

A conceptual network diagram on a light blue background. A central red sphere is connected by white lines to several yellow rectangular blocks. Each block has a 3D effect and a shadow. Businessmen in suits are standing on some of these blocks, holding briefcases. The overall theme is interconnectedness and business collaboration.

The Smart Grid Maturity Model & The Smart Grid Interoperability Maturity Model

Maturity Models – Dueling or Complementary ?



SGMM?

SGIMM?



SGIMM?

SGMM?

- Technology has been evolving ever since the industry was born
- Technology today is moving faster than our ability to respond to it
- To achieve Smart Grid will require interoperability across a wide spectrum of participants and systems
- In systems of systems this large, we need to focus on:
 - Human
 - Organizational
 - Policy
 - Hardware and
 - Software components
- So where do SGMM and SGIMM fit into this?

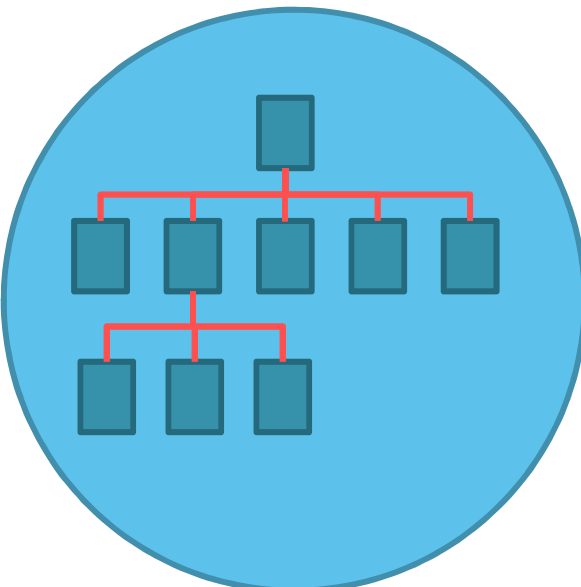
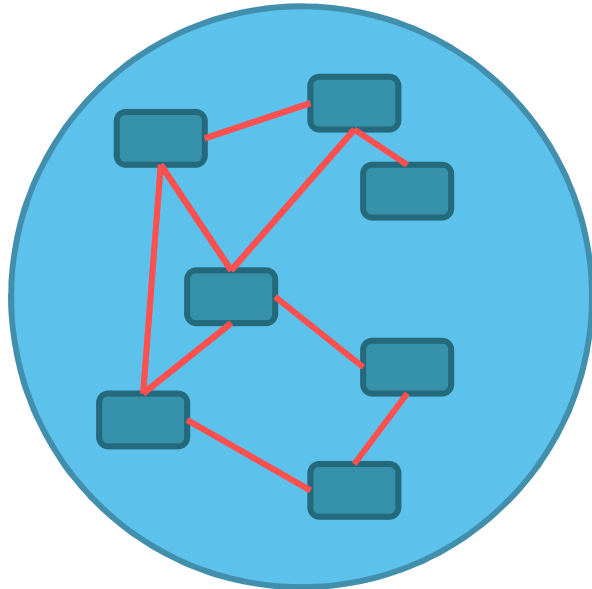
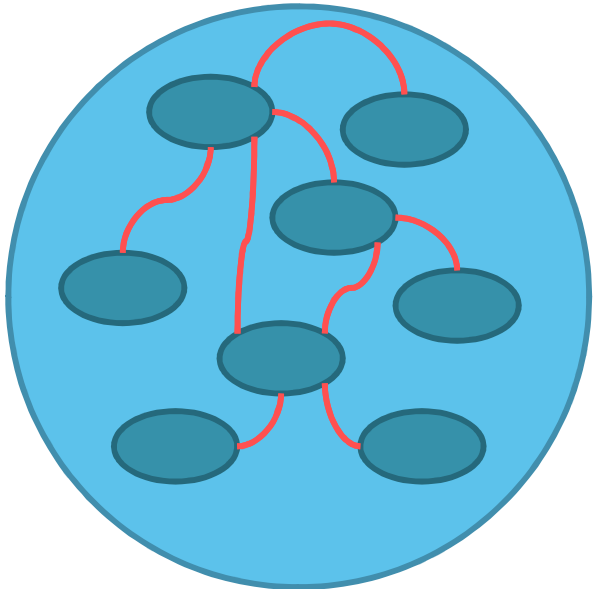
- The SGMM and SG IMM have different but potentially complementary purposes and uses
 - SGMM
 - Is a management tool to support utility smart grid planning and implementation;
 - It references interoperability as a key element of smart grid maturity
 - It does not focus on how to achieve it
 - SG IMM
 - Is specifically designed to assist stakeholders in achieving interoperability between devices and systems that support smart grid capabilities
- The SGMM and SG IMM teams are exploring ways to collaborate for the benefit of users of the two tools

BUSINESS PROCESS
& OPERATIONS

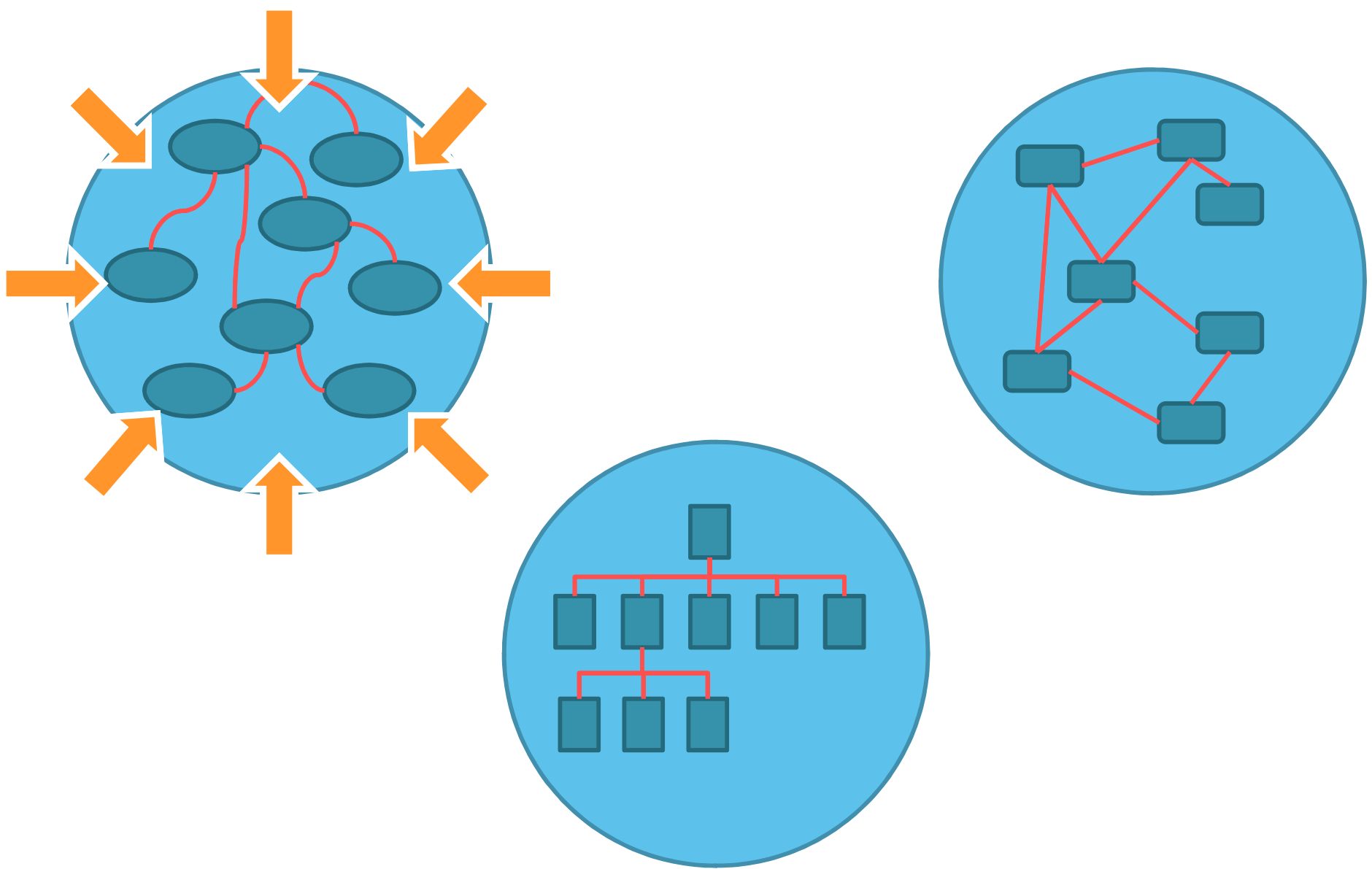
DATA, INFORMATION, &
SYSTEMS INTEGRATION

ORGANIZATION, STRUCTURE,
& REGULATION

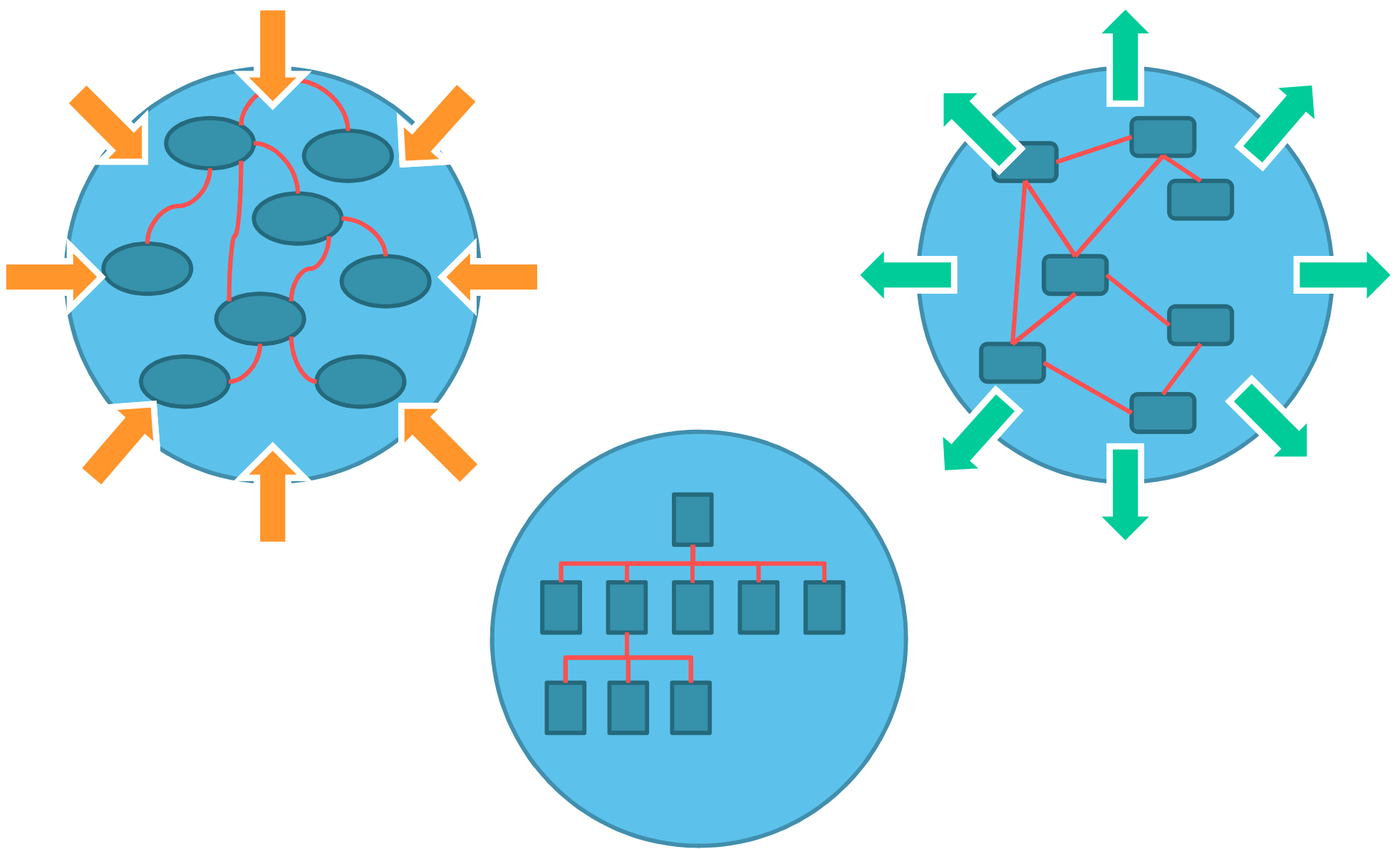
Several key elements referenced in SGMM and SGIMM



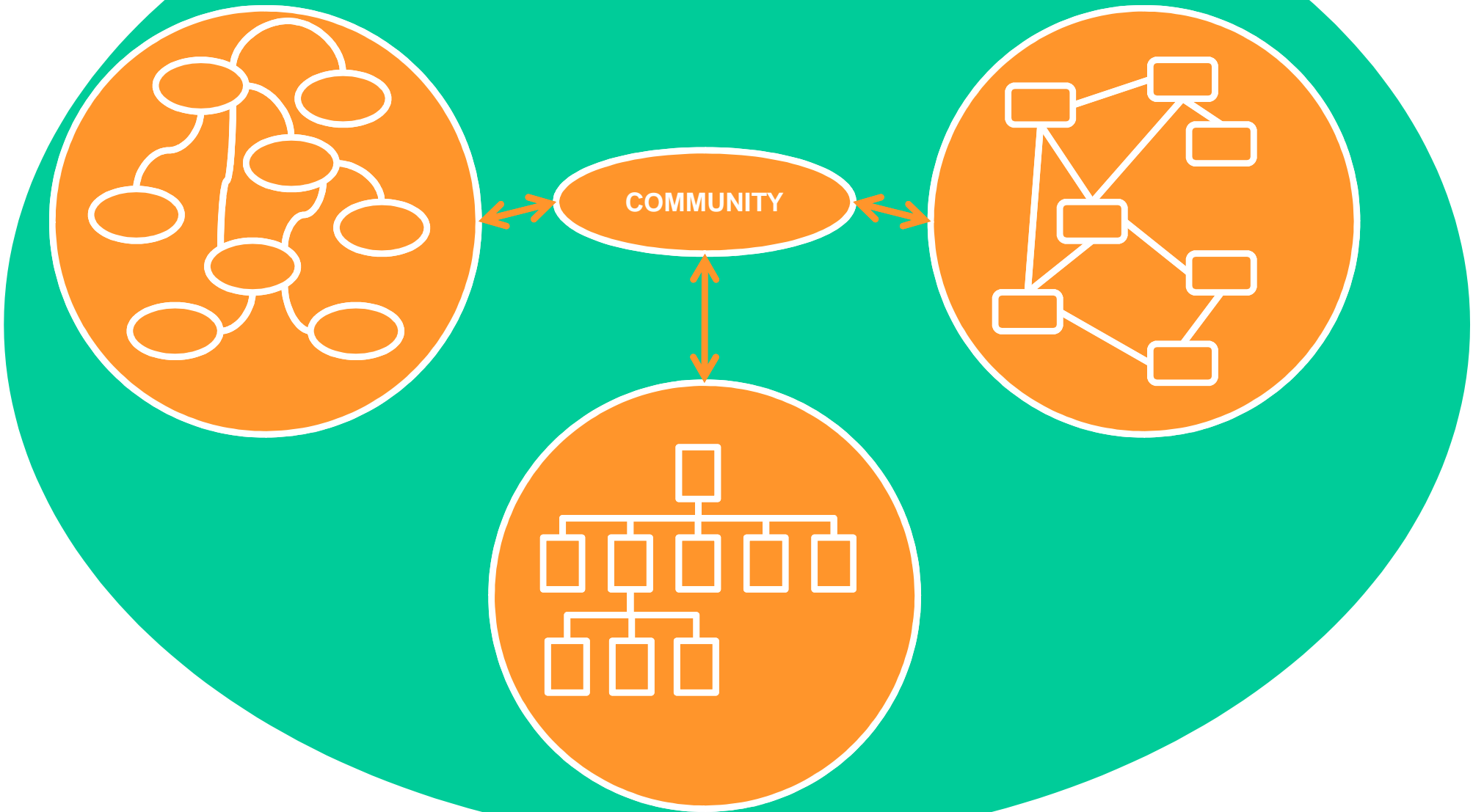
Several key elements referenced in SGMM and SGIMM



SGMM can be viewed largely as an internal focus



SGIMM can be viewed largely as an external focus



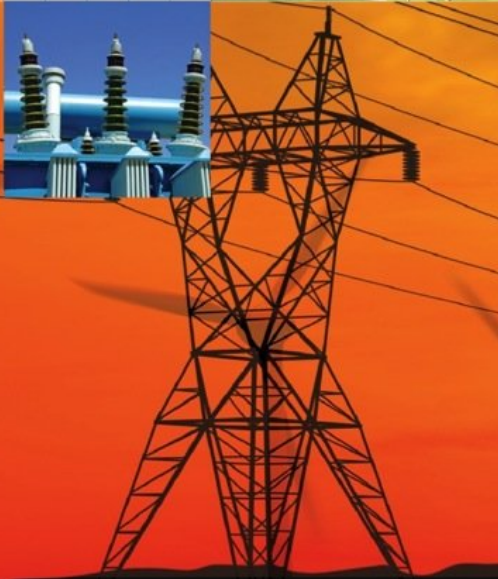
SGMM has external focus through a user community

Smart Grid Maturity Model

How can utilities

- Develop effective roadmaps?
- Track progress?
- Understand their posture in comparison to peers?

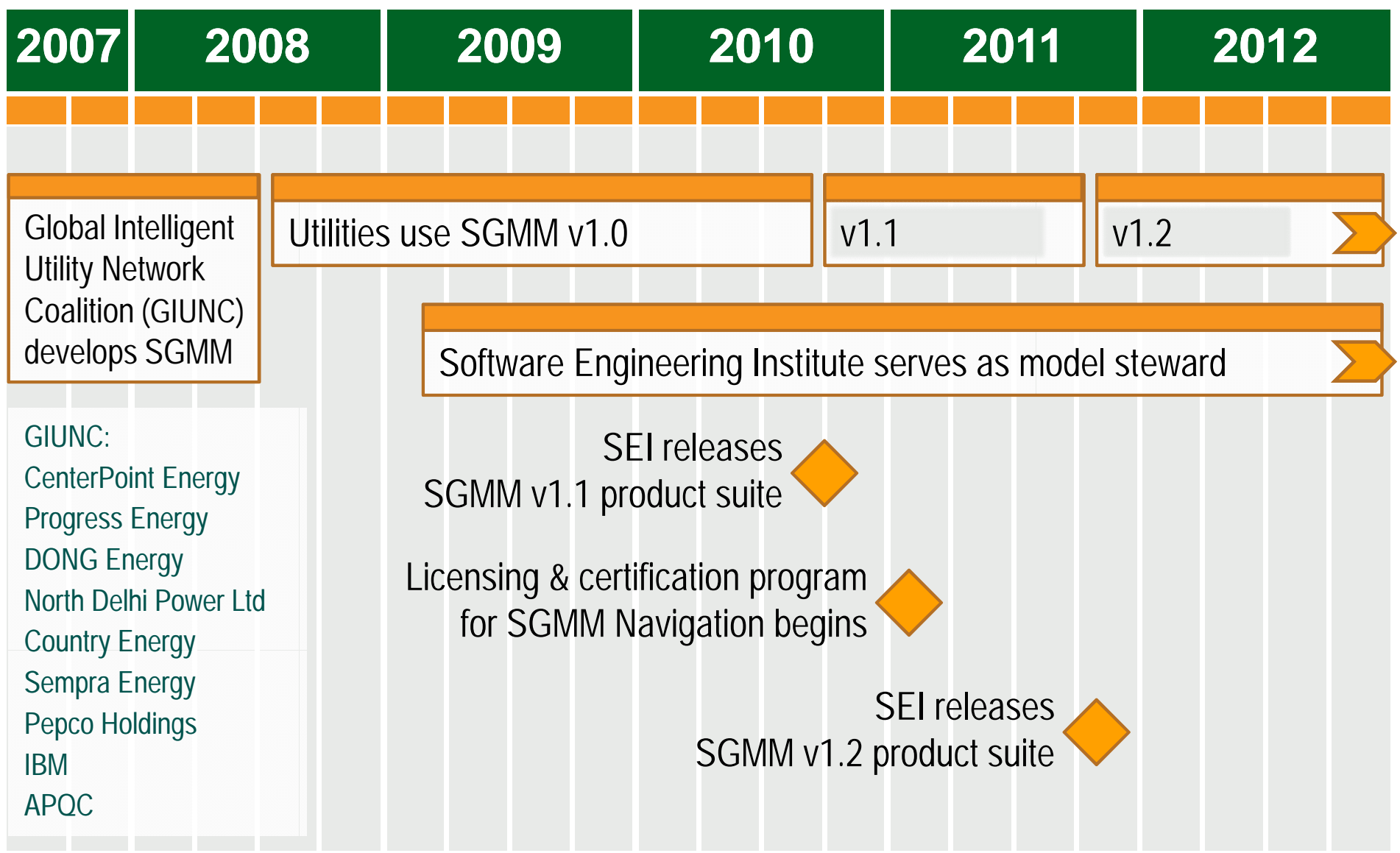
The Smart Grid Maturity Model was developed by utilities to address these concerns



The Smart Grid Maturity Model is

*A management tool
that provides a
common language and framework
for defining key elements of
smart grid transformation
and helping utilities develop a
programmatic approach
and track their progress*





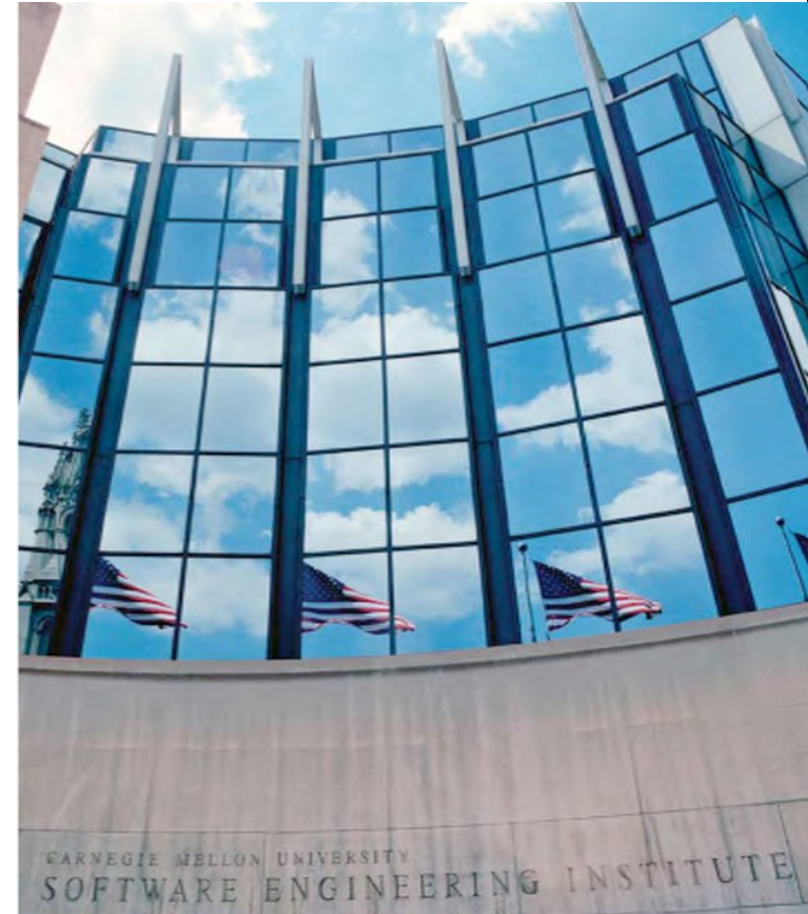
- GIUNC:
- CenterPoint Energy
 - Progress Energy
 - DONG Energy
 - North Delhi Power Ltd
 - Country Energy
 - Sempra Energy
 - Pepco Holdings
 - IBM
 - APQC

Developed by utilities for utilities

SEI is a federally-funded research and development center at Carnegie Mellon University, a global university recognized worldwide for its energy and environmental research initiatives.

A trusted, objective source of best practices, methods and tools to organizations worldwide, SEI is a global leader in software and systems engineering, process improvement and security best practices – all critical elements of smart grid success.

SEI collaborates in public-private partnership with government and industry on important cyber security, architecture, and interoperability challenges of the smart grid.



**Carnegie
Mellon
University**



- Provide **governance** working with multiple stakeholders
- Enable **widespread availability**, adoption, and use of the model for the benefit of the community
- **Evolve the model** based on stakeholder needs, market developments, user feedback, and interactions with domain experts
- Develop **transition** mechanisms—education, training, awareness, research collaboration—to support the model
- Grow the SGMM **community** of users worldwide

6 Maturity Levels: Defined sets of characteristics and outcomes

<p>5</p> <ul style="list-style-type: none"> 1 Smart grid strategy capitalizes on smart grid as a foundation for the introduction of new services and product offerings. 2 Smart grid business activities provide sufficient financial resources to enable continued investment in smart grid sustainment and expansion. 3 New business model opportunities emerge as a result of smart grid capabilities and are implemented. 	<ul style="list-style-type: none"> 1 The organizational structure enables collaboration with other grid stakeholders to optimize overall grid operation and health. 2 The organization is able to readily adapt to support new demands, products, and services that emerge as a result of smart grid. 3 Channels are in place to harvest ideas, develop them, and regard those ideas that shape future advances in process, workforce competencies, and technology. 	<ul style="list-style-type: none"> 1 Self-healing capabilities are present. 2 System-wide, analytics-based, and automated grid decision-making is in place. 	<ul style="list-style-type: none"> 1 The use of assets between and across supply chain participants is optimized with processes defined and executed across the supply chain. 2 Assets are leveraged to maximize utilization, including just-in-time asset retirement, based on smart grid data and systems. 	<ul style="list-style-type: none"> 1 Autonomic computing and machine learning are implemented. 2 The enterprise information infrastructure can automatically identify, mitigate, and recover from cyber incidents. 	<ul style="list-style-type: none"> 1 Customers can manage their end-to-end energy supply and usage levels. 2 There is automatic outage detection of premise or device level. 3 Plug-and-play, customer-based-generation is supported. 4 Security and privacy for all customer data is assured. 5 The organization plays a leadership role in industry-wide information sharing and standards development efforts for smart grid. 	<ul style="list-style-type: none"> 1 The optimization of energy assets is automated across the full value chain. 2 Resources are adequately dispatchable and controllable so that the organization can take advantage of granular market options. 3 The organization's automated control and resource optimization achieves desired and support regional and/or national grid optimization. 	<ul style="list-style-type: none"> 1 Triple bottom line goals align with local, regional, and national objectives. 2 Customers control their energy-based environmental footprints through automatic optimization of their end-to-end energy supply and usage level (source and mix). 3 The organization is a leader in developing and promoting industry-wide resilience best practices and/or technologies for protection of the national critical infrastructure.
<p>4</p> <ul style="list-style-type: none"> 1 The smart grid vision, strategy, and business cases are articulated and approved by management. 2 A common smart grid vision is articulated across the organization. 3 Operational investment is explicitly aligned to the smart grid strategy. 4 Budgets are established specifically for funding the implementation of the smart grid vision. 5 There is collaboration with regulators and other stakeholders regarding implementation of the smart grid vision and strategy. 6 There is support and funding for conducting proof-of-concept projects to evaluate feasibility and alignment. 	<ul style="list-style-type: none"> 1 The organization has articulated its need to build smart grid capabilities in its workforce. 2 Leadership has demonstrated a commitment to change the organization in support of achieving smart grid. 3 Smart grid awareness efforts to inform the workforce of smart grid activities have been initiated. 	<ul style="list-style-type: none"> 1 Business cases for new equipment and systems related to smart grid are approved. 2 New sensors, switches, and communications technologies are evaluated for grid monitoring and control. 3 Proof-of-concept projects and component testing for grid monitoring and control are underway. 4 Outage and distribution management systems linked to substation automation are being explored and evaluated. 5 Safety and security (physical and cyber) requirements are 	<ul style="list-style-type: none"> 1 Enhancements to work and asset management have been built into approved business cases. 2 Potential uses of remote asset monitoring are being evaluated. 3 Asset and workforce management equipment and systems are being evaluated for their potential alignment to the smart grid vision. 	<ul style="list-style-type: none"> 1 An enterprise IT architecture exists or is under development. 2 Existing or proposed IT architectures have been evaluated for quality attributes that support smart grid applications. 3 A change control process is used for applications and IT infrastructure. 4 Opportunities are identified to use technology to improve operational performance. 5 There is a process to evaluate and select technologies in alignment with smart grid vision and strategies. 	<ul style="list-style-type: none"> 1 Research is being conducted on how to use smart grid technologies to enhance the customer's experience, benefits, and participation. 2 Security and privacy implications of smart grid are being investigated. 3 A vision of the future grid is being communicated to customers. 4 The utility consults with public utility commissions and/or other government organizations concerning the impact on customers. 	<ul style="list-style-type: none"> 1 Assets and programs necessary to facilitate load management are identified. 2 Distributed generation sources and the capabilities needed to support them are identified. 3 Energy storage options and the capabilities needed to support them are identified. 4 There is a strategy for creating and managing a diverse resource portfolio. 5 Security requirements to enable interaction with an expanded portfolio of value chain partners have been identified. 	<ul style="list-style-type: none"> 1 Smart-grid strategies and work plans address societal and environmental issues. 2 Energy efficiency programs for customers have been established. 3 The organization considers a "triple bottom line" view when making decisions. 4 Environmental proof-of-concept projects are underway that demonstrate smart grid benefits. 5 Increasingly granular and more frequent consumption information is available to customers.
<p>3</p> <ul style="list-style-type: none"> 1 The smart grid vision, strategy, and business cases are incorporated into the vision and strategy. 2 A smart grid governance model is established. 3 Smart grid leaders with explicit authority across functions and lines of business are designated to ensure effective implementation of the smart grid strategy. 4 Required authorizations for smart grid investments have been secured. 	<ul style="list-style-type: none"> 1 The smart grid vision and strategy are driving organizational change. 2 Smart-grid measures are incorporated into the measurement system. 3 Performance and compensation are linked to smart-grid success. 4 Leadership is consistent in communication and actions regarding smart grid. 5 A new grid overlay structure is in place. 6 Education and training are 	<ul style="list-style-type: none"> 1 Smart-grid information is available across systems and organizational functions. 2 Critical analytics have been implemented and are used to improve critical-OT decision-making. 3 Grid operations planning is now fact-based using grid data and 	<ul style="list-style-type: none"> 1 Performance, trend analysis, and event built data are available to components of the organization's systems. 2 CBM programs for key components are in place. 3 Remote asset monitoring capabilities are integrated with asset management. 	<ul style="list-style-type: none"> 1 Smart-grid-oriented business processes are aligned with the enterprise IT architecture across LOBs. 2 Systems adhere to an enterprise IT architectural framework for smart grid. 3 Smart-grid-specific activities have been implemented to improve the organization's performance. 	<ul style="list-style-type: none"> 1 The organization initiates programs to customer segments. 2 New value-added communication has been developed. 3 A remote control/monitor capability is deployed. 4 Remote control and/or remote load control is available to customers. 5 New or enhanced capabilities of the workstation are 	<ul style="list-style-type: none"> 1 An integrated resource plan is in place and includes new targeted resources and technologies. 2 Customer service energy management solutions with market and usage information are available. 3 Additional resources are available and deployed to provide reliability or other 4 Smart-grid systems are deployed to control of value chain 	<ul style="list-style-type: none"> 1 Performance of societal and environmental programs are measured and effectiveness is demonstrated. 2 Segmented and tailored information that includes environmental and societal benefits and costs is available to customers. 3 Programs to encourage off-peak usage by customers are in place. 4 The organization regularly reports on the sustainability and the societal and environmental impacts of its smart-grid programs and technologies.
<p>2</p> <ul style="list-style-type: none"> 1 An initial smart grid strategy and a business plan are approved by management. 2 A common smart grid vision is articulated across the organization. 3 Operational investment is explicitly aligned to the smart grid strategy. 4 Budgets are established specifically for funding the implementation of the smart grid vision. 5 There is collaboration with regulators and other stakeholders regarding implementation of the smart grid vision and strategy. 6 There is support and funding for conducting proof-of-concept projects to evaluate feasibility and alignment. 	<ul style="list-style-type: none"> 1 A new vision for a smart grid is articulated across the organization. 2 The organization has aligned most operations around end-to-end processes. 3 Most smart grid implementation and deployment teams include participants from all functions and LOBs that the deployment will impact. 4 Education and training to develop smart grid competencies have been identified and are available. 5 The linking of performance and compensation plans to achieve smart grid milestones is in progress. 	<ul style="list-style-type: none"> 1 Business cases for new equipment and systems related to smart grid are approved. 2 New sensors, switches, and communications technologies are evaluated for grid monitoring and control. 3 Proof-of-concept projects and component testing for grid monitoring and control are underway. 4 Outage and distribution management systems linked to substation automation are being explored and evaluated. 5 Safety and security (physical and cyber) requirements are 	<ul style="list-style-type: none"> 1 An enterprise vision of how to build smart-grid capabilities is in development. 2 Status and interconnectivity (model) has been developed. 3 An organization-wide mobile workforce strategy is in development. 	<ul style="list-style-type: none"> 1 Standards are selected to support the smart grid strategy within the enterprise IT architecture. 2 A common technology evaluation and selection process is applied for all smart-grid activities. 3 There is a data communications strategy for the grid. 4 Pilots based on connectivity to distributed IEDs are underway. 5 Security is built into all smart-grid initiatives from the outset. 	<ul style="list-style-type: none"> 1 Research is being conducted on how to use smart-grid technologies to enhance the customer's experience, benefits, and participation. 2 Security and privacy implications of smart grid are being investigated. 3 A vision of the future grid is being communicated to customers. 4 The utility consults with public utility commissions and/or other government organizations concerning the impact on customers. 	<ul style="list-style-type: none"> 1 Assets and programs necessary to facilitate load management are identified. 2 Distributed generation sources and the capabilities needed to support them are identified. 3 Energy storage options and the capabilities needed to support them are identified. 4 There is a strategy for creating and managing a diverse resource portfolio. 5 Security requirements to enable interaction with an expanded portfolio of value chain partners have been identified. 	<ul style="list-style-type: none"> 1 Smart-grid strategies and work plans address societal and environmental issues. 2 Energy efficiency programs for customers have been established. 3 The organization considers a "triple bottom line" view when making decisions. 4 Environmental proof-of-concept projects are underway that demonstrate smart-grid benefits. 5 Increasingly granular and more frequent consumption information is available to customers.
<p>1</p> <ul style="list-style-type: none"> 1 Smart-grid vision is developed with a goal of operational improvement. 2 Experimental implementations of smart-grid concepts are supported. 3 Discussions have been held with regulators about the organization's smart-grid vision. 	<ul style="list-style-type: none"> 1 The organization has articulated its need to build smart-grid capabilities in its workforce. 2 Leadership has demonstrated a commitment to change the organization in support of achieving smart-grid. 3 Smart-grid awareness efforts to inform the workforce of smart-grid activities have been initiated. 	<ul style="list-style-type: none"> 1 Business cases for new equipment and systems related to smart-grid are approved. 2 New sensors, switches, and communications technologies are evaluated for grid monitoring and control. 3 Proof-of-concept projects and component testing for grid monitoring and control are underway. 4 Outage and distribution management systems linked to substation automation are being explored and evaluated. 5 Safety and security (physical and cyber) requirements are 	<ul style="list-style-type: none"> 1 Enhancements to work and asset management have been built into approved business cases. 2 Potential uses of remote asset monitoring are being evaluated. 3 Asset and workforce management equipment and systems are being evaluated for their potential alignment to the smart-grid vision. 	<ul style="list-style-type: none"> 1 An enterprise IT architecture exists or is under development. 2 Existing or proposed IT architectures have been evaluated for quality attributes that support smart-grid applications. 3 A change control process is used for applications and IT infrastructure. 4 Opportunities are identified to use technology to improve operational performance. 5 There is a process to evaluate and select technologies in alignment with smart-grid vision and strategies. 	<ul style="list-style-type: none"> 1 Research is being conducted on how to use smart-grid technologies to enhance the customer's experience, benefits, and participation. 2 Security and privacy implications of smart-grid are being investigated. 3 A vision of the future grid is being communicated to customers. 4 The utility consults with public utility commissions and/or other government organizations concerning the impact on customers. 	<ul style="list-style-type: none"> 1 Assets and programs necessary to facilitate load management are identified. 2 Distributed generation sources and the capabilities needed to support them are identified. 3 Energy storage options and the capabilities needed to support them are identified. 4 There is a strategy for creating and managing a diverse resource portfolio. 5 Security requirements to enable interaction with an expanded portfolio of value chain partners have been identified. 	<ul style="list-style-type: none"> 1 The smart-grid strategy addresses the organization's role in societal and environmental issues. 2 The environmental benefits of the smart-grid vision and strategy are publicly promoted. 3 Environmental compliance performance records are available for public inspection. 4 The smart-grid vision or strategy specifies the organization's role in protecting the national critical infrastructure.
<p>0</p>							

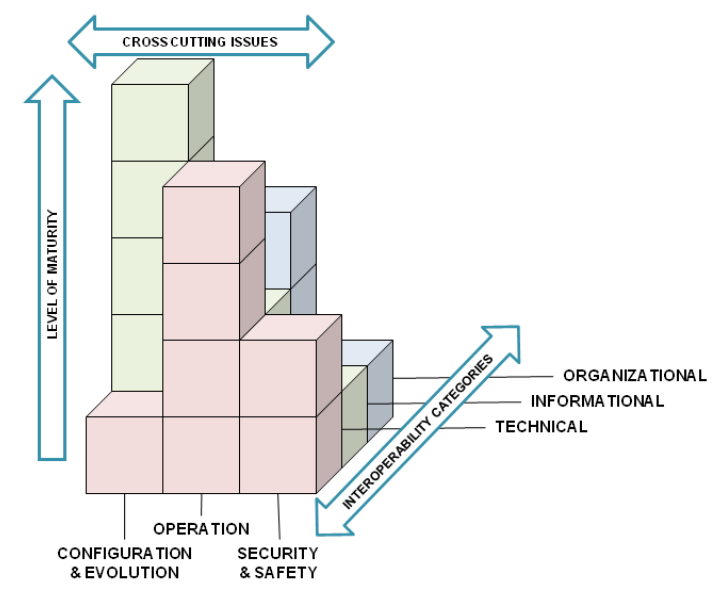
175 Characteristics: Features you would expect to see at each stage of the smart grid journey

8 Domains: Logical groupings of smart grid related characteristics

<p>SMR Strategy, Management, & Regulatory</p>	<p>OS Organization & Structure</p>	<p>GO Grid Operations</p>	<p>WAM Work & Asset Management</p>	<p>TECH Technology</p>	<p>CUST Customer</p>	<p>VCI Value Chain Integration</p>	<p>SE Societal & Environmental</p>
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			Configuration & Evolution	Operation	Security & Safety
			Configuration & Evolution	Operation	Security & Safety
			Configuration & Evolution	Operation	Security & Safety
Organizational			CE-O	O-O	SS-O
Informational			CE-I	O-I	SS-I
Technical			CE-T	O-T	SS-T

The intersection of a Context Setting Domain and a Cross Cutting Domain forms an Interoperability Area.



Smart Grid Maturity Model – levels

PIONEERING

5

Breaking new ground; industry-leading innovation

OPTIMIZING

4

Optimizing smart grid to benefit entire organization; may reach beyond organization; increased automation

INTEGRATING

3

Integrating smart grid deployments across the organization, realizing measurably improved performance

ENABLING

2

Investing based on clear strategy, implementing first projects to enable smart grid (may be compartmentalized)

INITIATING

1

Taking the first steps, exploring options, conducting experiments, developing smart grid vision

DEFAULT

0

Default level (status quo)

Maturity Level	Community/ Governance	Documentation	Integration	Test/ Certification
Level 1: Initial	management is ad hoc	documentation is ad hoc	integration is a unique experience	testing is ad hoc
Level 2: Managed	managed by project agreement	documented in a project specification	integration is repeatable, with customization expected	tested to plan with results captured
Level 3: Defined	managed by community agreement	references community standard with some customization	integration repeatable with predictable effort	tests exist for community with certification Members claim compliance to standard
Level 4: Quantitatively Managed	processes ensure currency and interoperation	references a community standard w/o customization	integration metrics are defined and measurements collected reference implementations exist	community test processes demonstrate interoperability members claim interoperable conformance
Level 5: Optimizing	managed by a community quality improvement process	adopts an open, community standard	integration metrics used for improvement of the standard	test processes are regularly reviewed and improved

SMR	<p>Strategy, Mgmt & Regulatory</p> <p><i>Vision, planning, governance, stakeholder collaboration</i></p>	TECH	<p>Technology</p> <p><i>IT architecture, standards, infrastructure, integration, tools</i></p>
OS	<p>Organization and Structure</p> <p><i>Culture, structure, training, communications, knowledge mgmt</i></p>	CUST	<p>Customer</p> <p><i>Pricing, customer participation & experience, advanced services</i></p>
GO	<p>Grid Operations</p> <p><i>Reliability, efficiency, security, safety, observability, control</i></p>	VCI	<p>Value Chain Integration</p> <p><i>Demand & supply management, leveraging market opportunities</i></p>
WAM	<p>Work & Asset Management</p> <p><i>Asset monitoring, tracking & maintenance, mobile workforce</i></p>	SE	<p>Societal & Environmental</p> <p><i>Responsibility, sustainability, critical infrastructure, efficiency</i></p>

SGMM

Smart Grid Maturity Model

V 1.2 Product Suite

Model	Fully described in the Model Definition document
Compass Survey	Questionnaire-based assessment yields maturity ratings and comparisons
Navigation Process	Expert-led workshops to complete Compass and use results to develop consensus aspirations
Training	Overview Seminar and SGMM Navigator Course
Partner Program	License organizations and certify individuals to deliver Navigation process

www.sei.cmu.edu/smartgrid

5	PIONEERING 1 The use of assets between and across supply chain participants is optimized with processes defined and executed across the supply chain. 2 Assets are leveraged to maximize utilization, including just-in-time asset retirement, based on smart grid data and systems.
4	OPTIMIZING 1 A complete view of assets based on status, connectivity, and proximity is available to the organization. 2 Asset models are based on real performance and monitoring data. 3 Performance and usage of assets is optimized across the asset fleet and across asset classes. 4 Service life for key grid components is managed through condition-based and predictive maintenance, and is based on real and current asset data.
3	INTEGRATING 1 Performance, trend analysis, and event audit data are available for components of the organization's systems. 2 CBM programs for key components are in place. 3 Remote asset monitoring capabilities are integrated with asset management systems. 4 Asset models are based on real performance and monitoring data. 5 Performance and usage of assets is optimized across the asset fleet and across asset classes. 6 Service life for key grid components is managed through condition-based and predictive maintenance, and is based on real and current asset data. 7 Modeling of asset investments for key components is underway.
2	ENABLING 1 An approach to track, inventory, and maintain event histories of assets is in development. 2 An integrated view of GIS for asset monitoring based on real-time data is in development.
1	INITIATING 1 Potential uses of remote asset monitoring are being evaluated. 2 Asset and workforce management equipment and systems are being evaluated for their potential alignment to the smart grid vision. 3 Asset and workforce management equipment and systems are being evaluated for their potential alignment to the smart grid vision.
0	DEFAULT

WAM-3.2 Condition-based maintenance programs for key components are in place.

WAM-2.1 An approach to track, inventory, and maintain event histories of assets is in development.

- Contains
 - One question for each expected characteristic in the model and
 - Attribute and performance questions

Example questions:

WAM-3.2 For what percentage of key components have you implemented condition-based maintenance that uses real-time data from asset monitoring to drive maintenance and replacement decisions?

- A. 0%
- B. 1 - 25%
- C. 26 - 50%
- D. 51 - 75%
- E. 76 - 100%

WAM-2.1 Have you established an approach to track, inventory, and maintain event histories of assets using smart grid capabilities?

- A. No
- B. In documented plan including committed schedule and budget
- C. In development
- D. Being piloted
- E. Completed

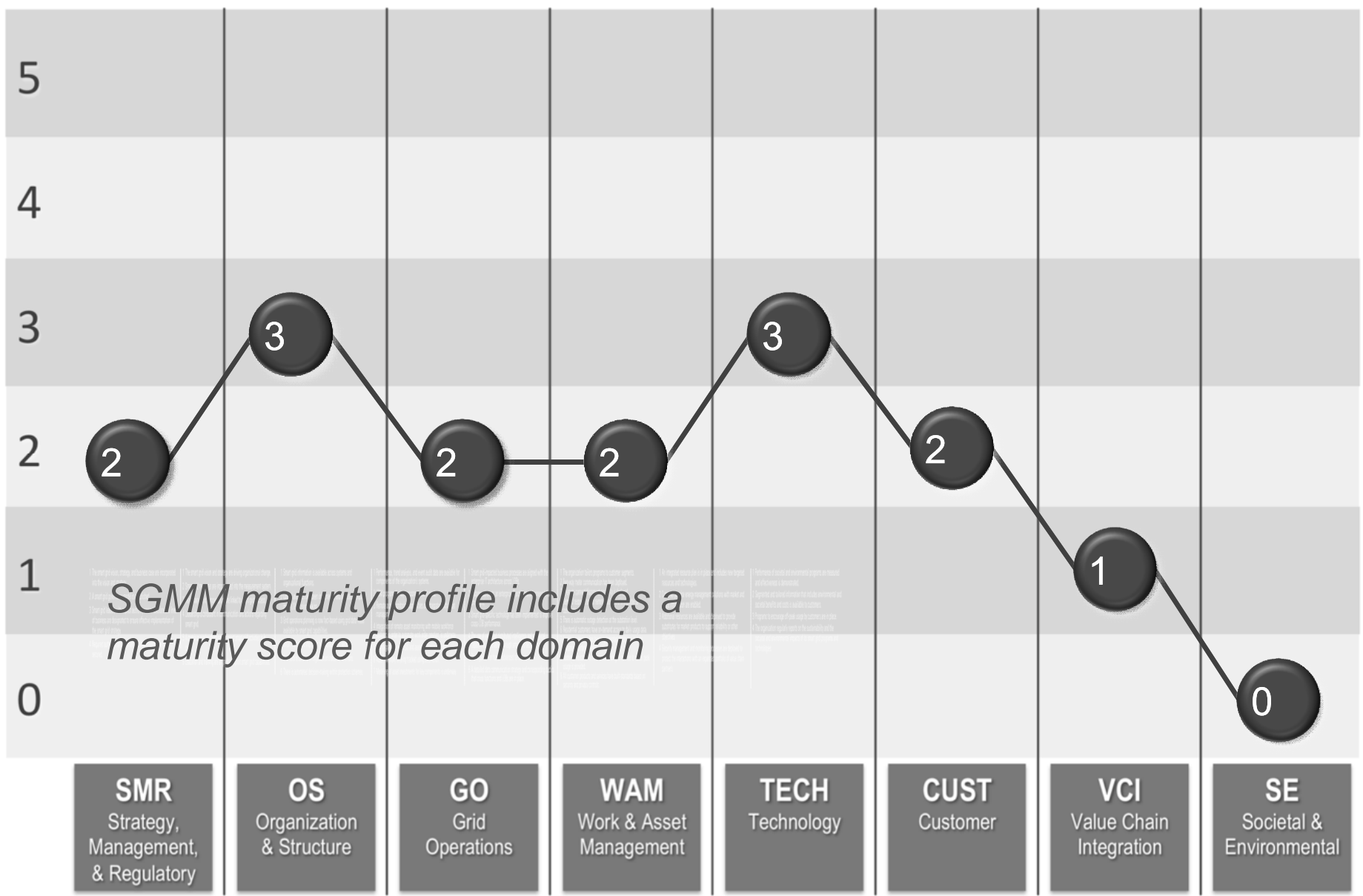


Stakeholders complete SGMM Compass survey
 Discussion and consensus answers lead to internal alignment on current state

Stakeholders review survey findings & set aspirational profile
 Consensus on aspirational state and identification of motivations, actions, and obstacles to achieve it

Compass results: maturity profile

example results



SGMM maturity profile includes a maturity score for each domain

Compass results: dashboard

example results

Sample Results																
Level	Strategy, Management & Regulatory		Organization & Structure		Grid Operations		Work & Asset Management		Technology		Customer		Value Chain Integration		Societal & Environmental	
5		0.53		0.50		0.25		0.00		0.00		0.20		0.30		0.30
4		0.57		0.17		0.28		0.30		0.40		0.36		0.25		0.40
3		0.65		0.75		0.57		0.47		0.73		0.59		0.58		0.35
2		1.00		0.82		0.93		1.00		1.00		0.92		0.58		0.76
1		0.90		1.00		1.00		1.00		0.84		0.85		0.78		0.68
0		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00

Point Range

Meaning



≥ 0.70

Green reflects level compliance within the domain



≥ 0.40 and < 0.70

Yellow reflects significant progress



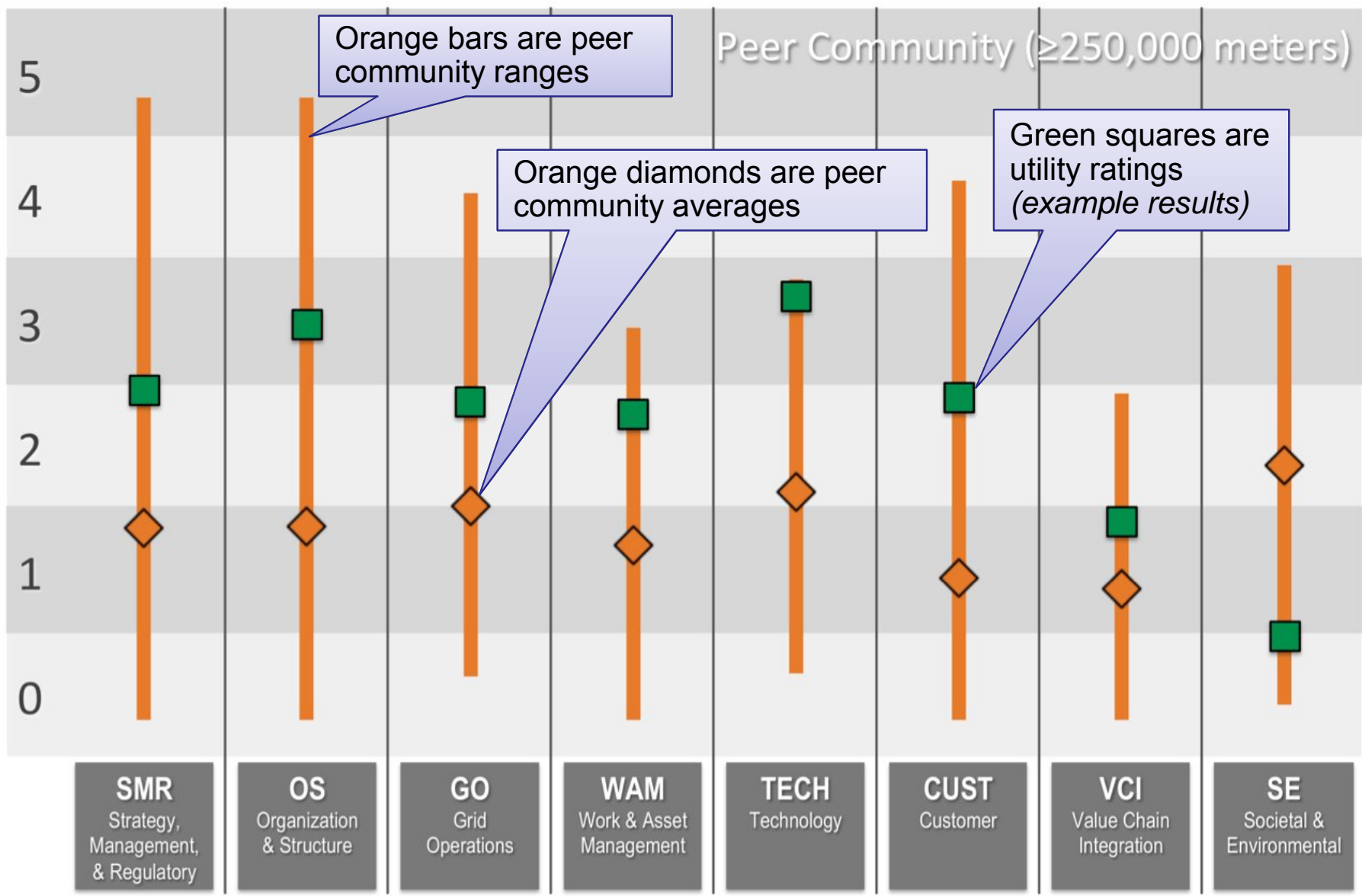
< 0.40

Red reflects initial progress



= 0

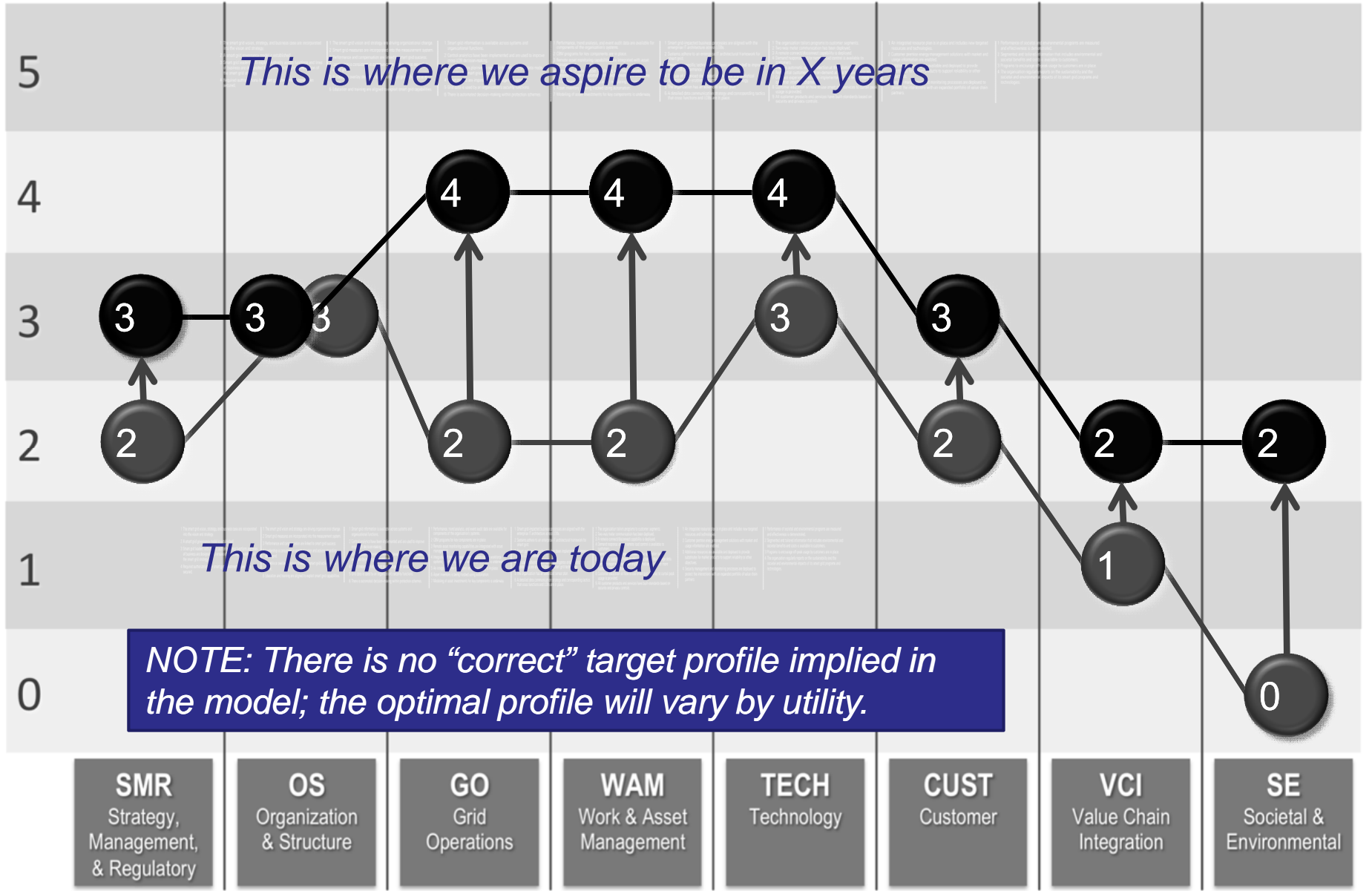
Grey reflects has not started



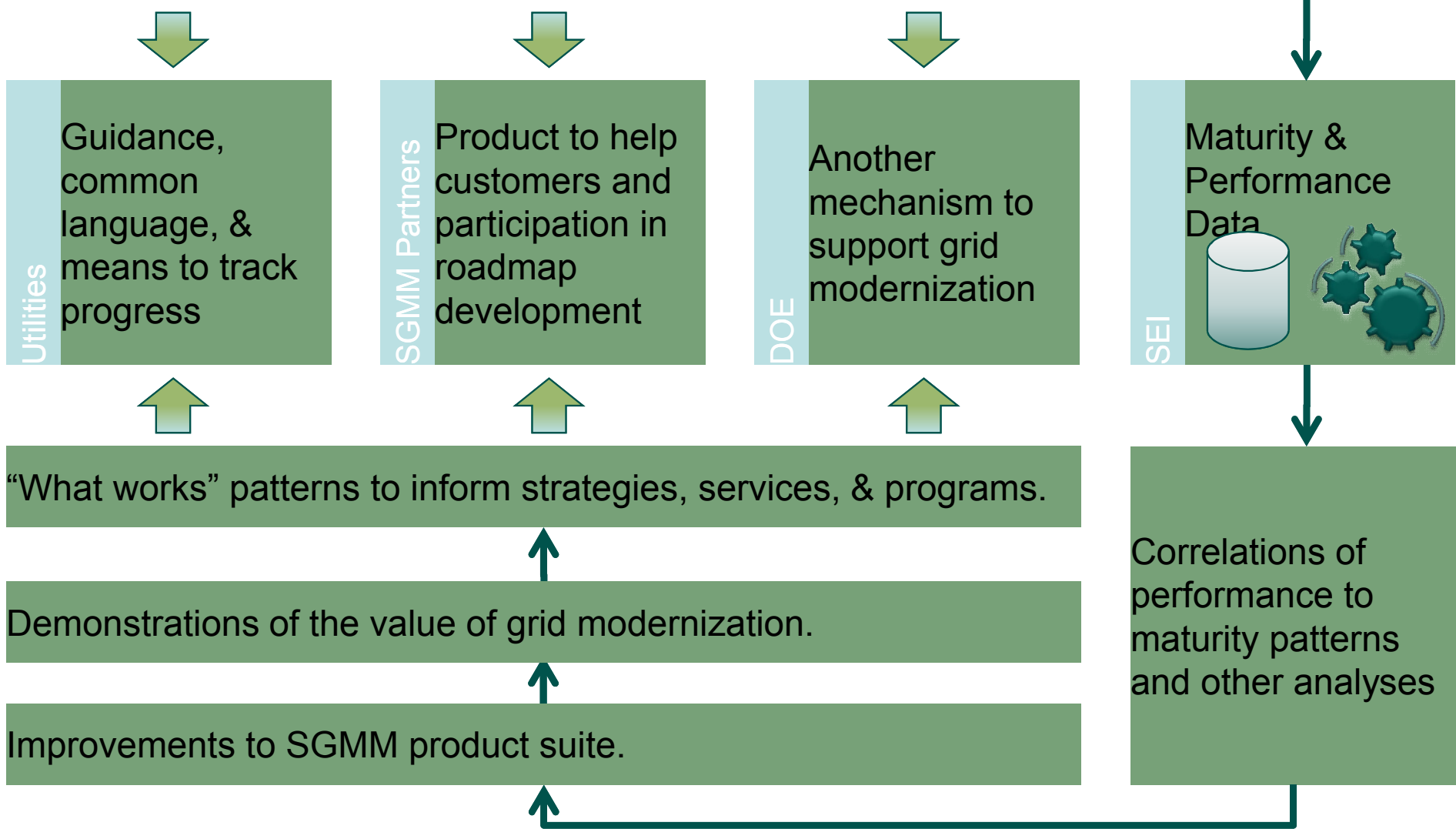
Community data as of September 2011

Navigation results: consensus aspirations

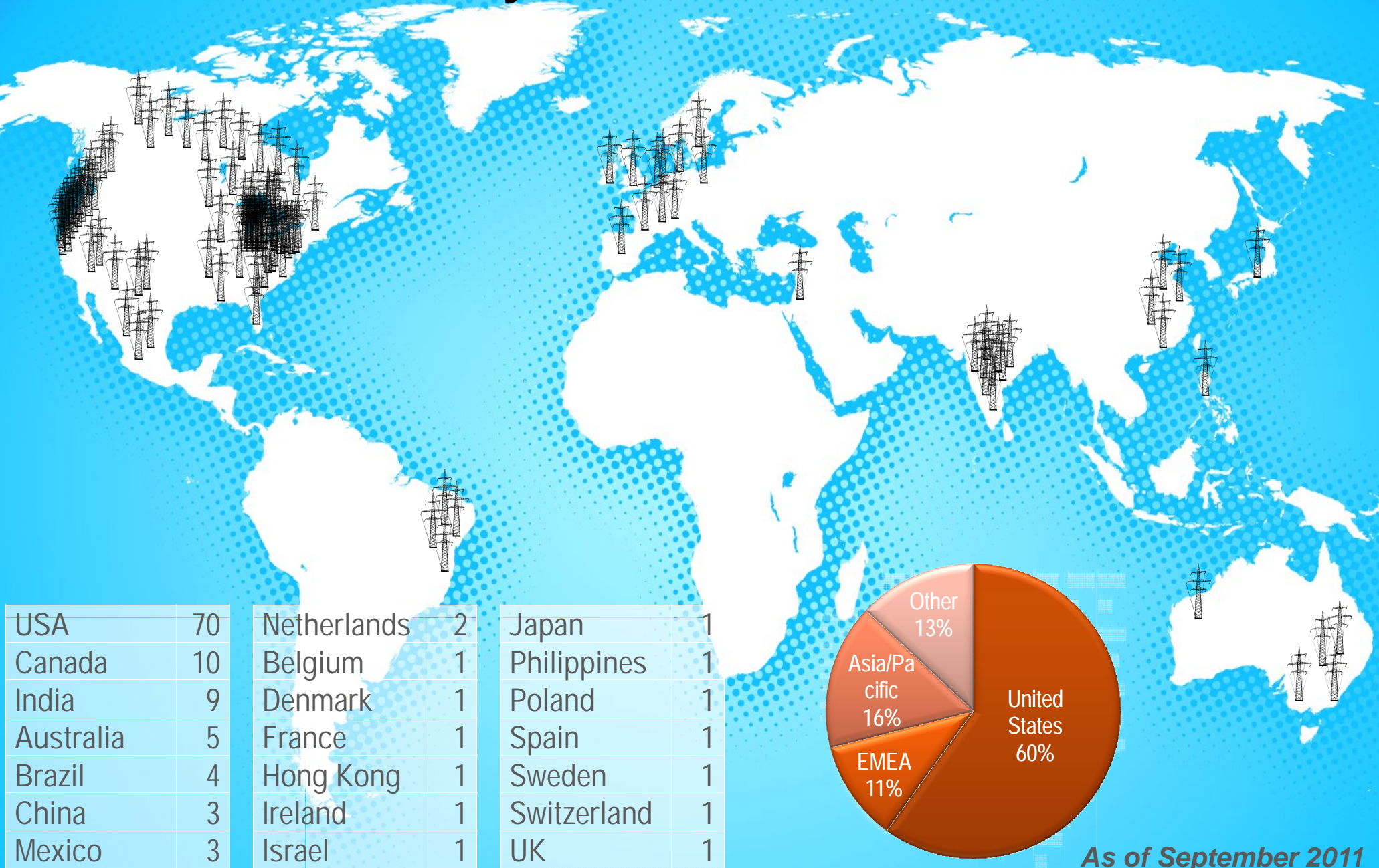
example results



Use of SGMM by utilities



SGMM community: 119 utilities in 21 countries



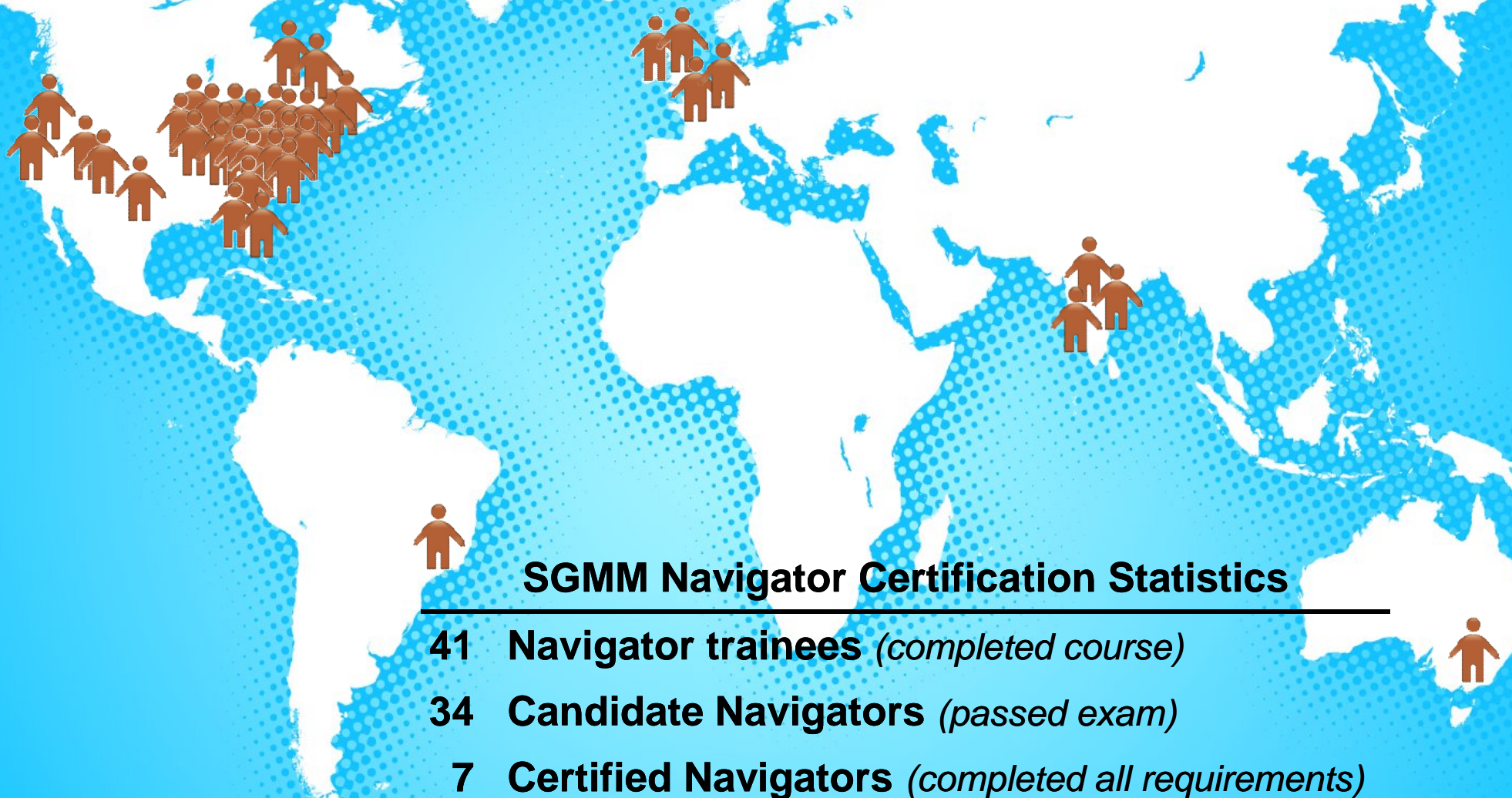
As of September 2011




- SGMM Partners are licensed by the SEI to provide official SGMM services, which are delivered by SEI-Certified SGMM Navigators

For the current list of SGMM Partners, visit:
www.sei.cmu.edu/partners/sgmm

SGMM Navigator population



As of September 2011

1. Assess how best to leverage the context-setting framework.
 2. Group cross-cutting issues into groups.
 3. Develop high-level goals for each framework level.
 4. Develop high-level goals for each cross-cutting issue.
 5. Develop detailed goals for each intersection of (3) and (4).
 6. Construct metric statements for the goals.
 7. Create a matrix of maturity characteristics and maturity-level statements to provide guidance in assessing maturity for each metric.
 8. Construct an evaluation sheet to apply the SG IMM and capture interoperability maturity for an interoperability area.
 9. Assess scoring models.
- 

Participation and feedback are essential



- Energy Market Operations
- Retail Service Provider/Vendor Technology Community
- A Multi-Player, Smart Grid Research Project
- An Enterprise Smart Grid Application

- Focus on the transactions associated with buying and selling energy
- Trading of energy generation resources in real-time, day-ahead or longer term timeframes
- Bringing demand-response and ancillary service resources into the markets
- Bilateral agreements between various parties
- Interface between these players includes the exchange of information about price, schedule, quantity, and other attributes of the energy being traded
- As a sample use case, a power exchange market uses the SG IMM as an assessment tool for understanding and developing an evolutionary roadmap for their trading platform. The outcome provides a more automated, efficient, and reliable mechanism for a new participant to join the market.

- The community around a smart meter interface
- Vendors of smart meters, retail service providers, retail customers, and integration partners
- Improve the standardization of the meter data interface and information exchange
- A stakeholder alliance working group uses the SG IMM to evaluate impediments to achieving interoperability goals
- Business goals of service providers, regulators, and vendors are not aligned for interoperability
- Set requirements that there be an independent test and certification authority. Develops technology procurement guidelines to assist in evaluating interoperability of specific vendor proposals

- Testing new business models and new technologies within an institutional structure such as an electric power market
- While intended to be applied to communities, SGIMM use with an experimental project can be useful
- Develop a significantly more sophisticated business and technical model for energy market operations
- Determine whether a scalable communication signal about the price of energy can be used to modify overall system behavior
- Develop signaling technology to test if new distributed, price-based, control system can provide efficiently scalable system for managing complex power flows and transactions
- Identify regulatory and business issues to be addressed for the most efficient scaling of the technology

- Smart grid capabilities require the integration of applications and systems that have typically operated in separate parts of an enterprise in the past
- Interoperability between myriad applications both within a utility enterprise and with its partners becomes the foundation or a prerequisite to deploying the next generation of services
- Applications may have been developed independently (to different standards) without long-range design for integration with other systems
- The enterprise is a community of systems
- Conduct an assessment of the interfaces between a bidirectional metering application, the smart meter, the advanced metering system, and the billing system in order to better understand the architecture and design issues that cause integration challenges to occur
- Better understanding of interoperability issues at the senior management level and with the regulator

- A lot of similarities
 - Processes
 - Documentation
 - Systems
 - Regulation
 - Interoperability
 - Maturity levels
 - Based on measuring current situation and defining goals through questions
- Trying to harmonize the approaches
 - Areas of focus
 - Terminology
 - Maturity levels
 - Characteristics
 - Provide a roadmap to higher maturity levels
 - Scoring?

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