



Leveraging Telco Frameworks for Smart Grid

Innovative Architecture Models

- Null Hypothesis/ Alternative Hypothesis
- TMForum Frameworx
- APQC Process Framework

- a null hypothesis (H_0) is a hypothesis set up to be nullified or refuted in order to support an alternative hypothesis

Utility Organizations are so unique that they have nothing in common with other Industries.

Utility's customer-facing business processes and information systems are almost exactly the same as other mature services industries, especially Telecommunications/Communication Services Providers (CSPs)

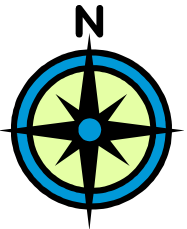
Therefore, Utilities can learn from mature, post-disruptive technology business and systems models from those other industries.

Utilities and Telco's: It's mostly the same north of the grid/network...

Information
Technology

- Customer Billing Database
- Customer Info System (CIS)
- Connect/Disconnect/Power Limitation
 - Remote 2-way communication with an intelligent device
- Call Center/Call Handling/IVR
- CRM
- Static/Dynamic GIS Viewer
- Outage Analysis
- Outage Detection

Business
support
Systems
(BSS)



Head-End Systems

Mediation Layer

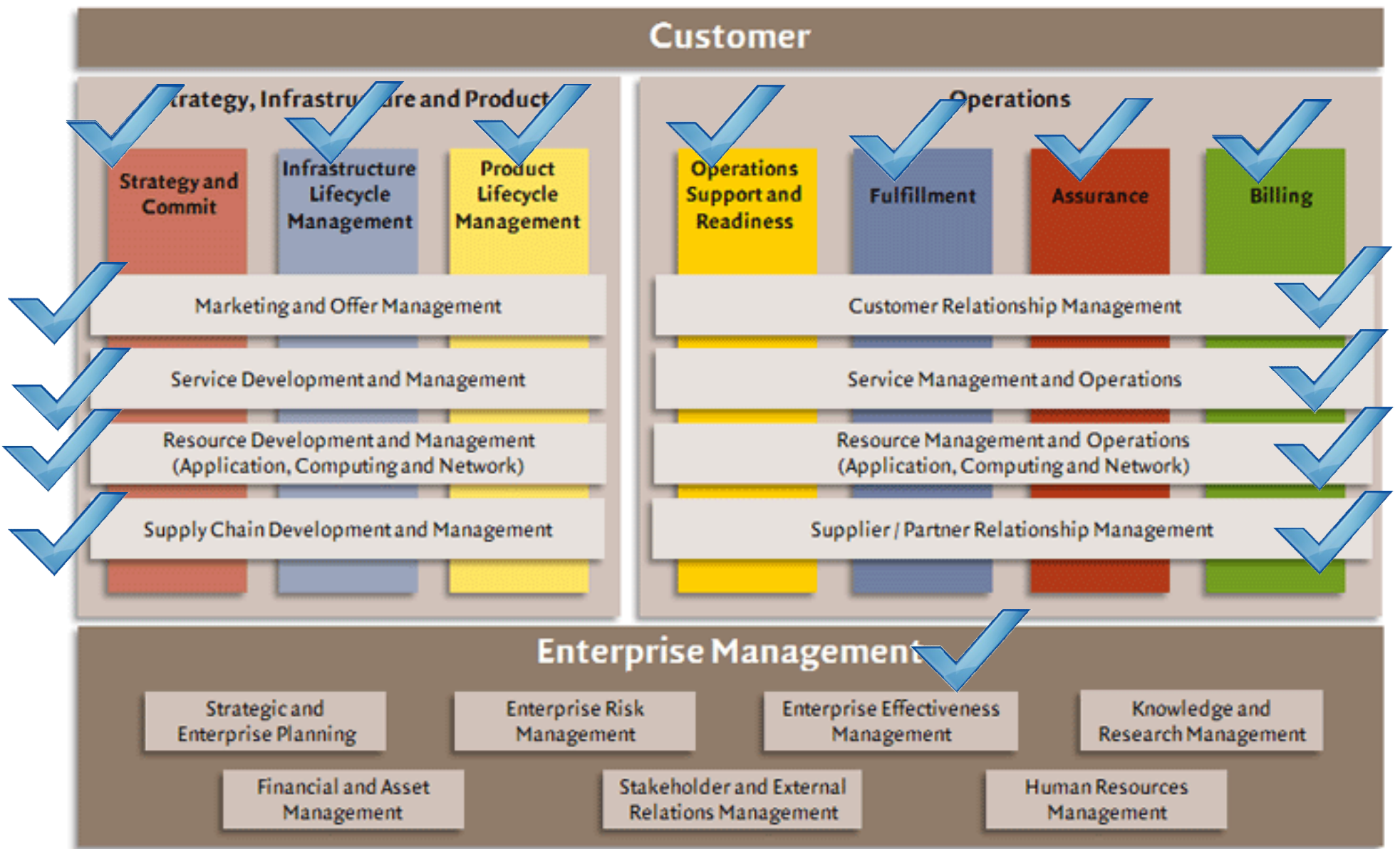


Operation Technology



Network Operations/OSS

Functional Similarities between Telcos and Utilities (eTOM View)



Similar

- Customer Billing Database
- Customer Info System (CIS)
- Connect/Disconnect/Power Limitation
 - Remote 2-way communication with an intelligent device
- Call Center/Call Handling/IVR
- CRM
- Static/Dynamic GIS Viewer
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- Outage Detection

Dissimilar

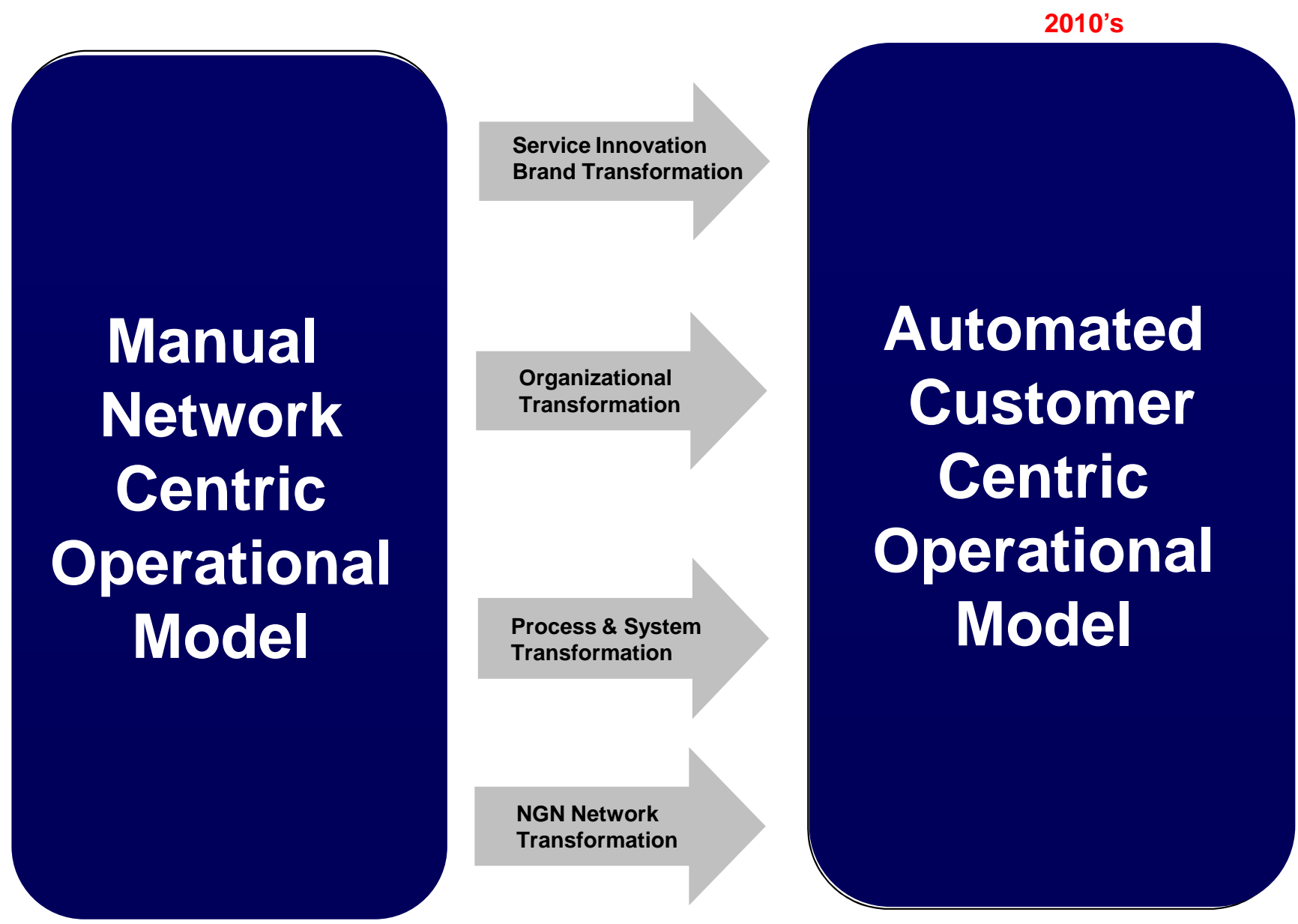
- Engineering Analysis (Power Grid)
- Load Management
- Load Profile
- Meter Reading (head-end systems)
- Automated Staking (field design and cost estimation)

Based on Multispeak Specs for Energy Utilities

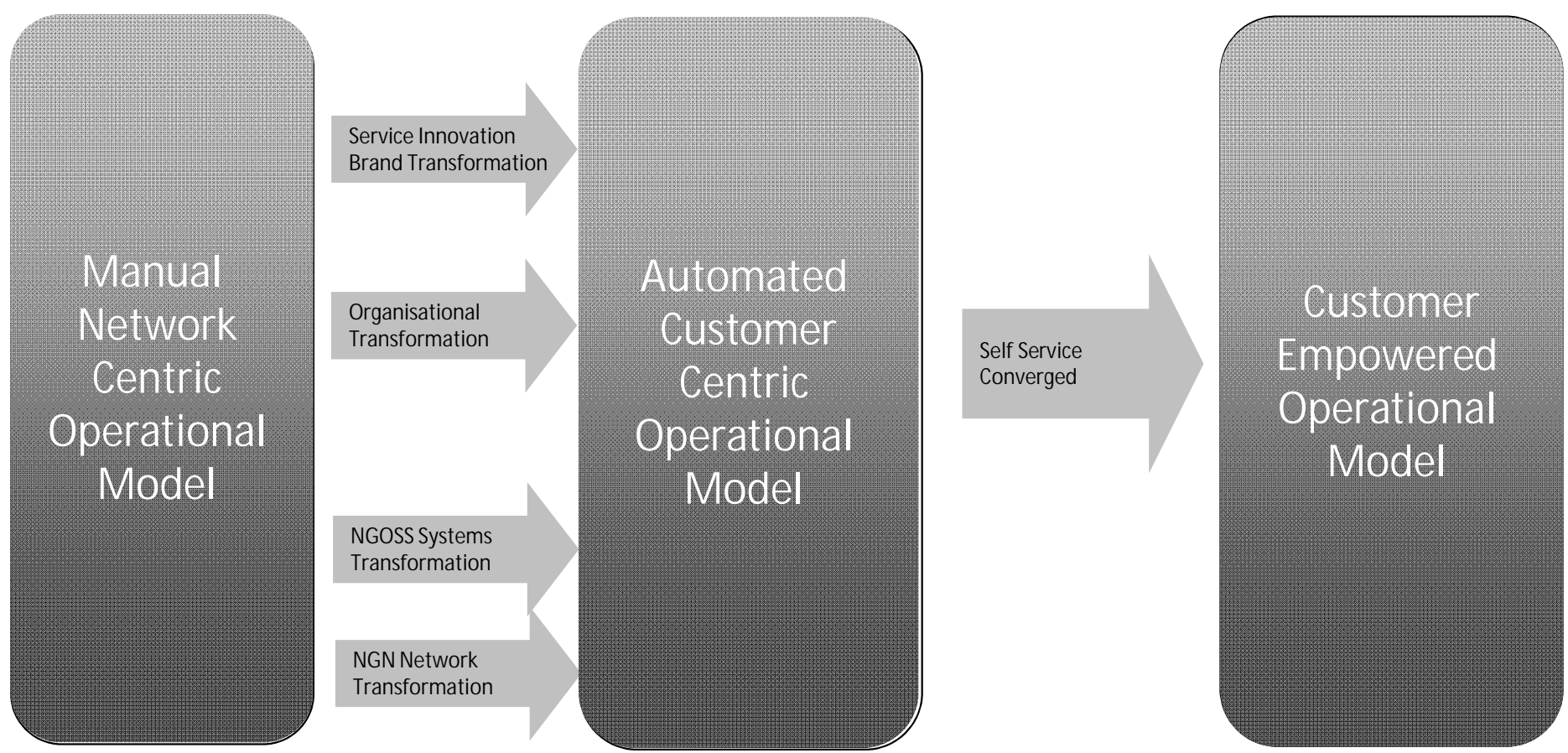
- Convergys – Duke
- Metratch – Onstream (UK)
- HP – Italy AMI
- Clarity – Western Power, Singapore (eTOM OSS/BSS)
- Lavastorm (analytics) – FP&L (Cust Care/Call Center)
- TailorMade (Sweden), SKTA, Hansen - Rating Engine
- GE Energy/Smallworld, ESRI - Automated Mapping/Facilities Management/GIS
- Netcracker (Bonneville Power), Telecordia - telecomm network management

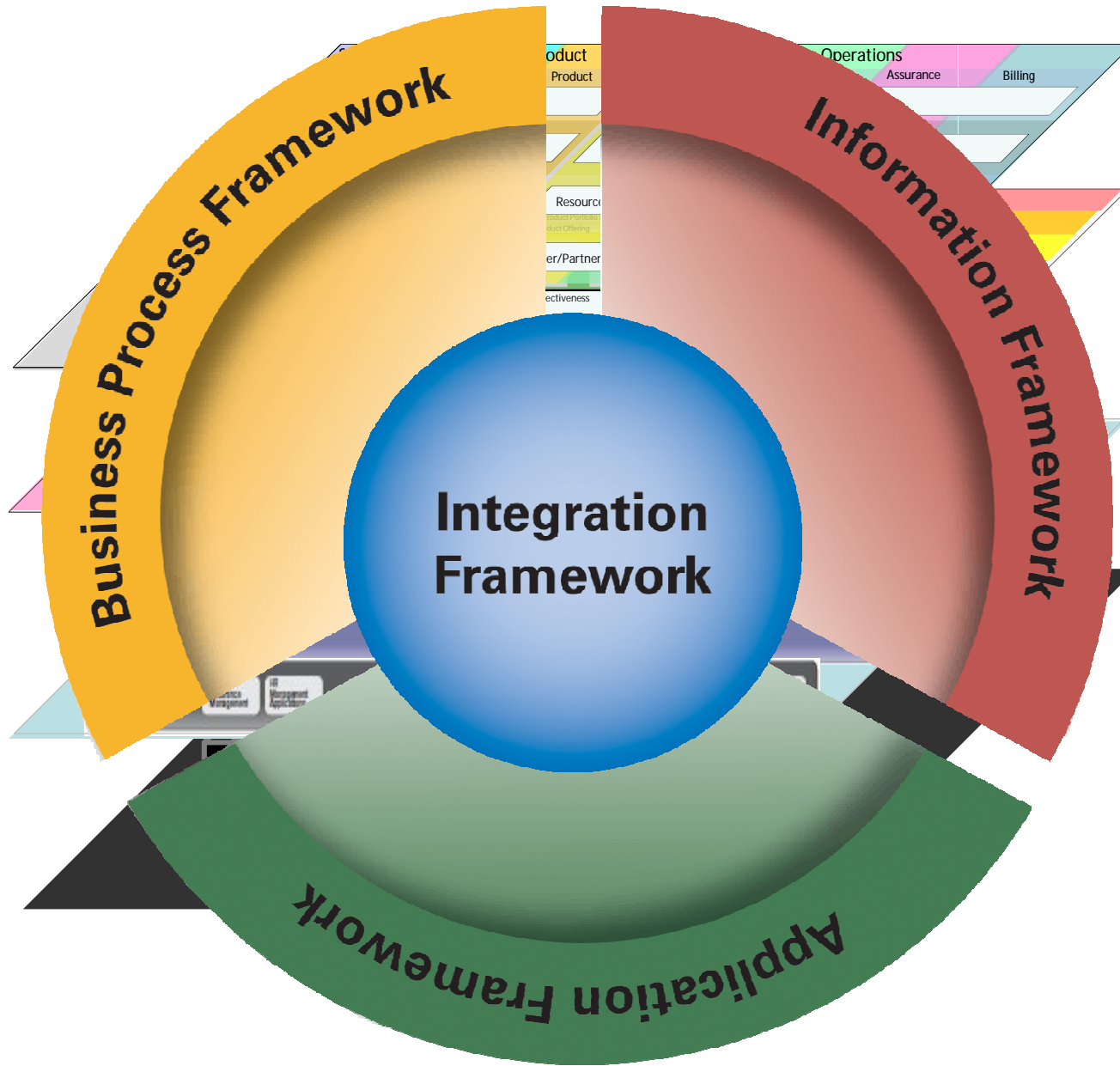
TM FORUM FRAMEWORX MODEL

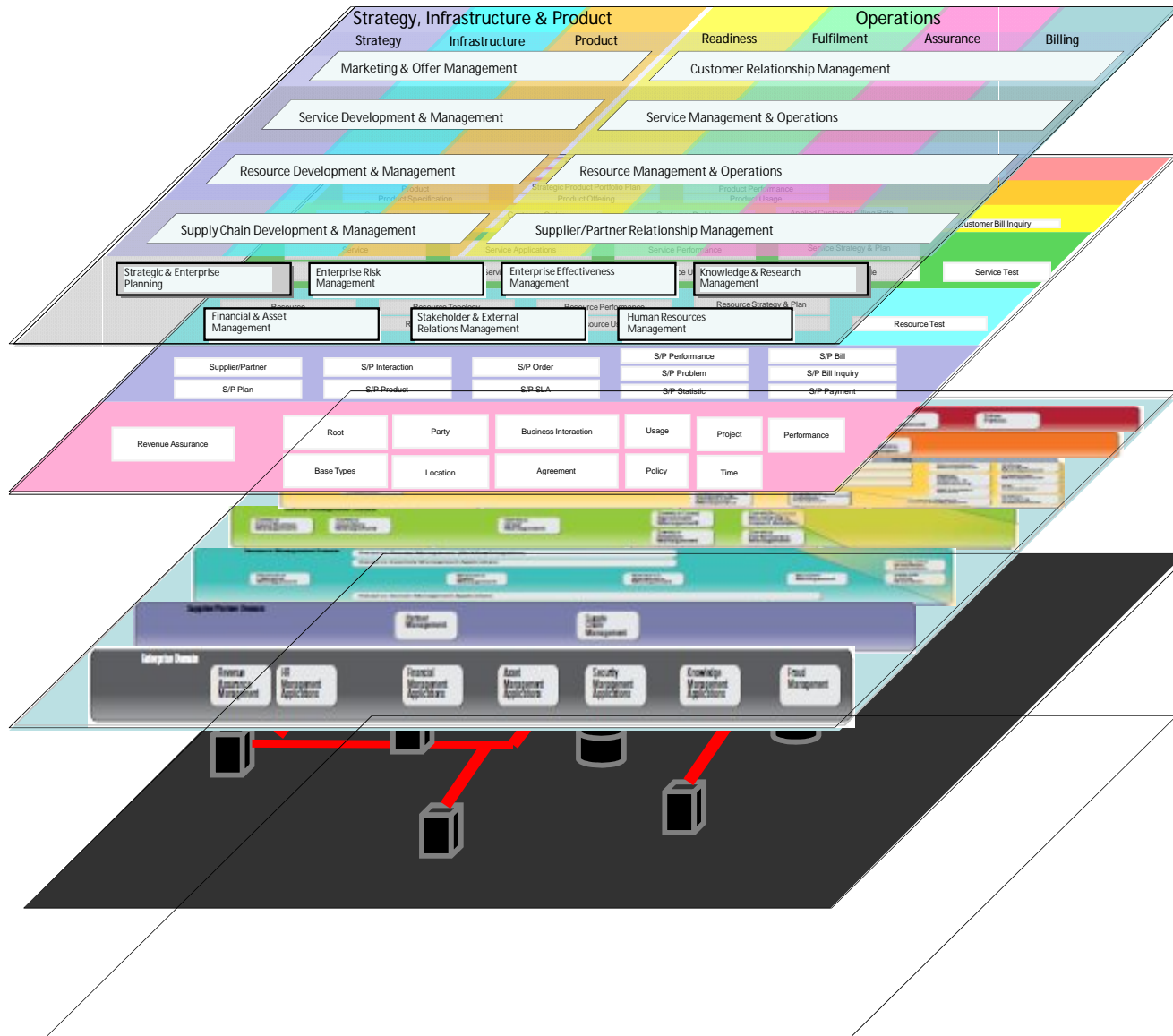
Telecom Best Practice Transformation



The Transformation Roadmap: React, Measure, Influence, Predict Customer Behaviour, Optimize it

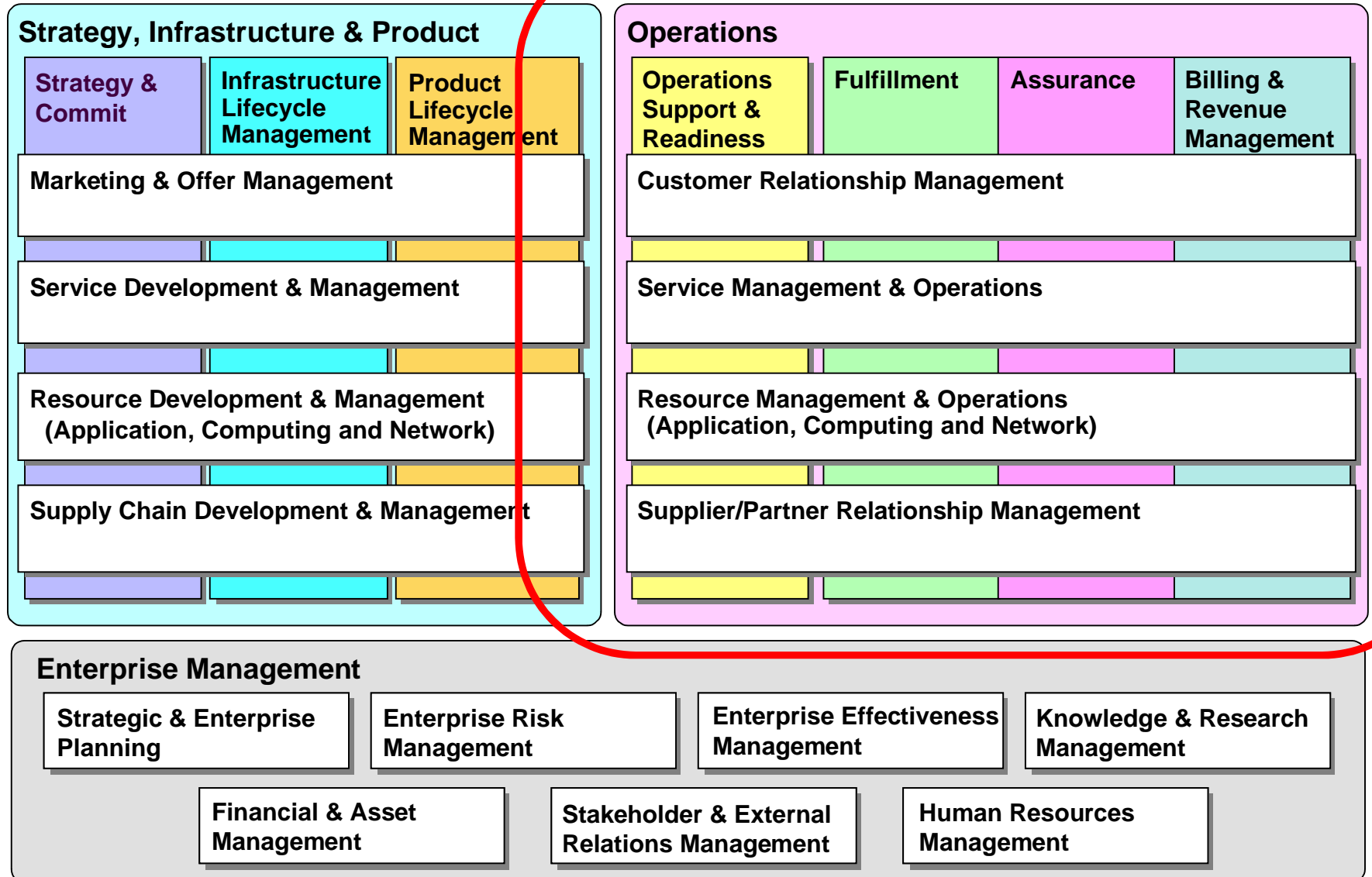




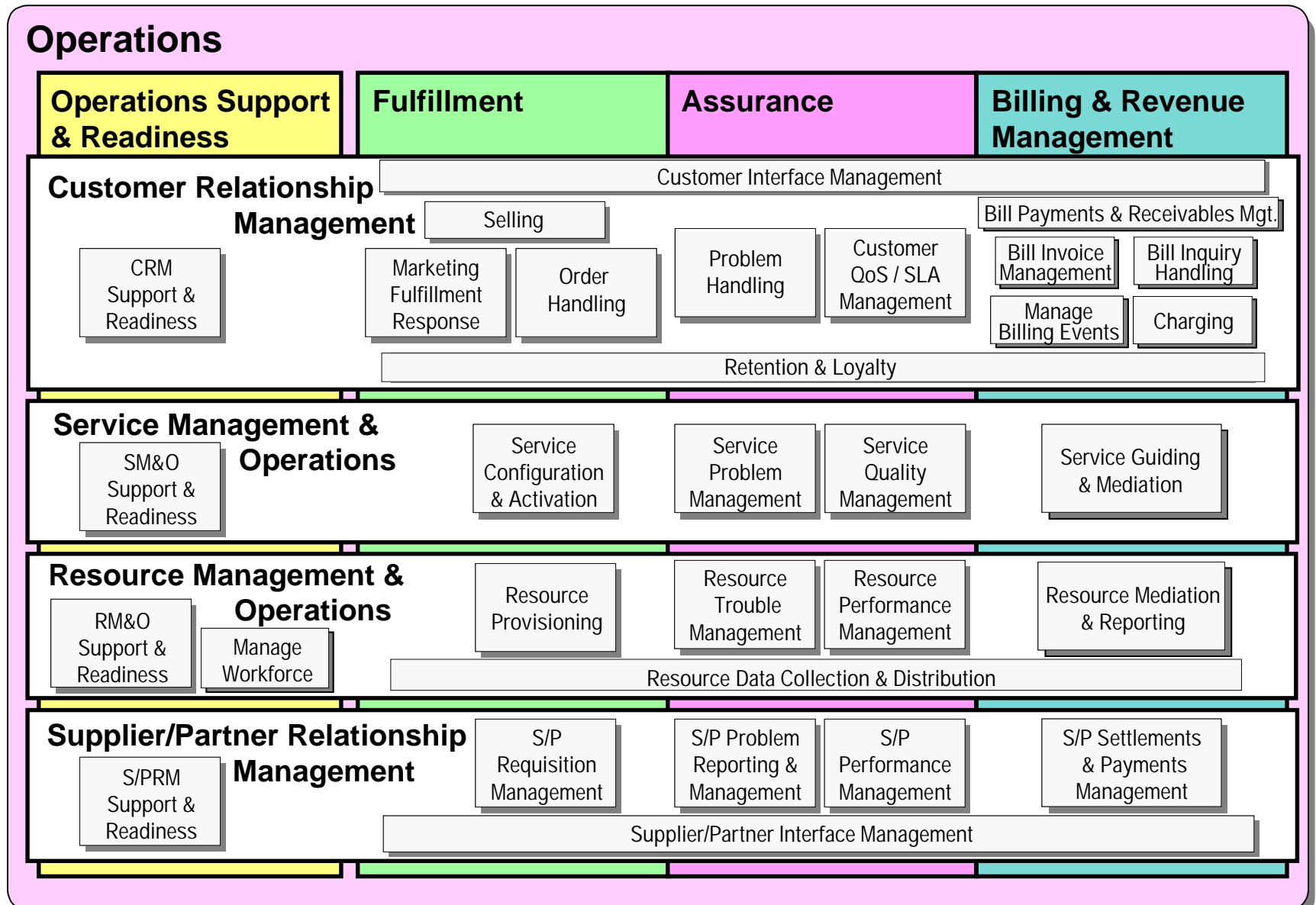


People

Framework – Level 1



Framework Operations – Level 2



Market / Sales

Market Strategy & Plan	Marketing Campaign	Contact/Lead/Prospect	
Market Segment	Competitor	Sales Statistic	Sales Channel

Product

Product	Strategic Product Portfolio Plan	Product Performance
Product Specification	Product Offering	Product Usage Statistic

Customer

Customer	Customer Order	Customer Problem	Applied Customer Billing Rate	Customer Bill Collection
Customer Interaction	Customer Statistic	Customer SLA	Customer Bill	Customer Bill Inquiry

Service

Service	Service Applications	Service Performance	Service Strategy & Plan	
Service Specification	Service Configuration	Service Usage	Service Trouble	Service Test

Resource

Resource	Resource Topology	Resource Performance	Resource Strategy & Plan	
Resource Specification	Resource Configuration	Resource Usage	Resource Trouble	Resource Test

Supplier / Partner

Supplier/Partner	S/P Interaction	S/P Order	S/P Performance	S/P Bill
S/P Plan	S/P Product	S/P SLA	S/P Problem	S/P Bill Inquiry
			S/P Statistic	S/P Payment

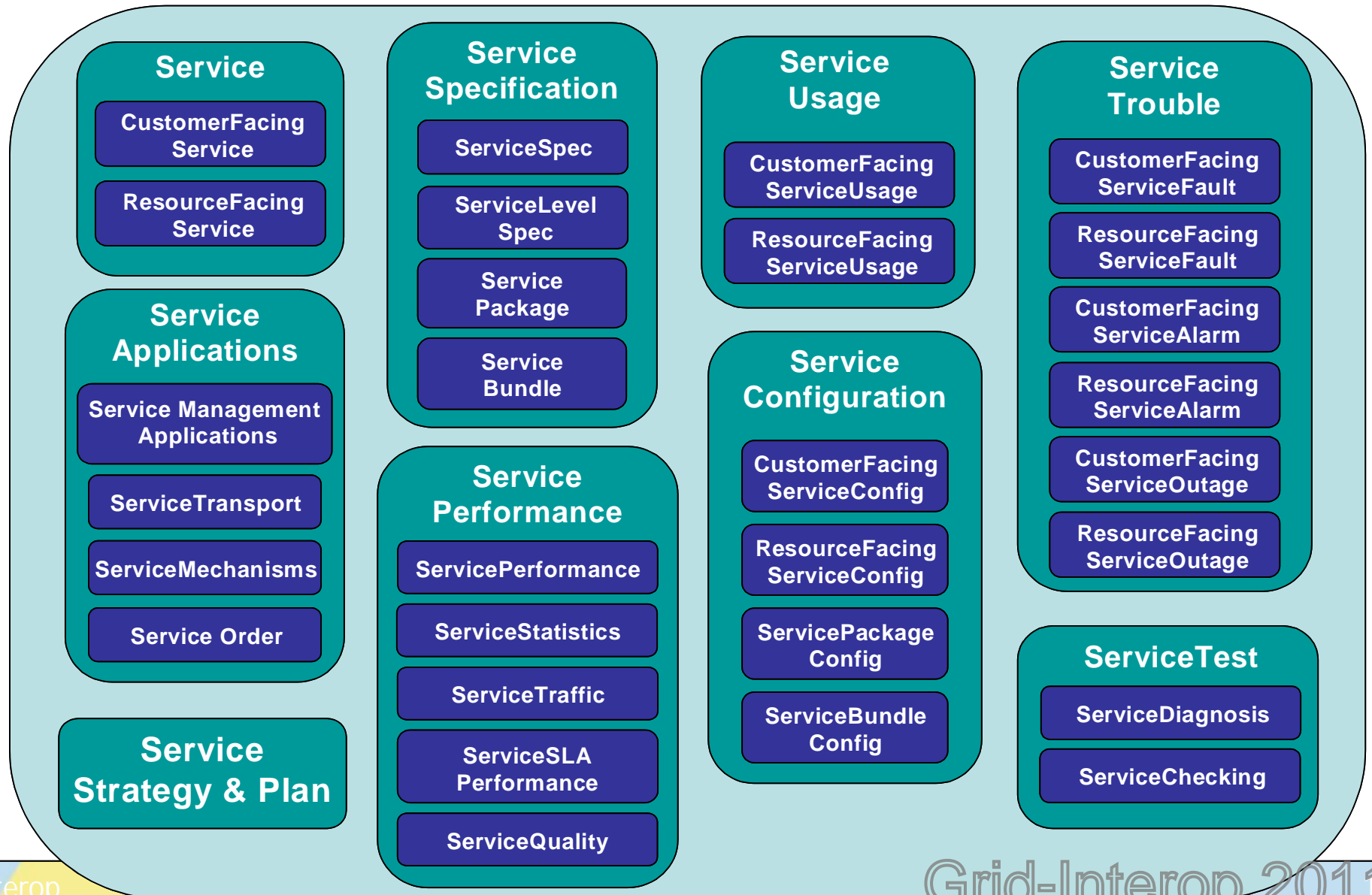
Enterprise

(Under Construction)

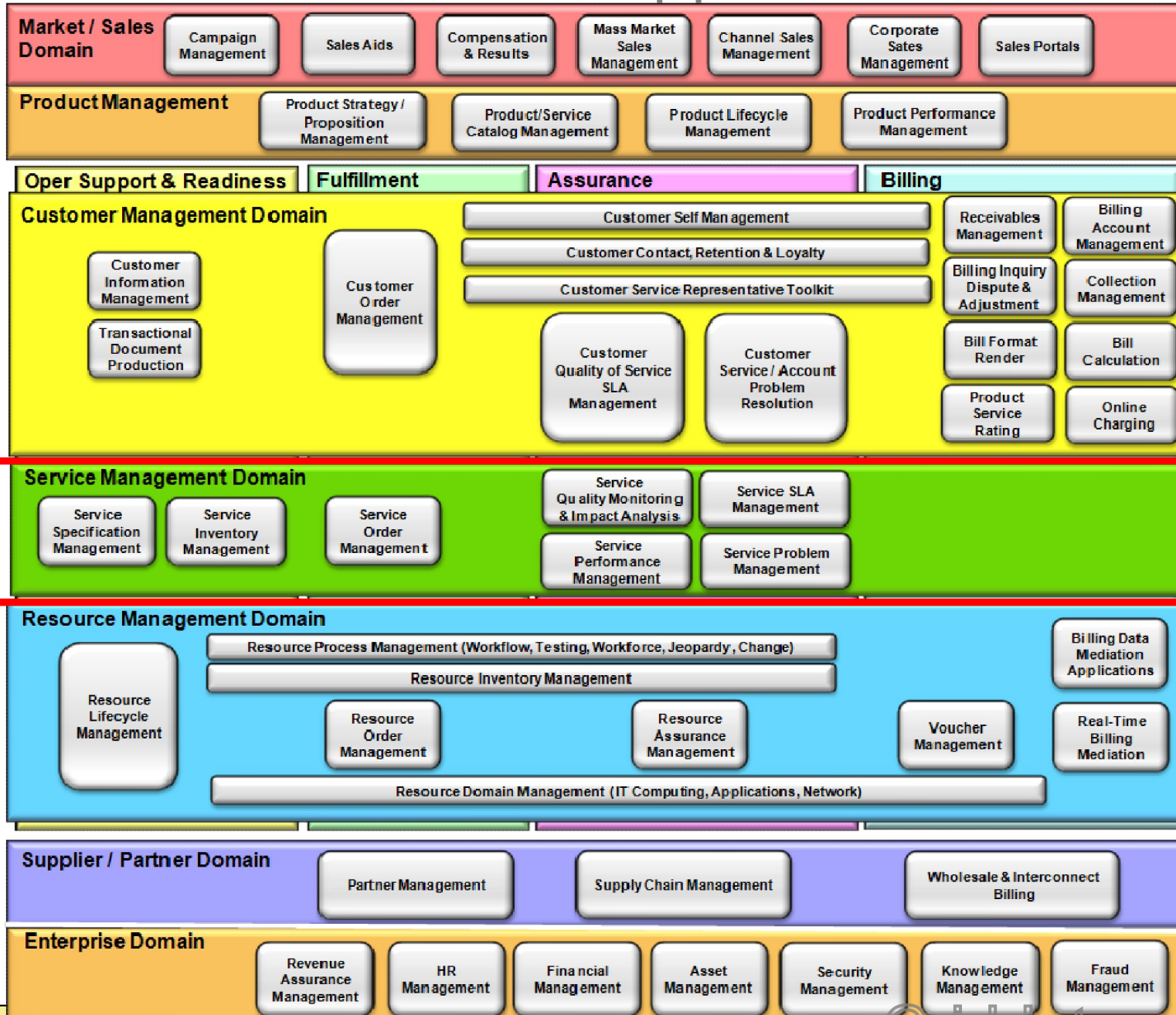
Common Business

Party	Business Interaction	
Location	Policy	Agreement

Service Domain Level 2



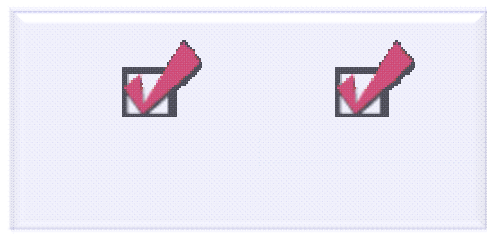
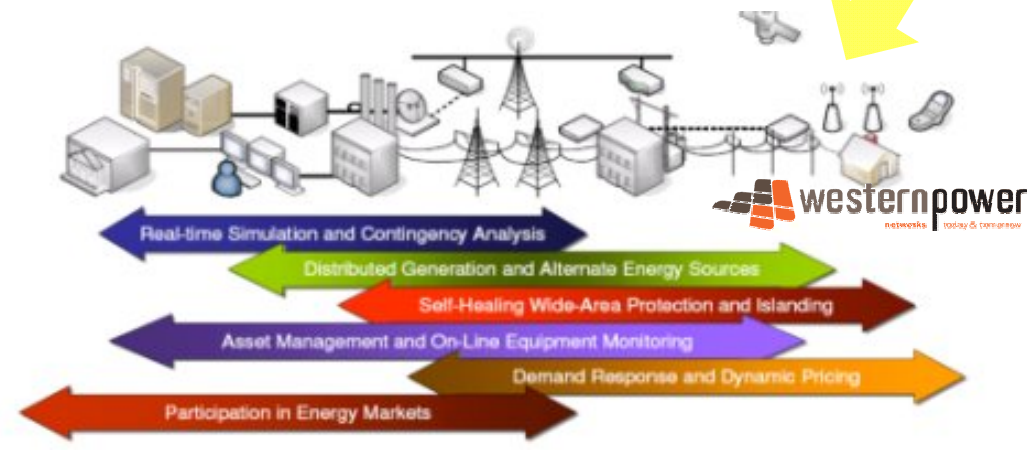
TAM - Applications Framework



Telecom Network Management System (TNMS)

- **Alarms** - TNMS collects Alarms, Correlates with Escalation Engine
- **Inventory** - TNMS Inventory System can model Network and "Smart Meter" Access device – Single Database
- **Performance** - TNMS Performance can monitor Quality of Grid including Meters
- **Multivendor** – TNMS is multivendor management platform
- **Autodiscovery** – TNMS can autodiscover enabled devices
- **Scalable & Mature** - TNMS Engine is managing in real time country wide Telecom infrastructure in Indonesia, Philippines, India and Malaysia.

- Open Management Interfaces
- Alarm Collection
- Performance Collection
- Configuration control
- Auto Discovery

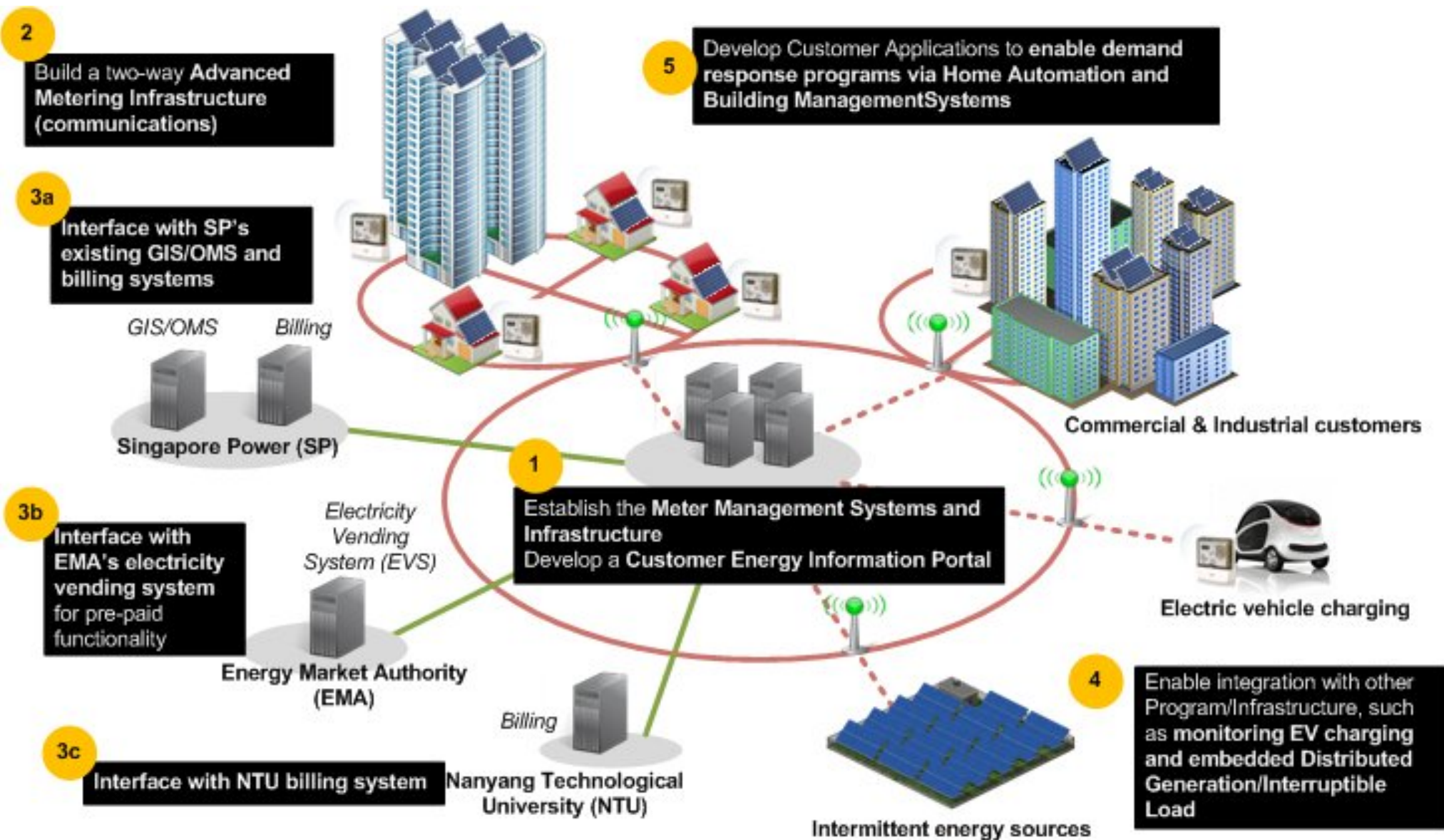


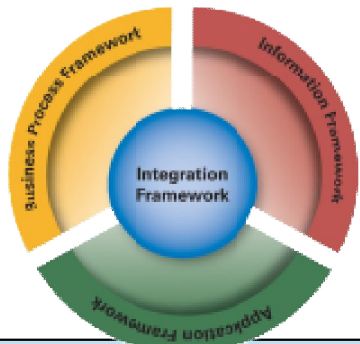
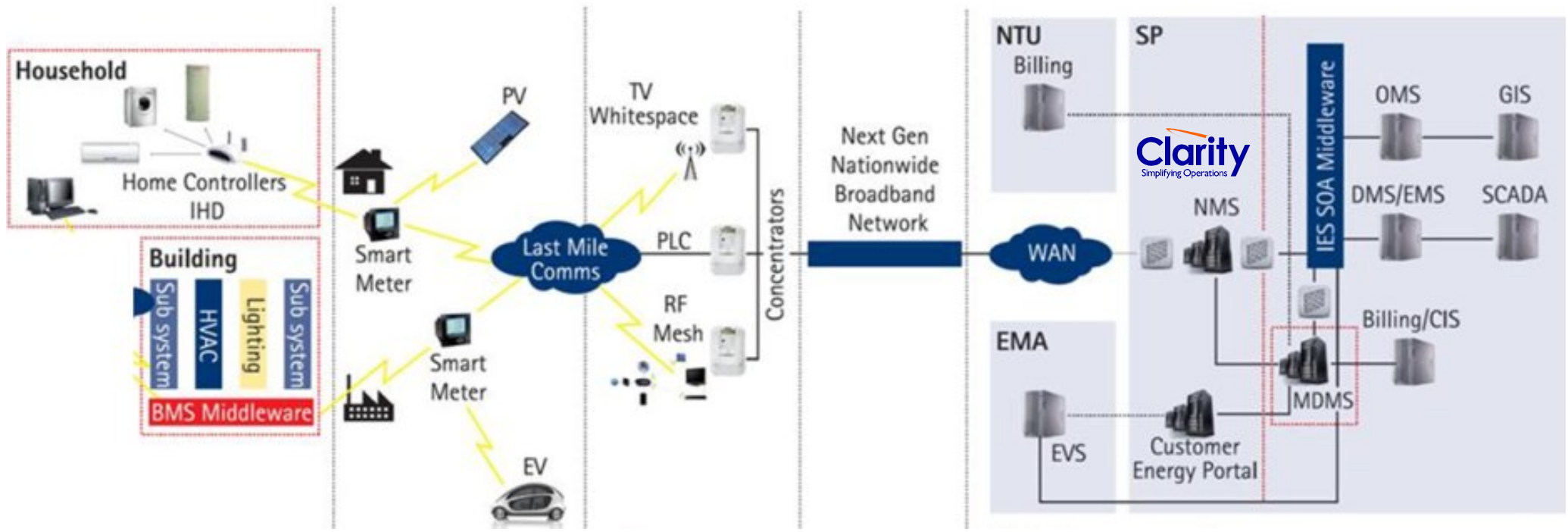
TNMS Smart Grid Pilot leverages current Western Power Framework TNMS Implementation



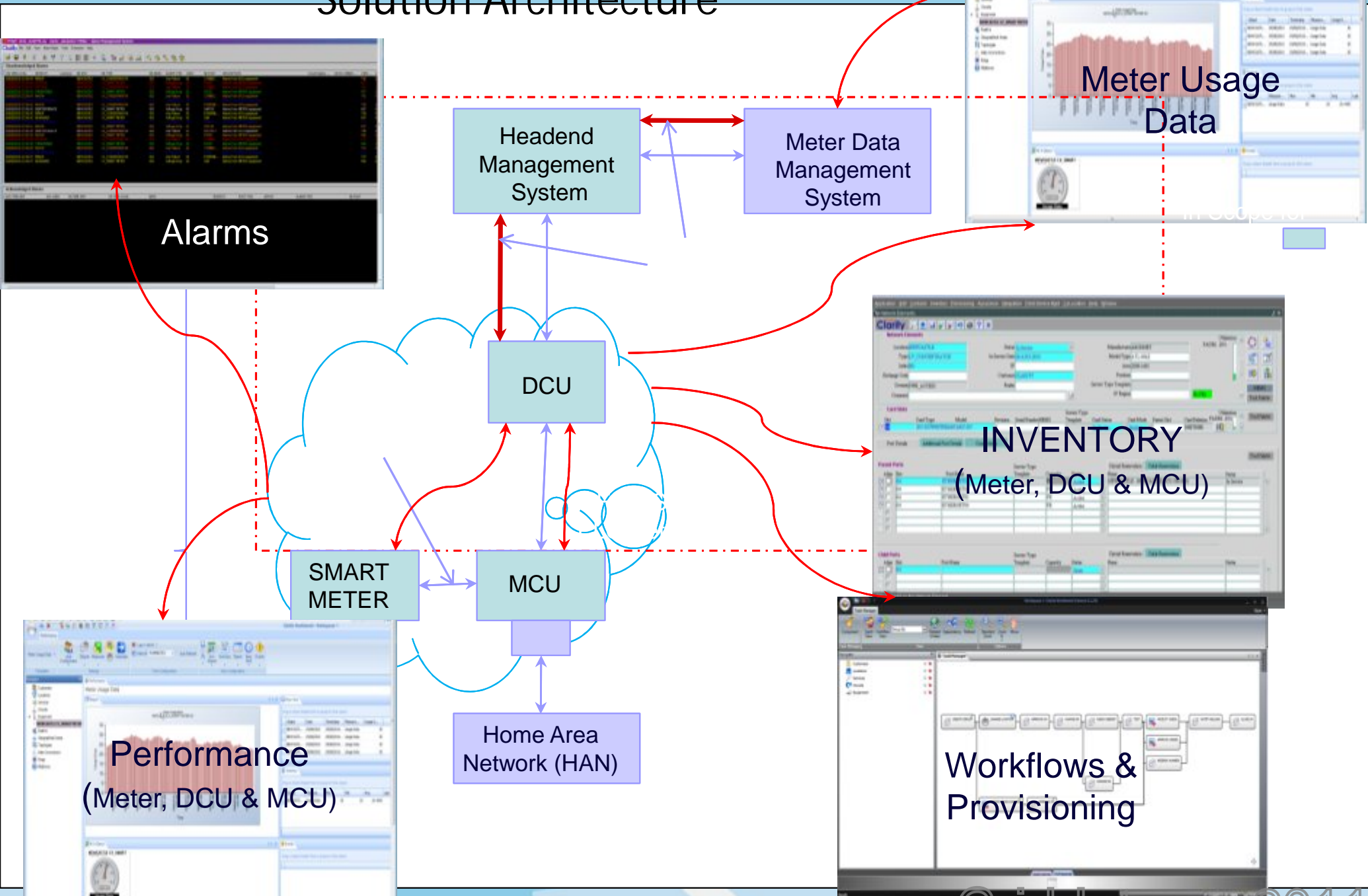
Singapore Smart Meter Pilot

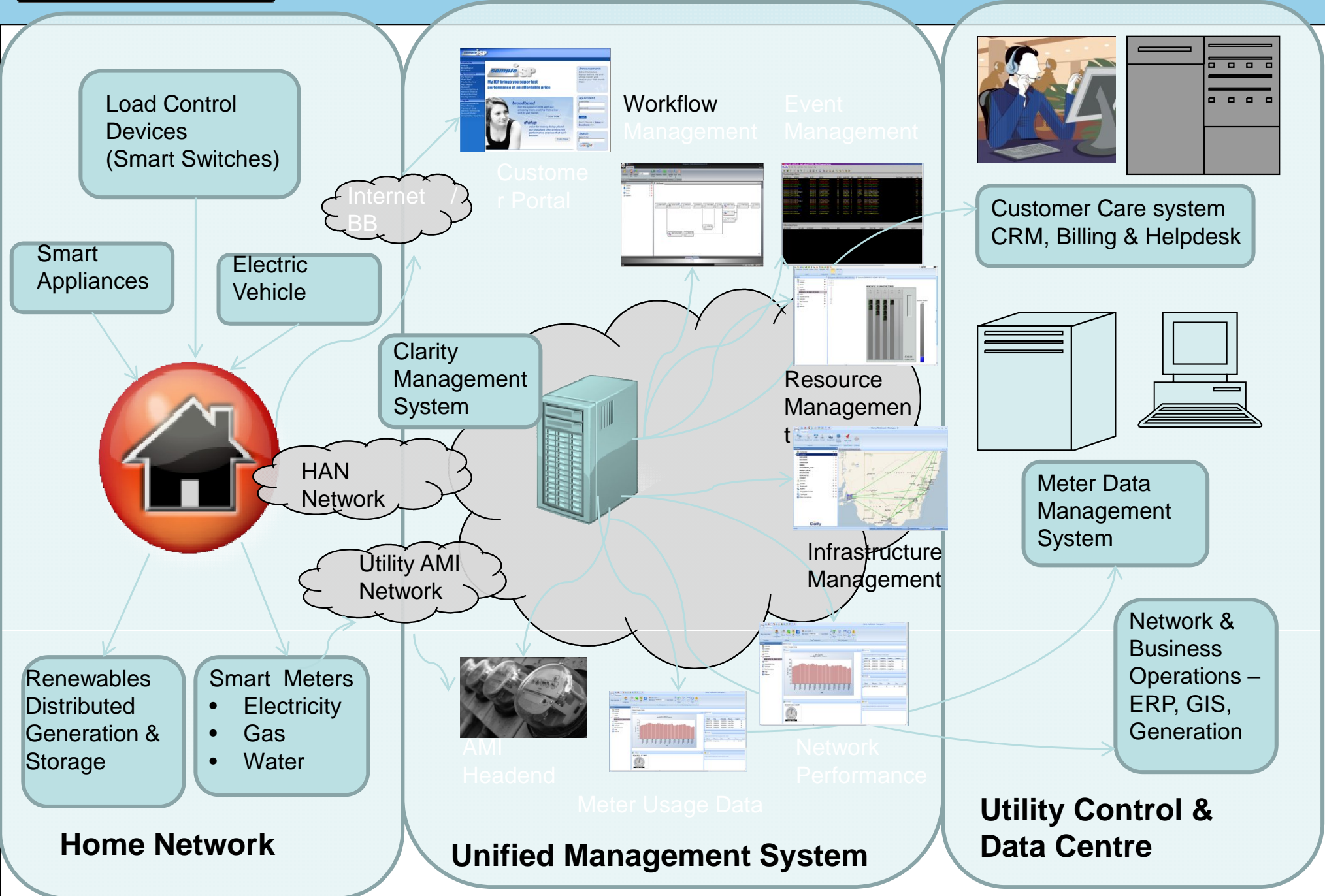
Intelligent communications interconnects various smart grid technologies, which are centrally managed.





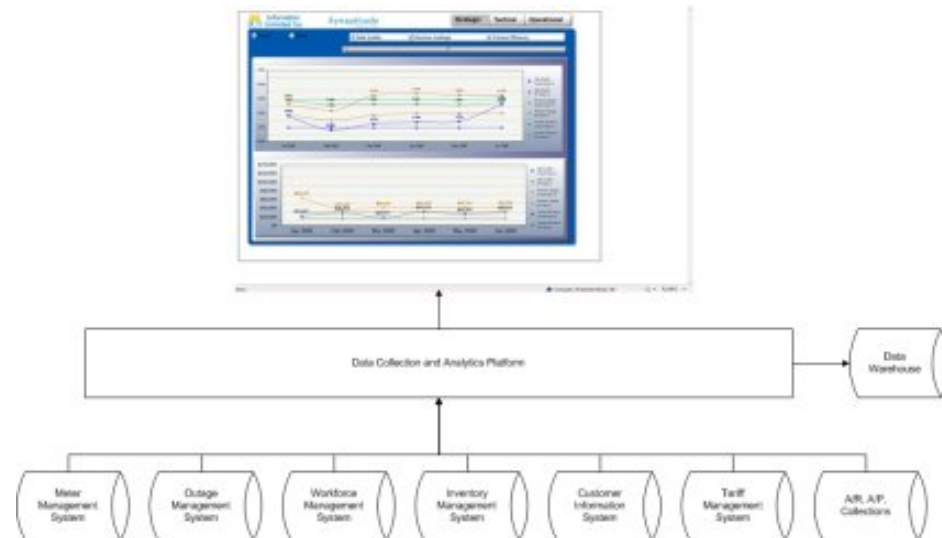
Singapore Headend NMS Solution Architecture



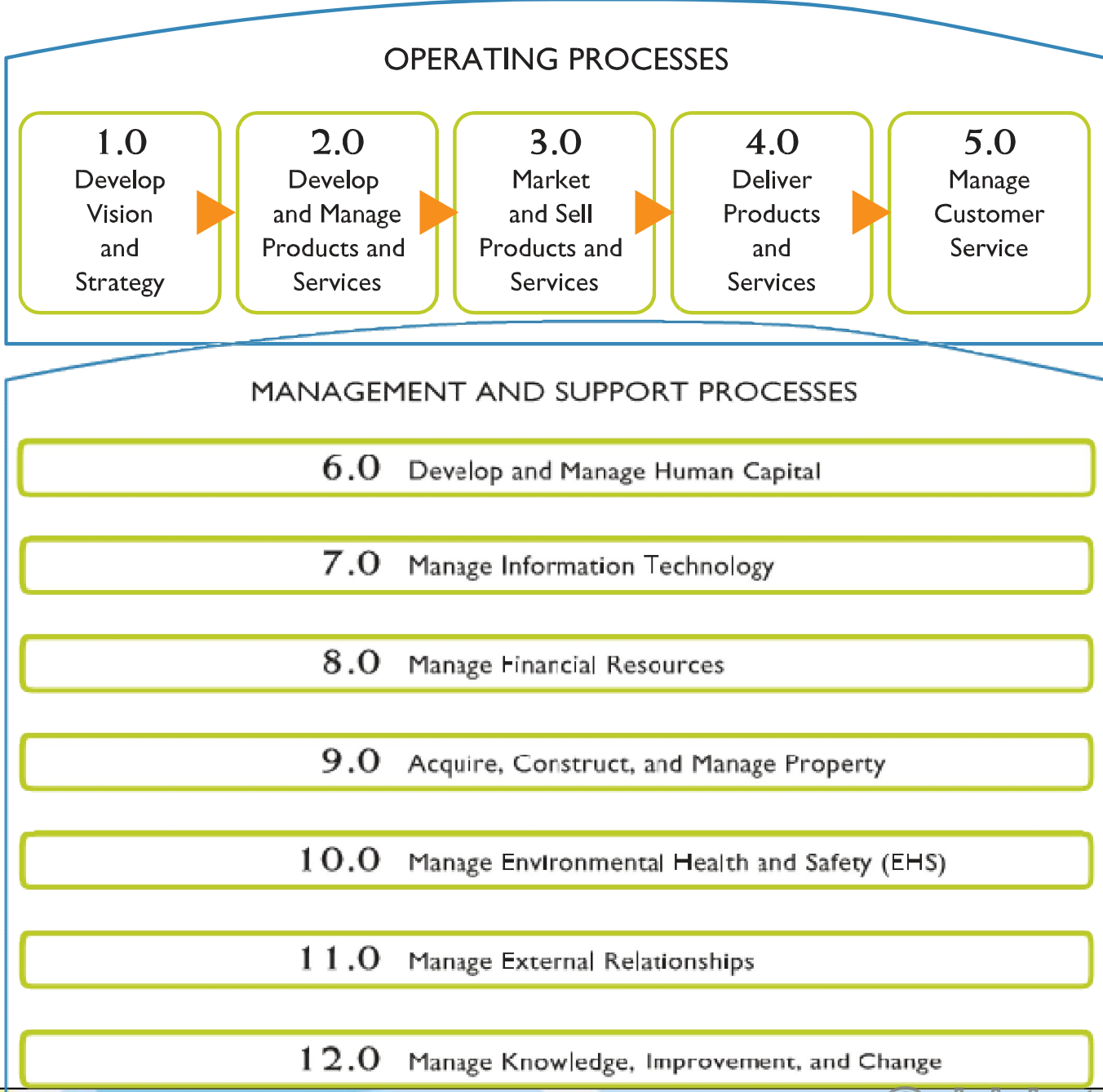


How well do the TM Forum artifacts port?

- RA Maturity Model
 - At a high level ports fairly easily
 - Organization and lexicon differences require question modifications
 - Some questions are not applicable
- RA KPI Framework
 - Simply change “Network” to Meter”
 - Ok, not really that simple – many of the calculations need to be modified, and the various sensitivities/thresholds, etc. need modification
- RA Controls
 - Similar concepts, but different control points for a Utility Value chain



The cross-industry Process Classification Framework was originally envisioned as a taxonomy of business processes and a common language through which APQC member organizations could benchmark their processes. The initial design involved APQC and more than 80 organizations with strong interest in advancing the use of benchmarking in the United States and worldwide. Since its inception in 1992, the PCF has seen updates to most of its content. These updates keep the framework current with the ways that organizations do business around the world. In 2008, APQC and IBM worked together to enhance the cross-industry PCF and to develop a number of industry-specific process classification frameworks.



5.1 Develop customer care/customer service strategy (10378)

- 5.1.1 Develop customer service segmentation/prioritization (e.g., tiers) (10381)
 - 5.1.1.1 Analyse existing customers (10384)
 - 5.1.1.2 Analyse feedback of customer's needs (10385)
- 5.1.2 Define customer service policies and procedures (10382)
- 5.1.3 Establish service levels for customers (10383)

5.2 Plan and manage customer service operations (10379)

- 5.2.1 Plan and manage customer service work force (10387)
 - 5.2.1.1 Forecast volume of customer service contacts (10390)
 - 5.2.1.2 Schedule customer service work force (10391)
 - 5.2.1.3 Track work force utilization (10392)
 - 5.2.1.4 Monitor and evaluate quality of customer interactions with customer service representatives (10393)
- 5.2.2 Manage customer service requests/inquiries (10388)
 - 5.2.2.1 Receive customer requests/inquiries (10394)
 - 5.2.2.2 Route customer requests/inquiries (10395)
 - 5.2.2.3 Respond to customer requests/inquiries (10396)
- 5.2.3 Manage customer complaints (10389)
 - 5.2.3.1 Receive customer complaints (10397)
 - 5.2.3.2 Route customer complaints (10398)
 - 5.2.3.3 Resolve customer complaints (10399)
 - 5.2.3.4 Respond to customer complaints (10400)
- 5.2.4 Manage and analyze customer information (11274)

5.3 Measure and evaluate customer service operations (10380)

- 5.3.1 Measure customer satisfaction with customer requests/inquiries handling (10401)
 - 5.3.1.1 Gather and solicit post-sale customer feedback on products and services (10404)
 - 5.3.1.2 Solicit post-sale customer feedback on ad effectiveness (10405)
 - 5.3.1.3 Analyze product and service satisfaction data and identify improvement opportunities (10406)
 - 5.3.1.4 Provide customer feedback to product management on products and services (10407)
- 5.3.2 Measure customer satisfaction customer-complaint handling and resolution (10402)
 - 5.3.2.1 Solicit customer feedback on complaint handling and resolution (11236)
 - 5.3.2.2 Analyze customer complaint data and identify improvement opportunities (11237)
- 5.3.3 Measure customer satisfaction with products and services (10403)
 - 5.3.3.1 Gather and solicit post-sale customer feedback on products and services (11238)
 - 5.3.3.2 Solicit post-sale customer feedback on ad effectiveness (11239)
 - 5.3.3.3 Analyze product and service satisfaction data and identify improvement opportunities (11240)
 - 5.3.3.4 Provide customer feedback to product management on products and services (11241)

- Australia and Singapore using TMF Framework to run their entire businesses end-to-end...
- TMF Framework at a minimum for internal Utility Telecom Operations
 - Some Utilities are running telecom networks that are larger than some telecom companies!
- Business Process
 - Harmonization between Framework, and AQPC, and other models with use cases
 - In conjunction with CM SEI SGMM
- Data Model
 - Harmonization underway between IEC CIM, Multispeak
 - Usefulness of TMF Framework CIM?

Thank You

