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Science with and for Society

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Foreword

This booklet presents a collection of successful projects funded either by the Science with and for Society (SwafS) programme part of Horizon 2020 or by its predecessor, the Science in Society programme of the 7th EU Framework Programme. The latter projects ended within the runtime of Horizon 2020 and have proven to be of major importance for Horizon 2020's SwafS programme.

With this collection, the European network of Science with and for Society National Contact Points, SiS.net, intends to showcase the richness of subject matters covered by SwafS projects, highlighting their impact on strengthening the science and society relationship and a more responsible research and innovation culture. The projects come from different areas of SwafS - such as public engagement, research integrity, science education, etc. - to demonstrate the diversity of actions and the broad range of topics that demand a concerted effort.

The booklet comprises nine project stories from recent years. We would like to take the opportunity to thank the featured projects for the fruitful collaboration in the preparation of the project portraits.

We hope that all readers will enjoy this collection and become curious about the many outstanding SwafS projects which we could not cover in this booklet. We trust that this booklet will prove the importance of dedicated funding of science and society activities.

On behalf of the SiS.net network,

Adalheidur Jónsdóttir
Project Coordinator

Gallery view of „Beyond the Lab"
© The Board of Trustees of the Science Museum

PROJECT DETAILS

Project title:	Sparks
Project acronym:	Sparks
Project URL:	www.sparksproject.eu
Project coordinator:	Maria Zolotonosa (Ecsite, the European Network of Science Centres and Museums, Belgium)
Project contact:	mzolotonosa@ecsite.eu
Project duration:	01/07/2015 - 30/06/2018
EU contribution:	3 498 839 EUR
No. of partners:	14 plus 19 third parties
Type of activity:	Coordination and Support Action
Programme:	Science with and for Society, Horizon 2020
Area:	Citizen Science / Responsible Research and Innovation (RRI)

The Sparks project: Sparking citizen science and RRI across the European Union

If you are visiting a museum or a science center these days, there is a chance that you come upon an exhibition set up by the Sparks project. This is even more likely if the exhibition is dealing with hot scientific topics taken up by citizen scientists. Because this is exactly what the Sparks project is about.

The Sparks project mainly consists of a travelling exhibition called "Beyond the lab: the DIY[1] science revolution" put together by the renowned Science Museum London. Its main objective is to engage the audience in responsible research and innovation (RRI) through the topic of citizen science. What makes the exhibition unique is that it tells the stories of so-called 'DIY scientists' who are experimenting, researching and even inventing – often hand in hand with professional researchers – and hereby contribute to better scientific solutions in line with actual needs of people.

The exhibition's guiding theme "technology shifts in health and medicine" was chosen to reflect its great importance for European society. Since health is a topic affecting everyone, all citizens can easily connect to this theme. It furthermore establishes a direct link to one of the societal challenges of Horizon 2020 (Health, Demographic Change and Wellbeing).

7 DIY stories, 3 artworks, 29 local case studies and numerous participatory activities

The exhibition contains seven different health- and medicine-related stories from DIY scientists from five European countries. The topics that the citizen scientists have been working on cover a wide range of current health challenges such as Parkinson's disease, diabetes, air pollution, potential disease outbreaks and antibiotic resistance. Fascinating stories about developing portable labs the size of a laptop or setting up an organisation to share DIY medical solutions are also being told.

Together with these real DIY stories, four artists who position themselves at the border between art, science and technology were selected to create three innovative artworks related to a possible health topic (solution) of the future. One artwork, for example, is a 3-D-printed headset in the shape of a unicorn horn[2] that keeps track of the attention of children with attention deficit hyperactivity disorder (ADHD) to improve ADHD care. Another one engages with the idea of inhalable nano-gadgets that will block your appetite for junk food, further exploring the relationship between robots and humans[3]. The "creative disruptions" – in the form of artistic inputs and questioning – help to engage more stakeholders and to promote innovative ways to enter into communication and to gain new insights.

Every venue that hosts the exhibition 'Beyond the Lab: The DIY science revolution' also provides space for a case study/research from local researchers, thus embedding RRI in various local contexts and contributing to the project's intention: to communicate Responsible Research and Innovation in an innovative way, allowing the public to understand that important health

1 The abbreviation stands for "Do it yourself"

2 Anouk Wipprecht ‚Agent Unicorn'

3 Jakob and Lea Illera 'Be Bots'

challenges may be tackled more inclusively. What all 29 case studies have in common is that they demonstrate how RRI and public engagement are or can be applied in research in the field of medicine and healthcare. One case study has covered, for example, an interactive tool for diabetes education (in Ljubljana, Slovenia) and another one the relation between nutrition and dementia (in Bonn, Germany).

Last but not least, involving citizens is at the heart of the Sparks project and the travelling exhibition. Every time the exhibition is on display, a series of public events will take place which relate to local scientists and to the topics addressed by the exhibition. Participatory activities such as Science Espressos, Scenario Workshops, Pop-up Science Shops and Reverse Science Cafés are used widely to give citizens a voice, to communicate more effectively on the exhibitions' topic and to trigger interaction between citizens and researchers.

Gallery view of „Beyond the Lab"
© The Board of Trustees of the Science Museum

European-wide outreach ensured: Beyond the lab stops at 29 countries

The Sparks exhibition "Beyond the lab: the DIY science revolution" runs at four locations in Europe in parallel for at least two months. All countries of the European Union plus Switzerland will be covered during the projects runtime. Not surprisingly, such a great outreach is possible only with a large consortium and strong partnerships. The project coordinator is Maria Zolotonosa from ECSITE, the European Network for Science Centres and Museums, which is based in Belgium. 33 institutions altogether - science centres, science shops, science institutes, universities, renowned international networks and organisations active in the scientific and creative fields - are involved as part of the development team and/ or the local implementation team of Sparks.

The work of Sparks is not done with the travelling exhibition. It will be complemented by policy recommendations to feed research and innovation policies with societal inputs and to facilitate RRI. The policy document will bring the topics that the general public sees as relevant in the field of health and innovation to the policy makers' attention. To achieve this, for example, the participatory activ- ities will be analysed on the basis of data collected from participants through questionnaires.

A project such as Sparks demonstrates the strengths of the Science with and for Society programme of Horizon 2020: it is a great example of how citizens can shape science for the benefit of all, how their beliefs, interests and expectations can be integrated and how new ways on how to do research and innovation can lead to innovation. It also shows how to successfully communicate these new approaches.

The project manager, Andrea Troncoso from ECSITE, points out that so far the Sparks exhibition has received very satisfactory attention from the public and the local media. By the end of 2016 the exhibition had been displayed in eight European countries (Croatia, Denmark, Germany, Luxemburg, Poland, Slovenia, Spain, United Kingdom), attracting more than 700,000 people to the exhibition and the side events. The Sparks exhibition will run until May 2018. To find out whether it will be shown at a place near you, please visit http://www.sparksproject.eu … get involved, get inspired!

The success story reflects the project status at the time of January 2017

© *Edward Andersson*

PROJECT DETAILS

Project title:	ENGAGING SOCIETY IN HORIZON 2020
Project acronym:	ENGAGE2020
Project URL:	www.engage2020.eu
Project coordinator:	Lars Klüver (Danish Board of Technology, DK) / lt@tekno.dk
Project contact:	Edward Andersson (The Involve Foundation, UK) / edward@involve.org.uk
Project duration:	09/2013 to 11/2015
EU contribution:	998.123 EUR
No. of partners:	6
Type of activity:	Small or medium-scale focused research project
Programme:	Science in Society, EU's seventh Framework Programme for Research (FP7)
Area:	Public Engagement

Engage2020: Deepening and broadening public engagement in Horizon 2020

Public engagement is about involving citizens and societal actors in the decision-making process or in the research process itself – strengthening societal support of innovations.

Public engagement is at the core of the Science with and for Society programme (SwafS) in the EU Framework Programme for Research and Innovation, Horizon 2020, and its predecessor Science in Society in the EU's Seventh Framework Programme for Research, FP7. Public engagement is not taken up in the SwafS programme only but as a cross-cutting issue it shall be implemented within the approach of Responsible Research and Innovation (RRI) across the priorities of Horizon 2020. In order to support this ambitious challenge the research project Engage2020 – "Engaging Society in Horizon 2020" - funded by the Science in Society programme in FP7 - started in 2013.

Engage 2020 – creating an impact through ambitious objectives

The consortium of six partner institutions, coordinated by Lars Klüver from the Danish Board of Technology, investigates how, where and why societal actors are engaged in research processes, from early policy development to the delivery of research activities, whether as consumers, employees, or lay persons and – perhaps more importantly – how they could be involved in the future in research and innovation. The core objective is to support the use of engagement methods by mapping current practice and raising awareness about engagement opportunities among researchers, policy makers and other interested parties. The development of tools and introductions to engagement in research and innovation is a central part of the projects work, too. And by engaging closely with policy makers within the European Commission the consortium aims for the results of Engage2020 to directly help to strengthen the implementation of public engagement in Horizon 2020. Edward Andersson, project partner from The Involve Foundation in the United Kingdom, states that the response to the current project reports has been very good and that a conference held in Brussels in early 2015 reached almost a hundred of policy makers from across the various parts of the European Commission. "It is very gratifying to work with policy makers and researchers directly because we can see a growing enthusiasm and interest in this area" he adds.

Engagement is an innovative experience and it is through practical experience that the field moves forward

Engage2020 surveys genuine engagement forms, which go beyond traditional one-way communication of scientific findings. Public engagement is about bringing on board the widest possible diversity of actors and it is different from simple 'communication' or 'consultation', Andersson explains. Traditionally science has been seen as a closed activity, carried out by experts far removed from ordinary citizens. But there is a shift away from this elitist model of science because the insight grows that if research and innovation remains in an ivory tower, it will be unable to meet the big challenges Europe faces today. Across Europe - and many other parts of the world - a growing

push towards 'democratising expertise' can be seen. As a result many new ways to engage members of the public in research and innovation activities have been developed. Today many policy makers, researchers or administrators are either carrying out public engagement or considering it. Project findings underline that public engagement in European research and innovation activities is relatively high by international standards, but it is unevenly distributed, both geographically and in terms of issues. Engage2020 has disseminated information on state-of-the-art participative processes, maximising learning from best practice. The aim of inspiring examples, accessible reports and policy briefs by the project is to help lower the barriers to entry in this growing field.

The benefits of public engagement in research and innovation

Public engagement brings significant benefits to research institutions, policy makers and the public and there are a number of reasons for it. Andersson explains that engaging the public in research and innovation processes promotes more legitimate, sustainable, responsive and relevant decisions. It also demonstrates accountability and transparency and increases public trust. Public engagement helps to ensure that research and innovation activities are relevant in a rapidly changing world. European research must focus on the grand challenges of our time, from global warming to tightened supplies of energy, water and food, to ageing societies and public health pandemics and security. The public can offer different types of expertise, as they express their values, aspirations and represent broad societal interests. And finally the public as taxpayers invests in public research and innovation and therefore they need to be confident that this investment is worthwhile and responding to citizens' interests and societal needs. Innovations which are developed without input from the intended end users can easily become expensive failures.

How to get started with public engagement in research and innovation

Researchers and research policy makers often feel overwhelmed by engagement because it is a new field for them and many mistakes are being made. Andersson has some important recommendations for scientists and science policy makers who would like to engage societal actors in their research and innovation activities:

- Be clear in your purposes and objectives from the start.
- Begin as early as possible in the policy/decision/research process.
- Allocate sufficient resources in terms of time, skills and funding.
- Consider what aspirations and concerns your intended participants from the public hold.
- Be clear about the extent to which participants will be able to influence outcomes.
- Find an area where engagement can help and start doing it.
- Use the tools developed by the project Engage2020.

Currently the project partners are finalising some of their core deliverables, including an introductory anthology on engagement, an action catalogue with over 40 different methods of engagement, as well as preparing for a free final conference on 9-10 November 2015, in Brussels, Belgium (http://engage2020.eu/enroll). More Information on the project, its tools and publications are available on the project website http://engage2020.eu. Visit it and learn more about how the outcomes of Engage2020 support public engagement in research and innovation.

The success story reflects the project status at the time of October 2015

Public engagement brings significant benefits to research institutions, policy makers and the public.

© Edward Andersson

Porpoises in Fjord&Bælt
Photo: Peter Verhoog/Fjord&Bælt

PROJECT DETAILS

Project title:	Using marine mammals for making science education and science careers attractive for young people
Project acronym:	Marine Mammals
Project URL:	www.marine-mammals.com
Project coordinator:	Dr. Katrin Knickmeier, Dennis Brennecke (University of Kiel / Kiel Science Factory, Germany)
Project contact:	kknickmeier@uv.uni-kiel.de, dbrennecke@email.uni-kiel.de
Project duration:	01/09/2016 - 31/08/2019
EU contribution:	1 797 420 EUR
No. of partners:	9
Type of activity:	Coordination and Support Action
Programme:	Science with and for Society, Horizon 2020
Area:	Science Education

The MARINE MAMMALS project: Experiencing marine life to spark the fascination of science towards the young

The future of research and innovation rests on today's younger generation. But what to do when all studies show that more and more young people are losing interest in science? That's where the Marine Mammals project comes in!

The decrease in the number of young people pursuing a scientific career is a problem that Europe has been facing for a number of years. It has become increasingly difficult to attract enough young people to the sciences. However, Europe needs young boys and girls to pursue careers in science, technology, engineering and mathematics (STEM) in order to avoid a Europe-wide shortage of highly qualified scientists. The MARINE MAMMALS project's main objective is to tackle this challenge by increasing young people's participation and interest in STEM through inspirational real science experiences connected to marine life. Through these activities, the project also contributes to improving the career prospects of today's youth and – by increasing the scientific literacy of society as a whole – helps citizens to participate in a more and more scientific and technological world.

Coordinated by Katrin Knickmeier and supported by the project manager Dennis Brennecke from Kiel Science Factory (Germany) and the team of the EU office of Kiel University, the MARINE MAMMALS project is implemented by a consortium of research and education actors, including universities, a nature protection association, a small and medium entreprise, and non-school learning locations, such as a nature information centre and public aquarium. They each bring their own expertise in marine mammals, teacher training and scientific outreach to society to the project. According to Knickmeier and Brennecke, it is much more promising to combine expertise and work together constructively to fight against the decline of young people's participation in STEM. It is their first EU project and they have been successful with their proposal right away.

Using marine mammals to get more young people interested and skilled in science

The nine project partners, who are based in five European countries, chose the marine mammal research theme for a project to increase young people's interest in science for specific reasons: not only is it an area of growing interest to young people, but it also combines many scientific disciplines, such as physics, biology, engineering or veterinary studies.

As a first step to raising the interest of teachers and students in the exciting world of science and to awaken a fascination for the different research areas involved, the project's scientific experts are developing innovative and comprehensive teaching materials based on state-of-the-art research on marine mammals. These materials will include print and digital materials, such as an interactive poster, 3D animations and podcasts (all materials will be finalised by the end of the project). Additionally, prepackaged expedition boxes will be made available for borrowing by teachers and everyone to conduct practical experiments in schools or outside the classroom.

MARINE MAMMALS

Teachers are the key actors for MARINE MAMMALS

Trainings for teachers are offered throughout the project's runtime to give them the opportunity to try out the teaching tools and methods that are intended for use in their classes. Collaborating with teachers is of great importance for the project since they play a key role in the learning process, they are the ones who are connected with the students, who can spread good practices and also act as multipliers for other teachers. The project has already trained hundreds of teachers from different school systems in the five European participating countries during the MARINE MAMMALS' national teacher trainings. More teachers were trained in the international teacher trainings - so far held in Denmark and Poland – to which teachers from all over Europe were welcome (project partner countries and, additionally, Romania, Greece, Portugal, the Netherlands and Moldavia).

Participant examining the beak of a squid, the main food source of a sperm whale. Photo: Heike Stumpenhorst, IPN

Students meet scientific experts during summer schools

In addition to teacher trainings, the consortium also conducts summer schools for secondary students. "During summer schools, participants can experience research directly" Knickmeier and Brennecke explain, "and they can get in touch with scientific experts." The presence of scientific experts at the summer schools is at the heart of the project; they are its cornerstone because they provide a special way to access the topic. Students often do not really have a clear idea of the daily work done by scientists and have no knowledge of the manifold career opportunities available to them in science, technology, engineering and mathematics. By engaging students in motivating hands-on experiments with scientists from marine science, they discover scientific professions and how science is done. Experimenting has a positive impact on how they approach scientific issues and on their choice of career path.

To reach a broader audience beyond the trainings and summer schools, consortium members such as the aquarium and science centre work on outreach activities for a diverse audience.

To ensure user-friendliness, all tools developed by the project are available in the five languages of the participating countries (German, French, Swedish, Danish and Polish) and additionally in English. Everything is available online on the project's website as well as on Scientix's website (www.scientix.eu). Scientix is a platform created at the initiative of the European Commission - and supported by the SwafS programme - which brings together all European-funded science education projects in order to promote and support a Europe-wide collaboration among STEM teachers, education researchers, policy makers and other STEM education professionals.

Aware of the great need for science education, the European Commission has been continuously supporting projects in this field since at least the Science and Society programme of FP6. In addition, expert groups have worked on recommendations, such as the report "Science Education for a Responsible Citizenship" from 2015 which is intended for policy makers and explains why science education matters so much. **MARINE MAMMALS** is one of the science education projects funded by European research and innovation programmes that contribute essentially to the objective of making the world of science more exciting and attractive to the younger generation. In this context, the project's focus on marine mammals represents a unique approach.

Want to test the tools produced by the **MARINE MAMMALS** project and learn more about marine life? Visit the project website, check out their YouTube channel, Facebook page and Instagram account, and give them a LIKE!

The success story reflects the project status at the time of June 2018

Dr. Eloy Rodrigues
Photo: Clara Boavida

PROJECT DETAILS

Project title:	FACILITATE OPEN SCIENCE TRAINING FOR EUROPEAN RESEARCH
Project acronym:	FOSTER
Project URL:	https://www.fosteropenscience.eu/
Project coordinator:	Dr. Eloy Rodrigues (University of Minho, PT) / eloy@sdum.uminho.pt
Project duration:	01/02/2014 - 31/07/2016
EU contribution:	1 499 860 EUR
No. of partners:	13
Type of activity:	Coordination and Support Action
Programme:	Science in Society, Seventh EU Framework Programme for Research (FP7)
Area:	Open Science, Open Access

The FOSTER project: Pushing forward the successful implementation of Open Access

The project "FOSTER – Facilitate Open Science Training for European Research" develops trainings and training materials on Open Science.

Why should a spotlight be placed on this and where is the connection to the Science with and for Society programme?

One of the main activities of the Science with and for Society programme in Horizon 2020 and its predecessor Science in Society in FP7 is to increase the accessibility and use of the results of publicly funded research. The implementation of Open Science (OS) and one of its main pillars, Open Access (OA), therefore receives important support from projects funded through these programmes.

In recent years, OS and OA have become key drivers for research and innovation as well as political priorities, which is illustrated, e.g., by the fact that the optimal circulation, access to and transfer of scientific knowledge is one of the priorities of the European Research Area (ERA). Also, OA to publications resulting from Horizon 2020 projects is mandatory under Horizon 2020. Additionally, projects in certain areas of Horizon 2020 are part of the Open Research Data Pilot. The importance of OS/OA was reinforced once again when the Commissioner for Research, Science and Innovation, Carlos Moedas, defined three strategic priorities for European Research and Innovation in 2015: Open Innovation, Open Science, and Openness to the World.

Raising practical capacity and awareness

To implement OA successfully, knowledge about this subject is essential. For example, researchers need to know how OA works and how it strengthens excellent research and innovation. This is where the FP7 Science in Society project FOSTER steps in.

FOSTER is one of the "tools" of the European Commission to implement the strategies and policies on OA by raising the awareness and the practical capacity to use OS/OA. Its main objective is to support different stakeholders, especially young researchers, in adopting Open Access in the context of the European Research Area and in complying with the Open Access policies of Horizon 2020. FOSTER reaches out and provides training to a wide range of disciplines and countries in Europe, offering and supporting face-to-face and distance training. It aims to integrate Open Science in current research workflows by targeting researchers and strengthens the institutional training capacity through a train-the-trainers approach.

The FOSTER consortium consists of 13 partners from 8 EU Member States, coordinated by Dr. Eloy Rodrigues, Director of the University of Minho Documentation Services in Portugal.

According to Rodrigues, the most relevant achievement of FOSTER so far is the impressive training programme on Open Access, Research Data and Open Science, which the project managed to establish and support since 2014. By the end of 2015, around 3,000 people – mainly researchers and especially young researchers – had participated in

more than 100 FOSTER-supported or -organized training events in 20 European countries. These numbers are set to rise further in 2016; it is expected that around 1,000 more stakeholders will participate in the ongoing training activities from FOSTER. Even after project completion, the project will have a lasting impact on the adoption of OS/OA through the sustainability and re-use of the training materials and the training portal where anyone interested in OA/OS can find target group-specific and free-of-charge resources, Rodrigues highlights.

Open Access promotes better and more efficient science

Rodrigues points out that it is now widely recognized that OA promotes better and more efficient science, and that it fosters innovation in research, economy and society, e.g. by building on previous research and avoiding duplication. More broadly, OS will result in more transparency and integrity in research, promoting collaboration and networking, and facilitating the identification of scientific responses to the societal and environmental challenges that Europe and the world are facing. In addition, he underlines that the European Commission takes the position that publicly funded research should be publicly available for everybody.

Participating in EU Research: Networking is the key

Rodrigues is well experienced in EU projects. For him, one of the most enriching and valuable experiences of participating in EU projects is the opportunity to get into direct and close contact with partners, people and organisations from many European countries. This, he highlights, has contributed not only to a better knowledge and understanding of the rich diversity within Europe, but also to learn from very different experiences and best practices. Rodrigues has an important advice for newcomers to Horizon 2020 and Science with and for Society: "Networking is the key. Try to identify the relevant researchers and organisations on the topic you will be working on, and establish formal or informal working relations with them. Even if you are not directly collaborating in the same project(s), having good personal and institutional contacts with relevant partners and potential partners is very important to prepare good, solid and potentially winning project proposals, but also to successfully run and complete the projects you participate in."

Regarding the Science with and for Society programme of Horizon 2020, Rodrigues emphasises that there are several topics, challenges and problems related to social and societal aspects of research activities and/or the impact of science and research in society, which by their nature are horizontal to most/all research fields. So, the most efficient way to address these issues and challenges, he proceeds, is to have a distinct programme like Science with and for Society rather than establishing individual research projects in the context of other thematic programmes.

Become a practitioner in Open Access!

Visit the training portal of the FOSTER project and make use of the project's products. For example, it has developed online-learning courses which will equip you with know-how on how to implement OA. Courses are available for a wide range of stakeholders including researchers and students, project managers, librarians, repository managers, policy makers, research funders and publishers on https://www.fosteropenscience.eu.

On the FOSTER training portal you will also find a collection of resources on OA/OS which will make you even more of an expert on the subject – such as presentations, videos or an Open Science taxonomy. You simply need to register.

The success story reflects the project status at the time of May 2016

Open Access

The practice of providing on-line access to scientific information that is free of charge to the reader.

In the context of Research and Innovation, open access typically focuses on access to 'scientific information', which refers to two main categories: peer-reviewed scientific research articles (published in academic journals) and scientific research data (data underlying publications and/or raw data).

Source: Participant Portal, Glossary

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PROJECT DETAILS

Project title:	FOSTERING RESPONSIBLE RESEARCH AND INNOVATION
Project acronym:	RRI TOOLS
Project URL:	www.rri-tools.eu
Project coordinator:	Ignasi López Verdeguer („la Caixa" Foundation, ES)
Project contact:	admin@rri-tools.eu
Project duration:	01/01/2014 - 31/12/2016
EU contribution:	6 942 031 EUR
No. of partners:	26
Type of activity:	Coordination and Support Action
Programme:	Science in Society, Seventh EU Framework Programme for Research (FP7)
Area:	Responsible Research and Innovation (RRI)

RRI Tools: Fostering RRI - Towards an open science and innovation system that tackles the societal challenges of our world

Have you ever heard of "Responsible Research and Innovation" or its abbreviation "RRI" and wondered what it is about? The project RRI Tools gives information on the RRI approach and provides you with everything you need to implement RRI in your research – heightening the inclusiveness and sustainability, and thus the excellence, of your project.

In short, RRI is a unique approach to increase the societal orientation of research and innovation (R&I). The project coordinator, Ignasi López Verdeguer from the "la Caixa" Foundation (Spain), explains that in recent decades many efforts have been made to bring science and society closer together, leading to a Europe-wide approach in Horizon 2020 called "Responsible Research and Innovation".

RRI seeks to draw attention to issues related to R&I, to anticipate their consequences, and to involve society in reflecting on how science and technology can help create the kind of society we want for future generations. Six policy agendas defined by the European Commission are part of the RRI approach: governance, science education, multi-actor and public engagement in research and innovation, enabling easier access to scientific results, and taking up gender and ethics in the research and innovation content and process.

RRI Toolkit: a wealth of resources

In order to implement RRI, López Verdeguer emphasises the need for concrete tools. This is where the RRI Tools project steps in. The mandate of the project is to develop a toolkit and a training programme to help implementing RRI in Europe. The ultimate goal of the project is to build a Community of Practice in Europe which will ensure the use, evolution and enhancement of the RRI Toolkit and thus boost RRI.

The RRI Toolkit will be finalised by July 2016. This online platform contains a wealth of resources to assist users in developing their understanding of, and capacity to implement RRI. These include:

- Inspiring practices: RRI success stories across Europe;
- Tools: manuals, guidelines, how-tos and online databases;
- Communication materials: videos, presentations, etc.;
- Training modules and materials, including best practice showcases;
- Library: background documents, articles, reports, etc.;
- Projects: other EU projects that have developed RRI resources.

RRI Toolkit: Meeting everyone's needs

The RRI Toolkit is developed in a way that meets all possible needs. It offers, inter alia, a "crash course" on RRI for beginners, explaining via five dedicated landing pages what the concept means in terms of benefits, needs, and obstacles for all actors involved in R&I: researchers, innovators, policy makers, civil society and the education community. The portal provides information on the six policy agendas defined within RRI by the European Commission: ethics, gender equality, governance, open access, public engagement, and science education. The RRI Toolkit also offers a self-reflection tool to

help users to reflect upon "how RRI" their professional practice is. Moreover, stakeholders are introduced to concrete examples explaining how to address possible challenges they may face in their daily work. These include, e.g., how to support RRI at national level, how to incorporate the RRI principles in a funding call, how to incorporate RRI in policy/funding institutions, how to embed the RRI principles in research proposals and business plans or how to co-create community-based participatory research.

Building a Community of Practice

RRI Tools aims to build a Community of Practice which means that it is open to users' contributions. Participatory elements include the possibility to upload RRI resources, advertise events in the RRI calendar or to participate in the discussion forum to exchange experiences or find partners for projects. All R&I stakeholders are invited to play a part.

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Training, training, training!

Training is one important aspect of the RRI Tools project in spreading the message about RRI. Good dissemination and exploitation of results is key for successful EU projects. The project is setting up a training programme, providing more than 60 training workshops aimed at R&I stakeholders throughout 2016. At these workshops, stakeholders will learn how to use the RRI toolkit and how to implement RRI in R&I all across Europe. Users can register for a training session or use the training modules to design their own training. The workshops will be organized by the 19 national RRI Tools Hubs.

A multi-stakeholder consortium

The wide European coverage is possible due to the exceptionally large consortium of RRI Tools, which consists of 26 partners active in 30 countries from all over Europe. The project includes representatives from a wide range of stakeholders: research, civil society, policy-making, education and business. It consists of foundations, science centres, universities and research centres, a science shop, a chamber of commerce and a technological partner, plus related European networks. All key components of RRI are covered by the expertise of the multi-stakeholder group of institutions.

NCPs as a dissemination channel

The RRI Tools project benefited from the expertise of the National Contact Points (NCPs) of Science with and for Society (SwafS) and their network SiS.net, with for example a feedback session on the RRI Toolkit prior to its launch. NCPs are national structures established by governments of the EU Member States and the states associated to Horizon 2020. Their task is to give advice and support in their national language on how to participate in Horizon 2020. The SwafS NCPs receive training on the RRI Toolkit, of course. Additionally, some of the hubs are in contact with their NCP regarding dissemination, advocacy and training activities.

Keeping up working towards change

López Verdeguer and the team at "la Caixa" Foundation, like other partners from the RRI Tools project, have caught the "RRI virus", meaning that for them the work on the further development, acceptance and implementation of the RRI aproach does not end with the project RRI Tools. For example, "la Caixa" Foundation is engaged in the SwafS projects HEIRRI (Higher Education Institutions and RRI) and COMPASS (Evidence and Opportunities of RRI in SMEs), which started in 2015 and 2016, respectively. For López Verdeguer it is not just the work on changing how R&I is done that makes EU research attractive to him. He also appreciates the opportunity to collaborate with some of the best players in the field. And the HEIRRI and COMPASS projects are sure to supplement the RRI Toolkit with further RRI resources.

Start with RRI today at rri-tools.eu.

The success story reflects the project status at the time of June 2016

INTEGER website (integer-tools-for-action.eu)
© CNRS

PROJECT DETAILS

Project title:	Institutional Transformation for Effecting Gender Equality in Research
Project acronym:	INTEGER
Project URL:	www.integer-tools-for-action.eu
Project coordinator:	Dr. Anne Pépin (CNRS, France)
Project contact:	anne.pepin@cnrs-dir.fr
Project duration:	03/2011 - 06/2015
EU contribution:	2 247 705 EUR
No. of partners:	4
Type of activity:	Coordination and Support Actions
Programme:	Science in Society, Seventh EU Framework Programme for Research (FP7)
Area:	Gender Equality

The INTEGER Project: Changing the institution, not the women scientists

The INTEGER project (INstitutional Transformation for Effecting Gender Equality in Research) aimed to foster gender equality in research institutions through so-called "Transformational-Gender Action Plans" (T-GAPs) which functioned as drivers for systemic structural change.

At three institutions - a large research organisation, the National Center for Scientific Research (CNRS, France), and two universities, Trinity College Dublin (Ireland) and Šiauliai University (Lithuania) - an institutional transformation was initiated through the INTEGER project to improve the career progression of the institutions' women scientific researchers.

Each implementing partner institution established its own T-GAP, tailored specifically to its needs and specific context, since a "one size fits all"-approach will not achieve real and sustainable institutional change. Another important factor for success was the continuous monitoring and comprehensive evaluation of the implementation of the T-GAPs. This task was taken over by the fourth project partner, GESIS - Leibniz Institute for the Social Sciences (Germany).

INTEGER was one of the very first projects to be funded by the Science in Society (SiS) Programme of the 7th Research Framework Programme to promote institutional change in research organisations and universities in order to strengthen gender equality. It signified a new approach and a rethinking of what is needed to achieve gender equality in research and innovation. Due to its particular importance, funding for this approach to structural change – first introduced in the SiS programme in 2010 - has become part and parcel of the Science with and for Society Programme in Horizon 2020. More than a dozen "sister projects" of INTEGER have received funding so far and the demand for such projects remains high.

Fostering gender equality through the institutional change approach

The still unequal situation between women and men in research and innovation has been documented impressively, e.g., in the extensive data collection "She Figures (2015)" which is updated every three years and funded by the Science with and for Society programme.

But why is institutional change fundamental when it comes to strengthening gender equality in research and innovation on an institutional level? A number of initiatives to promote gender equality had been developed over the years. But often they focused mainly on "helping" or "fixing" individual women scientists to fit the predominant structures without any real effect on the institutional processes and structures that contribute essentially to inequality. It became clear that in order to foster gender equality a comprehensive and sustainable systemic approach was needed which allowed to identify and adapt deeply embedded structures that lead to gender inequality in institutions. This is how the institutional change approach was born. A major cornerstone of this development at EU level has been the report "Structural change in research institutions: Enhancing excellence, gender equality and efficiency in research and

innovation" (2011). The importance of the institutional change approach has also been recognised in the context of the European Research Area (ERA). "Gender equality and gender mainstreaming in research" is in fact a key priority of the ERA and fostering institutional change to increase gender equality constitutes an inherent part of this priority.

Four key areas of intervention and analysis

In order to develop gender-sensitive organisational practices and culture the INTEGER project based their gender equality plans, the T-GAPS, on four key areas of analysis and intervention:

INTEGER team, © CNRS

- engagement of decision-makers,
- improvement of organisational structures,
- career progression, development and support,
- work-life balance.

The implementation of the T-GAPs allowed flexible adjustment whenever needed. A simultaneous top-down and bottom-up approach was utilized. Additional support came from the specifically established network of INTEGER ambassadors to benefit from practices tested in other institutions. Implementation was monitored through a set of key performance indicators. The evaluation of the project proved that substantial progress had been made at each partner institution. Ongoing commitment of senior management within these organisations, which is a prerequisite for sustainable change, was stated as one of the major results[1].

Embedding change into your institution: Use the INTEGER toolkit

Even though the runtime of INTEGER has ended, its impact has not. The implementation of the T-GAPs has triggered a process of change in the participating institutions that continued after the final day of the project. The consortium has worked on embedding gender good practice to step up sustainability.

Furthermore, the project's impact is not reduced to the consortium. One of the main achievements of INTEGER is the development of a toolkit (http://www.integer-tools-for-action.eu) which provides guidelines to peer research and higher education institutions seeking to improve the position and progression of women researchers through the implementation of gender action plans in a well-reasoned process.

The toolkit is based on good practices identified within the project. At its core are the four main steps "Plan", "Do", "Check" and "Act", which build on one another. Templates and how-to guides for specific actions are provided for every step.

The project consortium's commitment to gender equality in research and innovation is still strong. INTEGER partner Trinity College Dublin is currently coordinating the structural change project SAGE in which they share their knowledge of gender equality plans with partners who are at a starting stage of setting up gender equality plans. GESIS - Leibniz Institute for Social Sciences will monitor the implementation progress in the institutional change project GEECCO. And the INTEGER coordinator CNRS also coordinated the GENDER-NET ERA-NET which has recently published the IGAR online tool to assist organisations in the integration of sex and gender analysis into research policies, programmes and projects.

The annual Science with and for Society call always includes a topic that supports research organisations in implementing gender equality plans to stimulate institutional change. If you are looking for funding to follow the path of INTEGER and similar projects – examples of current projects are GENERA, LIBRA, BALTIC GENDER, EQUAL-IST – check out the call information on Science with and for Society in the Participant Portal. Work on change!

The success story reflects the project status at the time of June 2015

1 More concrete project results are available in the final report

TRUST meeting in Nairobi, May 2016: Dr. Joshua Kimani, Dr. Vasantha Muthuswamy, Prof. Doris Schroeder. Photo: Kate Chatfield

PROJECT DETAILS

Project title:	Creating and enhancing TRUSTworthy, responsible and equitable partnerships in international research
Project acronym:	TRUST
Project URL:	www.trust-project.eu
Project coordinator:	Prof. Doris Schroeder (Director of Centre for Professional Ethics, University of Central Lancashire, UK)
Project contact:	dschroeder@uclan.ac.uk
Project duration:	01/10/2016 - 30/09/2018
EU contribution:	2 141 173.25 EUR
No. of partners:	13
Type of activity:	Coordination and Support Action
Programme:	Science with and for Society, Horizon 2020
Area:	Ethics / Research Integrity

The TRUST project: Ensuring global research collaboration without ethics dumping

TRUST – this project acronym perfectly fits the work and objectives of the project which relates to the Science with and for Society programme activity "Ethics and Research Integrity". Because when it comes to ethics in research and innovation, trust is a fundamental category which requires sufficient and sensitive attention to ensure the excellence of research.

The main goal of the TRUST project is to catalyse a global collaborative effort to improve adherence to high ethical standards in research around the world. This main effort is also mirrored in the project title "Creating and enhancing TRUSTworthy, responsible and equitable partnerships in international research".

International cooperation in research and innovation plays an important role for fostering new knowledge and solving global challenges. Nevertheless, the notion of how research is undertaken in an ethically responsible way is one major challenge when cooperating globally. This is of importance especially when stakeholders with disparate access to decision-making and resources cooperate, when high-income countries collaborate with low- or middle-income countries or when vulnerable groups are involved in research. The work of TRUST aims to ensure the equity of research practices between the North and the South.

Doris Schroeder, Director of the Centre for Professional Ethics at the University of Central Lancashire and TRUST coordinator, highlights that "in the 21st century, research relationships should be free of exploitation". "Nobody", Schroeder continues, "should take part in research unless they have understood the purpose of the project and have agreed to contribute voluntarily. Research participants need to be involved equitably; the same principle concerns the use of any resources such as traditional knowledge or plant genetic resources and the collaboration with local researchers".

Three complementing tools for three main target groups

Purposeful exploitation of research participants and resources is called "ethics dumping" which also includes the exportation of research practices that would not be accepted in Europe on ethical grounds or the export of non-ethical practices from high-income settings to low- and middle-income settings.

To ensure international research that is trustworthy, responsible and equitable, i.e. research that is not practising ethics dumping, the TRUST project is developing three tools which will complement each other:

- a Global Code of Conduct for equitable North-South Collaborations,
- a Fair Contracting Webtool,
- an Ethics Follow-up and Compliance Tool

Each of the three tools is designed for a specific target group. Researchers all over the world will benefit from the Global Code of Conduct for equitable North-South Collaborations because it will give them clear guidance on how to conduct research without doing any harm. Vulnerable populations in low- or middle-income countries will profit specifically from the Fair Contracting Webtool which will enhance the capacity of these research participants and institutions to defend their own rights in research.

And research funders in high-income countries will benefit from the Ethics Follow-up and Compliance Tool which will ensure that research is conducted ethically and responsibly throughout.

Working on a Global Code of Conduct for equitable North-South Collaborations

The work of TRUST, which will run until September 2018, is most advanced regarding the Global Code of Conduct for equitable North-South Collaborations. The Code of Conduct will be based on the four values of fairness, honesty, care and respect. These values are considered globally applicable and do not require any special ethics know-how and training. The decision of the consortium in favour of these four values was taken in consultation with vulnerable populations from South Africa and Kenya. This involvement reflects that the TRUST consortium is indeed "practising what they are preaching".

Launch of San Code of Research Ethics, Cape Town, March 2017: Leana Snyders, Collin Louw, Mario Mahongo. Photo: Amy Azra Dean

Important groundwork for the Code of Conduct has been finished with success. A collection of paradigmatic case studies on ethics dumping has been completed. This collection has been used to formulate a risk matrix to identify risks of ethics dumping for, e.g., individuals, institutions, local communities or the environment. In a next step, the risk matrix has been compared with existing ethics guidelines involving North-South collaboration. The analysis concluded, e.g., that nine of the 88 exploitation risks in North-South collaborations in research identified in the TRUST risk matrix are not covered by major ethics guidelines. The development of the Code of Conduct will build on these three intensive preliminary works. The consortium pursues an ambitious objective for the Code of Conduct: its uptake by the European Commission as guidance for researchers receiving European funds, e.g. from Horizon 2020, the EU Framework Programme for Research and Innovation. The TRUST project thereby contributes to the EU - and its researchers - being a credible and strong global partner, thus supporting political objectives such as the 3 Os strategy "Open Innovation, Open Science, Open to the World" and the Juncker priority of being a "stronger global actor".

The San Code of Research Ethics: a major achievement by and for a vulnerable population

Working on an equal footing with five partners from India, Kenya and South Africa, the aim of TRUST to strengthen equitable North-South partnerships is reflected in the set-up of the consortium, too. TRUST coordinator Doris Schroeder explains that as a research and innovation funder, the EU is already following an important principle of equitable North-South collaborations by providing partners from low- and middle-income countries the opportunity to receive funding and to take over responsible positions in a Horizon 2020 project. An example of the inclusion of voices of vulnerable populations in TRUST is the civil society organization "South African San Institute Trust". The San are the indigenous population of Southern Africa and carry the oldest genetic heritage of contemporary humanity. At the same time, they are a highly marginalised, impoverished community. The San have been of great research interest for the past decades. However, due to complex reasons, the San have repeatedly suffered from inequitable research relationships and ethics dumping which was documented in the TRUST report on paradigmatic case studies. TRUST coordinator Doris Schroeder considers the collaboration with the San a major success of the project. Professor Schroeder's long-term collaboration with the San community over many years, culminating with TRUST, has led to the first indigenous Code of Research Ethics driven by a vulnerable population in Africa to protect them from unequitable research. The San Code of Research Ethics was announced in March 2017 to much attention from the media, e.g. from renowned journals such as Science and Nature.

If you would like to be kept updated on the finalisation of the three tools, please sign up for their newsletter on the TRUST homepage.

The success story reflects the project status at the time of April 2017

Hypatia PROJECT

Hypatia project coordinator Meie van Laar
Photo: private

PROJECT DETAILS

Project title:	Hypatia
Project acronym:	Hypatia
Project URL:	http://www.expecteverything.eu/, http://www.expecteverything.eu/hypatia/
Project coordinator:	Meie van Laar (NEMO Science Museum, Netherlands)
Project contact:	vanlaar@e-nemo.nl
Project duration:	01/08/2015 - 31/07/2018
EU contribution:	1 499 693 EUR
No. of partners:	10 (and 9 third parties)
Type of activity:	Coordination and Support Action
Programme:	Science with and for Society, Horizon 2020
Area:	Gender Equality / Science Education

Inspiring teenagers all across Europe in a gender-inclusive way to follow a STEM-related career

Research shows that the way sciences are communicated to youth, in and out of school, is not yet gender inclusive. Young Europeans, both girls and boys, still have very little idea of the variety of careers that are possible in science, technology, engineering, and mathematics (STEM), and the skills that are relevant for those career pathways.

In the coming years, with Europe's knowledge economy developing and new technologies on the rise, skills in STEM will be needed for a broader range of careers than ever before. This initial position is the starting point of Hypatia's activities and aims.

The Hypatia project fosters partnerships and dialogue among schools, museums, science centres and industries in order to offer gender-inclusive STEM education to young people, to actively expose young people and especially girls to the variety of STEM-related careers and to encourage young people to open up their horizons to "expect everything" from the field of STEM.

How is Hypatia pursuing these ambitious objectives? Hypatia first produced a theoretical framework on gender inclusion in STEM education and a list of criteria on what makes educational activities gender inclusive, Meie van Laar, Head of Learning and Research of NEMO Science Museum in the Netherlands, and project coordinator, explains. As the next step, the framework was implemented in the form of the Hypatia toolkit with the aim to promote gender- inclusive practices in Europe.

Actively expose young people and especially girls to the variety of STEM-related careers

The Hypatia toolkit is an accessible, practical and ready-to-use digital collection of innovative activities aimed at teenagers. The toolkit activities vary from workshops to speed dating, debate scenarios and more and are accompanied by gender and facilitation guidelines. They can be implemented by teachers, informal learning organisations, researchers and industry. The toolkit activities aim to empower teenagers to explore the range of skills needed for a great variety of STEM studies and careers open to young people. The toolkit consists of 15 modules and is available in 15 languages. It is being implemented across more than 14 countries in Europe and beyond during the project's runtime. The dissemination of the toolkit is part of Hypatia's pan-European campaign "Expect Everything". "Expect Everything" calls on teenagers to get involved in the STEM-related events and activities that are taking place in the 14 countries, to discover unexpected facts about science and to get in touch with scientists and learn about their career paths. By the end of the project, more than 250,000 teenagers will have participated in the project activities.

To achieve such a large European coverage, the project established National Hubs in 14 countries from the outset. These are coordinated by science centres and museums and include more than 250 hub members. The hubs consist of panels formed by schools (science teachers but also head teachers), informal educational institutions, local, regional and national authorities, academic research institutes and

industries, gender experts, parents, but above all, van Laar emphasises, young people themselves. The hubs co-designed and piloted the toolkit activities and are also strongly involved in the dissemination and implementation process of the toolkit on regional and national level. The National Hubs are furthermore working on sustainability plans to ensure that Hypatia's achievements extend beyond the project's life span.

On a level playing field with teenagers

The strong involvement of teenagers from across Europe is a unique element of Hypatia. More than 1,500 teenagers, for example, tested the modules in the developing phase. They play an important part in the "Expect Everything" campaign, which is very active in social media and which set up youth panels across Europe that work with museums and science centers, thus allowing their stories, articles, and videos to shape the campaign.

Another cornerstone of the project's efforts is the preparation of a set of institutional guidelines for science museums, schools and industries on how to address gender inclusion and how to transform their organisations (publication date: July 2018). Gender inclusion requires institutional change. It is important, for example, that organisations reflect on possible inherent stereotypes. It is furthermore essential to recognize the implicit gendering of STEM, which, e. g., presupposes certain types of learners to the exclusion of others, and also the widespread conflation of gender with biological sex, which contributes to creating STEM stereotypes. These mechanisms are at work both in and out of school contexts, and have the effect of excluding a variety of learners from STEM.

The Science with and for Society programme provides the opportunity to work on and disseminate new practices and to link with stakeholders

Expect Everything campaign logo

The participation in European collaboration keeps the science museum NEMO informed on the latest developments in science communication and on research in this field, van Laar points out. She adds that it has improved their performance as a museum: "By working with partners from across Europe we are strengthening the field of informal learning, ensuring that the broadest possible audience is aware of the significance of science to society, technology and innovation."

The SwafS programme, van Laar points out, offers organisations such as science museums, that are experts in the field of science communication and whose mission is to bridge the gap between science and society, the opportunity to cooperate with other stakeholders and work towards eliminating this gap. It also enables them to promote gender- and cultural-inclusive practices and to cooperate with stakeholders from the field of research, civil society organisations, universities and schools towards achieving this goal.

To get a foot in the door of European research and innovation funding, van Laar recommends to newcomers that they should come with an open mind and with the will to question their own practices. They should be prepared to work with new types of stakeholders and to think ahead beyond the lifetime of a project on how to incorporate what they learn into more sustainable practices in their own contexts and countries. She points out that they can always turn to the Science with and for Society National Contact Point in their country for advice, which was what van Laar herself did concerning issues the consortium had doubts on while preparing the Hypatia proposal.

The vision of Hypatia is a European society that communicates science to youth in a gender-inclusive way in order to realise the full potential of girls and boys around Europe to follow STEM related careers. Share their vision, join the "Expect Everything" campaign and make use of their toolkit to contribute to a more gender-inclusive STEM education.

The success story reflects the project status at the time of May 2018

PRINTEGER consortium. Photo: Mira Zöller, University of Bonn

PROJECT DETAILS

Project title:	Promoting Integrity as an Integral Dimension of Excellence in Research
Project acronym:	PRINTEGER
Project URL:	http://printeger.eu
Project coordinator:	Prof. Dr. Hub Zwart (Radboud University Nijmegen, Netherlands)
Project contact:	h.zwart@science.ru.nl
Project duration:	01/09/2015 - 31/08/2018
EU contribution:	1 987 780 EUR
No. of partners:	8
Type of activity:	Coordination and Support Action
Programme:	Science with and for Society, Horizon 2020
Area:	Ethics in Research/ Research Integrity

The PRINTEGER project: Integrity is part and parcel of excellent research

In an ideal research world, good scientific practice would be applied invariably. Unfortunately, such an ideal research world does not exist. Research integrity is not always exercised as naturally as it should.

The Science with and for Society project PRINTEGER ("Promoting Integrity as an Integral Dimension of Excellence in Research") aims at a research and innovation culture in which integrity is part and parcel of doing excellent research, whereby, as the project's coordinator, Prof. Dr. Hub Zwart from Radboud University Nijmegen in the Netherlands, emphasizes "integrity should not be seen as an external and restrictive control system". PRINTEGER takes the view that an improved governance of integrity and responsible research has to be informed by practice: the daily realities of the researchers' work and the tensions of a complex research system need to be taken into account.

The word "integrity" rolls off the tongue easily – but what does it actually mean? According to the European Code of Conduct for Research Integrity, good research practices are based on fundamental principles of research integrity. They guide researchers in their work as well as in their engagement with the practical, ethical and intellectual challenges inherent in research. These principles are reliability, honesty, respect and accountability.[1]

Integrity therefore is about proper research behaviour. It is fundamental for ensuring excellence in research and high-quality research results, and to secure public trust in science. Nevertheless, the issues at stake, e.g. how to ensure the implementation of research integrity or what is considered as misconduct or poor quality research, are quite complex and therefore part of the project's work. In doing so, PRINTEGER is one of the cornerstone projects funded by the EU to push forward the message of the European Code of Conduct for Research Integrity and to create an EU research integrity community.

How does PRINTEGER promote integrity as an integral dimension of excellence in research? In the short term, it does so by improving integrity policies of national and international research organisations, but also by providing better tools for research leaders and managers. In the long run, PRINTEGER will further ethical awareness and reflection through the education of new generations of scientists with next generation educational tools. Immediate contributions of PRINTEGER include increasing the awareness of realistic and effective integrity measures through dissemination, including a large conference in February 2018, and the trial and use of improved educational resources for teaching research ethics to future and young scientists.

Starting from what is happening in real practice

"A unique feature of PRINTEGER is the focus on a hands-on, bottom-up approach, starting from what is happening in real practice", Zwart points out. For this reason, e.g., focus groups with researchers, research managers and other research actors

1 http://www.allea.org/wp-content/uploads/2017/03/ALLEA-European-Code-of-Conduct-for-Research-Integrity-2017-1.pdf

have taken place to explore questions such as the effectiveness of integrity policies, definitions of research integrity, or barriers and challenges to integrity. The results will be used for the development of four types of tools to be generated by PRINTEGER before the end of the project's runtime in August 2018:

- Advisory tools for policy makers;
- Tools for reflection and action for research leaders and research managers;
- Advice for research support organisations, especially on IT tools to promote integrity;
- Educational tools for researchers, notably including future scientists and early stage researchers.

Additionally, a number of analyses have been conducted to determine what is happening in real practice, such as on the incidence of misconduct in research. The different types of tools to be developed already underline that PRINTEGER addresses a broad target group which includes researchers, early-stage researchers, students, research managers, funding organisations, science teachers, journal editors and science journalists. The various actors in the research system are affected by integrity in different ways, and this needs to be taken into account.

Internal integrity drivers rather than external measures

PRINTEGER is convinced that in order to address integrity challenges successfully, the focus should not be on external measures, such as more surveillance, more regulations, etc., but rather build on the internal integrity drivers of research, on the fact that integrity, responsibility, transparency, reliability, etc. are already part and parcel of conducting research. The PRINTEGER consortium is also aware that even though there is broad consensus in the research community that integrity is an essential part of research excellence, the ongoing changes and increasing complexities of modern science – such as globalisation, transdisciplinary collaboration, competition, emphasis on valorisation, etc. – need to be considered, too, when promoting integrity, as these developments present new and complex challenges to the researchers' integrity.

PRINTEGER conference, 5-6 February 2018, Bonn, Germany. Photo: Mira Zöller, University of Bonn

"Our goal", Zwart points out, "is to empower key stakeholders to effectively address these challenges in order to ensure quality, excellence, relevance, responsibility and credibility in scientific research."

It is obvious that a comprehensive issue such as integrity can only be tackled and moved forward at the European level. National or mono-disciplinary approaches can only be partially relevant. A comprehensive view is needed and the EU podium facilitates that. The Science with and for Society programme part of Horizon 2020 was a perfect fit for funding a project like PRINTEGER. The consortium, which consists of eight partner entities from seven EU countries, is confident that Europe can and should play a key role in addressing integrity on a global level.

Advice for newcomers to EU funded research and innovation

Through participating in various EU-funded projects over the past years – as coordinator and as partner - Zwart has gained much experience in research cooperation on the European level. What advice does he have for newcomers to EU research funding with regard to how to "get the foot in the door"? "The first step should be to explore what is going on and what has already been achieved. For newcomers, the best way to become involved would be to join forces with consortia already active and in place" he says. He argues that "the complexities of trans-national and trans-disciplinary research can only be addressed on the basis of experience, preferably of course in combination with new voices and ideas." It is also helpful to turn to the National Contact Points for support and advice.

Want to learn more about the work and output of PRINTEGER? Be sure to visit their website https://printeger.eu!

The success story reflects the project status at the time of April 2018

Further information and contacts:

Please visit

http://ec.europa.eu/programmes/horizon2020/en/area/society
for information about the Horizon 2020 programme part Science with and for Society,

https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/calls/h2020-swafs-2018-2020.html
for information about Science with and for Society calls for proposals,

https://cordis.europa.eu/projects/home_en.html
to find more Science with and for Society projects on Cordis,

http://www.sisnetwork.eu
if you would like to find out more about the SiS.net network.

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