GETTING THE WHOLE ECO-SYSTEM ON THE GRID - ENABLING BLOCKCHAIN IN ENERGY

ETEX

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@fractalgrid

A Changing System

- Early 20th C – problems of simplicity
  - Individuals
- Late 20th C – disorganised complexity
  - Average behaviour
- 21st C – organised complexity
  - Multilateral interactions

Architecture of markets, incentives, institutions, governance and regulations date from deregulation of late 20th C

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Challenge: old structures do not support new markets

Fragmented Data

- Low asset visibility & inclusion
- Siloed data
- Excluded capacity

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Fragmented Markets

- Uncoordinated price signals
- Fragmented liquidity
- Missing markets

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Inefficient System

1. **Higher costs**
2. **Higher carbon**
3. **Lower resilience**

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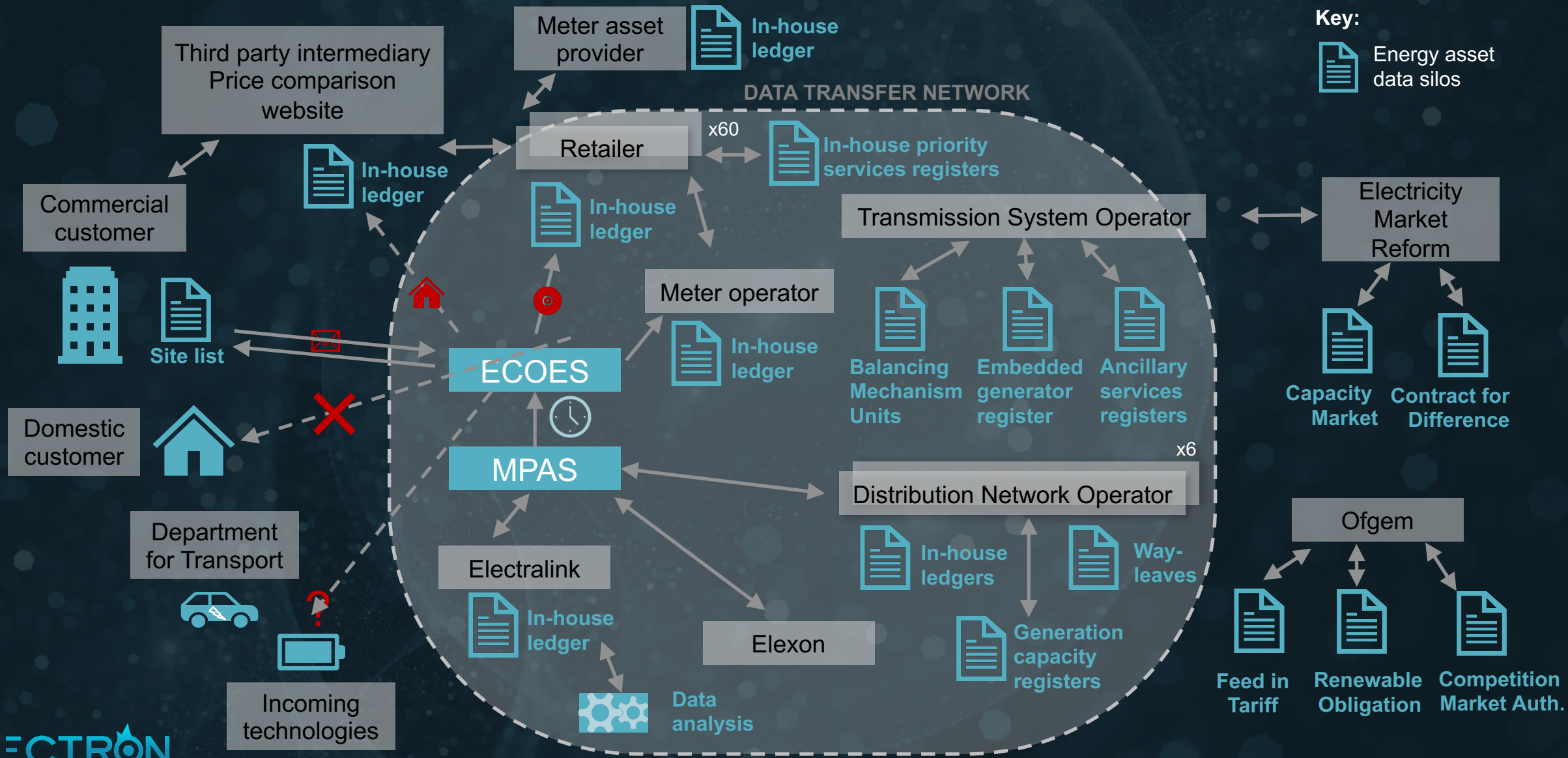
Fragmented Data



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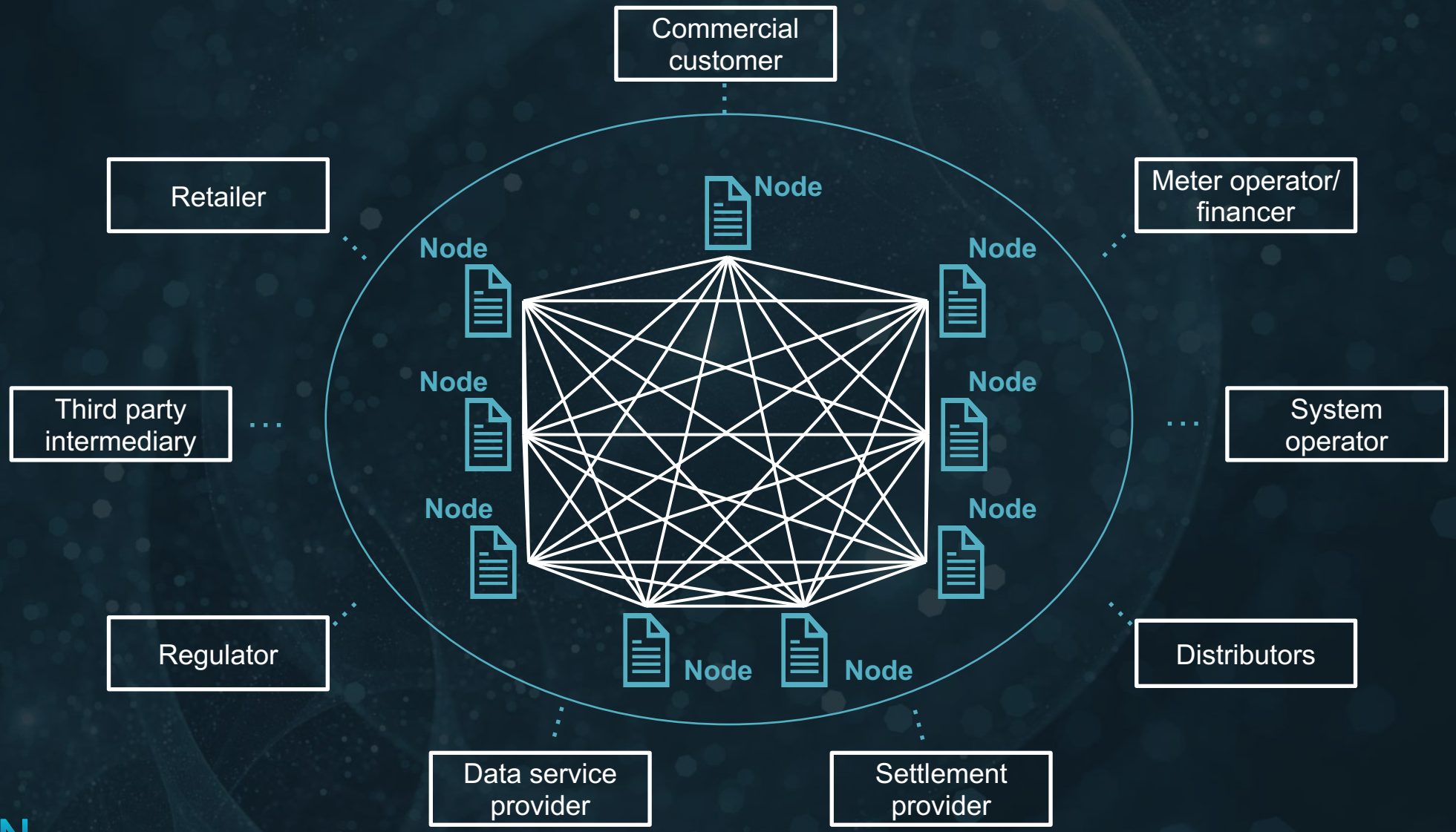
A common asset register…



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Fragmented value in energy markets

Traditional generation

- Energy
- Ancillary Services

Traditional + btm generation + renewables

- Energy
- Ancillary Services

+

- Low carbon
- Capacity

Traditional generation, renewables & smart systems

- Energy
- Ancillary Services
- Location

+

- Low carbon
- Capacity

+

- Power Quality
- Constraint mgmt.
- Response profile

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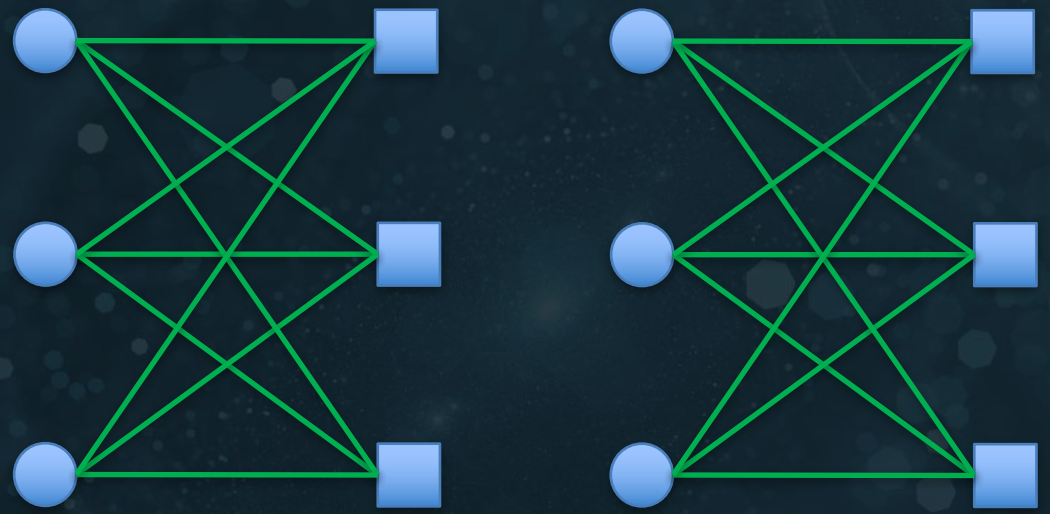
The path to smart markets

One-sided market

Bilateral Trading

Simple Attributes

Rivalrous trading



Two-sided market

Multi-lateral Trading

Complex Attributes

Collaborative trading

Capacity

Energy

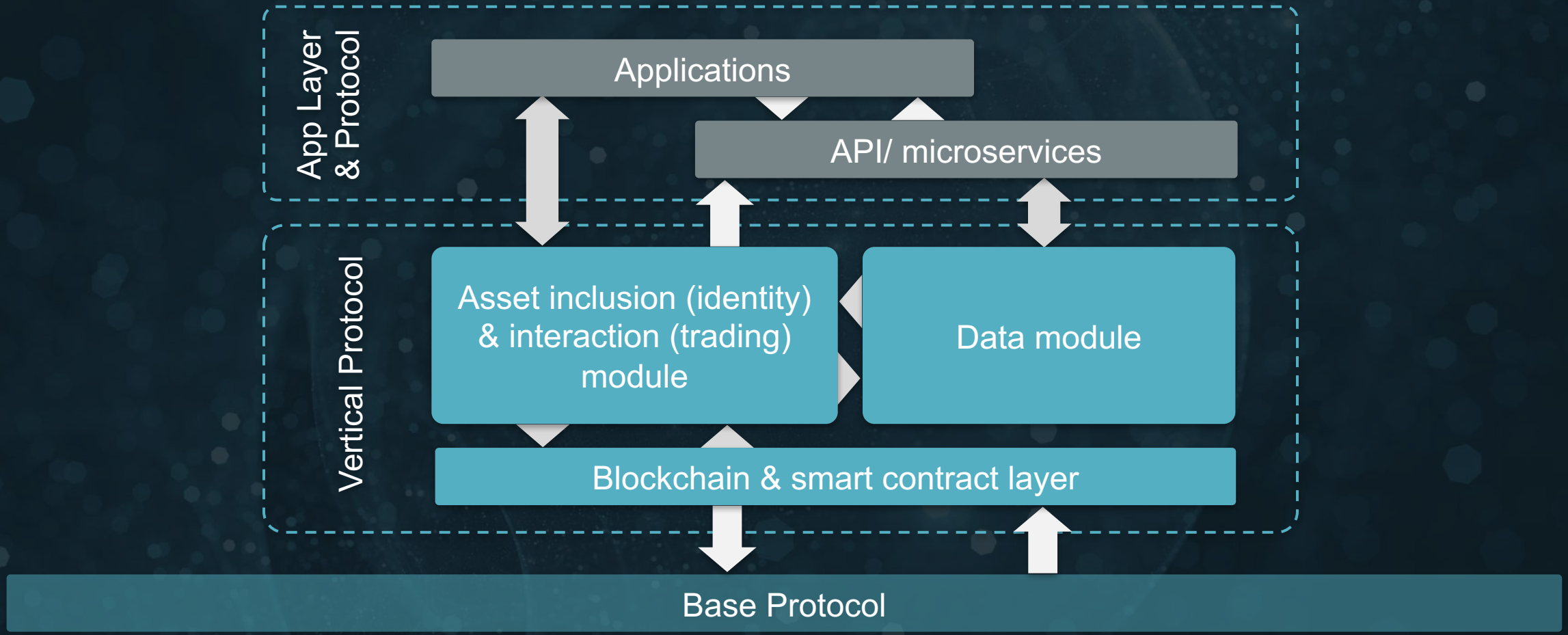
Location

Matched Trade

Response

Source

New business models: value migrates to apps & services



Building blocks: Apps in development

Secondary Capacity Trading
Completed

Asset Registration Platform
Next Phase: October 2018

Balance Group P2P
Start: August 2018

Energy Communities
Start: August 2018

Location specific DER trade
In scoping phase

Constraint Queue Management
In scoping phase

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Blockchain: cooperation as a competitive advantage?

Enables coordination without surrendering control of data, customers, or functionality

Coordination

- Single source of truth
- Whole market liquidity
- Collaborative transactions
- Cost Reflective Value

Assurances

- Visibility/Transparency
- Auditability
- Data ownership
- Level playing field
- Programmable Rules
  - Data access
  - Trading

Extensibility

- No functionality gatekeeper
- Integrates with new models
  - e.g. P2P/ Microgrid
- Streamline settlement

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