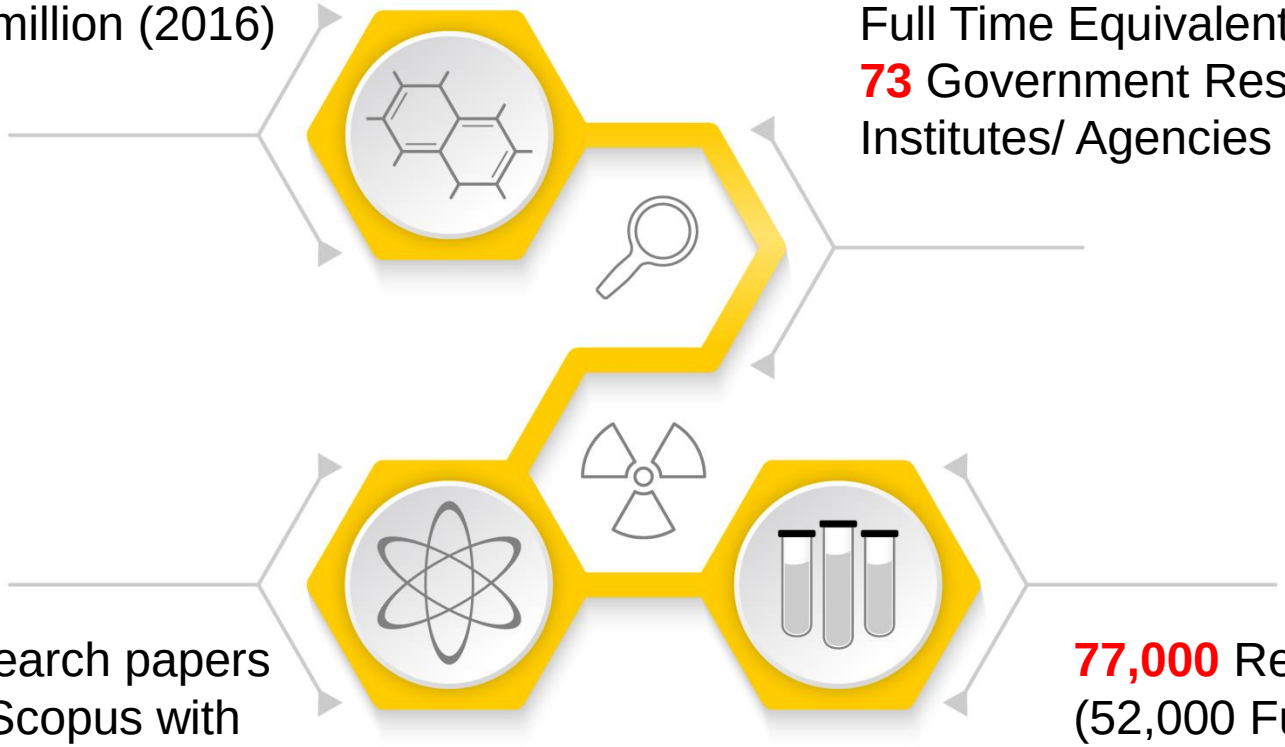
Malaysia Open Science Platform

Open science today for new science tomorrow

Malaysia Research Landscape

GERD (**1.44%**), RM17,685 million (2016)

12,000 Researchers (5,000 Full Time Equivalent) from **73** Government Research Institutes/ Agencies



230,000 research papers indexed by Scopus with more than 1.7 million citation and more than **100,000** domestic patent filed (2012-2018)

77,000 Researchers (52,000 Full Time Equivalent) from **64** public and private Institutions of Higher Learnings

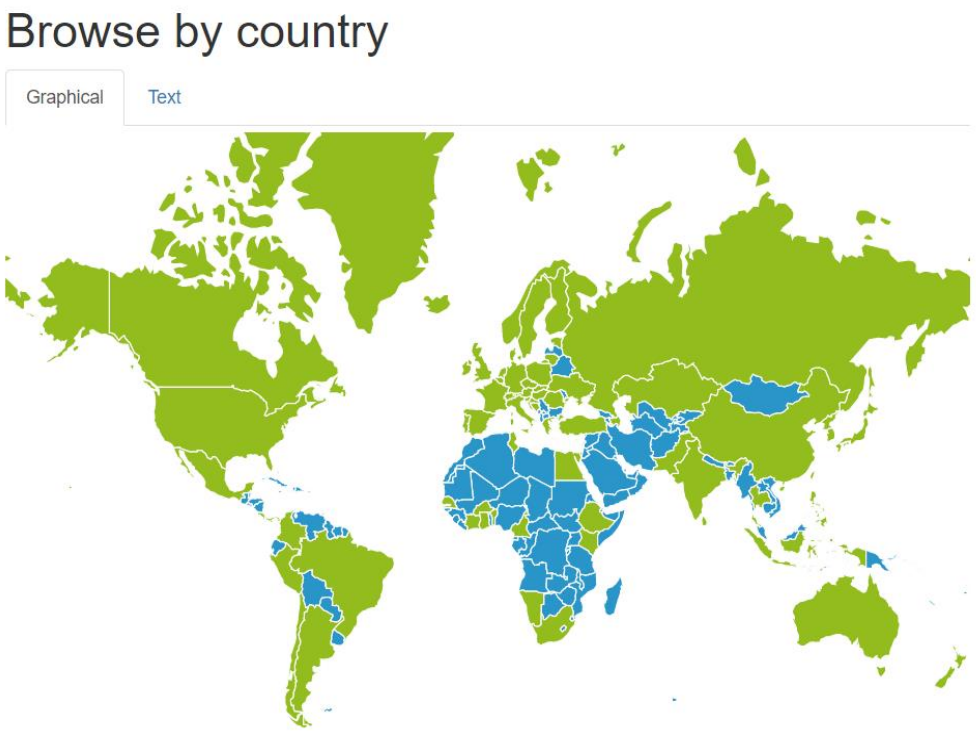
Source: MASTIC, 2019

Availability of data repositories - 2419

re3data.org
REGISTRY OF RESEARCH DATA REPOSITORIES
Search... Search

Registered research data repositories worldwide
(https://www.re3data.org/browse/by-country/)

- Indonesia (3)
- Phillipines (1)
- Singapore (4)
- Thailand (2)
- No data available for Malaysia



Malaysian Government Open Data Clusters

New Cluster: Research Data by MOSP

Source: Malaysian Administration Modernisation and Management Planning Unit (MAMPU), 2019

BENEFITS OF OPEN SCIENCE

- Reinforces open scientific inquiry
- Promotes research quality and integrity through reproducibility, transparency and accountability for verification and avoid fraud

- Publicly funded researchers are accountable to society
- Increases the return on public investments in scientific research
- Promotes equitable use of data and enables citizen science participation
- Business enterprises benefit in producing new products and services through open innovation
- Science-informed policy-making

- **Reduce data loss**
- Maximise data utility
- Minimise costs of unnecessary duplication of research
- Better planning in research management and funding

- Finding solution to local and global challenges through Big Data Analytics
- Fostering collaborations and research beyond disciplinary boundary
- Internationalise our local research

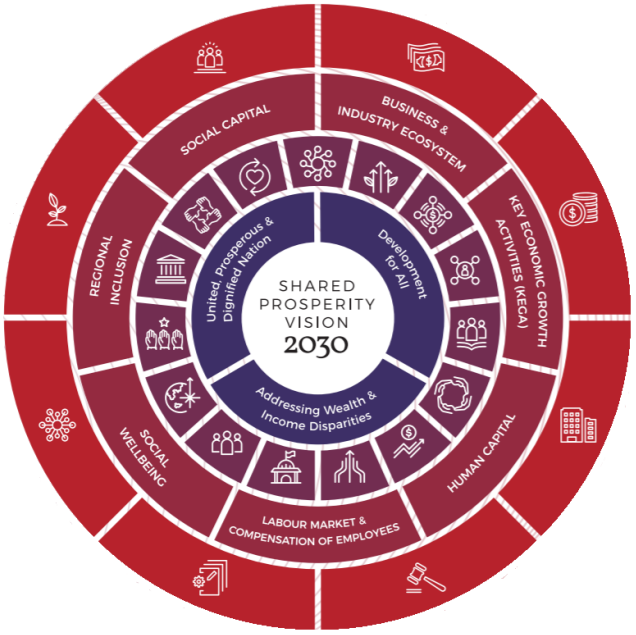
Memorandum Jemaah Menteri (Cabinet Paper)

The Cabinet has approved MJM for Malaysia Open Science Platform which was tabled by MOSTI on 14 August 2020.

Memorandum daripada Menteri Sains, Teknologi dan Inovasi

Pewujudan Malaysia Open Science Platform

Purpose of MOSP



MOSP is a strategic transformative initiative to strengthen Malaysia's STI Collaborative Ecosystem towards achieving Shared Prosperity Vision 2030 and addressing the United Nations Sustainable Development Goals

Malaysia Open Science Platform (MOSP)

Draft PPSTI Statement on Open Science

The Policy Statement on Science, Technology and Innovation Communication endorsed by the 2017 APEC PPSTI-10 in Viet Nam recognized the importance of open science and open access and the need to set clear policies that will help increase the returns from public and private investment, reinforcing cooperation and open scientific inquiry, as evidenced by the COVID-19 pandemic, and promoting research in new areas, which can have regional and global benefits.

Open Science represents an approach to the scientific process which is based on cooperative work and new ways of disseminating knowledge by using digital technologies and new collaborative tools. The idea captures a systemic change to the way science and research have been carried out for the last fifty years: complementing the standard practices of publishing research results in scientific publications by sharing and using all available knowledge at an earlier stage in the research process.

The recent response of the scientific community to the COVID-19 pandemic has demonstrated how Open Science can accelerate scientific solutions to a global challenge. The genetic sequence of the SARS-CoV-2 virus was posted in an open access repository and made freely available for all researchers. Several companies also made the designs for protective face shields open-source, allowing these shields to be freely 3D printed in cities and societies where they are needed the most.

Open Science does not require that all data are fully open and accessible. They should be available under well-defined conditions and that is why we support the FAIR guiding principles, rendering data Findable, Accessible, Interoperable and Reusable. Our emphasis also includes the collective benefits, authority to control, responsibility and ethics, including principles such as the CARE Principles for Indigenous Data Governance. These principles will cultivate a culture of openness and transparency, whilst at the same time ensuring ethics and integrity are maintained.

Pursuant to this, we recognise that Open Science has a vital role in fostering sustainable and inclusive economic growth and development, bringing with it the full benefit of innovation. This can only be realized by increasing the commitment of the public and private sector to a robust Open Science ecosystem which will underpin the aspirations of society for a more equitable sharing of scientific information.

21 Aug 2020, Kuala Lumpur

OPEN SCIENCE IS HERE TO STAY

(Excerpt from the Joint Statement Endorsed by APEC Community)

1. **Pursuant to this, we recognise that Open Science has a vital role in fostering sustainable and inclusive economic growth and development, bringing with it the full benefit of innovation. This can only be realized by increasing the commitment of the public and private sector to a robust Open Science ecosystem which will underpin the aspirations of society for a more equitable sharing of scientific information.**

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UNESCO RECOMMENDATION ON OPEN SCIENCE

- Adopted by the General Conference of the United Nations Educational, Scientific and Cultural Organization (UNESCO), meeting in Paris, from 9 to 24 November 2021, at its 41st session

"Committed to leaving no one behind with regard to access to science and benefits from scientific progress by ensuring that the scientific knowledge, data, methods and processes needed to respond to present and future global health and other crises are openly available for all countries, in accordance with the rights and obligations, including the exceptions and flexibilities, under applicable international agreements"

Background of Open Science Initiative in Malaysia

Malaysia Research Management and Governance (MRMG)

Phase I 2015 – 2016 & Phase II 2016- 2018: Project **fully funded by Newton-Ungku Omar Fund (NUOF) for Professional Development and Engagement (British Council – MIGHT)**

BPKI (MOHE) = project owner, UM = project implementor

Programs:

a. Professional Research Management
b. Research data repository
c. Research Impact
d. Full Economic Costing

2016: ASM Participation in APEC meeting

2016 to present: Series of discussions and meetings with local and international stakeholders regarding Open Science initiative in Malaysia

Nov 2019: Launching of MOSP, Establishment of Malaysia Open Science Alliance

2020-2021: Implementation of 2-year MOSP pilot project

2021-2025: Expansion to national repositories

2025 – 2030: Integration with regional and international platforms

One of the outcome from MRMG: Research Data Repository – MRUN to initiate – leading to adopting Open Data Repository – presented at BPKP (27/5/2017), JKTNC (P&I) om 28/3/2018 and TKP (JPT) on 26/4/2019.. Landing this initiative to the MOSP program.

Engagement with International Agencies working on Open Science

Open Science Forum for Asia and The Pacific, 13 Feb 2020

MOSP has been in consultation with other open science initiatives globally such as Australia's ANDS, OECD, ISC-CODATA, and Japan's RCOS to learn best practices of Open Science and to get their support to materialise MOSP.

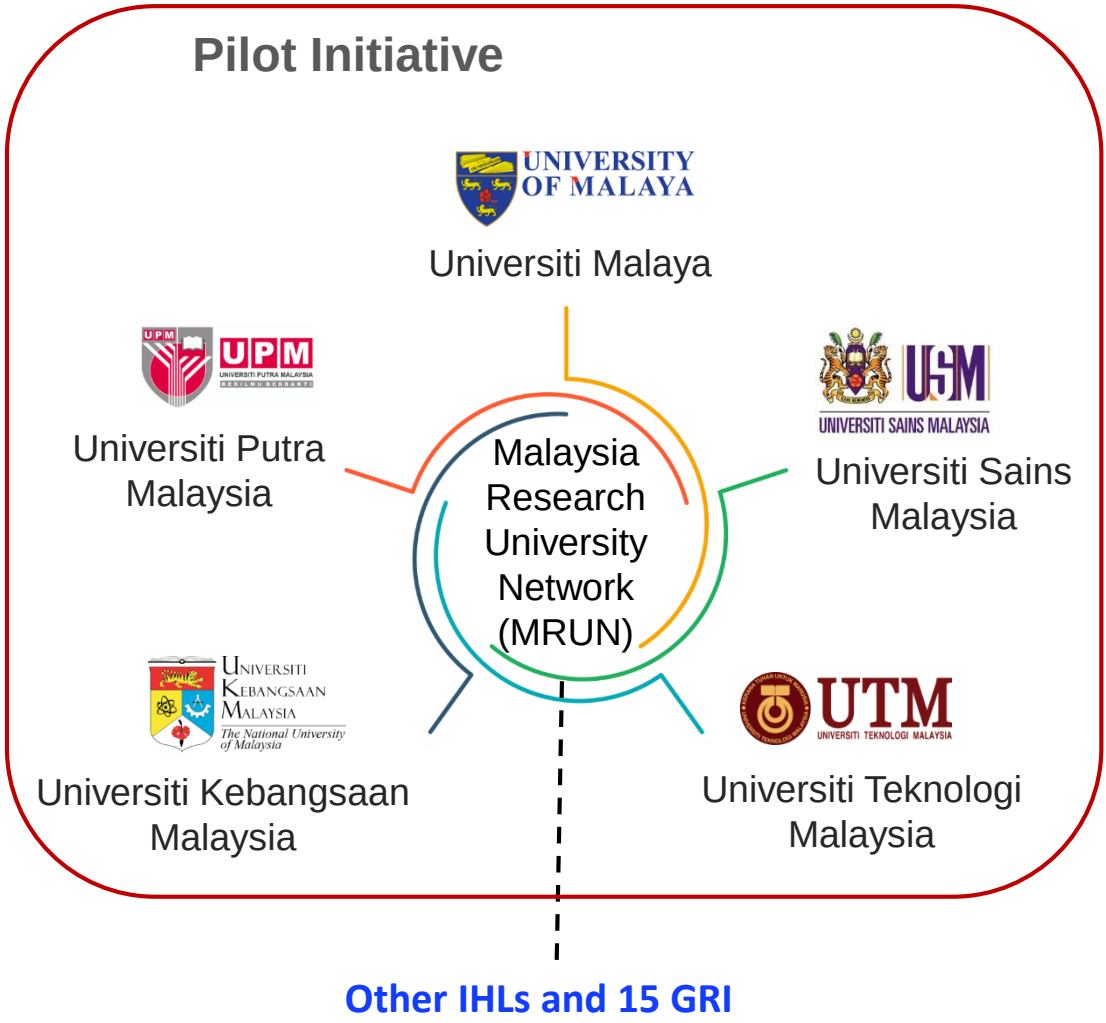
Dialogue on Open Science, 14 Feb 2020

MOSP is also a member of international open science networks such as the

- **Global Open Science Cloud (GOSC), CODATA**
- **UNESCO Open Science Advisory Committee**

National Alliance on Open Science (To Oversee the MOSP initiatives)

1. Ministry of Science, Technology and Innovation (MOSTI)
2. Malaysian Administrative Modernisation and Management Planning Unit (MAMPU)
3. Ministry of Energy, Science, Technology, Environment and Climate Change – Malaysia Science and Technology Information Center (MASTIC)
4. Ministry of Higher Education (MOHE)
5. Malaysia Research University Network (MRUN)
6. Malaysian Research & Education Network (MYREN)
7. Academy of Sciences Malaysia (ASM)
8. University of Malaya (UM)
9. International Science Council Regional Office for Asia and the Pacific (ISC ROAP)
10. Ministry of Energy and Natural Resources (KeTSA)
11. Ministry of Health (NIH)



About MOSP

1. Launched on 7 November 2019 (then MESTECC)
2. A 2-year pilot project (2020 to 2023), linking all 5 Research Universities and Research Institutes under MOSTI
3. The pilot project is to begin initially with 3 main areas:

GOAL of MOSP

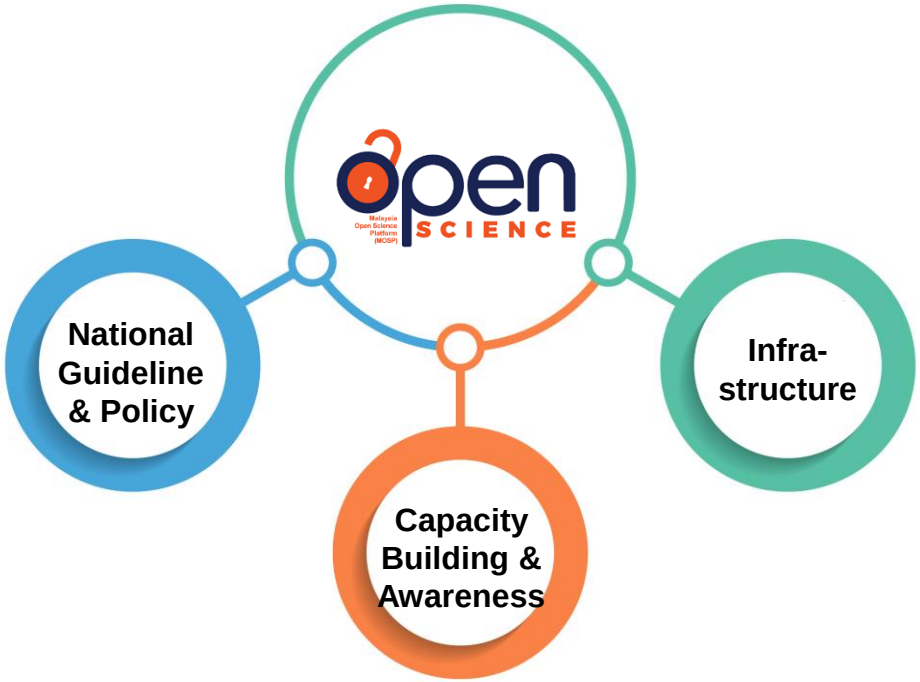
To developing a trusted platform that enables Malaysia's research data which are valuable national asset to be accessible and the sharing of research data be aligned to national priorities and international best practices.

About MOSP

TARGETS:

1. To carry out a landscape study on Open Science in Malaysia (by 2020)
2. To develop one National Guidelines on Open Science (by 2021)
3. To train 200 data stewards (by July 2022)
4. To reach 500,000 people and raise awareness about Open Science
5. To develop and execute one Platform for raw research data sharing (by 2022)

Focus Areas



Subscribing to the FAIR Principle of Open Science

Draft Guidelines for Malaysian Open Science

Difference between

Open data

Open data should be available to everyone to access, use and share without any implications and restrictions on patents, copyrights and licenses.

Fair Data

Data can be shared and available to everyone to access, use and share with certain condition – depending on the types of data.

As open as possible, as closed as necessary

The FAIR principles

	F Findable	A Accessible	I Interoperable	R Reusable
Definition	Data and metadata are easily to find by both humans and computers. [machine-readable persistent identifiers and metadata]	Data can be retrieved using the outlined protocols	Data can work seamlessly across storage and computing system, and can be used with other tools	Data is well-defined and can be used for different purposes and in different settings
Issues	Via data registry and discovery service. Relatively easiet to achieve.	Governed by the organsiation data policy and regulations	The hardest aspect among the four	Data stewardship and data curation platform are the keys to sucess

Malaysia Open Science Platform Focus Areas

National Guideline

1. Governance - General ruling (what kind of data shared and how to harmonise different terminologies/definition)
2. Standards of Findability, Accessibility, Interoperability, and Reusability (FAIR Data Principles)
3. Incentives for openness (e.g. part of career promotion)

National Policy

1. Example: all publicly-funded research are required to make the data available in institutional repository, link and curate research information in MOSP
2. Confidential and restricted data for national security and risk of misinterpretation reasons (e.g. Satellite data)
3. Fee/charges
4. non-sensitive data open by default

Awareness and Capacity Building

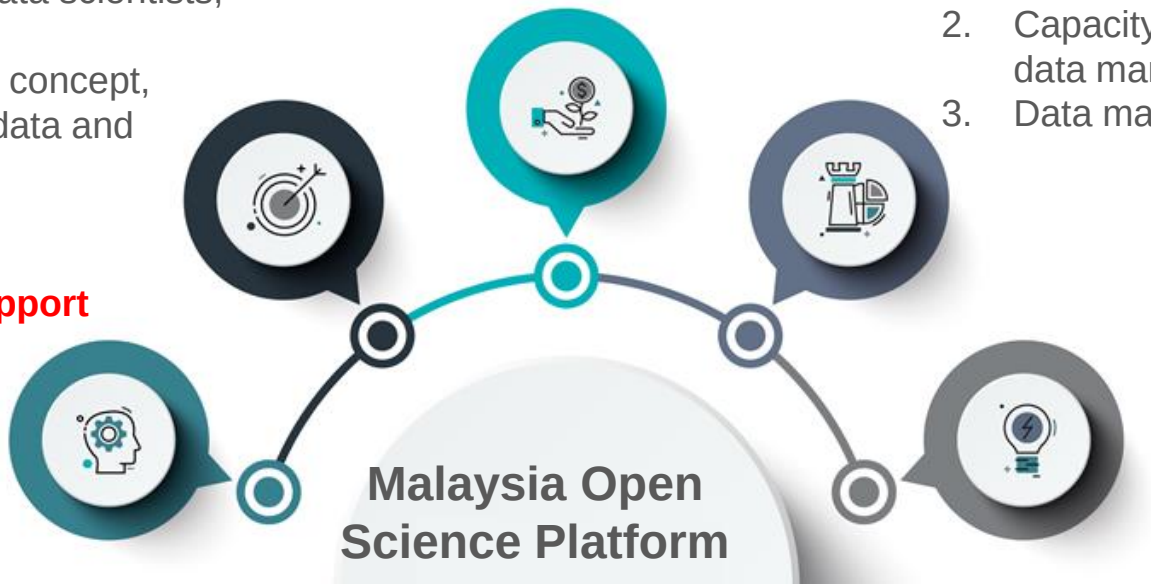
1. User, manager, data scientists, etc
2. Awareness - new concept, sensitivity about data and mindset

Management

1. Data Management Plan
2. Capacity and capability of data management
3. Data managers/ stewards

Infrastructure in support of open science

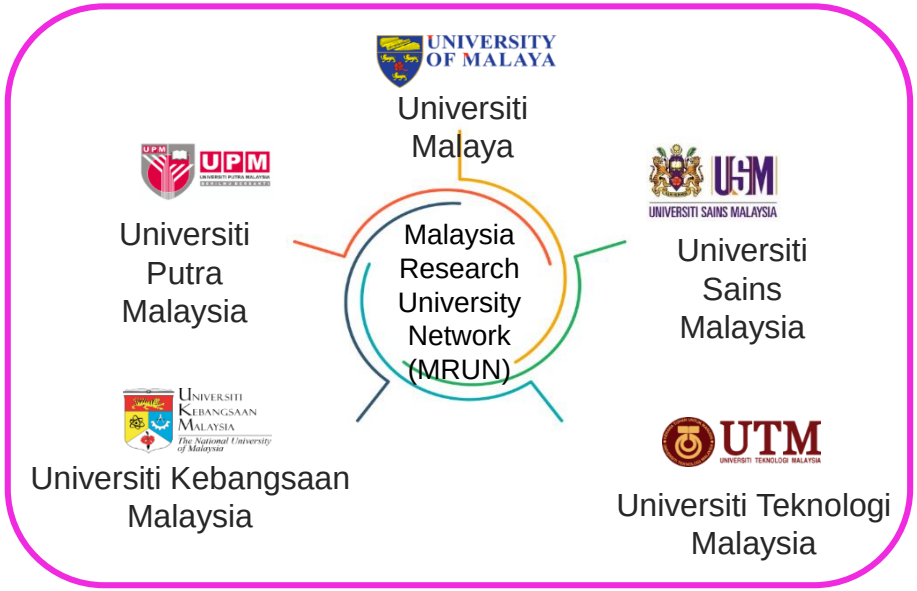
1. Technology
2. Platform



Malaysia Open Science Platform Focus Areas

TARGETS:

1. Landscape study on Open Science in Malaysia has been produced.
2. National Guidelines produced, currently in embargo period. To be launched with the platform
3. Incorporating some points into the National Policy on Data Sharing
4. 240 data stewards have been trained
5. More than 2 million people reached through programmes
6. Platform is currently being developed and integration with research universities under the pilot project is being conducted, MOSP is also connecting to government agencies through 2 data sharing platforms



RECOMMENDATIONS FROM THE LANDSCAPE STUDY

1. **Open Science in the National Policy**
   - 1.1 Open Science has to be incorporated into the National Policy for Science, Technology and Innovation.
   - 1.2 Guidelines on Open Science for Research Performing Organisations (RPOs) and Research Funding Organisations (RFOs) has to documented.

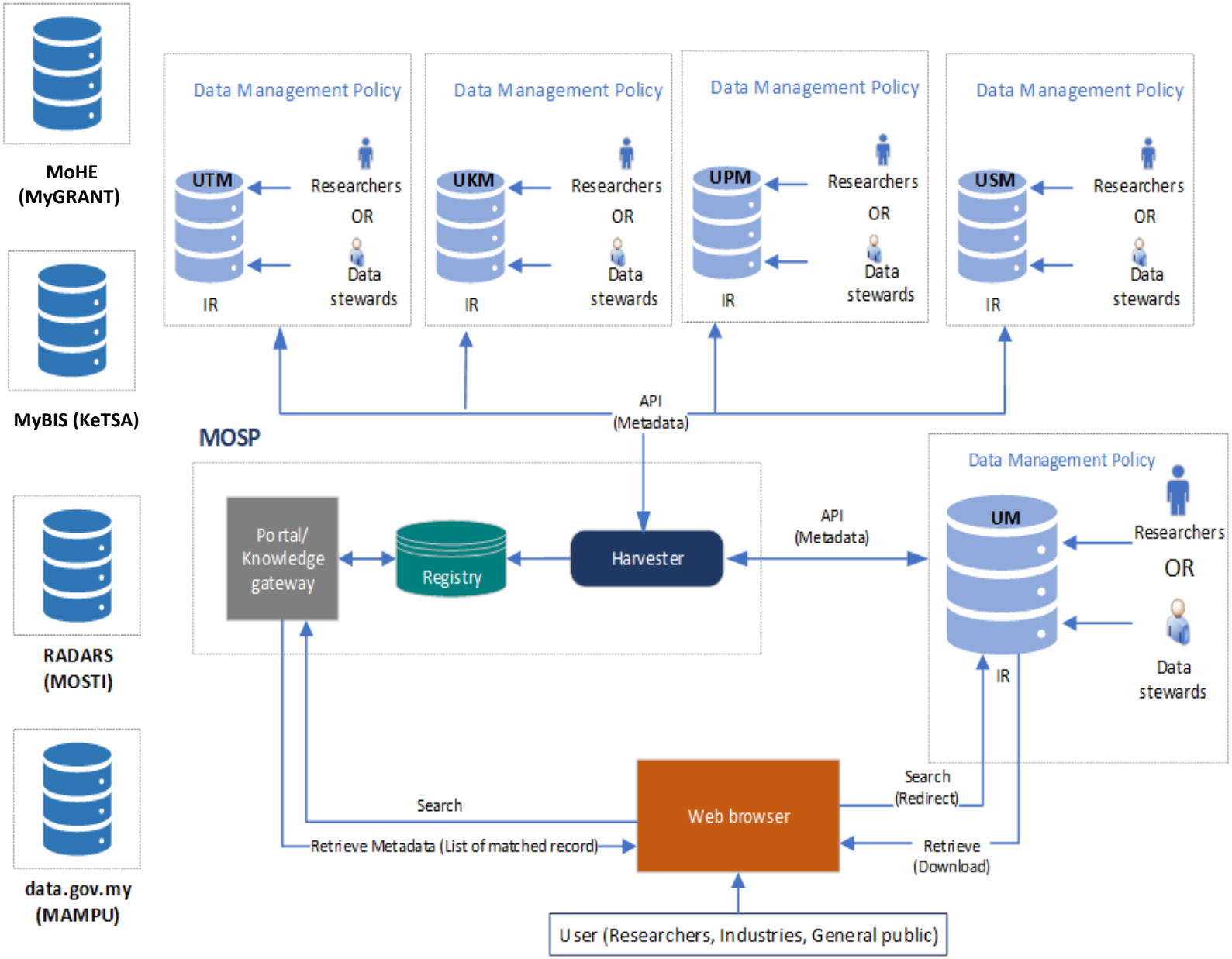
2. **Indicators for Open Science Readiness**
   - 2.1 To benchmark country's state of readiness globally, for example of open science readiness indicators is developed by RAND Europe and partners in 2017.

3. **Strong Funding to support Malaysia Open Science Platform**
   - 3.1 Reasons: The high cost to purchase equipment and tools for MOSP and the cost to maintain or sustain it.
   - 3.2 The initial seed funding should be provided for by the government
   - 3.3 The maintenance and sustainability of the MOSP will depend highly on the business model that will be developed and adopted.

4. **Competent Human Capital and Top Management**
   - 4.1 Data curators, data stewards, researchers and research fellows as well as an Advisory Board of which members to include industry players, policy makers, international experts, academics and representatives from related government agencies and NGOs.

5. **Right Positioning in the Government Institutional Framework**
   - 5.1 Must reflect its importance and authority to be able to give cross ministry directives in order to effectively manage different aspects of Malaysia Open Science.

MOSP Architecture (Pilot Project)



ISSUES & CHALLENGES

1. Researcher's "buy-in"
2. Institutional support
3. Trained and skilled personnels
4. Awareness and understanding
5. Central "ownership"
6. **MAJOR CHALLENGE: SUSTAINABILITY**


"The best collaborations create something bigger than the sum of what each person can create on their own."
Thank You
KEMENTERIAN SAINS, TEKNOLOGI DAN INOVASI
MINISTRY OF SCIENCE, TECHNOLOGY AND INNOVATION
AKADEMI SAINS MALAYSIA
Malaysia Open Science Platform (MOSP)
Malaysia Open Science Platform

Thank you