

TECHNOLOGY ADOPTION AND THE VALUE OF INDUSTRY COLLABORATION

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DTE Energy

WINTER 2012 FACE-TO-FACE
IRVING, TEXAS • DEC. 3-6, 2012



SGiP SMART GRID
INTEROPERABILITY PANEL

Grid-Interop 2012

Who is DTE Energy?

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- DTE Energy is a diversified energy company involved in the development and management of energy-related businesses nationwide
- Headquartered in Michigan, with operations in 24 states
- A major employer in many areas, with approximately 10,000 employees
- Member of the Fortune 500 largest companies, with approx. \$9 billion in revenue and \$25 billion in assets
- One of only 20 firms whose stock has traded on the NYSE for over 100 years

DTE Energy®



■ States with DTE Energy operations

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DTE Energy is an Integrated Energy Company

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Strong, Stable and Growing Utilities

~80% of DTE Energy's 2011 Earnings



Detroit Edison

- Electric generation and distribution
- 2.1 million customers



MichCon

- Natural gas distribution
- 1.2 million customers

Complementary Non-Utility Businesses

~20% of DTE Energy's 2011 Earnings



Gas Storage and Pipelines



Power and Industrial Projects



Energy Trading



Unconventional Gas Production

System automation has evolved since 1910

<u>Timeframe</u>	<u>Metering</u>	<u>Home</u>	<u>Electrical System</u>
"Classical Era"	- Electromechanical	- Basic lighting - Early electric appliances	- Fuses - Mech Relays
"Middle Ages"	- Magnetic tape - Paper reads	- Air Conditioning - Television	- Breakers - Switchgear - Wired remote
"Modern Era"	- Electronic reads - Remote reads - AMR / AMI	- A/C & Water Htr Control - Computers - Intelligent Link - Smart Home	- Radio Remote - SCADA - EMS/DMS - Generation Control

Investment Opportunities Require Technology

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Renewable Portfolio Standard (RPS)



Investments in renewable generation sources such as Wind, Solar and Biomass to comply with legislative mandates

Energy Optimization (EO)



Investments in residential, commercial & industrial programs to engage customers to reduce their overall energy consumption

Environmental Compliance



Investments in environmental equipment to reduce NO_x, SO₂ and Mercury emissions at our fossil power plants

Smart Grid Investments

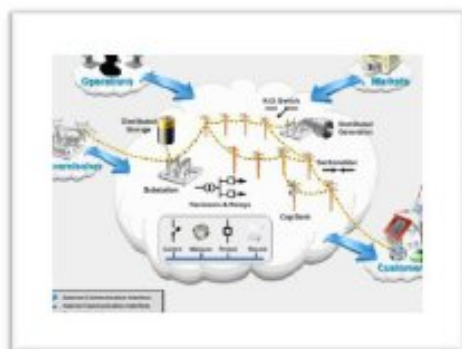


Advanced metering (AMI), Smart Circuit and Smart Home investments to modernize the out-dated electric and gas grid

IT/OT Convergence

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- The current rate of advanced technology adoption is accelerating
- The convergence of Information Technology and Operational Technology is upon us



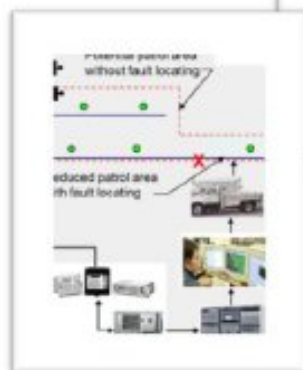
Smart Grid



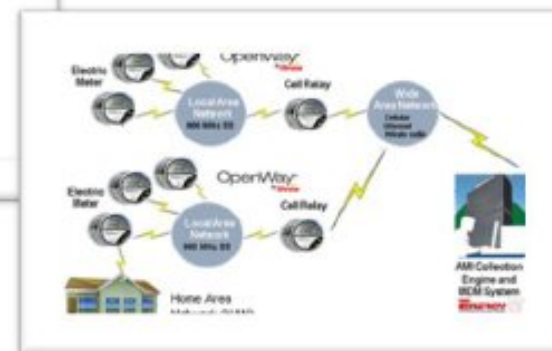
IT/OT Convergence



Smart Home



Smart Circuit



AMI Infrastructure

“Smart Grid” technology adoption at DTE Energy

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Evolution, Not Revolution.....



Strategic implementation driven by

- Customer satisfaction
- Affordability
- System reliability & power quality
- Reduced cost
- Regulatory construct

- SmartCurrents Project (DOE Grant)
 - Smart Circuit
 - Smart Home
 - Smart Meter (AMI)
- OMS full integration
- DMS full integration
- Advanced substation architecture
- Additional distribution loop schemes
- Volt/Var Control
- Requirements-driven ESM (CIM based)
- Advanced data analytics
- DG, DR, and EV integration

Technology adoption challenges

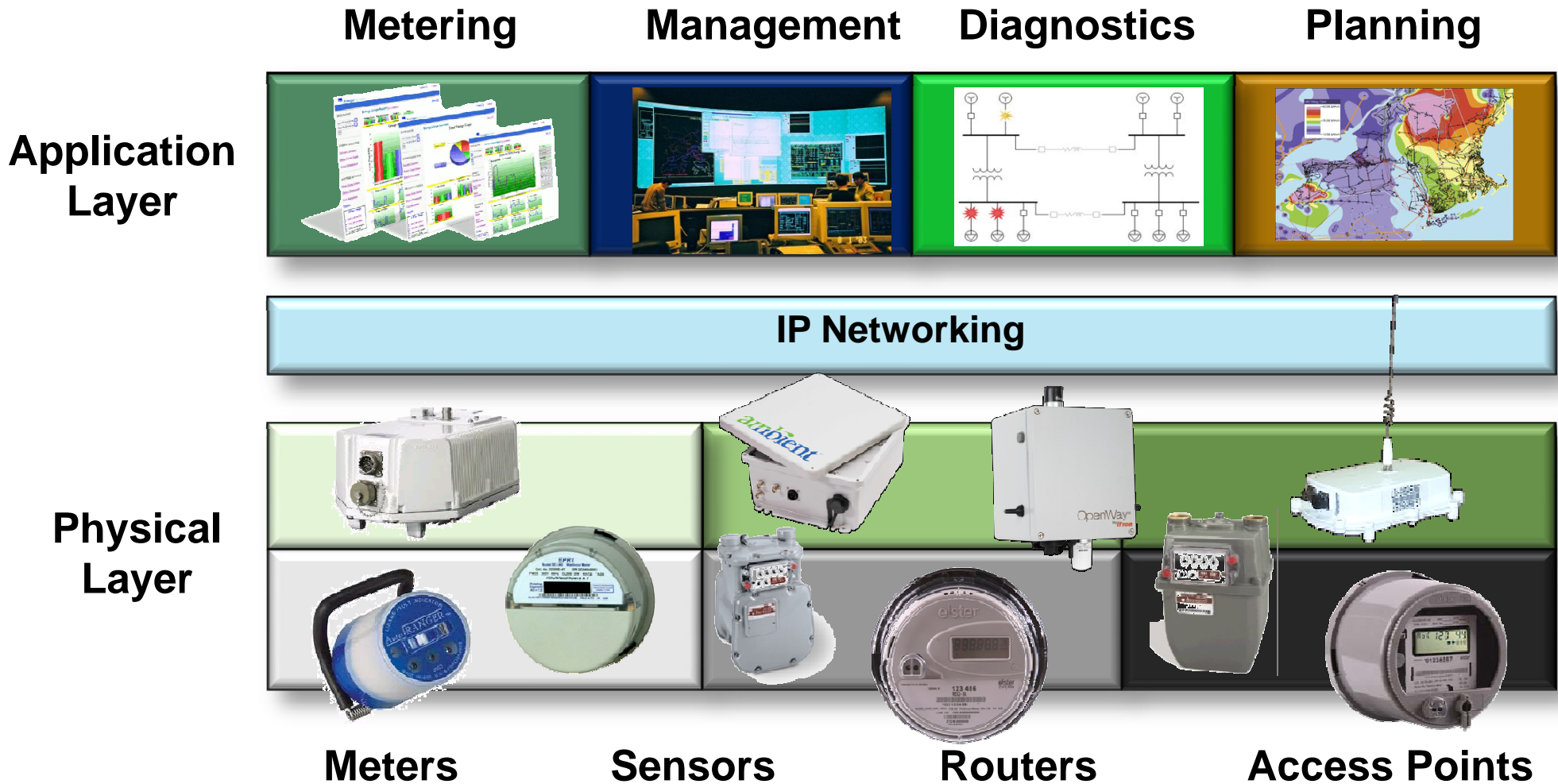
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While the pace of technology adoption has increased, it has introduced challenges only solved by discipline and collaboration.

- Program/project management
- Business process integration
- Cyber security considerations and compliance (NERC CIP)
- Legacy integration
- Premature obsolescence of equipment
- Interoperability
- Development methodology focused on enterprise integration
- Testing and certification of systems and equipment
- Regulatory compliance

Open, Interoperable AMI System Challenge

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Implementation Methods Committee



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SGIMC is a collaborative forum for implementers & regulators committed to:

- Strategies for coexistence with legacy systems and earlier versions of standards
 - Methods and practices to resolve technology conflicts
 - Methods and practices of operating in a mixed technology environment
- Migration Path Options
 - Strategies for migrating from a legacy installed base or an earlier version of the standard to the new standard. (e.g. as PAP 18 did for SEP)
 - Technology transfer planning
 - Supply chain implications
- Lessons learned and best practices
 - Tools and means to facilitate deployment
 - Documentation of reference implementations including lessons learned data, and analysis from smart grid deployments.
 - On-going Community of Practice

SGIMC Planned Work for 2013



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- Identify and prioritize the standards that are key to realizing the benefits cited when Smart Grid projects were authorized by regulators
- Re-assess and prioritize the implementation challenges and barriers to benefits realization faced by stakeholders
- Expand the standards implementation reference library
- Collaborate with SGTCC, PAP 20 and the BnP DEWG or other related groups in SGIP 2.0
- Identify areas of improvement for standards being implemented and facilitate communication of the issues to SGIP and the relevant SSO
- Continue utilizing virtual and face-to-face meetings to identify challenges, share lessons learned and compile standards implementation reference materials

Thank you!

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Contact for additional information & questions

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