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MARKETS IN EVOLUTION: NAVIGATING CONSTANT CHANGE

FORRETNINGSSPOR BUSINESSTRACK

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MARKETS IN EVOLUTION: NAVIGATING CONSTANT CHANGE

ENERGY MARKETS IN TRANSITION – STOCKHOLM EXERGI'S WAY TO NAVIGATE

Jimmy Renström, CIO, Stockholm Exergi

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How digital capabilities enables energy efficiency

Jimmy Renström
CIO – Stockholm Exergi

The right energy, at the
right time, for the right purpose.
This is exergy.
stockholm
exergi

The district heating landscape today

Climate

Economy

Cyber Threats

Geo-Politics

Peak capacity

Consumers are expecting a stable, valuable indoor climate year- round, creating periods of a significant peak demand

Infrastructure

Meeting consumers energy demands has traditionally been done through expansion of plant and network infrastructure

Demand for development

Digitalization, “smartness” and increased efficiency as an energy consumer is expected at an increased rate

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The challenges facing district heating companies in the midst of an uncertain world…

Cost of peak capacity

Increased fuel prices challenge the management of peak capacity demand

Increased fuel prices, most significant for peak production, has stricken district heating companies on a national basis. Also, the customer's energy profile is shifting due to energy efficiency. Resulting in a peak capacity demand that remains, but less profitability per peak hour delivery.

Cost of infrastructure

Cost of building new infrastructure creates a new obstacle in the business logic

The cost of building new infrastructure in terms of district heating plants and networks has increased drastically during past years. Making new investments a challenging to meet the urban expansion.

Digital maturity

An industry with moderate pace of digitalization and customers with high expectations

District heating companies on average faces challenges of converting internal digital capabilities to digital solutions to the consumer side. Leading to a legacy experience for the consumer, reactive actions and less system optimization through the value chain.

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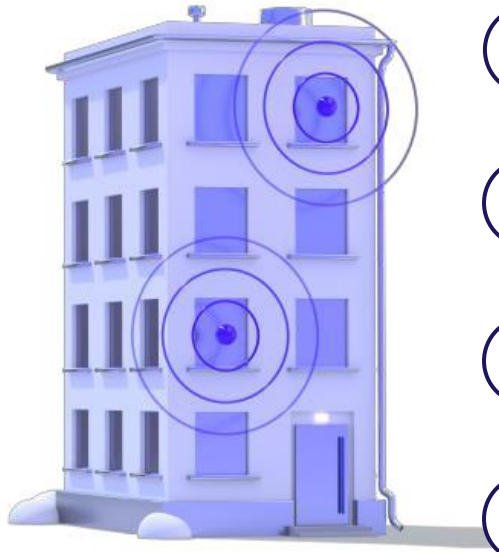
Using data and digital solutions to lead the path, a journey that started in 2017…

The challenges

- Cost of peak capacity
- Cost of infrastructure
- Digital maturity

Digital platform optimizing the value chain



- Connected consumers
- DSM and system optimization end-to-end
- Unlock service offerings
- A new customer experience

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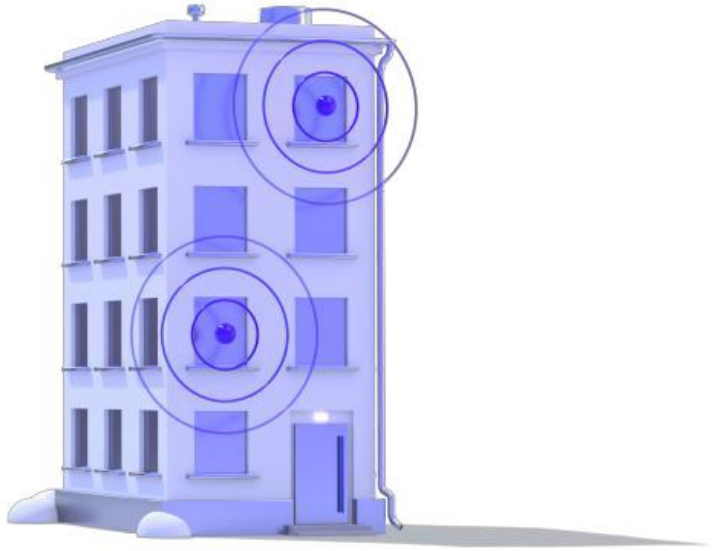
Intelligy solutions – unlocking DSM for 10 000+ properties that creates a win-win with our customers

Large scale IoT	Connecting 10 000 properties in Stockholm to our cloud platform
Smart heating for customers	New digital customer offerings enables energy optimization, monitoring and indoor climate management
Virtual power plant	Demand side management that unlock flexibility in minutes for peak capacity, production optimization and shortage control



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Today - Digitalization gives production optimization and digital customer products

Demand Side Management

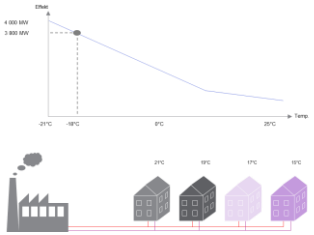
Shortage Control

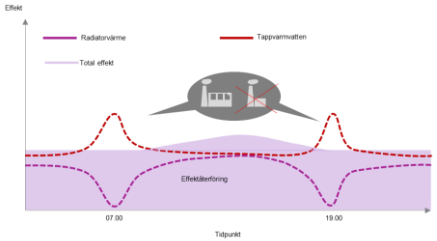
- Distribution flexibility during demand shortage situations
- Reduction of fossil base in production mix
- Cost reduction in production side

Utilized for district heating and cooling

Peak Optimization

- Improved flexibility in production and distribution side
- Cost reduction by reducing peak demand

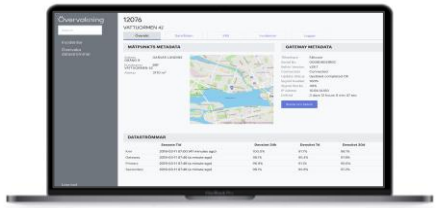




Smart Metering

Billing Services

- Cost efficient and scalable data collection for billing services
- Replacement of legacy systems and services
- Added functionality through data visualization and distribution analytics



Customer Offerings

Substation condition monitoring

- Stream analytics and condition monitoring of the heating system
- Cost reduction for operational maintenance
- Insights for improved predictive maintenance

Climate control

- Climate control services for building owners with an intelligent optimization for cost reduction and improved comfort
- Insights in the buildings' energy performance

Enable production optimization and production mix transformation

Operational efficiency

New revenue streams and improved customer experience

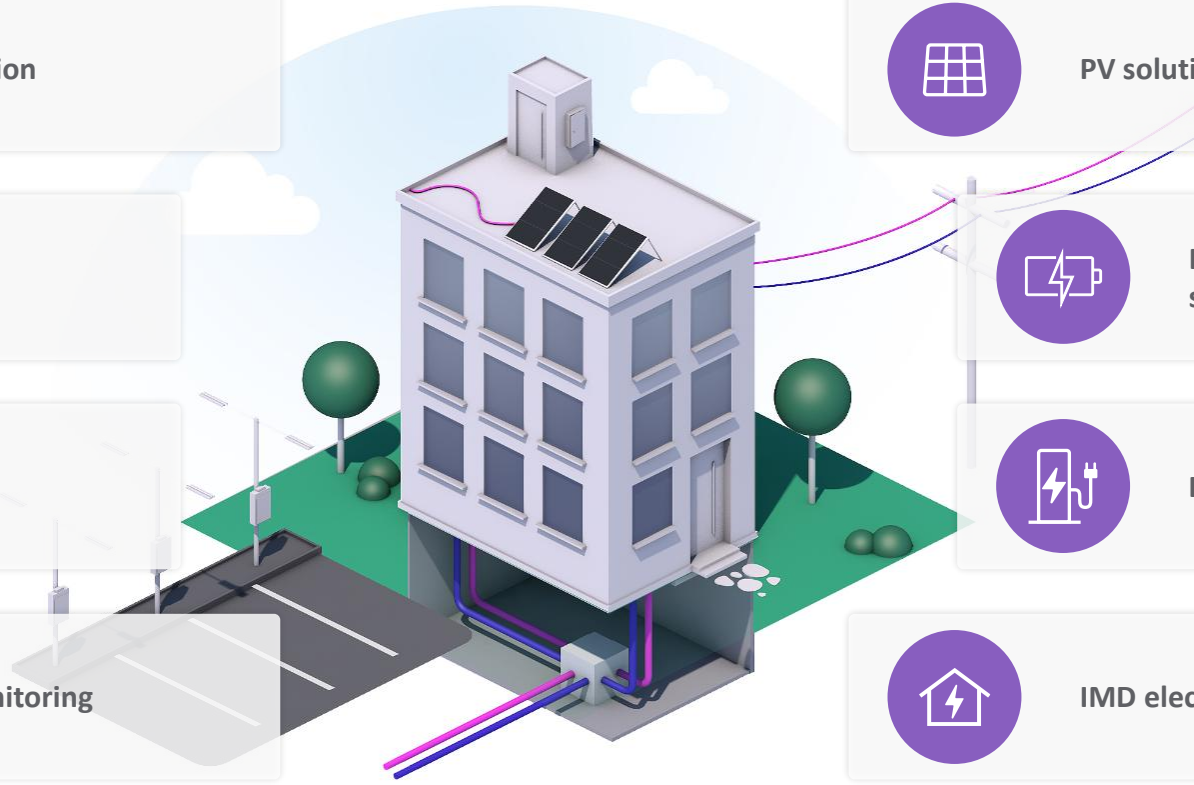
Tomorrow “Exergy-as-a Service” - enables energy optimization and monitoring for consumers full energy system

Integrated ventilation

Integrated heat pumps

Heat optimization

Energy system monitoring



PV solutions

Battery energy storage & ancillary services

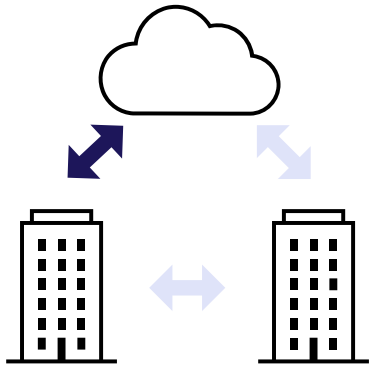
EV charging

IMD electricity

District heating &
Cooling & DSM mgmt.

Intelligy Solutions and Next Gen “Exergy-as-a-Service” aims to optimize systems, including our customers…

IN THE CURRENT SITUATION, ENERGY OPTIMISATION IS WITHIN A BUILDING

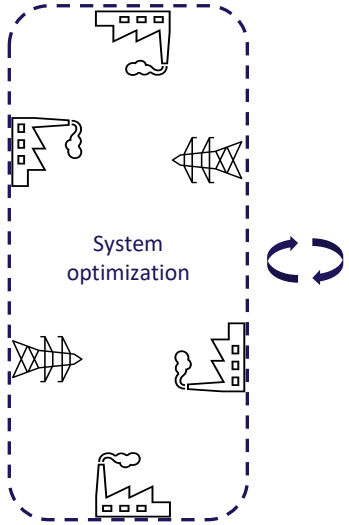


Sophisticated property owners can optimize individual buildings and in some cases clusters of their own buildings

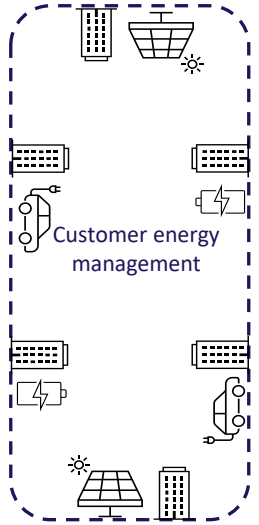
AT THE SAME TIME THERE ARE CHALLENGES IN THE ENERGY MARKETS

- Centralized and distributed resources are not orchestrated for maximum efficiency
- Different energy types are not optimized with respect to each other
- Different energy services often work completely independently

OPTIMISING BOTH ON BUILDING LEVEL AND SYSTEM LEVEL



Optimizes at the system level with the capability to calculate when, what and how much in relation to production and consumption conditions



Optimizes at the customer level with capability to optimize energy consumption in relation to cost optimization and climate/function demands

- Centralised and distributed resources cooperate
- Different energy types are optimised with respect to each other
- Different services are optimised together

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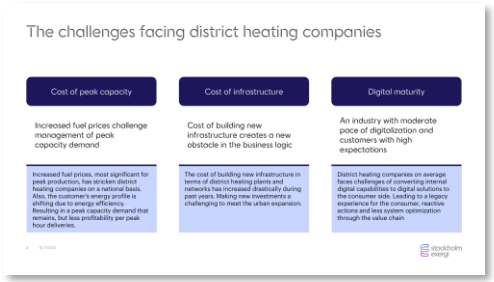
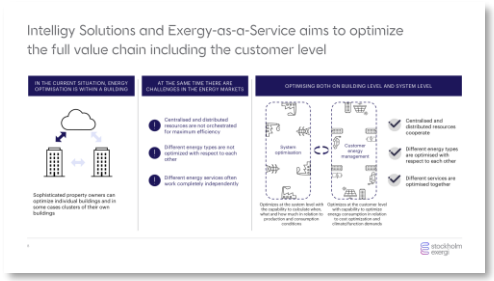
The district heating industry fundamentals and infrastructure base allows cooperation with joint ambitions

The district heating industry





Infrastructure base resulting in a logical geographical sectioning on national basis

District heating companies are not competitors to each other

Face the same challenges

Aim to improve customer relationship

- Stockholm Exergi has established deliveries, as SaaS-solution, to other district heating companies
- Leveraging on the same fundamentals, challenges and aim – business proven system efficiency with the customer in focus!

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THANK YOU!

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GENERATIVE AI, COPILOT & AGENTS – THE JOURNEY SO FAR, AND WHAT COMES NEXT?

Dag Nyrud, Director of AI at Work, Microsoft Norway

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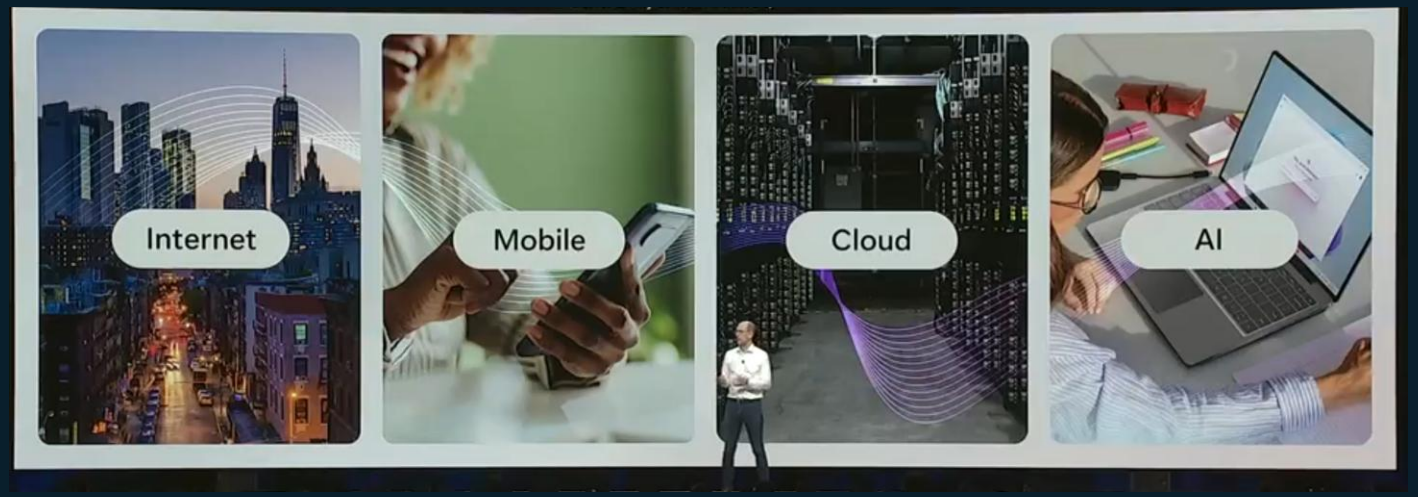
Microsoft

Generativ AI - Copilots and Agents

Dag Nyrud
Director - AI Business Solutions

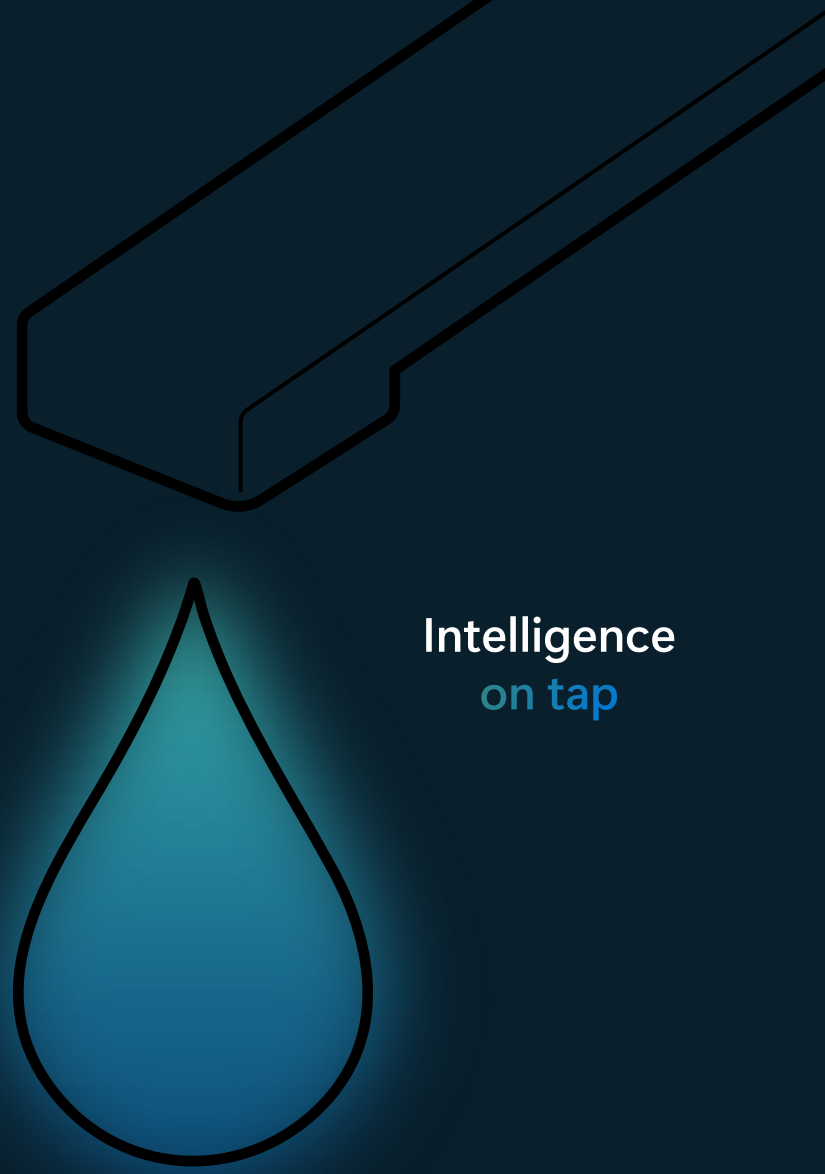
Oslo October 2025

The 4th major platform shift



From democratization
of data...

... to democratization
of intelligence



Intelligence
on tap

The Work Trend Index Annual Report

2025:

The Year the Frontier Firm Is Born

https://aka.ms/wti

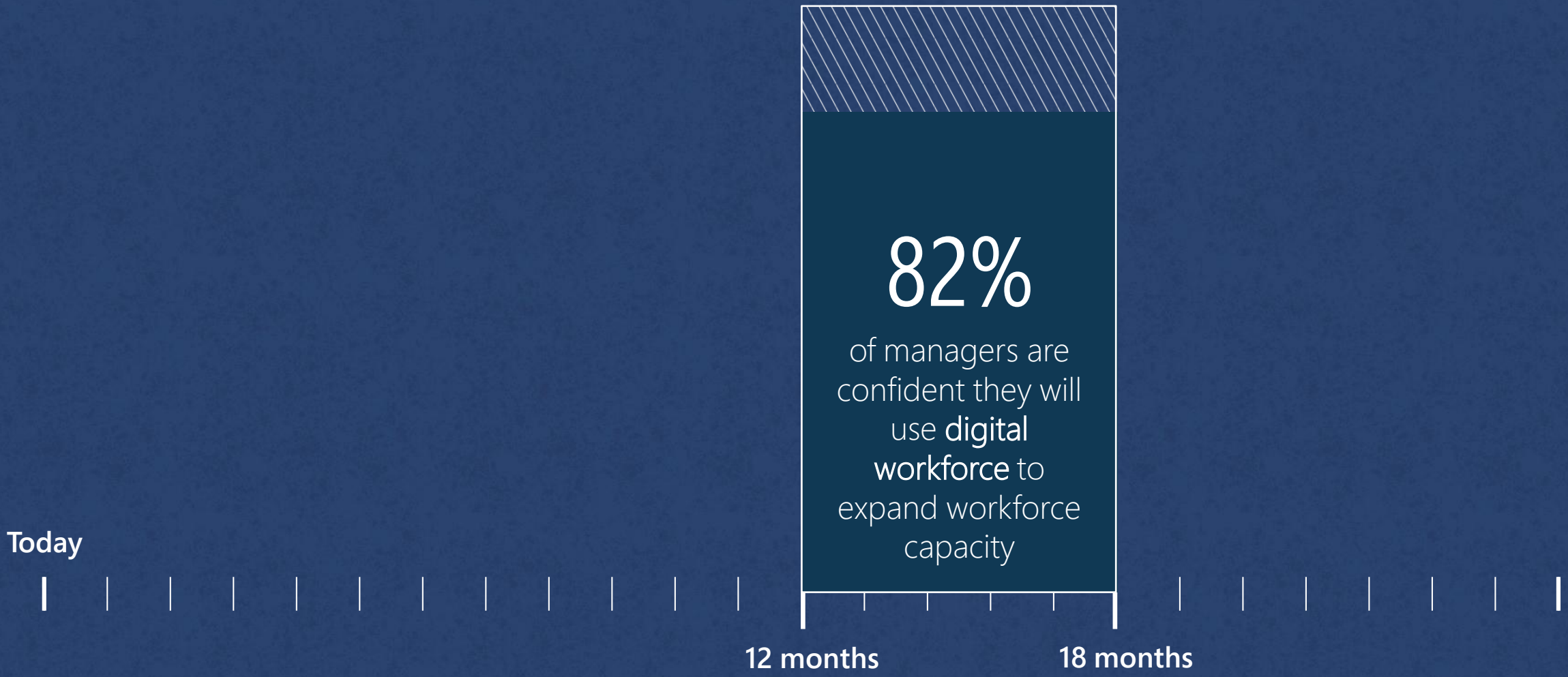
Microsoft

Human labor reaches its limits

Capacity gap

Source: Microsoft Work Trend Index Survey 2025, 80% (n = 31,00), 53% (n = 8,927).

The majority of managers see agents as the path to scaling



Source: Microsoft Work Trend Index Survey 2025 (n = 8,051).

The journey of **the Frontier company**

Step 1

Human with assistant

All employees are supported by an AI assistant to work smarter and faster

Step 2

Human-controlled agents

Agents are part of the teams as digital colleagues and perform tasks under human direction

Step 3

Led by people, driven by agents

People set the direction, and agents handle entire business processes and workflows, with check-in when needed

Copilot

Each employee has a Copilot

Agents

Every business process transformed by agents

Copilot

Artificial Intelligence User Interface

08:42

Copilot

Din daglige KI-hjelper

Lag et bilde av hvordan en kvantedatamaskin vil se ut

Spør meg om hva som helst ...

0/2000

AA copilot.microsoft.com

22:31

Beskyttet

Jobb | Nettet

Copilot

Din daglige KI-hjelper

Copilot bruker kunstig intelligens. Se etter feil.
Vilkår | Personvern

Bruk GPT-4

Noen ideer for å få deg i gang

Hva er begrepet minimalisme og hvordan forholder det seg til produktivitet?

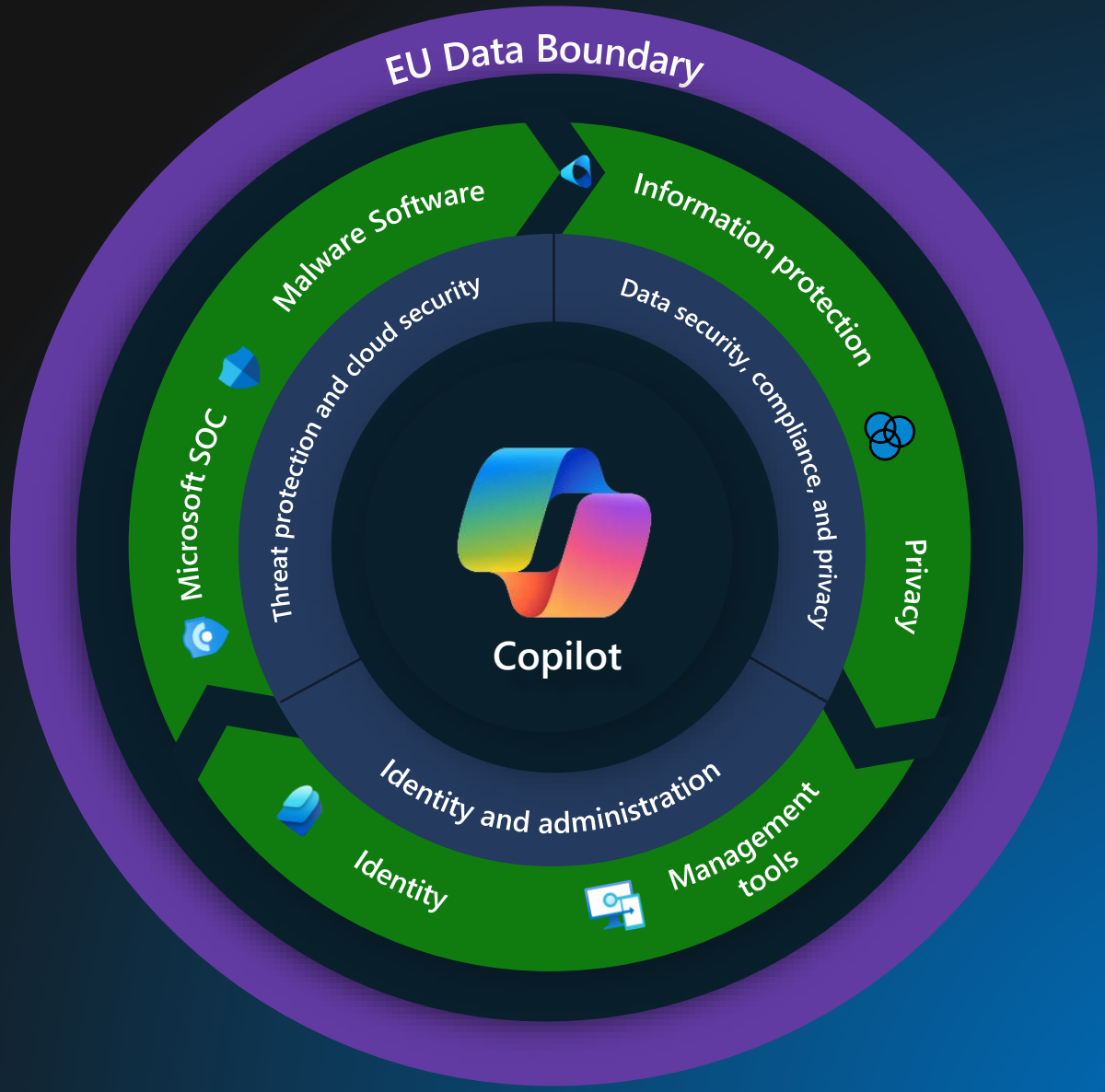
Hva er noen morsomme one-liners som vil lyse opp dagen min?

Skriv noen morsomme "out of office" svar på e-posten min mens jeg er på ferie

Dine personlige data og firmadata er beskyttet

Spør meg om hva som helst ..

Microsoft Securiy



Blog : Discover, monitor, and protect the use of generative AI apps

Microsoft's obligations and controls

We secure your data during storage and transmission

You control your data

Your data isn't used to train or enrich language models

You're protected from AI security and copyright risks

Microsoft 365 Copilot is built on trust

Accessibility for all – flexible models

Copilot Chat

Free, secure AI chat

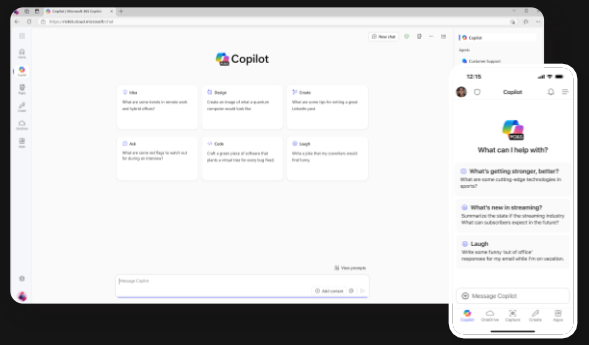
Free

Microsoft 365 Copilot

Your personal assistant

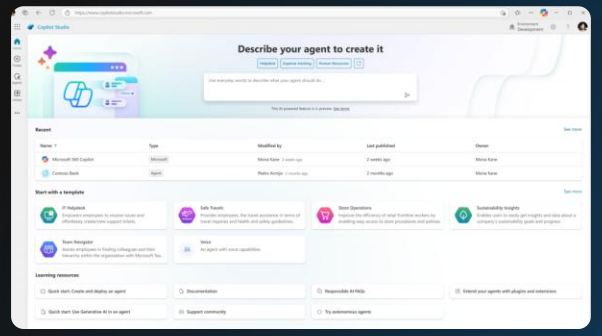
$30

Copilot Chat



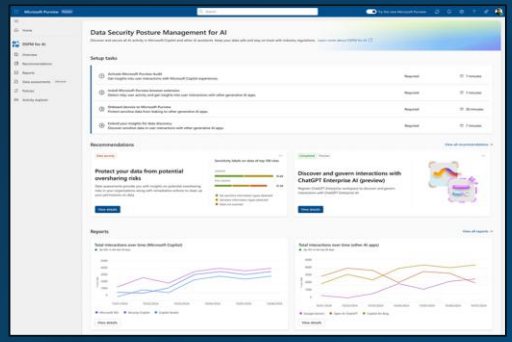
Chat

Free, secure AI chat –
powered by GPT-4o and web-grounded



Agents

Integrated into the chat experience,
cost based on consumption

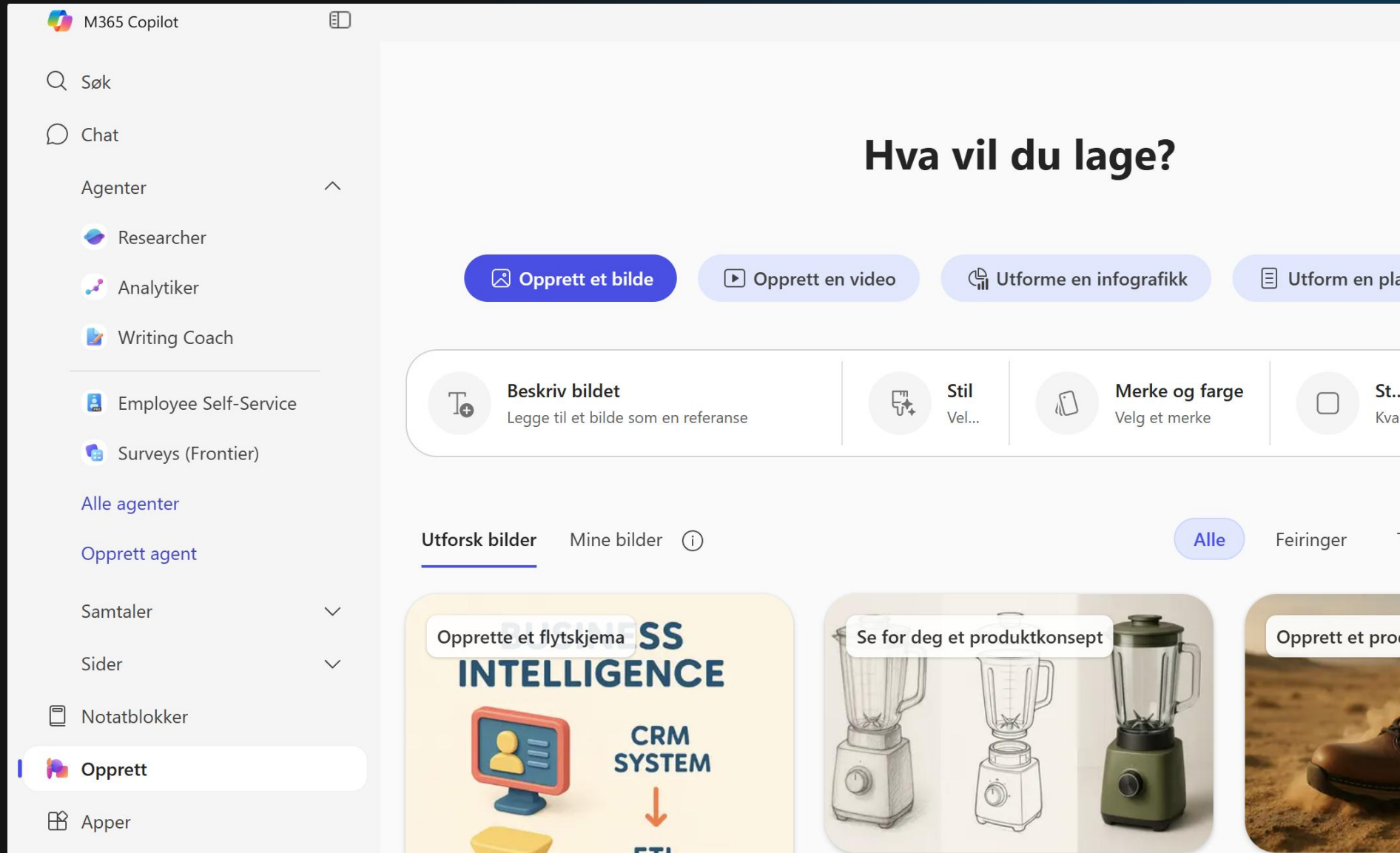


IT controller

Data protection for businesses
and agent management

Microsoft 365 Copilot – UI for AI

- Search
- Chat
- Agents
- Notebooks
- Create



A Day in My Life with Copilot

Dag Nyrud

Director
AI Business
Solution

08:15

Help me prioritize the most important messages of the day.

Copilot M365

Look in my inbox, chat and calendar for the day and help me prioritize so that I can focus on the current quarter and the deliveries we have then, as well as plan events that will happen next quarter. Which new messages on chat and email should I prioritize?

09:30

Summarize the meeting I missed.

Copilot i Teams

Summarize the meeting at 5 p.m. yesterday, and check specifically if anything was said about the launch of new functionality
Were there any action items I need to address?

10:50

Help me prepare partner meeting.

Copilot and Outlook

Summarize the dialogue with partner 'XXX' regarding our joint event in the spring.

14:00 m

Help me make a post to social media about a new report.

Copilot in Word

Make 3 drafts of a LinkedIn article to promote our new research report /xxxx. Make a short and clear, with a bit of humor. Highlight 3 key points from the report

15:00

Summarize escalation thread

Copilot and Outlook

Summarize this email, and come up with suggestions for answers I can give that solve the problems. Use this /FAQ from yesterday's meeting as a source for answers.

16:00

Summarize the day and list outstanding action items

Copilot M365

Summarize the most important messages I have received today by email and chat, and note that there are some action points on me that I need to respond to.
Feel free to suggest answers

Copilot is
the user interface for AI

Copilot

Copilot Studio

Agents

Data access and management, agent management, performance measurement

Copilot and Agents

Copilot

Every employee should have a Copilot

Your personal AI assistant at work

'Grounding' in work content such as emails, meetings and documents

The AI user interface

Agents

Every business process should have an agent

AI-powered system with actions, triggers, and knowledge

Working on behalf of employees, teams, and functions

Connected to Copilot or autonomous

Agents that customers build themselves
Custom agents for business processes

Agents built by third-party ISVs
Adobe, Service Now, SAP, and many more

Agents built by Microsoft for Microsoft 365
employee self-service, SharePoint agents, facilitators, etc.

Agents built by Microsoft for other services
Dynamics 365 Autonomous Agents

A spectrum of agents

Simple — Advanced

‘Retrieval'

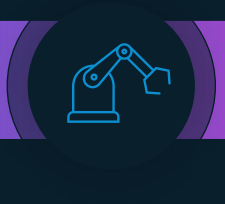
Retrieving information through grounding, reasoning, summarizing and answering user questions

Empower

Task

Take action when prompted , automate workflows, and replace repetitive tasks for users

Modernize



Autonomous

Operate independently, plan dynamically, orchestrate other agents, learn, and escalate

Innovate

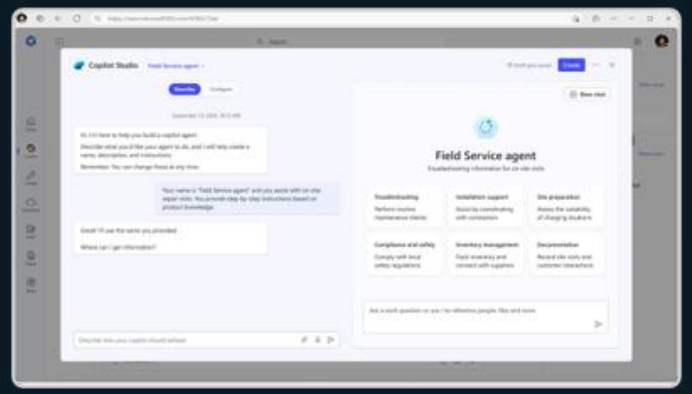
Generally available May 2025

Agents can vary in complexity and capabilities depending on your need

How to Create Agents

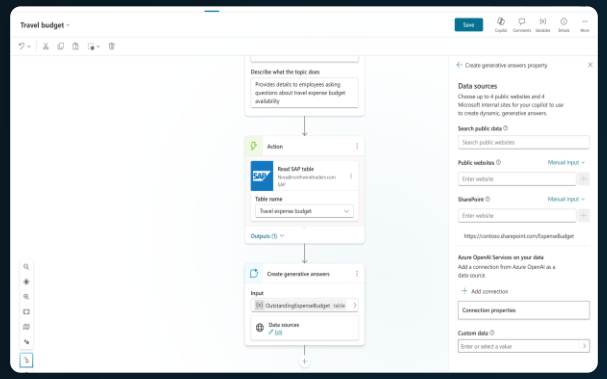
No code ‹‹‹‹‹‹‹‹‹‹‹‹ ›››››››››››› Pro Code

For end users



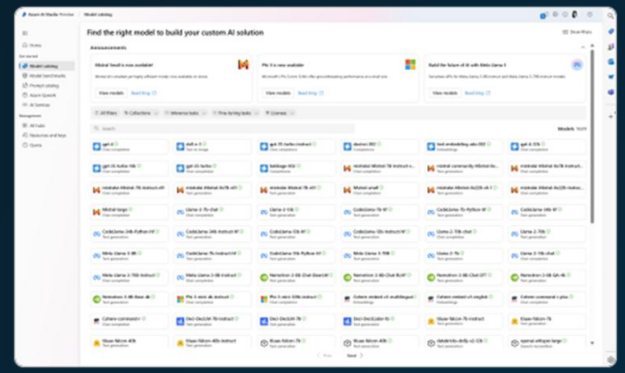
Agent Builder

For the business



Copilot Studio

For developers



Copilot Studio + AI in Azure

Create Agents for your industry and your role...

In your industry...

Travel and transport	Manage orders	Endre turdatoene mine	virgin atlantic
Professional Services	Lead generation	Get a quote	pwc
Government	Government Programs	Get help with childcare	Ottawa
Retail trade	Manage orders	I want to make an exchange	giant eagle
Health care	Claim	Submit Health Insurance Claims	NHS
Financial services	Manage accounts	Report a lost card	Standard Bank
Education	Recording	How to get financial aid?	SÃO PAULO GOVERNO DO ESTADO
Produksjon	Supply	Check the stock	hp

... and department/role.

Customer service
Reduce call volume for quick resolutions

- Request a refund
- Describe your problem

Customer Support Tickets | **Centralized FAQs**

Finance
Save time by automating budget and expense approvals

- Update tax information
- Submit expenses for approval

Maple | **Budget requests**

HR
Improve employee satisfaction and retention

- Sign up for health plan
- Book time off

Distributor | **Leave of absence**

IT
Optimize employee troubleshooting

- Reset my password
- Update your laptop

Support services | **Equipment requests**

Operations
Improve efficiency by digitizing paper processes

- Finn saksmappe
- Check delivery times for orders

Find Documents | **Manage inventory**

Sales and marketing
Increase opportunities for upselling and conversion

- You are eligible for a free upgrade!
- Update your email settings

Upselling | **Email**

How can Artificial Intelligence increase value creation and innovation in your company?

Improve
The employee
experience

Engaging customer
dialogue and
customer
satisfaction

Streamline
business processes

Higher rate of
innovation

Technology is too important to be left to technologists

Anchoring in top management

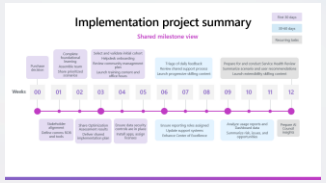
Focus on benefit realization

People at the center

Change management over time

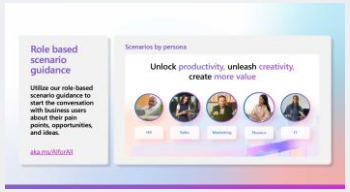
We have the tools to support your AI journey

Implementation summary guide



Business Leaders

User Enablement Guide

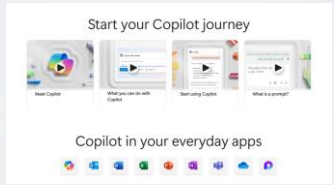


HR leaders, Change Management teams

Copilot Scenario Library

User Experience and Adoption leaders

Copilot Prompt Gallery



End users

Copilot Analytics: Comms, Skilling, Measurement

IT, L&D, Corp Comms, Analysts and End users

https://aka.ms/CopilotAdoptionHub

Tenk stort

Start smått

Skaler raskt

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ENERGY TRADING MARKET UPDATE

Jyri Joutsi, Product Manager, Hansen

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IMPACT OF MARKET CHANGES ON POWER TRADING DYNAMICS

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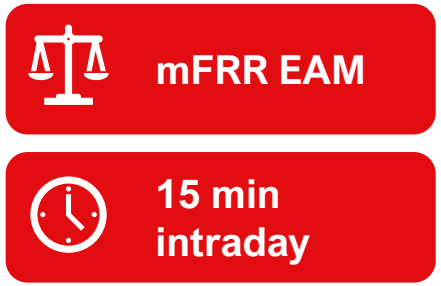
IMPACT OF MARKET CHANGES ON POWER TRADING DYNAMICS



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IMPACT OF MARKET CHANGES ON POWER TRADING DYNAMICS

- mFRR EAM
- 15 min intraday
- 15 min day-ahead

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IMPACT OF MARKET CHANGES ON POWER TRADING DYNAMICS

- mFRR EAM
- 15 min intraday
- 15 min day-ahead
- aFRR energy market

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IMPACT OF MARKET CHANGES ON POWER TRADING DYNAMICS

- mFRR EAM
- 15 min intraday
- 15 min day-ahead
- aFRR energy market
- Connection to MARI (mFRR)

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IMPACT OF MARKET CHANGES ON POWER TRADING DYNAMICS

- mFRR EAM
- 15 min intraday
- 15 min day-ahead
- aFRR energy market
- Connection to MARI (mFRR)
- Connection to PICASSO (aFRR)

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IMPACT OF MARKET CHANGES ON POWER TRADING DYNAMICS

- mFRR EAM
- 15 min intraday
- 15 min day-ahead
- aFRR energy market
- Connection to MARI (mFRR)
- Connection to PICASSO (aFRR)

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IMPACT OF MARKET CHANGES ON POWER TRADING DYNAMICS

- mFRR EAM
- 15 min intraday
- 15 min day-ahead
- aFRR energy market
- Connection to MARI (mFRR)
- Connection to PICASSO (aFRR)

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IMPACT OF MARKET CHANGES ON POWER TRADING DYNAMICS

- mFRR EAM
- 15 min intraday
- 15 min day-ahead
- aFRR energy market
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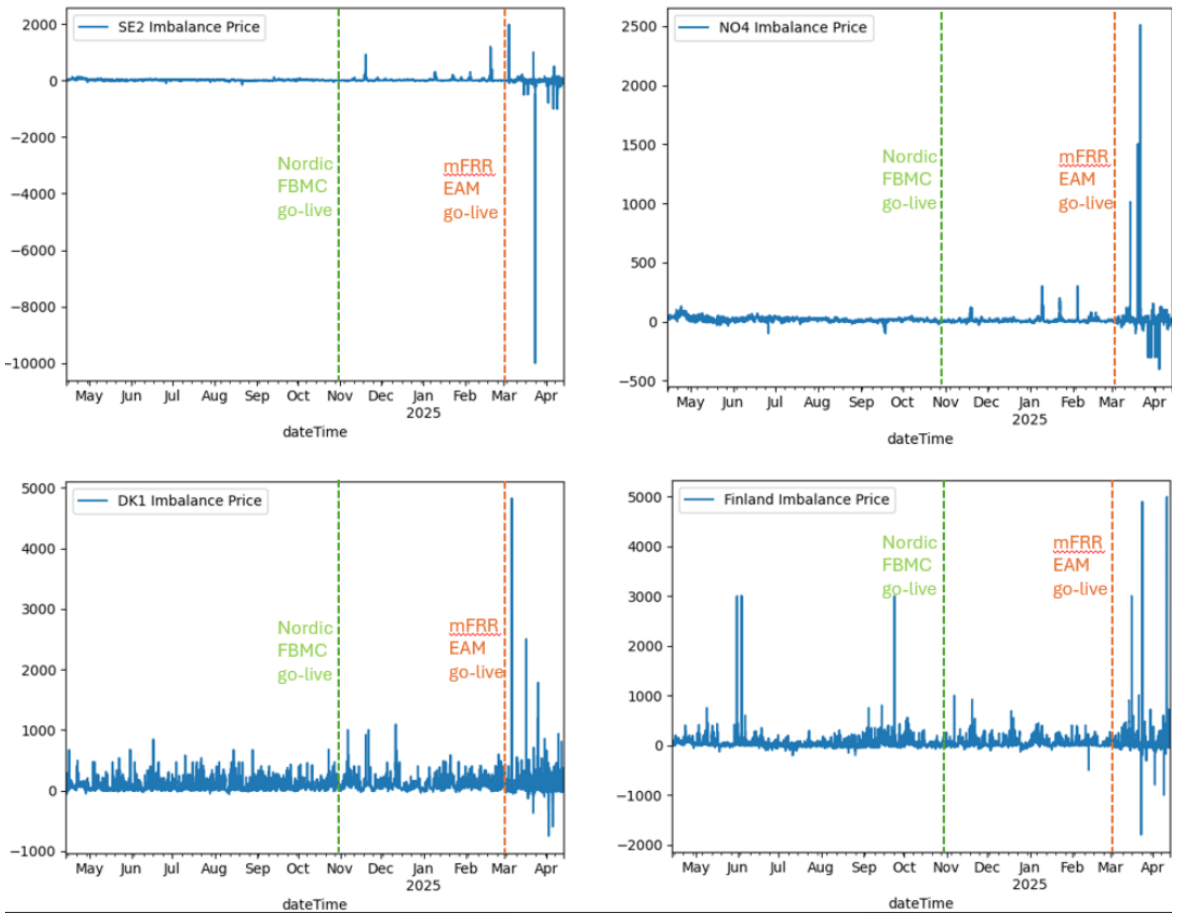

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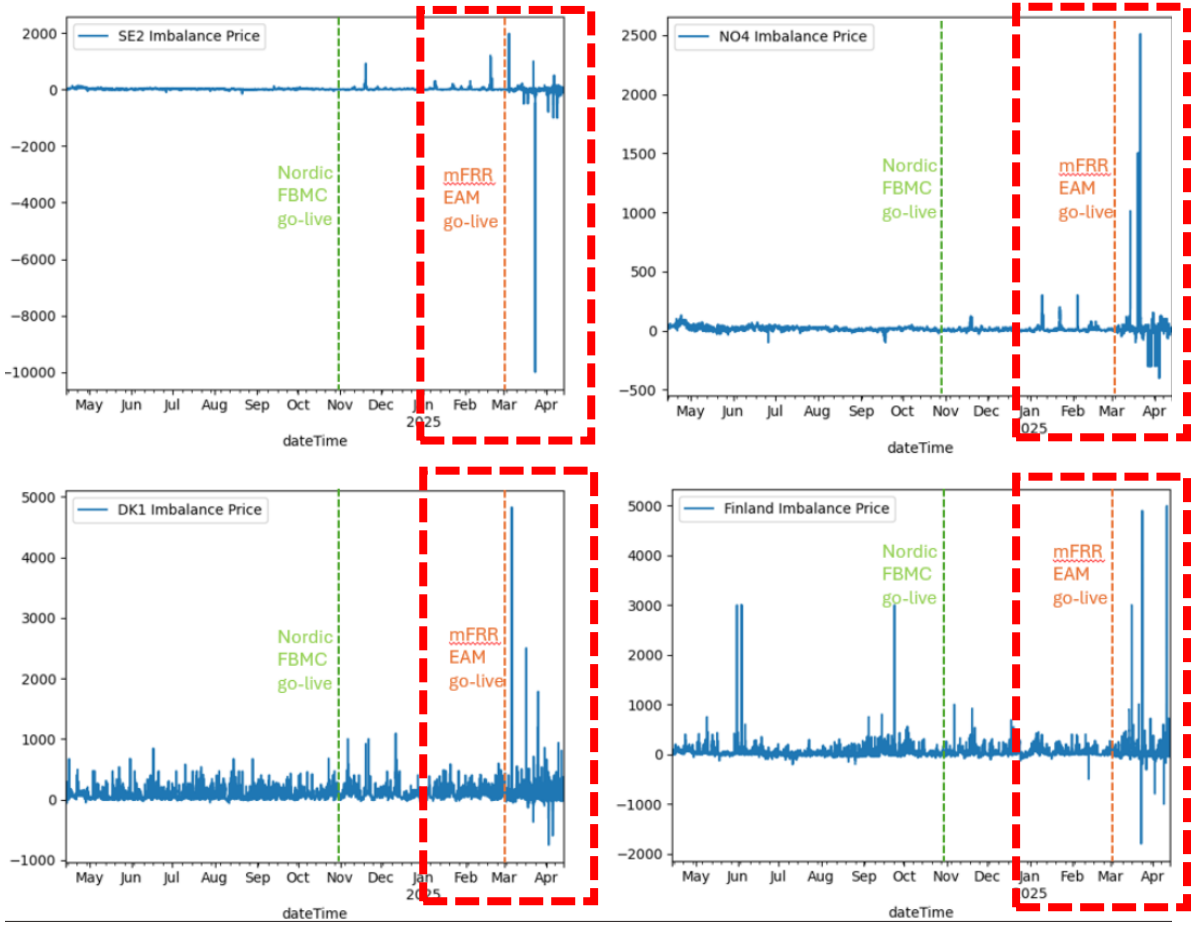

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ELECTRICITY

1 minute read

Balancing power costs cut Nordic wind producer's revenues in half

(Montel) Swedish wind power cooperative Solivind will halt output over weekends after losing half its revenues to balancing power costs in March, it told Montel on Wednesday.

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IMPACT OF MARKET CHANGES ON POWER TRADING DYNAMICS

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ELECTRICITY

1 minute read

Sweden's power balancing costs "like a lottery" – lobby

(Montel) Soaring costs to balance power in Sweden has made the Scandinavian nation virtually unsustainable for wind farm owners, said a lobby and Danish wind turbine manufacturer Vestas.

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IMPACT OF MARKET CHANGES ON POWER TRADING DYNAMICS

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- 15 min intraday
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- aFRR energy market
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- Connection to PICASSO (aFRR)

ELECTRICITY

2 minute read

Nordic balancing price spikes set to continue in long term

(Montel) Extreme volatility is likely to persist in the Nordic balancing markets, a renewables producer told Montel, after balancing costs rose in recent months amid market reforms.

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IMPACT OF MARKET CHANGES ON POWER TRADING DYNAMICS

- mFRR EAM
- 15 min intraday
- 15 min day-ahead
- **aFRR energy market**
- Connection to MARI (mFRR)
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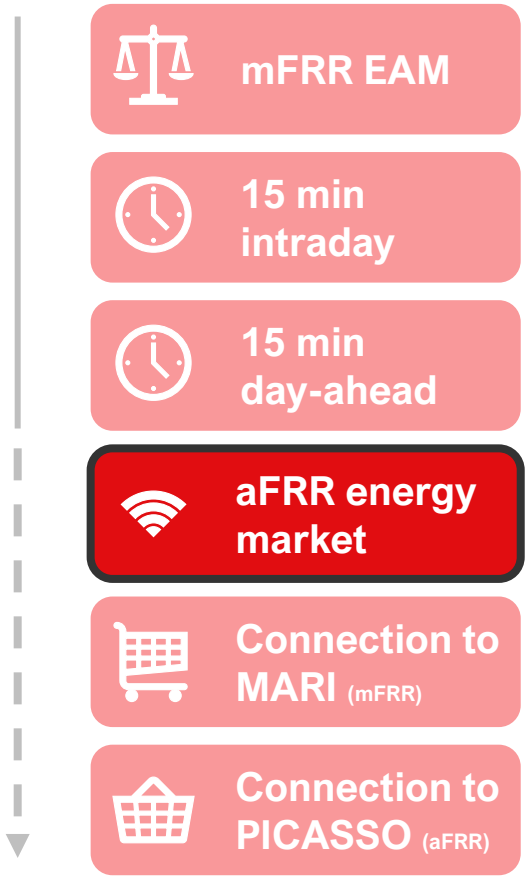
IMPACT OF MARKET CHANGES ON POWER TRADING DYNAMICS



IMBALANCE PRICE

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IMPACT OF MARKET CHANGES ON POWER TRADING DYNAMICS

- mFRR EAM
- 15 min intraday
- 15 min day-ahead
- **aFRR energy market**
- Connection to MARI (mFRR)
- Connection to PICASSO (aFRR)

IMBALANCE PRICE = **mFRR ENERGY COMPONENT**

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IMPACT OF MARKET CHANGES ON POWER TRADING DYNAMICS

- mFRR EAM
- 15 min intraday
- 15 min day-ahead
- **aFRR energy market**
- Connection to MARI (mFRR)
- Connection to PICASSO (aFRR)

IMBALANCE PRICE = **mFRR ENERGY COMPONENT** + **aFRR ENERGY COMPONENT**

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IMPACT OF MARKET CHANGES ON POWER TRADING DYNAMICS

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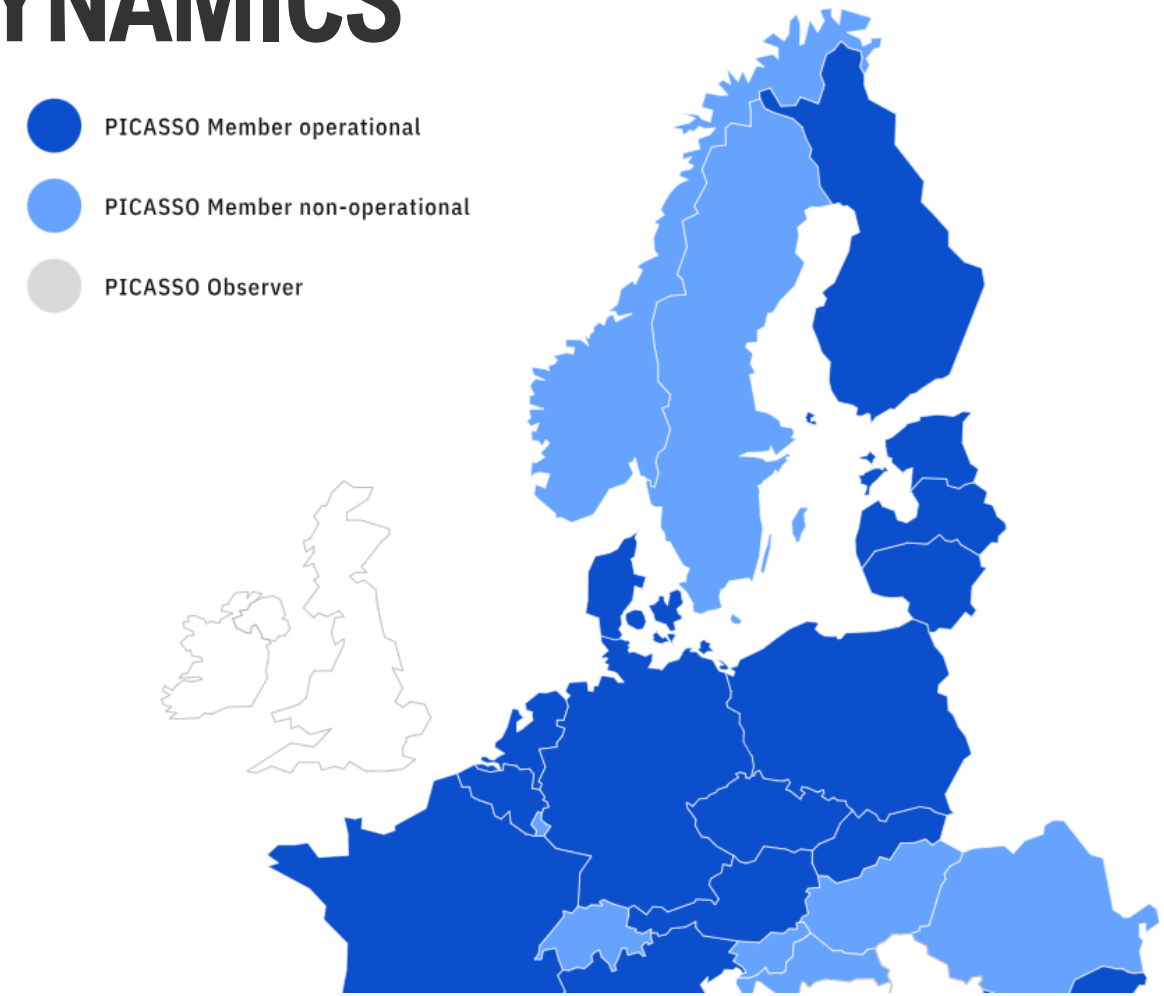

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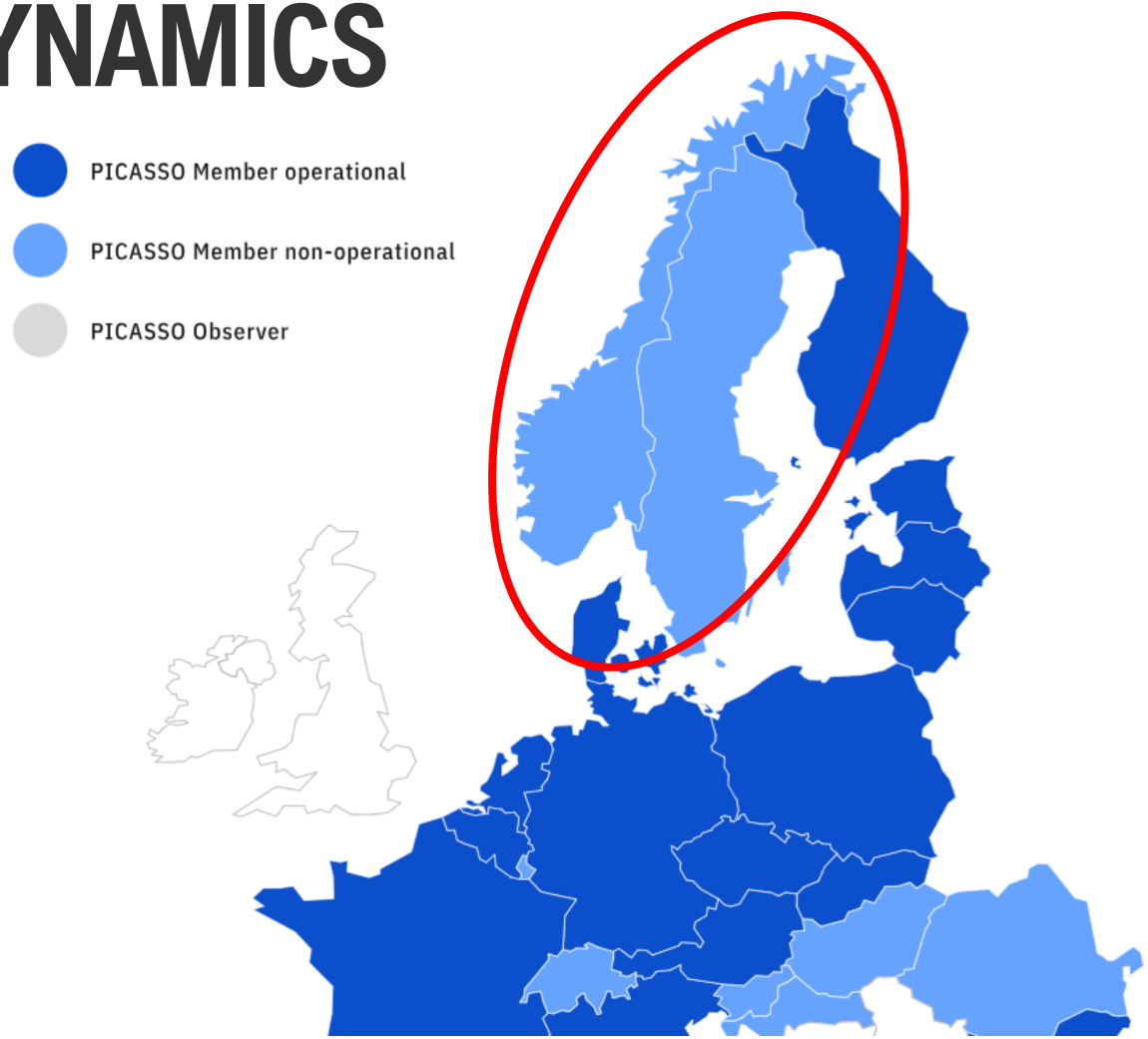

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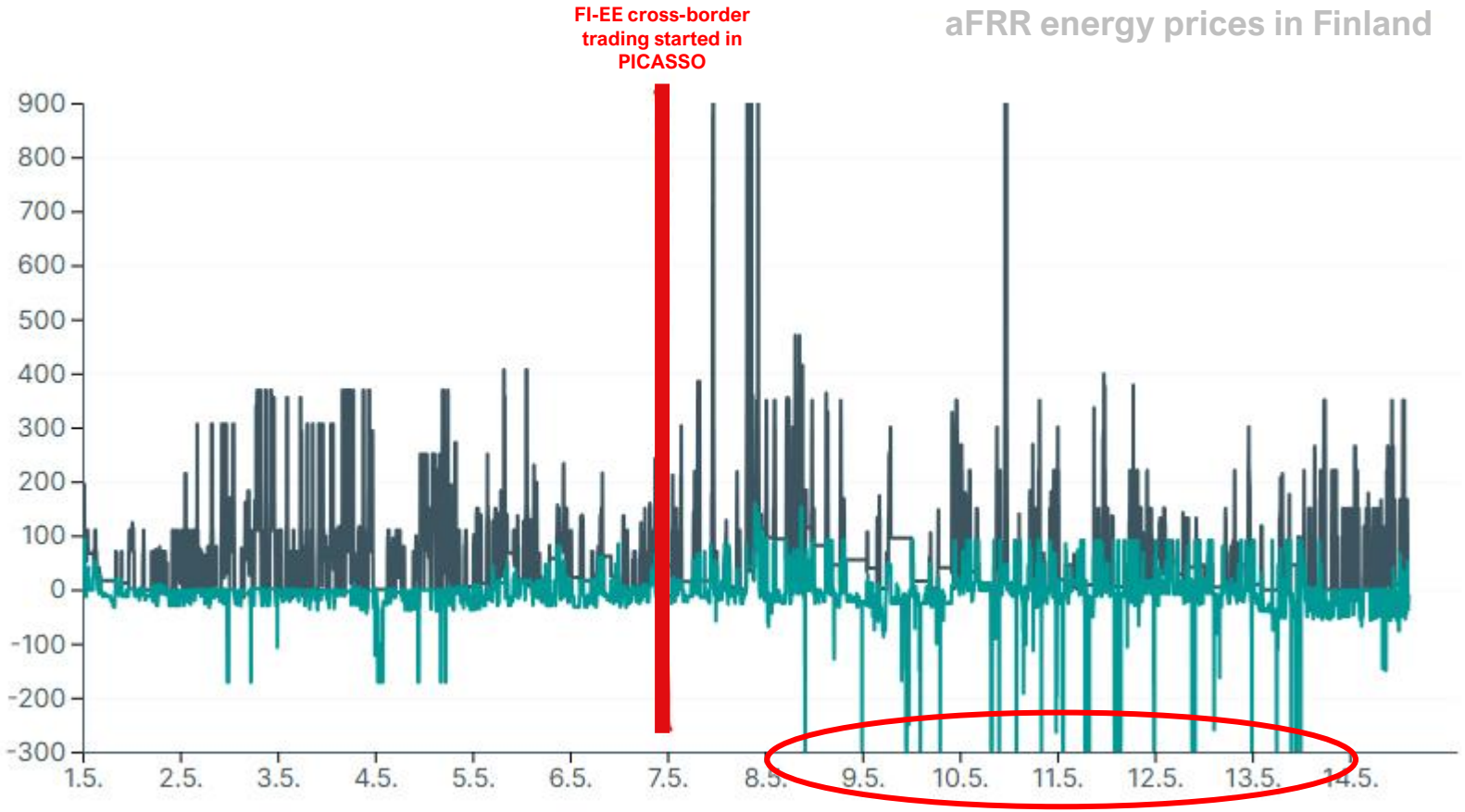

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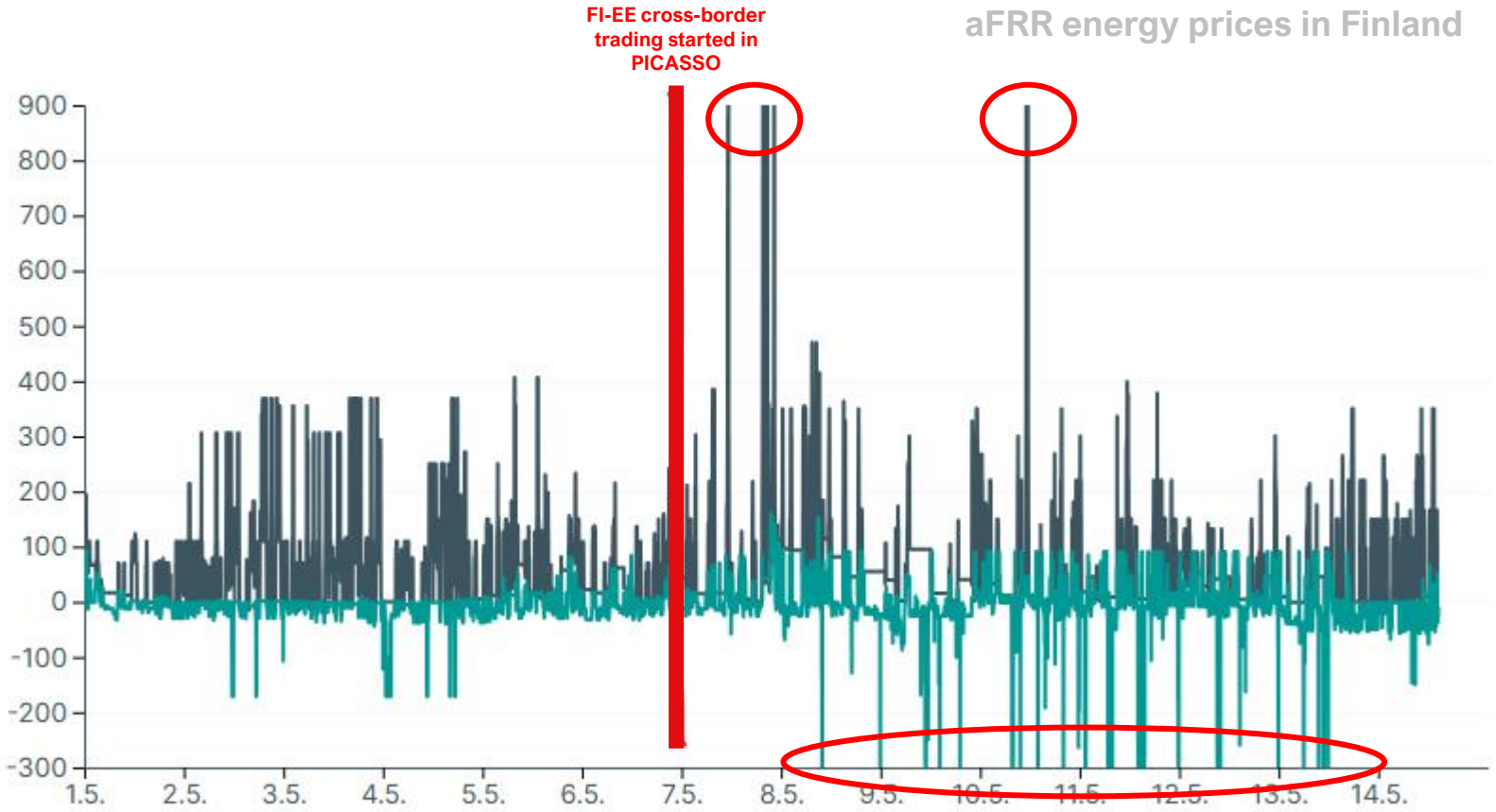

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IMPACT OF MARKET CHANGES ON POWER TRADING DYNAMICS

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ELECTRICITY

1 minute read

Analysts blame Picasso as Polish balancing price hits new low

(Montel) Poland's balancing power price is likely to have hit a record low of PLN -36,932.50/MWh (EUR -8,658.42/MWh) yesterday, with analysts on Thursday pointing to volatility caused by European cross-border balancing platform Picasso.

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ELECTRICITY

2 minute read

Baltic power price spikes “get more extreme” since Picasso entry

(Montel) The Baltic region has suffered severe balancing power price volatility since joining Europe's cross-border platform Picasso, with spikes “getting more extreme”, particularly after Poland also adopted the mechanism, experts told Montel this week.

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IMPACT OF MARKET CHANGES ON POWER TRADING DYNAMICS

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ELECTRICITY | TRADING

1 minute read

Baltic balancing power swings EUR 15,000 in a day

(Montel) Balancing prices in the Baltic region swung from EUR -4,999/MWh to EUR 9,999/MWh within a single day on Monday, despite available reserves.

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ELECTRICITY | TRADING

2 minute read

At least 6 more European TSOs delay Picasso entry

(Montel) The Netherlands, Belgium, Hungary and the Baltic states are the latest to postpone entry into Europe's Picasso platform amid concern the algorithm causes price spikes across borders, traders said.

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MIN AND MAX PRICES TO +-15 000 €/MWh

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MIN AND MAX PRICES TO +-15 000 €/MWh + STEPWISE ADJUSTMENT UP TO +-99 999 €/MWh

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MARI AND PICASSO – DYNAMIC MIN/MAX PRICES

How min & max prices can be increased?

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MARI AND PICASSO – DYNAMIC MIN/MAX PRICES

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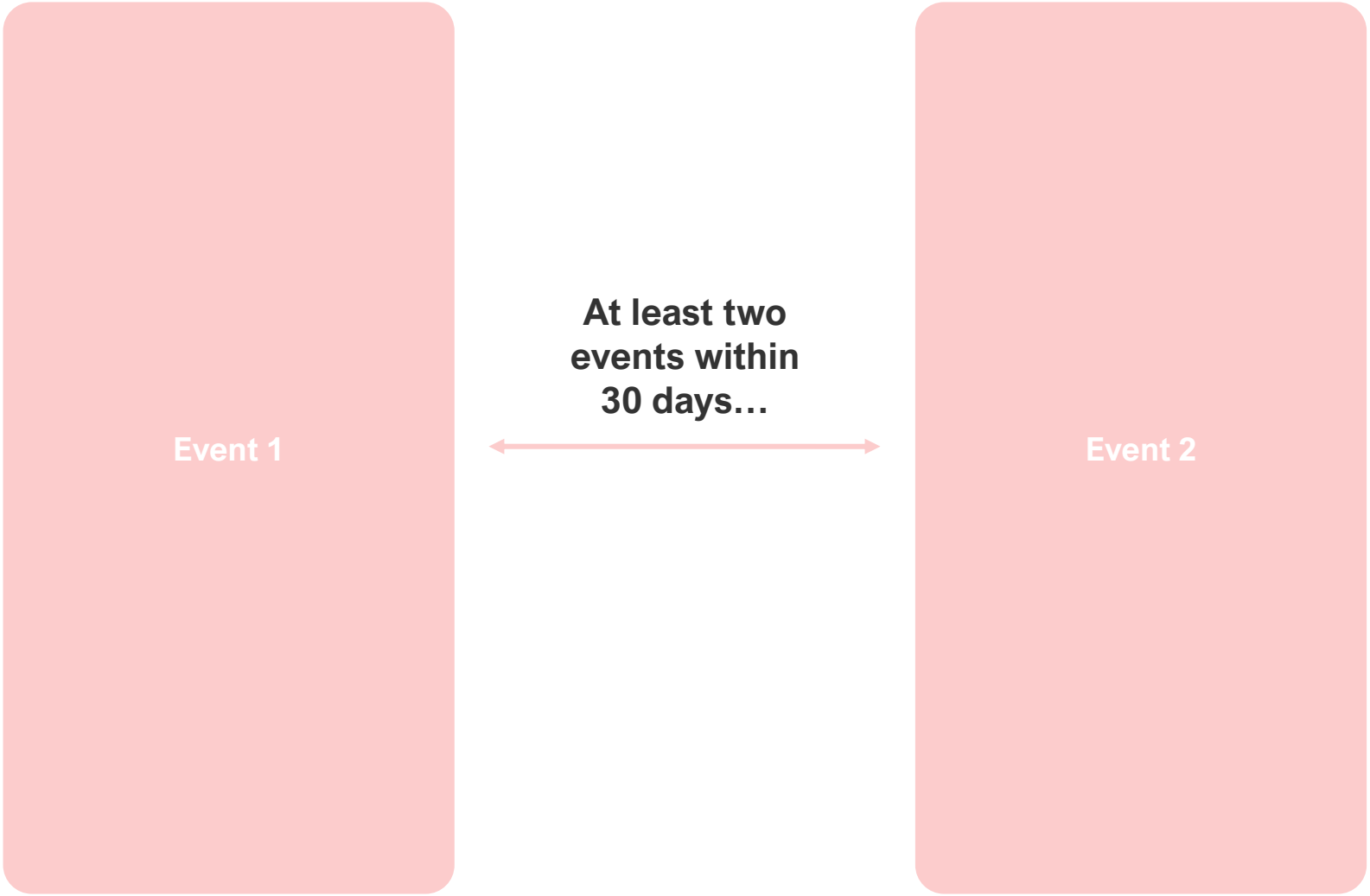
MARI AND PICASSO – DYNAMIC MIN/MAX PRICES



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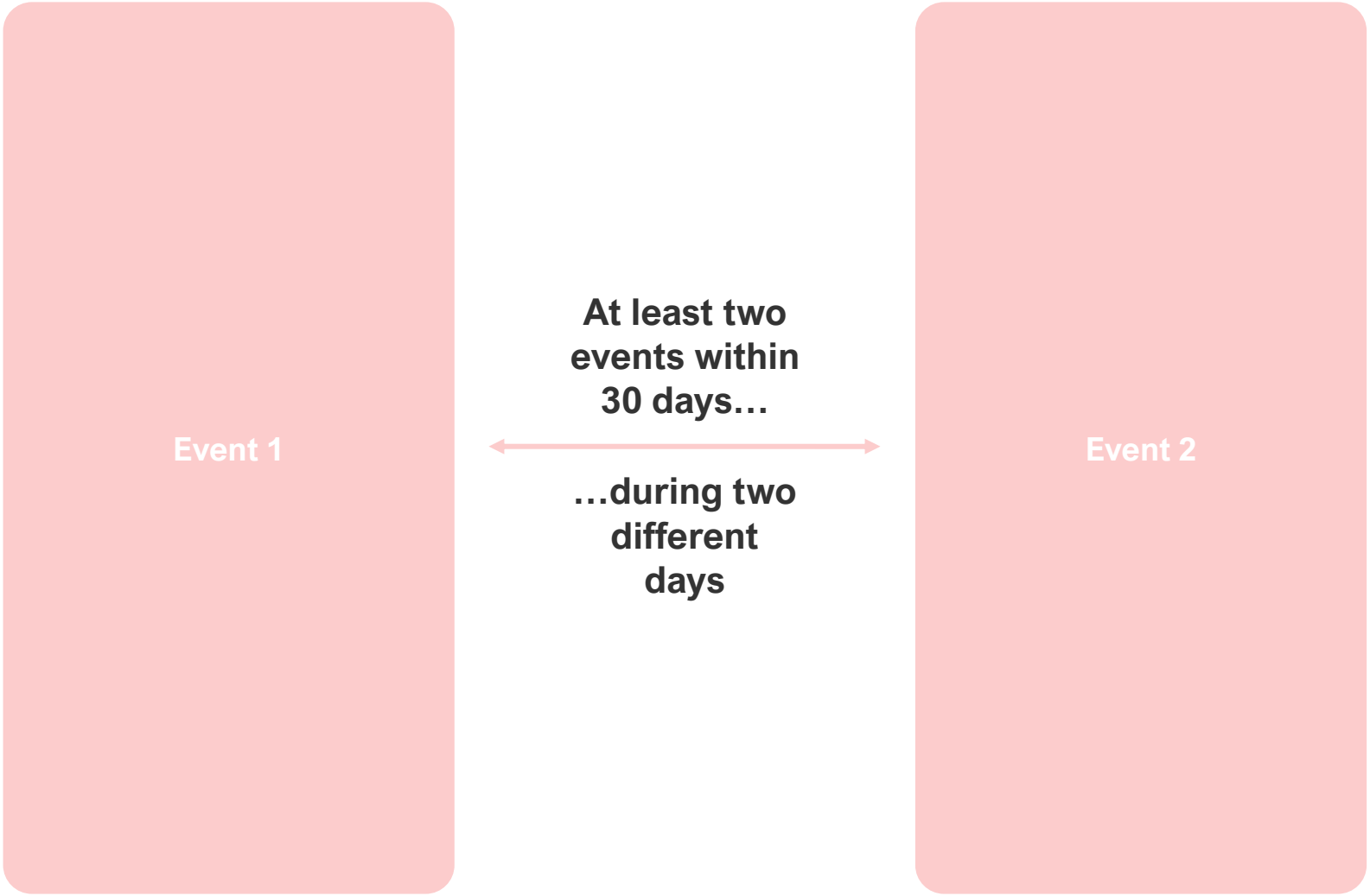
MARI AND PICASSO – DYNAMIC MIN/MAX PRICES



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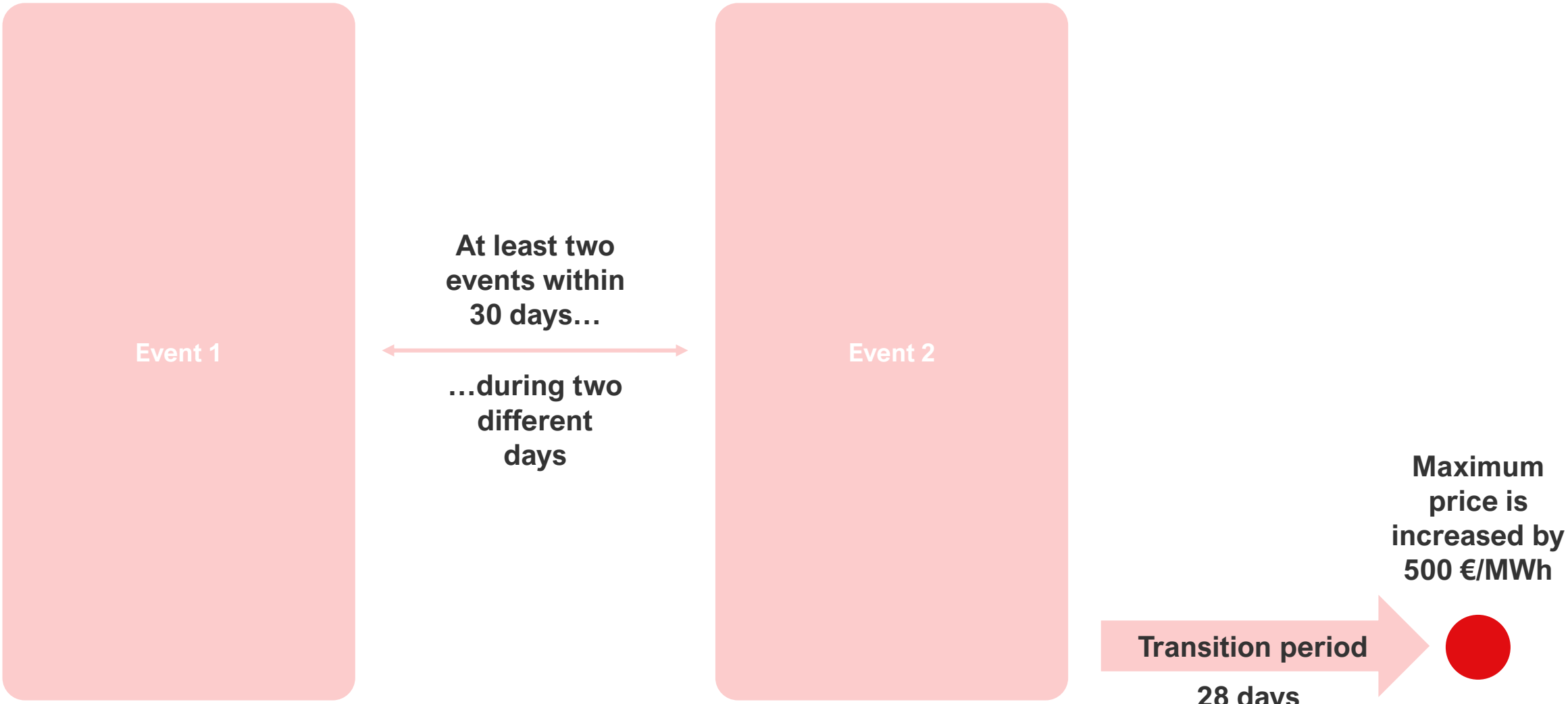
MARI AND PICASSO – DYNAMIC MIN/MAX PRICES



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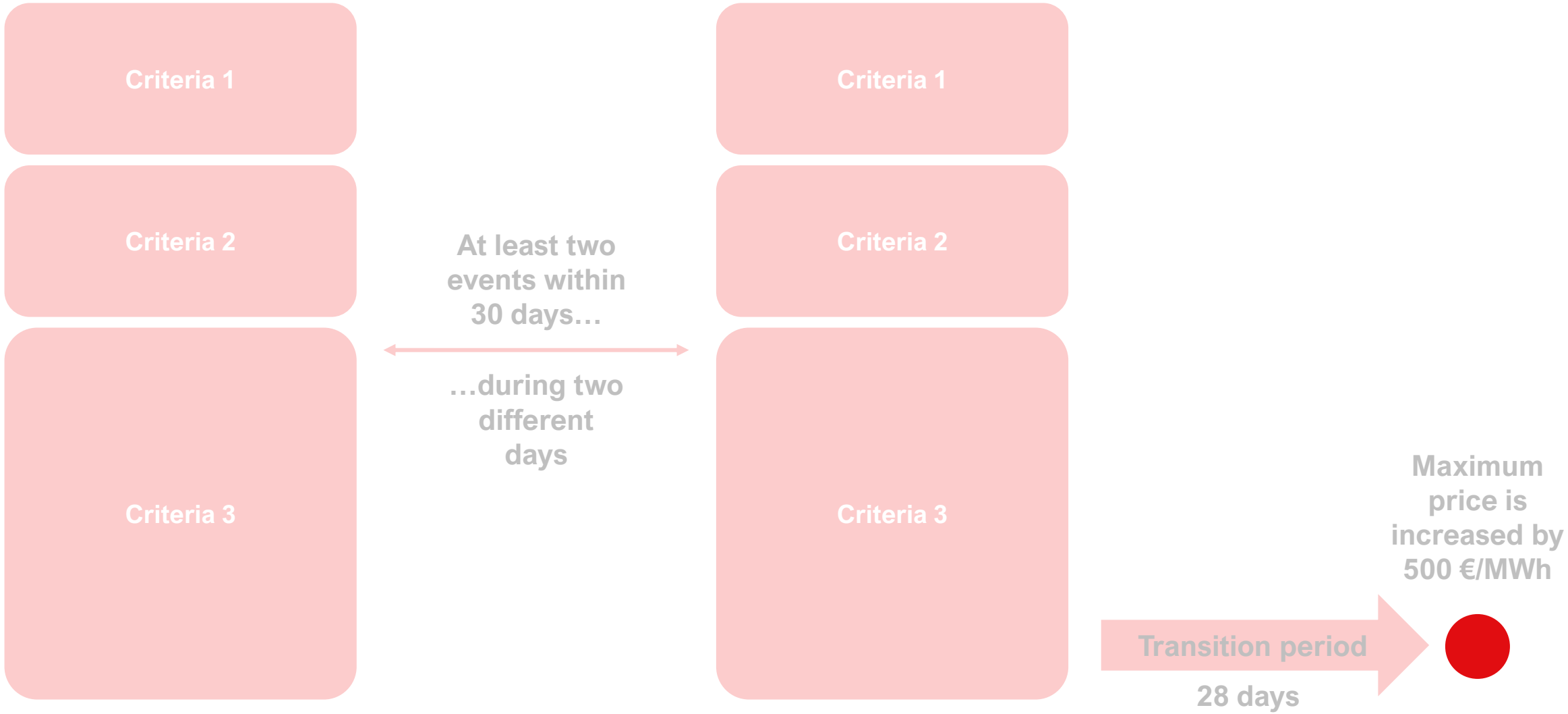
MARI AND PICASSO – DYNAMIC MIN/MAX PRICES



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MARI AND PICASSO – DYNAMIC MIN/MAX PRICES

Volume-weighted average price of activated aFRR energy (up) exceeds 70 % of the maximum price

Criteria 2

Criteria 3

At least two events within 30 days…

…during two different days

Volume-weighted average price of activated aFRR energy (up) exceeds 70 % of the maximum price

Criteria 2

Criteria 3

Transition period

28 days

Maximum price is increased by 500 €/MWh

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MARI AND PICASSO – DYNAMIC MIN/MAX PRICES

Volume-weighted average price of activated aFRR energy (up) exceeds 70 % of the maximum price

Activated mFRR energy (up) exceeds 70 % of the maximum price

Criteria 3

At least two events within 30 days…

…during two different days

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Activated mFRR energy (up) exceeds 70 % of the maximum price

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Transition period

28 days

Maximum price is increased by 500 €/MWh

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MARI AND PICASSO – DYNAMIC MIN/MAX PRICES

Volume-weighted average price of activated aFRR energy (up) exceeds 70 % of the maximum price

Activated mFRR energy (up) exceeds 70 % of the maximum price

Border capacity limitations (import) to the bidding zone in the mFRR-Platform is at least equal to the sum of the volume of bids offered in the mFRR-Platform and aFRR-Platform in that bidding zone by its largest BSP in the positive direction

At least two events within 30 days…

…during two different days

Volume-weighted average price of activated aFRR energy (up) exceeds 70 % of the maximum price

Activated mFRR energy (up) exceeds 70 % of the maximum price

Border capacity limitations (import) to the bidding zone in the mFRR-Platform is at least equal to the sum of the volume of bids offered in the mFRR-Platform and aFRR-Platform in that bidding zone by its largest BSP in the positive direction

Transition period

28 days

Maximum price is increased by 500 €/MWh

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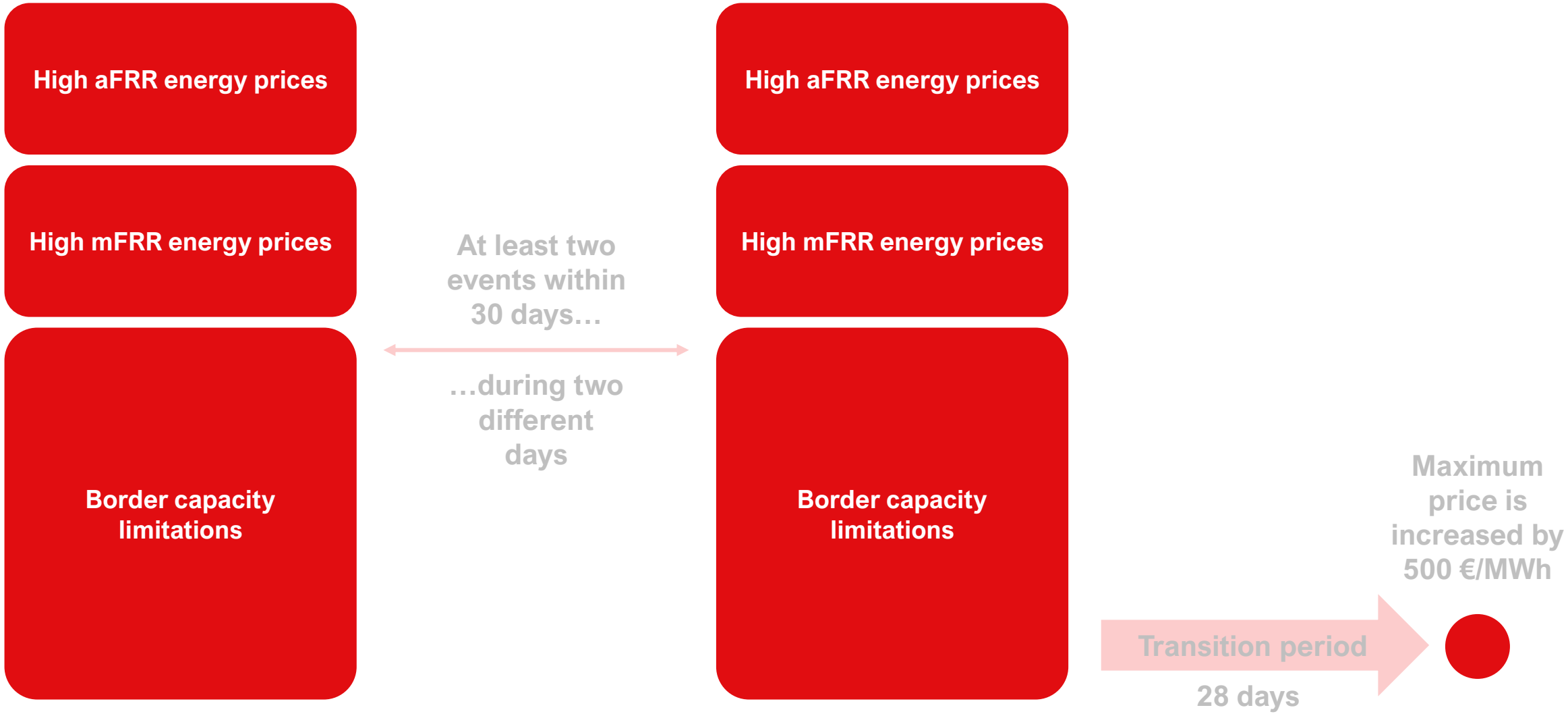
MARI AND PICASSO – DYNAMIC MIN/MAX PRICES



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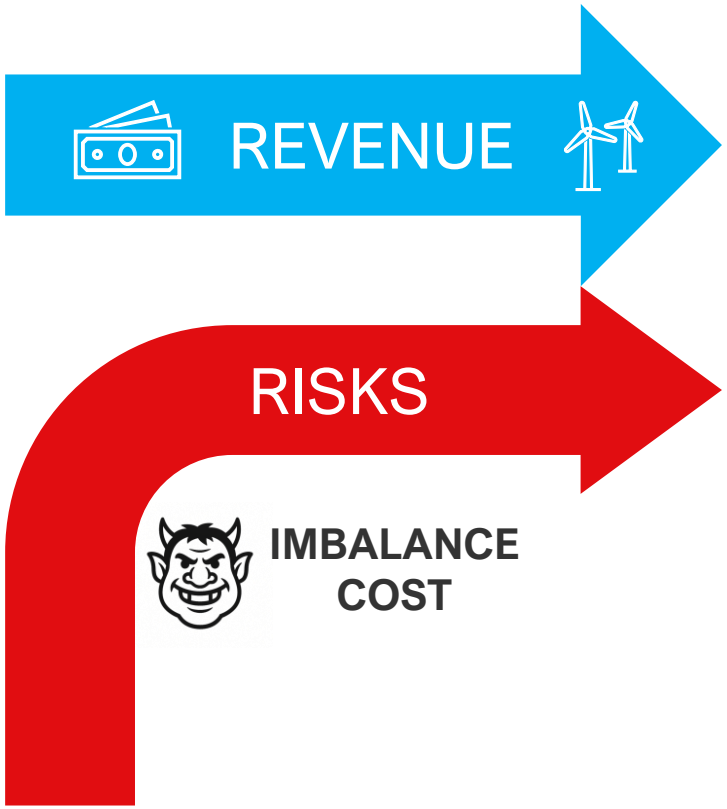

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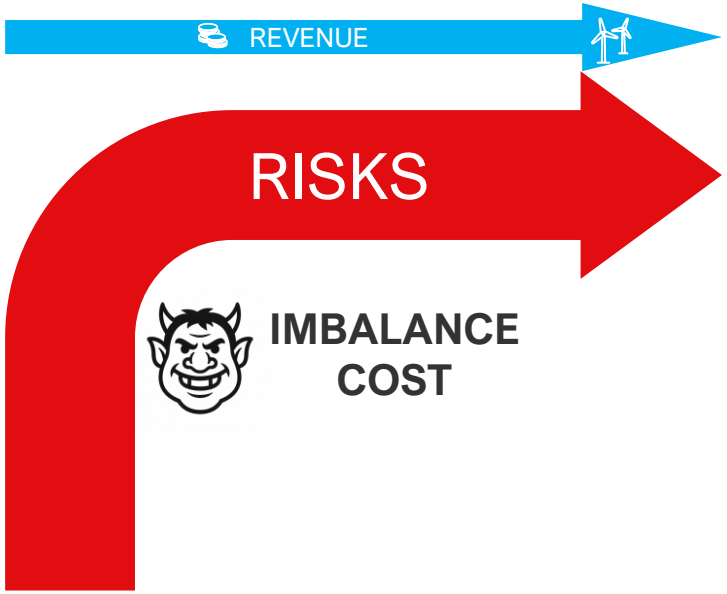

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ELECTRICITY | WIND

1 minute read

Wind output curbed amid extreme balancing prices – consultant

(Montel) Extreme prices in the new Nordic balancing market have led wind power producers in southern Sweden to reduce their output to avoid the risk of imbalance, the CEO of consultancy Bodecker Partners said on Thursday.

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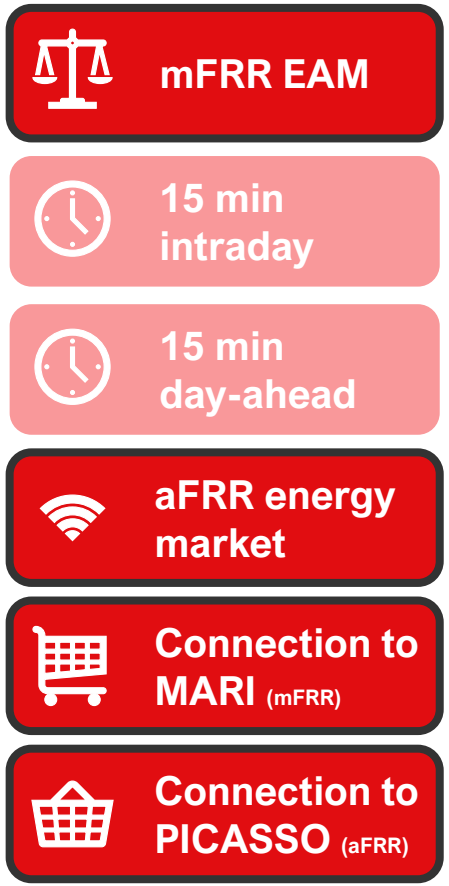

MULTI-MARKET OPTIMIZATION

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CONNECT LIVE 25

MARKETS IN EVOLUTION: NAVIGATING CONSTANT CHANGE

THANK YOU!

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MARKETS IN EVOLUTION: NAVIGATING CONSTANT CHANGE

THE IMPORTANCE OF MULTIMARKET OPTIMISATION

Jonas Andersson, Product Owner, Hansen

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AGENDA

- Market timeline
- Market prices
- What is Multi market optimization (MMO)
- Different assets
- The importance of price forecasts
- The value of MMO

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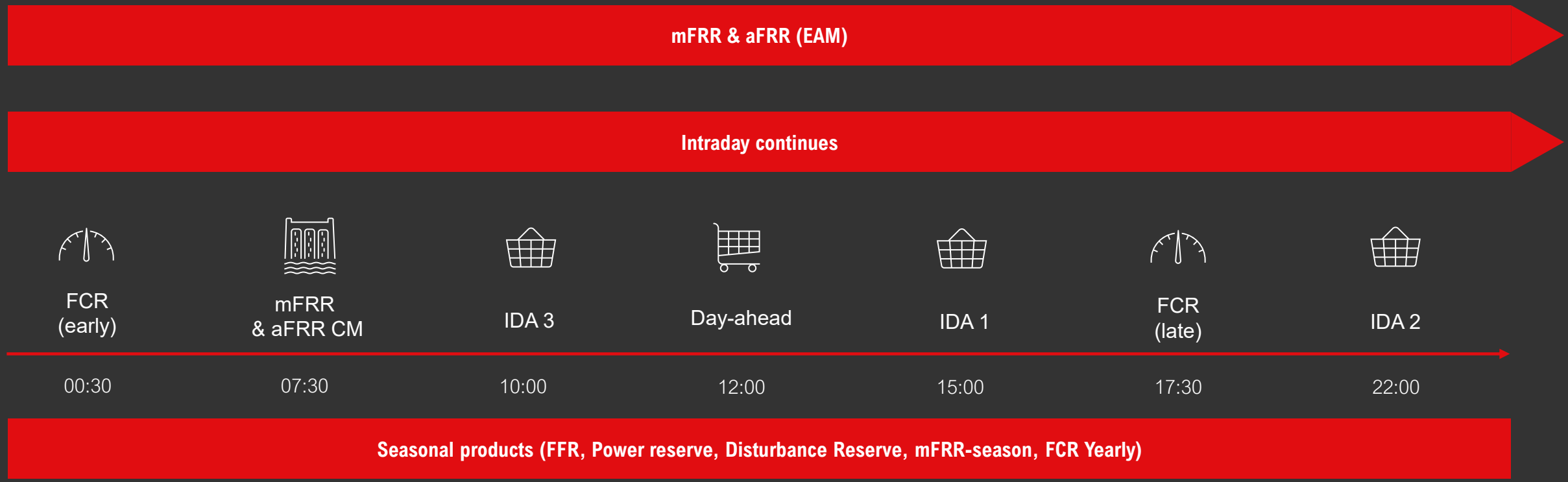
MARKET TIMELINE

Many market to “choose” from and more to come



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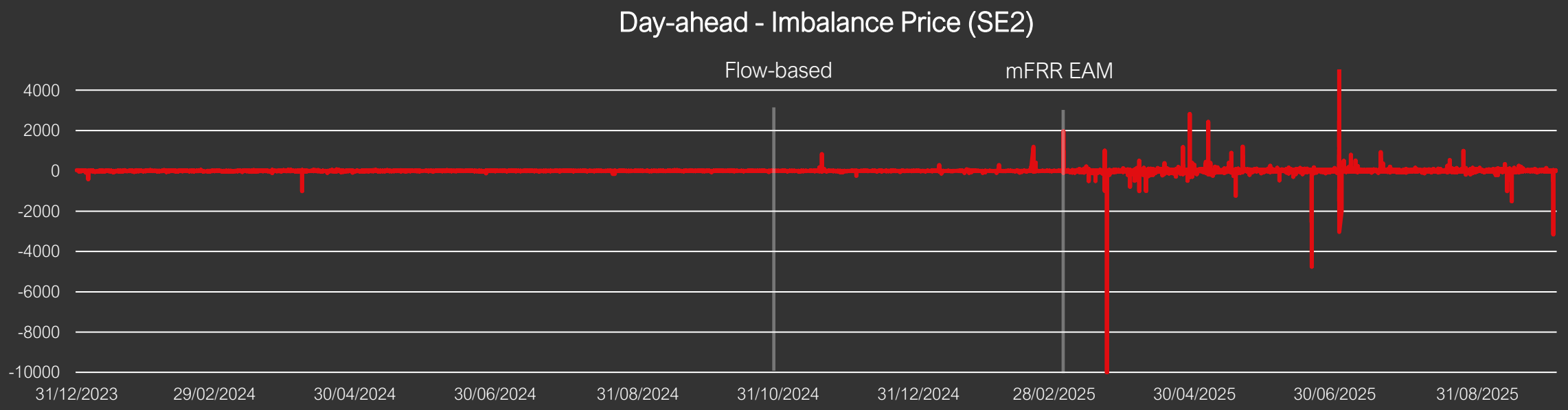
INCREASED PRICE VOLATILY

- Volatile and extreme mFRR prices
- More volatile Day ahead prices (after 15 min go live)



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MARKET PRICES

		2024 (Jan-Aug)	2025 (Jan-Aug)
• Day ahead prices < 0 EUR	:	292 h	519 h
• Day ahead prices < 5 EUR	:	819 h	2718 h

• Day ahead < 0	Average price:	-3,1	-2,1
• Day ahead < 5	Average price:	0,4	1,8

• mFRR CM UP	Average price:	20,8	31,8
• aFRR CM UP	Average price:	30,8	15,0
• FCR-D UP	Average price:	10,4	4,0

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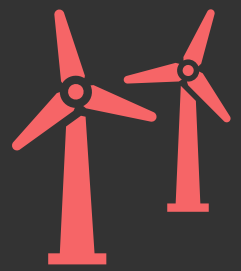
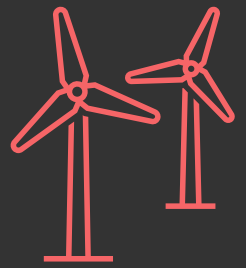
BASIC CONCEPT OF MMO

- For a flexible asset or group of asset participate in multiple markets to optimize profit and decrease risk
- Trade flexibility to different markets
  - Sell up capacity: Ready to produce more or consume less
  - Sell down capacity: Ready to produce less or consume more



SELL & PRODUCE
+
READY TO REDUCE

OR



”STAND BY”
+
READY TO INCREASE

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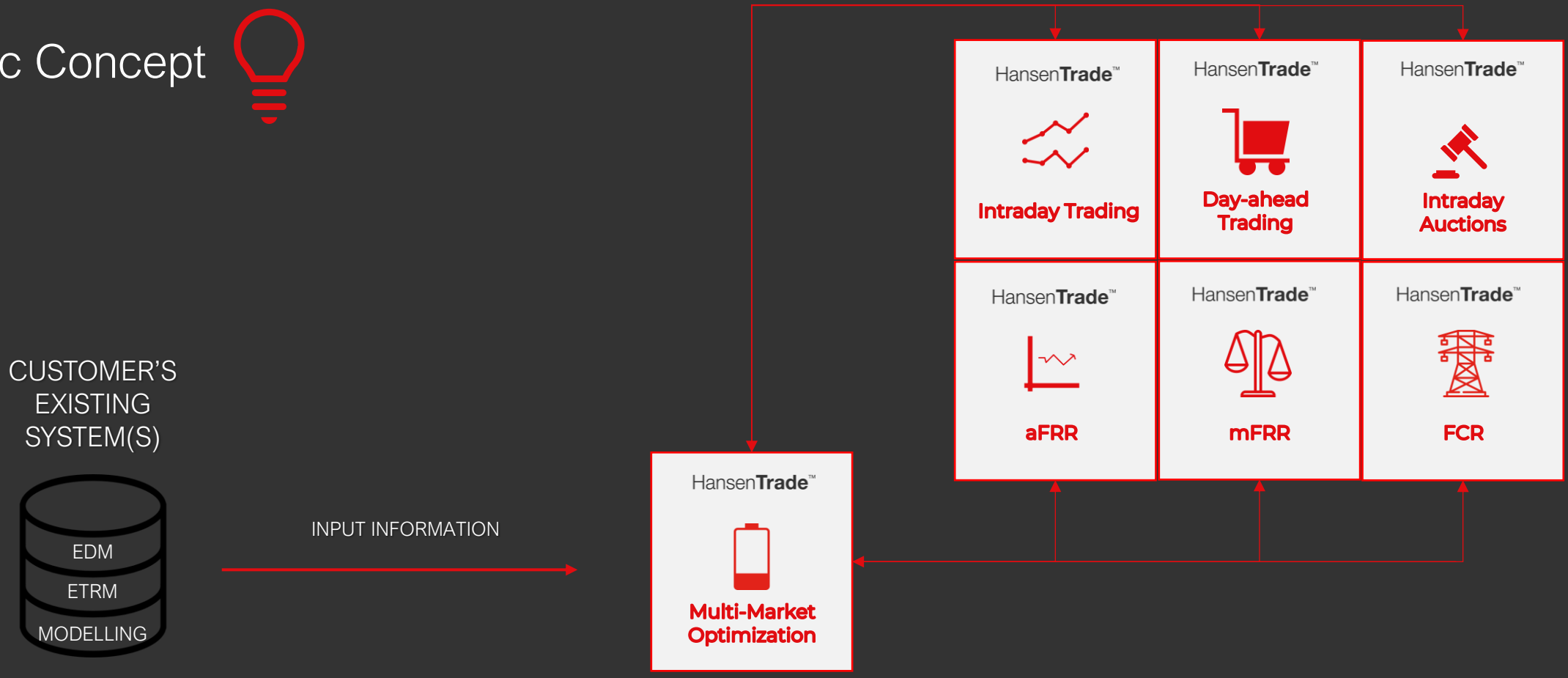
HANSEN TRADE – MULTI-MARKET OPTIMIZATION

Basic Concept



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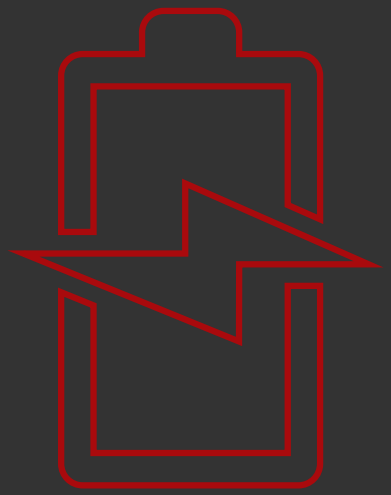
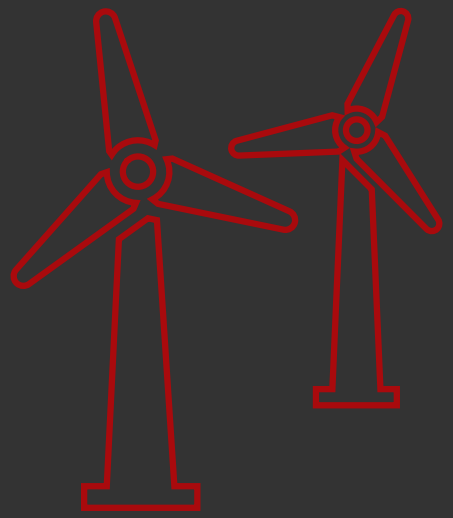
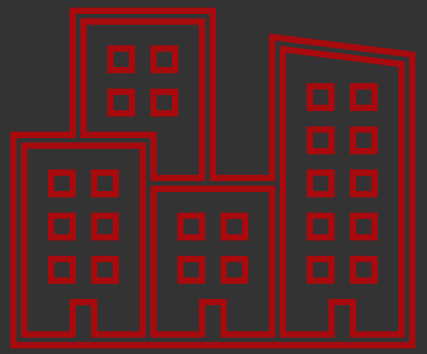
HANSEN TRADE – MULTI-MARKET OPTIMIZATION

- Batteries – State of charge
- Solar and wind – Production plan uncertainties
- Electric boilers – Alternative markets (deliver heat)







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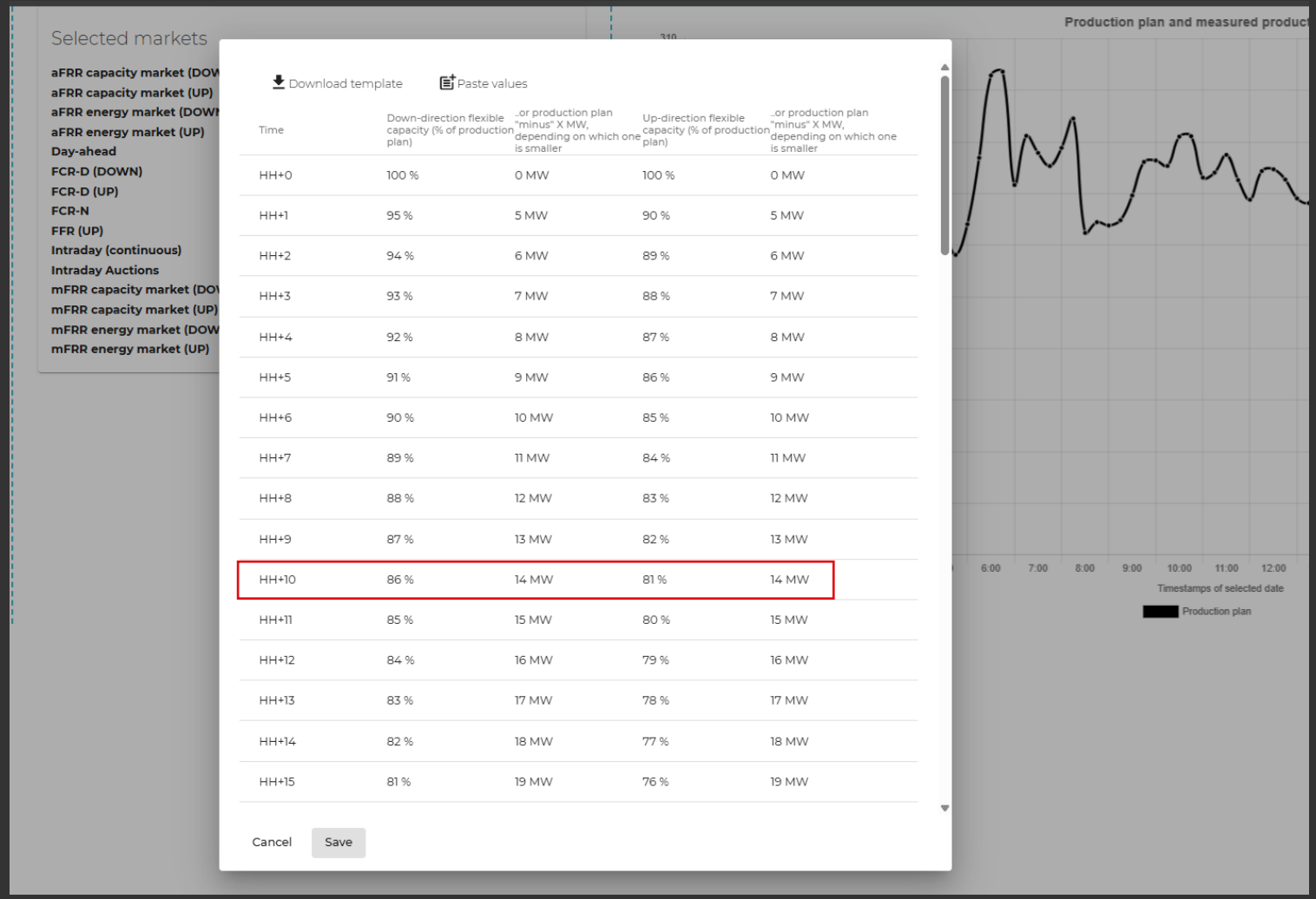
PRODUCTION PLAN UNCERTAINTIES



Production plan 150 MW

Down Flex:

0,86*150 = 129

150 -14 = 136

Up Flex:

0,81*150 = 121,5

150 -14 = 136

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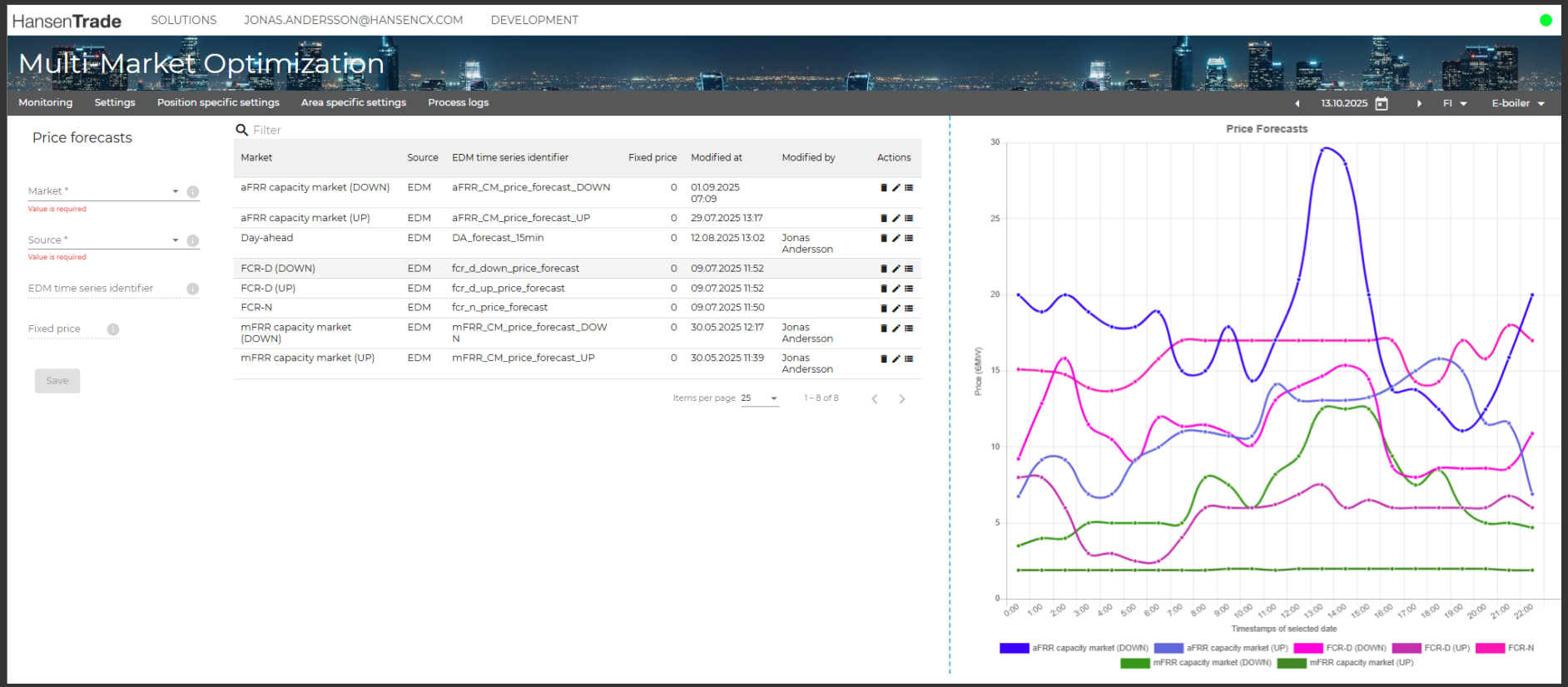
PRICE FORECASTS

- Important input parameter



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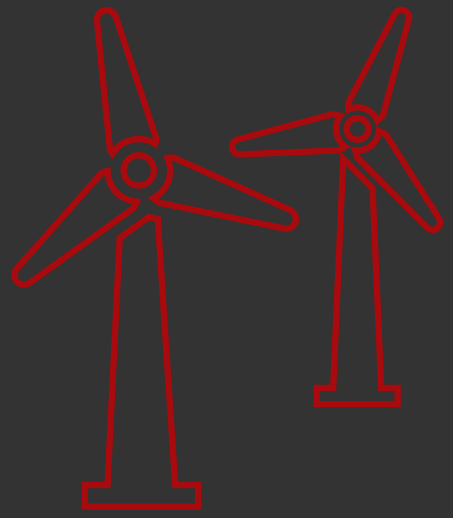
RESULT ONLY DAY-AHEAD



Production plan: 120 MW for tomorrow
Sell that to Day-ahead
Result from Day ahead: 120 * 2 = 240 EUR

Actual production: 100 MW
Imbalance: 20 MW
Imbalance cost: 50 * 20 = 1000 EUR

Total result: 240 – 1000 = **-760 EUR**

Prices (EUR/MW):
Day ahead: 2
Imbalance price: 50

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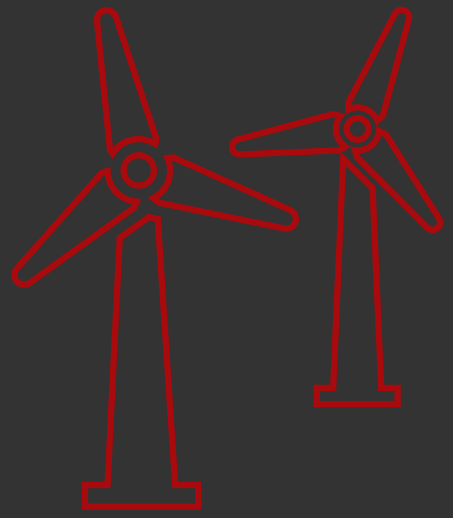
RESULT DAY AHEAD AND MFRR



Production plan: 120 MW for tomorrow
Sell that to Day-ahead or mFRR CM
Dare to sell 100 MW on capacity market

Sell 70 MW to Down and 30 MW to Up → 1290 EUR
Sell 70 MW to Day-ahead → 140 EUR

Prices (EUR/MW):
Day ahead: 2
mFRR CM Up: 8
mFFR CM Down: 15
Imbalance price: 50

This hour is being upregulated → Produce 30 MW extra
This result in 30 * 50 = 1500 EUR extra

Total result is: 1290 + 140 + 1500 = **2930 EUR**

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SUMMARY

- Great potential to participate in many markets
- BUT increased complexity
- Price forecasts is essential
- Volatile prices are here to stay
- Must be done in structured way to be scalable

"Optimizing across markets isn't just smart — it's essential to stay relevant in the business"

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MARKETS IN EVOLUTION: NAVIGATING CONSTANT CHANGE

THANK YOU!

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