

Grand Challenges: E-Science Opportunities in the World of the Visual Arts

This document is intended to stimulate debate and discussion in preparation of the E-Science Scoping Seminar for the Visual Arts. It is a tentative, partial and therefore controversial delineation of the challenges and opportunities, which the E-science agenda presents for the visual arts. It cannot however claim to be representative of all aspects of our disciplines. Nor does it aim to be comprehensive. Feel free to disagree with all or any of what it contains. It is simply offered as some of the key issues on which we shall need to focus on in our expert seminar. I would like our discussions to be broad ranging, but I would also like us to emerge with some practical recommendations and ways forward.

This seminar offers us an opportune moment and a unique occasion to look at how best we can use E-science to our advantage in our particular discipline. In this document, I will start with trying to encapsulate some of the distinctive features in the way in which visual arts research is conducted. Then I examine the challenges and opportunities presented by ICT, outlining the areas where it has been of particular importance to us. Initially I offer a series of headings for us to discuss the E-science agenda; suggesting ways we may most profitably take it forward in our own discreet discipline.

- To raise awareness and understanding of E-science to enable scholars to engage with ICT in their research practice.
- To find out about and take advantage of the outputs and tools arising from the E-science and E-social science programmes.
- To stimulate and encourage the best innovative use of ICT in research in the Visual Arts.

We will hopefully at the end of the Seminar be able to provide key indicators of the quality and excellence of this area of research which by its very nature is often a non-textual artefact, and how we can in future engage with the E-science agenda. It is a relatively uncharted field, as there is little knowledge available within the public domain. This will also help to assist the AHRC in the development of an arts E-research/science agenda.

Context:

Research in the Creative Arts is a broad and dynamic field. It provides modes of inquiry, reflection and production, through visual thinking and making. Knowledge and reflection are embodied in, rather than applied to, artistic practices and processes. These may materialise through a variety of media and forms of presentation, including two dimensional, three dimensional, time based and interactive media, and site specific practices, as well as multi - and interdisciplinary and traditional text based research approaches. Intersections between art and technology are transforming the way art is produced, and each time more frequently teams of artist, designers, engineers, etc. work together in art and media labs. These teams are not frequently related with the traditional art scene or circuits, as they approach or are directly part of the academia, the research laboratories at the universities, and the digital art specialised forums. Within these new Visual Arts research environment, the research outputs are often ephemeral and the scholarly infrastructure hidden, resulting in much innovative use of new technologies. Where the subject matter involves images and objects that can be researched through reflection on the creative results or research in the actual process of creating and making. Research and terms and concepts in the visual arts at present are often invented, adapted or borrowed from more established areas of research.

Broad Headings of Types of Research done within the Visual Arts

1. Practice Based Research
2. Critical and Theoretical Research
3. Design/ Project Managed Research

ICT can be seen to facilitate this research through the use of the following thematic areas, within primary research, research outputs, research dissemination, research processes, methods and knowledge production.

- collaboration and networks
- sharing and retrieval of data
- access to data
- analysis of data
- publishing data
- artistic outputs created by the use of generic and bespoke tools and applications

This list is not intended to be exhaustive and the participants are invited – indeed encouraged – to make new proposals or to propose that items be removed. It is intended to provoke discussion it does not necessarily represent the views of the author. Consequently, participants at the workshop are asked not to circulate this document: a more rounded discussion will form part of the reporting of the project, and participants will be sent a copy of this in due course.

Challenges, Drivers and Barriers

To review and contextualise the barriers and challenges within the overall ‘grand narrative’ of the research process in our specialised area, including our ‘research processes/life cycles’ for the Visual Arts.

(Some of these will end up being outside our sector, and others will be within the sector, and therefore in our power to resolve).

Drivers

These are factors, which sometimes determine the kind of ideas an artist has for their creations. These often might involve the availability of funding, pressures and stipulations of the RAE, or perhaps changes in intellectual trends and fashions that might inspire an artist. Computer technology, it might be noted- has quite an effect on this stage, as some artists find they are driven to produce work by the potential and new horizons offered by technology. The community also now finds itself in the position of having access to an unprecedented amount of digital materials, in the form of texts, images, moving image and audio materials, and datasets. While the creation, management and preservation of digital resources continue to present challenges that require ongoing support and engagement, the question of how best to provide support for researchers who wish to creatively engage with this body of material for advanced scholarship has become critical.

Barriers

Perhaps the limited knowledge and awareness of the potential of scientific technologies. By not engaging in collaboration with others be they for example other similar art/research institutions or with collaboration with other disciplines such as Computer Scientists, we are closing opportunities.

Visual Arts and the E-science Agenda

E-science – in this context it might be better to call it E-research – it is at present the flavour of the month. It means all things to all people!

The E-science programme arose from scientists trying to identify challenges that could not be dealt with using current technology.

This is the definition as defined by the National E-science Centre: -

‘In the future, E-science will refer to the large-scale service that will increasingly be carried out through distributed global collaborations enabled by the Internet.

Typically, a feature of such collaborative scientific enterprises is that they will require access to very large data collections, very large scale computing resources and high performance visualisation back to the individual user scientists’.

[<http://www.nesc.ac.uk/nesc/define.html>]

In a similar vein the arts and humanities communities need to identify the ‘grand challenges’ that are particular to arts and humanities research, and to assess how use and development of technology might contribute to solving these challenges.

How, then, should visual artists react to this possibility of the grand challenge?

To answer that question we need to focus on these issues. These emerge from this analysis of how artists/designers work and how they have reacted so far to ICT opportunities and challenges: -

- We have the potential for very large demands for fast transfers of data (high resolution of images, video and sound footage etc). How should we identify where these are, and where their further study and exploration in an E-science Grid environment can be most profitably enhanced
- We have some potentially very disparate data and some emerging interoperability needs. How can the Grid help us with these? Can we square the challenges of the authentication, licence, and copyright and accessibility issues with the opportunities that potentially may lie ahead for us? If so, can we identify a particular domain or area of enquiry where we should concentrate our attentions?
- If we can, what kind of interoperability are we looking to provide? Are there other ways in which we can develop a Grid-based ‘research platform’ that would more appropriately provide for the visual arts needs?
- We have a strong individualist research culture; but also proven evidence of successful collaborative endeavour. Can we base our Grid developments on the latter? If so, what lessons should we draw on so that we can maximise the likely outcome? Are there changes that we need to contemplate in our research culture? Do we need more (or more advanced) research tools? Open source software for

example? Are these likely to be generic to the arts and humanities, or specific to the visual artist?

- Our informal means of networking are effective in environments where technical support is minimal. How should we approach the move to an environment of higher technical specification for informal networking, with its greater demands? What is the best way of ensuring that visual artists and creators make effective use of the Access Grid? Of VREs? How should we approach the issues of awareness, training, and support?
- Research collaboration poses fundamental questions about the 'ownership' of research outputs (in a world in which the RAE expects returns by each individual practitioner). Visual creators are both very willing to share research results, and quite jealous of their particular 'subject' and sometimes of the 'archive' to which it relates).

An explosion of information faces Artists/Designers, like every other discipline. E-science is proposed as a means of managing that data 'bonanza'. If this is so, we should be looking seriously to take advantage of what the E-science agenda has to offer us. We need to engage with such advanced methods, which will however often require collaboration with the scientific, computer science and engineering communities. Collaboration within the E-science framework is therefore a crucial step towards building such partnerships.

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