



**NANYANG
TECHNOLOGICAL
UNIVERSITY**
SINGAPORE

The institutional journey to foster research integrity through research data management and open science: Are we there yet?

Ms GOH Su Nee,
Office of Information Knowledge & Library Services

Dr Andy LIEW,
Research Integrity and Ethics Office

Dr Willie KOH,
Research Integrity and Ethics Office

5 June 2024

Oral Presentation for 8th World
Conference on Research Integrity



Outline

- Journey so far
- Self-assessment
- Are we there yet?





Research
Integrity and
Ethics Office

Library

Research
Support
Office

THE NTU JOURNEY SO FAR

Research Integrity



2010: Singapore Statement for Research Integrity



2017: Setting Up of Research Integrity & Ethics Office



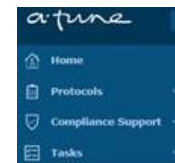
2018: NTU Research Integrity Grant Call



2018: Epigeum RI courses



2018: RI Conference



2021: New IRB management system

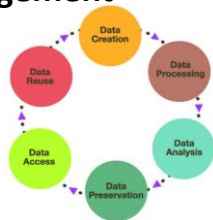


2023: RI Conference

Research Data Management



2016



2017: NTU Data Management Plan Template in RISE



2017



2021

2021 NTU Data Governance Policy



2022



2024

Open Science



CHECKLISTS



22 items


RISE (Research Infrastructure Self Evaluation Framework) 2017



9 items


Australian Research Data Commons

Research Data Management Framework for Institutions



14 items

Open Science Policy Checklist for Research Performing Organisations



~70 items under 8 headers

Checklist for Universities on Implementing the UNESCO Recommendation on Open Science

| | | | | |
|--|---|---|---|-------------------------|
| POLICY DEVELOPMENT | SECURITY, LEGAL AND ETHICAL RISK ASSESSMENT | SECURITY, LEGAL AND ETHICAL RISK ASSESSMENT | | |
| RDM IMPLEMENTATION ROADMAP | METADATA COLLECTION TO INFORM DECISION-MAKING | METADATA COLLECTION TO INFORM DECISION-MAKING | | |
| STAFF INVESTMENT | PRESERVATION PLANNING AND ACTION | PRESERVATION PLANNING AND ACTION | | |
| COST MODELLING | PRESERVATION CONTINUITY SUPPORT | PRESERVATION CONTINUITY SUPPORT | | |
| AWARENESS RAISING AND STAKEHOLDER ENGAGEMENT | MONITORING LOCALLY PRODUCED DATASETS | MONITORING LOCALLY PRODUCED DATASETS | | |
| POLICY | DATA PUBLISHING MANDATE | DATA PUBLISHING MANDATE | | |
| RDM PLANNING | LEVEL OF DATA CURATION | LEVEL OF DATA CURATION | | |
| CULTURE CHANGE | METADATA CATALOGUING SCOPE | METADATA CATALOGUING SCOPE | | |
| | ACTIVE RDM | | | |
| | RESEARCH DATA RETENTION & DISPOSAL | SENSITIVE RESEARCH DATA | | |
| | OPEN RESEARCH & DATA PUBLICATION | SUPPORT, TRAINING & GUIDANCE | | |
| | | RESEARCH DATA APPRAISAL | | |
| POLICY | OPEN SCIENCE ACTIVITIES | PUBLICATIONS & SHARING | | MONITORING & COMPLIANCE |
| ROLES & RESPONSIBILITIES | REWARDS & INCENTIVES | OPEN DATA | | REVISION & UPDATES |
| FUNDING | DISSEMINATION/AWARENESS RAISING | INFRASTRUCTURE | | |
| MACHINE-READABILITY OF POLICY | | EDUCATIONAL PROGRAMMES ON DATA-INTENSIVE RESEARCH | | |
| | | TRAINING | | |
| ENABLING POLICY ENVIRONMENT | OPEN SCIENCE PROMOTION | OPEN SCIENCE INFRASTRUCTURES & SERVICES | INNOVATIVE APPROACHES FOR OPEN SCIENCE | MONITORING |
| | ALIGN INCENTIVES FOR OPEN SCIENCE | INVESTING IN HUMAN RESOURCES, TRAINING, EDUCATION | INTERNATIONAL & MULTI-STAKEHOLDER COOPERATION | |

METHODOLOGY

**POLICIES,
STRATEGIES &
INVESTMENT**

**COMMUNICATION,
CULTURE &
RECOGNITION**

**INFRASTRUCTURE,
SERVICES,
CAPACITY
BUILDING**

**MONITORING &
COMPLIANCE**

Items were mapped
to 4 broad categories.

CHECKLISTS




RISE (Research Infrastructure Self Evaluation Framework) 2017



Australian Research Data Commons

Research Data Management Framework for Institutions



Open Science Policy Checklist for Research Performing Organisations



Checklist for Universities on Implementing the UNESCO Recommendation on Open Science

| POLICIES, STRATEGIES & INVESTMENT | COMMUNICATION, CULTURE & RECOGNITION | INFRASTRUCTURE, SERVICES, CAPACITY BUILDING | MONITORING & COMPLIANCE |
|--|--|--|--|
| <ul style="list-style-type: none"> POLICY DEVELOPMENT RDM IMPLEMENTATION ROADMAP STAFF INVESTMENT COST MODELLING | <ul style="list-style-type: none"> AWARENESS RAISING AND STAKEHOLDER ENGAGEMENT | <ul style="list-style-type: none"> SECURITY, LEGAL AND ETHICAL RISK ASSESSMENT METADATA COLLECTION TO INFORM DECISION-MAKING PRESERVATION PLANNING AND ACTION PRESERVATION CONTINUITY SUPPORT MONITORING LOCALLY PRODUCED DATASETS DATA PUBLISHING MANDATE LEVEL OF DATA CURATION METADATA CATALOGUING SCOPE | <ul style="list-style-type: none"> SECURITY, LEGAL AND ETHICAL RISK ASSESSMENT METADATA COLLECTION TO INFORM DECISION-MAKING PRESERVATION PLANNING AND ACTION PRESERVATION CONTINUITY SUPPORT MONITORING LOCALLY PRODUCED DATASETS DATA PUBLISHING MANDATE LEVEL OF DATA CURATION METADATA CATALOGUING SCOPE |
| <ul style="list-style-type: none"> POLICY RDM PLANNING | <ul style="list-style-type: none"> CULTURE CHANGE | <ul style="list-style-type: none"> ACTIVE RDM RESEARCH DATA RETENTION & DISPOSAL OPEN RESEARCH & DATA PUBLICATION | <ul style="list-style-type: none"> SENSITIVE RESEARCH DATA SUPPORT, TRAINING & GUIDANCE RESEARCH DATA APPRAISAL |
| <ul style="list-style-type: none"> POLICY ROLES & RESPONSIBILITIES FUNDING MACHINE-READABILITY OF POLICY | <ul style="list-style-type: none"> OPEN SCIENCE ACTIVITIES REWARDS & INCENTIVES DISSEMINATION/AWARENESS RAISING | <ul style="list-style-type: none"> PUBLICATIONS & SHARING OPEN DATA INFRASTRUCTURE EDUCATIONAL PROGRAMMES ON DATA-INTENSIVE RESEARCH TRAINING | <ul style="list-style-type: none"> MONITORING & COMPLIANCE REVISION & UPDATES |
| <ul style="list-style-type: none"> ENABLING POLICY ENVIRONMENT | <ul style="list-style-type: none"> OPEN SCIENCE PROMOTION ALIGN INCENTIVES FOR OPEN SCIENCE | <ul style="list-style-type: none"> OPEN SCIENCE INFRASTRUCTURE & SERVICES INVESTING IN HUMAN RESOURCES, TRAINING, EDUCATION | <ul style="list-style-type: none"> MONITORING INNOVATIVE APPROACHES FOR OPEN SCIENCE INTERNATIONAL & MULTI-STAKEHOLDER COOPERATION |

METHODOLOGY

1. Each author rated level of institutional readiness for each checklist item:

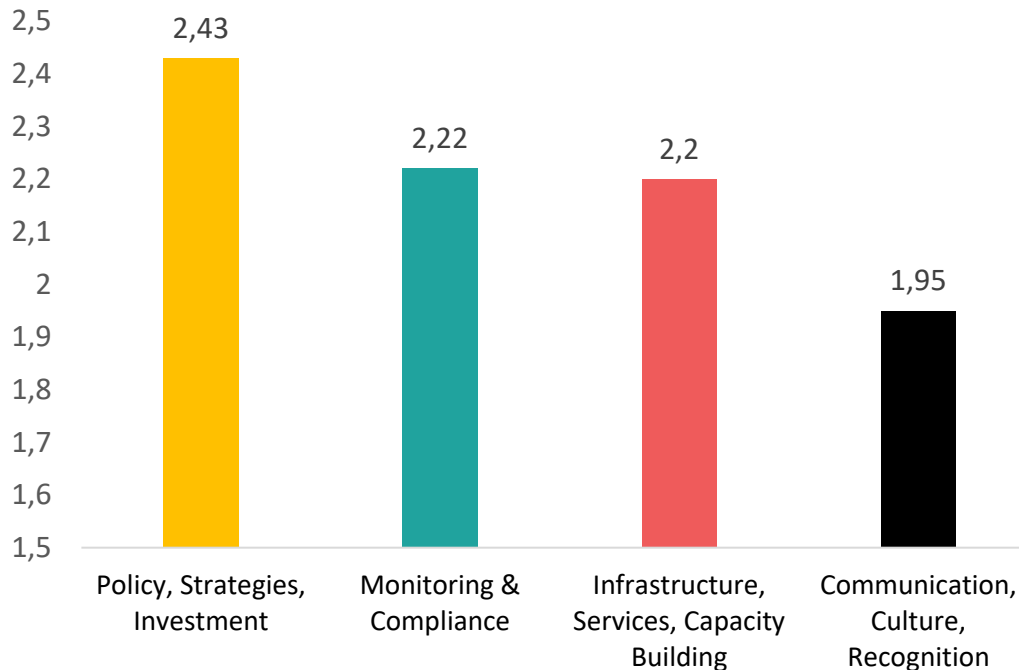
- 'A' for High
- 'B' for Medium
- 'C' for Low

2. Scores 'A's, 'B's and 'C's were summed up for each category. A=3, B=2, C=1.

3. Equal weightage.

| RISE Framework uses 'Level 1', 'Level 2' and 'Level 3' where 'Level 1' is the lowest and 'Level 3' is the highest. In this WCRI presentation preparation, 'Level 1' will be mapped to 'C', 'Level 2' to 'B' and 'Level 3' to 'A'. | | | Individual Rating | | |
|---|--|--|-------------------|---|---|
| Level 3 | Level 2 | Level 1 | | | |
| A | B | C | | | |
| Institutional policies with a bearing on RDM (e.g. FOI, ethics, research conduct, etc.) are joined up | Institutional policy articulates the value of good RDM practice to the institution and its rationale for | Institutional policy articulates roles & responsibilities for researchers, other staff and students to | B | B | A |
| Policies are promoted by the institution through channels designed to | Guidance on how to apply all relevant policies to the institutional context | Research data policies are promoted to all relevant staff, | C | C | B |
| Roadmap/strategy seeks to derive competitive | Roadmap is informed by the institution's strategies and its | RDM roadmap is compliance focused and defined by | B | B | B |

Self-Assessment Score by Authors on NTU's Research Data Management and Open Science Journey (Max = 3)



Overall institutional score = **2.2**

Are We
THERE
Yet?



Strengths in “Policy, Strategies and Investment”.



Not quite there yet, as there is room for improvement in communication, culture and recognition.

Potential

- Broaden representation of stakeholders in self-assessment
- Methodology could be applied by other institutions to allow comparison across other institutions.



Photo credit: <https://www.visitsingapore.com/>

THANK YOU

Email: sunee@ntu.edu.sg