

1. Cloud Computing

Although the term Cloud Computing is new, the underlying concept of cloud computing is actually not new. In the 1960s, John McCarthy mentioned that "computation may someday be organized as a public utility" in his speaking at the MIT Centennial. However, cloud computing, or the "Computer Utility", had not become a reality until the late 2000s.

2. Mutual Learning Exercise (MLE) on Open Science

The goal of this MLE is to facilitate communication and reciprocal learning across member states, EU policymakers and Open Science experts, fostering understanding of the implications, advantages and disadvantages of different strategies to support and incentivise Open Science.

3. Data Security in Cloud Computing

Cloud Computing has come into reality as a new infrastructure built on top of a series of techniques such as distributed computing, virtualization, etc. Besides the many benefits that it can bring forth, Cloud Computing also introduces the difficulty of protecting the security of data outsourced by cloud users.

4 What is Cloud Computing?

A research group from the University of California at Berkeley gives the following unofficial definition of cloud computing: cloud computing is a "pay-per-use model for enabling available, convenient and on-demand network access to a shared pool of configurable computing resources (networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

5. Mutual Learning Exercise (MLE) on Open Science

open science implementation: Funding strategies

There was a general consensus among MLE participants that using Open Science as a criterion for allocating funding would make a significant and immediate difference in the behaviour of researchers and research institutions. This belief is supported by the experience of countries that have implemented this strategy, such as the *UK* and the *Netherlands*, where the percentage of research being made openly available has increased over the last five years.

6. Mutual Learning Exercise (MLE) on Open Science

Transparency

Debates and decision-making around Open Science need to be transparent and publicly accessible, making it possible for any stakeholder (including the general public) to engage in the ongoing discussions and understand the rationale behind specific actions and guidelines. Attention must be paid to how information on Open Science implementation is presented, and adequate support must be given to the development of publicly accessible information tools.

7. Mutual Learning Exercise (MLE) on Open Science

Publishing strategies

A key strategy for the practical implementation of Open Science is the establishment and maintenance of publication avenues where researchers can deposit their outputs, ranging from full articles to data, protocols and other results of their work. The institution of policies and repositories for open access to research articles is typically the first step in the national implementation of Open Science.

8. What is Cloud Computing?

When a Cloud is made available in a pay-as-you-go manner to the general public, we call it a Public Cloud; the service being sold is Utility Computing. We use the term Private Cloud to refer to internal data centers of a business or other organization, not made available to the general public. Thus, Cloud Computing is the sum of SaaS (Software as a Service) and Utility Computing.

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Dealing with costs

Open Science implementation is expensive, both in terms of the infrastructures required and the human resources and specialist expertise that must be developed and maintained in order to support researchers in this endeavour. Many MLE participants are worried that money going to Open Science is being taken from other places, most often research budgets, which may damage science by further reducing the already small amounts of public spending devoted to it.

11. Mutual Learning Exercise (MLE) on Open Science

Educating and involving government officials

Many MLE participants pointed to the significance of educating public officials, including high-level policymakers, in the advantages and practical implications of Open Science. Although this is not an easy task given the technical nature of some Open Science debates, greater awareness of its potential for society lies at the core of adopting Open Science within national policy.

12. Mutual Learning Exercise (MLE) on Open Science

The role of publishers

MLE participants pointed to public debate and more clarity over the role of publishers in scientific governance as a major element of Open Science implementation. At the moment, most research articles are published by some of large commercial publishers, which have effectively taken over publishing procedures for the most reputable journals in several fields and have the power to affect the business models.

13. Mutual Learning Exercise (MLE) on Open Science

Valorising research in languages other than English

Many MLE participants noted the potential usefulness of Open Science initiatives in bringing visibility to research carried out in languages other than English. Indexes such as the Web of Science provide an incomplete and unreliable overview of international research outputs – especially in the field of social sciences and humanities because they mainly measure English-language publications.

14. Mutual Learning Exercise (MLE) on Open Science

the transition to Open Science needs to be closely monitored, paying attention to cost assessment and the evaluation of benefits and potential risks for each country. The social and ethical implications of Open Science implementation must be discussed and scrutinised to promote understanding of its significance and societal impact.

15. Mutual Learning Exercise (MLE) on Open Science

Respect for diversity

It is crucial to respect cultures and diversity in skills by paying close attention to how Open Science practices affect local research cultures and methods, smaller research communities, natural as well as social sciences and humanities, and groups working in languages other than English. Research works best when involving different actors with different qualities