Building a New Datacenter Experiences & Challenges

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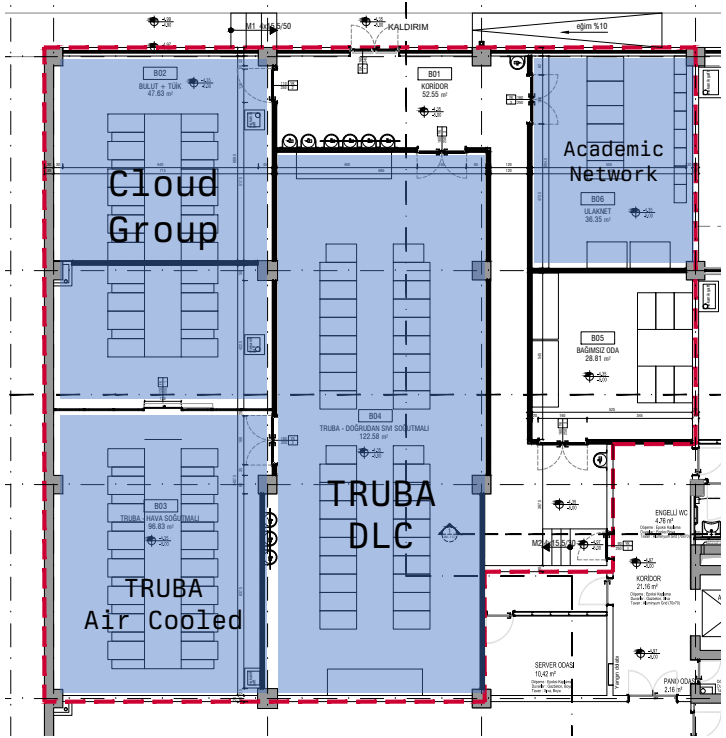
Building a New Datacenter

End Result



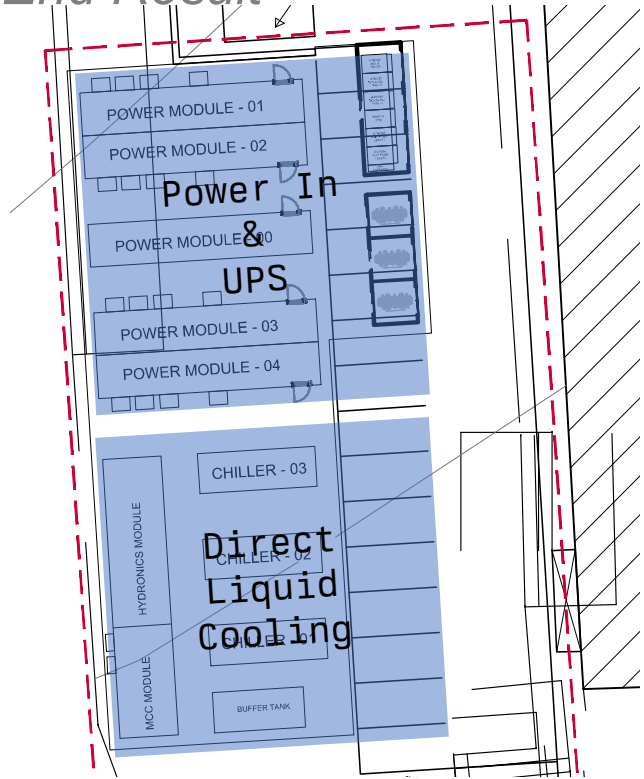
A new datacenter for all teams in ULAKBIM:

- Direct Liquid Cooling capability.
- Air cooled rooms for other systems.
- Busbar electricity.
- Integrated fire suppression.

Designed to replace the old one, in a completely new location, built (almost) from scratch.

Building a New Datacenter

End Result



Every datacenter needs external support infrastructure:

- Power in from utility with transformers
- UPS units in separate containers
- Generator sets in local vicinity.

Heat needs to go somewhere:

- Hydronics module
- Chillers
- Buffer tank

for Direct Liquid Cooling.

Plus, a couple of dry coolers on top of the building.

Building a New Datacenter

Why?

- New compute hardware is more efficient, but denser
  - Requires more power
  - Demands better cooling

- Infrastructure ages
  - Capacity losses
  - More failures
  - New hardware stresses existing infrastructure

- Technology is evolving
  - More capacity in the same footprint
  - Higher efficiency overall

Building a New Datacenter

Design Targets

- Twice the cooling and compute capacity.
- Able to host a direct liquid cooled system.
- Air cooled spaces for storage and less demanding workloads.
- Below ceiling busbar power distribution throughout the complex.
- Able to handle bigger cabinets, and per cabinet loads.

which were unattainable in our current datacenter due to various reasons.

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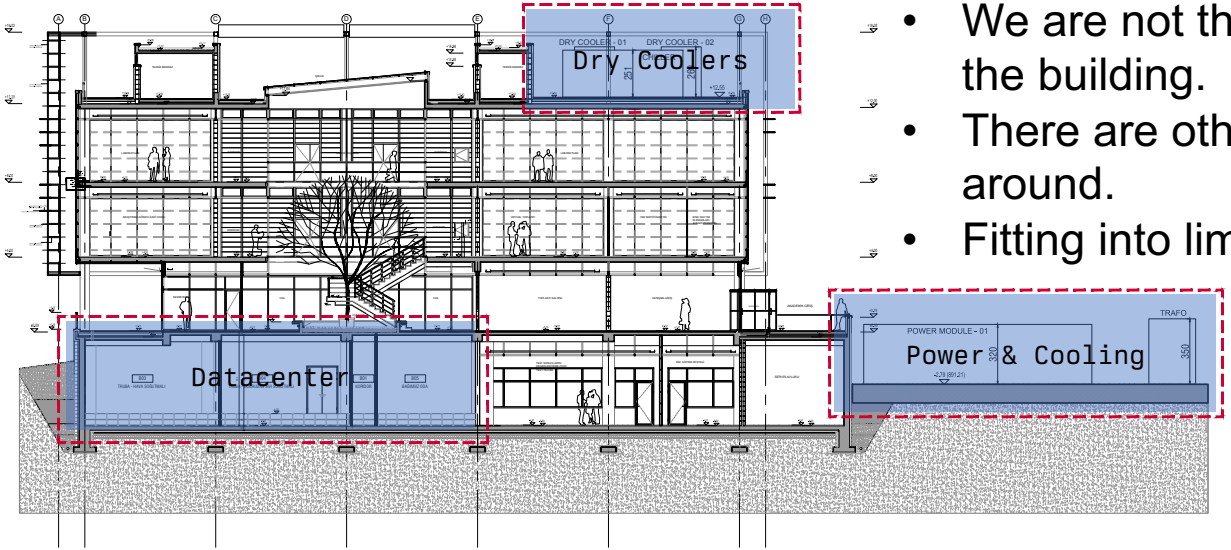
Footprint Challenges



There are some limitations:

- We are not the only tenant in the building.
- There are other buildings around.
- Fitting into limited floor space.

Building a New Datacenter

Infrastructure Challenges

- Insufficient energy capacity in the campus
  - Ring circuit already at capacity
  - Bringing required capacity to datacenter
- Piping and cabling challenges
  - Working with and around the present infrastructure

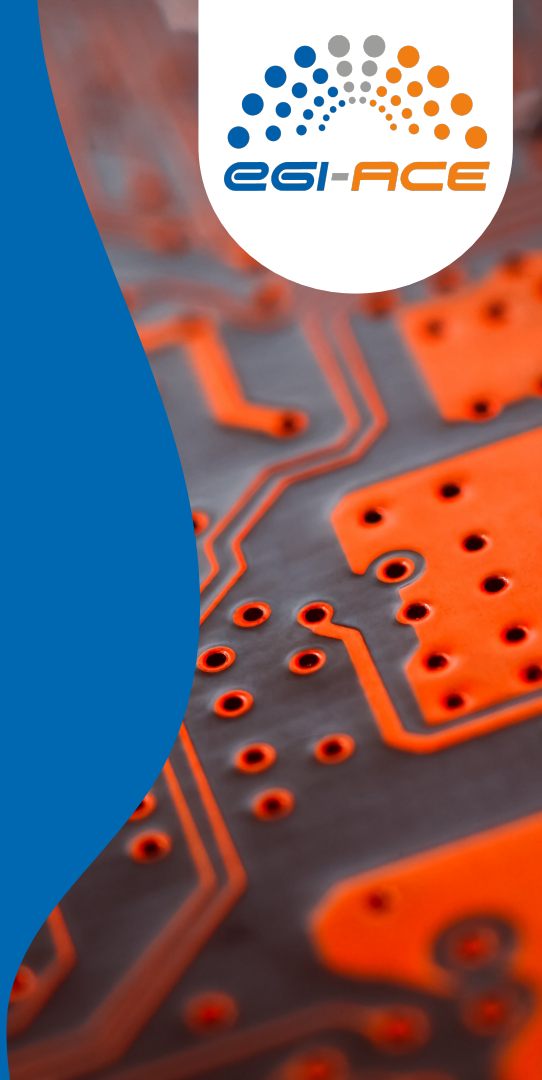
Building a New Datacenter

Current State

Construction is almost complete

- Energy has arrived to external receiving stations.
    - Yet the room has not energized.
- Monitoring is being installed.
- Waiting for DLC piping & system itself.
- Preparing for hardware migration efforts.

Questions?



Thank you!

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