US ARMY RDECOM

U.S. Army Research, Development and Engineering Command

Engineering the Enterprise

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TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

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Engineering the Enterprise

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Background in Chemical Engineering and Systems Engineering; Enterprise Architecture Enthusiast

Create a true architecture of the enterprise, representing business processes as functions and exposing data-hand-off and communication points as interfaces, and allocating this functional architecture to the physical organizational structure

Background

Began as an ARDEC Strategic Initiative to "**Enable the Enterprise**"

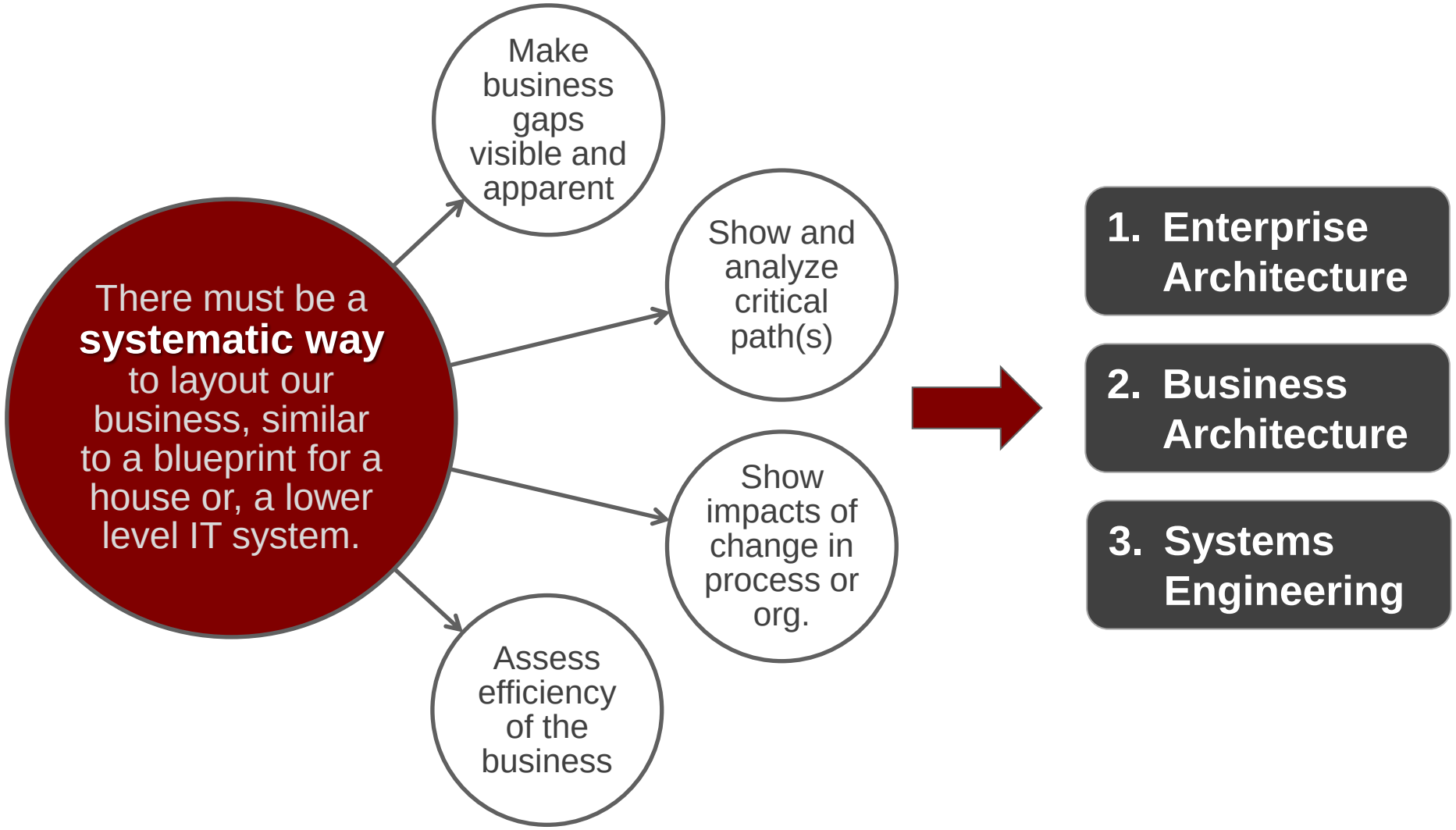
Goal — To show how an organization (people, processes, structure, etc.) interacts to provide superior products and services that reflect our desired culture (characteristics, behaviors, principles, etc.)

Definition — The Enterprise is an interdependent collective of people, facilities, processes and policies that consistently perform lifecycle armaments research, development and engineering support embodied by an adaptive culture with a strategic direction or shared purpose

Key Findings

- Core Values and Principles have changed or are unclear
- Regulation 10-1 not de-conflicted; Lack/misuse of key terminology and definitions
- Not all processes followed and documented, different levels of maturity
- Conflicting lines of authority (Process Owners, Objective Owners, Executive Directors

The Idea



Enterprise Architecture

Learnings

- ✓ Enterprise Architecture = Strategy + Business + Technology
- ✓ Provides a framework to organize elements of the enterprise

Shortcomings

- × In practice only done at the IT level
- × Lacks visibility into how and why elements are connected

- Needed better defined business rules for the IT systems
- Needed to show how the IT systems are satisfying the strategic layer and helping to meet the mission and vision (traceability)

Business Architecture

Learnings

- ✓ Business Architecture is the "blueprint" of the enterprise
- ✓ Prescribes the big picture "enterprise-thinking" methodology

Shortcomings

- ✗ In actual practice, products of Business Architecture are well-crafted, glorified ven-diagrams
- ✗ No insight to the actual communication within the organization

- Needed a database supported system to see interconnections, through which we could:
  - Rate the efficiency of each interconnection
  - Provide a snapshot of the entire organization

Enterprise Process Framework

Enabling Processes

Establish & Manage Customer Relationships	Manage & Improve Processes	Provide & Manage Human Capital	Provide & Manage Finances	Provide & Manage Knowledge, Equipment & Facilities	Acquire/Procure Required Resources

Core Processes

Conduct Research & Technology Development	Execute & Support Product Development	Execute & Support Mfg/Production	Execute & Support Fieldings, Operations & Support	Conduct & Support System Demilitarization

Governing Processes

Conduct Enterprise Planning & Management	Provide Environmental, Security & Safety Management

Enabling Processes *– processes that support one or more other processes, typically by supplying indirect inputs (e.g., hire to retire)*
Core Processes *– processes that convert inputs into outputs of greater value to external customers (e.g., transactional and developmental)*
Governing Processes *– processes that govern operation; how a company is directed and how objectives are achieved (e.g., strategic planning)*

Discovery

Enterprise and Business Architecture both serve different purposes:

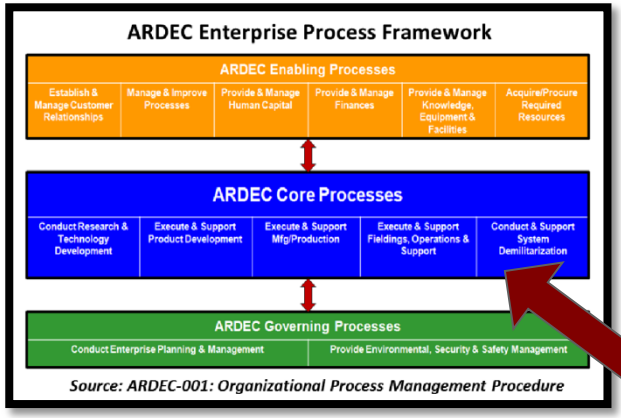
Business Architecture frames the key processes and capabilities to give a snapshot of the org.

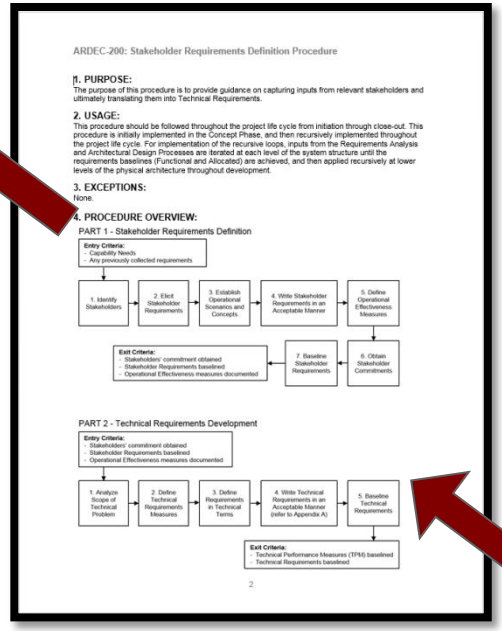
OUR DISCOVERY

There is a layer between these two views that is overlooked:
The Business Process Layer

Enterprise Architecture lives in the lowest level of an enterprise, managing the tactical aspect

Discovery Cont





Aligns the mechanics of the business to the strategic mission and vision

Provides insight to how IT systems support the mechanics of the business

IBM

SAP

magicdraw

Background | Research | Discovery | Results | Next Steps

Systems Engineering

We applied Systems Engineering rigor to the enterprise, essentially “Engineering the Enterprise”

Systems Engineering Activity	Business Process Focused Questions	Outputs
Stakeholder Requirements Definition	What are the goals of the organization? What responsibilities do we have to the customers?	Organizational “Goal Post”
Functional Architecture Development	What functions/capabilities do we have? How to they help meet our business and customer requirements?	Functional Flow of key process areas
Physical Architecture Development	How is my organization set up? How are the offices broken up?	Organizational Structure
Physical to Functional Traceability	Is the organization defined by capabilities and the physical structure is agile to meet changing/new functions? Is it defined by the physical structure and functions are allocated or divided among existing offices?	Allocation of capabilities to offices Identification of missing offices and capabilities
Interface Definition	Which capabilities involve multiple offices? What are the touch points?	Communication Channels Data Handoffs

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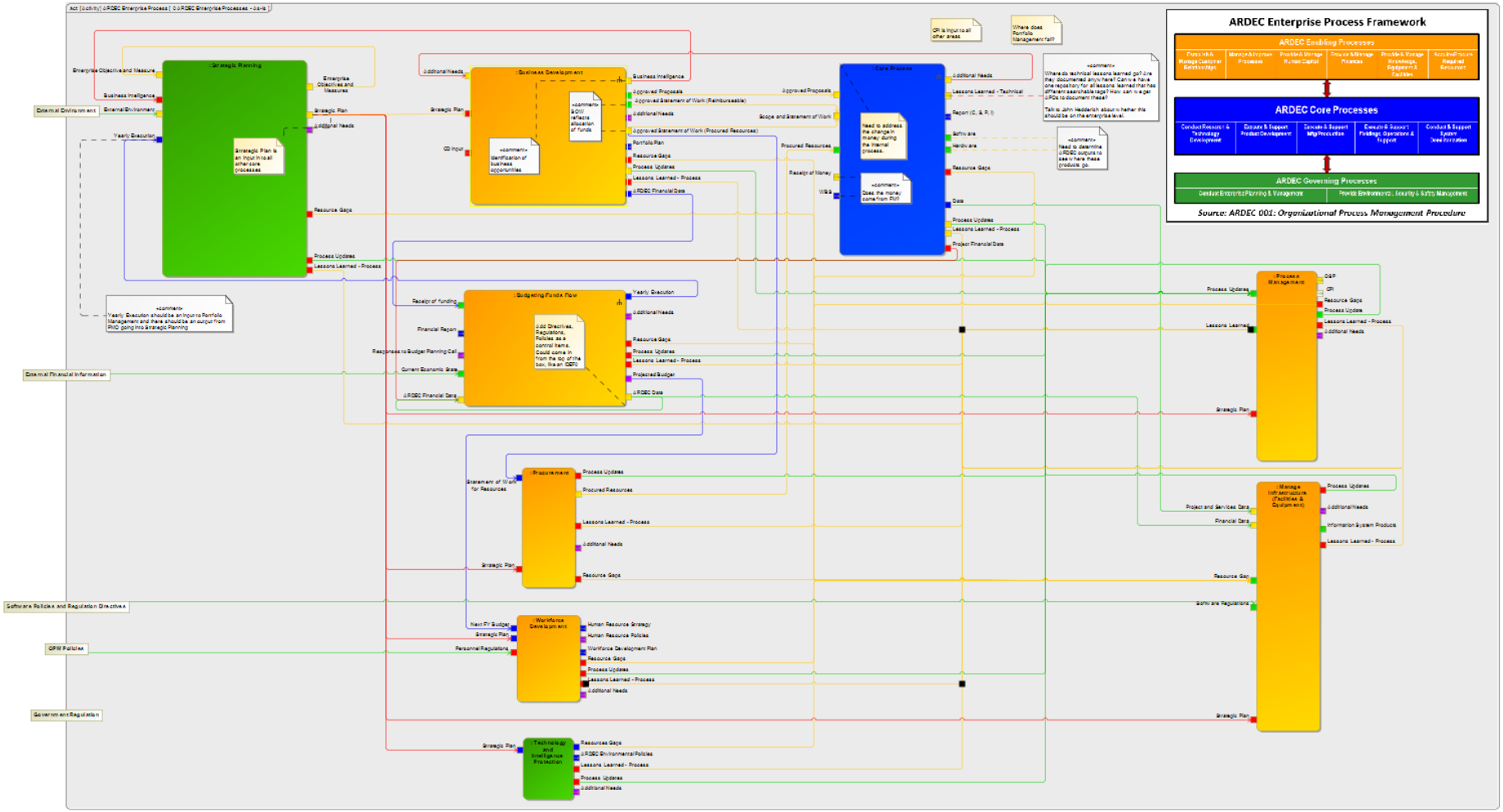
Architecture Version 1

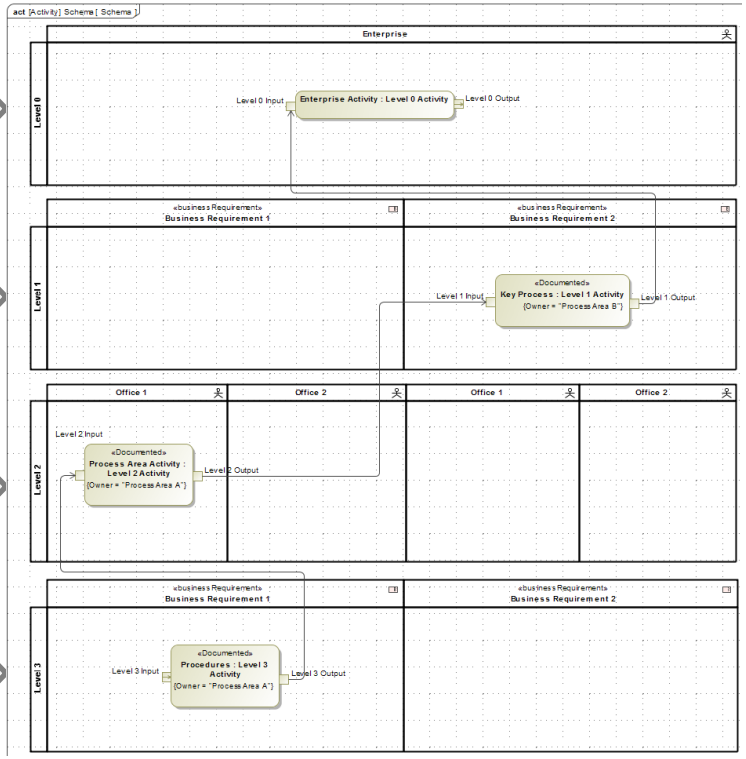


Background | Research | Discovery | Results | Next Steps

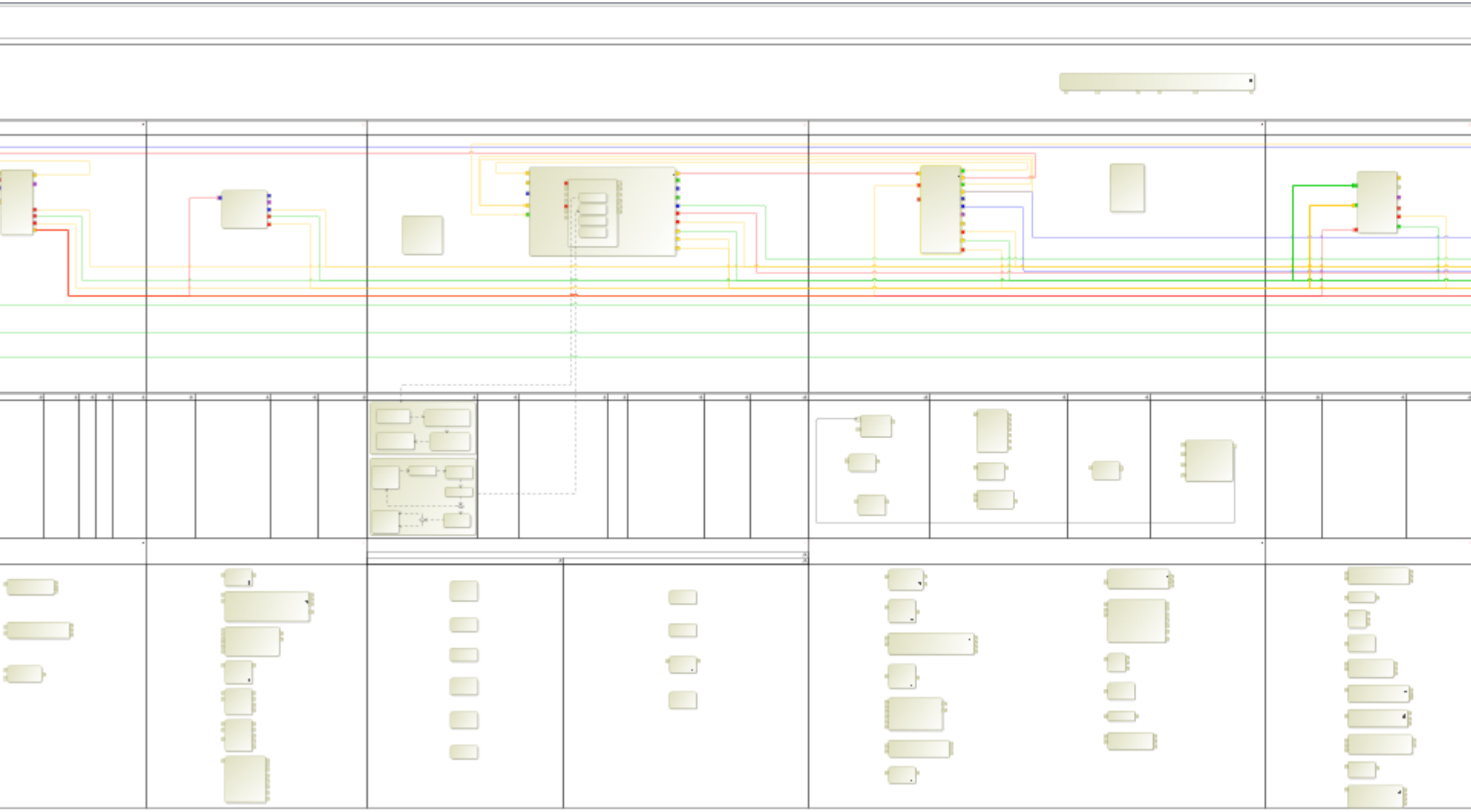
Business Architecture

The IDEF0 and Business Architecture training led us to redesigning the Process Framework in order to align our “functional” and “physical” architecture

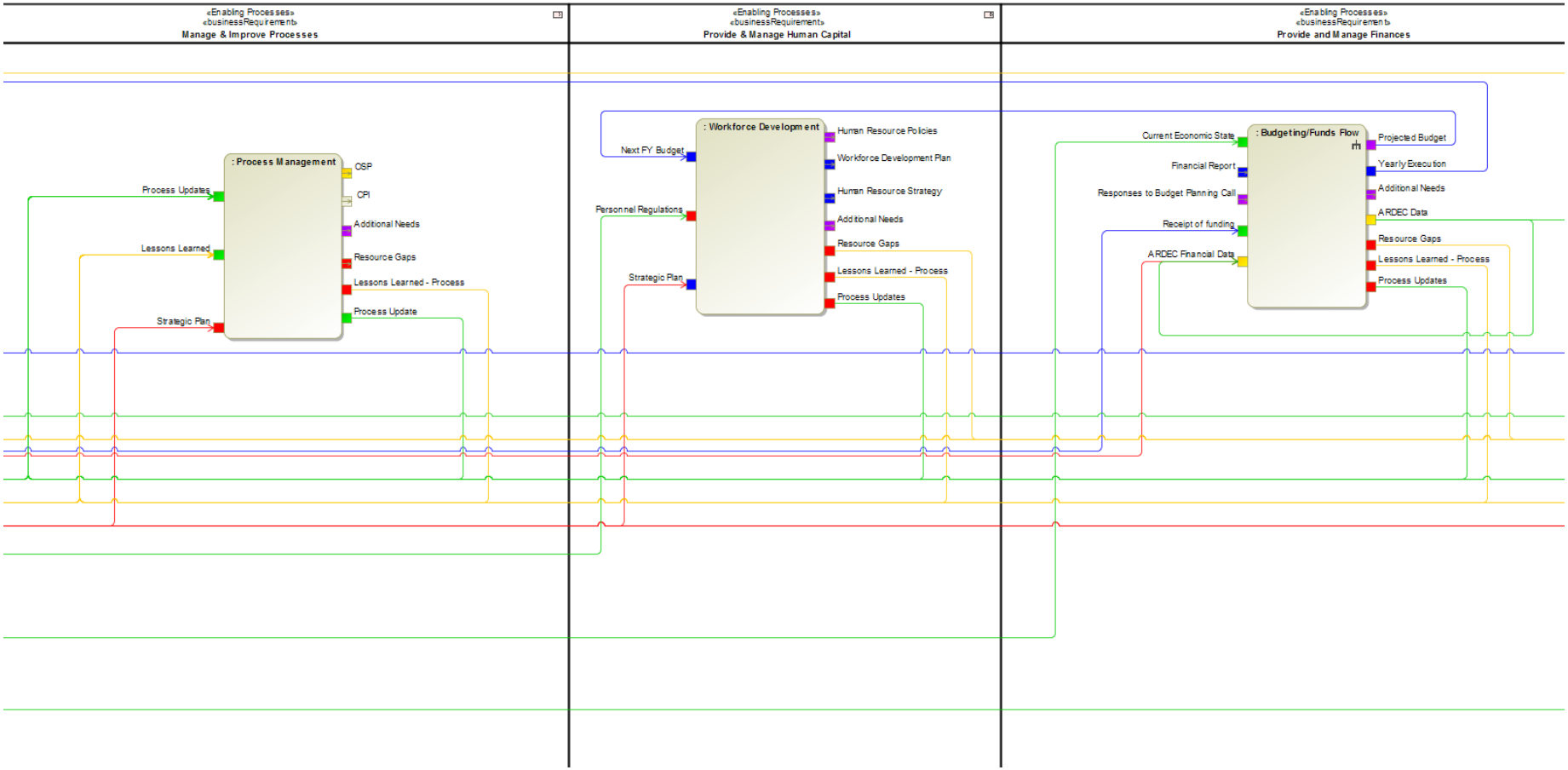
SIPOC diagrams for overarching processes	**Level 0**: Black box view of ARDEC
VOC sessions with each functional area	**Level 1**: Key Process Areas/Capabilities
Mapping of Reg. 10-1 to Process Framework	**Level 2**: Decomp of processes allocated to offices
RACI Matrices for each function/ capability	**Level 3**: Supporting documentation (SOPs, templates, etc)



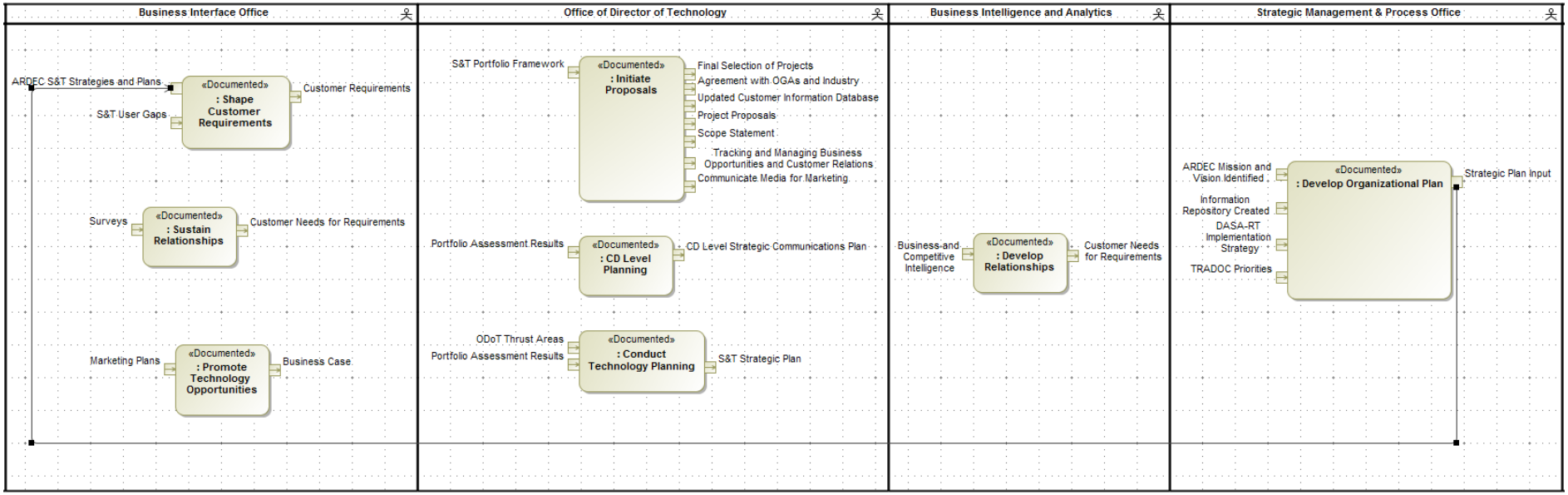
Updated Model



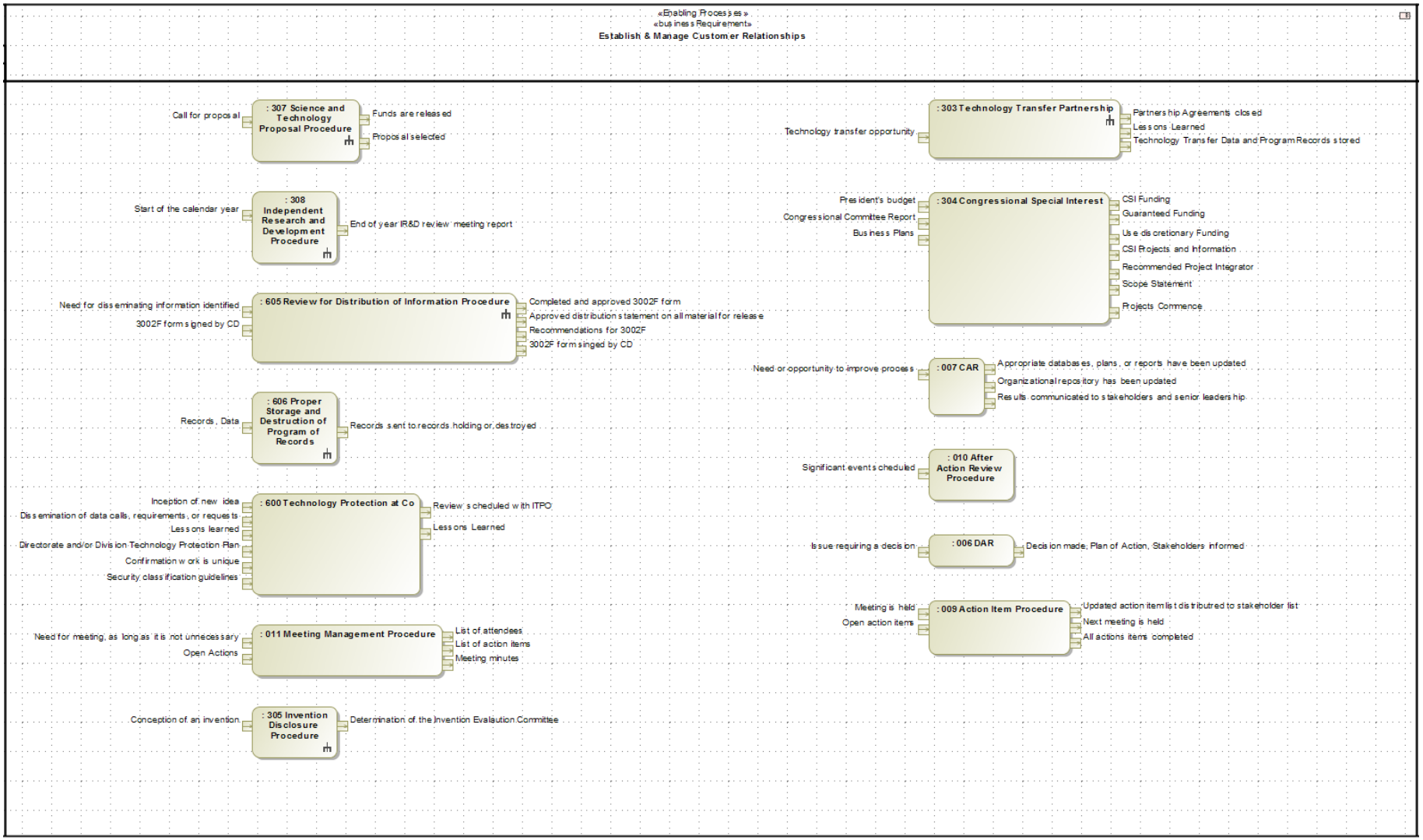
Level 1: Heat Map



Business Development: Level 2



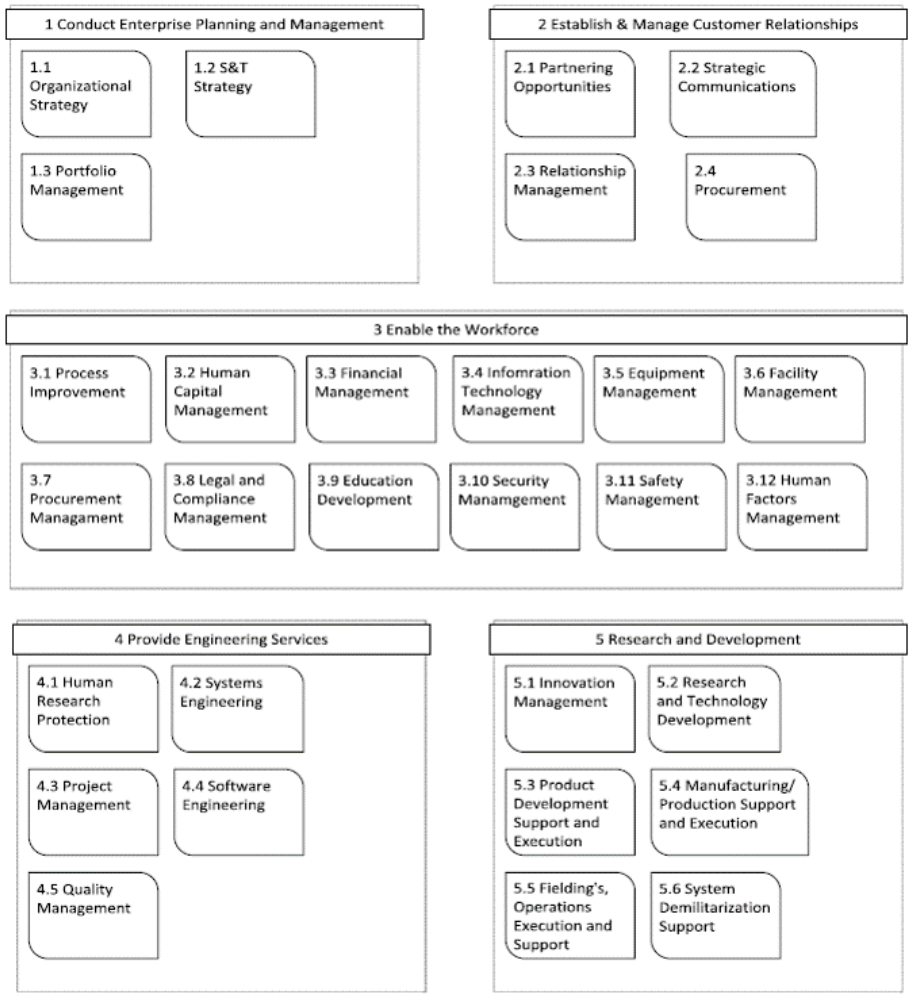
Business Development: Level 3



Benefits of the Model

- Applying this rigor will undercover gaps in the enterprise. It allows the organization to:
  - ✓ Examine whether the organization has the capabilities and personnel needed to meet the requirements
  - ✓ Examine whether the organization is structured to perform key functions needed to meet the requirements
  - ✓ Identify weak interfaces slowing down business
  - ✓ Identify opportunities to simplify process flows

What's Next



The End Goal is to create a model to aid in strategic decisions so that impacts of changes to the business can quickly be visualized and analyzed

We'll be making significant updates to the schema and model

Questions

Contact Information

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