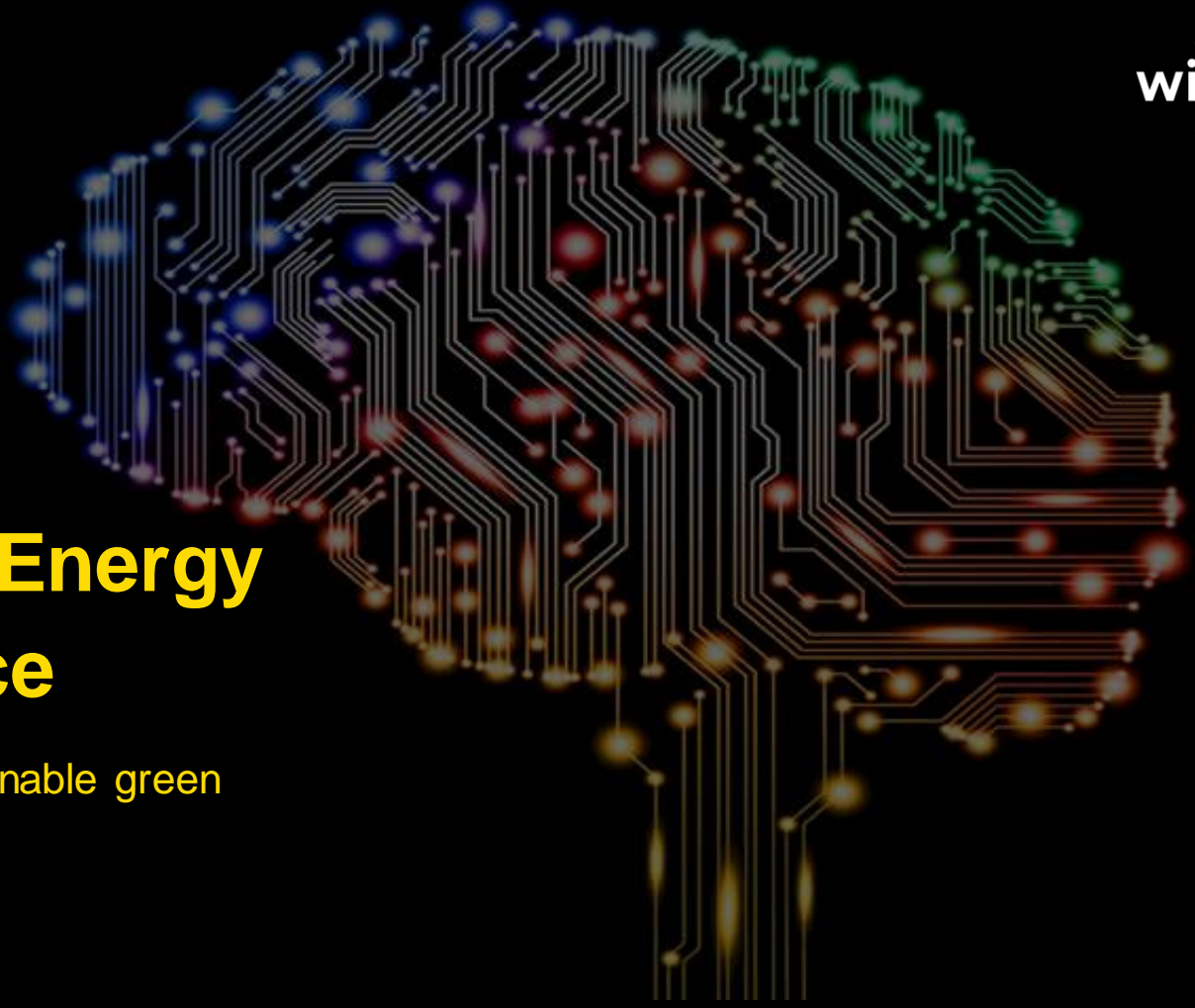




Cognitive Energy Intelligence

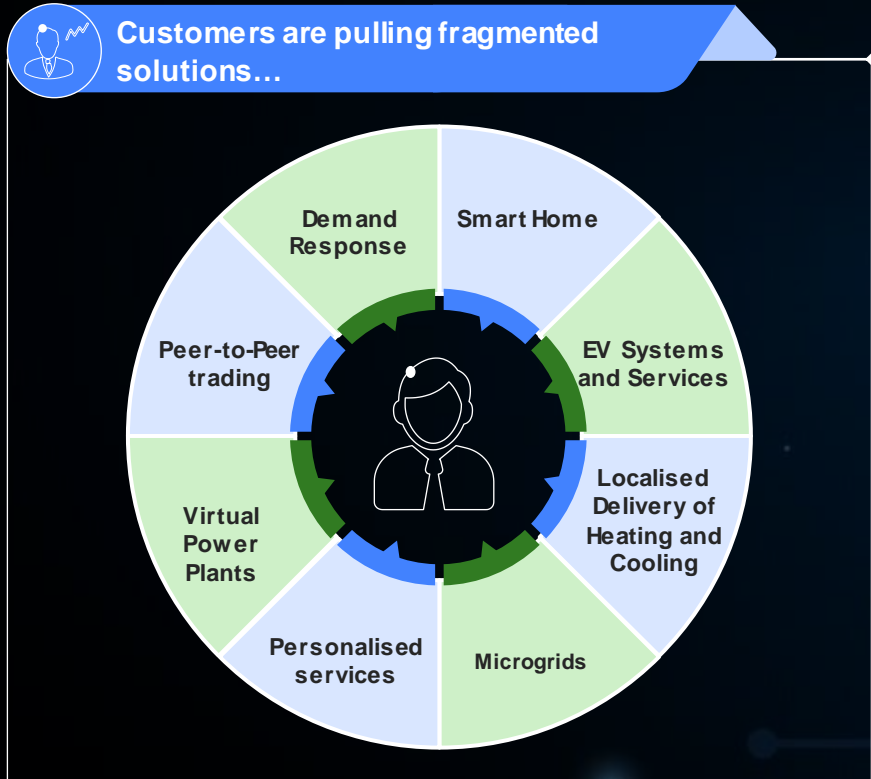
A Wipro solution to enable green
energy services



Distributed Energy Resources disrupting the utility market

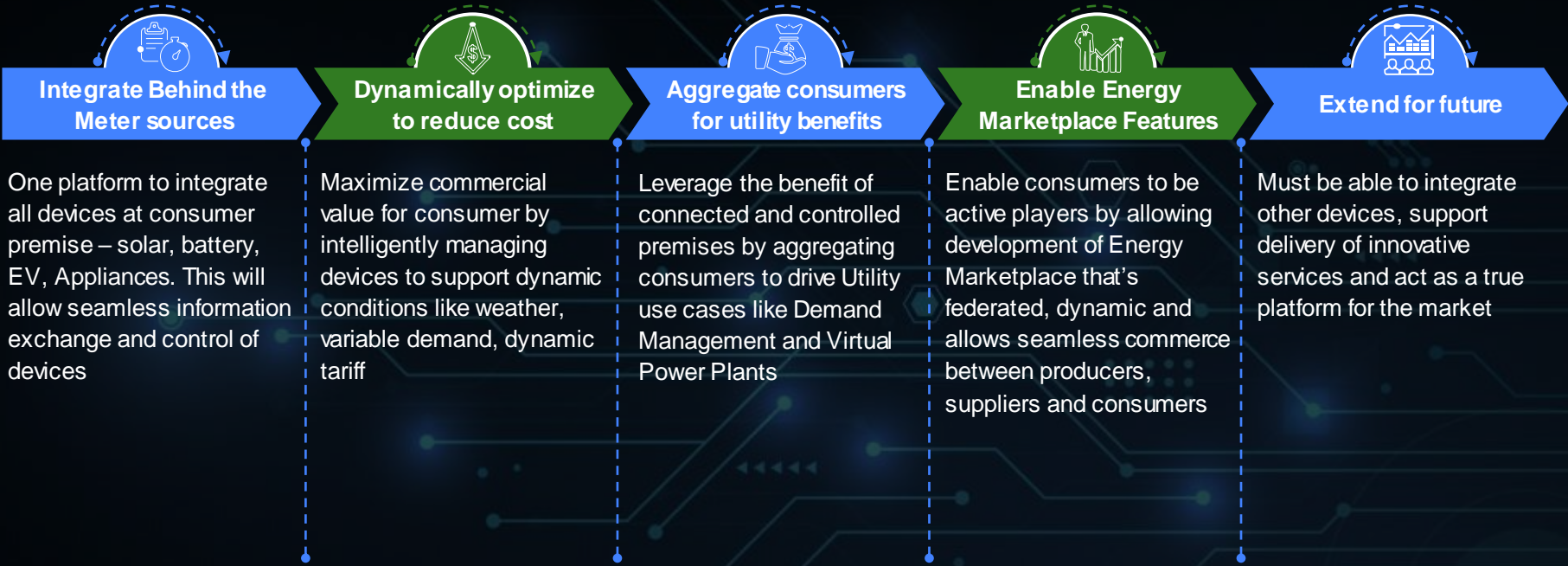


A multitude of services now exist however fragmented solutions lead to a confusing customer experience



- Individual solutions for customers from each solution require separate app/solution to manage each
- Inability to take input from other and optimize (e.g. if EV system can know about energy management in home...)
- This leads to too many applications to support with no integration at data and process level

Need for Next Generation Energy Platform



Need a common platform to support Energy Marketplace of the Future

Cognitive Energy Intelligence Platform

An “Energy Platform” that enables value added digital services for consumers to monetize energy and foster sustainability



Single channel control to set & manage energy usage & monetization



Pre-built use cases for Home Energy Management, grid support and community engagement



Cognitive algorithms to optimize usage and maximize revenue



Azure Cloud-based solution allowing reliability, scale & security



Universal device integration with any protocol ready device avoiding specific vendor lock-in



Flexible Operating Model including white labeling, customization and modular & subscription pricing

Helping consumers to reduce cost and Utilities to improve revenue

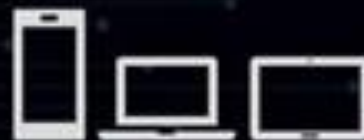
Components of the solution



IOT
Gateway –
Behind the
Meter

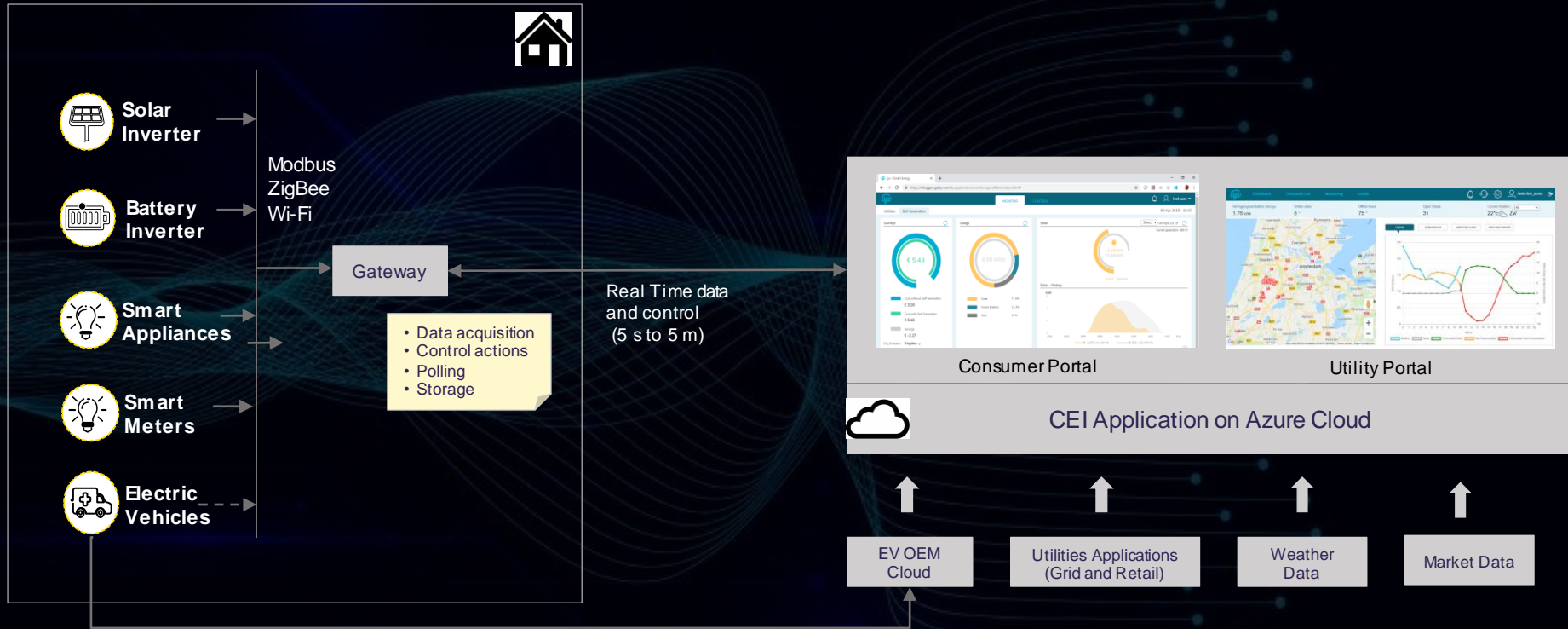


Energy
Intelligence
Platform on
Azure

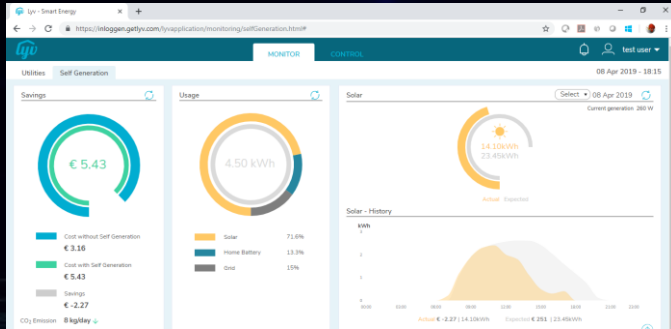


Apps for
Customers,
Utilities etc.

CEI Solution Overview



Platform features: Know and Act

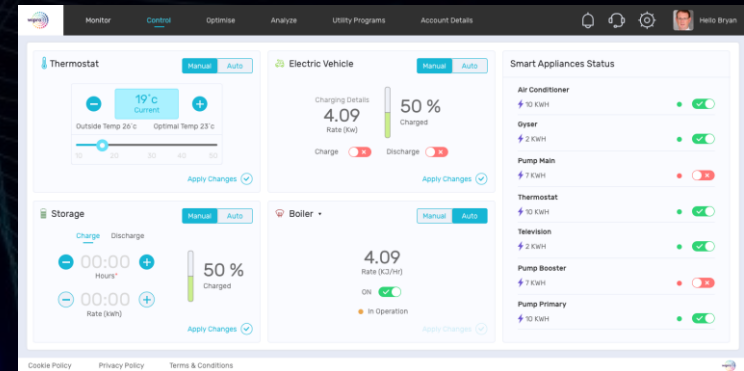


Monitor

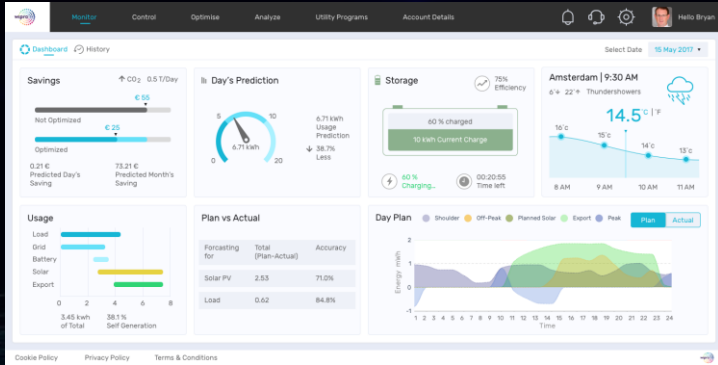
- Integrate with all devices in the premise – solar, battery, appliance
- Wipro gateway supports integration using all key protocols
- Provide near real time visibility to consumers about usage, price
- Get visibility across electricity, gas, water and heat – as required
- Consumers can set thresholds, track usage cost in real time

Control

- Provide capabilities to control devices where applicable
- Batteries and thermostats are controlled
- Appliances are made controllable using smart plugs
- Allows for individual settings where required
- Single screen visibility of usage and one click control



Platform features: Intelligence in action

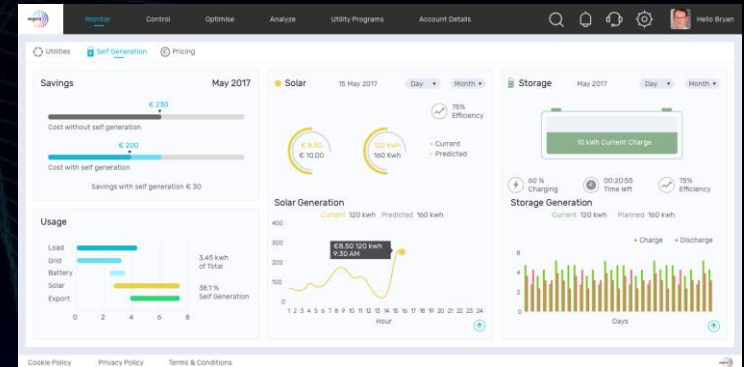


Optimize

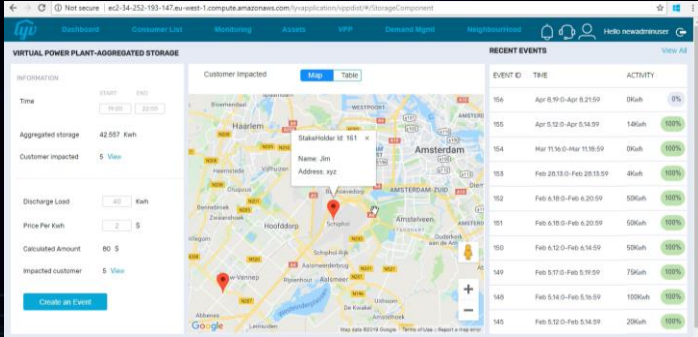
- Understand consumption pattern and usage of devices
- Provide manual or automatic optimization features
- Control battery usage dynamically for maximum yield
- Adjust to operating variability – weather, price, load
- Provide best energy savings available in market

Advice

- Advice consumers on device usage to lower cost
- Provide insight into consumption behavior for change
- Advice consumers on best plans available in market
- Provide insight on commercial benefits of solar and battery
- Detect leakage, unusual usage, heat loss to improve efficiency



Platform features: Efficiency in community

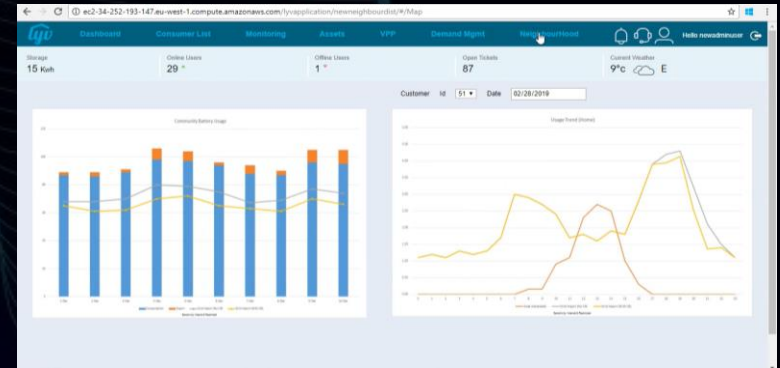


Virtual Power Plant

- Minimize net grid import for a set of distributed customers by intelligently balancing and optimizing their generation, consumption, storage and export
- Customers with excess solar benefits by virtually exchanging with customers in need
- Customers with no solar can also participate by being a low cost consumer
- System intelligently adjusts the load, battery usage and export to minimize import from grid
- A template commercial model can be used as a starting point

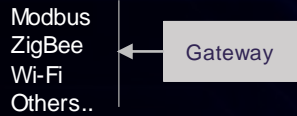
Neighbourhood Battery

- Leverage the benefit of battery without the customers having to invest individually
- The DNO installs a larger set of battery in a local line segment that supplies to a set of customers with or without solar
- During congestion the battery can be used to alleviate local constraints
- In normal times customer's excess is considered stored in battery and discharged during high tariff time in the evening



Distinctive Features

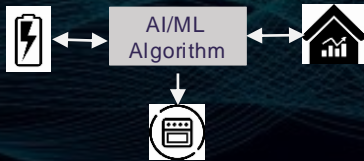
Device Agnostic – connect anything



- Gateway can connect to any device if API is available
- It supports all connectivity protocols and new ones can be added
- Wipro has developed Gateway firmware on Intel hardware
- 3rd party commercial gateway is also available from partner



Cognitive – best monetary option



- Algorithm decides the best way to use the battery – charge, discharge
- It decides when to store, consume and sell to maximize revenue
- Data from weather, market and utilities are utilized to plan ahead
- Algorithm forecasts the weather and consumption to plan better

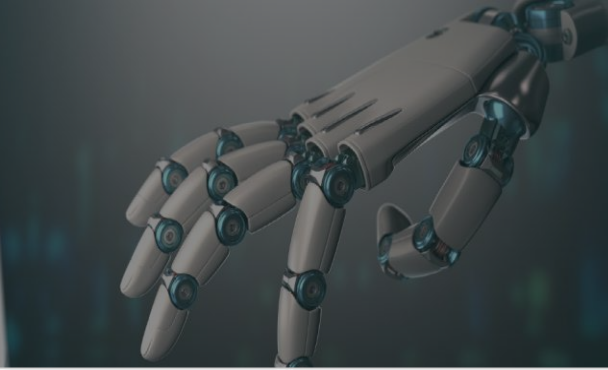


Scalable – grow at pace



- Cloud based solution provides ability to grow rapidly
- System allows adding new assets to monitor and control
- Can connect with multiple weather and utility systems
- Customer onboarding is self-serve, avoiding field crew need





Thank You

