Perspectives on next generation market models

Sintef Energy Research

Energy systems

Perspectives on ngLTM

I. Backgroun
II. Proof-of-Concept ngLTM
III. Long-term strategy

Teknologi for et bedre samfunn

SINTEF

Market models are a result of a long-term commitment

Market models for hydropower systems

SINTEF together with NTNU develops software tools for stakeholders in the Nordic power market / system.

The fundamental market models represent an important part in the chain for creating value from Norwegian renewable energy sources.

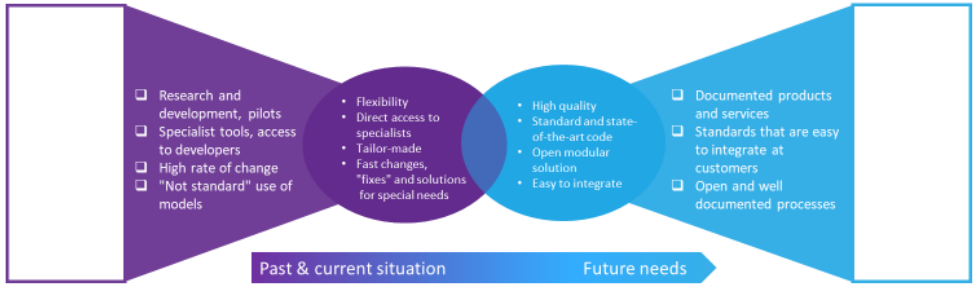
These decision support tools are applied for analyses, planning and dispatch, by various stakeholders.

- **System operators, Regulators, Power producers, Consultants, Academia**

Sucessful model development is made possible by continuous R&D based on a partnership of public authorities, the power sector and providing world-leading research enviroment during several decades.

Statkraft, Statnett, Eidsiva, NVE, Svenska Kraftnät, Vattenfall, Energinet.dk, Eco, agder energi, Lyse, NTE, Fingrid, BKK, Hydro, EnergiNorge, powel, Olje- og energidepartementet, Forskningsrådet

Market models in tension between research forefront and industrial standard



- SINTEF has successfully been developing solutions in accordance with customers' challenges and needs.
- Customer requirements are turning towards a greater degree of standardization and integration with customer solutions as well as flexibility for market changes.

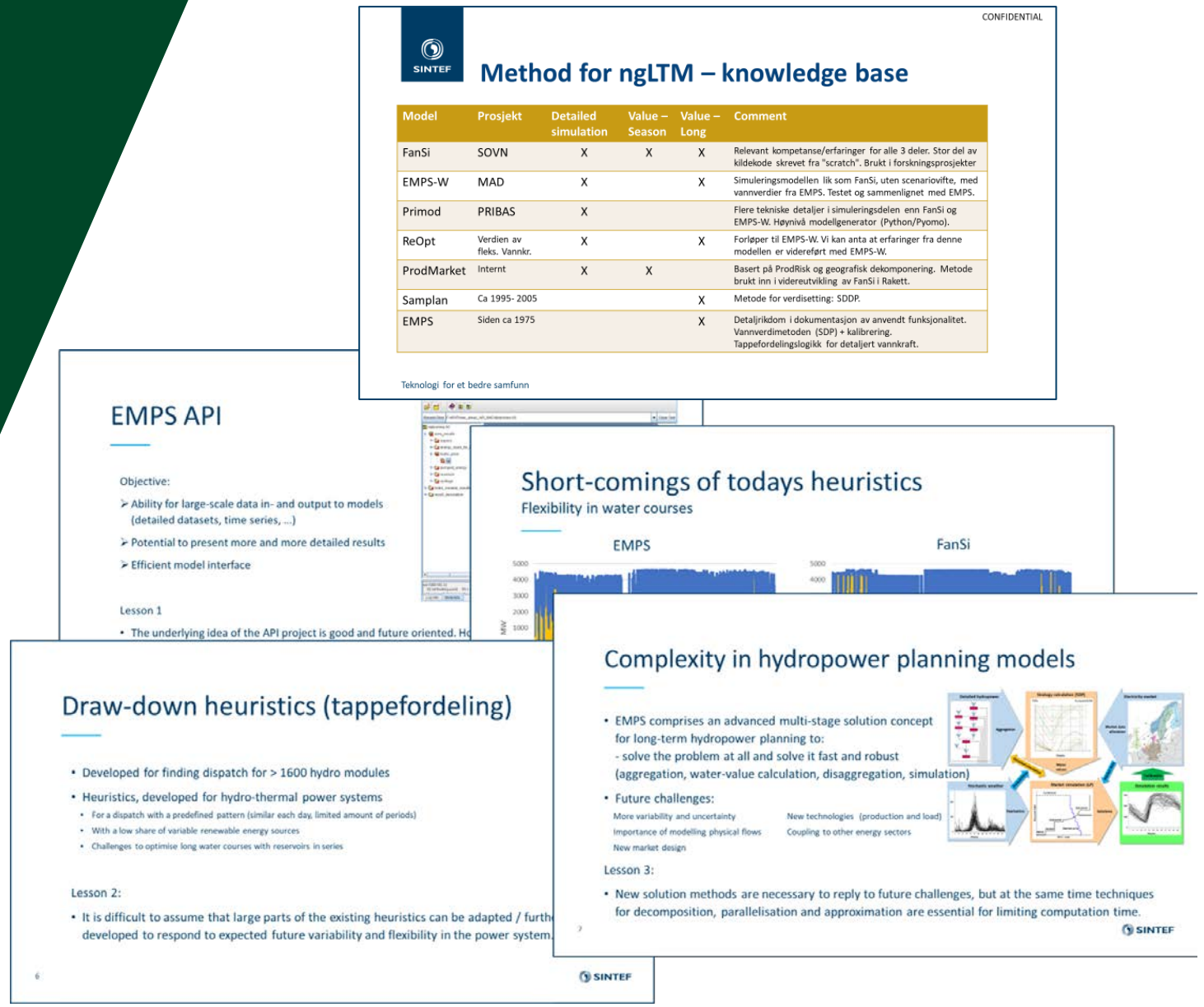
Teknologi for et bedre samfunn

Nåsituasjon

Energisystemet transformeres av gjennomgripende endringer som er sterkt økende både med hensyn på omfang og tempo.

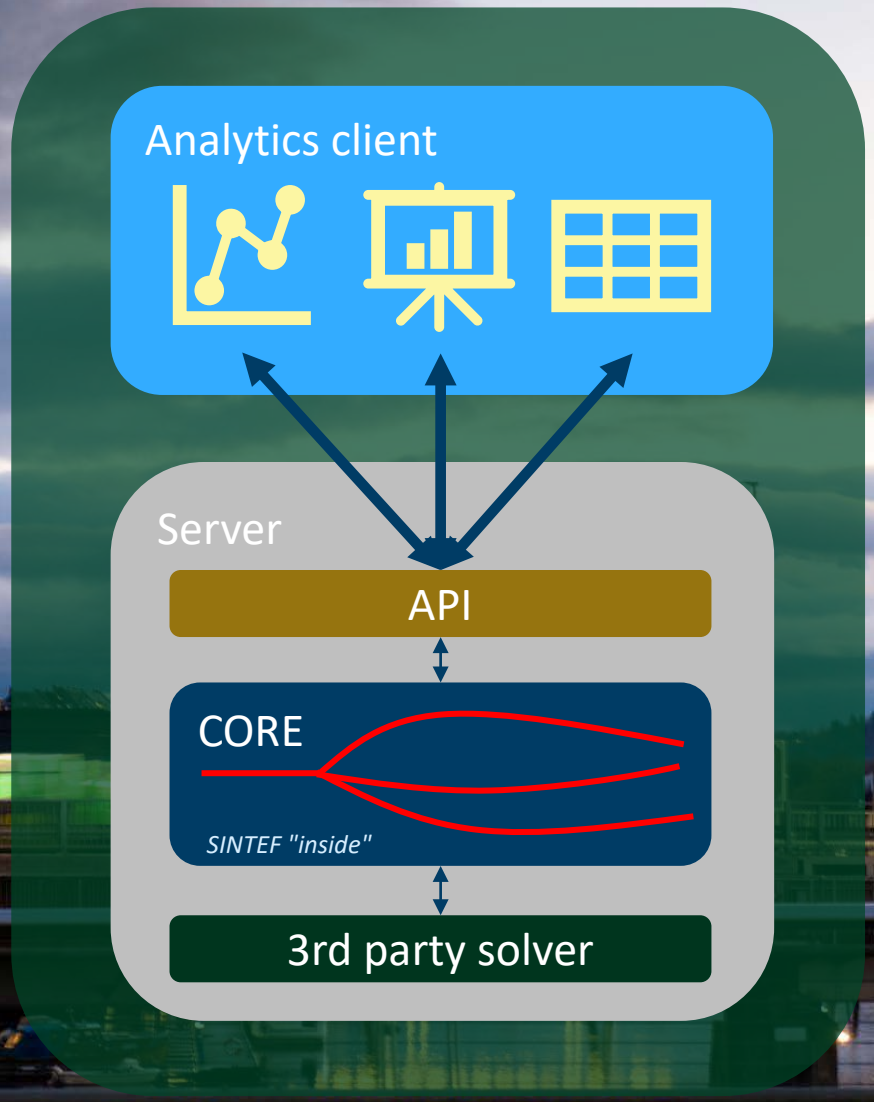
Nye teknologier og digitalisering er en utfordring og mulighet i det fremtidige kraft- og energisystem.

Vi trenger nye fundamental-modeller som gir oss evne til å forstå og styre utviklingen av det fremtidige energisystemet.



Project sketch based on conclusions from the pre-project

SINTEF **focuses** on the development of a state-of-the-art calculation CORE for a fundamental market model with a well documented interface for the integration with third-party / customer solutions.



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Proof-of-concept (POC)

Next generation market models

What is the concept?

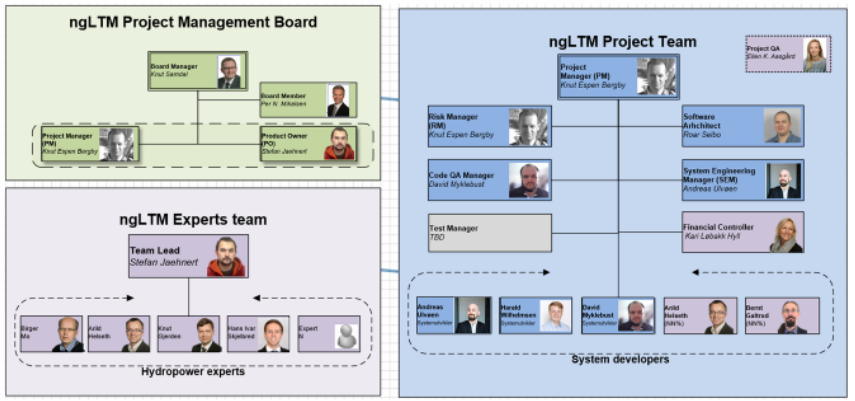
I. The concept *"Next generation market model"* describes:

   I. the mathematical method that is to be applied in future market models
   II. how this method is implemented in software, documented and supported
   III. and the process of the software development and customer involvement

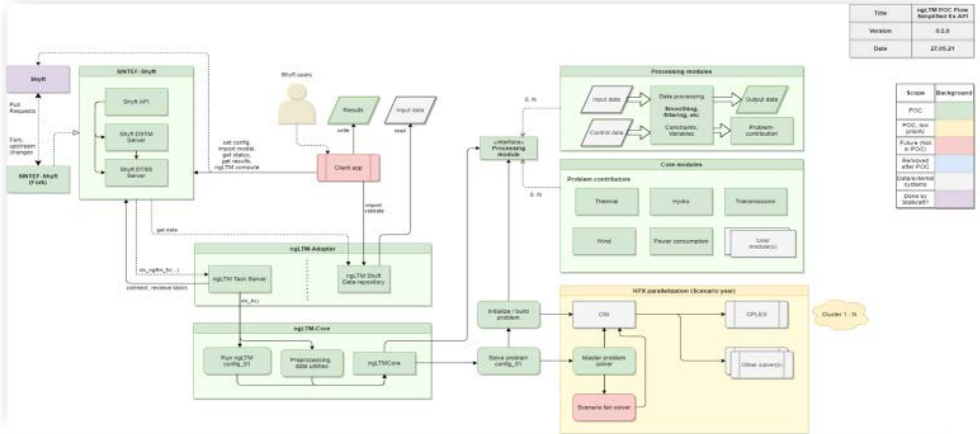
POC Focus areas

Quality	Speed	Implementation
		

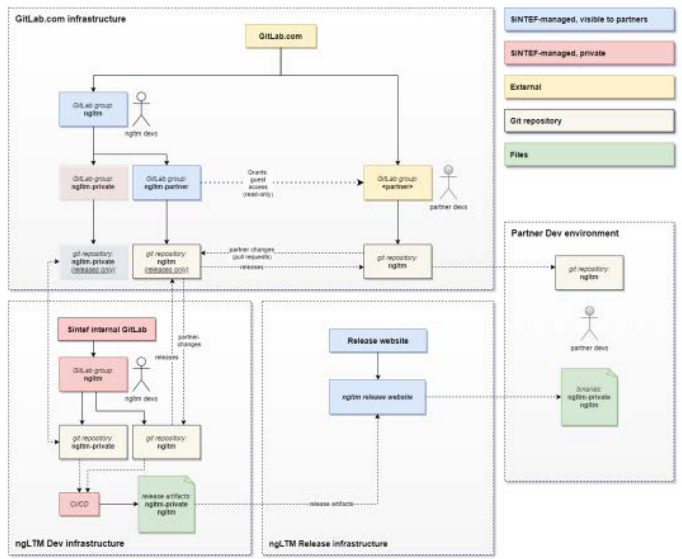
Project organization - SINTEF



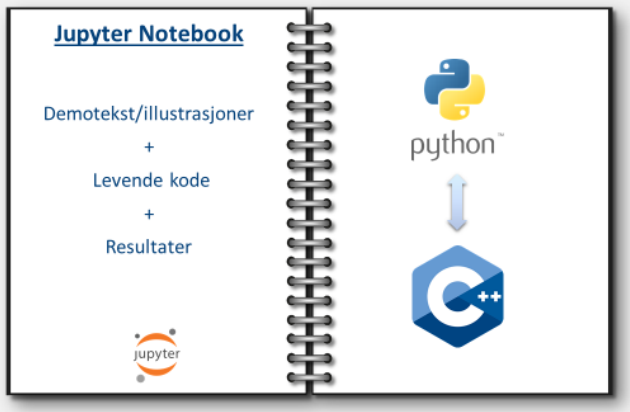
Implementation – Architecture



Samarbeid via GitLab



[Demo]



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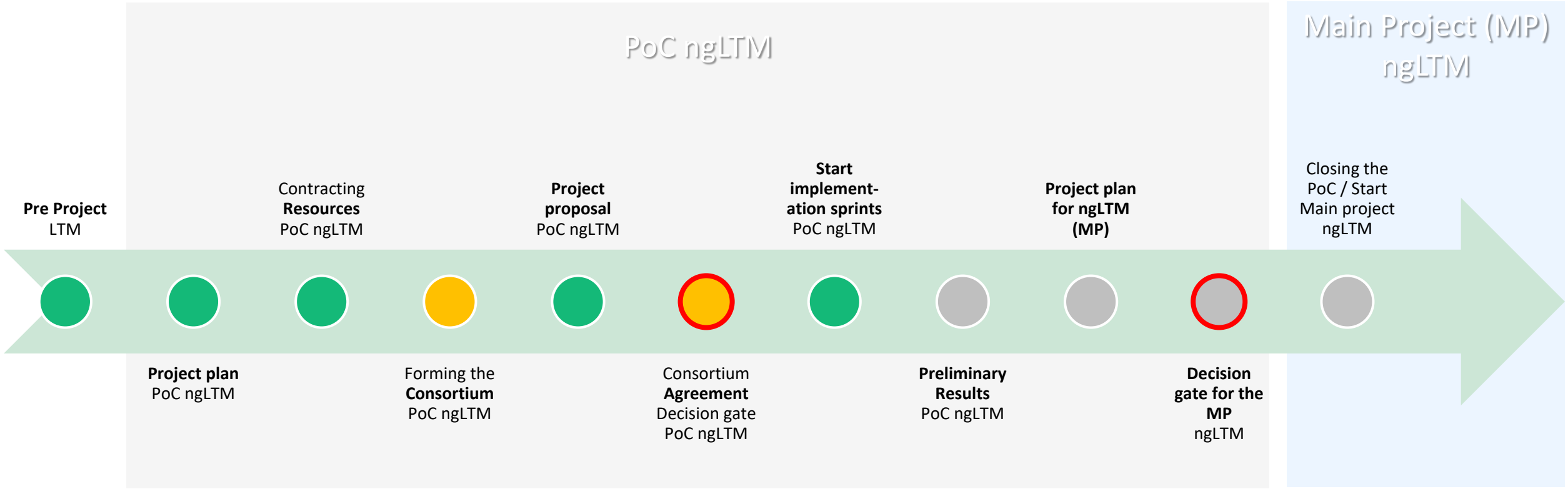
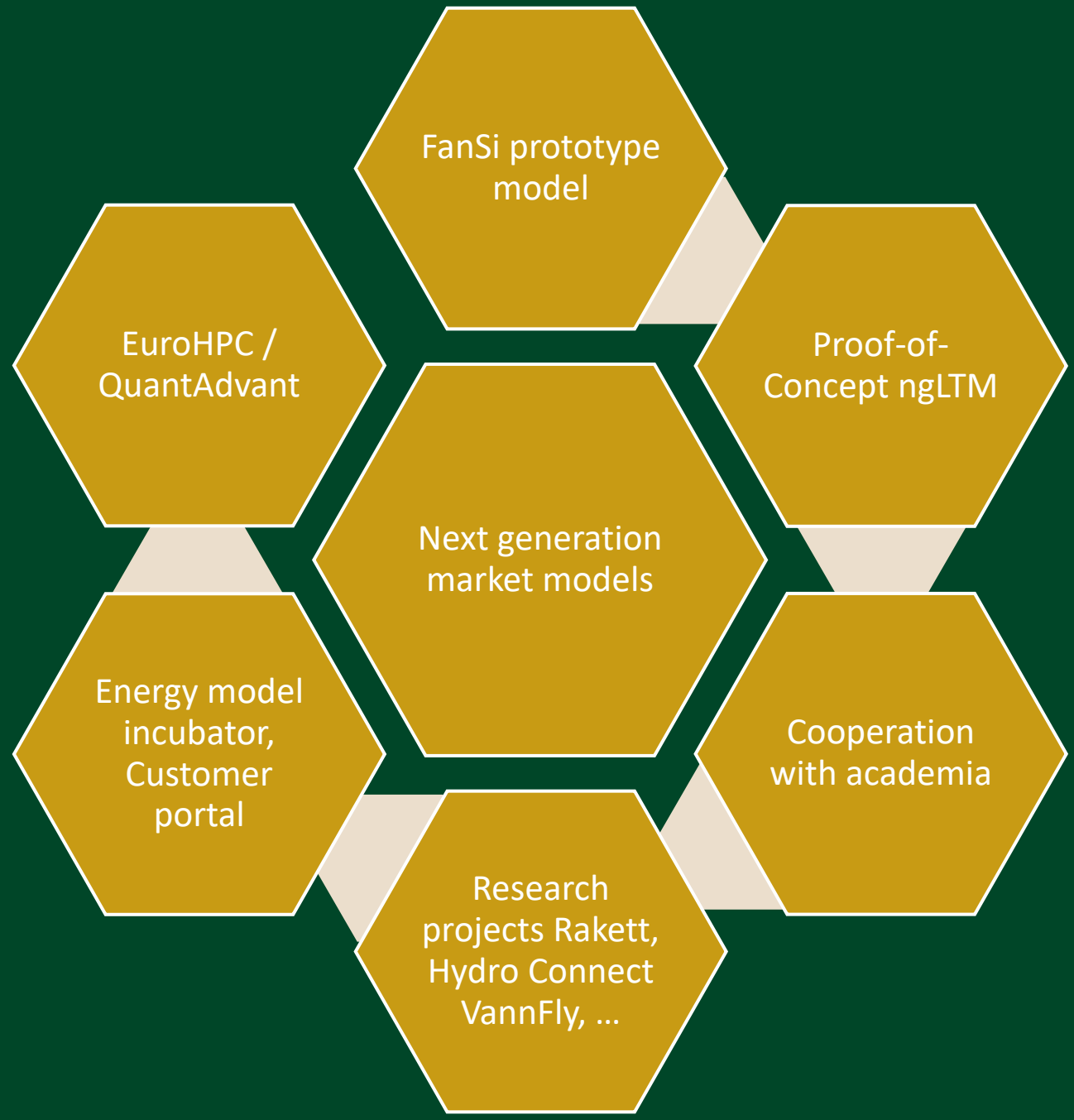
Timeline for the PoC and main project

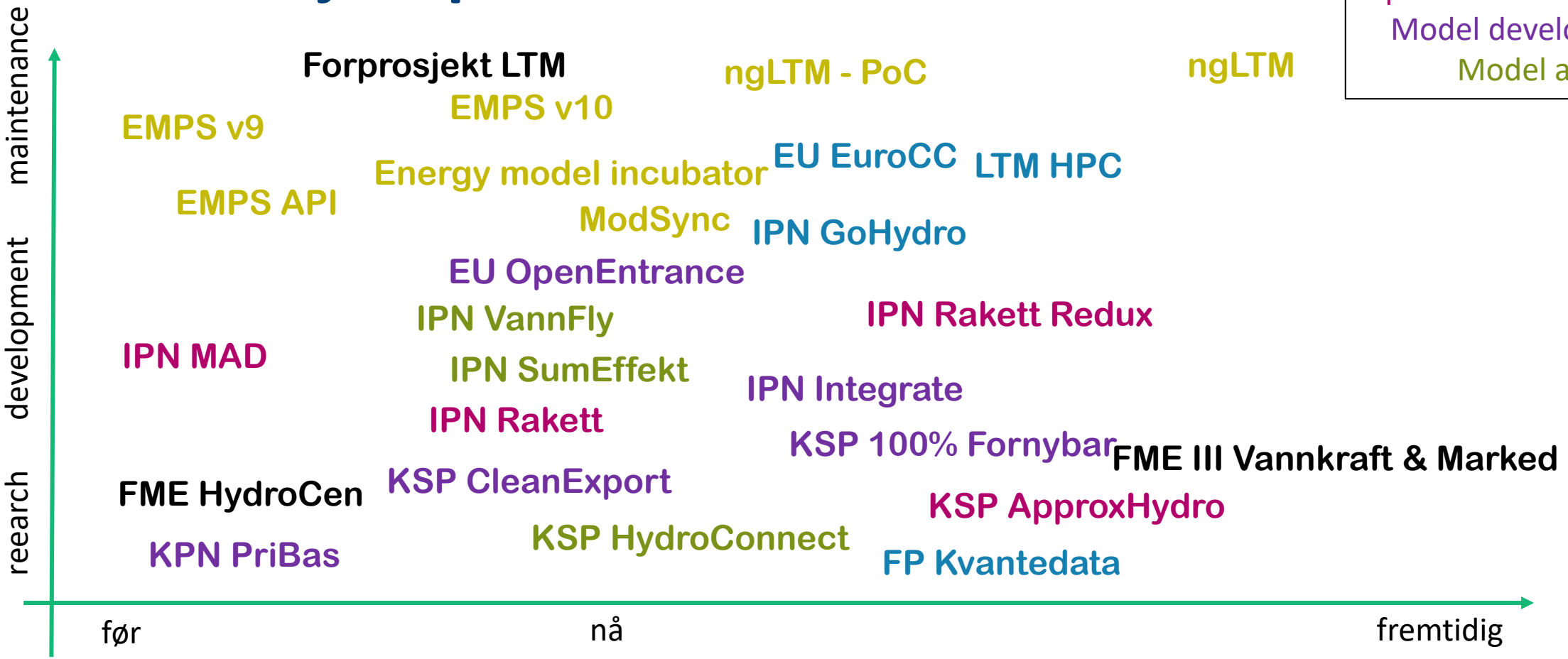


Stepwise development og next generation market models



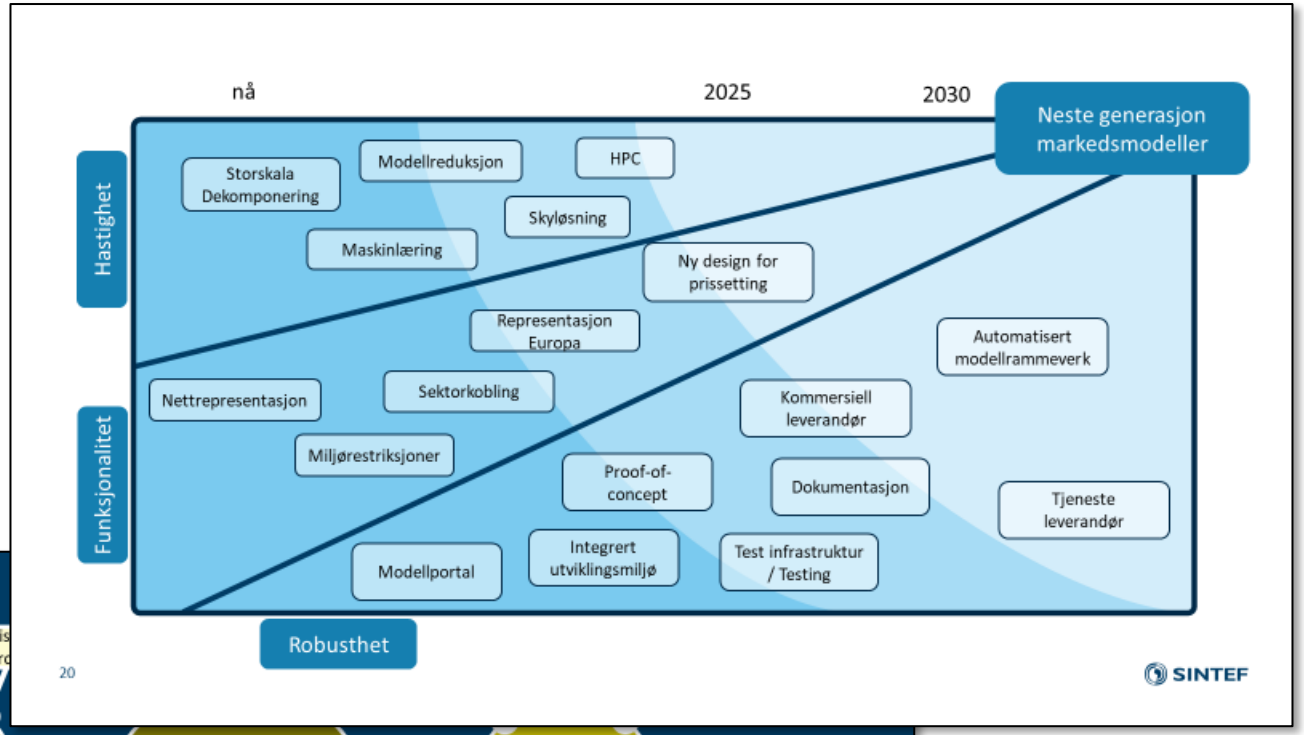
Project portfolio

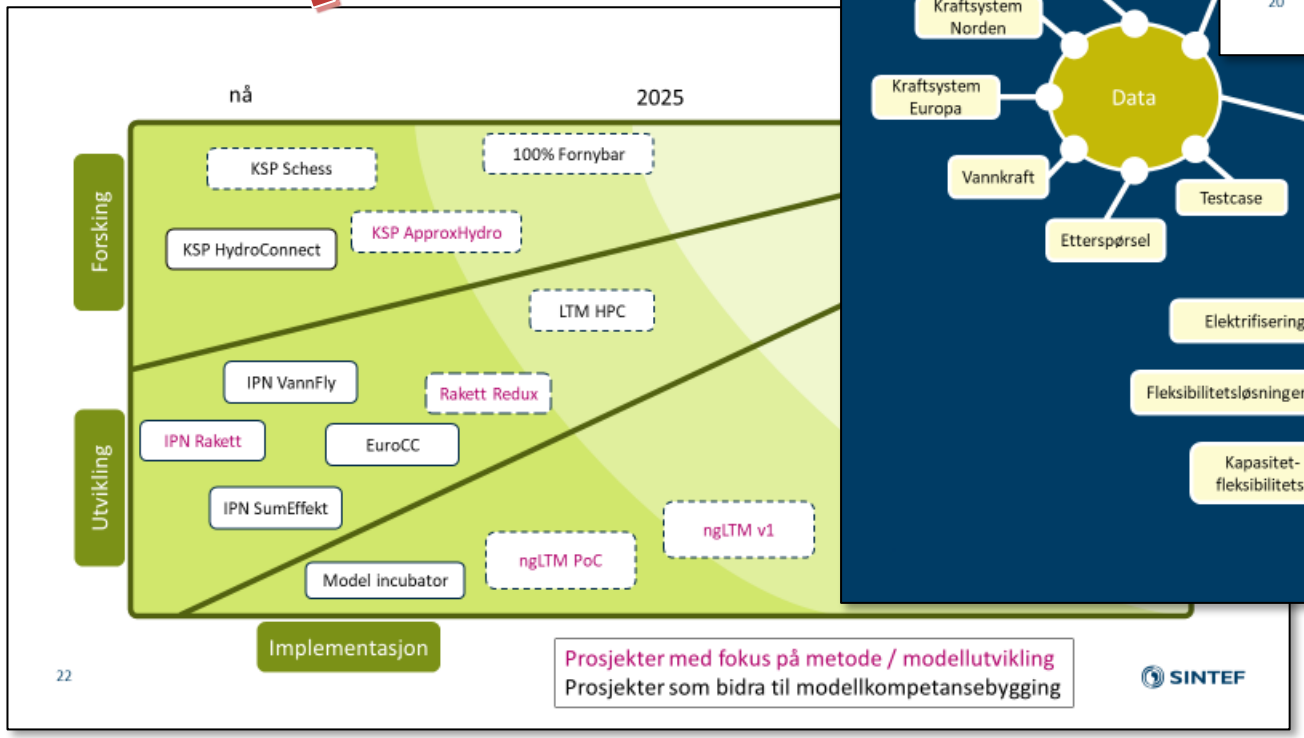
Tematisk:
Implementation
ML / HPC
Optimisation methods
Model development
Model analyses



Langsiktig strategi

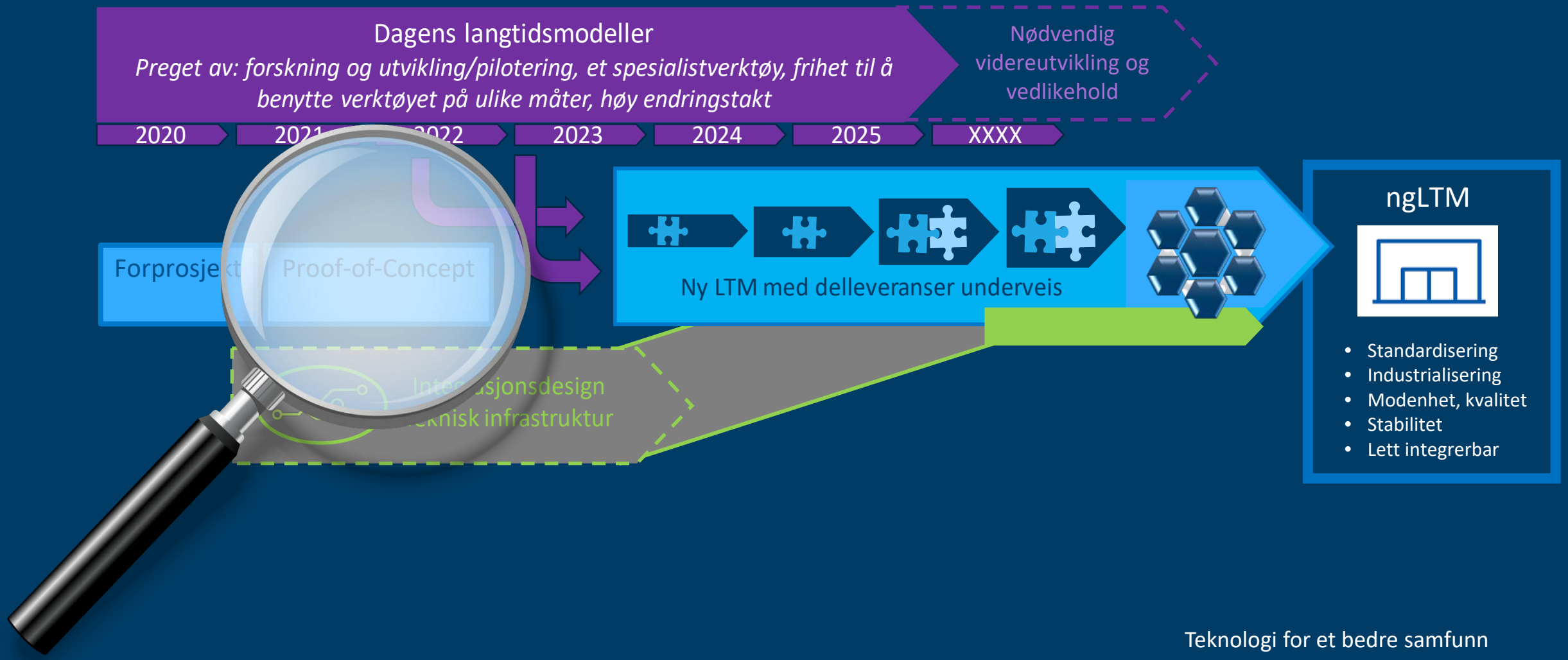
Work in progress





Tidslinje for neste generasjon markedsmodeller

Prinsipp-skisse



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70 years

1950-2020

Technology for a better society