Institute Of Creative Technologies
Laboratories & Equipment

Contents

This is a comprehensive illustrated listing of all IOCT Laboratories and Equipment in 2009. These may be used by anybody involved in an IOCT project, be they members of staff, PhD researchers, or Masters students.

Some of the equipment must be used *in situ* and some is portable. All facilities must be correctly booked and are subject to Health & Safety and Insurance constraints.

All bookings must be made through the IOCT Lab Supervisor, Annalli Herbert aherbert@dmu.ac.uk ext. 8133. Technical support is provided by the IOCT technicians Mrs Cherie Evans and Mr Adam Weikert, with specialist technicians in some of the laboratories.

The IOCT Facilities comprise:

- Main Lab (single large space with kitchen and toilet off, plus AV Editing Suite and Control Room)

- Usability Lab (two-roomed specialist observation)

- Virtual Reality Lab (180 degree stereoscopic immersive theatre)

- Fused Media Lab (3D media, film production, motion capture)

Access to other partner facilities can be arranged. There is a networked link with Phoenix Square.

1. Main Lab – installations

The IOCT Main Lab is designed to be as flexible as possible. It comprises a large sound-insulated space with a pillar off-centre, with disabled toilet and kitchen off. A small glass-windowed booth overlooks the space and functions as a control room and AV-editing suite. There is some fixed desking in the main space, but most surfaces are collapsible tables that can be relocated freely. There are some comfortable sofas and decorative tables, plants, and other miscellaneous items. There is a floor to ceiling shelving unit on one wall, and the ceiling has suspension bars for lights and data projectors.

The walls support three very large projection screens, and there is a collection of movable digital screens and TVs of various sizes, scrollable projection screens (both silver and white), interactive whiteboards, flipcharts and dividing screens. There are also holographic and multitouch screens, and a collection of Mac and PC computer workstations, both desktop and portable, plus one Linux Notebook. The equipment cupboard contains an array of portable (and not so portable) equipment which is detailed in Section 2 below.

There are a number of installations in the Main Lab which are designed to be used *in situ* and are available for booking:

Access Grid Node

Access Grid (AG) in simple terms is an advanced videoconferencing application that uses audio and video tools allowing people in different locations worldwide to meet in a virtual venue (virtual meeting room). In these virtual venues participants can see and speak to each other in realtime, use online chat and share applications simultaneously. As an application AG is ideal for any size of meeting due to its scalability. At its most basic it can run on a laptop with webcam using the laptop's display and webcam microphone for a one-to-one meeting or it can be used in a conference room with a server, several high specification cameras and large display boards to create a group-to-group meeting with participants from across the globe.

IOCT has used the Access Grid for creative projects using real-time interaction, such as *Stereo Bodies* which featured live interaction between remotely located physical and virtual dancers.

Photograph by Annalli Herbert

AV Editing Suite

A self-contained Mac-based video editing system complete with 5.1 surround sound and dual monitors.

Digital Lectern

Presentations in the IOCT will benefit from this multimedia lectern which enables multimedia control, and projection onto the end wall screen via an HD Widescreen Projector.

Virtalis System

Otherwise known as a 'GeoWall', this is a low cost interactive 'passive' 3D stereoscopic projection system. It consists of a computer with a dual-output graphics card, two projectors, a rack to hold them, polarizing filters, silver screen, and cheap polarized glasses for each user.

Holopro Screen

A transparent screen designed for holographic projection, complete with high specification projector. Images

LED Display

A large prominent text-only display suspended outside the Main Lab. This may be used for writing projects, but these must be approved by the IOCT Director before public display is permitted.

Rimage CD/DVD printer

Prints 50 CD-R/DVD-R. Will copy the disc's contents whilst producing high quality prints on the discs surface using the inbuilt software. Great for rapid production of music, video, or even conference proceedings!

3D Surround Sound System (Motu Mk3) (from Aug 09)

A fixed 12-speaker system with MIDI interface and dedicated 3D sound software.

3. Main Lab – portable

- *Cameras*

Apple Isight webcam (x 3)	A highly specified webcam with auto focus lens and built in microphone.	
Sony Digital Camera – Cybershot (x 2)	This camera has 7.2 megapixels and four times optical zoom.	
Sony HD Stills Camera – Cybershot	10.1 megapixel resolution, with a 5 x optical zoom. Lens not as good quality as other Sony Camera	
Sony HD HandyCAM (x1)	HD Hard disk camcorder – no tapes required. Features GPS	
Sony DV HandyCAM (x3)	Basic DV Tape Camcorder. Not professional Quality	
HDV Camcorder 1080i	HD Camcorder with good lens – Semi Professional Images attainable, can look very professional with some good post production.	

DSR 400-PK DV- Cam (x2)	Broadcast standard Camcorder – does not shoot in HD but produces very high quality almost noiseless image. Fantastic lenses for sensitive depth of fieldwork.	
VCT-R640 stands	Small Tripod for Camcorders/cameras	
Webcam 5500	Low quality PC/mac webcam, operates via USB	

- ***Computers***

Imac (x 2)	Two apples imacs that remain within lab	
Alienware Laptop PC	Hi performance gaming laptop with windows vista	
Dell Precision Laptop	Performance XP laptop	
Mac Powerbook G4 (x 4	Older model than MacBook	
MacBook (x3)	Uses Intel Processor.	
XPS PC	High performance PC running windows XP	
Eee PC Notebook	Uses Linux Operating System. Very Light & compact.	

- *Controllers and desks*

Jester Zero 88 AV mixing desk	An extensively malleable DMX controller capable of complex patch mapping/saving for control of intelligent lighting.	
Kroonde UDP/MIDI/Microwave Interface	System that allows various sensors (Thermal, Motion, Light etc) to sent data wireless and then be interpreted as data on a computer.	
Edirol V-4 Video Mixer	Video mixer allowing real time mixing/effects of two video sources	
Xenyx 802 Mixing desk	Basic audio mixing desk for simple set ups	
Express XT Midi	Basic midi receiver/ transmitter, rack mounted.	
Motu 828 Mk2	External firewire soundcard for multi channel audio dissemination/recording.	

- *Gaming*

Xbox 360		
Sony PSP		
Nintendo DS (x6)		
Various Wii Controllers (No Console)		
Chess Set		

- *Lighting*

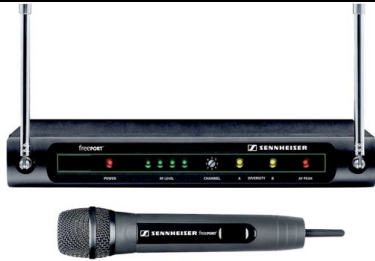|		
Zero88 Alpha Pack (x2) theatre lights	Furnells (Theatre Lights) x 6 Profiles (Theatre Lights) x 4 Gels for Theatre Lights Basic portable lighting rig, controllable by dmx or provided faders	
Martin Mac 250 Entour programmable rotating lights (x2)	Motorised lighting with X Y control, gobos and full spectrum of colours	

- *Loudspeakers*

Genelec 5:1 8020 set, with stands	5.1 Surround sound system speakers. Require cabling and amplifier/ surround sound card.	
HyperSonic Sound (HSS) Speakers H450	Hyper directional speakers	

- *Media Players*

DVD & Video Player		
DVD Player		
Video Player		
Tascam DAT Tape Player		
Denon Tape Player		

- *Microphones*

AKG CK 69 ULS Shotgun	Hyper cardiod response microphone. Point, shoot, record. Requires phantom power	
AKG D230	Low quality dynamic microphone	
Neumann KM 184 (x2)	High quality condenser microphone – requires phantom power	
Neuman TLM 103	High quality condenser microphone – requires phantom power	

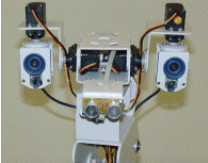| Rode NTG 1	High quality condenser microphone – requires phantom power – very directional response	
Sennheiser Freeport Vocal Set (x2)	Wireless dynamic handheld microphones.	

- *Projectors*

Saville DMD Optoma Projector (x2)	Good contrast ratio, bad throw ratio (needs to be far away to create large image)	
Sony Data Projector (x2)	Slightly worse contrast ratio than Saville, but better throw ratio (can be put nearer the screen yet produce a bigger image)	
Panasonic PT-LB20VEA (x2)	Fixed on bars	
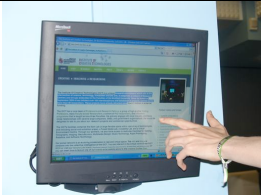
- *Recording Equipment*

Edirol R 4-4 Channel Portable HDD Recorder (x6)	Hard disk audio recorder, can record up to four separate mono channels – provide phantom power	
Tascam HD-P2 Portable Recorder (x3)	Hard disk audio recorder, similar to Edirol, only provides three phantom powered channels though.	

- *Robots*

5 x Aibo ERS7	Sonys robotic dog, runs independently or can be controlled wirelessly, or tampered with via an internal memory stick	
Animatron (with PC)	Speak to Mario Gongora for details	
Mindstorm's Robotics Invention Set	Mindstorms programmable lego set – build simple robots	
Peoplebot (x 2)	Motorised programmable interactive robots with various sensors.	

- *Screens and Surfaces*

2 x Portable Frame Projection Screens.		
Daft Punk Table	A table…with lights..!	
Lemur Control Tablet	Interactive touch service with customisable digital layout. Great for audio/midi control.	
Smart Wireless Slate	Basic graphics tablet	
Wacom Graphics Tablet	More advanced graphics tablets, with higher pressure sensitivity and tilt sensor in pen	
Touch Screen	Windows based single touch response touch screen. Touch acts as a mouse.	
Transparent Projection Screen	Perspex screen that can be projected on.	
26" Plasma TV		
40" Plasma TV		
60" Plasma TV		

- *Visualisation*

Pokescope stereoscopic viewer and capture box (needs the 2 Sony cameras to work)	Take stereo images using two synced cameras then view using a convergence eye piece for stereoscopic image	
Triple Head-To-Go	Allowed 3 extra screens to be attached to one VGA port	

4. Usability Lab

Photograph by Adam Weikert

A Usability lab is a place where Usability testing is done. It is an environment where users are studied interacting with a system or device in order to evaluate it's usability. The user is given tasks to perform, while behind a one-way mirror, a number of observers watch the interaction, make notes, and ensure the activity is recorded. Usually, sessions will be filmed and the software will log interaction details.

The IOCT Usability Lab is located in the Chantry Building on Gateway St. (next to Portland) and is available free to university staff and students or on a commercial basis to external visitors. The Usability Lab is directed by Professor Stephen Brown and initial enquiries about its use should be made to him. The equipment available within the Usability Lab is as follows:
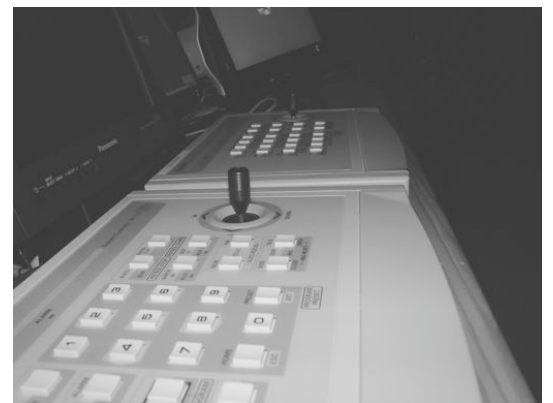
Photograph by Adam Weikert.

2 x Panasonic Colour Dome Cameras

2 x Panasonic Joystick Desktop Controllers

2 x High Resolution 15" Monitors

2 x Wireless Tie Microphones

2 x Boundary Microphones

2 x Desk Cameras

Microphone Pre-Amp 8 Channel

16x16 Audio-Video Matrix Switcher

Vision Mixer Quad

Video/Audio PiP & Mixer

Analogue to Digital Video Device

2 x DVD Recorders

PA System

PC with Dual Monitors.

In addition, an eye tracking device may be available by prior arrangement only.

2. Virtual Reality Lab

The Virtual Reality Lab comprises a very large immersive 180 degree screen with stereoscopic display capabilities through six projectors. The lab is located on the sixth floor of Gateway House. The detailed specification is as follows:

Photograph by Nathan Jeffery

6 x PC image generators.

1 x PC host control system

6 x SX15 projectors

6 x Polarising filters for passive stereo & passive stereo glasses

3 x projector brackets (dual units) with passive stereo filter holders

1 x 150 degree cylindrical screen (3.5m radius) with spectral coating to support passive stereo

1 x audio amp (Sony) with speakers (Jamo) for surround sound

1 x Polhemus head and hand tracking system with Pinch gloves

Various cables (video, RS232, power etc to interconnect devices)

1 x Rack with networking

5. Fused Media Lab

The Fused Media Lab aims to enhance every aspect of our lives and environments for a healthier, happier and more productive life, by offering know-how and facilities in bleeding edge technologies. The Fused-Media Lab includes the Technolife Grid (fused Technology-in-life) which is a test-bed for consumer/customer driven innovation.

Fused-media and the corresponding technolife grid can be exploited in a variety of applications to enhance our lives and environments including health, work, social networking, security, training, e-learning, creativity, consumer electronics, living environments, entertainment, prototyping, visualisation and so on.

The facilities comprise an open plan lab, green screen and broadcast spaces, and the following items:

- Animazoo Motion capture full body suit, wireless & s/w drivers w/ PC (motionbuilder)
- Measurand Wireless stand-alone VR glove
- Vicon Optical single person motion capture system w/ PC and MX+3 Special Offer (7 x MX3+, 1 x MX Ultranet, 1 x Control Studio, Camera cables (25m), 1 x L-frame and Wand, 1 x dongle for IQ, Animation Marker Kit, 7 Superclamps, 7 Tripods, 7 Tripod Heads, Flight case for cameras.
- Autodesk 3D animation/motionbuilder software

Photograph by Adam Weikert

- Adobe Stereo/3D studio software
- Inition Stereoscopic visualisation system (matched stereo DLP projectors with lenses, etc., fixed screen, 10 passive glasses, Duality S+3 (3500 ansi lumens)
- Philips 3D Graphics tablet (20")
- Actuality 100 million voxel volumetric display with w/s PC
- Philips 2D/3D High res display (42") with stand (x2)
- Emagin Mixed reality head-mounted display (SVGA) (x2)
- Inition Stereoscopic Capture, Edit and replay system
- Nvidia High-end Quad output graphics cards (x4)
- Immersion Haptics glove, s/w drivers & SDK
- Sensable Portable 6DoF force feedback/haptic development kit (x2)
- Polhemus 6DoF Magnetic motion tracking system
- 3D Connexion 6DoF Input device (SpaceBall 5000) (x2)
- XIST FacialTracking system, with w/s PC
- Realtime VR software (1VR4MAX Generator, Advanced Stereo, Measurement, Red Lining, Device Configurator, Augmented Reality, VR Conferencing Pro, Remote API Developers Kit, DMU-Digital Mock Up.
- Planar Steresoscopic Display

6. Partner Research Centres

The IOCT has access to other facilities across the university. Some Centre's are IOCT Partners, as follows:

- Centre for Computational Intelligence
- Centre for Excellence in Performance Arts
- Centre for Textual Scholarship
- Digital Media Group
- Imaging and Displays Research Group
- Knowledge Media Design
- Mechatronics Research Centre
- Modern Holography
- Music, Technology and Innovation Research Centre
- Radford Group for Architectural Research
- Software Technology Research Lab
- The Design Unit
- Transliteracy Research Group

Each of these has a lab or labs which can be accessed by IOCT researchers. This is done strictly by agreement with the managers of the labs in question. Full details via the links at http://www.ioct.dmu.ac.uk/

The Creative Technology Studios in the Queens Building are also available. These are primarily an integrated facility for the acquisition, editing and distribution of video, audio and computer-generated materials. Files can be shared throughout the studios via a fast computer network, enabling a seamless mixed-media workflow. Specifically, the facilities include:

- Industry-standard video, audio and radio production suites.
- A suite of twenty-one High-Definition (HD) video workstations, using the very latest industry-standard HD editing software.
- Television studios with HD video cameras, green-screen and virtual-studio capabilities.
- Two fully equipped recording studios, featuring analogue and digital recording systems and surround sound monitoring.
- Broadcast-standard radio production studios with professional playout and management systems.
- Audio and video laboratories with high specification test equipment for signal analysis.
- A high-speed, high-definition, data backbone, enabling the integration of audio, video and computer-generated media projects.
- Hybrid technologies, using the best of current analogue and digital media.

7. Phoenix Square

Phoenix Square
http://www.phoenixsquare.co.uk/
has been sensitively designed by award winning architects in the heart of Leicester's emerging Cultural Quarter. It launches towards the end of 2009. This is a truly unique cultural building fusing together independent arts cinema and immersive digital gallery, individually designed homes, office studios and creative workspace.

The IOCT has an important role in the creation, informing, and programming of Phoenix Square. Enquiries should be directed to Dr Steve Gibson sgibson@dmu.ac.uk who is the IOCT Research Fellow based both in the university and at Phoenix Square. There is a dark fibre link between the Cube space in Phoenix Square and the IOCT facilities, enabling real-time remote interaction. There is also a 'portable' immersive projection system that duplicates the Virtual Reality Lab.