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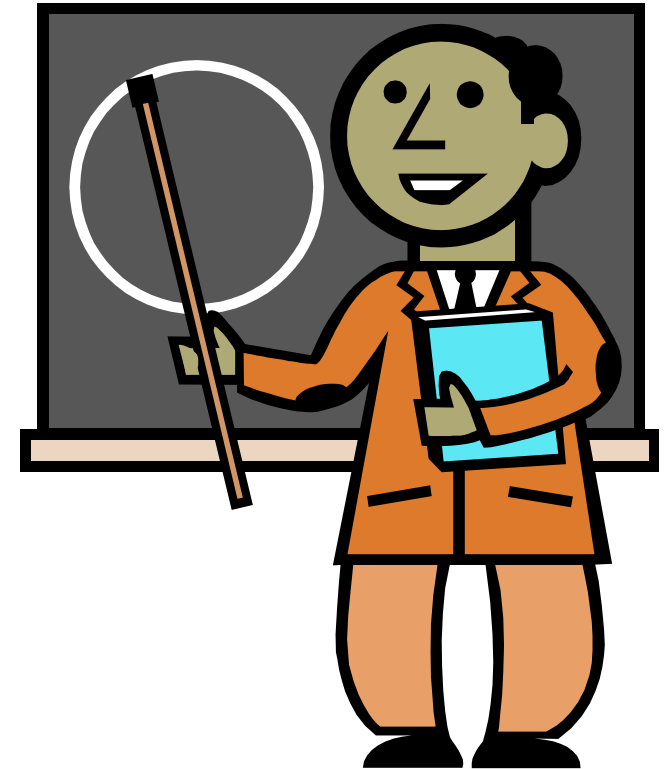


Enterprise Architecture Advanced topics

Rational. software

Welcome!

- About your workshop leader
 - ▶ Scott McBride
 - ▶ 10 years+ experience with System Architect
 - ▶ Started with Popkin Software → Telelogic → IBM
- About you
 - ▶ Your organization
 - ▶ Experience with System Architect
 - ▶ EA experience, current projects
 - ▶ What you are looking to take away from this session



Outcomes for this Session

- EA Topics:
 - ▶ The case for enterprise architecture
 - ▶ Lessons learned and critical success factors
 - ▶ So you have an EA program – what are the first things you should do?
 - ▶ EA team roles and responsibilities
 - ▶ Governance and investment decisions
- System Architect Topics:
 - ▶ Reporting
 - ▶ Extending the metamodel in USRPROPS
 - ▶ Working with Explorer diagrams
 - ▶ Working with the Views Explorer
 - ▶ Analytics
 - ▶ Writing VBA macros



U.S. NEWS | MAY 29, 2009, 12:08 PM ET

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Article

GM Gets \$4 Billion in New U.S. Funds

Article **Comments (64)**

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By SHARON TERLEP and NORIHIKO SHIROUZU

General Motors Corp. on Friday said it received \$4 billion in U.S. aid, \$1.4 billion more than it had originally requested, as part of its plan to pay suppliers and dealers before a June deadline.

More

- Chinese Company Interested in Opel
- GM, UAW Reach Cost-Cutting Pact

The auto maker, already subsisting on \$15.4 billion in government loans, previously had asked the Treasury for an additional \$2.6 billion before June 1 and \$6 billion after that

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By SIOBHAN GORMAN and YOCHI J. DREAZEN

WASHINGTON -- President Barack Obama will announce on Friday the creation of a "cyber czar" position, stepping up his administration's efforts to better protect the nation's computer networks.

' Position

Why Enterprise Architecture?

- To start, we will look at three fictitious enterprises.
- Each one will present a set of symptoms.
- For each scenario, we will identify the root causes.
- You will then be asked what types of actions could be taken in each scenario to help address the underlying problems.
- Also consider the risks associated with any of your proposed actions

Case 1: A Logistics Company in a Competitive Environment

Symptoms

- Each department has its own IT department.
- IT solutions are developed to meet functional requirements at the department level.
- Resources and capabilities are not aligned with the strategic goals of the enterprise.
- Capabilities are often duplicated across the departments.
- Performance of the individual departments is good, but the company is faced with competitive pressures.

Root Causes

- No one at the executive level takes accountability for ensuring resource alignment across the departments.
- Strategic goals are not translated into tactical objectives.
- There is no measurement system to show how activities at the business level contribute to the achievement of high level outcomes.
- Solutions development is funded by department managers.



Case 2: A Federal Agency that works with other Agencies and the Public

Symptoms

- The agency finds it difficult to share information with other governmental entities.
- Agency is caught flat-footed when addressing the needs of citizens to be able to request services over the Internet.
- Congressional oversight committee questions IT budget for the agency.
- A series of security lapses that are reported on the front page of the Washington Post embarrass the agency.
- Inadequate storage capacity and network bandwidth to support normal business operations.

Root Causes

- No standard for information interoperability is followed.
- Security and privacy issues are addressed as “bolt-ons” to existing systems and processes.
- No long-range technology planning or initiatives in place.
- Political appointees determine the technical direction of the agency.
- No metrics in place for measuring improvements in capability resulting from IT solutions.



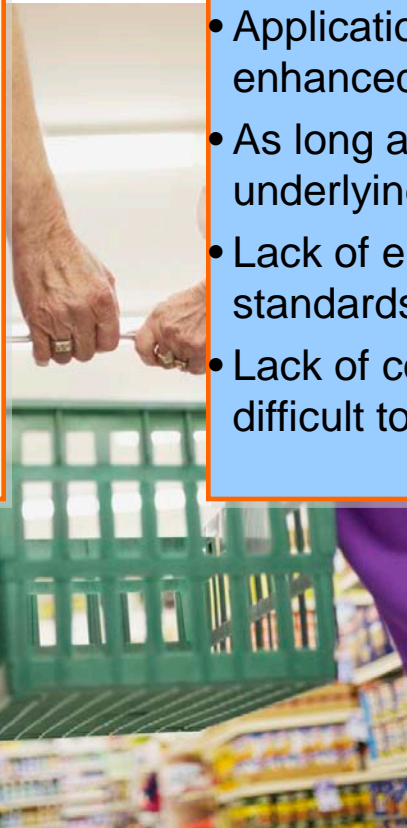
Case 3: A Regional Retailer Looking to Expand

Symptoms

- Key business processes (purchasing, inventory control, hiring) are specific to each store. They cannot be digitized.
- Company wants to reap the benefits of SOA, but is unable to identify shared services.
- Application portfolio is a mess. There is no authoritative source showing which processes an application supports, or who owns the app.
- Very difficult to replicate aspects of the business and expand to new areas.

Root Causes

- No formal business process modeling or documentation.
- Applications were developed and enhanced to satisfy near-term needs.
- As long as quarterly objectives were met, underlying problems were hidden.
- Lack of enterprise-wide application of standards and components.
- Lack of consistency in process makes it difficult to identify shared services.



Making the Case for Enterprise Architecture – Team Activity

- Divide into two teams
- You will each receive a handout and further instructions from the workshop leader



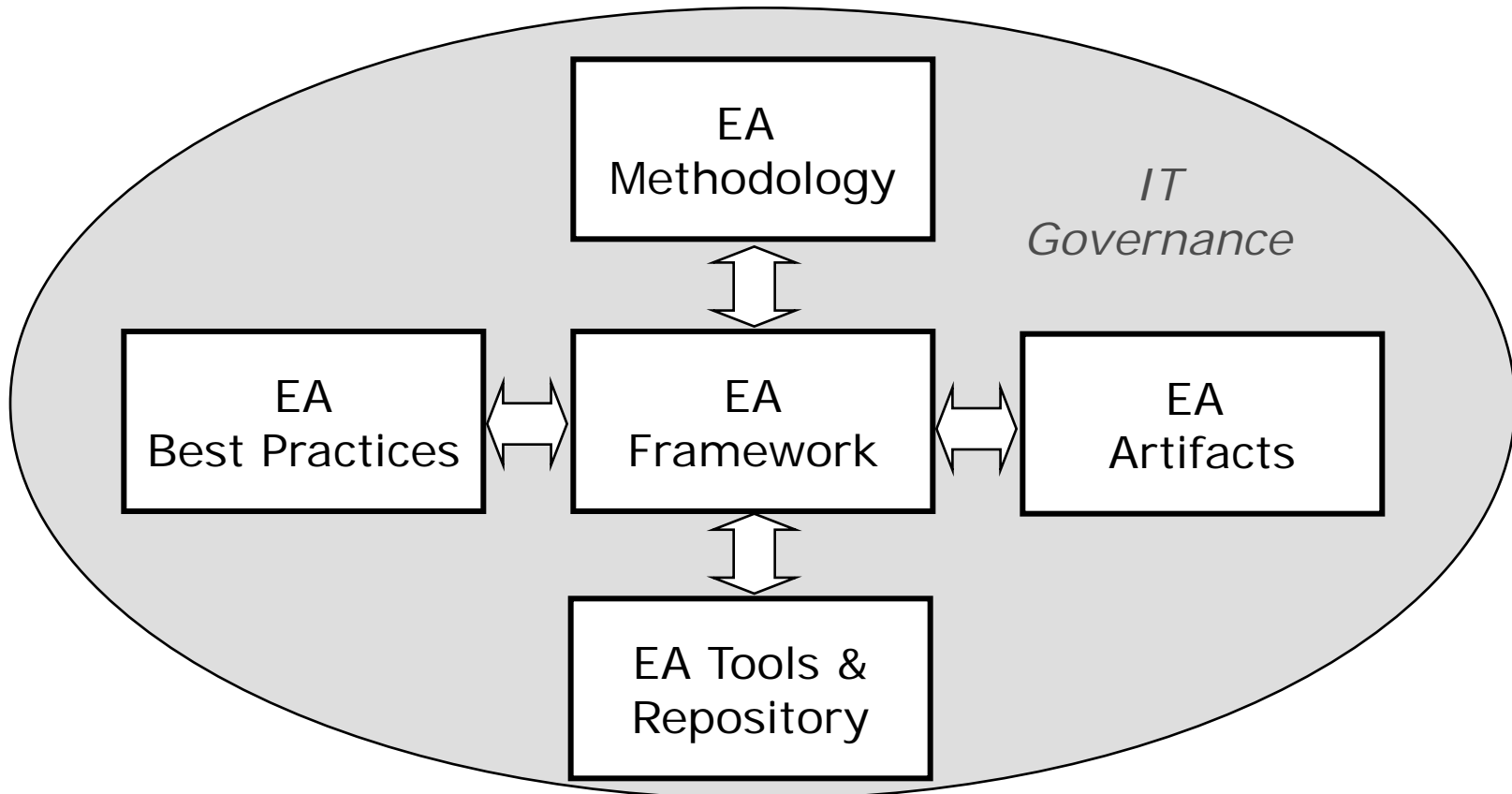
Why Enterprise Architecture?



| Typical EA Activities | Outcomes |
|--|--|
| Employ enterprise-wide standards | Increase interoperability; reduce number of distinct technologies and products |
| Construct baseline and target architectures | Plan for coordinate and predictable change to bridge the gap in capabilities |
| Build an inventory of “components” with standard interfaces | Decrease life cycle costs; decrease total development time |
| Adopt formal business case approach for evaluating new investments | Make investment decisions that are informed and in line with the enterprise strategy |
| Identify metrics at all levels | Understand where the gaps are; achieve strategic alignment |

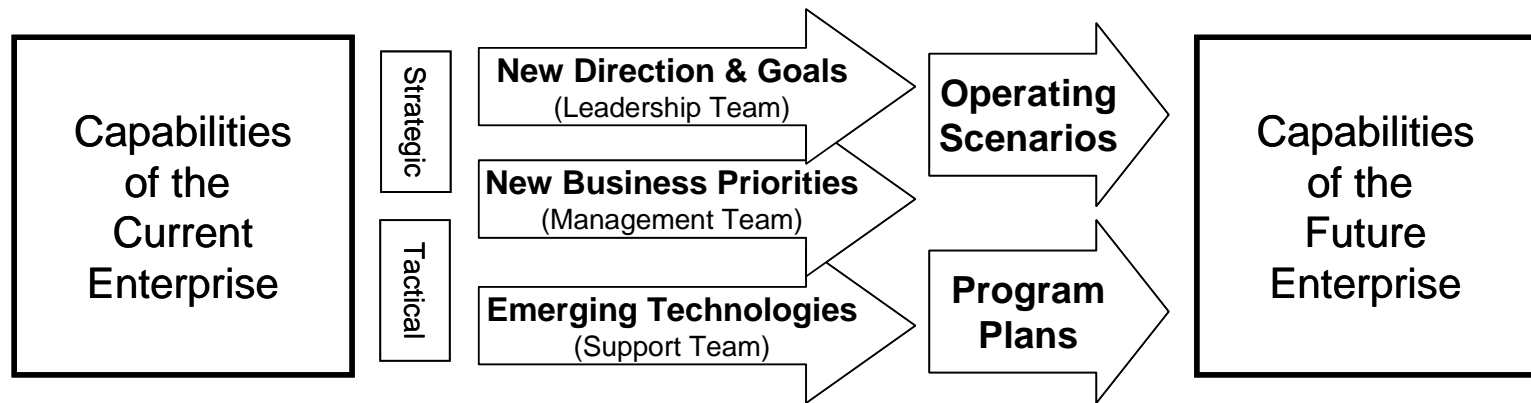
The Five Elements of a Complete EA Approach*

- A “complete” EA approach must have all of these five elements, which are specifically designed to work together in the context of the IT governance process.



* From Scott Bernard, *Introduction to Enterprise Architecture, 2ed*

EA is about Planning and Managing the Transition to a Future State*



* From Scott Bernard, *Introduction to Enterprise Architecture, 2ed*



Critical Success Factors for EA



- Know **why** you are doing EA.
- The EA effort will not be able to **address issues** at levels above the program sponsor.
- Identify the stakeholders early, and **enroll** them in identifying and validating program requirements.
- Anything less than one year is not a program – it is a **pilot**.
- Find **seasoned and experienced** architects to lead the program.
- Make artifacts, reports and analyses **accessible**.
- If EA is not **integrated** into existing governance processes, it will not take root.
- Be realistic on timelines, but also know that you will be able to **deliver value** for selected areas early on.

What are Drivers?

Drivers are forces, environmental factors, opportunities, changing consumer tastes, promising technologies, demographics and regulations that define the world in which the enterprise exists.



Strategic drivers

Identifying drivers is essential to being able to justify investments and to develop certain capabilities.

Business drivers

Organizations can either respond proactively, reactively, or ignore these factors altogether.

Technology drivers

Class discussion: think of real-world drivers involving your organization or other companies or agencies

How to Plan an EA Program (1/4)

Phase 1

- Identify the executive sponsor
- Secure funding
- Hire a chief architect
- Put the core team in place
- Develop a set of operational concepts to show how the published artifacts from EA will be used in decision making and long term planning
- Establish links to other governance processes
- Establish a communications strategy
- Identify members of the extended EA team – typically other key stakeholders
- Gather requirements from stakeholders

How to Plan an EA Program (2/4)

Phase 2

- Select the EA framework
- Identify the EA lines of business and segments and the order of their documentation
- Identify which EA components are in scope and build the metamodel that supports this
- Identify the types of artifacts and notations to be used to represent the architecture
- Select the tools, repository and training
- Establish an online repository for use by EA consumers
- Gather requirements from stakeholders (continuing activity)

How to Plan an EA Program (3/4)

Phase 3

- Identify sources of data for the baseline EA
- Populate the baseline EA
- Construct current views that address stakeholders' requirements
- Use methods (SWOT, future planning scenarios) to identify what capabilities the target architecture needs to support
- Build out views of the target architecture based on needed capabilities, known constraints and stakeholder requirements
- Develop an EA Management Plan to transition from the baseline to the target architecture

How to Plan an EA Program (4/4)

Phase 4

- Use EA documentation for EA planning, resource alignment and decision-making
- Measure the EA program against the original goals
- Update the baseline and future views at regular intervals
- Release an annual EA Management Plan
- Maintain and grow EA skill sets, software licenses and further integrate EA in planning and governance activities

EA Program Roles and Responsibilities (1/3)

| EA Team Position | EA Team Role | EA Responsibilities |
|--|--|---|
| Sponsor | Executive Leadership | Be the champion of the EA program. Provide resources. Assist in resolving high-level EA issues. |
| Chief Information Officer (CIO) | Executive Leadership and Decision-Making | Facilitate the establishment and ongoing operation of the EA Program. Lead the resolution of high-level EA issues. Integrate EA and other IT governance processes. |
| Chief Architect | Program Management | Manage the EA program and documentation process. Select and implement the EA framework and documentation methodology. Identify EA standards and manage EA configuration management sub-process. |



EA Program Roles and Responsibilities (2/3)

| EA Team Position | EA Team Role | EA Responsibilities |
|----------------------------------|-----------------------------|---|
| Line of Business Managers | Requirements Identification | Participate in EA program decision-making. Promote the identification of IT-related requirements and EA solutions for each LOB. |
| Solutions Architect | Problem Solving | Collaboratively identify solutions for IT-related problems within LOBs. Support EA documentation. |
| Systems Architect | Analysis and Design | Provide technical analysis and design support for systems-related EA component selection and implementation. Ensure that IT systems meet integration and interoperability requirements. Support EA documentation. |



EA Program Roles and Responsibilities (3/3)

| EA Team Position | EA Team Role | EA Responsibilities |
|--------------------------------|----------------------------------|---|
| Data Architect | Analysis and Design | Provide technical analysis and design support for database-related EA component selection and implementation. Ensure that databases meet integration and interoperability requirements. Support EA documentation. |
| EA Tool Expert | Application and Database Support | Maintenance of EA Software Application. Maintenance of EA repository and information. |
| End-User Representative | Requirements Identification / QA | Identify end-user requirements for EA components. Provide feedback on the effectiveness of solutions. |

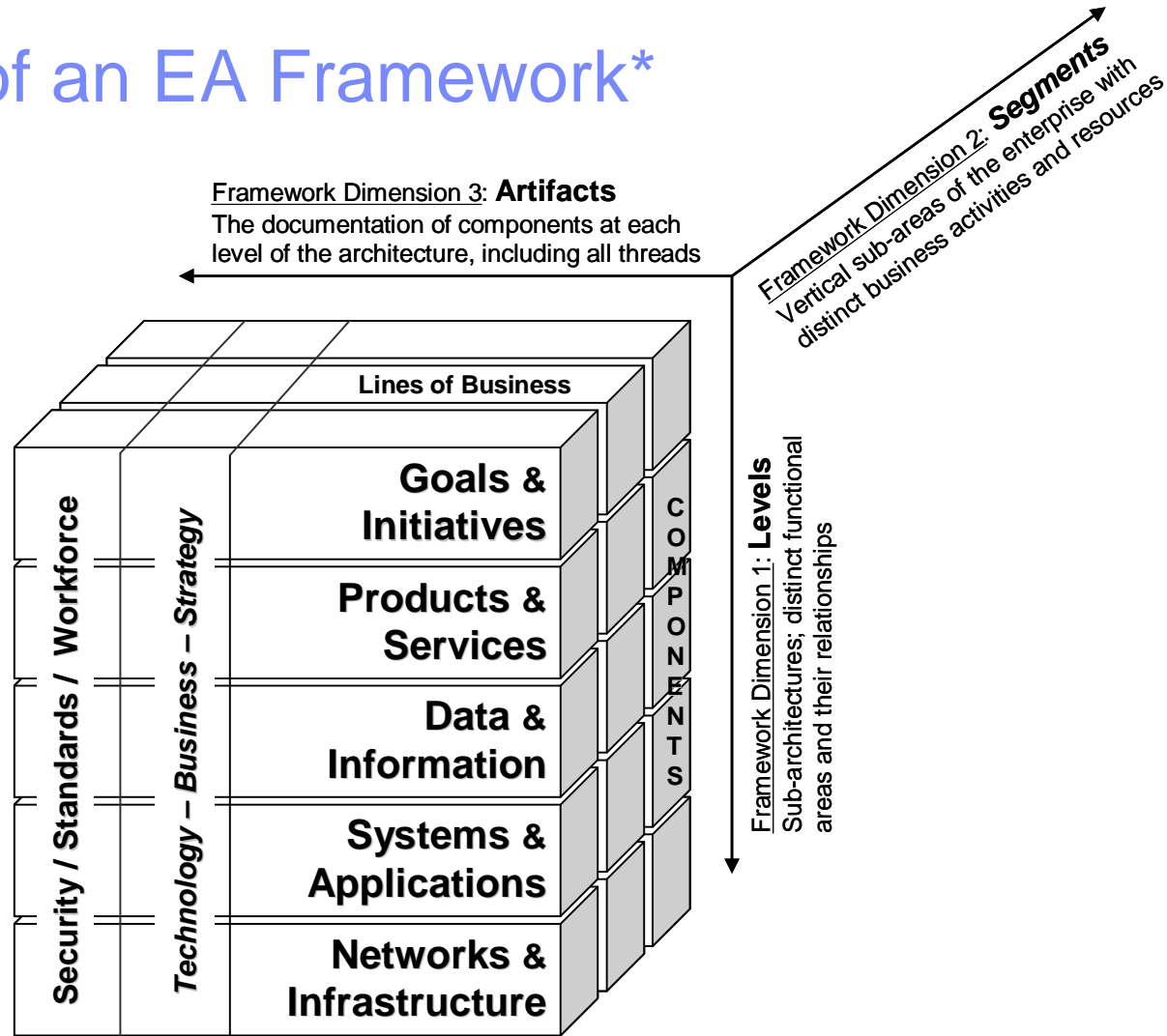
EA Program Roles and Responsibilities

| EA Team Position | EA Team Role | EA Responsibilities |
|-------------------------|-----------------------|---|
| Webmaster | Website Support | Maintenance of EA website, associated content, and links to other websites as needed. |
| Research Analyst | Requirements Analysis | Document and verify LOB and end-user requirements. Assist in EA component design and documentation activities |

How to Scope the EA

- EA programs with poorly defined scopes are at high risk of failure
- Don't even think about including the entire enterprise
 - ▶ Use a phased approach
 - ▶ Better to go narrow and deep than wide and shallow
- Use the framework to help in scoping
- Use “big chunks” to identify that portion of the enterprise that is in scope for the first phase. Examples:
 - ▶ Lines of business or segments
 - ▶ Domains
 - ▶ High level requirements, especially those demanding attention now

Example of an EA Framework*



* From Scott Bernard, *Introduction to Enterprise Architecture, 2ed*

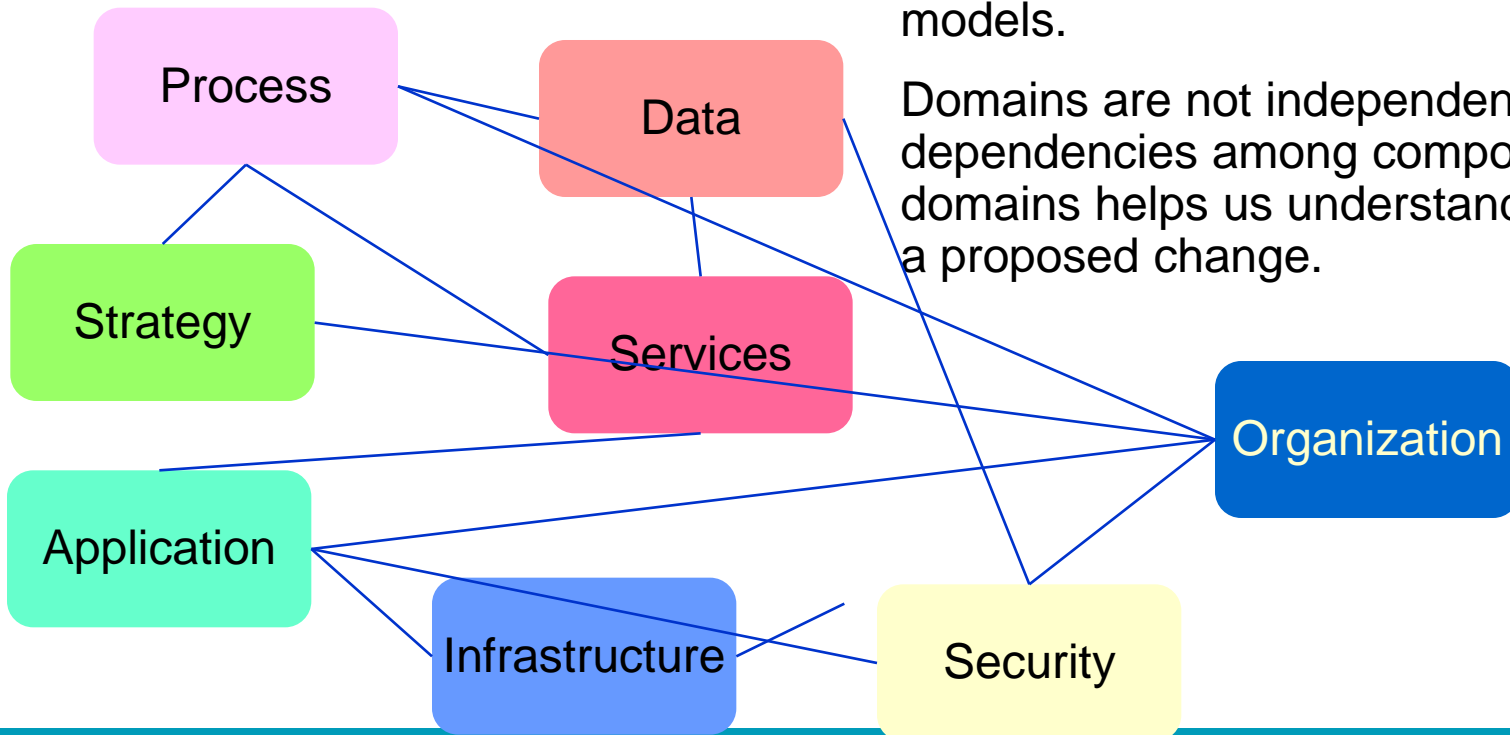
What are Domains?

A domain is an aspect of the enterprise that can be modeled and analyzed separately.

Domains typically have a set of standard notations, disciplines and a community of practitioners.

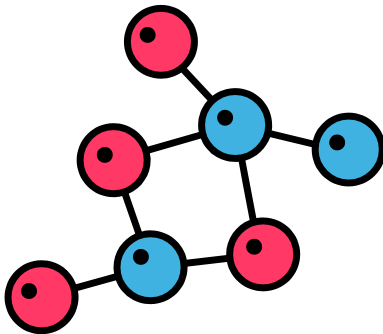
Each domain will have a set of artifacts or models.

Domains are not independent. The dependencies among components across domains helps us understand the impact of a proposed change.



What are Metamodels?

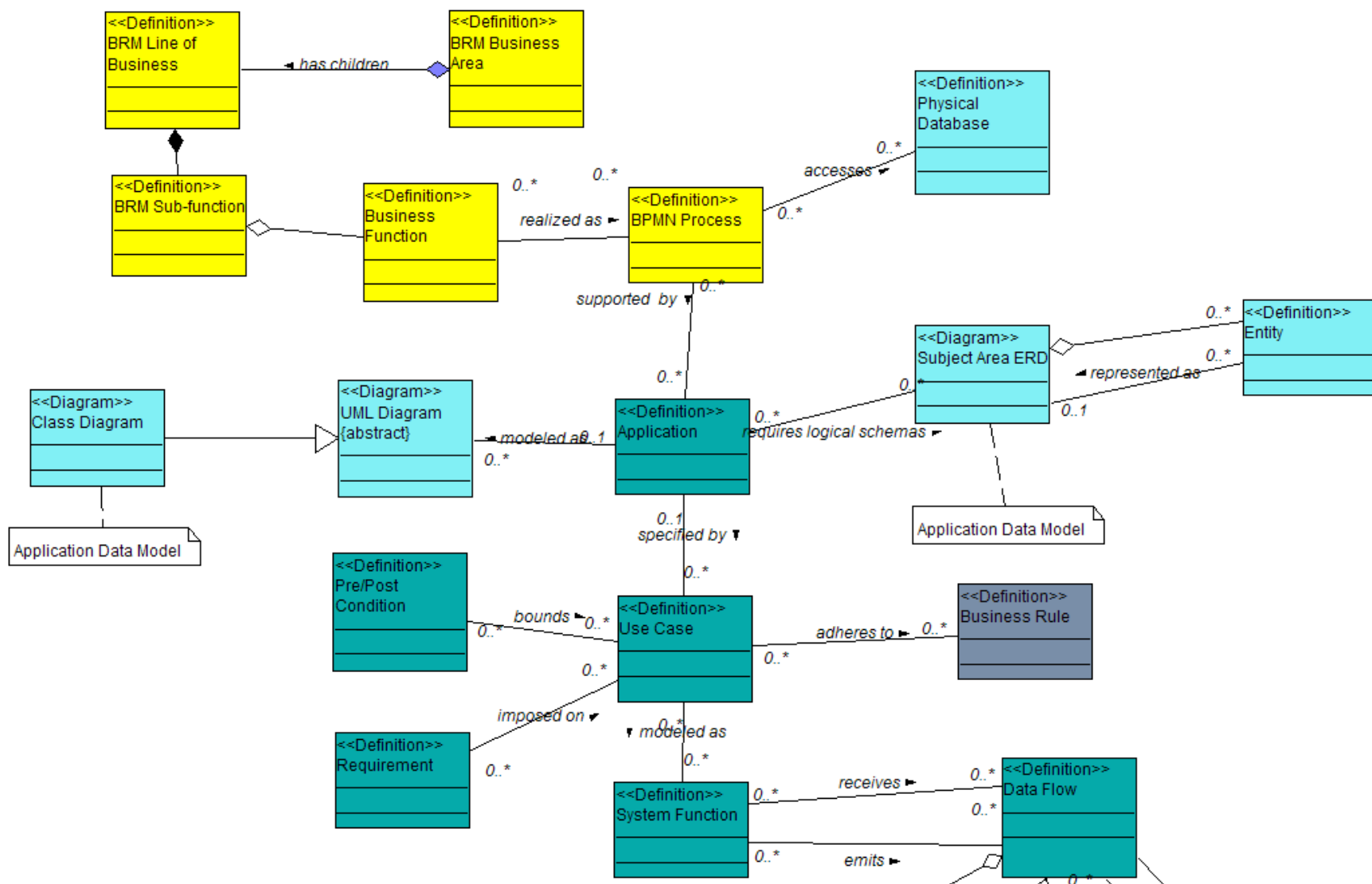
- A metamodel is a refinement of a domain in that it identifies the component types within the domain.
- A metamodel reflects how you intend to think about, reason through and analyze the enterprise.
- Metamodels are sometimes driven by the types of reports and views that you will need to generate.



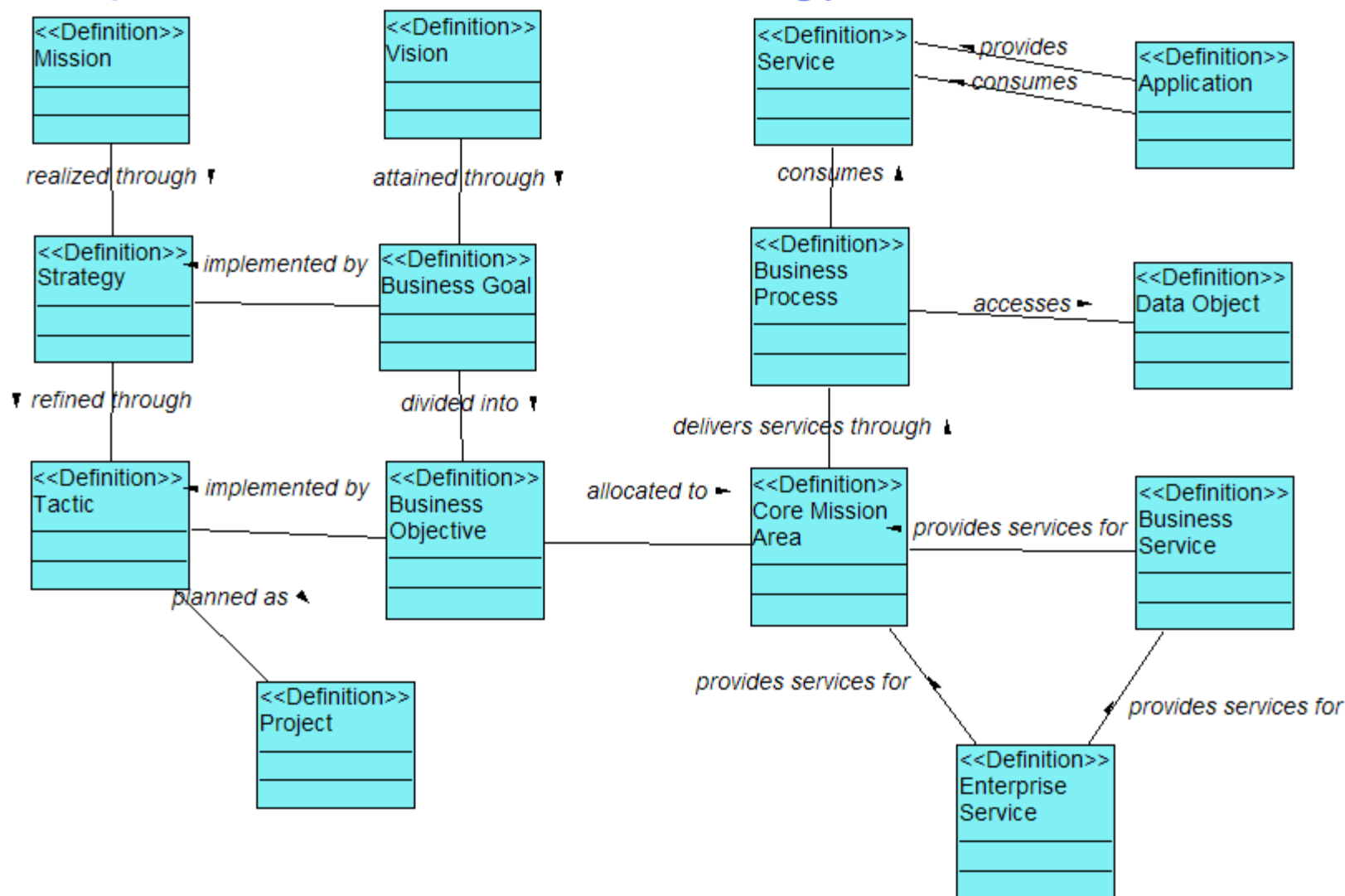
The metamodel defines the underlying structure of how the components of the enterprise are linked.

Metamodels also reflect the semantics of what is represented by the objects and relationships.

Sample Metamodel for Business Domain



Sample Metamodel for Strategy Domain



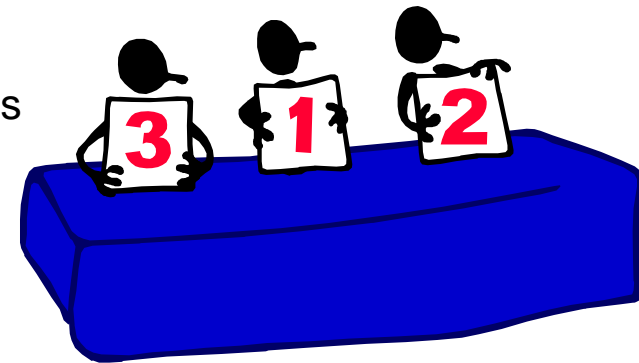
What is Governance?

- Governance is an instance of policy
- Governance is repeatable in its process and procedures, but not always in its outcomes
 - ▶ Which is why governance is people-dependent
- Governance is the formalized decision-making that puts *actionable* into “actionable EA”
- Governance should not be about who is charge
 - ▶ Good governance is not personality-dependent
- Governance removes the ambiguities in working relationships
 - ▶ Example: IT directors, CIO, domain architects, chief architect

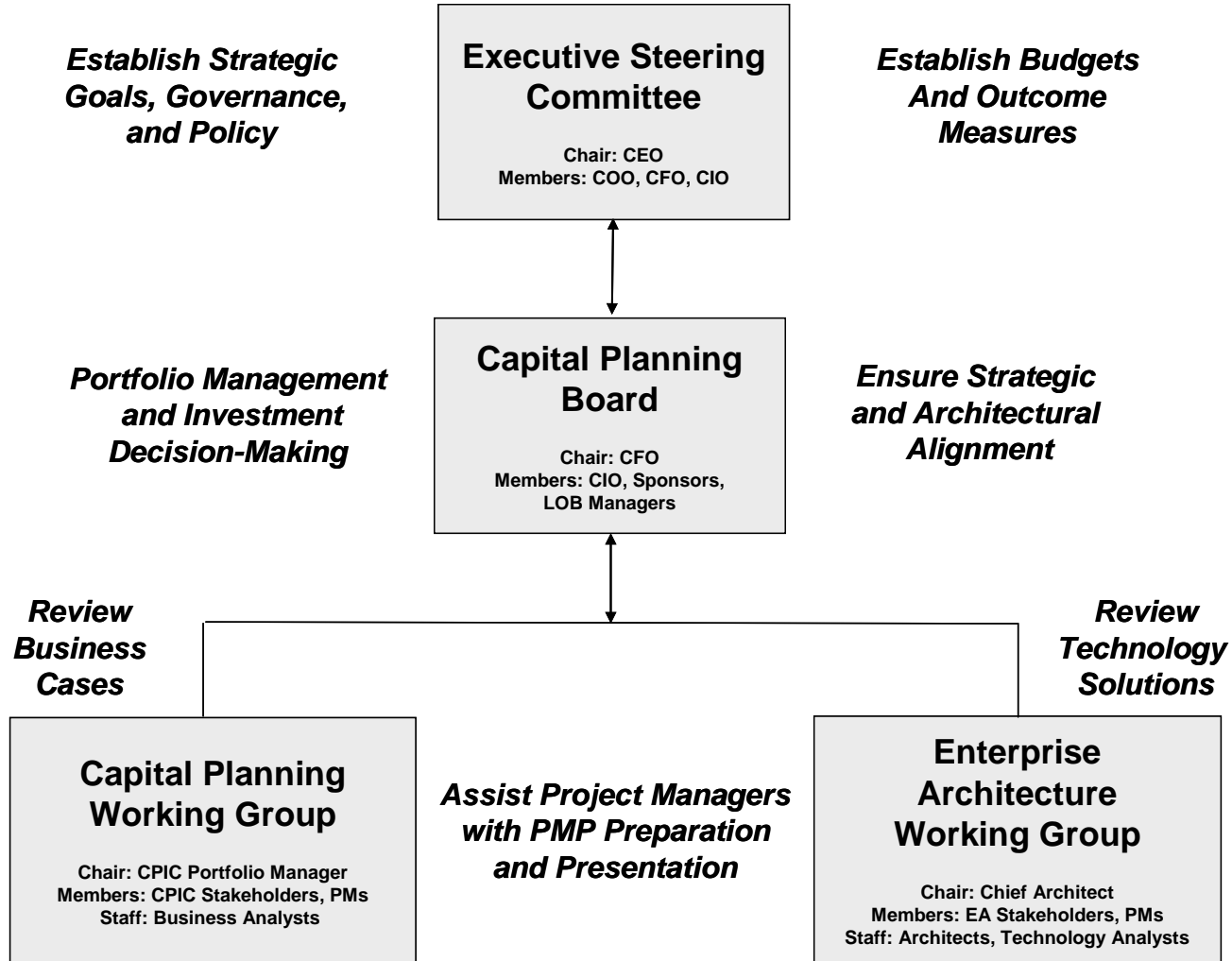


Elements of a Governance Process

- Tripwires
 - ▶ When does a decision need to be formalized? (by scope or cost?)
- Transparency
 - ▶ The process can be known by all
- Exceptions
 - ▶ But on a limited basis and under extraordinary circumstances
- Auditable
 - ▶ Decisions are recorded including rationale
- Minimal red tape
 - ▶ Justifying an investment or a design decision often produces better thinking



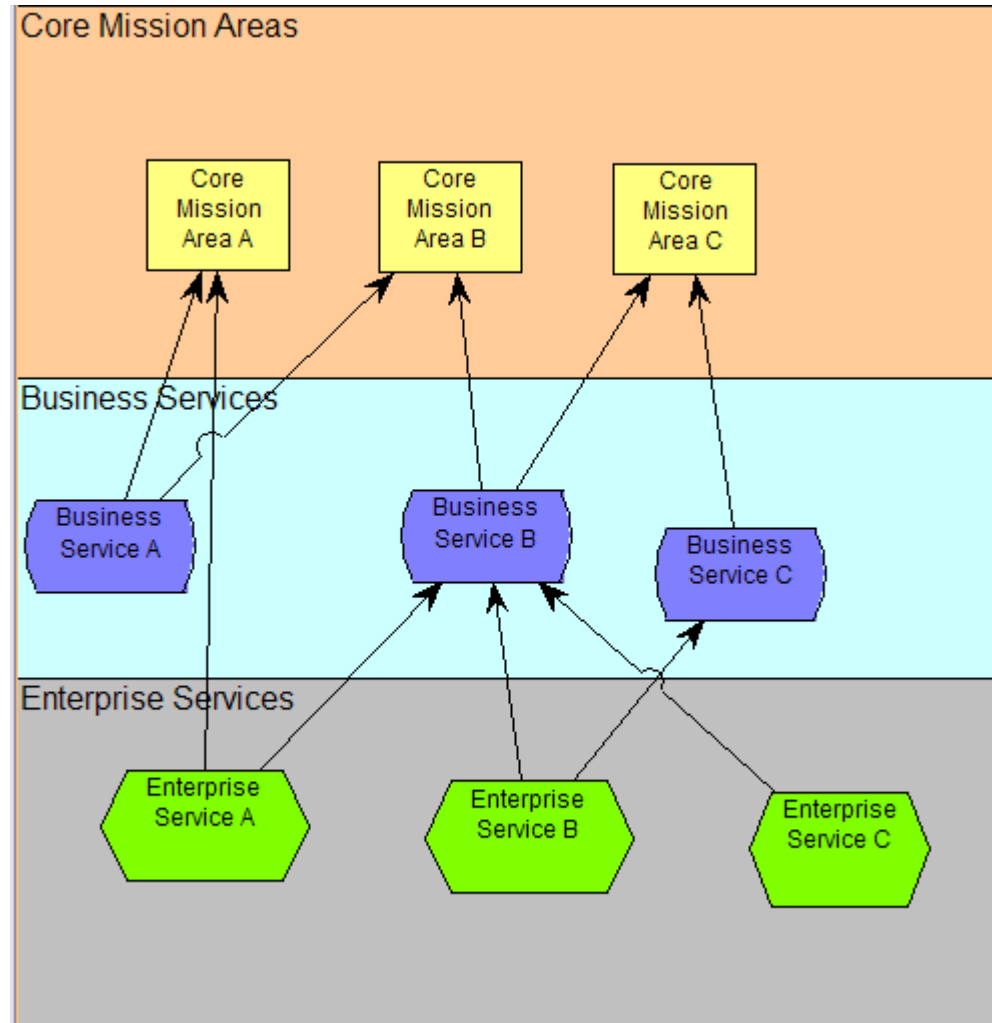
A Sample Governance Structure*



* From Scott Bernard, *Introduction to Enterprise Architecture, 2ed*

Segmenting the Enterprise

- Large enterprises require methods to divide them into manageable chunks
- Identifying the core mission areas, business services and enterprise services is one approach.*



* See Federal Segment Architecture Methodology, www.tsam.gov for further information.

Core Mission Areas

- A **core mission area** is a line of business or a stand-alone functional area within the enterprise. Core mission areas can be tied directly to the mission of the enterprise and their existence is essential to the enterprise as a whole.
- A core mission area often delivers products or services to customers (for commercial enterprises) or to citizens (for government agencies) or to clients (for nonprofit organizations).



Business Services

- A **business service** provides shared or common business functions to the core mission areas. These are typically back-office functions, such as finance and human resources. A business services segment may not directly contribute to the mission of the enterprise, but these are clearly necessary for its continued operation.



Enterprise Services

- An **enterprise service** delivers IT-enabled functions to business services segments and to core mission areas. Included among the enterprise services are applications, systems and information delivery mechanisms that provide the desired level of performance, accuracy and accessibility.
- Examples are enterprise services are enterprise resource planning, customer relationship management, and identity management.



Team Activity: Identifying Enterprise Segments

- In this activity you and your team will identify the core mission areas, business services and enterprise services of a fictitious company.



Refreshment Break



How Do I ...

- Reporting Topics
 - ▶ Modify the look of HTML reports
 - ▶ Write reports for Explorer diagrams
- User Interface Topics
 - ▶ Create static view reports
 - ▶ Create dynamic view reports
 - ▶ Perform a Model Compare
- User Properties Topics
 - ▶ Declare new object types
 - ▶ Define a definition type that is keyed by its GUID
 - ▶ Declare a new relation type
 - ▶ Qualify a relation in a reference property
 - ▶ Have fill color change based on a property

QUESTIONS

Thank You



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