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GUIDELINES ON
OPEN SCIENCE (OS) IN PUBLIC FUNDED RESEARCH

Malaysia Open Science Platform (MOSP)

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These Guidelines were prepared as a deliverable for the Malaysia Open Science Alliance Working Group on Guidelines.

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FOREWORD

The Malaysia Open Science Alliance (MOSA) in collaboration with the Academy of Sciences Malaysia (ASM) has been tasked by the Government in drafting a Guidelines on Open Science in Public Funded Research. The mandate given was in line with the Open Science Initiative championed by MOSP. The proposal for the guidelines was drafted in collaboration and consultation with various stakeholders through a series of information and dialogue meetings. The views that emerged during these meetings were taken into account in the work on producing the proposal for guidelines

The guidelines will help to ensure **scholarly publications and research data** resulting from **publicly funded research** to be openly and publicly available. Information and Communication Technologies (ICTs) as an enabler, has however made it easier and doable. As such openness in obtaining, processing, publishing and disseminating research information has become easily achievable due to the spread of ICTs and ICT-enabled services.

In addition, there are some socio-economic benefits and diverse opportunities to be derived from Open Science. Perhaps the most important reasons are the broad economic benefits and growth, both public and private. Scholarly publications and research data made available and accessible through Open Science have been shown to be economic force enhancers and multipliers, creating value many times over and providing much greater returns on public research investments. The generative or pro-creative effects as a result of Open Science are key in this regard.

Undoubtedly, Open Science will have an effect on society's social welfare. Not only will it meet society's expectations on appropriate management of Open Science assets and resources, it will also provide diverse reputational gains apart from incorporating ethical principles for accessing and using scholarly publications and research data. In the public research it ca substantially reduce unproductive barriers to interdisciplinary, inter-institutional, and international research. Besides n enabling data mining for knowledge discovery in a growing sea of big data, Open Science is essential for the verification of research results and in generating broad trust in them. It avoids many inefficiencies, such as the unnecessary duplication of research and the identification of erroneous results. Open Science will promote more research and new types of research. It also permits the legal interoperability of data when multiple sources of data are combined for new knowledge.

Finally, Open Science will help to improve governance. Public data made openly available through the public institutional portals will support improved decision-making and transparency in government and society. For a developing economy like Malaysia, Open Science will help to build freedom in society, and trust in governance and its many functions.

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ABBREVIATION AND ACRONYMS

APCs	Article Processing Charges
API	Application Programming Interface
ARDC	Australian Research Data Commons
BPCs	Book Processing Charges
DMP	Data Management Plan
DOAJ	Directory of Open Access Journals
DOI	Digital Object Identifier
DVD	Digital Versatile Disc
EOSC	European Open Science Cloud
FAIR	Findable, Accessible, Interoperable and Reusable
FOSTER	Facilitate Open Science Training for European Research
ICT	Information and Communications Technology
ID	Identification/Identity
IHLs	Institute of Higher Learnings
IP	Intellectual Property
ISC	International Science Council
ISO	International Organization for Standardization
KPI	Key Performance Indicator
MOHE	Ministry of Higher Education
MOSP	Malaysia Open Science Platform
MOSTI	Ministry of Science, Technology, and Innovation
NCBI	National Centre for Biotechnology Information
NGO	Non-Government Organisation
NPSTI	National Policy on Science, Technology and Innovation
OECD	Organisation for Economic Co-operation and Development
ORCID	Open Researcher and Contributor ID
PLOS	Public Library of Science
PIs	Principal Investigators
PRI	Public Research Institutes
RAND	RAND Corporation
RDM	Research Data Management
RI	Research Institutes
RU	Research University
SSH	Social Science and Humanities
STEM	Science, Technology, Engineering and Mathematics
STI	Science, Technology and Innovation
UKM	Universiti Kebangsaan Malaysia
UM	Universiti Malaya
UPM	Universiti Putra Malaysia
US	United States
USM	Universiti Sains Malaysia
UTM	Universiti Teknologi Malaysia
VRE	Virtual Research Environment

GLOSSARY

Article Processing Charges (APCs): fees that some scholarly publishers charge authors of academic papers to publish their work in open access.

Book Processing Charges (BPCs): fees charged by a publisher to make a book open access.

Confidential: highly restricted information due to the law such as Data Protection, policy, agreement or duty of confidence arising from the nature of relationship between the parties. Inappropriate disclosure of the information would be likely to cause serious damage or distress to individuals and/or constitute unfair/unlawful processing of "sensitive personal data" under the Data Protection Act; and/or seriously damage the government and institution interests and reputation; and/or significantly threaten national security.

Copyrights: collection of legal rights that are attached to an original work when it is created. Copyright allows the copyright owner to control certain acts to do with their work (e.g. copying) and to prevent others from using the protected material without permission.

Data Curator: responsible for organising and integrating data collected from various sources. It involves publication, presentation, reuse and preservation of the data.

Data Custodian: Data owners are also data custodians who own the data storage facilities. A data custodian is an IT individual or organisation responsible for the IT infrastructure providing and protecting data in conformance with the policies and practices prescribed by data governance.

Data Governance: A cross-functional management programme that treats data as an organisational asset through the collection of policies, standards, processes, people and technologies to achieve a set of goals.

Data Management Plan (DMP): a living document that records how the research data arising from the research project will be handled during and after the project is completed, describing what data will be shared and/or made open, and how it will be curated and preserved.

Data Originators: Researchers who produce research data and who are credited for their work. Also known as data creator.

Data Owner: Institutions, which also are employers of researchers, or the research institutions receiving and administering the grants.

Digital Repository: an on-line archive for collecting, preserving and disseminating digital copies of the intellectual research outputs.

Data Sharing: Data can be shared at any time either publicly or privately among collaborators, while the proper documentation and code is open source to ensure that others can build on and benefit from.

Data Steward: Protects the integrity and quality of data, adherence or compliance to standards and protocols, governance and advocacy. The role of data stewards complements curators in the aspects of both metadata management activities and data governance.

Data User: Individuals who re-use data and have responsibilities to acknowledge the sources of their data by citation or giving appropriate credits to data originators.

Errata: a list of errors and their corrections inserted, usually on a separate page or slip of paper, in a book or other publication. This is also referred to as corrigenda.

Embargo: the period during which a publication can be ‘closed’ while deposited in the repository (i.e. the publication is not openly available).

FAIR Data Principles: refers to a set of principles to make data Findable, Accessible, Interoperable and Reusable for scientific management, data stewardship and Open Science framework.

Gold Open Access: makes the final published version of an article freely available and permanently accessible for everyone, immediately after publication.

Green Open Access: also known as “self-archiving”, it is “the practice of placing a version of an author’s manuscript into a repository, making it freely accessible for everyone.”[1] . The version (pre-print or post-print) that can be deposited into a repository is dependent on the funder or publisher.

Metadata: means "data about data". Metadata are the descriptors used for describing, tracing, use and management of the deposited item. Metadata describes characteristics such as content, quality, format, location and contact information.

Open Access: it’s freely availability on the public internet, permitting any users to read, download, copy, distribute, print, search or link to the full texts of these articles, crawl them for indexing, pass them as data to software or use them for any other lawful purpose without financial, legal or technical barriers other than those inseparable from gaining access to the internet itself.

Open Data: is defined in essence, as data that can be freely used, re-used and redistributed by anyone. Besides being commonly associated with Open Government Data, Open Data also refers to Open Business Data and Citizen Generated Data. The main criteria for Open data are complete, primary, timely, accessible, machine-processable, non-discriminatory, non-proprietary and license-free.

Open Peer Review: a scholarly review mechanism where both the identities of the reviewer and the author are known to one another during the review and publication process.

Pre-print: refers to the version of an academic paper which is submitted by an author for peer review.

Post-print: refers to the final version of an academic paper before publication, incorporating the revisions made as a result of the peer review process or as accepted for publication if no changes were made.

Research: defined as any creative and systematically performed work with the goal of furthering knowledge.

Research data: any information that has been collected, observed, generated or created to validate original research findings. Although usually digital, research data also includes non-digital formats.

Research Data Lifecycle: consists of data acquisition, processing, analysis, curation, sharing and re-use. The data life cycle is divided into two domains i.e. private (green-colour coded) and public (blue-colour coded).

Research Data Management (RDM): concerning the organisation of data, from its entry to the research cycle through to the dissemination and archiving of valuable results. It aims to ensure reliable verification of results, and permits new and innovative research built on existing information.

Restricted data: data that is restricted or prohibited from disclosure. Restricted data would include confidential data. In some circumstances, access to sensitive data can be restricted, depending on whether there is any express prohibition or policy discouraging its disclosure.

Sensitive data: data that can be used to identify an individual, species, object, process, or location that introduces a risk of discrimination, harm, or unwanted attention. Under law and the research ethics governance of most institutions, sensitive data cannot typically be shared in this form, with few exceptions.

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[1] https://www.springer.com/gp/authors-editors/authorandreviewertutorials/open-access/what-is-open-access/10286522