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Smart Grid Roadmap & Enterprise Architecture Interest Groups

October 16, 2012

Agenda

• Introduction	Don Von Dollen
• DTE Enterprise Architecture	Michael Reterstorf
• EPRI's Enterprise Architecture Activities for 2013	Gerald Gray
• Wrap up	Don Von Dollen

DTE Energy®

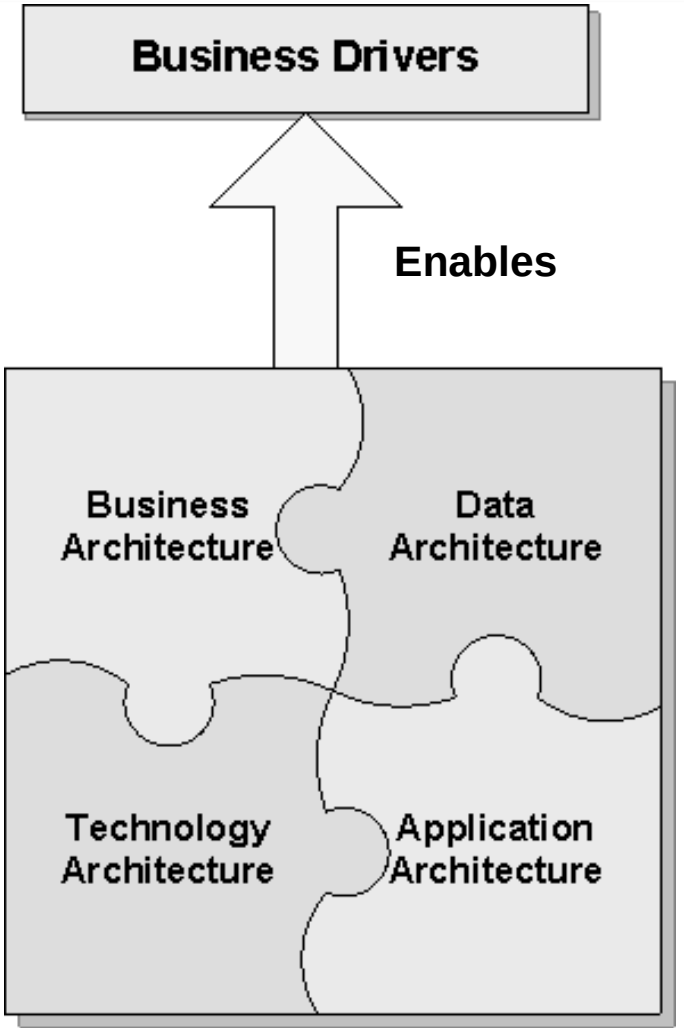
Enterprise Architecture

EAs Role in Asset Lifecycle Management and Road Mapping

Enterprise Architecture – What is it?

The purpose of enterprise architecture is to optimize the often fragmented processes (both manual and automated) across the enterprise into an integrated environment that is responsive to change and supportive of the delivery of the business strategy.

Align IT strategies with business strategies, to enable DTE Energy to achieve its objectives and goals



Focus of Enterprise Architecture

- **IT Strategic Planning**
  - Providing traceability, optimization, and technology governance of IT Assets to meet business goals and objectives
- **Governance and Quality**
  - Ensure quality technical solutions utilizing enterprise architecture standards and principles
- **Industry Standards Alignment**
  - Facilitating the adoption of standards and working with standards setting organizations to develop standards that are favorable to DTE Energy
- **Technology Management**
  - Managing the full lifecycle of technology from introduction through retirement

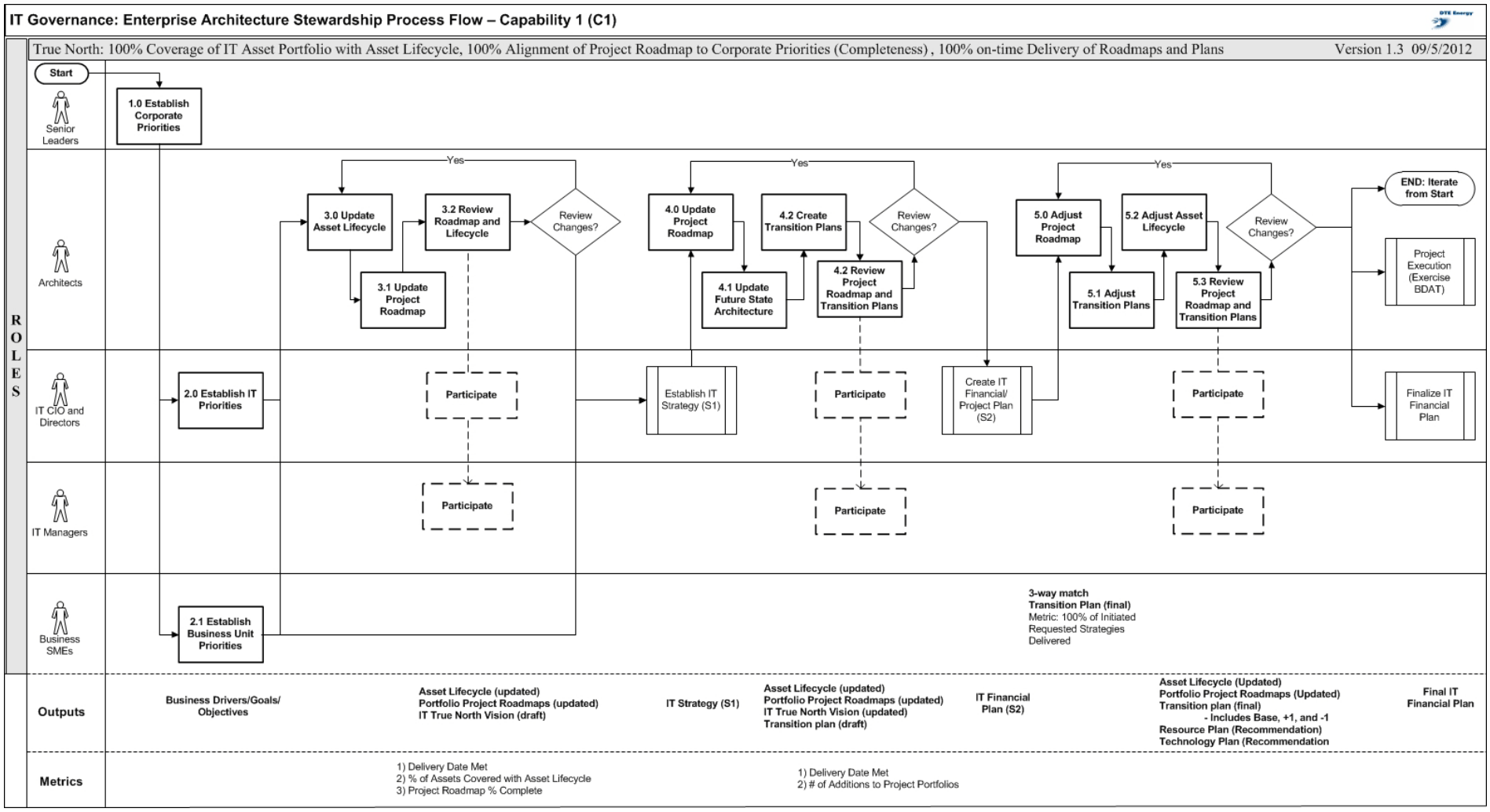
IT Asset Lifecycle and Project Roadmaps

- DTE Energy manages IT Assets through a set of Portfolios aligned by high level functional area
  - **Customer IT**: Assets which deliver capabilities to manage Customer interaction with DTE Energy
  - **Plant/Field**: Assets providing capabilities to manage generation and distribution of Electricity and Natural Gas
  - **Back Office**: Assets providing necessary capabilities for core business functions (HR, Finance, Supply Chain, etc.)
  - **Shared Infrastructure**: Assets providing the base IT infrastructure to run DTE Energy (Network, Operations, etc.)
- 5-year IT Roadmap and Planning Forecast for all Portfolios includes:
  - Capital Expenditure Plan
  - Project Roadmaps
  - Asset Lifecycle
  - Future Business Drivers/Objectives

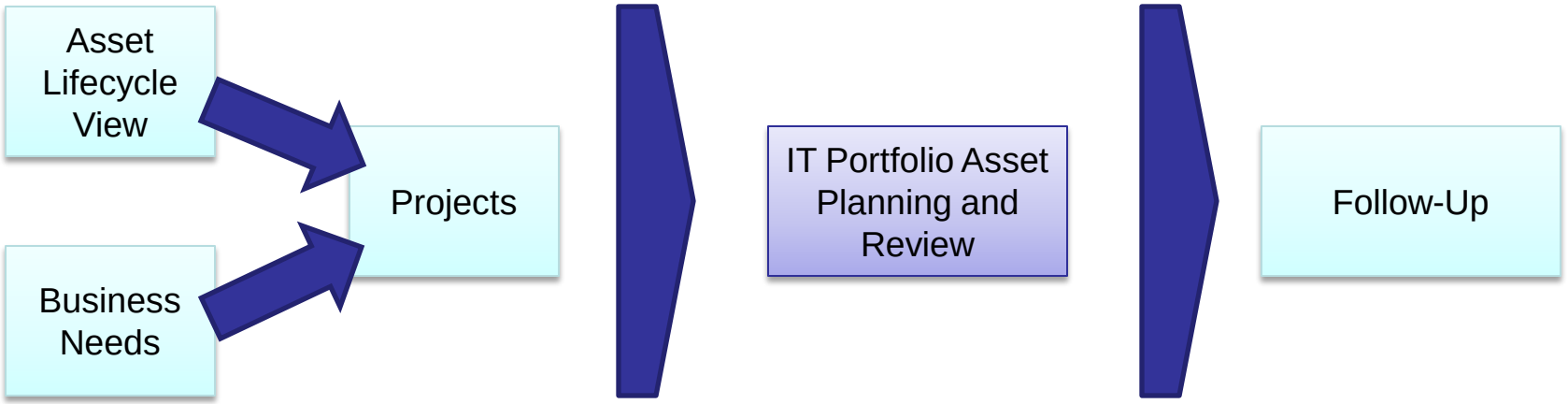
Roadmap Development Process

- Process used by Enterprise Architects to manage and develop required 5-Year Portfolio Roadmaps
- Process is cyclic and executed on a yearly planning cycle
- Provides overall IT Asset Road Mapping process in order to enable:
  - Technology Needs/Directions for DTE Energy
  - IT Asset Lifecycle Management
  - Overall IT Asset Roadmap/Strategy
  - Enables Rolling 5-year Asset/Capability Strategy
- Roadmaps and Asset Lifecycle become basis for Yearly Projects and overall IT Capital Expenditure

Roadmap Development Process



Portfolio Asset Planning



- Discuss Materials/Inputs for IT Portfolio asset planning include:
  - **Asset Lifecycle View:** Multi-Year goals and targets to ensure assets are properly maintained and operated
  - **Business Needs:** Multi-Year clarity into business goals, objectives, and strategies to achieve (Target Architectures)
  - **Projects View:** Multi-Year roadmaps on in-flight, planned, and potential investment work (Transition Architectures)

Example Road Mapping Viewpoints

- Execution of Roadmap Development Process requires several viewpoints in order to guide and illustrate the actual plan
  - 5-Year Asset Lifecycle (by Portfolio)
  - Asset Lifecycle Management (ALM) Risk/Value 4-Block
  - 5-Year Portfolio Project Roadmap
- Business Objectives/Goals developed and provided as part of yearly strategy planning (May/June timeframe)
  - Planning horizon is a rolling 5-years

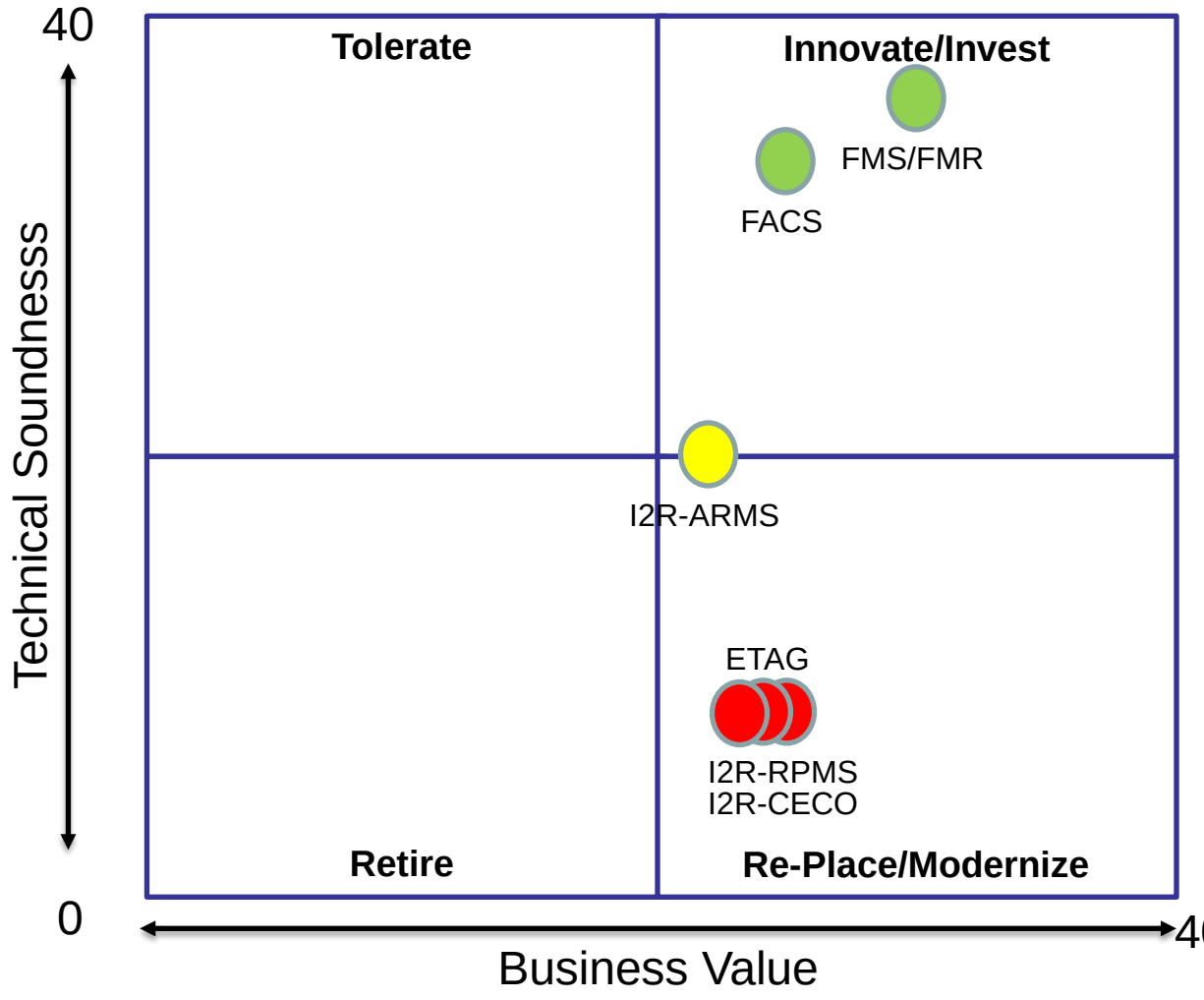
Viewpoint: 5-Year Asset Lifecycle

- Provides projection on roadmap for each Asset
- Projection on Invest, Maintain, Replace, or Retire
- Meant to give multi-year strategy for each Asset to deliver business capabilities
- Does not directly look at Operational Health or current Technical Risk

Area of Investment	Asset Name	Note	2012	2013	2014	2015	2016	2017
Back Office	Maximo	Upgrade to 7.5 by 2014						
Back Office	WBI	Replace with ESB and BPM						
Customer	KCS	Replace with SAP						
Customer	CSO	Migrate to Portal, retire when fully migrated						
Customer	CSO Mobile	Replace with UseableNet						
Customer	Websphere Portal	Institute as new Web Platform for Customer						
Field and Plant	I2R-RPMS	Replace with Sentinel Upgrade and then retire						
Field and Plant	Sentinel	Execute Upgrade to replace I2R-RPMS						
Field and Plant	OPA	Evolve OPA infrastructure to support SOA Enterprise Services for Order Management						
Shared Infrastructure	Enterprise Service Bus (ESB) - Broker							
Shared Infrastructure	Enterprise Service Bus (ESB) - DataPower							

- Investment Capital (New Features/System Improvements)
- Base Capital (Minor Enhancements)
- Maintain (Operate Only)
- Retire Asset

Viewpoint: ALM Risk/Value 4-Block



- Purpose is to visually identify at any given point the intended next Investment step for an Asset
- Each quadrant represents an investment level/choice
- Colors of the circle identify the current Technical Risk
- Attempts to bring Project/Architecture Roadmap together with Asset Risk

Viewpoint:
5-Year Portfolio Project Roadmap

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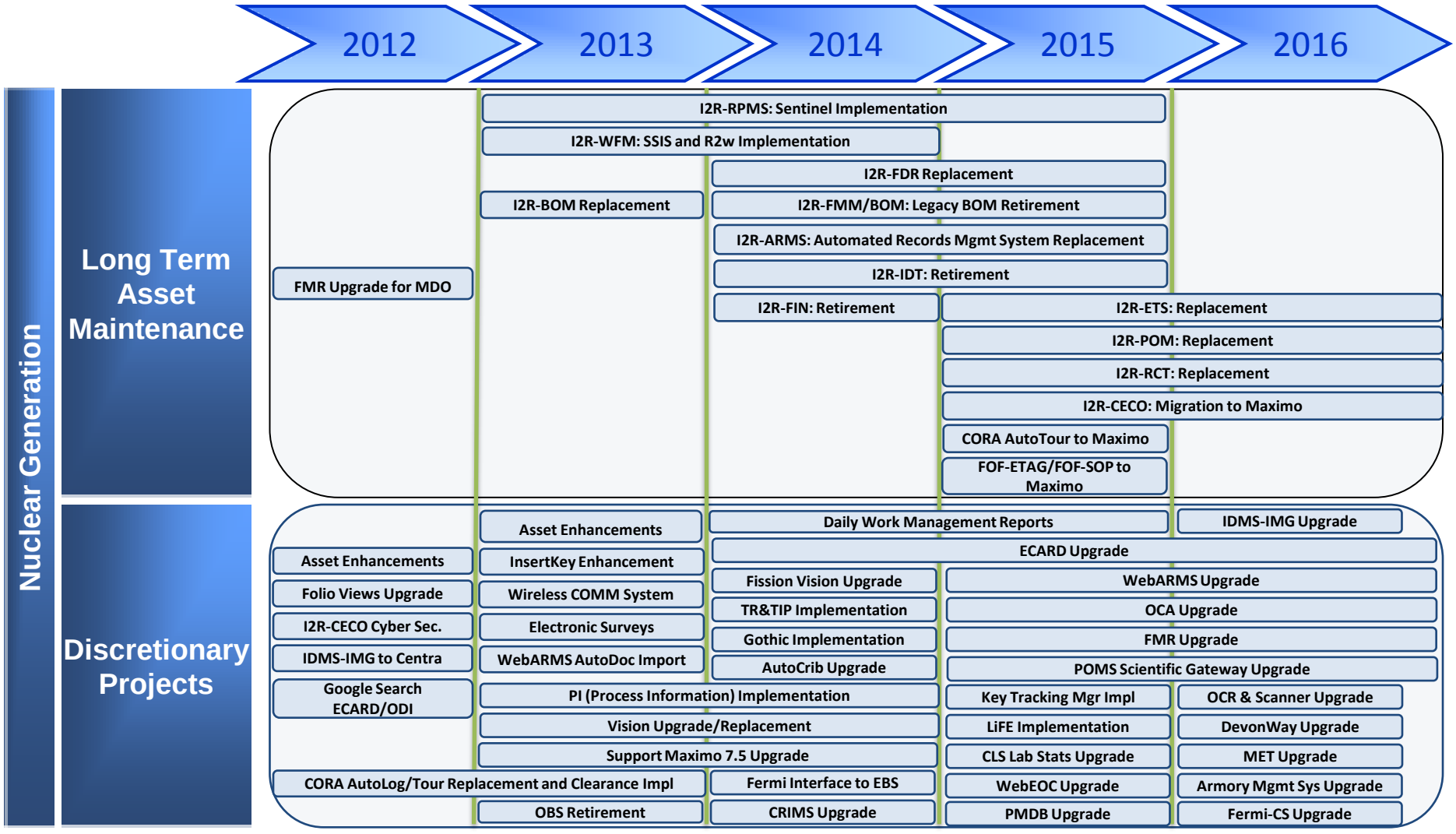

What does and Architect do within Road Mapping Process?

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Enterprise Architect

- IT True North Vision Development
- Investment Area Project Roadmap Development
- IT Asset Lifecycle Stewardship
- Investment Area Architecture Transition Planning
- Technology Roadmap Stewardship
- Participant in Technology Advisory Council (TAC)

Technical Architect

- Responsible for the design and delivery of the Application and Technology Architecture
  - Leverages the Investment Area Project Roadmap and Asset Lifecycle
  - Implements and Refines the Architecture Transition Plans
- Ensures delivery and operation of high quality solutions
- Responsible for solution architecture design
- Influences the Technology Roadmap
- Works closely with project and operation teams (on the job site)

QUESTIONS?

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Enterprise Architecture Interest Group

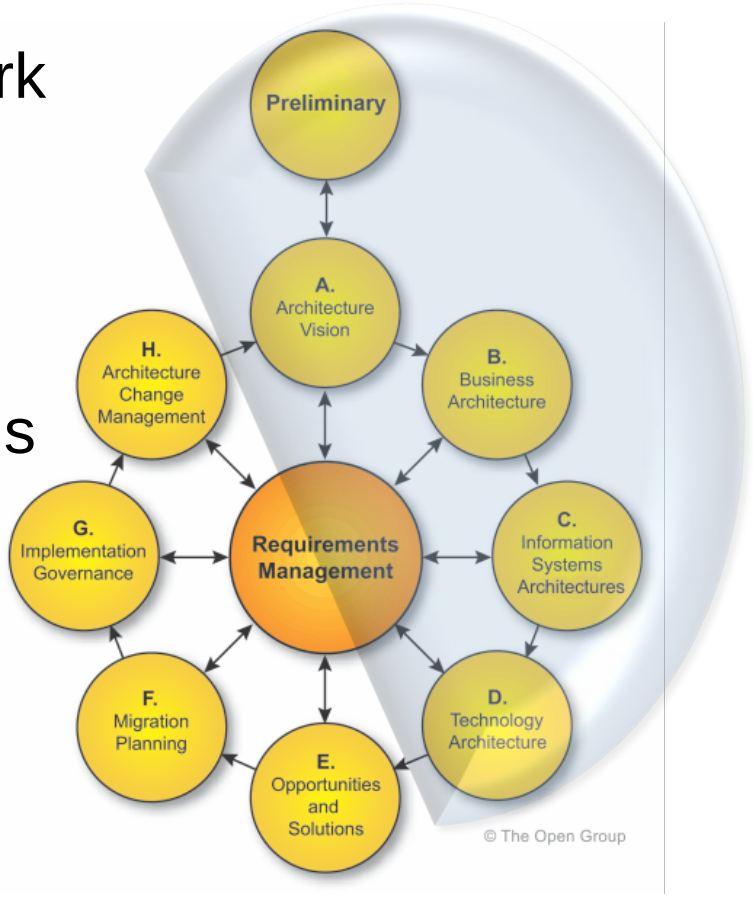
Gerald R. Gray, Ph.D.
Senior Project Manager

Agenda

- 2012 - Year in Review
  - Enterprise Architecture overview
  - Interest Group – Growth and Activities
- 2013 – Work Plan and Deliverables
  - Cost/Benefit Analysis
  - Tech Transfer

TOGAF + Repository + Expertise

- The Open Group Architecture Framework (TOGAF) as a framework
- Enterprise Architect
  - UML tool used for IEC, UCAIUG, CIM, OpenSG…
  - TOGAF and Archimate extensions
- Interest group
  - Gather and review
    - Best practices
    - Shared artifacts

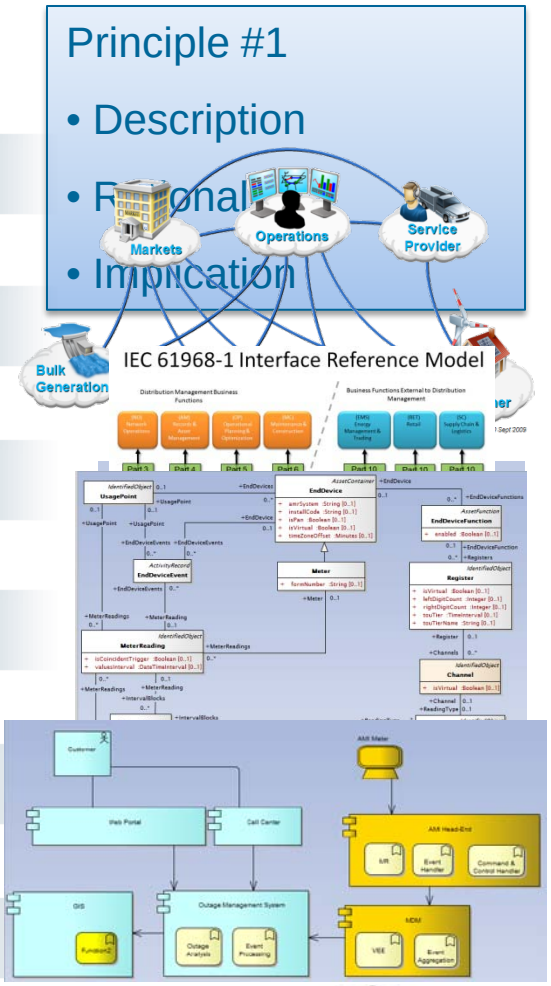


Goals and Objectives

- Knowledge sharing
- Build a repository
  - Collect the various industry resources under one “roof” for sharing
    - Use cases, actors, standards, conceptual models
  - Develop new artifacts
    - AS-IS ► TO BE e.g. smart grid impacts to OMS
    - Utility specific templates
- Develop Guidance – how to go from the abstract (conceptual model) to concrete (NIST catalog of standards)
- What would YOU like to see?

Artifacts?

- Guiding Principles
- Conceptual Architectures
- Reference Models
- Use Cases
- Data Models
- Application Architectures



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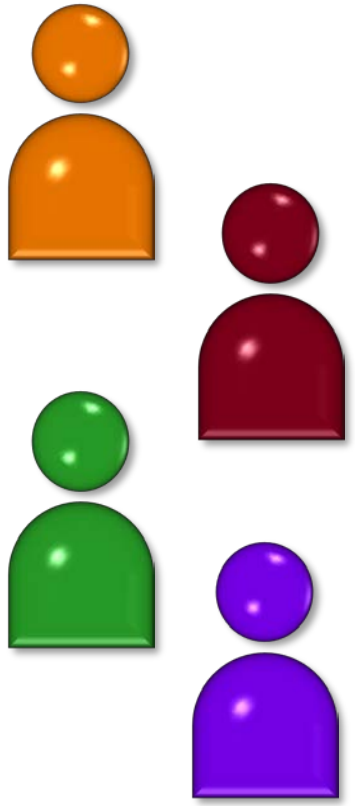
Repository Audience

- Architects – Enterprise, Application, Data, Information
- Systems Integrators
- System Planners
- Enterprise Strategists
- Business Process Owners

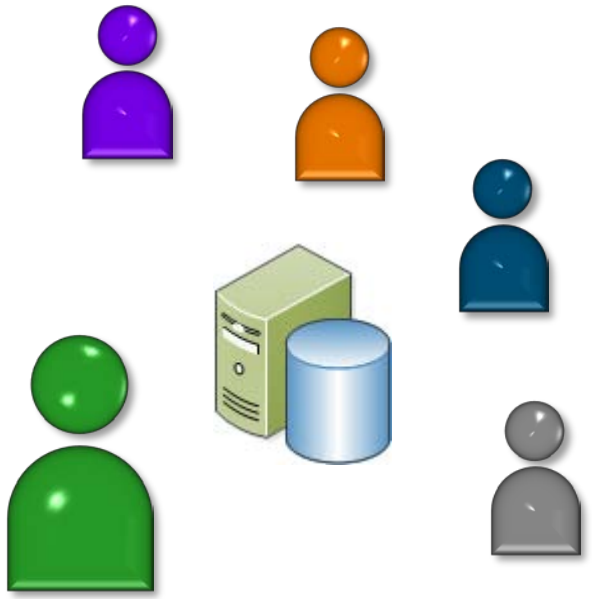


All organizations have an enterprise architecture

2012 Activities

Enterprise Architecture Interest Group

- Open to members and non-members alike
- Integrating artifacts across the industry into the repository
- Sharing best practices, tools, techniques, challenges
- Developing new artifacts, e.g. DERMS application architecture



A Technology Transfer Outreach Effort of the EPRI IntelliGrid Program

P161.024 – Robust IT Architecture Development

Project Objectives

Develop utility specific enterprise architecture best practices.

Value

A robust EA practice helps to future proof smart grid investments, align investments across the enterprise with strategy, while preserving investments where possible

Deliverables

Tech Transfer Report

Cost/Benefit Analysis

Repository of reusable artifacts

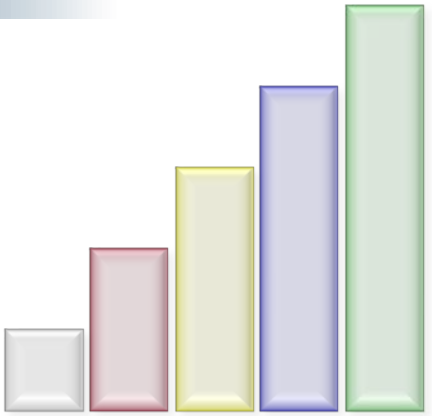
Completion Date

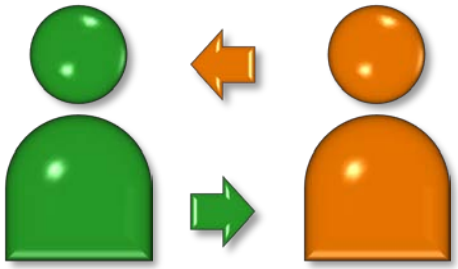
December 2013

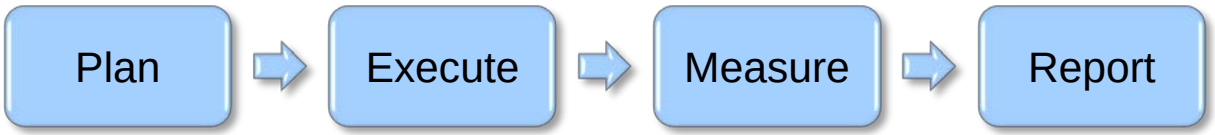
Approach

Collaboration with SEI

- SGMM - Baseline
  - Complement to the IntelliGrid Road Mapping
  - Pick targets for improvement
- Roadmap workshops
  - Build the plan
- Collaborate with the member utility







Benefits

Reusable architecture repository

- An enterprise architecture “starter kit”

Enterprise Architecture benefits

- More efficient business and IT function
- Better return on existing investment
- Reduced risk on future investment
- Faster, cheaper, simpler procurement

Coordination point for IT and OT

- Enterprise approach instead of silo approach

Together…Shaping the Future of Electricity