

# New Research Processes and Business Models for the Creative Industries

## Part 1: Previous Research and Track Record

Our cluster brings together practitioners from the creative industries with researchers from varied traditions that span ICT, the arts and humanities, the social sciences, and business studies.

### Initial partners from the Loughborough workshop

**Matt Adams** (Artist, **Blast Theory**) is a founder member of Blast Theory, renowned as one of the most adventurous artists groups using interactive media worldwide. Their work has toured the globe, including Chicago Museum of Contemporary Art; ICC in Tokyo; the Dutch Electronic Arts Festival, Rotterdam; Biennale of Sydney; Sonar, Barcelona; and Basel Art Fair. They have been awarded the Maverick Award at the Game Developers Choice Awards in San Francisco, the Golden Nica for Interactive Art at Prix Ars Electronica, and have been nominated for four BAFTAs. Matt is also a Visiting Professor at the Central School of Speech and Drama.

**Steve Benford** (Ubiquitous computing, **Nottingham**) is a Professor at the Mixed Reality Laboratory where he explores the potential of ubiquitous computing to support art, performance, culture and entertainment. He has worked widely with artists, most notably Blast Theory, to develop innovative experiences that are then deployed and studied 'in the wild' using ethnography. He has published over 200 papers, including 20 full papers at ACM CHI, 6 in ACM Transactions on CHI, 3 in Communications of the ACM, and a full paper at SIGGRAPH. He led the EPSRC funded Pervasive and Locative Arts Network and was an investigator on EPSRC's Equator Interdisciplinary Research Collaboration (IRC).

**Jonathan Foster** (Information management, **Sheffield**) is a Lecturer in Information Management where he researches knowledge management and strategy, e-business, and information systems in organisations, with a focus on information management in the digital economy and social/collaborative information seeking and retrieval. He has worked on a TLTP Computer-Based Collaborative Group Work project and received a White Rose (Universities of Leeds, Sheffield and York), teaching and learning award for Managing Innovation in the Digital Economy.

**Ted Fuller** (Entrepreneurship and strategic foresight, **Teesside/Lincoln**) is currently a Professor in the Business School at Teesside, but takes up a new position as Head of the Lincoln Business School in March 2008. His research interests span entrepreneurship and Small and Medium Enterprises, emergence and a 'complexity' theory of entrepreneurship, and the (social) construction of futures. He regularly publishes in journals such as the International Entrepreneurship and Management Journal; and Futures, Journal of Policy, Planning and Futures Studies.

**Peter Grindrod** (Mathematics, marketing and innovation, **Reading**) is a mathematician and entrepreneur who has spent almost 20 years in industry. He has run innovative multidisciplinary and multi-company projects within the UK, EU, US and Japan. For ten years he specialised in providing analysis and insight for the marketing, advertising and commercial sectors based on analysing the behaviour of massive customer databases. He was a founder of a successful self-funded company (Numbercraft limited) that provided analysis, algorithms and software for major business, exiting by trade sale to a US software company, on plan, in 2003.

**Giles Lane** (Artist, **Proboscis**) is founder and co-director of Proboscis, an artist-led studio that has created a number of internationally acclaimed projects (Mapping Perception, Urban Tapestries and Navigating History) with a strong focus on research, public engagement and participation. They collaborate with research partners including the London School of Economics, Institute of Child Health and Birkbeck College, and also with large industrial companies including Orange, HP Labs, France Telecom R&D, Channel 4 and Ordnance Survey. Proboscis have been funded by DTI, EPSRC, the Arts Council, Ministry of Justice, British Film Council, Creative Partnerships and NESTA.

**John Patterson** (Animation, **Glasgow**) collaborated with Cambridge Animation Systems in the ANIMAX project (1993-6), coordinating the project from 1994-6. He participated in the CIRCUS ESPRIT Working Group (1998-2001), leading to the RACINE-S (2002-2005) and CUSTODIEV (2002-2005) projects. **Matthew Chalmers** (Computer Science, Glasgow) takes a holistic approach to ubicomp, spanning theory, user studies and systems design, building on his work at Xerox labs and as an investigator in the Equator IRC. A committee member of Ubicomp, Pervasive and CHI, he co-authored the UKCRC Ubicomp Grand Challenge.

**George Roussos** (Pervasive Computing, **Birkbeck College**) is a Senior Lecturer in Computer Science and Information Systems, where he leads the pervasive computing research lab. His research explores the effects of social activity on system architectures, including collaborations with the artists Proboscis. He is the area editor on RFID for the Pervasive and Mobile Computing Journal and regularly edits journal special issues including IEEE Internet Computing and Personal and Ubiquitous Computing.

**Kirk Woolford** (Digital artist, **Lancaster**) is a lecturer at the Lancaster Institute for the Contemporary Arts. His work mixes elements of traditional visual arts, digital techniques, movement and live performance. He has directed web development and video games production at companies in New York, London, and Amsterdam, working with the Economist Group, BBC, Channel Four, FilmFour, Illuminations, Babel Media, and THQ. His work has been shown in international venues including Shanghai eArts, ARCO Madrid, Art Cologne, P.S.1. (MoMA), Venice Biennale, Gulbenkian Foundation Lisbon, Monaco Dance Forum, Ars Electronica, ISEA, and SIGGRAPH.

## Further partners who have joined the cluster following the Loughborough workshop

**Alan Blackwell** (Interdisciplinary design, **Cambridge**) is Reader in Interdisciplinary Design and Director of the Crucible network for collaborative arts research projects, funded by AHRC, the Arts Council of England and the Leverhulme Trust. His studies of artist-technologist collaborations have been reported in journals such as *Leonardo* and in a forthcoming NESTA report on best practice in interdisciplinary collaboration. He is also research coordinator for the Arts Council's million pound AmbITion programme. **Neil Dodgson** is Reader in Graphics and Imaging, pursuing research in geometric modelling and image processing. **Peter Robinson** is Professor of Computer Technology, pursuing research in new technologies to enhance communication between computers and their users.

**Thierry Barbier** (Graphics, CGI and VR, **AmaK**) co-founded AmaK in 2000 to specialise in large format films, CGI, composite images and virtual reality (10 credits, including IMAX, multi-screen HD films, and 3D interactive installations), where he is executive producer today. His previous post was Head of the VFX department at *Ex Machina* where he gained production credits for six ride films, three 3D IMAX films, two 3D HD, and six feature films.

**Ernest Edmonds** (Studies of creativity, **University of Technology, Sydney**) is Professor of Computation and Creative Media and runs the multi-disciplinary practice-based Creativity and Cognition Studios. He has previously held the position of University Dean and Head of Department at Loughborough in the UK. He co-founded the ACM Creativity and Cognition Conference series and was part of the founding team for the ACM Intelligent User Interface conference series. He has more than 200 refereed publications in the fields of human-computer interaction, creativity and art.

**William Gaver** (Design, **Goldsmiths**) is Professor of Design and heads the Interaction Design Studio. Bill has pursued research on innovative technologies for 20 years, exploring auditory interfaces, theories of perception and action, interaction design and design-led methodologies. Much of his work has been pursued with and for companies such as Intel, Apple, Hewlett Packard, IBM and Xerox. He is on the steering committee of the joint EPSRC/AHRC Design for the 21st Century initiative, and is a member of both the EPSRC and AHRC Peer Review Colleges.

**Gabriella Giannachi** (Theatre studies, **Exeter**) is Director of the Centre for Intermedia and co-investigator of the AHRC-funded 'Performing Presence' project (with Stanford and UCL). The project's archival work on Lynn Hershman has so far been shown at Montreal Museum of Fine Art and St Francisco Museum of Modern Art. She worked as dramaturg, theatre critic, advisor to festivals and organizations, and was a partner in the AHRC, DTI, ACE and ESRC-funded network on creativity, CEMP. Recent monographs include: *Virtual Theatres* (2004) and *The Politics of New Media Theatre* (2007).

**Patrick Healey** (Digital music, **Queen Mary**) is a Reader in Computer Science and a member of the Centre for Digital Music, a world-leading group in the field of Music & Audio Technology whose interests range from record/replay equipment in the home or studio, to the simulation and synthesis of instruments and voices, acoustic space simulation, music understanding, delivery and retrieval. His research addresses human computer interaction and multimodal interfaces. He has published widely in cognitive and computer science and was joint chair of HCI 2006.

**Susan Heath** (Music and interaction, **Decoda**) is a founder of Decoda, a Hastings-based social enterprise, set up in 2003 and dedicated to pushing back the boundaries of what's considered possible for those with profound disabilities. Their main focus is now the Music Gym, an innovative interactive music and movement facility for sports halls.

**Sally Jane Norman** (Performing arts and technology, **Newcastle**) is director of Culture Lab, a unique research infrastructure that promotes socially and economically valuable synergies with artists, creative industries, and cultural and scientific institutions. She is a cultural theorist and practitioner whose research is focused on live art and technology, author of studies for UNESCO, the French Ministry of Culture, and the French National Scientific Research Centre, and also co-organiser of events at the Zentrum für Kunst und Medientechnologie (Karlsruhe) and STEIM (Amsterdam).

**Clare Reddington** (Producer, **iShed**) works with industry, academic and creative partners to deliver collaborative research and networking projects around digital technology and the creative industries. She is responsible for iShed, a new venture set up by Bristol's Watershed Media Centre to initiate innovation and collaboration in the creative industries. She has managed a series of collaborations with HP Labs, has recently set up the Creative Technology Network with the University of Bristol, and has just launched Media Sandbox a Pervasive Media investment scheme with South West Screen.

**Frank Van Reeth** (Digital media, **Hasselt**) is Professor of Computer Science and Deputy Managing Director of the Expert Centre for Digital Media at Hasselt (Belgium) as well as Vice-President of Androme NV. His interests span computer graphics, animation, virtual environments, multimedia technology and telematics. He has led major industrial research projects and has acted as evaluator of national and European R&D proposals involving the above research domains.

**Phil Willis** (Animation, **Bath**) is Professor of Computing and Director of the Media Technology Research Centre. His research interests are within colour raster graphics, computer games, virtual reality and animation and film technologies with an underlying interest in picture and object representations. He is a founding member of UKCRC, the UK Computing Research Committee. **Danae Stanton-Fraser** is a Reader in Psychology with interests in spatial cognition, navigation in real and virtual environments and the design, development and evaluation of applications using mobile, wearable and tangible technologies. She is an investigator of the CityWare project under EPSRC's WINES programme and a member of the iShed Advisory Group with links to digital arts activity in Bristol and the South West. **John Fitch** explores sound and music, including sound design, computer music composition and performance, and computational musicology

**Lorraine Warren** (Innovation in SMEs, **Southampton**) is a senior lecturer in the School of Management where she studies the complex dynamics of innovation systems, including the impact of legislation and standards on innovation and entrepreneurship and also early stage concept development. She has established two small businesses and is a member of the British Academy of Management and an Associate of the Chartered Management Institute.

## Part 2: The proposed research and its context

*“Very few creative firms or organisations have the critical mass of in-house skills and market knowledge to fully exploit market opportunities or generate creativity through in-house teams of sufficient diversity. They need to be able to network with others to fill gaps in their knowledge and skill sets.” [4]*

The UK is world-renowned for its creative industries in areas as diverse as music, animation, design, and the visual and performing arts. Creative industries account for 7.3 per cent of the UK economy, making them comparable in size to the financial services industry [4], and the livelihood of a growing proportion of British citizens now depends upon the sector maintaining its trajectory of growth. However, the emergence of a new generation of social, pervasive and affective ICT promises to transform the creative landscape, raising major challenges for both the creative industries and ICT research. This cluster therefore seeks to establish a close connection between ICT researchers, those with an interest in business and innovation, and practicing members of the creative industries in order to answer two closely related questions: *what key challenges face the creative industries due to the emergence of a new generation of social, pervasive and affective ICT?* and conversely, *what long term challenges must be tackled by ICT research in order to support future creative industries?*

In answering these questions we also recognise that the creative industries have a distinctive character that challenges traditional models of research and business innovation. Specifically, the creative industries revolve around dynamic and often unorthodox coalitions, whereby numerous small and micro-businesses come together for the duration of a single project, then disband and form new partnerships for the next project. In contrast to larger companies that can sustain dedicated research and development facilities, it can be extremely challenging to engage such dynamic creative networks in traditional long-term EPSRC-funded research projects. Our cluster therefore also addresses a third question: *how can we better engage small creative companies in research and knowledge transfer, and especially how can we establish new interdisciplinary approaches across ICT, the arts and humanities and the social sciences that support ‘practice-led’ approaches to research?*

In this context, the overall objectives of this cluster are therefore to:

- define a new long-term research agenda for the creative industries to underpin future collaborations between the ICT research-base and creative practitioners;
- initiate new inter-disciplinary collaborations among researchers across ICT, the arts and humanities, and the social sciences, including business studies;
- propose and demonstrate new ways of engaging creative end-users, leading to new models of research that can successfully combine focused ‘practice-led’ creative activity with the need to address long-term research goals;
- explore new forms of knowledge transfer and innovative business models that reflect the highly dynamic and distributed nature of the creative industries within the UK.

In order to meet these objectives this cluster will support a programme of collaborative activities:

- it will facilitate a series of workshops (open events, ateliers and sandpits) in order to build a community of researchers and users, explore research agendas and processes, and generate seed proposals;
- it will fund four ‘practice projects’, short-term practical activities that explore different modes of interdisciplinary collaboration across various sectors of the creative industries including music, pervasive media and animation;
- it will support two troubadour studies to reflect on research and business models across a wide range of past and ongoing projects;
- it will fund a focused team of researchers to consolidate the results of these activities into a research framework for the creative industries that combines a forward-looking research agenda with guidelines for new models of collaboration.

Consequently, the outcomes of the cluster will be:

- A coherent agenda for long-term ICT research with the creative industries that articulates future opportunities, key challenges and potential barriers to leveraging the creative industries as part of the digital economy.
- The shaping of a new and inclusive interdisciplinary community of researchers, business specialists and creative users that is ready to undertake future research projects;
- A set of seed proposals ready to be developed into full-blown proposals for EPSRC, TSB and other research funding bodies as part the Digital Economy programme;

# Background

## Motivation

As highlighted by the DCMS [3], NESTA [8], TSB, RCUK and others, the creative industries are thriving in the UK. According to the DCMS' October 2007 *Creative industries Economic Estimates Statistical Bulletin*, the creative industries' exports of services totalled £14.6 billion in 2005. In addition, the creative industries grew by 6% between 1997-2005 – double the overall UK economic growth at 3%. Clearly the creative industries are extremely important, not only to the UK digital economy, but to the UK economy as a whole.

However, the creative industries are also poorly understood. In highlighting the central role of the creative industries in the wider economy, a report for the Department of Culture, Media and Sport in 2006 observed:

*“Today there is growing recognition of the subtle but important linkages between the vitality of the creative core, the creative industries beyond, and creativity in the wider economy – although uncovering their exact extent is made very difficult because of a paucity of evidence and data.”*

The creative industries are also unusual in that they are characterised by a relatively small number of larger organizations and an extraordinary number of SMEs, micro-businesses and sole traders. Networks of these small businesses are often called upon by the larger organisations for innovative solutions to problems, or when the larger organisation realizes it can't respond quickly or flexibly enough. The relationships and collaborations between these kinds of businesses are in constant flux and defy conventional business strategies and understanding. As observed in [4]:

*“The creative industries can be conceived as a pioneer sector of the economy, trailblazing approaches, and fostering an attitude towards creativity and innovation from which the rest of the economy and society can benefit. This critically depends on whether ‘effective’ transmission mechanisms are in place.”*

Understanding how these ‘effective transmission mechanisms’ will become established is essential if the digital economy is to succeed in increasing the links between the creative industries, ICT research and business innovation. Without them, it may be undermined by the current disconnection between large parts of the creative sector and those who seek to develop new ICT technologies and transformative approaches to business and innovation.

This “New Research Processes and Business Models for the Creative Industries” cluster emerged from a remarkable collection of people attending the Loughborough workshop. Its participants came from a wide range of backgrounds, but shared a common interest in the use of digital technologies to support creative practice – producing products, services and technologies, engaging in interdisciplinary collaborations, and studying innovation and business. These partners now wish to focus their combined efforts on the unique challenges presented by the creative industries within the Digital Economy.

## The problem to be addressed

Creative industries raise significant and distinctive challenges for research and knowledge transfer within the digital economy. Clusters of small creative partners can be hothouses of innovation but do not always fit well to traditional research models. The cash flow demands of SMEs mean that they seldom have the opportunity to invest time and capital on projects that don't have immediate commercial value. Consequently, while the research they produce may be extremely market focused and targeted, it is often lost to the digital economy at large because SMEs lack the resources or incentives to disseminate their research or to collaborate with others to undertake longer-term research. A number of specific tensions need to be addressed in order to build stronger links between the creative industries and the traditional research base.

- **Agility** – small creative teams are often agile and spontaneous, responding quickly to new market opportunities. While the stability and sustained vision required for long form research projects is important, new models must be found to realise projects with short lead times, especially in a digital economy in which first mover status can be critical. The long planning periods, linear development paths and established collaborations often required by traditionally funded research can be too restrictive, inhibiting the risky innovative strategies demanded by the creative industries.
- **Funding** (and hence power balance) – as a consequence of their inherent stability, large companies and universities have well established links with research support. Given their large premises and staff, technical resources and breadth of skills (including dedicated legal, HR and financial experts) they tend to set the research agenda. We would argue that developing funding approaches which engage more directly with innovative small-scale creative networks is critical to fostering future transformational research in the digital economy.
- **Intellectual Property** – traditional approaches to IP are challenged by technical changes in the creation and distribution of content. For example, business processes have risen in importance as a form of IP; open approaches to IP are moving beyond the Open Source model used for software into other areas; and Digital Rights Management and other forms of intrusive IP protection have proved unviable and are being scaled back.

*To fully reap the benefits offered by the creative industries, we need to establish new approaches to ICT research and knowledge transfer that are properly grounded in an interdisciplinary approach that combines practice-based and theoretical work, and that draws upon perspectives from ICT, creative practice, the arts and humanities, social science and business studies.*

## Previous collaborations between the creative industries and ICT research

Of course, there is already a longstanding relationship between ICT research and the creative industries. From the first demonstration of the mouse-driven graphical interface as a tool for animation to today's CGI and interactive games, computer graphics has been at the heart of ICT research, perhaps best seen in the history of the SIGGRAPH series of conferences. Many other fields have since emerged including sound and music (see the New Interfaces for Musical Expression series of conferences), Design (see the Designing Interactive Systems conferences) and Creativity (see the Creativity and Cognition conferences). In turn, the arts have turned to ICT as a way to create innovative forms of new media art, as seen in the history of major festivals and conferences such as the International Symposium of Electronic Arts, and Ars Electronica. This body of work includes very many individual cases of successful collaborations between creative users and ICT researchers. The following three examples involve our cluster partners and span different sectors of the creative industries:

- **Animation:** Patterson (Glasgow) and Willis (Bath) collaborated as part of the EU - IST project CUSTODIEV (2002-2005) which carried out a programme of practice-led research involving artist-technologist collaborations with three animation studios, leading to a patent on Vectorising Photographic images [9], the book "The Art and Science of Drawn Animation" and a series of papers at key graphics conferences.
- **Music:** The Centre for Digital Music at QMUL is a leading centre world-wide for digital music, building on unique commercial and technological assets as well as on an ongoing EPSRC Platform Grant to explore collaborative musical improvisation and performance. Pat Healey and colleagues are leading a series of projects at the interface between artistic practice, human communication and technology including the AHRC/EPSRC DemTech project which is using live art techniques to widen participation in the design of digital 'networks of things'.
- **Performance and games:** As part of the EPSRC funded Equator IRC, the artists Blast Theory collaborated with Benford (Nottingham) to create a series of mobile and mixed reality artistic performances that toured to more than twenty cities worldwide. These generated scientific outcomes including a series of papers at the ACM's CHI conference (e.g. [6]), the award of the 2003 Prix Ars Electronica and three BAFTA nominations, and also seeded follow on projects including the DTI/EPSRC funded Participate project with the BT, BBC, and Microsoft Research and the EU funded Integrated Project on Pervasive Games with Nokia, Sony and others.

However, in spite of the history of collaborations between the creative industries and ICT research, including many examples involving our cluster partners, the increasing importance of the digital economy brings with it a pressing need to reconsider the nature of interdisciplinary work in this sector. First, the technology landscape is rapidly changing, requiring us to establish a new ICT research agenda for the coming decades. Second, the growth of the digital economy requires us to move beyond isolated examples of successful collaborations towards new generic and more powerful models of research and knowledge transfer that can be applied on a large scale throughout the creative industries and beyond.

## The changing landscape for ICT and the creative industries

A series of emerging developments in ICT have already begun to have a transformational impact on the creative industries and their links with rest of the economy. These introduce opportunities for new products and businesses while also significantly challenging existing ones. Our preliminary discussions within the cluster have already identified the emergence of three new forms of media as being especially relevant.

- **Social media** – the recent growth of interest in social and sharable media promises to radically transform the ways in which we both produce and consume creative content, opening up new possibilities for 'user generated content' and thereby transforming value chains. The potential disruption of social technologies can currently best be seen in the music industry, but promises to spread into animation, film, broadcasting and the arts.
- **Pervasive media** – developments in pervasive and ubiquitous technologies will similarly transform the creative industries. The ability to access experiences at anywhere and anytime demands new approaches to personalisation and contextualisation while the ability for participants to document real world experiences as they happen will stimulate new forms of participatory experience.
- **Affective media** – while still at an early stage, the nascent field of biosensing promises to deliver new ways of capturing information about physiological, and ultimately emotional, state leading to new affective experiences that directly adapt themselves to participants' real time responses.

A key objective of this cluster is therefore to identify and map the opportunities and challenges that arise for the creative industries as a result of these, and indeed other, shifts in the ICT landscape.

## Studying interdisciplinary collaborations in the creative industries

In addition to setting a new technical agenda for ICT research in the creative industries, we also aim to establish new understandings of the underlying collaborative processes involved so as to inform future research and business models. This will build upon previous methods for studying interdisciplinary collaborations between the arts and ICT research that have been developed by cluster partners.

*Ernest Edmonds and Linda Candy* (UTS, Sydney) carried out a series of studies of creativity within their earlier EPSRC-funded COSTART projects (1998-2003) [2] which led to Edmonds chairing OST's Access and Creativity Task Group that investigated access to creative technologies within the UK and Japan. They have subsequently formed the Creativity and Cognition Studios at UTS to study the nature of creative practice in digital media and the arts.

*Alan Blackwell* (Cambridge) has extensive experience of a range of approaches to research at the boundary between arts and technology, including the New Technology Arts Fellowships – a 1-year pilot national fellowship scheme run by AHRC and the Arts Council of England. He is also research coordinator of the Arts Council's million pound AmbITion programme of strategic deployment of IT in the arts [1].

Other cluster partners bring a track record of studying and innovation and collaboration in business, enabling us to further broaden our perspective on the nature of interdisciplinary collaboration, especially with regard to future business models for the creative industries.

*Ted Fuller* (Teesside) has undertaken a number of studies of SMEs in relation to ICT (e.g. [7]). Informed by complexity theory and social theory, he has generalised a theory of entrepreneurial 'processes of emergence' showing through business case studies how such processes can account for the production of specific business practices.

*Jonathan Foster* (Sheffield) as a recipient of a White Rose Centre Enterprise grant for Managing Innovation in the Digital Economy has researched new models of information management and information seeking, collaboration, and discourse.

*Peter Grindrod* (Reading) brings extensive business insights gained from over ten years of providing analysis and insight for the marketing, advertising and commercial sectors, especially analysing the behaviour of massive customer bases (account data, usage, transactions, and clubs and loyalty cards). This has included support for the growth of on-line, telco and ISP businesses as well as retail (Tesco, Sainsburys, Waitrose) and many major FMCG/CPG companies (Unilever, P&G, Coke, Pepsi). He was a founder of a successful self-funded company (Numbercraft limited, 1998-2003) that provided analysis and algorithms and software for major business and that exited by trade sale to a US software company on plan, in 2003.

This combined experience will enable us to identify practical business models, network relationships among small creative firms, insights into the behaviour of entrepreneurs and, in particular, an innovative methodology for identifying the emergence of innovation in the digital economy.

***In summary, this cluster offers a unique opportunity to integrate previous research from multiple disciplines in order to develop a broad understanding of the creative landscape in the UK and its relevance to the Digital Economy.***

## Approach, activities and workplan

Our cluster will adopt an interdisciplinary approach to establishing new collaborations between the creative industries and an interdisciplinary research base. This will integrate three broad perspectives:

- **Creative practice** – we will work practically with small creative companies, including undertaking feasibility projects as a way studying collaboration in practice and of seeding ideas for future proposals. These companies will provide creative design input, knowledge of the creative industries, and opportunities to publicly demonstrate early research prototypes. Our cluster already includes creative companies from various sectors of the industry spanning animation (Studio AmaK), music (Decoda) and the arts (Blast Theory and Proboscis). A further partner, iShed, part of the Bristol's Watershed Media Centre, brings a proven track record of fostering interdisciplinary collaborations between artists, business and researchers. We anticipate recruiting further creative partners as a result of our launch event.
- **ICT research** – our cluster includes partners from the EPSRC research base who bring research expertise in relevant technology areas including graphics (Bath, Cambridge and Glasgow), sound and music (Queen Mary, Bath), interactive performance (Newcastle), design and human computer interaction (Goldsmiths) and pervasive computing (Birkbeck, Nottingham and Glasgow). These partners bring knowledge of future and emerging techniques as well as the technical ability to help develop and stage practical projects.
- **Studies of collaboration** – other partners bring complimentary backgrounds in studying collaborative research and business practice, spanning studies of collaboration between artists and technologists (Cambridge and UTS), archiving and information management (Exeter and Sheffield) and studies of innovation and business models (Reading, Southampton and Teesside).

These three perspectives will be brought together through a series of cluster activities that range from short practical projects to reflective studies of previous projects, and which deliberately contrast the nature of collaboration across different sectors of the creative industries including animation, music, design and the visual and performing arts.

## Cluster activities and workplan

The cluster will generate, fund, coordinate and integrate the activities described below. Their allocation to workpackages and their organisation into a workplan is summarised in the attached diagrammatic project plan and workpackage table.

**Gatherings** – two large gatherings will focus on building a research community including recruiting new partners, networking, building partnerships, and the dissemination of our results to the wider industry and to the public.

- An initial **launch gathering** for up to 100 people (an estimate based upon our previous experiences of running networks) will introduce our aims and activities, publicise initial calls, facilitate networking among partners, recruit further partners and use invited speakers from different disciplinary perspectives to energise the community.
- A final **dissemination gathering** for up to 100 people will present the outcomes from the cluster to academics, business, artists, the public and funding bodies. These outcomes will include the outputs of the practice projects and troubadour studies as well as our final framework (see below).

**Workshops** – these will be smaller structured gatherings of between ten and twenty-five participants to undertake focused planning or reflective activities. Participants will be selected following a call for participation that will be distributed to all cluster partners. Building on our experience from the Equator IRC, Nottingham will contribute the Mixed Reality Laboratory’s studio space as a flexible and well-equipped environment for hosting such workshops. We will run three different kinds of workshop.

- An early **planning atelier** – this will be facilitated intensive four day gathering of 25 participants, focused on generating and planning our practice projects and troubadour studies as described below.
- A **reflection atelier** – this workshop will enable us to review and compare the results of completed practice projects and troubadour studies to generate input for the production of the research framework (see below).
- **Sandpits** – we will support three sandpits to generate outline proposals for follow on projects. These will be intensive facilitated gatherings of selected partners. Here we will build on our experience of taking part in previous EPSRC sandpits and or running sandpits in our current ‘Bridging the Gaps’ project at Nottingham.

**Practice projects** – are short projects to enable us to explore our research challenges through practical activities, responding to EPSRC’s invitation to include “short-term exploratory research projects aimed at creating the foundation for further research or for developing new concepts and ideas” within clusters [5]. Each will run for up to six months with a typical budget of £25K. They will combine practical activities (prototyping, demonstrations, archiving, small-scale public trials) with workshops and studies of actual and potential research processes and business models. Their outputs (practical and studies) will be documented in an online project repository. Each is expected to involve several cluster partners and to cover all three of our perspectives. Between them, they should address a variety of sectors within the creative industries. The specific details of these practice projects will be determined at the planning atelier and so is left open at this cluster proposal stage. However, we can already outline the general nature and spread of practice projects that we are looking to support.

First, we are interested in contrasting collaborations that are broadly ‘artist-inspired’ versus those that are ‘technology-inspired’. Artist-inspired projects emerge as creative ideas from artists and creative designers, sometimes in response to a specific opportunity such as a commission. The artist or designer may then seek input from technology researchers and providers to help them realise their idea. In contrast, technology-inspired projects arise from a technical innovation or from the need to explore a technology research question, for example as part of an ongoing ICT research project. While these might of course be intertwined in more subtle ways, we see these as being two good contrasting starting points for exploring the issues and tensions inherent in interdisciplinary collaborations (agility, funding and IP as described above).

Second, we are interested in comparing projects that are broadly ‘generative’ with those that are more ‘reflective’. Generative projects will be concerned with interdisciplinary approaches to generating new ideas, for example through creative workshops and iterative prototyping activities. Reflective projects on the other hand, are more concerned with how we can study, learn from and build on previous ideas, for example by focusing on creative ways in which we can archive and reuse materials (documentation, software and even ‘system logs’) from previous projects both to support the academic practices of multiple disciplines and also as a way of generating further creative ideas and products or of adding value to existing ones.

Putting these together, we anticipate supporting four projects that map out the following space, although this will of course depend upon the specific proposals generated by the partners.

|  |                        | <b>reflective verses generative</b>            |   |
|--|------------------------|--|---|
|  |                        | <b>reflect &amp; build on previous project</b> | <b>generate new project idea</b>        |
| <b>artistic versus technology inspired</b> | artistic inspiration   | <i>reflective art-inspired project</i>         | <i>generative art-inspired project</i>  |
|  | technology inspiration | <i>reflective tech-inspired project</i>        | <i>generative tech-inspired project</i> |

**Troubadour studies** – these will be studies of collaborative processes across a range of *external* projects, that is previous or ongoing projects outside of our own practice projects. They will involve researchers (our troubadours) undertaking a series of short-term placements, exchanges and visits among partners in order to capture their reflections on creative collaborations. We anticipate funding two such studies: a study of how artists/small creatives fit into the research process, leading to new proposals for research mechanisms; and a parallel study of how artists/small creatives collaborate with larger business leading to an analysis of new business models.

**Framework consolidation** – will generate our research framework, comprising a roadmap for the creative industries, agenda for future research and guidelines as to how to fund and undertake future collaborative research in the creative industries. We will support two framework generation activities. Initially, we will fund a survey of creative industries leading to a roadmap. Towards the end of the year we will fund a small number of investigators and researchers to distil the results of other cluster activities (projects, studies, workshops) into our final research framework.

**Coordination** – this will span a variety of activities required to coordinate the cluster and ensure the appropriate selection, delivery and integration of its various activities. Coordination activities will include: arranging gatherings and key workshops; administering calls for proposals for practice projects, troubadour studies and sandpits; driving the recruitment of partners, overall project management, financial management and final reporting to EPSRC. Coordination will include providing and maintaining a public website for the cluster and also a protected online repository for project materials (plans, reports, documentation and so forth), the latter based upon the existing BSCW server that is used by Nottingham to support their collaborative projects.

## Management

Professor Steve Benford of Nottingham's Mixed Reality Laboratory will manage the cluster. He has extensive experience of collaboration between artists and technologists, and also of managing large interdisciplinary multi-partner endeavours. He has been the PI of previous successful EPSRC-funded projects, has managed the EPSRC-funded *Pervasive and Locative Arts Network* (2004-2006) and is leading Nottingham's ongoing EPSRC-funded *Bridging the Gaps between ICT, Mathematics and Engineering* project. He was also the project manager of the European *KidStory* collaboration (1998-2001) and deputy director of the EPSRC-funded *Equator* IRC (2000-2007). Professor Benford will be supported in the day-to-day running of the cluster by a local **Operations Team** comprising Dr Hazel Glover (the MRL Lab Manager), Dr David Lloyd (the MRL Technical Manager) and a full-time research associate who will be responsible for ongoing day-to-day coordination, managing calls for proposals and responses, managing membership of the cluster, production of reports, documentation, creating and sustaining the website and online repository. Based on our previous experience, we believe that a full time member of staff is required to successfully drive and coordinate all of the different activities that we propose. The Operations Team will meet at least fortnightly.

Professor Benford and the Operations Team will be guided by a **Steering Group**, comprising representatives from approximately ten selected partners with a mixture of industry and academic experience. As co-investigators, Foster (information management and business) and Woolford (an artist and academic) will assume particular responsibility guiding our work on innovation and business studies, and creative activities respectively.

There are already more than twenty partners in the cluster and we would like to see the cluster grow to become a large and vibrant community. On the other hand, there is a need to carefully set and manage the expectations of partners as to the funding that they are likely to receive while ensuring that as many as possible can benefit from participating in some of the focused activities. Specifically, we anticipate that all partners will be able to attend the gatherings and access the online repository. Our four practice projects will then engage in the region of 16 partners, while troubadour studies and framework generation might be expected to engage a further 6 or so, and the sandpits approximately 30. The Steering Group will be responsible for selecting the partners and activities to fund from among the proposals that emerge from the early gathering and atelier events. Its key task will be to maintain a fair and balanced allocation of resources for practice projects, troubadour studies and framework activities across partners while ensuring that the objectives of the cluster are met. EPSRC will be invited to attend and observe Steering Group meetings.

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