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# Usage of CIM for data exchange within European Energy coordination

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# About me

- At Svenska Kraftnät since end of 2020
- **2020 -2023: Operations**
  - Process manager reserves
  - CORE project representation (NATO/EU)
  - Business owner/Business analyst for Nordic balancing projects:
- **2023/03 – Now : Strategic Development Manager at Business Intelligence**
  - ENTSO-E representation
  - CGM Manager
  - ENTSO-E secondment autumn 2023
  - Svenska Kraftnät AI strategy

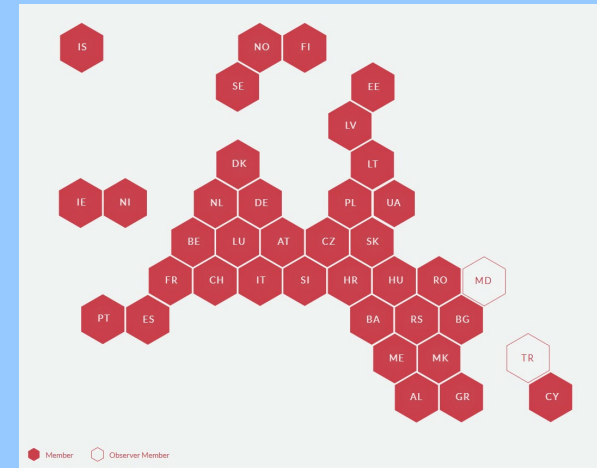
# Agenda

- ENTSO-E collaboration
- Coordination of operations through Common Grid Models
- Common Information Model (CIM)
- CIM strategy at Svenska Kraftnät



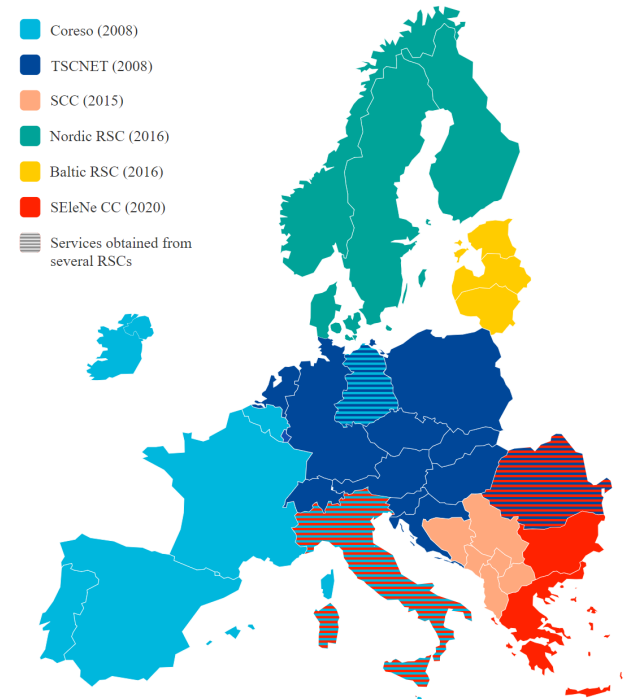
# ENTSO-E

- ENTSO-E was established and given legal mandates by the EU's Third Package for the Internal energy market in 2009
- **ENTSO-E, the European Network of Transmission System Operators for Electricity**, is the association for the cooperation of the European transmission system operators (TSOs). **The 40 member TSOs representing 36 countries are responsible for the secure and coordinated operation of Europe's electricity system**, the largest interconnected electrical grid in the world.



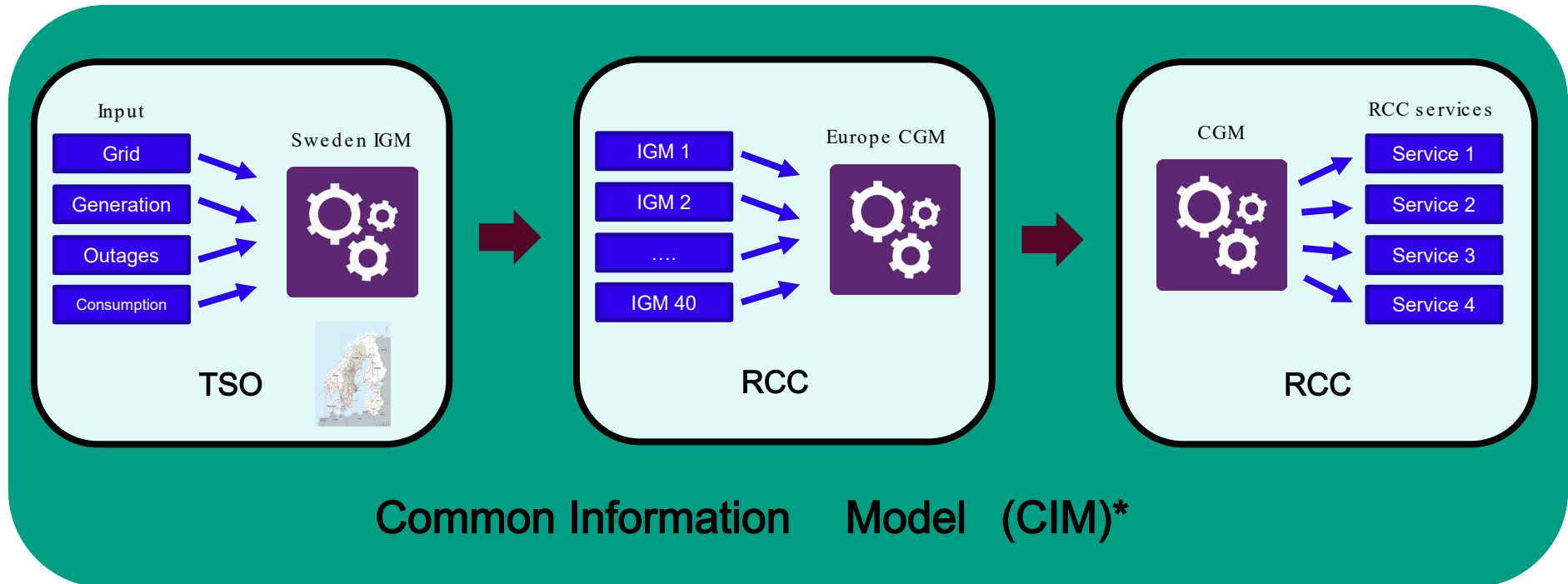
# Regional Coordination Centers

- Why?
  - Volumes and directions of European electricity power flows can be **highly volatile** .
  - Renewable energy's growing share
  - Power flows are now much more difficult to predict, leading to an **increased need for more coordination** .
- How ?
  - Centralised services performed by RCCs
  - Information shared through *individual grid models*

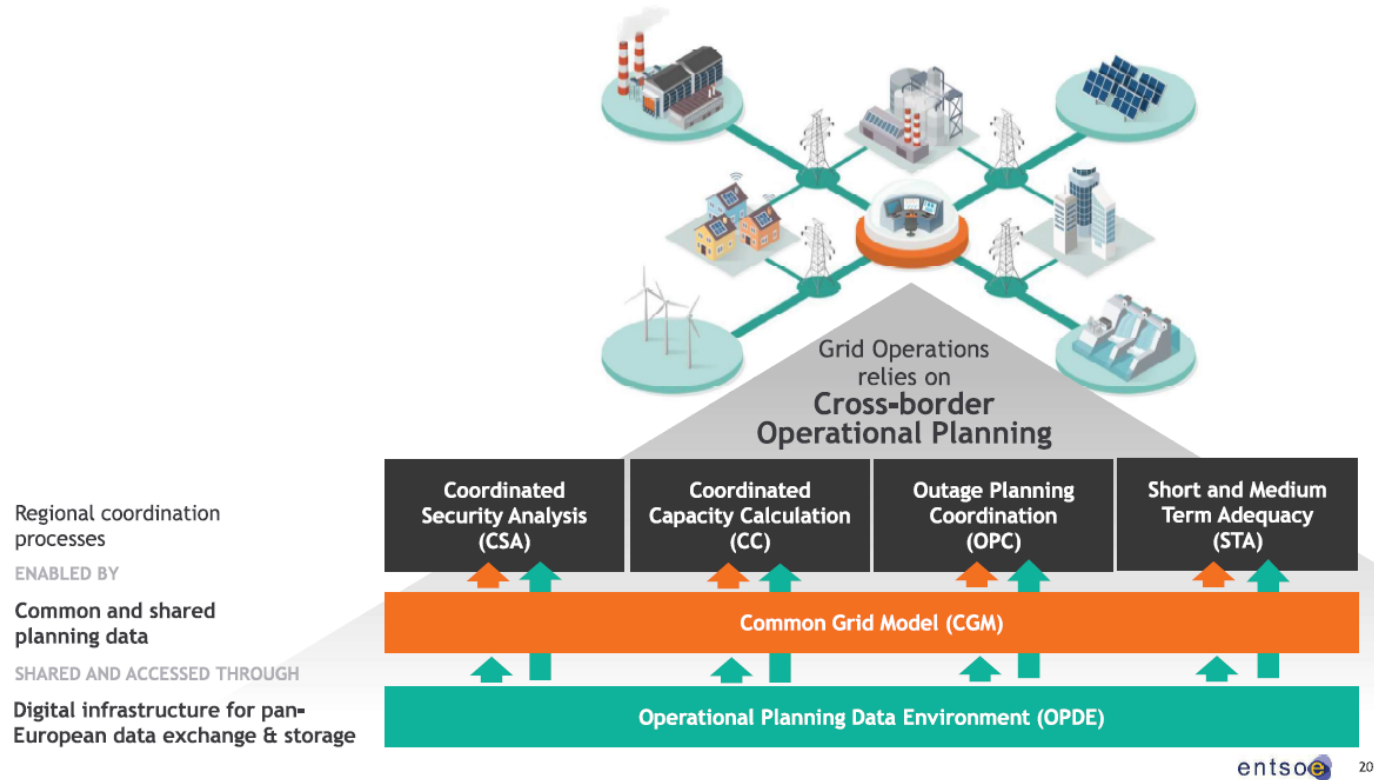


# Individual Grid Model

- Hourly forecast of the power system (D-1, D-2, W-1, Y-1, ID)



# Services conducted by RCCs



# Common information Model

- The Common Information Model (CIM) is an international electric power transmission and distribution **standard** developed by the electric power industry.
- CIM is **more flexible and more complete** compared to older standards.







# How we approach CIM at Svenska kraftnät?



# CIM strategy at Svenska kraftnät

- Common strategy for information modelling
- No isolated projects and initiatives
- Common information model (or at least compatible models) via a master metadata model
- Oversee Svk's questions and needs internationally
- Pragmatic approach
- Svk has decided to use CIM "to **increase integration and communication** possibilities among **internal** and **external** parties"
- Svk formed a **cross -functional body** for harmonisation and coordination in the realm of Data Exchange, **Svk CIM Expert Group**



# Information models relevant for Svenska kraftnät's operations

- European standards:
  - CGMES
  - ESMP
- IEC CIM
- Extensions of CIM-standard (together with relevant actors)

# Modelleringshandboken

- A living document describing Svk's interpretation, modelling principles and common guidelines for network modelling
- Describes individual components and structures
- Written so that readers without a deep CIM knowledge can understand it
- Distributed externally

# Obstacles, challenges and mitigations

Lacking knowledge in  
the industry

Legacy systems and  
processes

Very flexible standard

Education  
Communication

Data governance  
Data quality  
Pragmatic approach

Agreed modelling strategy  
Modelling Handbook  
Extra validations

# The value for our organization

- Guarantee higher Data Quality
- Integrate and maintain other systems in a safer, cheaper and more standardized way
- Merge and test external actor's model
- Enables new possibilities without jeopardizing control room operation

# The value for European Coordination

- Automatisation is must due to the amounts of data needed to exchange.
- Advanced models and thus advanced calculations are facilitated by the standard
- Advanced models are used for coordinating a huge interconnected grid
- The standard allows for future updates to models and modelling when the grid and technologies change

# Thank you!



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