Datahub – Change of the Game:

Major Changes in the Datahub Era

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Vaasa Energy Week | 22, March, 2018

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Three phases in the Energy transition are driving the need for Central Market Solutions or Datahubs

- A **Datahub** is a **data platform** to exchange all types of data and to support central market facilitation for market parties to enable fair competition and create innovative services accelerating smart grids
- Driven by de-regulation and the move to a low carbon economy, utilities companies must migrate to **new digital business models**
- **Clients across the world are at different phases** of digital transformation. With the energy transition the consumer moves center stage and energy companies will need increase **consumer participation.**

1 De-regulating markets

- Possibility to **switch** between suppliers
- **Split up** in regulated grid operations and commercial activities
- Regulated tasks put in place to **facilitate the market**

2 Introduction of **smart meters**

- Huge increase in data (exchange, big data)
- Services Innovation: it changes the current way of working
- Data analytics for existing market parties

3 **Energy transition** and consumer participation

- Introduction of renewable energy sources
- Electrification of society (e.g. electric vehicles)
- Consumers become producers as well.
- Increased dataflow between consumers, grid and energy service companies.
- Central Market Facilitators will add services to energy service companies

CENTRAL MARKET SOLUTION

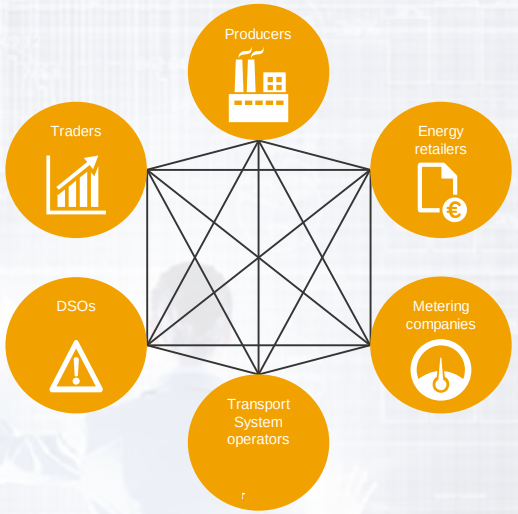
Market liberalisation – Datahubs efficiently support the extensive information exchange between parties

Market parties and Market Facilitation

(Market) parties that exchange information

- Transmission System Operators provide Security of Supply (SoS).
- Distribution System Operators: operate MV- and LV networks;
- Metering companies appointed to collect, validate and distribute meter data
- Energy suppliers buy and resell energy
- Traders trade energy on behalf of energy retailers
- Producers generate energy

Without central market facilitation there will be n:n information exchange relations

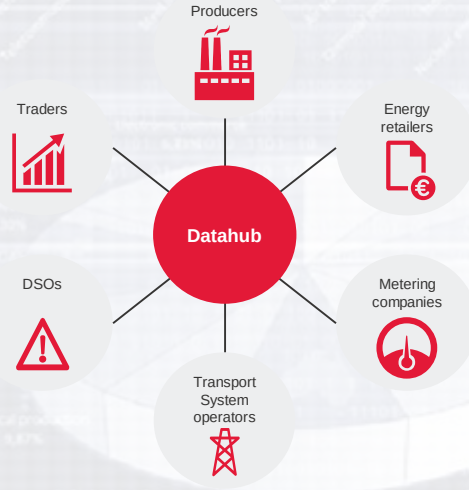


Central Market Facilitation

Centralisation Market Facilitation

Centralizing market facilitation offers a number of benefits to the market.

- **Level Playing Field**: CMF reduces the sunk cost (of connecting to all market parties) when entering the market
- **Transparency**: CMF provides for equal access to information for all market parties (small/large, incumbents/new)
- **Consistency**: The market processes are equal for each client and network area.
- **Cost reduction**: market parties reduce cost by centralizing functionality with a central organization.



Introduction of Datahubs changes the landscape for participants

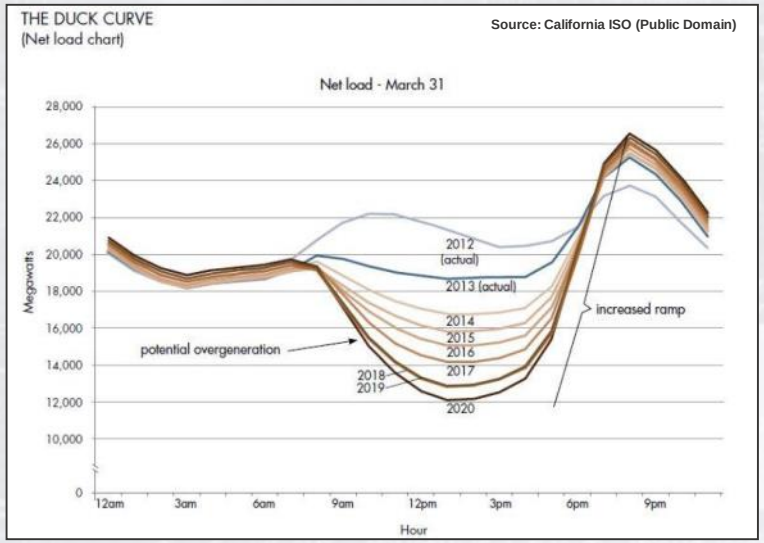
Distribution Grid Operators **Comply**	• **Consolidation of market players** • **Driven to a Comply role in the market** • **Possibly limited in innovation** • **Increased DSO-TSO cooperation**
Suppliers/BRPs **Compete in high pressure market**	• **Low barrier of entry enable new and niche players** • **Increased volume of Customer Switching is driving down profits and limiting innovation** • **Limited service differentiation capability** • **Consolidation of market players**
New entrants **Opportunity for innovation**	• **3rd party innovation becomes easier as data is centrally and transparently available but may be hampered by the markets need to support innovation services**
Central Market Operator **Innovation enabler**	• **When sufficiently supported by market model the CMO can drive market change such as a Wholesale model** • **Similar innovation can be enabled for customer services and aggregated data services**

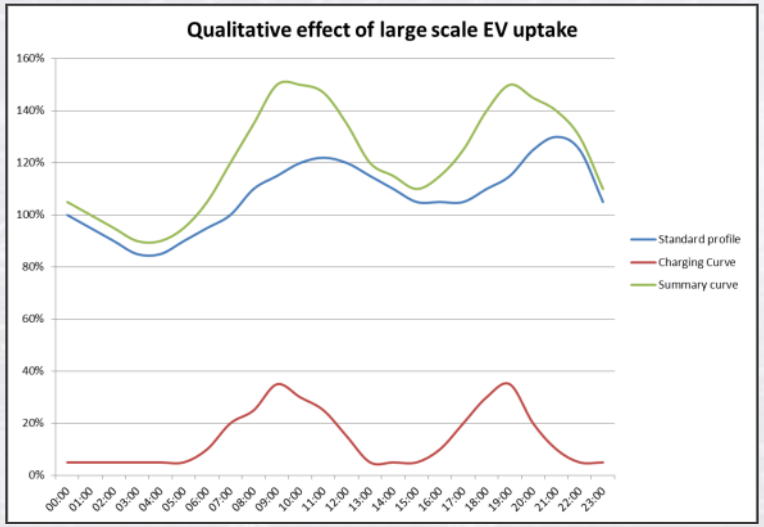
Energy Transition is driving for further changes to the landscape

Flexibility is driver in both Consumption and Production and impacts DSOs and BRPs alike

- Alternative energy sources are disrupting the current models of energy usage patterns
- Roll out of Electric Vehicles exacerbates this change in profile

- Managing Congestion and Net Security is the key role of the DSO and increases in complexity
- Balancing power production against consumption is the role of the Balance Responsible Party (Portfolio management) and is similarly impacted
- Responsibilities of BRP and DSO are independent and potentially competing

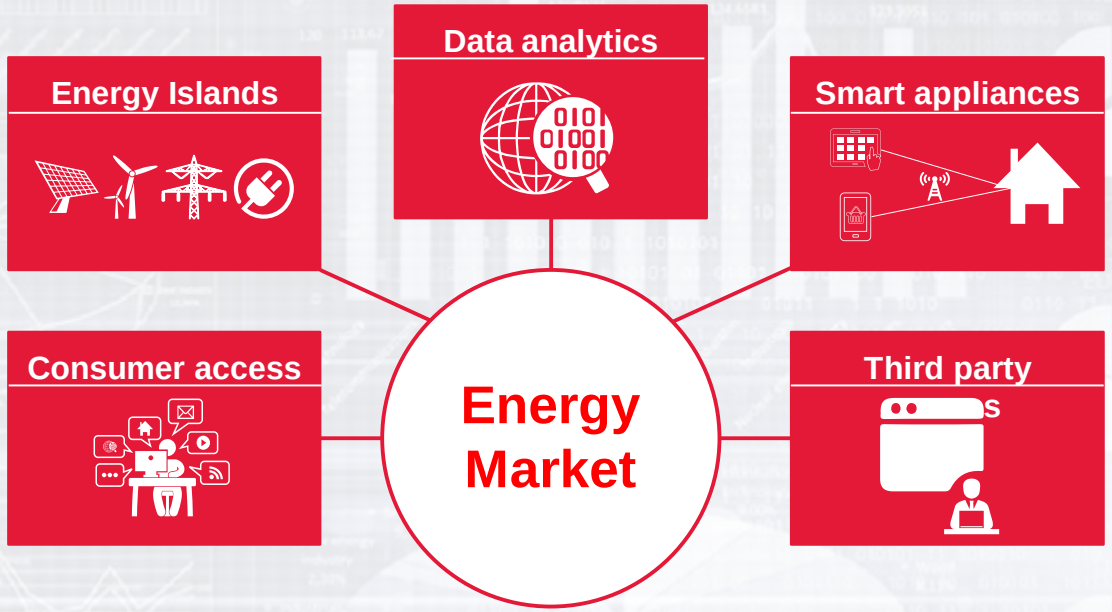




Furthermore, consumer and 3rd parties demand participation

Social, economic and environment concerns are drivers for new services from the Energy market.

- Consumers, both retail, wholesale and governmental are driving for new services to take part in or demonstrate compliance to environmental change.
- Flexible energy consumption, though still some time away, is likely to impact consumption profiles.
- Local storage, either through EVs or Tesla like batteries, might be leveraged by prosumers
- 3rd parties are challenging the incumbent parties with innovation, sometimes increasing issues of Net Security and Congestion



The central nature of Datahubs enable and support this change

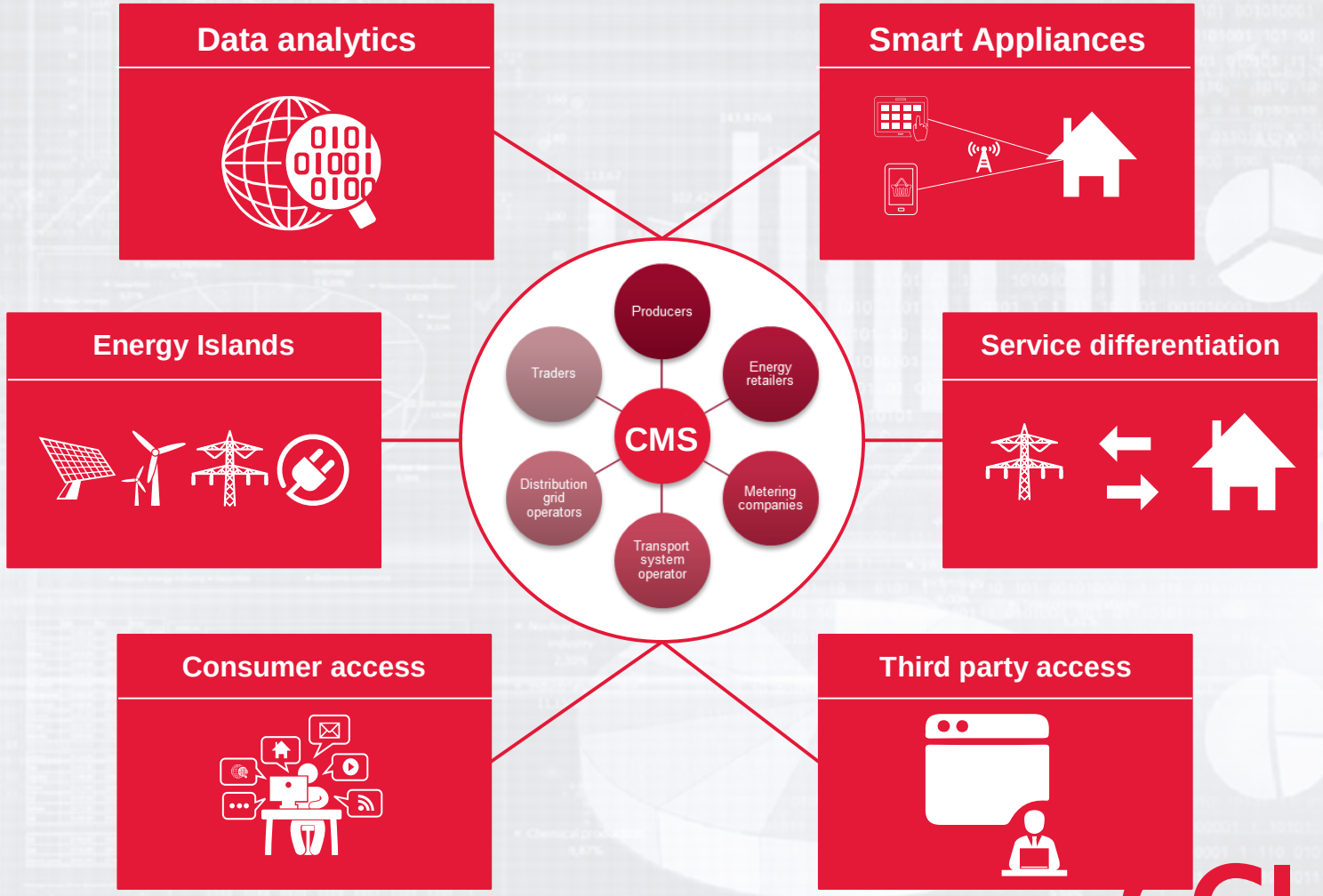
Centralisation of all data and services in the Datahub enable new services towards customers and market.

Datahubs provide the central master data management and market process management to support the administration and settlement processes for **Energy Societies**

Service differentiation is relevant for all parties in the market and Datahub provides the central registry to these services and the associated Settlement and reporting processes

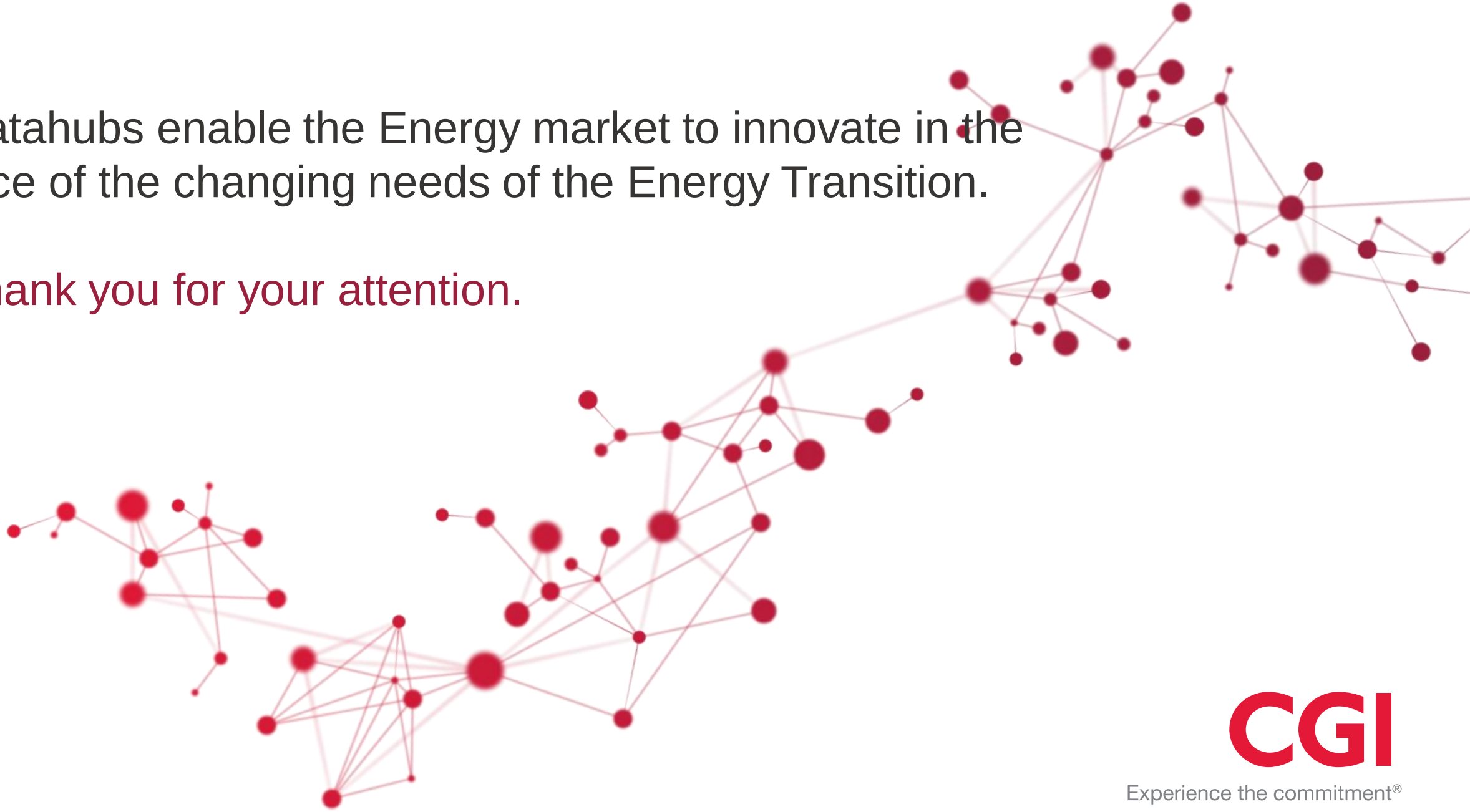
Administration of **consumption** and **production capacities**, including **switchable capacity**, allows portfolio and net security management but also supports volume aggregation and third party services

Customer and **3rd party access** to all data, both individual and **aggregated**, is ensured through the centralisation of the market data. Script security and privacy processes need to be in place though.



Datahubs enable the Energy market to innovate in the face of the changing needs of the Energy Transition.

Thank you for your attention.



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