From Grid to **SmartGrid**

Evolution towards optimized energy distribution through smart grids

Emergence of decentralized energy resources and real-time dynamics in the smart grid

landscape

Renewables **Energy** Growth

Increasing share of renewable energy sources

Challenges

in production

forecasting and

short-term/

day-ahead

management of

renewables

Advancements in storage technologies, including batteries and Power-to-X, leading to enhanced grid reliability

Increase

in Storage

Capacity

Altered dynamics in storage costs and performance. New business model opportunities

Hydrogen as an Energy Carrier

Rising prominence of hydrogen as an e-fuel for storing and transporting demand patterns (green) energy

Deal with market immaturity and complexity associated with new hydrogen products

eMobility

Rapid growth in electric mobility, reshaping energy

Shifts in demand

patterns require

a dynamic approach

to energy supply

management

Disruption and reconfiguration of energy supply chains due to geopolitical shifts

Geopolitical

Developments

Extreme price volatility and liquidity / cashflow shortcomings as very serious business threats

Convergence of European energy markets

Integration and interconnection of energy markets through market

coupling

Complex regulatory landscape, real-time dynamics in crossborder intraday trading, and increased liquidity

Policy & Trading Regulatory

Shift towards more Emphasis on clean energy, sustainable and grid harmonization, responsible investment practices digitalization, and consumer-centric in energy markets approaches

Navigating Growing evolving regulatory importance of ESG landscapes and considerations in adapting to trading strategies changing standards

Climate

Finance &

Investment

Energy trading must constantly transform to stay successful and profitable within steadily evolving energy market landscapes

COLLABORATION Facilitating collaboration between **IT and Trading**

Portfolio Management and Asset **Optimization**

Adoption and integration of new technologies, such as Renewables etc.) and improvement of forecasting accuracy and speed

Energy Trad

Quantand **Analytics**

Integration of real-time market data feeds and advanced analytics to support decision-making processes

Pricing and Advanced

Risk

Management

MARKET DATA MANAGEMENT

Ensuring centralized and

consistent data

Implementation of advanced risk models and platforms to accurately measure and manage relevant risks in real-time

CLOUDIFICATION Providing scalability and performance



/ Managing of Increasing trading

volumes and trades Storage of comprehensive data (including all quotes)

platforms and other enterprise systems

Renewables integration Ensuring flexibility, real-time capabilities, and seamless integration with analytics

Algorithmic **Trading** and **Automation**

> Development and maintenance of effective algorithms capable of navigating dynamic market conditions and ensuring algorithms compliance with regulatory

> > requirements

ket Place

Mar

Bilateral Trading & OTC Markets

Exchanges

Ancillary

Services

Coping with a significant increase in market volatilities

Navigating through the increasing liquidity in spot and forward markets / Adapting to the introduction of new products

and emerging markets Addressing market fragmentation by **efficiently navigating and integrating** diverse markets

Managing regulatory complexity and staying **abreast** of regulatory changes to ensure compliance and operational effectiveness



From price-taker to risk-taker: requires a shift from EoD to intraday risk & PnL monitoring

Requires optimized energy procurement strategies for energy industries

Retail

Products

Complexity

Growing intricacy

in retail energy

products

from new product types and requires advanced real-time forecasting

Implies risks

Increasing Demand in

Green Energy

Growing demand for green energy and carbon neutrality, introducing new product types like

PPAs

Requires more sophisticated risk & pricing models for managing complex risks

Evolving Risk Landscape

Transfer and offloading risks to energy producer

Innovation towards digital solutions, shaping efficient and technologicallyadvanced trading practices

Digitalization & **Efficiency**

Growing demand for digitalization and efficiency in energy retail

Importance of adaptability and responsiveness in trading practices

and processes

Shift to Renewables

Moving away from traditional fossil-fuelled plants toward renewable sources

Requires flexible and new trading strategies to navigate uncertainty and unpredictable generation patterns

Flexible Power Plants

Increasing flexibility of power plants to adapt quickly to fluctuations in energy generation

Manage higher variety of assets, requiring advanced trading processes, e.g. for forecasting & optimization

Diversification of Production **Technologies**

Expanding variety in energy production technologies

Higher efforts for integrating regulatory compliance into trading processes

Regulations for Grid **Stability**

Evolving regulatory frameworks, ensuring grid stability

Battery Storage Facilities

Requires

automated trading

process and new

optimization trading

strategies

Highly flexible battery storage facilities incorporate a huge future potential for covering renewables overproduction









