



UWI Cave Hill

Research Data Handling (RDH) Implementation Roadmap (version 1.0, 17-Dec-2020)

Document Status

This is a living document written by the Research Data Handling (RDH) Committee and approved by the Office of the Deputy Principal

The implementation of this roadmap is the responsibility of the RDH Committee, led by Ian Hambleton, Professor of Biostatistics and Informatics. This group contains representatives from each Cave Hill Faculty, and from:

- CITS,
- Library,
- INPLAIS
- Office of the Deputy Principal, and
- Office of Graduate Studies and Research

RDH Development

This roadmap sets out a high level plan for delivery of RDH services highlighted in the accompanying RDH Policy. Objectives, outcomes, deliverables and target dates are set across **SIX** strategic areas, following the life of data through a research project:

1. Planning and Designing project data handling,
2. Collecting and capturing data,
3. Processing and Analysing data,
4. Storing and Preserving data
5. Sharing, Publishing and and Discovering data
6. Training and Support

Roadmap version 1 covers the period from September 2020 (when the RDH project began) to August 2022. These 24-months cover the first two project phases:

Phase 0 (September 2020 – August 2021): largely a planning phase, with some pilot activity and early deliverables.

Phase 1 (September 2021 - August 2022): Initial rollout of primary services.

Further phases are expected as services mature and new facilities are added.

Ongoing activities such as awareness raising and training are already underway and will continue as a rolling programme available to both new and existing staff.

1. PLAN AND DESIGN

Support and services for planning activities that are typically performed before research data is collected or created.

- facilitate the creation of project Data Management Plans
- facilitate linkage with UWI Cave Hill ethics approval process
- Guidance documents related to Planning and Support
- Training materials related to Planning and Support

Addresses RDH Policy section A, B, C, D, K

OBJECTIVE	ACTIONS	DELIVERABLE	TARGET PHASE
1.1 Assess DMP Online for use at UWI Cave Hill for DMP development	<ul style="list-style-type: none">- Explore and test system- Contact DCC for institutional access options	Decision on use of DMP Online as UWI Cave Hill standard for Data Management Plan creation	Phase 0
1.2 Customize DMP Online for UWI Cave Hill use	<ul style="list-style-type: none">- Creation of bespoke UWI template- Adopt key funder templates	Minimal Data Management Plan template for use by Cave Hill researchers	Phase 0
1.3 Tailored DMP assistance for PIs submitting research proposals	<ul style="list-style-type: none">- Create example UWI templates- Offer bespoke support linked to IRB applications	Develop process for assisting with DMP development for researchers applying for external funding	Phase 1
1.4 Embedding RDH questions and guidance within local ethics approval processes	<ul style="list-style-type: none">- Sub-project with Cave Hill Institutional Review Board	IRB application form including questions regarding DMP development	Phase 1
1.5 Develop Guidance Documents	<ul style="list-style-type: none">- Begin creation based on web-book for online accessibility.	Guidance documents on: (a) Data management plans (b) Compliance with data regulations (c) FAIR principles (d) Costing RDH (e) RDH in arts, humanities, social sciences (f) RDH checklist (g) Roles and responsibilities	Phase 0/1
1.6 Develop Training Module	<ul style="list-style-type: none">- Based broadly on the guidance documents.- Module for offer as short course or longer course linked with other modules	Training module for online or face-to-face delivery	Phase 1

2.COLLECT AND CAPTURE

The facilities to collect and store active data (data that is actively being used in current research activities), and to provide access to that storage through a number of channels.

- facilitate the collection of research data
- facilitate the storage of active research data (data that is actively being used in current research activities)

Addresses RDH Policy section A, E, H, K

OBJECTIVE	ACTION	DELIVERABLE	TARGET PHASE
2.1 Complete technical assessment of REDCap prior to REDCap campus rollout	- Led by CITS - Assessment of security infrastructure primarily	- REDCap receives CITS approval for rollout	Phase 0
2.2 Formal approval of REDCap as UWI Cave Hill software for research data collection and active data storage	-Through Office of Deputy Principal / CITS	- REDCap adopted as UWI Cave Hill standard for collection of quantitative research data	Phase 1
2.3 Explore need for additional integration of REDCap with Cave Hill Research Computing Infrastructure	- Tackle this once REDCap adopted and operational - Discussion / process led by CITS	- Decision on need for further integration	Phase 2
2.4 REDCap campus rollout (Faculty by Faculty)	- Staged rollout across campus - Rollout includes brief presentation on REDCap features - Rollout should include website + links to further resources	- All Faculties and Centres aware of REDCap as a campus resource	Phase 0/1
2.5 Investigate SharePoint as an additional service for cross-platform storage of active data	- Key aspects of exploration: - Security protocols - Collaboration options	- UWI Cave Hill operates Sharepoint. - Therefore sensible that it becomes part of the RDH framework - So this exploration will decide on the flavour of RDH usgae	Phase 0/1
2.6 Investigate options for maintaining data-security chain during storage of active data	- Key exploration for inclusion as guideline	- guideline (See below) on maintaining data security chain. - and See 4.2	Phase 0
2.7 Investigate mechanisms for data access supporting mobile devices	- Future feature. - Can document mobile options given current infrastructure	- guideline (See below) on data infrastructure for mobile devices	Phase 1 / 2
2.8 Investigate mechanisms for active data backups	- Documentation of backup facilities within the current infrastructure - Guideline on active data backup (See 2.12)	- Guideline (See 4.2) on backup facilities and procedures for active research data	Phase 0 / 1
2.9 Investigate options for an institutional Electronic Lab notebook (ELN) service	- Sub-project with key laboratory researchers (probably representatives from FMS / FST)	- Guidelines created for laboratory data (See 2.12) - Advisory on way forward for laboratory RDH on campus	Phase 1/2
2.10 Investigate specific active data needs for qualitative reseach data	- Sub-project with Key qualitative researchers with wide Faculty representation	- Guidelines created for main types of qualitative data (See 2.12) - Advisory on way forward for qualitative RDH on campus	Phase 0 / 1
2.11 Invetigate options for a bespoke secure data service	- Future feature. - Can document options available within current infrastructure	- guideline (See 4.2) on data security options within current infrastructure	Phase 1/2
2.12 Develop Guidance Documents	- Begin creation based on web-book for online accessibility.	Guidance documents on: (a) Active data storage and backup (b) Documenting research data (using metadata) (c) File management and formats (d) UWI Cave Hill RDH using mobile devices (e) Guidelines for RDH - qualitative data (f) Guidelines for RDH - laboratory data	Phase 0 / 1
2.13 Develop Training Module	- Based broadly on the guidance documents. - Module for offer as short course or longer course linked with other modules	Training module for online or face-to-face delivery	Phase 1

3.PROCESS AND ANALYSE

Facilities to prepare data for analysis, and for analysing and interpreting the data resources.

- facilitate access to tools to assist with data preparation
- facilitate access to tools to assist with analysis and interpretation of research data

Addresses RDH Policy section A, K

OBJECTIVE	ACTION	DELIVERABLE	TARGET PHASE
3.1 Investigate the need for Institutional source code control system	-Explore in particular an Institutional repository eg. using GitHub. Optional usage.	- guideline on source code repository options and usage (See 3.4 below)	Phase 1 / 2
3.2 Investigate options for proving Institutional solutions for the analysis of <u>quantitative</u> research data	- Explore software currently available - Explore options for alternatives - Possible focus on R (open-access / free)	- guideline on software for quantitative data (See 3.4 below)	Phase 1
3.3 Investigate options for proving Institutional solutions for the analysis of <u>qualitative</u> research data	- Explore software currently available - Explore options for alternatives - Any open-access / free ?	- guideline on software for qualitative data (See 3.4 below)	Phase 1 / 2
3.4 Develop Guidance Documents	- Begin creation based on web-book for online accessibility.	Guidance documents on: (a) Preparing quantitative research data for analysis: common pitfalls (b) De-identifying confidential data for analysis (c) Analysis software options for quantitative data (d) Analysis software options for qualitative data (e) Software for source code storage (Eg. GitHub)	Phase 1/2
3.5 Develop Training Module	- Based broadly on the guidance documents. - Module for offer as short course or longer course linked with other modules	Training module for online or face-to-face delivery	Phase 2
3.6 REDCap training	- Consider 1-day short course - Consider series of 30-60 minute presentations - Draw on REDCap official video tutorials	Short course on using REDCap	Phase 0 / 1
3.7 Quantitative research data training	-Will be software specific - Options include Stata, R, SPSS, Excel	Short course on using (eg) Stata	Phase 1
3.8 Qualitative research data training	-Will be software specific - Options include DeDoose, Nvivo - Sub-project with qualitative researchers	Short course on using (eg) DeDoose	Phase 2

4.STORE AND PRESERVE

Tools and services to aid in the description, deposit, and ongoing management of completed research data outputs.

- facilitate the storage and (optionally) the open-sharing of data associated with completed research studies

Addresses RDH Policy section A, H, K

OBJECTIVE	ACTION	DELIVERABLE	TARGET PHASE
4.1 (And 5.1). To investigate options for a data repository for enhanced deposit and discovery of data collections generated by University researchers	<ul style="list-style-type: none">- Important investigation- Major decision is UWI-installed versus open-archive- eg DataVerse vs. (eg) FigShare	<ul style="list-style-type: none">- Final approved decision on choice for campus data-sharing infrastructure	Phase 0 / 1
4.2 Develop Guidance Documents	<ul style="list-style-type: none">- Begin creation based on web-book for online accessibility.	<ul style="list-style-type: none">Guidance documents on:<ul style="list-style-type: none">(a) Data preservation(b) Data security(c) Data protection regulations(d) Protecting personally identifiable information	Phase 0 / 1
4.3 Develop Training Module	<ul style="list-style-type: none">- Based broadly on the guidance documents.- Module for offer as short course or longer course linked with other modules	<ul style="list-style-type: none">Training module for online or face-to-face delivery	Phase 1

5.SHARE AND PUBLISH / DISCOVER, RE-USE AND CITE

Support and services for best-practices sharing of research data

- facilitate the storage and (optionally) the open-sharing of data associated with completed research studies

Addresses RDH Policy section A, F, G, I, J, K

OBJECTIVE	ACTION	DELIVERABLE	TARGET PHASE
5.1 (And 4.1) To investigate options for a data repository for enhanced deposit and discovery of data collections generated by University researchers	<ul style="list-style-type: none"> - Important investigation - Major decision is UWI-installed versus open-archive - eg DataVerse vs. (eg) FigShare 	- Final approved decision on choice for campus data-sharing infrastructure	Phase 0 / 1
5.2 To provide a registry of research data assets in support of the University RDH policy	<ul style="list-style-type: none"> - Plan survey of data assets - Plan ongoing maintenance of asset list 	- survey would give starting point for data asset inventory	Phase 1
5.3 To provide continuity of access for data assets with long-term value	<ul style="list-style-type: none"> - Data storage software choice is key here - Also guidance on data preservation file formats 	- Guidelines on data preservation (See below)	Phase 2
5.4 Develop Guidance Documents	<ul style="list-style-type: none"> - Begin creation based on web-book for online accessibility. 	Guidance documents on: (a) Intellectual property and copyright (b) Licensing (c) Data resource identifiers (d) Linking data to a publication (e) Where to deposit data (f) Data preservation	Phase 1
5.5 Develop Training Module	<ul style="list-style-type: none"> - Based broadly on the guidance documents. - Module for offer as short course or longer 	Training module for online or face-to-face delivery	Phase 2

6.GENERAL TRAINING AND SUPPORT

General Research Data Handling training, support and consultancy services

Addresses RDH Policy section A, K

OBJECTIVE	ACTION	DELIVERABLE	TARGET PHASE
6.1 Create a new website for RDH with links to RDH services and RDH guidance documents	- Begin Website development - Share draft with CITS for approval / linkage to UWI	- Website with access to main elements of roadmap	Phase 0 / 1
6.2 Raise awareness of UWI and funder policies and advocate for good practice in RDH for all research projects	- Overview presentation - Incorporation into course module (See 1.6)	- Presentation - Part of training module in Roadmap section 1	Phase 0 / 1
6.3 Maintain, develop and promote online training modules	- See Roadmap sections 1 to 5 for details on planned training modules	- Training modules (See Roadmap sections 1-5)	Continuous
6.4 Maintain, develop and promote online RDH guidelines	- See Roadmap sections 1 to 5 for details on planned guidance documents	- RDH guidelines (See Roadmap sections 1-5)	Continuous
6.5 Create tailored, on-demand training for research groups and professionals	- With resources, consider tailored training as needed. - Link with CPDLL (Centre for Professional Development)	- Create website page for researcher access to on-demand support - Possible short course schedule for external clients	Phase 2
6.6 Compliance monitoring	- With resources, consider how to monitor compliance with RDH Policy elements - Sub-project with Quality Assurance Unit ??	- Draft structure on feasibility of compliance monitoring infrastructure	Phase 2
6.7 Investigate the possibility of day to day RDH support	- With resources - Consider structure for offering day-to-dat RDH support - In addition to training + guidelines	- Create website page for researcher access to on-demand support	Phase 2

7.RDH OPERATIONS

Planning and organisational activities for RDH implementation team

- plans and facilities to allow the RDH implementation team to carry out their work

OBJECTIVE	ACTION	DELIVERABLE	TARGET PHASE
7.1 Form Cave Hill RDH committee	<ul style="list-style-type: none">- Approach Deans / Heads for representatives- Convene committee- Draft and approve committee ToR	<ul style="list-style-type: none">- Operational Cave Hill RDH committee	Phase 0
7.2 Create RDH Policy and roadmap	<ul style="list-style-type: none">- Draft RDH campus-level policy- Circulate to committee for comments and approval	<ul style="list-style-type: none">- RDH Policy with UWI ratification- Approved RDH Roadmap- Both documents available via RDH website	Phase 0
7.3 Create RDH costing and sustainability plan	<ul style="list-style-type: none">- Draft RDH costing + sustainability plan- Circulate to committee for comments and approval	<ul style="list-style-type: none">- Costing model in place for Phases 0 and 1	Phase 0
7.4 Formalise the RDH implementation team	<ul style="list-style-type: none">- Key step for initial RDH infrastructure development- Key as well for RDH sustainability	<ul style="list-style-type: none">- A model in place for a formalised RDH implementation team	Phase 0 / 1