

An Open Architecture Platform for Demand Resources from AutoDR and MBCx

- National Virtual Power Plant -

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Advanced Institute of Convergence Technology

Smart Grid Research Center

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Mission Statement

Motive Engine
for Smart Grid

- A Killer Application
- National Virtual Power Plant (DR& EE)

Innovative
Business Model

- Open Architecture Platform
- C-P-N-D Eco System

Sustainable
Energy System

- Priority No.1 Energy Resource
- Upto 20% on 2030

Infrastructure vs Killer Application

Gasoline

- Automobiles
- Roads

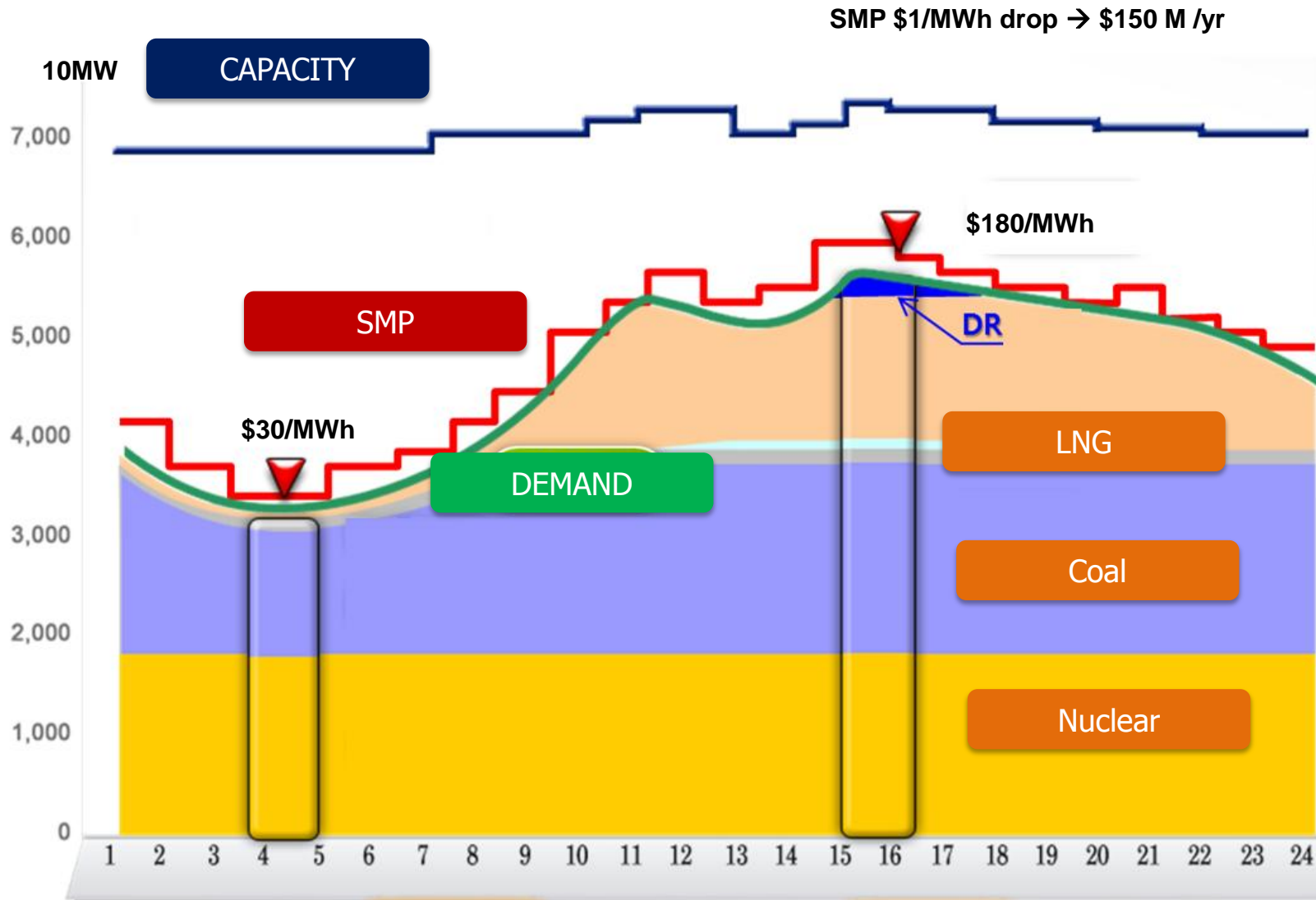
Wireless

- Smart Phone
- Base Stations

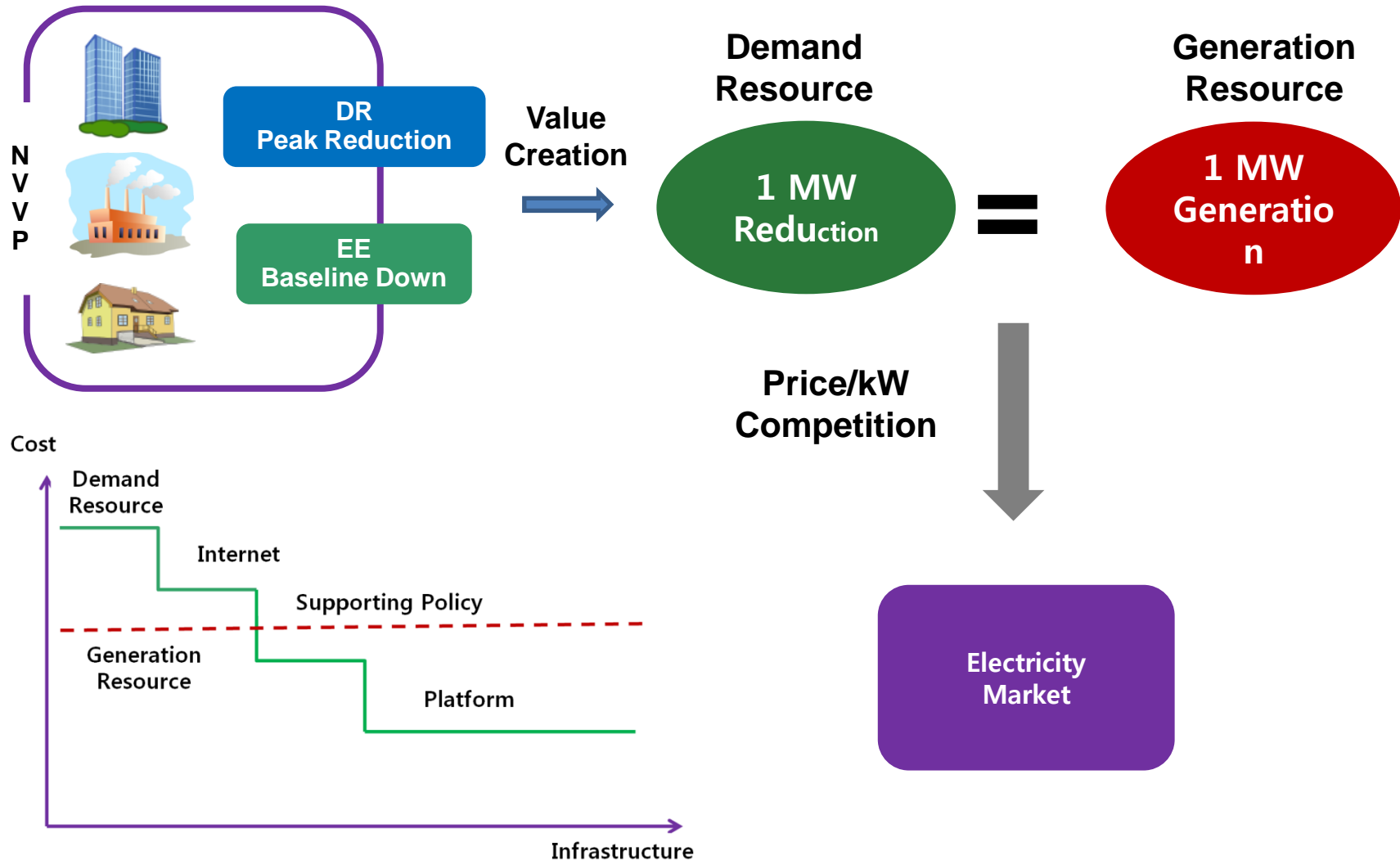
Energy

- Demand Resource
- Smart Grid

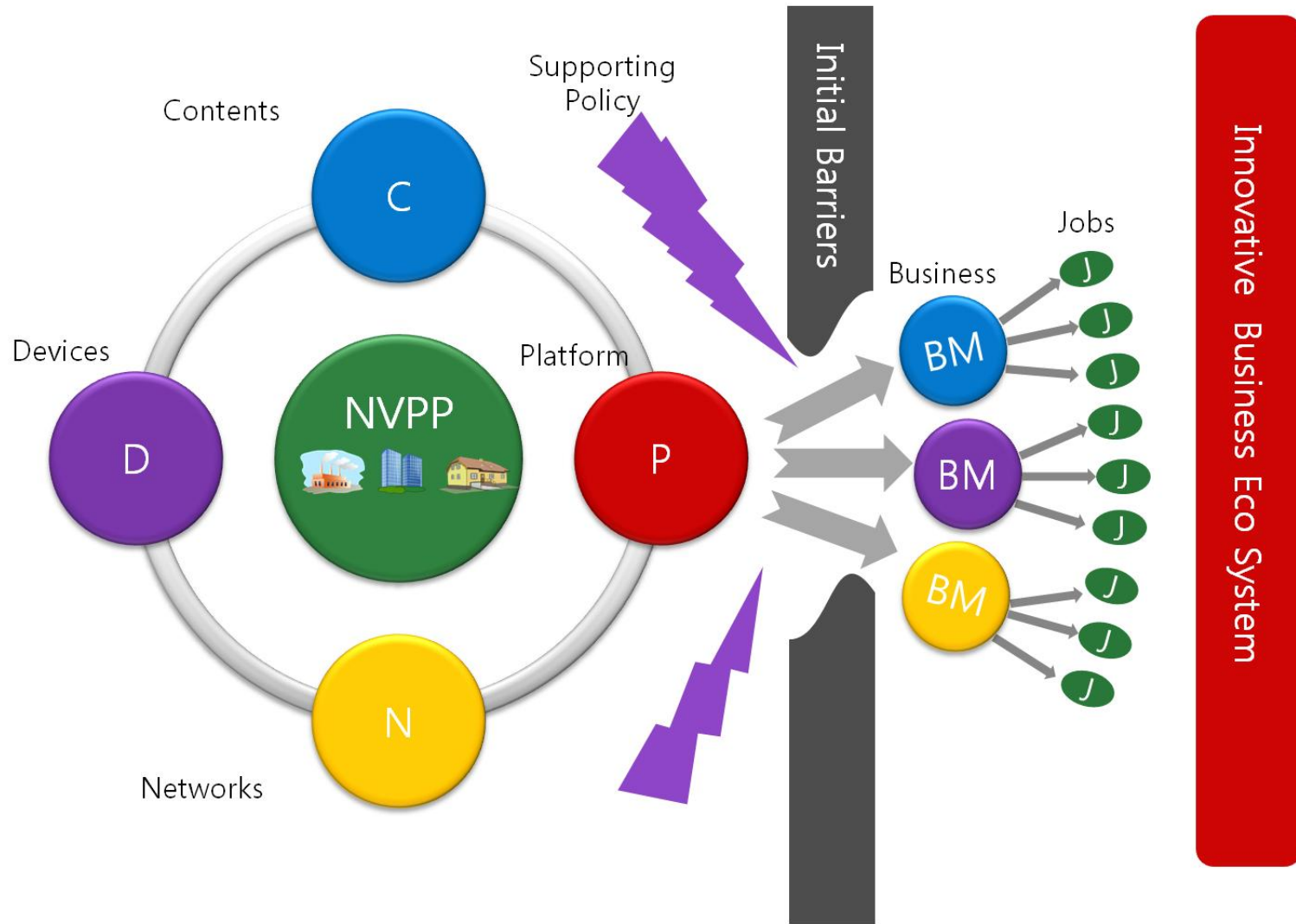
Value Creation from Demand Resource



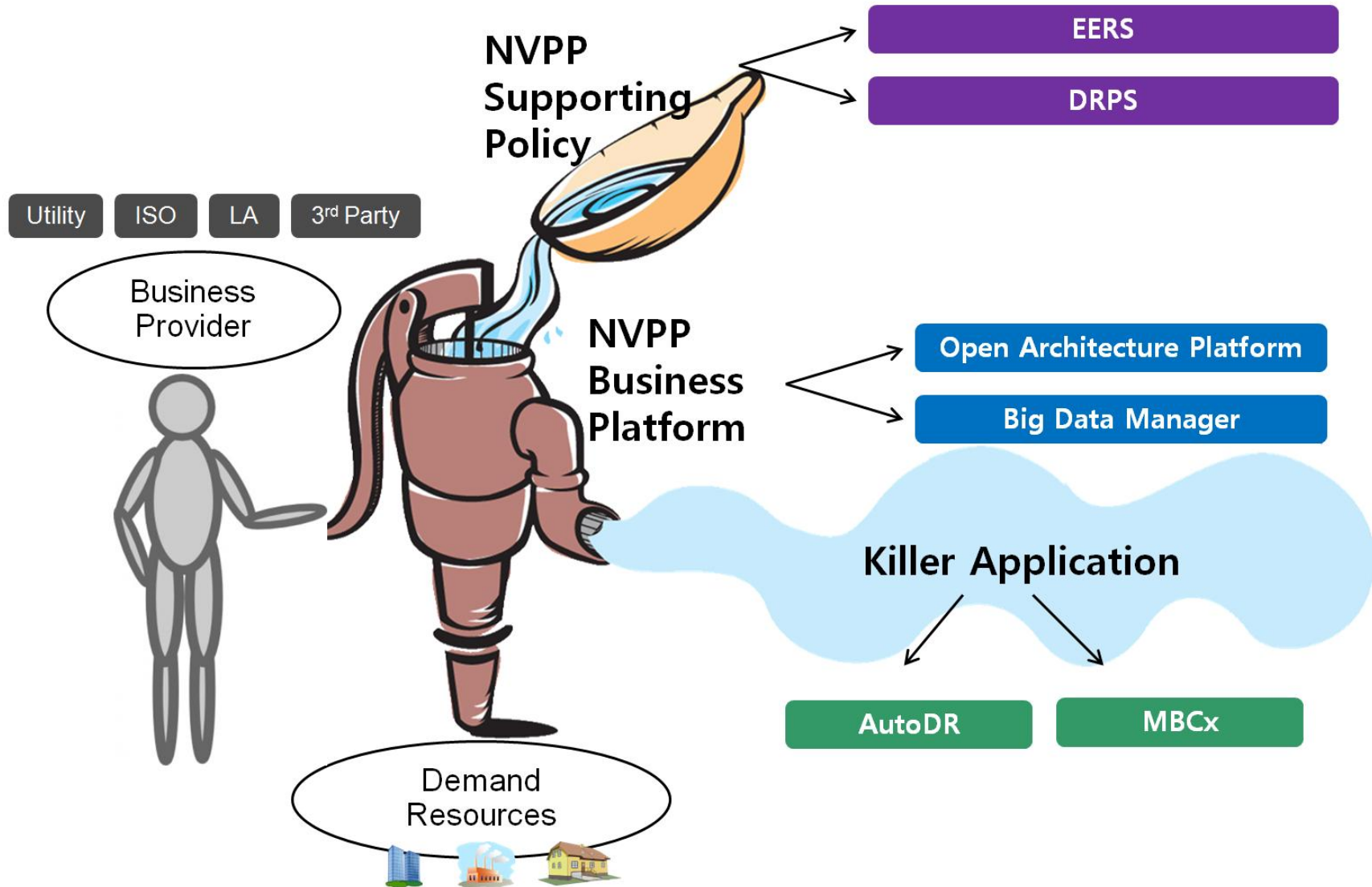
Open Market for Demand Resource



C-P-N-D Based Innovative Business Eco System



Open Architecture Platform for NVPP



Success Conditions for NVPP



Innovative Value Creation

- Demand Resource Market



Everybody Winning Game

- C-P-N-D Business Eco System



Sustainable Growth

- Open Big Data

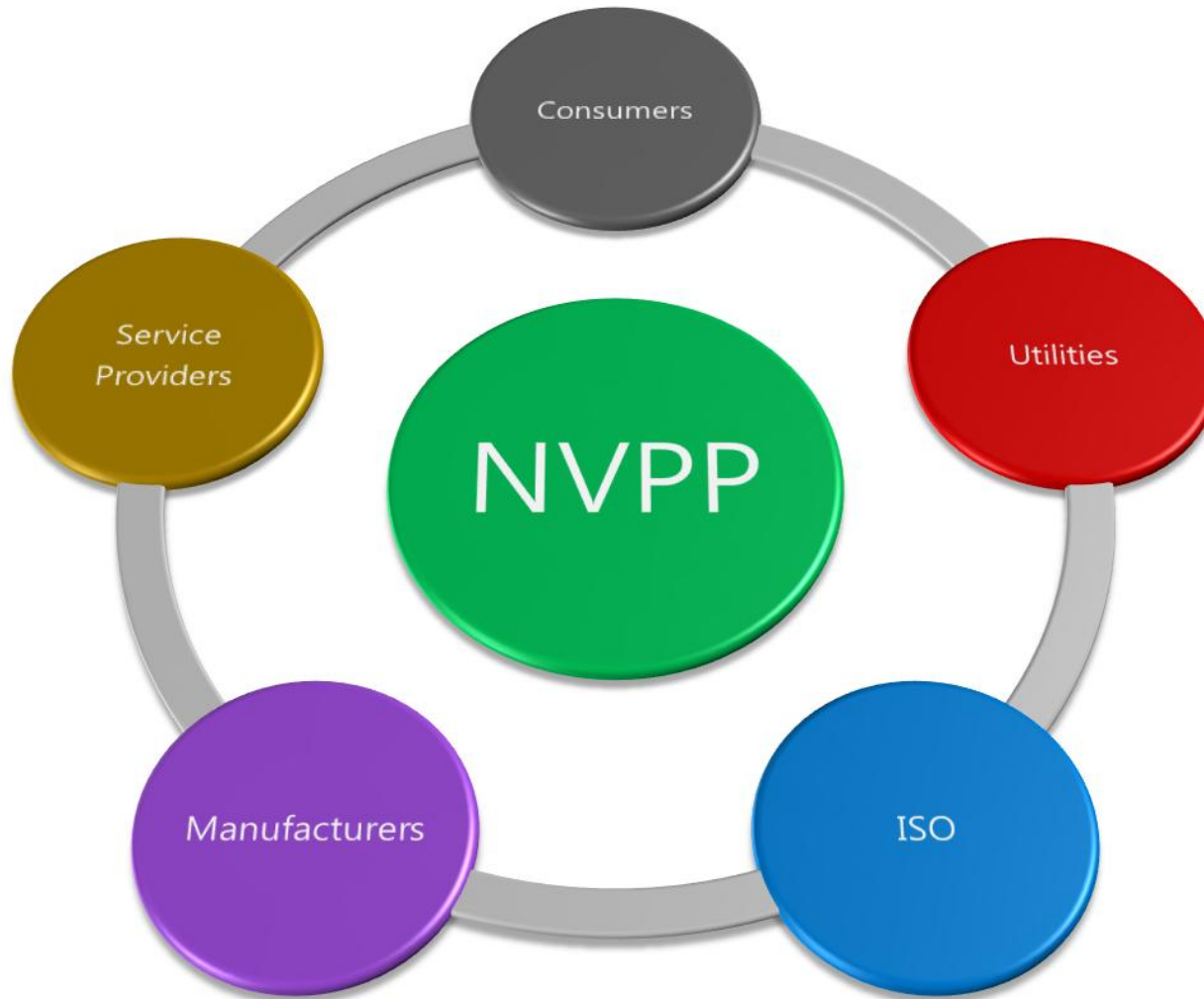
Innovative Value Creation – Reverse Thinking



Kindt think
Kindt think

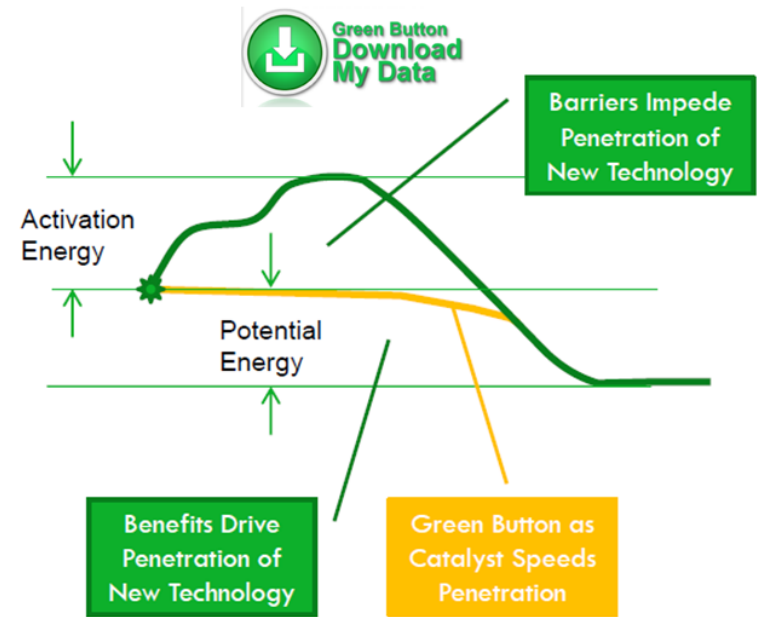


Everybody Winning Game – CPND Business Eco System



Sustainable Growth – Open Big Data

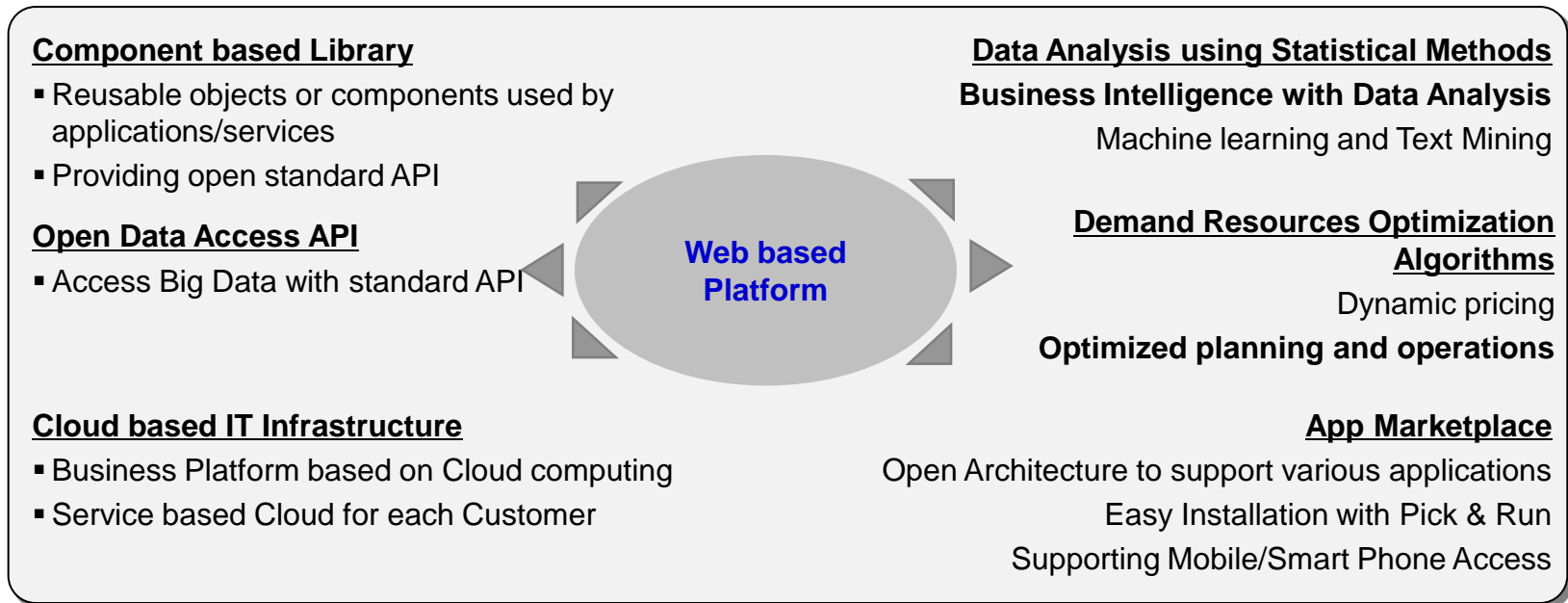
The screenshot displays the SCE website interface. At the top, there is a navigation bar with links for Home, About SCE, Outage Center, and Contact Us. Below this is a menu with categories: Residential, Business, Customer Service, Environment, and Comr. The main content area shows a user's account information for Jung In Choi, including account number and rate. A prominent green button labeled 'Green Button Download My Data' is visible. Below the account info, there is a 'Usage' section with a bar chart showing hourly energy usage for April 20, 2012. The chart shows usage in kWh over a 24-hour period, with a callout for 07:00 AM showing 0.76 kWh and 60°F. A 'Log Out' button is also present in the top left.



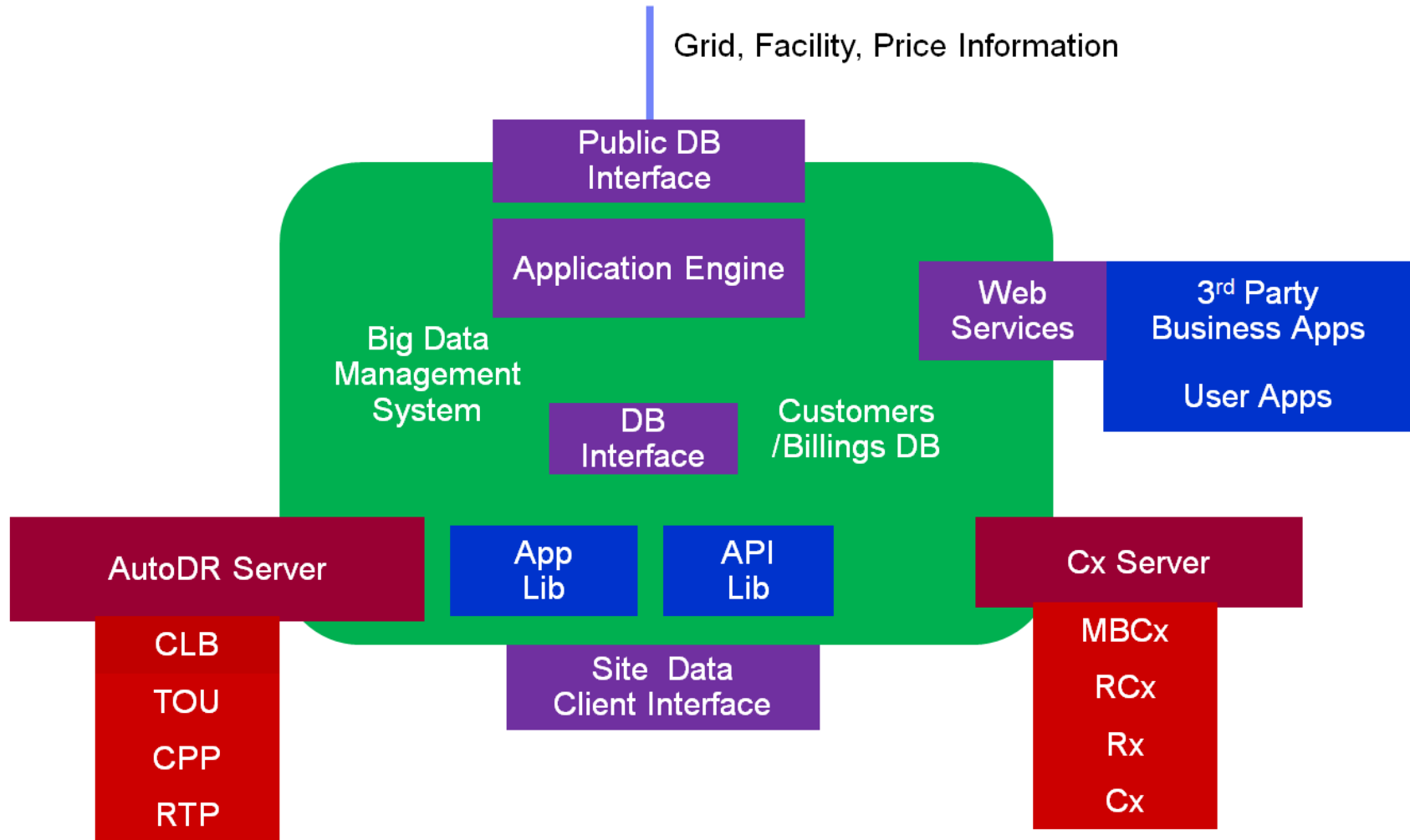
Open Architecture Platform

Developing Open Business Platform supporting **Scalability** and **Standards** based on Cloud Computing and Pick & Run technology as in App Store.

- 1) Cloud based IT infrastructure
- 2) Data Analysis using Statistical Methods
- 3) Demand Resources Optimization Algorithms
- 4) Applications and User Interfaces: Component based Library, Open Data Access API
- 5) Interface with Big Data System and External Systems

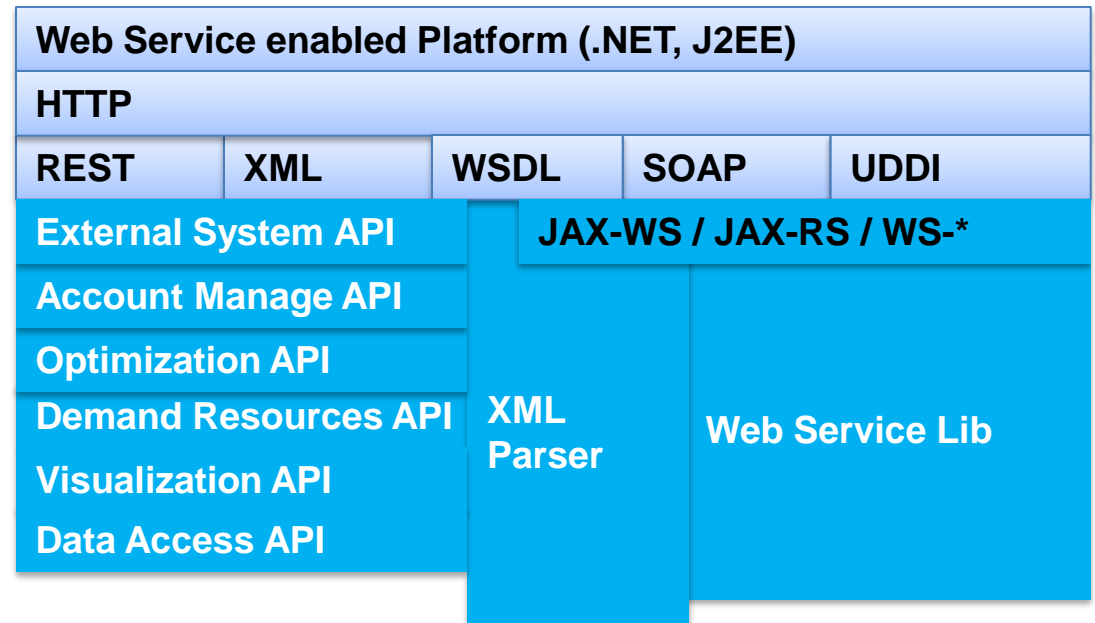
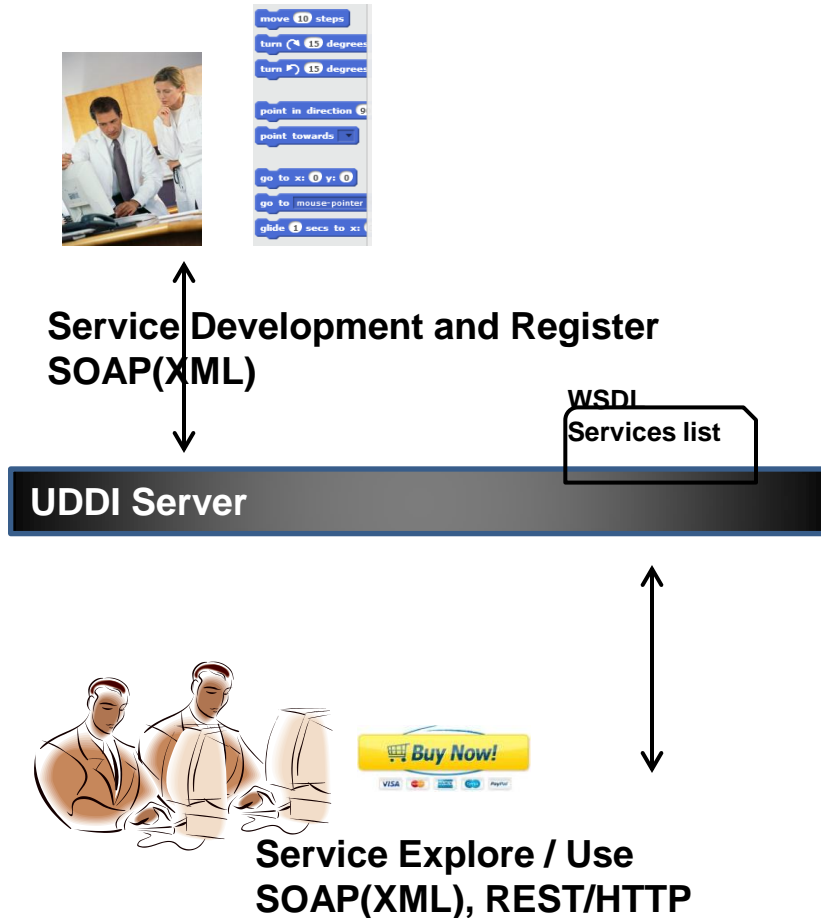


Design for Platform Components



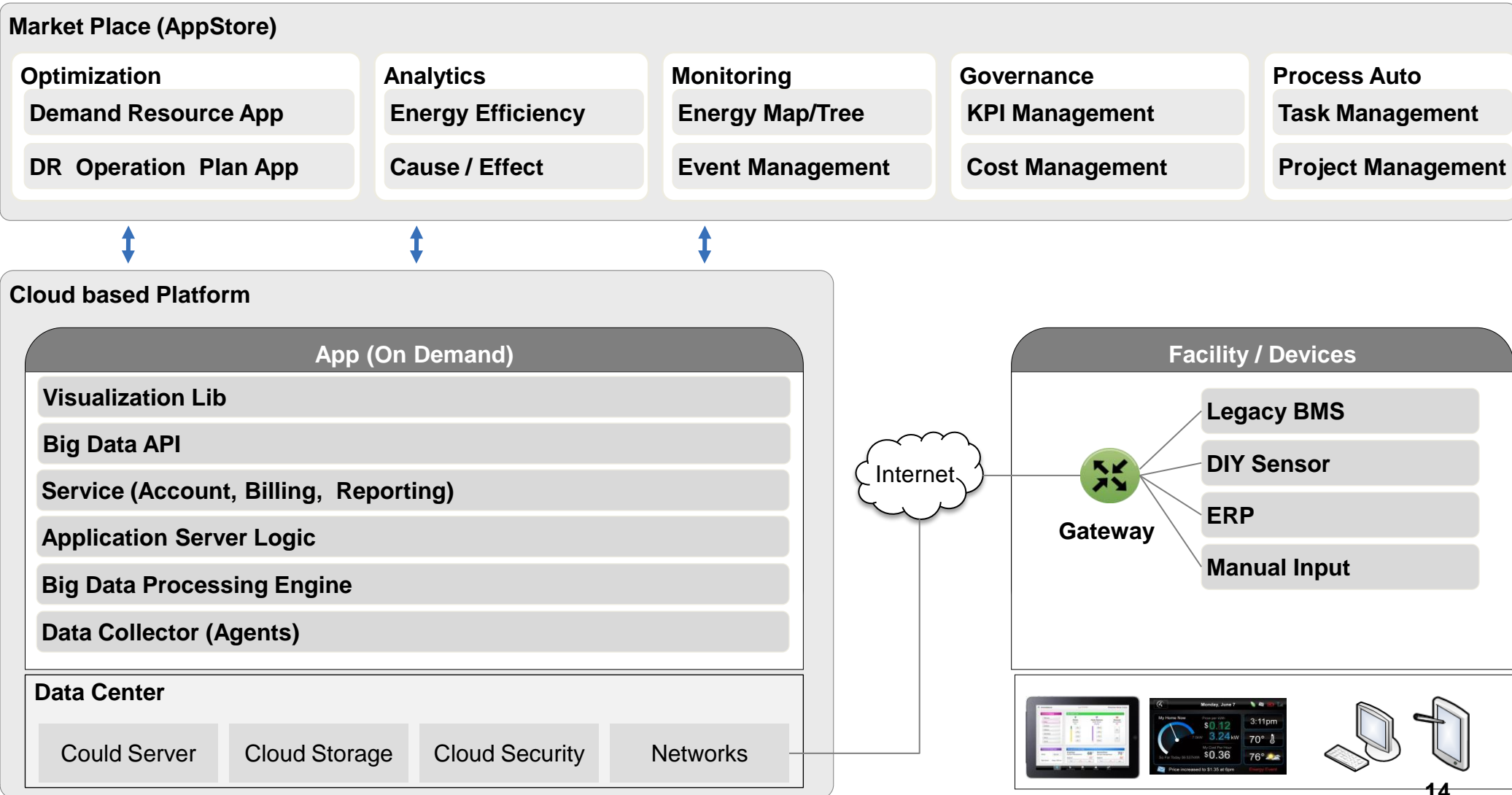
Application Engine

Enable the 3rd party to develop new services on our business platform 1) Demand Resources Management, 2) Energy Optimization, 3) Visualization, 4) Data Access API, 5) External System Interface, 6) Billings and User Management.



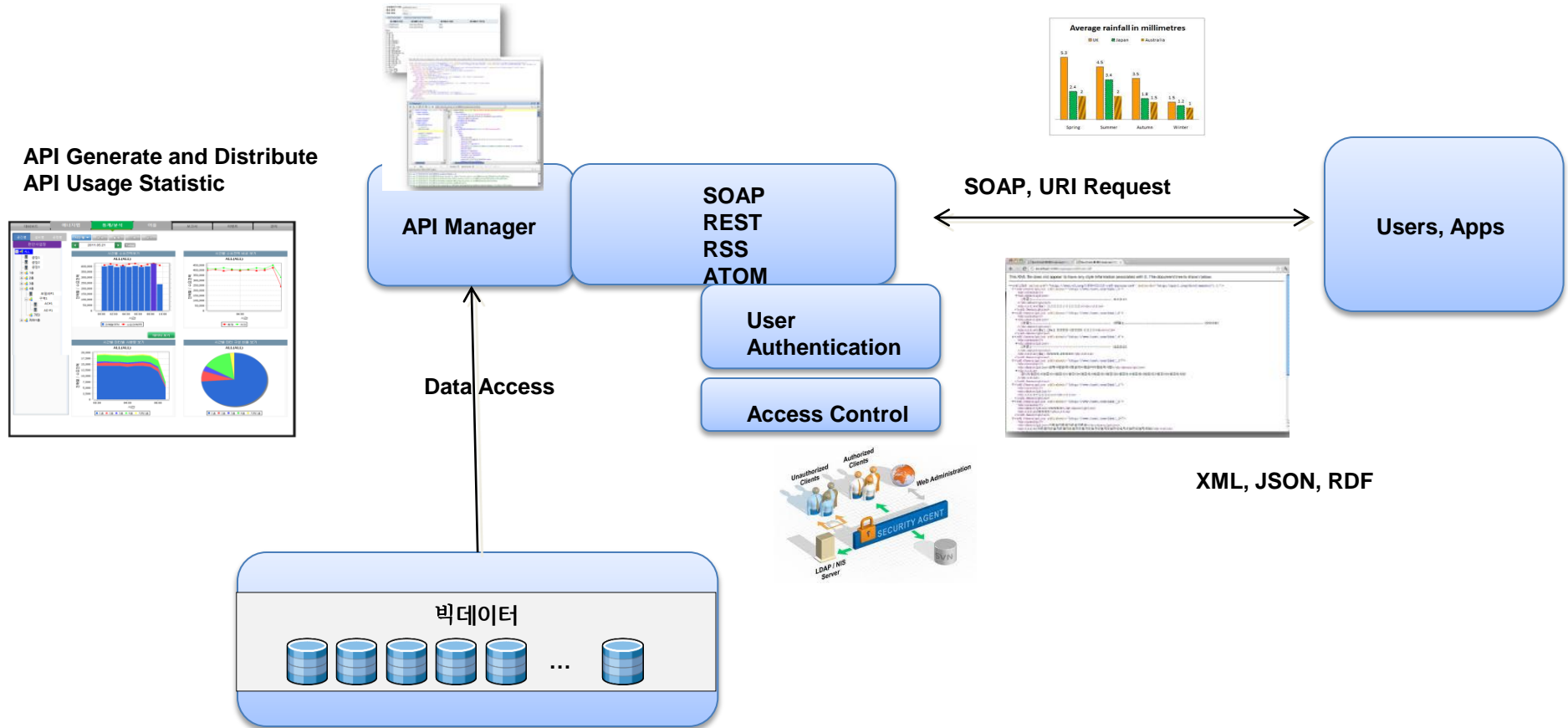
Open Application Library

Providing Apps and environments to support users and developers to create new services, and manage apps.

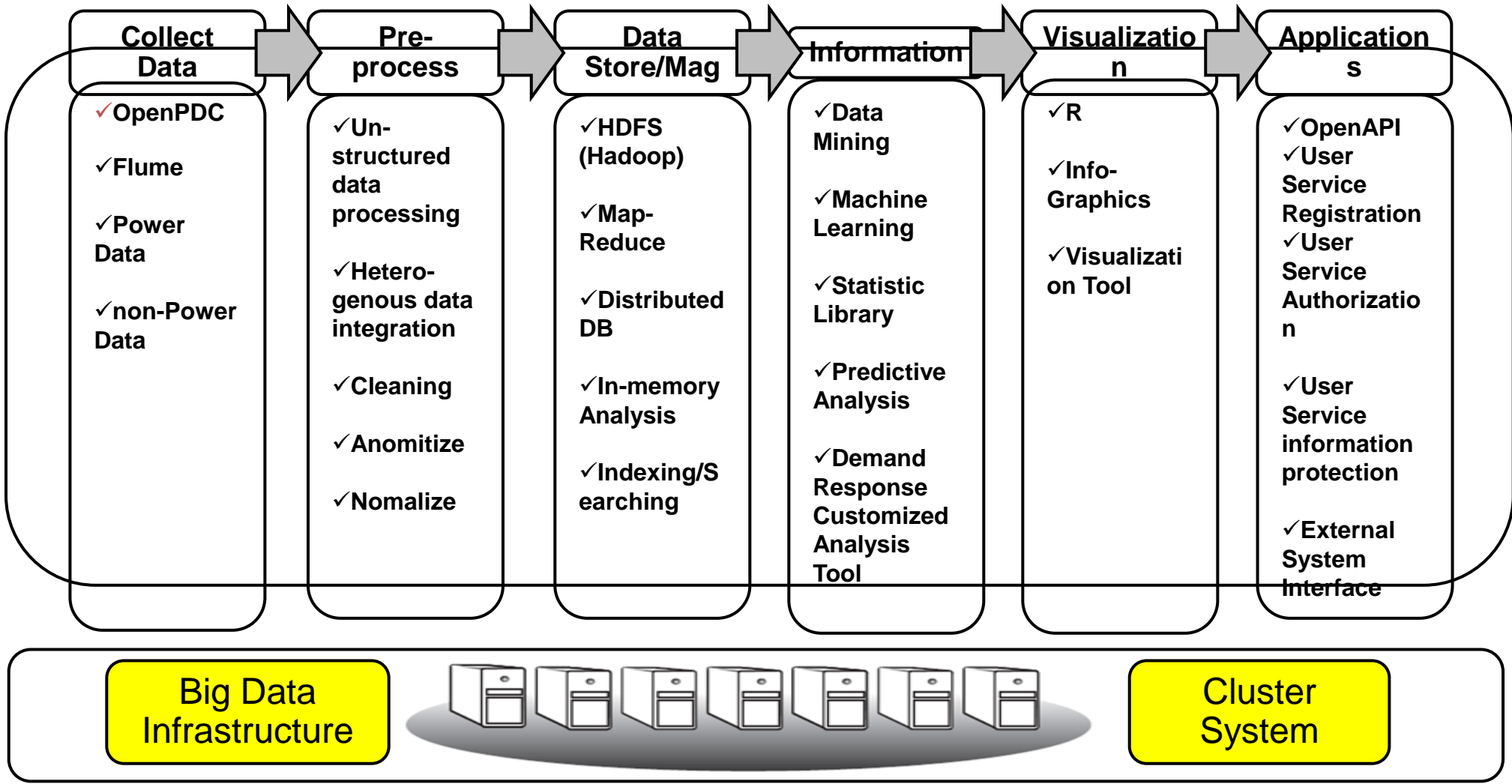


Open API Management

Standardized Open API for APPs and Data Access API supporting 1) SOAP, 2) REST, 3) RSS, 4) ATOM. API Manager handles API registration and distribution, and analyzing API usages.

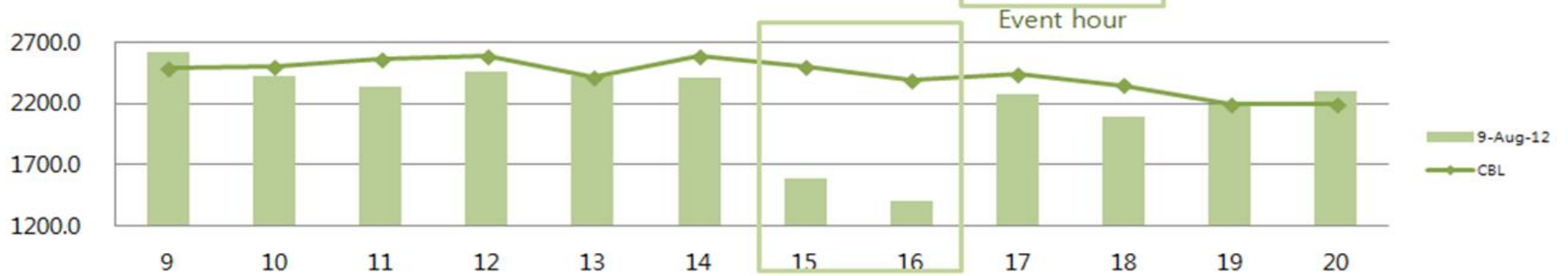


Big Data Manager

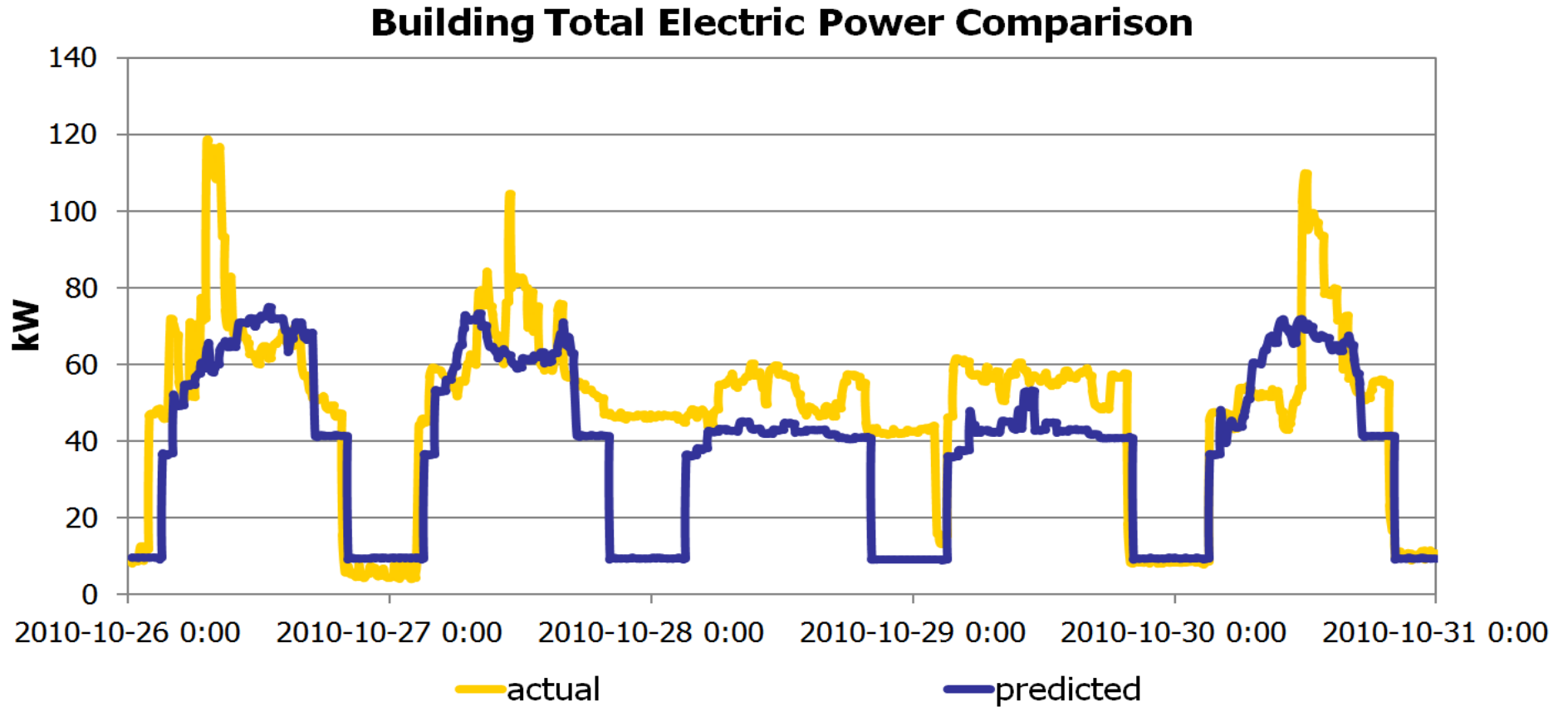


Killer Application 1 : AutoDR by OpenADR

Resources	Event Day		Data(kWh)											
			9	10	11	12	13	14	15	16	17	18	19	20
Electric Furnace Rolling Mill	9-Aug-12	CBL	2487.5	2506.5	2564.4	2591.9	2424.2	2591.5	2505.6	2397.1	2447.4	2351.4	2196.0	2202.4
			2623.7	2420.3	2336.4	2466.7	2422.1	2409.5	1591.6	1409.4	2280.2	2092.7	2191.3	2298.6



Killer Application 2 : MBCx



Conclusion

AICT
NVPP
Goal



**3,000,000kW (3 NPP, 5% Reserve Rate)
30,000 consumers with 100kW reduction
By 2017 in Korea
Supporting Policy : DRPS**