Open Innovation, Open Science, Open to the World - video message

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Ladies and Gentlemen, Dear Colleagues, I am very sorry I cannot be with you today. However, I'm happy to have this opportunity to share some thoughts with you through video. From the perspective of European research and innovation policy, the growing economy of data has two areas of application: knowledge and innovation. Or in other words, Open Science and Open Innovation. Let me briefly develop on both trends.

First, **Open Science**: science is currently in a transition process to more open forms of science. The key rationale of Open Science is to move away from publishing as fast and as much as possible to sharing knowledge and data as early as possible in the research process. Early knowledge and data sharing is increasingly made possible by digital technologies and ever increasing computing capabilities. This makes science more reliable, as we can collectively better verify data. It makes it more efficient, as we are increasingly able to collaborate on common research topics in virtual global digital networks, and also it makes science more responsive to societal challenges. Transparency enables a more responsive system towards societal demands.

The use of big data in science in Open Science mode transforms scientific activity. Take the European program Copernicus, which we are doing together with the European Space Agency. The sentinel satellite heralds a new era in Earth observation, since it makes radar-guided, 24-hour, continuous Earth observation. Soon, the Copernicus program will be able to observe Earth in more detail than an anaesthetist can do for a patient during a complicated heart operation. What is good about it? The Earth observation data are shared with any possible user and enable other scientists to do things they never could do before. For example, climate scientists are enabled to identify impacts of climate change at a global scale. Data are currently also used for observations to determine whether ships dump oil illegally in the ocean or used for border control purposes. Typically, big data-based research combines big data settings which have been generated initially for different purposes.

Active data sharing or Open Science will enable scientists to bridge the gaps between scientific disciplines. For example, combining the data of patients treated with antibiotics for blood poisoning and their personal data, illness, age, weight, etc. will enable doctors to be more accurate in giving the right amount of antibiotics for future patients, thereby saving a significant number of lives. Scientists like Viktor Mayer-Schönberger from the Oxford Internet Institute and the author of *Big Data* expects from science policy that researchers at universities and in industry who receive public funding for their research should make their data freely accessible, not only the results of their research.

The European Commission, in that line, has made Open Data the default option under Horizon 2020 as of the beginning of 2017. Open access to publications was already mandatory since the beginning of Horizon 2020 in 2014.

This does not need to put into question intellectual property rights. Open Science is often more successful than closed science, which operates on the exploitation of IPR. The fight against emerging health diseases, such as Ebola and the Zika virus were so successful, because scientists refrained from the exploitation of IPR, and they shared data instantly.

They even refrained from publishing as long as the projects lasted. In the area of innovation, many firms also identify the benefits of openness, with many of them sourcing ideas from outside and opening their patent portfolio to scientists, entrepreneurs and engineers. The value of knowledge developed has to be assessed not only on the basis of the revenues earned, but also on its positive societal impact.

However, IPR protection is necessary in order to ensure that the private actors, the private sector, are incentivised to pursue the development of new products and new services. A right balance between the two needs to be struck in order for the outcomes of scientific endeavours to be brought into the market and to maximise social benefits while building on the efficient dynamics of the private initiative.

Your conference also puts the emphasis on **better capacity to analyse data**. This line of work was also strongly recommended by the Research, Innovation and Science Policy Experts (RISE) High Level Group to the Commission. Many researchers do not have either competence or confidence in the practice of Open Data. RISE argued that the European Commission should support competence in working with data, establishing appropriate infrastructure and creating a supporting culture for openness. **These are three core challenges for Open Data**.

Second, **Open Innovation**. As you know, we are living in a knowledge economy. What is new these last ten years is the exponential growth and use and accumulation of big data in the economy. Data and knowledge increasingly contribute to the productivity of our firms and our economies. We see this in the statistics on productivity, where so-called intangibles are becoming the most influential factor driving productivity. The centre of this is the new economy focus on value creation, a complex process where also citizens and users are becoming prime actors. This is one reason why we see an increasing number of firms adopting the model of Open Innovation.

The innovation process is accelerating while remaining a high-risk game. Big data, value creation with users, living labs in cities and new value chain ecosystems are ways and instruments to cope with this uncertainty. From the EU level, we want to create the **right framework conditions for Corporate Open Innovation.** This is why we are very interested in hearing your reflections on which factors facilitate the full use of big data in Open Innovation. For instance, is there a need to modify our PR rules in order to encourage and facilitate Open Innovation?

In this expanding new data-driven economy, we also need **to build a capacity in Europe to accumulate Big Data**. For the moment, the U.S. is a first mover with powerful technologies and powerful technological firms, such as Google, Facebook and Apple, to name but a few of the most emblematic ones. In terms of technologies, we also see China moving up, investing heavily in key enabling technologies, such as the Internet of the future, data processing and analytics, or even cyber security.

In this context, I would like to close with a more provocative reflection. The economic situation of big data today has many similarities with the air transport market in the 1960s. At that time, air transport was a rapidly expanding market, dominated by a few large U.S. firms, such as Boeing, McDonnel Douglas and Lockheed. Several European countries joined forces to take up the large capital costs needed to enter into this expanding market. Airbus was created in 1970 and is now creating skilled manufacturing jobs in most European countries through extensive value chains. Perhaps we are now in a similar industrial situation for big data. **Do we need a more determine European industrial direction, which could generate well needed innovation and employment for Europe? Do we need an Airbus for Big Data?**

Many thanks, Colleagues, for your attention. I wish you a very good meeting, and we look forward to learning about the results of your discussions.