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Platform Wars[®]

Energy Research Cooperative is facilitating sessions with a startup software company and various utilities to discuss grid planning evolution driven by increasing adoption of renewable and distributed energy resources. One key finding from these meetings has been the increasing need to coordinate various data systems to holistically consider all options to grid infrastructure investments. Typical electric utilities have hundreds of software applications performing various aspects of managing their business. These applications include Enterprise Resource Planning, Customer Information Systems, Meter Data Systems, Work Management, Energy Management Systems, Forecasting, Power Flow Analysis, Economic Analysis, and Interconnection tools. All of these applications contribute information to the overall grid infrastructure planning process and require methods to integrate data across the various applications.

One solution is to depend on a single vendor to reach more and more business functionality to ease multiple vendor integrations. This strategy may be enabled by companies like SAP and Oracle that have multiple product lines with theoretically built-in interoperability. Often these companies have acquired a suite of applications over time and many of the integrations are less than seamless and therefore the enterprise solution from a single vendor may manifest more as a Frankenstein-like problem than an integrated solution.

Another solution is to use an independent platform provider with specific subject matter expertise to manage interoperability. This approach is offered by a host of providers that have developed interoperability solutions for a single organizational group (e.g. within Customer Programs, Customer Information, Transmission Planning, or Distribution Interconnection groups). This is often a solution when individual business groups have budget and discretion to procure solutions without significant input from outside groups or a centralized IT department. These solutions often provide excellent solutions for specific business problems and can make a handful of systems effectively interoperate.

A third solution is a more generic technology solution that is generally driven by an IT department. This solution may be based on standardizing data repositories (e.g. Oracle, Teradata), extending ERP solutions (e.g. SAP Hana), using an analytic platform to develop an interoperable environment (e.g. Snowflake, GE's Bit Stew), or employing a cloud-based environment with application development tools (e.g. AWS, Microsoft's Azure, Google).

Electric Utilities generally have a combination of all of these solution strategies. This is often the case for several reasons:

1. Decisions to implement a new technology are often easier than developing a strategy to maintain an existing system
2. Individual business units and groups are pressed to deliver immediate results and cannot wait for an enterprise consistent solution

3. Interoperability is difficult under any of the chosen directions and complicated further by choosing multi-strategies - there are no silver bullets so why not choose a shotgun approach

The question is what direction this will take. The decisions are certainly influenced by the underlying utility's business model and technology approach. Examples of these underlying factors include:

- Return of Investment of Capital versus Performance Based Ratemaking – this fundamental regulatory approach will influence capital decisions like building data centers and capitalizing software as opposed to deploying cloud-based solutions
- Business centric versus IT centric decision-making – of course these do not have to be in conflict, but often in electric utilities the business unit has considerable control over budget and views on technology solutions that do not align with the IT department
- In-house development versus outsource dependency (vendor or 3rd party) – much of integration is customized work in a dynamically changing environment depending on vendors or third parties can be very costly. At the same time, the electric utility industry has depended on technology vendors to provide innovative solutions and few in-house IT departments have the skills to compete with technology providers or to keep pace with the rapid technology advances occurring in the industry

One other consideration is the agency issue of those supporting existing platforms and those seeking new solutions. An in-house SAP subject matter expert understands what SAP can do and is likely to support an SAP solution for a particular business problem. Likewise, an expert in Salesforce is likely to support an expansion of functionality to be achieved within the Salesforce environment. And IT resources looking to push the technology envelop within the utility are likely to support cutting-edge solutions that are not only disruptive to existing technology solutions but also provide IT resource's more marketable skills than supporting an older, legacy system.

All of these issues combine for a difficult environment to navigate through to arrive at a successful technology architecture. These are systemic issues, baked into the system, and therefore a component of the industry culture.

Electric utilities have a core mission to safely deliver electricity services and reliably build and maintain an effective electric grid at least-cost. This creates an inherently conservative and risk adverse environment. At the same time, significant opportunities are available through advanced computing platforms. If utilities are unable to adopt these technologies effectively, there will be significant pressure to find alternative solutions and providers. Utilities are significantly isolated from competitive forces and while energy markets have enabled independent power producers and some competitive transmission infrastructure companies, the utility still very much exists within a natural monopoly. If utilities are not able to manage improved technology systems and integration, the ongoing efforts to remove core functions from the utilities (e.g. Independent Power Producers, Competitive Transmission, Community Choice Aggregators procuring energy for individual municipalities) will continue. An inability to adopt advanced technology effectively and efficiently may be the next chink in the natural monopoly armor.