

UTILITY 2.0

2018 ISSUE



Going Digital!

In the last decade, utilities are made to believe that they are losing battle in the digital world without smart grids, big data and now machine learning/AI can only save them in digital revolution. We believe utilities should not be fooled again and again!

DIGITAL UTILITY TRANSFORMATION - A HOAX OR GAME CHANGER?

From **Smart Grid** to **Big data** and now **Digital**, Utilities can't be guinea pigs again!

In the last decade, utilities were misled a number of times by technology hoax making them realize, how dumb they are when compared to a leading utility whose existence no one knew! The truth was always in between.

Utilities are struggling to make sense of the right technology for their business from amongst Smart grid, big data analytics, machine learning, Artificial intelligence(AI) and Block Chain.

Many utilities are barely able to get off the ground with smart meters trying their best to manage the 10X data generated. Many are religiously flushing their hard drives at the end of each year! Even before they could start with big data analytics, they are hit by digital

transformation, AI and machine learning. Is digital transformation a hoax or a game changer? It depends on who you are today!

Granted that pace of technology evolution is unprecedented and utilities are required to up their game, but utilities cannot be guinea pigs. Many of the new technologies are maturing in other industries, but they are at a nascent stage in the utility sector.

In the race to demonstrate their progressiveness, utilities are making big announcements to go Digital and adopt AI, block chain, etc. but applications and value of digital technologies are not clearly established. Of course, this is good news for consultants/ technology providers as they can see the next decade of multi-million opportunities. However, if not careful,

utilities may end up with stranded digital technologies, lower productivity and poor efficiencies.

If utilities use their current data and processes to train a machine/robot using AI techniques, the results might be quite opposite to what is intended because these machines may not have the advantage of years of experience the utility personnel has or may adopt bad practices of current business!

In this context, what should be the right strategy and implementation approach for the utilities to extract maximum value for their business? Should they all have to go digital? The answer may be in remembering difference between computerization vs. automation!

Digital Strategy approach should involve four steps with key emphasis on utility's fitness to adopt digital technologies and asks of utility's in order to derive value from digital technologies

IN THIS Edition

- 2 Utilities challenges and Digital transformation
- 3 Digital Strategy and business value
- 4 Our recommendations on how to approach Digital Utility Transformation





UTILITIES CHALLENGES WITH DIGITAL

In utility sector around the world, we have witnessed stress in centralized generation and death spiral accelerating for distribution utilities. Transmission companies may not remain sacred cows too. It is a firm belief in the utility Industry that without regulatory and policy protections, the current utility model is not sustainable. Following trend summarizes challenges for the utilities:

- Rapid growth of solar and wind as a generation source driven by China and India demand driving low prices
- Intermittency argument is countered by maturing storage technologies leading to peak demand destruction
- Challenges in building new transmission and advent of alternative transmission options
- Declining flow of electrons leading to lower system utilization and stranded costs for utilities
- Government policies and regulatory landscape is forced to choose low cost clean alternatives
- Technology disruption lowering costs but posing adoption challenges due to human resources and sourcing constraints
- Vendor/ Buyer model constraining procurements due to unbalanced technology, regulatory and business risks

In summary, most technologies are leading to innovation which is reducing the need for traditional utility service of electricity delivery! Instead, they require a service provider who can enable grid assets irrespective of ownership.

Following are some trends in the utility industry, which need to be considered while thinking about going Digital or not:

- Utilities will be required to manage third party owned assets as grid resources in the future.
- Increasingly many network services will be provided by players other than utilities.
- Customers will not be passive and will have opportunities to earn money if they choose to interact with utility ecosystem
- Transactions, billing and settlement will become complex and fast
- Utilities need to extract more value from current investments, they will need to work hard to justify capital and operating expenses
- Severe weather events will increase requiring utilities to rethink how to keep lights on during extreme events

Once, future trends and requirements are agreed, utilities need to understand what emerging digital technologies can provide

DIGITAL TECHNOLOGIES AND THEIR VALUE

towards future challenges and what they require from utilities. One such analysis conducted by our team (see Figure 1) reveals that applications of digital technologies will bring standardization, optimization and lower transaction costs along with some key requirements.

- **Quality data:** Most of the new digital technologies have high expectation of quality data or mechanism to generate it. Traditionally, this has been a problem for the utilities
- **IoT Devices:** High level of sensors and communicating level devices are a prerequisite for AI and block chain deployment
- **Standard Processes:** Machines can learn provided they are told the right and repeatable process!
- **Skilled manpower:** mathematical modeling and optimization skills required by digital technologies are rarely available in utilities and hard to acquire and retain
- **Faster telecommunications:** Most of the digital applications require reliable, low latency communication network, which is not a domain expertise of most utilities

Figure 1 is fairly complex and so is the utility's choices with the technologies. Figure shows technology options (Dark Blue circles) such as smart metering, smart grid, big data/analytics, IoT, Platforms, Distributed Computing, Artificial Intelligence and Machine learning. Each technology provides some key features (light blue rectangle boxes) for utilities (for example Smart meters provide usage data and are a gateway to behind the meter devices). Each technology supports multiple applications (Orange ovals) shown by dotted arrows and each technology and application expects certain deployment or process (Green ovals). Simply, utilities can see more arrows and connections from each box as a sign of complexities with each technology and their deployment requirements.

Utilities should compare their current state with the expectations from most of the digital technologies. As will be the case, most utilities may not meet these expectations fully. However, this does not mean everything is gloom. It means that utilities cannot blindly jump on digital bandwagon. They need to make strategic decisions around technologies and its implementation.

We further argue that utilities should not worry too much about technology changes, however they should know their business goals, which business and not technology trends matter to them. They need to evaluate financial, regulatory, operational and people impact. Based on this assessment, they should develop a plan to adopt technologies and tools. They should not be surprised if the outcome in many cases points to retaining their existing tools and processes and improve them further.

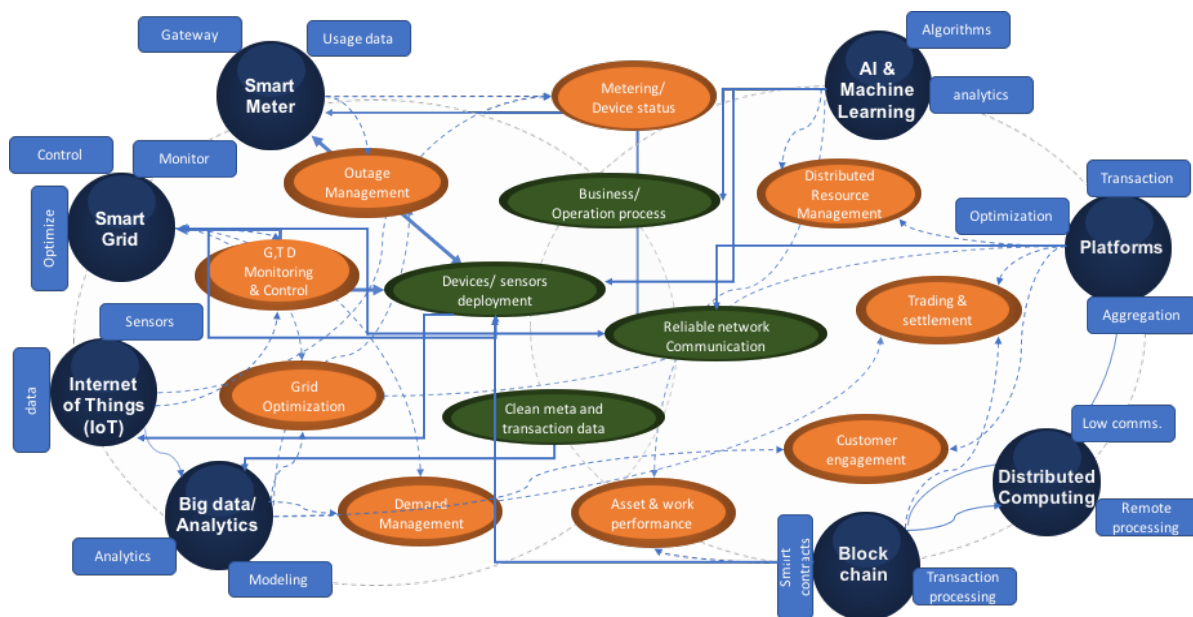


Figure 1: Analysis of digital technologies in the utility industry context

DIGITAL STRATEGY AND BUSINESS VALUE

As the analysis above reveals, each technology has expectation of utilities which have significant cost and resource implications. Hence, utilities need to be prudent in evaluating these technologies and their value and also understand regulatory landscape to ensure that they can recover costs. In Figure 2, we have developed a simple four step Digital Strategy development approach to help utilities think through their digital journey.

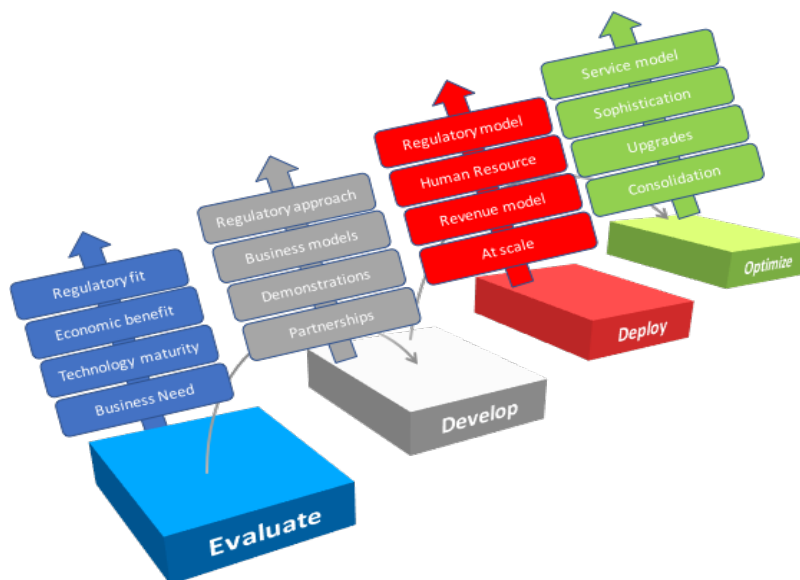


Figure 2: Digital strategy development approach

Evaluate: utilities need to evaluate their business needs, technology maturity, economic benefit and regulatory fit before moving forward with development and deployment of digital technologies

Develop: Utilities need to develop targeted programs and engage with regulators around deployment strategy. Most of the technologies today are available in cloud and can be provided as a service. Utilities should look for strategies to shift technology and financial risks to technology companies by paying for value rather than costs.

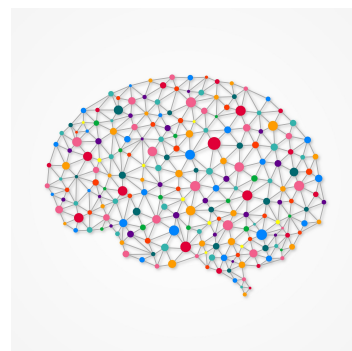
Deploy: Utilities should deploy technologies at scale instead of pilots, as many technologies give optimal value only when deployed at scale. Utilities need to establish strong value monitoring mechanisms. They also need to consider their human resources capabilities and decide on hosting technologies or owning them. The best path can be to let customers and third parties deploy technologies, integrate them and let utilities act as a service provider. This will only be possible if utilities work closely with regulators and policymakers in previous phases.

Optimize: Utilities need to put in place mechanisms to optimize number of technologies they adopt as well as how to leverage continuous improvements and disruptions. In this context, services as opposed to ownerships may help given nature and pace of technology disruption.

Our recommendations on how to approach Digital Strategy Implementation

We recommend that utilities should not be fooled by barrage of technology jargons, they should evaluate, develop and deploy most valuable technologies for their specific situation.

- Utilities should evaluate their business requirements, understand technology landscape and their own current business priorities before announcing digital transformation
- Understand that all technologies are not for all the utilities. Status of your current systems, data, business processes and organizational capabilities may not let you reap benefit from many digital technologies.
- Utilities should engage with regulators early on, identify current regulatory constraints and ways to develop new technologies without major changes
- Technology providers should not approach utilities as vendors but more as partners willing to share risks and rewards of technology through value based compensation model
- Utilities should look for technology incubators and labs and partner with them to learn about the development of technologies instead of making them Guinea pigs
- Evaluation of economic value and business model proposed by technology vendors should be key consideration in selection of a technology partners.
- Take a measured approach to develop digital strategy, spend more time in evaluation and develop phase to achieve maximum success with digital transformation
- Without understanding technology implications and right strategy, Digital transformation may become computerization of early 90's. Do not be misled by the urgency to jump on the Digital bandwagon!



We believe that digital transformation is an important long-term goal for utilities but jumping on bandwagon without tailored evaluation in a utility situation may spell disaster for current operations, however manual they may be!

UTILITIES SHOULD NOT BLINDLY JUMP ON DIGITAL BANDWAGON. GOING DIGITAL REQUIRES HONEST ASSESSMENT AND A VALUE SHARING BUSINESS STRATEGY

UTILITY 2.0 – ABOUT AUTHOR



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Navneet co-founded Vrinda Inc. leveraging 25 years of international Energy and Utility sector experience of working with 100+ utilities in 7 countries (North America, Latin America and Asia) across the value chain of utility industry. Navneet leads regulators, policy makers, utilities, technology providers on business model led transformation of the utility industry. Navneet's area of interest and experience ranges from Utility Strategy and Operations, policy & regulation, renewable integration, Smart Grid and utility analytics.

Prior to 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 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.



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