Perspectives and Learning(s)

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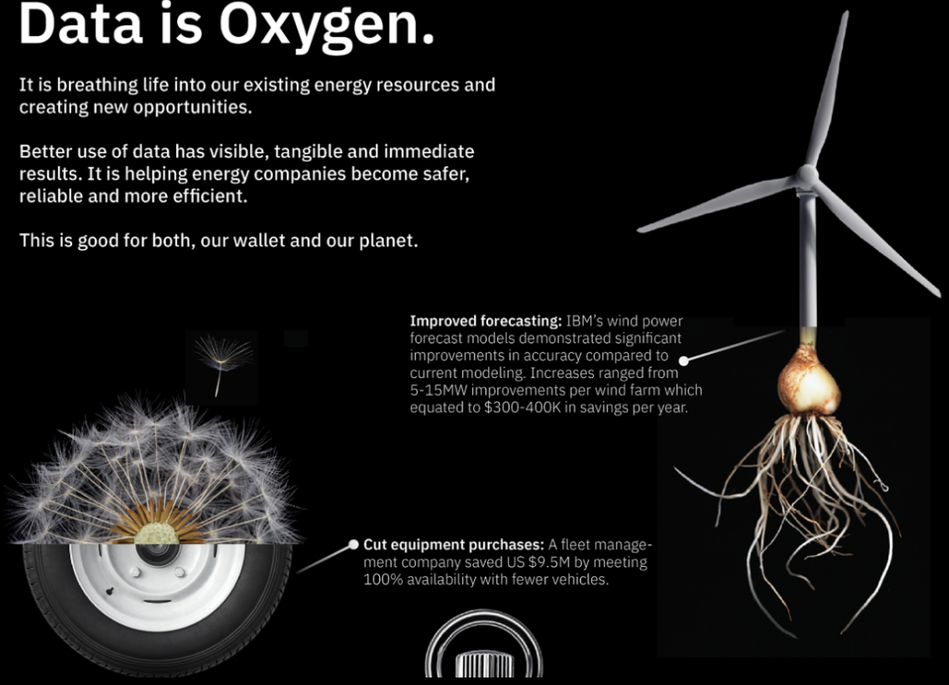

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IBM is working with utilities to address key market challenges and enabling a more sustainable, reliable and affordable energy transition

TRENDS

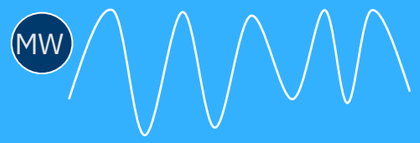
Conventional → Sustainable

Centralised → Decentralised

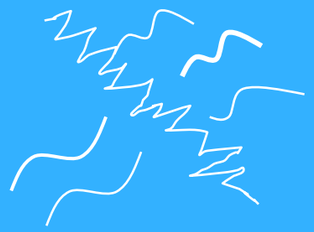
Predictable → Unpredictable

CHALLENGES

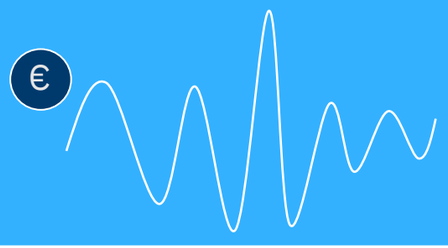
Instability in the grid



Congestion

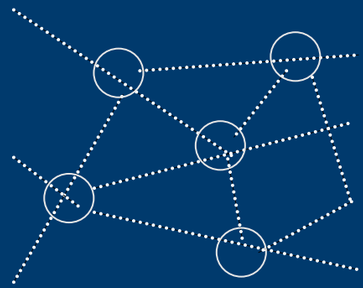


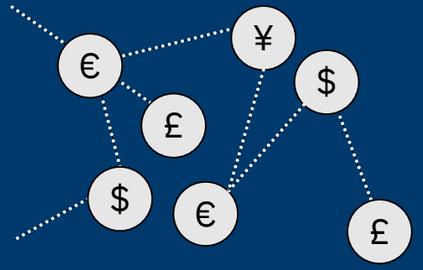
Volatile markets



SOLUTION

Increased flexibility through intelligent workflows, AI and new market mechanisms





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There are many kinds of flexible loads in a city – that can be controlled (start/stop/bidirectional) to unleash flexibility of demand into the market. The key is to aggregate and optimise at scale with AI.

HVAC
Potential: ~30 %

IT & electronics
Potential: ~30 %

Cooling and freezing
Potential: ~70 %

Battery Storage, Pumps
Potential: ~25 %

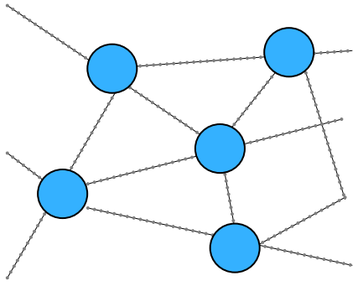
Electric motors and industrial equipment
Potential: ~10 %

Compressed air
Potential: ~5 %

Electrical vehicles
Potential: ~70 %

Several key technologies are used to create intelligent workflows that link the intelligent network to intelligent markets - Creating a new market platform for flexibility services

Smart Grids and Network Intelligence (Aggregation)



Network of electricity consuming devices, where each device can be instrumented to increase or reduce consumption to adjust to the balance and capacity in the grid.

Linked via Intelligent workflows (Optimisation, Orchestration)

IoT

Integrates the devices to the Flex Platform and communicates between them to instrument the devices at the right time to ensure the balance.

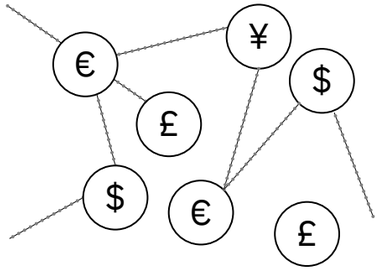
AI

Predicts the capacity in the grid and determines the combination of relevant devices for flexibility and their flexibility potential.

Blockchain

Documents the flexibility delivered in real-time, to ensure transparency and trust in the trade of reduced/increased electricity consumption.

INTELLIGENT MARKETS (Settlement)



The electricity consumption is adjusted and typically moved from expensive to cheaper periods. The flexibility is pooled together and sold by aggregators in the markets for ancillary services.

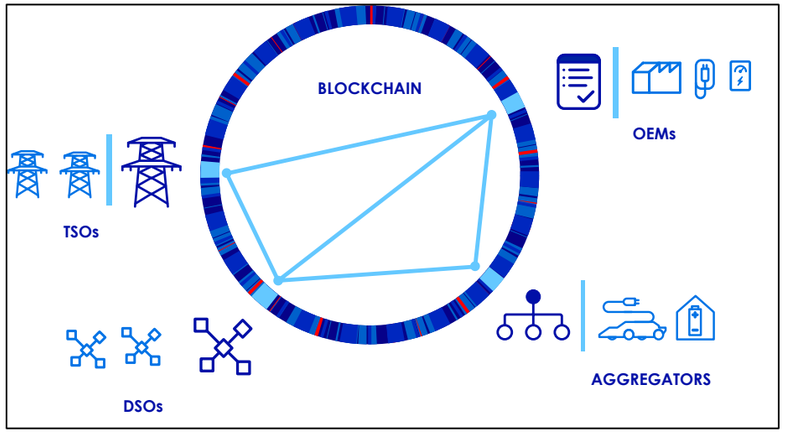
TSOs come together to form Equigy

Equigy is a joint-venture between 3 European TSOs, through which they will jointly create the Crowd Balancing Platform (CBP) on IBM Blockchain and enable the balancing of the renewable energy supply of the future. The Focus will be EV and Battery Storage initially

The Vision: Towards battery-based balancing in 2030

Our mission is to support the energy transition by enabling smaller distributed flexibility assets to participate in the energy system through aggregation

EQUIGY as a significant driver and enabler for the energy transition: together, we enable the balancing of the renewable energy supply of the future.



Founders: TenneT Taking power further · swissgrid · Terna

Publicly announced partners: sonnen · vandebron · SCHOLT ENERGY CONTROL · NISSAN · BMW · ENERGINET

Links: www.equigy.com **Youtube 'How it works':** https://youtu.be/32Vx7akBNzA

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