BENTRADE

Blockchain Based Energy Distribution & Trade Platform

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Market Readiness

Kaynak Türü	2016		2017	
	Kurulu Güç (MWe)	Oran (%)	Kurulu Güç (MWe)	Oran (%)
Güneş (Fotovoltaik)	939,19	89,60	2.978,84	93,87
Doğal gaz	51,85	4,95	85,88	2,71
Biyokütle	36,42	3,47	66,72	2,10
Rüzgar	13,75	1,31	32,20	1,01
Hidrolik	5,78	0,55	8,69	0,27
Güneş (Yoğunlaştırılmış)	1,22	0,12	1,00	0,03
Genel Toplam	1.048,21	100,00	3.173,32	100,00

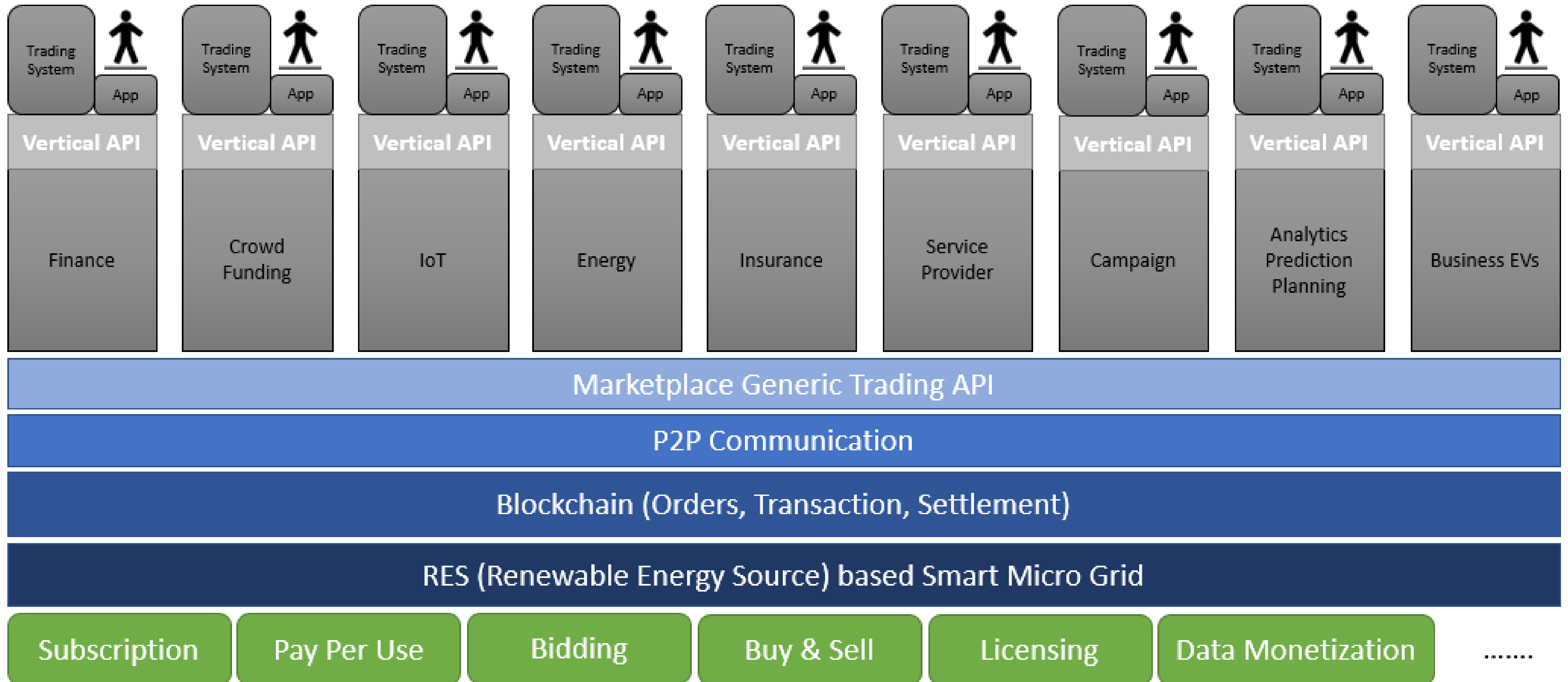| Kaynak Türü	2016		2017	
	İhtiyaç fazlası olarak sisteme verilen enerji miktarı (MWh)	Oran (%)	İhtiyaç fazlası olarak sisteme verilen enerji miktarı (MWh)	Oran (%)
Güneş (Fotovoltaik)	1.031.358,00	90,64	2.836.553,09	93,57
Biyokütle	92.129,90	8,10	138.657,08	4,57
Rüzgar	8.268,44	0,73	36.801,92	1,21
Hidrolik	6.115,42	0,54	19.434,29	0,64
Doğal gaz	0,00	0,00	111,67	0,00
Genel Toplam	1.137.871,75	100,00	3.031.558,05	100,00
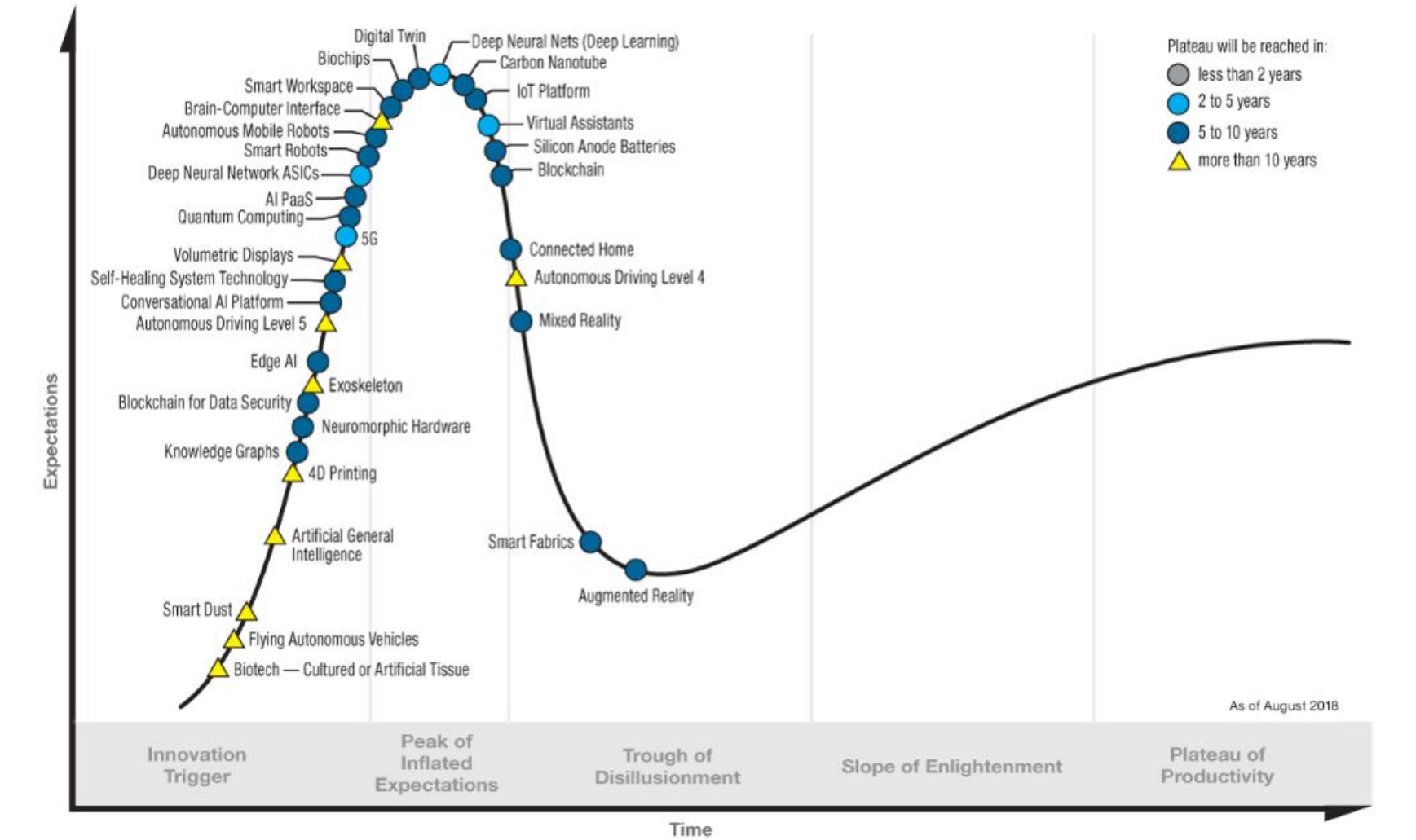
Problem - Rationale
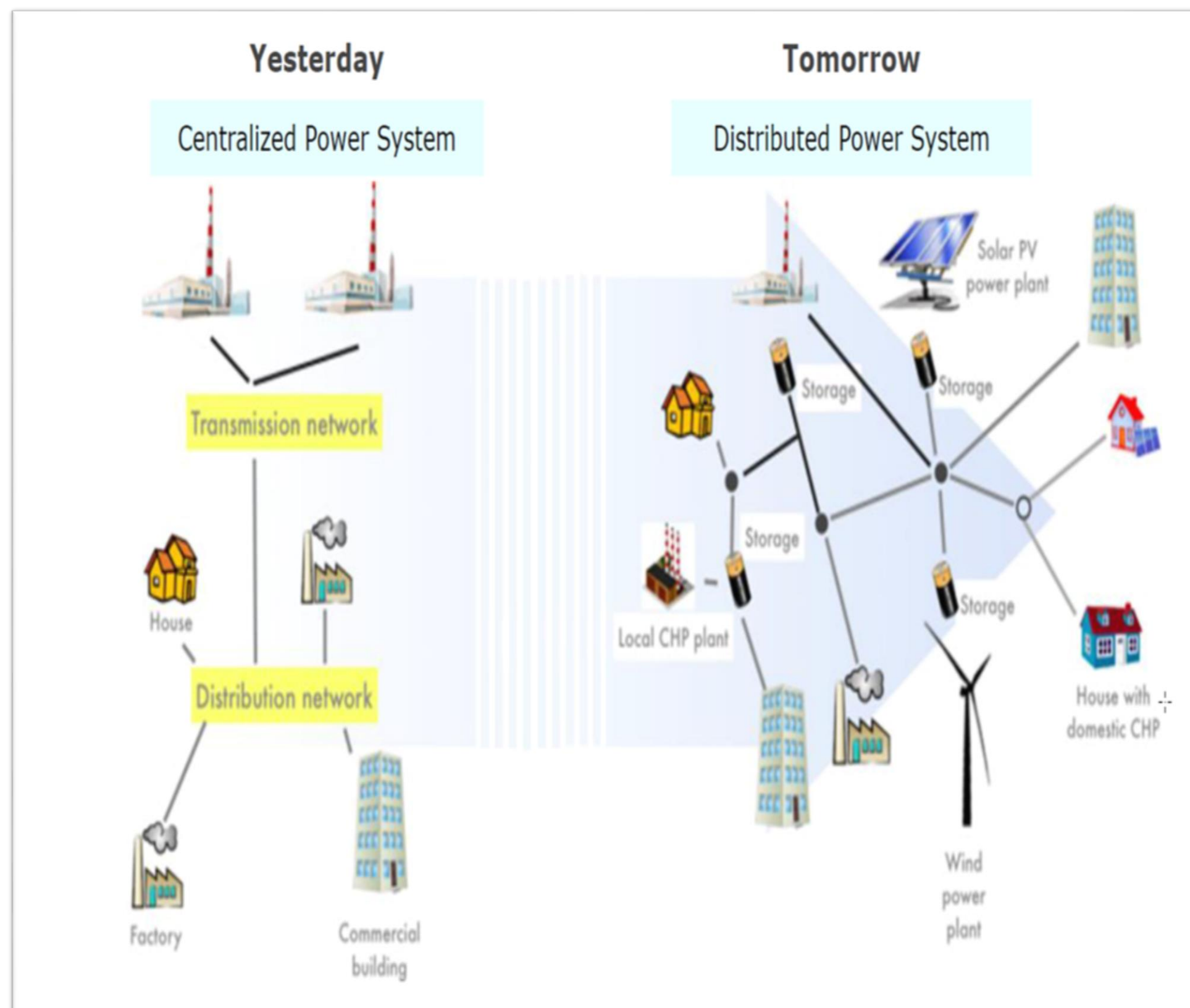
- As technological advancements come to life, **new smart energy delivering services** become available such as rooftop solar panels and storage devices.

- Triggered by new technologies, policy, regulation, and customer expectations are all contributing to a **shifting paradigm**

- Traditional utility businesses can no longer only rely on **demand for the commodity**

- Demand grows and become distributed and **centralized grid is too costly** and sluggish for these needs

- **Lack of customer choice** as well as financial models are locked in

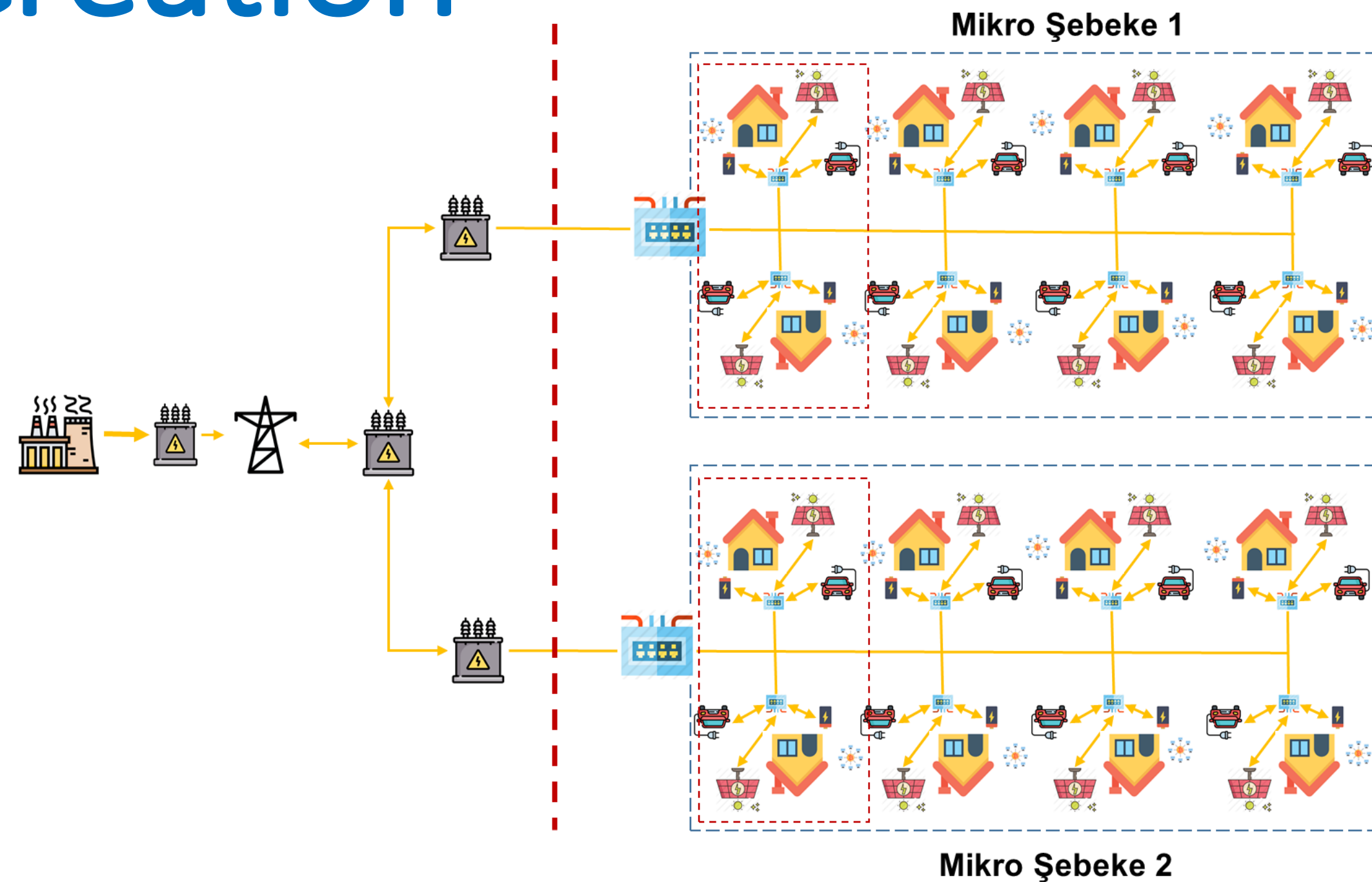- **Too much energy waste** and loss take place

Goal

- Decrease dependence on commodity electricity and disseminate use of renewable energy sources

- Create distributed energy asset owners (Prosumer)

- Track and audit energy production, consumption and transfer

- Balance demand response

- Reduce risks of failure and cyber attacks by distributed model

- Help create disruptive business and revenue models

- Provide smart energy services to customer with trust

- Create alternative financial models

- Create digital asset history

Solution Offer

Trading System / App	Trading System / App	Trading System / App	Trading System / App	Trading System / App	Trading System / App	Trading System / App	Trading System / App	Trading System / App
Vertical API	**Vertical API**	**Vertical API**	**Vertical API**	**Vertical API**	**Vertical API**	**Vertical API**	**Vertical API**	**Vertical API**
Finance	Crowd Funding	IoT	Energy	Insurance	Service Provider	Campaign	Analytics Prediction Planning	Business EVs

Marketplace Generic Trading API

P2P Communication

Blockchain (Orders, Transaction, Settlement)

RES (Renewable Energy Source) based Smart Micro Grid

| Subscription | Pay Per Use | Bidding | Buy & Sell | Licensing | Data Monetization | ……. |

Value Creation

LAYERS	COMPONENTS	VALUE
Power Grid	Distribution Generation, loads, storage, electric voltage	Paid for installation, configuration, operation and maintenance costs
ICT	Communication network devices, data storage, information flow, smart contracts, ledgers	Paid as service provider, licensing
Control	Monitoring and control systems	Paid for service and infrastructure usage
Business	Market Authorities, local market participants, trading platforms, mobile service providers	Paid for electronic services, contribution fees

Impact

- Introduce DLT in electricity market

- Achieve better understanding of customers behavior, interest and acceptance of active participation

- Develop new algorithms and techniques to support service and business innovations based on big data, AI and interoperable DLT

- Give suggestions to the national governance method and regulations related to DLT

Issue	Traditional Approach	Blockchain Approach
Single Point of Failure	Yes	No
Energy Profile Anonymity	No	Yes
Payment System	Centralized	Peer-to-peer sales/purchase system
Payment Settlement	By central authority	Through Consensus between all nodes
Energy Profiles Integration and Aggregation	By central authority	Through distributed ledger and consensus between all nodes
Demand Response Programs	By central authority	Autonomous signaling through node cooperation and smart contracts
Energy Agreements Verification	By central authority	Through consensus between all nodes

Future Revenue Models

VALUE ADDED SERVICES

- P2P & Bulk Energy Trading Marketplace

- Energy Metering and Billing Platform

- IOT Data Monetization Platform – Demand Forecasting/ Price Modelling


THROUGH LICENSING & CONSULTANCY

- Blockchain Platform As A Service

- AI & Analytical Platform

- Microgrid Design & Energy Market Design

- Grid Management Services (Capacity, Real Power, Reactive Power, Frequency Regulation)

Risk Factors (Research Area)

- It is a new territory in all aspects without any legal or compliance precedents to follow, which poses a serious problem for IOT manufacturers and services providers.

- Lack of grid-scale energy storage capacity

- Integration of renewable energy adds a level of uncertainty due to the intermittent and unpredictable nature of its generation

- Variations in energy production, either surplus or deficit, may threaten the security of energy supply leading to energy components overload and resulting power outages or service disruptions.

- Large gap between IOT data transfer speeds and blockchain processing times

High Level Architecture
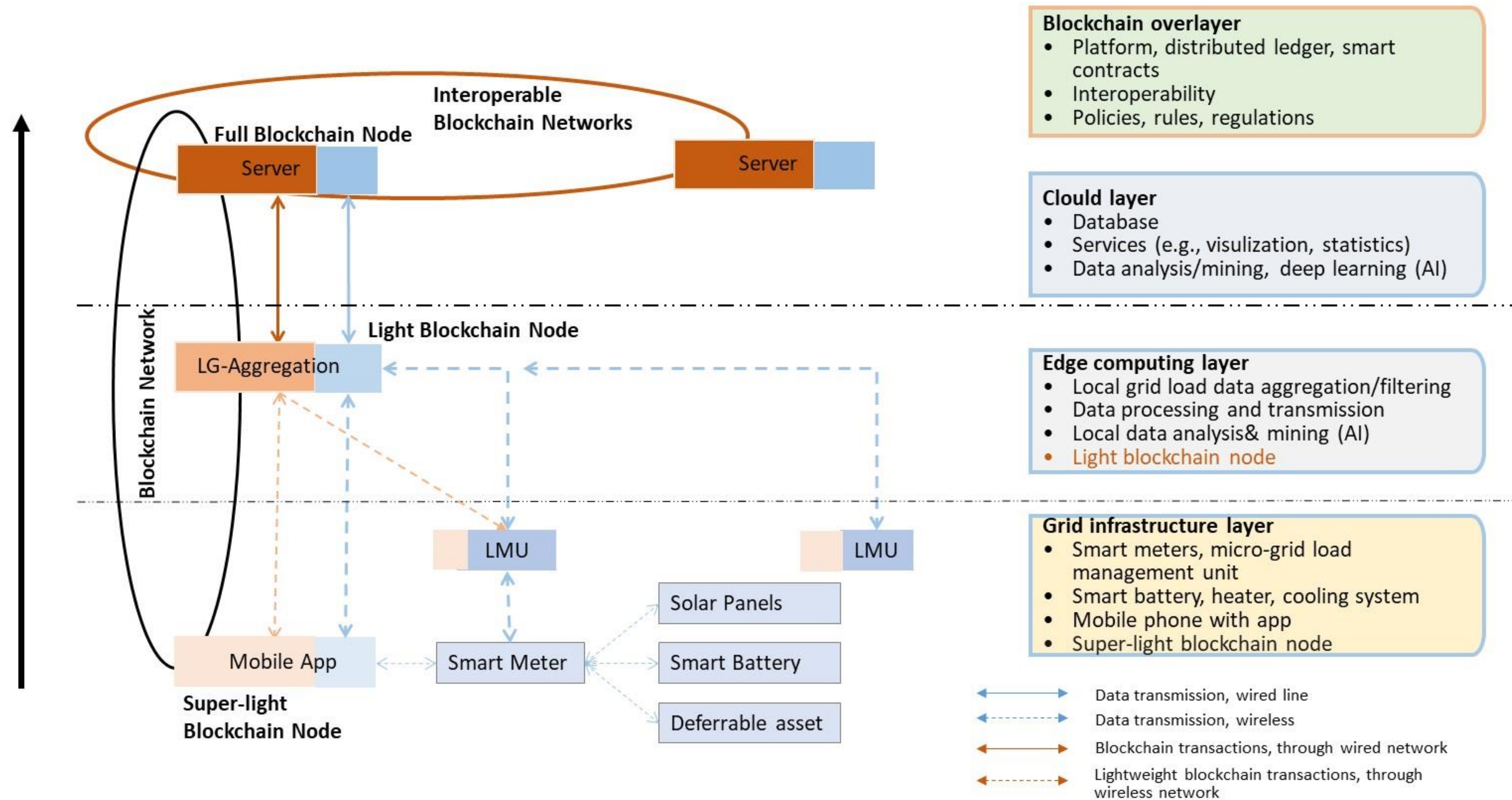
Looking For Partners

Turkey

KoçSistem

Entek

Sedaş (DSO)

Tredaş (DSO)

Epiaş

Doğuş Tech

Endoks

Sweden

Stockholm University

IBM Sweden

Lulea University of Technology

Jamkraft AB

SuperGrid

Expertise Needed

- Micro grid communication and infrastructure provider, operator
- DSO - Distribution System Operator
- Business model and market operator
- Policies, rules, regulation facilitator

- IOT
- Cybersecurity
- Blockchain
- Data analysis, mining, deep learning

Join the follow-up Telco
4 February 10.00-10.30 CET

Meeting number : 140 144 149
Meeting password: dfJgEXPp583
Link to join:
https://eurescom-meetings.webex.com/eurescom-meetings/j.php?MTID=m07d7c712015698dcf0b26284a1e6366d

Join by phone
+49-6925511-4400 Germany toll
Global call-in numbers

Can't join the meeting?

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