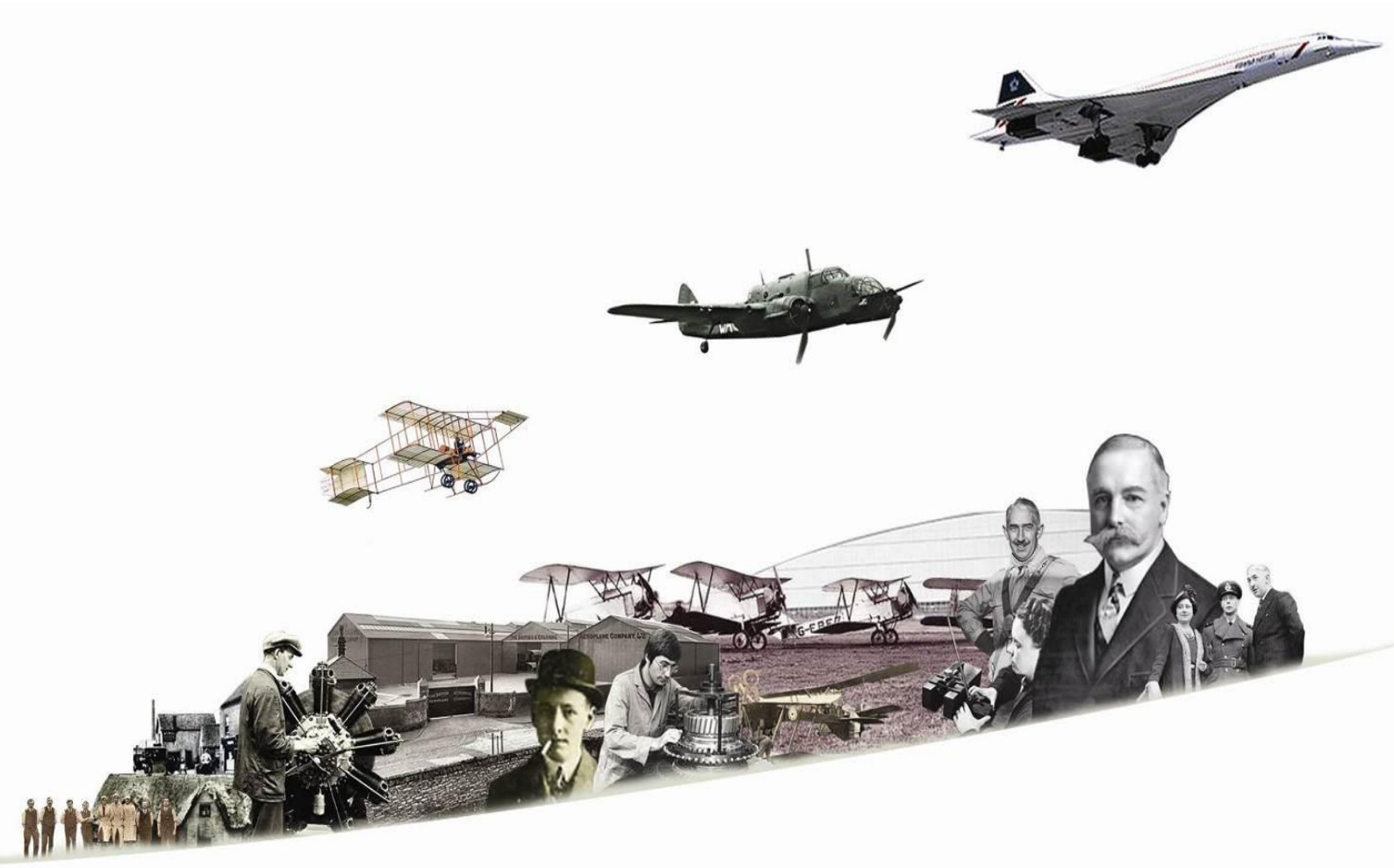
Aerospace Bristol

Active IT System & Wi-Fi

Document Five

Project Specific Requirements –
For Information

February 2017



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B13 VOICE AND DATA

B13.1 STRUCTURED WIRING (W30)

B13.1.1 SYSTEM DESCRIPTION

A The site is presently served by a variety of legacy systems which have mostly been installed by tenants, and as such are not adequate for the present and future aspirations of the Employer.

Consequently all systems will be renewed, the only exception being retained voice cabling in 16M and connection from 16M to Airbus telecommunications infrastructure.

B The structured wiring shall support a variety of services,

1. Voice services (anticipated as being VOIP),
2. Data connectivity, both to fixed outlets and to WiFi access points,
3. Building system networks (e.g. BMS, metering),
4. Security networks (Access control, CCTV),
5. Audio-visual networks.

Prioritization and management of these services will be by the Employer.

C A structured wiring specialist contractor shall be appointed to provide the final design of the installation, provide the works, test and commission.

Prior to preparation of the Technical Submittals, meet with the Employer and C.A. to establish if additional requirements are known, seek instruction and then proceed.

Verify connectivity requirements for other systems, both quantity and location.

Prepare Technical Submittals for approval be the C.A.

D Provide details and material samples for approval and co-ordinate with the Architect to ensure details are resolved and approved by the prior to implementation.

E The system provided by the structured wiring specialist contractor shall consist of

1. Racks in dedicated locations,
2. Termination strips and frames within the racks,
3. Optical fibre and Copper cabling, terminated at both ends,
4. Outlets at the points of use.

F Refer to other parts of this specification, plus the following parts of Section C :-

V80	Electrical Identification
V81	Earthing and Bonding
Y50	Testing And Commissioning Of Mechanical And Electrical Services
W31	Structured Wiring
Y61	LV And ELV Cables
Y63	Cable Supports
Y67	Transient Over-Voltage Surge Suppression Devices
Y90	Fixing To Building Fabric

G Test and certify the system on completion of the installation.

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B13.1.2 INCOMING LINES TO SITE

A The BT connection cabinet to the north of Building 16S may be able to provide the necessary connectivity to the BAC site, however this will need to be verified as the BAC requirements for voice & data, plus exhibition related feeds become known.

Refer to list of provisional sums for the civil engineering works necessary should this not be the case. Procurement of the new infrastructure will be by the Employer (refer B16).

B The Employer is also considering if a second telecommunications connection is necessary or desirable.

B13.1.3 SITE WIDE INFRASTRUCTURE

A Links between buildings and between racks will be both fibre optic and copper.

B The fibre optic backbone to ISO 11801 and BS EN 50173 will support 10Gbps (IEEE 802.3ae) Ethernet links on day one, scalable to 40Gbps and 100Gbps standards.

C Cables run external to the building via the new duct system shall be moisture resistant gel filled type with braided mechanical protection of an external grade.

D Cables run internally shall be LSF type standard internal grade multicore.

E In the final development of the site the fibre connections shall be routed from 16S to Concorde to 16M to 16R and back to 16S, so providing a diversely routed ring via all buildings.

The present contract does not include 16M or 16R, so the ring shall run from 16S to Concorde and back to 16S on the same route via separate ducts.

Ensure the below ground duct system is extendable to form a ring, from outside the buildings, to 16 M and 16R at a future date.

Minimum provision between each location shall be a 16 core ~~OM4~~ OS1 fibre optic, 8 No balanced twisted pair (Cat ~~6~~ 6e) and 50 pair BT type CW1308B (Cat 3) 50 pair.

B13.1.4 EQUIPMENT RACKS

A Equipment racks shall be fully enclosed, with removable ventilated doors back and front.

For specific building requirements, including provisions for future AV racks, see the building specific sections and Buro Happold IT & Technology Report 25/04/2016.

B Racks shall have brushed cable entries at the rear for the entire height of the cabinets, with transition trays to support cabling between cabinets (where relevant).

C Provide a 1U fibre patch frame at the top of the rack, suitable for a minimum 32 terminations. Use SC connectors.

D Provide patch panels for all copper cables. The presentation of the patch panel will support labelling and identification using a printed numbering system. Snap-in connector must be identified by the same standard colour coding as the wires of FTP cables.

E Install cable support products that maintain bend radius requirements, allow the easy removal and installation of single leads from loose cable bundles without disturbing other cabling

Provide vertical and horizontal cable management, including jumper and transition trays, not exceeding manufacturer recommended fill ratios. Provide re-usable cable management straps.

F Provide locations for retrofit of cooling fans.

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G Each rack will be connected with power via industrial power sockets rated 32 A
From these provide either 1 or 2 power strips per rack (see building specifics), minimum 16 sockets each, mounted vertically at the rear of the rack.
These shall be monitored and networked with SNMP capability.

H Do not populate the bottom 6U of racks, which are reserved for future UPS power supplies.

B13.1.5 HORIZONTAL CABLING INFRASTRUCTURE

A The Specialist Contractor will design and install all horizontal cabling in a star topology from the telecommunications outlets (TO) and the patch panel located within racks.

The~~is~~ majority of cables shall consist of ~~one type of~~ 100 Ohm balanced twisted-pair horizontal cabling infrastructure (FTP) to EIA 568c Category 6, suitable to support both Fast and Gigabit Ethernet.

The cables between buildings and to all WiFi Access Points shall consist of 100 Ohm balanced twisted-pair horizontal cabling infrastructure (FTP) to EIA 568c Category 6e, suitable to support up to 10G Ethernet.

The Cat 6e cables shall be easily identifiable from the Cat 6 cables, preferably by colour.

In addition ensure the cabling can support IEEE 802.3af (PoE) across all cables.

B At the patch panel, the horizontal cabling will be terminated onto 24 port patch panels.
The patch panels will be mounted in 19" equipment racks.

C For the WiFi access points identified, provide 2 No Cat 6e FTP points.
While one may be adequate initially this is intending to allow for future expansion and use of POE.

B13.1.6 STRUCTURED WIRING SPECIFIC TO 16M

A All works to 16M have been deleted from the Contract.

B13.1.7 STRUCTURED WIRING SPECIFIC TO 16S

A In the incoming IT room in the north lean-to, provide a 42U equipment rack as indicated for termination of incoming services and termination of the fibre and copper cables to other buildings.
Rack to be floor mounted 800mm wide, 800mm deep, with a two power supplies.

Connect to ~~16M and~~ the Concorde building via the below ground infrastructure.

B In the same room provide a second rack for termination of cables in the north of 16S, and routing of services to and from the main IT room in the new construction.
Rack to be floor mounted 800mm wide, 800mm deep, with a two power supplies.

C In the main IT room in the new construction, provide 2 No racks for the main servers and voice switches for 16S, plus termination of cables in the south of 16S.
Racks to be floor mounted 800mm wide, 800mm deep, with a two power supplies.

D In the ~~three~~ two locations identified for Exhibition AV equipment, provide the inter-rack connectivity as for the IT racks. Do not provide racks at these locations.
Note the Exhibition AV locations are shown on the Exhibition Fitout drawings.

E Provide new FTP copper cables on a new high level cable distribution route to fixed ~~TO~~ outlet locations and for for WiFi data connections.

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B13.1.8 STRUCTURED WIRING SPECIFIC TO CONCORDE BUILDING

A In the main IT room on the first floor, provide 2 No racks for the main servers and voice switches for Concorde, plus termination of cables in the building.
Racks to be floor mounted 800mm wide, 800mm deep, with a two power supplies.

Note that the use of these and separation of Archive data has yet to be established.

Connect to ~~16M and~~ 16S via the below ground infrastructure.

B In the A.V. room identified for Exhibition AV equipment, provide the inter-rack connectivity as for the IT racks. Do not provide racks at these locations.
Note that due to the limitation on space we recommend that the IT room and AV room are a shared space with shared cooling.

C Provide new FTP copper cables on a new high level cable distribution route to fixed TO locations and for for WiFi data connections.

B13.1.9 TESTING AND COMMISSIONING

A The structured cabling system certification will include 100% cable testing and verification according to the standards set out in this document, and shall conform to BS EN 50173.

B Test equipment shall be checked to be within calibration, calibration certificates are to be available for inspection. The tester should be checked to ensure the latest firmware is installed.

C The verification of each cable will be performed by the Contractor and will be documented on a cable testing sheet which will form part of the hard copy documentation supplied at the end of the installation. A digital copy of test results is also required.

D Any cable not passing the testing procedure will be replaced in its entirety. No splicing is permitted in the repair of any defective cable.

E As the operation of some systems is dependent on the operation of the active equipment (by others), provide a list of outlets~~TOs~~, with specific outlet numbers that have to be active prior to commissioning of these systems.

The patch panel outlets will be connected to access layer switch infrastructure equipment, or to the voice grade copper backbone patch panels, by the Employer.

B13.1.10 WARRANTY

A The Contractor shall obtain and issue on completion a manufacturers extended product and applications assurance warranty to cover a minimum of 20 years from practical completion.

B The Contractor shall provide a warranty against defective products and standards of workmanship for a period of 12 months from practical completion.

C All structured cabling products shall be provided by a single manufacturer in order to provide a complete warrantable structured cabling system.

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