



Data Centre Fit Out

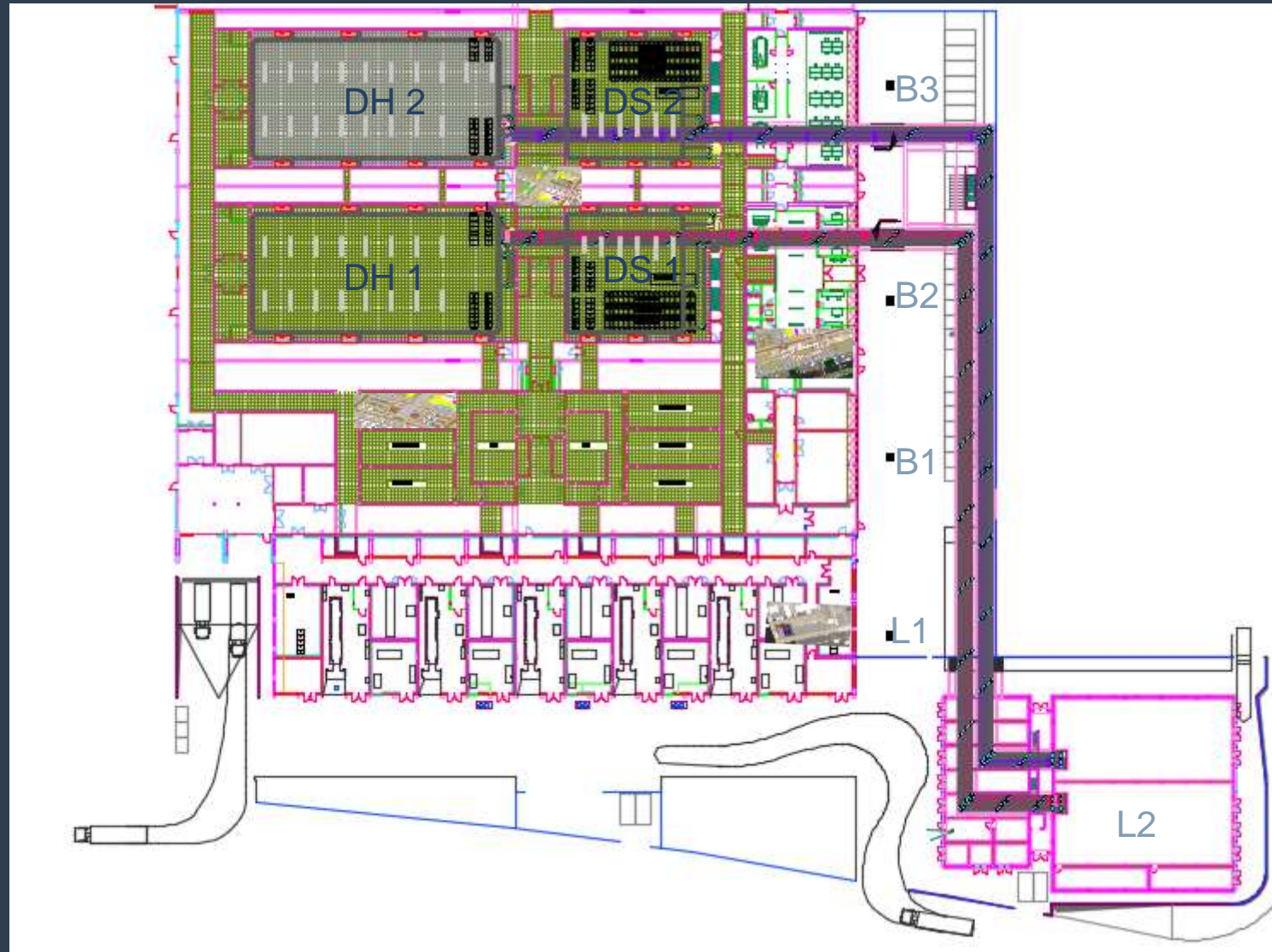
Industry Day, Bologna, 16 January 2019

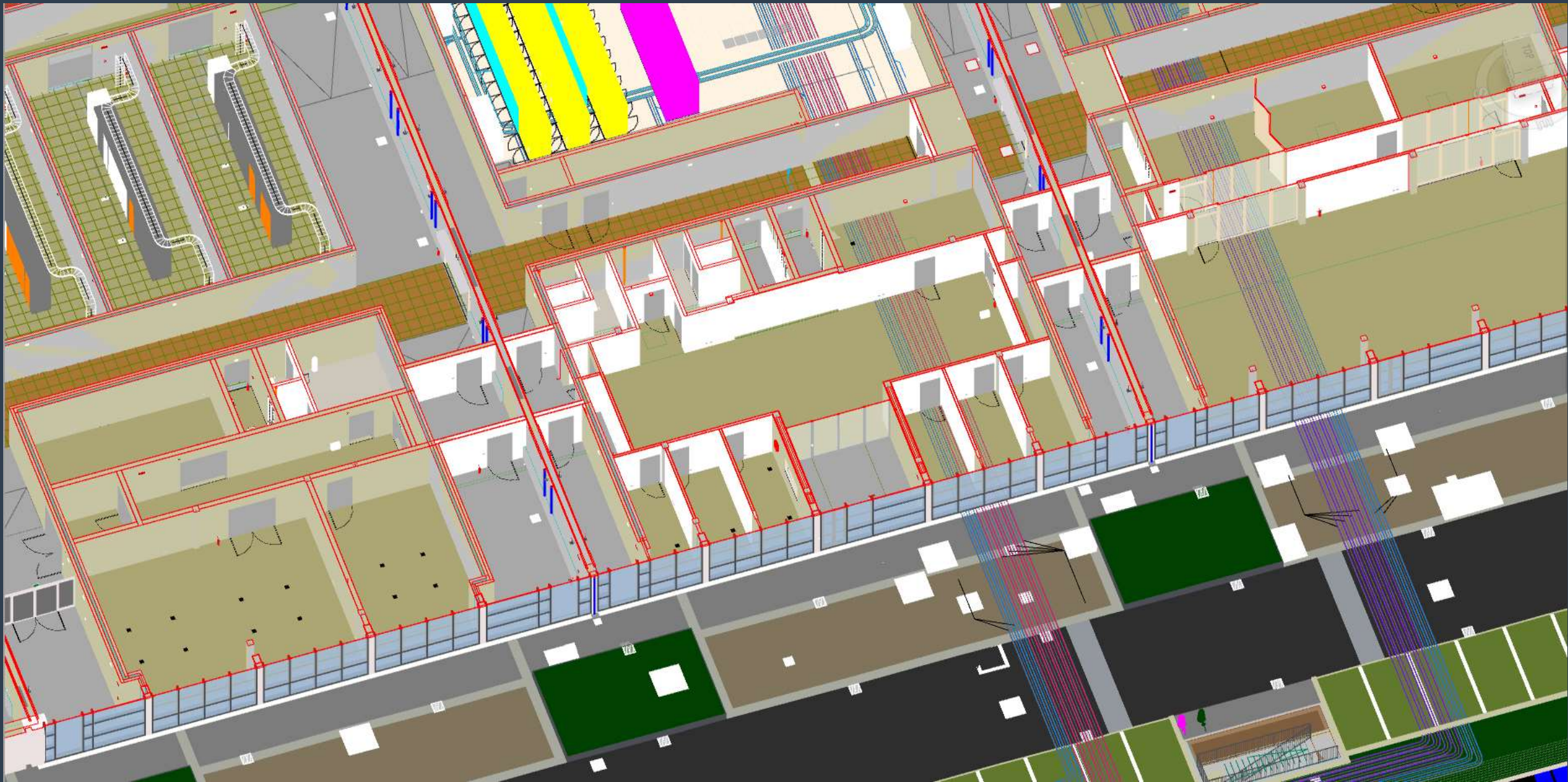
Andy Gundry

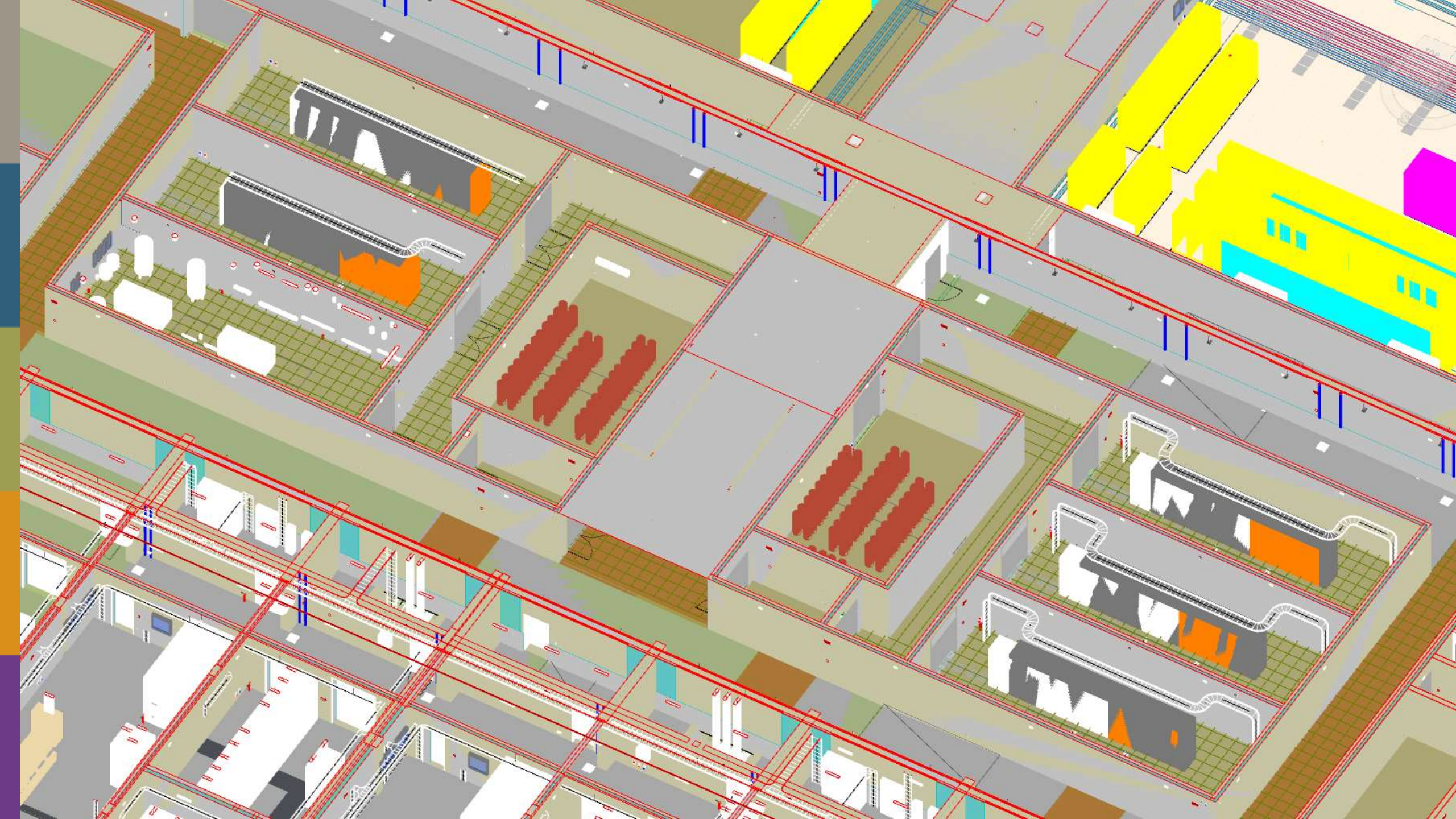
Head of Operations

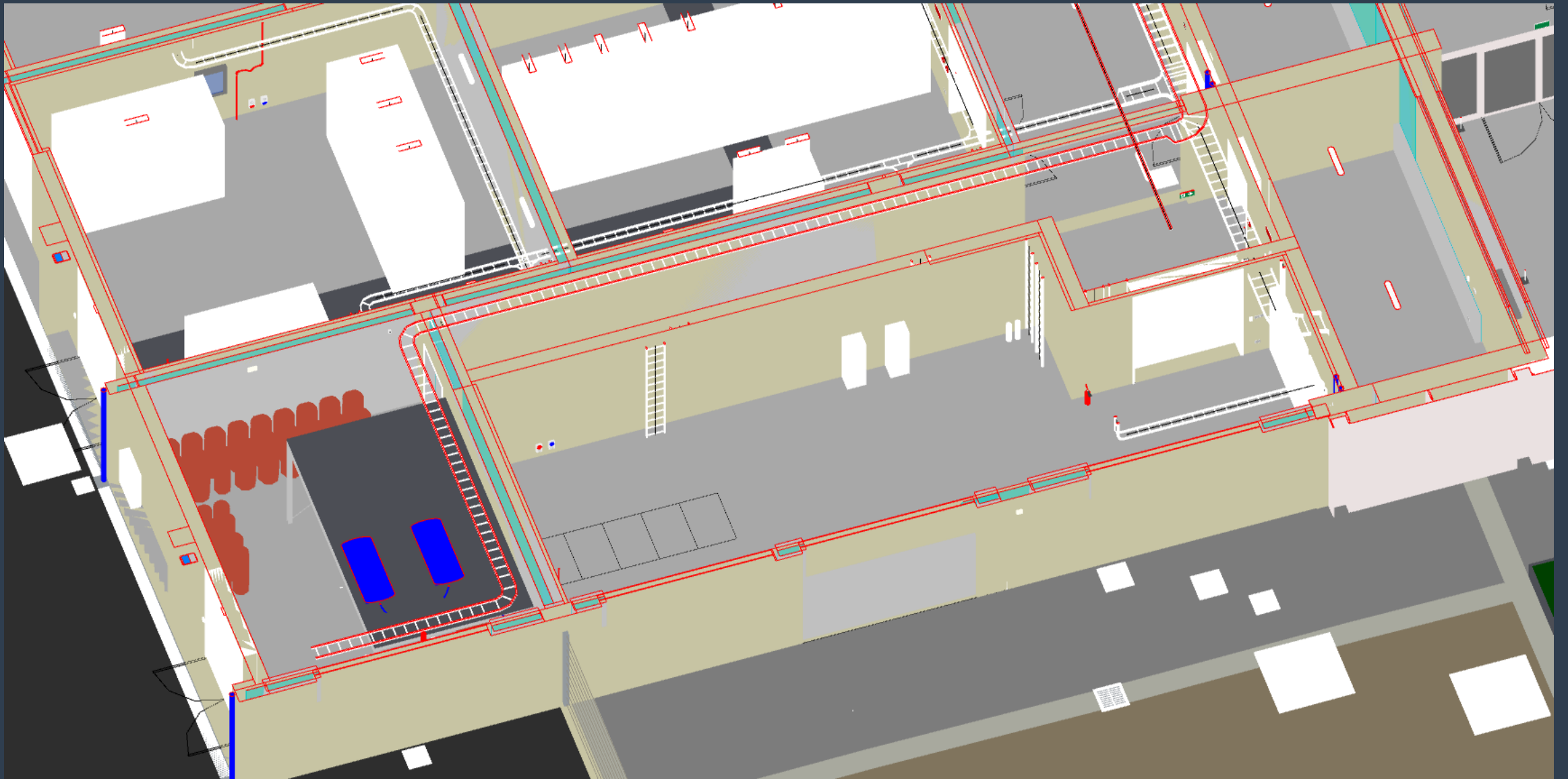
ECMWF

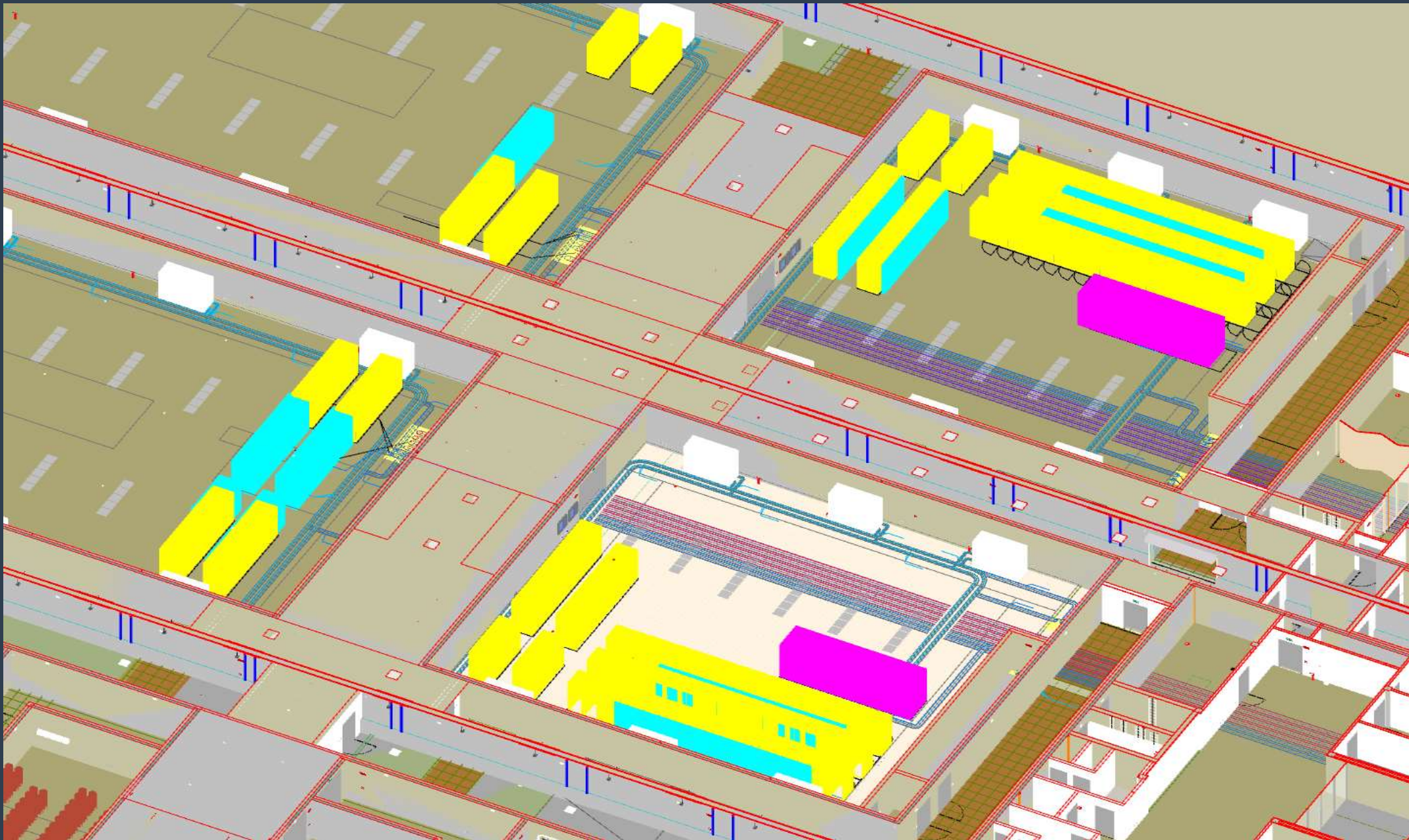
Data Centre Layout











Electrical Overview



Switchboards

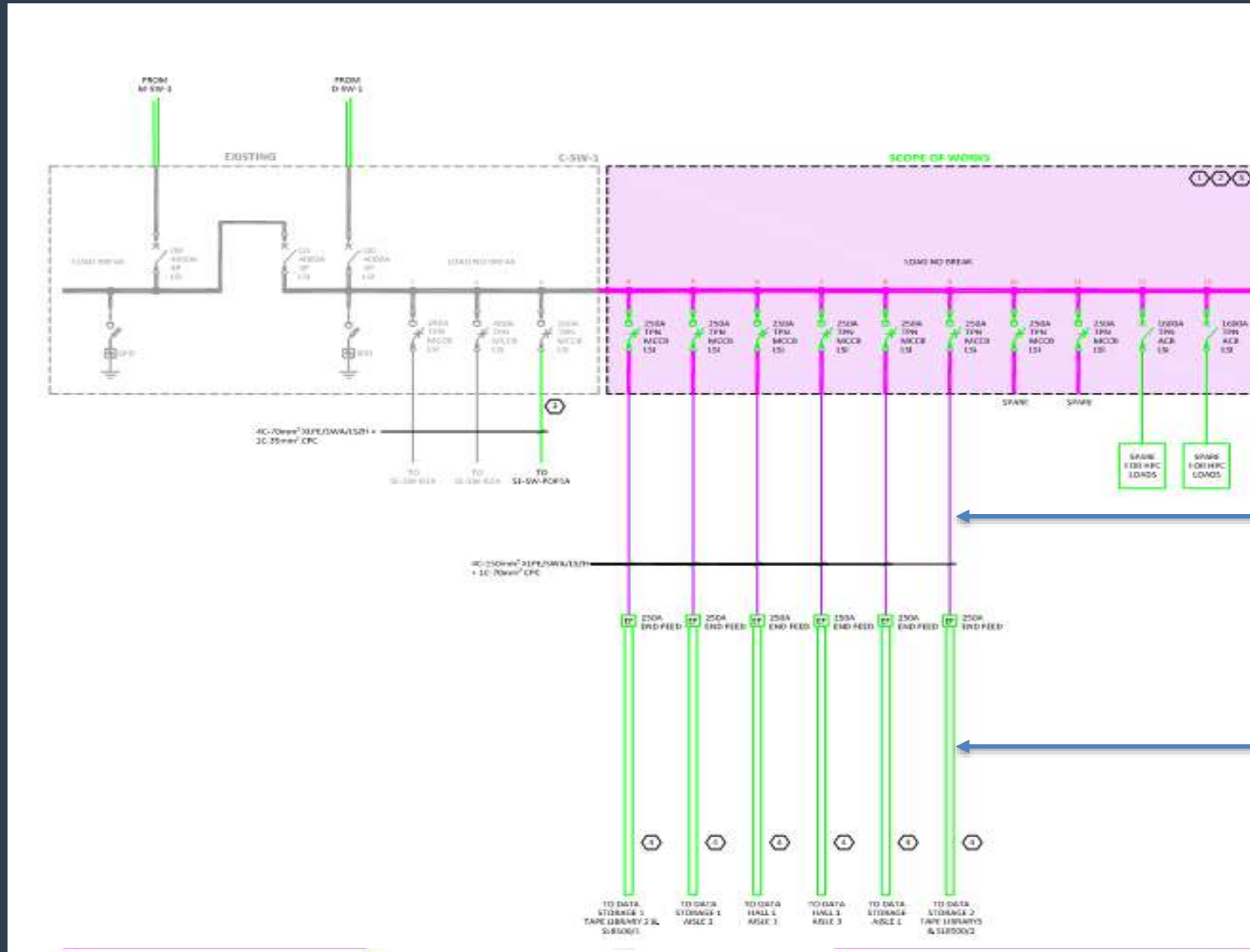
Base Build – Five critical switchboards



Expanded to give an additional three sections per switchboard

LV Distribution

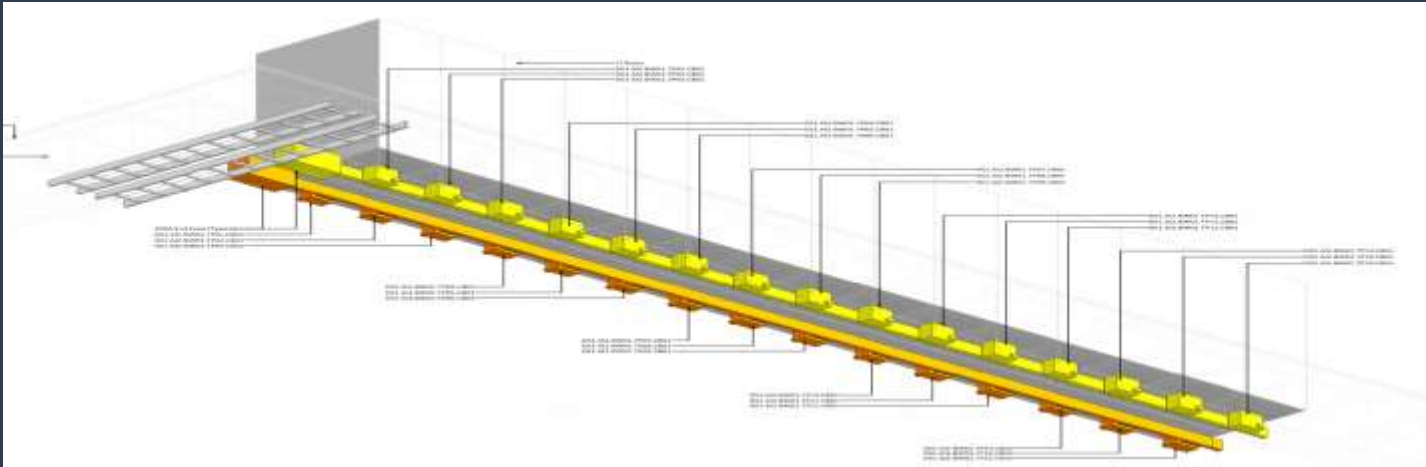
Critical Switchboard 1



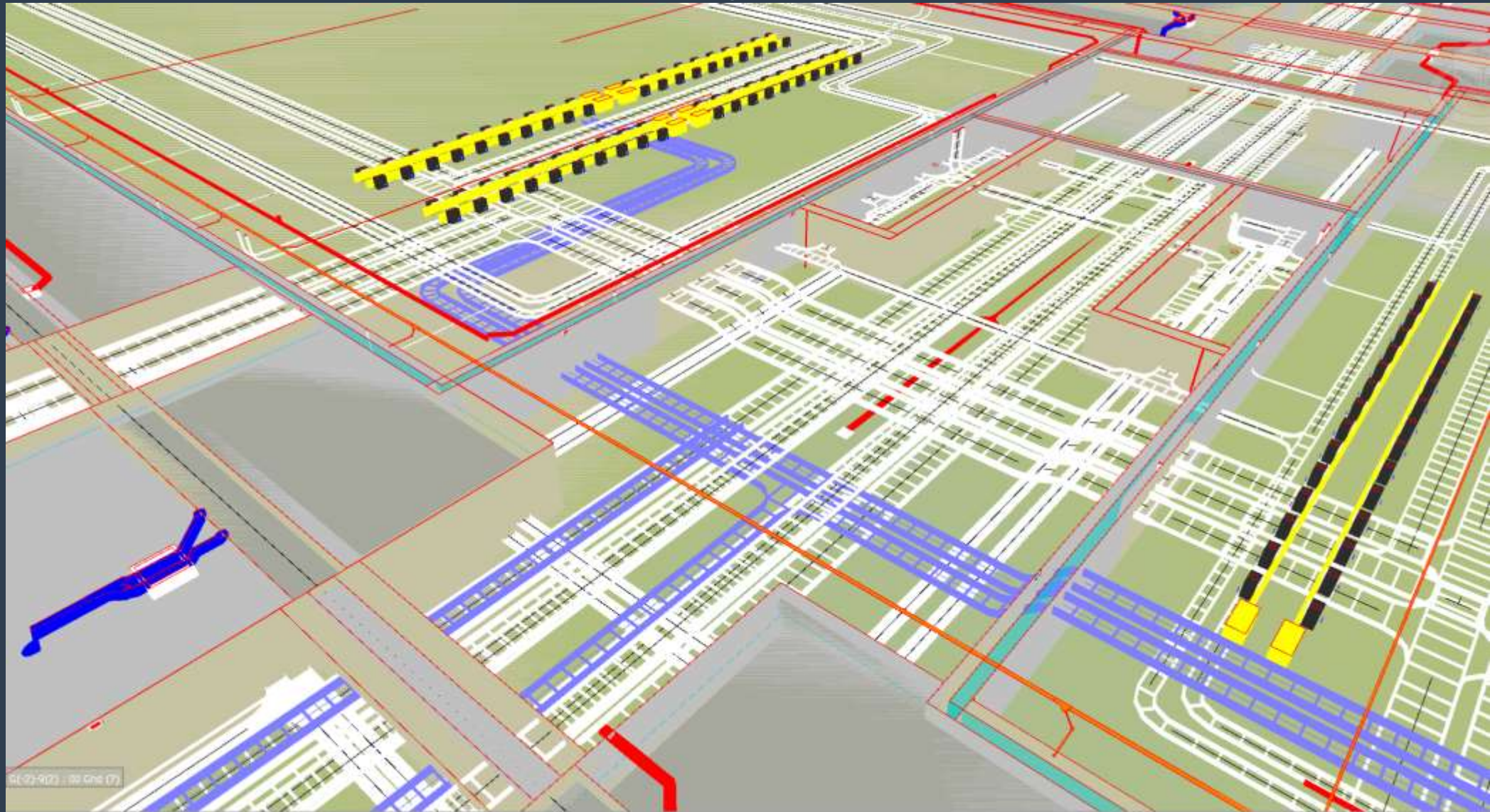
LV Distribution to Computer Halls

Under floor Busway

Busway Distribution



Busway Distribution



Power Monitoring

Enhance the base build system with additional power monitoring required to run an operational facility.

- Final circuit monitoring is integrated into the busway
- Pick up the data that is generated from the HPC vendor meters. Install gateways and containment/cabling
- Pick up the data from the rack mount PDU's

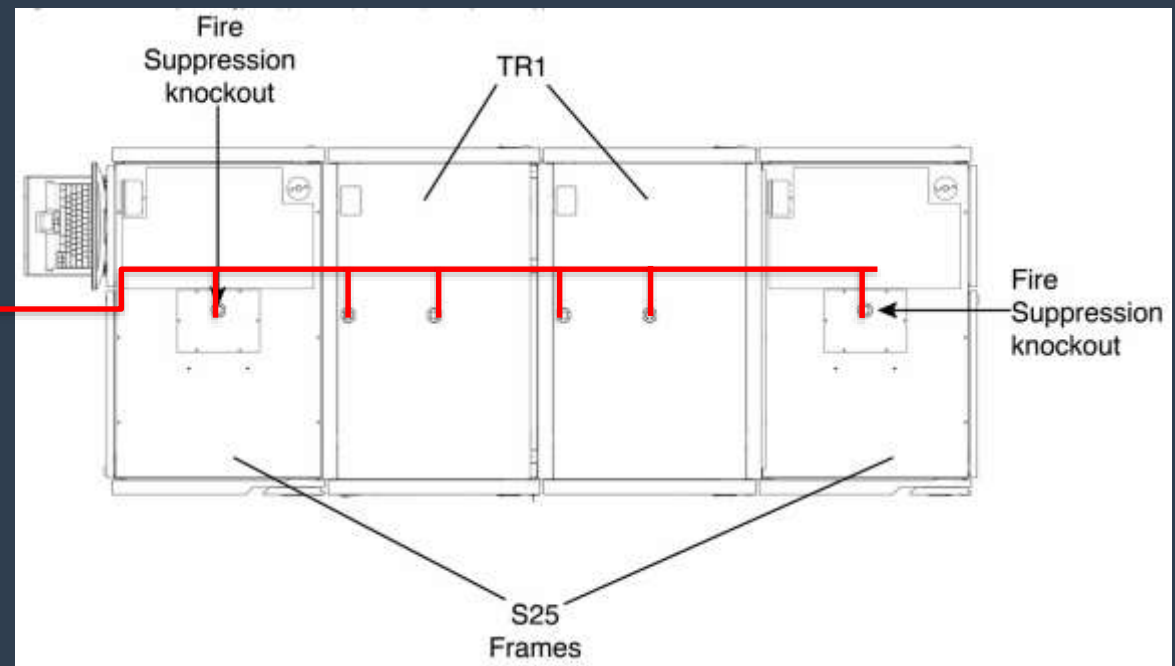


Fire Detection - VESDA

Enhance the base build fire detection system.

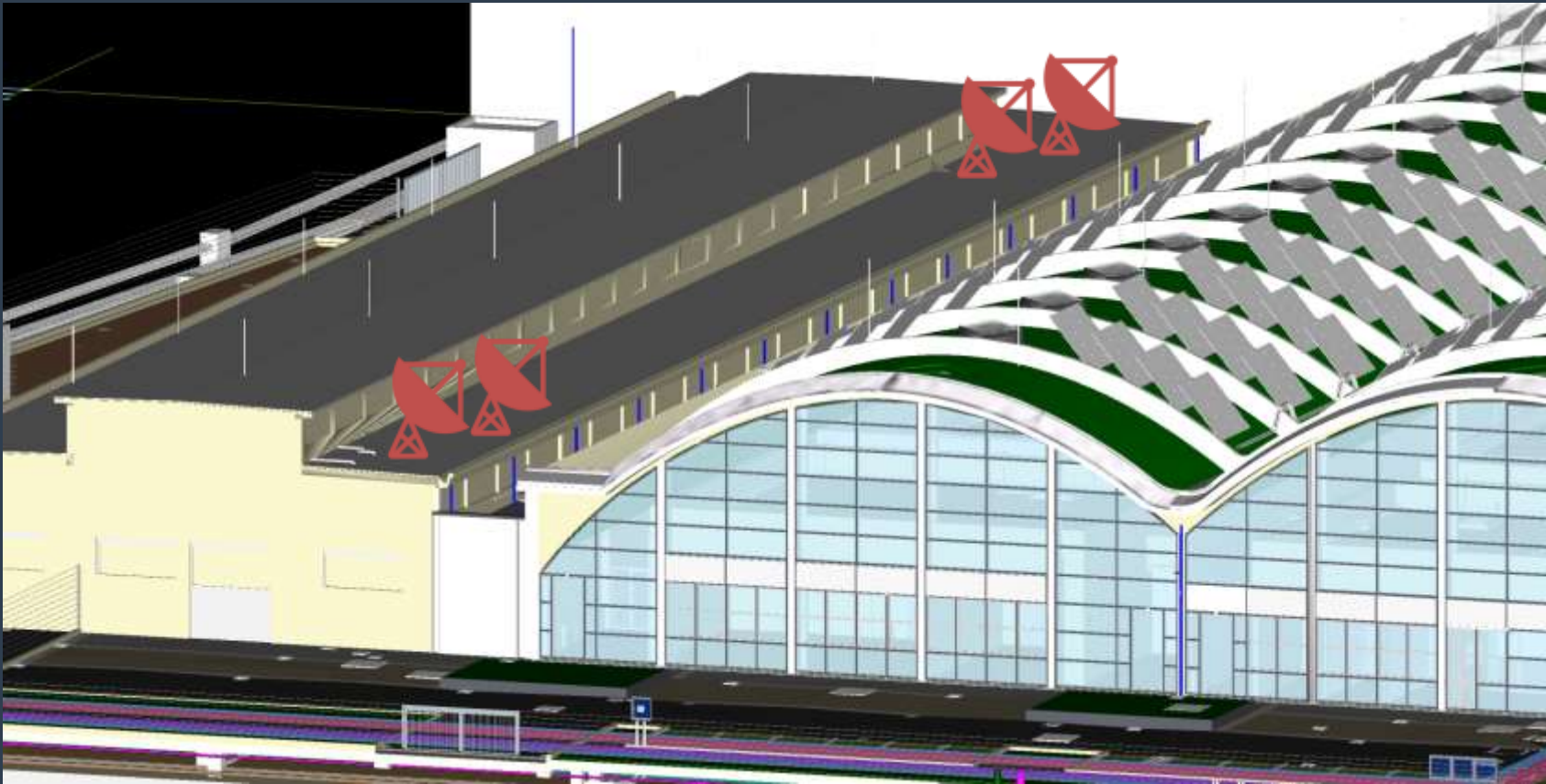
Additional VESDA units are to be installed and connected to the VESDA net.

VESDA pipework is to be installed in to the six IBM tape library's and the two Oracle library's.



Satellite Dishes

Two pairs of satellite dishes to be installed on opposite ends of the L1 building



- 1.4-1.5M Parabolic dishes with universal LNB.
- Dish to be trace heated for snow melting.
- Downlink cabling from dishes to decoders mounted in POP rooms.
- DVB-S2 signal decoders two per dish.

System Integration

The system integrator will build the racks for all the Data Centre ICT equipment to the ECMWF specification:

- Supply the rack
- Rack power PDU strips
- Patch panels and cable management
- Install the servers / network equipment
- Cable and patch all the internal rack wiring



System Integration

- CAD drawings and cable schedules will be supplied detailing the build.
- 88 racks in 5 variations depending on use.

Cable Schedule								Document: DCOPS-0010-SCH-RACKS Revised: 19 November 2018 Issue A				
Source				Destination				Description				
Rack	U	Device	Port	Rack	U	Device	Port	Type	Colour	Estim. Length (m)	Socket and Cable ID	NT-RACK-01 = NETWORK RACK SR-RACK-01 = SERVER RACK
DH1-SR-RACK-01	44	Management Switch	1	DH1-SR-RACK-01	2	Server 01	Mgmt	CAT6	Grey	2	M01-4500	
DH1-SR-RACK-01	44	Management Switch	2	DH1-SR-RACK-01	4	Server 02		CAT6	Grey	2	NW0-4501	
DH1-SR-RACK-01	44	Management Switch	3	DH1-SR-RACK-01	6	Server 03		CAT6	Grey	2		
DH1-SR-RACK-01	44	Management Switch	4	DH1-SR-RACK-01	8	Server 04		CAT6	Grey	2		
DH1-SR-RACK-01	44	Management Switch	5	DH1-SR-RACK-01	10	Server 05		CAT6	Grey	2		
DH1-SR-RACK-01	44	Management Switch	6	DH1-SR-RACK-01	12	Server 06		CAT6	Grey	2		
DH1-SR-RACK-01	44	Management Switch	7	DH1-SR-RACK-01	14	Server 07		CAT6	Grey	2		
DH1-SR-RACK-01	44	Management Switch	8	DH1-SR-RACK-01	16	Server 08		CAT6	Grey	2		
DH1-SR-RACK-01	44	Management Switch	9	DH1-SR-RACK-01	18	Server 09		CAT6	Grey	2		
DH1-SR-RACK-01	44	Management Switch	10	DH1-SR-RACK-01	20	Server 10		CAT6	Grey	2		
DH1-SR-RACK-01	44	Management Switch	11	DH1-SR-RACK-01	26	Server 11		CAT6	Grey	2		
DH1-SR-RACK-01	44	Management Switch	12	DH1-SR-RACK-01	28	Server 12		CAT6	Grey	2		
DH1-SR-RACK-01	44	Management Switch	13	DH1-SR-RACK-01	30	Server 13		CAT6	Grey	2		
DH1-SR-RACK-01	44	Management Switch	14	DH1-SR-RACK-01	32	Server 14		CAT6	Grey	2		
DH1-SR-RACK-01	44	Management Switch	15	DH1-SR-RACK-01	34	Server 15		CAT6	Grey	2		
DH1-SR-RACK-01	44	Management Switch	16	DH1-SR-RACK-01	36	Server 16		CAT6	Grey	2		
DH1-SR-RACK-01	44	Management Switch	17	DH1-SR-RACK-01	38	Server 17		CAT6	Grey	2		
DH1-SR-RACK-01	44	Management Switch	18	DH1-SR-RACK-01	40	Server 18		CAT6	Grey	2		
DH1-SR-RACK-01	44	Management Switch	19	DH1-SR-RACK-01	42	Server 19		CAT6	Grey	2		
DH1-SR-RACK-01	44	Management Switch	20	DH1-SR-RACK-01		Spare		CAT6	Grey	2		
DH1-SR-RACK-01	44	Management Switch	21	DH1-SR-RACK-01		Spare		CAT6	Grey	2		
DH1-SR-RACK-01	44	Management Switch	22	DH1-SR-RACK-01		Spare		CAT6	Grey	2		
DH1-SR-RACK-01	44	Management Switch	23	DH1-SR-RACK-01		Spare		CAT6	Grey	2		
DH1-SR-RACK-01	44	Management Switch	24	DH1-SR-RACK-01		Spare		CAT6	Grey	2		
DH1-SR-RACK-01	44	Management Switch	Console	DH1-SR-RACK-01	47	Cassette 1	1	CAT6	Purple	2		
DH1-SR-RACK-01	44	Management Switch	Uplink	DH1-SR-RACK-01	48	Cassette 3	1	LC		2		
SR-RACK-01	24	Edge leaf switch 01	1	SR-RACK-01		Server 01	1	DA	Black	2		
SR-RACK-01	24	Edge leaf switch 01	2	SR-RACK-01		Server 02	1	DA	Black			
SR-RACK-01	24	Edge leaf switch 01	3	SR-RACK-01		Server 03	1	DA	Black			
SR-RACK-01	24	Edge leaf switch 01	4	SR-RACK-01		Server 04	1	DA	Black			
SR-RACK-01	24	Edge leaf switch 01	5	SR-RACK-01		Server 05	1	DA	Black			
SR-RACK-01	24	Edge leaf switch 01	6	SR-RACK-01		Server 06	1	DA	Black			
SR-RACK-01	24	Edge leaf switch 01	7	SR-RACK-01		Server 07	1	DA	Black			
SR-RACK-01	24	Edge leaf switch 01	8	SR-RACK-01		Server 08	1	DA	Black			
SR-RACK-01	24	Edge leaf switch 01	9	SR-RACK-01		Server 09	1	DA	Black			
SR-RACK-01	24	Edge leaf switch 01	10	SR-RACK-01		Server 10	1	DA	Black			
SR-RACK-01	24	Edge leaf switch 01	11	SR-RACK-01		Server 11	1	DA	Black			
SR-RACK-01	24	Edge leaf switch 01	12	SR-RACK-01		Server 12	1	DA	Black			
SR-RACK-01	24	Edge leaf switch 01	13	SR-RACK-01		Server 13	1	DA	Black			
SR-RACK-01	24	Edge leaf switch 01	14	SR-RACK-01		Server 14	1	DA	Black			
SR-RACK-01	24	Edge leaf switch 01	15	SR-RACK-01		Server 15	1	DA	Black			
SR-RACK-01	24	Edge leaf switch 01	16	SR-RACK-01		Server 16	1	DA	Black			
SR-RACK-01	24	Edge leaf switch 01	17	SR-RACK-01		Server 17	1	DA	Black			
SR-RACK-01	24	Edge leaf switch 01	18	SR-RACK-01		Server 18	1	DA	Black			
SR-RACK-01	24	Edge leaf switch 01	19	SR-RACK-01		Server 19	1	DA	Black			
SR-RACK-01	24	Edge leaf switch 01	20									
SR-RACK-01	24	Edge leaf switch 01	21									
SR-RACK-01	24	Edge leaf switch 01	22									
SR-RACK-01	24	Edge leaf switch 01	23									
SR-RACK-01	24	Edge leaf switch 01	24									
SR-RACK-01	24	Edge leaf switch 01	25									

Structured Cabling

Supply, Install and Test of the structured cabling.

- Fibre Backbone - All fibre links between POP's and computer halls (MPO and Single Mode).
- All fibre links between network racks and compute racks.
- All CAT 6 copper links between racks.

Summary

Four tenders:

1. Electrical distribution, power monitoring, fire detection
2. Satellite system
3. System Integration – Rack build and wiring & patching
4. Structured cabling
 - Fibre Backbone
 - Fibre and copper links between racks

Q&A