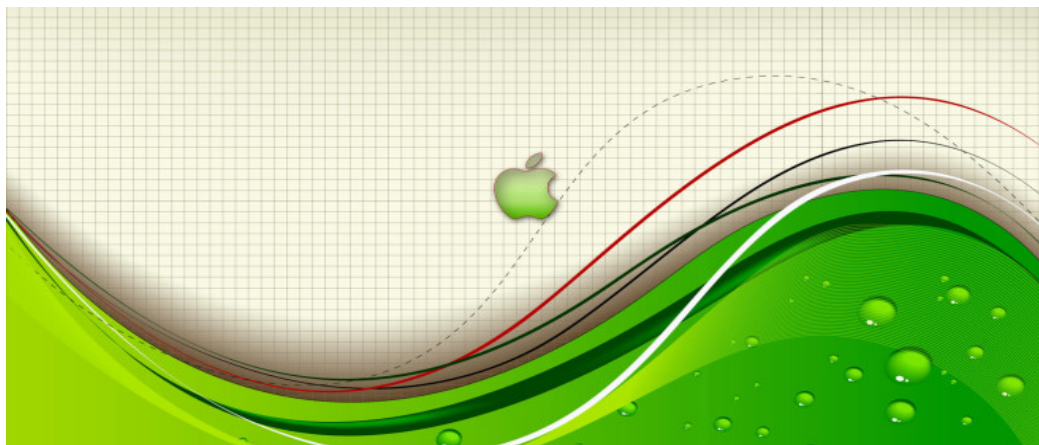


UTILITY 2.0

2015, ISSUE V



Many industry players want utilities to become a platform like Apple's iTunes™ while some other see no need for change. In this issue, we discuss what it takes for utilities to be an Energy Services Provider (ESP) platform

COULD iTunes™ BE THE MODEL FOR UTILITIES OF THE FUTURE AN ARCHITECTURE FOR UTILITIES AS ENERGY SERVICE PROVIDER PLATFORM

Could utilities become like Apple iTunes™ platform provider?

Recently I attended a conference where, during roundtable discussions, one group summarized “We believe utilities should be like Apple's iTunes™ platform and should be pushed off the cliff to become a service provider!” It was not difficult to spot representatives from utilities in the room, as they all turned around and rolled their eyes together!

In the past few years there has been a raging debate about the future of utilities, with solutions ranging from a world without poles and wires to utilities becoming like Apple iTunes™ platform versus utilities


remaining as they are today, eternally.

Incidentally, big technology companies are creating their own ecosystem of energy independence on the same premises on which utilities existed for over century - “reliability and quality”. Companies like Apple, Google, eBay and now financial institutions are creating their own supply systems, as they believe utilities cannot guarantee reliable and quality supply.

Furthermore, some utility CEO's are citing public good as a reason for their existence. We believe this can be a tricky argument as utilities may be left with only low income and last resort customers in the long term, while key

customers defect. With the added restriction on utilities to become Distribution Service Providers (DSPs), one can only hope that utilities will be able to survive changes through miracle!

We have examined key requirements and platform capabilities for utilities of the future. Utilities have much bigger role than that of a platform provider. We have proposed architecture for the “Utility of the Future” (Utility 2.0) and believe utilities have a role in the future of the energy provided they proactively transform their business models!

 and iTunes are trademark of Apple Corporation. We use of these symbols primarily to explain concepts related to the market models for utility sector. We do not intend to use these symbols or any IP for commercial benefit.

IN THIS ISSUE

- 2 Key requirements for Energy Service Provider (ESP) platform
- 3 Architecture of ESP platform and capabilities
- 4 Our recommendations on how to implement ESP platform





KEY REQUIREMENTS OF AN ENERGY SERVICE PROVIDERS (ESP) PLATFORM

Many utilities, regulators and policy makers have recognized that the future of utility business is not in the current model, which largely incentivizes the sale of electricity. Numerous ad-hoc approaches such as leasing of energy efficiency products, integrating renewables and demand response in current operations have been tried. Several models such as NY REV are emerging which proposes utility as Distribution Service Provider (DSP). Irrespective of the merit of independent or utility owned DSP, it is clear that utilities need capabilities, which are different from current operations. Our analysis shows that most of the capabilities required around DER based markets are either ad-hoc or does not exist. In the states where it is not mandated by regulators/ policies, utilities have real opportunities to develop these capabilities and position themselves for “pro-sumers” of the future.

However every utility is searching for the right model for their needs as we hear that each one is unique, though they all sell the same invisible electricity! In this section we laydown key requirements and architecture of new models for utilities. We believe that each utility may take a slightly different path but they all need to have these capabilities to prepare for the future.

ENERGY SERVICES PROVIDER (ESP) CAPABILITIES

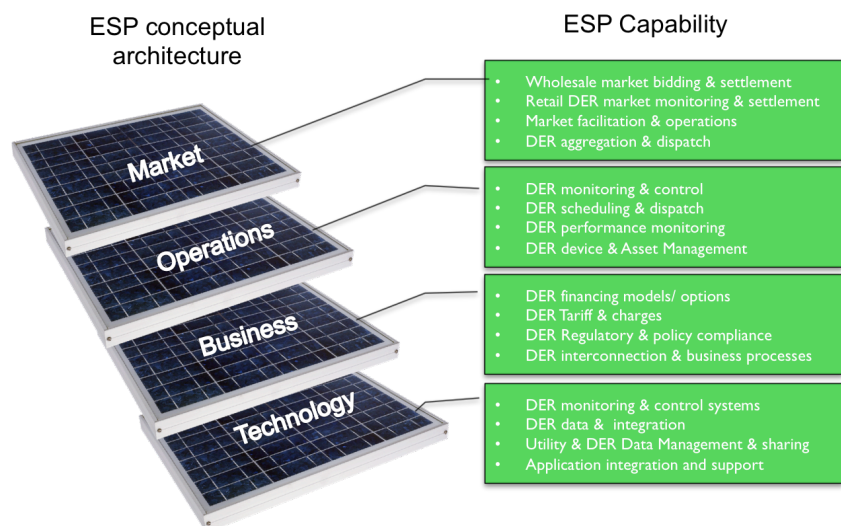
In our assessment, utilities need four foundational capabilities to prepare for future state. They are

Technology capability: One of the foundational requirements for utilities in the future state is the ability to integrate, monitor, and control DERs to be able to derive value from their deployment. At times this may be granular and behind the meter devices.

Further to move towards an iTunes™ type platform, utilities need to have capabilities to store, process and share data, provide technology developers/ service providers’ access to customers in a transparent manner. This requires platform capabilities that do not exist in most of the utilities today.

Business capabilities: Today, utilities may not have mechanisms in terms of charging for new services they may provide in the future state. Regulatory engagement needs to be more proactive to get a favorable outcome, and business processes need to be realigned for new platform capabilities. Further to help its customers adopt new technologies, utilities may have to move beyond incentive mechanisms and towards financing models for DER technologies. Customer engagements need to be enhanced to retain utility brand and eventually customers.

Operations Capabilities: In the current landscape many utilities struggle to maintain their asset registers, integrity of asset management processes and monitors limited substation and lines. In the future there would be a need to monitor, control and operate a thousand times more devices than currently handled by control centers. There needs to be a strategy to operate a grid which will be



DER- Distributed Energy Resources which include Renewables, Energy Efficiency, Demand Response, Storage and Electric Vehicle

Figure 1: Energy Services Provider (ESP) model architecture

much more intelligent and dynamic. A key factor will be to realize the value of DERs effectively instead of complaining operational characteristics and value of the DERs to the grid.

Market Capabilities: Utilities are struggling with net metering regulations and many distortions in the market. However they have done little to provide access to DERs in the market. Key to the success of DER based future market model will be the ability of the utilities to provide **transparent** market access to these technologies so that real value can be demonstrated and hence DERs are paid for their prudent value and not some arbitrary policy/ regulatory incentive which hurts current business models. This will require ESP platform to have market facilitation, aggregation, dispatch and settlement capabilities. These capabilities are currently available in trading functions but not in distribution operations.

ESP CAPABILITY MATURITY MODEL

In order to meet these requirements one needs to consider in three dimensions of capability. These capability dimensions can be thought of as

- **Platform (Dimension –I)** which are largely needed to meet institutional requirements of technology platform, business, operational and market access capabilities.
- **Products (Dimension –II)** which are offered on the platform and need their own capabilities from vendor registration to maintenance of systems.
- **Services (Dimension –III)** are required for operating DER markets and products. These may include DER services, network/ delivery services, pricing, billing, metering and monitoring services

Following is a conceptual capability maturity dimension of the new ESP model

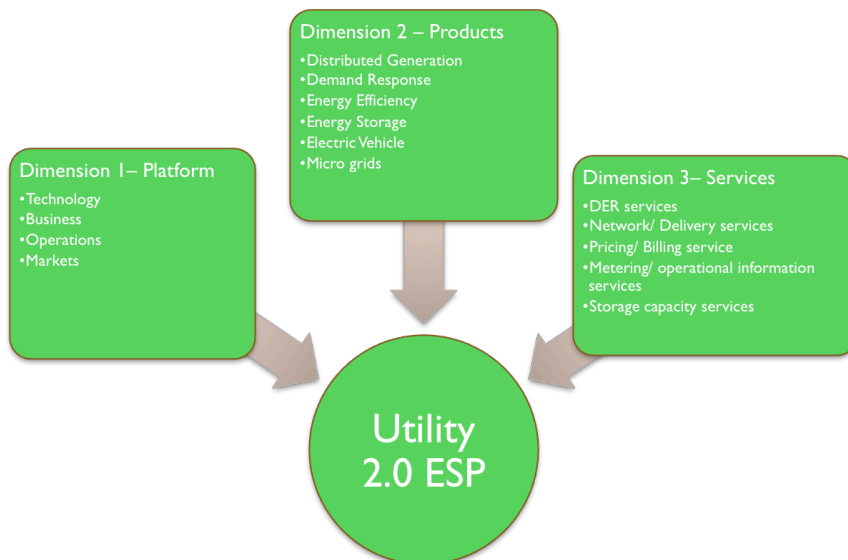


Figure 2 Three-dimensional Utility 2.0 ESP Capability Maturity Model



ESP 3 DIMENSIONAL DER CAPABILITY MODEL

Dimension –I: Platform

- Technology
 - DER monitoring & control systems
 - DER data & integration
 - DER Data Management & sharing
 - Application integration and support
- Business
 - Financing models/ options
 - Tariff & charges
 - Regulatory & policy compliance
 - Interconnection & business processes
- Operations
 - DER monitoring & control procedure
 - DER scheduling & dispatch procedure
 - DER performance monitoring process
 - DER device & Asset Management
- Markets
 - Wholesale market bidding & settlement
 - Retail DER market & settlement
 - Market facilitation & operations
 - DER aggregation & dispatch

Dimension –II: Products

- Distributed Generation
- Demand Response
- Energy Efficiency
- Energy Storage
- Electric Vehicle
- Micro grids

Dimension –III: Services

- DER services
- Network/ Delivery services
- Pricing/ Billing service
- Metering/ operational information services
- Storage/ ancillary services

Each dimension will need technical, process and organizational capability

OUR RECOMMENDATIONS

We recommend that utilities should take following proactive actions in developing capabilities to prepare for the future instead of fighting the change or waiting for regulatory actions

- Understand Energy Services Provider (ESP) model and set organizational goals with long term view
- Assess current technology, business, operating and market capabilities against the three dimensional capability maturity model
- Establish a roadmap and action plan for gaps between your goals and current state. Do not accept goals that work for others!
- Do not invest in Smart Grid and Smart metering without clear strategy of how they will be leveraged in the ESP model
- Do not build data exchanges and analytics platforms without knowing what business outcome you need and how technology providers bring business
- Do not depend and wait for regulatory changes or mandates. Regulations will follow innovation as has happened in the past
- Do not treat this as a technology or system integration problem. It has a much deeper impact on your business and future survival
- Understand that your commercial operation is in the interest of public good. Don't be victims but be champions.
- Utilities can play a central role in the future of the energy if they don't position themselves as the last resort!



We recommend utilities and industry build a model which integrates leading practices from service providers and build on foundations of safety, reliability, quality and requirements of new energy consumers who wants more than their lights on!

Multiple models are being debated in industry about the future of the utilities. Utilities don't need to mimic Apple but you should be ready to change in an institutional approach... else we will keep comparing Oranges with Apples!

UTILITY 2.0 – ABOUT AUTHOR



Navneet Trivedi – Executive Director & Co-Founder, Vrinda Inc.

Navneet brings 22+ years of energy and utility sector experience working in seven countries with more than 100 utilities. Navneet has worked with policy makers, regulators, utilities, multilateral funding agencies to develop and implement power sector transformation programs.

Prior to his current initiative, Navneet was in the North America leadership of the Global Smart Grid Practice of Accenture and PricewaterhouseCoopers, utility management consulting services for 15 years. Navneet has also done design, construction, operational performance improvement and grid automation in his various roles in utility industry. Navneet holds a master's degree in renewable energy from Indian Institute of technology, Bombay, a bachelor's degree in electrical engineering and business certification from Columbia University, New York.



About Vrinda Inc.

Vrinda Inc. is a New York based business and technology firm. Vrinda Inc. creates success in your business through focus on value creation by providing trusted, actionable advice and practical solutions. We provide business and technology consulting services to Energy, Utility and Transportation sector