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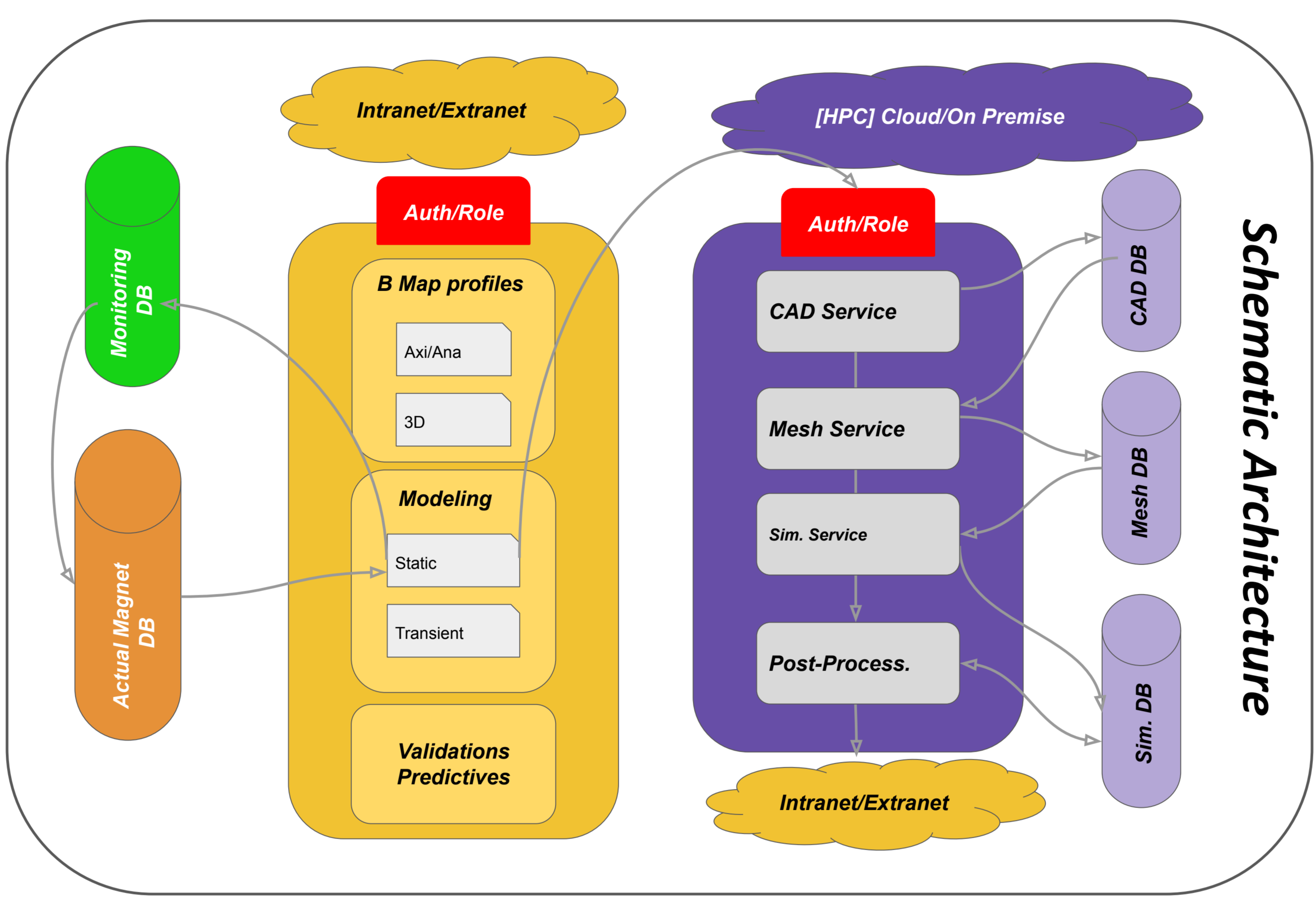
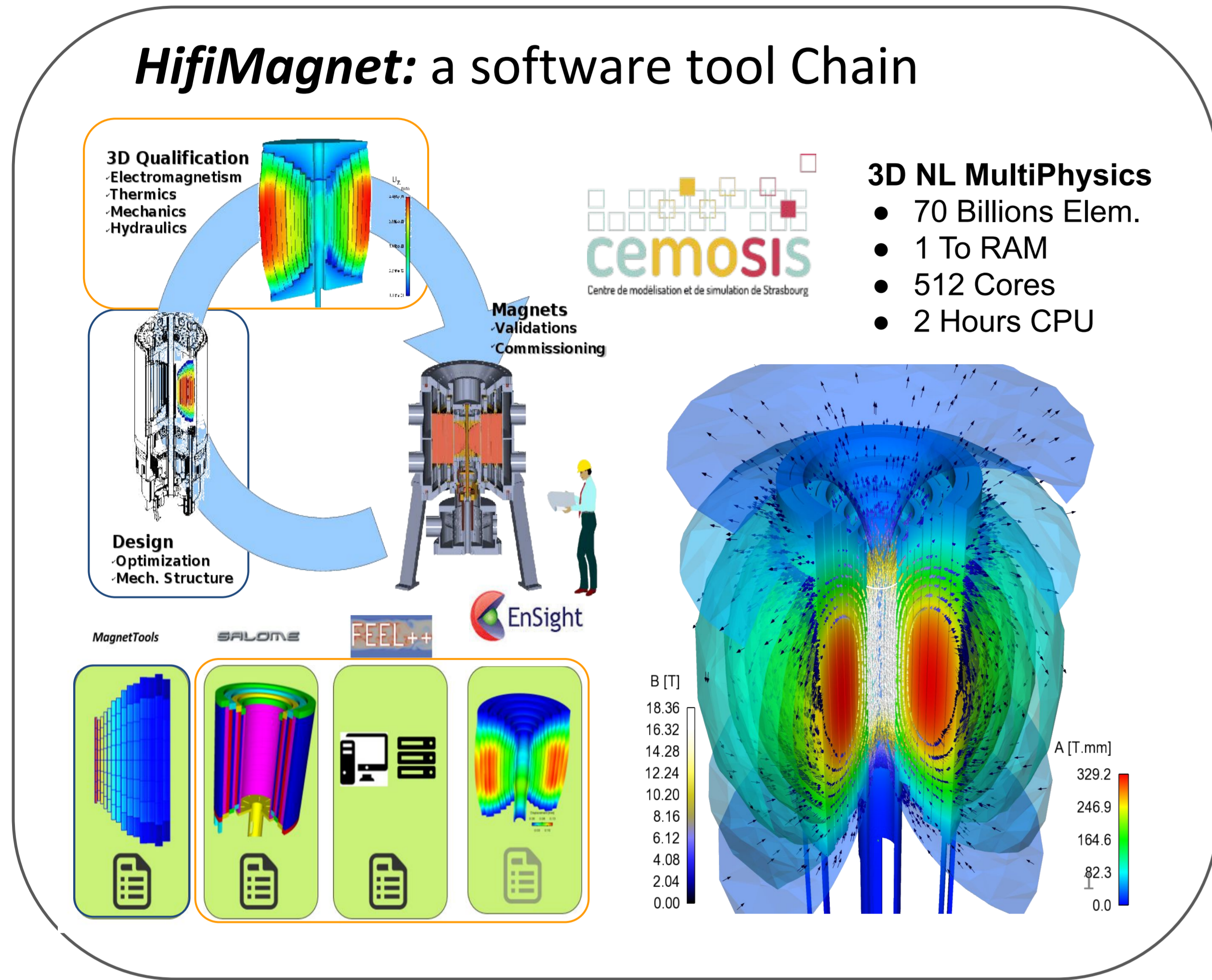
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Integrating Modeling Toolchain into High Field Magnet Monitoring and Control system.

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MSO4SC: HPC Cloud Computing service

A Portal to access:

- software catalogue (Hifimagnet),
- data repository,
- workflow management
- pre/post visualization of data (Salome)

MSO4SC provides mathematical technologies and its applications as service for solution of societal challenges through an HPC oriented cloud-e-infrastructure.

Horizon 2020 European Union Funding for Research & Innovation

Use cases:

Cooling of HTS Nougat prototype (Jan. 2019) [Fri-Mo-Or27-04]
Magnetic Levitation of liquid He

14 Helices Insert (Jul. 2019) : Commissioning (Axi Model)

Assume:

- Flowrate = $f(I, I_{var})$
- Uwater mean by channel
- Montgomery correlation

Iterate to get I:

- Heat dissipated by channel
- $h(I)$ and T_{water} per channel

14 Helices Insert in Operation (Mar. 2017) : Reproduce plateau (3D Model)

From Monitoring:

- I,
- Flowrate,
- Water Temperature

From Magnet DB: Mesh, Props

Various cooling models

Comp./Mes. Voltages taps

Voltage taps (Error on V)

Field factor [T/A]:

- Exp: 8.892
- Num: 8.935

Self/Mutual [mH]:

- L = 2.318
- M = 1.1696

Coils: Ucoil1 to Ucoil14

Models: Cst, Montgomery, Colburn, Dittus