

ICT and Art Connect: Engaging Dialogues in Art and Information Technologies

A WORKSHOP ORGANIZED BY THE EUROPEAN COMMISSION DG CONNECT

in collaboration with
Galerie Libre Cours
iMAL Centre for Digital Cultures and Technology
Brussels, 26-27 April 2012

Rapporteur:
Giles Foden, University of East Anglia UK
Ralph Dum, DG.CONNECT, European Commission

Participants in this event included: artists, scientists, academics, technologists, designers from across Europe and beyond (see list of participants in separate pdf file)¹

I. RATIONALE

This workshop was an attempt to understand and facilitate connections between art and Information and Communication Technologies - ICT, with a view to beginning the consensual process of determining future European Commission policy around and between these areas.

The focus was on the social context of art produced by and/or mediated by ICT, on what role artists can play in the adoption of new technology across society, as well as their potentially formative role in the global innovation narratives that generate transformational ICT products and processes. In this case participants came together with a view to understanding the systemic boundaries between art and ICT, to look at such issues as, all premised on various levels of interaction between artists and scientists:

- Co-creation and collaboration
- Communication and translation
- Technology tools, platforms, media of the future
- Social behavior/awareness and engagement
- Emotion, affect and the senses as motivators

¹ Organizers: Yulia Matskevich (Brunel University); Steve Bishop (University College London, FuturICT), and Ralph Dum, DG CONNECT, European Commission

The rationale and motivation for this meeting was twofold:

- (i) It was thought that a conscious dialogue between art and ICT could stimulate novel solutions to challenges in technology and society and provide a new conceptual base for innovation narratives and the embedding of new technology in society. Art could stimulate innovation in design and in use of IT.
- (ii) The idea – put forward by many contemporary artists - of art as a way of increasing resilience and as a means to stimulate social change and new societal processes (because it often accesses unmeasured domains and inculcates metaphor/model-making adaptability) brings it into the center of the social innovation agenda.

II. PRINCIPAL SUGGESTED OUTCOMES

In the event, the two main rationales noted above became connected as the following core proposals were evolved

1. Joint science-art institutes/hack spaces/tinkering labs/design studios be founded across Europe. The model for this is probably some version of the Bauhaus, with the workshop/lab at the centre and a surrounding light-assembled network
2. A common research process across ICT & Art be established, following experimental and intuitive avenues, for both specific (ie graphene, big data, nanotech) and unpredictable aims. Social, neural, technological, artistic and policy aspects of Art& ICT collaboration would be explored, as would computational creativity
3. A grand challenge be issued for an EU-transformative ICT-enabled, socially relevant collaborative art project that produced a definite set of related cultural objects, ie a painting, a video games, an ebook, a digitally enhanced film, a biosynthetic/electronic fashion item etc.

III. KEY THEMES

Some other central points quickly became ‘givens’, emerging again and again in different types of discussion and presentations. While it is too early to outline a concrete research agenda (specific desired projects are detailed below), the following might be presented as broad guidelines for the Commission for future interaction and collaboration:

Why Art and ICT collaboration is necessary

There is a double instrumental relation between art and technology that relates to art and science being different ways of acquiring different types of knowledge. Art needs technology to make and distribute art works and scientists often need artists to ‘push’ technology to socially/commercially effective designed realization, ie Apple. Designers are key bridging figures within this process, giving focus and particularity within a commercial framework. Art provides a degree of freedom or play within commercial ICT future development. ICT often produces data or content devoid of

emotion; art tends to produce emotion and is thus important in communication of ICT content, allowing users to transcend current ICT constraints to liberate experience.

Equally, art made without a commercial agenda delivers visions and challenges to technology that ‘pull’ it into the future. Artists tend to break up emerging technologies and redistribute them in unexpected ways, with a focus on enaction and embodiment, boosting or swelling the extended mind around the product; they can act as first movers or style leaders for the general public’s role in turning new technologies in a particular direction. So as well as fostering the direct instrumental relation, we need to see Art and ICT experts working together without a particular aim. This idea of unpredictable creation with unpredictable benefits is where the Commission can serve both the resilience and the innovation agenda. It also contributes to creativity generally as art, science and technology all become mutually inspiring. The long-term social gain may be an ICT-enabled evolution of consciousness.

Open the box

The Commission needs to be proactively open in the type of ICT & Art projects it considers, integrating both individual scientific and artistic practitioners (perhaps as duos) and larger collectives into its plans. This open-ness needs to extend to the range of artists (painters, writers, film-makers, architects etc) and to the types of scientists engaged in such projects. Artist and scientists should have equal input into investigations or projects; too often artistic activity is secondary to scientific activity because of an imbalance of funding, or artists simply add their transformative sheen to projects (and get a pat on the back) rather than being part of the co-creative architecture. Historically there have been EU projects that start out with large across-system ambitions only for the arts/humanities element to be cut as funding becomes tighter. This curtails the very co-innovation processes that might in the long term help avert the crises which affect the funding stream.

Make it new

New cultural objects/designs/products would probably result from Commission-galvanised co-creation between art and ICT at both the directed and the undirected level. The need for elaboration of these new cultural objects was a central finding of the workshop. Nomination of a grand challenge in this field would be a big motivating factor with multiple possibilities for inclusion.

Tools for thinking and doing

Collective tools for community management, sustainable management and broad exposure across Art & ICT need to be established. Here we would like to see a focus on ICT as an enabler of new ways to create art collaboratively with technologists and other artists. At the same time, multimedia platforms using integrated technology embedded in different social and intellectual environments could offer scientists and technologists ways of actualizing their discoveries as artworks, products or memes. It’s clear that artists must anyway be more engaged in the process whereby ICT products come to market and these platforms could help that happen. A network of digitally mediated platforms for creative research and practice in Art & ICT would aid distribution of knowledge in both fields. Related institutional networks of excellence could result in small multidisciplinary teams working together to address global concerns in an open source co-innovative manner, for example bringing artists and

computer modelers in at the planning phase of urban development and then sharing possible plans through ICT on publically accessible platforms and reacting to the feedback.

The social agenda

Art is generally accepted as a good vehicle for public engagement with and understanding of science, though artistic modulations of science are always liable to the charge that ‘this is not science’. That said, art often provides a holistic view of the social conflicts of science’s embodiment in technology. It helps convert knowledge into meaning. Together, Art & ICT can help the wider public to engage in the ethical issues around policy; though ICT-enabled communication channels, involving participatory democracy around different artistic version of choices, the public can participate and affect decision-making. If users opt in to the process, studying the opinion dynamics around these choices, in social networks and other arenas, would offer a deep way to turn social data into effective policy. The social agenda may be where art & ICT can most efficiently help meet such 21st cent challenges as environmental sustainability, economic crisis, and the shift of power from Europe to the BRICs; study of social engagement with these issues through art could also help us understand better both how people process and adapt to crisis. New models and new approaches born of cohesion between art & ICT can help us to address a world with new priorities – connecting people, raising awareness, sharing knowledge, changing behaviours.

Big data and new technologies

Involving artists in real-time technologies fed by live data would increase social uptake of information and proliferate new artistic forms. The establishment of accessible sources of easily assimilated data has been a constant refrain in GSD workshops across the past few years, with an emphasis on software/techniques which enables data gathered for one purpose to be used for another without distortion. While this has generally been proposed as being of value to scientists, giving artists access to this material would rapidly speed up its percolation through and impact upon society in differentiated modalities. Collaborative artistic environments drawing on this data, exploiting socially distributed sensors and AR interfaces would create powerful feedback loops; the visual narrative is a key part of promulgation of models built on large complex data sets. Many artist simply do not have access to new technologies and the data that drives them.

Notes towards a research agenda

We need to study what problems Art and ICT can solve together. What are the elements that work across both artistic and computational forms? Are there formulae (ie the golden mean, the three act structure, the Navier Stokes equations) that can be jointly applied? To what degree can craft wisdom be mathematised; what are the possibilities and limits of computational creativity? Can we establish neural-based computational models and multimodal automated measures of aesthetic experience? Does there first have to be a convergence process between art, ICT, brain science and psychology whereby each discipline better understands the process and language of the other? What are the conditions of genuine cross-fertilisation between Art and ICT both in the academic and the commercial environments? Do we need to understand better the intradisciplinary benefits of Art and ICT collaborations, before going on to understand the inter- and transdisciplinary ones? What are the policy implications

around artistic/software IP on mass media platforms whose users often employ mash-ups, samples, hacks etc (cf creative commons, antitrust actions, copyright law)? How can we create coherent policy that both generates innovation and protects rights holders?

The element of the aesthetic in the ICT innovation process may also need more study. Artists don't like environments in which they are an afterthought, getting a pat on the back for making it pretty. This is decoration not true co-innovation on the Apple model; what are the right conditions for true co-innovation? How do we integrate the artistic ethos that art should be not mean (ie it's 'a way of happening' without a priori message or purpose) into the generally executive concerns of those involved with ICT? From another point of view, there has also for centuries been a competing set of artistic credos that are expressly executive and set out to send a message. Perhaps the best way to think about this dichotomy in an ICT context is as unplanned and planned innovation. The point in Luis Girao's presentation below about how to integrate the revelation processes of art into scientific/policy methodologies is highly relevant here.

These questions are all relevant to establishment of a research agenda across Art & ICT. Yet at national levels over the past 25 years, there have been many funded programmes promoting mutual understanding between art and science. Commission activity might better involve linking the convergence process to wider educational/research policy and embedding it institutionally. (For example, artistic disciplines such as creative writing and design need to be established and accepted across Europe as a funded research output within universities. There is a very wide divergence on this nationally, with the German *Wissenschaft* tradition, the French/Italian bias towards theory, and the Anglo-Saxon bias towards praxis all affecting the way in which artists are integrated (or not) into universities and other establishments where cutting-edge ICT research is taking place.

There is some urgency about the convergence question, given that despite the national programmes of mutual understanding, despite decades of popular science in books and on TV, despite a groundswell of artistic responses to science and more artistic renderings of scientific data, there is still a 'two cultures' problem between art and science institutionally. The art school and the computing school don't converse enough; there is a latency which then propagates through society.

Conversation alone is not enough, anyway. While some universities in Europe have set up 'Centres for the Digital Humanities' which attend to aspects of the putative research agenda, we need to move quickly to innovative co-creation between art and ICT in product design. Europe is rapidly falling behind in this regard, especially since its largest software house by financial value (Autonomy) was recently bought by the US corporation Hewlett-Packard. This relates to the need identified in the 2010 Future Technology and Society to create 'a substantial transnational European corporation for ICT co-innovation'.

More generally, we need to think harder about art and ICT as complementary ways of thinking; this links to the agenda proposed by Sander van der Leeuw and others in the 2010 Future Technology and Society workshop, whereby both computational and creative thinking both come under a heading of making models and metaphors of the world/experience that involve choosing between a range of narrative options. The key

idea here is adaptation: adaptation of ICT/art forms and social adaptation to possible futures. Thinking about it in this way brings the ICT and Art topic under President Barroso's overall sustainable development strategy for the Commission and connects the research agenda to the social agenda as described above.

IV. CONCLUSIONS AND POSSIBLE RECOMMENDATIONS FOR FOLLOW-UP

Already there is an impressive number of FP7 ICT projects that engage with artists, mainly for dissemination purposes (in areas like e-inclusion, cultural heritage and FET)

There is a wider range of researchers and media artists that could be addressed. Therefore a map of ongoing activities would be essential to decide on further steps how to best enhance the dialogue with artists.

Apart from dissemination two possible areas of synergy between ICT and artists:

- (a) A dialogue between art&ICT could establish new forms of creative expression for art and give inspiration to new design in ICT (e.g in HCI and augmented reality)
- (b) Art and ICT together could be used trigger behavioural change

Possible Follow-up:

On organizational level:

- Establish working blog/ mailing list for participants (use on of the coordination actions like INSITE or GSDP)
- Launch a study determining who and how (players, forms of interaction between ICT and art) Establish a map of ongoing activities that bring together art and ICT across Europe (and possibly worldwide)
- Include events of the type organised in the fabric of ICT events (FET14, ICT2013) Plan an annual series of workshops in the spirit ICT&ART CONNECT
- Consider an organisational structure to facilitate interaction of artists with ICT projects ('in-project artists?') Develop an operational scheme to include artists in projects funded, e.g. for dissemination purposes ('in project' artists as already exist in various ongoing FP7 projects).

On thematic level

- Explore other forms of CONNECT engagement with art than for dissemination purposes only

- See how a stronger engagement of ICT with artists could help integrate ICT better in the social fabric and can help ICT to better fulfill its role as catalyst of social change.

-Establish areas of research in ICT where stronger involvement of artists could be synergetic. Three candidates: Creativity, Social innovation, Global Systems science. Develop a rationale and operational steps to include artists more prominently in these areas.

Appendix 1: STRUCTURE AND NARRATIVE OF THE WORKSHOP

The Director General of DG.CONNECT Robert Madelin opened the meeting.

Day 1, morning. Location: Berlaymont. **Expert presentations**, facilitated by Peter Baudains. Slides and associated video of all of these are available on [insert web address]. Photographs of the meeting and related artworks can be viewed at [insert web address]

1. Svetlana Kondakova/Elliot Burns/Piotr Skibinski: Art in the Information Ecosystem. The role of the internet and other technologies in the careers and practice of young artists and beyond.
2. Luc Steels: Art and AI. The role of art and technology in robotics and computer-assisted music creation.
3. Ariane Koek: Arts@CERN. Artistic residencies and other activity at the European Laboratory for Particle Physics
4. Simon Colton: Computational creativity: The painting fool program, its aims, methods and futures
5. Semir Zeki: Neuroesthetics and ICT. What can ICT-enabled brain science tell us about our reactions to art?
6. Hugues Vinet: Art, music and ICT @IRCAM. The experience of an institute that brings together musicians, scientists and engineers for mutual benefit.
7. Antonio Camurri and Roberto Doati: The Experience of SIEMPRE (EU FP7 FET). Multimodal measurement of music practice as a means of understanding social behavior.
8. Sofia Pescarin: V-MUST.NET (EU FP7 Network of Excellence). Interactivity, immersion and narrative in virtual museum projects.

Day 1, afternoon. Location: Berlaymont **Short stories on how art and ICT have connected**, facilitated by Afonso Ferreira and others. What have we learned from previous experiences to encourage new collaborations between science and art? Each short story presenter tried to give an answer to the following questions: What is the story about and how does it relate to ICT and art? What do the artists and scientists do both separately and collaboratively? Does an overall theme for collaboration emerge?

What were the results and successes from both a science and technology perspective as well as an artist's perspective?

1. Nenad Stojanovic/Tamiko Thiel. ARTSENSE (EU FP7). Infrastructure for Adaptive Augmented Reality.
2. Luis Miguel Girao. Integrating the subjective into new technologies and art practices through collective experiential practices.
3. Camille Baker. An personal perspective on art-science practice in multiple environments
4. Lampros Stergioulas. TELMAP(EU TEL programme). New ICT tools for community discourse, creativity and learning.
5. Roger Torrenti PARADISO (EU FP7). True collaborations of science and art across multiple domains – strategic research directions around disruptive paradigms
6. J.M. Moreno Arostegui/Raquel Paricio Garcia (POETIC). The sensible experience and bio-inspired technology (an art/science installation around self-organizing robots, emergent behaviour and the dynamics of the human body).
7. Gustavo Diaz-Jerez. IAMUS. Autonomous musical composition by computer
8. Derek Jones. CONNECT(EU FP7 FET). Using art techniques for enhanced brain imaging.
9. Beatrice de Gelder. TANGO. Understanding non-verbal communication through a mathematical theory of communicative behavior combined with computer vision/graphics
10. Christoph Veigl/David Thaller ASTERICS (EU FP7 RTD) Assistive technologies for those with motor disabilities and related problems

There followed a convergence of processes for elaborating emerging themes. This was done using the World Café method.

Day 1 evening. Location: Galerie Libre Cours www.galerielibrecours.eu Delegates attended an **art exhibition** to bring together art & ICT collaborations and artworks inspired by ICT and its uses. Featured work included video, illustration, installation, painting and mixed media by artists and scientists including Derek Jones, Holly Beryl Bishop, Oliver Ninnis, Svetlana Kondakova, Piotr Skibinski and Elliot Burns.

Day 2. Location: iMal, Centre for Digital Cultures and Technology. **Presentations and a move towards outcomes** began with short stories from the hosts. Slides and associated video of all of these are available on [insert web address].

1. Yves Bernard, IMAL. The evolution and activities of a digitally inflected arts and technology centre. www.imal.org
2. Annemie Maes, Guy van Belle, OKNO. The projects of an artist-run collective concerned with technology/ecology on digital and other platforms. <http://okno.be>

A discussion and distillation of emerging themes was facilitated by Steve Bishop, Caterina Mora, Camille Baker and others. Fluid working groups then moved around

selected themes, using storyboards to identify future actions.

Appendix 2: SOME POSSIBLE RESEARCH PROPOSALS IN EMBRYO

The workshop came up with a variety of interesting ideas how to link art and ICT. below is a summary of the proposed follow-up topics.

1.

Title

Neural-based computational models and automated measure of aesthetic experience

People involved

Beatrice de Gelder, Antonio Camurri, Semir Zeki, Hugues Vinet, Roberto Doati, Virva Auvinen

Summary of ideas

Developing a methodology for measuring aesthetic emotion and social participation; visualizing affective processing and social integration in small and large groups; neural correlates of aesthetic participation; developing integrated technology and metrics around these; measuring motivation for artistic experience; making accessible art of/for clinical groups; intercultural dialogue.

Past experiences and lessons learned

Assessing scientific teams including artists on EU projects on Art & ICT; cybermotions projects; SIEMPRE; SANE; TANGO; HumaineNET; SSPNET; SZSZ

Impact/role of art & ICT

Measuring experiential and artistic complexity and developing metric to assess them; formulating an ICT-based theory of beauty; multi-sensory/modality integration

Future actions: Who? What? When? How?

Bring together computer scientists, visual artists, neuroscientists, psychologists and social scientists, anthropologists, musicians, theatre directors to assess research challenges around platforms for experiential measurement of art

2.

Title

Blue Leopard: large collaborative interaction for multimodal cohesive art/game creation mediated through technology

People involved

Giles Foden, Hugues Vinet, Antonio Camurri, Beatrice de Gelder, Elliott Burns, Sventalna Kondakova, Gustavo Diaz Jerez, Lamos Stergioulas, Piotr Skibinski

Summary of ideas

Technology mediating the Blue Leopard artwork/meme through many art media/ICT platforms with multiple public contributions; art and ICT collaboration around specific concepts with social value, ie water shortage, utilising social networks; creation of specific viral meme for social benefit; a global system with math-derived artistic rules, ie algorithms, constraints; ontologies; using equations that work across art and ICT

Past experiences and lessons learned

Crazy Frog; Kony Video; Angry Birds; SANE; SIEMPRE; serious games; history of collective art; FUTURICT; GSD; FET Future Technology and Society workshop

Impact/role of art & ICT

Broad awareness of important social issues; new artistic forms; new technologies and new scientific knowledge: why do viral memes get so many hits? Real-time situations with multiple performers; viral marketing in AR-inflected street situations; real-time feeds from water-starved areas linked to displays in fountains, toilets, canal sides; situationist interventions, ICT-enabled flashmobs. Academic study to understand potency and family resemblances of internet memes, collaboration with psychologists, statisticians, web historians and neural experts

Future actions: Who? What? When? How?

Group of artists and ICT experts to co-create an online game around a social issue, with added platforms across music, novel, film, fashion, bound by single brand-like meme; monetising ICT-enabled/created art products; studying process online as opinions/artworks form

3.

Title

Social innovation and impact of Art and ICT

People involved

Ariane Koek, Maria Pina Poleda, Rachel Paricio, Manuel Moreno, Andrzej Nowak, Lampos Stergioulas, Gil Bauwens, Janet McDonald, Filippo Addarii, Yulia Matskevich

Summary of ideas

Individual and collective perception and consciousness across art & ICT as platforms for innovation; ie, intelligent clothing, ie to alert the user to illness; cities as fluid and dynamic environments for this

Past experiences and lessons learned

Modeling the innovation process in Poland with interviews and scenarios; evaluation as a mechanism for measuring impact

Impact/role of art & ICT

Attention to perception and consciousness in these disciplines

Future actions: Who? What? When? How?

Create a fund or bid around this concept. Keep open to both individual and collective initiative; functional agenda often does not work for artists, keep theme and participation open and wide and the specific will follow

Conceptual spaces for exploration with tangible examples -- allowing risk to drive innovation

4.

Title

Only Connect: The Art & ICT Network

People involved

Artists, scientists, mediators, cultural and scientific managers, science labs and media labs, hacker spaces, industry, schools (no specific workshop participants given on sheet)

Summary of ideas

Make a network of excellence compiling best practices in art and ICT, make recommendations for next EC calls;

Past experiences and lessons learned

Current EU schemes do not allow many art/science collaboration; engaging scientists with art practices

Impact/role of art & ICT

Mediation process; dissemination of results; new frameworks for collaborations between different types of actors

Future actions: Who? What? When? How?

Scientists and artists in residencies; transdisciplinary workshops; exhibitions; testimonials from artists and scientists; recommendations for best practices for engaging in network

5.

*Title***Computational creativity in art and design for social inclusion***People involved*

Simon Colton, Piotr Skibinski, Chuck Hargrove, Anna Dumitri, David Thaller, Chris Veigl, Henad Stojanovic

Summary of ideas

Inclusion of: disabilities, youth, 'tecchies', elderly, outsider artists; Trusting software to co-create; machine learning of aesthetic considerations actually a celebration of human creativity; engineering physicality and robotic creativity, public engagement; new creative domains for study in computational creativity research; emotion detection via physical feedback to guide co-production

Past experiences and lessons learned

ASTERICS, drawbots, computational creativity theory (UK EPSRC, UK Heritage Fund)

Impact/role of art & ICT

People want to distil their creativity in to software; role for psychology; co-production with creative people held back to physical disability; video games is killer application domain; fashion design; assistive technologies; monetising computational creativity products

Future actions: Who? What? When? How?

Collaborative interventions exchange of personnel from art, science and engineering, e-inclusion experts; explicit encouragement of hiring artists for science proposals; public engagement for feedback; encouragement of other areas to think of computational creativity software; hci interfaces for co-production of adaptive software

6

*Title***Art and ICT: citizens and sustainability***People involved*

Tamiko Thiel, Miles Parker, Guy van Belle, Annemie Maes, Luc Steels, Josep Perello, Andrzej Nowak, Aleksandra Wasilkowska, Joanna Poplawska

Summary of ideas

Bottom-up collaborations/ participation; regeneration; enablement; energization; creating awareness in self and social contexts around Art & ICT

Past experiences and lessons learned

Need for co-construction partners from the start; dynamics of engagement; economy of attention; dynamically formed networks.

Impact/role of art & ICT

Art as provocation, an open door, a safe space; representation and creation of meaning and potential; exploration; experiments; new methods; ICT credibility and distribution

of knowledge; measuring, monitoring, analysis, prediction, potential; new types of scientific and social network; new sensors, large data sets

Future actions: Who? What? When? How?

Residencies; exhibitions; festivals; conferences; shared labs; expert meetings, publications, artist collectives; social networks; focused calls,

The background context to this area can be seen the organization and convening power which INFOSO has brought to the topic of global systems science over the past four years. It is in the context of GSS that further steps might be taken.
