

HVDC Grids

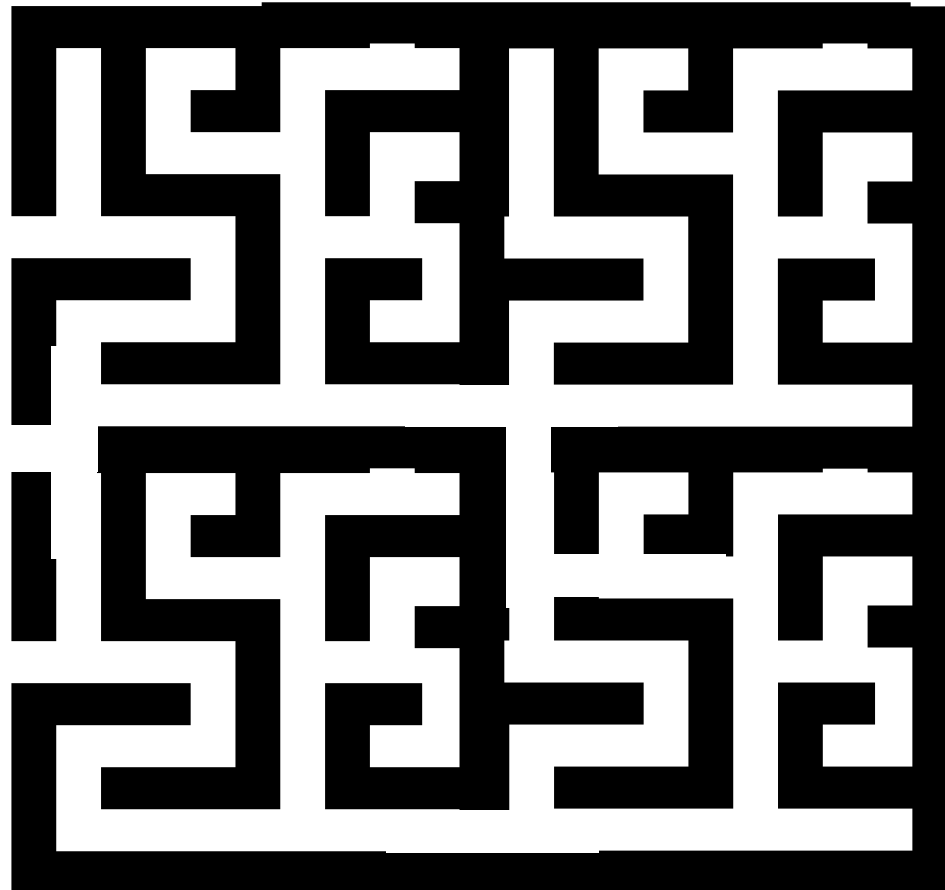
Making DC as simple as AC

HVDC Operators' Forum 2023, The National HVDC Centre
14.06.23 – 15.06.23

Ben Rennings (Grid Solutions / Control & Protection)



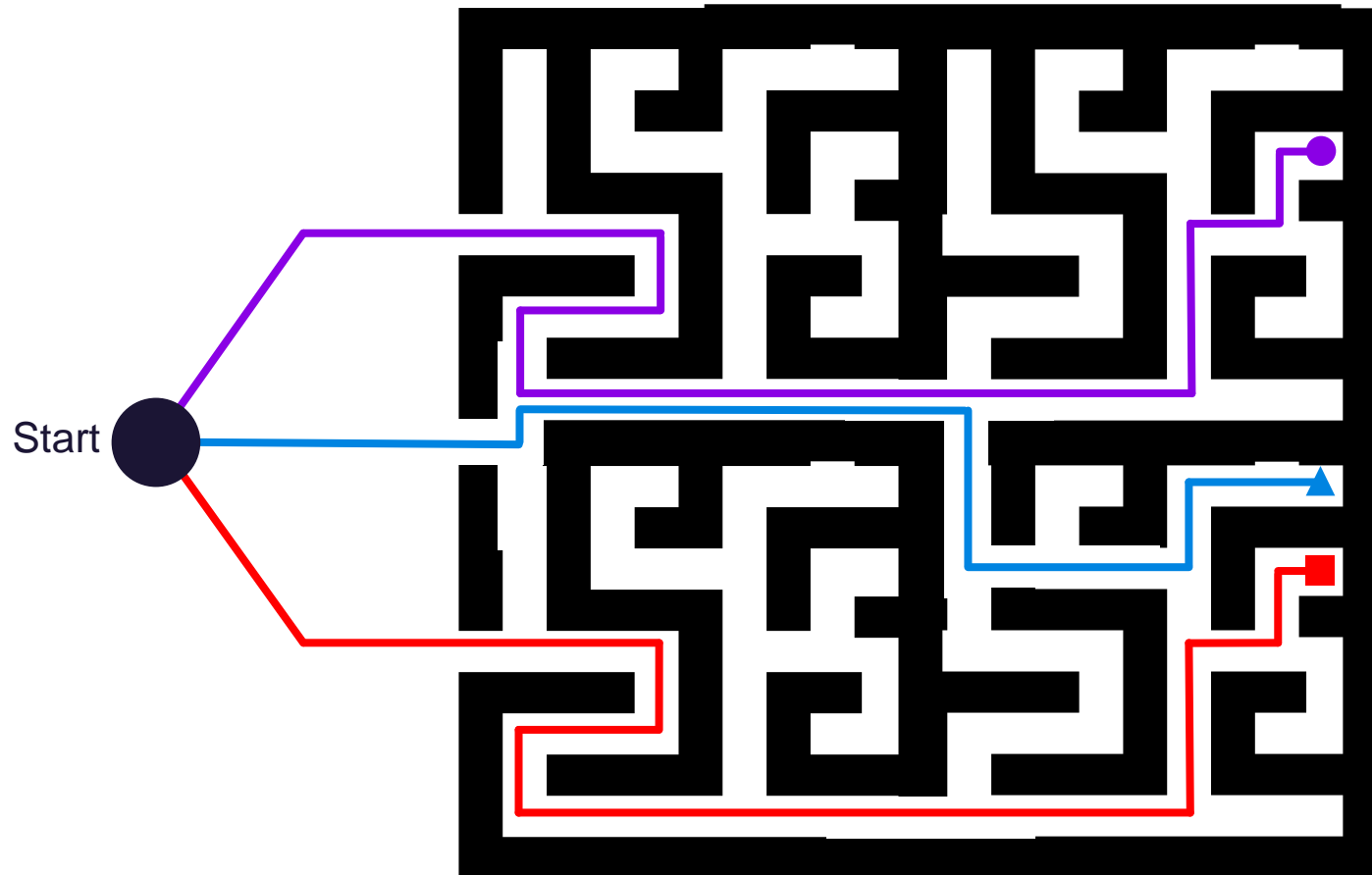
Finding a way through the HVDC maze...



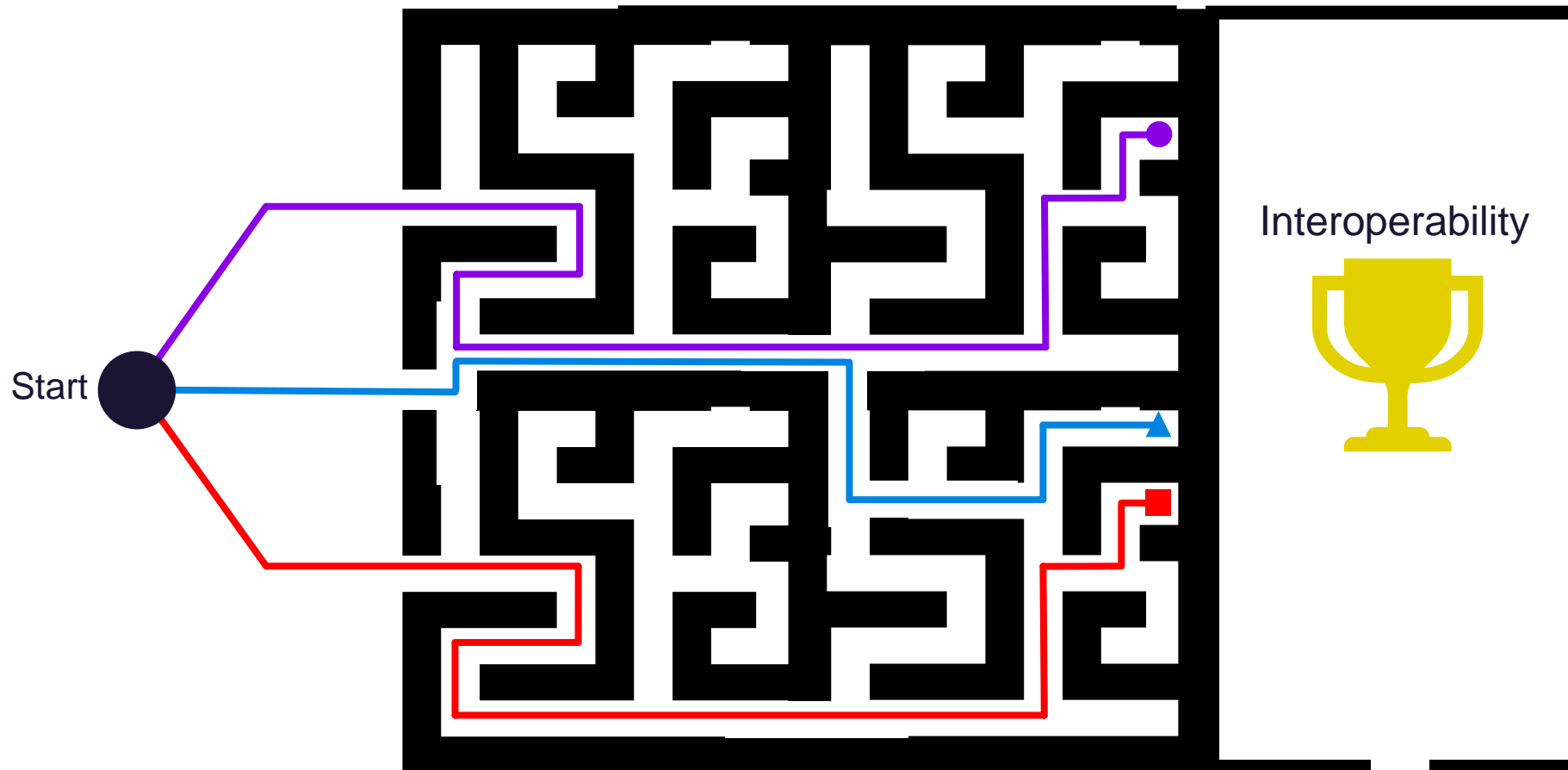
Start



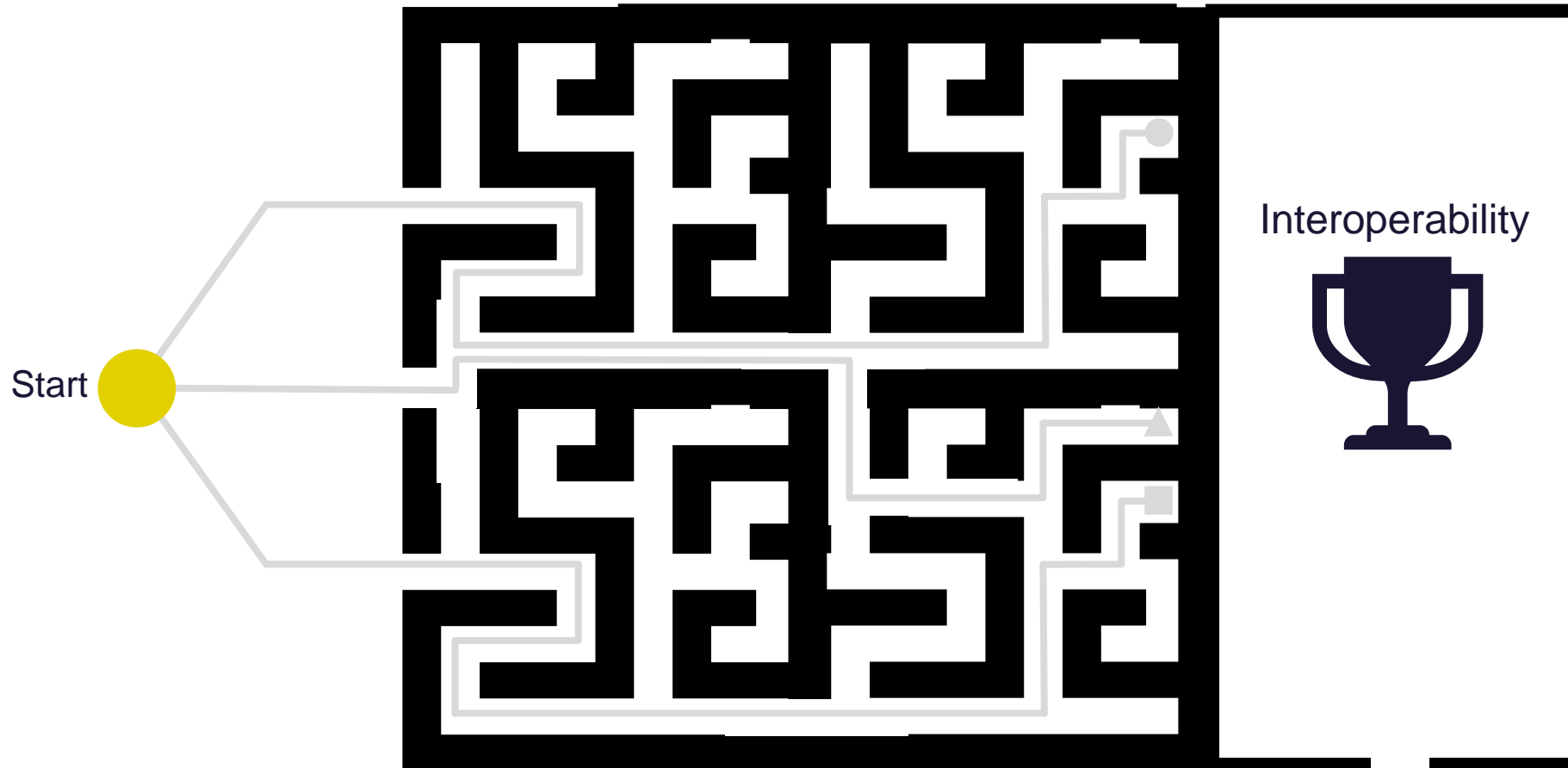
...brought us here...



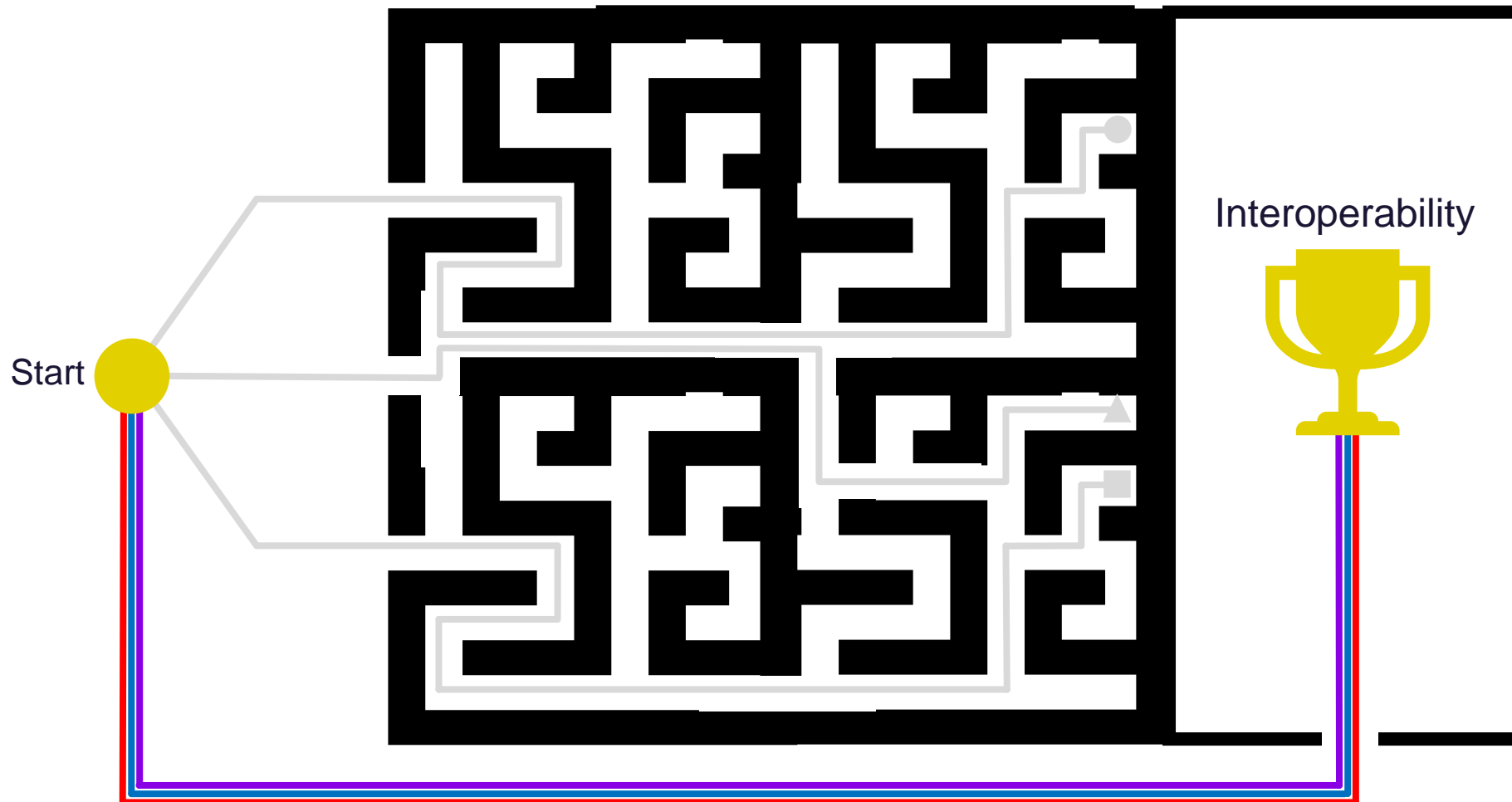
...while the future requires us to be there.



Escaping the maze means finding common ground first...



...to reach the common goal in an aligned effort.

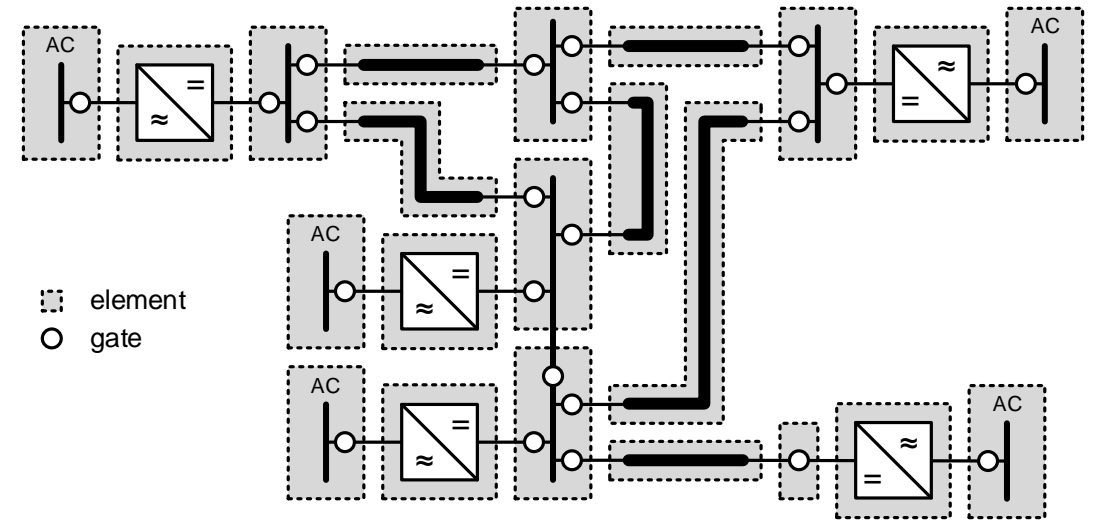


HVDC Grid System Architecture: „The Textbook“

Motivation

- Identify functional system elements
- Ensure modularity by elegant interfaces
- Create transparency and reduce ambiguity

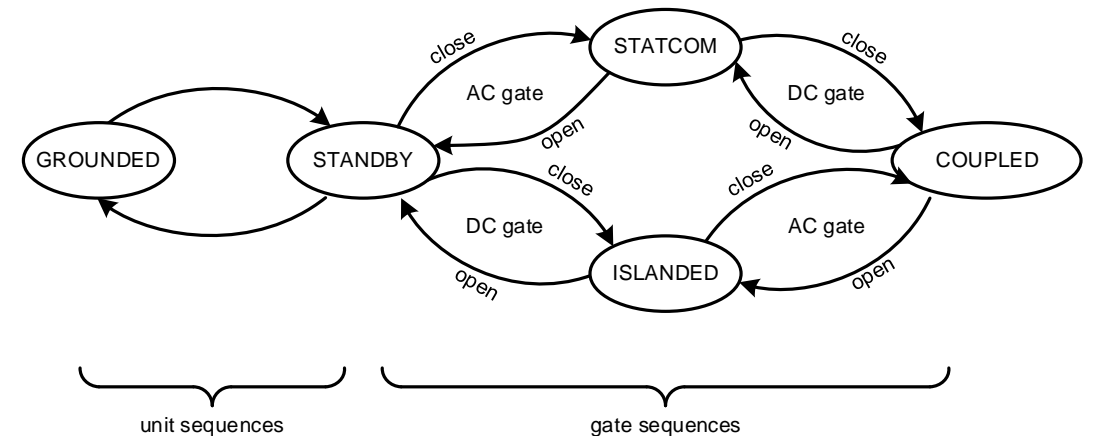
→ Enable **Interoperability by Architecture**



For a copy of the latest version, please reach out to:




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Two industrial initiatives working on interoperability in Europe

GB HVDC Interoperability "Network-DC"

Lead
The National HVDC Centre
(owned by SSEN)




Proposed Contributors (HVDC)

- **Siemens Energy**
- Hitachi Energy
- GE Renewable Energy
- Mitsubishi Electric



EU InterOpera



Lead
EU funded Innovation Action

Proposed Contributors (HVDC)

- **Siemens Energy**
- Hitachi Energy
- GE Renewable Energy

} T&D Europe

Other Partners

- SuperGrid Institute (DC Grid Control)
- SciBreak (DC Circuit Breaker)
- Ørsted
- Equinor
- Vattenfall
- Siemens Gamesa
- Vestas

} WindEurope

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