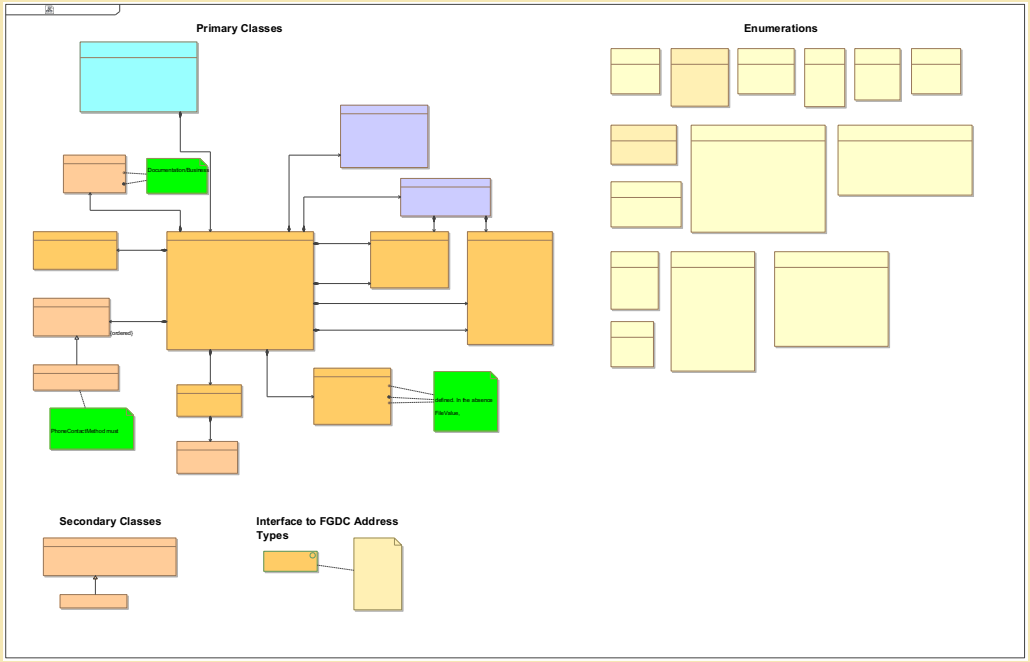
Election Modeling

Status Update

What is Modeling?

- "All models are wrong; some models are useful" – George Box
- Abstraction of real world
- Holistic picture



Why do we Model?

- Create a common basis of understanding
- Provide a learning tool
- Provide a blueprint for elaboration
- Establish current and best practices
- Identify Common Data Format(CDF) Use-Cases
- Serve to derive requirements (VVSG)

Why do we model (continued)

- Helps identify Use-Cases for Common Data Formats
  - “Is there a CDF for this interchange?”
  - “What data inputs are required to support this process?”
- Traceability of Requirements
  - “Is there a requirement for this task?”
  - “Do the requirements trace to a task?”
- Provides Scope of Requirements

Why do we model (Requirements)

Laws, Policies and Rules

- Provide inputs for…

Election Processes

- Automated via…

Information Systems

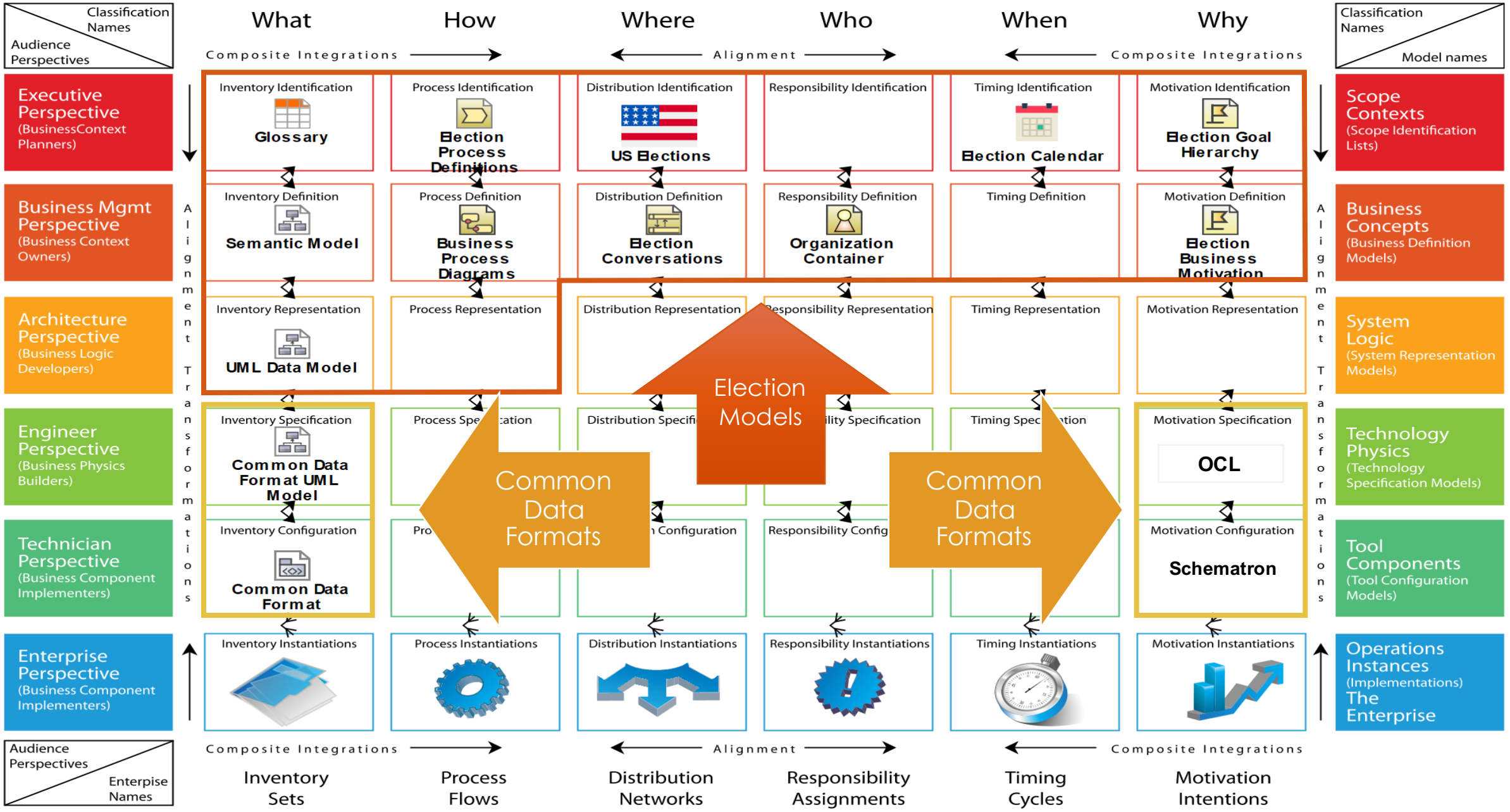
- Built according to

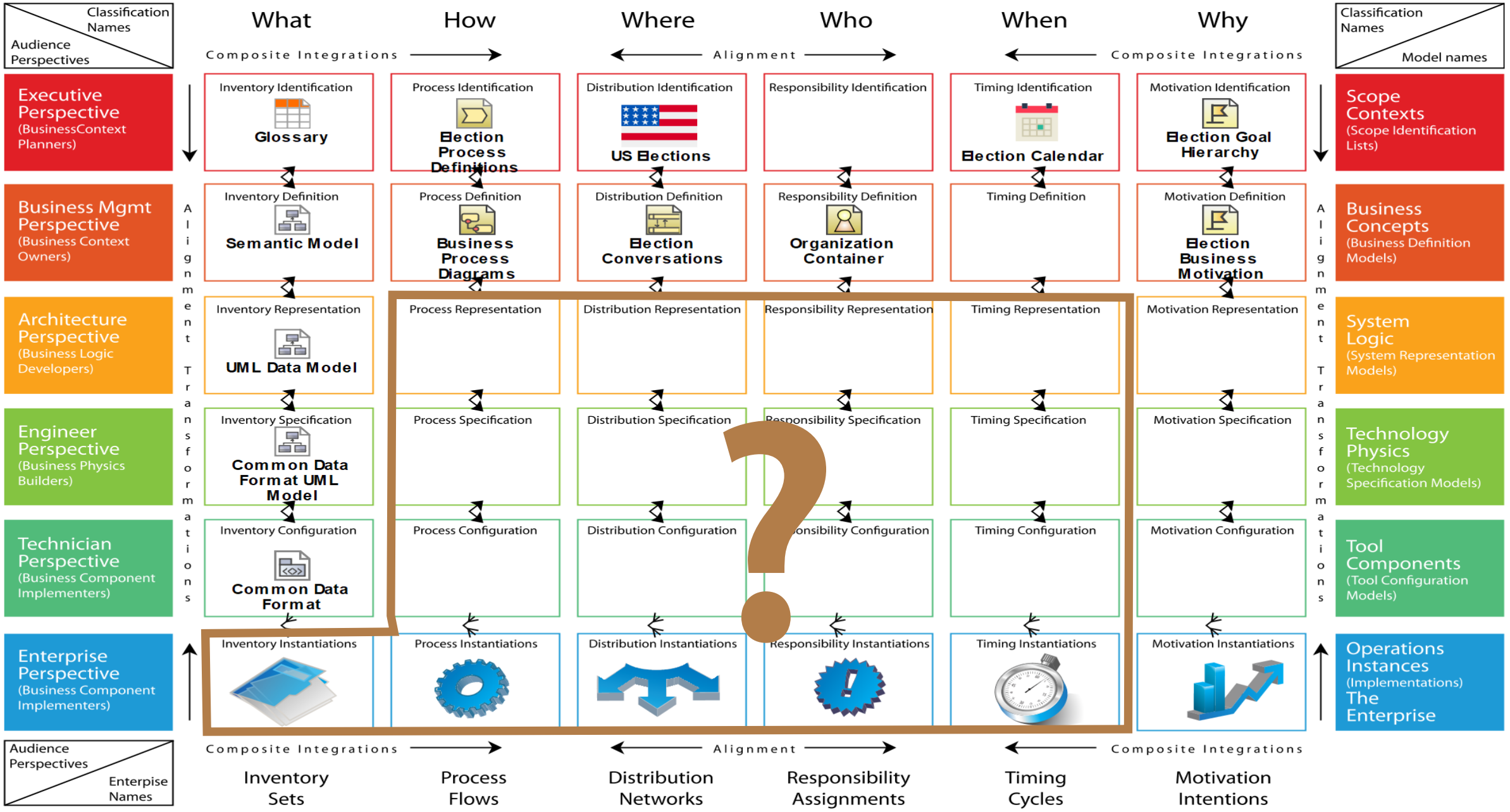
Requirements

- (VVSG, Common Data Formats)

Purpose of Election Modeling

"The purpose of election modeling is to establish an **implementation-independent** baseline understanding of election **data**, **its inter-relatedness** and minimum required attributes. The model is based on a high level but comprehensive understanding of the **processes** that are common to elections. The model provided establishes **common terminology** that contributes to a more **formal glossary** and serves as a tool for the development of other election-related standards." - IEEE P1622.4 PAR

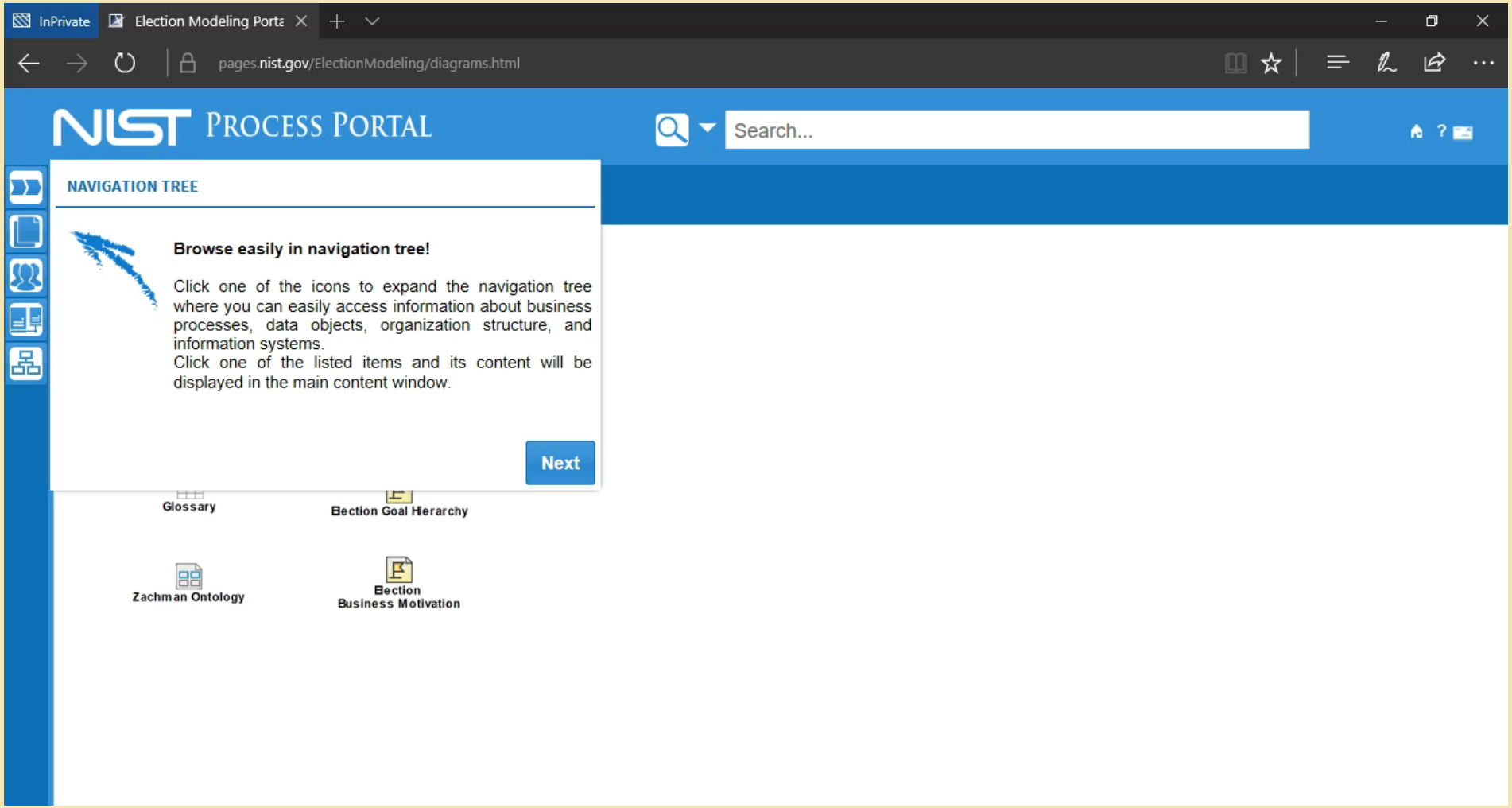

Classification Names
Audience Perspectives
What
How
Where
Who
When
Why
Composite Integrations
Alignment
Composite Integrations
Classification Names
Model names
Executive Perspective
(BusinessContext Planners)
Business Mgmt Perspective
(Business Context Owners)
Architecture Perspective
(Business Logic Developers)
Engineer Perspective
(Business Physics Builders)
Technician Perspective
(Business Component Implementers)
Enterprise Perspective
(Business Component Implementers)
Alignment Transformations
Inventory Identification
Glossary
Process Identification
Election Process Definitions
Distribution Identification
US Elections
Responsibility Identification
Timing Identification
Election Calendar
Motivation Identification
Election Goal Hierarchy
Inventory Definition
Semantic Model
Process Definition
Business Process Diagrams
Distribution Definition
Election Conversations
Responsibility Definition
Organization Container
Timing Definition
Motivation Definition
Election Business Motivation
Inventory Representation
UML Data Model
Process Representation
Distribution Representation
Responsibility Representation
Timing Representation
Motivation Representation
Inventory Specification
Common Data Format UML Model
Process Specification
Distribution Specification
Responsibility Specification
Timing Specification
Motivation Specification
OCL
Inventory Configuration
Common Data Format
Process Configuration
Responsibility Configuration
Motivation Configuration
Schematron
Inventory Instantiations
Process Instantiations
Distribution Instantiations
Responsibility Instantiations
Timing Instantiations
Motivation Instantiations
Election Models
Common Data Formats
Common Data Formats
Scope Contexts
(Scope Identification Lists)
Business Concepts
(Business Definition Models)
System Logic
(System Representation Models)
Technology Physics
(Technology Specification Models)
Tool Components
(Tool Configuration Models)
Operations Instances
(Implementations)
The Enterprise
Audience Perspectives
Enterprise Names
Composite Integrations
Alignment
Composite Integrations
Inventory Sets
Process Flows
Distribution Networks
Responsibility Assignments
Timing Cycles
Motivation Intentions


Classification Names
Audience Perspectives
What
How
Where
Who
When
Why
Classification Names
Model names
Composite Integrations
Alignment
Composite Integrations
Executive Perspective
(BusinessContext Planners)
Business Mgmt Perspective
(Business Context Owners)
Architecture Perspective
(Business Logic Developers)
Engineer Perspective
(Business Physics Builders)
Technician Perspective
(Business Component Implementers)
Enterprise Perspective
(Business Component Implementers)
Alignment Transformations
Inventory Identification
Glossary
Process Identification
Election Process Definitions
Distribution Identification
US Elections
Responsibility Identification
Timing Identification
Election Calendar
Motivation Identification
Election Goal Hierarchy
Inventory Definition
Semantic Model
Process Definition
Business Process Diagrams
Distribution Definition
Election Conversations
Responsibility Definition
Organization Container
Timing Definition
Motivation Definition
Election Business Motivation
Inventory Representation
UML Data Model
Process Representation
Distribution Representation
Responsibility Representation
Timing Representation
Motivation Representation
Inventory Specification
Common Data Format UML Model
Process Specification
Distribution Specification
Responsibility Specification
Timing Specification
Motivation Specification
Inventory Configuration
Common Data Format
Process Configuration
Distribution Configuration
Responsibility Configuration
Timing Configuration
Motivation Configuration
Inventory Instantiations
Process Instantiations
Distribution Instantiations
Responsibility Instantiations
Timing Instantiations
Motivation Instantiations
Alignment Transformations
Scope Contexts
(Scope Identification Lists)
Business Concepts
(Business Definition Models)
System Logic
(System Representation Models)
Technology Physics
(Technology Specification Models)
Tool Components
(Tool Configuration Models)
Operations Instances
(Implementations)
The Enterprise
?
Audience Perspectives
Enterprise Names
Composite Integrations
Alignment
Composite Integrations
Inventory Sets
Process Flows
Distribution Networks
Responsibility Assignments
Timing Cycles
Motivation Intentions

Methodology

- Elicitation
  - Interview Subject Matter Experts
  - Make sure everything makes sense at micro level
- Validation
  - Ensure work is broadly applicable
  - Alignment
    - Make sure everything makes sense as a whole
      - No Overlap
      - Complete

Publicizing the work



Election Modeling Portal. Accessed August 22, 2017. https://pages.nist.gov/ElectionModeling/diagrams.html.

TIMELINES AND NEXT STEPS

Business Modeling (Status)

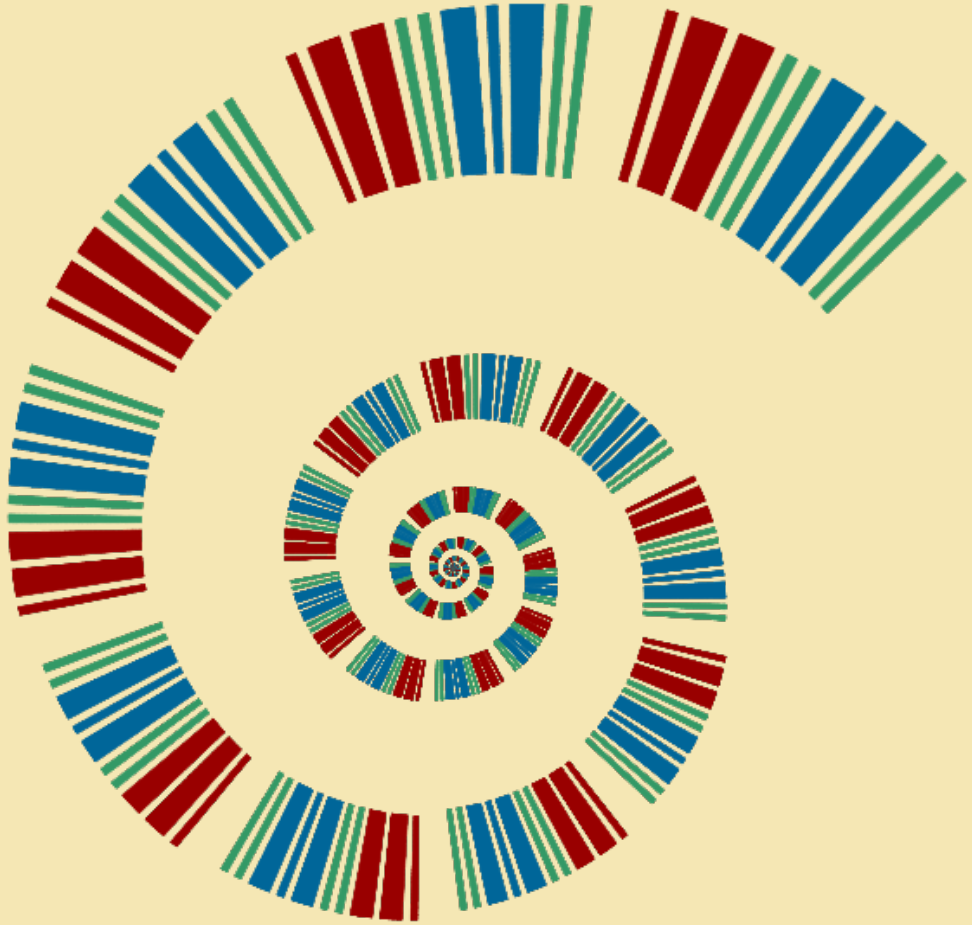
- Process Catalog
  - List of Processes (Scope) – **100% Complete**
- Process Model
  - Elaboration of Processes – **80% Complete**
- Business Motivation Model
  - List of policies derived from law – **60% Complete**
- Organizational Structure Model
  - Describes Organizational Roles – **80% Complete**

Glossary (Status)

- Describe election terms
- Establish synonyms
- Create common definitions, consistently used Across..
  - Process Models
  - Data Models
  - Common Data Formats
  - VVSG

Semantic Data Model (Status)

- Common Data Formats are one-offs
- Ensures that data items and especially their relationships are defined rigorously
- A catalog of data items



Timeline

- Q4 2017
  - Completed Business Model
- Q1 2018
  - Revised Glossary
  - Completed Semantic Model
- Q2 2018
  - Completed UML Data Model
  - New Common Data Formats

Thank You!

John Dziurlaj
Hilton Roscoe LLC
(234) 706-6434
john@hiltonroscoe.com