

The TeciRes project is one of three parallel projects funded by JISC. The other two complementary projects are the review of “using cloud computing” focusing on cloud use cases from users’ perspectives, and the review of “environmental and organisational implications of cloud computing” in Higher Education (HE) and further education sectors.

The main purpose of the TeciRes project was to conduct a technical review of the current landscape within cloud computing to establish the extent to which existing solutions meet encountered and envisioned requirements for using emerging cloud technologies for research, in particular those which enable computing and storage cloud facilities in Higher Education (HE) institutions, and to make recommendations on further development, guidance, and standardisation.

This project combined expert consultancy and desk research approaches. The project started with a stakeholder analysis, example case studies from HE institutions and research departments, and a close collaboration with the “using cloud for research” group, while paying particular attention to technical requirements and issues. Our project team attended research conferences and organised workshops to enrich our understanding of technical requirements, challenges, available solutions, and ongoing technical research activities. Continuous desk research was ongoing throughout the project for: information consolidation, reviewing available and emerging standards, and technical prototyping.

During the course of TeciRes project, the number of Cloud-related workshops and conferences, along with white papers and publications, has greatly risen. In part this shows the interest both commercial and academic of this field. The outputs from the project are a reflection of an extensive literature research but more importantly of the issues that practitioners in the field are facing. Where possible we have tried to show how they have overcome these problems. There are still many questions unanswered, in part because cloud computing for research remains a concept to many or has only been tried on a small scale.

The TeciRes project listed five prioritised recommendations to JISC for possible future works as follows:

Recommendation 1: JISC SHOULD continue support for proofs of concept of using cloud for research. Cloud computing is in its infancy; hence a number of proof of concept application are need in order to give a baseline understanding/measure from which to assess the usefulness of cloud computing for research.

Recommendation 2: JISC SHOULD stimulate cloud-based shared service delivery. Various JISC committees have invested considerable time and resources in developing shared services in a non-cloud context. Hence there are a number of existing shared services in the Grid and VRE space that can be migrated to the cloud for research, and there are new services to be developed, including the need to provide management software for virtual machine images. This will allow Universities to explore the appropriateness of various cloud types and also their ‘green’ credentials.

Recommendation 3: JISC COULD work with international standard bodies, for instance Open Cloud Computing Interface, a working group in OGF, or similar non-grid organisations. This will require funding and efforts, however, on standards adoption through reference implementations.

Recommendation 4: JISC COULD fund various cloud service facilities, particularly storage and data cloud facilities, to ensure highlighted data security and privacy as areas of concern from practitioners and stakeholders. Funding projects in this area will allow researchers to provide alternative methods of sharing research data inside UK research communities, with enhanced security and data privacy.

Recommendation 5: JISC MAY fund large scale institutional and cross institutional clouds for research. This could possibly learn from the work of the NGS cloud pilot project currently underway, with a view to building a UK research cloud on NGS infrastructure.

More details of our findings can be found in the TeciRes final report.