19 January 2021

e-IRG Communiqué on the e-IRG Workshop under German EU Presidency

The e-IRG Workshop, organised in the framework of the German EU Presidency, took place on 1.-2. December 2020. The Workshop was implemented as three virtual sessions with the overall theme of **how e-Infrastructures can support addressing societal challenges,** including public health and climate change. Presentations ranged from institutional to national, EU and international levels, and from users to providers, and policy makers/funders perspectives.

e-Infrastructures in support of addressing societal challenges

The presentations of the workshop were selected in order to reflect on the current developments in the e-Infrastructures domain, including the European Open Science Cloud (EOSC), High Performance Computing (PRACE and EuroHPC) and networking, and how these are linked with some of the societal challenges in different thematic areas. The three main topics addressed were i) **Research Data Infrastructures**, as data is the common denominator both within e-Infrastructures and across e-Infrastructures and thematic infrastructures, ii) **The support of e-Infrastructures to the digital transformation in the health sector**, where the COVID-19 pandemic has accelerated and amplified processes, and iii) one of the biggest challenges for mankind ahead, i.e. the climate change, and the **impact and benefits of e-Infrastructures in support of the EU Green deal policy,** i.e. to become "climate neutral" by 2050 (without greenhouse gases).

Research Data Infrastructures

The e-IRG workshop opened by addressing the topic of *Research Data Infrastructures*, seen from different angles, including national ones from within Europe and beyond, thematic (vertical) and generic (horizontal), and from both policy and sustainability perspectives. **David Moorman (U15, Canada)** presented in his keynote speech the ongoing structural transformations that the Canadian e-Infrastructure landscape is undergoing to address the current challenges. Mr Moorman highlighted that "as we are seeing in response to COVID-19, research infrastructures have a central role to play in ensuring trust in scientific data". **Josef Linkens (BMBF, Germany)** also provided insights in an ongoing change that concerns a major EU country - Germany, where the *National Research Data Infrastructure* is being implemented as a series of bottom-up projects complemented by a bottom-down supervision. Mr Linkens provided the background on the processes that have led to the joint agreement between the German government and the federal states, which are in charge of education and research at the federal level.

Carthage Smith (OECD) presented recent work from the OECD Global Science Forum and international partners on policies for enhancing access to research data. Mr Smith stressed that there is a diversity of actors in the research ecosystem, from individuals to institutions, and all have a role to play in making data FAIR. There is also a need for both mandates and incentives (including funding) and these need to be applied strategically and coherently. Finally, insights were provided on business models for data repositories of research data infrastructures, not only in terms of funding sources, but also on the related value proposition. **Sarah Jones, (GÉANT)** highlighted the most important outcomes from the EOSC FAIR Working Group and its subgroups (task forces), including FAIR practice, PID policy, Interoperability and Metrics & Certification. Some of the feedback received

included the central role of research communities as data and service providers and users of EOSC, which has to adapt to community practices. In addition, it was highlighted that FAIR is a journey and EOSC has to be inclusive, allowing a gradual uptake of the FAIR principles. Metrics and evaluation tools for FAIRness and EOSC overall have to be extensively tested, regularly assessed and updated. Finally, at the recent consultations it was recommended that a neutral body is used for oversight of the FAIR, PID and interoperability practices, policies and metrics. **Francoise Genova (CNRS)** representing the Ministry of higher Education, Research and Innovation presented the French National Research Infrastructures Roadmap process and related data infrastructures, including thematic ones and the coordination activities with the generic national e-Infrastructures.

Digital transformation and Public Health Session

The second session of the workshop was dedicated to *Digital Transformation and Public Health*. **Konstantinos Repanas (EC, DG RTD)** highlighted the critical role that data play in understanding transmission and infection related to a health crisis, and in identifying drug targets, vaccines or disease-related symptoms. The European COVID-19 Data Platform brought together established data infrastructures from the EMBL, coordinated standards and best practices from ELIXIR and leveraged investments from related H2020 disease-specific projects. The platform is embedded within the EOSC ecosystem. Mr Repanas also highlighted the importance of linking data from social sciences and humanities to clinical and research data, stipulating that this may be an important next step in finding further answers regarding the COVID-19 pandemic.

The intensity and approach of the European effort to address the pandemic has illustrated the power of openness and collaboration. This point was also brought up by **Fabian Prasser (Charité, Germany)** whose presentation underlined the tension between data sharing and privacy protection, which can be resolved with the aid of modern technologies.

Robert Lovas (SZTAKI, Hungary) presented the CO-VERSATILE project to boost manufacturing responsiveness to counteract the shortage of vital medical equipment and protect caregivers and citizens. The project has been developing a cloud-based platform called 'Digital Technopole' – a commercial marketplace that aims at quickly assisting manufacturing firms with readily available solutions including software tools/services, manufacturing capacity and training services.

Stelios Sartzetakis (GRNET, Greece) presented the Cloud Data Infrastructure of the national node ELIXIR-GR. ELIXIR brings together Europe's major life-science data archives and, sets the example for many other scientific fields with similar demands in terms of compute and storage infrastructures and as such GRNET supports its deployment and operations. ELIXIR-GR also hosts the local EGA, and will support the compute and storage needs of personalized medicine and Epidemiological Study Of SARS-CoV-2 national flagship actions.

Digitalisation and Green Deal

The presentations in the final session of the e-IRG workshop, targeting Digitalisation and Green Deal, depicted a twofold impression. On one side the metadata, data infrastructures and huge computing capabilities as provided by the High-Performance Centres, which are inevitably needed to address the environmental challenges mankind is facing, e.g. climate change. On the other hand, there are the enormous amounts of energy consumed, as well as other environmental impacts like e-waste, that follow such technologies' benefits, and which need to be taken into account and addressed appropriately.

Chris Schubert (CCCA, Austria) gave an introduction to EU directives dealing with data access, interoperability and infrastructures. These were linked to ongoing technological activities like Open Data Cube for Earth Observation Data, thus demonstrating a holistic approach ready to up-scale from a local to an international level. To quote him "Lowering barriers to an accessible, federated,

and reliable data infrastructure with computing core components, minimizes local download behavior by processing data remotely and browsing results. It is a great opportunity associated with the wider sharing and reuse of data, in particular to increase reproducibility".

Tuuli Ojala (Ministry of Transport and Communications, Finland) presented the just recently published report from the Finnish Ministry of Transport and Communications: *The ICT sector, climate and the environment.* Her conclusions are that "ICT provides great opportunities for the green transformation of societies, but we also need to take into account the environmental footprint associated with the energy and material use of the sector."

The final presentation, by **Martina Fromhold-Eisebith (RWTH Aachen, Germany),** provided insights into the Flagship Report from the German Advisory Council on Global Change *Towards or Common Digital Future.* She reminded the audience that "only if digitalization is systematically and comprehensively connected with considerations on sustainability, from the local-regional up to the supra-national level, we will be able to create a viable future for mankind."

Closing

Andrea Herdegen, BMBF highlighted how research data infrastructures can support in addressing key societal challenges in thematic areas. On the health area with focus on Covid-19 there were a series of infrastructures highlighted that can make a difference to fight the pandemic. On the environment, green solutions were highlighted, along with tensions between sustainability and digitalization, the latter being both a problem and solution. Successful research is a major requirement for society.

The **e-IRG Chair Paolo Budroni** in his closing remarks highlighted the virtual "tour" around the world that the speakers provided with different practices and policies on research data infrastructures. Some of the key messages expressed were summarised, including the global nature of the societal challenges, engagement of researchers in these and the society as a whole, cooperation and competition with major relevant industrial players, the close relevance of Open Science and FAIR artefacts and that FAIR is a journey.

e-IRG will continue to provide policy recommendations that are also shaped by inputs provided in the e-IRG workshops and further the discussion on the e-Infrastructure Commons.