Hitachi Energy Investor Day 2026

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AI-powered power systems: Accelerating the journey towards autonomous grids

Gerhard Salge
CTO, Hitachi Energy

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Innovating superior products – High Voltage Switchgear

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Gas-insulated Switchgear

Reducing space uptake by **>90%**



How did we achieve such a leadership position?

We pioneer the sustainable (r)evolution

- High Voltage SF_6-free Switchgear
- World-leading ratings

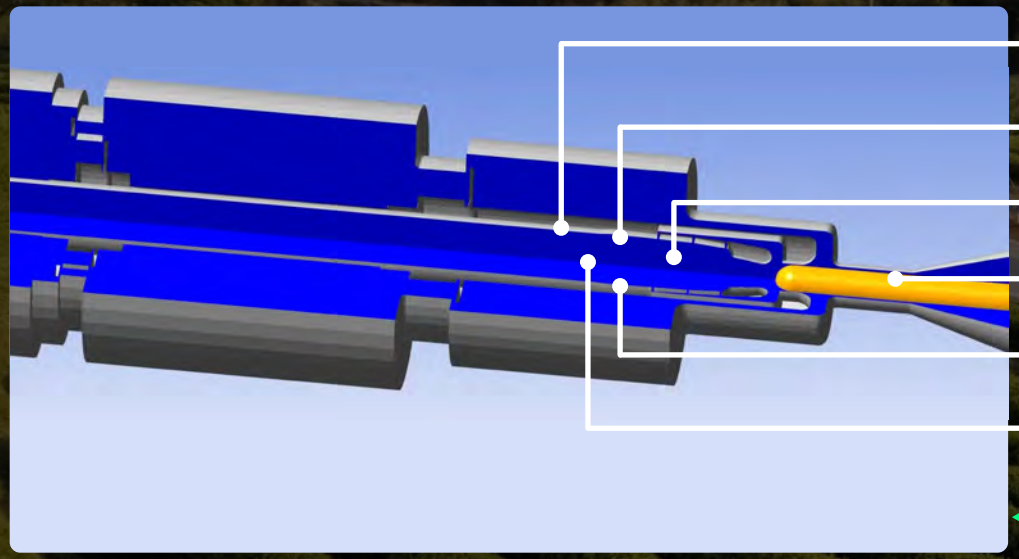
HV Switchgear

3-5x

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Innovating superior products – High Voltage Switchgear

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Chemical reactions

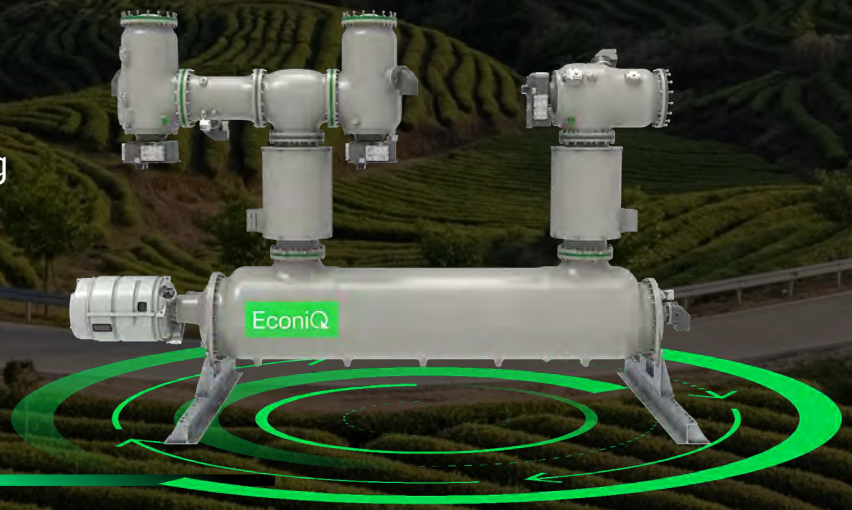
Thermodynamics

Radiation and heating

Mechanics

Turbulence

Electromagnetics



- 100+ complex mathematical equations
- Millions of finite volumes
- Time resolution down to nanoseconds

Augmented AI surrogate modeling is enabling a new dimension of complexity management

Superior physical models + Cutting-edge AI technology + Unmatched domain competence

Better and faster product development

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Executing customer projects – better and faster: HVDC

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1954

World's first HVDC transmission line (Sweden)

HVDC project execution is a multi-year activity with high level of complexity – an acceleration is of high value for all stakeholders



175 GW

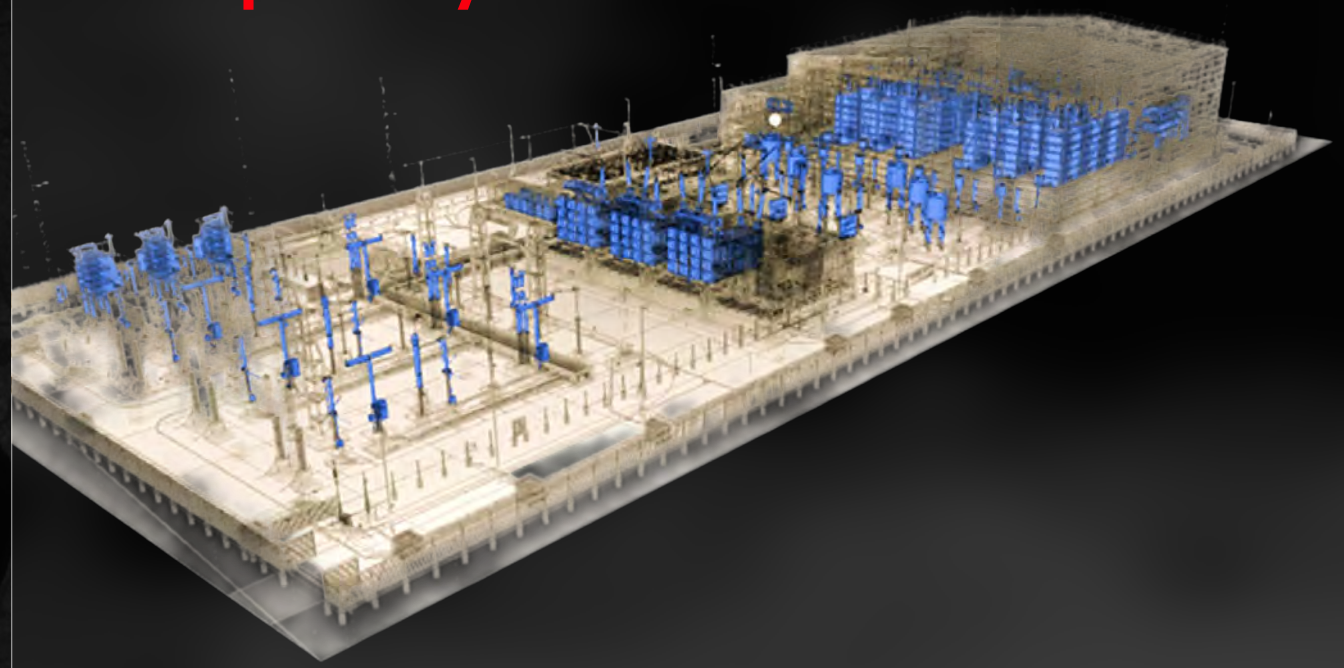
by Hitachi Energy equipment, corresponding to >50% of today's total installed base

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Executing customer projects – better and faster: HVDC

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HVDC project engineering complexity



Example: Elmed project (illustrative)



Open Infrastructure Map

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Executing customer projects – better and faster: HVDC

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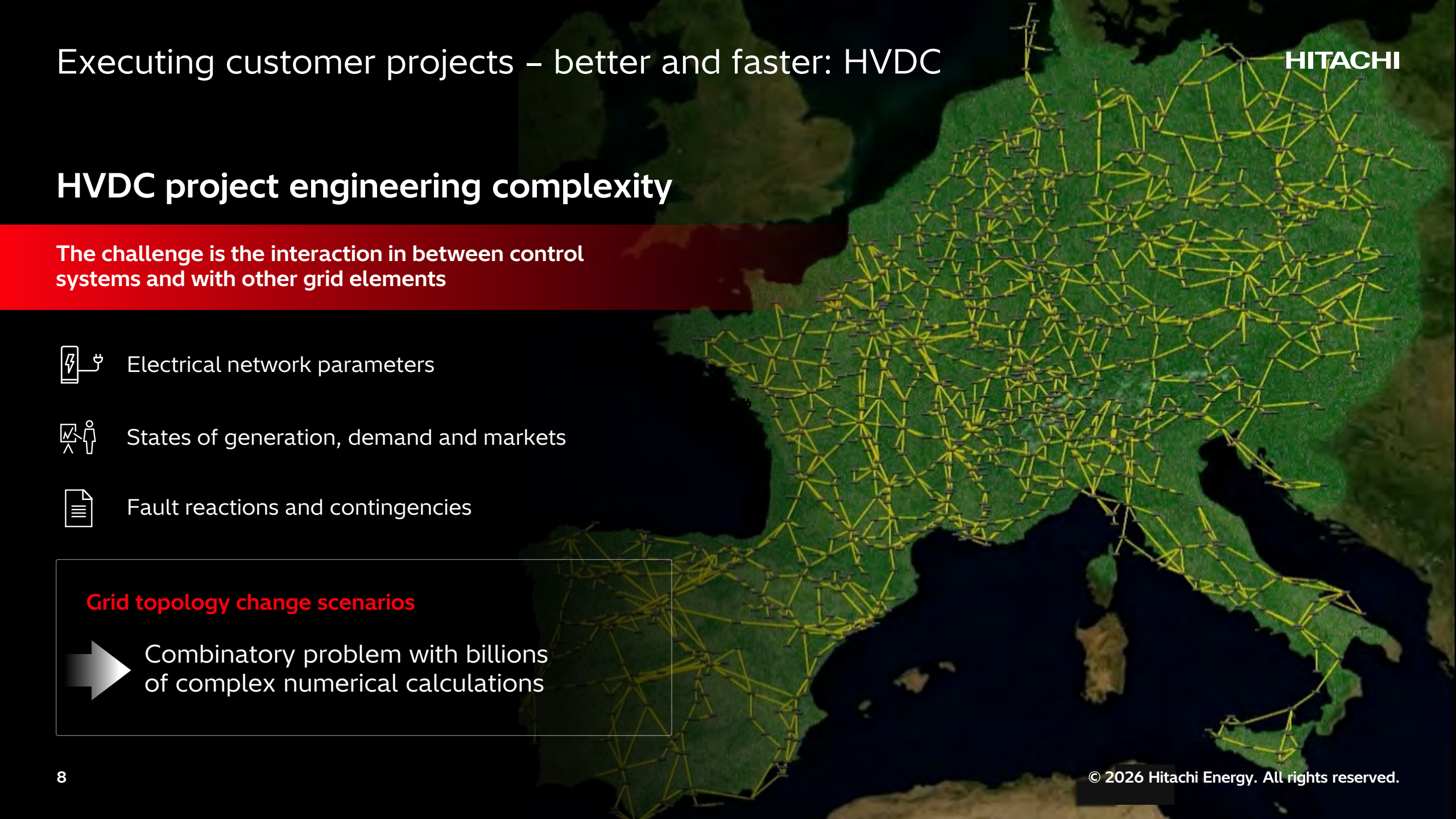
HVDC project engineering complexity

The challenge is the interaction in between control systems and with other grid elements

- Electrical network parameters
- States of generation, demand and markets
- Fault reactions and contingencies

Grid topology change scenarios

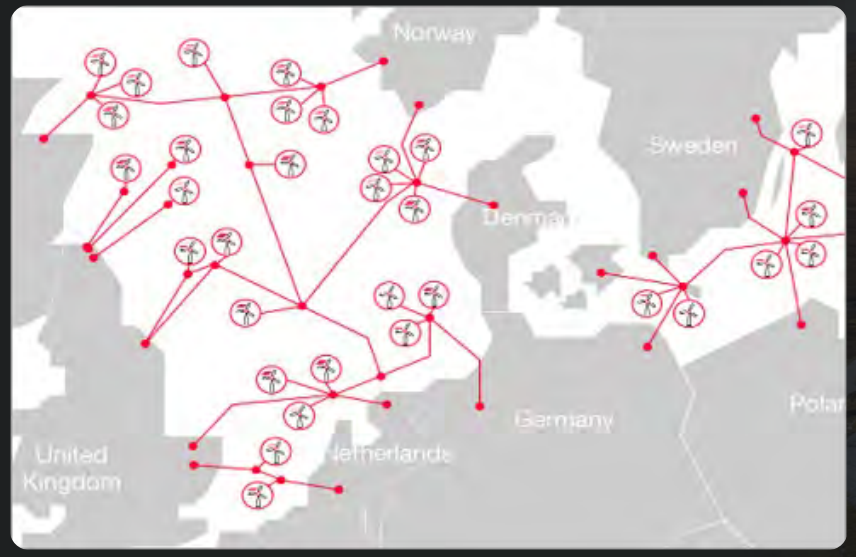
→ Combinatory problem with billions of complex numerical calculations



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Executing customer projects – better and faster: HVDC

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Combination of Digital and AI[1] technologies to optimize HVDC station design and control parameters

More than 4 months (>35%) reduction in time for the HVDC System dynamic performance evaluation already achieved

HVDC

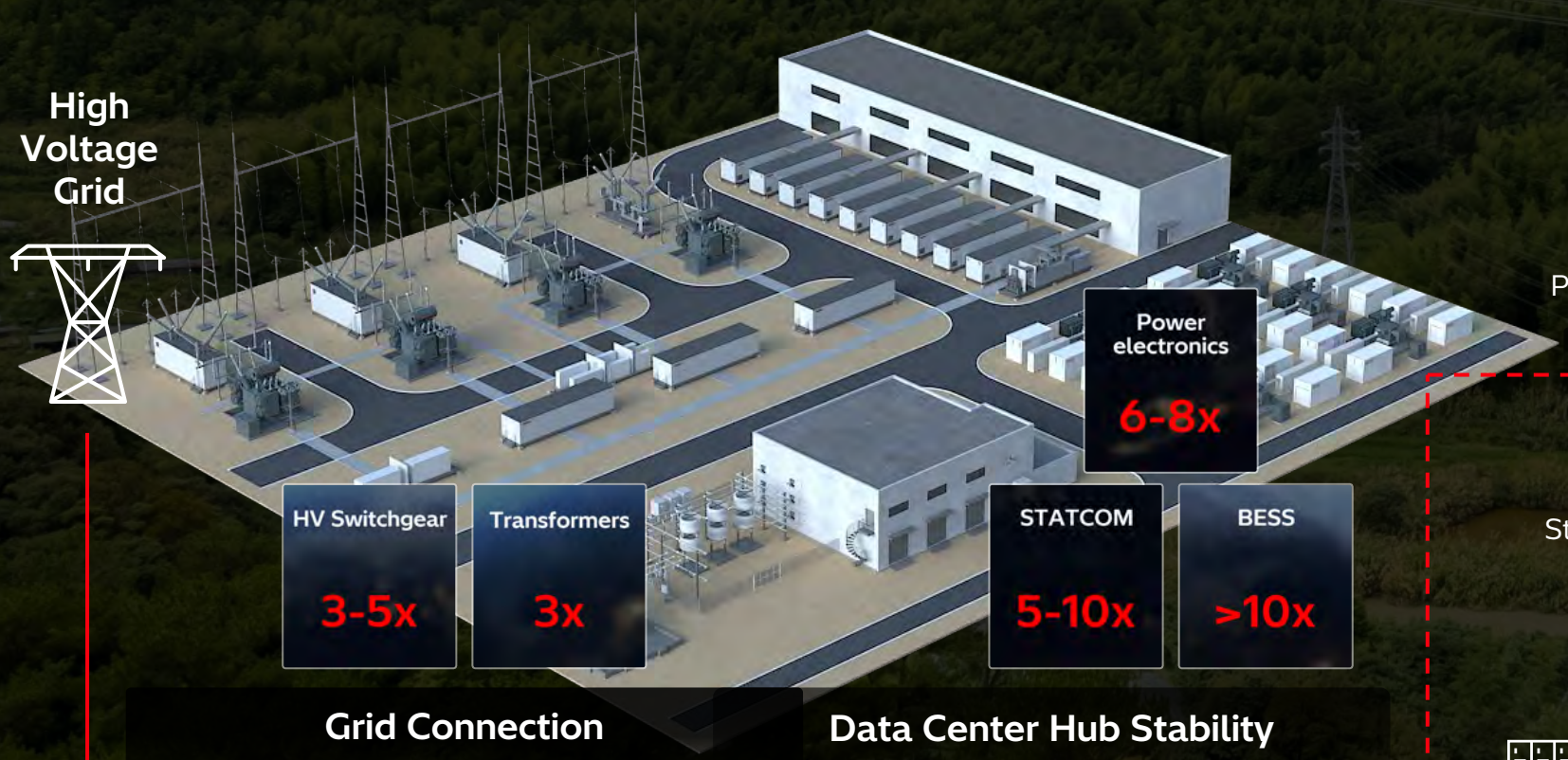
4x

[1] Bayesian optimization, genetic algorithm, deep learning, surrogate modeling, etc.

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Executing customer projects – better and faster: data center hubs

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Services

Service >6x

Planning, operation, and maintenance

On-site Generation

Static Frequency Converter

Power electronics 6-8x

Transformers 3x

LV AC or 800V DC[1]

Compute Rack

MV Switchgear

HV Switchgear

HV/MV Transformer

Protection and Control

Power Quality

BESS

[1] Includes solid-state transformer technology; developing with NVIDIA new 800V DC architectures for next-gen AI factories

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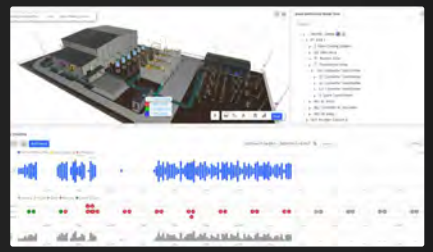
HMAX Energy – Delivering digitally-enabled services

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Capturing additional data from cameras, drones, robots, etc.

Integration layer



IdentiQ® platform providing insights through AI analytics and recommendations



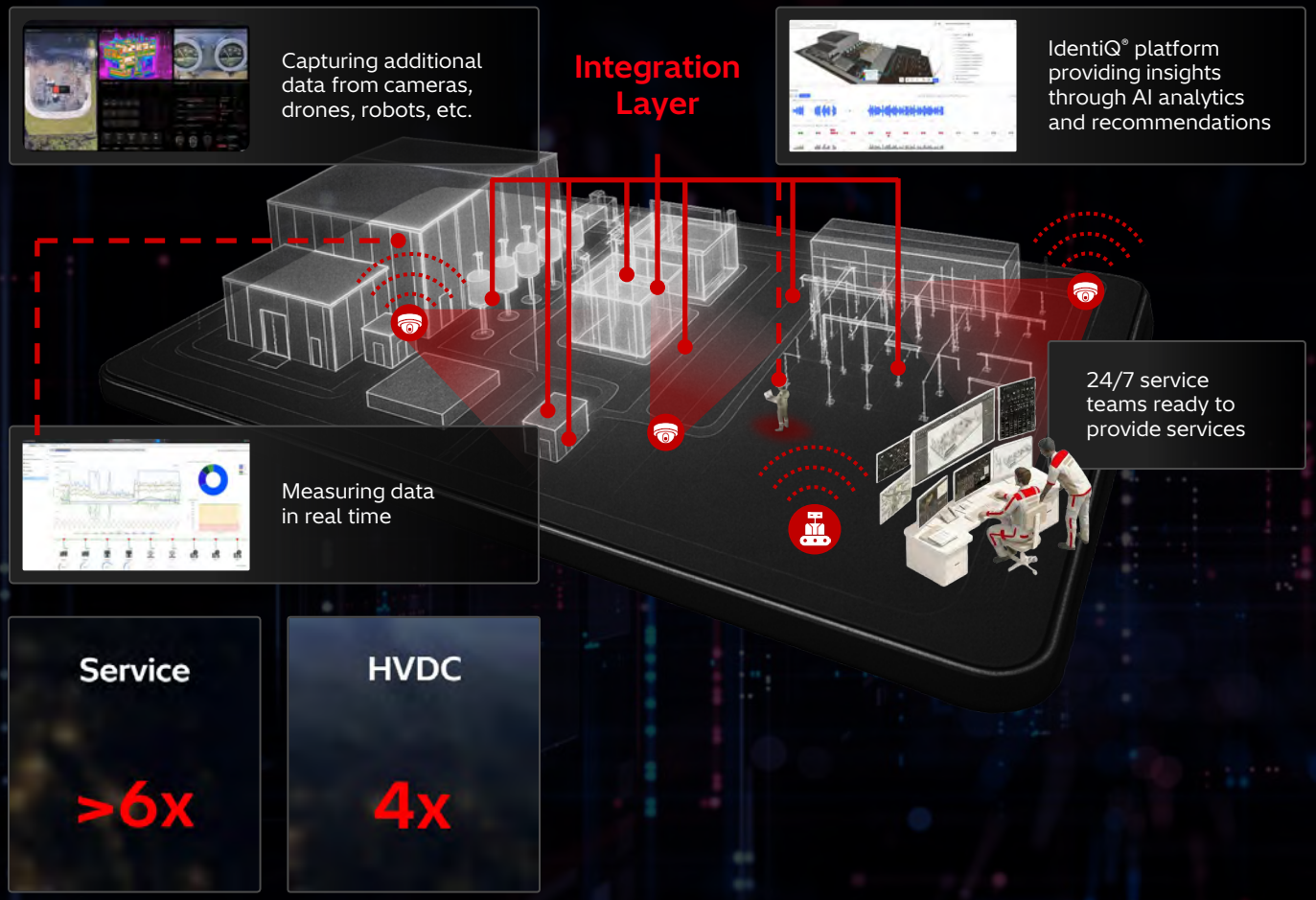
Measuring data in real time

24/7 service teams ready to provide services

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HMAX Energy – Delivering digitally-enabled services

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IdentiQ using a variety of AI-technologies[1]

Real time data measurement system providing hundreds of millions signals per hour

Additional correlating information from external sensors (drones, cameras, etc.)

Digital Twin-based data analytics

HMAX Energy for HVDC – part of the One Hitachi HMAX suite of solutions

[1] E.g. multivariate statistical monitoring, k-Nearest Neighbor (kNN) anomaly detection, Recurrent Neural Networks (RNNs), etc.

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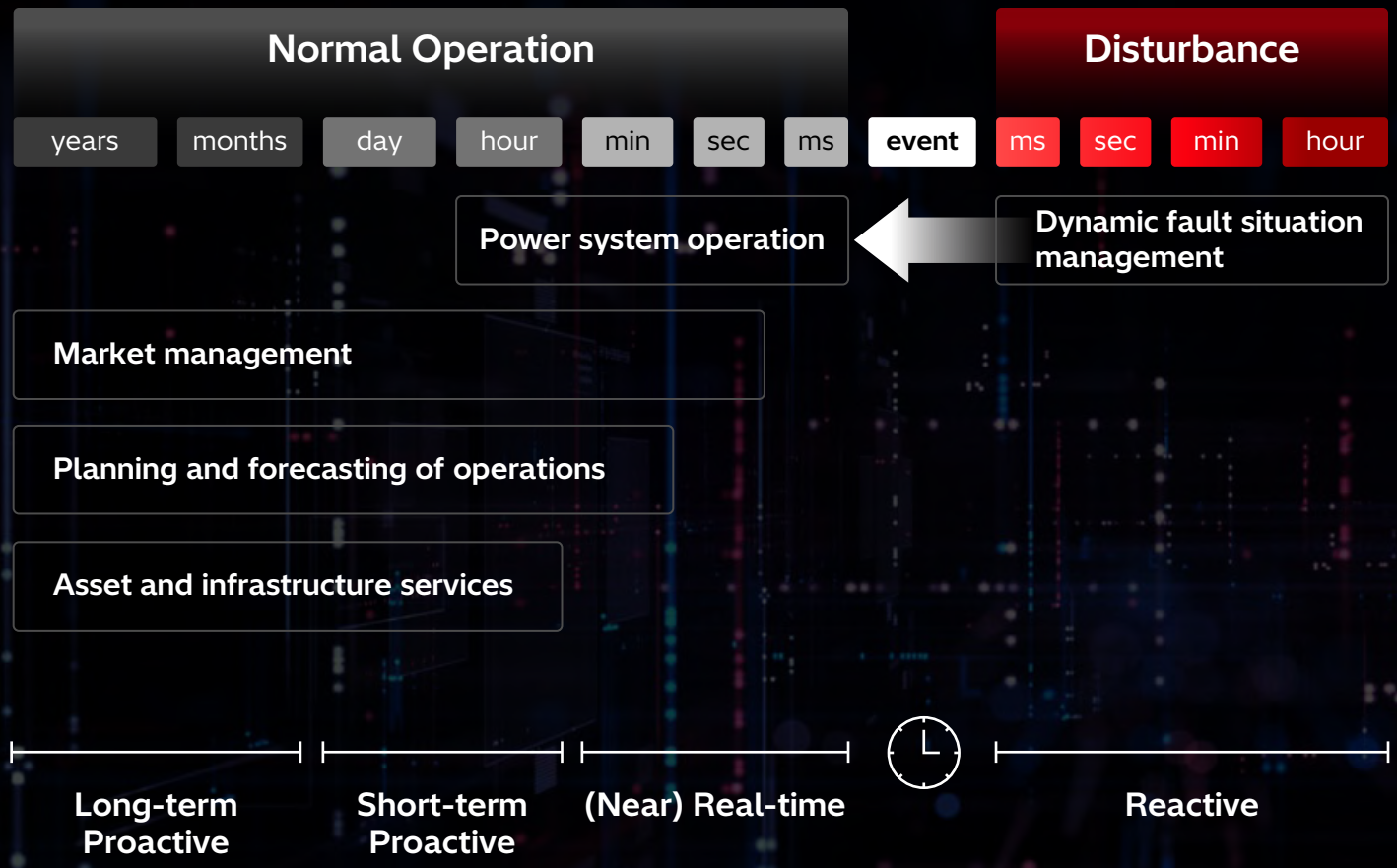
Delivering digitally-enabled services 03

Operating the much bigger and more complex power system 04

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Operating the much bigger and more complex power system

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Power system scale and dynamics exceed manual response capability

Grid congestion is no longer a marginal issue:

In 2025 it drove system costs of

Over 3B€ in Germany

Around 2B£ in UK

A substantial opportunity for advanced network control, optimization and grid-enhancing technologies

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Operating the much bigger and more complex power system

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Software solutions

>10x

Autonomous operations

Agent-initiated decision support

Hitachi Energy Network Manager with AI-Assistant is building on superior domain competence, power system software solutions & cutting-edge AI technology

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Operating the much bigger and more complex power system with increasing autonomy



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Key takeaways

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The power system evolution – built on Hitachi AI-powered technology

01 **Better products developed faster** with advanced models, AI and domain expertise

02 **Customer projects executed faster**, accelerating infrastructure build-out and backlog reduction

03 **Better services through HMAX Energy** towards quantitative reliability-centered maintenance

04 **AI-powered Network Management** enabling a secure, affordable and sustainable power system

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