Impact case study (REF3b)

Institution: Leeds Metropolitan University

Unit of Assessment: Computer Science and Informatics

Title of case study (64 characters maximum)
Improving the online promotion of UK contemporary art on Axisweb.org

1. Summary of the impact (indicative maximum 100 words)
Since 1998, Leeds Met researchers have worked closely with national arts charity Axis which operates the UK database of contemporary artists. Research focused on how artists can make best use of online platforms to present and sell their work and develop their practice. The collaboration made Axis a digital leader in the arts and helped secure its continued funding in an otherwise volatile arts funding sector, benefitting more than 2,800 UK SMEs (artists and curators). It also resulted in the spin-out of a commercial company that provided Axis with extra income of more than £150,000.

2. Underpinning research (indicative maximum 500 words)
For the last one and a half decades, Leeds Metropolitan University has been actively involved in research on
Presence in Collaborative Virtual Environments (r1,r2,r4), avatars as interaction devices (r3,r5), the design of next generation instant messaging tools (r5,r6) and the effect of embedding social and emotional cues into software interfaces (r5,r6). The group of key researchers involved in this work are:

- Dr. Marc Fabri (Associate Lecturer March 1999-July 2007, Leeds Met Visiting Research Fellow August 2007- April 2012, Senior Lecturer April 2012-now)
- Dr. David Moore (Principal Lecturer 1993-July 2012)
- Dr. Michael Gerhard (Associate Lecturer March 1999-March 2003)
- Dr. Dave Hobbs (Reader, 1979-March 2000)

1997-2003: Presence and Co-Presence in Collaborative Virtual Environments (CVEs)
The term 'CVE' refers to a 2D or 3D interactive computer-based environment that can be visited simultaneously by multiple users, each represented by an avatar. Since the late 1990s, the group of Leeds Met researchers has successfully built an argument for the importance of effective avatar representation in CVEs, based on psychological and sociological aspects of computer assisted collaborative work (r1). This was further developed into a case for a hybrid avatar/agent model ("presence-in-absence model") which facilitates the continuous representation of all users within the environment, even though users themselves may not be directly active in the environment (r2,r4).
→ Application: The CyberAxis virtual gallery (g1) was informed by this research and acted as a tool to conduct experiments.

2002-2008: Avatars as interaction devices
The group conducted research on the representation and conveyance of emotions through avatar facial expressions, with a particular focus on the effects emotion-based interactions have on CVE users (r3,r5). Findings strongly support the argument that such affective computer systems, and the people represented through them, can themselves become powerful social actors which exploit our innate cognitive abilities and hard-wired reactions to emotional cues (r6).
→ Application: The research informed several design innovations for the Axis public service, e.g.
   1) A tool for users to create their own personal virtual gallery that acted as a chat space

2) The ability to share and discuss shortlists/bookmarks amongst website visitors
3) A tool for artists to communicate with each other

2009-2013: Embedding social and emotional cues in interactive systems for the public

Further research that emerged from the above (especially r5,r6) is undertaken by the Assistive Technologies Research Group (led by Dr Marc Fabri). The group explores future opportunities for embedding social and emotional cues into interactive systems in order to elicit emotions, or change behaviour in the user. Initial work in the group focussed on the design of mobile device applications, e.g. the highly successful 'Art in Yorkshire' iPhone app (g2, see also section 4).

→ Application: The research informed several design choices in the Art in Yorkshire app, e.g.
1) users were enticed to physically visiting exhibitions through "appinion", a chat tool that had hidden clues which would only be revealed in situ at the venues
2) icons were designed to elicit positive emotional responses, e.g. a heart-shaped icon for 'like'
3) users put their favourite events into a playful virtual exhibition planner

Grants

(g1)   "Cyberaxis", 1999-2001
        £30,000 grant from the National Arts Council and Millennium Lottery funding
(g2)   "Art in Yorkshire – Supported by Tate", 2010-2012
        £40,000 grant from Arts Council England to devise and produce an innovative mobile
        application to engage members of the public in the physical exhibition programme

3. References to the research (indicative maximum of six references)

(r1)   Gerhard, M., Moore, D., Hobbs, D. (2002) An Experimental Study of the Effect of Presence in Collaborative Virtual Environments, in Intelligent Agents for Mobile and Virtual Media, Earnshaw R and Vince J (eds.), Springer, Springer, ISBN 1-85233-556-4 .

(r2)   Gerhard M., Moore D., Hobbs D. (2004) Embodiment and Copresence in Collaborative Interfaces, in International Journal of Human Computer Studies, Vol. 61 (4), pages 453-480, Elsevier Academic Press, ISSN: 1071-5819; DOI: 10.1016/j.ijhcs.2003.12.014. (74 citations)

(r3)   Fabri, M., Moore, D., & Hobbs, D. (2004). Mediating the expression of emotion in educational collaborative virtual environments: an experimental study, International Journal of Virtual Reality, April 2004, Volume 7, Issue 2, pp 66-81, DOI 10.1007/s10055-003-0116-7 (52 citations)

(r4)   Gerhard M, Moore, D. & Hobbs, D. (2005). Close Encounters of the Virtual Kind: Agents Simulating Copresence, International Journal of Applied Artificial Intelligence, Volume 19, Issue 3-4, pp.393-412, DOI: DOI:10.1080/08839510590910219.

(r5)   Fabri, M., Elzouki, S. Y. A., Moore, D. (2007). Emotionally Expressive Avatars for Chatting, Learning and Therapeutic Intervention, Proceedings of Conference Human-Computer Interaction - HCI , pp. 275-285, DOI: 10.1007/978-3-540-73110-8_29. (25 citations)

(r6)   Fabri, M., Moore, D., Hobbs, D. (2008) Designing Avatars for Social Interactions, in L. Canamero and R. Aylett (eds.) Animating Expressive Characters for Social Interaction, Advances in Consciousness Research Series, Benjamins Publishing, ISBN 978 90 272 5210

4. Details of the impact (indicative maximum 750 words)

Contemporary art is engaging, influencing and emotionally affecting millions of people world-wide. With more and more interactions – both business and social – happening online, it is critical that UK contemporary artists can effectively present and promote themselves online. This is a challenge that, if addressed well, gives artists exposure, provides them with work opportunities, engages the public in contemporary culture and demonstrates the creativity and innovation the UK

has to offer to a world-wide audience.

Axis (see www.axisweb.org) is a charity, funded by Arts Council England and the Arts Council of Wales, hosting the national register of more than 2,800 contemporary artists and curators and their 45,000+ artworks. Axis' role is to promote UK contemporary art internationally and connect artists with people who want to purchase, commission, exhibit, write about or simply find out more about their work. There is no other public or private sector organisation fulfilling this role of national importance.

Since 1998, Leeds Met researchers have worked closely with Axis. Research focused on how artists can make best use of online platforms to present and sell their work, connect with other artists and develop their practice. The collaboration considerable improved Axis' performance and fundamentally changed how Axis operates. Contemporary UK artists would not promote themselves online the way they do today were it not for Axis. The detailed impact over time is as follows:

1. In 2000 the CyberAxis Virtual Gallery was created with a £30k grant from the National Arts Council and Millennium Lottery funding. During the course of the four initial exhibitions CyberAxis received 4,607 visits by 1,213 visitors who explored and engaged with the 3D virtual gallery and with other visitors. CyberAxis was a ground-breaking concept at the time, attracting much attention in the media and the arts sector (i1, i2). CyberAxis is now closed but has directly informed later Axis initiatives to present art in an engaging and interactive way.

2. From 2003 Dr Marc Fabri was directly involved in shaping the digital strategy of Axis and improving its internal processes and public service offer. Research on user interface design, affective computing and computer-supported collaborative work had an immediate impact on the evolution of the Axis website and the ways artists and visitors interact with the artworks presented, and with each other. Axis emerged as a digital leader in the UK arts sector, acknowledged in 2009 by a top score of 13/15 in an independent review of key UK arts organisations (i3). In the report, Axis was particularly praised for its digital public service.

3. In 2005, Axis started a new commercial business called Axis Web Developments (AWD). AWD creates affordable websites and mobile apps for other arts and cultural organisations and gift-aids all profits back to Axis the charity, thereby "benefiting UK artists and the arts sector as a whole" (i4). Starting a commercial company was a first for Axis, and it was only possible with the support and expertise from Leeds Met researchers. Since 2008, the company generated extra income for the charity in excess of £150,000 (i4).

4. In response to government cuts, Arts Council England re-structured the arts funding system in 2010 and all regulary funded organisations had to re-apply for the 2011-2016 period. The successful incorporation of research outputs from the Leeds Met group into Axis' services directly contributed to Axis becoming a UK digital leader in the arts. This in turn helped secure continued funding of around £300,000 a year in an otherwise volatile arts sector that was affected by severe cuts. During the past 5 years there was also significant growth in membership (up 36% since 2008) and website visitor numbers (up 34% between 2008 and 2012 to 750,000) which can be directly attributed to the quality of the digital service. The on-going funding protects 10 Axis full-time staff posts and benefits the more than 2,800 SMEs (artists and curators) who rely on Axis for a continuous stream of work opportunities,

commissions and artwork sales (i4, i5).

5. In 2011, Axis with Dr Marc Fabri and digital agency fuse8 created the iPhone App for "Art in Yorkshire - supported by Tate", a 10-month long exhibition programme showcasing the best of Yorkshire artists from the last century in more than 20 venues (i5). Research on affective interactions, persuasive technology and context-aware systems directly fed into the design of the app, which was a great success (i6). Apple featured it for several weeks in their 'What's Hot' and 'News and Noteworthy' lists (i6). The App won GOLD in the Best App category of the 2012 Roses Creative Awards, beating HONDA, Butlin's and Best of Britain (i7). The app had more than 8,000 downloads (initial target: 1000) and was used about 30,000 times during 2011 (i6).

    The App has since produced several successful spin-offs, licensed by Axis, including 'Art Sheffield', 'Ways of Looking' and 'Contemporary Art North East' which was the official app for the Turner Prize at Baltic Mill in 2011/12.

5. Sources to corroborate the impact (indicative maximum of 10 references)

(i1) **CyberAxis Virtual Gallery**
    a. Demonstrations: Museums and the Web 2001 (for Museum and Web professionals)
        http://www.museumsandtheweb.com/mw2001/abstracts/prg_95000337.html
    b. Published in the European Schoolnet: Axis Cyber Art Resource
        http://celebrate.eun.org/eun.org2/eun/de/innovation/content.cfm?lang=en&ov=1243
    c. Archaeology Data Service / Digital Antiquity Guides to Good Practice.
        http://guides.archaeologydataservice.ac.uk/g2gp/Vr_4-4

(i2) **Creating and Using Virtual Reality: a Guide for the Arts and Humanities**
    AHDS Guides to Good Practice, 2002 http://www.vads.ac.uk/guides/vr_guide/

(i3) **Snapshot of Digital Content held by Arts Council England and funded organisations**
    Report commissioned by Arts Council England in 2009. Authors MTM London recognised Axis with a top "excellent" score of 13/15 for the quality of its digital public service (see page 42).
    http://www.artscouncil.org.uk/media/uploads/downloads/MTM-snapshot.pdf

(i4) **Axis Testimony** (attached document)
    Verifies a decade-long collaboration between Axis and Leeds Met which resulted in significant impact on the charity, its work, its members and the UK arts sector. Axis Contact: Sheila McGregor, Chief Executive, 46 The Calls, Leeds LS2 7EY, sheila@axisweb.org, 0113 242 9830

(i5) **Art in Yorkshire – Supported by Tate**
    Website http://art.yorkshire.com
    iPhone App http://itunes.apple.com/gb/app/art-in-yorkshire-supported/id433643676?mt=8
    (NB: these links are for the 2013 version – the 2011 version is not available anymore)

(i6) **Project Evaluation for "Art in Yorkshire – Supported by Tate 2011"** (attached document)
    Report by Caroline Krzesinska, Managing Curator, York Museum Trust. See evaluation of digital project, pp 31-36. Contact: Caroline Krzesinska, carolinekrz@gmail.com, 0114 258 9538

(i7) **Art in Yorkshire iPhone App wins GOLD Award**
    Announcement of winning GOLD in the prestigious Roses awards under category "Best App". Axis was commissioner, fuse8 developer. http://www.fuse8.com/news/fuse8-wins-roses-gold-award-for-art-in-yorkshire-app/19738