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IoT and Smart Grids: A new era in energy management, efficiency and sustainability for FM

Aristoteles Alexiou

M.Eng. Electrical and Computer Engineer AUTH

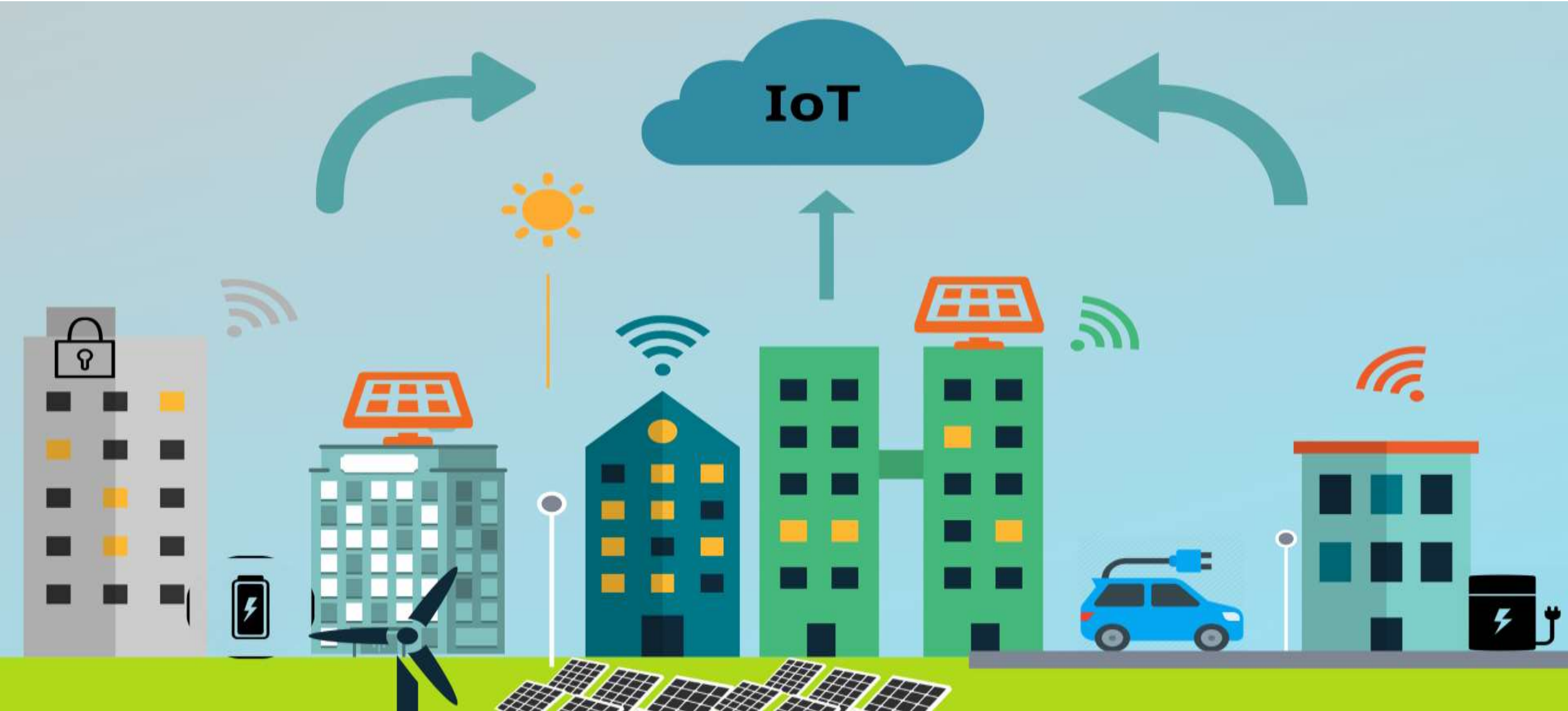
MSc Smart Grid Energy Systems UTH

Ioannis Filippopoulos

PhD, MBA, MSc in IT

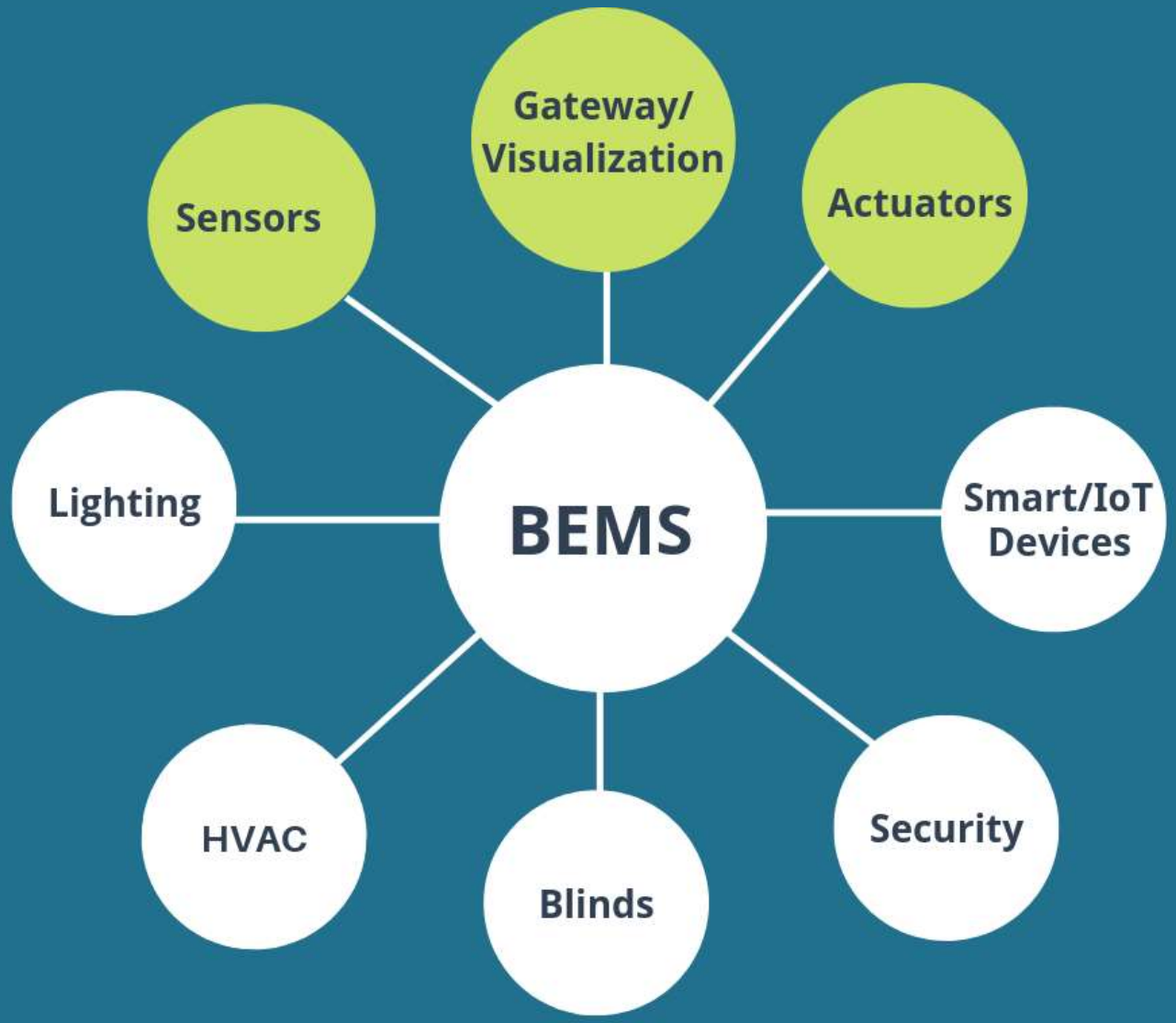
Smart Energy Systems

Building Automations, Smart Meters, Renewable Energy, Storage System, Electric Vehicles.



Today’s IoT-based energy management

The substructure of facilities energy management

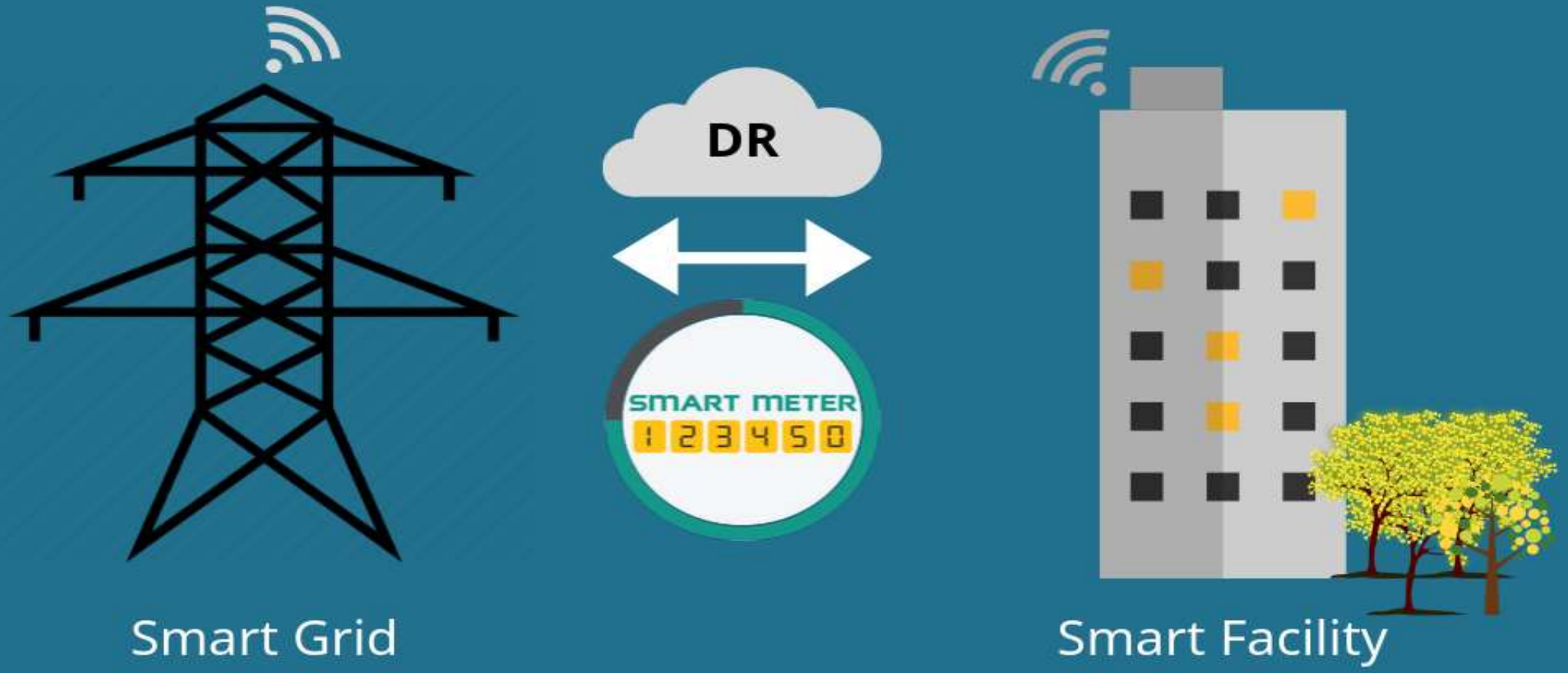


Main goals:

- Energy consumption control
- Monitoring-Fault detection
- Remote Control
- Comfort and quality of life

- ➢ One – way flow of information & energy
- ➢ Uses mainly environmental data
- ➢ Passive system

Where we're headed:
Towards the future energy supply/demand ecosystem.



Bidirectional Communication and Interoperability

- Demand Response (DR)
- Real-Time Pricing (RTP)

The game changer!

Internet of Things meets Grid of Things

Why is this so urgent?

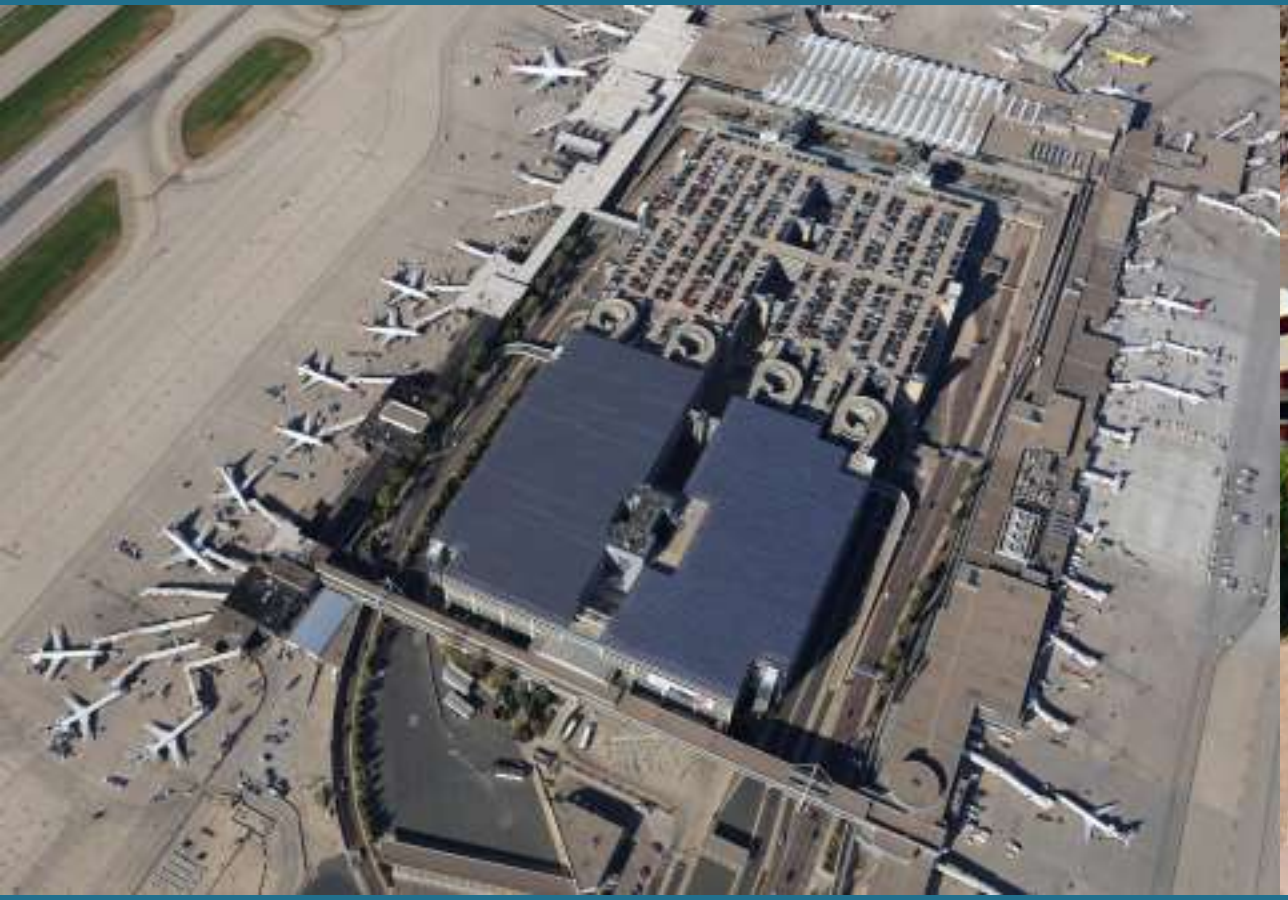
- The electricity prices will differ every hour even every 15 minutes
- High demand – high prices
- Facilities that will not be ”smart”, indirectly will pay a penalty
- Incentives to change energy consumption profile
- Buildings must be a dynamic part of a solution for a new energy future

Renewables (PV) and Battery Storage

The key to business sustainability

- Reduces CO_2 emissions and facilities O&M costs
- Ensures robustness to price volatility
- Used as a back up system
- Easier to predict due to IoT Technologies

Minnesota's St. Paul Airport and Arizona State University



Plug-in Electric Vehicles (PEVs)

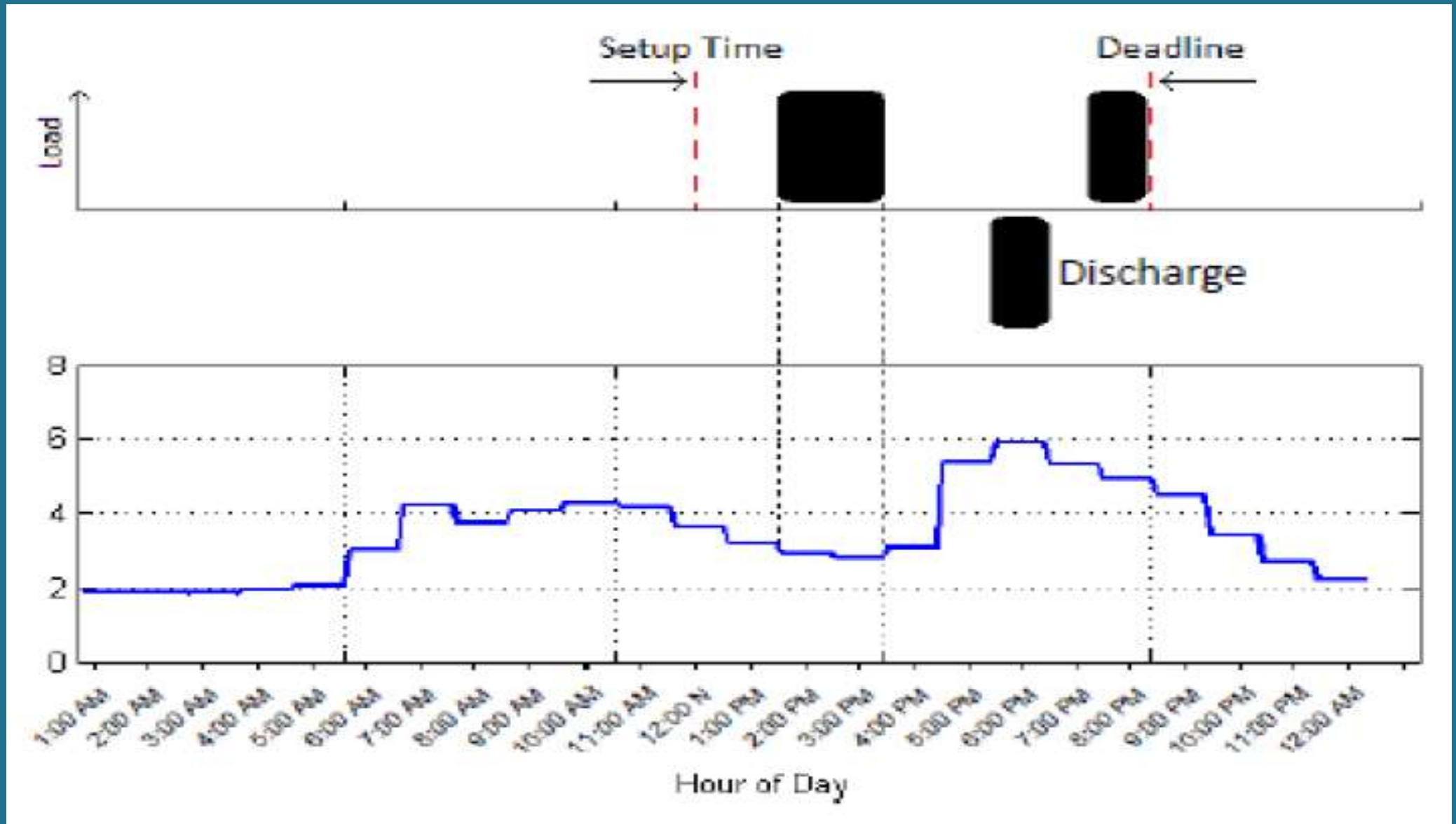
Batteries of parked vehicles are used as source of power

The PEVs discharge their battery when the facility is in an emergency situation (V2B)

The PEVs discharge their battery when the grid lacks generation (V2G)

The PEVs are paid to compensate for their contribution

Vehicle-to-Grid (V2G) Example



Automated Energy Consumption Scheduling (ECS)

IoT and Artificial Intelligence

Weather Forecast

Consumption Forecast

Energy Production Forecast

Pricing Forecast

Scheduling

The schedule should be an optimal solution to minimize the cost while maintain comfort

Comprehensive Integration

A state-of-the-art facility

01	02	03	04	05
BEMS	Renewable Energy (Solar) and Storage	Electric Vehicles (V2B or V2G)	Demand side management (DSM)	Energy Consumption Scheduling

Business Benefits from IoT-Smart Grid aided FM

Creates a zero down and guaranteed positive cash flow business model.

Reduces its carbon footprint.

Adds value, resilience and public recognition to the enterprise.

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Thank you!

Dr. Yannes Filippopoulos

Aristoteles Alexiou