



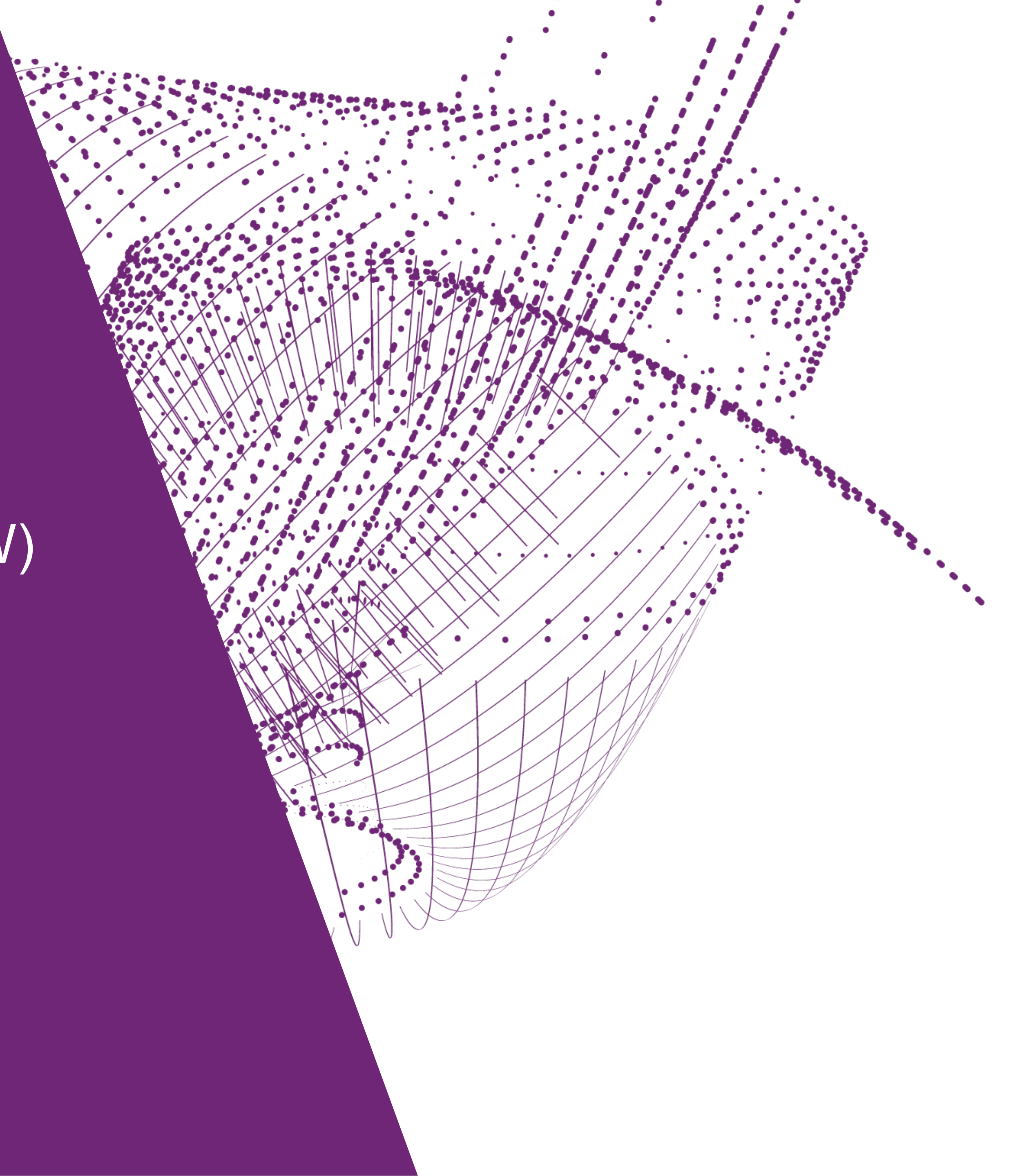
DATA CENTRE ADVENTURES

MANAGING A LEGACY DATA CENTRE

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- A BRIEF HISTORY
- TECHNICAL INSTALLATIONS (E + W)
- CABLE, AND CUSTOMER,
MANAGEMENT
- ADDITIONAL LESSONS LEARNED
(THE HARD WAY)
- ASSUMING I DON'T RAMBLE TOO
MUCH: QUESTIONS





HISTORY

SLIGHT CASE OF OVER ENGINEERING

- Computing power increased while footprint shrank
- Early days of the internet
- First commercial customers
- Facilities and Housing expansions

HISTORY

Main building construction started in the late '70s

- Raised computer floor (60cm) spread over 500m²
- Seperate rooms by design



HISTORY

- Raised computer floor (60cm) spread over 500m²
- Seperate rooms by design with and option to remove wall panels for computing power expansion



HISTORY

Dedicated data centre for GRID

- Built in 2009
- 47 racks (not 46, *Dennis*)
- 400KW of total compute power



DATA CENTRE TECHNICAL INSTALLATIONS

- First gen-set added in 2005
- Shared cooling installation with the rest of Nikhef



TECHNICAL INSTALLATIONS

ELECTRICAL:

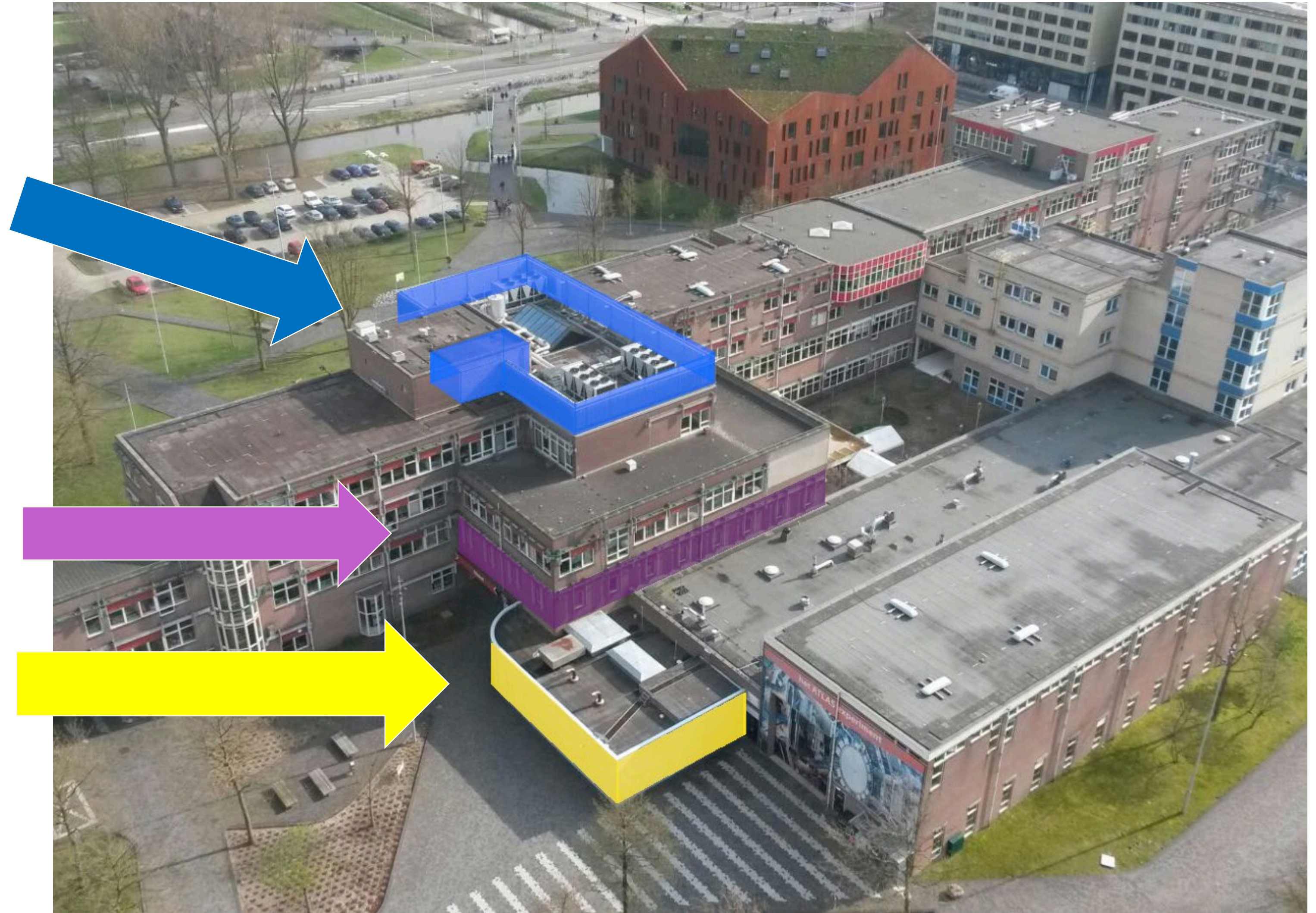
Installations grown over time

- Power demand
- Demand for redundancy
- Multiple Housing expansions over time



DATA CENTRE INSTALLATION MANAGEMENT

- Three 400kw active/free cooling chillers installed in 2009
- Housing site in operation since the early '90s
- Additional B-feed genset added in 2009



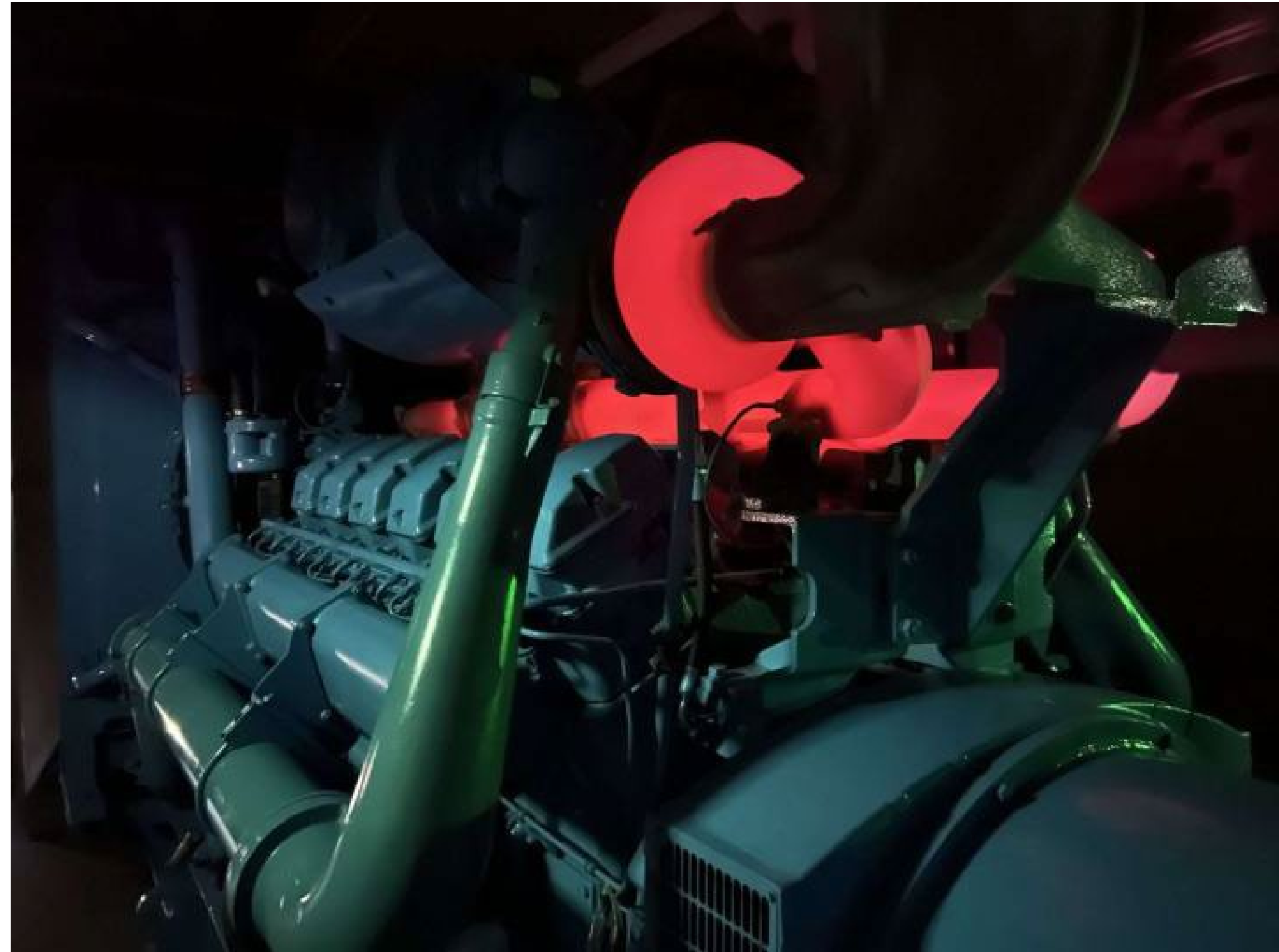
TECHNICAL INSTALLATIONS

ELECTRICAL:

Installations grown over time

Currently:

- 3 Generators
 - A-Feed 1250 kVA (pictured under load while testing)
 - B-Feed 1700 kVA
 - C-Feed 1250 KVA added with the current expansion
- Separate redundant UPS for each



COOLING SYSTEMS

- Previously ran on shared infrastructure with laboratories
- Modernised and expanded in 2009
- Addition of an Aquifer Thermal Energy Storage (ATES) system in 2010 (operational as of 2013)
- Optimisation is ongoing



CABLE, AND CUSTOMER, MANAGEMENT

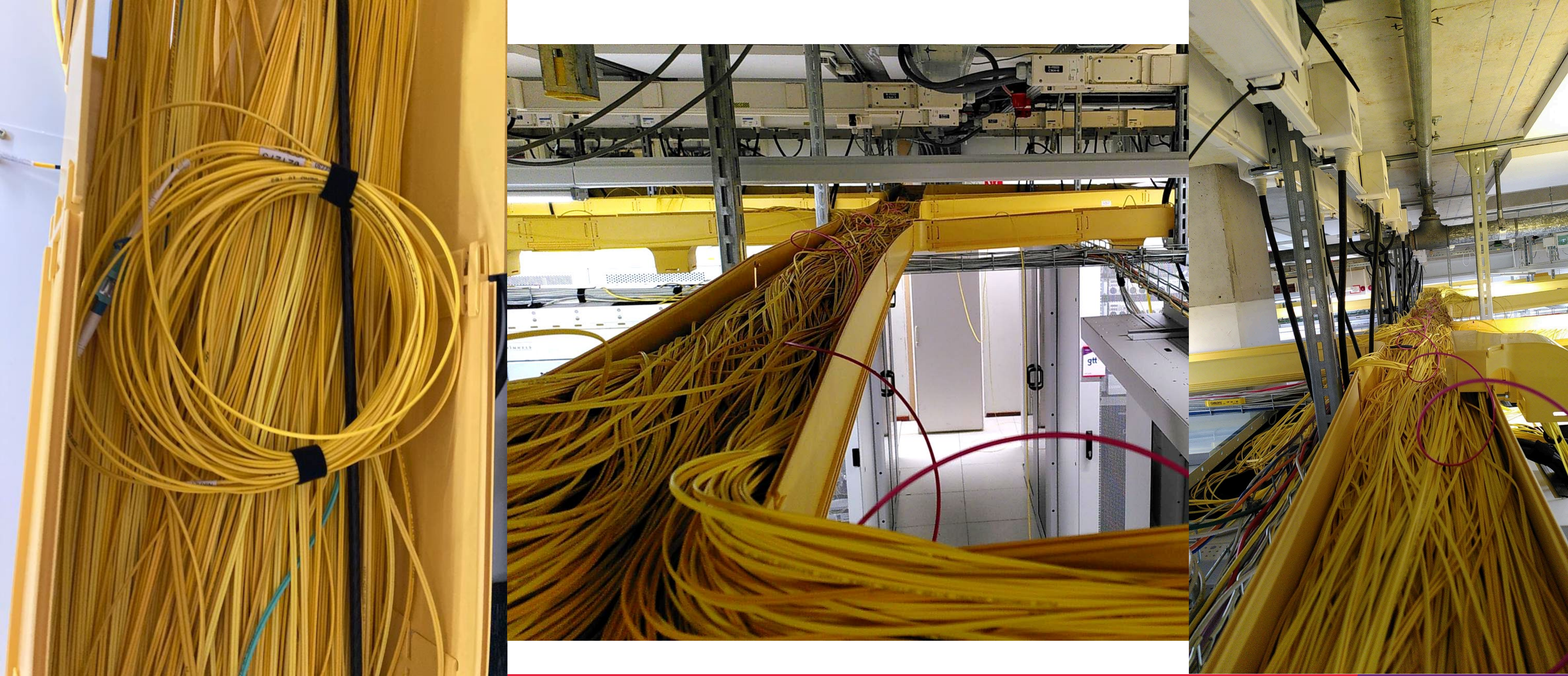
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- Just over 211km of fiber

CABLE, AND CUSTOMER, MANAGEMENT

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CABLE, AND CUSTOMER, MANAGEMENT



CABLE, AND CUSTOMER, MANAGEMENT

- **Drastic solution**



LESSONS LEARNED THE HARD WAY

- [REDACTED]
- The blue confetti eruption
- Rebuilt network and the cable monkeys' experiment
- [REDACTED]
- The floor kerfuffle
- Bloody fingers
- [REDACTED]



Questions?