

## Supporting researchers with advanced digital technologies: an approach for institutions

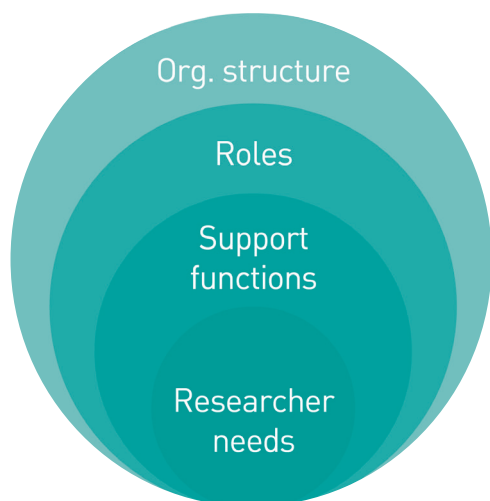
Digital technologies are changing the way researchers work and the research that can be done. Some researchers are using and developing advanced information and communication technologies (ICT) to answer challenging new research questions. Others have little awareness of the potential technologies might offer their research. How do institutions support researchers who may span both ends of this spectrum? This briefing paper reports on the findings of a recent JISC-funded study that set out to answer this question.

Many institutions, recognising the key role that advanced technologies play in research, have invested in high performance computing and data storage. Many are putting in place a human infrastructure consisting of facilitators who support researchers in their use of these facilities and other aspects of what may be called 'advanced' ICT, such as tools for collaboration and data sharing. Our study examined the roles these facilitators perform, how institutions decide on what these roles should be and how the roles are matched to researchers' requirements.

Based on our findings, we have devised an approach to developing facilitator roles which institutions may find helpful when planning their own ICT support for research. The approach, represented diagrammatically below, first identifies the needs of different types of researcher. Then it matches these needs to discrete support functions. Finally, it shows how these support functions can be bundled into facilitator roles that can also perform a function in an organisational structure.

### Users of advanced ICT

Advanced ICT is difficult to put boundaries on – what is advanced ICT to one researcher (or indeed one institution) may be business as usual to another. It is tempting to assume that the support requirements of researchers in Science, Technology, Engineering and Mathematics (STEM) will be different from those of non-STEM researchers. However, this is a false assumption: users require different types of support for different problems at different stages of their research careers.



We have described the differences between users against two axes: requirement maturity (how well they understand and can express what they want to do), and their own level of technical skill to meet the requirement. From this we have proposed four user personas, each occupying a quadrant of the grid created by the axes of technical skill and requirement maturity (see diagram below).

An individual could find themselves in more than one quadrant. For example, many computational researchers work on projects containing elements that cause them to behave as both Day Job and Inventor. Researchers will move between quadrants as they gain knowledge and experience.

**The Day Job** user knows what they want to do and how to do it. They need a low level of support, which mostly concerns the routine operation of their work.

**The Inventor** is at the forefront of technology development. They are drawing on their high level of technical skill to develop solutions or approaches to problems that may themselves not be well defined.

**The Dreamer** is aware that they could do something beneficial with ICT, but they are not yet sure exactly what it is, and they certainly lack the technical skill to make it happen.

**The Sat Nav** user is able to express what they want, but lacks the skill to implement it.



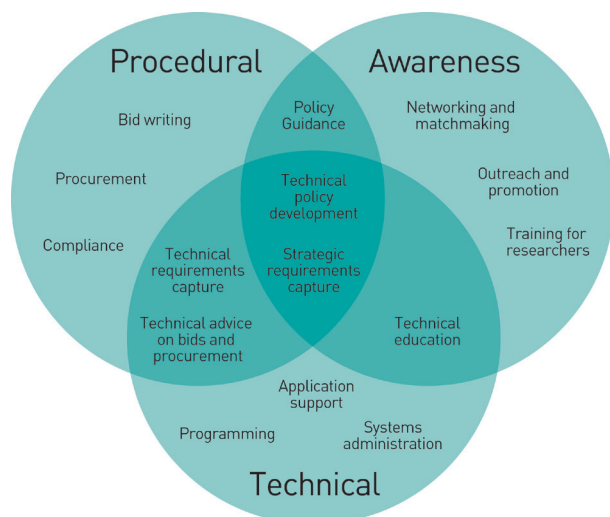
### Support functions

The support of advanced ICT involves a range of discrete activities, for example technical support, requirements capture, networking and matchmaking, outreach and promotion and training. We identified 15 different activities each of which we have placed into one of three overlapping categories (see diagram on next page).

**Technical** requires the support provider to possess either a greater degree of technical ability and knowledge than the user, or to be in a position of responsibility or authority regarding ICT

**Procedural** enables the user to navigate institutional and funding council structures and to follow and apply institutional policy

**Awareness** raises the profile of ICT facilities and associated support, or trains researchers in the use of facilities.



## Roles

Institutions have combined these functions in different ways into facilitator roles. However, some roles are encountered frequently including core staff, such as systems administrators, and specialist facilitators, such as internal consultants (two example roles are illustrated in the diagram below). Specialist facilitators play a range of important roles, such as helping researchers access the resources they need and helping services to plan future provision.

We found that, in many cases, facilitator roles have been developed significantly by the individuals currently occupying them. Career paths for facilitators are not well defined and although some will be able to move into other areas of institutional administration, many will have nowhere to go within the sector.

## Organisational structure

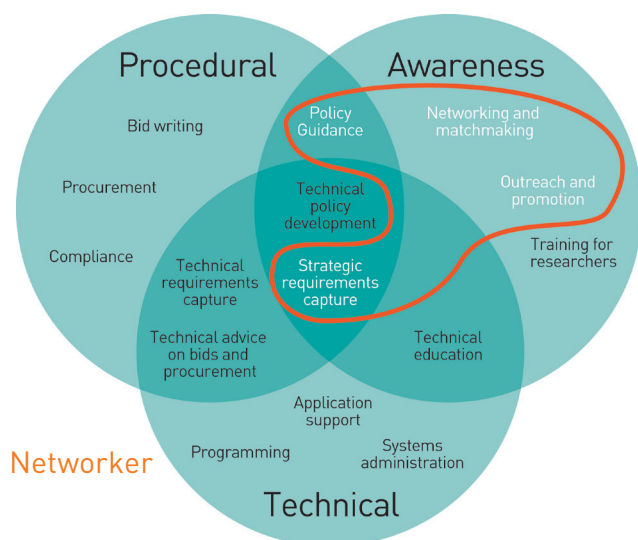
How individual institutions arrange their support for research depends on a number of drivers and may not be optimal. We therefore found it unhelpful to consider in detail the overall model of support at any institution with the aim of comparing models. Rather, we think that our approach – specific requirements being met by discrete support functions, which are bundled into facilitator roles within the organisational structure – provides a framework within which to consider the provision of support at all levels from individual research groups up to institutions or consortia.

Unless an institution is committing to wholesale restructuring and re-engineering of support processes, from the research office all the way to IT services' help desk, it is unlikely that the support environment could be optimised. Pragmatic choices will be required to determine whether more limited changes to roles, responsibilities and processes could improve the institution's research output.

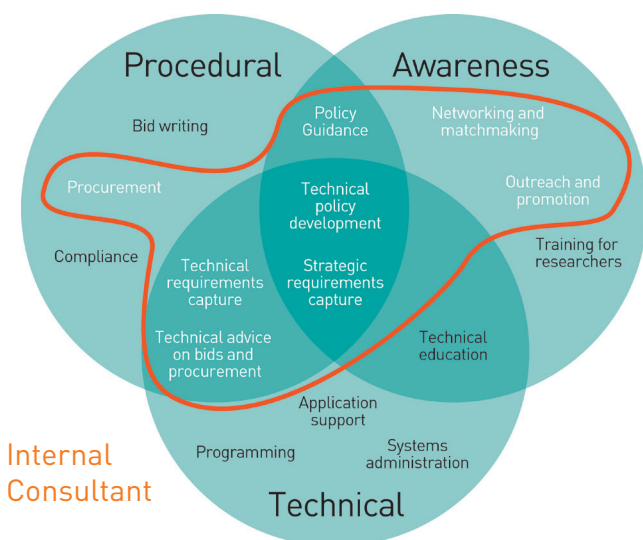
## Support of advanced ICT

Many users of advanced ICT simply need a working infrastructure (network, power and cooling, filestore, email, high performance computing) upon which to build their own research systems. Unless these core functions are being provided well, and are trusted by users, it is unlikely that an institution will be able to deliver higher-level services effectively.

Many institutions are striving to increase the maturity of their services. However, much advanced ICT, for example software developed as part of a research process, is unstable or immature, making it difficult or inappropriate for institutions to support. That said, appropriately skilled and empowered facilitators have the potential to act as agents of change within the institution, helping IT services to understand better their customers' priorities and to align their service provision to those priorities.



Networker



Internal Consultant

## Recommendations

- Institutions should accept that some advanced ICT should be left to the users themselves to support.
- Given the limited career opportunities for specialist facilitators within higher education, institutions should consider their grades and responsibilities against similar roles in other sectors
- Institutions considering changes to their ICT support infrastructure should consider 'advanced ICT' within the overall organisational picture and ask whether a change to business processes could avoid the need for a specialist facilitator

## Further information

Review of models of advanced ICT support for researchers:  
[www.jisc.ac.uk/whatwedo/programmes/researchcommunities/modelsofsupport](http://www.jisc.ac.uk/whatwedo/programmes/researchcommunities/modelsofsupport)

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