCST launched the fourth call of the Research Excellence Programme (REP) in January 2023. During the REP 2023 Call, a total of 65 applications were submitted to MCST by several entities, ranging from public entities to industry players and non-profit making entities. Moreover, applications were received from a broad range of scientific areas ranging from:



Figure 2: Research Excellence Programme is a national funding programme for early stage, bottom up, non-thematic basic research

- Agriculture, Fisheries and Food.
- Digital Technologies.
- Energy.
- Engineering.
- Environment and Climate Change.
- Health.
- Marine and Maritime.
- Security.
- Social Sciences.
- Space.
- Sustainable use of resources.
- Transport and Mobility.

Further details with respect to the awarded projects can be found summarised in the table overleaf:

National R&I Funding Unit

Table 1: Awarded projects for the Research Excellence Programme 2023 Call

| Project Reference | Title | Beneficiary | Granted Amount (€) | Project Status |
|-------------------|---|---------------------|--------------------|----------------|
| REP-2023-004 | Exploring the Potential of achieving Subsea Air Isothermal Compression using Offshore Pipelines in Long Duration Energy Storage Applications (SAICOPEs) | University of Malta | € 79,882.00 | Ongoing |
| REP-2023-005 | AI meets the Maltese Courts : Safe use of AI to improve efficiency using the Small Claims Tribunal as a model (AMPS) | University of Malta | € 79,965.00 | Ongoing |
| REP-2023-006 | Advanced Health Evaluating and Monitoring Tool for Aerospace Electric Drives (eVal) | University of Malta | € 76,600.00 | Ongoing |
| REP-2023-009 | Protection of Data in Medical Research (PaDME) | University of Malta | € 79,920.00 | Ongoing |
| REP-2023-010 | The Evolution of the Maltese language between English and Italian influences (EvoMalt) | University of Malta | € 77,989.00 | Ongoing |
| REP-2023-011 | Constraint-free multi-modal Access to Communication Technology for Users with Severe motor impairments (CACTUS) | University of Malta | € 67,618.00 | Ongoing |
| REP-2023-013 | Lung Cancer Immunotherapeutic Antibodies (LUCIA) | University of Malta | € 80,000.00 | Ongoing |
| REP-2023-018 | Targeting Major ALS Genes in Malta: From Humanised Models to Rapid Therapeutic Translation (majorALS) | University of Malta | € 80,000.00 | Ongoing |
| REP-2023-019 | Confronting Cosmological Tensions in ESA Surveys using Machine Learning (CosmoLearn) | University of Malta | € 76,209.00 | Ongoing |
| REP-2023-020 | 3D Printer Batteries (3Dbats) | University of Malta | € 79,918.00 | Ongoing |
| REP-2023-021 | Revealing the Opposite Role of the Endocannabinoids AEA and 2-AG in Absence Epilepsy May Open Revolutionary Therapeutic Opportunities (EndoCannEpi) | University of Malta | € 79,990.00 | Ongoing |
| REP-2023-022 | Robust Electrooculography-based Eye-Gaze Tracking under Varying Illumination Conditions (EyeTrack) | University of Malta | € 79,995.00 | Ongoing |
| REP-2023-023 | Synthesis of Fluorescent Natural Product Sensing Polymers (Fluopoly) | University of Malta | € 76,914.00 | Ongoing |
| REP-2023-024 | 14.0/5.0 MR Training: Investigating MR Tools to Enhance Learning Experiences (IMRTEL) | University of Malta | € 79,744.00 | Ongoing |
| REP-2023-025 | Rheometric 3D Printing (REO3D) | University of Malta | € 79,129.00 | Ongoing |
| REP-2023-026 | Reinforcement Learning for Quantum Optimal Control (RLQuantOpt) | University of Malta | € 79,970.00 | Ongoing |
| REP-2023-027 | Exploring Visual Bias in News Content using Explainable AI (NBxAI) | University of Malta | € 79,916.00 | Ongoing |
| REP-2023-028 | Small-molecule therapeutics targeting a mitochondrial lipid in type-2 diabetes mellitus (MITOLIPID-T2DM) | University of Malta | € 79,600.00 | Ongoing |
| REP-2023-029 | Auxetic Fungi Biomaterial (AUXFIM) | University of Malta | € 79,970.00 | Ongoing |
| REP-2023-031 | Environmental Degradation of Malta's Megalithic Temples (MEGALITH) | University of Malta | € 79,960.00 | Ongoing |
| REP-2023-033 | Endemic Plant Omics (EPOM) | University of Malta | € 79,947.00 | Ongoing |
| REP-2023-034 | Empowered Consumer-Side Battery Energy Storage Systems for Enhanced Network Reliability (EMBRACE) | University of Malta | € 73,360.00 | Ongoing |

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| REP-2023-036 | Learning Causal Models of Affect (ERICA) | University of Malta | € 79,966.00 | Ongoing |
| REP-2023-037 | Active Support of Decarbonised Weak Power Distribution Networks (ASPIRE) | University of Malta | € 79,997.00 | Ongoing |
| REP-2023-039 | Lattices Graded using Additive Manufacturing (LattiGRAM) | University of Malta | € 79,997.00 | Ongoing |
| REP-2023-040 | A Machine Learning Algorithm for Correlation and Prediction of Fish Stress Derived by Water Quality and Impact of Microplastic in the Sea on Maltese Tuna Fish Farms (MARINA) | WES Trade Ltd. | € 56,673.00 | Ongoing |
| REP-2023-042 | Functional and Bioactive Packaging Solutions to Improve the Quality of Traditional Maltese Cheeselets (FunPack) | University of Malta | € 77,356.00 | Ongoing |
| REP-2023-043 | Autonomous Application for Information Mapping Scrapbook during the Dissertation Journey (STAR) | MCAST | € 79,716.00 | Ongoing |
| REP-2023-046 | An Industrial Hybrid 5 Degrees of Freedom (DOF) Robotic Manipulator for Printing Furniture (ELM-FAB) | ELM Fabrication Ltd. | € 79,626.00 | Ongoing |
| REP-2023-049 | Epigenetic Rejuvenation of Ageing Immune Cells to Reverse Immune Paralysis in Sepsis (EPICURE) | University of Malta | € 79,964.00 | Ongoing |
| REP-2023-051 | New Power Module Technology for Solid State Relays (CG SinterTech) | Carlo Gavazzi Ltd. | € 80,000.00 | Ongoing |
| REP-2023-052 | iPSC-Derived Hepatocytes and Kupffer Re-Cellularized liver Model (iLiver) | De Novo Cell Ltd. | € 79,994.00 | Ongoing |
| REP-2023-053 | 3D Printing of Concrete for Sustainable Construction (3DCONCRETE) | University of Malta | € 79,921.00 | Ongoing |
| REP-2023-054 | Mechanisms of Imatinib Re-Sensitisation in Chronic Myeloid Leukaemia using Combination Therapy (RECOMBICML2) | University of Malta | € 80,000.00 | Ongoing |
| REP-2023-057 | Virtual Kinetic Energy from Solar 1.0 (VirtualKES1.0) | FiR.mt | € 71,814.33 | Ongoing |
| REP-2023-059 | Dolphin Passive Acoustics to Develop a Baseline Knowledge on the use of Protected Areas and on the Interactions with Fishing and Aquaculture Activities in the Eastern Part of the Maltese Islands (DELFIHPAM) | EcoMarine Malta Ltd. | € 79,873.20 | Ongoing |
| REP-2023-061 | Robust Optimisation Framework for PVs and EVs Integration at Low Voltage Network (RoOFPEVs) | FiR.mt | € 71,692.03 | Ongoing |
| REP-2023-064 | Sustainable Utilisation of Seaweed for Transparent and Innovative Packaging (SUSTAINPack) | Natural Edge Ltd. | € 79,992.00 | Ongoing |

Following another successful uptake of the REP and the positive feedback obtained from interested stakeholders, MCST is envisaging to continue to relaunch this programme through the FUSION portfolio, as a single call per year during Quarter 1. This ensures further funding for early-stage, basic research and simultaneously entices further engagement by the industrial players.

2.3 FUSION R&I: Technology Extension Support Programme - 2023

The Technology Extension Support Programme (TESP) is a new funding programme within the FUSION portfolio which provides aid for private entities seeking technical support from Higher Education Institutes. Technology extension services can include the provision of information, technical assistance, consultation etc. but also connecting businesses with technology and expertise which may not be immediately available.



Figure 3: Technology Extension Support Programme Logo

The scope of the programme is to provide financial support for incremental product or process improvement. This programme will accelerate the application and the transfer of technological innovation to industry, as these get adapted to the business operations, facilitated by higher education institutes. Through the adoption of technology, this will ensure a proactive approach to preserve profitability, productivity, quality and innovation.

Hence, TESP operates by incentivising higher education institutes to provide technology-extension services to the private sector, focusing on solving specific challenges related to the company's products or processes, and thus resulting in incremental improvements.

During the 2023 Call, **6 applications** were received, out of which **3** were awarded. Further details with respect to the awarded projects, can be found summarised in the table below:



Figure 4: The Technology Extension Support Programme is intended to fund incremental product or process improvement

Table 2: Awarded projects for the Technology Extension Support Programme 2023 Call

| Reference | Title | Beneficiary | Granted Amount (€) | Project Status |
|---------------|--|---|--------------------|----------------|
| TESP-2023-002 | TABLEO - AI Assistant (TABLEO) | Get Hitched Inc. Ltd. (MCAST as HEI) | € 35,733.00 | Ongoing |
| TESP-2023-003 | Concrete Reinforced with 3D Printed Recycled PET Structure (CoRePET) | Laser Engineering & Development Ltd. (University of Malta as HEI) | € 39,636.22 | Ongoing |
| TESP-2023-006 | Virtual Conferencing of the Future (VCF) | Cinteraction Labs Ltd. (University of Malta as HEI) | € 38,649.00 | Ongoing |

2.4 Commercialisation Voucher Programme and Technology Development Programme 2023

The Commercialisation Voucher Programme (CVP) aims at improving the development and commercialisation potential of innovative research ideas, acting as a pre-requisite for the

Technology Development Programme (TDP). The latter supports the actual development of innovative projects.

Between 2016 and 2023, a total of 310 CVP applications were received from Maltese research entities. These applications targeted six Smart Specialisation areas: Future Digital Technologies, Health and Well-being, Sustainable Use of Resources, Smart Manufacturing, Aviation & Aerospace, Marine

and Maritime Technologies. Following scientific evaluations by external independent experts, a total of have 155 beneficiaries were selected for funding, requesting a total of almost € 4 Million in funding. CVP funds grants up to €22,420 for public entities whilst industrial entities are eligible for €14,250 in funding.

Table 3 portrays a breakdown of 2023 project submissions and funded projects per smart specialisation area.

In 2023, 7 Optional Vouchers have been provided to Technology Development Programme Projects, with a total commitment of around €0.2M (Refer to Table 4). These three vouchers grant a maximum of €15,000 for IP Protection,

€5,000 for a Business Plan and €4,000 for Investor’s Meeting preparation. Following the success of 2022 call where we increased the grant to €295,000, we launched another TDP call with some minor administrative amendments. After successfully completing the CVP programme, 7 projects were awarded funding under TDP during 2023. A total national funding of almost €2M was committed to these projects, some of which will complete in 2026. A list of these projects is provided in Table 5 entitled ‘Projects Awarded under the Technology Development Programme during 2023’. Between 2004 and 2023 inclusive, 147 proposals were accepted for funding, requesting a total commitment of approximately €23.1 million.

Table 3: Breakdown of CVP project submissions in 2023. Previous projects can be found on the website.

| Reference | Title | Beneficiary | Status |
|---------------|----------|---------------------|-----------|
| R&I_2023_001 | BEAT_DP | University of Malta | Completed |
| R&I_2023_002 | MORPHEUS | University of Malta | Completed |
| R&I_2023_003 | ROBERT | University of Malta | Completed |
| R&I_2023_005 | MASCOT | University of Malta | Completed |
| R&I_2023_006 | OMV_CRC | University of Malta | Completed |
| R&I_2023_007 | STOP | University of Malta | Completed |
| R&I_2023_008 | AVIATOR | Raven Ltd. | Completed |
| R&I_2023_010 | OARS+ | University of Malta | Completed |
| R&I_2022_013V | HyFoil | University of Malta | Completed |

Table 4: R&I CVP Optional Voucher 2023 Report

| Reference | Title | Beneficiary |
|--------------|-----------|---------------------|
| R&I_2018_009 | AIRSAVE | University of Malta |
| R&I_2020_008 | WAGE | University of Malta |
| R&I_2019_009 | HID | University of Malta |
| R&I_2019_003 | MALTAKNEE | University of Malta |
| R&I_2019_027 | VACUUM | University of Malta |
| R&I_2020_004 | Sit DIAB | University of Malta |
| R&I_2019_005 | AIRSAVE | University of Malta |

Table 5: Projects Awarded under the Technology Development Programme during 2023

| Reference | Title | Beneficiary | Granted (€) | Status |
|---------------|------------|-------------------------------|--------------|---------|
| R&I-2020-011T | M3Profiler | Omnigene Medical Technologies | € 253,343.00 | Ongoing |
| R&I-2021-008T | ADVISER | University of Malta | € 294,999.00 | Ongoing |
| R&I-2021-010T | REMEMI | University of Malta | € 294,914.00 | Ongoing |
| R&I-2021-014T | ARTIAP | University of Malta | € 294,865.00 | Ongoing |
| R&I-2022-010T | SPELL3D | University of Malta | € 294,933.00 | Ongoing |
| R&I-2022-011T | HiGEN | University of Malta | € 294,154.00 | Ongoing |
| R&I-2022-013T | HyFoil | University of Malta | € 264,294.00 | Ongoing |

2.5 Thematic Programme – Space Upstream Programme - 2023

In 2021, MCST expanded its FUSION portfolio to provide a more comprehensive support structure to the research community. Whilst these changes promote a wider range of technology readiness/maturity project proposals, it also included a top-down thematic programme provision. This Thematic Programme provision is intended to address a particular market failure for the year in question.

For 2023, this Thematic Programme was the Space Upstream Programme (SUP), as it was considered as an important step towards Malta’s preparation to join PECS, the ESA “Plan for European Cooperating States”. Space Upstream is related to the transportation of items into Space, Space Exploration and the development of related ground-based technology. Space Upstream as a Thematic Area has been further subdivided into five categories, which highlight the various aspects of the sector where research and development has potential to develop in Malta:

- Engineering.
- Bio Tech.
- Communications.
- Human Computer Interaction.
- Nutrition.

Through the SUP, 12 applications were received, of which 9 were awarded, totalling approximately €1.12 M. Further details with respect to the awarded projects can be found summarised in the table below:



Figure 5: Thematic Programmes Logo



Figure 6: Space Upstream Programme is a top-down, thematic programme intended to support innovative projects under the theme of Space Upstream

Table 6: Awarded projects for the Space Upstream Programme 2023 Call

| Project Reference | Title | Beneficiary | Granted Amount (€) | Project Status |
|-------------------|---|--|--------------------|----------------|
| SUP-2023-001 | Enhancing Astronaut Neuro-Imaging Capabilities: Toolbox Optimisation & Modification (Operation TOM) | University of Malta | €124,572.00 | Ongoing |
| SUP-2023-002 | Pre-Qualification Testing of a Pico-Satellite Cluster for a Real-Space Environment (QUASAR) | University of Malta | €125,000.00 | Ongoing |
| SUP-2023-003 | Smart Energy Efficient Non-Terrestrial Networks for 6G (SMARTEN6G) | University of Malta | €124,074.00 | Ongoing |
| SUP-2023-005 | Anomaly detection for Spacecraft Telemetry Data using Artificial Intelligence (ASTRA-AI) | University of Malta | €124,995.00 | Ongoing |
| SUP-2023-006 | Space Monitoring using AI-based Radar Techniques: Investigating Echoes and Streaks (SMARTIES) | University of Malta | €122,038.00 | Ongoing |
| SUP-2023-007 | Wire Arc Additive Manufacturing of Magnesium for Satellites (WAAMMS) | University of Malta | €124,989.00 | Ongoing |
| SUP-2023-008 | Development of a smart composite satellite shield with integrated space debris sensor (SmartShield) | University of Malta (Lead) & MCAST (Partner) | €124,772.00 | Ongoing |
| SUP-2023-009 | Advanced Spacecraft Technology for Repairing of Broken External Armor using Cold-Welding Adhesion Treatment (Astrobeat) | MCAST | €124,236.00 | Ongoing |

From 2024 onward, the aim of these thematic initiatives will be to improve the R&I landscape in Malta by producing a cohesive system by which Maltese researchers and entrepreneurs may develop their innovative ideas in a comprehensive, well-adapted environment, which caters specifically for their sector. With these requirements in mind, an adaptive system can only be developed with the collaboration of Maltese public entities, authorities and agencies who boast a deep technical understanding of specific sectors.

2.6 FUSION R&I: Technology Development Programme Lite – 2023

The Policy Support Facility (PSF) of the European Commission, as well as an expert review of FUSION undertaken by KPMG, recommended the importance of some critical updates that an applied research programme should contain

to maximise its benefits for all eligible Maltese entities. It was noted that a one-size-fits-all approach to subject areas of varying nature, the current size and timelines of the programme, as well as the requirement for a public-private consortium, have created gaps in the support system, particularly when recent technology advances are requiring swifter research developments or increased expenditure. As a result, the Technology Development Programme Lite was created, and a pilot call was launched.



Figure 7: Technology Development Programme Lite is intended to provide an expedited route for Maltese innovators to develop and demonstrate their novel technologies.



Figure 8: Technology Development Programme Lite Logo

The primary aim of the programme is to fund projects that intend to carry out research on fast emerging technologies, at a faster pace than the traditional thematic areas that require significant research timelines to fulfil the scope of the project.

MCST launched the Technology Development Programme Lite (TDP Lite) in September 2021 as a pilot scheme and, following the success obtained, it was launched again in 2022.

During 2023, after consultation with various stakeholders, focus was on making some changes related to TDP Lite Programme rules for participation. Given that the State Aid regulations were going to expire by December 2023, it was decided to launch the new TDP Lite call in Quarter 1 of 2024.

2.7 FUSION R&I: Go-To-Market Programme – 2023

The Go-To-Market - Accelerator Programme, nestled within the broader FUSION framework, is a testament to Malta's commitment to elevating locally-funded research and innovation. This initiative focuses on taking innovative concepts, nurtured through earlier stages of development, and equipping them with the financial support necessary to thrive in the marketplace.



Figure 9: Go-To-Market Programme Logo

Key Objectives of the Programme:

Accelerating Market Entry - At the core of this programme is the ambition to accelerate the transition of innovations from research to market. By doing so, it enhances Malta's competitiveness on a global scale, creating high-value employment opportunities and fostering growth.

Validation and Verification - The programme ensures that innovations developed in the earlier stages are thoroughly verified and validated for real-world deployment. This phase includes technology application validation and quality assurance processes;

Consolidating Routes to Market - The Go-To-Market - Accelerator Programme offers a structured path to consolidate and validate prototypes, paving the way for a concrete route to the market.

Prospects:

Looking forward, the Go-To-Market - Accelerator Programme is dedicated to accelerating research and innovation and is designed to enable innovators to accelerate R&I activities which bring market-upstream innovations in line with the pre-commercial stages of their go-to-market strategy. The coming year promises further support for R&I projects, and a continued commitment to preparing innovations for the market.

MCST launched the call of the Go-To-Market Programme (GTM) in July 2023. During the GTM 2023 Call, a total of 7 applications were submitted by public educational institutes as well as private industry players. All applications were awarded, and descriptions can be found in the table overleaf.

Table 7: Awarded projects for the Go-To-Market Accelerator 2023 Call

| Reference | Description | Beneficiary | Granted Amount (€) |
|----------------|---|-------------------------------------|--------------------|
| R&I-2016-031-A | Development of a weed-removal system through an all-terrain, unmanned ground vehicle operating in an autonomous manner and managed navigation through geo-location technology. (VIKTOR) | Pixam Ltd | € 59,927.40 |
| R&I-2017-025-A | Selective laser heating of filament deposition printing of thermoplastics, allowing for superior bond layer adhesion and faster print times which are the main barriers towards achieving mass production of 3D printing in industry. (ORQA4M) | Laser Engineering & Development Ltd | € 99,506.75 |
| R&I-2018-007-A | Identification of new drugs to treat patients with leukaemia to reverse cells to a healthy state through the administration of a novel chemical agent currently being researched. (DEMONSTRATE) | University of Malta | € 89,832.00 |
| R&I-2018-012-A | A comprehensive validation and verification analysis of the EOG-based eye-gaze tracking system through the prototyping of electro-oculographic glasses. (EyeCon+) | University of Malta | € 99,970.00 |
| R&I-2018-035- | Developing a cooling strategy through advanced optimisation algorithms of multi-stage thermoelectric modules to achieve high performing electrical devices in smaller more compact formats (GLACIER) | University of Malta | € 99,912.00 |
| R&I-2019-027A | Experimental testing of a cost-effective, therapeutic solution for early knee osteoarthritis to enhance mobility and prevent further deterioration of the joint. (MaltaKnee2) | University of Malta | € 99,997.00 |

2.8 Space and Related Technologies – 2023

The aim of the Space Research Fund (Refer to Figure 8) is to provide financial support to encourage Satellite downstream Earth Observation research, development and innovation. Satellite data has become an integral and essential component in modern-day systems that concern various aspects such as weather and atmospheric monitoring, land including agriculture and urban development, marine monitoring, security, climate change and emergency assistance.



Figure 10: Space Research Fund Logo

Considering the large amounts of data that need to be processed, the latest technological machine-learning algorithms are necessary to create effective and usable data. End user design customises datasets to suit the needs of stakeholders and to ensure that the data is represented in the most effective and efficient way.

The Space Research Fund was launched by the Malta Council for Science and Technology (MCST) in collaboration with ESA in 2018. Malta was considered to have a strong ICT sector that could be exploited in data processing of Earth Observation data. The Space Research Fund provides financial support that encourages Research, Development and Innovation in the downstream Earth Observation sector, with the scope of tackling societal challenges in Malta. This fund offers expertise in space-related research that will eventually allow Maltese entities to be able to apply for more competitive space-related calls within the EU Framework. To date there have been a total of 15 (out of 38) applications that were granted funds. These applications come from public research institutions, public sector organisations and private entities. Many of the project applicants form consortiums that involve a variety of public and private sector companies.

In 2023 the Space Research Fund received a total of 9 applications and two projects were granted funding, but only one project was finally funded (Urban Climate SRF-1S1-2023) while the other project (TRAC – no designation number was given since the project was not awarded) was dropped due to significant changes in the GBER

review. The awarded projects commenced their work on the 1 December 2023 however, due to unforeseen circumstances, Urban Climate SRF-1S1-2023 is now on hold and needs to be re-evaluated in July of 2024. One of the major data

provision components for the project, a satellite that provided high resolution thermal data (HotSat-1) stopped functioning in December of 2023, just as the Urban Climate project was about to start.

Table 8: Awarded project for the Space Research Fund in 2023

| Reference | Title | Beneficiary | Amount of Grant (€) | Status |
|--------------|---|---------------------|---------------------|---------|
| SRF-2023-1S1 | Using satellite data to study the impact of heritage buildings on urban temperatures under a changing climate (Urban Climate) | University of Malta | 149,323 | On Hold |

2.9 Space Education Programme

Through MCST's cooperation agreement with the European Space Agency (ESA), educators could apply to attend a week-long teacher training workshop at the e-Technology Lab in the ESA Education Training Centre in Belgium. Workshops were developed based on current ESA missions and research activities, covering themes such as Technology, Robotics, Earth Observation and Space Exploration. Moreover, tertiary students could apply for ESA Academy workshops, intensive sessions led by ESA and external experts. MCST sponsorships were available for the year 2023, covering participation, accommodation, meals and up to €300 in travel costs for any student selected by ESA, following a competitive selection process. Learning opportunities included ESA Academy's Concurrent Engineering Workshop and the Ladybird Guide to Spacecraft Operations Training Course.

2.10 ESA Traineeship Scheme

MCST also managed space-related initiatives through other adjacent agreements. An agreement between MCST and ESA was established to provide training opportunities to Maltese graduates at an ESA facility. The aims of this agreement contribute to the aims of the Space Education Programme, tailored for individuals with tertiary education seeking a career in the space domain. Through this scholarship scheme, MCST financially supported individuals' travel costs and subsistence.

MCST opened the scheme for 2023 with ESA. A total of 4 applicants applied for the post and two of them were awarded traineeship posts. One trainee was awarded a post at the European Astronaut Centre (EAC) in Cologne, Germany and started his traineeship in January of 2023, while the other, awarded a post at the ESRIN ESA facility in Frascati, Italy, started his traineeship in February of 2023. The trainees would complete their training in January and February of 2024, respectively.

2.11 ESA PECS 2023

In 2023 the Space Research Fund, the Space Education Programme and the ESA Traineeship Schemes were closed and replaced by the ESA PECS Scheme. In October of 2023, the Government of Malta signed the ESA PECS Agreement, and a PECS call was launched in the same year. A total of 8 applications were received but one application was invalid and not accepted. This left 7 applications that would undergo evaluation from the ESA PECS tendering board. Applicants were able to apply under any of the following criteria:

Research and Development Activities Design, development and demonstration of a recurring upstream product or service or a satellite data based downstream service with potential for use in ESA optional programmes and/or commercial missions/ customers. The start TRL shall be at least 3, target TRL shall be 4-6. Price not higher than €200,000;

Space (downstream) Applications Products and services making use of ESA / European space infrastructure that already exist, or which

are scheduled for operation in the near term. The goal is to take steps towards the introduction of a product to a first customer and to enter the customers' supply chain. The start TRL shall be at least 5, target TRL shall be 7-8. Price not higher than €150,000.

Preparatory activities Feasibility studies, de-risking activities, conceptual design work, proof of concept and simple breadboard activities (e.g. feasibility studies, market surveys, user-requirements definition and breadboard demonstrators) aimed at supporting national competitiveness or the initial steps of a product development for Space with potential for use on future ESA or commercial missions. The start TRL shall be at least 1 (where applicable), target TRL 2-4. Price not higher than €150,000.

Education activities Covers activities aimed at raising awareness about space technologies and their practical application, and space science, amongst the public, government, local industry, schools and universities with the aim of increasing young people's motivation to choose space-related education and industry as a career and encouraging the uptake of the use of space-based services. Also covers the development of tertiary education programmes in space education (BSc, MSc). Price not higher than €75,000.

Space science activities Supporting the involvement of Maltese researchers leading to potential of future involvement in ESA science mission core team and publication of peer-reviewed scientific papers. Involvement of an international partner is considered essential. Price not higher than €50,000.

Table 9. Applications that were received for the 2023 PECS call

| Reference | Title | Beneficiary | Granted Amount (€) |
|-----------|---|--------------------------|------------------------------|
| MT1_01 | Galileo Leverage: A Hassle-free RTK Technology for All | PIXAM LTD | €176,753.00 |
| MT1_02 | Soil erosion monitoring using super-resolved Sentinel-2 data (SEMS-2D) | Semablu Limited | €149,048.00 |
| MT1_03 | MOISTUREYE – Integrated Soil Moisture Mapping: combining ground sensors and satellite imagery for enhanced precision in Malta | WES TRADE LTD | €121,792.00 |
| MT1_04 | GPU acceleration of Point Spread Function model calibration and generation for the ESA Euclid mission | University of Malta | €46,331.00 |
| MT1_05 | Machine-Learning Driven Cosmology Model Builder in the Era of Euclid Science (BridgingTensions) | University of Malta | €45,911.00 |
| MT1_06 | Developing an e-learning space education platform for Maltese primary schools (EDUSPACE-MALTA) | Across Limits Ltd | €74,876.00 (€50,000.00) |
| MT1_07 | Satellite, social media, and drone integration: Reinventing Nature-Based Tourism in Malta (SMART-NBT) | Ecostack Innovations Ltd | €149,937.00 (€100,000.00) |

Xjenza Malta (the new Government Agency that replaced the MCST in 2024) is currently waiting for the Government of Malta to ratify the ESA PECS Charter that will activate all PECS activities, which includes the successful applications of the 2023 call which will allow them to commence work on their projects. At this point in time information regarding the successful PECS applications cannot be disclosed. This information will be provided to the successful applicants by ESA once the Charter has been signed.

2.12 Internationalisation Partnership Awards Scheme Plus Option A (IPAS+ Option A) – 2023

The IPAS+ scheme Option A supports collaborative initiatives between Maltese entities and at least one foreign counterpart. The aim of this scheme is to enable academia and industry to create and sustain collaborative networks focused on developing joint R&I activities.

As in the previous year, the IPAS+ scheme in 2023 was launched twice. In 2023, Option A attracted 50 applications. The 39 proposals awarded had requested a total of €228,861 in funds.

Table 10. IPAS+ Option A 2023 Funded Projects

| Reference | Beneficiary | Granted Amount (€) |
|---------------|---------------------------|--------------------|
| IPAS-2023-032 | University of Malta | € 5,966 |
| IPAS-2023-026 | University of Malta | €6,000 |
| IPAS-2023-008 | University of Malta | € 6,000 |
| IPAS-2023-007 | University of Malta | € 6,000 |
| IPAS-2023-005 | University of Malta | € 6,000 |
| IPAS-2023-010 | University of Malta | € 5,980 |
| IPAS-2023-016 | University of Malta | € 5,948 |
| IPAS-2023-030 | MCAST | € 6,000 |
| IPAS-2023-001 | University of Malta | € 6,000 |
| IPAS-2023-011 | University of Malta | € 6,000 |
| IPAS-2023-025 | University of Malta | € 5,950 |
| IPAS-2023-012 | University of Malta | € 5,912 |
| IPAS-2023-029 | MCAST | € 5,996 |
| IPAS-2023-039 | University of Malta | €6,000 |
| IPAS-2023-034 | University of Malta | €6,000 |
| IPAS-2023-014 | University of Malta | €6,000 |
| IPAS-2023-060 | University of Malta | €4,429 |
| IPAS-2023-044 | University of Malta | € 6,000 |
| IPAS-2023-059 | University of Malta | €6,000 |
| IPAS-2023-055 | MCAST | € 5,999 |
| IPAS-2023-058 | University of Malta | €6,000 |
| IPAS-2023-056 | Malta Medicines Authority | € 6,000 |

The Malta Council for Science & Technology

| | | |
|---------------|-----------------------|---------|
| IPAS-2023-057 | University of Malta | €5,542 |
| IPAS-2023-054 | University of Malta | € 6,000 |
| IPAS-2023-066 | University of Malta | € 5,876 |
| IPAS-2023-067 | University of Malta | € 5,999 |
| IPAS-2023-041 | University of Malta | € 6,000 |
| IPAS-2023-042 | University of Malta | €5,998 |
| IPAS-2023-047 | University of Malta | € 5,918 |
| IPAS-2023-065 | BioArte Ltd | € 6,000 |
| IPAS-2023-063 | University of Malta | €6,000 |
| IPAS-2023-061 | University of Malta | €6,000 |
| IPAS-2023-053 | MCAST | € 6,000 |
| IPAS-2023-051 | University of Malta | € 5,860 |
| IPAS-2023-043 | University of Malta | € 6,000 |
| IPAS-2023-045 | University of Malta | € 4,372 |
| IPAS-2023-048 | University of Malta | € 5,876 |
| IPAS-2023-050 | University of Malta | € 6,000 |
| IPAS-2023-062 | AquaBioTech Group Ltd | € 5,240 |

3.0 Internationalisation Unit

The Internationalisation Unit (IU) within the MCST Malta played a crucial role in mobilising Malta-based stakeholders to actively engage in scientifically excellent, bilateral and transnational Research and Innovation (R&I) projects by facilitating their participation in various regional and international funding programmes.

MCST offered financial support for bilateral and multilateral R&I cooperation in 2023, by launching annual competitive calls for funding. Such funding programmes include the PRIMA programme, JPI Oceans Joint Actions and related ERA-Net Cofunds, as well as the bilateral programmes from which joint calls are launched with MCST's counterparts in other countries.

The end of 2022 and the start of 2023 marked a milestone in the work of the IU, owing to the launch of three (3) new Horizon Europe Co-funded Partnerships on the clean energy transition, transformation needed towards a climate-neutral, sustainable, productive and competitive blue economy and on the transformation of health and care systems. MCST represents Malta in these three (3) Partnerships and manages the national investment of €10.5 million to be disbursed over the span of seven (7) years, to support local successful researchers.

Furthermore, the IU continued to strengthen its existing bilateral cooperations, by increasing the budgetary allocation of the SINO-Malta and MCST-TÜBİTAK bottom-up calls to a total of €1.7 million, a sum that was matched by

MCST's counterparts in these joint calls, namely the Ministry of Science and Technology (MOST) in China and the Scientific and Technological Research Council in Türkiye (TÜBİTAK). This budgetary increase was accompanied by a parallel broadening of the thematic focus to include more priority areas outlined in Malta's Smart Specialisation Strategy 2021-2027¹.

Since its establishment in 2019, the IU has progressively expanded its portfolio of opportunities to support the local R&I community in their internationalisation endeavors and address global challenges that no single country can tackle alone. In 2023 alone, Xjenza Malta received fifty-two (52) applications from fifty-seven (57) applicants.

By the end of 2023, MCST had invested €6.8 million of local funds to facilitate collaborations between the local researcher community and foreign entities. In 2023 alone, MCST awarded Maltese beneficiaries a total sum of ca. €2.5 million (Refer to Table 11). Almost €0.9 million was awarded to 6 beneficiaries for 5 projects supported by Calls launched in 2022, whereas ca. €1.6 million were granted to 14 beneficiaries for 13 projects stemming from calls launched in 2023 (Refer to Table 11). In 2024, Xjenza Malta, which will replace MCST in all its roles and more, is expected to support 4 additional projects arising from calls launched in 2023, for an estimated total project value of €1 million (Refer to Table 12).

¹ Smart Specialisation Strategy (RIS3) 2021-2027 - MCST (gov.mt)

MCST was committed to encourage, support and facilitate R&I cooperation with foreign countries. In 2023, the Government of Malta concluded separate MoUs on cooperation in R&I with the Kingdom of Spain² and the United Arab Emirates (UAE)³. As a result of the MoU with UAE, signed in February 2023 by the Hon. Keith Azzopardi Tanti, Parliamentary Secretary for Youth, Research and Innovation and H.E. Abdulla Nasser Lootah, Deputy Minister of Cabinet Affairs for Competitiveness and Experience Exchange of the UAE, twenty (20) senior management officials working within the public service participated in the Executive Leadership Programme (ELP 2023) led by UAE professionals. This international training programme aimed to further improve the local capacity in the public service. MCST was entrusted to run the national screening process for Maltese candidates to participate in the first edition of the Global Government Leaders Programme (GGLP 2023). The objective of the GGLP was to empower and create a global network of leaders that have the necessary leadership skills to achieve the best achievements at both the local and global levels.

To enhance effective collaboration and cooperation in the scientific sphere, the IU actively participates in several international policy forums. This allows Malta to influence international R&I directions and ensure national strategies for internationalisation are aligned and effectively implemented. In 2023, the IU represented Malta in the Euro-Mediterranean dialogue on science and technology through participation in the 5+5 Dialogue on Research, Innovation and Higher Education and the Union for the Mediterranean Research and Innovation Platform. The IU actively participated in the ERA Forum sub-group in the Global Approach to R&I Cooperation, which advises the European Commission services (responsible for designing, implementing and evaluating approaches and actions of international R&I cooperation), to establish coordination between the Commission, Member States and stakeholders, and to exchange experiences and good practices in the field of international R&I cooperation, including that at the multilateral level. In line with the

Global Approach objectives, the IU participated in Multilateral Dialogue on principles and values with EU Member States, Associated Countries, other key countries in science and technology, and international organisations. Complementarily, the IU represented Malta's perspective in other fora including the AU-EU (African Union and EU) high-level Policy Dialogue, the EU-CELAC (EU and Community of Latin American and Caribbean States) working group and the EU-KNOC initiative that brings together several European partners aiming to support the Commission and EU Member States in their strategic approach to R&I cooperation with China.

3.1 PRIMA – Partnership for Research and Innovation in the Mediterranean Area

The Partnership for Research and Innovation in the Mediterranean Area (PRIMA) aims to “build research and innovation capacities and to develop knowledge and common innovative solutions for agri-food systems, to make them sustainable, and for integrated water provision and management in the Mediterranean area, to make those systems and that provision and management more climate resilient, efficient, cost-effective and environmentally and socially sustainable, and to contribute to solving water scarcity, food security, nutrition, health, well-being and migration problems upstream”⁴. PRIMA launches annual competitive Calls under two different sections: Successful projects selected through Section 1 Calls are funded by the European Commission, whilst successful projects selected through the Multi-topic Section 2 Call are funded through the pooling of national resources from the 19 PRIMA Participating States.

MCST launched the PRIMA Calls 2023 in the first quarter of 2023, with a national budget of €500,000 put forward for Maltese researchers to participate in regional, multilateral R&D projects in the field of Water Management, Sustainable Agriculture and Agri-Food Value Chains. No

² MoU on co-operation in Research and Innovation between the government of the Republic of Malta and the Government of the Kingdom of Spain - Affarijiet barranin

³ Memorandum of Understanding between the Government of the Republic of Malta and the Government of the United Arab Emirates on Government Experience Exchange and Cooperation in Research and Innovation - Affarijiet barranin

⁴ PRIMA-SRIA_Strategic-Research-and-Innovation-Agenda.pdf (prima-med.org)

projects with Maltese participation were awarded under Section 1 in 2023, while one (1) project with Maltese participation was selected for funding under the Section 2 Call. This R&I project will officially start in 2024 (Refer to Table 12).

The PRIMA programme also features a third Section, which offers PRIMA Participating States the possibility of launching ancillary activities to encourage stakeholder participation in Sections 1 and 2. In 2023, the IU administered the PRIMA Training and Mobility Award (PTMA) for the second time by allocating €20,000 to support Maltese entities to form collaborative links with at least one foreign counterpart from any of the 19 PRIMA Participating States. Through this award, two (2) applications were financially supported to develop cross-border collaborations, undertake research activities and/or training activities in the PRIMA thematic areas, with the condition of submitting a proposal to any PRIMA-related call (Refer to Table 11).

3.2 Joint Programming Initiatives on Healthy Seas and Productive Seas and Oceans (JPI Oceans) and related ERA-NET Cofunds

JPI Oceans⁵ was established in 2011 as an intergovernmental platform, open to all EU Member States, Associated Countries, and international partners. Participating countries are invited to strategically align national priorities and investments associated with marine and maritime research to allow for a greater impact through the implementation of collaborative Joint Actions. Malta, through MCST, has increasingly engaged with JPI Oceans since 2013 over the years, first with an Observer Status and as of 2018, as a full member of the JPI Oceans Management Board. By the end of 2023, Malta was involved in two Joint Actions and one Scoping Action.

Malta is co-leading the JPI Oceans Joint Action – Science for the Good Environmental Status (S4GES)⁶ together with Italy and Belgium. This Action seeks to adopt an innovative approach to the evaluation of the marine Good Environmental Status that is complementary to the Marine Strategy Framework Directive (MSFD). Following an observational campaign on board a state-of-the-art research vessel in the North Sea, a team of Maltese experts were also involved in follow-up workshops related to data analysis. In June 2023, MCST hosted a ‘Science to Policy’ workshop titled ‘Appraising Concepts for the Marine Good Environmental Status’ to debate the new results from different initiatives within the scientific community, to give knowledge-based support to policy and to give new substance to the interpretation of GES. This workshop was attended by representatives of relevant authorities from the countries involved in the S4GES Joint Action.

In April 2023, following a one-year scoping process, Malta along with other JPI oceans member countries, adopted Blue Carbon⁷ as a new Joint Action. As part of its commitment, Malta nominated a team of Maltese experts to contribute the local perspectives and needs to the established working groups. The Joint Action on Blue Carbon will facilitate the development of enhanced European collaboration in addressing knowledge gaps about blue carbon and its role in the context of climate change.

The IU is constantly looking into the possibility of participating in, or spearheading, Scoping Actions that are of national interest. In fact, during the JPI Oceans Management Board held in October 2023, Malta, together with Italy, submitted a proposal for a Scoping Action to assess the scope, feasibility and design of a potential JPI Oceans Joint Action exploring the untapped potential of Offshore Freshened Groundwater⁸. Once Scoping Actions are endorsed by the JPI Oceans Management Board, they can be further developed by interested JPI Oceans members and implemented through fully-fledged Joint Actions.

⁵ <https://jpi-oceans.eu/>

⁶ Science for Good Environmental Status | JPI Oceans (jpi-oceans.eu)

⁷ Blue Carbon | JPI Oceans (jpi-oceans.eu)

⁸ Offshore Freshened Groundwater Scoping Action | JPI Oceans (jpi-oceans.eu)

The ERA-Net Co-Funds MarTERA⁹ and Blue Bio¹⁰ are two other JPI Oceans - related actions that MCST actively participated in. MarTERA was concluded in 2022, while BlueBio will be concluded in 2024, yet the projects supported through these initiatives will continue to be concluded in the coming years.

3.3 The SINO-MALTA Fund – Malta and China Science and Technology Cooperation

The SINO-MALTA Fund¹¹ originated from the framework of the Agreement on Science & Technological Cooperation between the Government of Malta and the Government of the People's Republic of China (PRC), supported by subsequent agreements. Its primary objective is to enhance scientific collaboration between the two countries by strengthening Research & Development (R&D) activities, facilitating technology transfer, and fostering comprehensive, stable, and long-term cooperation. This is achieved through support for researchers' mobility and the establishment of networks among industries, universities, and research institutions, ultimately promoting mutually beneficial and win-win research endeavours.

In 2023, the 5th Call for proposals for R&I projects was thematically aligned with Digital Technologies, Health Innovation and the Blue & Green Transition, and the allocated budget was increased to €1.2 million to support six (6) projects. This one-stage Call received 19 full applications, making it the most successful Call across programmes within the IU to date.

3.4 Cooperation between MCST and TÜBİTAK (Scientific and Technological Research Council of Türkiye)

In 2020, the MCST signed a bilateral agreement with TÜBİTAK, with the aim of encouraging



cooperation in the field of science, technology and innovation between research entities, universities, research institutes and industrial enterprises from Türkiye and Malta.

Following the work undertaken during 2020, a 1st Joint Call for funding R&I projects was launched in 2021, with a total national budget of €200,000. This first call was launched as a Section 3 Participating State Initiated Activity under the umbrella of the PRIMA programme (Refer to Section 3.1), with the aim of supporting bilateral R&I collaboration in the fields of water management, sustainable agriculture, and agri-food value chains. The results of the 2021 Call were issued in January 2022, whereby two (2) projects of ca. €100,000 each, were awarded. A 2nd Joint Call was subsequently launched in Q2 of 2022, and one (1) project of ca. €100,000 was funded in 2023 (Refer to Table 11). A 3rd Joint Call for R&I proposals was launched in March 2023, including additional thematic areas from Malta's RIS3 as a novelty. For this reason, the allocated budget was increased to €500,000 to support five (5) successful projects (Refer to Table 11). This one-stage Call received 11 full applications.

3.4.1 Horizon Europe Partnerships

The MCST secured a budget of €10.5 M to support Malta-based entities when participating in three (3) Horizon Europe co-funded partnerships over the course of the programming period 2021-2027. The potential of candidate partnerships on thematic areas that need to be addressed to further develop Malta's R&I landscape was recognised. These thematic areas were the transition towards climate neutrality, sustainability in the blue economy sector, the strengthening of Malta's health innovation sector. While in 2022, MCST had officially launched its first Horizon Europe Partnership locally, namely the Clean

⁹ MarTERA - ERA-NET Cofund on Marine Technologies | JPI Oceans (jpi-oceans.eu)

¹⁰ Blue Bioeconomy | JPI Oceans (jpi-oceans.eu)

¹¹ <https://mcst.gov.mt/sino-malta-science-technology-cooperation/>

Energy Transition Partnership, in Q1 of 2023 two (2) other partnerships (THCSP and SBEP) were launched along with their respective joint transnational calls for R&I proposals.

3.4.2 Clean Energy Transition Partnership



The Clean Energy Transition Partnership (CET Partnership)¹² is a joint, transnational initiative on Research, Technological Development, and Innovation (RTDI) programming to boost and accelerate the energy transition. The overarching aim of this Partnership is to empower the energy transition and, through the launch of at least 6 calls until 2027, contribute to the EU's goal of becoming the first climate-neutral continent by 2050.

The Partnership gathers more than 50 partners from 30 EU Member States, HE Associated Countries, and non-EU countries. These partners launched the first transnational call in 2022 with the aim of funding projects that develop applicative solutions and provide results for the clean energy transition in one of the seven (7) set thematic configurations of the Partnership. These include the integrated net-zero energy systems at the regional and industrial level and within the built environment, as well as enhanced zero emission power technologies, storage technologies, renewable fuels and efficient heating and cooling solutions. Unfortunately, no successful proposals from the 2022 Call involved Maltese partners. The results of the 2023 Call are expected by mid-2024, and one (1) proposal is likely to be selected for award (Refer to Table 12). The selection of projects is based on an external, centralised evaluation process coordinated by the CETP Call Steering Committee.

¹² Clean Energy Transition Partnership (cetpartnership.eu)

¹³ Homepage | Bluepartnership

3.4.3 Sustainable Blue Economy Partnership



In 2022, Malta officially joined the Sustainable Blue Economy Partnership (SBEP)¹³, which is a joint, transnational initiative that enables an unprecedented effort to pool R&I investments and align national programmes at pan-European scale, taking into consideration the sea-basin and Atlantic Ocean dimension. The Partnership gathers 60 partners from 25 EU Member States, HE Associated Countries, and non-EU countries. These partners will launch annual Joint Transnational Calls until 2027 for R&I projects. On behalf of MEYR, MCST (Xjenza Malta as from 2024), will be allocating a total of €3.5 million to be availed of by Malta-based applicants over 7 years. The first Joint Call for R&I proposals was launched in Q1 2023, and submitted proposals were expected to address one of the following intervention areas: Development and validation of ocean digital twins at sub-sea-basin scale; Blue generation marine structures; Planning and managing sea-uses; Healthy blue food under a one health approach and lastly, Enabling the green transition of blue food production. Out of the 10 submitted proposals, half of which were submitted by the private sector, two (2) proposals were selected for award and shall be awarded in 2024 (Refer to Table 12). The selection is based on based on an external, centralised evaluation process coordinated by the SBEP Call Steering Committee.

3.4.4 Transforming Health and Care Systems Partnership



The Transforming Health and Care Systems Partnership (THCS Partnership)¹⁴ is a joint, transnational initiative on research within the health sector. Its general aim is to maintain and improve people’s health by supporting the transformation of the health and care systems to achieve high quality, fairly accessible, sustainable, efficient, resilient and inclusive health and care systems for all.

This Partnership gathers more than 60 partners from 24 EU Member States, HE Associated Countries, and non-EU Countries. These partners will launch yearly Joint Transnational Calls until 2027 for R&I projects. On behalf of MEYR, MCST allocated a total of €3.5 million to be availed of by Malta-based applicants. The first Joint Call for R&I proposals was launched in Q1 2023, but unfortunately none of the six proposals submitted were selected for award, based on an external, centralised evaluation process coordinated by the THCS Call Steering Committee and Coordination team.

3.4.5 Partnership Knowledge Hub (PKH)

The Partnership Knowledge Hub is considered the core of the Strategic Coordinating Process. The PKH allows working-level interactions and meetings including representatives from the

Commission, EU Member States and Associated Countries within Horizon Europe to discuss any work in relation to Partnerships implementation. In 2023, the IU continued to participate in quarterly PKH meetings. Indeed, during this year the first Biennial Monitoring Report on partnerships in Horizon Europe was published. This Report aimed to provide a strong and continuously evolving evidence base to guide the implementation of European Partnerships throughout their life cycles, and to inform strategic discussions on Horizon Europe’s new policy approach to them. The IU contributes to this reporting by consolidating information on European Partnerships in Malta to be submitted in the country fiche part of this report.

3.5. BlueMissionMed

In January 2023, MCST, together with 9 other partners, launched the BlueMissionMed¹⁵ Coordination and Support Action (CSA). This CSA project aims to implement the EU Mission to Restore Our Ocean and Waters and supports. This project accelerates progress towards the Mission’s goal of “Restoring Our Ocean and Water by 2030” by designing, structuring, and supporting an effective basin-scale innovation ecosystem. Specifically, it focuses on achieving Objective 2 of the Mission: preventing pollution of our oceans, seas, and waters – The Mediterranean Lighthouse. The project activities are complemented by mobilising the territorial multi-stakeholder communities with actions in the seven (7) BlueMissionMed National and Regional HUBs that have been established. Indeed, MCST launched the Maltese BlueMissionMed Hub in December 2023 to contribute to its stakeholder engagement role. This Hub aims to instil a sense of ownership within the local community and to eventually become a competence centre to support the overarching goals of the BlueMissionMed initiative and support the deployment of the BlueMissionMed Operational Implementation Roadmap and associated activities.

¹⁴ THCS (thcspartnership.eu)

¹⁵ BlueMissionMed – Supporting the mediterranean sea basin for the implementation of the EU Mission Restore our Ocean and Waters

3.6 Plumtri – The Platform focusing on Research and Innovation in the Mediterranean Region



The IU operates and administers the plumtri¹⁶ web platform, which serves as a comprehensive resource for researchers and entities in the Mediterranean region interested in R&I. It also serves as a platform for international researchers to find Malta-based researchers for future collaborations. This platform is continuously updated throughout the year, offering the latest news, events, funding opportunities, traineeships and job listings, making it a comprehensive source of information in the field of R&I. The information is further disseminated and made accessible through the issue of a monthly newsletter as well as through supporting social media channels. Monthly analyses and strategic planning are continuously carried out to maximise plumtri's reach, quality and effectiveness.

In 2023, the number of registered users continued to steadily increase, reflecting a growing interest in the platform. Notably, the plumtri portal was officially integrated into the 5+5 Dialogue Research, Innovation and Higher Education Workplan for 2022 to 2024.

Table 11: The table below lists the R&I projects awarded in 2023 through Internationalisation Programme Calls launched in 2022 and in 2023.

| Reference | Title | Beneficiary | Granted Amount (€) |
|---------------------------|---|---------------------|--------------------|
| PTMA Call 2023 | Pathogens and the <i>Apis mellifera ruttneri</i> Microbiome (PAM) | University of Malta | €6,000.00 |
| | Multiparametric Geophysics to study Groundwater in the Mediterranean region (MGGM) | University of Malta | €6,000.00 |
| SINO-Malta Fund Call 2022 | Ecological Natural Fibre Reinforced Composites (ECO-COMPOSITE) | University of Malta | €199,922.80 |
| | Online Procedural Content Generation via Multi-objective Optimisation and Learning (OPTiMaL) | University of Malta | €199,607.00 |
| | Novel Antibiotic Synthesis and Development for Agriculture and Cancer therapy (NASDAC) | University of Malta | €199,909.00 |
| | Green Laser Post-Processing in Additive Manufacturing (GLAM) | University of Malta | €199,364.00 |

¹⁶ <https://www.plumtri.org/>

The Malta Council for Science & Technology

| | | | |
|--------------------------------|--|---|---------------------------|
| SINO-Malta Fund – Call 2023 | Enhancing Speech Imagery Decoding for EEG-based Brain-Computer Interface Systems (SIDEK) | University of Malta | €181,808.07 |
| | High Reliability and High-Power Density Starter/Generator System for MEA (SG Drive) | University of Malta | €199,767.49 |
| | Digital Health Inspection of Concrete Bridge Structures in Coastal Areas with Wall-Climbing Robot and Computer Vision (DiHICS) | University of Malta | €199,864.50 |
| | Hybrid Energy Storage System (HESS) | University of Malta | €130,205.00 |
| | Theory and Key Technologies for AI Driven 6G Broadband Communication Systems (TEKAID6G) | University of Malta Malta Communications Authority (MCA) | €161,547.00 €37,833.00 |
| | Decarbonisation of Ports using microgrid technologies with shore and offshore power (DISTRICT) | University of Malta | €199,998.68 |
| MCST-TUBITAK – Call 2022 | Unified framework to cope with droughts under Mediterranean climate-change conditions (UNIMED) | Integrated Resources Management Co. Ltd. | €75,000.75 |
| | | MCAST | €24,998.28 |
| MCST-TUBITAK – Call 2023 | ICT-enabled Bee Foraging Sites and Beekeeper Routes Optimisation for Efficient Honey Production (BEE-OPTECH4HONEY) | University of Malta | €99,995.24 |
| | Highly Selective Piezoelectric MEMS VOC Sensors with Functional Polymer Nanostructures (PolyMEMSens) | University of Malta | €99,998.2 |
| | Accelerating microwave HYPERthermia for Breast cancer treatment (HYPER4B) | University of Malta | €99,996.73 |
| | An integrated system designed for olive growing enabled by artificial technology in rural areas of med regions addressing water, soil and energy challenges (SOLEATCH) | WES Trade Ltd. | €42,666.62 |
| | 3D manufacturing of developed sustainable coating materials for building retrofitting and energy efficiency (SMARTCORT) | University of Malta | €99,995.32 |

Table 12: The table below lists the R&I projects that shall be awarded in 2024 through Internationalisation Programmes Calls launched in 2023.

| Funding Programme | Title | Beneficiary | Granted Amount |
|---------------------------|---|---|----------------|
| SBEP Call 2023 | Data and Scenarios for a Sustainable Mediterranean Blue Economy (MEDSEAPLAN) | Malta College of Arts, Science and Technology | €201,098 |
| | From Waste to Taste: Exploring Innovative Food Applications of Postharvest Fish Losses (WASTE2TASTE) | University of Malta | €269,809 |
| PRIMA Section 2 Call 2023 | Novel Biodegradable and Antimicrobial Smart Packaging and Coatings for Increased Shelf-life of Mediterranean fish fillets (NOVISHPAK) | University of Malta | €300,000 |
| CETP Call 2023 | To be announced in 2024 Ca. €250,000 | | |

4.0 Framework Programme Unit

In 2023, **Horizon Europe**, the 9th European Union (EU) Framework Programme, was in its third year. The Programme has already contributed over €33 billion worth of grants in its initial three years. By the time the Horizon Europe concludes in 2027, it is expected to have provided more than €95 billion in funding, supporting researchers, organisations and policy to foster scientific and technological advancements that drive economic growth and address societal challenges in Europe and beyond.

Horizon Europe facilitates collaboration and strengthens the impact of research and innovation by developing, supporting and implementing EU policies and supporting the creation and enhancement of excellent knowledge and technologies. The programme helps to achieve the United Nation's (UN) Sustainable Development Goals and boost the EU's economic growth and competitiveness.

Pillar I - Excellent Science

- European Research Council
- Marie Curie Actions
- Research Infrastructures

Pillar II - Global Challenges and European Industrial Competitiveness

- Health
- Culture, Creativity and Inclusive Society
- Civil Security for Society
- Digital, Industry and Space
- Climate, Energy and Mobility
- Food, Bioeconomy, Natural Resources, Agriculture and Environment

Pillar III - Innovative Europe

- European Innovation Council
- European Innovation Ecosystems
- European Institute of Innovation and Technology

Widening Participation and Strengthening the European Research Area

- Widening Participation and Spreading Excellence
- Reforming and Enhancing the European R&I System

Horizon Europe is structured around three main pillars and other horizontal actions:

Pillar I – Excellent Science aims to increase the EU's global scientific competitiveness by supporting frontier research projects driven by top researchers, fellowships for experienced researchers and investment in world-class research infrastructures;

Pillar II - Global challenges and European Industrial Competitiveness supports research related to societal challenges and reinforces technological and industrial capacities through clusters. It also sets ambitious goals for EU Missions;

Pillar III – Innovative Europe aims to make Europe a frontrunner in market-creating innovation and developing the overall EU innovation landscape.

Horizontal Actions aim at increasing support to widening countries in their efforts to make the most of their national research and innovation potential, fostering closer collaborations and spreading excellence.

The Horizon Europe Strategic Plan sets out the main strategic orientations for research and innovation investments. The first strategic plan covered 2021-2024 and through this, the European Commission (EC) ensures that EU research and innovation actions contribute to EU priorities, including a climate-neutral and green Europe, a Europe fit for the digital age and an economy that works for the people. The second strategic plan for 2025-2027 addresses the key global challenges such as climate change, loss of biodiversity, the digital transition and an ageing population.

4.1 Missions

Horizon Europe features five ambitious missions to tackle major societal challenges by 2030. The **Cancer** Mission aims to improve the lives of over 3 million people through enhanced prevention, treatment and support. The **Climate-neutral and Smart Cities** Mission supports 100 cities in achieving climate neutrality. The **Soil** health and food mission seeks to ensure 75% of soil is healthy for food production, people, nature and the climate. The adaptation to **Climate Change** mission assists 150 regions and communities in

becoming climate resilient. Lastly, the **Ocean** Mission focuses on restoring marine and freshwater ecosystems.

Since the launch of the Horizon Europe Missions initiative, Malta has submitted a total of 43 proposals. Most of these proposals were submitted under the Ocean Mission, but the highest success rate was achieved under the Cancer Mission, contributing to the approximately **EUR 2.2 million** secured from the five missions.

Throughout 2023, the Framework Programme Unit (FPU) organised dedicated events such as the "Missions and Thematic Experts Group Info Day" in January 2023, and also hosted a European Commission delegation for each of the Missions in July. These events are aimed to further contribute to the promotion of these opportunities and have led to increased uptake by Maltese organisations. These initiatives help raise awareness and provide valuable information, encouraging more submissions and successful participation.



4.2 Partnerships

Horizon Europe also supports European partnerships with EU countries, the private sector and other stakeholders. The aim is to deliver on global challenges and industrial modernisation through concerted research and innovation efforts. In 2023, MCST actively participated in several partnerships being implemented by the Internationalisation Unit.

4.3 European Cooperation in Science and Technology (COST)

Together with Horizon Europe, MCST also promoted and encouraged local researchers to involve themselves in COST Actions. Founded in 1971, COST receives EU funding through various Research and Innovation Framework

Programmes, at present Horizon Europe. COST helps in the creation of research networks, called COST Actions. With these Actions, COST's interdisciplinary bottom-up networks are bridging the innovation divide in Europe. This can be done only thanks to the bottom-up approach exposing all scientific fields to research through collaboration and networking.

In 2023 Malta joined 38 new COST actions and was active in total of 225 COST Actions (CA) thus being represented in 62% of the CAs.

4.4 Role of the Framework Programme Unit

During 2023, MCST was mandated to act as the Malta's National Contact Point (NCP) structure for the EU Framework Programmes for Research and Innovation and set up the support portfolio to support potential applicants of the Programmes, as well as set up the structure for the Programme Committees.

4.5 National Contact Points

Local stakeholders are currently supported by six **National Contact Points (NCPs)** under the guidance of the NCP Coordinator. Each NCP provides specialised knowledge and guidance in their respective areas and together they provide the necessary support and actively encourage local stakeholders to participate in the R&I Framework Programme. The Framework Programme Unit offers a variety of services at any stage of the applicant's proposal, including:

- Providing information on the FP and guidance in choosing relevant topics and calls;
- Tailored one-to-one meetings providing specialised support;
- Dissemination of information through information sessions, webinars, presentations at events, mail shots and social media.
- Partner Search facility.
- Pre-proposal checks.
- Assisting with legal and financial issues.

- Dedicated workshops tailored for entities.
- Proposal writing workshops.
- Providing advice on project management.
- Providing additional support through National funding schemes.
- Creating digital content to promote success stories.

Throughout 2023, the NCPs held more than 400 one-to-one meetings with local stakeholders, and organised numerous events and training sessions (details below).

4.6 Programme Committee Members

The Framework Programme Unit staff also serve as Programme Committee Members (PCM) for Horizon Europe. The PCMs assist the European Commission in implementing the programme through strategic discussions on planning and ensuring links to nationally funded research activities. Negotiations of the Work Programmes and calls are the primary focus of the PCMs' work. The PCMs consult with various specialists, governmental organisations and other relevant stakeholders to get their perspectives on the EC's proposed work programmes. This feedback is relayed back to the EC through the proper channels. Once the feedback is received by the EC, where applicable, it is reflected in the work programmes. Finally, a formal vote is taken by the committees, to approve or otherwise, the final version of the work programmes before being published.

PCMs participate in strategic discussions across the areas they represent. They have insight into the evaluation results of the work programme calls, and once the EC finalises the main listed proposals, a vote is taken to approve the proposals for funding.

The PCMs also have a very crucial role in linking the national research ecosystem to the European one and vice versa, and this is attained through the closed contact with local research stakeholders and policymakers as well as constantly being updated by the EC through committee meetings.

All Programme Committee meetings are attended by the FPU, however when strategic discussions are taking place the committee members discuss such matters with relevant Ministry representatives and the **Thematic Expert Groups** (TEGs). The TEGs have been set up by the PCMs to assist in providing feedback to the work programmes as part of the consultation process. There are currently seven groups, while the PCM are also looking into creating a new group for the New European Bauhaus (NEB).

4.7 National Support Schemes 2023

The Framework Programme Unit was entrusted with the national budget through which the following support schemes were launched, aiming at increasing and strengthening the participation from local participants in the Horizon Europe programme:

PF2MT

The Postdoctoral Fellowship Training Scheme for Incoming Postdocs to Malta (PF2MT) supports travel and accommodation expenses for experienced researchers willing to submit a proposal with Maltese entity host (beneficiary) for the MSCA Postdoctoral Fellowship call. The support, in the form of a lump sum grant, is for the participation of the researchers in the MSCA Postdoctoral Fellowship training to be held annually in Malta. The Scheme was open for applications for those experienced researchers who had already identified their supervisor and planned to apply for the 2023 call with a Maltese host entity. The masterclass proposal writing training was held on 12 July 2023, with 27 participants coming from UK, Italy, India, Vietnam, Spain, Romania, Indonesia, Cameroon and Malta.

ERC Support Scheme

The European Research Council (ERC) Support Scheme aims to strengthen the opportunities for talented researchers to obtain grants from the Horizon Europe ERC for excellent and ground-breaking research based on researchers' own ideas within all areas of research. The Scheme is divided into two options:

Option A (Mentoring initiative) - The mentoring initiative will support potential ERC applicants by helping to identify international experts to provide coaching and advice;

Option B (Proposal writing training) - The objective of this activity is to raise the capabilities of potential ERC candidates to prepare successful ERC grant applications through attending ERC proposal writing training (online or physical);

During 2023, the call was open with 3 cut off deadlines, resulting in 2 proposals being supported, both have been invited to Step 2, the interview.

EIC Support Scheme

The EC launched the European Innovation Council (EIC) programmes for innovative SMEs under Horizon Europe. This programme supports all stages of technological development, be it initial stages of research (Pathfinder), technology development and demonstration (Transition), to commercialisation and scale up (Accelerator). It opens funding opportunities worth over €9.5 billion in 2021-2027 for breakthrough innovators to scale up and create new markets, with grant size up to €2.5 million and the possibility to access equity funding.

Due to its highly competitive nature, its bottom-up approach and focus on private sector innovation, the Framework Programme Unit at MCST developed an EIC Support Scheme to help Maltese companies in developing high quality applications. The scheme is intended to support Malta-based SMEs (including Start-Ups), for both the short and full stage application of the EIC Accelerator as well as the Pathfinder and Transition calls. The applicants can apply for Option A and/or B (€5,000 and/or €2,000 business and pitch coaching for the short stage application), or Option C (€10,000 proposal development grant for the full stage application).

There were no EIC Support Scheme applications in 2023.

NET2HE

This scheme offered stakeholders from Malta the financial support to attend Horizon Europe networking and brokerage events held overseas in a bid to increase the uptake in Horizon Europe

proposal submissions. The aim is to incentivise Maltese participation in brokerage sessions, networking events and Info Days organised by the Commission by supporting travel and subsistence expenses as per the application form and rules for participation.

Participation in Horizon Europe networking events will generate long-term outcomes leading to the formation of the consortia and/or participation in consortia capable of applying for the Horizon funding.

A total of 9 applications were supported in 2023 through NET2HE.

International Partnerships Awards Scheme Plus (IPAS+)

IPAS+ is divided into two options:

Option A - opportunities for collaborative initiatives between Maltese entities and at least

one foreign entity of proven track record of excellence. Proposals needed to describe the nature of the joint activities that would be funded through the Award;

Option B - opportunities for Maltese entities intending to submit a Horizon Europe proposal as the coordinator of the consortium to engage a service provider (local or foreign), who would be supporting the applicant through proposal writing and submission.

The Framework Programme Unit managed Option B and the amount of the award available to any one successful applicant was capped at €6,000 per Option.

19 applications were selected for Option B in 2023, of which seven did not use the grant and one is still looking for a new topic due to cancellation of the call.

Option B – Call 1

| Reference Number | Entity | Name of PI |
|------------------|---------------------|--------------------------------------|
| IPAS-015-2023 | University of Malta | Norbert Bugeja |
| IPAS-021-2023 | MCAST | Tatjana Chircop (Lorna West) |
| IPAS-022-2023 | MCAST | Tatjana Chircop (Judita Tomaskinova) |
| IPAS-031-2023 | University of Malta | Adrienne Grech |
| IPAS-036-2023 | University of Malta | Simon Fabri |
| IPAS-2023-040 | Ministry for Health | Kenneth Grech |

Option B – Call 2

| Reference Number | Entity | Name of PI |
|------------------|---------------------|----------------|
| IPAS-2023-046 | University of Malta | Edward Duca |
| IPAS-2023-049 | University of Malta | Simon Fabri |
| IPAS-2023-052 | University of Malta | Adrian Gellel |
| IPAS-2023-071 | IDEA Academy Ltd | Alexei De Bono |
| IPAS-2023-072 | BIOARTE Ltd | Manuele Biazzo |

4.8 Participation in Horizon Europe

Malta continued to capitalise on its positive starting performance in Horizon Europe and by the end of 2023, Maltese stakeholders were involved in a total submission of **627** eligible proposals.

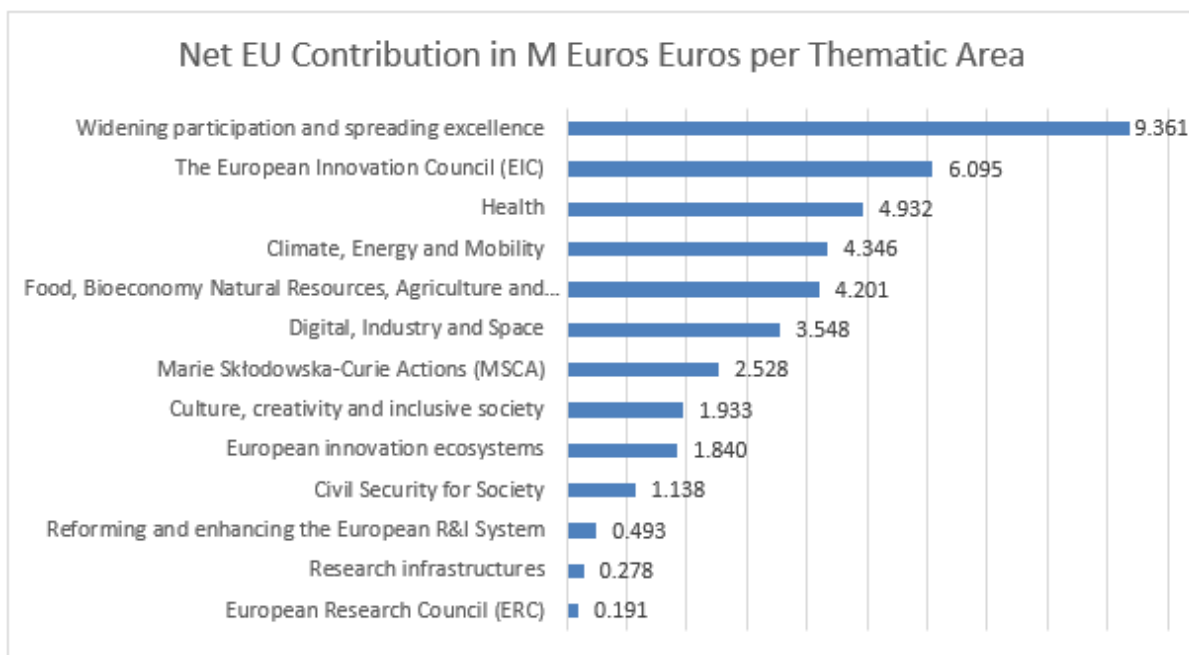
In terms of successful proposals, **56** unique Maltese participants were involved in **164** successful participations which transpired a total of **128** grant agreements.

The total costs for Maltese participants in these grant agreements amount to **51.51** million

Euros, of which **40.88** million Euros is the total net contribution from Horizon Europe. Of these, **12.85** million Euros are directed to Small and Medium Enterprises (SMEs).

An overall success rate of **20%** was retained by the Maltese Community throughout the Horizon Europe Programme. Comparatively the EU average success rate is **17%**.

The graph below depicts the amounts of net EU contribution in million Euros per Horizon Europe thematic area.



The table below explains the share of the NET contribution received according to organisation type.

| Organisation Type | Net EU Contribution in Million EUROS |
|--|--------------------------------------|
| Higher or Secondary Education Establishments | € 16.38 |
| Private for-profit entities | € 13.76 |
| Public bodies | € 7.49 |
| Research organisations | € 2.70 |
| Other | € 0.52 |

4.9 Events 2023

Throughout 2023, the Framework Programme Unit organised a total of 22 information and/or training sessions. Events were either held physically or online. Moreover, the NCPs were invited to be present at another 19 events organised by other entities.

| | | |
|--|----------|---------------|
| HE Proposal Writing Workshop | Physical | 01/02/2023 |
| Missions and Thematic Experts Group Info Day | Physical | 12/01/2023 |
| EIC scheme webinar | Online | 09/02/2023 |
| Faculty of Health session | Physical | 21/02/2023 |
| Meet the NCP at UM – Faculty of ICT | Physical | 08/03/2023 |
| Meet the NCP at UM – Faculty of Engineering | Physical | 16/03/2023 |
| HE Support Schemes webinar | Online | 09/03/2023 |
| IPAS+ Info Session | Online | 13/03/2023 |
| HE Proposal Writing Workshop | Physical | 18&19/04/2023 |
| Doctoral School | Physical | 25/04/2023 |
| Info Day at Project Green | Physical | 30/05/2023 |
| Mission in Horizon Europe | Physical | 06/07/2023 |
| MSCA PF Proposal Writing | Physical | 12/07/2023 |
| Novelties in ERC | Online | 18/07/2023 |
| Superintendency for Cultural Heritage and Food Agency Training | Physical | 18/07/2023 |
| IPAS+ Info Session | Online | 13/09/2023 |
| Joint info session with MBB | Physical | 12/10/2023 |
| HE Clusters and Meet your NCP | Physical | 13/10/2023 |
| Horizon Europe Opportunities for Senior Research Officers and Doctoral students at MCAST | Physical | 26/10/2023 |
| Training for SEA-EU Office | Physical | 01/11/2023 |
| Gender Equality Workshop | Physical | 07/11/2023 |
| Legal and Finance workshop | Physical | 09/11/2023 |

4.10 Events organised by the NCPs in their Projects

| | |
|---|---------------|
| GO SME Final workshop | 28/03/2023 |
| Seren 5 Pitch Training | 27/04/2023 |
| NET4Society training | 3,4&5/05/2023 |
| NCP_Widera.net project Mutual Learning Exercise | 17/05/2023 |
| MSCA NET twinning in Malta | 8&9/06/2023 |
| MSCA NET training and project meeting | 3&4/10/2023 |

4.11 Events organised by third parties

| | |
|---|-------------|
| Mutual Learning workshop on Gender Equality Plans | 28/03/2023 |
| Dissemination and Information session on upcoming calls under Horizon Europe at SAMOC | 26/04/2023 |
| Access to funding in the Tech Ecosystem at the Malta Chamber of Commerce | 04/05/2023 |
| Startin Malta Spring Meetup | 05/05/2023 |
| MSCA PF hints and tips for China | 10/05/2023 |
| MSCA Presentation for COST meeting | 11/05/2023 |
| Sustainable Transport Adaptation and Resilience in the Maltese Islands | 15/05/2023 |
| MSCA PF Introduction for India | 16/05/2023 |
| Attending TVAM programme | 18/05/2023 |
| EEN Access to Finance event (MBB-MCST) | 26/05/2023 |
| MSCA PF Introduction for Latin America | 05/06/2023 |
| MSCA PF Introduction for Asia | 06/06/2023 |
| Ghasel Malta 2020 | 08/06/2023 |
| EIT Digital | 15/06/2023 |
| MSCA PF Introduction for NET Euratom | 26/06/2023 |
| Startup Festival | 4&5/10/2023 |
| Doctoral School at UM | 11/10/2023 |

4.12 Projects

The Framework Project Unit also engaged in various initiatives and projects to improve and enhance the services provided as National Contact Points. This included participation in several **NCP networks** across the Programme.

These networks facilitate trans-national cooperation between NCPs, identify and share good practices and raise the general standards of support to programme applicants.

The FP Unit is participating actively in the following projects:

| | |
|----------------|--------------------------------------|
| NET4SocietyHE | Cluster 2 NCP network |
| Seren5 | Cluster 3 NCP network |
| GREENET | Cluster 5 NCP network |
| Care4Bio | Cluster 6 NCP network |
| NCP_WIDERA.NET | Widening and ERA NCP network |
| MSCA.NET | MSCA NCP network |
| RICH Europe | Research Infrastructures NCP network |

4.13 Other projects

Establishing of Cancer Mission Hubs: Networks and Synergies (ECHO S)

The ECHO S Project is a three-year Coordination Support Action funded under the Cancer Mission which aims to support the implementation of the Cancer Mission activities in all Member States and Associated Countries through the establishment and development of National Cancer Mission Hubs (NCMHs) operating at national, regional, and local levels. By establishing NCMHs in each MS/AC. MCST is a Work Package Leader of the Synergies Work Package which aims at building the synergies of the ECHO S project and the National Cancer Mission hubs with other projects and initiatives both within Health and Cancer and beyond.

Competence Upgrade for Business Excellence in Malta (CUBE-MT), Enterprise Europe Network (EEN)

MCST is part of this project led by Malta Enterprise and funded under the Single Market Programme (SMP). The project is aimed at accelerating the transformation of Maltese SMEs which have the ambition and potential to grow by leveraging

sustainability and digitalisation. MCST, as the consortium member specialising in research and innovation programmes, aims to assist SMEs with regards to financing opportunities for both start-up and scale up companies at EU and national levels.

Throughout 2023, the project provided adapted services to SMEs focused on digitalisation, internationalisation and sustainability.

4.14 Euraxess

The FP Unit is also in charge of the EURAXESS Malta portal - www.euraxess.org.mt

EURAXESS is a unique pan-European initiative delivering information and support services to professional researchers. Backed by the EU, Member States and associated countries, it supports researcher mobility and career development, while enhancing scientific collaboration between Europe and the world.

In 2023, the portal was continuously updated with new content, including news, job offers, funding opportunities, events, hosting offers and more.



5.0 Esplora Interactive Science Centre

Esplora is the National Interactive Science Centre located in Kalkara, Malta. It is designed to make science engaging and accessible to people of all ages through hands-on exhibits, workshops, and activities. The Centre focuses on a wide range of scientific topics, including physics, biology, technology and space exploration.

Esplora features a variety of themed zones with over 200 interactive exhibits that allow visitors to explore different scientific concepts in a fun and educational way. Additionally, Esplora has a planetarium, where visitors can experience immersive shows about astronomy and the universe, as well as outdoor spaces with exhibits related to energy and sustainability.

The Centre is particularly popular among families, school groups and tourists, providing an entertaining and educational experience for anyone interested in science and discovery.

5.1 The Education Programme: Educators and Students

Through its Education Programme and an annual calendar of thematic events, Esplora aspires to cultivate a culture of scientific curiosity and creativity by igniting a passion for questioning, investigation, and discovery. Esplora's principles - Explore, Think, Imagine, Appreciate and Create - are embodied through a series of educational workshops, science shows and artistic collaborations.



The Education Programme at Esplora acts as a valuable planning resource for educators planning trips with their students throughout the year. Featuring an array of engaging activities, the 2022-2023 Education Programme boasted two hundred interactive exhibits alongside ten diverse workshops. These workshops covered topics ranging from Lunar Missions and Aquatic Ecosystems exploration to cybersecurity and online safety in codebreaking sessions. Complementing these workshops were eight science shows targeting different age groups, along with 12 planetarium films and two presenter-led planetarium shows, aligned with the National Curriculum.

MCST – ESA Partnership Offers Unique Learning Opportunities for Educators and Students

Through a cooperative agreement between the Malta Council for Science and Technology (MCST) and the European Space Agency (ESA), Maltese educators and students could participate in prestigious workshops aimed at enhancing knowledge and skills in space technology, robotics, Earth observation and

space exploration. One of the highlights of this collaboration was the chance for educators to attend a teacher training workshop at the **e-Technology Lab** in the ESA Education Training Centre in Belgium. These workshops, meticulously developed around current ESA missions and research activities, provided educators with cutting-edge resources and insights into Space science. Themes covered during the training included Technology and Robotics, Earth Observation and Space Exploration.



Dates: 14-15 September 2023 Location: ESA ESEC (Belgium)

ESA Academy Workshops for Tertiary Education Students

In addition to opportunities for educators, tertiary education students could apply for **ESA Academy workshops**. These intensive sessions, led by both ESA and external experts, provided a deep dive into various aspects of Space science and engineering. Sponsored by MCST, the programme covered all participation costs, accommodation, meals and up to €300 in travel expenses for students selected through a competitive application process.

Workshops offered under this initiative included:

- **Concurrent Engineering Workshop** - A comprehensive introduction to the process of designing and building spacecraft, focusing on teamwork and interdisciplinary collaboration;
- **Ladybird Guide to Spacecraft Operations Training Course** - An accessible yet detailed look at spacecraft operations, providing students with practical knowledge and skills applicable to future careers in space exploration.

MCST Sponsorships for 2023

MCST was proud to offer sponsorships for 2023, making these unique learning opportunities accessible to Maltese students and educators. By covering essential costs, MCST ensured that financial barriers did not stand in the way of participants gaining invaluable experience at ESA's world-class facilities. These workshops provided not only an educational experience but also a stepping stone for those interested in pursuing careers in space-related fields. The knowledge gained, and the connections made during these sessions, are expected to have a lasting impact on participants, further strengthening Malta's presence in the global Space community.

Educators' Night



In our ongoing efforts to align Esplora's offerings with the educational needs of schools, we regularly gather daily and annual stakeholder feedback to refine both our school booking operations and overall visitor experience. A key initiative in this process was **Educators' Night**, held in September, where educators were invited to the science centre for an exclusive preview of Esplora's Education Programme. This event highlighted how a visit to Esplora can complement the curriculum, providing valuable

insights into the ways our interactive exhibits and workshops can enhance student learning.

Educators' Night also served as a vital platform for bolstering relationships with Senior Management Teams (SMTs) and educators, allowing for direct feedback on our education programme and overall experiences at Esplora. These interactions are instrumental in our commitment to continuous improvement, emphasising our dedication to excellence and service quality in all aspects of our offerings.

To further support educators, Esplora continues to provide complimentary admission for them and their immediate families. This initiative allows educators to explore the science centre at their leisure, facilitating informed planning for future visits with their students. Additionally, thanks to our partnership with the Ministry for Education, Sport, Youth, Research and Innovation, State schools continue to benefit from complimentary transportation services to and from Esplora, ensuring easy access for all. Through initiatives like Educators' Night and ongoing stakeholder engagement, Esplora remains committed to enriching educational experiences and fostering strong connections within the educational community.

5.2 Public Programme

Another facet of Esplora's programming encompasses the engagement of public visitors, including but not limited to, families, seniors, youths, disability groups and adults. Museums and science centres can support scientific learning and are viewed as spaces where visitors can "pursue and develop science interests, engage in science inquiry, and reflect on their experiences through sense-making conversations" (National Research Council et al., 2009, p.2). Esplora's main tools for achieving this are through its exhibits, education programmes and events.

Esplora's educational experiences and events also contribute to the development of science capital, a concept encompassing individuals' science-related knowledge, attitudes, experiences and resources accumulated throughout their life. The impact of families on children's perspectives of STEM (Science, Technology, Engineering and Mathematics) has been extensively researched and documented. By involving guardians and

family members in the scientific process through the use of family workshops and experiences, Esplora aims to enhance science capital, thereby increasing the likelihood that children will continue pursuing STEM later in life.

STEM events serve as a valuable avenue to captivate and motivate visitors, igniting their curiosity and cultivating a passion for these subjects. Moreover, these events provide the science centre with a platform to communicate scientific concepts in an accessible and engaging manner, while establishing connections between the community and STEM professionals.

For its events, Esplora's Education Department develops thematic programmes which integrate the educational aspect of STEM with entertainment. New hands-on workshops and activities are developed with the event objectives in mind, alongside thematic science shows.

Carnival at Esplora – Think it! Make it!

Esplora's Annual Calendar of Events kicked off in vibrant style with the **Carnival Event: Think it! Make it!** This highly anticipated event set the tone for a year of engaging, hands-on experiences celebrating creativity and exploration. True to Esplora's mission of making science accessible and fun, the Carnival Event provided visitors with a unique blend of tinkering, making and imaginative play, all within a festive and colourful atmosphere. During **Think it! Make it!** visitors of all ages were invited to immerse themselves in a world of creativity. The event featured a variety of interactive stations where participants could use digital and physical tools to bring their ideas to life. From building and crafting with recycled materials to experimenting with simple electronics, the event offered countless opportunities for tinkering and invention. These activities not only sparked imagination but also highlighted the practical application of STEM skills in a fun and engaging way.



Journey to Space

During the **Journey to Space** event, visitors embarked on a simulation of an exciting, week-long exploration of Earth and the vast cosmos beyond. The programme was meticulously designed to engage participants of all ages in the wonders of Space science and technology, offering a diverse range of activities that made complex concepts accessible and exciting. The event successfully bridged the gap between cutting-edge Space research and public engagement. By offering a rich blend of educational content, hands-on experiences and direct interactions with experts, the event inspired participants to look up at the stars with newfound curiosity and consider their own potential roles in the exploration of the final frontier.



Esplora procured from a third party. The simulator allowed participants to experience the thrill of driving a high-performance racing car, offering a realistic and immersive racing environment. Visitors tested their driving skills on virtual tracks, providing them with a firsthand experience of the adrenaline and precision required in professional racing. In addition to the simulation, attendees were given a unique behind-the-scenes look at the advanced technology used in these cars. Moreover, visitors could also participate in a 'Gran Turismo 7' racing game within the designated e-sports area.



Gears & Wheels: Unveiling the Science of Racing

This exhilarating event brought together racing enthusiasts, families and curious minds to delve into the cutting-edge technology and science behind modern racing. One of the event's highlights was the opportunity for visitors to try out a state-of-the-art racing car simulator, which

EuroPride 2023 – Bursting with Colours

Esplora celebrated EuroPride 2023 with an event focused on STEM activities linked to the science of colours - from how they are formed to how they are perceived by the human eye. Through interactive workshops, hands-on experiments and engaging demonstrations, participants learned about the physics of light, the chemistry of pigments and the biology of vision. The event also explored the cultural and symbolic meanings of colours, making connections to the vibrant diversity celebrated at EuroPride.



Halloween – Cirque Bizarre

For its Halloween Event, **Cirque Bizarre**, the science centre was transformed into a whimsical circus, featuring a thematic show including the captivating 'Science on Fire' and 'Spelltacular'. These shows blended spectacular science demonstrations with theatrical flair, dazzling audiences with fiery experiments, bubbling potions, and enchanting effects that brought the mysteries of science to life in a way that was both entertaining and educational. In addition to the shows, visitors were invited to participate in hands-on dissections, offering a rare opportunity to explore the anatomy of various organisms in a fun and interactive way. The **Corridor of Curiosities**, with its scientific twist, challenged participants to test their skills while learning about physics, biology and chemistry through playful and engaging activities. From balancing acts to gravity-defying stunts, each game was designed to teach scientific concepts in a fun and memorable way. One of the event's standout features was the **Reptile Dungeon**, where visitors could come face-to-face with some of nature's most fascinating and misunderstood creatures. Here, herpetologists and entomologists shared their passion and knowledge of reptiles and insects, providing insights into the lives of these incredible animals. From snakes and lizards to spiders and scorpions, the Reptile Dungeon offered a unique opportunity to learn about the biology, behaviour, and importance of these creatures in our ecosystem.

Aura: A Musical in the Dark

Esplora, in collaboration with Teatru Malta, produced **Aura: A Musical in the Dark**, an innovative production which offered the public a unique multi-sensory experience, blending the magic of music with the immersive environment of the Planetarium Dome. The captivating musical performance took place in complete darkness, allowing audiences to experience the show through enhanced senses of sound and touch. Using the Planetarium Dome's state-of-the-art facilities, the immersive experience engaged the audience in a new and profound way, creating a fully enveloping environment, where music, atmosphere and sensation came together.



Esplora's Seventh Anniversary

For its Seventh Anniversary event, Esplora celebrated by focusing on one of the most pressing issues of our time, the climate crisis. Bringing together a diverse group of environmental NGOs, dedicated researchers and scientists, the event aimed to inspire and educate visitors about the critical role that science and technology play in building a more sustainable future. This milestone event offered attendees a unique opportunity to engage with the latest advancements in climate science. Through interactive exhibits, presentations and workshops, visitors learned about cutting-edge research being conducted to address climate change and its impact on the planet. Experts in the field shared insights on topics such as renewable energy, conservation efforts and innovative technologies designed to reduce greenhouse gas emissions. A significant highlight of the event was the focus on practical solutions for individuals to reduce their own carbon footprint. From simple lifestyle changes to adopting new technologies, visitors were provided with actionable tips on how they could contribute to environmental sustainability in their daily lives. The event emphasised the power of collective action, encouraging participants to make small, meaningful changes that, when combined, could have a significant impact on the environment.



International Day of Older Persons

In October 2023, Esplora proudly celebrated the **International Day of Older Persons**, stressing the importance of an active and fulfilling life for older individuals and reinforcing the message that science is for everyone, regardless of age. This special event brought together older adults for a day of exploration, learning and engagement, showcasing the fact that curiosity and the love of discovery know no age limits. These activities were designed not only to entertain but also to inspire older individuals to continue their journey of lifelong learning. A significant highlight of the event was the signing of an important Memorandum of Understanding (MOU) between the Malta Council for Science and Technology (MCST) and Active Ageing and Care in the Community (AACC). This partnership marks a crucial step towards promoting science engagement and active aging within the Maltese community. The MOU solidifies the commitment of both organisations to work together in creating more opportunities for older adults to participate in science-based activities, ensuring that they remain active, engaged, and connected to the world around them, whilst paving the way for future initiatives that cater specifically to the needs and interests of older individuals. Esplora's celebration of the International Day of Older Persons not only highlighted the importance of active aging but also underscored the Centre's commitment to inclusivity.





Christmas at Esplora

Esplora brought the festive spirit to life with two exciting events that captivated visitors of all ages. Combining education, creativity and holiday cheer, the science centre delivered a unique and unforgettable experience for families and individuals alike, with a programme of activities designed to engage and inspire visitors through a series of festive science shows and workshops. Among the highlights was the **Santa's Sorting Bots Workshop**, where families had the chance to code robots to sort, count and deliver presents. Additionally, participants coded drawing-robots that created personalised Christmas cards, blending technology with holiday creativity. The festive atmosphere extended throughout the exhibition floors, where thematic hands-on activities encouraged creativity and learning. These included crafting **Paper-Circuit LED ornaments**, a fun and educational way to link physics with artistic expression. Children also explored their 21st-century skills using specially designed cardboard toolkits, empowering them to create their own Christmas decorations

Esplora Wonderland with Danusan

Esplora also hosted a unique interactive storytelling session, where the youngest visitors embarked on a magical journey with Santa Claus himself. Through this experience, children discovered how families celebrate Christmas across Malta and Gozo, enriching their understanding of local traditions.

In collaboration with an external partner, local entertainers Dan u San, the science centre hosted an intimate Christmas market, offering visitors the chance to browse festive stalls and discover unique gifts. The evening event also featured an interactive trail through the science centre, where visitors could stop at various themed stations. One popular stop was Santa's Post Office, where children wrote heartfelt letters

to Santa. The night concluded with a spectacular show featuring a mix of comedians, dancers and singers, providing entertainment and joy for all.



5.3 Career and Skills Initiatives STEM Career Orientation Visits and Engagement

In a rapidly changing environment, Esplora plays a pivotal role in raising awareness on emerging careers in the STEM fields and of associated 21st-century skills essential for the world of work, which citizens also need in their daily lives.

Career Orientation Visits for students at Year 9 and 10 level were organised through a collaboration with the National School Support Services within the Ministry for Education, Sport, Youth, Research and Innovation (MEYR). During 2023, over a 2-month period, more than 250 students visited Esplora on a career orientation visit. During these visits, these students' met staff members to learn about the different roles within the science centre. Moreover, Esplora representatives participated in the 'I Choose Career' fairs organised by MEYR in January 2023 and in July 2023. During these events, staff members engaged with Year 11 students and families on career opportunities at Esplora Interactive Science Centre.

Astronomical Society of Malta Host Week-Long Summer Camp for Aspiring Teen Scientists

In July, Esplora collaborated with the Astronomical Society of Malta (ASM) to deliver an unforgettable week-long summer camp, designed to ignite a passion for science among teenagers aged 12-15. The camp provided participants with the unique opportunity to dive into the fascinating world of astrophysics, planetary science and spacecraft engineering through a series of engaging workshops.

Throughout the week, Esplora's skilled science communicators, along with experts from ASM, led interactive sessions that explored a variety of captivating topics. Participants learned about the mysteries of the universe, the intricate workings of spacecraft and the science behind planets and stars. By combining hands-on activities with expert guidance, the camp allowed teenagers to expand their knowledge in a fun and stimulating environment.

This collaboration between Esplora and ASM brought together the best of both worlds – the educational expertise of Esplora and the specialised knowledge of ASM. Together, they created a programme that was not only educational, but also inspiring, offering young participants a glimpse into potential careers in science and engineering.



World Capital for Women and Girls in Science

Esplora also participated in one of the initiatives to mark Malta's year as the first World Capital for women and girls in science. As part of this initiative, Esplora organised a one-day programme as part of the Girls4STEM summer camp, which was spearheaded by the Ministry for Education, Youth, Research and Innovation (MEYR). The event aimed to encourage 12-year-old female students to engage with STEM subjects (Science, Technology, Engineering and Mathematics) through a variety of activities designed to spark their interest and broaden their understanding of these fields. This effort is part of a larger movement to promote gender equality in STEM, inspire young girls to pursue careers in these areas, and emphasise the importance of diversity in science and technology.

DIGINOVA Camp at Esplora

Esplora also collaborated with the Malta Innovation Forum and the Malta Digital Innovation Authority to host the DIGINOVA Camp. This camp, held at Esplora, targeted teenagers aged 13-15 years old. The programme was designed to introduce participants to the transformative potential of creativity, innovation and emerging digital technologies, with a particular focus on artificial intelligence (AI). Through hands-on activities and interactive sessions, the camp aimed to empower young people by giving them the tools and knowledge to explore and harness the power of these cutting-edge technologies. This initiative aligns with Malta's broader goals of fostering a digitally savvy and innovative youth population, preparing them for future challenges and opportunities in the digital world.





ERASMUS +

Esplora's role as a hub for STEM education extends beyond local initiatives, as it continues to receive requests to create bespoke training for both students and educators through Erasmus+ programmes. In October 2023, Esplora hosted a group of 17&18-year-old students as part of an Erasmus+ initiative. This tailored, week-long STEM programme was designed specifically for these students, focusing on the development of 21st-century skills and a deeper understanding of STEM education. Through interactive workshops and hands-on activities, the programme aimed to equip students with the skills and knowledge necessary to thrive in a rapidly evolving technological landscape.

Journey to Space

At Esplora's *Journey to Space* event, families were given a unique opportunity to engage with local Space-science researchers. The event was designed to inspire curiosity about Space and explore potential career paths related to Space science. Through interactive sessions and discussions, participants learned about the various fields within Space research, fostering an interest in STEM careers tied to the exploration of the cosmos.

Saving our Blue campaign and the Malta Pollinator Monitoring Scheme

Esplora continued to strengthen its commitment to environmental education through its ongoing partnership with the Ministry for the Environment, Energy and Regeneration of the Grand Harbour. This collaboration is a key part of the local Saving our Blue campaign, which focuses on marine conservation and raising awareness about protecting Malta's coastal and marine

ecosystems. In addition, Esplora partnered with the Environment & Resources Authority (ERA) to conduct citizen science workshops, engaging the public in hands-on scientific research. These workshops play a vital role in the Malta Pollinator Monitoring Scheme (MPOMS), where participants learn to monitor important pollinators like bees, butterflies and hoverflies. Through the MPOMS-ID Club, participants are trained in species identification, equipping them with the skills needed to contribute to this important conservation effort. This initiative not only fosters community involvement in scientific research but also enhances public understanding of the critical role pollinators play in maintaining biodiversity and ecosystem health. To bridge the gap between theory and practice, Esplora organised a half-day science communication lecture specifically for students pursuing a Master of Science in Applied Oceanography or for a Bachelor of Science in Medical Biochemistry. The goal of this lecture was to immerse students in Esplora's unique approach to science communication, providing them with firsthand experience of the centre's programmes and initiatives. During the lecture, students gained insights into the processes and creative ideation involved in communicating science through non-formal education and entertainment. The session emphasised how science can be made accessible and engaging to the public, illustrating the benefits of effective science communication in fostering a deeper understanding and appreciation of scientific concepts. Additionally, the lecture highlighted various methods employed by Esplora to actively involve and captivate audiences, reinforcing the importance of public engagement in science. This initiative aimed to inspire the next generation of scientists to communicate their work in ways that resonate with broader audiences.

5.4 OUTREACH – Science in the Community

Esplora's dedicated staff are instrumental in bringing the vision of cultivating a culture of scientific curiosity and creativity to life, extending this mission beyond the walls of the science centre. Through their passion, expertise and commitment, they engage with diverse communities, creating impactful programmes,

workshops and events that inspire individuals of all ages to explore and appreciate the wonders of science. Their efforts ensure that Esplora's influence reaches far and wide, fostering a love for science and innovation throughout Malta and beyond. To bring science and technology closer to the community and ignite an appreciation for science within society, Esplora actively engaged in numerous outreach initiatives across Malta and Gozo. These efforts aimed to reach diverse audiences and inspire a wider interest in scientific topics.

Among these initiatives was the Public Service Expo, where Esplora showcased its commitment to public engagement in science. The 'Science in the Citadel' event in Gozo allowed participants to explore various scientific concepts in a historic setting, blending culture with education. Esplora's Gozo Roadshow took staff members to locations such as Dwejra, Xlendi and Marsalforn, bringing interactive science experiences directly to these communities.

Additionally, Esplora played a significant role in the 'Science in the City' festival, with the innovative workshop titled Murder in the City. This investigative workshop creatively presented local climate-change issues, sparking discussions on environmental challenges and empowering participants to take action. By making science engaging and relevant to everyday life, Esplora's outreach initiatives successfully fostered a deeper connection between science and the community.

5.5 International Cooperations

Ecsite Conference 2023

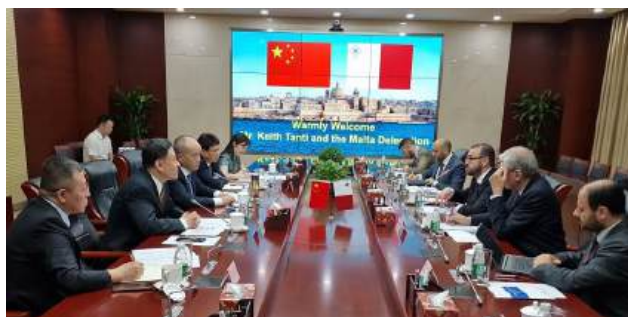
In 2021, Esplora Interactive Science Centre had successfully secured the prestigious role of host for the 2023 annual Ecsite conference. Ecsite is an organisation comprising over 300 science centres, museums, exhibition fabricators and related entities, primarily based in Europe but also including members from further afield. This significant event gathers up to 1,000 members annually for a four-day conference filled with educational sessions, panel discussions, project showcases, networking opportunities and a trade fair. To ensure the success of this large-scale event, Esplora's senior management formed a core team that drew on the expertise of various departments, including Operations, Education and Business Development. The conference began with a one-day Pre-Conference at Esplora, followed by the three-day Main Conference at the Mediterranean Conference Centre. Esplora staff were present at both venues, ensuring a seamless experience for all participants. A standout moment of the conference was the evening Nocturne event held at Esplora. Organised by the Education Department, this event featured a variety of engaging activities and experiences. Participants were also treated to a nighttime scenic ferry ride across the floodlit Grand Harbour, adding a memorable touch to the event. The feedback from both the Ecsite head office and participants was overwhelmingly positive, with the conference concluding in a standing ovation for the Esplora staff who had made the event such a resounding success.



Beijing International Week for Science Literacy

In September 2023, Esplora's Senior Director, Olaf McKay and Esplora Director, Nikolai Zammit, travelled to Beijing, China to participate in the prestigious Beijing International Week for Science Literacy. During this event, they advocated for the importance of digital literacy for all, emphasising the role that science centres like Esplora can play in enhancing access to technology education. Their participation highlighted how science centres can serve as vital platforms for promoting digital skills and bridging the gap between communities and emerging technologies. By sharing Esplora's approach to making technology education more accessible and engaging, they contributed to the global conversation on improving science literacy and ensuring that technological advancements are within reach for everyone. Their involvement in this international forum underscored Esplora's commitment to fostering a digitally literate society and inspiring innovation through education.

centres host festivals of this scale, and to network with other professionals in their field.



Fête de La Science

In October 2023, a small team from Esplora participated in *Fête de La Science*, a festival organised by the *Cité des Sciences et de l'Industrie* in Paris, France. Since the museum was showcasing the science of sports, a new science show was developed to align Esplora's activities with the rest of the festival's offerings. During the three days participating in the festival, staff members interacted with hundreds of visitors of all ages, including school groups, tourists, families with young children and teenagers. It was an incredibly rewarding experience for them to see the content they created being received so well by foreign audiences and to observe children engaged by what they were saying, despite the language barriers. It was also enriching for them to witness how other science

5.6 STEM Engagement Team

The STEM Engagement Team at Esplora operates in tandem with the Education Department, but with a distinct focus on initiatives involving external entities and communities, rather than directly engaging with Esplora's in-person visitors.

In February 2023, the team launched the second edition of the National STEM Community Fund, which received 12 project applications. Of these, 5 projects were selected and awarded a total of €24,000. The approved projects covered diverse areas such as STEM education, sustainability, community health and marine conservation, with all projects set to be concluded by the summer of 2024.



The second edition of the National STEM Awards was also launched in 2023, emphasising STEM engagement. This initiative aimed to recognise and reward individuals who extend their efforts beyond their usual responsibilities for the benefit of Maltese society. The awards attracted 41 applications across 7 categories, with the winners to be celebrated at an awards ceremony in January 2024.



Another significant achievement during the year under review was the successful Career Guidance training session for career guidance teachers and JobsPlus staff. Participants valued the opportunity to connect with Esplora staff and STEM professionals. The highlight of the session was an engaging Q&A with four panellists, where attendees learned about new initiatives, such as Foundation courses, and had the chance to network with scientists and engineers in a relaxed setting.

Additionally in 2023, the STEM Engagement Team revived the National STEM Engagement Working Group, which had been on hiatus following the departure of its Chair from Esplora. This group is unique in Malta, bringing together key stakeholders in STEM education and engagement at a national level. It is actively involved in identifying and addressing the primary challenges facing the country in these crucial areas.

5.7 Exhibits

Esplora reached a significant milestone in 2023 as it transitioned from its initial phase of retaining original exhibits to a period of exciting renewal and expansion. With the expiry of the grant agreement that had initially funded its exhibits, Esplora took bold steps to update and diversify its offerings.

In 2023, Esplora introduced two thrilling new exhibits that quickly became highlights for visitors. The first, a large animatronic dinosaur which captivates audiences with its lifelike movements, was installed outdoors near the Cot Lift exhibition. This prehistoric addition was a hit among visitors of all ages. The second major attraction is a full-size racing car simulator, equipped with virtual reality and hydraulic motion, which made its debut during the “Gears and Wheels” event. This cutting-edge simulator provides an immersive racing experience and will be permanently housed in a dedicated gaming area in 2024.

In addition to these new exhibits, Esplora revitalised the LittleEsploras exhibition area. The space was refreshed with a new coat of paint in Esplora’s signature colours and redesigned with a more whimsical theme, ensuring it continues to engage and delight the centre’s youngest visitors. These developments marked the beginning of an exciting new chapter for Esplora, as it continues to inspire curiosity and learning through innovative and interactive science exhibitions.

5.8 Training Programmes

In December 2023, two members of Esplora’s education team had the unique opportunity to participate in a prestigious training programme focused on the upcoming Paris Olympic and Paralympic Games. Hosted by Universcience, the programme aimed to explore the dynamic relationship between science, sport and e-sport. This event gathered approximately forty young scientific talents from around the world, fostering the exchange of knowledge on sports-related sciences.

The training sessions took place at Universcience’s renowned venues, including the *Cité des Sciences et de l’Industrie* and *Étincelles du Palais de la Découverte*. Participants also visited partner sites such as cultural institutions and sports facilities, further enriching their experience. This programme not only deepened the participants’ understanding of the intricate connections between science and sports but also facilitated valuable discussions on the subject with peers from various international backgrounds. This enriching experience will

undoubtedly contribute to Esplora's ongoing efforts to integrate science with diverse aspects of society, including sports.

5.9 Accessibility, Inclusion and Equality

Multi-Sensory Room



In 2023, the multisensory room celebrated its first full year of operation, marked by tailored ability-based sessions. This milestone prompted significant adjustments to the original plans to better serve the needs of our visitors. Changes included extending session durations, refining booking procedures, and ensuring accessibility for both schools and families. Moreover, age-appropriate and ability-specific activities were developed, aimed at creating an enriching environment for all participants. These activities catered to tactile, olfactory and visual senses. Furthermore, they were designed to engage participants across varying levels of physical and intellectual capabilities, fostering inclusivity and participation for all.

Furthermore, Esplora continues to provide monthly sensory-friendly mornings or afternoons for visitors and families, with exhibition galleries and outputs being adapted accordingly. Additionally, visitors can benefit from Esplora's Sensory Bag and navigate the premises using a tailored map highlighting quiet spots and light-sensitive areas. As advocates for inclusivity, Esplora proudly maintained its support for the Sunflower Scheme by offering lanyards to our visitors.



Furthermore, as part of Esplora's commitment to engage members of the community unable to visit Esplora and experience the multisensory room firsthand, outreach activities were organised at the Wardija Resource Centre. Additionally, a dedicated presentation of the multisensory room was organised for parents and guardians, extending the reach of its benefits beyond the facility's physical boundaries.

Inclusivity and Disability Week

To celebrate Disability Week, the Service Dogs Malta Foundation (SDMF) partnered with Esplora to organise an event for their service users. A bespoke social story was created and sent to SDMF as part of the preparations. Furthermore, Esplora made adjustments to its programme, including making modifications to its science shows, ensuring an outstanding experience for both the service users and their working dogs.

To enhance accessibility and elevate the Ecsite conference experience for its delegates, Esplora created a sensory room at MCC. This dedicated space was used daily and received commendation for its contribution to attendee comfort and well-being at the Conference.

In a commitment towards Inclusivity, the Inclusivity committee continued meeting to set up an inclusivity strategy to create a path forward, alongside identifying areas of improvement which can make Esplora more inclusive and accessible. Moreover, child-protection training for Esplora staff members was held in collaboration with Child Safety Services Malta, while an internal policy for staff members to be able to report incidents that they witness was also established.

5.10 Funded Projects

Erasmus+ KA2 Project

Wired Youth Science Forum

The **Wired Youth Science Forum** project aimed to empower young people aged 15 to 18 by fostering a deeper understanding of their voting rights and raising awareness of pressing societal concerns. The initiative also focused on the latest research and the application of scientific findings to develop evidence-based policies.

Throughout the project, participants engaged in four interactive workshops, where they had the opportunity to meet with leading scientists in the field of Artificial Intelligence and with policymakers. The activities were designed to enhance their public speaking, critical thinking and debating skills. Moreover, the project promoted European democracy by teaching the participants how to write impactful policy papers that could benefit both their country and society at large.

Erasmus+ KA1 Project

Learning for All: Upskilling for great Impact and Reach

In December 2023, Esplora was granted the sum of Eur26,490 for an Erasmus+ project, through which 14 Esplora employees were given the opportunity to participate in three training and job shadowing mobilities, organised at three international institutions, focusing on Science Communication theory and practice.

The objectives encompass various aspects of professional growth and engagement within the science communication field. This includes enhancing professional development by acquiring knowledge, skills and adaptability

to navigate the evolving landscape of science communication. Additionally, there was a focus on gaining insights into practices and roles in non-formal education institutions, fostering positive interactions with professionals from international settings and acquiring expertise in effectively communicating scientific societal challenges, such as climate change, particularly in science centres for youth engagement and evidence-based activism.

Furthermore, the objectives aimed to explore co-creation methods to foster meaningful connections and facilitate dialogue among stakeholders, bridging the gap between science communication research and practice for effective programme development and evaluation.

Esplora continue to show its commitment to specialisation in designing and implementing engagement approaches and informal learning practices tailored to diverse STEM contexts, objectives and audiences, to widen Esplora's impact on society and to encourage dialogue on important societal issues.

5.11 Communications

In June 2023, MCST enhanced its operational efficiency by merging the PR Unit and Marketing Unit into a unified Communications Department. This strategic move was driven by the interdependence of both segments and the entity's growing demands, resulting in a more streamlined and effective approach to serving all units, namely within Esplora, MCST and Villa Bighi. Under the leadership of Ms Giselle Calleja, Director of Communications, PR and External Affairs, and Esplora Senior Director Mr Olaf Mc Kay, the department continued taking on the coordination of PR events, proofreading services, speechwriting, press releases, and marketing of all Esplora, MCST and Villa Bighi events. With a focus on data-driven marketing, and a mix of traditional and digital media, the department successfully organised over 45 events, including the international ECITE event, which significantly boosted tourism to Malta. The below section goes over some key highlights for Esplora and MCST.

Key Highlights – ESPLORA – PROMOTING STEM SUBJECTS WITHIN THE COMMUNITY

National Stem Community Fund – Press Event (2 February)

The second edition of the National STEM Community Fund was launched by Hon. Keith Azzopardi Tanti, Parliamentary Secretary for Youth, Research, and Innovation, alongside Mr. Silvio Scerri, MCST CEO. The Fund, managed by the STEM Engagement Working Group and chaired by Esplora Interactive Science Centre on behalf of the Malta Council for Science and Technology (MCST), supports community-based STEM projects. Eligible organisations collaborating with researchers or STEM professionals could receive up to €8,000 per project, with a total fund allocation of €24,000.

The fund aims to:

- Inspire and implement participatory STEM projects;
- Celebrate the relevance of science within the community through education, communication and citizen engagement.

Projects involve schools, local councils, and NGOs, focusing on addressing community needs sustainably. Applications underwent a thorough evaluation and adjudication process by the Evaluation Panel.

National Stem Community Fund-Awardees Announced – Press Event (10 July)

The 2023 National STEM Community Fund Event was held on 10 July 2023 at the Planetarium Hall. The Evaluators agreed to support five projects out of the 12 applications received, distributing the €24,000 budget among the following projects: 'Grow Your Own: Hydroponic Gardening for Sustainable Agriculture, a STEM Education Project for the Community' by De La Salle College; 'Beat the Wheat: Coeliac Screening from our Labs to our Community' by The Malta Association of Biomedical Scientists (MABS); 'Bombs to Batoids: Filfla Nature Reserve at 35 – Legacy and State of the First Maltese Nature Reserve' by Sharklab-Malta; 'D.I.C.E.: Design, Innovate & Connect Efficiently' by Gozo College; and 'STEMmersion: Immersive Learning through Our Local STEM Environment' by the Secretariat for Catholic Education.



Mr. Scerri, MCST CEO, addressing the National STEM Engagement Working Group

The National Stem Awards – Press Event (2 May)

During a press conference, Parliamentary Secretary for Youth, Research and Innovation Keith Azzopardi Tanti announced the launch of the Second Edition of the National STEM Awards.

The National STEM Awards aim to acknowledge and honour the far-reaching contribution made by individuals and organisations in Malta through engaging and inspiring others to collaboratively prioritise Science, Technology, Engineering and Mathematics, better known as STEM.

The National STEM Awards event is an initiative of the National STEM Engagement Working Group, chaired by the Esplora Interactive Science Centre on behalf of the Malta Council for Science and Technology (MCST). The National STEM Engagement Working Group brings together different entities and professionals, working in Malta on STEM education, research, communication, outreach and engagement, to discuss and plan STEM initiatives in a way that avoids duplication and fragmentation of efforts.

Applications were evaluated and ranked by an Evaluation Panel in the following categories:

1. Primary Class Teacher Award for Inspiring Learners in STEM.
2. Secondary School Teacher Award for Inspiring Learners in STEM.
3. Non-formal STEM Educator Award.
4. STEM Community Project Award.
5. STEAM Project Award.

6. Lifetime Award for Contribution to STEM Engagement.

7. Engaged Researcher Award.

8. Diversity in STEM Award.

The evaluation criteria included the following headings: Excellence, Impact, and Supporting Material. The Evaluation Panel considered evidence that the person or organisation:

- Created and implemented creative and innovative engaging STEM activities.
- Created opportunities to foster 21st century skills.
- Conducted outreach efforts.
- Impacted behaviours and attitudes within the community.
- Incorporated others' input into their activities, projects and initiatives.

Celebrating Space at Esplora (12 April)

Space was under the spotlight during the Easter holidays. A press event announcing, 'Journey to Space', an event whereby the science centre was transformed into a hub for all things extra-terrestrial: satellites, astronauts, lunar rovers, space shuttles and so much more, to be held between the 11 the 16 April, was announced during a press event. Present for the event were MCST Chairman Dr Tonio Portugese and Esplora Senior Director, Mr. Olaf Mc Kay.

Let's Analyse This Plastic (16 May)

Led by Malta's first-ever Ocean Ambassador, University of Malta's Professor Alan Deidun, 'Let's Analyse This Plastic' was a press event showcasing of the latest innovative microplastic analysis and reporting tools delivered through the ANDROMEDA project, with the involvement of students in an interactive and full-immersive experience using the exhibits at Esplora, was held at the Planetarium Hall.

This event was partially funded by the EU ANDROMEDA project and by the BlueNIGHTs project. The ANDROMEDA project was funded by the Malta Council for Science and Technology through the JPI Oceans Joint Action "Sources,

distribution & impact of microplastics in the marine environment.

Students had the chance to meet 'Pepper the interactive robot'. Present for the event were Parliamentary Secretary for Fisheries, Aquaculture and Animal Rights, Dr Alicia Bugeja Said and the Parliamentary Secretary for European Funds, Dr Chris Bonnet.

Ecsite Conference Press Event (15 June)

Esplora hosted the annual **Ecsite Conference** between the 12 and the 17 June 2023. Ecsite is a dynamic community of over 350 organisations committed to inspire people with science and share a passion for making it more accessible, interactive, and engaging for all ages and backgrounds. The conference is an annual event aimed at promoting science education, fostering collaboration between science professionals, and sharing the best practices in science communication. One of the primary goals is to provide a platform where to exchange knowledge and ideas.

Over 900 science professionals registered from all over the world attended this conference. The Public Relations team was responsible for the Opening Ceremony and networking meetings during this week.

The opening ceremony took place at the Mediterranean Conference Centre Valletta with the involvement of the Hon. Clifton Grima, Minister for Education, Sport, Youth, Research and Innovation and the Hon. Keith Azzopardi Tanti, Parliamentary Secretary for Youth, Research and Innovation. The event received nationwide coverage.



OUTREACH

COSI ROADSHOWS (15th – 17th June)

Following the signing of an MoU between MCST and COSI, Esplora organized a series of roadshows from **15th to 17th June 2024**, in collaboration with COSI, who travelled from America for this event. The roadshows visited several Maltese villages, with significant support from the mayors and local councils of Valletta, the Three Cities (Cospicua, Senglea, and Vittoriosa) and other villages.

During the roadshows, the Esplora team, including the Communications Unit, worked closely with COSI to engage with children and students of all ages, ensuring a successful and interactive experience.



This interactive activity aimed to engage the community and distribute vouchers that could be redeemed for COSI's Learning Lunchboxes. Created during the COVID pandemic, these boxes are part of COSI's outreach programme designed to provide youngsters, without access to technology, the opportunity to learn science in an engaging and fun way through interactive activities. Each Learning Lunchbox contains a variety of science-related activities, experiments and educational resources, allowing kids to explore science from home.

Presentation of Cosi Science Kits to Children of Kalkara (5 August)

Mr. Olaf McKay, Senior Director at Esplora, presented COSI Science Kits to over sixty

children from Kalkara, in the presence of Mr. Wayne Aquilina, Mayor of Kalkara. All the children who attended and their families enjoyed free entrance to Esplora on that day.

Presentation of Cosi Science Kits to Children of Senglea (12 August)

Mr. Olaf McKay, Senior Director at Esplora, presented COSI Science Kits to children from Senglea, who were accompanied by their parents, at Esplora Belvedere, a most scenic location, in the presence of Mr Clive Pulis, Mayor of Senglea.

Presentation of Cosi Science Kits to Children of Valletta (23 August)

Mr. Silvio Scri, CEO of MCST, and Mr. Olaf McKay, Senior Director at Esplora, presented COSI Science Kits to children from Valletta, who were accompanied by their parents. During the event, the children enjoyed a science show titled "Body Wonders." The event was attended by Mr Alfred Zammit, Mayor of Valletta, and Ms. Pamela Schembri, Head of the Foundation for Educational Services.

Esplora participates in the "I Choose Fair" (21 – 22 July)

Esplora participated in the "I Choose Fair," showcasing career opportunities available at Esplora, and featuring Virtual Reality headsets and interactive busking activities to engage with the attendees.

Outreach at The Seminary Tal-Virtu, Rabat (25 October)

Mr. Olaf McKay, Senior Director at Esplora, along with other MCST officers, visited The Seminary, Tal-Virtù, Rabat, to distribute COSI Science Kits and complimentary entry tickets to the Esplora Science Interactive Centre. The distribution aimed to support primary and secondary school students in their journey to explore and engage with STEM (Science, Technology, Engineering and Mathematics) fields.

Outreach at Primary Schools of B'Bugia and Żurrieq (27 October)

Mr. Olaf McKay, Senior Director at Esplora, Ms. Giselle Calleja, Director of Communications, PR & External Affairs, along with other MCST officers, visited the primary schools in B'Bugia and Żurrieq to distribute COSI Science Kits and complimentary entry tickets to the Esplora Science Interactive Centre to students.

Outreach Visits at Schools in Cottonera (8 November)

Mr. Olaf McKay, Senior Director at Esplora, Ms. Giselle Calleja, Director of Communications, PR & External Affairs, along with other MCST officers, visited the primary schools in Cospicua, Kalkara, Senglea and Vittoriosa. They distributed COSI Science Kits and complimentary entry tickets to the Esplora Science Interactive Centre, continuing their efforts to create awareness about STEM (Science, Technology, Engineering and Mathematics).

Esplora Participates in San Ġwann Christmas Village Event (1–3 December)

On the first three days of December 2023, members of the Esplora Education and Communications Departments participated in the San Ġwann Christmas Village, promoting the importance of STEM (Science, Technology, Engineering and Mathematics) among children. The event was organised by the San Ġwann Local Council.

Prize-Giving Ceremony to Winners of Esports Tournament (23 August)

On 23 August 2023, Mr. Olaf McKay, Senior Director of Esplora, presided over the prize-giving ceremony for the winners, runners-up and third-place finishers of the Esports Tournament held during the Gears and Wheels Event on 19 and 20 August 2023.

Education Programme Launch 2023 – 2024 (22 September)

The new education programme for the 2023–2024 scholastic year was launched with a press conference. For the eighth consecutive year, Esplora's Interactive Centre for Science has introduced an innovative educational programme for schools. This programme aims to ignite a passion for Science, Technology, Engineering, Art, and Mathematics (STEAM) through Esplora's engaging methods and approaches.

The new school programme includes a range of blended learning opportunities, featuring science activities, practical workshops and Planetarium experiences, designed for students from kindergarten through to higher levels. The launch event was attended by the Hon. Clifton Grima, Minister for Education, Sport, Youth, Research and Innovation; the Hon. Keith Azzopardi Tanti, Parliamentary Secretary for Youth, Research, and Innovation; and Esplora's Senior Director, Mr. Olaf McKay. Educators and representatives from both Church and independent schools were also present at the press event.

Esplora Sponsors Two-Day Handball Event at The University of Malta (11 – 12 November)

On 11 and 12 November 2023, Esplora sponsored a two-day handball event at the University of Malta. Malta's handball champions faced off against a team from Italy. Esplora officers were invited to attend and support the event.

World Children's Day (17 November)

On 17 November 2023, MCST hosted a group of fifty students from Marsa Primary School at Esplora, the Science Interactive Centre, to celebrate World Children's Day.

Esplora's Seventh Anniversary (18 November)

As part of MCST's activities marking the seventh anniversary of the opening of Esplora, children under 10 years of age were given free admission to the Centre. On this occasion, Esplora's Education Team produced new shows and workshops designed to introduce young visitors to the wonders of general science.

We Are the Scientists of Tomorrow (21 November)

MCST hosted an awards presentation for students participating in the project titled “We Are the Scientists of Tomorrow,” organised by the Department of Education. Following the prize-giving ceremony, guests enjoyed a tour of Esplora and a Planetarium show. The event was attended by the Hon. Keith Azzopardi Tanti, Parliamentary Secretary for Youth, Research & Innovation.

The Esplora Christmas Wonderland Press Event (1 December)

A press conference was held to announce the Esplora Christmas Wonderland programme, an event that uniquely combined the festive spirit of Christmas with the exciting world of science and technology—something only Esplora can deliver. For the first time, Esplora teamed up with the popular duo Dan u San to bring this experience to life.

The programme was officially launched by the Parliamentary Secretary for Youth, Research, and Innovation, the Hon. Keith Azzopardi Tanti. Also present were MCST CEO Mr. Silvio Scerri, Esplora Senior Director Mr. Olaf Mc Kay, and MCST Director of Communications, PR and External Affairs, Ms. Giselle Calleja.

The Esplora Christmas Wonderland ran from Friday, 8 December to Sunday, 7 January, every evening from 6:00 pm to 10:30 pm.

VISITS

French Ambassador Visits Esplora (6 July)

H.E. Agnès Von der Mühl, Ambassador of France to Malta, and Hon. Keith Azzopardi Tanti, Parliamentary Secretary for Youth, Research and Innovation, visited Esplora on 6 July 2023 for discussions and a tour of the centre. They were accompanied by Mr. Olaf Mc Kay, Senior Director at Esplora, and Ms. Giselle Calleja, Director of Communications, PR and External Affairs at MCST.

Talks On Sino-Malta Cooperation in Space Matters (20 July)

A delegation from the People’s Republic of China visited MCST, including Esplora and the Planetarium. During the visit, the delegation from the Chinese Space Agency donated a model of *Zhurong*, the Chinese rover currently exploring Mars, to Esplora. A workshop on Sino-Malta Cooperation in Space was also held as part of the visit.

Chinese Delegation from The Ministry of Science and Technology of The People’s Republic Of China visits MCST (6 December)

A delegation from the Ministry of Science and Technology of the People’s Republic of China (MOST) visited MCST on the 6 December 2023 for an informal meeting with MCST CEO, Silvio Scerri. The visit included a tour of Esplora, featuring the Planetarium, and refreshments served at the Cot Lift. These discussions were preliminary and will lay the groundwork for a significant visit to China in 2024.

“Hybrid” AI Art Exhibition at Esplora (7 December)

On Thursday 7 December, Esplora hosted ‘Hybrid’, a unique AI Art Exhibition in collaboration with Professor Victor Grech and 21 other renowned artists. The launch event for these innovative art pieces, created through the Dibond process and AI printing, was held at Esplora’s main entrance. The works of art were exhibited around Esplora, mainly in the Passage of Time and Spiral Staircase area. The ‘Save and Support Trust’, supporting worthwhile causes in the community, benefited from this event.

Partnership in Transforming Health and Care Systems (THCS) (24 March)

This initiative invited local stakeholders to collaborate with international partners on joint research projects aimed at enhancing health and care systems. The launch event took place at the Esplora Planetarium Hall.

As part of the Horizon Europe Programme, MCST participated as one of 63 entities from 26 countries in the THCS partnership. The first co-funded call for research and innovation proposals, titled “Healthcare of the Future,” was supported by a €500,000 annual budget. This programme underscored Malta’s dedication to addressing common challenges in European health and care systems through coordinated and innovative solutions.

Present at the event were the Hon. Keith Azzopardi Tanti, Parliamentary Secretary for Youth, Research and Innovation, MCST Chairman, Dr Tonio Portuguese and MCST CEO Mr Silvio Scerri. The event was well attended by stakeholders, who had the opportunity to present their ideas and innovations during pitching sessions.

Sustainable Blue Economy Partnership (15 February)

In February 2023, MCST, in collaboration with the Sustainable Blue Economy Partnership (SBEP), launched the inaugural Co-funded Joint Call for Research and Innovation proposals titled “The Way Forward: A Thriving Sustainable Blue Economy for a Brighter Future.” This initiative, supported by a €500,000 budget, aimed to foster collaboration between local stakeholders from both the private and public sectors and international partners on joint research projects. During the evening event, stakeholders had the opportunity to pitch their innovative ideas.

MCST is one of 60 entities from 25 countries participating in the SBEP under the Horizon Europe Programme. This partnership aligns with Malta’s Smart Specialisation Strategy for 2021-2027, particularly in the thematic area of ‘Marine and Maritime Technology.’ The SBEP envisions a just and inclusive transition to a regenerative and circular blue economy, contributing to ocean health, resilience and climate neutrality. It is considered Horizon Europe’s “blue arm” of the Green Deal, supporting Europe’s transition to climate neutrality by 2050 and advancing the United Nations’ Sustainable Development Goal 14: “Life Below Water.”

At the press event, speeches were delivered by the Hon. Keith Azzopardi Tanti, Parliamentary Secretary for Youth, Research and Innovation, and Mr. Silvio Scerri, MCST CEO.

PUBLIC ENGAGEMENT EVENTS

Half-day press events were organised in which beneficiaries of the R&I Technology Development Programme FUSION Fund, administered by MCST, presented their project results to the public. These events featured presentations by the beneficiaries and included a panel discussion to engage with the audience more effectively.

MaproHand (8 March)

The project results and prototype of MAProHand were presented during a public engagement event on 8 March, at the Esplora Planetarium Hall in Kalkara. MAProHand, which involves the development of the mechanical and control framework for a Minimal Anthropomorphic Prosthetic Hand, is the result of collaboration among three departments from the University of Malta: the Department of Mechanical Engineering; the Department of Systems and Control Engineering; and the Department of Artificial Intelligence. The project was conducted in partnership with the Orthopaedic Centre Malta Ltd. to create a commercial prosthetic hand.

Funded by MCST under the R&I Fusion Fund with a budget of €200,000, the project benefited from accelerated development timelines and allowed the consortium to employ full-time researchers for the complex analytical and developmental work required. Speeches were delivered by the Hon. Keith Azzopardi Tanti, Parliamentary Secretary for Youth, Research, and Innovation, and MCST Chairman Dr Tonio Portuguese.

BEA (20 April)

With an investment of €200,000 from the Malta Council for Science and Technology (MCST), a collaboration led by the Institute for Aerospace Technologies at the University of Malta and Divers Code has successfully developed the world’s first multi-drone system aimed at enhancing divers’ safety at sea. The system comprises a Remotely Operated Underwater Vehicle (ROV), a floating platform and an Unmanned Aerial Vehicle (UAV).

Safety at sea is a critical issue, especially with its impact on the tourism sector, and the ability to address and mitigate potential risks can be a game changer in this field. This innovative technology offers a significant leap forward in ensuring diver safety and opens new possibilities in sea-based activities. The Hon. Keith Azzopardi Tanti, Parliamentary Secretary for Youth,

Research and Innovation, along with MCST Chairman, Dr Tonio Portugese, presided over the launch event.

SmartAP(10 May)

The results of SmartAP, a project led by the Institute of Aerospace Technologies at the University of Malta, in collaboration with QuAero Ltd., a local aviation consultancy, were presented during a public engagement event held on Wednesday, 10 May 2023 at the Esplora Planetarium Hall in Kalkara. Smart Artificial Pilot (SmartAP) developed innovative solutions based on Artificial Intelligence (AI) to assist pilots in better understanding flight conditions and being better equipped to recover control of the airplane in case of automation failure. The project focused on two critical areas of concern during flight: loss of control (particularly due to aerodynamic stalls) and loss of situational awareness.

Supported by approximately €200,000 in funding, this groundbreaking project made significant contributions to enhancing aviation safety. The Hon. Keith Azzopardi Tanti, Parliamentary Secretary for Youth, Research, and Innovation, along with MCST Chairman Dr Tonio Portugese, presided over the launch event.

EyeCon (5 July)

EyeCon, an innovative invention enabling individuals with mobility and communication difficulties to communicate through eye movements, was unveiled during a press conference held at Esplora. The event was attended by the Parliamentary Secretary for Youth, Research and Innovation, the Hon. Keith Azzopardi Tanti, and MCST Chairman, Dr Tonio Portugese.

Developed through collaboration between engineers from the University of Malta and local software company 1888 Limited, the EyeCon project received approximately €200,000 in funding through the Technology Development Programme from the FUSION R&I Fund. Unlike conventional eye-gaze trackers that rely on cameras or infrared light—often causing strain with extended use—EyeCon's system communicates by detecting the strength and direction of the eyes, providing a more comfortable and innovative solution for users.

DEEP-FIR (1 August)

On 1 August 2023, a press conference was held to disseminate the results of the DEEP-FIR project, funded by the FUSION Fund under the R&I Programme administered by MCST. This project addresses a critical challenge faced by many countries, namely the low resolution of facial images captured by CCTV cameras, which hampers efforts in crime investigations and evidence gathering.

A collaborative effort between the Department of Information and Communication Technology at the University of Malta and industrial partner Ascent Software Limited, DEEP-FIR developed a semi-automated system utilising deep learning models to restore low-quality facial images through advanced AI techniques. The project's extensive experiments demonstrate that both image quality and automated face recognition can be significantly enhanced compared to existing methods.

The press conference featured addresses by the Hon. Keith Azzopardi Tanti, Parliamentary Secretary for Youth, Research and Innovation, and Dr Tonio Portugese, MCST Chairman.

TRANSITIONING TO ENHANCED R & I DISSEMINATION

R & I Days (23 and 24 November)

Recognising the need to innovate the dissemination process for research and innovation projects, MCST introduced *Engage: Science and Enterprise*, a dynamic two-day event held on the 23 and 24 November 2023. This event marked the first edition of the R&I Days, shifting away from individual project dissemination towards a more comprehensive and engaging format that attracted a broader audience.

This inaugural event highlighted a €2.7 million investment in 15 innovative projects, spanning key sectors such as Health, Resource Efficiency, High-Value-Added Manufacturing, Aviation, and Maritime Resources. These projects were funded through the FUSION programme and international collaborations like the SINO-Malta Fund and the BLUEBIO ERA-NET Co-Fund.

The event's programme featured research presentations, prototype exhibitions and panel discussions, engaging project coordinators, industry leaders, academic institutions and public sector stakeholders. These discussions aligned with Malta's Smart Specialisation Strategy 2021-2027, reflecting the government's priorities for innovation, growth and competitiveness.

The Hon. Keith Azzopardi Tanti, Parliamentary Secretary for Youth, Research and Innovation, and MCST Chairman, Dr Tonio Portuguese, delivered keynote speeches, setting the tone for an inspiring event that connected science and industry.

EFFECTIVE COLLABORATION BETWEEN ENTITIES

On 16 June 2023, as a key outcome of the ECSITE Conference, MCST Esplora, part of the Malta Council for Science and Technology (MCST), signed a Memorandum of Understanding (MOU) with the Centre of Science and Industry (COSI) at Villa Bighi, Kalkara. This partnership, which aligns with the missions of both Esplora and COSI, aims to further promote STEM skills in Malta, essential for future-proofing the country's economy.



The MOU will enable the two institutions to collaborate on initiatives that support Maltese families, fostering a stronger engagement with Science, Technology, Engineering and Mathematics education.

The signing ceremony was attended by the Hon. Keith Azzopardi Tanti, Parliamentary Secretary for Youth, Research and Innovation, alongside MCST CEO Dr Tonio Portuguese, Esplora Senior Director Mr Olaf McKay, and MCST Communications Director Ms. Giselle Calleja. Representing COSI were Dr Frederic Bertley,

President and CEO of COSI, Mr. Stephen M. White, Chief Strategy Officer and Vice-president of Partnerships and Business Development, and Ms. Sara Leikin, Senior Director of National and International STEAM Partnerships

Novel Digital Technologies

On 27 June 2023, the Malta Council for Science and Technology (MCST) and the Maltese Digital Innovation Authority (MDIA) signed a Memorandum of Understanding (MoU) at Villa Bighi Gardens. This cooperation agreement marked a significant step in advancing the development of digital technologies in Malta.

The MoU sets out a framework for collaboration between the two entities, combining their skills and expertise to foster innovation in the digital sector. By working together, MCST and MDIA aim to accelerate the development of cutting-edge digital technologies, creating a supportive environment for digitalisation in Malta. This partnership is part of Malta's broader vision to become a centre of excellence in the field of digital innovation, as both organisations focus on addressing local challenges through technological advancement.

The MoU was signed by Hon. Keith Azzopardi Tanti, Parliamentary Secretary for Youth, Research and Innovation, and Mr. Silvio Scerri, MCST CEO, on behalf of the Council, and the Hon. Silvio Schembri, Minister for the Economy, EU Funds and Lands, and Mr Kenneth Brincat, MDIA CEO, on behalf of the Digital Innovation Authority.

On the 2 October 2023, coinciding with the National Day of Older Persons, the Malta Council for Science and Technology (MCST) and the Ministry for Active Ageing, through Active Ageing and Community Care (AACC), renewed their Memorandum of Understanding (MoU). The signing ceremony took place during a press conference at the Esplora Interactive Science Centre in Kalkara. A significant feature of the renewed MoU is the initiative to allow up to 7,000 elderly individuals (aged 60+) annually to participate in group visits organised for service users of Active Ageing Centres and residential homes for the elderly. These visits will benefit from reduced entry fees, along with discounts at the Esplora Café and Esplora Shop.

Additionally, the agreement includes plans for joint outreach activities at Older Adults Homes

and Active Ageing Centres. Esplora staff will engage elderly individuals in STEM-related activities, fostering lifelong learning. To further celebrate the elderly, a special programme for 300 individuals will be annually organised at the Science Centre in recognition of the International Day of Older Persons.

The MoU was signed by MCST CEO Mr Silvio Scerri and AACCC CEO Dr Renzo De Gabriele.

On the 16 November 2023, the Malta Council for Science and Technology (MCST) and the Malta College for Arts, Science and Technology (MCAST) renewed their Memorandum of Understanding (MoU). The primary goal of the renewed MoU is to enhance collaboration between the two institutions, particularly in the planning, structuring, and provision of internships and work experience opportunities for MCAST students at MCST and within Esplora Interactive Science Centre. This partnership aims to provide students with hands-on experience in the fields of science, technology, and innovation, offering them valuable exposure to the professional environment.

The event was attended by: the Hon. Clifton Grima, Minister for Education, Sport, Youth, Research and Innovation; the Hon. Keith Azzopardi Tanti, Parliamentary Secretary for Youth, Research and Innovation; Dr Tonio Portuguese, MCST Chairman; and Dr. Tatjana Chircop, MCAST Deputy Principal for Research and Innovation. This collaboration underscores both institutions' commitment to nurturing the next generation of professionals in science and technology.

On the 28 September 2023, as part of the celebrations marking their 80th anniversary, the Administration of the General Workers' Union visited the Malta Council for Science and Technology (MCST). The delegation was welcomed by MCST CEO, Mr Silvio Scerri, and had the opportunity to tour Esplora, where they engaged with officers and employees of MCST.

On 24 February, 2023, MCST hosted a significant workshop in Kalkara, in conjunction with EURISY. The event, focusing on the Space Research Fund, introduced the 2023 Space Thematic Programme and aimed to provide financial support to Maltese entities engaged in Satellite Earth Observation (EO) research and innovation.

The workshop highlighted various e-shape pilots that tackle critical issues such as climate change impacts, urban management, and the global carbon cycle. The presentation included a product utilising EO data for solar energy planning. The agenda also featured Q&A sessions that explored how these EO-based services can be integrated into the workflows of Maltese public and private sectors. The goal was to foster collaboration, promote the EuroGEO initiative, and emphasise co-design methodologies for operational EO services.

Speeches were delivered by the Hon. Keith Azzopardi Tanti, Parliamentary Secretary for Youth, Research, and Innovation, and MCST CEO, Mr Silvio Scerri.

On 28 April 2023, Malta's involvement in the EUROfusion programme was officially announced during a press event at Villa Bighi Chapel, Kalkara. The University of Malta and the Malta Council for Science and Technology (MCST), represented by Rector Professor Alfred J. Vella and Chairperson Dr Tonio Portuguese respectively, emphasised the significant milestones achieved through this collaboration. This partnership, formalised by a Memorandum of Understanding in 2021, designates the University of Malta as the programme manager and MCST as the programme owner, marking Malta's first foray into nuclear fusion research. This initiative opens up new avenues for Maltese academics to engage in groundbreaking research.

The Oceanography Malta Research Group (OMRG) within the Department of Geosciences at the University of Malta, who runs two citizen science campaigns – 'Spot the Jellyfish' and 'Spot the Alien Fish' – on a national basis, launched a third such campaign, 'ANDROMEDA microplastics'. Through this campaign, information on the density, size, colour and type of microplastics being recorded by bathers along selected Maltese beaches is collected in real time. This was launched during an outreach event held at the Esplora in Kalkara. The event was opened by Professor Alan Deidun, Principal Investigator at the University of Malta on the ANDROMEDA project and Ocean Ambassador for Malta, followed by the Head of the Geosciences Department (Faculty of Science, University of Malta) Professor Sebastiano D'Amico, and saw the intervention of MCST

Chairman Dr Tonio Portuguese, Parliamentary Secretary for Fisheries the Hon. Dr Alicia Bugeja Said and Parliamentary Secretary for EU Funds, the Hon. Dr Chris Bonett.

The event was attended by over 100 Secondary School students hailing from three different schools, who were given the possibility of touring the Esplora facilities, of engaging with the latest research tools on microplastics (e.g. hand-held NIR spectrometer) at the University of Malta and with the digital ocean literacy tools (e.g. humanoid tools, VR headsets, hologram) delivered through the CORALLO project. Dr Adam Gauci, IT specialist and resident academic at the OMRG, Mr Ede Kossari-Tarnik, MSc. student at the University of Malta and Mr Andrew Schembri from the environmental NGO Žibel, also made presentations on ongoing national research and campaigns revolving around marine litter and microplastics.

On the 26 May 2023, MCST together with the Malta Business Bureau (MBB) organised a business conference on EU Direct Funds, as part of the Enterprise Europe Network (EEN) project, entitled 'Navigating EU Direct Funds: Unlocking Financial Opportunities for Business'. During the press event at Giardini Lambrosa, Rabat, participants had the opportunity to meet international 'access to finance' experts as well as local intermediary bodies seeking to help businesses procure direct EU funding from some of the EU's main funding streams – Horizon Europe, LIFE, Erasmus+ and the Single Market Programme (SMP).

The Hon. Dr Chris Bonett, Parliamentary Secretary for EU Funds, the Hon. Keith Azzopardi Tanti, Parliamentary Secretary for Youth, Research and Innovation, Dr Tonio Portuguese MCST Chairman and Ms. Alison Mizzi, MBB President, addressed the conference. The concluding message was delivered by European Parliament President, Dr Roberta Metsola via a video message.

Missions and Thematic Expert Groups Info Day (12 January)

On the 12 January 2023, during an information session held at Esplora, MCST announced the funding opportunities available under the Horizon Europe Missions Programme. For 2023, Mission calls would have a budget of 600 million Euros. Addressing the event were the Hon.

Keith Azzopardi Tanti, Parliamentary Secretary for Youth, Research and Innovation, and MCST Chairman Dr Tonio Portuguese, for the Malta Council for Science and Technology, and Mr. Julien Guerrier a Director at the European Commission.

HORIZON EUROPE 'Mission Days' Malta (6 July)

MCST organised an informative workshop on the missions of Horizon Europe at the Esplora Interactive Science Centre, Kalkara. Parliamentary Secretary for Youth, Research and Innovation, the Hon. Keith Azzopardi Tanti, together with a delegation from the European Commission, were present for this workshop which was attended by the press. MCST Chairman Dr Tonio Portuguese and Deputy Director General at DG R & I of the European Commission, Dr Joanna Drake, also addressed the event. The event was open to the EC representation, MCST Management, NCPs, potential stakeholders and participants.

Throughout 2023, the Marketing Department at Esplora Interactive Science Centre remained dedicated to promoting the centre's mission of igniting a passion for questioning, investigation, and discovery. Through a diverse array of initiatives, events and projects, Esplora made a lasting impact on all who visited.

The Marketing Department spearheaded several campaigns that showcased Esplora's unique offerings. Through captivating social media content, engaging TikTok videos, and targeted advertising, these efforts raised awareness and attracted more visitors to the centre. These successes were driven by a strategic communications plan that utilised various media channels, including print advertisements, TV commercials, online ads, radio spots, outdoor advertising and featured articles.

In 2023, the Marketing Department also proactively pursued collaborations and partnerships with other organisations, extending Esplora's reach and influence. These alliances broadened the centre's network, generated leads and increased its visibility within the community. The Department also supported local events through sponsorships, distributing vouchers and merchandise, which further strengthened Esplora's presence and fostered deeper connections with the public.

On the digital front, the Marketing Department played a crucial role in expanding Esplora's online presence. This included consistent updates on the centre's website and social media platforms. While Facebook remained a primary focus, efforts were made to boost visibility on Instagram, TikTok, Twitter and YouTube. Additionally, Esplora received overwhelmingly positive reviews on its Google Business Page and TripAdvisor, achieving an overall rating of 5 out of 5 stars. The Marketing Department ensured high engagement by acknowledging and responding to each comment and review.

Esplora's social media presence provided valuable insights into upcoming events, new exhibits, and behind-the-scenes glimpses of the centre, helping visitors plan their experiences. However, the Marketing Department's efforts went beyond simply broadcasting information. By actively interacting with the audience—responding to queries, addressing concerns, and fostering discussions—the department enriched the visitor experience and built strong relationships with the public. This commitment to meaningful connections exemplified Esplora's dedication to its audience.

5.12 ESPLORAPLANETARIUM

In 2023, the planetarium focused on building upon previous achievements while exploring new ways to engage visitors. The variety of offerings was significantly enhanced, particularly with the addition of content and films available under a creative commons licence. Notable films like "From Earth to the Universe" by the ESO and the "One Sky Project" were introduced to enrich the astronomy content. The latter film is designed for a younger

audience and addresses indigenous astronomy, a topic previously lacking in the planetarium's offerings. These additions followed an internal review to ensure the best selection was made.

To maintain high service quality, routine preventative maintenance was conducted by Visualisation Services, along with servicing the audio equipment and replacing projector lamps that had reached the end of their lifespan. Preparations are underway to identify new software and technology needed for future equipment replacement.

The planetarium also aimed to enhance educational engagement through science busking activities between films, tailored to fit the space theme. Some activities were linked to specific films during thematic periods and events. New content was created for various themes, such as the Halloween "Cirque Bizarre" using Virtual Reality goggles, and annual Easter-themed content for Esploronauts. This complemented the plan to develop a new live show for 2024, with topic selection already in progress.

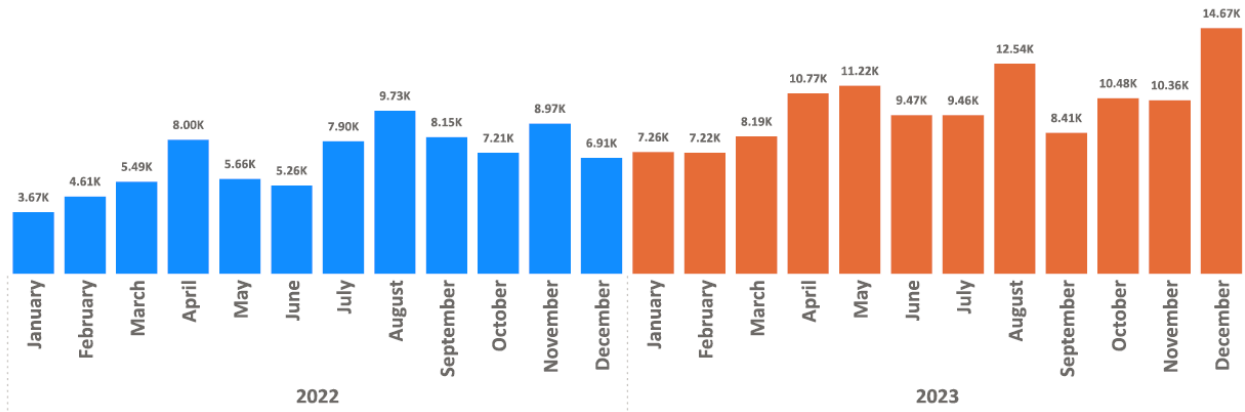
Additionally, 2023 provided opportunities for collaboration with local artists and the Astronomical Society of Malta, expanding the planetarium's offerings to include evening stargazing events called "Giants of the Night Sky." These events aimed to provide more in-depth material for those interested in astronomy. Another noteworthy development was the introduction of live planetarium shows for adult audiences with specialised interests. While not strictly live, the software was adapted to present content on the dome screen for events where the planetarium was rented as a private venue.

5.13 Operations

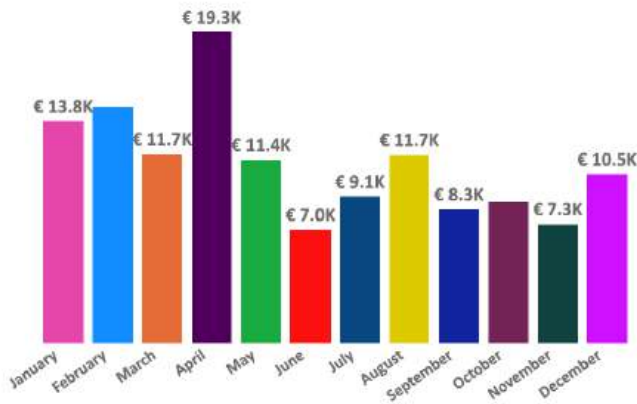
82K
Total Visitors 2022

120K
Total Visitors 2023

Totals Visitors by Month & Year-22/23



Totals Sales by Month-2023



Totals Sales by Month-2023



95.35K

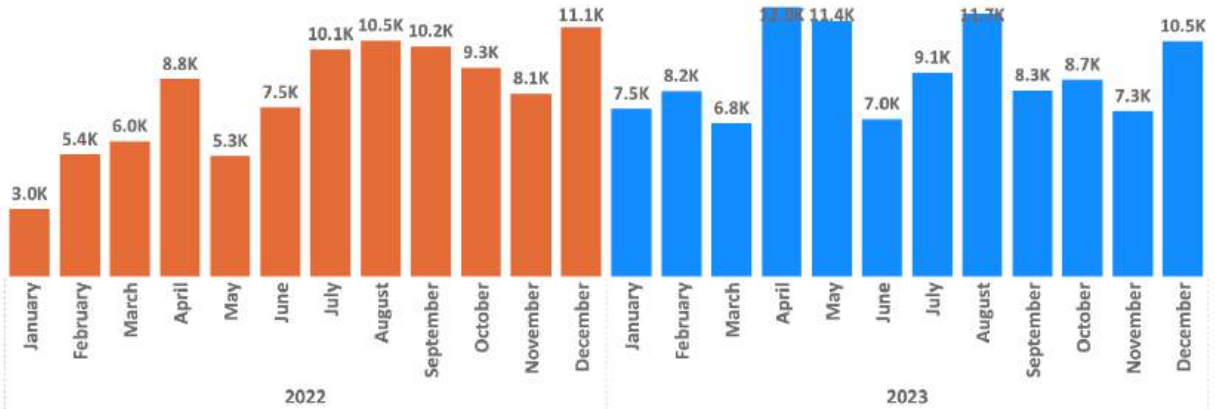
Total Sales 2022



133.41K

Total Sales 2023

Totals Sales by Month & Year



233.57K

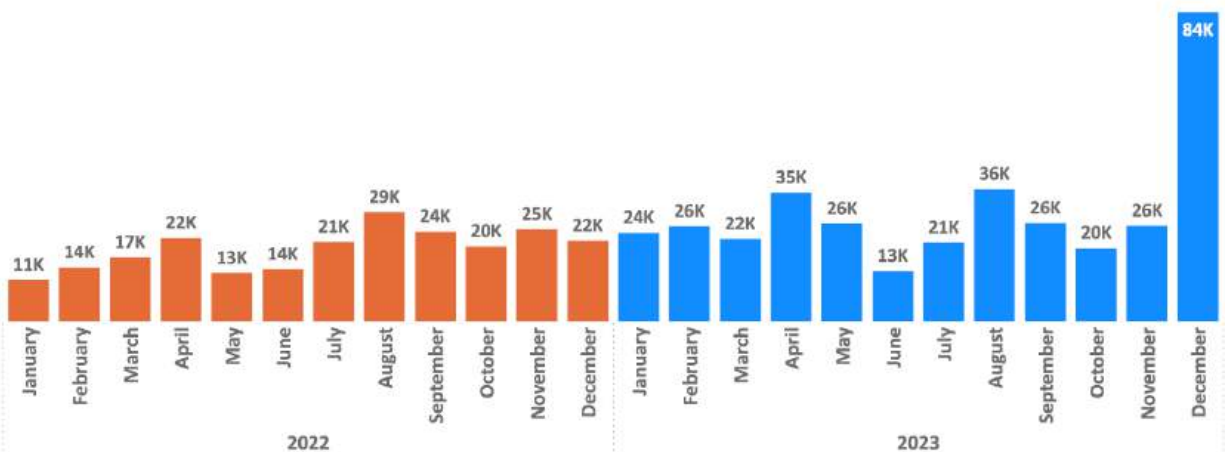
Total Ticket Sales 2022

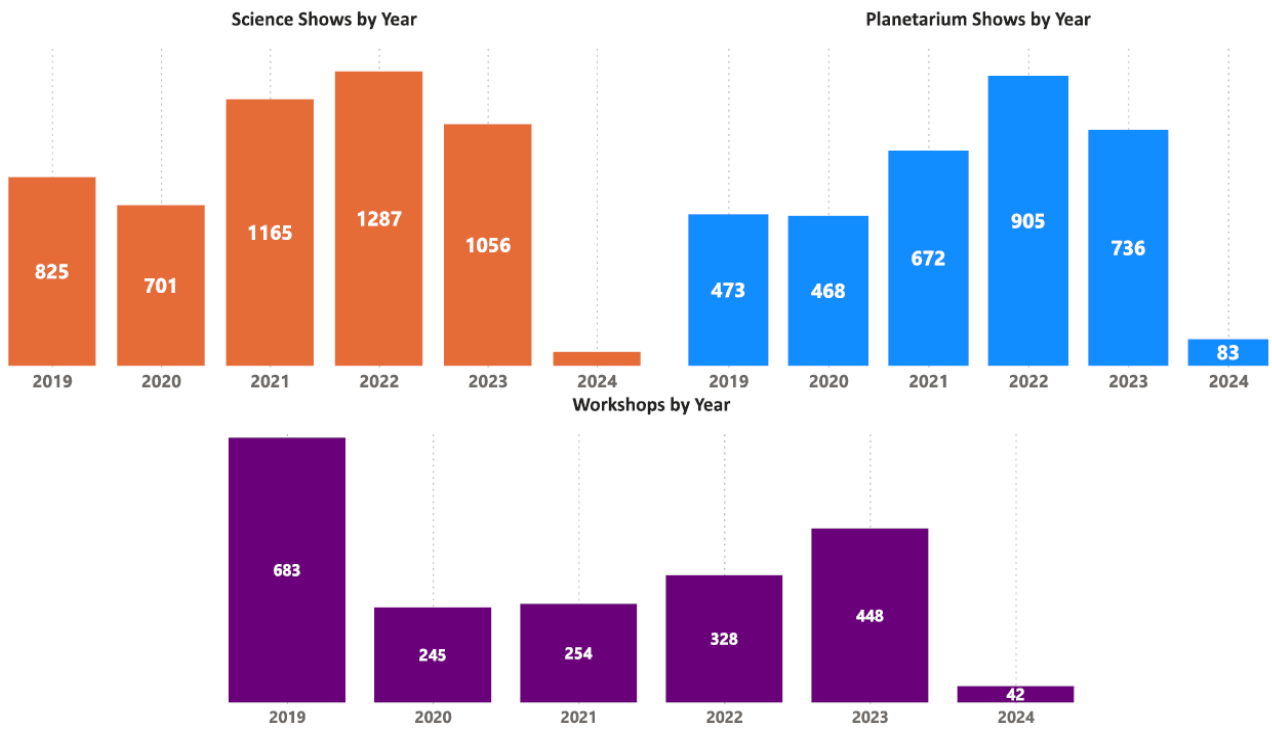


477.39K

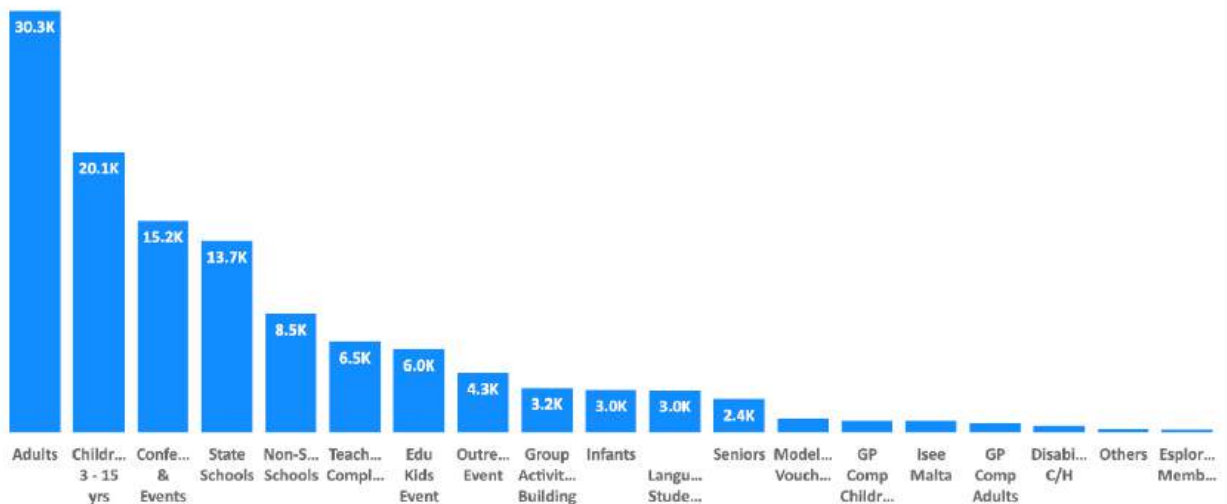
Total Ticket Sales 2023

Ticket Sales Totals by Month & Year

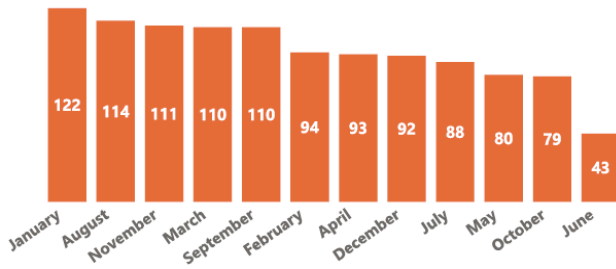




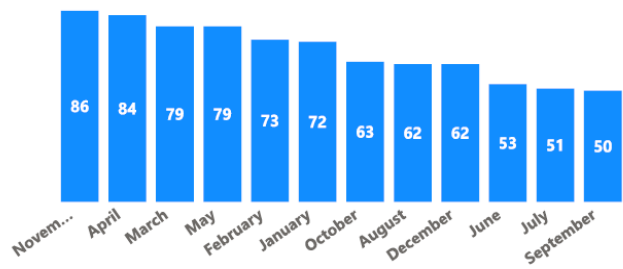
Total Vistors-2023



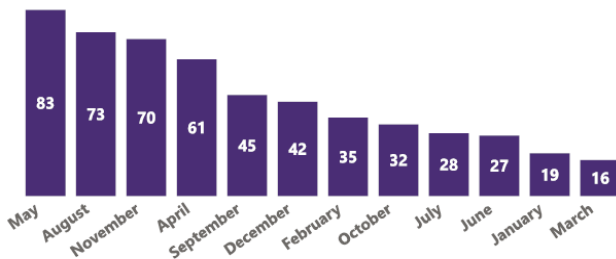
Science Shows by Month-23



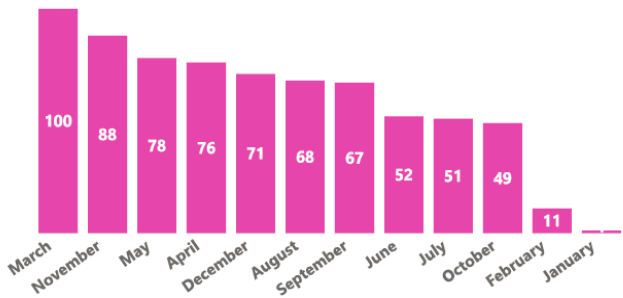
Planetarium Shows by Month-23



Workshops delivered by Month-23



Multisensory by Month-23



5.14 General Operations Report

During the 2023 calendar year, Esplora experienced remarkable growth and achieved significant successes across multiple operational aspects. The centre’s commitment to enhancing visitor experiences was evident through the introduction of new, interactive exhibits and the continuous improvement of existing ones. These efforts ensured that Esplora remained a dynamic and engaging destination for visitors of all ages. Beyond its walls, Esplora expanded its outreach initiatives, reaching new communities and engaging with a broader audience. These initiatives included partnerships with educational institutions, public events, and collaborations with international organisations, all aimed at making science accessible and exciting for everyone. Esplora also invested in professional development for its staff, equipping them with the skills and knowledge to better serve visitors and contribute to the Centre’s growth. Through workshops, training programmes, and participation in global conferences, the team was empowered to bring innovative ideas back

to Esplora. Moreover, Esplora’s unwavering dedication to its core mission of fostering scientific curiosity and exploration was reflected in the Centre’s ongoing educational programmes. These programmes inspired curiosity, critical thinking and a passion for science among participants, further solidifying Esplora’s role as a leader in science education. In summary, 2023 was a transformative year for Esplora, marked by growth, innovation and a steadfast commitment to making science both accessible and enjoyable for all.

5.15 Footfall Report & Ticket Sales

In 2023, Esplora achieved a significant milestone by recording its highest visitor footfall since its inception, with an unprecedented total of 120,000 visitors. This remarkable achievement represented an increase of 38,000 visitors compared to 2022, reflecting a strong and consistent growth in popularity and appeal throughout the year. From January to December 2023, Esplora saw a steady influx of visitors,

surpassing its initial projections by 20,000, a clear testament to the Centre's enhanced reputation and the successful execution of its programmes and events.

The increased visitor numbers directly translated into higher total ticket revenue, which reached nearly €480,000. This surge in revenue highlighted the success of Esplora's efforts to attract a wider audience and offer valuable experiences that resonate with visitors. The Centre's ability to maintain strong footfall across all months is particularly notable, with December 2023 emerging as the best-performing month in terms of ticket sales.

Several factors contributed to this growth, including the introduction of new and engaging exhibits, strategic marketing campaigns and a broader range of events and activities that appealed to diverse audiences. Esplora's dedication to providing an enriching and interactive experience clearly resonated with visitors, encouraging repeat visits and positive word-of-mouth publicity.

Overall, the significant increase in both visitor numbers and ticket revenue underscores Esplora's continued success in fulfilling its mission to inspire and engage the public in science. This achievement not only marks a high point for 2023 but also sets a strong foundation for future growth and development.

5.16 Visitor Segmentation

In 2023, Esplora's visitor footfall showed a diverse mix of segments, reflecting the Centre's broad appeal and its ability to engage a wide range of audiences. The visitor base included adults, children, students from both State and non-State schools, tourists, participants in Edukids events, attendees from outreach programmes and language school groups. This variety underscores Esplora's role as a versatile and inclusive destination for science education and exploration. Among these segments, adults constituted the largest group, with approximately 30,000 adults visiting the Interactive Science Centre throughout the year. This strong adult presence highlighted Esplora's success in offering programmes and exhibits that resonate more than just with children and families, also

attracting individuals with diverse interests in science and innovation.

School groups, both from State and non-State institutions, represented another significant portion of Esplora's audience. The Centre continued to be a favoured destination for educational field trips, providing students with hands-on learning experiences that complemented their classroom studies. The inclusion of Edukids events, tailored specifically for younger children, further expanded Esplora's reach, engaging the next generation of curious minds.

Tourists also formed a substantial part of the visitor mix, as Esplora's reputation as a must-visit attraction for science and discovery continued to grow. This segment was particularly boosted by international visitors seeking enriching cultural experiences, making Esplora a key destination in their itineraries.

Additionally, the success of outreach programmes in extending Esplora's impact beyond its physical location demonstrated the Centre's commitment to bringing science education to broader communities. Language schools also contributed to the footfall, with international students exploring Esplora as part of their cultural immersion and educational activities.

This diverse mix of visitor segments was a clear testament to Esplora's ability to attract and engage a wide array of audiences. By catering to different interests and needs, Esplora not only strengthened its position as Malta's leading venue for scientific exploration and education but also reinforced its role as a dynamic and inclusive hub for lifelong learning. This broad appeal ensures that Esplora remains a vital part of the community, inspiring curiosity and fostering a deeper understanding of science across all demographics.

5.17 Science Outputs Data 2023

In 2023, Esplora achieved a remarkable milestone by delivering a record number of over 3,000 science outputs, far surpassing the year's initial target of 1,700 outputs. These outputs included a diverse array of science shows, planetarium

films, workshops and multisensory sessions, offering visitors a wide range of interactive and educational experiences. This outstanding performance represented a positive difference of approximately 1,300 outputs compared to the original objectives, showcasing Esplora's dedication to expanding its offerings and enriching the scientific journey of every visitor.

The breadth and depth of these outputs underscore Esplora's mission to inspire curiosity and foster a love for science across all age groups. The science shows captivated audiences with engaging demonstrations, while the planetarium films transported viewers to the wonders of the universe. Workshops provided hands-on learning opportunities, and multisensory sessions catered for diverse needs, ensuring that the Centre remained inclusive and accessible to all visitors.

This significant achievement not only reflects Esplora's operational success in 2023 but also highlights the team's unwavering commitment to continually enhance the visitor experience. By consistently delivering high-quality scientific content, Esplora has solidified its reputation as a leading institution in science education and a key contributor to the community's lifelong learning and curiosity-driven exploration.

5.18 EsploraShop 2023

At EsploraShop, 2023 saw a significant enhancement in our product offerings and merchandising strategies. The shop introduced an extensive selection of over 3,000 science-related gadgets, expanding and improving the existing range of products. This strategic enhancement in both product variety and display methods led to record sales totalling €133,000. This impressive achievement highlights EsploraShop's crucial role in supporting Esplora's mission by providing educational and engaging merchandise that complements the scientific experiences offered at the centre.

In conclusion, 2023 was a year of exceptional growth and success for Esplora. The Centre experienced an increase in visitor footfall, higher ticket sales and a diverse range of visitor segments, each contributing to the Centre's vibrant and inclusive atmosphere. The significant rise in science outputs and record-breaking merchandise sales further underscored

Esplora's commitment to delivering enriching and impactful experiences. As we look to the future, Esplora remains dedicated to advancing its mission, continuing to inspire curiosity, and fostering a love for learning among visitors of all ages and backgrounds.

5.19 Administration Office 'Mindfulness with Elaine' sessions

Esplora hosted a series of "Mindfulness with Elaine" sessions for children aged 6 to 10, in collaboration with Mindfulness with Elaine. These sessions focused on teaching mindfulness, a practice that encourages awareness of the present moment through observation, curiosity and compassion. Mindfulness has been shown to reduce stress, improve memory, enhance focus, boost creativity and promote overall happiness and well-being. The interactive 2-hour sessions, which were held at the Little Esploras Science Theatre, gave children an opportunity to learn various mindfulness techniques while enjoying the unique resources at the Centre. The sessions will continue into 2024.



Ms. Elaine Azzopardi during mindfulness sessions



During the mindfulness sessions

Southern Dreams Exhibition

Esplora Interactive Science Centre is committed to promote STEAM (Science, Technology, Engineering, Art and Mathematics) among young people and adults. As part of this initiative, Esplora partnered with local artist Paul Cassar to showcase his exhibition "Southern Dreams". This collection featured abstract paintings, poems inspired by his art and sculptures that represent the vibrant hues of Malta's southern coast. Cassar's abstract paintings are created with oils and acrylics on canvas.

The exhibition's opening ceremony was held on the 11 March at Esplora. MCST Chairman, Dr. Tonio Portuguese, welcomed attendees, and the event concluded with refreshments at the Plaza. "Southern Dreams" remained open for the public during regular hours until the 9 April. Visitors were encouraged to explore the artist's unique perspective on the colours of Kalkara through this impressive collection of works.

In addition to the exhibit, the production team of the TV series Meander interviewed Mr Paul Cassar, providing further insights into his artistic journey and the inspiration behind his work. Esplora invited visitors to experience this unique artistic voyage and appreciate the fusion of art and science in our STEAM-focused environment.



Chairman Dr Tonio Portuguese with Paul Cassar



Chairman Dr Tonio Portuguese and Mr. Paul Cassar during the launch of Southern Dreams Exhibition

Our Heritage and Maltese Endemic Wildlife – Outreach, Competition and Exhibition

Esplora, in collaboration with HSBC, BDL Books and Nature Trust, launched the "Our Heritage and Maltese Endemic Wildlife" competition for Year 4 and Year 5 primary school students within the Cottonera area, including schools from Kalkara, Vittoriosa, Cospicua and Senglea. This initiative, designed to foster community involvement and promote environmental awareness, encouraged students to explore Maltese wildlife through research, artistic expression, and creative thinking.

To inspire participation, Nature Trust and Esplora representatives visited the participating schools, providing presentations on Maltese fauna and discussing the importance of habitat conservation. The students then channelled their creativity into drawings, collages and poems highlighting the unique aspects of Maltese wildlife and heritage. Youths from the Cottonera area also contributed by setting up an artistic installation.

The submissions were evaluated by a panel, with one winner selected from each school. A prize-giving ceremony was held on the 1 June at Esplora, where all participants were awarded certificates and a small gift from the Esplora Shop, along with complimentary entrance tickets for their families. Winners received vouchers for the Esplora Shop, and the participating schools were awarded educational games based on their rankings in the competition. Youths from Aġenzija Żgħażaġh's Cottonera Youth Café also received certificates and were treated to lunch at Esplora, with the participation of MCST CEO, Mr Silvio Scerri.

The students' artwork and the youth installation were showcased at Esplora from the 23 May to 30 June, allowing ECSITE guests to appreciate the creativity and effort of these young participants. The event garnered support from local leaders, including MCST Chairman Dr Tonio Portuguese, Portuguese, and MCST CEO, Mr. Silvio Scerri, demonstrating a shared commitment to fostering creativity and environmental stewardship among the younger generation.



Ms. Mary Rose Camilleri and Mr Phil Walsh from Nature Trust during the presentation of the Heritage and Maltese Endemic Wildlife project at St Francis School, Cospicua.

Natura Maltija TV Episodes

Esplora partnered with Mr. Saviour Bonnici to produce a 13-episode television series titled “Natura Maltija,” which explores the behaviour of Malta’s unique flora and fauna, showcasing a variety of species, from land-based animals to marine life. The series aired on ONE TV, with the first episode being on the 4 April. This collaboration is part of Esplora’s commitment to supporting educational content that highlights Malta’s natural environment.

Esplora provided financial support to produce this series, reinforcing its commitment to environmental education and enhancing its mission to foster greater awareness and understanding of Malta’s rich biodiversity.



Ms. Cynthia Caruana from Nature Trust during the presentation of our Heritage and Maltese Endemic Wildlife project at St Edward’s College, Cospicua.



Bee Buzz Event

To celebrate World Bee Day, Esplora hosted a lively event called “Bee Buzz” in collaboration with the Għaqda Trobbija ta’ Naħal u Għasel Malti on the 19 and 20 May. Visitors had the opportunity to learn about the vital role of bees in our ecosystem, gained insights into the honey-making process, and enjoyed a complimentary honey tasting. The Esplora team complemented the weekend event with themed Science Shows and Workshops.



Ms. Mary Rose Camilleri, Ms. Maria Grazia Pulis and Ms. Giselle Calleja during the ‘Our Heritage and Maltese Endemic Wildlife’ Project Launch.



Mr. Jimmy from Għaqda Trobbija ta’ Naħal u Għasel Malti explains honey to children



Mr Kevin Cassar in a bee costume with children



A parent and child participating in the Little Legends session



Mr Rodney Galea, Mr Kevin Cassar and Mr Jimmy during the Bee Buzz Event



A child participating in the Little Legends session

Little Legends Sessions

In collaboration with Little Legends, Esplora offered three drop-in workshops designed for families with children aged 18 months to 6 years. These interactive workshops focused on a multisensory approach to learning about nature, allowing children to explore through hands-on activities in a fun environment. The add-on workshops were held at the Little Esploras Science Theatre in July, August and September 2023. The collaboration provided the Esplora team with a way to encourage families to engage their children in creative learning and foster their curiosity about the world.



Children participating in the Little Legends session

Astrophotography Exhibition

The Astronomical Society of Malta had another opportunity to showcase their annual Astrophotography Exhibition at Esplora in November. Visitors discovered the impressive efforts taking place in Malta to capture the beauty of our night skies.



Astronomy Exhibition in collaboration with the Astronomical Society of Malta

In November 2023, life-size models of dinosaurs, produced in the USA, were added to the exhibits of Esplora, immediately proving to be a hit attraction with young and old alike



Dinosaur Installation



Dinosaur Launch during the Esplora Christmas Wonderland



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