

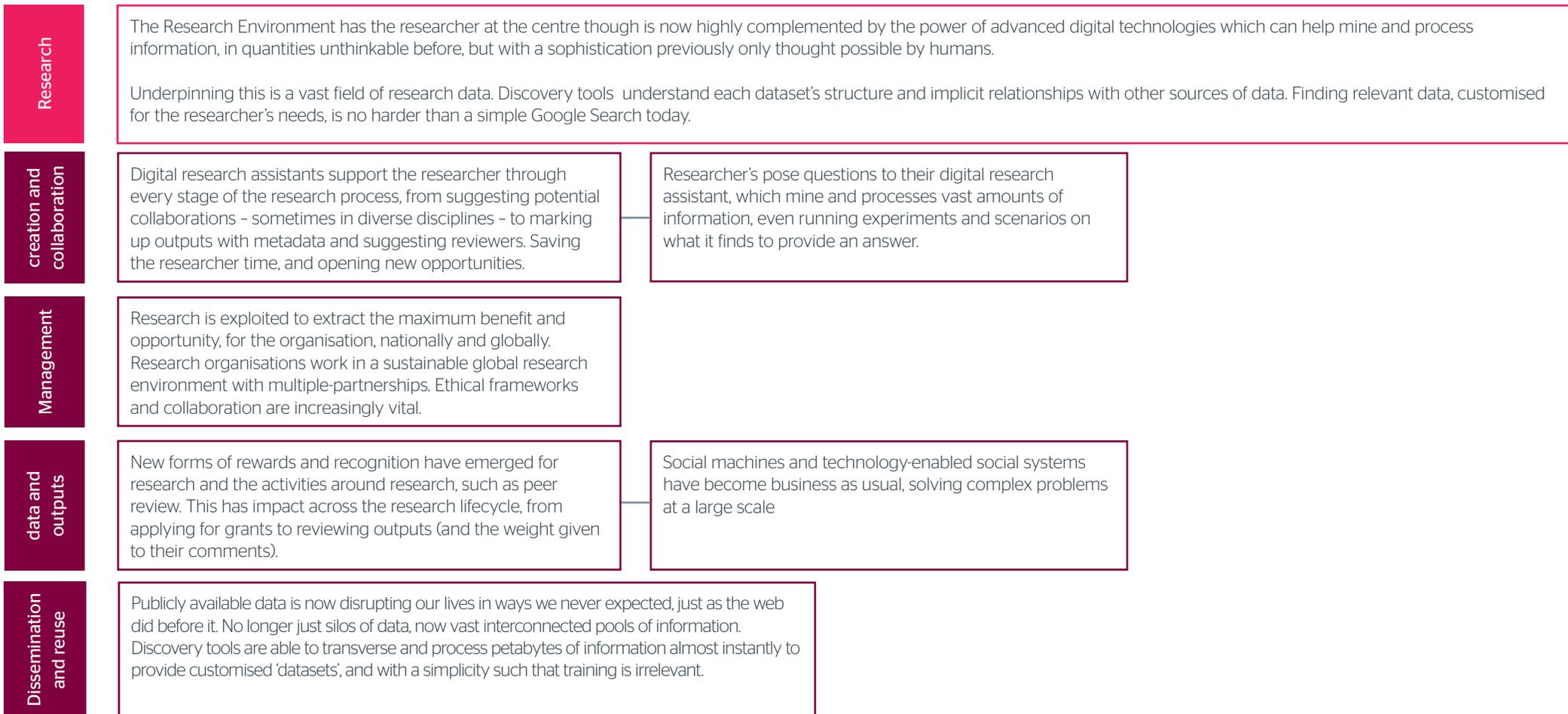
Research: vision

2020



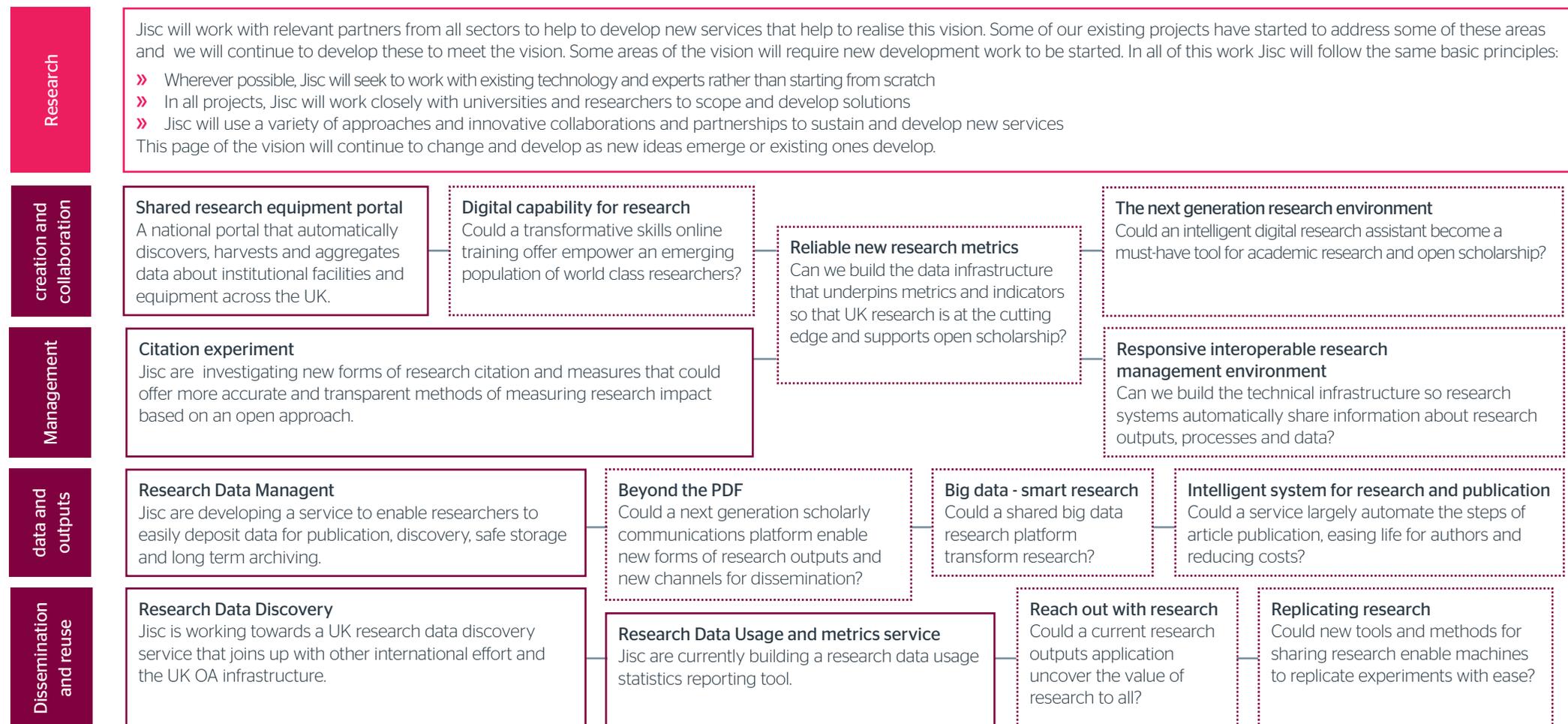
Research: vision

2030



Research: what could Jisc contribute?

2020



Research: vignettes



Gill

Principal investigator

Gill is the principal researcher on a number of large-scale research projects. She spends much of her time applying for funding, overseeing the activities of researchers in her group, and contributing to the writing up of publications.

1. Obtain grant funding

2020

Success rates for grant applications overall have been going down and the competition is getting ever harder. Gill has been regularly using services that provide updates on potential sources of funding. Well established tools have automated the process of submitting applications allowing her to focus on her research. The use of open standards and identifiers have simplified the whole process, internal research information systems and funder systems use notifications to remove duplication and to ensure all stakeholders are informed.

2. Ensure research has impact and engages a wide range of people

Gill began sketching her group's path to the Research Excellence framework (REF) some time back, with support from her institution's library. She had ensured all her work was REF eligible by using tools to check it was in a repository, now an automated process, and meeting other REF requirements. She has also started to pay attention to transparent impact and citation indices and she can see where the numbers come from and has ideas for how to drive improvement. So even though getting research funding was not getting any easier, Gill has plenty of opportunities to continue her excellent research and looks forward to the REF2020 outcomes with confidence.

2030

A key trend in scientific research is the use of intelligent machine-learning tools to uncover new results from existing data. This has impacted on research grant funding which is now supporting this new generation of experimental data. Faster networks and transfer of data has removed the bottleneck that once delayed Gill's work. Researchers have easy access to all the training they need online so they are highly digitally literate. The multiple skills of a research technologist have been recognised and supported by institutions and funders. Gill's data and research outputs are now available according to FAIR principles of being findable, accessible, interoperable and re-useable.

Gill has begun collaborating with library colleagues to explore new ways of publishing academic research which are becoming common. This includes dynamic links to data and other research artefacts that can be updated in real time, alongside similar work from commercial publishers. This has led to transformations in the impact of research enabling different views to be provided on the outputs tailored to different audiences. This is all being provided as part of a new open digital library space that allows members of the public to engage as well as people working in the private sector. The government have been supporting this initiative as they can see how it promotes innovation and benefits the UK economy.

Research: vignettes



David
Researcher

David has strong early career research success, positive REF 2014 results, an enthusiastic research group, and positive personal impact metrics.

1. Access information to improve skills

2020

David was a PhD student when he was recruited, this was thanks to a grant that his employer received. His employer arranged induction and training managed by the Doctoral Training Centre. In turn he benefited from evolved, digitally supported, research methods training for ethics board submissions, statistics, IPR and computing. Training on research tools and issues around big data, such as handling data at scale, storage and distributed processing, has helped stress the importance of preserving the underlying data and software that form the basis of his research as well as making it accessible to inter-disciplinary colleagues and the wider public.

2. Use the latest research methods

Through a research equipment sharing portal, David was able to access and hire specialist research equipment from a university in the same region. This was relatively low cost for his institution and made good use of equipment that would otherwise have been left standing idle. Some of David's research was part of a wider international collaboration which included some partners from industry. While his own university did not have high performance computing, he was able to use his partners' facilities, as well as national services, as easily as if they were on his own doorstep thanks to the university's powerful and fast network.

2030

David's regular training and support has ensured he has kept up-to-date on new research tools and the latest techniques and algorithms. Constantly developing his skills has kept him at the forefront of his area of research. The ability to go back and obtain historical data and then repeat, tune, and check analysis and even sometimes recreate experimental conditions has made his research more robust, and has helped to dispel public cynicism around commercially funded research. He has started to work on a range of data sources although some agreements are still a little opaque.

David's research projects are all interdisciplinary. Some of his research makes use of social machines - a decentralised process of capturing large scale interactions between humans and machines to develop new knowledge.

David has become highly skilled at using text and data mining techniques on research outputs from similar disciplines around the globe, alongside his own data, to reinforce his research findings. This has led to a couple of publications that have started to establish David's reputation in his field. He used one platform that allowed him to 'publish' all of his research methods and findings as he went. Ensuring his publications and underlying data, software and tools are made openly available ensures that his work can be processed in the same way, using the same techniques by other researchers, enabling potential new discoveries.

Research: vignettes



Jasmin

Associate Dean of Research

It is Jasmin's job to raise the research profile and ranking of her University

1. Ensure her institution's research is well managed and meets strategic goals

2020

REF2021 is going to be the most important yet in refining and focusing government research funding. The adoption of open standardised metrics has ensured open and transparent access to comparable outputs across research-intensive universities. Using an open research dashboard, Jasmin is able to see how her institution's metrics compare to others and be confident of hitting the strategic goals her institution has set. The research office processes have become a lot smoother since the introduction of the research data management shared service and she can be confident that the anxious hand-crafting of the final REF return in 2014 was something that would not be repeated.

2030

Information about research and indicators of its impact are now abundant, yet the effort required from researchers and administrators has been greatly reduced, partly due to systems in the open research environment frictionlessly sharing information. The most recent REF was supported by a range of transparent metrics and Jasmin has full access to these in the preparations beforehand. 'Big science' areas still continue to flourish, relying on peta-bit connectivity between public and private organisations, and major research labs. Having a science 'demilitarised zone' (DMZ) within the institution has ensured data no longer takes weeks to be transferred. This is complemented by growing analysis of existing and new big data sources, which are continuing to drive major new discoveries in the sciences and humanities alike.

2. Ensure her institution hits research targets

There has been an intensive debate again within the university as to who should be included in the REF submission, so the ability to make such decisions on the basis of new, transparent and open metrics, as well as peer review, has been a great step forward. Looking ahead, however good the REF outcome, Jasmin still faced the prospect of her university needing to do more with less. So she was planning to foster much greater use of shared equipment via neighbouring institutions or national facilities and use of centralised HPC power. As well as saving money, this approach offered the intriguing possibility of supporting cross disciplinary work using shared equipment. She has also been exploring how she can track the effectiveness of this activity via research activity analytics. So while times ahead may be tough, she feels her university is well organised and that she can spend her time on achieving strategic goals rather than intensive administrative efforts.

As the majority of data is now being made available via open access, Jasmin is having to spend much less time on putting in place agreements for access to the major big datasets and new forms of data as they emerge. Access to these datasets is now seamless with tools to bring diverse datasets together as one coherent whole. International collaboration with multiple partners has become the norm, helped by faster networks, collaborative platforms, adoption of open standards and open access. Interdisciplinary research has flourished enabled by tools and techniques utilising 'big data'. Arts and humanities are at the forefront of innovation alongside the sciences. Jasmin uses analytics tools to monitor her university's performance in these international collaborations and the impact of the research. The Analytics available to her now include engagement with stakeholders outside traditional research, including government, businesses, and the community.