

The M.O. TAFE NSW St Leonards Campus Virtual Production Studio

*A full VP Studio Installation in collaboration with
system integrators, Gencom Technology*



Project Overview

Systems integrator Gencom Technology was engaged to design and deliver a Virtual Production Studio at TAFE NSW’s St Leonards campus – a facility to prepare students for the rapidly evolving future of screen production.

Gencom Technology partnered with Mo-Sys to provide its Virtual Production technology stack as the core around which the rest of the studio would be built.

One of the key objectives was to create a world-class training facility that would not only house the latest,

cutting-edge XR (extended reality) Virtual Production technology, but stay relevant as production methods continue to evolve, ensuring maximum ROI for TAFE NSW and that its students will graduate with up-to-date skillsets, ready for their future careers.



Project Partners



Gencom Technology

Overall solution architect and systems integrator: responsible for end-to-end system design, integration of the specialist technologies, project management, installation oversight and final commissioning.



Mo-Sys

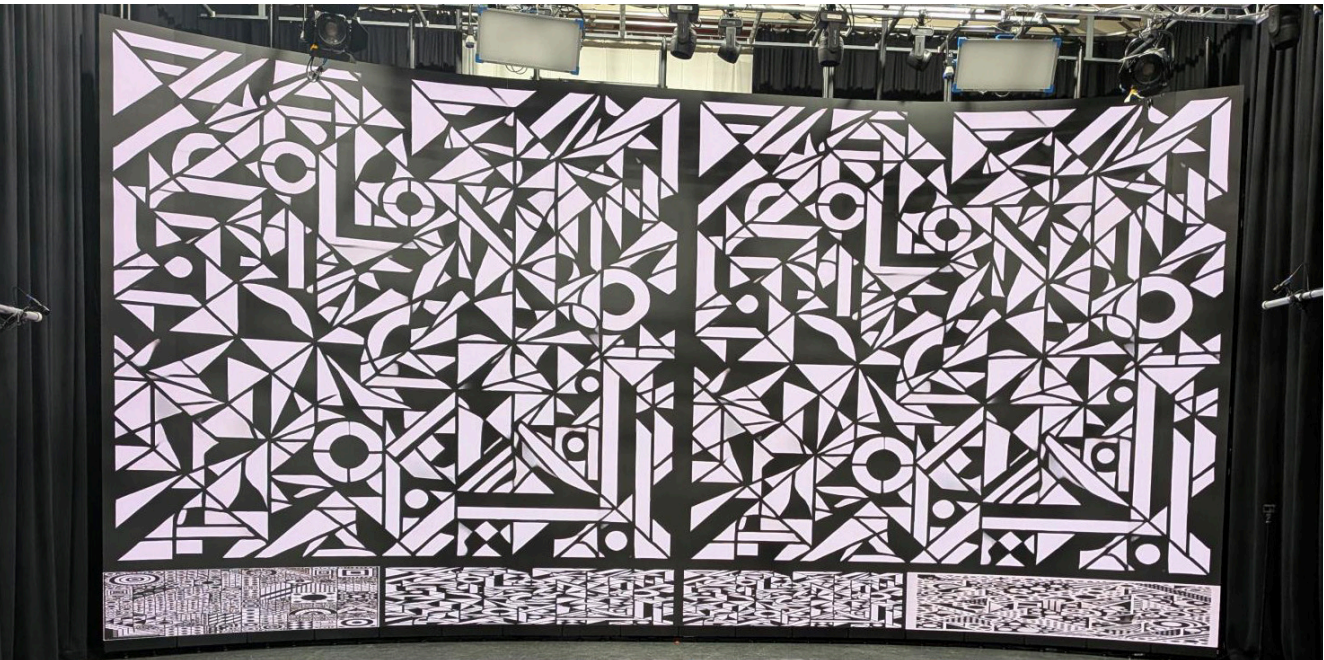
Virtual Production technology: camera tracking, motion capture system and custom computer hardware rack pre-installed with Unreal Engine and Mo-Sys VP Pro XR software.



ULA Group

Production infrastructure: curved LED volume and the studio's lighting infrastructure.

XR Virtual Production at TAFE



Mo-Sys VP Pro XR sits at the heart of the studio's real-time pipeline, coordinating camera tracking, lens calibration, LED wall rendering and compositing across a three-node Unreal Engine cluster. Two nodes operate as dedicated render engines feeding the LED processor and generating the AR/XR graphics, while a third "design node" gives students and faculty the interface for updating content and controlling Unreal Engine directly.

The Mo-Sys XR Set Extensions system enables students to shoot off the edge of the LED volume, overlaying real-time graphics around the edges of the LED pans, like garbage mattes on a greenscreen. Students can frame wider or pan the camera off the edges of the live set, into the entirely virtual environment, and then back on to the live set, seamlessly, empowering them to create even wider shots than the studio could otherwise accommodate.



TAFE is the first project of its kind in the region that uses cutting-edge, XR Virtual Production. This is the most emergent type of VP, where we shoot on the LED background, but extend it digitally.

For XR, we deploy two render engines. One is rendering what's going on the LED wall, and the other one is rendering what's going on beyond the LED wall. That means that you can have a smaller LED wall, and a smaller studio space, but you can have a much bigger virtual environment, so you can make it feel like you're in a much bigger space than you really are.



James Uren - Chief Technology Officer



Benefits of XR for Academic Institutions

Virtual Production for Education

Hands-on experiences with the same real-time tracking and rendering pipelines used on professional feature film and broadcast productions are essential for developing the applied real-time production skills now increasingly in demand across film, television, commercials and games.

Institutional Benefits of a Multi-Functional Environment

Mo-Sys technologies are adaptable to many workflows, supporting everything from film and broadcast to software and games development, extending the studio's value across multiple courses and departments rather than a single specialism.

“Virtual Production is real-time; it's very fast and iterative, which is great for an education environment where you want people to learn a wide range of techniques and be able to switch between different skillsets easily. To ensure maximum ROI, the TAFE NSW stage can also act as a general teaching environment, capable of streaming out lectures to remote students, as a high-end, immersive lecture theatre.”

Michael Geissler – CEO

“With some projects, the main challenge comes from being brought into the project later in the development process, when key technology decisions have already been made. It was great working with Gencom Technology, with all their experience and expertise on the studio build and general infrastructure side, but what really ensured such a smooth install was the decision to involve Mo-Sys early in the process.”

Selin Kemal – Managing Director

Collaboration

Coordinating globally distributed teams can always be challenging, especially between different organisations on a collaborative project.

Mo-Sys often oversees entire studio projects, designing and delivering complete Virtual Production solutions; however, we also have over two decades of experience working directly with system integrators as a technology partner, ensuring seamless integration with the wider technology infrastructure selected by the SI and the client.

For the St Leonards project to be a success, the two firms had to develop a fast and effective collaborative process, with Mo-Sys VP experts able to advise on key technology decisions that would streamline what can often be a very complex process if Virtual Production capabilities are considered at a later point in the project development process.



Mo-Sys Technologies in the Studio

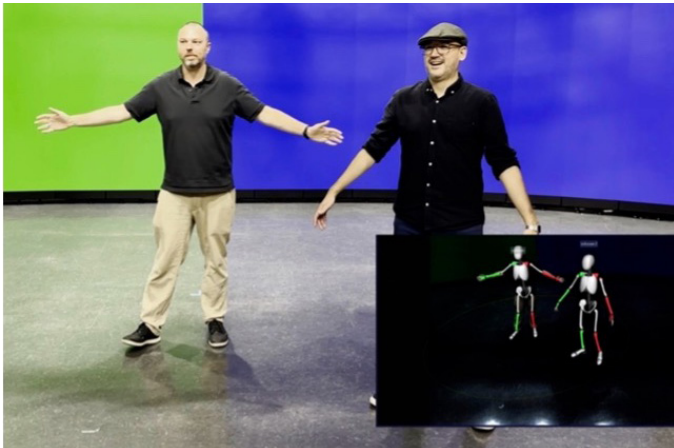
“Virtual Production is a cocktail of technologies, with quite a lot of complexity in the technology chain. Mo-Sys has done a huge amount of work, behind the scenes, making the installation process easier, without reducing the system’s flexibility or restricting creative freedom.”

James Uren – Chief Technology Officer

StarTracker Max – delivers absolute six-axis camera tracking using a constellation of retroreflective markers installed on the studio ceiling. Mounted directly to the studio’s cameras, the compact StarTracker sensor continuously measures the camera’s position and orientation with sub-millimetre accuracy, reporting that data to Unreal Engine in real-time. This provides drift-free tracking that Unreal uses to update the environment on the LED volume instantly, as the camera moves.



MoCaptury – markerless, suit-less, real-time motion capture. For TAFE NSW, an array of sixteen machine-vision cameras was installed around the studio. Using computer vision and AI-based skeletal tracking, students can capture performer movement in real-time, for character animation, gesture-driven graphics or interactive scene control.



VP Pro XR – a comprehensive suite of VP tools, delivered as a professional Unreal Engine plugin used on major LED volume stages worldwide. This software layer coordinates camera tracking, LED wall rendering and real-time compositing.

As an integrated plugin, one of the huge benefits of VP Pro is that users retain full, unrestricted access to the Unreal Engine, allowing them to experiment, rather than being restricted to operate solely within a third-party, locked-down system.

Studio Specifications

Virtual Production Systems

- Custom computer hardware rack pre-installed with Unreal Engine real-time rendering environment and Mo-sys VP Pro XR software
- StarTracker Max camera tracking
- MoCaptury markerless motion capture

Camera System

- ARRI Alexa 35 digital cinema camera
- Canon cine zoom lenses

LED Volume

- 9m × 4.5m curved LED wall
- Vuepix Infiled DB2 VS LED panels (1.9mm)
- Brompton Tessera LED processing

Studio Lighting

- Motorised truss lighting grid
- ARRI professional lighting package
- ACME lighting fixtures supplied by ULA Group

Media Infrastructure

- 96TB EditShare EFS 310 shared storage with FLOW Production Asset Management
- Plura / Ensemble SPG & genlock distribution
- Ambient wireless timecode and sync distribution
- 2D graphics and video playback with NewBlueFX Captivate and Resolume Arena software
- Juniper network switches



The Install

Pre-Installation

The Gencom team ensured that the camera tracking markers were applied to the ceiling, as part of the rigging process, in addition to running the cables for MoCapture ahead of the Mo-Sys team's arrival.

Phase One – Change of Plan

Initially meant to start to with camera tracking installation, it was discovered upon arrival that some of the ground level infrastructure had yet to be installed.

The Mo-Sys team were able to pivot, first mounting the 16-camera MoCapture array to the overhead motorised lighting truss, ensuring complete coverage of the volume.

Phase Two – Camera Tracking

With requisite networking now in place, StarTracker Max hardware was installed and the overhead star array mapped.

Phase Three – Calibration

With all of the Mo-Sys computer hardware delivered in a custom rack, our technicians connected all systems to Unreal Engine via the preinstalled Mo-Sys software, before calibrating lenses, tracking, XR Set Extensions and the MoCapture systems.

Futureproof Outcomes

Mo-Sys is committed to supporting its clients and partners, ensuring maximum compatibility and capability, delivering consistent updates of our own VP Pro XR software within 24 hours of any Unreal Engine release. This dedication to support is something that Mo-Sys education clients also benefit from.

The TAFE NSW VP studio facility will continue to receive upgrades as Mo-Sys's software technology and Virtual Production workflows evolve, giving students access to cutting-edge Virtual Production tools as they are released.



“At Mo-Sys, we integrate technology that isn't just appropriate now, but will be relevant for the foreseeable future, and that's what we've done in partnership with GenCom here at TAFE. The installation went very smoothly, and that's the result of a lot of engineers working to streamline the installation process, and how well our team manages challenges in this complex technology chain as they arise. The ability of both teams to collaborate so effectively is a testament to the experience, expertise and professionalism that both companies bring to the table.”

Michael Geissler – CEO

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