AN INITIATIVE OF
THE NEW EDUCATION FRAMEWORK

Digital Simulation Technology Evaluation Pilot 1 (STEP1)

Briefing Document

The University of Newcastle is running a prospective return on investment research program to consider the merits of introducing innovative, new technologies into existing degree programs within the University of Newcastle. As part of this project the DVC-A's office will support the development and introduction of a highly targeted digital simulation technology (VR, AR and 360 video) tool into existing courses being run within the University. This pilot project will be supported, managed and evaluated by a steering committee, chaired by Professor Rohan Walker. Funding is available for the development of targeted simulation content, which enhances the educational framework of an existing UON course. The project will also be supported by a dedicated research co-ordinator.

Apply for the development of a new digital simulation teaching tool now.

The STEP1 steering committee is inviting applications from all Faculties and Schools, within the University of Newcastle, to apply to the STEP1 program by way of expression of interest and the presentation of suitable, targeted teaching content. Applications do not require the identification of digital simulation technology.

To apply, please complete an application form. Your application must address all eligibility criteria outlined in the Application Guidelines on pages 5 and 6.

Applications Close: 5pm, 1st of March 2019

For further questions concerning the general pilot project, eligibility, assessment criteria and application process please contact VRTeaching@newcastle.edu.au.

General ROI Digital Simulation Technology Project Description

The University of Newcastle is currently well positioned with respect to digital simulation technologies, with clear grass roots enthusiasm for the technology across the faculties. Numerous teaching co-ordinators have begun adopting digital simulation technology within their courses already. Additionally, our in-house IT Innovation team has been developing content tailored to UON specific teaching requirements. Digital simulation technology in teaching is the future and UON is dedicated to implementing the technology into its curriculum.

The reality, however, is that broader utilisation of digital simulation technologies will require significant and sustained investment. The UON ROI Digital Simulation Technology Project aims to obtain all the critical information necessary to formulate a structured business plan that could be considered as part of the NeW Education Framework, with a view to providing sustained support over the life of the plan. This will enable a university wide approach to utilisation of digital simulation technologies across programs and courses. Ongoing evaluation will identify longer term funding strategies and the sustainability of the venture.

As part of the project we are now seeking suitable pieces of content with well-defined learning objectives or student assessment outcomes to develop into a pilot digital simulation teaching module. This project is called Digital Simulation Technology Evaluation Pilot 1 (STEP1). Our main objective is to use STEP1 to perform a detailed return on investment (ROI) assessment from start to finish. A comprehensive assessment of the impact of STEP1 will be undertaken to gather both qualitative and quantitative information on costs and benefits associated with the program. STEP1 represents a trial to potentially support future teaching content and shortlisted applications will therefore be saved and considered for future funding.

Successful applicant/s

If your application is successful, the development and implementation of a digital simulation technology teaching or assessment tool for a course running within the faculty will be fully funded. STEP1 is a pilot project with a focus on performing a cost/benefit assessment and part of the larger Digital Simulation Technology ROI program. We expect that the program will be highly competitive and only a small number of project will be selected in the first phase to move forward into development.

In addition to funding the development and implementation of a free-standing digital simulation teaching/ assessment module, the STEP1 steering committee will provide successful applicants with expert support and advice on the type of digital simulation platform most suitable for their scenario. Additionally, advice will be provided on appropriate hardware and software solutions. Organisation and management support during the development and implementation process will also be assisted by the STEP1 research co-ordinator.

Successful applicant/s will be responsible for providing a detailed content storyboard with clear learning and teaching objectives and a contact person/ people to be nominated to work closely with the software development team throughout the process.

The STEP1 Steering Committee will act as the central decision making body of the general project and consist of the DVC-A (Prof. Darrell Evans), the academic lead (Prof. Rohan Walker) as well as the Chief Information Officer (CIO) or delegate.

The development and implementation process of STEP1 will be subjected to extensive assessment and evaluation and all decisions will be vetted and taken in consultation with the CIO or appropriate delegate. Hence, the project will be developed and driven in close collaboration between the lead applicant and the STEP1 steering committee. As the selection of a suitable digital simulation technology and the module itself depends on the nature of the teaching content, the final project design will be generated by the lead applicant, in collaboration with the steering committee.

A successful applicant will not only have to agree to this collaborative framework but also to the conditions and requirements concerning the assessment of input costs as part of the general ROI component of the overarching program. This will include the documentation of professional and academic staff time associated with all aspects of the pilot program. Applicants, associated staff members and students will be required to undertake a series of surveys and questionnaires regarding their views on digital simulation technology. Results from anonymous questionnaires, will be used for internal and external evaluation.

What is digital simulation technology?

Digital simulation technology describes the use of digital technology to generate a 3D simulated environment. The term includes virtual reality (**VR**), augmented reality (**AR**) and 360-degree video (**360**). A 3D digital simulated environment provides an immersive experience of content and can include a highly interactive component depending on the context and technology. Historically associated with gaming, this technology is now also successfully being used as an education and training tool. Using digital simulation environments to reach learning objectives over traditional 2D presented content appears to have high benefits highly applicable to the University sector. These benefits are connected to the highly immersive experience that digital simulation has to offer. It is important to highlight that simulation technology is not the content but rather refers to the equipment and software used to increase the quality of student/ user experience. Hence, the success of a course and the learning outcomes are not generated by the technology itself but relies heavily on the pedagogy and educational framework.

Virtual-Reality

VR is the most commonly used form of digital simulation technology. This tool allows the immersive experience and interaction within a 3D simulated environment. The scope spans from a headset and tracking of a hand held device to free roam tracking and the exploration of a virtual location. For a short video on the VR experience please visit the link below:
https://www.youtube.com/watch?v=qYfNzhLXYGc

Augmented Reality

AR integrates VR into a real world space. It generally uses a tablet, PC, phone or headset to superimpose digital 3D objects onto a screen showing a live video of the real world. The most commonly known AR application is Pokémon Go, where digital content is displayed within the real world using a mobile phone.
For a promotional video on AR technology please visit the link below:
https://www.youtube.com/watch?v=aYdB2xBNFek

360 video

360-degree videos, also known as immersive videos or spherical videos, are video recordings where a view in every direction is recorded at the same time, shot using an omnidirectional camera or a collection of cameras. They allow the user to move their head and view a real world space freely creating a highly immersive experience. 360 videos can be recorded in 3D or 2D. For an example video please visit the link below:
https://www.youtube.com/watch?v=v64KOxKVLVg&t=44s

Examples of the use of digital simulation technology in education

Leading educators at the university are already integrating simulation technology within their curriculum, which has been developed by the University IT Innovation team.
For examples on how VR and AR can be used to assist and help convey an existing teaching goal, please visit the IT Innovation Team web page.

- https://www.youtube.com/watch?v=PkmW9CB1b3c
- https://www.youtube.com/watch?v=IJT1K8Vjtmk
- https://www.newcastle.edu.au/newsroom/featured-news/a-new-world-in-sight-virtual-reality-to-advance-human-health

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Application Guidelines

Eligibility Criteria

1) **The teaching content and learning objectives are currently being taught or fit into an existing course within the University.**

2) **The simulation teaching platform lies within an area of priority.**

For instance:

- addresses flexible off site and/ or remote delivery of content
- has a primary focus in allowing training for high risk or high complexity procedural training
- has a focus in reducing costs associated with the current delivery of the same content
- facilitates cross-degree scalable training
- provides consistent and standardised student assessment an evaluation

Your application must demonstrate how your digital simulation technology tool will fit into one or more of these categories.

3) **A similar simulation technology for this content has not been/ is not being used or developed within or outside of the University of Newcastle.**

4) **The teaching content/ scenario has defined teaching and learning goals, irrespective of its focus area.**

5) **Applications must be supported by the course co-ordinator – applications can be submitted by any teaching staff member however, written and signed support must be provided by the course co-ordinator or alternatively be named as a co-applicant.**

6) **At least one of the applicants must have a valid contract for the duration of 2 years at the time of application.**

Assessment Criteria

Applications will be assessed against the eligibility criteria and content will be chosen specifically to enhance a teaching objective or assessment, which in its current form is not met adequately, involves high risks or excessive costs. We are not looking to replace a functional and effective teaching module or tool. This program is not specifically interested in the development of technologies such as 'e-learning', 'blackboard' style forms of digital simulation. Assessment will take into account, as appropriate, some but not all of the following criteria:

- enhances pedagogical outcomes by providing students a tool to engage with complex and/ or high risk procedural training that would otherwise be difficult or impossible
- provides an approach to reduce costs associated with the deployment of existing real world training protocols
- provides the means to deliver standardised gold-standard assessment or content to multiple geographical sites
- provides the means for students to access immersive and engaging teaching content in a flexible manner wherever they are
- offers scalability in the sense that one server can distribute content to effectively an unlimited number of students, therefore reducing costs associated with both human resources and physical infrastructure associated with the delivery of teaching content.

STEP1 is an initiative of the NeW educational framework, driving innovative new technologies. As such, applicants must indicate that they have scanned the teaching landscape for the suggested content in respect to whether this has already been implemented into or being taught using digital simulation technologies outside of the University of Newcastle. Applications will be assessed on novelty and level of innovative character as well as their potential for being used and shared across the University.