Jisc digital research community discussion paper

Identifying priorities, actions and next steps

This paper is a summary of the discussions that took place within Jisc’s digital research community council between July-December 2020. The paper was compiled by Helen Clare, Jisc digital community lead, and approved by the community council (see Appendix 1 for a list of members) and published on 14 December 2020.

We invite the wider research sector to reflect and comment on the content and recommendations.

Background

Over the last six months, a group of 20 members of the research sector have been working with Jisc to explore the potential of forming a digital research community. Jisc has a long history of bringing together communities and we identified a need for a space for discussion and sharing around the use of technology to improve research practice.

The community aims to bring together all those involved in the research process, from researchers to research managers and other professionals such as librarians, research software engineers and IT services. A community council was formed in July, with members coming from a diverse range of institutions, roles and disciplines.

Jisc identified the need for this community following a series of focus groups and other engagement activities taking place to inform updates to Jisc’s research strategy. The focus groups with funders and national academies, along with feedback from our PVCR research strategy forum, identified Jisc as well placed to surface and showcase innovation and encourage adoption of technology.

As a membership body, it is vital that Jisc’s work is guided and informed by the needs and ambitions of its members and the wider research sector. As well as providing a valued space for the research community to connect and share, we hope it will enable our strategy to remain aligned to the needs of the research sector.

A vision for the community

The council’s first meeting took place in July and the members shared views on the potential and possible activities for the community. Key themes are highlighted below, along with ideas about the purpose of the community and next steps.

Purpose of community

- **Bringing communities together** – looking outward across disciplines, roles (researchers, research managers, librarians) and sector (industry, heritage). Somewhere that can help to knit initiatives together and connect stakeholders.
- **A place to share** research outputs and different examples of using technology for research
- **A place to address issues** raised in key themes, possibly through building a toolkit and curating content for the community. Other potential outputs need to be discussed.
Key themes for the community to address

- **The skills agenda.** How do we meet the training/development needs of all those involved in the research process: the next generation of researchers, mid-career researchers, research leaders, those that surround researchers and research community (e.g. research managers, librarians)? How do we ensure that what we do locally for training/CPD/embedding skills etc can feed into national initiatives? Can we work towards building national standards of what researchers (and others) should know?

- **The policy agenda.** The government’s industrial strategy is important, however, how can technology help realise the potential of universities and increase perceived value to policymakers?

- **Interdisciplinarity and mobility.** How can technology facilitate forms of mobility (discipline, geography, sector, inclusion)? How can we work together to develop solutions rather than have some areas illustrating to others?

- **Tools and methods for future researchers.** How can researchers know about the possibilities of technology and be equipped to use it effectively? Many examples of potential use were highlighted including: modelling, simulation, AI, machine learning, digital twins, tool chains, tools for practice and for open collaboration and dissemination, research 4.0, text mining, remote working and collaboration.

- **Interface between technical skills and needs of researchers.** Is the technology too complex or knowledge on use of technology too low? Development of technology and methodology to use it must go hand in hand in hand. If technology is oversimplified, there is a danger of it losing its power - how do we solve this conundrum?

- **Improving the wider research infrastructure.** The research ecosystem needs to work together to become more efficient and effective e.g. through use of Persistent Identifiers (PIDs) and metadata to link to resources from research outputs and make these discoverable. We should explore the potential of the repository infrastructure and how it can be better embedded in the UK digital research framework, to better expose open content.

- **Improving visibility of different kinds of research.** How can non-standard outputs such as practice research can be captured and made visible? The review of PhD and questioning of book format is relevant.

- **Ethics, research integrity and reproducibility.** How to address issues around the ethical use of technology and data? How can technology be used to train ethical practitioners e.g. through use of virtual reality?

- **Dangers of digital poverty.** How can we make sure tools are accessible to all? Research aspiring institutions face different challenges to big research intensives. (In the past, Jisc was instrumental in developing capacity in ‘forgotten’ institutions – how can we meet this need now?)

From vision to action

Our second meeting in September aimed to flesh out the priorities and activities of the community. However, we found that we were raising more questions than answers in our hour-long meeting and we soon realised we needed more time for discussion. Two workshops ran in October, using the Miro whiteboard to enable us to replicate face-to-face brainstorming and sorting activities. The first workshop focussed on exploring key issues in more detail, based on the initial topics raised in our first meeting. We also discussed the European perspective, given the potential implications of Brexit on research. Appendix 2 contains summaries of the ten areas discussed.

The council prioritised five of these areas for further discussion: the skills agenda, the policy agenda, improving the wider research infrastructure, improving visibility of different kinds of research and finally, the dangers of digital poverty.

In the second workshop, we discussed what success might look like for the community in each of these areas and we ran a ‘How Might We’ exercise (a design thinking idea) to come up with concrete ideas for activities. While considering these ideas, we reflected on the scope of the group and agreed that its focus should be specific use of technology for research, rather than researchers use of technology for general everyday activities (such as email, use of Teams etc). Summaries and suggestions for each of the five prioritised areas follow below.

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The skills agenda

What are the key challenges?

- A lack of an agreed definition of the digital skills needed by researchers and a need to identify future skills
- A lack of a unified strategy for digital research skills across the research sector and across disciplines, including the need to bridge the gap between schools, colleges and universities
- A need for collaboration and coordination in meeting identified training needs, including specialised training, involving collaboration with employers and professional bodies
- A need for continued training throughout a researcher’s career, with clear messaging across all levels
- The difference in skills across different types of HE and FE institutions and a need to ensure equitable support for development so that there is equality of capacity

What does success look like?

- We know our starting point through a landscape study of existing standards and support
- There is a standard understanding of how to engage with different technologies and platforms at different stages of a researcher’s career – standards which are portable across institution and potentially more widely. There should be a convergence of skills frameworks, institutional and national, across bodies. A digital research skills framework should be developed with stakeholders, addressing researchers’ needs and related to other researcher skills, identifying intersections.
- There is clear communication of the framework and standards, being actively promoted by partners
- Skills available meet the needs of the policy and research infrastructure agendas
- We have a national open access repository for training and development

How might the community achieve change?

Contribute to the development of a research skills framework. Identify what strands of work other organisations are doing, support a landscape study and map skills and skill types. We should be conscious that the notion of a baseline risks simplification and explore a taxonomy of types, areas, attributes and applications.

Encourage the development a unified digital research skills strategy for HE. Starting with a clear definition of ‘digital research skills’, we can prompt work on national strategy to be led by UKRI and National Academies, with a view to influencing a future comprehensive spending review.

Support different career stages. Working at PGR level via doctoral training provides the easiest route, but mid-career case studies might emerge from SRR (Significant Responsibility for Research) changes. We need to understand barriers via engagement with existing networks, considering discipline as well as career stage. We need to ensure that splitting support into career stages does not cause inappropriate variation and confusion.

Promote collaboration in delivery of training. We should support a shared understanding of the aims and success factors in training so that stakeholders are offering complementary opportunities and support. We should work closely with institutional IT and research teams and reach researchers through subject networks. There are opportunities to share high level training material, with subject and institutional context dealt with locally. Common shared platforms and infrastructure to support skills development may help, as might the creation of a national community of training co-ordinators.

Push for equitable support across institutions. A standard, concordat or baseline support that institutions can meet / claim, including hardware/software expectations for different contract types e.g. fraction/fixed term.

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1 Significant responsibility for research in REF https://www.ref.ac.uk/about/blogs/defining-significant-responsibility-for-research-an-inclusive-approach/
The policy agenda

What are the key challenges?

- A changing policy environment
- A need for improved engagement with policy makers
- Supporting open access to data and research and open source technical solutions, with open standards and protocols
- Capturing evidence in a standard way to feed into policy making (comparing apples with apples)
- Inclusive approach – who’s policy is it?
- How does policy fit with cutting bureaucracy in research?
- Increased importance of knowledge transfer
- Incentivisation for moving in new directions, while fostering re-use not re-invention
- Support to evaluate and choose technical solutions wisely, particularly at institutional level

What does success look like?

- A joined-up policy approach with agreed standards, with stakeholders working together to ensure there is no fragmentation or conflicting policies
- Recognising digital methods as an infrastructure issue, including at a national policy level
- Explicit funding for tool development with open access policies for digital tools that are publicly funded
- Integration of infrastructure planning with what is going on in industry / outside HE
- A coordinated approach on how big data is curated and made openly available

How might this community achieve change?

Defining the unique purview of this community in terms of the policy agenda. The community could provide an additional means of collecting views from across HE and FE institutions, presenting key points to discuss with funders and be an advocacy group able to affect change. Providing a sample of disciplines and institutions, we can highlight the value of an interdisciplinary group representing different areas of input and support in the research process. We could point to where there are syntheses and reviews of the changing policy landscape. We may be best suited to addressing specific technical issues, rather than the full landscape of national strategy. We could support more limited initiatives within Jisc and promote wider policy engagement with other bodies, such as UKRI and National Academies.

Define this group as a resource and reference for policy input and review. We are subject specialists with particular domain expertise and can prompt innovation from within those relatively limited contexts. We can be champions, but this needs to be wider than our own situation e.g. within subject, region, using our own networks. We need realism about our capacity. We can be stakeholder agnostic to a certain extent except when we are wearing this group and organisation ‘hats’.

Identify the ‘who’ and ‘how’ in terms of the networks to enable response at pace. Capture the group’s knowledge of relevant networks and institutions and identify sources of input on the different areas into which the group can feed.
Improving the wider research infrastructure

What are the key challenges?

- No agreed baseline expectations for hardware / software leading to a lack of compatibility and inefficiencies when moving information between systems
- Recognising the needs of different communities, including users of content, and continual engagement with these communities
- Encouraging engagement by ensuring the are benefits are clear, to individuals and projects, and by increasing the visibility and amount of support and training available
- Lack of open source research repository infrastructure
- Short term thinking leading to technical debt (“the implied cost of additional rework caused by choosing an easy (limited) solution now instead of using a better approach that would take longer”\(^2\))

What does success look like?

- A widespread understanding of what constitutes digital infrastructure
- People need to be / feel part of this infrastructure, with the right level of skills to do so
- A national digital infrastructure strategy agreed by all key stakeholders, with longer term funding commitment
- Shared equitable ownership of infrastructure

How might the community achieve change?

Identify the research infrastructure pain points whose remedy we can influence, gain consensus to solve them and identify novel approaches from the perspective of this group. We could consult the researcher community through a survey across disciplines and stages asking ‘what stops you embracing digital methods?’ We should explore the common issues faced by those who lead research infrastructures and recognise leaders in research infrastructure as academic leaders. We could develop criteria to support decision making especially around when shared infrastructure is ‘merited’ and encourage culture change so there is a greater expectation of support from centralised approaches. The community could highlight infrastructure resources to support connectivity across the landscape.

Develop a baseline or taxonomy of technical standards. Firstly, we should review what already exists that could be reused. Then consider whether a baseline or taxonomy is more helpful.

\(^2\) https://en.wikipedia.org/wiki/Technical_debt
Improving the visibility of different kinds of research

What are the key challenges?

- Agreeing a broader definition of what is considered a publication or research output. We might need to orientate away from ‘outputs’ specifically, towards investigation, process etc. We can learn from strides made in education content, from expansion of digital only monographs and from novel university presses.
- How to make it easier to ‘publish’ different types of output, especially ensuring they are open or FAIR\(^3\)
- Raising awareness of the potential of repositories to share content and an understanding of other platforms that can be used for communication.
- Promoting the observance of open standards and systems in research infrastructure to ensure optimum interoperability, thereby promoting relational research object linking, sharing, re-use, and discovery of distributed research content.
- Engagement with content – what kind of audiences are we aiming for and what are we trying to communicate to them?
- Reward structures do not always include non-standard outputs in the assessment of individuals and research units.
- FE practitioner researchers and their output – how can we improve their visibility?

What does success look like?

- Recognition of different types of research output, including methods, not only what gets formally published.
- Improved accessibility of research outputs for researchers and wider community.
- PIDs broadly adopted across a range of research objects (equipment, projects etc.).

How might the community achieve change?

Agree what we mean by ‘same’ and by definition ‘different’. This needs to be more complex than text and non-text outputs and should be focused on all research in order to be as inclusive as possible. Members of the community can bring examples of ‘different’ to the discussion. What is different in one field may be the same in another and capturing this would be helpful. Who should define the issue / problem space? We can address these issues by running a consultation session with a range of researchers and users to inform scoping but also encourage engagement.

Bring forward the range of novel approaches to inform deliberation. A showcase of use cases of novel research using technologies and a forum for discussion. Identify new approaches that are quick wins or more accessible so that some movement might be achieved. Work with the communities we are part of.

Bring the diversity of this community together to offer a fresh lens of improving visibility. We can review use cases to reflect on the benefit across different parts of research activity and support. REF already identifies an array of different research forms – we need to champion these and dispense with status hierarchies. REF2021 is likely to offer some good case studies to help map across research types and formats.

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\(^3\) Findable, Accessible, Interoperable, Reusable [https://www.force11.org/group/fairgroup/fairprinciples](https://www.force11.org/group/fairgroup/fairprinciples)
The dangers of digital poverty

What are the key challenges?

- Inequitable access to resources including hardware, online resources and internet access
- A need for collaboration to identify issues and share experiences of what support can be provided, including specialist resources
- A need for greater emphasis on shared and open sources services

What does success look like?

- There is a clear understanding of what is meant by digital poverty, its different forms and the associated issues, with indicators that can be used to inform activity to address this issue.
- Innovative approaches are shared from different disciplines.
- Participation by as wide a range of people and institutions to be able to access and benefit from technology

How might the community achieve change?

Define what is meant by digital poverty in research. We need to collect data from a range of sources to understand and map it, while appreciating that what is considered ‘poverty’ may be relative and change over time. This mapping should consider technologies, economics, skills, scales, geographies and interdependencies. We should explore different types of poverty and refer to ‘poverties’.

Develop an inclusive and comprehensive overview of the issue of digital poverty in research. Raising awareness of the issues as some researchers may not realise they are in digital poverty as they don’t know what they may be missing out on. Scoping the issues, gathering experiences, including subject specific differences, and key issues from the developing world, will help move towards an action plan.

Influence policy with perspectives from the unique purview of this community. We can highlight the challenges and offer solutions speaking from a single source (this community). We can clarify the barriers to participation in research through not having access to technologies and encourage exploration of the roots of the issues, such as causes of poverty through capacity being directed elsewhere (to evaluation and reporting for example), thus curbing innovation. We can encourage steps to addressing digital poverties, such as developing a risk assessment of the impacts of digital poverties, linking to the development of skills, and unifying policies that drive many of the digital needs.
Recommendations for next steps

The initial aims for the community were defined as providing a place to bring communities together, a place to showcase and share practice, and finally a place to address issues. The discussions about potential activities for the community in the workshops was very fruitful, but many of the actions were high level and ambitious. In our next steps we need to be realistic about capacity and identify who is best placed to take forward these actions. We also need to be clear about the scope of the group in terms of its focus on use of technology specifically for research. Finally, we need to work with the communities we are all part of, ensuring a co-ordinated response meeting the needs of those communities and national strategies.

**Recommendation 1: Develop the community as a showcase, place to connect and a place for peer support**

A strong message from previous Jisc engagement which also emerged in council discussions, was to provide a forum for showcasing and sharing practice.

Suggestions include creating a mailing list or forum for discussion, running webinars, live online demonstrations for shared practice, drop-in clinics on themed topics and creating online guidance and/or wiki pages. A key point raised was that we should learn from others beyond the UK.

We have already created a [mailing list](#) and identified a [Jisc blog](#) that can be used to disseminate outputs. We will shortly be launching a Teams site for collaboration and we invite the community to use the Twitter hashtag #JiscDigiRes

**Question: How best can the community develop as a place to showcase, connect and gain peer support?**

**Recommendation 2: Develop the community as a place to collaborate**

While many of the issues and actions we identified will require sector wide effort and resources, there will be certain smaller scale activities that members of the community may wish to take forward. We need to work with the wider community to identify, prioritise these activities and assess whether there is enough capacity within the community to take forward these ideas.

Ideas which have already been proposed include:

- Writing open papers (cf. Turing Institute Humanities and Data Science Paper)
- Developing a workflow for new digital tools for practice research
- Critiquing government policy papers – what they mean for community, unintended consequences of different policies
- Capturing the technology landscape to understand what technologies we are using or would like to use
- Creating short guides to working in open research support
- Preparing a conceptual map of the domain to give a structuring mechanism for activities
- Mapping activities to research lifecycle to put community outputs in context

**Question: What are the most valuable collaborative activities on which the community can work?**

**Recommendation 3: Initiate wider consultation**

Our final recommendation would be to initiate a wider consultation around the themes identified in our discussions so far, in order to ensure community activities complement those within existing initiatives and networks. This could be done as part of a regular community webinar series which would be open to all, but also through convening focus groups composed of particular groups, with a view to ensuring disciplinary/role diversity and EDI.

**Question: How can the community address the more ambitious questions raised which require sector wide collaboration?**
Appendix 1 – Jisc digital research community council members

Dr Nicola Abraham, Lecturer, Applied Theatre Practices, Royal Central School of Speech and Drama
Dr Sean Adams, Senior Lecturer in New Testament and Ancient Culture, University of Glasgow
Chris Awre, Interim University Librarian and Associate Director (Collections, Learning & Research), University of Hull
Prof Balbir Barn, Professor of Software Engineering, Deputy Dean, Faculty of Science and Technology, Middlesex University London
Prof Anne Boddington, Professor Emeritus of Design Innovation at Kingston University and REF 2021 Sub Panel Chair for Art and Design
Prof Michael Braddock, Professor of History, University of Sheffield
Prof Richard Catlow, Foreign Secretary and Vice-President of the Royal Society
Rachel Cox, Engagement and Policy Project Manager, Vitae
Vanessa Cuthill, Director of Research, The British Academy
Prof Karen Fleming, Belfast School of Art, Ulster University
Prof Mark Horton, Director of Research and Professor of Archaeology and Cultural Heritage Royal Agricultural University
Dr George Macgregor, Institutional Repository Manager, University of Strathclyde, representing UKCORR
Prof Sunil Manghani, Professor of Theory, Practice and Critique, Winchester School of Art, University of Southampton
Prof Marcus Munafo, Professor of Biological Psychology, University of Bristol
Valerie McCutcheon, Research information manager, University of Glasgow, representing ARMA
Dr Paul Richmond, President of the Society of Research Software Engineers and Director of the RSE Group, University of Sheffield
Mike Saunders, Head of Quality Improvement, York College
Prof Iain Styles, Professor of Computer Science, Institutional Lead for Data Science and AI, University of Birmingham
Prof Jane Winters, Professor of Digital Humanities & Pro-Dean for Libraries, School of Advanced Study, University of London

Observers
Justin O’Byrne, Associate Director at Science and Technology Facilities Council, UKRI
Richard Gunn, Head of E-Infrastructure, Engineering and Physical Sciences Research Council, UKRI

Jisc
Helen Clare, community lead, Senior e-Infrastructure strategy manager
Matthew Dovey, community sponsor, Head of e-Infrastructure strategy
Dr Victoria Moody, research strategy lead
Dr Caroline Ingram, product lead
Verena Weigert, senior co-design manager
Paola Marchionni, head of digital resources for teaching, learning and research
Appendix 2 – Summary of key challenges

The skills agenda

- A lack of an agreed definition of the digital skills needed by researchers now and in the future
- A lack of a unified strategy for digital research skills across the research sector and across disciplines, including the need to bridge the gap between schools and universities
- A need for collaboration and coordination in meeting identified training needs, including specialised training, involving collaboration with employers and professional bodies
- A need for continued training throughout a researcher’s career, with clear messaging across all levels
- The difference in skills across different types of HE and FE institutions and a need to ensure equitable support for development so that there is equality of capacity

The policy agenda

- A changing policy environment for both HE and FE
- A need for improved engagement with policy makers
- Supporting open access to data and research and open source technical solutions, with open standards and protocols
- Capturing evidence in a standard way to feed into policy making (comparing apples with apples)
- Inclusive approach – who’s policy is it?
- How does policy fit with cutting bureaucracy in research?
- Increased importance of knowledge transfer
- Incentivisation for moving in new directions, while fostering re-use not re-invention
- Support to evaluate and choose technical solutions wisely, particularly at institutional level

Improving the wider research infrastructure

- No agreed baseline expectations for hardware / software leading to a lack of compatibility and inefficiencies when moving information between systems
- Recognising the needs of different communities, including users of content, and continual engagement with these communities
- Encouraging engagement by ensuring the are benefits are clear, to individuals and projects, and by increasing the visibility and amount of support and training available
- Lack of open source research repository infrastructure
- Short term thinking leading to technical debt (“the implied cost of additional rework caused by choosing an easy (limited) solution now instead of using a better approach that would take longer”4)

Improving the visibility of different kinds of research

- Agreeing a broader definition of what is a considered a publication or research output. We might also need to orientate away from ‘outputs’ specifically, towards investigation, process etc. We can learn from strides made in education content, from expansion of digital only monographs and from novel university presses.
- How to make it easier to ‘publish’ different types of output, especially ensuring they are open or FAIR5

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5 Findable, Accessible, Interoperable, Reusable https://www.force11.org/group/fairgroup/fairprinciples
• Raising awareness of the potential of repositories to share content and an understanding of other platforms that can be used for communication

• Promoting the observance of open standards and systems in research infrastructure to ensure optimum interoperability, thereby promoting relational research object linking, sharing, re-use, and discovery of distributed research content

• Engagement with content – what kind of audiences are we aiming for and what are we trying to communicate to them?

• Reward structures should include non-standard outputs in the assessment of individuals and research units

• FE practitioner researchers and their output – how can we improve the visibility of this?

The dangers of digital poverty

• Inequitable access to resources including hardware, online resources and internet access

• A need for collaboration to identify issues and share experiences of what support can be provided, including specialist resources

• A need for greater emphasis on shared and open sources services

Interdisciplinarity and mobility

• Definition is critical. What might we need as interdisciplinary skills and what might assist with such issues across cultures and nations? Is there good practice anywhere?

• Poor communication lines between disciplines and between academia and industry. There is a need to foster communication across boundaries, establish a common language and encourage openness as a key to working across geographies and areas

• Massive gulfs across digital competence between disciplines and a need to be able to illustrate competencies when moving between institutions

• Does discipline mobility create generalists rather than specialists?

• A dominance of the ‘PI’ mindset rather than collaboration and reward focussed on individual researchers

• A lack of shared and compatible hardware with no shared common technology framework for interdisciplinary work

• Inclusion and digital poverty, equality and access

Interface between technical skills and needs of researchers

• A tension between making systems easy to use but not losing the power of their sophistication, poor interfaces

• A lack of skills to use more complex technology and a lack of time to learn, engage and experiment.

• Do researchers need to hold all the knowledge? Could this be solved with more cross-functional research teams?

• A need for researchers to understand the methodologies and training how to ask the right questions as technology changes quickly

• A need for more support for researchers to know where they can get support for technology as and when they need it, which might be via institutional support or through peer networks.

Ethics, research integrity and reproducibility

• A need for a definition of digital research integrity

• Links to training and skills - a need for training and education

• Ethics should be part of any baseline framework of skills as it is a standard requirement

• A need to focus on openness and innovation, along with open metrics
• Data security and ethical issues around data and consent
• Must cover visual as well as text
• A need to improve research culture

Tools and methods for future researchers
• A need to build technology skills into rewards schemes and career development and supporting with appropriate education, training and persuasion. A need to understand how to deploy the right tool for the right methodology.
• Academia needs to be ‘in the market’ for new technological solutions. Otherwise there is a danger that the next generation are not going to be engaged
• A lack of exemplar research deploying new technologies and a need to champion examples of practice
• A need to create tool chains and methodologies – how to link different tools together

The European perspective
• Why just Europe? International should include Europe but not be limited to this.
• Need clarity about post Brexit changes and a need for Jisc / the UK to have a role in constructing open science cloud infrastructure and partnering with similar organisations in other countries
• A need for universities to foster links with European institutions to maintain and build connections.
• Collaboration is key – time and space to collaborate needs to be ringfenced.
• Technology can help us remain open with Europe