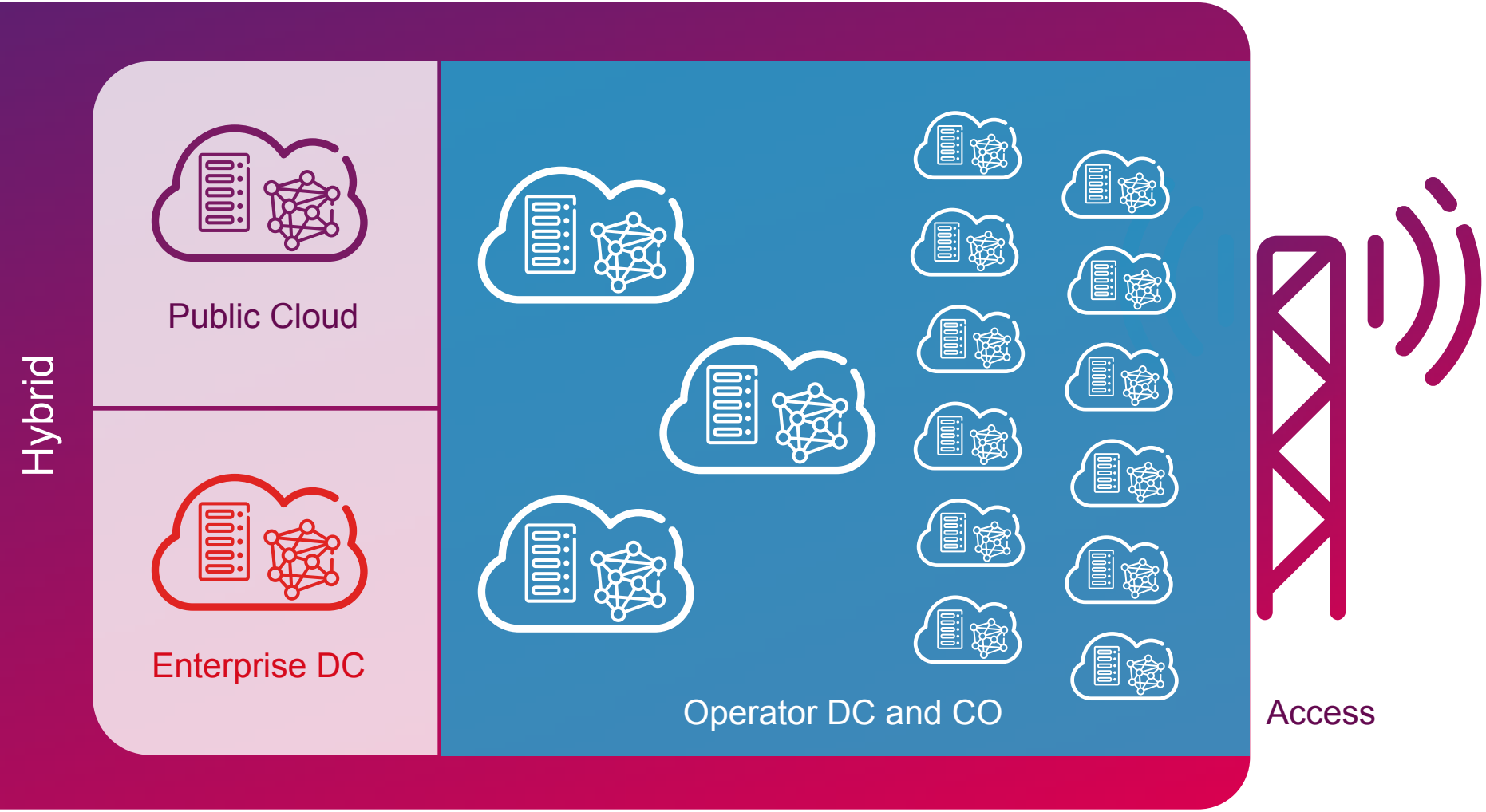

Ericsson
ERICSSON

Ericsson

- 139 year old Swedish multinational headquartered in Stockholm
- 120,000 people in 187 countries (25,000 in R&D)
- ~$36B in annual revenue
- The group has made many things over the years but has been in the communications space the entire time (from handsets to networks)
  - 1st largest “telecom equipment manufacturer”
  - And the 5th largest services and 5th largest software company by revenue

Our view of the world



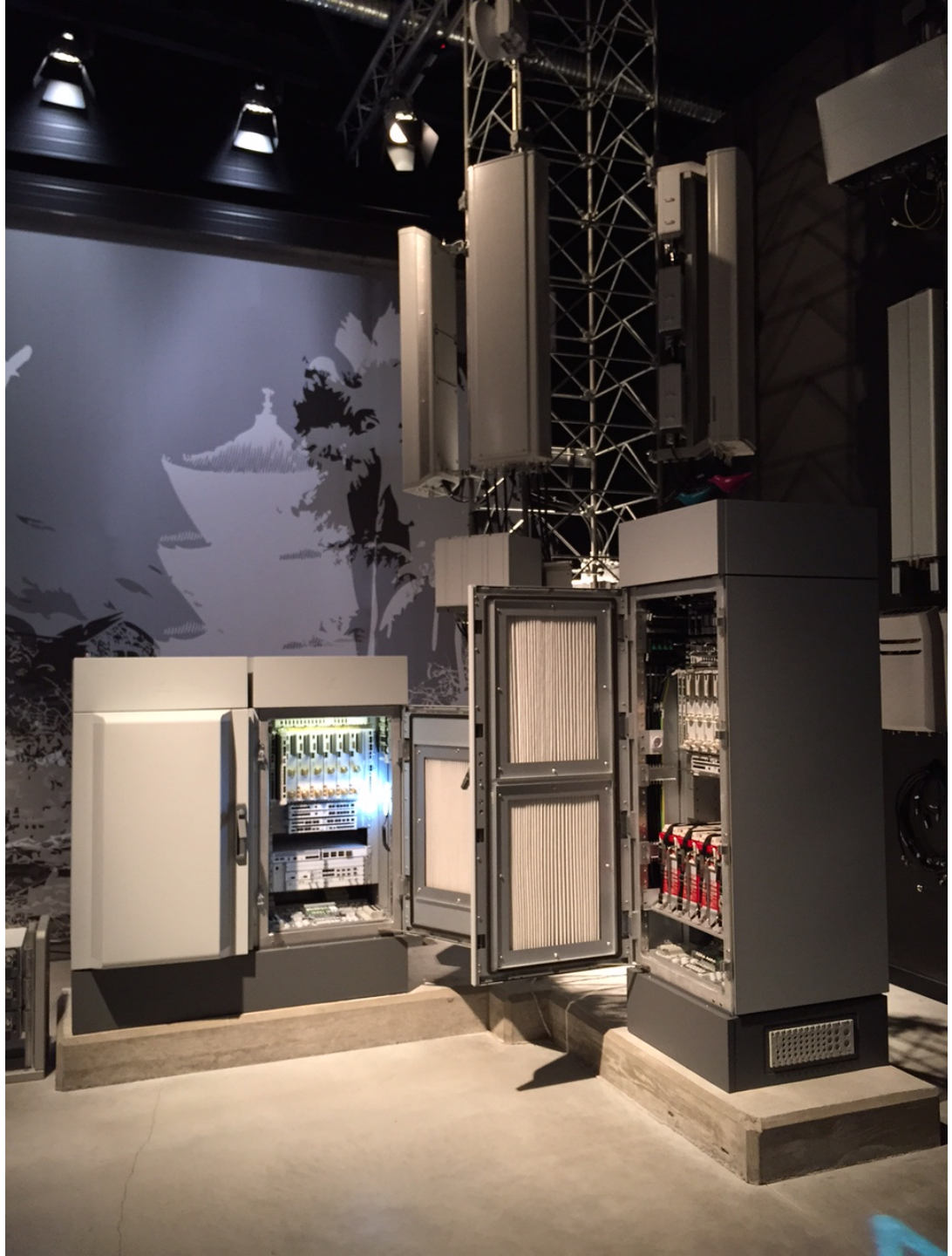
Access

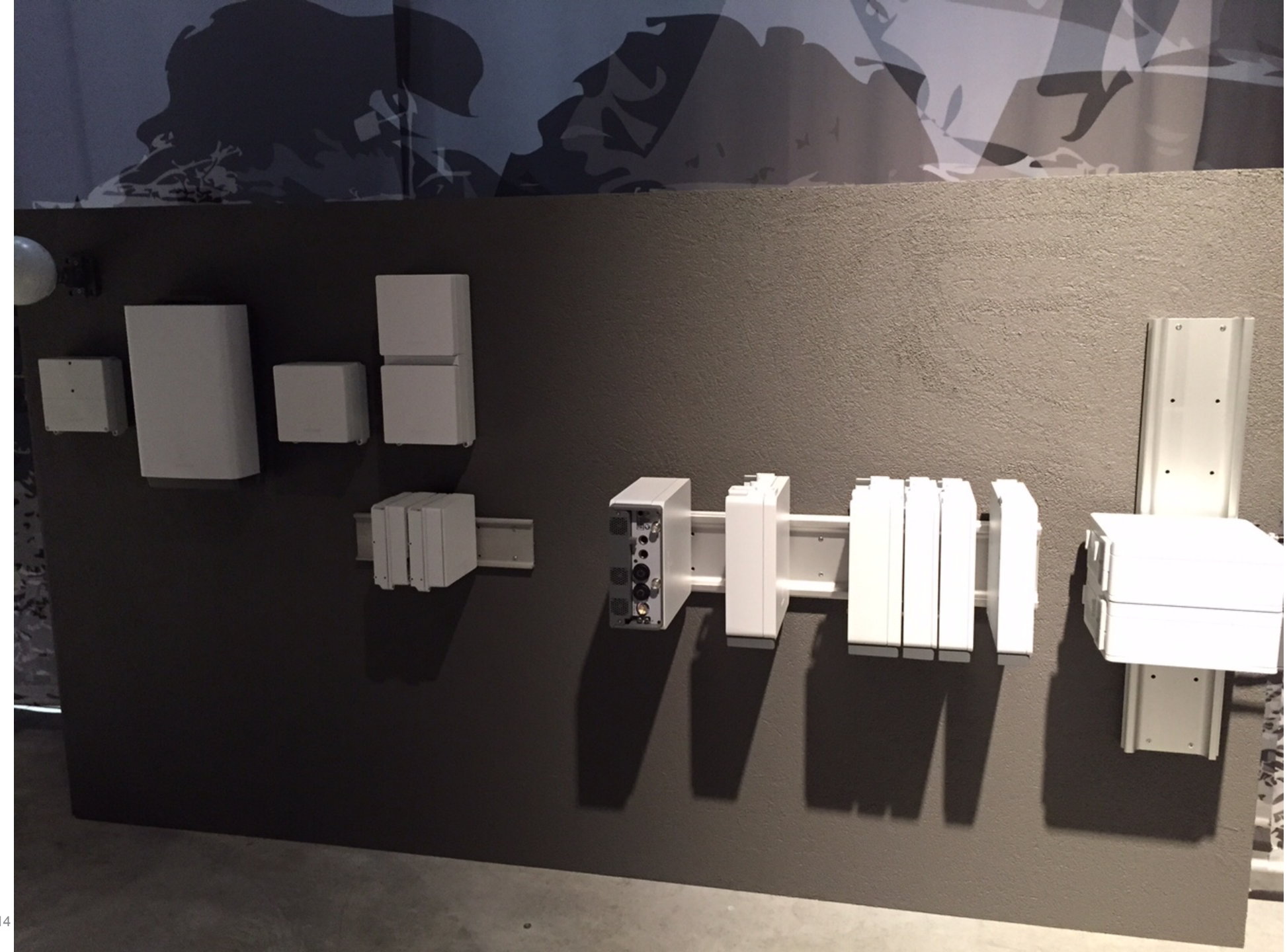
Voice, Media, Messaging
(Now)

Control Systems
Data Collection
(Emerging)

Bulk of the business

- Mobile Networks
  - #1 in 1G, 2G, 3G and 4G (LTE).
  - Driving 5G for 2018 and 2020 launches
- Large end user base
  - 3 Billion on our products.
  - 1 Billion on networks that we run.
  - We manage ~40% of all global, mobile traffic.



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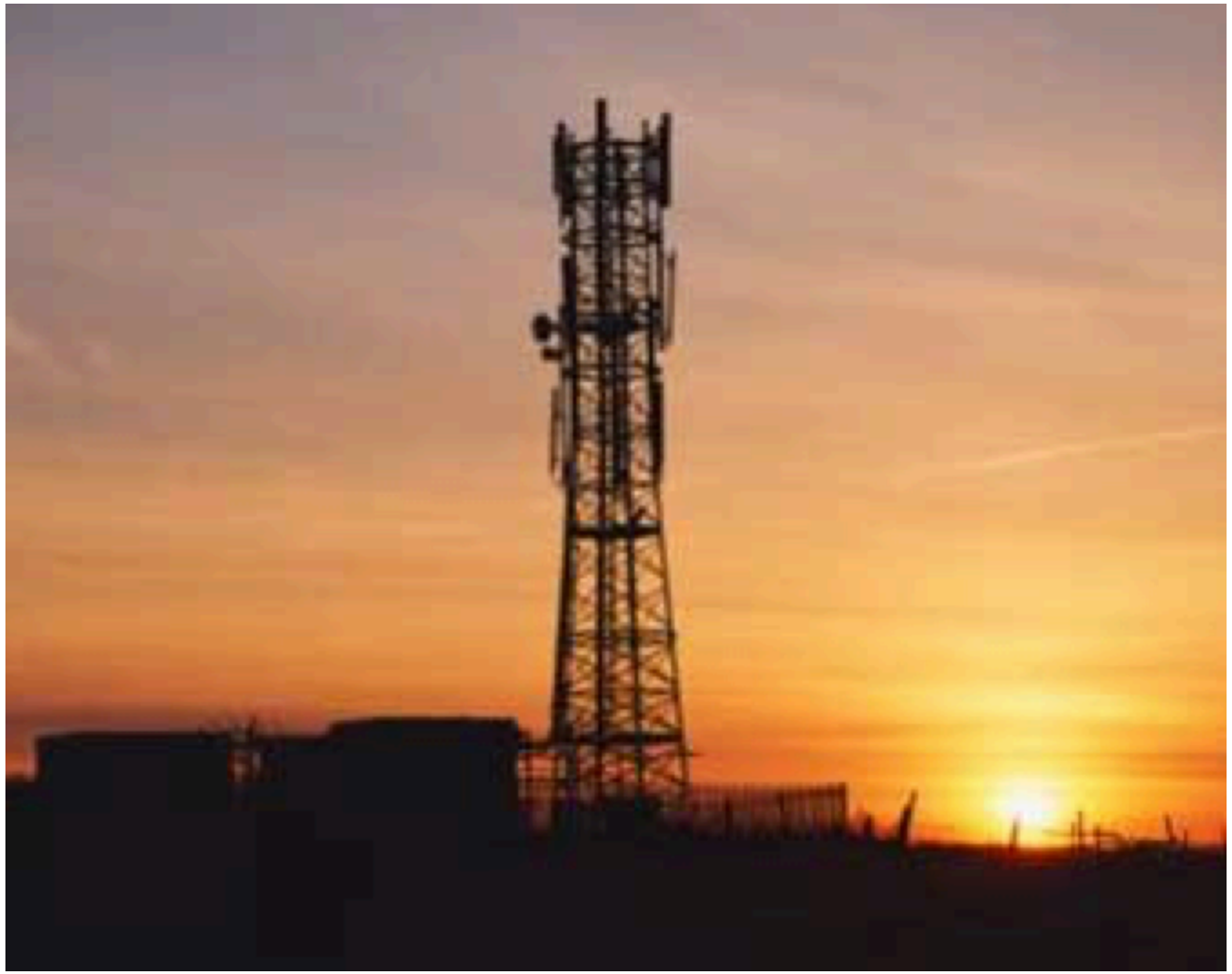


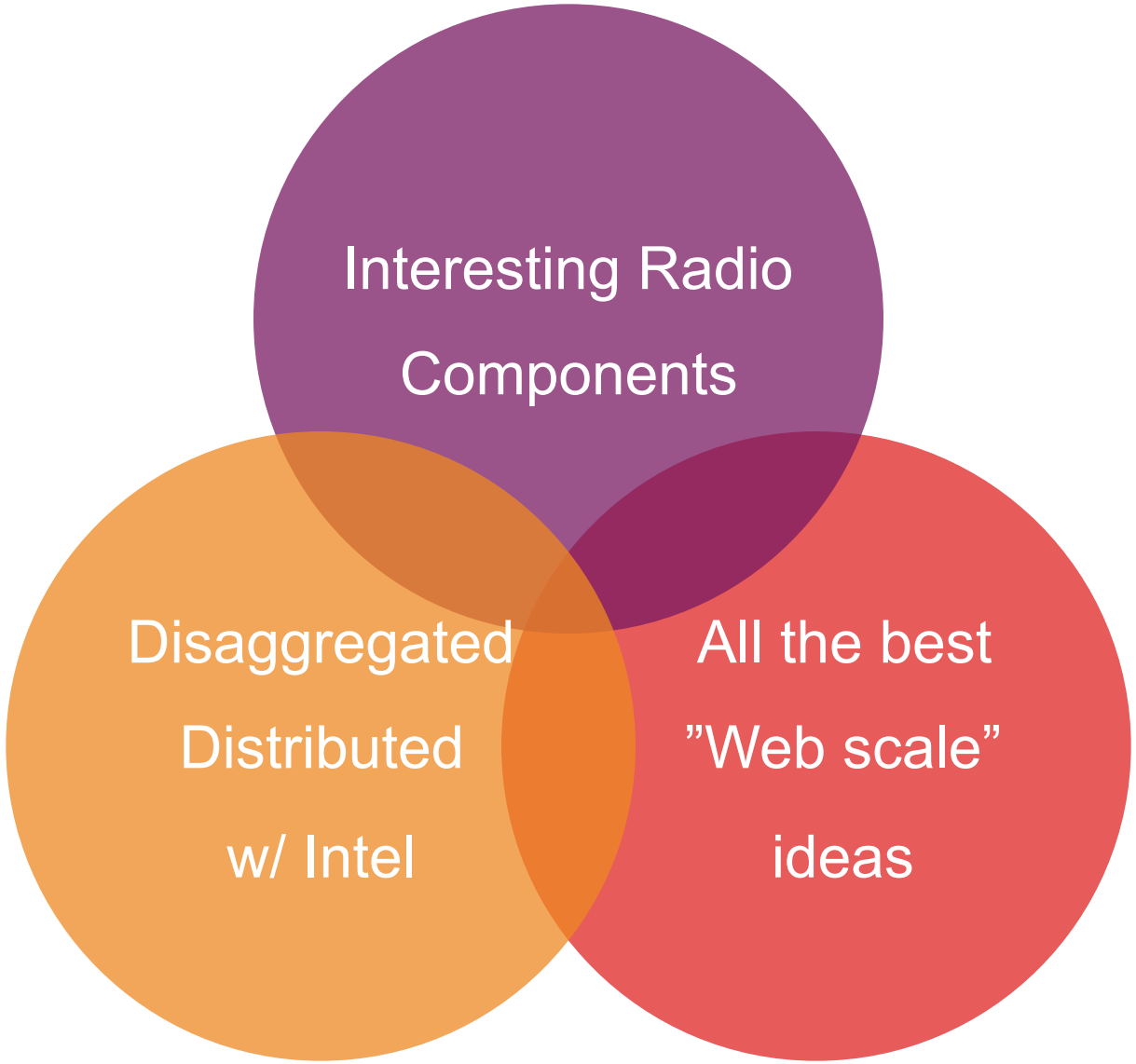
hardware

- Radio volumes are large
  - What can we re-use?
- Have been or still are part of the entire value chain (depending on country)
  - Component designer
  - Component manufacturer
  - System designer
  - System manufacturer
  - “OEM”
- For the datacenter, we’ll be at the “ODM that sometimes puts our logo on it”

About 2 years ago

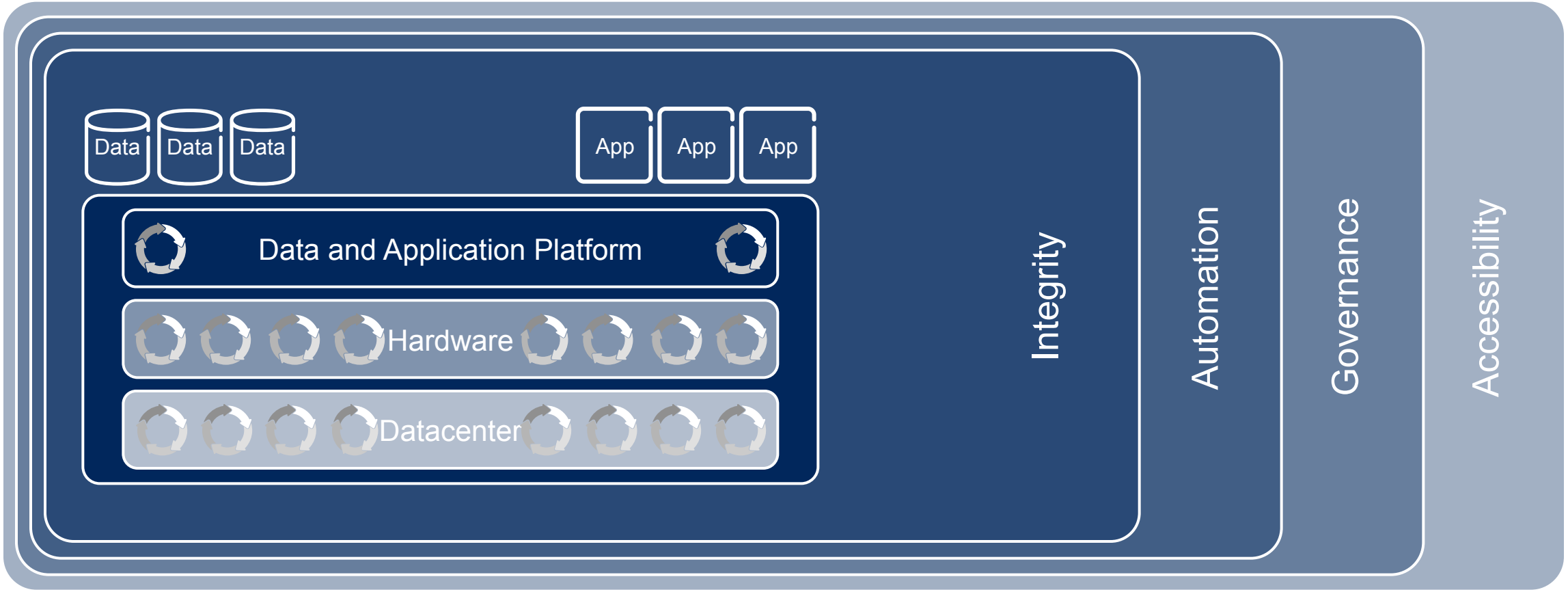
- Global ICT centers
- Consume a lot of “servers”, “storage”, “networking”
- Design and make “telco” (NEBS) servers and networking but had spent the last 8 years converging those into one platform.

How WE DO THIS: A Winning combination



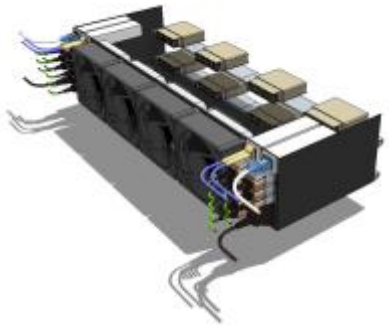
Redfish
Project Scorpio
Open Compute

Ericsson cloud business



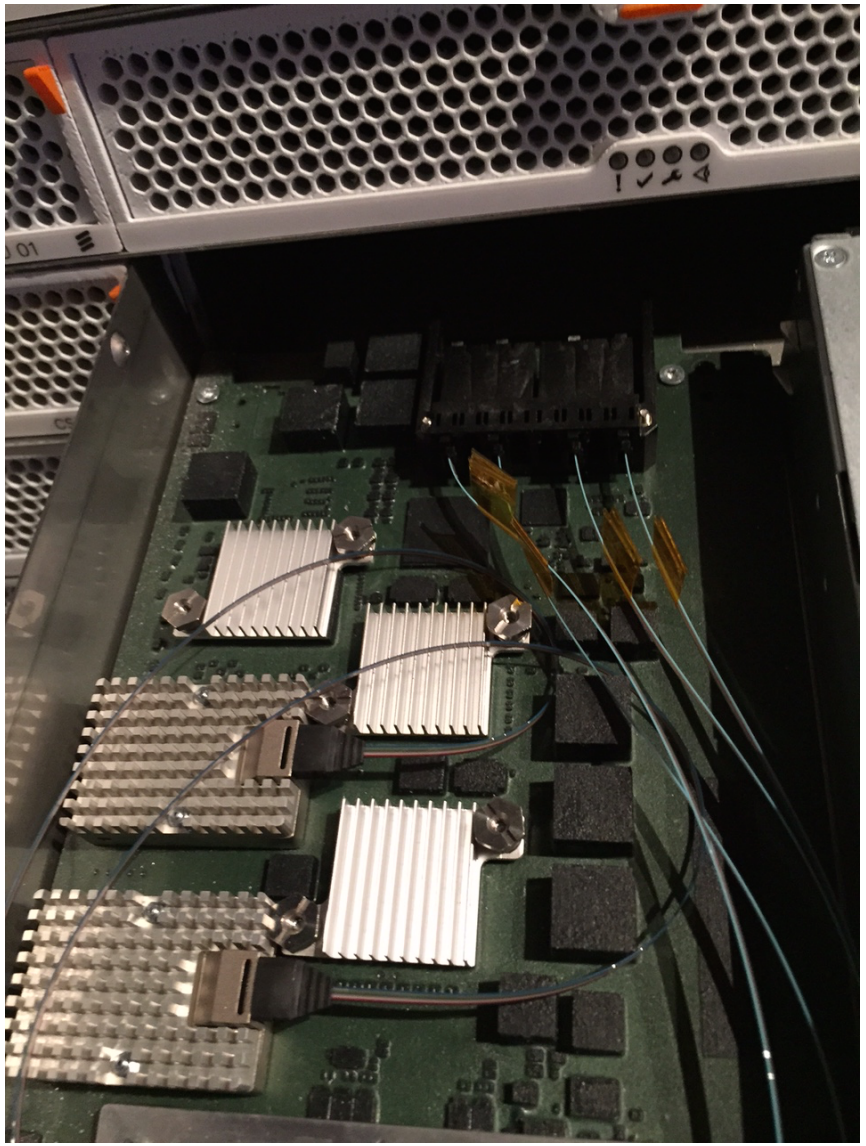
ERICSSON HDS 8000

- Ericsson's next generation data center infrastructure platform.
- Datacenter solution using Intel Rackscale Architecture and fully optical server backplane.



On-board photonics

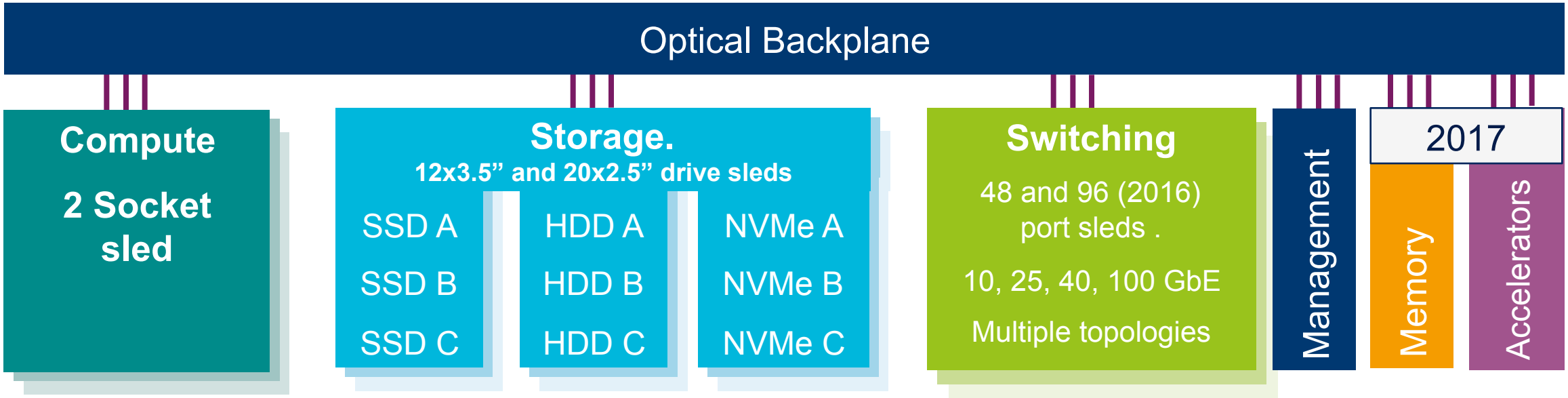
- LUX22604 100G-PSM4 silicon photonics chipset
- LUX42604 QSFP optical module
- Hybrid network fabric:
  - Packet switched ethernet
  - SAS, PCIe ++



Order for the next few years

- Just getting them on-board
  - Discs
  - NVRAM
  - NICs
  - CPU + Memory
  - CPU
  - Memory
- Pooled
- Shared

Hds fabric numbers so far



- Broadwell CPUs
- 24 Memory slots. <3 TB
- 4x or 8x10 GbE. 4x25 in 2016
- 2xNVMe Drives
- Unlimited number within 1km radius

- SAS (GA) Fabric. Multiple HA cfgs
  - Drives per pool: 1024
  - Number of compute sharing common pool: 128
  - Total volume (8TB drives)/pool: 8 PB
  - Compute interconnect: 4x12 Gb/s
- PCIe:
  - Drives per pool: 80
  - Number of compute sharing common pool 8-16
  - Compute interconnect: 16x8 Gbps

- non-blocking cfg:
  - Max uplink / fabric: 24x40 GbE (0.96 Tb/s)
  - Total compute ports / fabric: 828 x 10GbE (8,2 Tb/s)
  - East/West throughput: 2.88 Tb/s
  - 4-8x25 GbE server connect and 100 GbE uplinks
  - Fully redundant
  - 100.000+ Nodes
  - HDS HW and 3PP HW

HDS Control

HDS Command Center

Intel POD Manager

HDS 8000

3PP HW

Dell iDRAC, HP iLO, IPMI

3PP OCP & RSA Platforms

Redfish, DMTF/SPMF

Common control and data lake

- Parts
  - Hardware systems
  - Electrical
  - Mechnical
  - Whitescape
- Common timing
- Common data collection
- Common control

The datacenter as an “IOT” environment

- 40+ devices across systems, electrical, mechnical, whitespace
- Active area of exploration is how we can use LTE, LTE-Advanced and 5G
  - Timing
  - Connectivity (data collection and control)