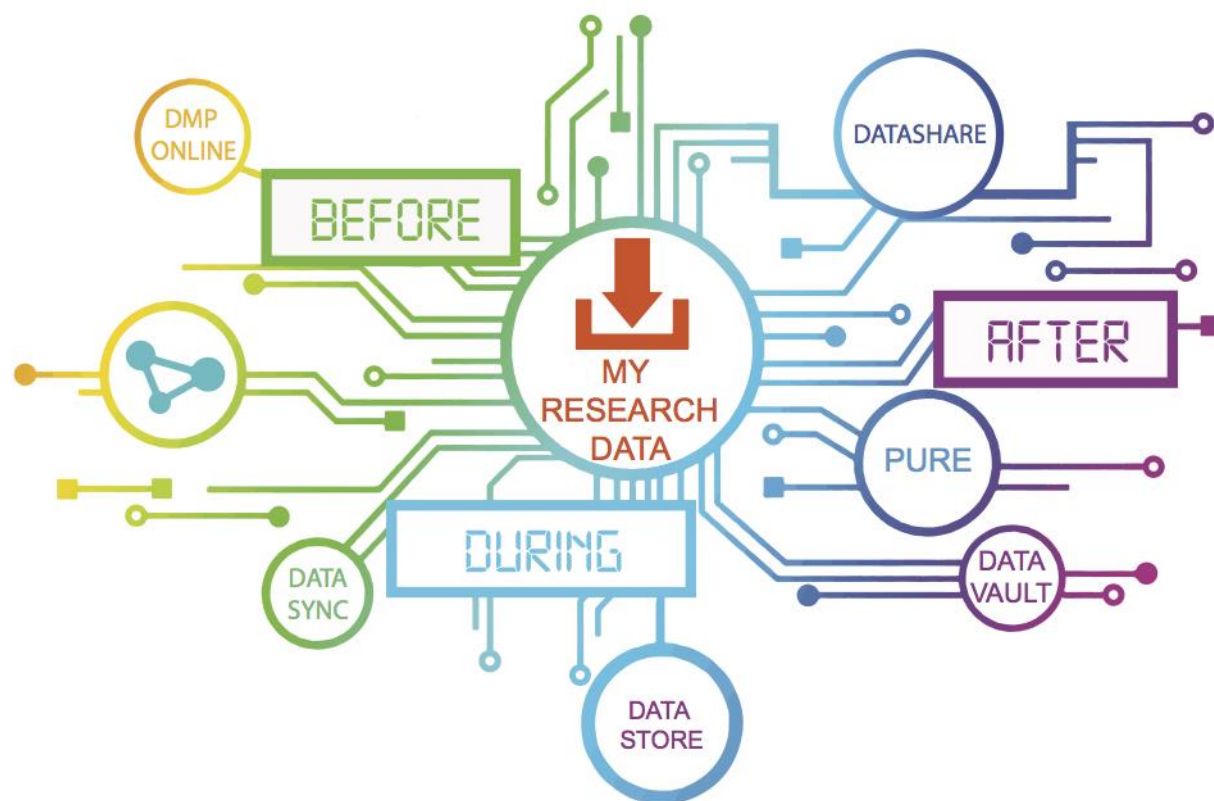# University of Edinburgh Research Data Service Roadmap

August 2017-July 2020

University of Edinburgh Research Data Service Steering Group
30 November, 2017 (Version 3.2, with summary)

Document Status

This is a living document written by the Information Services (IS) Research Data Service team and approved by its Steering Committee. Version 3 was approved by the Research Data Service Steering Group on 24th October, 2017.

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Introduction

This is the third Research Data Service Roadmap (formerly called Research Data Management Roadmap), laying out the objectives and delivery targets of the service team for better meeting the research data management and support requirements of the University of Edinburgh's research community. Two previous documents covered the time periods of August 2012-May 2015, and September 2015-July 2016. There was a gap of one year in which the service consolidated from a more ad-hoc programme to a single service aiming to offer a smooth user journey across the data lifecycle, from data management planning (BEFORE) to active use and collaboration (DURING), to data stewardship options (AFTER). These can be found on the Roadmap web page indicated in the header.

The Roadmap is originally based on the University's Research Data Management Policy, passed by the Court in May, 2011, available at www.ed.ac.uk/is/research-data-policy. The service itself may be discovered within the Information Service pages at www.ed.ac.uk/is/research-data-service.

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Layout of the document

The document is made up of 5 tables, each containing a number of prioritised objectives, the actions needed to meet the objectives, related milestones or deliverables, the responsible teams and the target year (year one is August 2017-July 2018). The 5 tables or groupings are continuous from previous Roadmaps with the exception of the first, a new addition and priority, given the range of service component and service providers across our organisation: A - Unification of the service, B – Data management planning, C – Working with active data, D – Data stewardship, E – Research data support. The 32 objectives are listed first, followed by the detailed tables.

Summary of Objectives

A. Unification of the Service

1) Devise a unified look and feel to the service components, as part of Digital Research Services.

Priority: High

2) Create a coherency to service as a whole and its underlying components.

Priority: High

3) Offer a simplified user journey starting from the home page.

Priority: High

4) Investigate and deliver on options to allow interoperability between systems, e.g. to transfer data easily from one system to another.

Priority: Medium

5) Horizon scan on options for replacement/merging of system components.

Priority: Low

B. Data Management Planning

6) Increase the number of fully-costed plans written by researchers across schools, including University-funded research.

Priority: High

7) Increase the number of schools/departments that require a simple DMP as part of a PhD research proposal (from zero).

Priority: Medium

8) Encourage software management planning as part of DMP.

Priority: Medium

9) Explore and evaluate possibilities for 'active' data management plans.

Priority: Low

C. Working with Active Data

10) Provide secure setting for sensitive data and set up controls that meet ISO 27001 compliance and user needs.

Priority: High

11) Modernise the code versioning service component.

Priority: High

12) Ensure usable interface for researchers and their collaborators to share storage space for research data.

Priority: Medium

13) Advocate and understand how lab-based research settings can move to electronic lab notebooks.

Priority: Medium

14) Ensure researchers doing database activity have secure, networked backed-up resource.

Priority: Medium

15) Provide coherent, safe solution for University researchers who need to encrypt their data in Research Data Service systems.

Priority: Medium

16) Ensure the stability of the University shared storage space and plan for growth.

Priority: Low/Business as Usual

17) Assist researchers who require datasets for analysis from all disciplines.

Priority: Low/Business as usual

D. Data Stewardship

18) Provide enhanced display and preview of multimedia and numeric files held in repository.

Priority: High

19) Alternative to open sharing exists with immutable, replicated secure long-term storage.

Priority: High

20) Communicate options to researchers for data sharing and curation customised to their situation (discipline, funder, project longevity).

Priority: Medium

21) University repository that provides FAIR (findable, accessible, interoperable, reusable) principles in line with emerging funder and international principles (EU Open Science Cloud etc.).

Priority: Medium

22) Repository makes best use of metadata standards and citations to improve impact for researchers.

Priority: Medium

23) Embrace new technologies and metadata standards for curating and providing access to research images

Priority: Low

24) Repository continues to meet trusted digital repository requirements for researchers and actively migrates supported file formats for long-term preservation.

Priority: Low / Business as Usual

E. Research Data Support

25) Refresh Communications Plan to ensure key messages are getting out to all stakeholders in line with DRS objectives.

Priority: High

26) Vibrant network of data managers and curators speaking about their use of data with service representatives and each other.

Priority: High

27) Forward-looking training on data protection in light of GDPR.

Priority: High

28) Conduct privacy impact assessments on service components and/or service as a whole.

Priority: High

29) Training on and offline is responsive to user needs, new tools, open science / digital scholarship new norms for transparency and reproducibility.

Priority: Medium

30) Ensure researchers have access to expert advice in anonymising and pseudonymising their data.

Priority: Medium

31) Alignment with College and School Ethics committees for data-related guidance.

Priority: Medium

32) Revisit statistical training and consultancy offerings with relevant parts of IS in light of Innovation Project outcome (Scoping Statistical Support).

Priority: Low

Full Roadmap

A. Unification of the service
Actions needed to achieve a single, unified and comprehensive Research Data Service, a key part of the Digital Research Services (DRS) programme.

Objective	Actions	Milestones/Deliverables	Responsible team	Target Year (1, 2, 3)
1) Devise a unified look and feel to the service components, as part of Digital Research Services. *Priority: High*	Unify branding across web pages and access points. Use of Digital Research Services branding throughout.	All access points have same branding	L&UC Data Library Research Services DCC	Year 1
	Hide individual 'brands' of components in favour of Research Data as part of Digital Research Services. Focus on user 'action verbs' not systems. Where needed, conduct user testing to ensure message can work.	User testing completed and revisions made	"	"
	Revise brochures and other promotional materials accordingly. Distribute widely to replace older versions still used by some.	New brochures	L&UC Data Library	" and as needed
2) Create a coherency to service as a whole and its underlying components. *Priority: High*	Write a complete service description and SLA for the service as a whole, covering all tools and support.	Single service description Service Level Agreement	Service Owner, Service Operations Manager, Virtual Team Steering Group sign-off	Year 2

	Ensure consistency of user documentation, standard operating procedures and vocabulary across service.	Consistent documentation across service	L&UC Data Library Research Services	"
	Release promotional video of full user journey with supplemental videos showing particular service components and user experience.	Promotional video, whole service Service component 'how-to' videos Case study interview videos	L&UC Data Library LTW (resource required)	Year 1 and 2
3) Offer a simplified user journey starting from the home page. *Priority: High*	Create an interactive user journey that allows people to select the stage they are in and solution required to be delivered to the landing page of the appropriate service component. Include FAQs and Decision Trees to support users looking for self-help on website (or related site, wiki or sharepoint, as appropriate).	Interactive solution on website and tested. FAQs and/or decision trees for self-help available	L&UC Data Library Research Services LTW (user experience, web experts), resource required L&UC	Year 1 Year 2
4) Investigate and deliver on options to allow interoperability between systems, e.g. to transfer data easily from one system to another. *Priority: Medium*	When upgrading systems or doing project development, look for opportunities to combine and converge systems, make metadata flow between systems.	Demonstrated interoperability improvements. End to end service.	L&UC DCC Research Services Developer resource required	Years 1 and 2 Year 3
5) Horizon scan on options for replacement/merging of system components.	Watch and measure developments in UK, Europe and	Report on benchmarking endeavours.	Service Owner, Service Operations Manager, Virtual Team	Years 1, 2, 3

Priority: Low	beyond compared with ourselves. Set up test instances of potential open source options. Gather user requirements for service as a whole to be able to translate/apply to potential unified solutions.	Test instances set up (e.g. other repository platforms). Written requirements documented across service.	Research Services Data Library Developer resource required Virtual Team Business analyst resource required	Year 3 Year 2, 3

B. Data Management Planning
Tools and support for planning activities that are typically performed before research data is collected or created.

Objective	Actions	Milestones/Deliverables	Responsible team	Target Year (1, 2, 3)
6) Increase the number of fully-costed plans written by researchers across schools, including University-funded research. *Priority: High*	Continue to monitor creation of plans in DMPOnline. Continue to build library of (successful) sample plans. Review customised text in DMPOnline annually & revise. Conduct user testing of DMPOnline University template. Work with schools and centres who wish to customise their own text in DMPOnline.	Number of plans created known and increasing. Diverse set of plans available. Annual revision of standard text and University DMP template. User tests completed. Advocacy leads to new school or centre templates in DMPOnline.	L&UC Data Library DCC L&UC " L&UC Data Library L&UC L&UC	Year 1, 2 and 3 Year 1, 2 and 3 Year 1, 2 and 3 Year 2 Year 1, 2 and 3 Year 1, 2 and 3

	Encourage and assist schools and centres to write standard operating procedures for data management.	Evidence of working with schools/centres on data management procedures.	Virtual team	
	Continue & improve 'rapid response' DMP support.	Measure turnaround time of requests. No request ignored due to timing.	L&UC Data Library	Year 1, 2 and 3
	Obtain timely information from Worktribe about grant proposals; contact PIs as appropriate.	Procedure in place and being followed for contacting PIs at start and end of projects.	L&UC	Year 1, 2 and 3
7) Increase the number of schools/departments that require a simple DMP as part of a PhD research proposal (from zero). *Priority: Medium*	Conduct outreach to doctoral training programme leaders to advocate requirement to include simple DMP as part of research proposal.	Evidence of outreach to doctoral programmes.	L&UC Data Library	Year 1, 2 and 3
	Help create bespoke DMP templates for schools' postgrads.	Number of bespoke DMP templates created.	"	Year 1, 2 and 3
	Provide bespoke training to PhD students to complete a DMP.	More annual invitations for bespoke training to PhD students in schools.	"	Year 1, 2 and 3
8) Encourage software management planning as part of DMP. *Priority: Medium*	Provide customised text about software management in UoE systems for use in plans.	Software management text for DMPs available.	L&UC Data Library Research Services	Year 1, 2 and 3
	Organise discussions amongst compute-intensive researchers on software management, reproducibility and sustainability of code to surface good practice.	Events organised with SSI and others focusing on software management. RDM training materials updated appropriately.	Data Library Research Services DRS team	Year 1, 2 and 3 Year 1, 2 and 3

	Incorporate lessons learned about good practice into regular RDM training.	"	L&UC Data Library	Year 1, 2 and 3
	Advocate use of code versioning systems as part of regular outreach (Subversion, Gitlab).		L&UC Research Services	Year 1, 2 and 3
9) Explore and evaluate possibilities for 'active' data management plans. *Priority: Low*	Work with DCC and RDA Working Group on automating 'trigger events' to put DMP words into machine-readable actions.	Ensure team stays informed on developments.	Service Owner L&UC DCC	Year 1, 2 and 3
	Use Worktribe and knowledge of research timeframe to develop methods to remind researchers at key moments of their grant about DMP actions.		L&UC	Year 2

C. Working with Active Data
Tools and support for sourcing, managing and using data during a project, and collaborating with partners.

Objective	Actions	Milestones/Deliverables	Responsible team	Target Year (1, 2, 3)
10) Provide secure setting for sensitive data and set up controls that meet ISO 27001 compliance and user needs. *Priority: High*	Complete the Data Safe Haven project and roll out, promote service.	Data Safe Haven launch	Research Services Data Library L&UC Resource required: Front and back-end, info. security teams	Year 1
	Conduct checks on controls and audit both operations and users for compliance.	Compliance check and reporting mechanisms in place.	Research Services Data Library L&UC Info Security team	Year 2
	Pursue and obtain ISO 27001 certification.	ISO 27001 certification.		Year 3
	Plan for rollout beyond UoE PIs (other parts of university and/or corporate customers) as agreed by steering group.	Known process for incorporating non-research related projects into Data Safe Haven.	" "	Year 2
11) Modernise the code versioning service component. *Priority: High*	Roll out an instance of Gitlab for researchers' use.	Gitlab available to researchers.	Research Services	Year 1
	Monitor requirements around Subversion service to decide if/when to retire it.	Decision made on Subversion service.	"	Year 3
12) Ensure usable interface for researchers and their collaborators to share storage space for research data. *Priority: Medium*	Monitor longstanding bug in DataSync (Owncloud) regarding syncing data.	Options considered and decided for dealing with the bug.	Research Services L&UC	Year 2
	Improve user instructions and interface for PIs and their	Improvements to documentation about	L&UC Research Services	Year 2

	external collaborators to share data on the University storage system.	sharing data with collaborators.	Data Library User Services	
	Provide examples of good data practice using the Confluence wiki and Sharepoint in collaborative research projects.	Written and/or video examples available from website.	L&UC Data Library	Year 2 and 3
13) Advocate and understand how lab-based research settings can move to electronic lab notebooks. *Priority: Medium*	Monitor uptake of current RSpace offering.	Uptake of RSpace known.	Research Services, L&UC Data Library	Year 1
	Monitor levels of success of university Wellcome Trust funded project to bridge and dock ELNs into lab environments.	Project outcomes reported to steering group.	L&UC Data Library	Year 2
	Provide additional resources for ELN tools as needed.	Additional resources for ELN tools available.	DRS team Service owner	Year 3
14) Ensure researchers doing database activity have secure, networked backed-up resource. *Priority: Medium*	Set up 'Database as a platform' service.	Database as a platform launched.	Research Services DRS team Additional resource required	Year 2
	Conduct user testing; write service documentation; promote service.	Online user support for databases tested and available.	Research Services L&UC Data Library	Year 3
15) Provide coherent, safe solution for University researchers who need to encrypt their data in Research Data Service systems. *Priority: Medium*	Work with relevant IS teams to develop a key service for the University.	Scoping study completed.	DRS team Research Services	Year 1
		Additional steps taken as recommended by steering group.	Info Security team Additional resource required	Year 2 and 3

16) Ensure the stability of the University shared storage space and plan for growth. *Priority: Low/Business as Usual*	Continue to monitor usage, provide maintenance and plan for upgrades and repairs on DataStore.	Continuous improvement gains for DataStore.	Research Services	Year 1, 2 and 3
17) Assist researchers who require datasets for analysis from all disciplines. *Priority: Low/Business as usual*	Gain feedback on the 'finding data' pages toward an overhaul to make fit for purpose across more disciplines.	Requirements gathered for finding data portal.	Data Library	Year 2
	Obtain through purchase or other means reference datasets in disciplines where use of secondary sources is important and provide easy access to university users.	Key datasets obtained and made available.	Data Library Research Services	Year 3

D. Data Stewardship
Tools and support to aid in the description, deposit, and ongoing management and curation of completed research data outputs.

Objective	Actions	Milestones/Deliverables	Responsible team	Target Year (1, 2, 3)
18) Provide enhanced display and preview of multimedia and numeric files held in repository. *Priority: High*	Determine if new Angular DSpace interface will facilitate this or work with DSpace peers to leverage work done elsewhere. Do user consultation and testing to ensure we adopt this in a way useful to our depositors (and their end-users).	Enhanced display of files in repository. DSpace options investigation. Usability investigation.	Data Library "	Year 1 or 2 Year 1 Year 1 or 2
19) Alternative to open sharing exists with immutable, replicated secure long-term storage. *Priority: High*	DataVault full solution in place following end of project. Migrate existing vaults. Identify and implement enhancements to make user experience smoother. Adopt useful functionality from Jisc-funded project activity in cost-effective way.	Full solution in place following end of project. Interim service vaults migrated to full solution. Functionality from useful open source code adopted.	L&UC Research Services Data Library " "	Year 1 Year 2 Year 1, 2 and 3

20) Communicate options to researchers for data sharing and curation customised to their situation (discipline, funder, project longevity). *Priority: Medium*	Develop capacity for advisory service for researchers choosing between long-term stewardship options (open/closed archiving, local/disciplinary repositories, different funders) and appraisal of different types of project data.	Usable documentation exists for researchers and team members on choosing between data stewardship options.	L&UC Data Library	Year 1
	Decision trees, case studies and other relevant guidance on web and sharepoint sites.	Guidance materials and case studies available via UoE website or Sharepoint.	"	Year 2 and 3
21) University repository that provides FAIR (findable, accessible, interoperable, reusable) principles in line with emerging funder and international principles (EU Open Science Cloud etc.). *Priority: Medium*	Participate in discussions with international peers to illuminate steps needed to stay FAIR and promote local solutions.	Conference papers and other evidence of impact in the international RDM field.	Data Library	Year 1, 2 and 3
	Obtain external funding for collaborations around FAIR principles as opportunities arise.	At least one funded collaboration with external parties.	"	Year 1, 2 and 3
22) Repository makes best use of metadata standards and citations to improve impact for researchers. *Priority: Medium*	Evaluate if data repository should adopt DataCite 4.0 schema more fully.	DataShare release reflects outcome of metadata study.	Data Library	Year 2
	Evaluate best subject classification to replace JACS.	DataShare release reflects outcome of subject classification evaluation.	"	Year 2
	Implement ORCID IDs in DataShare.	DataShare ORCiD ID field.	"	Year 2
	Consider adding Altmetrics, if deemed valuable to depositors, or sharing buttons on landing pages through commonplace widget.	DataShare release for Altmetrics.	"	Year 2

23) Embrace new technologies and metadata standards for curating and providing access to research images *Priority: Low*	Gather requirements and evaluate options for a separate research image server Utilise L&UC knowledge/experience with IIIF standard to explore better research image management in existing or new systems	Image server requirements gathered. Evaluation written for use of IIIF in Research Data Service systems.	L&UC DCC Virtual team May require additional resource L&UC DCC Data Library Research Services	Year 3 Year 3
24) Repository continues to meet trusted digital repository requirements for researchers and actively migrates supported file formats for long-term preservation. *Priority: Low / Business as Usual*	Implement identified file format migration exercise in data repository (Office formats first.) Develop workflows and documented procedures for migration of file formats. Experiment with use of L&UC's instance of Archivematica to determine if value is added to workflow. Resubmit Data Seal of Approval or successor scheme for certification when needed.	Office format file migration completed in DataShare. Workflows and documented procedures on wiki. One-page evaluation of Archivematica experiment. Certification received from CoreTrustSeal.	Data Library " Data Library L&UC Data Library	Year 1 Year 1 Year 2 Year 3

E. Research Data Support
Awareness raising, training, self-help and direct support throughout the research data lifecycle.

Objective	Actions	Milestones/Deliverables	Responsible team	Target Year (1, 2, 3)
25) Refresh Communications Plan to ensure key messages are getting out to all stakeholders in line with DRS objectives. *Priority: High*	Communications Plan drafted and signed off by Steering Group (to include e.g. stepped up targeted college and school visits, website and video outputs, blog posts and revision of brochure).	Communications Plan enacted.	Service Owner L&UC DRS team	Year 1
26) Vibrant network of data managers and curators speaking about their use of data with service representatives and each other. *Priority: High*	Dealing with Data annual conference or Open Access Week event. Occasional topical meetings for data managers and research staff. Continue RDM Forum meetings for those who support PIs in schools	Successful annual Dealing with Data events. Topical meetings are scheduled and attended. Regular RDM Forum meetings.	L&UC Data Library " "	Year 1, 2 and 3 Year 1, 2 and 3 Year 1, 2 and 3
27) Forward-looking training on data protection in light of GDPR. *Priority: High*	Implement information governance training as piloted. Revamp Working with Personal and Sensitive Data training course. Consider options for external training and income.	Periodic GDPR training sessions. Working with Personal and Sensitive Data training courses redesigned and tested. Income from external training/consultancy.	L&UC L&UC Data Library " "	Year 1, 2 and 3 Year 1 Year 1, 2 and 3 Year 1, 2 and 3

	Continue to liaise with DPO and Information Security team on best guidance and advice.	GDPR and personal data guidance approved by DPO and Information Security team.		
28) Conduct privacy impact assessments on service components and/or service as a whole. *Priority: High*	As PIA guidance is rolled out by the University ensure we are doing 'privacy by design' through these assessments.	PIA assessments completed as required.	L&UC Data Library	Year 1, 2 and 3
29) Training on and offline is responsive to user needs, new tools, open science / digital scholarship new norms for transparency and reproducibility. *Priority: Medium*	Run more data and software carpentry courses with SSI/EPCC.	Bi-annual data / software carpentry courses with SSI/EPCC.	L&UC Data Library DRS team	Year 1, 2 and 3
	Pursue opportunities to leverage DCC training materials and expertise at UoE	DCC trainers run University courses.	L&UC Additional DCC resource required.	Year 1
	Develop or offer training in R, Python, Jupyter Notebooks and other open science / digital scholarship tools.	Design two courses on Data Science topics.	Additional expert training resource required. DRS team	Year 2 or 3
	Develop database training as part of Database as a Service developments.	Database training delivered in RDM context.	Additional expert training resource required. DRS team	Year 3
30) Ensure researchers have access to expert advice in anonymising and pseudonymising their data. *Priority: Medium*	Scope a potential Anonymisation advisory service (disclosure control) to assist with both Data Safe Haven outputs and DataVault deposits.	Scoping report on an Anonymisation advisory service.	L&UC Data Library Research Services	Year 2
	Pilot anonymisation advisory service.		Additional expert resource required	Year 3

		Successful pilot anonymisation advisory service.		
31) Alignment with College and School Ethics committees for data-related guidance. *Priority: Medium*	Meet with ethics groups across university to identify opportunities for alignment.	Service team members attend some REIRG meetings (Research Ethics and Integrity Review Group)	L&UC	Year 1, 2 and 3
	Advise college and school ethics committees on data-related decisions: retention of data, sharing of data, gaining appropriate consent for sustainability of research data (sharing, retention, etc), especially with regard to GDPR.	Service team members speak to college and school ethics committees and report back.	L&UC Data Library	Year 1, 2 and 3
	Develop further sample consent forms appropriate for Vault (long term retention) and openly licensed research data outputs.	Suite of sample consent forms augmented for Vault suitability.	L&UC Data Library	Year 2
32) Revisit statistical training and consultancy offerings with relevant parts of IS in light of Innovation Project outcome (Scoping Statistical Support). *Priority: Low*	Meet relevant parties within IS and beyond to discuss outcomes of project and recommendations.	Findings disseminated; meetings held.	Data Library Research Services	Year 1
	Develop sensible plan to expand statistical training/consultancy as appropriate based on meetings.	Next steps identified, with User Services Division involvement.	Data Library Research Services	Year 1 and 2