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THAI National Commission for UNESCO

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**Subject: Comments and Observations on the First Draft of
UNESCO Recommendation on Open Science**

Dear Ms. Nair-Bedouelle

Kindly refer to the UNESCO's letter Ref. CL/4333 inviting us to forward the comments and observations on the first draft of the Recommendation on Open Science.

In this regard, the Thai National Commission for UNESCO is pleased to submit the comments and observations on the above-mentioned document as attached for your further consideration.

Please accept, Madam, the assurances of my highest consideration.

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Comments and Observations on the First Draft of UNESCO Recommendation on Open Science

It is common awareness that there have been discussions about open science; or the way that we can transform-and in a sense, update-the practices of science and research. One can speculate that it is at this time of global crisis, that such conceptual transformations as Transdisciplinary Research and Open Science have reached their critical mass. UNESCO's action on Open Science has now reached the stage whereas organizations are engaged widely at a most apt moment.

Successfully implementing Open Science is beneficial economically and increase society's cohesiveness through integrating their concerns. The core values are inspirational. The potential benefits from their achieving recommendations is encouraging, however, implementation of the Recommendation is a challenge.

We would like to support the UNESCO Recommendation on Open Science and further discourse and collaboration on the Open Science in the future. However, additional phrase "software environment information and configurations settings," highlighted in yellow with red letters should be considered to be added to the first draft of UNESCO Recommendation on Open Science, for the enhancement of Open Science reproducibility, due to incompatibility issue arising from rapid changes of software versions and performance variability arising from different configuration settings.

- Page 4, Paragraph 9 (i) **Open Access:** Open access generally involves users being able to gain full and immediate access to and unrestricted use of scientific outputs including scientific publications, data, software, source code and protocols, produced in all parts of the world, free of charge to the user and re-usable. Subject to the users' properly attribution of source and authorship, all users are granted free, irrevocable, worldwide rights to access, copy, retain, use distribute, transmit and display the work publicly and to make the distribute derivative works, in any medium for any responsible purpose. In the case of scientific publications, the publication and all related scientific outputs (e.g. original scientific research results, raw data and metadata, software, including source code, source materials, software environment information and configuration settings, digital representations of pictorial and graphical materials and scholarly multimedia material), should be deposited, upon publication, in at least one online repository using suitable technical standards that is supported and maintained by an academic institution, scholarly society, government agency, or other well-established non-profit organization devoted to common good that

seeks to enable open access, unrestricted distribution, interoperability, and long-term archiving.

- Page 7, Paragraph 11(i) maintaining and promoting good practice and scientific rigour, as well as accelerated discovery by maximizing access to robustly described data, software, including source code, software environment information and configurations settings, and methods underpinning scientific conclusions;

- Page 7, Paragraph 11(ii) maximizing access to scientific knowledge and the reuse and combination of data and software, including source code, software environment information and configurations settings, and thereby maximizing the common good achieved through public investment in scientific resources and infrastructures; and...

Furthermore, we would like to express a few thoughts regarding the open science, the scope of Open Science transformation is large. Shifting paradigm is a huge undertaking for all parties involved. Especially, when active cooperation from all involved parties is required for a truly effective result. The true challenge is how policy makers, funding partners, and the scientific and academic communities can be engaged; and how a workable central data management system can be agreed and adopted. We observed at least three broad categories of actors whose engagement is required.

1.The National Policies

The first forces needed to support the initiative are political ones. National authorities who are responsible for the science, research, and innovation system will be the main actors in the implementation of the open science principle and the establishment of the rules and regulations. These actors range from governments, policy makers, funders, etc. Political forces also include the public opinions to a varying degree of countries. The public is undeniably still a strong driving forces for government policies in any cases. However, it can be expected that policy makers and the public will quickly accept Open Science on principle alone. If the implementation requires arduous preparation, it will be delayed. If the implementation requires surrendering of national technological advantages, it will be negotiated. A good start could be in certain areas of research that will undoubtedly provide mutual benefit to all involved parties without any significant losses. The cost and benefit of Open Science will need to be further explored and communicated clearly.

2. The Private Sector

According to the recommended action for Open Science, where data and patents resulting from the investment of the public fund should be made publicly available for public benefits. This cause of action run contradictory to business investments which in done for private benefits. Partially, public research fund is invested for research to support certain business or community enterprises, often in form of co-funding. Therefore, ownership of research results, patents or otherwise, is shared between a public funder and a self-interested entity. The percentage of shares in investment may vary according to factors, such as a size of business. This practice is done to boost competitiveness in the countries to support economic growth. Similarly, the business would wish to keep their competitive advantages by keeping exclusive utilization of the research results. A certain degree of ownership would be desired and negotiated, regardless of the percentage of public funding. This will create a dilemma, as a push toward Open Science will undermine the incentive of the private sector to cooperate with public funders. This may necessitate exemptions or multiple levels of “openness” in different form of the funding partnership.

3. The Researchers

Perhaps the actors’ cooperation is the most crucial part for Open Science as a function in the operation level. Researchers, academics, and other research institutes’ personnel will directly affect the task they need to perform and the way their hard work is rewarded. The researchers can be encouraged the Open Science via a revised reward system. The way research grants are given, the way researchers are evaluated, or the way credits are attributed for tangible success may need to be redesigned for a better system that will encourage more sharing of data between researchers or research institutes.

These above points are commendations and observations on the first draft of the UNESCO Recommendations on Open Science.

Reference

- Gene Kim, Jez Humble, Patrick Debois, and John Willis (2016). The Devops Handbook: How To Create World-Class Agility, Reliability, & Security in Technology Organizations. IT Revolution Press. [ISBN: 9781942788003]
- Gene Kim, Kevin Behr, and George Spafford (2013). The Phoenix Project: A novel about IT, DevOps, and Helping Your Business Win, IT Revolution Press. [ISBN: 9780988262591]