AV Handover Arrangements - Supplement to FMG–42 Management and Operational Procedures

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- First document draft - issue no. 1.1, August 2012
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Contents

1. Document summary

1.1. General introduction

This document supplements the Facilities Management Guidance Hand-over Arrangements (FMG-42) and outlines the procedures to be followed when an audio/visual installation is completed and ready for hand-over to LU. This document relates closely to the ISS Campus AV Specification.

The most recent version of this document and the Campus AV Specification can always be found at: https://www.lancaster.ac.uk/iss/contact-us/av-installation-specifications

1.2. Relevant standards/legislation

The AV hand-over document has been developed to ensure all projects are delivered in accordance with the legislative requirements of the Equality Act 2010, the Health & Safety at Work Act 1974 and associated UK regulations.

1.3. Certifications

The hand-over documentation should include provision of Certificates of Conformity to IEC 60118-4 for any installed induction loop systems. CAT6 certification demonstrating conformity to the full CAT6 specification must be provided where CAT6 cabling has been used for AV lines.

1.4. Lancaster University policies and other guidance notes

All existing information relevant to the project should be requested by sending details of the project to: d.neal@lancaster.ac.uk

2. The hand-over process

2.1. General requirements

All AV installations are required to satisfy the requirements outlined in the Campus AV Specification except where alternative requirements have been agreed and documented by ISS – **Schedule AV05**.

The hand-over process shall generally follow that which is described in the FMG-42 document with the following considerations and variations specific to the AV equipment and systems installed.

3. Project hand-over

3.1. Introduction

Management and support of LU teaching spaces relies heavily on the quality and consistency of audio visual installations. Teaching spaces are often unavailable for maintenance during the academic year therefore sufficient time in the project should be allocated to complete AV works and to carry out witness testing and subsequent snagging in full. Testers should not feel pressurised to agree hand-over due to projects falling behind schedule.

3.2. System documentation

Hand-over cannot be completed without adequate information being provided for the correct operation, inspection, testing and maintenance of the equipment and audio-visual systems. These documents should be provided prior to inspection and testing – **Schedule AV02**

All AV schematics (as built) should be provided in:

- CAD-DWG format and/or
- PDF format and/or
- 1x hardcopy at no less than A3 size

Schematics should include:

- Audio, video and control
- Rack and AV panel layouts

Additional documentation required (where applicable) consists of:

- Certificate of conformity to IEC 60118-4 for any installed induction loop systems
- Induction loop layout design drawings
- CAT6 certifications for AV lines
- O&M manuals
- Manufacturer guarantees or warranty certificates

3.3. Inspection and testing

Inspection and testing shall be carried out by ISS and will consist of two parts.

Part A confirms that the requirements of the Campus AV Specification and of any Additional Specification Documents (as detailed in **Schedule AV05**) are met. This shall be recorded in **Schedule AV06**.

Part B consists of the carrying out and recording of additional tests as detailed in **Schedule AV07**.

The following equipment may be required to conduct tests and will be provided by ISS:

- An induction loop field strength meter and headphones
- A HDMI source
- An unbalanced stereo audio source (3.5mm TRS jack and 2x phono)
- Network testing equipment (Fluke DTX 1800 cable analyser)

Records of all inspections and tests will be recorded by the Design/Construction team and shall form part of the record documentation in the FMG-42 document – **FMG-42 Schedule 06**

Appropriate ISS IT/AV Engineers should be invited to witness inspection and tests as part of their training and familiarisation – **FMG-42 Schedule 09**

3.4. Control and maintenance equipment

Prior to system commissioning any equipment and/or apparatus required for the operation or direct maintenance of the installed AV equipment should be provided – **Schedule AV03**. This may include:

- Remote controls for projectors, screens and other devices
- Tools for the removal of access panels, access or switch keys
- Manufacturer replacement and alternative fittings as included with installed equipment

- Alternative connectors or cables provided with installed equipment

3.5. System commissioning

Following the inspection and testing of all equipment and systems, these shall be commissioned and set to work as detailed in the Contract documentation.

Note that control system programming errors can take time to reveal themselves. Snagging is to be expected during the following four weeks or so of regular use and provision should be made by the contractor to carry out any remedial works at a suitably convenient time following System Commissioning and at no additional cost where changes are required to correct defects.

Appropriate ISS IT/AV Engineers should be invited to witness commissioning and setting to work as part of their training and familiarisation.

3.6. Source / program code

Prior to hand-over a copy of the source code used to program the AV control systems should be provided in digital format either by USB stick or by providing a URL for download – **Schedule AV04**

3.7. Training and familiarisation

Formal training shall be provided to enable appropriate ISS IT/AV Engineers to operate, test, maintain and support the AV equipment and systems.

Training and familiarisation may in part be undertaken as part of the inspection, testing, commissioning and setting to work procedures.

Training should cover: day-to-day operation of the equipment, troubleshooting steps to be taken in the event of a problem arising and how to perform any regular maintenance that is required. Where applicable training should include details of how to make extended use of the AV systems, particularly where flexible re-configuration or patching is available.

- Training provision is to be recorded on **FMG-42 Schedule 9**.

3.8. Defective and outstanding works

Prior to any AV systems being offered for hand-over, the works should be substantially complete. Substantially complete shall mean:

- Safe in all aspects regarding the operation and maintenance of the equipment and audio visual systems.
- All documentation, code and equipment as set out in the Contract is handed over - **Schedule AV02-AV04**
- ISS confirm that the campus AV and any additionally specified requirements and tests have been met – **Schedule AV06 and AV07**
- Project Manager provides a detailed schedule of all outstanding works together with dates when these will be completed by – **FMG-42 Schedule 08**
- Any outstanding works will not have any adverse effect on the intended operation of the audio visual equipment and system(s).

3.9. Works during the defects period

Prior to hand-over of the audio visual system, the Project Manager and ISS shall agree and record how any work is to be carried out following hand-over. These shall include:

- Scheduling and agreeing maintenance windows in which remedial work can take place. Care should be taken to avoid any disruption to normal use of the audio visual systems (particularly in teaching spaces). Out of hours work may be required where spaces are in heavy use.
- Updating and re-issuing of any as-built system schematics that are changed in the course of remedial works.

Refer to **FMG-42 Schedule 10**

3.10. Formal hand-over meeting

A formal hand-over meeting shall be arranged so that ISS can accept responsibility for maintenance activities and until this meeting is conducted all maintenance activities will remain with the contractor.

Acceptance forms for:

- Maintenance possession – **Schedule AV07**

3.11. Practical completion

In addition to the procedure described in FMG-42 practical completion will be subject to agreement by the ISS that any audio visual equipment and systems are operating correctly and that maintenance and support of such systems can be passed over to the University/ISS.

4. AV hand-over document

Schedule AV01: Summary document

Part A
Brief description of the extent of the installation covered by this AV Hand-over Document:

Project title:

Building:

Scope (including AV tier):

Summary of Installation:

Part B
Confirmation that all issued documentation, maintenance equipment and source code has been checked for completeness and signatures are present.

• Schedule AV02	System documentation	☐	Complete
• Schedule AV03	Control and maintenance equipment	☐	Complete
• Schedule AV04	Source / program code	☐	Complete

Confirmation of the completeness of the audio visual engineering services, other than outstanding works or defects.

• Schedule AV05	AV specification	☐	Complete
• Schedule AV06	Part A - Inspection and testing	☐	Complete
• Schedule AV07	Part B - Inspection and testing	☐	Complete

Confirmation that familiarisation and training has been provided and post-hand-over procedures are in place.

• FMG-42 Schedule 9	System familiarisation and training	☐	Complete
• FMG-42 Schedule 10	Post hand-over procedures	☐	Complete

Schedule AV02: System documentation

The final documents must be combined into an A4 binder as well as provided in electronic format. Please avoid generic manufacturer's literature that is not necessary for maintenance activities. Where available compact disks provided with equipment or containing additional documentation should be incorporated into the ring binder.CAT6 certifications for AV lines are not required to be printed for inclusion, electronic copies will suffice.

It is expected that all documentation shall have been reviewed by ISS as being relevant and having sufficient detail and is provided with a logical referencing system. Once all reviewers are satisfied with the information supplied the following signatures should be sought:

Signed: Date:

(Contractor's Engineer)

Signed: Date:

(ISS)

Schedule AV03: Control and maintenance equipment

All control and maintenance equipment provided should be clearly identified as to which of the installed components it belongs to. If this is not inferred by manufacturer labelling additional labelling or segregation of equipment into separate containers should be made. For example; remote controls and cables should be labelled and keys should be tagged in sensible bunches.

It is expected that all equipment shall have been reviewed by ISS as being relevant and clearly identified. Once all reviewers are satisfied the following signatures should be sought:

Signed: Date:

(Contractor's Engineer)

Signed: Date:

(ISS)

Schedule AV04: Source / program code

Source code should be provided on a USB flash drive or by provision of a URL for zipped download.

Code files should be clearly grouped into folders.

Folder names should start with the date in the format **YYYYMMDD** followed by venue name and the device to which they relate, e.g. **20120131 - LUMS LT1 NetLinx Master Controller**

It is expected that source code will be downloaded and reviewed by ISS as being complete and readable with a logical file structure and naming convention. Once all reviewers are satisfied with the information supplied the following signatures should be sought:

Signed: Date:

(Contractor's Engineer)

Signed: Date:

(ISS)

Schedule AV05: AV specification

The version of the campus AV specification used for this installation should be written below.

Campus AV specification Version :

Any additional AV requirements issued for this installation should be noted in the table below.

Additional specification documents	**Issued by**	**Version/date**

Schedule AV06: Part A - Inspection and testing

Confirmations that ISS representatives have inspected that each of the installations have been installed to meet the requirements of the Campus AV Specification and any additional requirements outlined in Schedule AV05 to their satisfaction and in accordance with the Contract documents.

Signed: Date:

(Contractor's Engineer)

Signed: Date:

(ISS)

Schedule AV07: Part B - Inspection and testing

Item	Description	Tested By	Date
Supplied equipment	• Check equipment supplied matches approved schematics		
Physical inspection	• General condition of install - use PAS 122 guidelines as a reference		
Cabling – floor box (if applicable)	Check cabling between floor box and lectern: • Labelled as per schematic • Not stretched or damaged • Floor box lid should close without trapping cables		
Power controls	Check system: • Powers up and down • Resets to defaults (including audio volume level)		

Source switching	• Check system switches between all sources and that:
	  • Aspect ratios are correct
	  • Audio follows video as appropriate		

Volume control	• Check program volume control operates over full range • Check program mute operates • Check microphone level control under advanced options • Check volume levels for each source selected		
Audio	• Check quality of program audio • Check quality of vocal audio		
Microphones	• Check operation of gooseneck microphone • Check operation of wireless microphone Check correct frequency in use • Check sensitivity correctly adjusted		
Video	• Check quality of video on Podium • Check quality of video on projection screen(s) • All images should be in focus with no smearing, video noise or other defects.		
Screen blanking	• Check screen blanking button operates		
Aspect ratio over-ride (if applicable)	• Check aspect ratio over-ride controls work		
Screen controls (if applicable)	• Check that motorised screen controls work to raise, lower and stop under manual control		

Item	Description	Tested By	Date
Additional inputs and outputs (if applicable)	• Check additional audio and video inputs • Check additional audio and video outputs		
Lighting control	• Check pop-up is available • Check lighting presets are recalled correctly		
Blind/curtain control	• Check pop-up is available • Check blinds/curtains open/close		
Auto shutdown	• Check that inactivity timer shuts system down		
Fire alarm mute	• Check that fire alarm activation mutes system audio upon activation • Check that RMS receives an alert condition		
Display resolution / aspect ratio	• Check rack PC display resolution is set appropriately and is displayed with the correct aspect ratio on the podium / projector / display		
Induction loop (if applicable)	• Check that program and vocal audio is being sent to the loop amp • Check that the compressor is active Check that there is loop drive • Take field strength meter readings at various points in the venue to check that there is sufficient drive • Take a subjective listening test to test for audio clarity		
IP/DNS	• Check correct IPs have been assigned to equipment connected to campus network		

RMS	• Venue should have called home to RMS with the correct name.
	• Device list should be populated
	• Device parameters should be populated
	Control functions should be populated
	• Check that the following data is reported and matches device:
	  • Projector lamp hours
	  • Projector filter times
	• Check control functions (Source select, Power off, etc.)		