Framework Assisted Design

with

MODEL GUARDIAN
by
OAD systems

Presented by Terry Merriman

Levels of Abstraction

- **Reference Models Describe Abstracted Aspects of a Domain**

- **Models Describe a Particular Instance of a Domain, Leveraging the Abstract Concepts**

- **Frameworks Embed the Knowledge of the Reference Model into the Modeling Environment to Provide Real Time Guidance and Control**

Reference Model

↓

Model

↓

Domain

Framework Pros & Cons
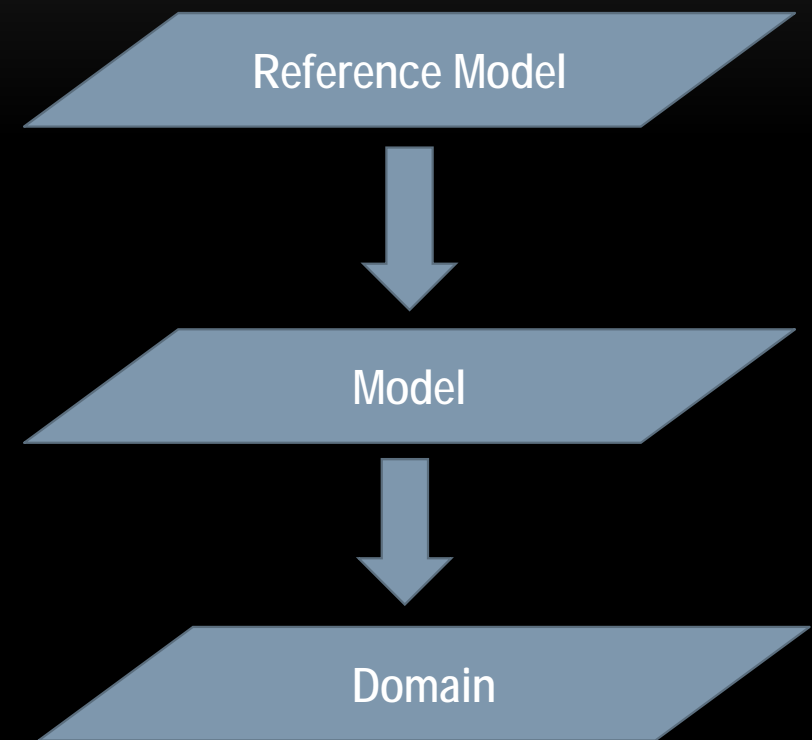
- **Modeling Frameworks Succeed Because They…**
  - Provide Guidance
    - By abstracting away technical details
    - By incorporating experts' knowledge
  - Promote Consistency
    - By providing domain knowledge
    - By making it easier to design to standards than not to
  - Ensure Conformance
    - By finding infractions
   - By making it easier to correct infractions

Framework Pros & Cons

- **Modeling Frameworks Fail Because…**
  - They are not adaptable, forcing you to use their rigid approach
  - They impose an additional burden on designers who then resist their use
  - They are too limited in their scope and do not work with other frameworks
  - They are focused on the capturing of information but not on robust reporting mechanisms to provide a strategic vision from the models
  - New releases of the framework do not address model synchronization creating a maintenance nightmare
- **Frameworks Need to be Managed Along with their Models**

Modeling Environment Support

- **A Good Modeling Environment Provides…**

  - Framework Assisted Design (FAD) & Automation
    - Using framework (domain) knowledge to make things easier

  - Model Assisted Design (MAD) & Automation
    - Using model information to make things easier

  - General Automation Tasks
    - Extending general EA's capabilities to make things easier

Level of Support
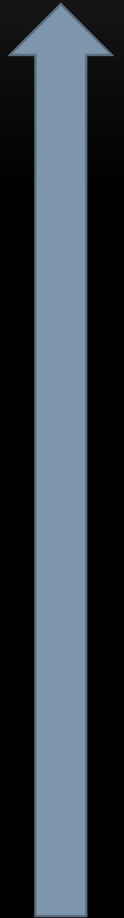
Framework & Model Management

- **Provide Lifecycle Management of Profiles and Frameworks with Minimal Turn-around Time**

- **Provide Framework Aware Automation to Control Input to your Models**

- **Provide Model Aware Automation to Make Designing Easier**

- **Minimize Workflow Interruption Using a Series of Floating Control Panels**

Framework & Model Management

- **Managing Your Frameworks and Models Requires…**

  - The flexibility to create and change your frameworks

  - An integrated approach to framework development and model synchronization

  - Addressing more than one area of concern with multiple, interoperating frameworks targeting different stakeholders

  - Providing the appropriate level of tool support, governance, and reporting to ensure that your models meet the needs of your stakeholders

What is Model Guardian?

- **Model Guardian is an Extension to Sparx Systems' Enterprise Architect UML Design Tool**

- **Model Guardian Provides…**

  - A framework management system

  - A framework/model synchronization system

  - A modeling environment that provides tools and governance

- **Pre-defined Frameworks**

  - OAD Systems and its partners are developing pre-defined frameworks for use with Model Guardian, providing you with a head start

  - The (EA)2 Enterprise Architecture Modeling Framework is now part of the Model Guardian family of frameworks

- **Your Custom Frameworks**

What is Model Guardian?

- **Enterprise Architect Lets You Extend UML with Domain Specific Toolboxes and QuickLinks (UML Profiles)**
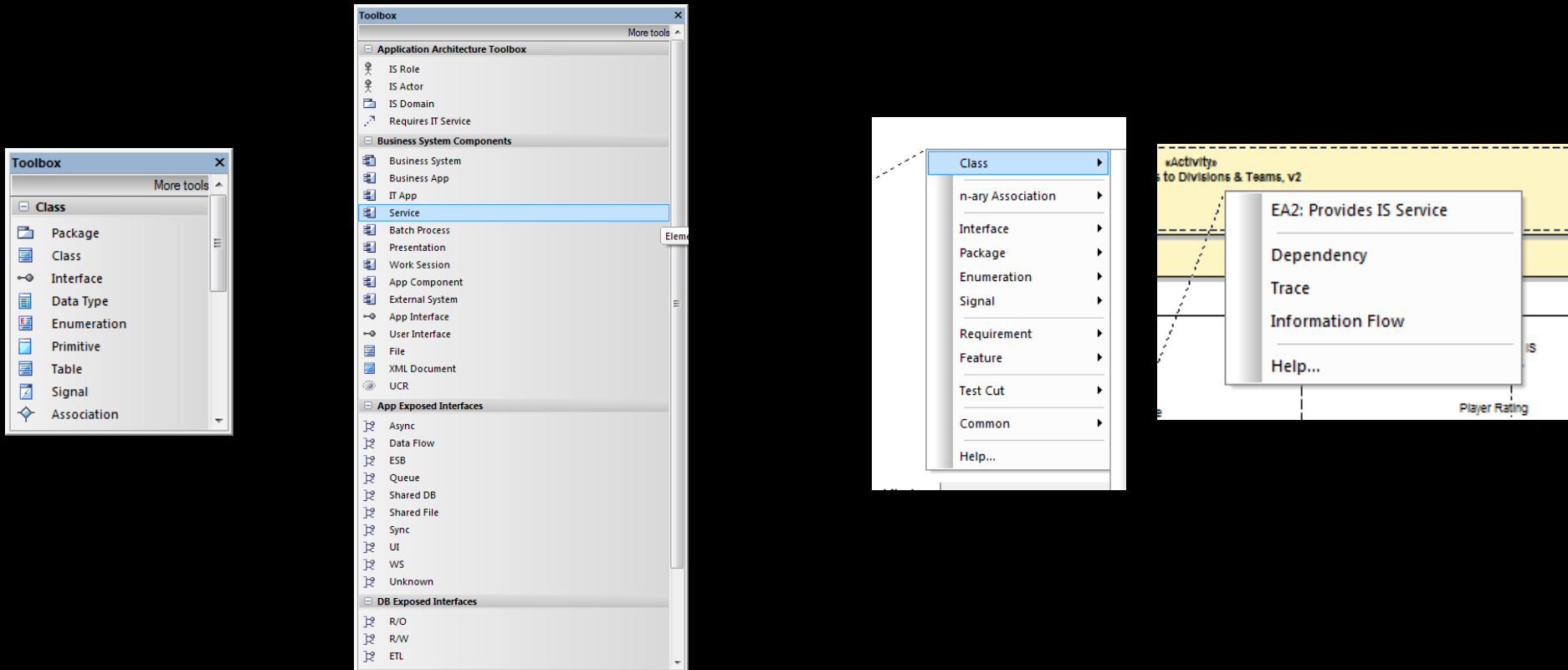
What is Model Guardian?

- **Model Guardian Makes Creating Frameworks (Profiles++)**
  - Easier
  - More intuitive
  - Faster
- **With a User Interface that Addresses**
  - Element and Connector Types
  - Tag Definitions
  - Relationships and QuickLinks
  - Toolboxes and Toolbox Sections
  - Diagram Types
  - And more

What is Model Guardian?

- **Model Guardian's Comprehensive User Interface…**
    - Leads you through the process of developing your framework
    - Provides an iterative, incremental approach to framework development
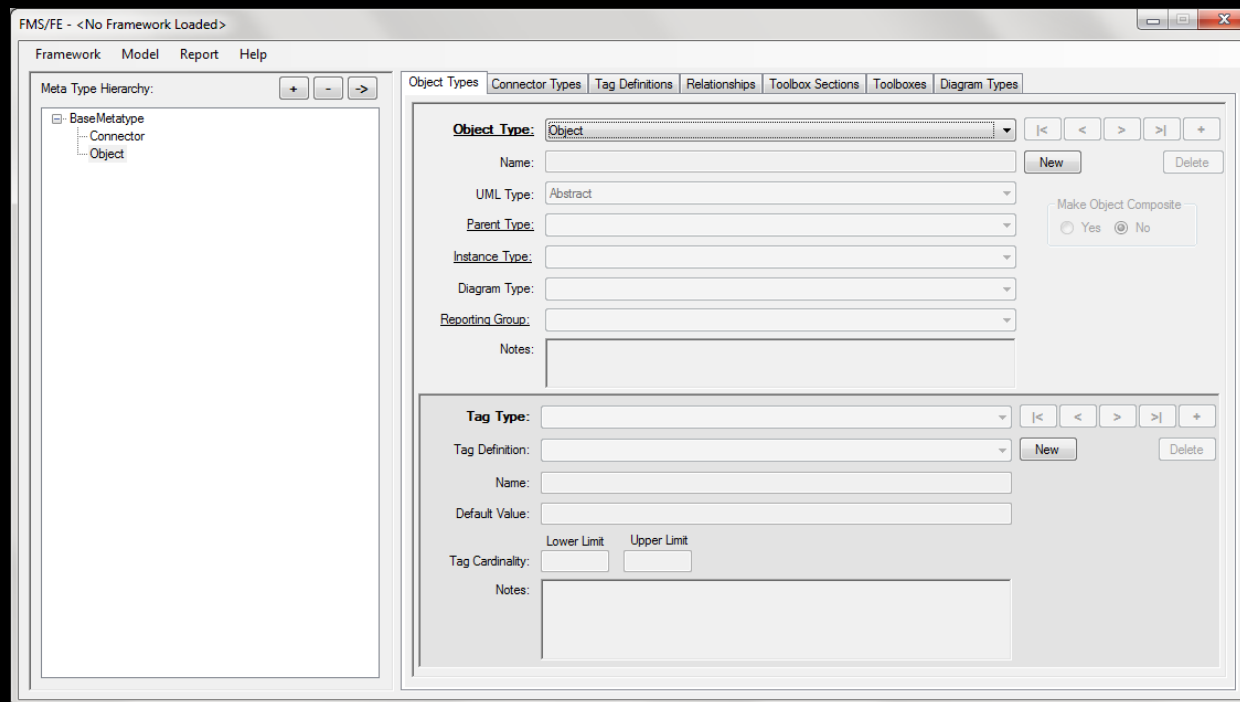
The Model Guardian User Interface

The Model Guardian User Interface

- **The User Interface Has Two Sections**

  - Metatype hierarchy of object and connector metatypes

  - Editor consisting of seven tabs

    - Object Types

    - Connector Types

    - Tag Definitions

    - Relationships

    - Toolbox Sections

    - Toolboxes

    - Diagram Types
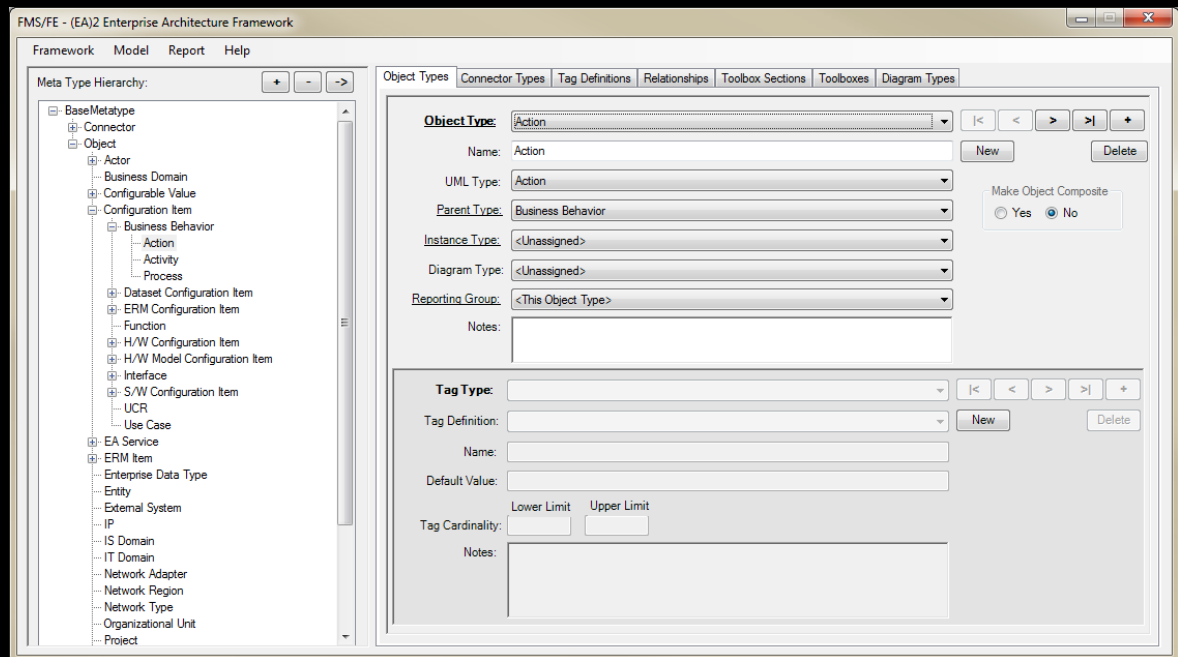
- **The Meta Type Hierarchy**

    - Shows the structure of the framework

    - Provides an understanding of how the meta types inherit tags and relationships from their ancestors

    - Synchronizes with the Editor to show where the current meta type is within the hierarchy

Object Types
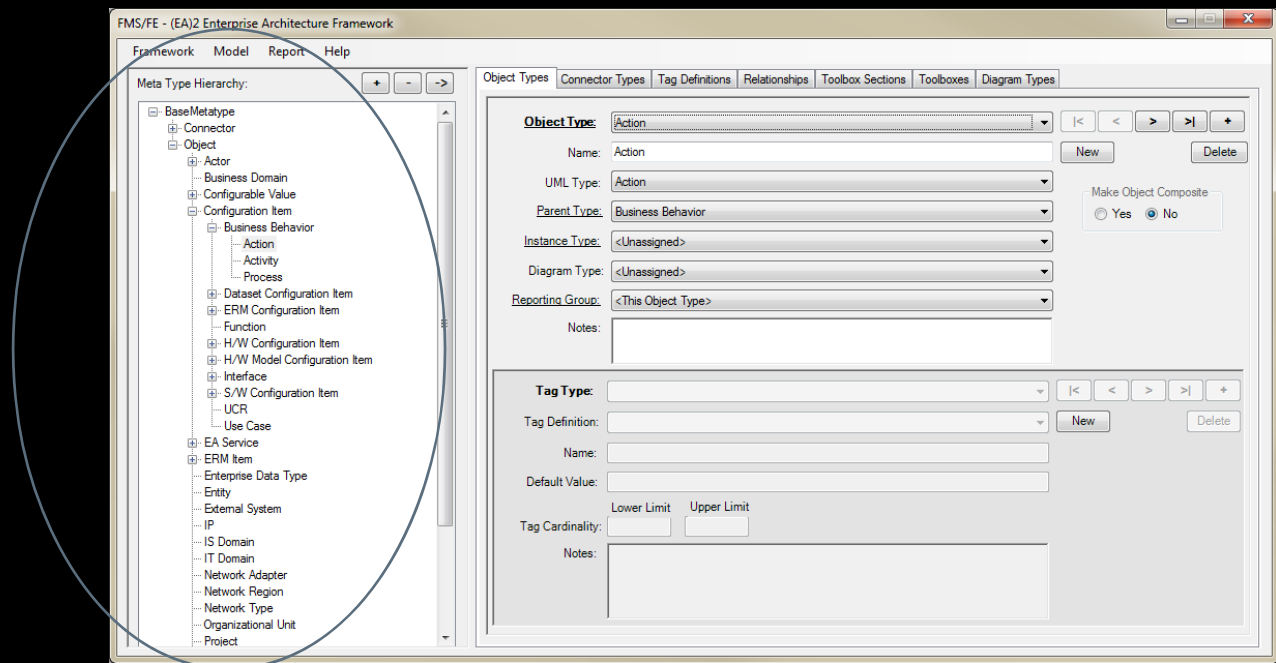
- **The Framework Editor Section…**

  - Lets you manage your framework elements

  - Makes the elements immediately available via drop down lists
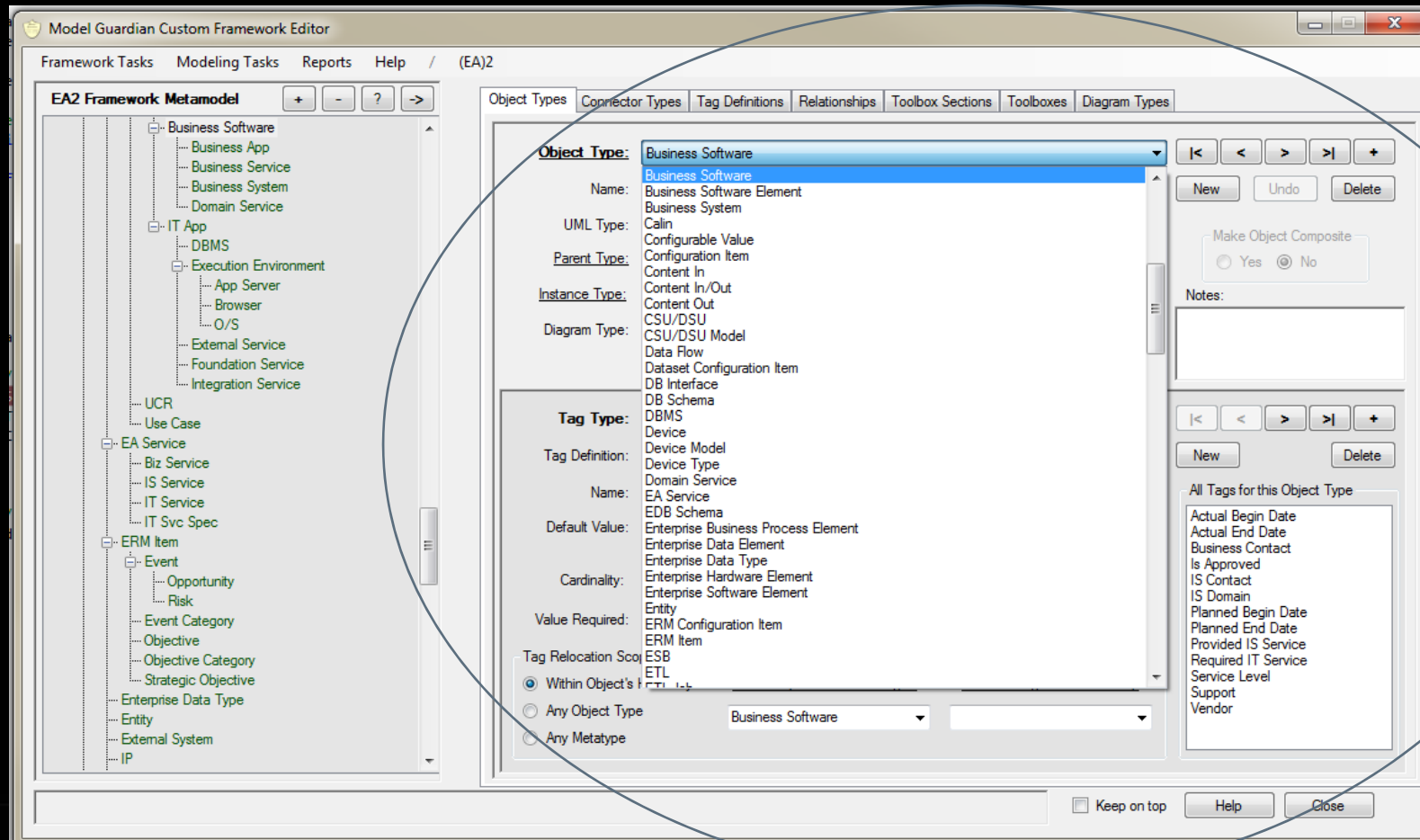
Attaining Framework Assisted Design

- **Lets Look at...**

  - Using the Framework Editor to Design your Framework

  - Applying the Framework to the Modeling Experience

Defining Object Types

- ## **Object Types Become Toolbox Elements**
  - ### Hierarchical metamodel for inheriting tags and relationships
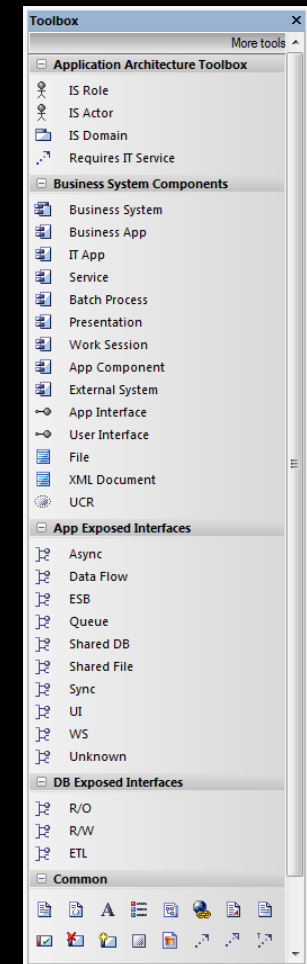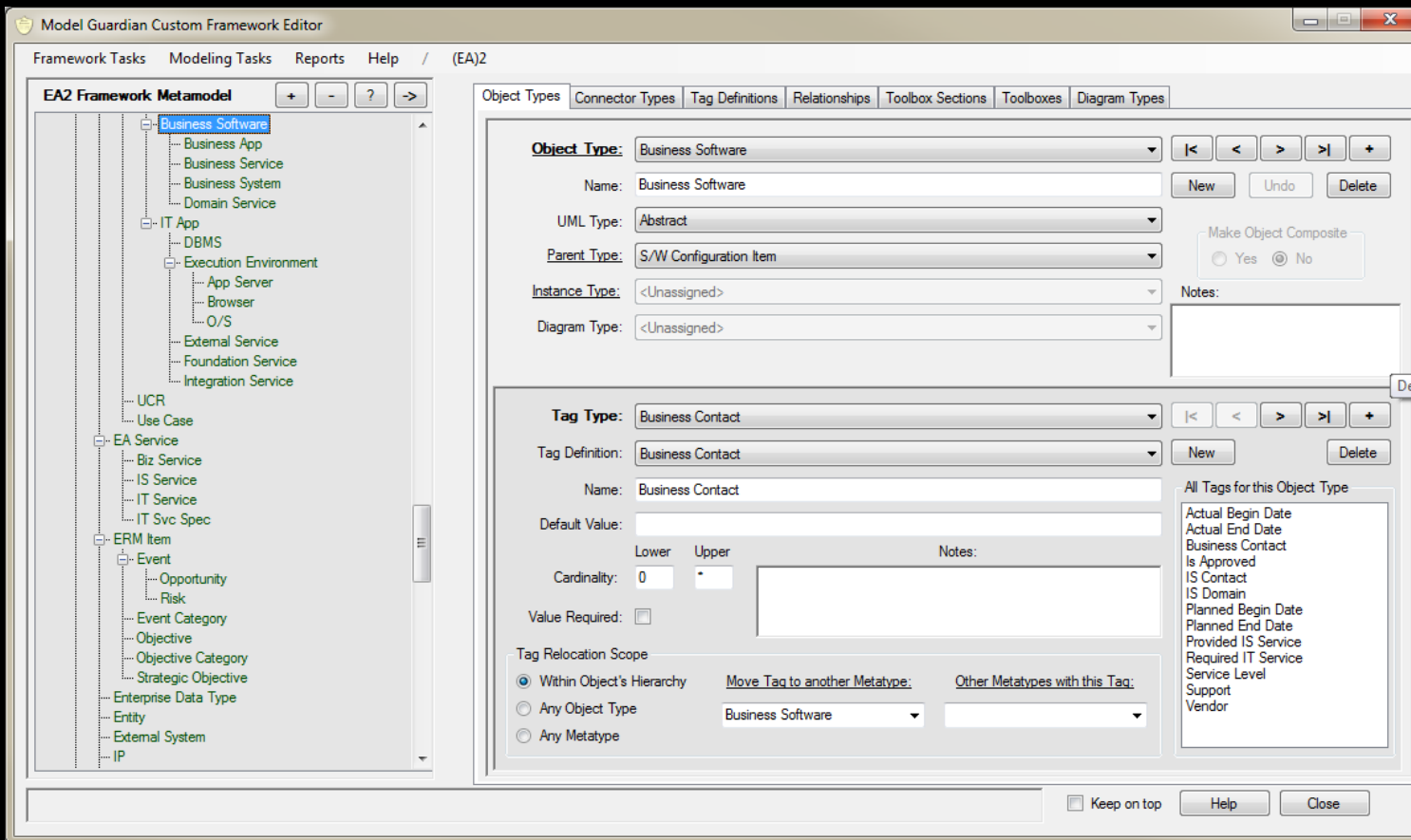
Defining Connector Types

- **Connector Types Become Toolbox Elements**
  - Hierarchical metamodel for inheriting tags and relationships
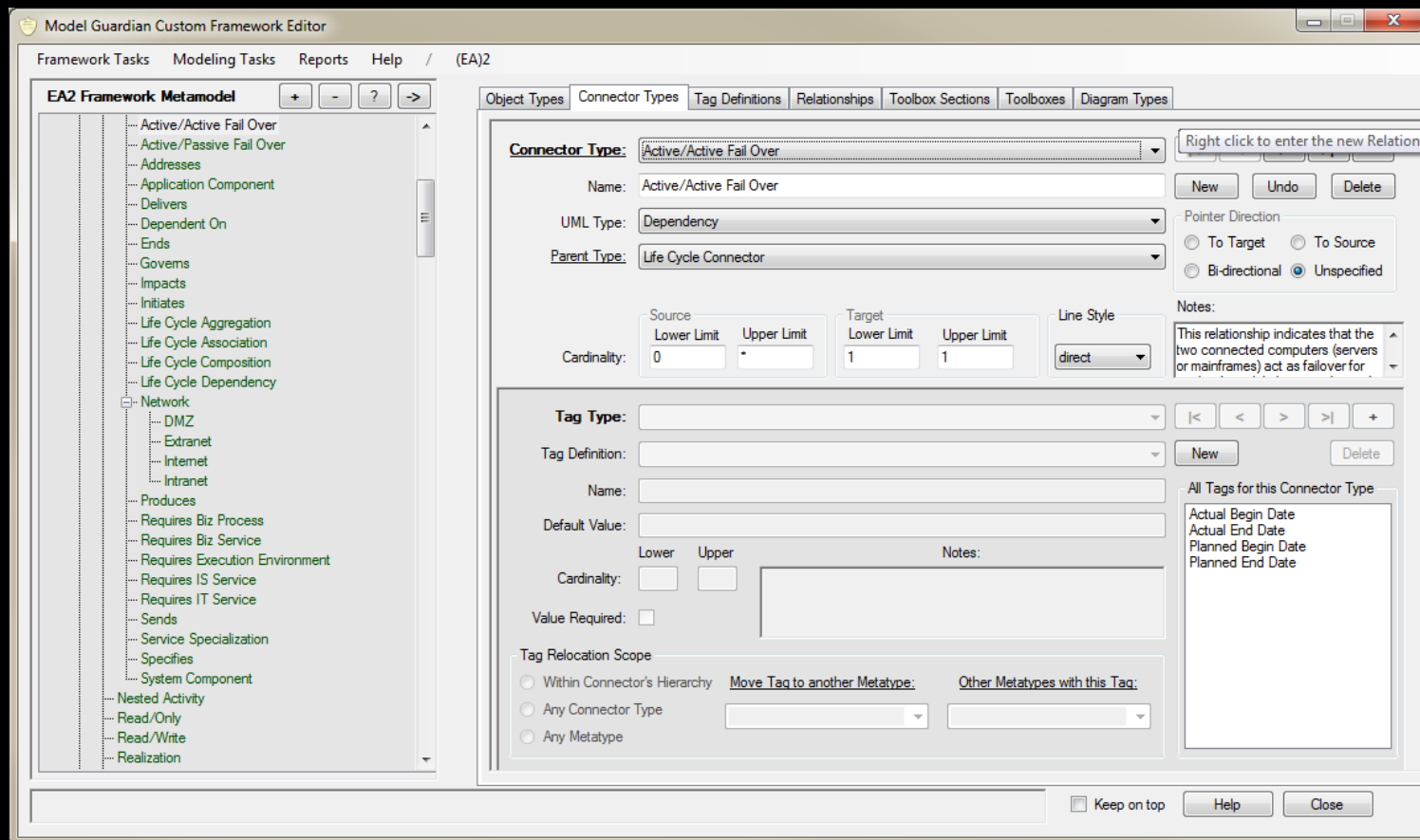
Defining Tag Definitions

- **Create Tag Definitions using EA's Native Format**
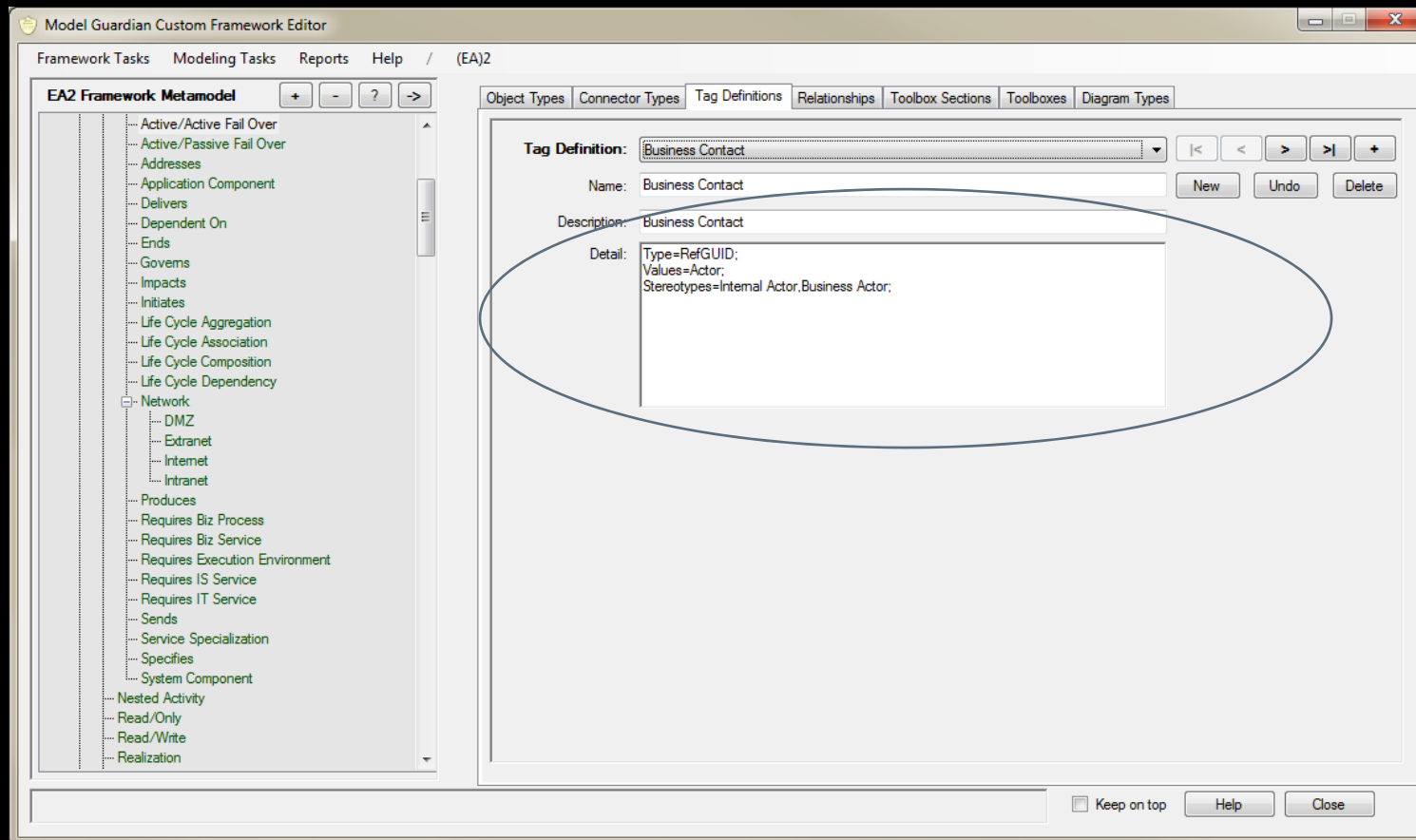
Defining Relationships

- ## Relationships

  - Define the Relationships and resulting QuickLinks

  - Child Elements inherit the Relationships

  - In (EA)2, 76 Relationships yielded over 1200 QuickLinks
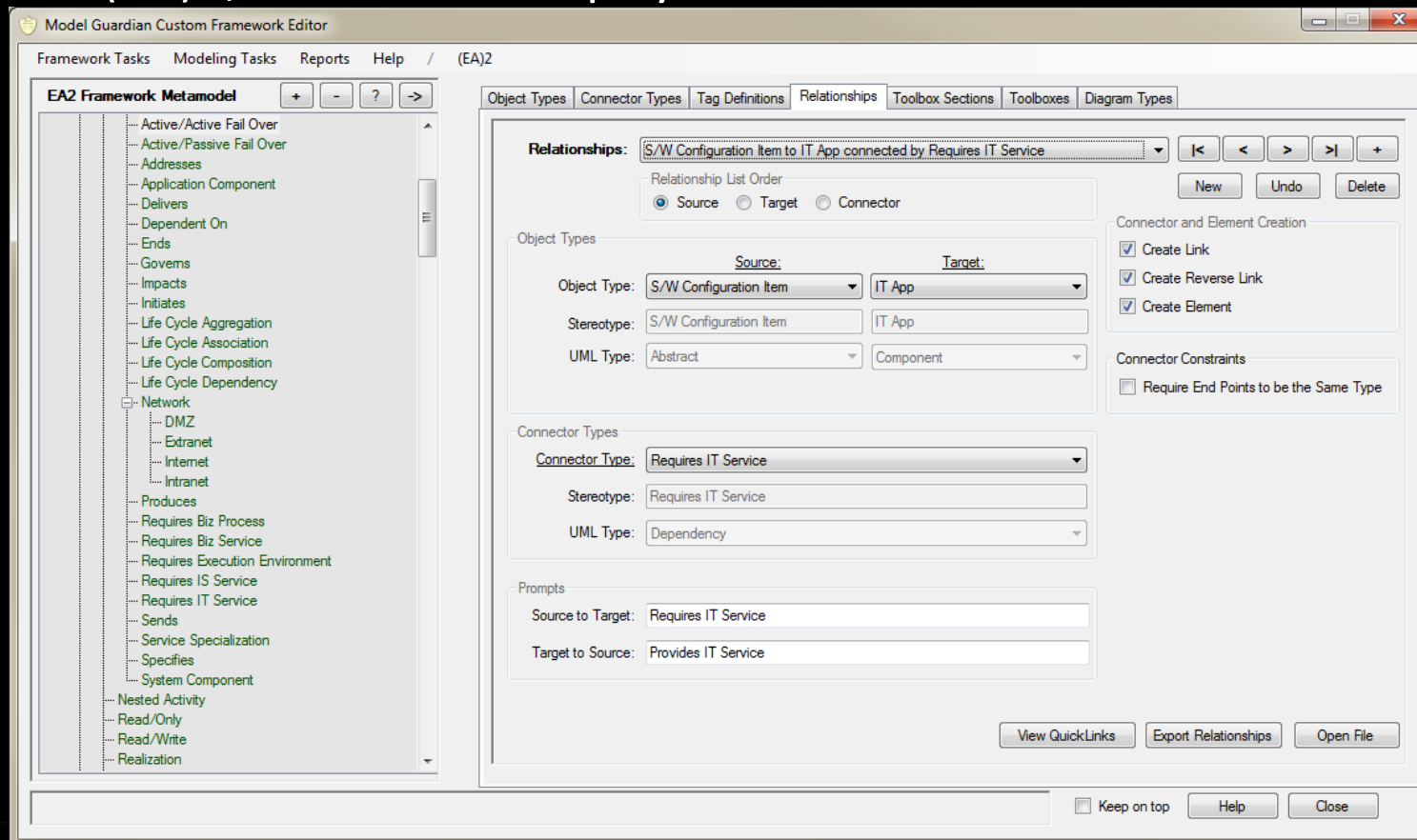
Defining Toolbox Sections

- ## Define Toolbox Sections Consisting of…

  - ### Framework metatypes (object and connector types)

  - ### UML types
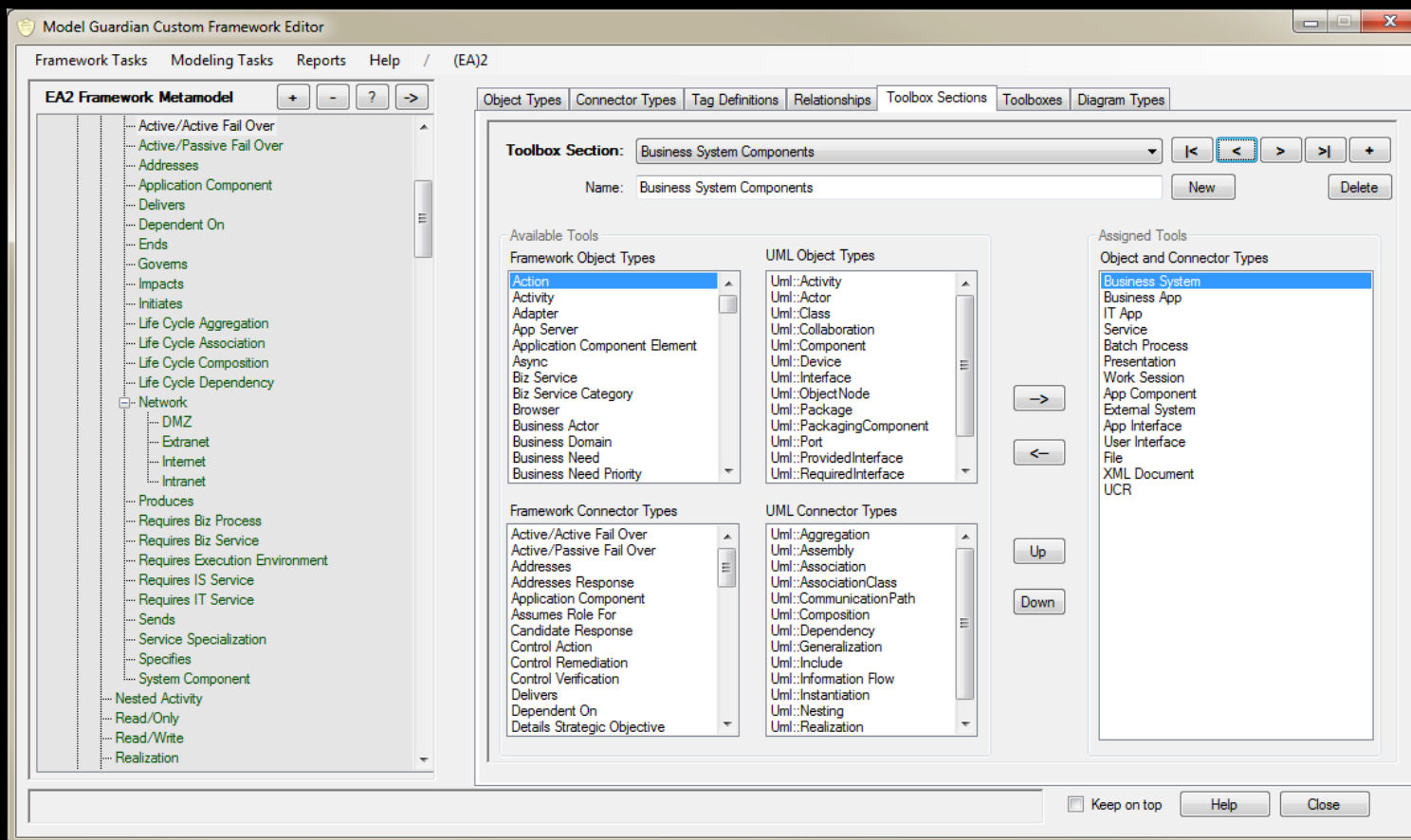
Defining Toolboxes
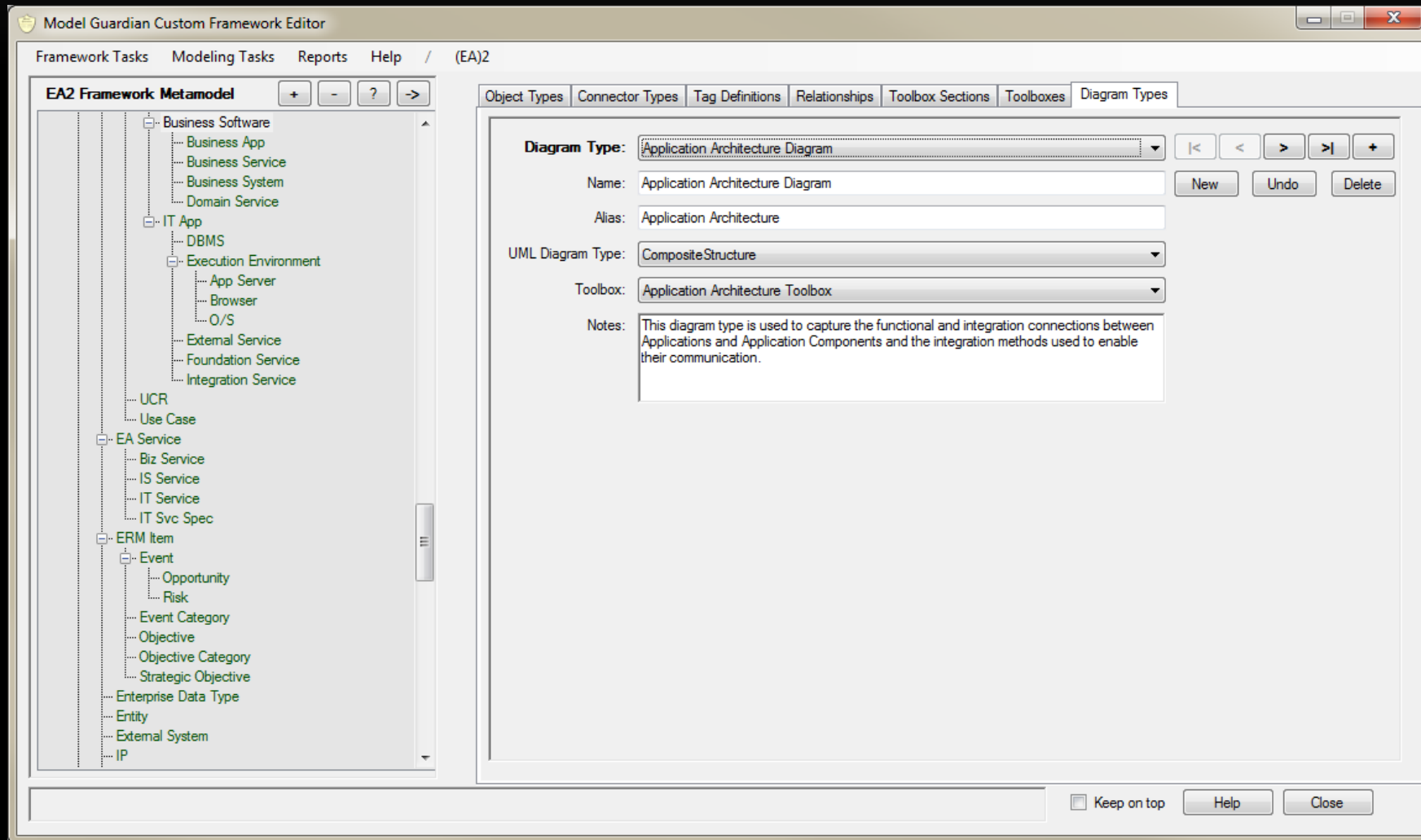
- **Define Toolboxes Composed of Toolbox Sections**
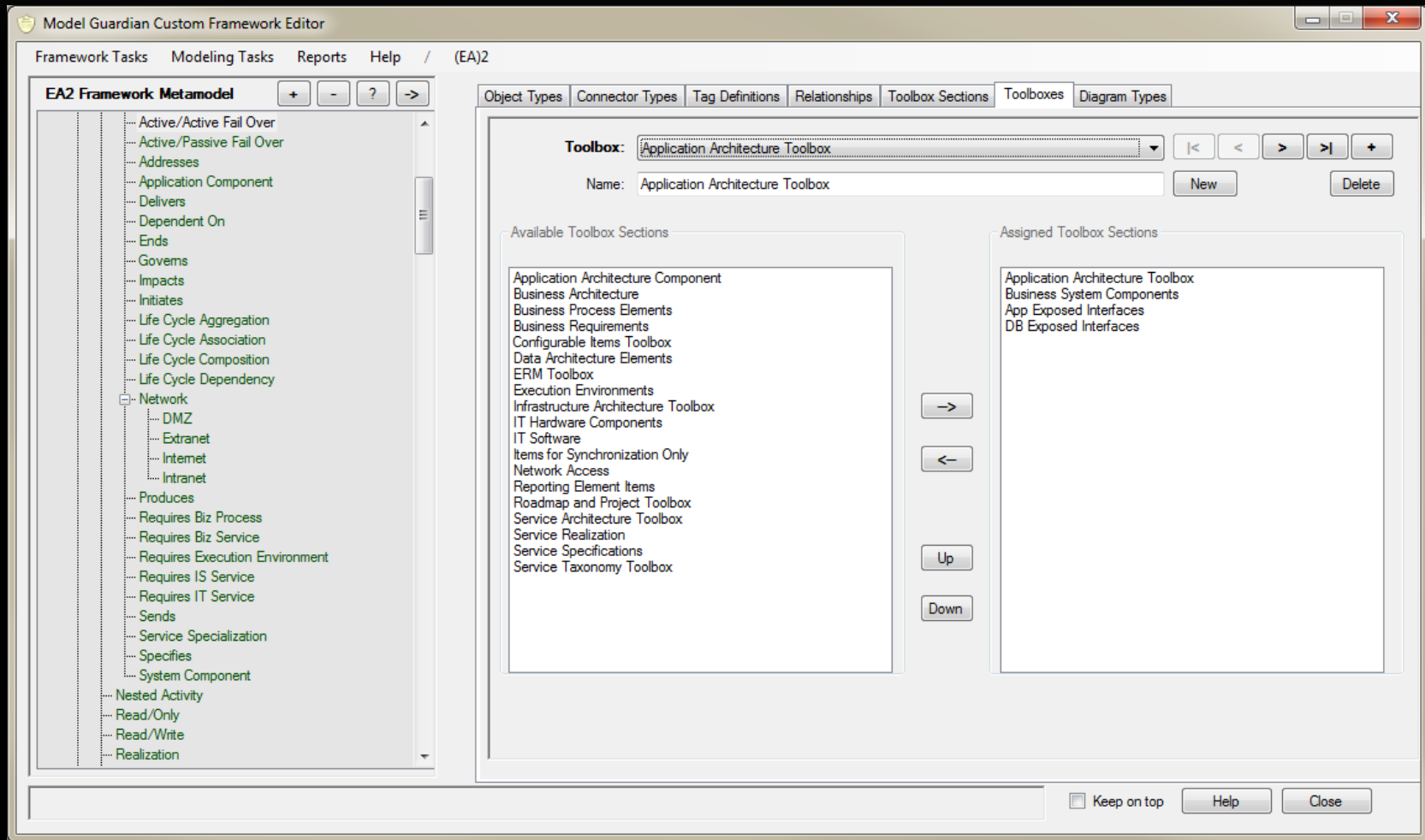
Defining Diagram Types

- ## Define Diagram Types with their Associated Toolbox

Creating the MDG

- **Now that the Framework has been Designed, how do You create the MDG file for Enterprise Architect?**

  - Simply restart Enterprise Architect!

  - The MDG is automatically created at start up from the Model Guardian framework file

  - Only one file must be deployed for others with the runtime version of Model Guardian to use the framework

Framework Lifecycle Management

- ## Framework Development and Release

  - Design the framework in a WIP area

  - Release the finished framework to production

  - Manage archived versions of the framework
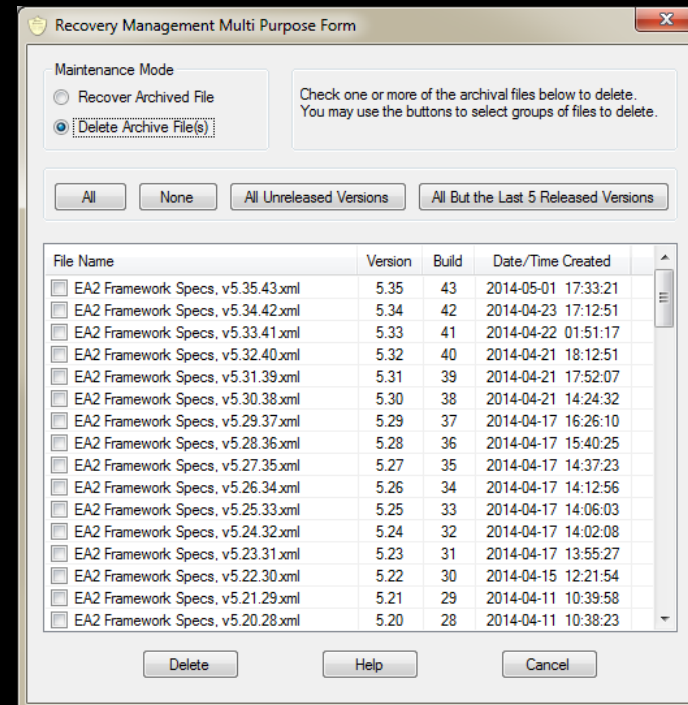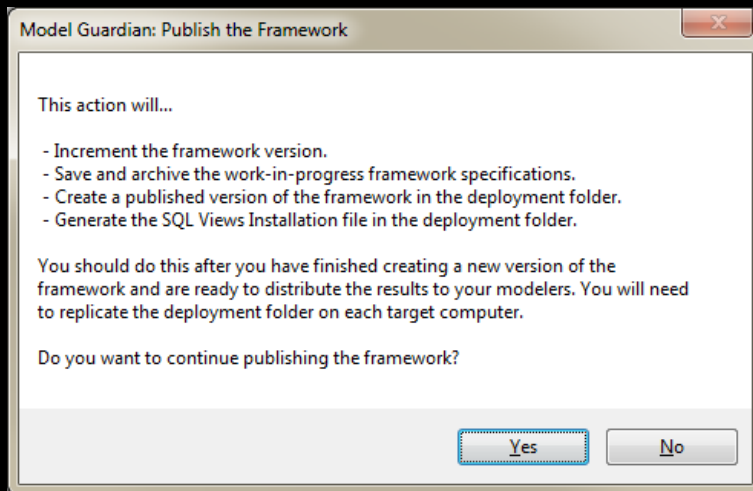
- **Framework Assisted Design (FAD)**

  - Leveraging the framework to provide guidance

- **Model Assisted Design (MAD)**

  - Leveraging the model contents to provide guidance

FAD - Using Relationships

- **Use the Relationship Definitions from the Framework**
  - Select a model element, select one of its allowed relationships, select from a list of all of the candidate elements that can be on the other end of the relationship
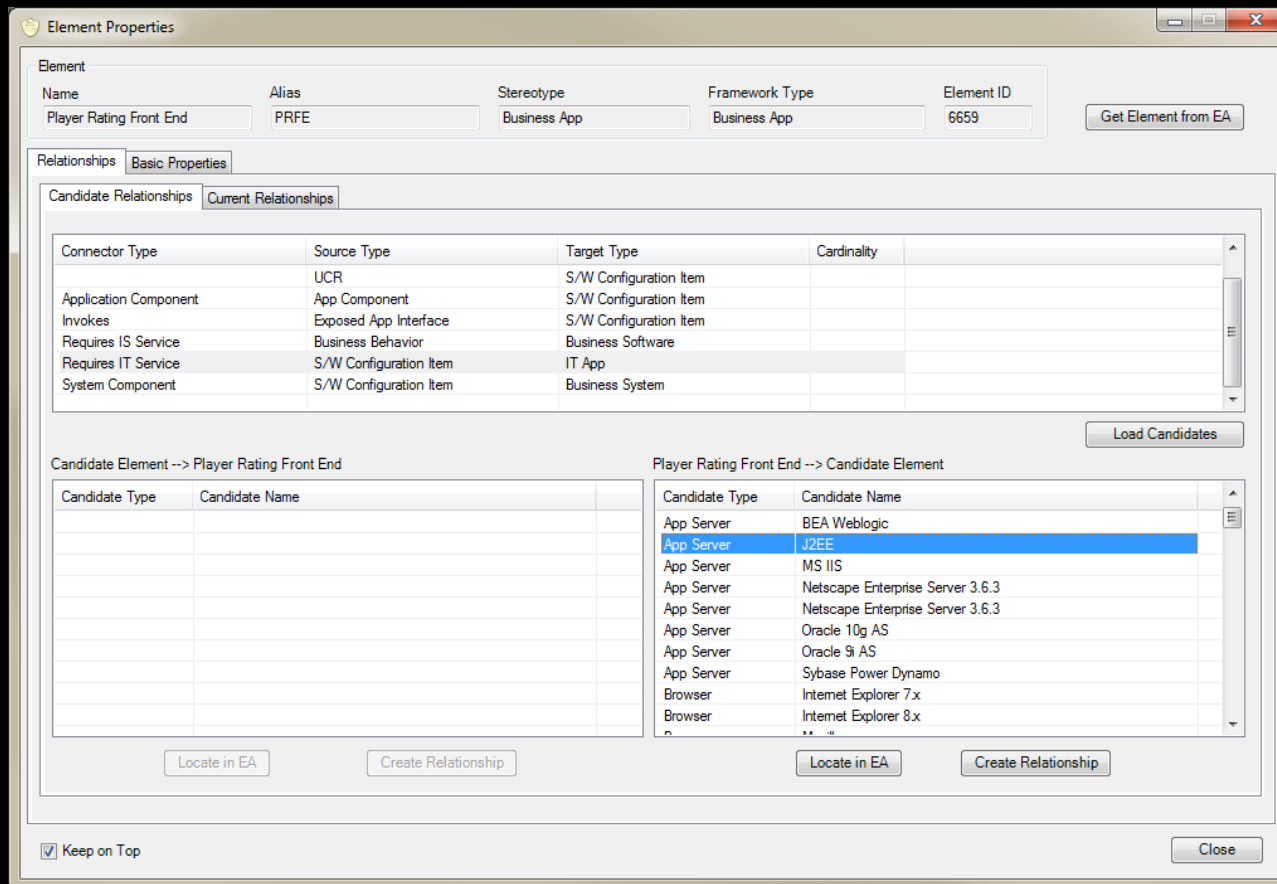
FAD – Global Stereotype Changes

- **Change a Stereotype for all Elements/Connectors with the Stereotype**

- **Synchronize Tagged Values**

- **Optionally Delete Non-framework Tags**

- **Bring Elements/Connectors Created Outside of the Framework Under Framework Control**

FAD – Global Tag Name Changes

- **Change a Tag Name for all Elements/Connectors with the Tag**

- **Fix Tag "Orphans" When Changing a Tag Definition's Name in EA Leaving Tags Depending on that Definition Orphaned**

FAD – Checking Conformance

- **Check Conformance to the Framework**
  - Connector Cardinalities

FAD – Checking Conformance

- **Check Conformance to the Framework**
  - Tag Cardinalities (How many birthdate tags should a Person have?)

FAD – *Checking Conformance*

- **Check Conformance to the Framework**
  - Existence of non-framework defined tags

FAD – Synchronizing Models

- ## Frameworks Mature over Time

  - If models cannot be synchronized with framework changes they become obsolete
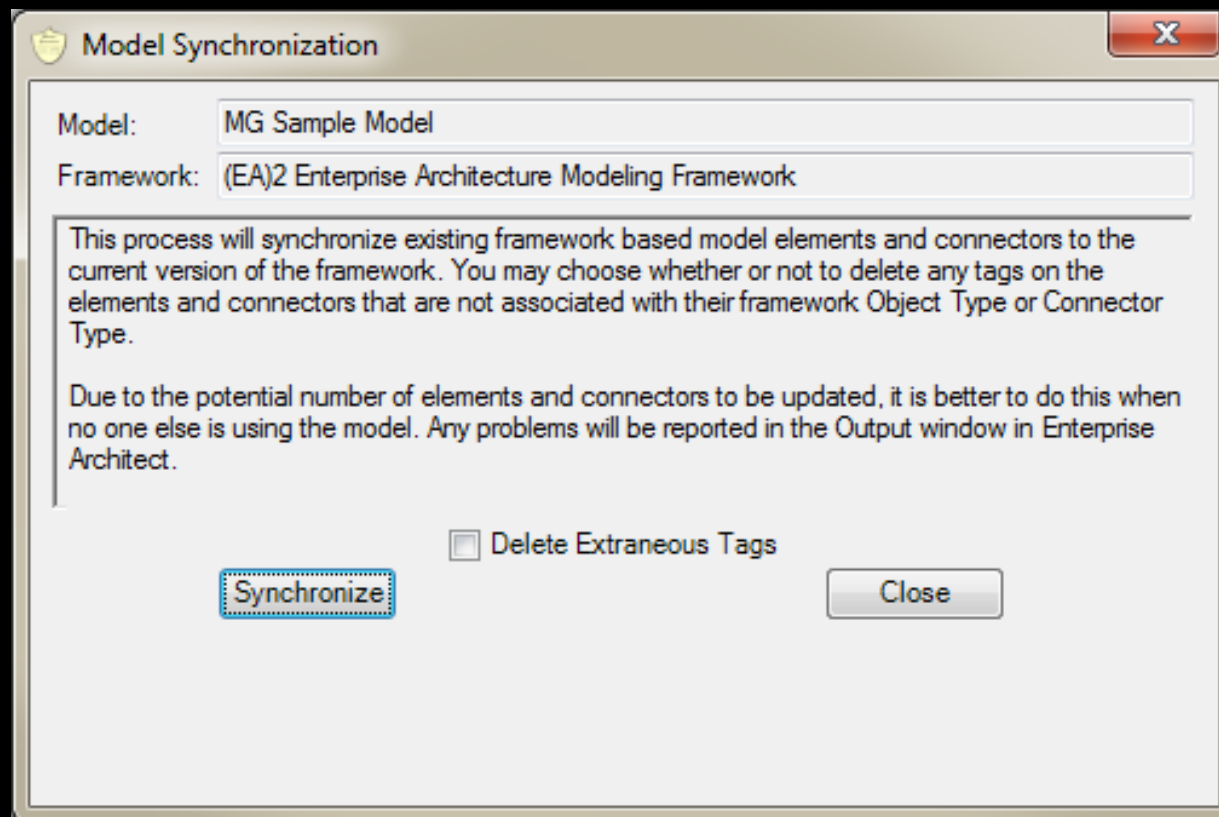
FAD – Synchronizing Individual Items

- **Synchronize Individual Elements and Connectors**

Synchronize Model Element or Connector

Name/ID:	Affiliation Registrar System
Stereotype:	Business App
UML Type:	Component

This action will synchronize the currently selected model item (listed above) with the framework, adding any tags defined for the item's metatype that are missing from the item. If necessary and if permited, it will also change the UML type of the item to correspond with the UML type assigned in the metatype.

You may also choose to delete any extra tags that are not associated with the item's metatype. This cannot be undone, so care must be taken to not delete wanted tags.

☐ Delete Extraneous Tags

[Continue]   [Cancel]

MAD – Auto Location of Elements

- **Use Diagram References to…**

  - Create elements in the appropriate package

    - Drag elements from the Toolbox onto a diagram reference to create the element in the package containing the referenced diagram

  - Move multiple elements to multiple target packages

    - Drag existing elements onto various diagram references and select the menu option to move the elements to the target packages

  - The following slide shows a Business Model Canvas diagram consisting of diagram references used for controlling element destinations

- ## Dropping New Elements on Diagram References Auto-Locates the Elements

Business Model Canvas For the NewCo Architecture Solution

Key Partners
- Domain Consultant
- Framework Domain Expert

Key Activities
- Domain Specific Framework Design
- Marketing & Proselytizing
- Product Based Consulting
- Product Design
- Product Implementation
- Research and Development

Key Resources

Human Resources
- Product Designer
- Research & Development
- Development Experts
- Product Related IP
- Domain Experts

Products
- Domain Specific Add-ons
- Domain Specific Frameworks
- Framework Development Platform
- Model Guardian Editor
- Model Guardian Publisher
- Model Guardian Runtime

Value Propositions
- Branded Frameworks
- Domain Specific Frameworks
- Framework Integration
- Full Framework & Model Lifecycle Support
- Guidance and Direction
- Homogeneous Modeling Environment
- Industry Standard Based Modeling
- Integrated Development Environment

Customer Relationships
- Co-creation
- Personal Assistance
- Self-service

Channels
- Marketing Partners
- Online Purchasing Sites
- Social Media
- Standards Bodies & Industry Organizations
- NewCo Web Site

Customer Segments
- Framework Designers
- Framework Publishers
- Framework Users

Cost Structure
- Development Tool Costs

Revenue Streams
- Product Sales
- Consulting Fees
- Framework Publisher Advertising Placement
- Online Application Subscriptions

- **Use Element Relocator Dialog to Relocate Elements**
  - Lists packages that contain elements with the same stereotype
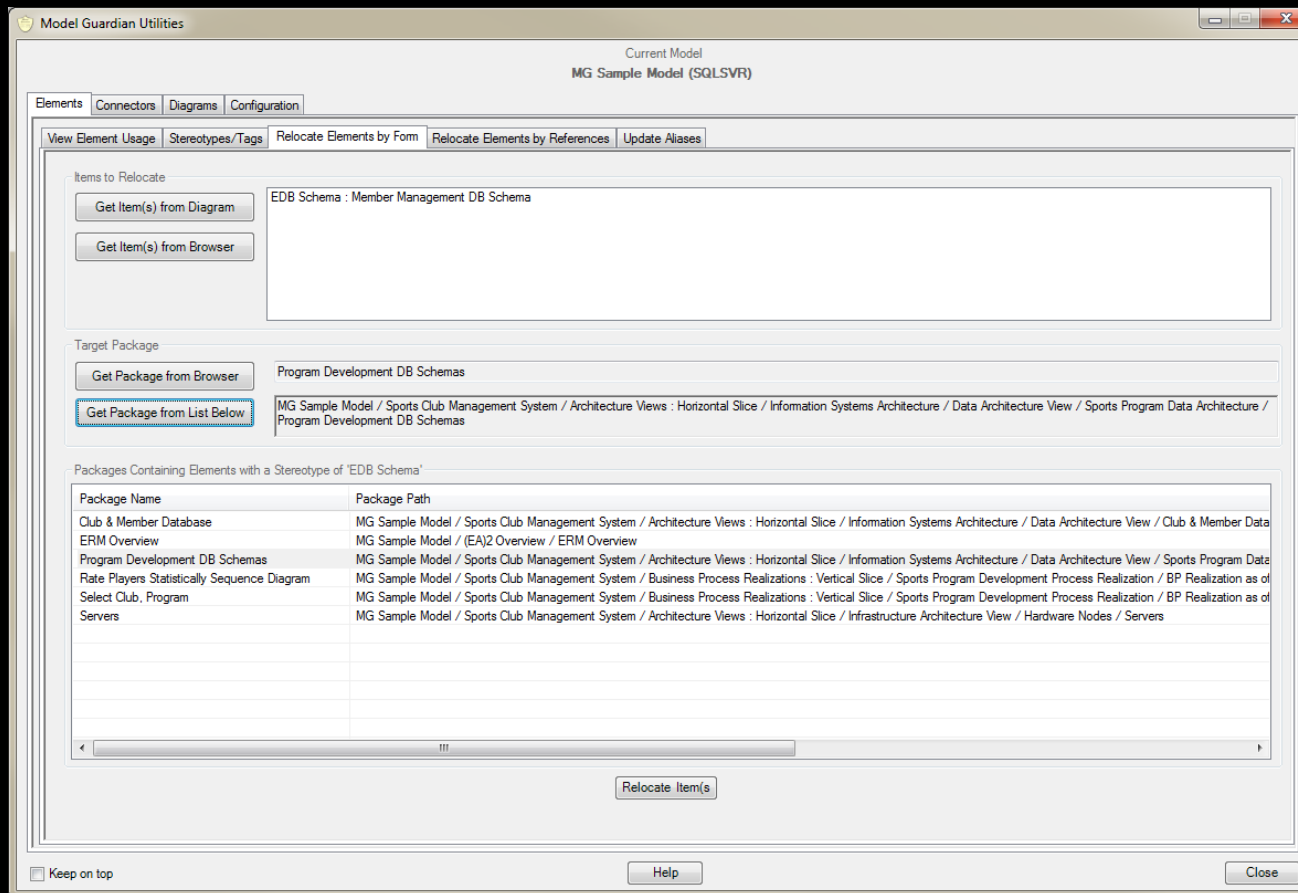
MAD – Update Numerous Connectors

- **Select Connectors to Change**

- **Select Characteristics to Change**

- ## Highlight Selected Connectors for Confirmation
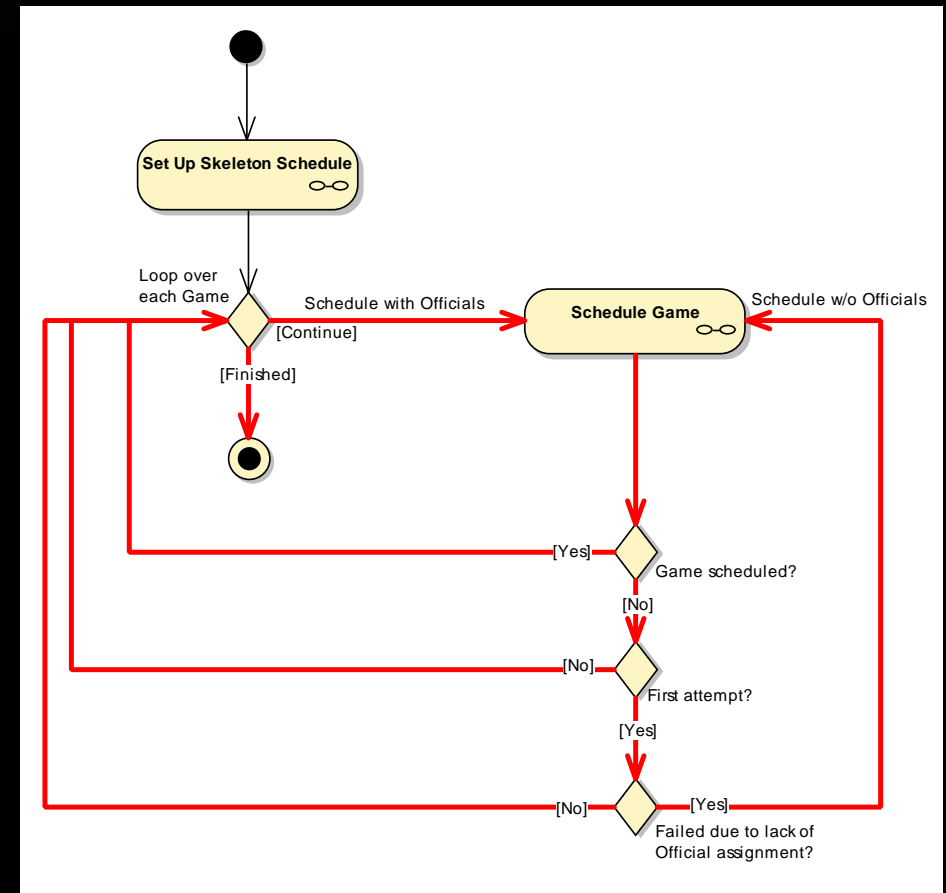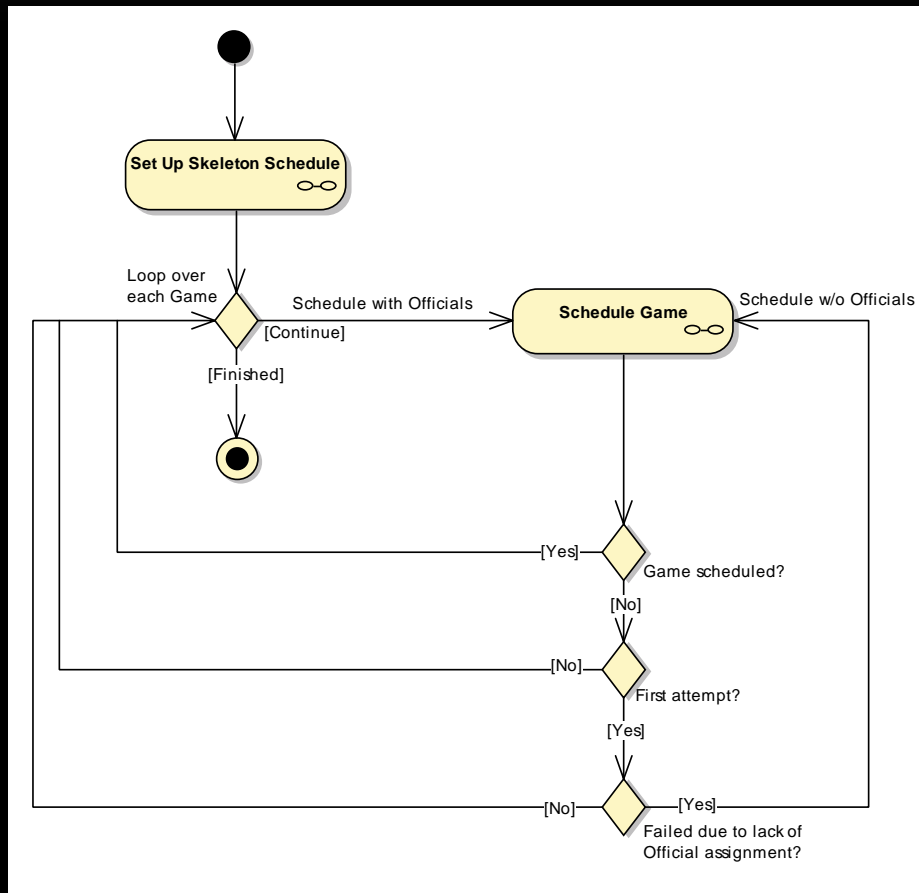
MAD – Update Numerous Connectors

- **Apply the Changes**
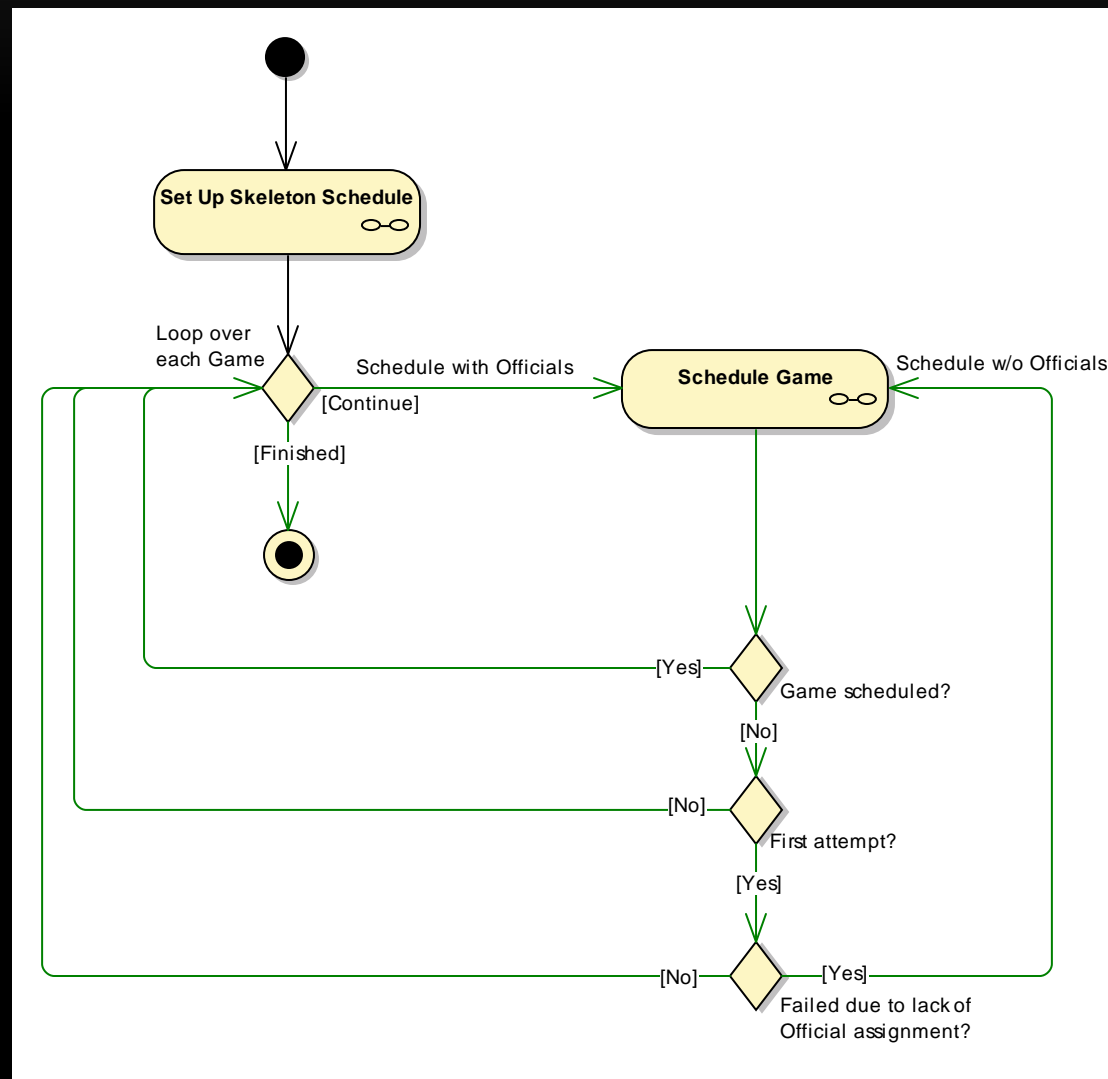
MAD – Find Where Data Flows

- **Find Connectors with Conveyed Information**

- **Locate Elements and Connector in EA**

- **Works with Exposed Interfaces**

MAD – Find Diagrams

- **Search for Diagrams Filtered by…**
  - Name, Stereotype, UML Type, MDG metatype

MAD – Find Diagrams

- **Controlled Diagram Copying**

  - Copy only selectable elements

  - Copy only non-selectable elements (effectively making the source diagram a template)

  - Copy both types
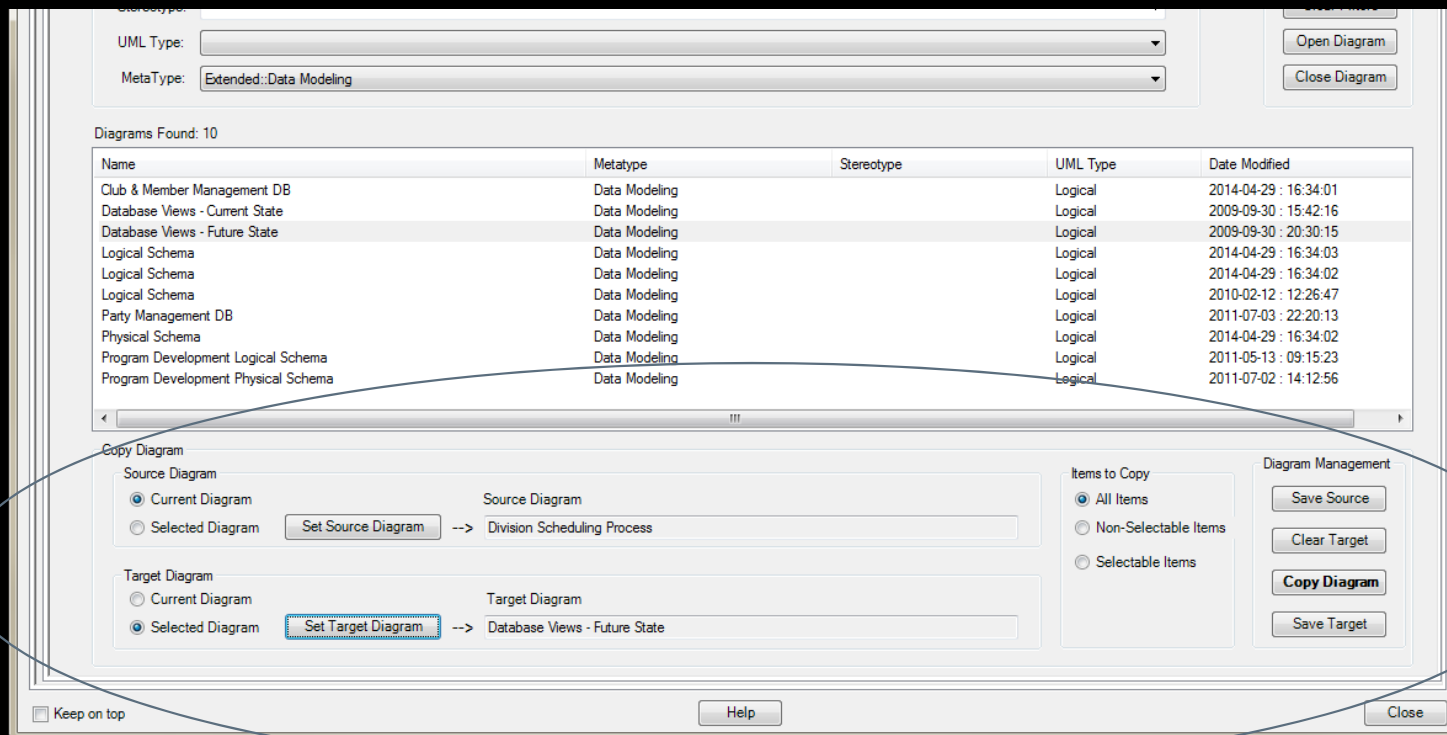
MAD – Avoid Duplicate Elements

- **When Creating a New Element**
  - Look for existing elements with the same name
  - Choose to…
    - Use an existing element and place it on the diagram
    - Change the new element's name
    - Use the duplicate name

- **Model Guardian Adds Automation for Specific Frameworks**
  - Example: $(EA)^2$ Enterprise Architecture Modeling Framework
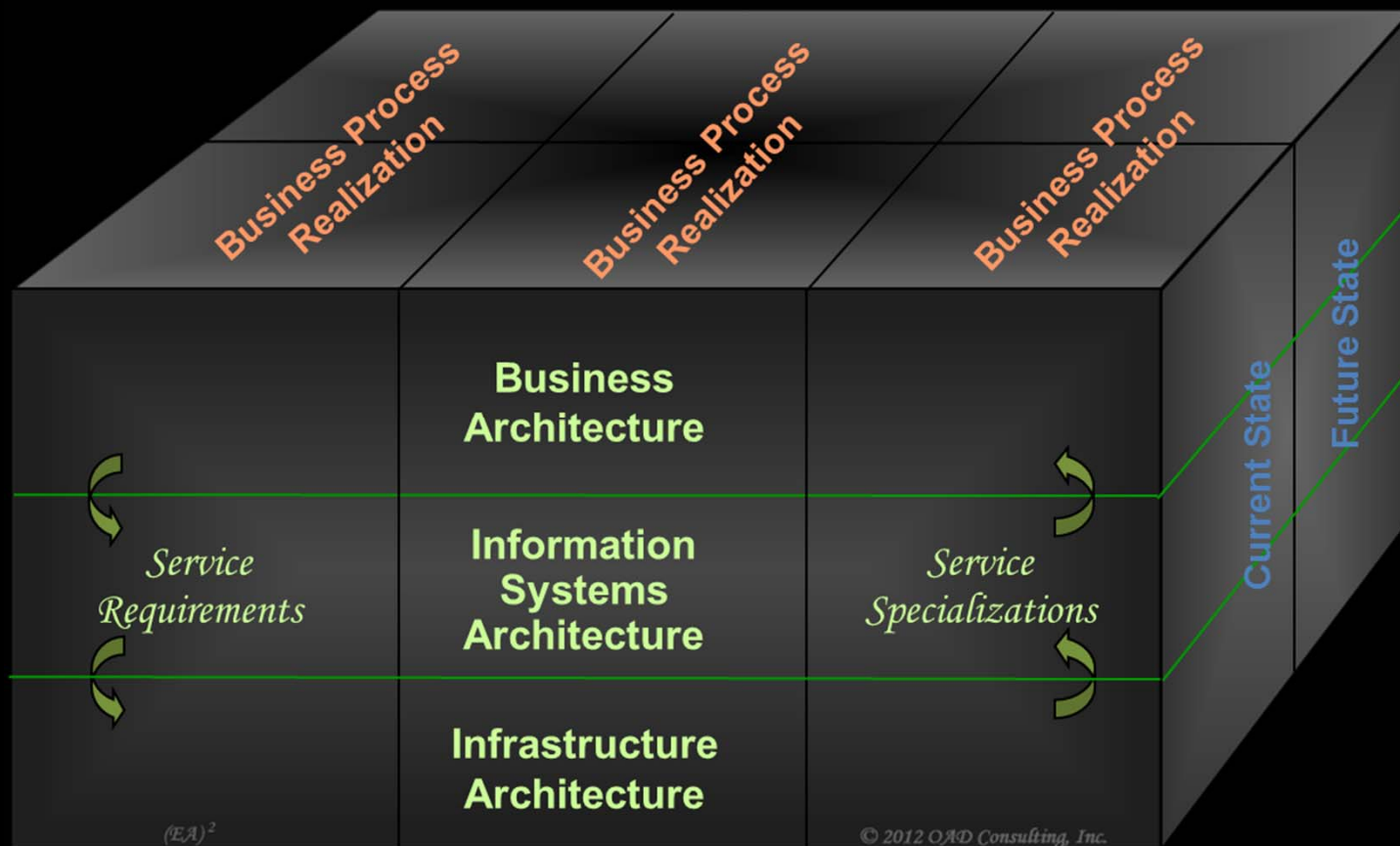
- ## (EA)^2 Provides a Service Oriented Approach to Architectural Requirements

  - ### Elements from higher layers require services from elements in lower layers
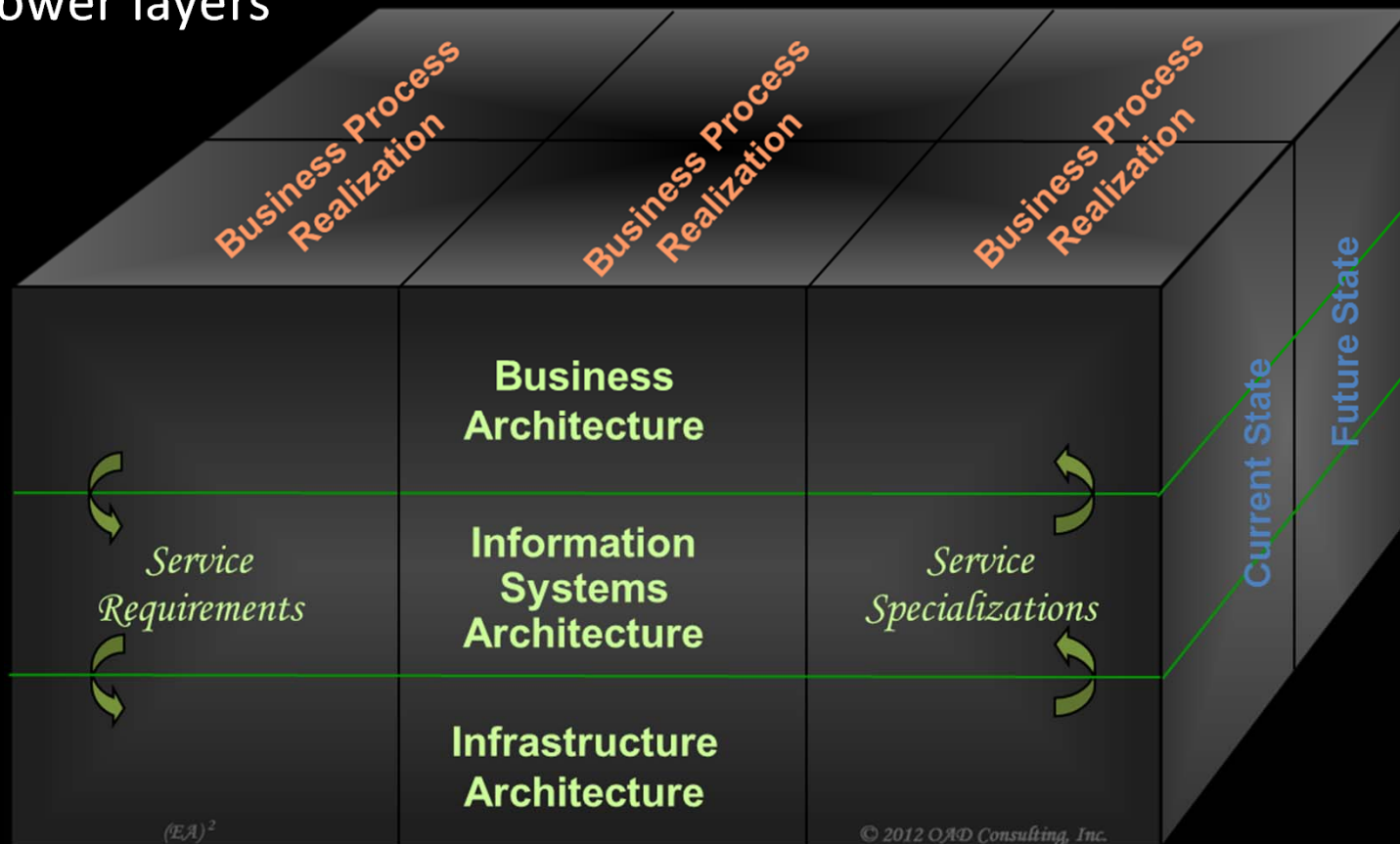
Framework Specific Automation

- **Vertical Slices Show the Elements and Services Required to Realize a Business Process for a Particular Roadmap Phase**

Framework Specific Automation
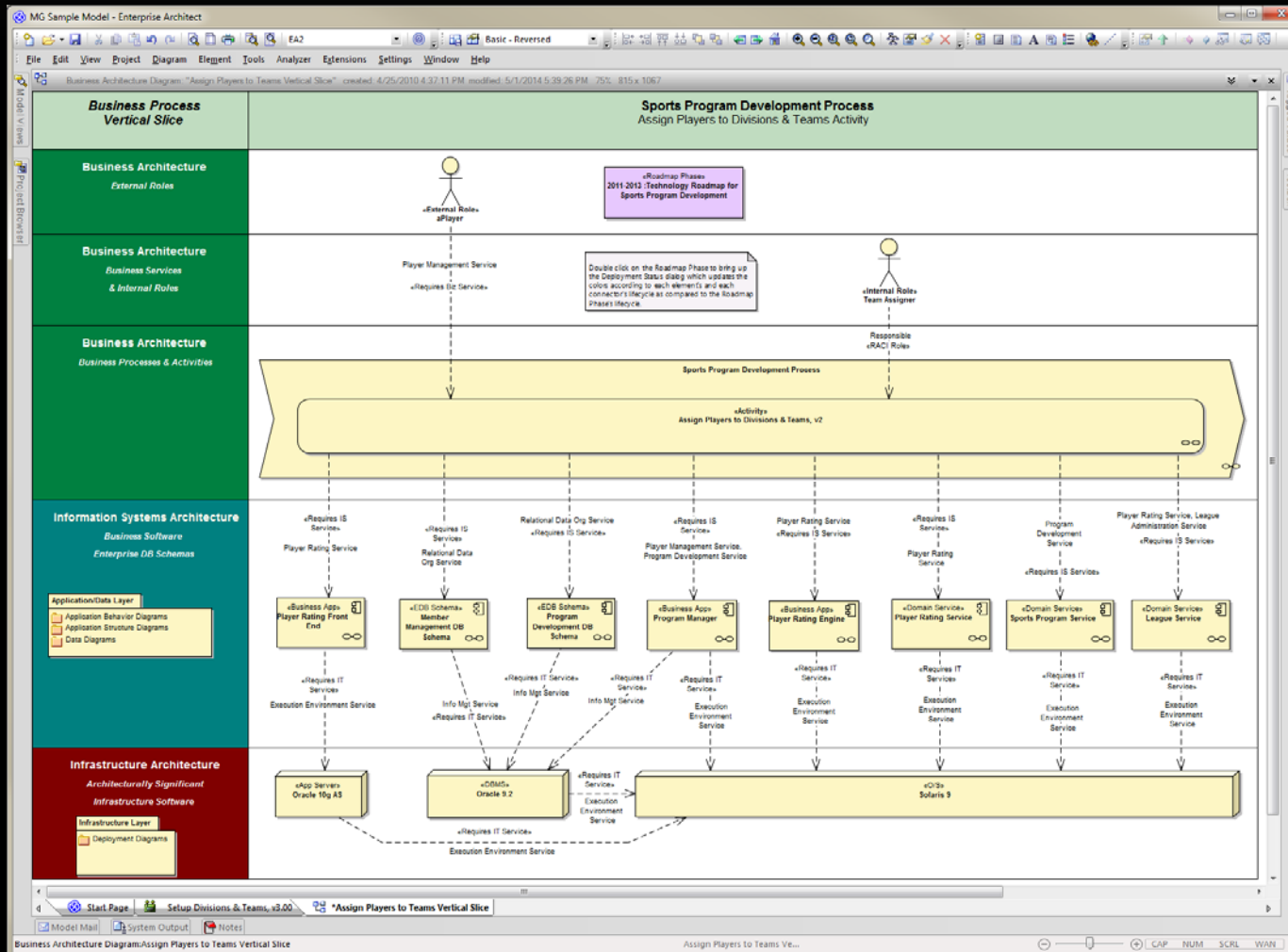
- **Service Tags on…**

  - Elements show the services they require and those they provide

  - Connectors show which of its services a provider provides to the client

- **Lifecycle Tags on…**

  - Elements show when they are/will be/were available

  - Connectors show when the provider provides the services to the client

Framework Specific Automation

- ## Model Guardian Can Automatically Color Elements and Connectors According to Their Availability During the Roadmap Phase

Framework Specific Automation

- ## A Dialog Shows the Results and Lets You Click Through to the Elements or Connectors to Make Adjustments

Framework Specific Automation

- ## A Dialog Shows the Results and Lets You Click Through to the Elements or Connectors to Make Adjustments

- **The Color Mapping Feature has been Generalized to Work with Any Elements and Connectors that have the Lifecycle Tags**

- **Model Guardian Also Adds Automation for Managing the Service Provisioning**

  - Assign required and provided services to elements

  - Assign service providers along with when they will provide the services

  - Manage service provisioning via connectors

Framework Specific Automation

- ## Assign Required and Provided Services to Elements

Framework Specific Automation

- **Assign Service Providers along with When They will Provide the Services**

- **Manage Service Provisioning via Connectors**
  - Add services and lifecycle dates to the connectors by selecting from the provider's set of provided services

- **OAD Systems Can…**

  - Address custom automation needs you may have

  - Provide training and online mentoring on developing and using frameworks

Framework Assisted Design

with

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