Exploration Series with SciFi-authors "Visions, needs and requirements for Future Research Environments": Synthesis of the Takeaway Messages

Katharina Flicker, Andreas Rauber (PI)

The EOSC initiative aims at supporting more than 1.7 million researchers and boosting (interdisciplinary) research in Europe. To understand better what the research community needs, the **EOSCSecretariat** partner **TU Wien** organized a series of **workshops, consultations** and an *Exploration Series*.

In order to address research communities in a structured way, TU Wien invited academics who became successful SciFi-authors to participate in a series of discussions to inquire about visions, needs and requirements for (future) research environments. A **full report** was published on 22 March 2021. Key findings include:

Discussions surrounding **Competition and Collaboration** focused on the need to collaborate to tackle global, societal and interdisciplinary challenges, all while putting too strong an emphasis on competition. The latter comes with the risk of ruining accomplishments that could be achieved through genuine collaboration. Actions required include:

➢ Support research environments in which funding for research is less constrained to weaken fighting for (what appear to be) scarce resources
➢ Develop strategies to prove research systems against exploitation (in-fighting for positions, the need to occupy top-positions in order to get access to resources)

Topics such as distrust in (Information) technologies, research practices and positions of power along with the necessity to re-establish that kind of trust were discussed in connection with **Issues of Trust**. Actions required include:

➢ Accompany the development of technologies with impact assessment as well as with debates and analysis on potential (side) effects on micro- and macro-scale
➢ Establish regulations to control the development of technologies, all while finding balance between practicality and security
➢ Establish legible processes to publicly display conflicting claims, evaluate and come to conclusions about them
➢ Set up a failure mode for situations in which conclusions need to be revisited because new evidence was discovered
➢ Deal with structural problems such as not publishing negative research results, statistical malpractice (by setting up a formal set of criteria used to (re-)evaluate statistics to find malpractice) and the difficulty of reproducing research results (by supporting open access)
➢ Change the reward system: Having results first leads to advantages in terms of wealth, status, finances/funding, access to limited resources. If such benefits were to be reduced, the exploitation of such systems for personal gain amight decrease
➢ Enable citizens to get a look at every data that everybody has about them anywhere (through a key, an application…)

Monopolies and Oligopolies as a starting point-for-debate opened up issues such as the reduction of pluralism within research systems. Actions required include:

➢ Develop and implement strategies to disempower monopolies
➢ Re-consider the dominance of scientific publishing houses
➢ Establish *acts of manipulation* in future systems to contribute to pluralistic structures by constantly resetting the conditions to succeed within market economies, research systems and infrastructures

- Resilient systems allow for messy bits and pieces (e.g. redundancies). Thus, a trade-off between resilience and optimization needs to be taken into consideration when building research environments, while investing in the ability of such systems to adapt

Focusing on **Education and Science Communication** led to the discussion of themes such as ensuring quality education for all and establishing a dialogue between the broader public and the world of science. Actions required include:

- Introduce data literacy, digital literacy and education around privacy concepts into school curricula
- Change the ways of current teaching: Present science as an investigative process, convey scientific reasoning, teach how to make connections between pieces of knowledge, bring the appreciation of complexity and uncertainty closer to pupils and students
- Research institutions as well as researchers have to take responsibility for science communication
- Find ways of communicating science from the very technical and difficult to grasp down to a level where the average person is able to understand it

This report will be distributed among the **EOSC Association** and various stakeholders such as researchers, members of university networks and funding bodies, thus providing input in the ongoing development processes of the EOSC.

TU Wien representatives of EOSCsecretariat: Paolo Budroni, Katharina Flicker, Juliana Giroletti, Andreas Rauber (PI), Barbara Sanchéz, Bernd Saurugger