

CONNECT WITH OUR CATALYST &
ATTEND OUR PANEL SESSION

tmforum
DIGITAL
TRANSFORMATION
WORLD SERIES 2020
7 OCTOBER - 12 NOVEMBER/2020 ONLINE

Smart Grid User Stories

The Digital Twin User Story

As the virtual power pool provider of alternative energy for a geographic region,

I need to simulate the aggregation of a hybrid combination of energy generation types around the region in significant decentralized patterns,

so that I can plan, design, construct, integrate, commission, and operate the overlay power system to deliver significant revenues for 30 years.

To do this I need to gamify the planning process and then transition into steadily more detailed engineering, construction control, systems integration with hardware in the loop, and longer term operational controls.

I know that I am successful when a prospective stakeholder can visualize the scope of the system reach, can use the embedded teaching tools to learn to use the system, and then the system can be used to control detail designs and construction, and then to transition to become the management system itself.

The Synchronphasor User Story

As the power balancing authority situational awareness lead,

I need to be able to see the balance of quality and adequacy of electric power at the national level, and then drill down tier-by-tier to see problems that need to be resolved right down to an individual microgrid level,

so that I can issue corrective guidance to SCADA control managers to maintain the quality of power to normal levels and to avoid highly destructive situations where distortion has entered the dynamic power situation.

To do this I need to measure six aspects of the power delivery 120 times per second at key junction points in the power grid, store the stream of measurements for further analysis, and then prepare a visual dashboard for human-in-the-loop judgement for corrective action when needed.

I know that I am successful when I can see the distortions and make a decision to investigate for corrective action within 4 seconds.

**CONNECT WITH OUR CATALYST &
ATTEND OUR PANEL SESSION**

tmforum
DIGITAL
TRANSFORMATION
WORLD SERIES 2020

7 OCTOBER - 12 NOVEMBER/2020 ONLINE



The Microgrid 5G User Stories

As the microgrid control operator,

I need to have redundant real-time communications to my microgrid power generation equipment using both wired Ethernet connections and wireless 5G alternate path connections, **so that I can** instantaneously transition to alternate control paths for operating the flow of electric power without interruption of controls in process.

To do this I need to have a dual-path, high-speed communication service that is fault tolerant between my fault tolerant tier-1 microgrid controls and my specialized grid device controllers in my microgrid yards.

I know that I am successful when I encounter physical destruction of any of my control lines to critical equipment, and yet no trace of an interruption occurs for grid transition commands in process.

As the communications service provider,

I need to plan, deploy and operate redundant real-time communications for my microgrid control customer using both wired Ethernet connections and wireless 5G alternate path connections as part of the provisioning process,

so that I can transition to alternate communications paths without interruption of controls in place for operating the flow of my customer's electric power solution.

To do this I need to establish an infrastructure to support a dual-path, high-speed communication that is fault tolerant between my customer's fault tolerant tier-1 microgrid controls and my customer's specialized grid device controllers in their microgrid yards.

I know that I am successful when my customer encounters physical destruction of any of his/her control lines to critical equipment, and yet no trace of an interruption occurs for grid transition commands in process.

The Transactive Energy User Story

As the homeowner who can generate renewable energies at my residence,

I need to be able to offer any surplus power to my neighbors who could benefit from my resources locally,

**CONNECT WITH OUR CATALYST &
ATTEND OUR PANEL SESSION**

tmforum
DIGITAL
TRANSFORMATION
WORLD SERIES 2020

7 OCTOBER - 12 NOVEMBER/2020 ONLINE

so that I can equitably be compensated for my support to my neighbor.

To do this I need to be able to autonomously advertise my energy flexibility to my neighbors and automatically match it with adequate demand, then deliver bursts of power smoothly at just the agreed upon moments, and then be compensated through convertible vouchers using DLT secure contracts, digital assets and electronic micro-transaction currency.

I know that I am successful when I can do this autonomously without complexity, while actually delivering the agreed upon support, and also be measured by a trusted third party to verify, and then receive the value. I need this to be so simple that I don't have to think about it.

The Microgrid Security Operations Centre User Story

As the CISO for my company's microgrids,

I need to have a concierge that I can trust to help me monitor and respond to cyberattacks on my microgrid (or building nanogrid, or smart factory) by detecting perimeter threats of suspicious behavior internal to my OT environment,

so that I can have rapid help in defending my facilities from cyberattack from the multiple approaches represented in the **Cybersecurity Kill Chain**.

To do this I need to install an appliance in my internal network with zero-touch orchestration and register for the SOC as a service through the Digital Marketplace.

I know that I am successful when I can install the appliance with no onsite configuration and can get notifications in time of attack, and get immediate help in quarantining my affected devices and restoring them to service as they existed (or securer than) prior to the attack.