A Practical Approach to IT/OT Utility Business Release Planning

Introduction

Utilities have experienced a substantial shift from a historically lines and wires operational organization to a data centric organization that emphasizes delivery of complex information, enterprise applications and automation critical to operational organizations and customer services. This shift to OT critical data applications and services primarily supported by the Information Technology (IT) organization is one major components of the IT/OT convergence. Technology no longer drives the services; rather, the services should drive the technology!

This paper is intended to speak to IT Executives, IT Project Managers, and Enterprise Architects that are in the process of transitioning to an IT/OT convergence model for solution delivery to their internal utility operational customers, and are experiencing challenges in developing an IT/OT release roadmap that has business sponsorship.

I was first introduced to the IT/OT convergence as a means to distinguish architectural IT security zones. Then, as this segregation evolved, IT/OT convergence became a means to determine system security access between operational organizations and the IT support centers. In many cases, IT has assumed the full leadership of the overall IT/OT convergence and solution delivery. This has many utility IT organizations realizing added system complexity, higher O&M costs, and increased accountability for expeditious delivery of new complex solutions and services to their internal Business customers. This accelerated pace of technology delivery expectation, with the advent of AMI and Smart Grid in the last decade and now the advent of Intelligent Grid with grid edge information, is unlike any previous change utility IT teams have experienced previously. In this environment, IT is now in the business of delivering "services" which include the technologies, customizations, supporting operations, and enhancements to meet the OT business processes of their internal customers. The single assumption that smart grid continues to drive immediate and substantial transformation in the assets, information, automation, and roles, continues to push the IT/OT delivery organizations into constant, agile, change enablers. This "service" paradigm requires a shift in traditional roadmaps, release methodologies, and associated release definitions to better align with the OT business customer.

If your IT organization has the highest reputation of value from your organization's internal business customers, then well done!!! You've obviously made substantial changes to your methodologies to adjust to the current services of technology delivery. However, if you're like many and are still in the process of adapting to the IT/OT convergence demands, and learning how best to accommodate these demands into a structured roadmap of service solutions, this paper may help. This paper will focus on a practical methodology to develop a strategic IT/OT roadmap which communicates in a language for a converged utility to exceed delivery expectations of projects and still account for and maintain basic IT fundamental priorities and drivers of the legacy roadmaps and project release points.

Identification and Assessment of IT/OT Service Components

The first step in the process is to acknowledge that IT/OT convergence is the current reality, not a choice. Assuming your utility has begun the transformation of operational support, decision making, automation and control through any level of Smart Grid information, then IT/OT convergence is the reality. The resulting perspective is that IT is now delivering solutions and services, instead of simple

technology to its business customers, and must work with the business leadership to identify those desired service components and OT enablers.

Under a typical utility organizational construct, the "business" includes several organizations from generation, transmission and distribution, metering, customer service, planning, etc. Each business unit will need to identify the future, desired service components that will provide their organization the enhancements to achieve a higher level of service and quality. Common roadmap service components currently include:

- Enhanced Asset Management
- Enhanced (or more robust) Distribution Automation
- Data Analytics, including Dashboards and Reporting
- Enhanced Customer Communications through Text and Social Media technologies
- New Rate Structures and Enhanced Load Modeling supporting Renewable Technologies
- NERC CIP V5 Compliance
- CIS Major Release Upgrade

These services are intended to be high-level so as to begin the roadmap discussions. Notice that there are major IT related roadmap items on the list as well. Maintain this high level of service definition at this initial stage in the process, but capture the major initiatives that are desired.

Each of these service components will need to be further developed to vet and assess the core pre-requisites, technical impacts, change management drivers, schedule duration, and overall corporate alignment. Keep in mind that this is the start of a roadmap vision, so definitive business justification, budgeting and resource allocation will come later in the project planning stages. To avoid a truly complex and possibly impossible mission, it's best to assess each major service component independently. Considerations for each should include:

- What is the critical timing for the business entity that requested it, and what is this priority when aligned with the overall corporate strategy?
- What technical enterprise solutions are required, and will there be any major procurement, up-grades, development or customizations required to meet the service component?
- What operational dependencies are required, and what organizational or logistical planning needs should be in place for this service component?
- What are the acceptable market approaches to meet the service component? Must this be internally hosted and operated? Is it acceptable to have this service cloud hosted, or fully managed externally?
- What are the other enterprise pre-requisites required for this service, and are these pre-requisites in place, or roadmap components? Do these need to be sequenced?
- Are there technical obsolescence drivers, enterprise system or service impacts, or organizational drivers that need to be considered?
- Are there regulatory requirements driving this service component?

In essence, this phase of the assessment will depict the impact statements of each major service component. Impacts can be positive and negative, and, once captured, will provide the necessary elements to negotiate and sequence the roadmap.

The Enterprise Business Roadmap (EBR)

A key component and goal to successful planning in the IT/OT converged organization is the Enterprise Business Roadmap (EBR).   As opposed to a legacy IT roadmap, an EBR is a depiction which includes a view of both the high level business service initiatives, along with the supporting IT technologies. The EBR may be accomplished in a variety of views, but the key is the cross communication elements of the IT roadmap and the business release services to provide a foundation for communication to both IT and OT leadership.

Let's examine one example of a mature high level EBR:
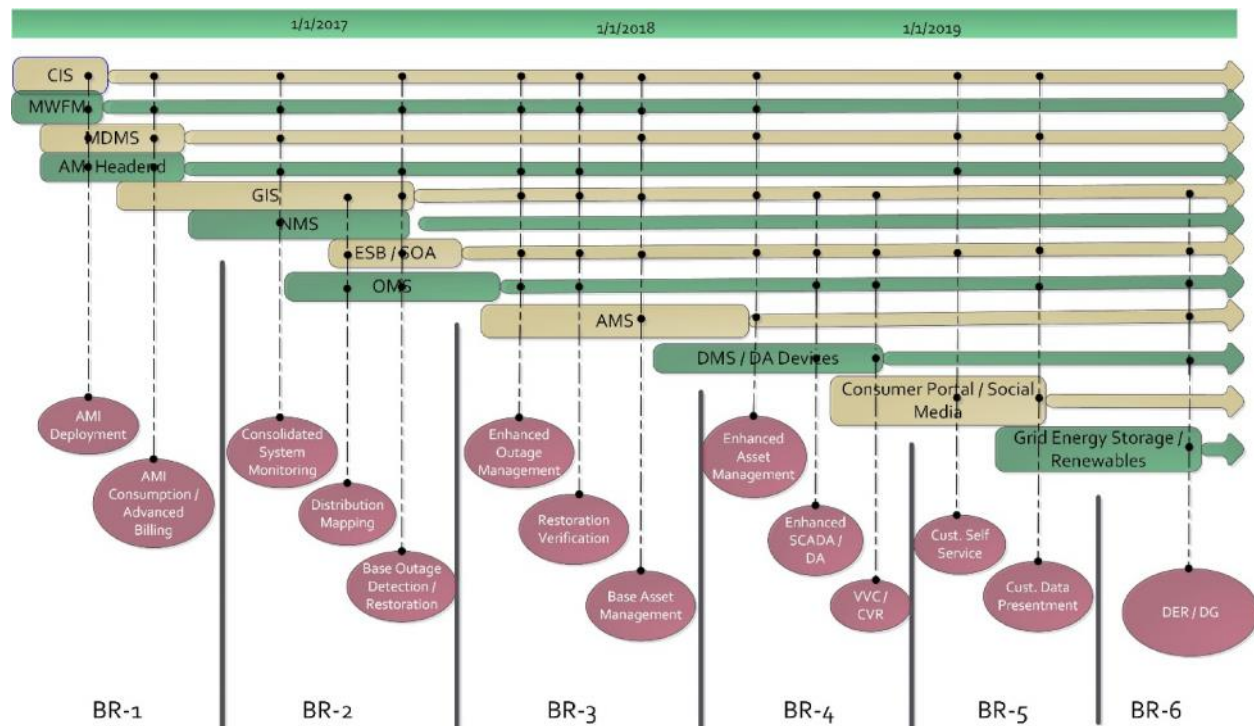
NOTE: This is for illustration purposes only.

As depicted in the image above, the EBR depicts the enterprise IT solution dependencies over an extended timeline that deliver the related OT high level services. This single view will enable IT/OT communication of a vision to both technical and business leadership in a form each can understand. This depiction is an overlay of the primary business services and business priorities aligned to accommodate the key IT dependencies.   EBR is a valuable tool for depicting the vision for both the IT and OT organizations, and gaining eventual buy-in to the final roadmap plan. The following are key elements and considerations of the IT/OT Enterprise Roadmap:

➢ The vision should depict at least 3 years of horizon for the business initiatives and the technical model, and should be aligned with the overall utility strategic goals.
➢ The roadmap is a jointly owned product with stakeholder approval from the senior levels of both the OT business and the IT organizations.

> ➢ The Business Releases should have been prioritized to meet the vision of the utility. The technology should be available or under procurement, and the infrastructure resources should be available to deliver the most desired services as expeditiously as possible.

In the current industry IT/OT transitional status, it remains unclear in many utility organizations whether the IT leadership is the catalyst to develop the vision, or it falls on the OT leadership to define their service needs. A joint approach to IT/OT planning will defeat this "chicken or the egg" syndrome. Additionally, it is important to consider that this ultimate roadmap takes more evaluation than meets the eye to balance the business requests with the IT dependencies required for delivery.

Translating the IT/OT Service Components into Business Release Plans

Translating the service components into structured business release plans is a balancing of impacts and negotiations. To balance the impacts, business alignment should be considered the first priority, and technical and operational impacts the secondary priority. The EBR tool is specifically designed to speak both IT and OT languages, so all leadership involved can understand the high level impacts, dependencies and deliverables.

Keep in mind that this is not an IT driven prioritization exercise, instead is a joint facilitation of both the IT delivery organization and the OT business customer. The business OT entities should be determining the priorities, and IT should be representing the impacts to each for pre-requisites, implementation timing, etc. This joint approach to planning should result in the buy-in and collective IT/OT support necessary for sponsorship when it comes to the execution of the business releases.

Finally, it is critical to establish the prioritization guidelines in advance, and depending upon your organizational culture, you may want to have a baseline defined with some logical points of discussion around the EBR impacts prepared in advance. Setting a prescribed logical priority sequence will help to remove emotional desires.

Below is an example of some base prioritization categories as a starting point:

Business Alignment Priorities:

A) Regulatory Drivers
B) Corporate Strategic Alignment (broken down below)
    a. Business drives impacting Customer Engagement
    b. Business drivers impacting Grid Quality
    c. Business drivers impacting Grid Optimization
C) Business Enhancements impacting Efficiency

Technical Alignment Impacts:

A) Pre-requisite operational requirements
B) Pre-requisite enterprise solution procurements
C) Technical enhancements, customizations, level of effort
D) Market ready services and/or solutions

Once established, the EBR should be maintained on a regular basis. The smart grid has evolved from AMI, SCADA/DA and DRMS into the Internet of Things (IoT), Grid Edge Sensors, and Grid Optimization Automation, just within the last several years. If your organization can develop an IT/OT vision extending out at least 3 years, and the typical execution lead time for major business releases is approximately 18 months, it would be prudent to establish a quarterly EBR review cycle.

Summary

Utility IT/OT convergence, driven by the advent of the smart grid applications, has substantially impacted the utility environment. IT groups are now faced with extensive, integrated and complex applications, related operational costs that are historically high, and a more rapid pace of change driving the business that is unfamiliar in this market. Aligning with the business to deliver the future Enterprise Business Roadmap and associated business releases are the first steps to establishing a common communication of organizational goals. Standard processes will need to change to accommodate this new environment. These changes, and the new processes that accompany them, need to be assessed with some baseline for continuity of quality that is expected under a new risk profile. Successfully adapting to this change will increase the value and success of the IT/OT support organizations. This article represents a practical methodology to establish that vision in the form of an EBR, but also recognizes that each organization is unique and faces its own challenges. There's never a single methodology or standard process that fits all, so be cautiously creative, find a common communication method that works for your organization, and embrace the new IT/OT smart grid!

About VASS Solutions

VASS Solutions is an agile smart grid consulting company that focuses on Electric, Gas and Water Utilities. VASS Solutions listens to your specific drivers, needs and risks, and provides a lifecycle of customized services for smart grid projects. VASS Solutions develops and implements strategic plans; facilitates vendor/partner contract negotiations and management; enables justification, design, integration and implementation of core operational and strategic technologies and business processes; enhances customer interactions and satisfaction; and ensures the most valued benefits of smart grid technologies for the Utility and its customers. VASS Solutions tackles the tough situations. VASS Solutions' consultants "git-er-done".

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