Australian Government
Australian Research Council

EI 2018 ENGAGEMENT AND IMPACT

Engagement and Impact 2018

Deakin University

DKN19 (CAH) - Impact

Overview

Title

(Title of the impact study)

Moving pixels: Movement-based technologies and creative industries

Unit of Assessment

19 - Studies In Creative Arts and Writing

Additional FoR codes

(Identify up to two additional two-digit FoRs that relate to the overall content of the impact study.)

Socio-Economic Objective (SEO) Codes

(Choose from the list of two-digit SEO codes that are relevant to the impact study.)

95 - Cultural Understanding

Australian and New Zealand Standard Industrial Classification (ANZSIC) Codes

(Choose from the list of two-digit ANZSIC codes that are relevant to the impact study.)

55 - Motion Picture and Sound Recording Activities

90 - Creative and Performing Arts Activities

Keywords

(List up to 10 keywords related to the impact described in Part A.)

Augmented reality

Motion capture

Movement-based technologies

robotics

Virtual reality

Sensitivities

Commercially sensitive

No

Culturally sensitive

No

Sensitivities description

(Please describe any sensitivities in relation to the impact study that need to be considered, including any particular instructions for ARC staff or assessors, or for the impact study to be made publicly available after EI 2018.)

Aboriginal and Torres Strait Islander research flag

(Is this impact study associated with Aboriginal and Torres Strait Islander content?
NOTE - institutions may identify impact studies where the impact, associated research and/or approach to impact relates to Aboriginal and Torres Strait Islander peoples, nations, communities, language, place, culture and knowledges and/or is undertaken with Aboriginal and Torres Strait Islander peoples, nations, and/or communities.)

No

Science and Research Priorities

(Does this impact study fall within one or more of the Science and Research Priorities?)

No

Impact

Summary of the impact

(Briefly describe the specific impact in simple, clear English. This will enable the general community to understand the impact of the research.)

The Deakin Motion.Lab (DML) had cultural and economic impact through its development and staging of innovative creative arts productions, and its work in formulating and sharing new products and techniques. DML's approach brings together live performance and digital effects, with the development of movement-based production techniques, applications, and systems for use in the creative arts (e.g. dance, opera, theatre, public art) and in commercial products (e.g. video-games, film, television and advertisements). Working with DML facilities and expertise enabled Australian and international production companies, community and governmental organisations, arts organisation and individual arts practitioners to innovate, become more mobile, and develop new techniques, products and audiences.

Beneficiaries

(List up to 10 beneficiaries related to the impact study)

Individual arts practitioners (such as Raghav Handa)

Australian arts companies (such as Victorian Opera and Australian Dance Theatre)

Government and government agencies (such as City of Banyule local government and the Australian Federal Police)

Major Australian film, animation and digital effects companies (such as Alt.vfx and Iloura)

Countries in which the impact occurred

(Search the list of countries and add as many as relate to the location of the impact)

Australia
China (excludes SARs and Taiwan)
Hong Kong (SAR of China)
Japan

Details of the impact

(Provide a narrative that clearly outlines the research impact. The narrative should explain the relationship between the associated research and the impact. It should also identify the contribution the research has made beyond academia, including:
- who or what has benefitted from the results of the research (this should identify relevant research end-users, or beneficiaries from industry, the community, government, wider public etc.)
- the nature or type of impact and how the research made a social, economic, cultural, and/or environmental impact
- the extent of the impact (with specific references to appropriate evidence, such as cost-benefit-analysis, quantity of those affected, reported benefits etc.)
- the dates and time period in which the impact occurred.

NOTE - the narrative must describe only impact that has occurred within the reference period, and must not make aspirational claims.)

DML is a conceptual leader in creative, practice-based research. Since its founding DML developed and advanced a model that positions practice-based research as a methodology that can address industry problems both within and beyond the arts. The impact of DML research was: cultural (innovation in the arts, especially performance), social (improving arts access), and economic (high-end commercial digital effects products and movement assessment of products).

The scale of DML's impact is demonstrated by its generation of more than $1 million in income in 2011-16: $785,939 for collaborative creative arts research and productions leading to impacts (detailed below); $224,341 for creation of commercial digital effects; as well as $30,844 for movement analysis work (for Australian Defence Apparel, Triumph International and City of Banyule local council). Illustrative examples below demonstrate the nature of DML impact.

Integrating digital effects into live performances through DML collaborations had significant cultural impact through innovation in dance, opera, and public arts. An illustrative example is the DML's creation of 3D scenery for live opera performances. DML researchers created a 3D sequence representing French post-Impressionist painter Georges Seurat's theory of colour for Victorian Opera's production of 'Sunday in the Park with George' (2013). This collaboration developed into an ARC Linkage (2014-16) exploring artistic and economic value of virtual scenography. The first resulting production, Richard Wagner's 'The Flying Dutchman' (2015) saw the world of the opera (a Norwegian fjord) built in a 3D game engine (Unity) and projected onto the stage to create scenery with depth previously unimaginable in an opera set. The immersive production pushed the boundaries of the form and is believed to be the first full-length opera of its kind anywhere in the world. It was nominated for seven Green Room Awards, including one for Design, and was a finalist in the Unity Golden Cube Award (2015). A Sydney Morning Herald review said 'images devised by [...the DML] effectively and ingeniously take the audience deeper into the drama without confusing or cheapening it.' Other reviews emphasised the production's innovation: 'eye-poppingly inventive' (Herald Sun), and 'the kind of production that makes old-school opera exciting and fresh' (Aussie Theatre).

The DML produced 3D sets for 'The Magic Flute,' which the Australian International Opera Company (AIOC) toured in China in 2016. AIOC director Chris Howlett noted that the Chinese market is technically-focussed and the 3D sets were a 'point of difference' for setting AIOC productions. DML's digital set had a threefold impact: introduced Chinese audiences to classic Western opera, demonstrated Australian innovation and technical expertise in the creative digital industries, and yielded economic benefits for the AIOC by reducing the transportation costs for touring productions.

DML's work at the intersections of live performance and digital effects has also driven innovative in dance, through works created with: choreographer Raghav Handa on 'Mens Rea: the Shifters Intent' (2016); the Australian Dance Theatre to create 'Multiverse' (2014 Adelaide Festival/international tour) and 'The Pinoke Project'; and with choreographer and DML director Kim Vincs to produce 'The Crack Up' (Malthouse Theatre), nominated for a 2015 Australian Dance Award. DML spurred innovation in public art, for example the Vox Lumen partnership with Federation Square, which combined digital projections, live dancer-driven motion capture and a purpose-built app. The 12-hour show transformed Fed Square for White Night 2015, was seen by hundreds of thousands of visitors, and was nominated for an AEAF Award in Live Event VFX & Animation (2015).

DML innovations had social impact through improved arts accessibility. In 2015, DML partnered with the (then) Deakin Centre for Intelligent Systems Research and Arts Access Victoria to develop two new haptic devices which recreate a sense of touch or movement by applying force, vibration or motion to the user. The 2014-15 Arts Access annual report highlighted the project's innovation and stated that its benefits "reach across sectors, audiences and artforms: it provided a new means of accessibility for the blind and vision impaired; opens up the world of haptic art [to] offer new aesthetic possibilities for all artists and audience [...]; and enriches the knowledge and skill sets of artists and engineers in haptic interface development."

DML research had economic impact by adding value for Australian and international digital effects companies. By working with the DML, digital production companies gained access to high-end expertise, production pipelines and facilities which enabled them to solve complex production problems and create works that could otherwise not be made to an otherwise unachievable quality. In 2011, for example, the DML worked with post-production company, Alt.vfx, to motion capture and retarget the movements of a live deer for a Tooheys Extra Dry TV advertisement. Demonstrating the benefits of working with the DML, the commercial won three major industry awards: Gold for Visual Effects/Animation at the Mobius Awards (2011), a Gold Film Craft Lotus at Adfest (2012) and a Cannes Silver Lion (2012), industry awards which demonstrate the benefit of working with the DML. Further examples of DML adding value to commercial products include (but are not limited to): advertisements for Abbot's Bakery

(2013) and Toyota (2015, aired in Japan) with Alt.vfx; and creating all motion-capture sequences in the horror film 'I, Frankenstein' (2014) with post-production company Iloura. A collaboration with Big Ant Studios produced in-game action and cut scenes for the video-game Rugby League Live 2; reviews noted improvements in graphics over the first game in the series, including on the leading games website IGN.

Associated research

(Briefly describe the research that led to the impact presented for the UoA. The research must meet the definition of research in Section 1.9 of the EI 2018 Submission Guidelines. The description should include details of:
- what was researched
- when the research occurred
- who conducted the research and what is the association with the institution)

The Deakin Motion.Lab (DML) was founded in 2006 through a partnership between Deakin University, Multimedia Victoria and Act3 Animation as a way to build capacity and access to a high end facility for Victoria's games industry. At DML's inception motion-capture was the key technology. In the decade since the facilities were augmented with emergent technologies, including virtual reality (VR) and augmented reality (AR). DML research was uniquely focused at the interstices of performance practice traditions, creative arts research, understanding ourselves in embodied experience, and digital and data-driven processes. DML explores expanding affordances of movement-based technologies (motion capture, AR, VR, and robotics) in the creative industries and was extended across art practices such as dance, animation, and digital and transmedia art. The DML is a conceptual leader in creative, practice based research, having evolved a model that positions practice-based research as a methodology able to address industry problems within and beyond the arts. From its founding, the DML has achieved arts innovation, analysis, and economic growth through a unique programme of practice-based and critical research in movement and technology.

DML research was conducted in partnership with external organisations (including as detailed above); key staff during the reference period were: academics Dr Kim Vincs (founding Director); Dr Jordan Beth Vincent; Dr John McCormick; and technical staff.

FoR of associated research

(Up to three two-digit FoRs that best describe the associated research)

19 - Studies in Creative Arts and Writing

References (up to 10 references, 350 characters per reference)

(This section should include a list of up to 10 of the most relevant research outputs associated with the impact)

Andrews, S., J. Vincent, J. McCormick. 2015, ‘Duet: Improvising spatial dialogues with an artificially intelligent agent’, in SUI 2015: Proceedings of the 3rd ACM Symposium on Spatial User Interaction, [The Symposium], [Los Angeles, Calif.], pp. 57-60, doi: 10.1145/2788940.2788952

McCormick, J., P. Divers, S. Hutchison, R. Vincs, M. Hossny, D. Nahavandi, J. Vincent, K. Vincs. 2015. Vox Lumen: People into Light, interactive motion capture installation for the main screen, Federation Square, Melbourne, White Night

Stewart, G.K. Vincs, D. Skovli, P. Divers, J. McCormick. 2012, `Multiverse’, dance and 3D scenography performance, Deakin Motion.Lab, November 2, 2012 [first public performance 2014]

Vincent, J., C. Vincent, K. Vincs, J. McCormick. 2016. ‘Navigating control and illusion: functional interactivity versus 'faux-interactivity' in transmedia dance performance’, International Journal of Performance Arts and Digital

Media, Vol. 12, pp. 44-60

Vincent, J., J. McCormick, K. Vincs. 2016, The Magic Flute (Scenographic Visualisations) for Australian International Opera Company, Australian International Opera Company, Melbourne, Vic.

Vincs, K., A Bennett, J. McCormick, J. Vincent, S. Hutchison. 2014. ‘Skin to skin: performing augmented reality’, in Augmented reality art: from an emerging technology to a novel creative medium, ed. Vladimir Geroimenko, pp. 161-174

Vincs, K., J. McCormick, D. Skovli, K. Wallace, S. Hutchison. 2015. Scenography for The Flying Dutchman with Victorian Opera, Melbourne, Vic.

Vincs, K., J. McCormick, R. Vincs, D. Skovli, S. Taylor, K. Wallace, B. Lin, P. Divers. 2014, The Crack Up, Melbourne, Vic.

Vincs, K., K. Barbour. 2013. ‘Snapshots of complexity: using motion capture and principal component analysis to reconceptualise dance’, Digital Creativity, Vol. 25, no. 1, pp. 62-78

Additional impact indicator information

Additional impact indicator information

(Provide information about any indicators not captured above that are relevant to the impact study, for example return on investment, jobs created, improvements in quality of life years (QALYs). Additional indicators should be quantitative in nature and include:
- name of indicator (100 characters)
- data for indicator (200 characters)
- brief description of indicator and how it is calculated (300 characters).)