



Artificial Intelligence in energy forecasting

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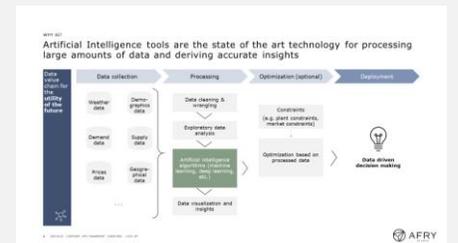
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Executive summary

1

Why AI?

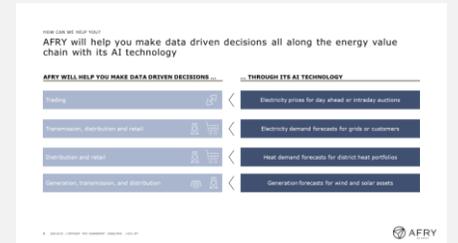
- Artificial Intelligence tools are a key enabler in becoming a data driven utility of the future
- Artificial Intelligence tools are the state of the art technology for processing large amounts of data and deriving accurate insights



2

How can we help you?

- AFRY will help you make data driven decisions all along the energy value chain with its AI technology



3

What is our product?

- **DEEP FORECAST** - AFRY's own forecasting platform offers a user-friendly browser-based platform to run deep learning algorithms, visualise and analyse results



WHY AI?

Artificial Intelligence tools are a key enabler in becoming a data driven utility of the future

What can we expect from AI?



1 Patterns and trends

2 Predictive analytics

3 Actionable insights

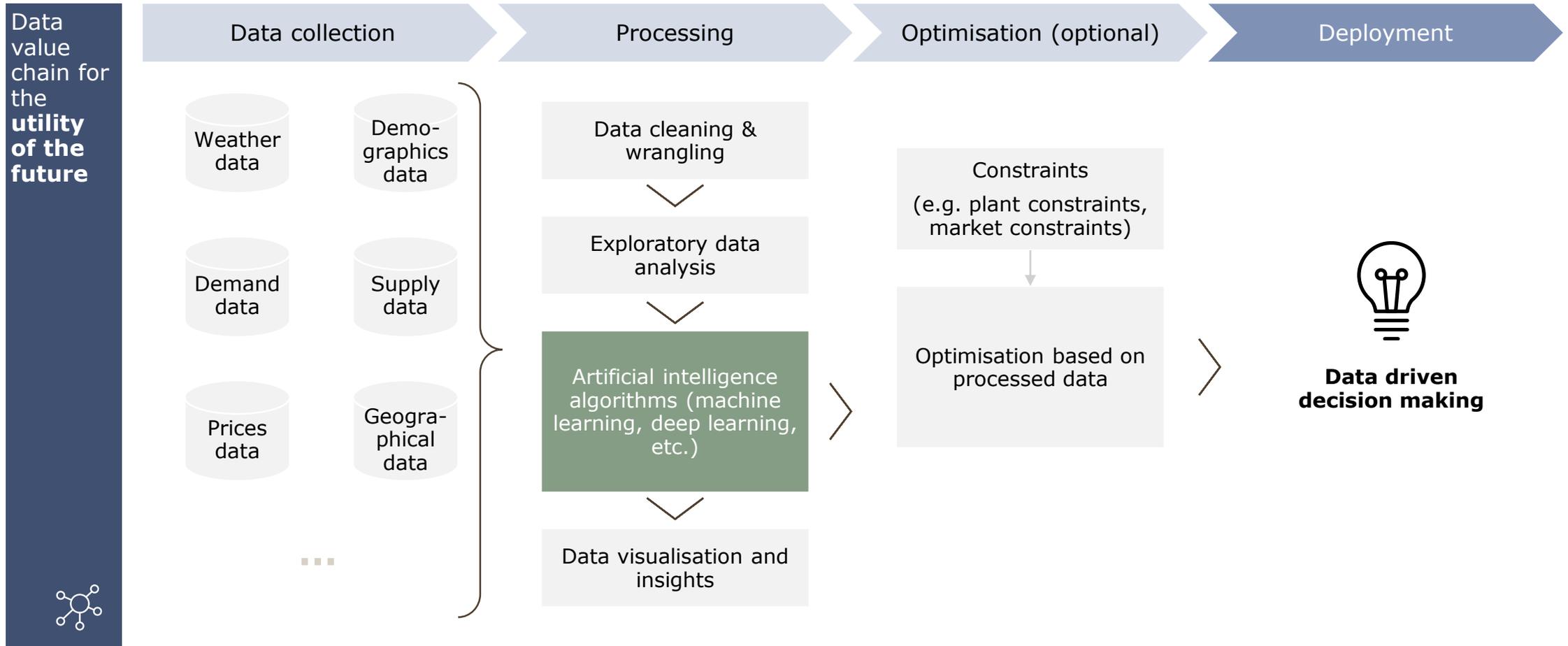
4 Automated actions based on predictions



**Data driven
decision making**

WHY AI?

Artificial Intelligence tools are the state of the art technology for processing large amounts of data and deriving accurate insights



HOW CAN WE HELP YOU?

AFRY will help you make data driven decisions throughout the energy value chain with its AI technology

AFRY WILL HELP YOU MAKE DATA DRIVEN DECISIONS ...

Trading 

Transmission, distribution 

Transmission, distribution and retail 

Distribution and retail 

Generation, transmission, and distribution 

... THROUGH ITS AI TECHNOLOGY

Electricity prices for day ahead or intraday auctions

Electricity loss forecasts for advance purchasing

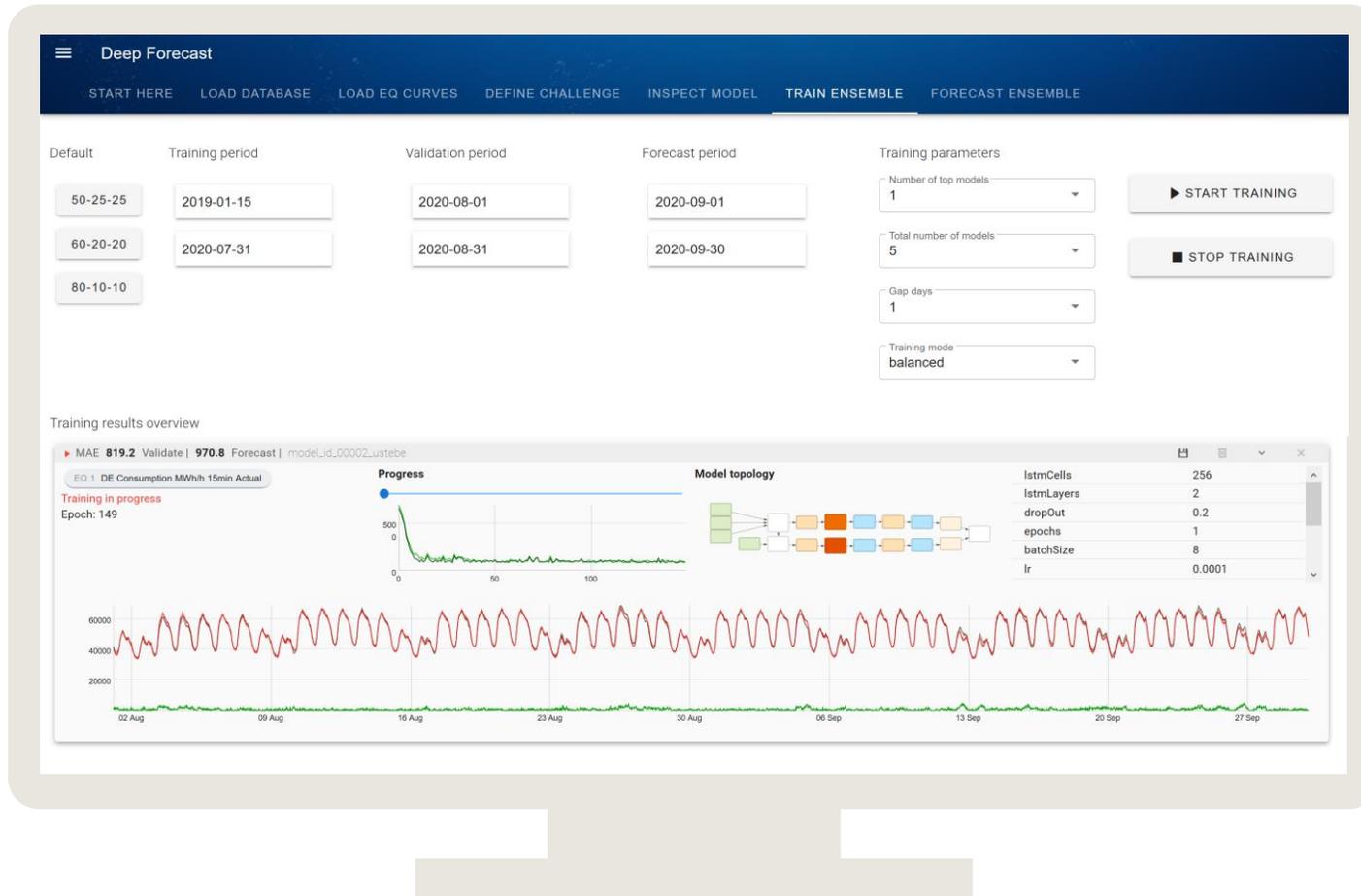
Electricity demand forecasts for grids or customers

Heat demand forecasts for district heat portfolios

Generation forecasts for wind and solar assets

WHAT IS OUR AI PLATFORM?

DEEP FORECAST - AFRY's own forecasting platform



– Platform is based on machine learning approach with **deep learning** technology modelling



– **Integrated** platform for

- Uploading and managing data
- Model configurations & training
- Daily forecasting & sensitivity analysis



– **User friendly** browser based interface

WHAT IS OUR AI PLATFORM?

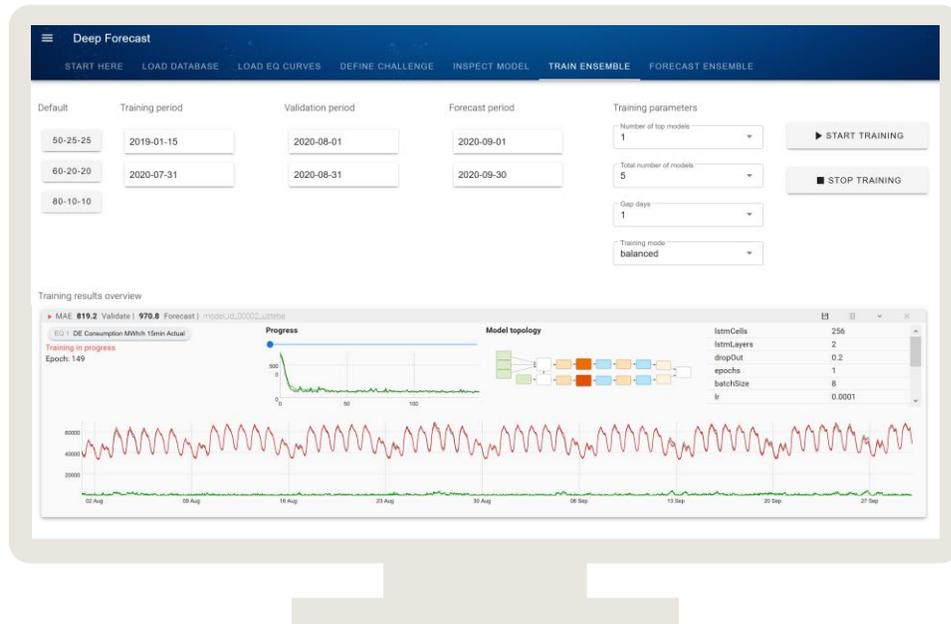
DEEP FORECAST offers a user-friendly browser-based platform to run deep learning algorithms, visualise and analyse results

MODEL CONFIGURATIONS & TRAINING



Before training a model, user can:

- Upload input data per drag-and-drop
- Define modeling configuration on the platform
- Train model and visualise training process in real time



FORECASTING & SENSITIVITY ANALYSIS

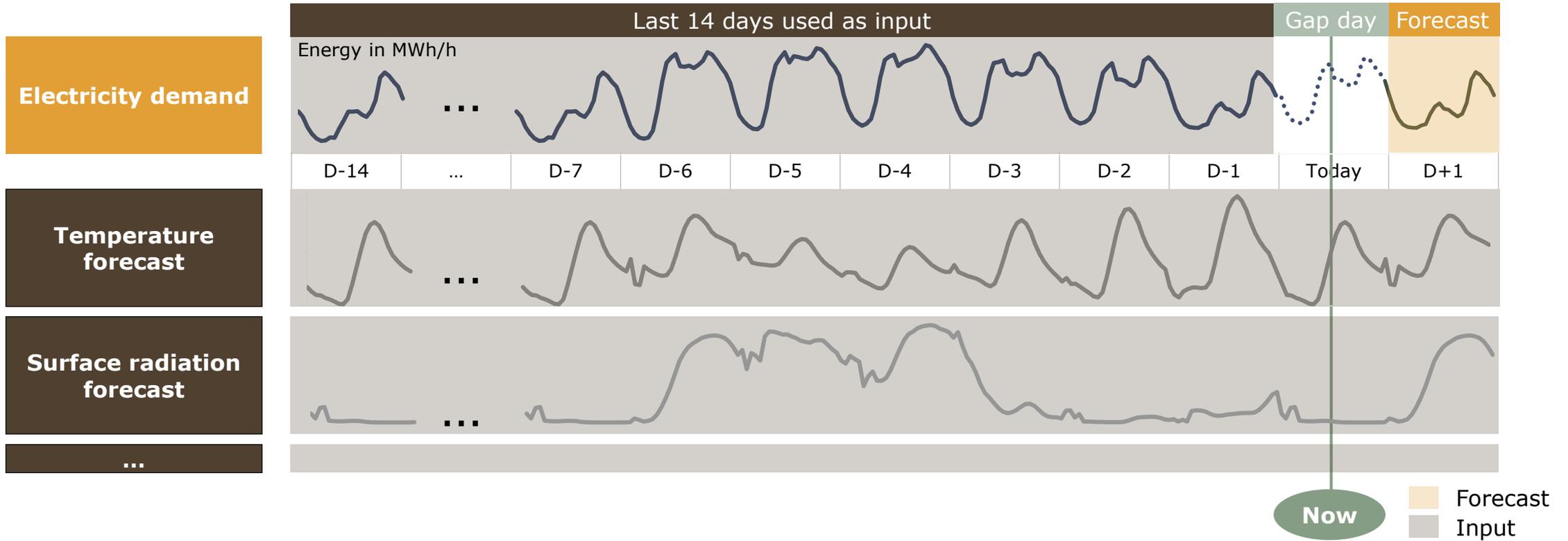


After training a model, user can:

- Compare model error with previously trained models
- Run a sensitivity analysis for the model results depending on the input variables
- Forecast future/unknown values with the model



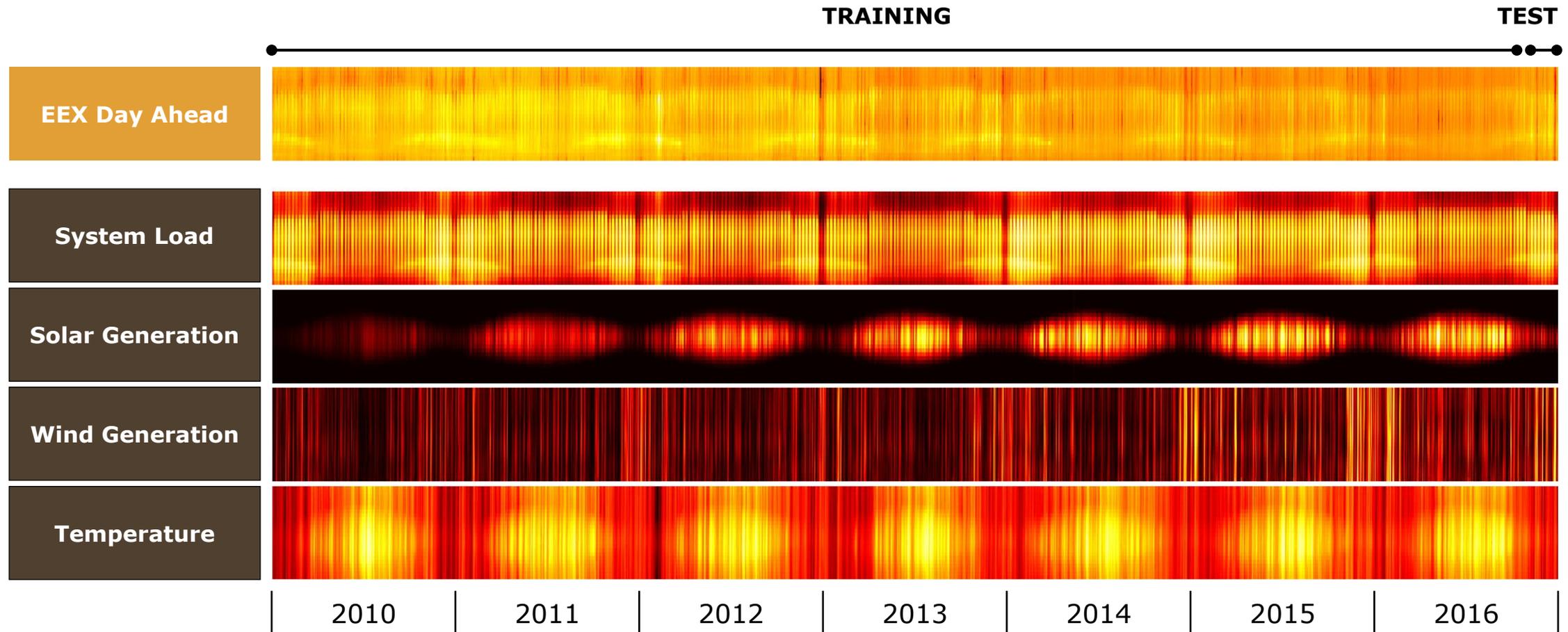
DEEP FORECAST improved the client's electricity demand forecast by 15-20%



AI based forecast improved forecast quality by 15-20%

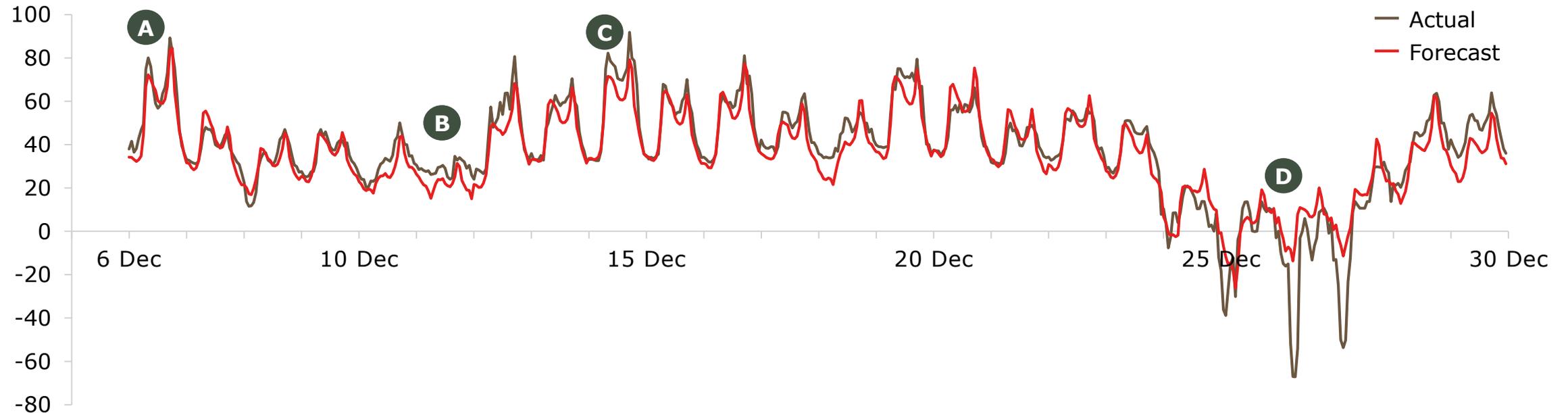
TRACK RECORDS

We implemented an AI based model to forecast EEX day ahead spot prices with 2010-2016 data



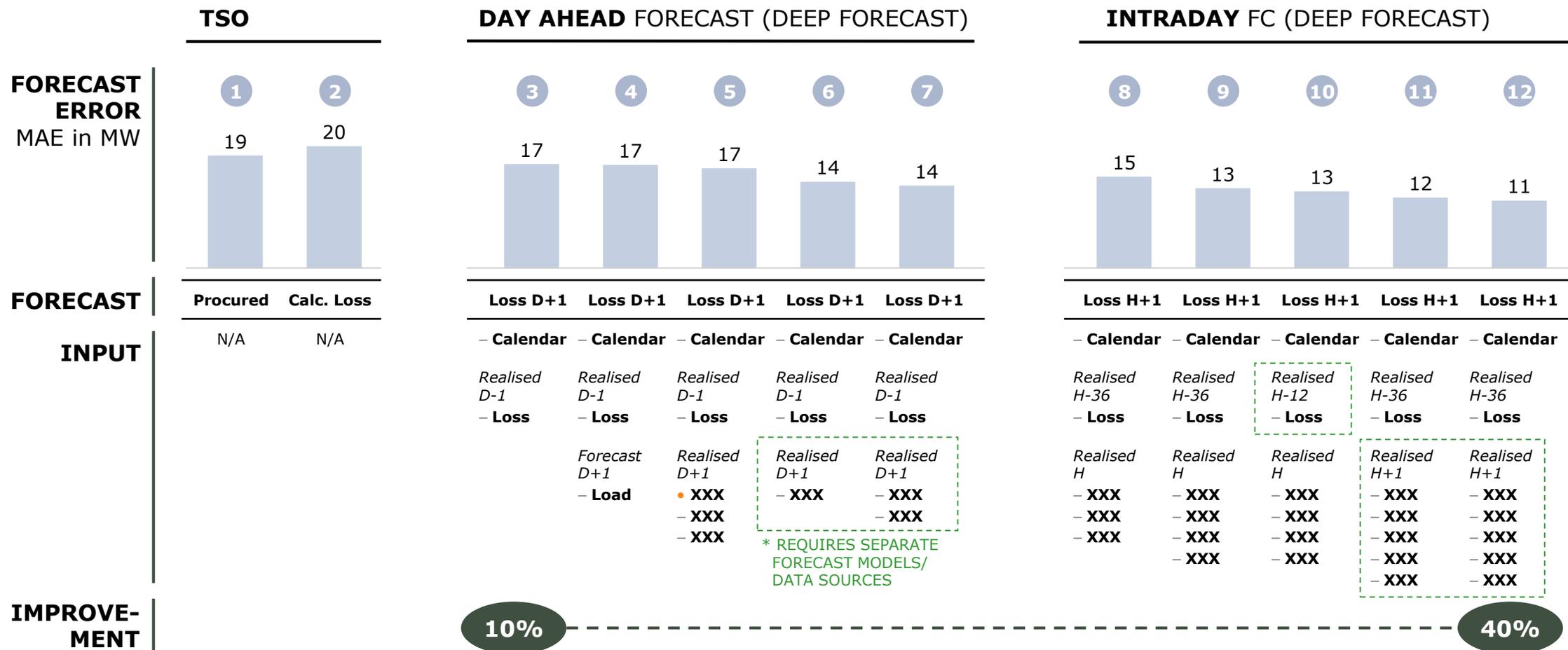
TRACK RECORDS

We implemented an AI based model to forecast EEX day ahead spot prices with 2010-2016 data



- A** Intra-day patterns such as solar dips come out very well
- B** Model recognises weekly pattern e.g. lower prices on the weekend
- C** Rush hour peaks a bit low
- D** Model predicted negative prices in extreme situation (holidays + low load + high wind gen)

DEEP FORECAST improved TSO grid loss forecasts to the current process





Live Demo



AI & Deep Learning for the energy industry is here (to stay)



Be the first! (or someone else will)



Go and capture more value

CONCLUDING REMARKS

Contact us

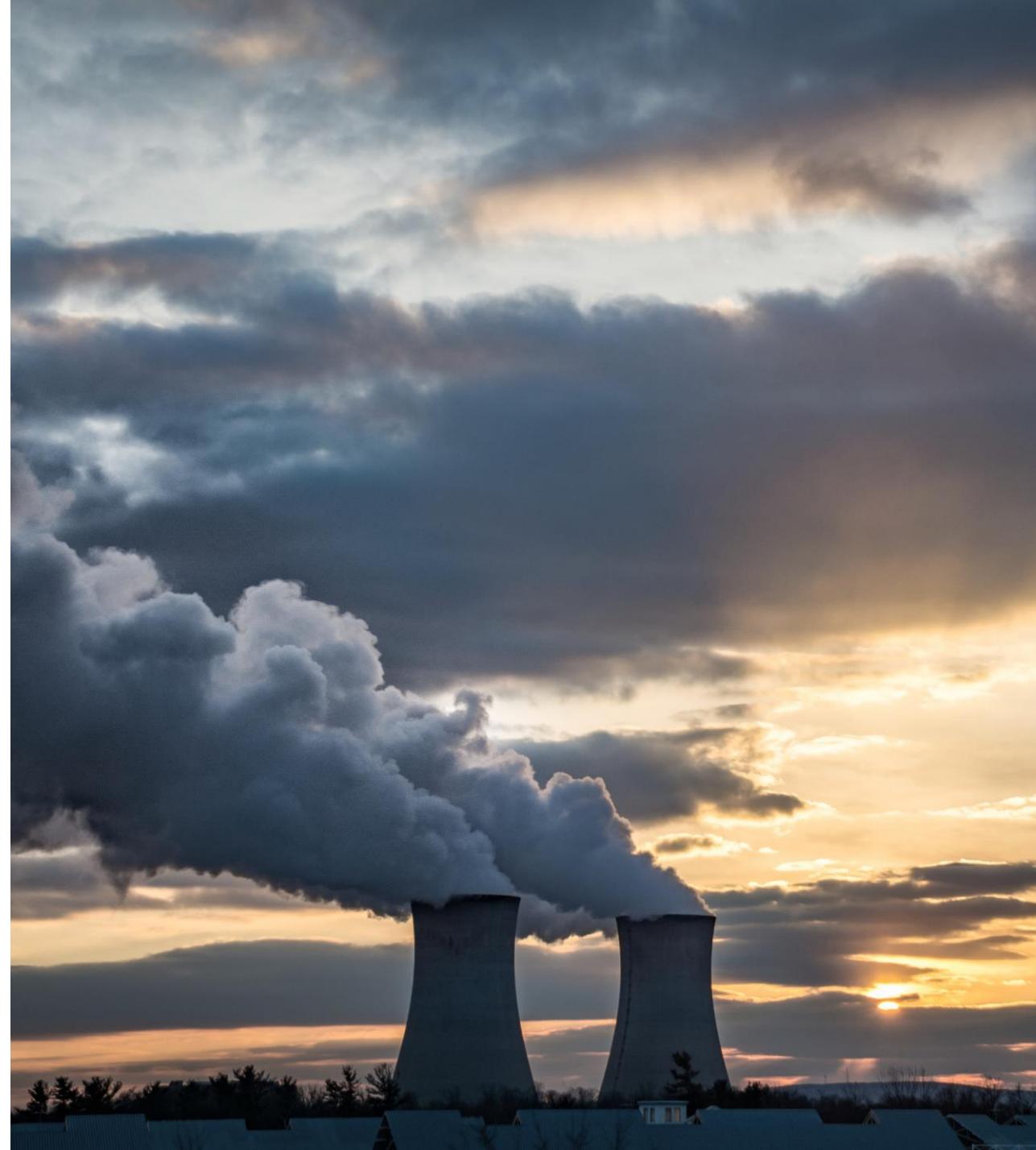
- **Reach out** to us for more information:
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- Next week:

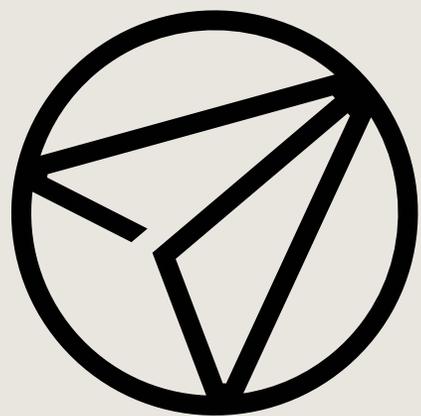
PJM and the impact of Pennsylvania's carbon pricing

Thursday 19 November

16:00 GMT / 17:00 CET

Sign up: tinyurl.com/AFRYwebinar1911





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