The Most Comprehensive Profile Based

Model Management System

for Enterprise Architect

Features Guide

Updated: January 31, 2019

Providing Greater Productivity, Consistency, and Conformance
for your Enterprise's Modeling Environment

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Overview

Model Guardian's Mission

Model Guardian is an extension to Sparx Systems' Enterprise Architect. Its mission is to elevate Enterprise Architect from a UML modeling tool to an enterprise level planning tool. To do this, Model Guardian brings order to your enterprise modeling environment, by ensuring the consistency, correctness, and conformance of your models. It allows you to easily establish modeling guidelines that not only provide guidance to your modelers but also constrains them to your modeling standards. This forces modelers to take a common approach so that their work is more easily understood and better integrated with that of others. Mistakes are inevitable so Model Guardian provides model-wide changes to help bring models into conformance with your standards.

Model Guardian's Approach

The developers of the UML industry standard modeling language realized that they would not think of everything. Therefore, they built in an extension mechanism that permits the modeling environment to be honed to a specific modeling domain. Using stereotypes, tagged values and other extension concepts, modelers can work with elements and connectors that refer to things from their business domain instead of raw UML constructs. In the case of enterprise architecture, rather than modeling with plain classes and components, you can work with IS Services, Business Applications, ABBs and SBBs. Instead of nodes, you can model Servers, Firewalls, and other devices.

It is a simple matter to give model elements stereotypes from your modeling domain. However, doing so in an ad hoc manner leads to inconsistencies that can make your models meaningless. Creating a profile of acceptable stereotypes not only provides the guidance needed to attain consistency, but also lets you create a standard set of tagged values that the stereotyped elements will always be given. Furthermore, you can indicate what relationships are to be used with the elements.

Enterprise Architect provides a means to create UML profiles that are model based. To develop a non-trivial profile in Enterprise Architect, you have to develop and manage a complex model with possibly 100's of elements and attributes on scores of diagrams and 100's or even 1000's of rows in a quicklink spreadsheet definition file. Creating profiles is just the beginning. They are living things that mature over time. With Enterprise Architect, there is no easy way to change existing model elements and connectors to reflect changes made to a profile. This causes models to become outdated and obsolete.

Model Guardian allows you to:

- Create and maintain a comprehensive profile that defines your modeling environment
- Use the profile to provide guidance to modelers and to prevent them from straying from your defined environment
- Update and cleanse data that does not conform to your profile

Simplify the task of setting up your modeling environment with a WSYWIG profile editor

As you enter object types, connector types, tag definitions, diagram types, toolboxes and their toolbox sections into the profile editor dialog, they become immediately available to be selected in combo boxes so that you can easily combine them to form your profile. The hierarchy of the metamodel simplifies maintenance by supporting the inheritance of tags and relationships, drastically reducing the number of items to be maintained. Putting

your profile into action takes no longer than saving your profile and restarting Enterprise Architect so that it can read in the latest version of the profile.
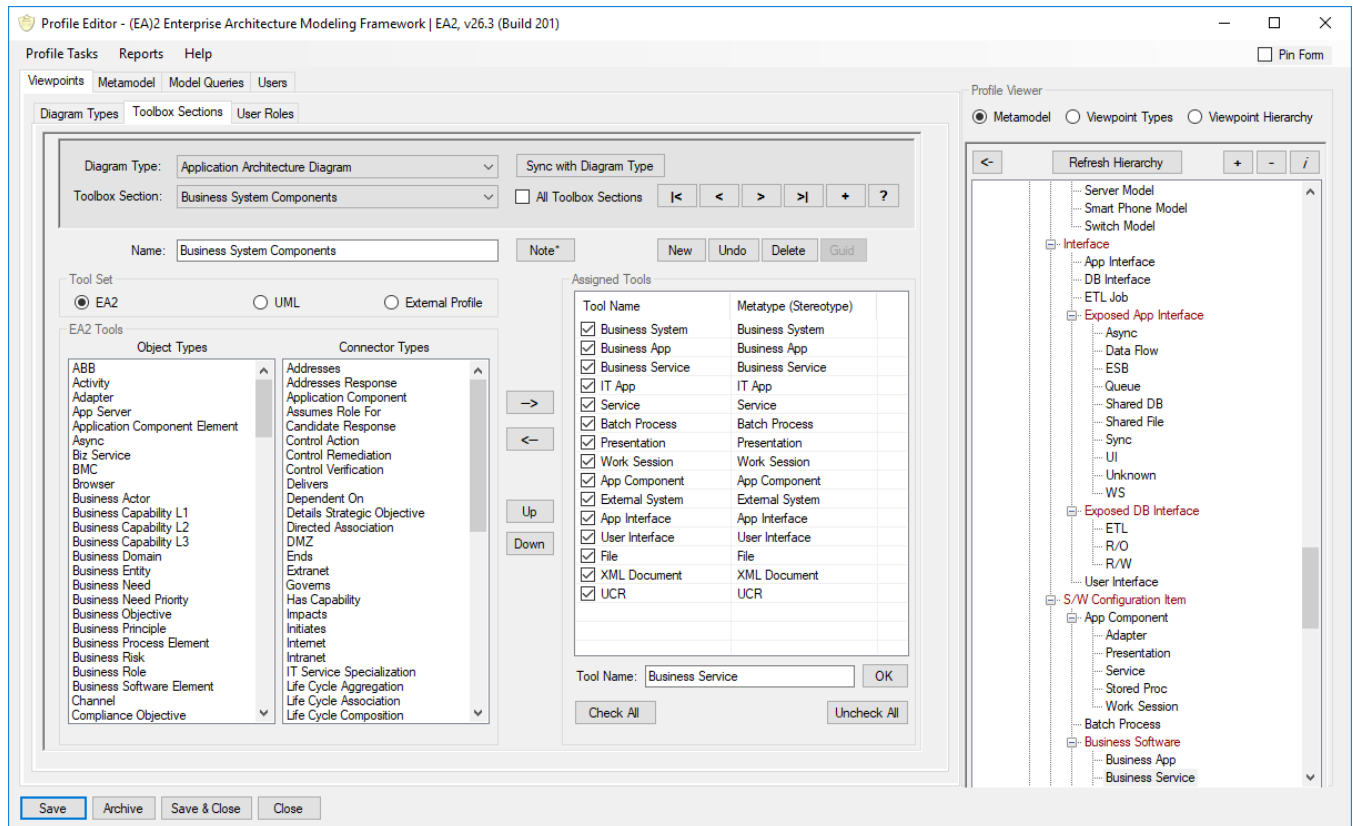
Figure 1: MG Profile Editor

Take the concept of a profile even farther than what is built into Enterprise Architect

Users can be given modeling roles. Each role can be given a set of viewpoints, i.e. diagram types along with their associated toolboxes. When working on a diagram in Enterprise Architect, you are free to change toolboxes and create any type of element or connector on the diagram. You can also add any existing elements to it. This uncontrolled approach to modeling leads to chaos. With Model Guardian, you can decide what element and connector types may be created on a diagram. You can also decide what existing element types can be underlined placed on a diagram. No longer will you end up with a mismatch of elements from different architectural views that have no business being together on the same diagram. Furthermore, you can indicate that modelers may only create or delete elements that are included in their viewpoints. Modelers can no longer change things outside their area of expertise.
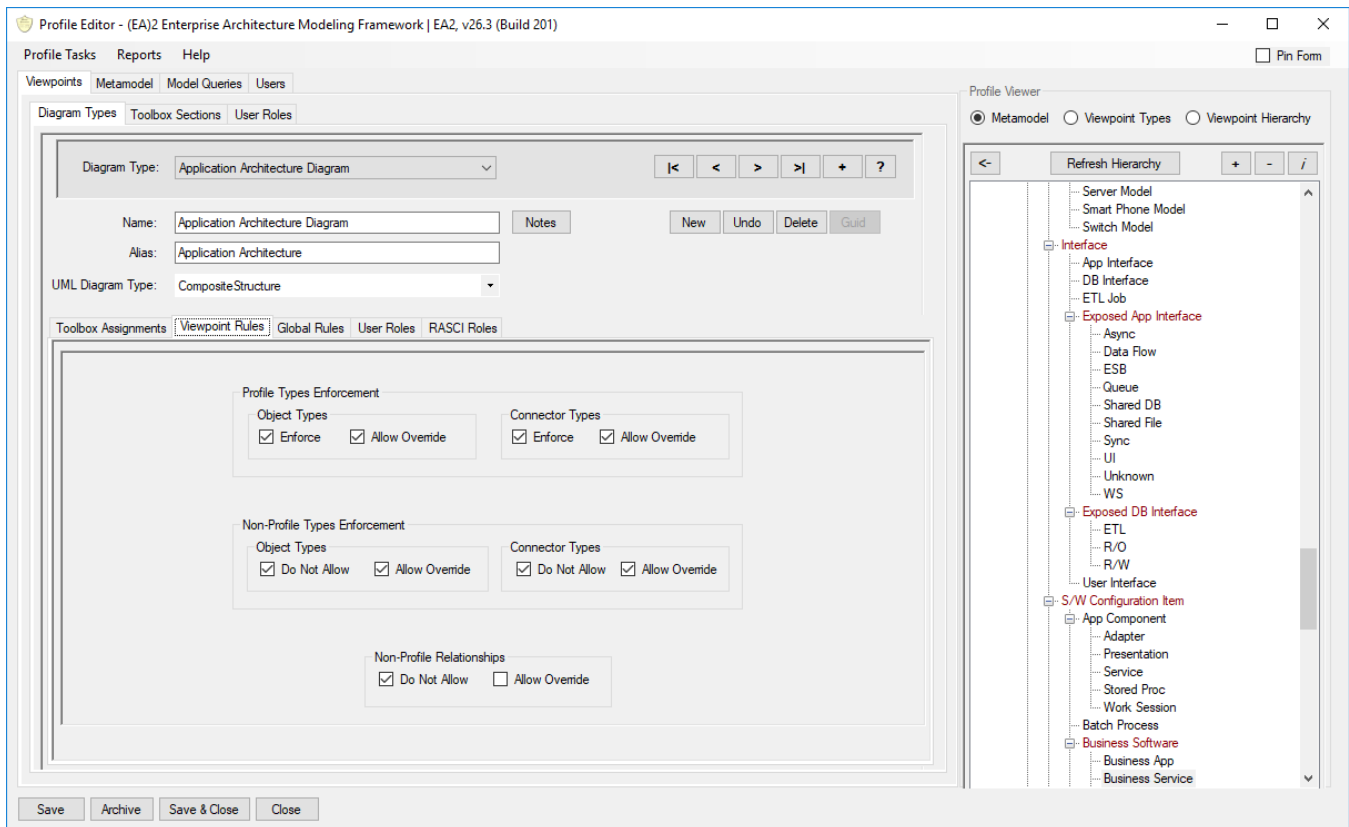
Figure 2: Viewpoint Rules

Provide Profile Driven Modeling that assists modelers as they perform various tasks

Working in a large, enterprise-wide model can be challenging. Finding the right thing can be like looking for a needle in a haystack. Model Guardian simplifies numerous modeling tasks by using the profile to find things for you. For example, Model Guardian can list all the types of relationships that are defined in the profile for an element. It can also provide a list of all the model elements that can be on the other side of the connector. No more searching throughout the model for an appropriate element. Additional examples of profile driven modeling are described in the sections below.
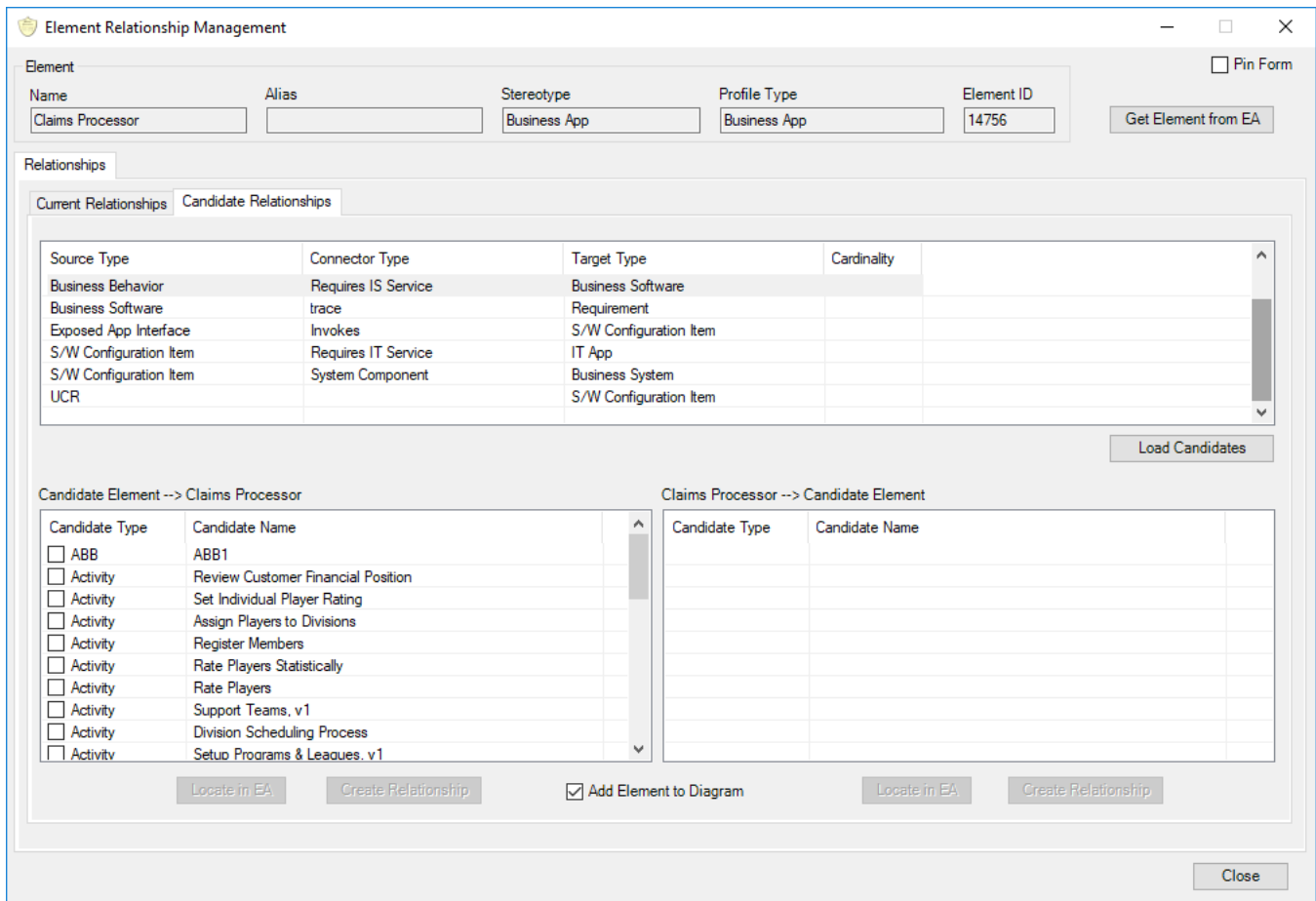
Figure 3: Dialog for Finding Candidate Elements for a Relationship

What's Next?

This document provides a brief description of the Model Guardian features. We are constantly adding new features, so be sure to come back to see what is new. Send us an email from your company email address to sales@OADSystems.com and we will send you credentials for downloading a free 30-day trial edition of Model Guardian as well as the comprehensive User's Guide. We also provide training and/or mentoring programs regarding the development and use of profiles should find you need help.

Some of the screenshots in this document were provided by INTEGRATE It (www.in2grateit.com), a business partner of OAD Systems specializing in TOGAF and Business Architecture.

Happy Modeling!

The Power of Model Guardian – A Brief Overview

Model Guardian enhances some of the features of Enterprise Architect and provides addition, powerful features above and beyond what EA can do alone. Here is a list of features. Additional information on them is provided below.

- Users identified by their Windows login
- User Roles that provide limits and guidance to ensure the user's job is easier and done within conformance to your profile
- User Groups that are assigned authorization to all or a subset of the powerful modeling features provided by Model Guardian. For example, you may not want a regular modeler to be authorized to change all occurrences of a stereotype to something else.
- External profiles, e.g. the BPMN 2.0 profile provided by Sparx Systems, linked into your profile allowing toolboxes to include the external profile's types. This lets you pick and choose what elements you want from the external profile. All tags, quicklinks, and icons from the external profile remain intact when used within a Model Guardian toolbox. However, you can apply all profile rules over the elements and connectors of the external profile.
- UML management allowing you to eliminate the myriad selections of types that you do not use. It even allows you to add new UML types, for example, should Sparx decide to include additional extended types.
- Cardinalities for Tag definitions, limiting how many an element or connector may have. For example, you would not want a Person element to have more than one Birthdate tag. While the cardinality is currently not enforced, Model Guardian provides a dialog that will show all infractions and let you select the element or connector in the model for modification.
- Viewpoint Rules constraining what can be done on a diagram of a given Diagram Type and within the model in general.
  - Allowing only those types of elements or connectors in the Diagram Type's toolbox that are marked as creatable[1] to be created on the diagram.
  - Allowing only those types of elements or connectors in the Diagram Type's toolbox that are marked as usable[2] to be added to the diagram.
  - Preventing non-profile types, like plain UML classes and nodes, from being created on or added to a diagram. This forces modelers to stick to your profile.
  - Preventing non-profile defined relationships from being drawn on a diagram of the given viewpoint. This too forces modelers to stick to your profile.
  - Preventing non-profile defined relationships from being drawn on a diagram of any viewpoint.
  - Globally preventing a user from deleting an element or connector from the model that is not a Creatable tool in one of their viewpoints.
  - Preventing a user from adding profile types to a non-profile Diagram Type, preventing them from circumventing the profile rules.
  - Preventing a user from working on a non-profile Diagram Type altogether, which provides the strictest adherence to your profile.

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[1] This MG feature extends the functionality of the EA Toolbox so that Creatable Tools appear in the Toolbox and can be used to create new elements or connectors. Usable Tools are assigned to a Toolbox, however, do not appear in the Toolbox. Their presence indicates that existing elements of the given type may be dragged onto the diagram.
[2] IBID.

- o Provide a list of types that are allowable exceptions to the rules, like allowing the addition of a UML class to diagrams.
- o Each rule can be set to Ignore, Warn, or Enforce.

Model Guardian Editions

Model Guardian has several editions allowing you to choose those features you require at the most economical price. There are two Profile Generator editions and the MG Runtime edition.

Only one Profile Generator license is required for creating and maintaining your profile, although you can get multiple licenses if you want a team of advanced modelers to maintain the profile. The rest of your modelers would use the less expensive MR Runtime to get all the benefits provided by the extended profiles generated by the XPG or CPG editions.

Each Profile Generator lets you easily create and maintain your modeling profile(s). You can create a profile in a matter of minutes rather than the hours it can take with Enterprise Architect's native profile generator tools. The following describes their differences as to the profiles they generate.

Standard Profile Generator (SPG)

The output of the SPG is an XML file that can be used directly with Enterprise Architect, just like those that Sparx Systems provides with Enterprise Architect. Since these are in the native format of Enterprise Architect's profiles, anyone with Enterprise Architect can use them. They provide diagram types, toolboxes, quicklinks, and model searches. If you set up roles within your profile, then the SPG edition will generate an XML profile for each role. This will allow you to distribute the appropriate profile to each of your modelers. However, the extended profile required for the MG Runtime and its advanced features are not available with the SPG edition.

Extended Profile Generator (XPG)[3]

This edition generates the standard profiles like the SPG does. It also generates extended profiles that include the extra information used by the MG Runtime (MGR). The MGR uses the extended profile to aid modelers and enforce conformance to your profile. This edition also includes the MG Runtime Edition.

MG Runtime (MGR)

This edition leverages the profile to provide guidance to your modelers and to enforce the rules of the extended profile to ensure that your modelers work in a consistent manner. The MGR edition captures Enterprise Architect events, like creating a new element, to apply the governance you have embedded into the extended profile. It also uses that information to present a more limited view to the options that the modeler can do. This helps them to stay focused and ensures they get the right information to make the right decisions. The MGR edition also provides numerous tasks that ease the modeling tasks. For example, it includes a relationship management dialog that uses the profile to show you what model elements may be on the other end of a connector. Another task allows you to select multiple connectors on a diagram and make various changes to them with a single click of the mouse. The modeling tasks are described later in this document.

Both the SPG and XPG editions can be found in the Windows Start menu under the Model Guardian menu group. The MGR edition starts automatically whenever Enterprise Architect is started.

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[3] Previously there were three MG Profile Editions, the Standard edition (SPG), the extended edition (XPG), and the combined edition (CPG). The original XPG edition has taken on the features of the CPG and the latter has been eliminated.

Profile Management[4]

Most everything that Model Guardian does begins with the profile that you develop using its Profile Editor. This is a comprehensive form with tabs for each of the different areas of your profile. The Relationships tab is shown below.
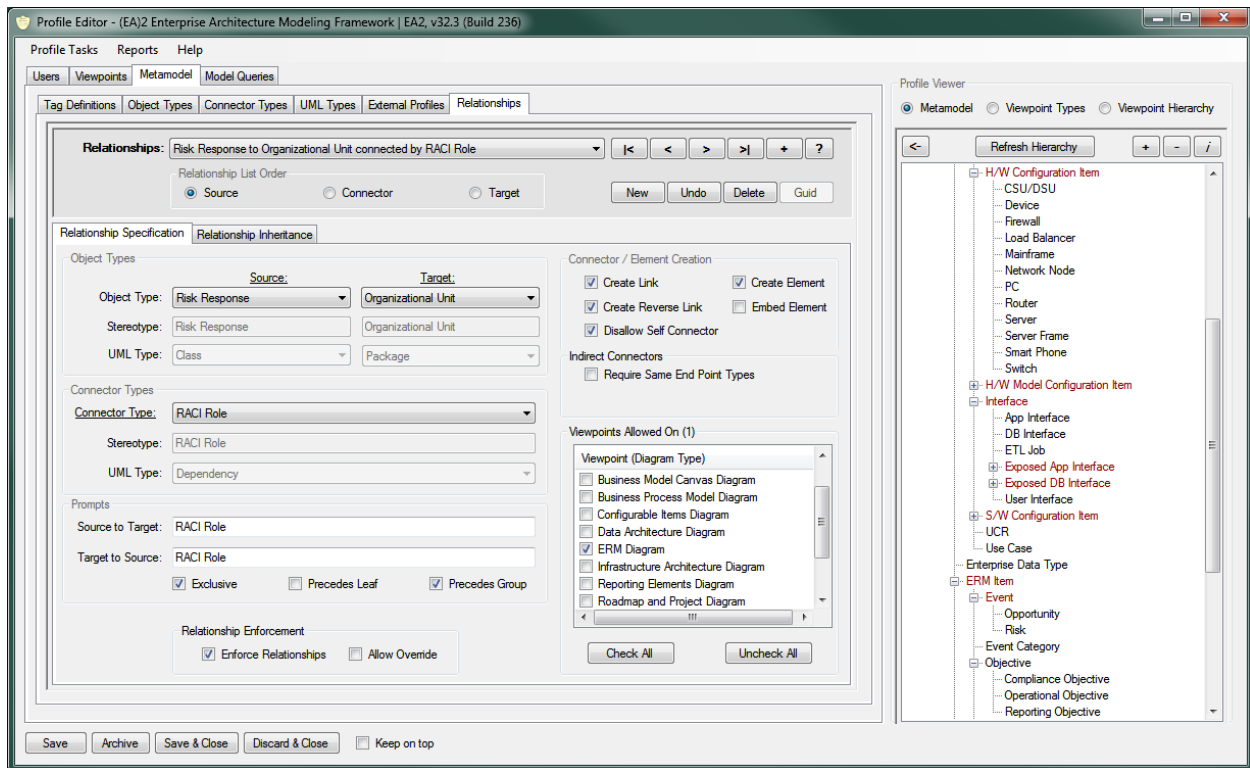
Figure 4: Example Tab in the Profile Editor - Relationships Tab

All the work of building your profile is done via the Profile Editor's tabs. As you enter information, e.g. a new Object Type, it becomes immediately available to other parts of the profile. There are structural views on the right that show the hierarchy of the metamodel and how these metatypes are used by the Diagram Types, Toolboxes, and Relationships. You will find more about this below.

Profile Structure[5]

Model Guardian lets you create profiles in minutes rather than hours with a user interface that has all your artifacts just a list box away. However, profiles are not static things. They evolve. Therefore, it is imperative that models be synchronized with profile changes or they rapidly become obsolete.

Model Guardian maintains information within the models that allows it to identify things that were created using the profile, even after profile changes have been made. This allows Model Guardian to map model items to the changed profile types for update.

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[4] This section describes how you build profiles with Model Guardian. If you are not too familiar with profiles, you may want to review the section below on *Profile Driven Modeling Using the MG Runtime*.

[5] A more formal discussion of the structure of the modeling environment provided by Model Guardian can be found in the Model Guardian Metamodel section below.

The following is the list of things that comprise a profile along with their definitions. Note that Object Types and Connector Types may be collectively referred to as Profile Types or Metatypes.

Metatypes

Metatypes, aka Profile Types, are divided into two categories, **Object Types** and **Connector Types**. Object Types contain metadata about the elements that you create in a model. Connector Types contain metadata about the connectors that you create.

Metatypes are built in an inheritance hierarchy. This allows sub types to inherit the tags and relationships assigned to their ancestors.

Metatypes from External Profiles

Model Guardian provides the flexibility to link to external profiles, e.g. the BPMN 2.0 profile provided by Sparx Systems, into your profile. Once linked, you can add elements and connectors from the external profile into your Toolbox Sections. This lets you select just those Metatypes from the external profile that you want to use. All tags, quicklinks, and icons from the external profile remain intact when creating external profile elements and connectors via your profile's Toolboxes. Additionally, you can set up the same rules governing these tools, i.e. Creatable vs Usable, and on which Viewpoints they are allowed.

Tag Definitions

Enterprise Architect allows you to define the format of the tags you can add to elements and connectors. Likewise, Model Guardian lets you define the format for the tags to be added to the Metatypes, using the same format as used in Enterprise Architect. The Tag Definitions can be added to Object Types and Connector Types.

Relationships

Two endpoints linked together by a connector comprise a Relationship. Model Guardian lets you not only define Relationships, but to add rules constraining their use.

You can indicate the defining characteristics of what is at each end of a relationship. It can be an element defined by an Object Type from the profile, a Stereotype of your choosing, or simply a UML type. If you choose an Object Type, any of its child Object Types will inherit the Relationship.

The connector can be specified using one of these three methods as with the endpoints. However, sub types of a Connector type do not inherit the relationship.

You choose what is to be shown in the Quicklinker context menu when the line is drawn from the source to the target and what will be shown when drawn from the target to the source.

You can control if the link will be created by drawing in either direction. You can also choose to create the target element if the Quicklinker is dropped on empty space or embedded within the target when the Quicklinker is dropped on an element.

You can assign a Relationship to the various Views. If not assigned, the Relationship will not appear in the Quicklinker list. Setting the viewpoint rule will prevent modelers from creating new relationships not defined within the profile.

Diagram Types

A diagram's Diagram Type indicates the purpose of the diagram and what types of elements and connectors can be created on the diagram. The purpose is determined by the UML diagram type, e.g. Class Diagram or Activity Diagram. What can be created on it is determined by the Diagram Type's toolbox. Collectively, these represent a Viewpoint, i.e. a way of looking into and working on the model for a specific purpose and audience. The terms Diagram Type and Viewpoint are used interchangeably in Model Guardian documentation.

Each Diagram Type is assigned a Toolbox which is composed of one or more Toolbox Sections. Object Types and Connector Types can be placed in Toolbox Sections. Toolbox Sections are then associated with the Diagram Type's Toolboxes. Since a Diagram Type has only one default toolbox, i.e. the one that is opened along with the Diagram, we talk about Toolbox Sections being assigned directly to Diagram Types. A Toolbox Section can be assigned to more than one Diagram Type. The image below shows a Toolbox with four profile defined Toolbox Sections and two Enterprise Architect standard Toolbox Sections, Common and Artifacts.
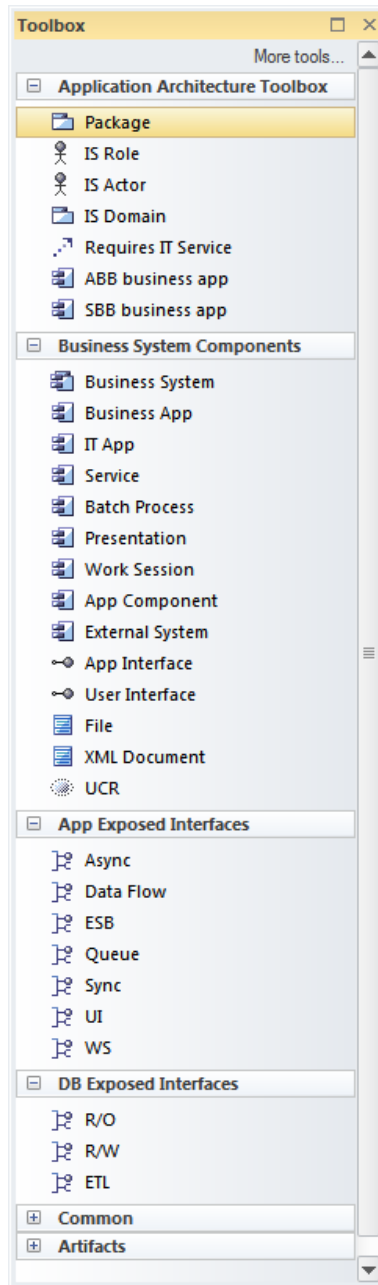
Figure 5: Toolbox Sections

You can assign Metatypes to Toolbox Sections. However, Model Guardian takes this a step farther than Enterprise Architect. Model Guardian allows you to control whether an element can be created on a diagram. It even lets you control whether the element can be added to the diagram. This helps to ensure that elements or connectors that are not considered part of a Viewpoint do not clutter diagrams and obscure their meaning.

The image below shows the Toolbox Sections tab. You can see the list of Tools that have been assigned to the Architecture Building Blocks toolbox section. The Tools can be Object Types and Connector Types from your Profile, UML types, or types from a mapped External Profile.
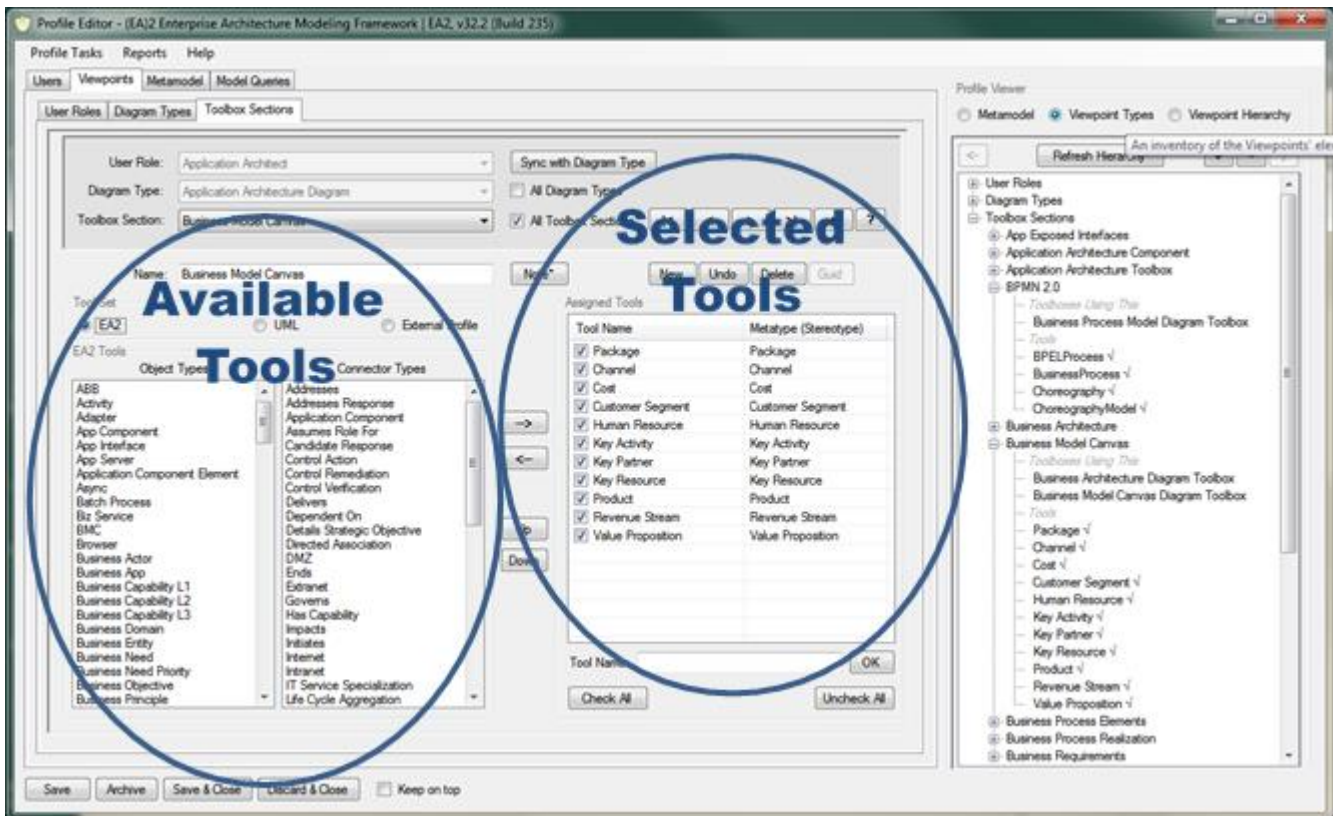
Figure 6: Toolbox Sections Tab

Checked tools are marked as Creatable in the viewpoint. This means they will appear in the diagram's toolbox and can be created on the diagram. Those that are not checked are marked as Usable within the viewpoint meaning they can be added to the diagram. However, they will not appear in the Toolbox and, therefore, cannot be created on the diagram.

Enterprise Architect allows you to change Toolboxes when working on a diagram. Model Guardian lets you lock down a diagram so that the rules of the Diagram Type's Toolbox always apply, even if you change to another Toolbox while modeling.

You can apply rules to a Viewpoint and decide whether to allow modelers to override them. These include…

- Constraining the creation of new elements and connectors to those belonging to the diagram's viewpoint
- Constraining the addition of new elements and connectors to those belonging to the diagram's viewpoint
- Preventing elements and connectors based on non-profile Metatypes, e.g. plain UML types or other profile types, to be created or added on the diagram.
- Preventing non-profile defined Relationships to be created on the diagram.
- Limiting the deletion of elements and connectors to just those that are set as creatable within at least one of the user's Role's Toolboxes.
- Preventing users from using profile types on non-profile diagrams so that rules on their usage cannot be circumvented.

The following image shows the rules on the Profile Editor's Diagram Types tab, Viewpoint Rules subtab.
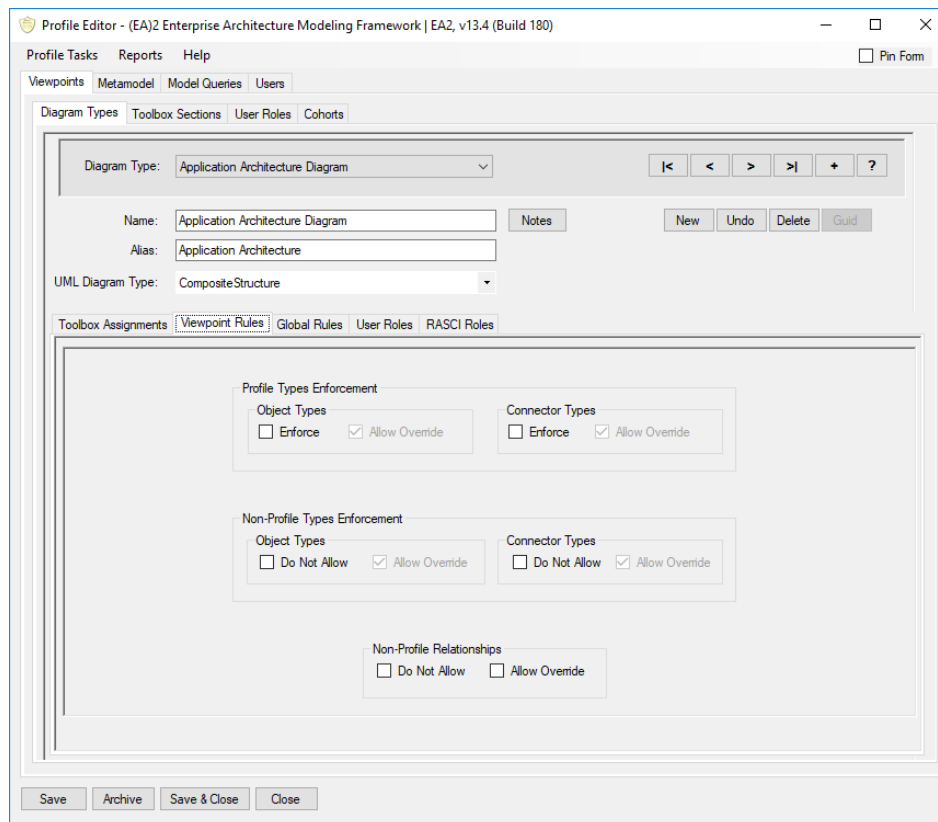
Figure 7: Viewpoint Rules

User Roles

User Roles indicate what a user can do within the model. Example Roles may include Business Architect, Business Process Modeler, Solution Architect, and Data Architect. You may assign one or more Roles to a user. A User's activities are controlled by the rules of the Viewpoints that have been assigned to the User's Role(s).

User Roles are setup on the Profile Editor's Users tab, Users subtab shown below.
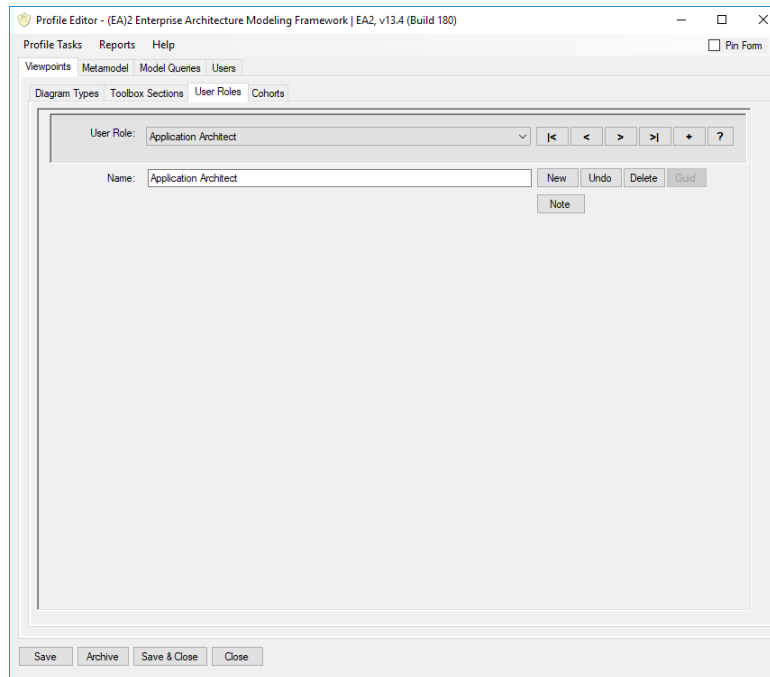
Figure 8: User Roles

User Groups

Model Guardian provides some very powerful features, some of which perform mass updates throughout a model. You may want only very experienced people to perform some of these advanced tasks. Examples include synchronizing a model to profile changes or changing a stereotype to another for all elements in the model that have the stereotype.

Model Guardian allows you to establish Groups to which you assign permission to run the various modeling tasks. If you set up a Group and mark it as the default group, everyone who is not assigned a group will automatically be assigned the default group. Give this group just those Modeling Tasks that most of your users should have. You can setup other groups that have a different set of Modeling Tasks assigned to them. For example, you could set up a Power Users group and assign many of the Modeling Tasks and an Admin Group that gets all the tasks.
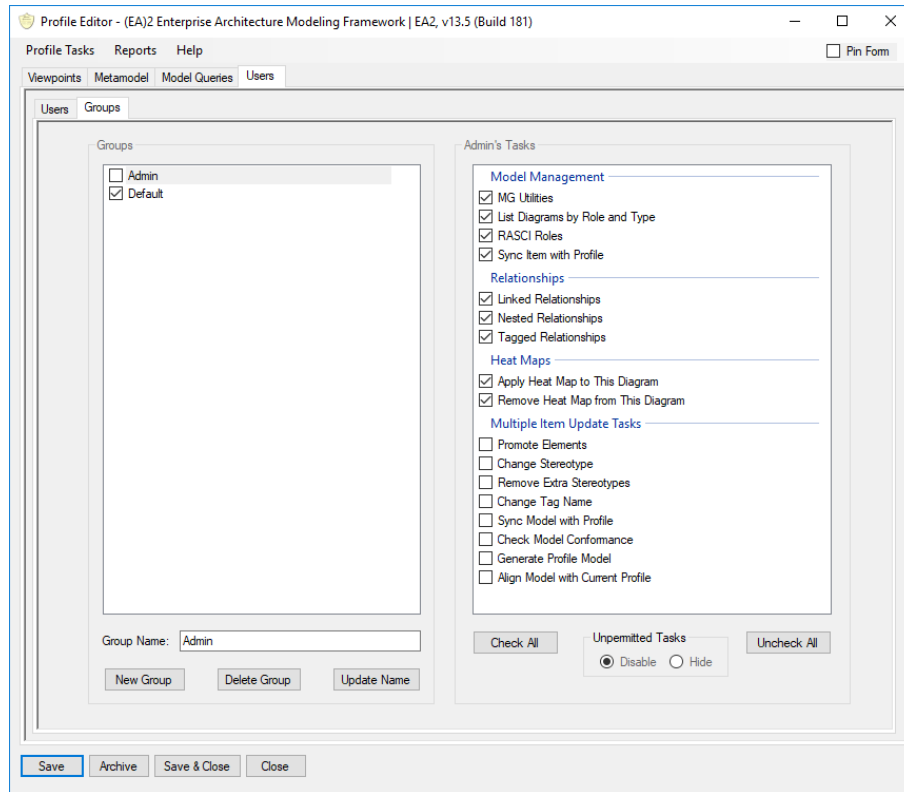
Figure 9: User Groups

Users

Users may be added to the profile to control what they may do. You provide the user's full name and the user's Windows login name so that Model Guardian can identify the user. You may optionally define two more fields to help you identify your users. For example, you could create a 'Department' field and/or a 'Birthdate' field so you can distinguish between two people with the same name. The prompts for the additional fields will not appear if you do not assign them.

Users are assigned one or more User Roles. They can also be assigned to one or more User Groups. It is important to understand that the Users and their assignments are at the profile level, not the model level. This means that you only have to assign users once in the profile. All models will be affected.

Users are maintained and assigned User Roles and Groups on the Profile Editor's Users tab, Users subtab. Simply check the Roles and Groups you want for the User.
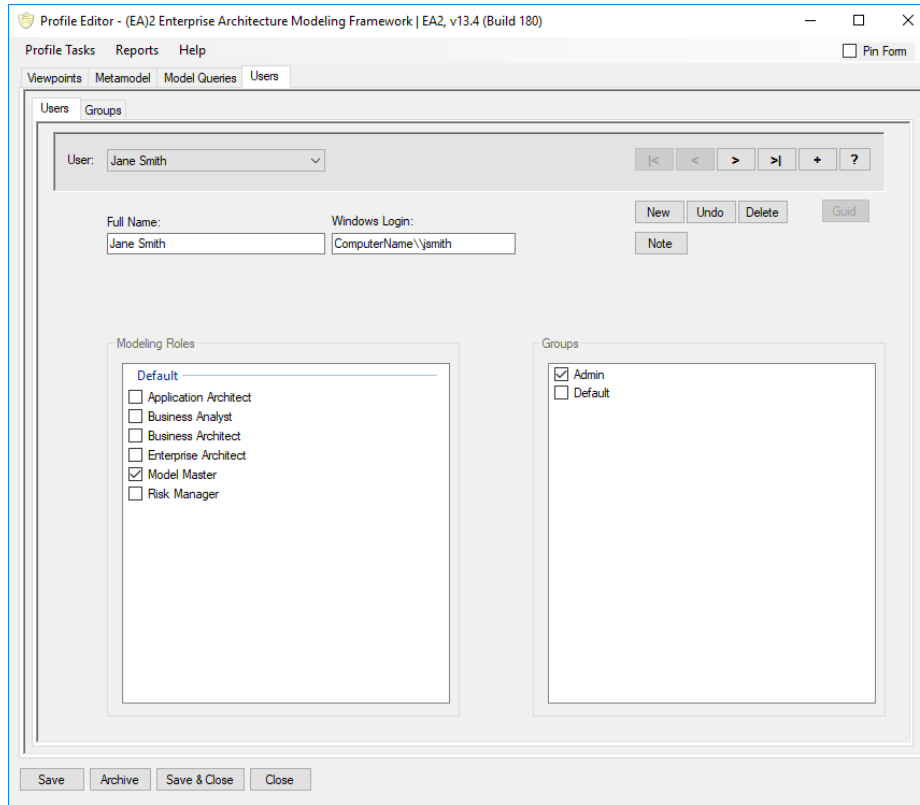
Figure 10: User Role Assignment

Model Queries

You can define Model Queries in Enterprise Architect by using the 'Find in Model' feature. When doing so, you can use a SQL query to define your search. Once you have created a search in this manner, you can create a new Model Search in the profile Editor and paste in the SQL statement. Model Searches set up in this manner can be used by Enterprise Architect's "Find in Model" feature. They will be listed under the drop down that contains the categories of searches. The EA2 profile's queries can be seen by clicking the EA2 category in the drop down as shown below.
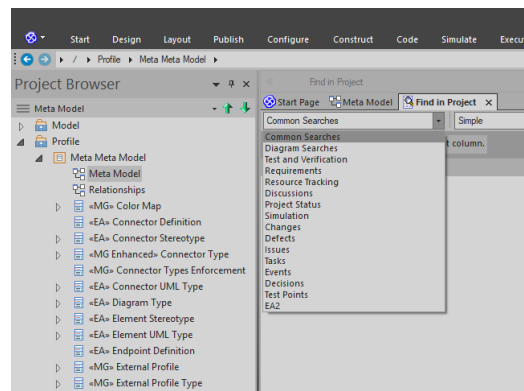
Figure 11: Using Profile Defined Queries in "Find in Project"

The Profile queries are setup in the Profile Editor's Model Queries tab, Model Searches subtab.

Understanding Your Profile

Building the profile is done in an iterative and incremental way. Being able to move around to the different areas and having changes seen immediately in others is critical to profile development. For example, you can create an Object Type, jump over the Tag Definition tab to create a needed Tag Definition, and then go back to the Object Types tab to add the tag to the Object Type.

Profile Type Details

Being able to easily understand the profile is critical to validating and maintaining it. One of the ways is with a dialog that shows how a type is being used in the profile.
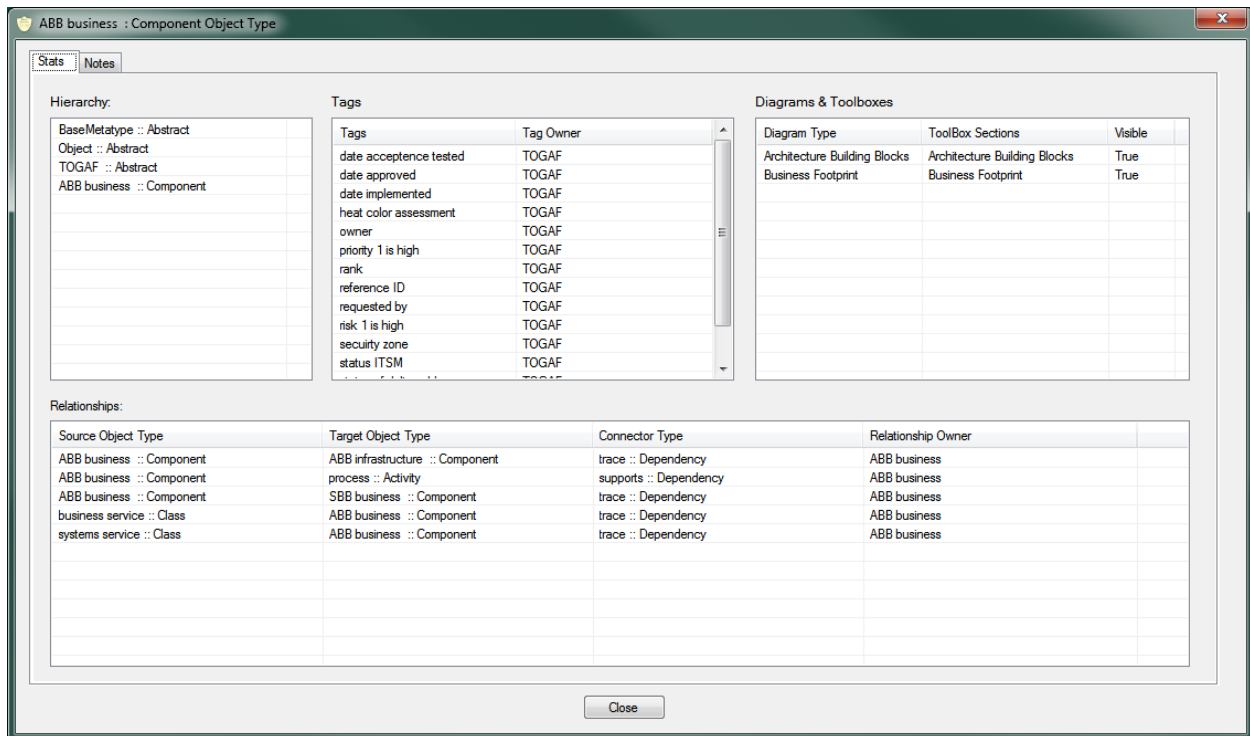
Figure 12: Details About a Profile Type

You can also readily see what Tag Definitions each Metatype is using and, conversely, what Metatypes are using a given Tag Definition.

Furthermore, there are three browser trees on the right of the Editor that show your profile at a glance.

Metamodel Browser

This shows the hierarchy of Object Types and Connector Types. Abstract types that are used to gather common Tags and Relationships but are not added to toolboxes are shown in red. As you edit different types, they are highlighted in the browser so that you can easily see how they fit into the puzzle. Clicking on underlined labels in the editor section selects the associated element or connector in the browser. You can then click the left arrow at the top left of the browser to put the highlighted element or connector into the editor area.
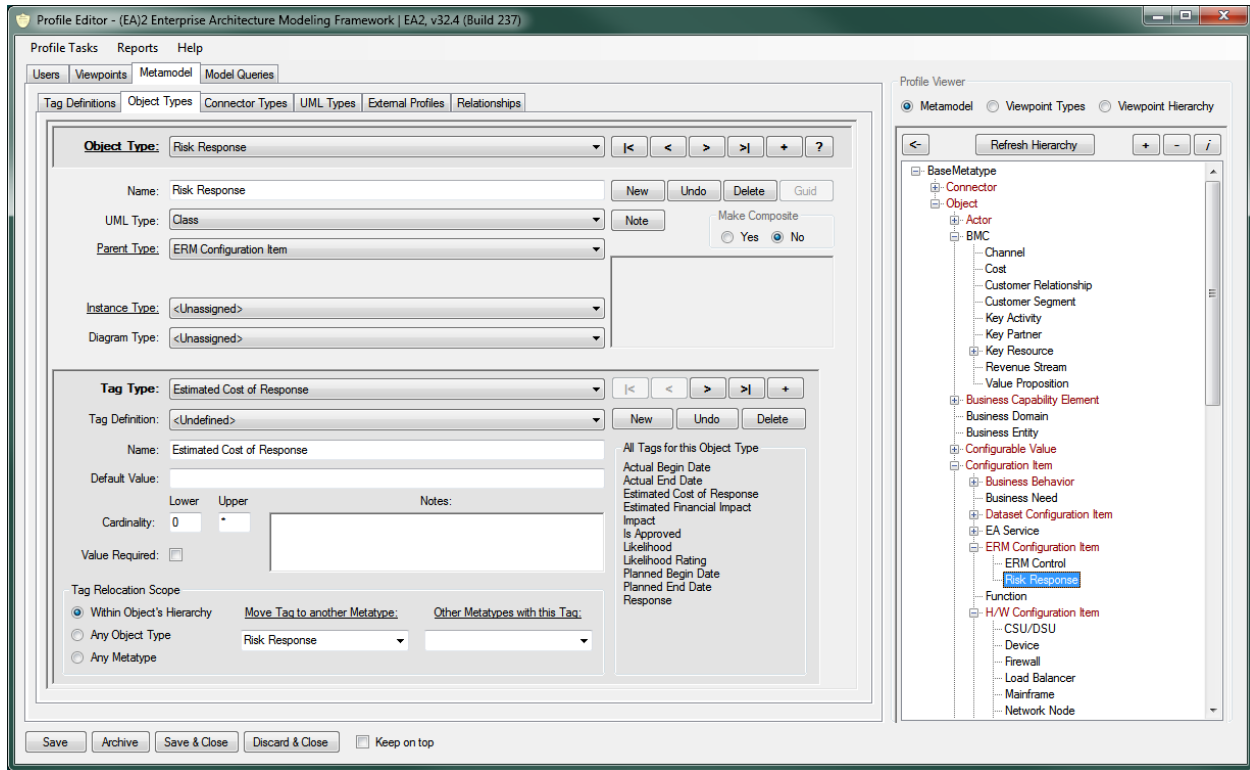
Figure 13: Metamodel Browser (on the right)

Viewpoint Types

This browser provides an inventory of User Roles, Diagram Types, Toolbox Sections. Expanding each shows the profile items that it contains.
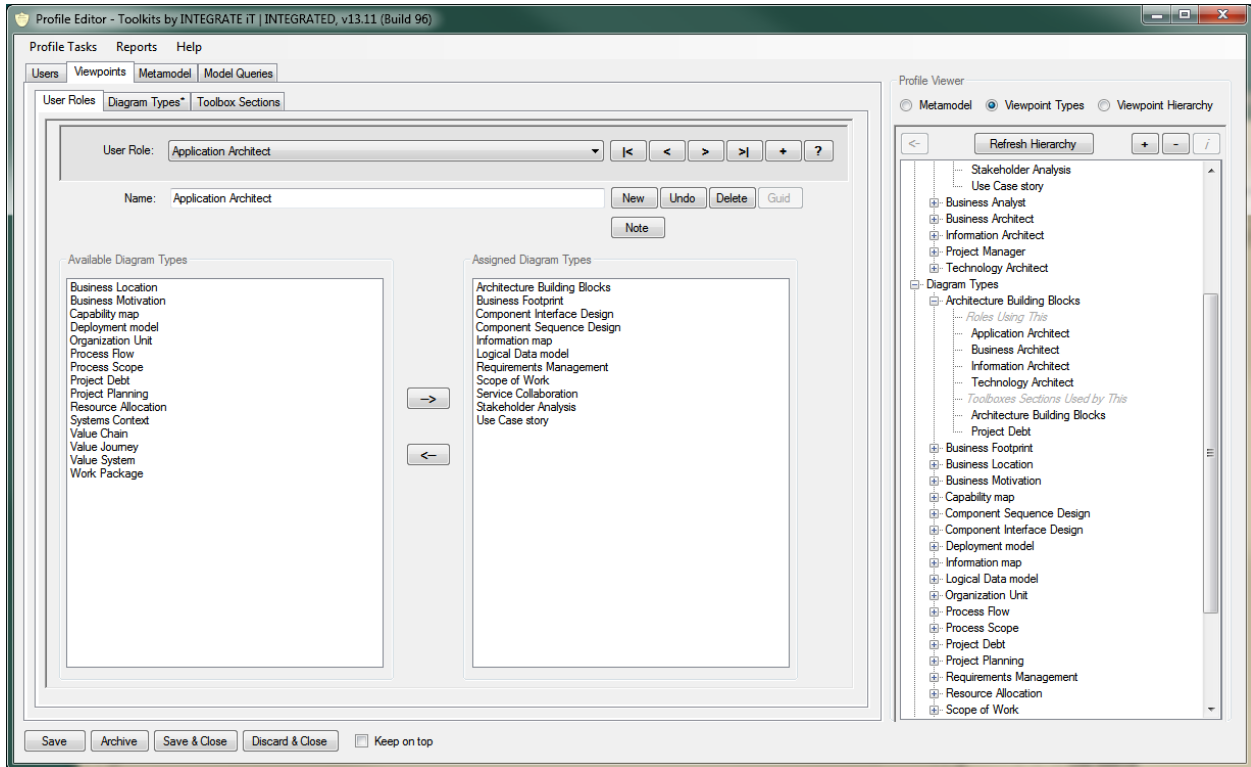
Figure 14: Viewpoint Types Browser (on the right)

Viewpoint Hierarchy

This browser shows a drill down of each User Role showing the Role's Diagram Types, the Toolboxes sections each Diagram Type has, and the Tools in each Toolbox Section. Toolbox elements that are creatable have checkmarks. Unchecked items indicate element/connector types that are usable but not creatable in diagrams of that Diagram Type. This browser also shows what relationships can be created in the viewpoint.
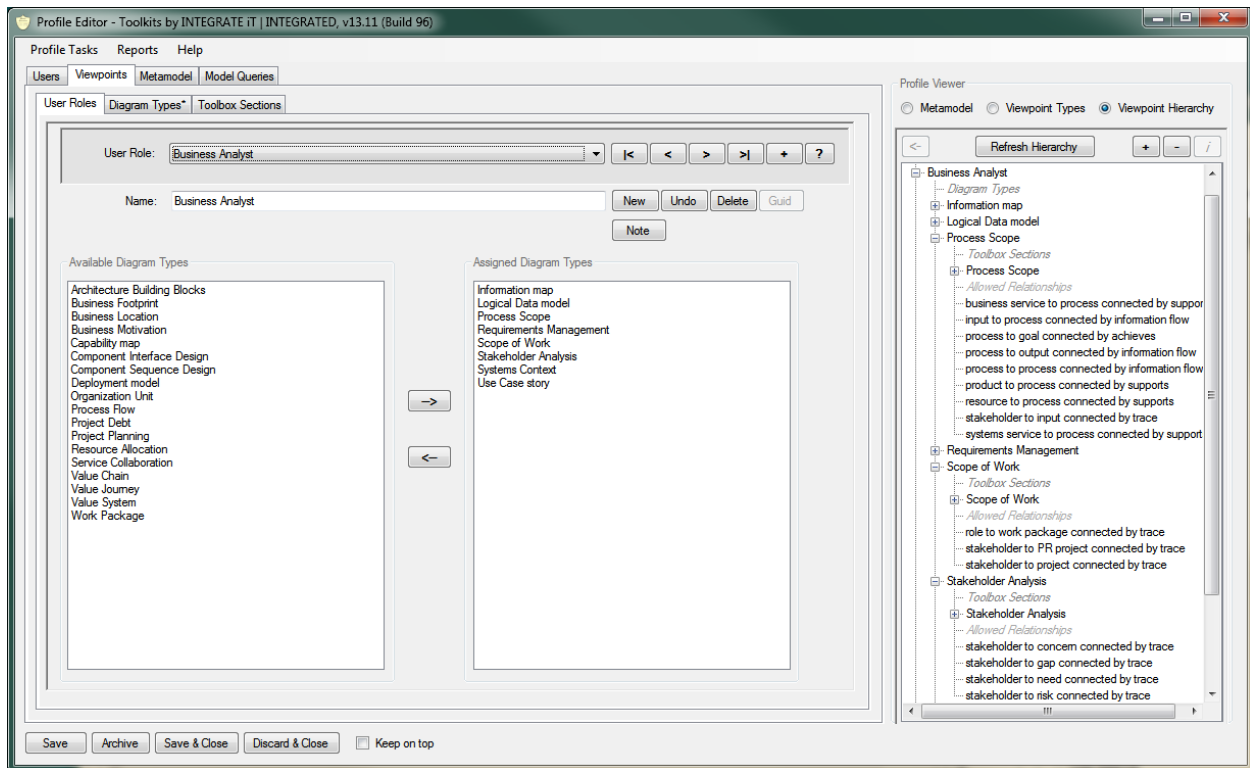
Figure 15: Viewpoint Hierarchy Browser (on the right)

Many of the Model Guardian dialogs are modal, meaning that you have to finish working with them before you can return to Enterprise Architect. However, some key dialogs are modeless. This means that that you can move back and forth between Enterprise Architect and the dialog. This lets you inspect things in the model while working within the dialog. These diagrams have a "Keep on top" checkbox. Check it and the dialog will float above Enterprise Architect (and other windows you may have open). This lets you flip back and forth between Model Guardian and Enterprise Architect without losing the context of what you are doing in the dialog. For example, some dialogs ask you to select a target package in the project browser to be brought into the dialog.

Profile Maintenance

Profile maintenance is easy with Model Guardian. There are the normal commands, Open, New, Save, Save as… However, Model Guardian also provides the creation of and retrieval of archived versions of the profile. You can easily go back to a previous version to see how things were done then. Even if you use an version control system to track previous version of the profile, the archival feature of Model Guardian is useful within an single profile editing session to let you experiment and then back out changes.

Deployment

While working on the profile, you will be in the Work-in-Progress (WIP) folder. When ready, you click a button to deploy the profile to a distributable files folder. From there you can send it to each user or put it in a shared location; on a network share, at a URL to a website, or even in SharePoint. When using a shared location, you configure the MG Runtime to look for the profile in the shared location at startup. When Enterprise Architect starts up, Model Guardian will download the shared profile into the Deployed Profiles folder on the local computer. If it cannot get to the shared profile, Model Guardian will use the local copy until it can download it again. This ensures that everyone is using the most recent published version of the profile.

Having a WIP space separate from the Deployed Profiles space helps ensure you are using the correct version of the profile when making changes to it versus working with it to model just like everyone else is doing.

Help System

Model Guardian's help system is composed of a set of RTF files in a folder structure. The folders represent topic categories and the RTF files are the topics. We used this format so that you can easily incorporate your own documentation or modify ours to better suite your needs.

Profile Driven Modeling Using the MG Runtime

Enterprise Architect uses the profile that you develop to create the Diagram Types, Toolboxes, Tags, and Quicklinks to help guide your modelers. As you have seen above, Model Guardian extends the native Enterprise Architect profile to include control over what modelers can do in specific situations. These extensions require the MG Runtime, which leverages the profile to give what we call Profile Driven Model Development. These powerful extensions to the modeling capabilities of Enterprise Architect are described below.

Synchronize Model to Profile

Profiles are living things subject to change over time. Unless models keep up with those changes, they will become outdated. Model Guardian allows you to synchronize models with the profile changes, ensuring they continue to provide value. Model elements and connectors can be synchronized with the profile changes. Model Guardian adds tagged values to all elements and connectors created from the profile. These tags allow it to map those elements and connectors back to the profile types from which they were created. This direct link is what drives the synchronization process.

Metatype Name Changes

The Metatype name in the profile becomes the stereotype for corresponding elements and connectors in the model. If you change a Metatype's name the profile, the synchronization process will update both the stereotype and the profile tags on corresponding elements and connectors in your models.

Metatype Tag Changes

If additional Tags are assigned to a Metatype in the profile, the synchronization process will add them to the existing elements or connectors. You may optionally have it delete element and connector tags if they have been removed from their corresponding Metatypes.

Tag Definition Changes

If a Tag's Definition is changed in Enterprise Architect, the corresponding tags on existing elements or connectors will become orphans. This means that they will no longer have a definition and Enterprise Architect treats them as simple strings. This especially impacts reference tags that hold the guid of another element representing the tag. Rather than seeing the referenced element's name in the tag window, you will see the guid of the referenced element. The synchronization process allows you to update the tag names of these tag orphans so that they are treated properly by Enterprise Architect.

Manage Stereotypes and Tagged Values

Manage Stereotypes

Sometimes there is a need to change a stereotype used for multiple elements or connectors to another stereotype. Model Guardian lets you do this for all elements or connectors in the model or just for a selected set of them. You are given feedback as to which elements will be changed and allowed to check all or just those that want. You can use this to take existing elements or connectors with a given stereotype and change their stereotype to one from the profile. This will bring the elements and connectors under profile control.

Remove Extra Stereotypes

Managing element's and connector's stereotypes is an awkward twostep process in Enterprise Architect. First you must remove any unwanted stereotype(s), have EA process that request, and then add the correct stereotype. If not done properly, you end up with multiple stereotypes. This often results in elements and connectors with inappropriate, additional stereotypes.

The MG Runtime lets you remove extra stereotypes throughout the model with one operation. It also deletes the profile identifying tagged values associated with the extra stereotypes. You may optionally choose to delete all the tagged values associated with a stereotype to be remove or, alternately, just those tagged values that do not have a value.

Managed Tagged Values

The tagged values presentation in Enterprise Architect can be confusing. Adding tagged values after an element or connector has been created can be problematic as they do not get properly attached to the current profile.

This tab allows you to perform individual and bulk updates to element or connector tagged values. The updates include adding new tagged values and deleting inappropriate ones. Model Guardian simplifies the display of the tagged values and handles adding new ones properly.

You can select which stereotypes are to have their tagged values managed and the source of the elements or connectors you want to update. These sources include

- Elements selected in the project browser
- Elements selected in a diagram
- The connector selected in a diagram
- Elements or connectors selected in a SQL query
- Elements or connectors with a given stereotype

Finally, you can choose to see all resulting elements or connectors or just those who have non-compliant tagged values.

Next you can pick and choose which elements or connectors to update and which tagged values are to be addressed. You may also decide whether to apply the changes to just the currently selected element or connector or to all qualifying items. You may choose to

- Leave the non-profile tagged values as is
- Delete just those tagged values you have marked
- Delete all non-profile tagged values
- Delete non-profile tagged values that have not value

The dialog also helps you to add the appropriate tagged values to an item. It presents a list of valid profile tag definitions for the currently selected item or a list of all tag definitions in the model. You can select from these to add new tagged values to the item.

Promote (Update and/or Move) Elements

This dialog provides one of the most powerful ways to make changes in a model.

One of the drawbacks with Enterprise Architect is that you can update only one element at a time. This is fine when developing your model via diagrams. However, it is a serious limitation when you are finished a given

phase and want to promote a full set of elements by changing their status, tagged values, stereotypes, and even relocate them to a different package. Model Guardian's Promote Elements dialog takes care of this.

For example, suppose you have finished working with a set of Proposed SBBs and want to promote them to SBBs. Model Guardian's dialog will allow you to select the package where the elements reside, optionally including its sub packages. You choose one or more profile types (in this case Proposed SBB) that are to be promoted along with the target Profile type (ABB). You can filter the list by selecting the status of the elements, a date before or after which the elements must have been last updated, and the values of any of their tags. You can add new values for the status and tags for the promotion process. You then select the target package and click go.

All the elements that are selected are then presented and you can choose which individual elements to be processed. All the chosen elements are updated and optionally moved to their new location.

Relationship Management

Relationships in a model are extremely important and need to be done correctly. Model Guardian provides three types of relationship dialogs that are driven by the profile.

Linked (Simple) Relationships

Enterprise Architect can show you all the existing relationships that an element has. Model Guardian's Element Relationships dialog provides this along with the ability to show either endpoint in the project browser and the connector in one of the diagrams it appears on. You can select a relationship and delete it right from within the dialog.

More importantly, the dialog also shows all the candidate relationships that a given model element may have as defined in the profile. Select one of the candidate relationships and the dialog will show all the model elements that can be on the other end of the relationship. You can click to view the candidate element in the project browser for further inspection. Finally, just click to create the relationship.

Nested Relationships

Creating a hierarchy of nested elements in the project browser is a powerful, visual way of representing the parent/child relationships. However, it is all too easy for the elements to get moved around, thus breaking their relationships and anything that depends on them. Model Guardian provides a Nested Relationship dialog that allows you set up nesting connectors between each parent/child element pair as depicted in the project browser under the package. If they later get moved around, Model Guardian can recreate the nesting in the project browser.

Tagged Relationships

Tagged relationships are a powerful tool that can succinctly show the relationship among three elements and a connector. Let's look at an example to explain how this works.

The modeling context in this example is as follows:

A <u>Business Activity</u> requires one or more <u>IS Services</u> from the Information Systems Architecture to automate its processes. We need to find what <u>Business Apps</u> can fulfill that need. To do this we somehow need to indicate

- What <u>IS Services</u> a <u>Business Activity</u> requires
- What <u>IS Services</u> a <u>Business App</u> provides
- Once a connection is established between the two, of the <u>IS Services</u> that the <u>Business App</u> can provide, which are being provided to the given <u>Business App</u>.

Furthermore, it would also be good to know

- When the <u>Business Activity</u> requires the <u>IS Service</u>
- When the <u>Business App</u> can provide the <u>IS Service</u>
- When the <u>Business App</u> is being used to fulfill the <u>IS Service</u> for that particular <u>Business Activity</u>

That is a lot of information. It gets compounded when you realize that the connections between the <u>Business Activities</u> and the <u>Business Apps</u> are many to many. Before you know it, your diagram depicting these relations will become the proverbial bowl of spaghetti.

The Tagged Relationship approach can help show all of this in a succinct manner and Model Guardian eases the task of coordinating all this information. One tab of the Tagged Relationship dialog is used to assign the required and provided tags to elements. Another tab displays all the types of tags that an element requires. After selecting one, all the model elements that provide the required tag will be shown. Then, with a single click, you can create a new relationship with the appropriate tags and dates or update an existing one by adding or removing tags on the connector. You can also choose to remove Tags to completely delete the relationship. Model Guardian will set the connector's label to the list of Tags that are being provided, making for an informative view of the connector.

Heat Maps

Heat maps, i.e. the coloring of model element or connectors according to pre-defined color scheme based on tagged values, can be easily created in Model Guardian. This feature pre-dates the similar capability that is now available in Enterprise Architect. However, by being defined within the profile, the heat map capability is automatically available in all your models. When creating a Tag Definition in the profile, you simply define an enumerated tag on which the coloring will depend, along with the color to be applied to each tagged value.

MG Utilities

The MG Utilities were originally designed as a set of capabilities to make modeling in general easier. The utilities were not tied to a profile. We have now incorporated the MG Utilities into the MG Runtime and in some cases enhanced them to leverage the profile. The features within the MG Utilities provide several very beneficial features to the set of MG Runtime modeling tasks. These are described below.

View Element Usage

This dialog is designed to give you a lot of information about how a model element is used. This includes were an element is used…

- On diagrams
- As an attribute on another element
- As an operation parameter on another element
- As an operation return type on another element
- As a reference tagged value on another element
- As linked to other elements
- As linked to other elements via exposed interfaces or ports
- As a classifier for instances

This is a great way to help decide whether or not to delete an element. A simple double click with find the related element in the project browser or open a diagram. A sample screen shot of this is shown above in the Viewpoint Types section.

Aliases

When design in a technical environment, like data models, element names can be rather unfriendly. They consist of a long set of uppercase characters with underscores that make diagrams look messy and hard to understand. For example, the name THIS_IS_A_COLUMN_IN_SOME_DATABASE will cause its element to be drawn without word wrap causing it to take up a lot of space. When creating elements, you can choose to have Model Guardian create a more friendly version of the name and assign it to the element's alias. For example, the name THIS_IS_A_COLUMN_IN_SOME_DATABASE will be given the alias: This Is A Column In Some Database.

Diagram Connectors

The Diagram Connectors tab allows you change numerous characteristics about numerous connectors on a diagram with a single command. For each selected connector you may

- Replace the stereotype, add an additional stereotype, or delete the stereotype.
- Change the Source and/or Target cardinality
- Change the line style
- Change the direction of the arrow
- Swap the source and target elements
- Change the line width
- Hide or show the connectors
- Change their color

Information Flows

It is valuable to know exactly where information is flowing through your system. The Information Flows tab shows you all the conveyed items on all of the connectors in your model. You can filter the list on source and/or target element's names and the conveyed information. The dialog will let you view the source and target element's in the project browser or bring up the diagrams that have the connector. If a connector is between two exposed interfaces or ports, the parent elements are shown as well. You can export the list of information flows into a .CSV file for import into Microsoft Excel, allowing you to share the information with non-modelers in a hands on manner.

Diagrams

Copy elements and their connectors from one diagram to another is easy in Enterprise Architect. However, it will not copy elements that are marked as non-selectable. With Model Guardian, you can choose to copy…

- Only selectable elements
- Only non-selectable elements
- All elements

This allows you set up a diagram template with non-selectable elements and then copy them to new diagrams.

Greater Control Over Element Location

Modelers often create elements that already exist. Another problem is that they often create them in the wrong package. The MG Utilities has a new-element dialog that replaces Enterprise Architect's and provides some important additional features.

Duplicate Name Check

When giving a new element a name, Model Guardian will let you know if there are any existing elements with the same name. If so, it will list those elements and show you where they are in the project browser. You can also get a list of elements whose name contains the new element name, have the same stereotype, the same profile type, and/or the same UML type. You then have the option of either using one of the existing elements or creating the new one. You can be sure that your modelers are not creating the same thing repeatedly.

Choosing an Element's Location

Getting elements into the right package can be distracting if not outright difficult. If you create an element on a diagram, it gets placed under the package that owns the diagram. You can create them under a package by right clicking the package and then choosing to create a new element. Model Guardian gives you a few more convenient options.

Via the New Element Dialog

The Model Guardian new element dialog allows you to browse for the correct package when creating a new element. It optionally presents a list of packages that already have elements with the same stereotype, allowing you to easily find a package with similar elements.

Dropping on a Package

If you locate a new element by dragging an item from the toolbox and dropping it on a package in the diagram, the element will be created under that package. When first creating a diagram, you can add the packages where various new elements should be created. Then when creating the new elements, simply drop them on a

package. This will create the element in the correct location. Afterwards you can drag it to wherever you want it on the diagram. You can even make the packages non-selectable so you do not accidentally grab them rather than the new elements you have created.

Relocating Existing Elements

Relocating an existing element in Enterprise Architect can be a painful process. To do so, you need to drag it from one package in the browser to another. With a larger model, this can be a slow process. Having multiple elements to move makes the situation worse. Model Guardian gives you three different, convenient ways to select elements to relocate.

- Select elements in a diagram.
- Select elements in the project browser.
- Select elements via a query

Once you have selected the elements to relocate, you can choose the target package from the project browser or from a list of packages that already have elements with the same stereotype.

Each of these methods for relocating elements moves them to a single target package. An even more powerful method lets you move multiple elements on a diagram to different locations with one command. Simply drag each element on top of its target package, save the diagram and click the button. This lets you move multiple elements to multiple locations.

Sync Item with Profile

Creating a Model of your Profile

To provide maximum flexibility in documenting your profile, you can generate an external model of the profile in Enterprise Architect. The current version of Model Guardian at the time when this document was written, v7.4, generates a hierarchy of classes representing the Object Types and Connector Types in your profile. The Tags assigned to each are included as attributes on the classes. You can use the Enterprise Architect reporting features to create documentation on your profile. You can also use SQL Report Writers against supported SQL based repositories. We are working to include all aspects of the profile this external model.

The image below is an excerpt from the INTEGRATED Modeling Profile by Integrate IT[6]. You can easily see the hierarchy and the tags that belong to the elements and connectors.

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[6] www.in2grateit.com

Figure 16: Model of the INTEGRATED Profile by INTEGRATE iT

Model Guardian Metamodel

The following diagram is a model of the modeling environment created by Enterprise Architect and enhanced by Model Guardian and, as such, is its meta model.
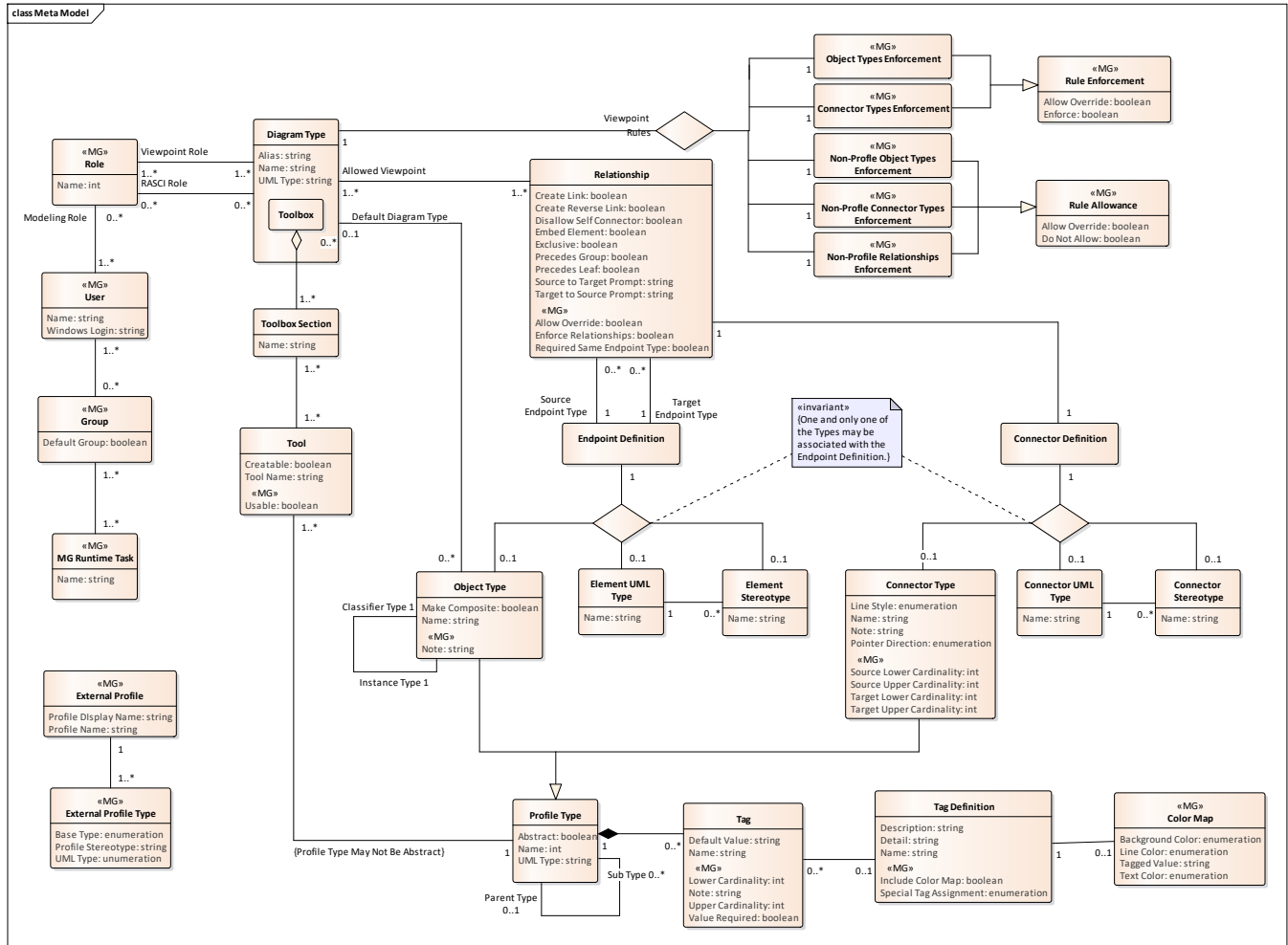

Figure 17: Model Guardian Metamodel

Viewpoints

Viewpoints provide a way to look at a subset of a model that pertains to a particular audience and purpose. Business Architects have no interest in looking at server deployments nor should they be permitted to make changes to them. They should be restricted to making changes to only those things within their expertise. A Viewpoint provides the structure for doing so. In Enterprise Architect, a Viewpoint is represented as a Diagram Type along with its Toolbox. A View is a representation of a subset of the model. The are numerous ways to show a view, such as textual descriptions and spreadsheet formulas. In Enterprise Architect, a View is represented by a diagram and its contents.

When you create a diagram, you choose the type of diagram which automatically presents its toolbox. The toolbox relates to the purpose of the Viewpoint. A Class diagram will have a toolbox with items such as Class, Package, Interface, and other tools used to capture the structure and relationships in the model. An Activity Diagram, on the other hand, has Activity, Action, Decision, and other types that are used to capture the behavior in the model.

An Enterprise Architect profile sets up the Diagram Types and Toolboxes, which provide valuable assistance for your modelers. However, they are merely suggestions. You can use any Toolbox with any Diagram Type, allowing you to do non-sensical things like connecting an Activity to a Node. This make no semantic sense. Model Guardian adds safeguards against this.

Another deficiency in Enterprise Architect is that you can place any element type on any diagram, regardless of its Diagram Type. There is no reason to have a Server element on a Business Motivation Model diagram. Model Guardian solves this problem. In the Metamodel diagram above, you see that Diagram Type has an embedded Toolbox. The Toolbox has 1 or more Toolbox Sections, which can be shared by other Diagram Types' Toolboxes. Each Toolbox Section has a set of Tools which map to Object Types or Connector Types. Each Tool is Creatable, i.e. can be used to create an element or connector on a diagram. Model Guardian adds the concept of Usable to the Tool. If a Tool is marked as Usable, then elements or connectors previously created from it can be dragged onto the diagram. If it is not marked as Usable, the elements and connectors cannot be placed on the diagram. Tools are marked as Usable by adding them to the Toolbox (see the Profile Editor's Assigned Tools section in the image below) but not checking them. Checked Tools are both Creatable and Usable.
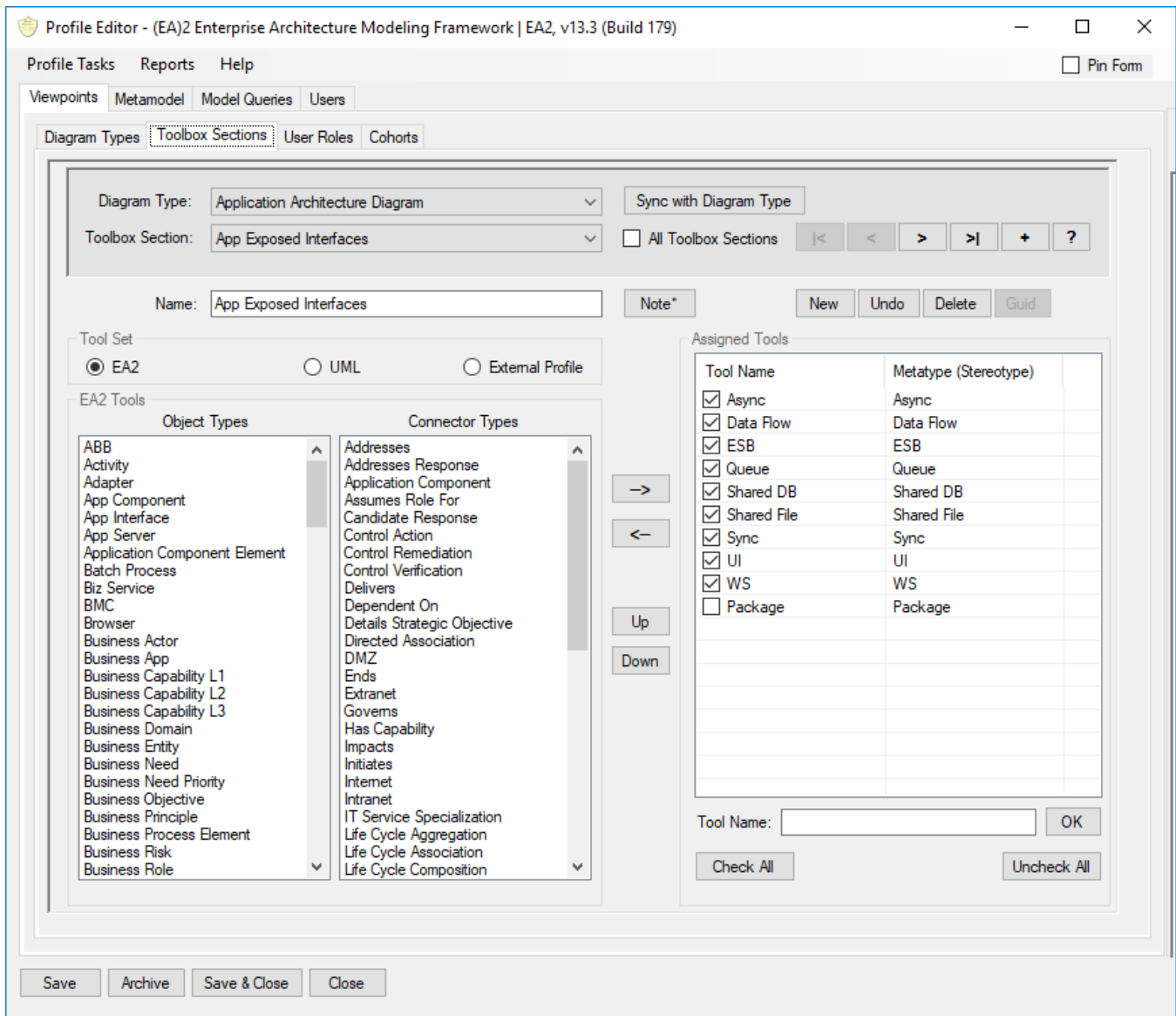
Figure 18: Controlling the Use and Creation of Tools

Diagram Type in the metamodel has numerous relationships which help control what can be done in a diagram. To the right is the Viewpoint Rules association containing five enforcement constraints. Two are derived from Rule Enforcement that lets you decide whether to enforce the rule. As with all the constraints in Model Guardian, you can choose to allow the user to override the rule after being notified about it. Three are derived from Rule Allowance, which is the inverse, letting you choose to not allow something.

- Object Types Enforcement – only elements created from Tools in the Diagram Type's Toolbox may be created on the diagram, even if you have changed to another toolbox.
- Connector Types Enforcement – the same as with Object Types Enforcement except that it applies to connectors.
- Non-Profile Object Types – prevents elements, like Class, Node, etc., from being created on a diagram of the Diagram Type. The idea is to prevent modelers from using things that you have not put into your profile.

- Non-Profile Connector Types – the same as with Non-Profile Object Types except that it applies to connectors.
- Non-Profile Relationships – this prevents Relationships that have not been defined in your profile from being added to a diagram of the Diagram Type. Only those elements that you want connected can be connected.

Roles

Users can be assigned one or more Roles, e.g. Business Architect, Application Architect, Security Architect, etc. Each Role is assigned one or more Viewpoints (Diagram Types). A User's Viewpoints control what a modeler can do. In order to delete an element or connector, its Profile Type must be included as a Creatable Tool in one of the User's Roles' Diagram Type's Toolbox.
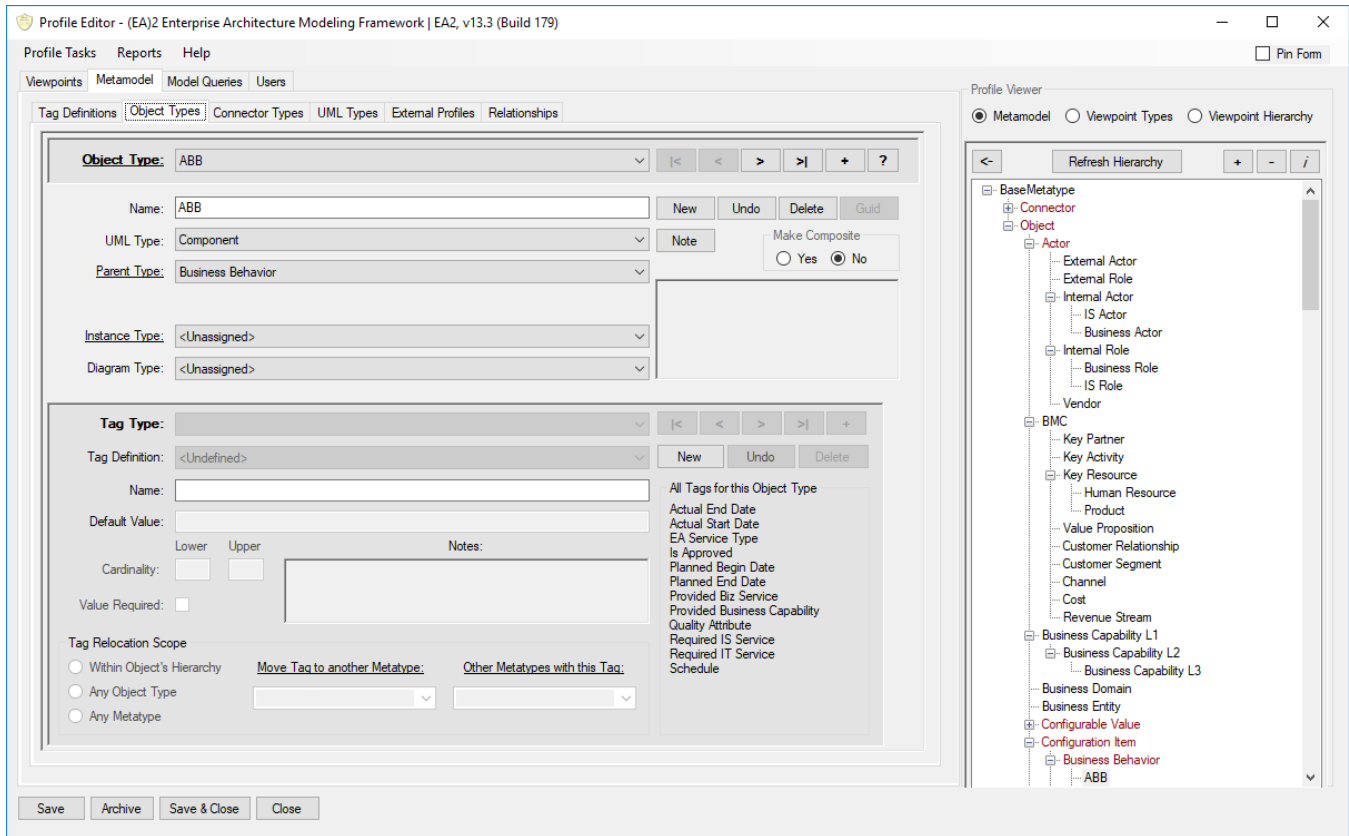
Metatypes

Profile Types, aka. Metatypes, map to the stereotypes you use in your model.

Model Guardian uses a hierarchical approach to building the metatypes which drastically reduces the amount of maintenance required. Profile Types can be either Object Types or Connector Types. The former are the specifications for elements created in a model. The latter are the specifications for connectors created in a model. Each are given Tags and participate in Relationships. These are shared by child types in the hierarchy.

 If a Profile Type is given a UML type it is considered concrete. If not, it is Abstract. Abstract types cannot be used in Toolboxes. They are used to capture attributes and relationships for their subtypes. The Profile Editor shows the hierarchy of Profile Types (on the right in the image below). Abstract types are shown in red. If a type's parent is not abstract, the type will result in model elements that have the stereotype of both the type and its parent. You should derive types from abstract types to prevent this.

Relationships

Enterprise Architect's profile system uses Quicklinks to represent Relationships. You set the stereotypes of the three items to determine what kind of elements and connectors form the Relationship. You can indicate on which Diagram Types the Relationship may appear. Furthermore, you can create a Quicklink which will provide a menu of elements types to which an element may be connected. This provides assistance but does not ensure conformance. You can connect any element to any other element regardless of their types.

Model Guardian extends the concept of a Relationship. It consists of a source endpoint, a target endpoint, and a connector. The type of each endpoint may be defined as

- A concrete Object Type from the Profile
- A UML type with or without a stereotype

Likewise, the type of the connector may be defined as

- A concrete Connector Type from the Profile
- A UML type with or without a stereotype

Model Guardian not only makes it easier to setup your Relationships, it lets you control Relationships. It is easier because everything you need to define a Relationships is in drop down boxes. However, the real power is that you can define a relationship using Object Types of your Profile, including abstract types, and all child types automatically inherit the relationship.

Quicklinks in EA are created using a spreadsheet. Each Relationship requires two rows in the spreadsheet, one for each direction the link may be drawn, i.e. source to target and target to source. Model Guardian

automatically creates the Quicklink definitions for each Relationship you create. Furthermore, it will create a Quicklink for all combinations of endpoint subtypes. The (EA)[2] profile has about 70 Relationships which yield over 1,000 Quicklinks.

Model Guardian provides the option to enforce Relationships. Not only can you control what Relationships may be created on a diagram of a given Diagram Type, you can prevent Relationships that are not defined in your Profile. Your modelers will no longer be able to connect a Business Objective to a Server.

Abstract Connector Type

A Connector Type with its UML type set to "Abstract". It can be used to capture Tags and Relationships for its child types. It cannot be used in Toolbox Sections.

Abstract Object Type

An Object Type with its UML type set to "Abstract". It can be used to capture Tags and Relationships for its child types. It cannot be used in Toolbox Sections.

Color Map

Object Types that have a Tag defined as an enumeration may have colors associated with their model Element's fill, text, and line characteristics depending on the value of the enumeration. See Tag Definition below for further information.

Concrete Connector Type

A Connector Type that has a UML type. It can be used in Toolbox Sections.

Concrete Object Type

An Object Type that has a UML type. It can be used in Toolbox Sections. See Object Type below.

Connector Definition

Used to specify the type of Connector that may exist within a given Relationships. For a given Relationship, the Connector Definition may be one and only one of:

- Concrete Connector Type
- UML connector type
- Stereotyped UML connector type

Connector Stereotype

One of three possible Connector Definitions. See Connector Definition above.

Connector Type

A Profile type that is based on a UML connector type, e.g. Association, Dependency, etc. The Connector Type Tab in the Profile Editor is shown below.

Connector Types

An association combining Connector Definition with the three types of Connector Definitions. An instance of a Connector Definition may be associated with one and only one of the Connector Definition types. See Connector Definition above.

Connector Types Enforcement

This is a constraint on the Viewpoint Rules subtab of the Diagram Type's tab. Checking the Enforce box means that only Connector Types that are part of the diagram's Toolbox may be created on the diagram.

Connector UML Type

One of three possible Connector Definitions. See Connector Definition above.

Diagram Type

A Diagram Type, along with its Toolbox, represent a Viewpoint in Enterprise Architect. Model Guardian allows you to control what types may be created on a diagram and what types may be added to a diagram. You can decide to prevent any non-profile types from being created or added to a diagram. You can also decide whether to allow non-Profile Relationships to be created on a diagram.

Element Stereotype

One of three possible Element Definitions. See Endpoint Definition

Element UML Type

One of three possible Element Definitions. See Endpoint Definition

Endpoint Definition

Used to specify the type of the Endpoints that may exist in a Relationship. There is an Endpoint Definition for the Source Endpoint and another for the Target Endpoint. For a given Relationship, each Endpoint Definition may be one and only one of:

- Concrete Object Type
- UML element type
- Stereotyped UML element type

Endpoint Types

An association combining Endpoint Definition with the three types of Endpoint Definitions. An instance of a Endpoint Definition may be associated with one and only one of the Endpoint Definition types. See Endpoint Definition.

External Profile

A Profile provided by a third-party vendor, including those from Sparx Systems. There are two types of External Profiles.

- XML based profile – This type of profile is delivered as a XML file. The Sparx BPMN 2.0 Profile is an example of this type of profile. Model Guardian can be mapped directly to this type of profile. Once mapped, the types from the External Profile can be used in Toolbox Section and be governed by all the Model Guardian constraints. Rather than having to use all of the types from the external Profile You can use just those types from the External Profile Furthermore, all the features provided by the External Profile Type will apply, e.g. tagged values, icons, relationships, etc.
- Proprietary profile – This type of profile is delivered as a proprietary file. The Sparx TOGAF Profile is an example of this type of profile. Model Guardian cannot map directly to this type of profile. However, you can

External Profile Type

This is a type from an External Type, e.g. BPELProcess from Sparx Systems' BPMN 2.0 profile. You can choose which of the External Types from an External Profile you want to include in a Model Guardian profile.

Group

Groups are set up and assigned to Users to control what MG Runtime Tasks they may perform. Some of the tasks perform bulk updates throughout a model, something you may not want junior modelers to do.

One of the first things you should do when creating a profile is to set up your Users and Groups. The will automatically be a Default Group to which you can assign the Tasks that you want to give access to most of your Users. Then, you can set up Groups for power users and administrators and assign them the more powerful Tasks. Any User not assigned a Group will be placed in the Default Group. This means you do not have to assign most of your Users to a Group.
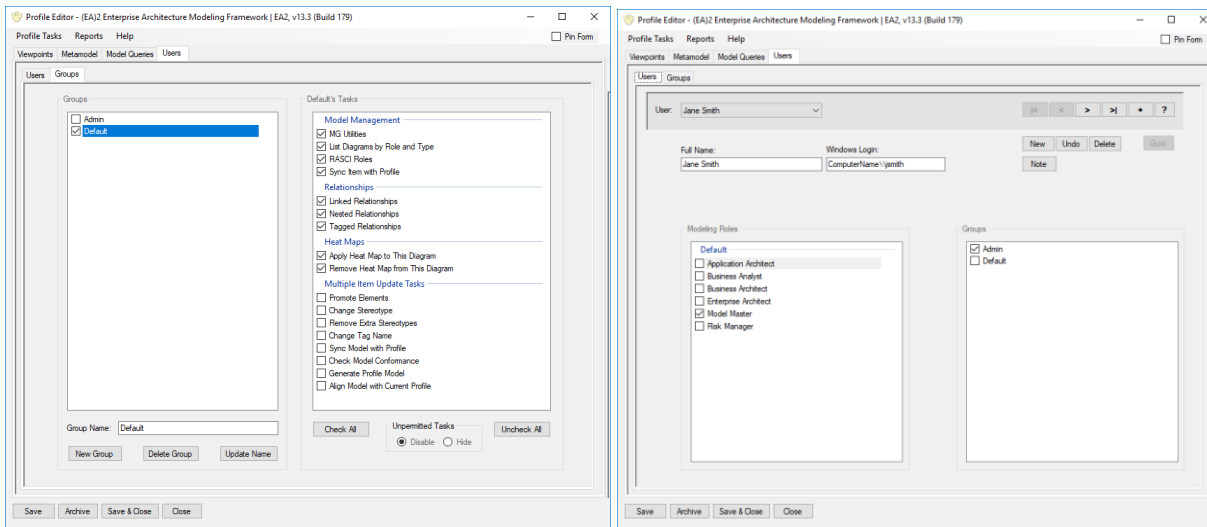
MGR Task

The MG Runtime (MGR) edition of Model Guardian provides capabilities beyond what Enterprise Architect can do by itself. It can do mass updates to stereotypes, tagged values, and other things. It can synchronize the elements and connectors of a model with changes to the profile used to create the model. It can manage Direct Relationships, Nested Relationships, and Indirect Relationships that use tagged values to form the Relationships. It can list all the diagrams that have a Diagram Type belonging to your Role and then open any you choose. For a complete description of the MGR Tasks.

You can create Groups to control what Tasks each User may access. See the Group definition above. Note that some Tasks require the repository to reside in SQL Server. Some Tasks may be grayed out if you have a model with a different DBMS.
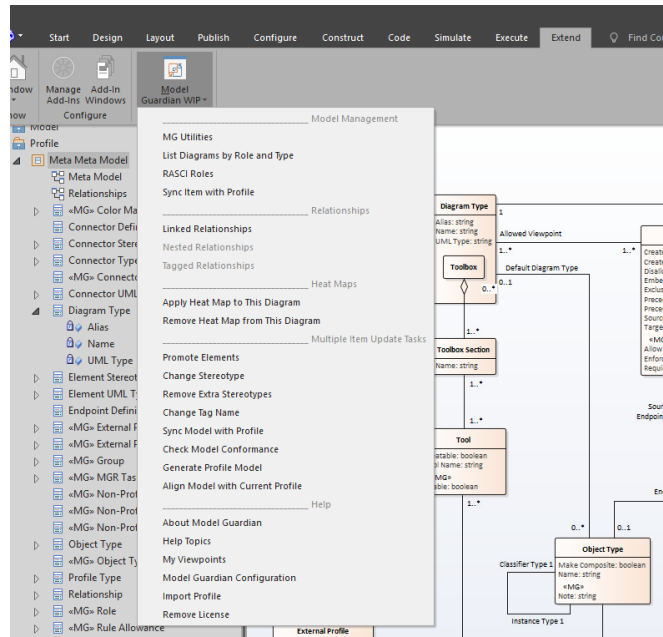
Figure 19: MGR Tasks Menu in EA

Non-Profile Connector Types

These are Connector Types that are not part of your Profile. Model Guardian lets you control whether they can be used in diagrams of certain Diagram Types.

Non-Profile Object Types

These are Object Types that are not part of your Profile. Model Guardian lets you control whether they can be used in diagrams of certain Diagram Types.

Non-Profile Relationship

These are Relationships that are not part of your Profile. Model Guardian lets you control whether they can be used in diagrams of certain Diagram Types.

Object Type

A Profile type that is based on a UML element type, e.g. Class, Activity, etc.

Object Types Enforcement

This is a constraint on the Viewpoint Rules subtab of the Diagram Type's tab. Checking the Enforce box means that only Object Types that are part of the diagram's Toolbox may be created on the diagram.

Profile Type

Aka. Metatype Type

Profile Types are used to control the creation of model element and connectors. See Model Guardian Metamodel

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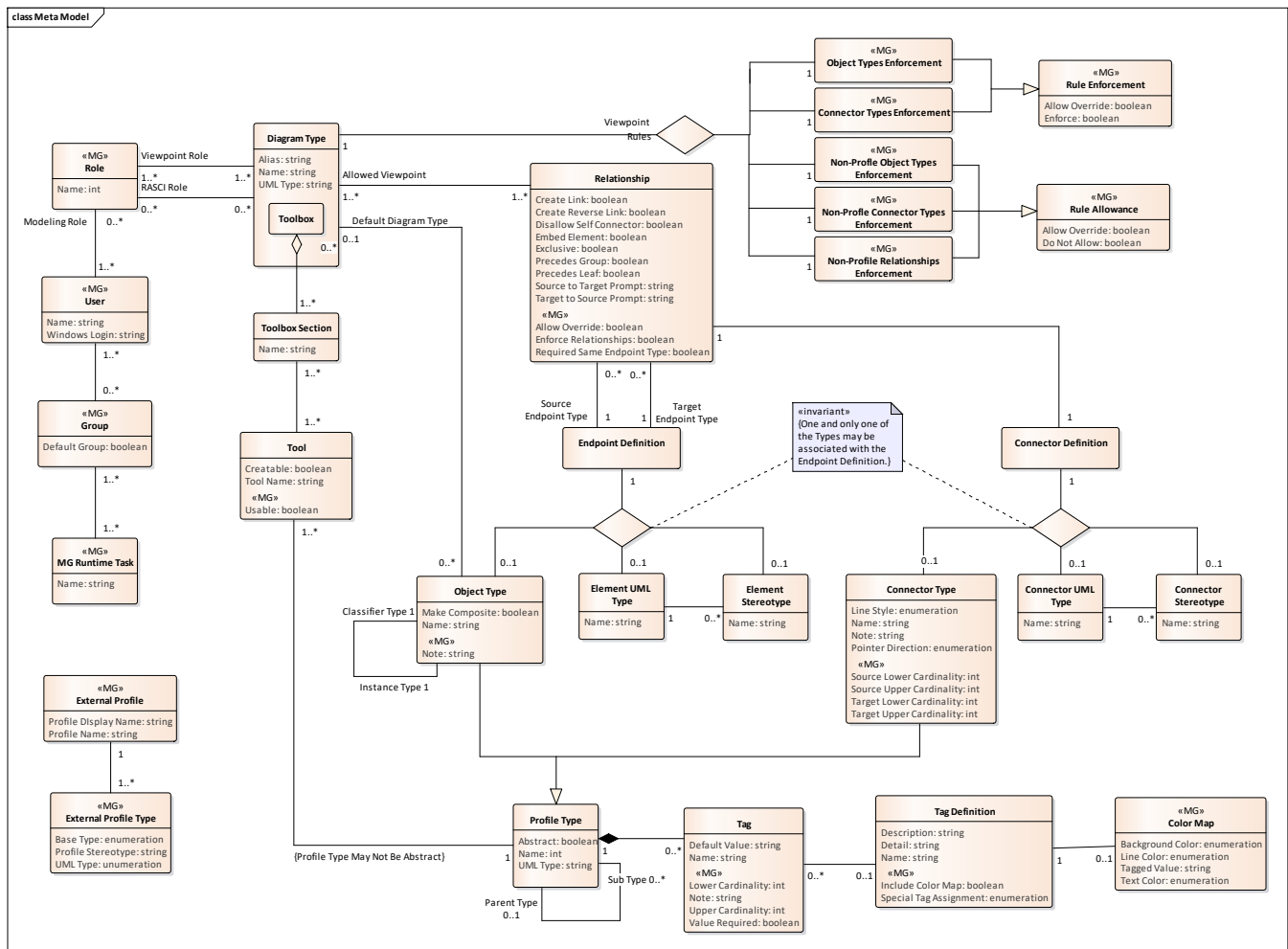

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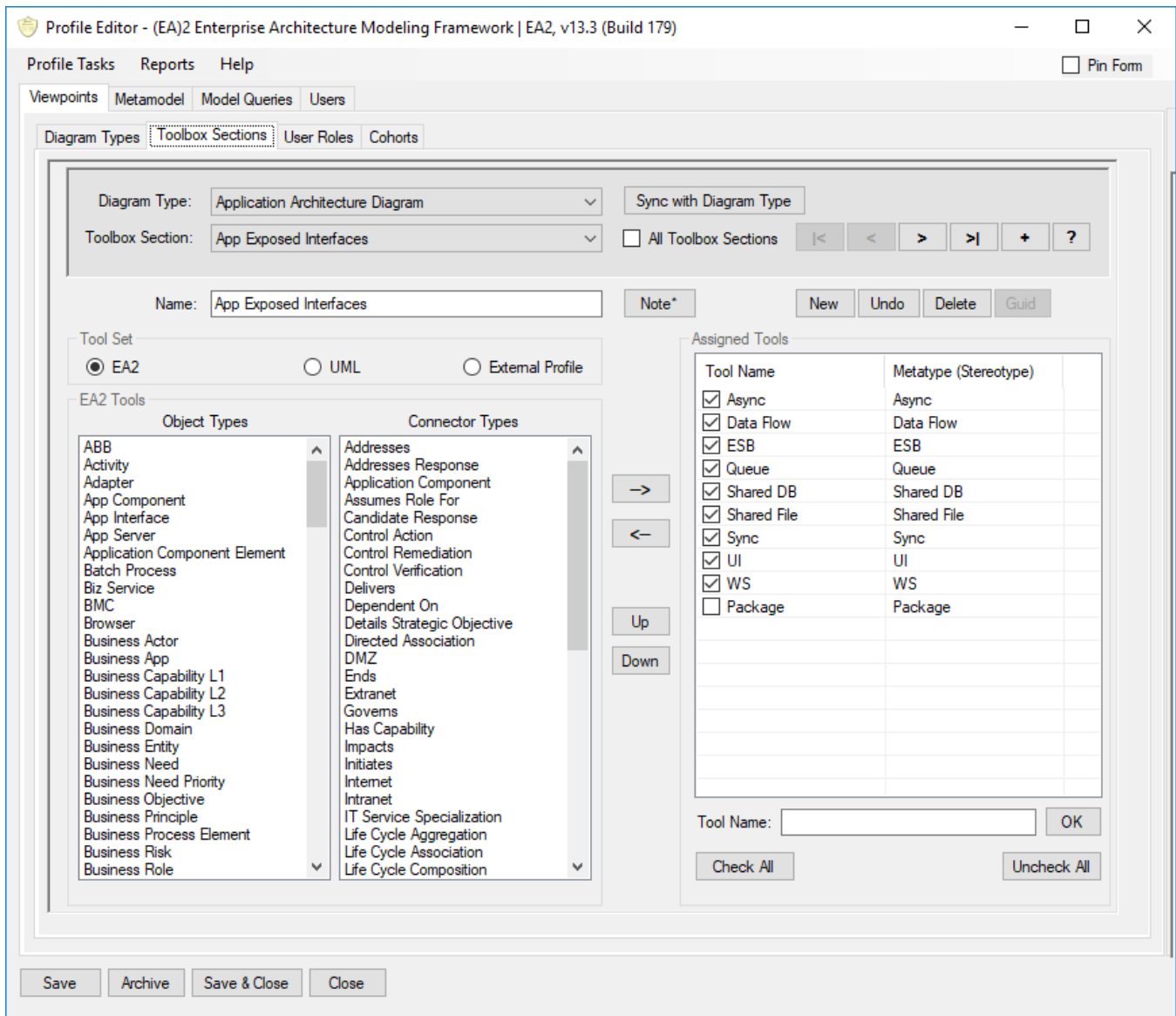
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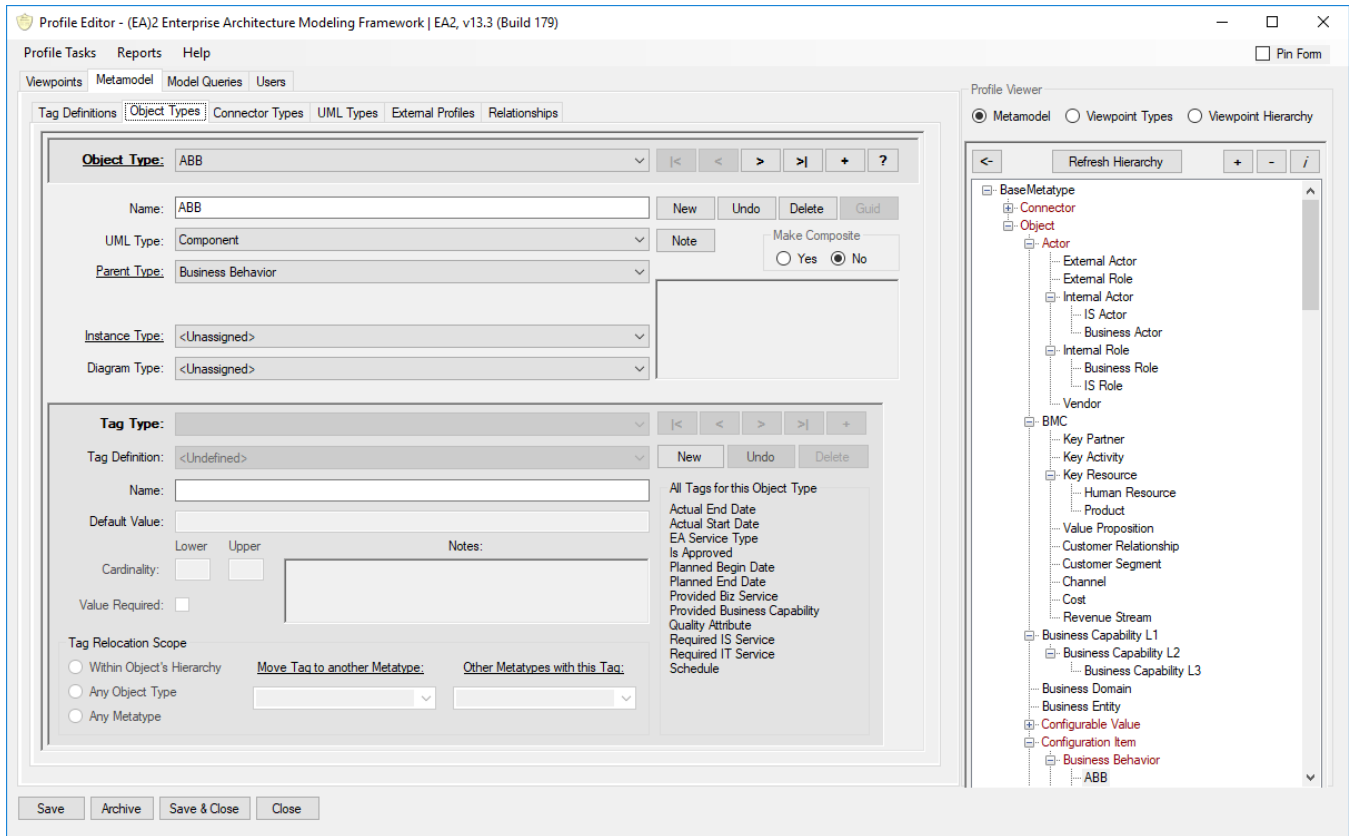
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Profile Types, aka. Metatypes, map to the stereotypes you use in your model.

Model Guardian uses a hierarchical approach to building the metatypes which drastically reduces the amount of maintenance required. Profile Types can be either Object Types or Connector Types. The former are the specifications for elements created in a model. The latter are the specifications for connectors created in a model. Each are given Tags and participate in Relationships. These are shared by child types in the hierarchy.

 If a Profile Type is given a UML type it is considered concrete. If not, it is Abstract. Abstract types cannot be used in Toolboxes. They are used to capture attributes and relationships for their subtypes. The Profile Editor shows the hierarchy of Profile Types (on the right in the image below). Abstract types are shown in red. If a type's parent is not abstract, the type will result in model elements that have the stereotype of both the type and its parent. You should derive types from abstract types to prevent this.

Relationships

Enterprise Architect's profile system uses Quicklinks to represent Relationships. You set the stereotypes of the three items to determine what kind of elements and connectors form the Relationship. You can indicate on which Diagram Types the Relationship may appear. Furthermore, you can create a Quicklink which will provide a menu of elements types to which an element may be connected. This provides assistance but does not ensure conformance. You can connect any element to any other element regardless of their types.

Model Guardian extends the concept of a Relationship. It consists of a source endpoint, a target endpoint, and a connector. The type of each endpoint may be defined as

- A concrete Object Type from the Profile
- A UML type with or without a stereotype

Likewise, the type of the connector may be defined as

- A concrete Connector Type from the Profile
- A UML type with or without a stereotype

Model Guardian not only makes it easier to setup your Relationships, it lets you control Relationships. It is easier because everything you need to define a Relationships is in drop down boxes. However, the real power is that you can define a relationship using Object Types of your Profile, including abstract types, and all child types automatically inherit the relationship.

Quicklinks in EA are created using a spreadsheet. Each Relationship requires two rows in the spreadsheet, one for each direction the link may be drawn, i.e. source to target and target to source. Model Guardian

automatically creates the Quicklink definitions for each Relationship you create. Furthermore, it will create a Quicklink for all combinations of endpoint subtypes. The (EA)^2 profile has about 70 Relationships which yield over 1,000 Quicklinks.

Model Guardian provides the option to enforce Relationships. Not only can you control what Relationships may be created on a diagram of a given Diagram Type, you can prevent Relationships that are not defined in your Profile. Your modelers will no longer be able to connect a Business Objective to a Server.

Abstract Connector Type, Abstract Object Type, Concrete Connector Type, and Concrete Object Type.

Relationship

A relationship consists of two endpoints, source and target, and a connector. A Quicklink generated for a relationship is a modeling aid used to show what types of elements and connectors may be used in a relationship. Enterprise Architect uses Quicklinks to make suggestions for relationships. Model Guardian lets you add constraints to ensure your modelers are creating valid relationships.

Profile Editor : Metamodel | Relationships

Role

Aka. User Role, Modeler Role

Roles help define what a User can do in a Model. Examples include Business Architect, Business Process Modeler, and Data Architect. Assigning a User to one or more Roles constrains the User to doing just what you have allowed for the Diagram Types that are assigned the User's Role(s).

Rule Allowance

This is a Diagram Type constraint that lets you decide whether something is permitted. You can choose whether to allow the User to override the constraint after receiving a warning. It is an abstract class that is specialized by Non-Profile Connector Types, Non-Profile Object Types, and Non-Profile Relationship.

Rule Enforcement

This is a Diagram Type constraint that lets you decide whether to enforce a restriction, like what types can created on a diagram. You can choose whether to allow the User to override the constraint after receiving a warning. It is an abstract class that is specialized by Object Types Enforcement and Connector Types Enforcement

Tag

Tags can be assigned to Object Types and Connector Types. They can be simple string values or use a Tag Definition.
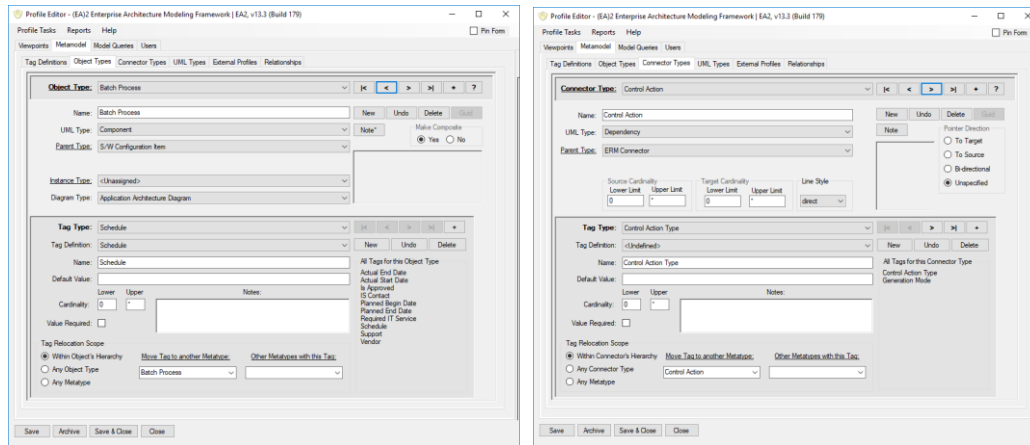
Figure 20: Object & Connector Type Tags

They may have a default value. Model Guardian allows you to set lower and upper cardinality limits. For example, a Person element should not have multiple Year Born tags. You also indicate whether a value must be provided. Model Guardian currently does not enforce these rules, but you run a conform check to find elements and connectors that break the rules and then quickly find the offenders in the model.

Tag Definition

Creating a Tag Definition provides greater control when adding Tags to Object Types and Connector Types. You define the detail of the tag using the same technique as used in Enterprise Architect. If the EA detail has a type of Enum, you can add a color map for the element and assign a distinct color to each enumerated value, as shown below. The image on the right shows the Special Tag Assignments that can be made. These are values that the MG Runtime uses for automated processing Tagged Relationships. See the MG Runtime Users Guide for more information on how they are used.
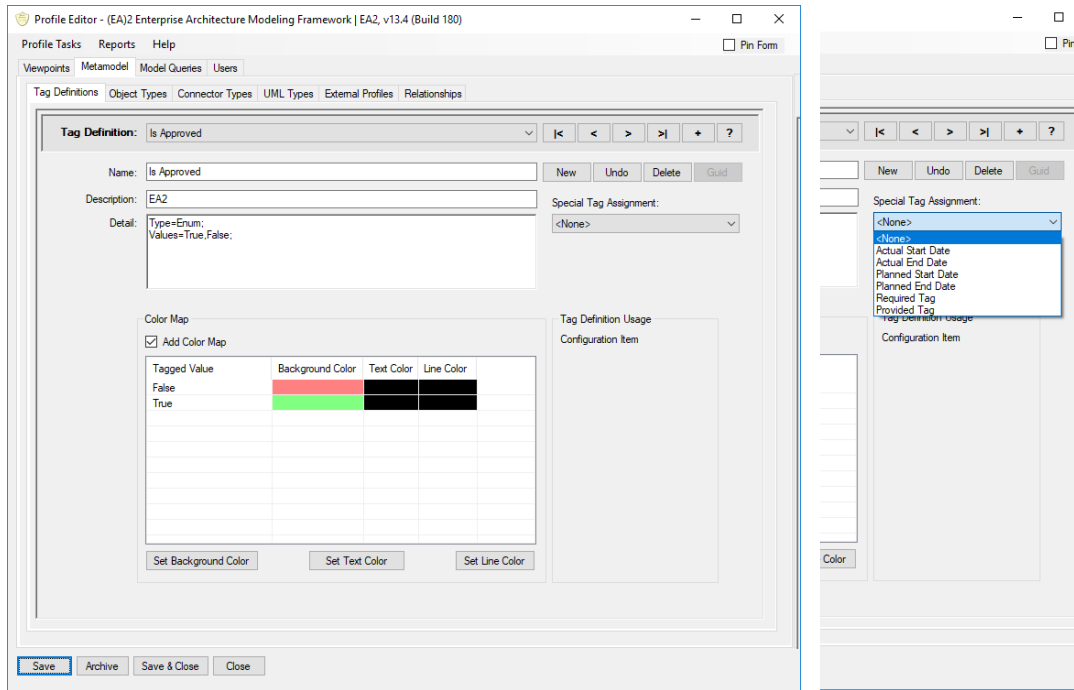
Figure 21: Tag Definition Tab

Tool

A Tool is an item in a Toolbox Section that lets you create elements from the Object Type or Connector Type with which the Tool is associated.

Toolbox

A Diagram Type has one associated Toolbox that automatically open when a diagram is opened or created. It is composed of one or more Toolbox Sections that may be shared by multiple Toolboxes.
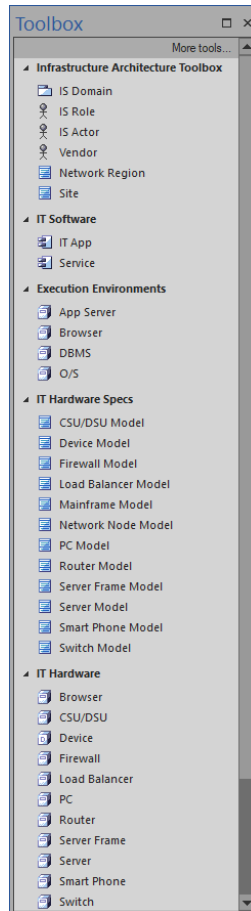

Figure 22: Enterprise Architect Toolbox

Toolbox Section

A Toolbox Section contains Tools. It may be included in one or more Diagram Type's Toolbox.

Tools within a Toolbox Section may be set as Creatable and as Usable. Checking a Tool's box indicates that it can be created on diagrams of the Diagram Types that use the Toolbox Section. Leaving it unchecked means that the Tool's element or connector. If rules are turned on, for a model element or connector to be placed on a diagram, it must be included in the Diagram Type's Toolbox. For the element or connector to be created on a diagram, it must be included in the Diagram Type's Toolbox and be checked.
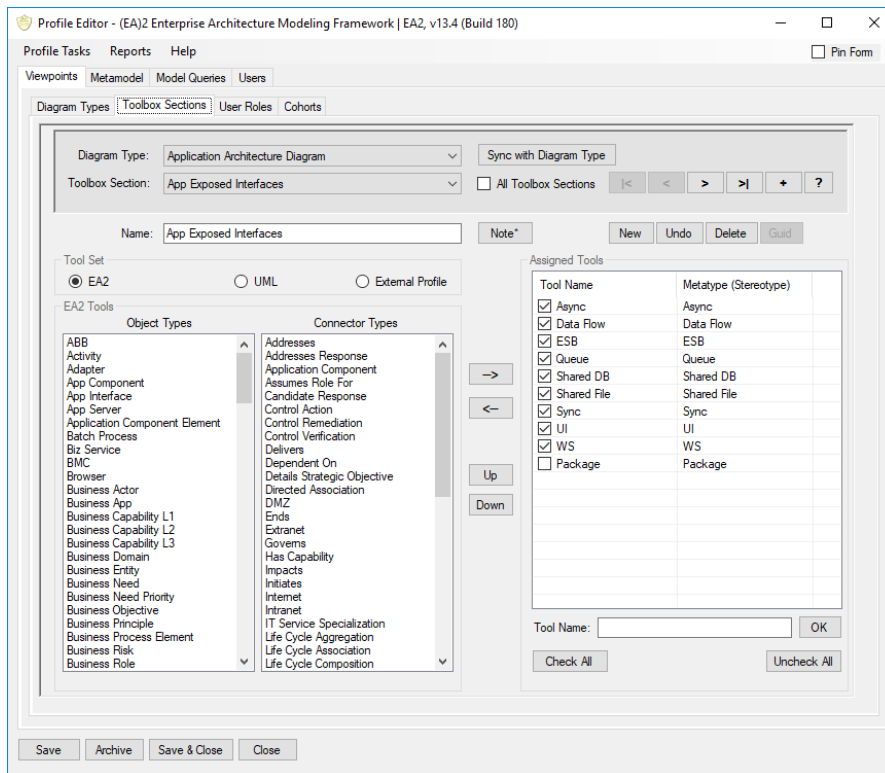

Figure 23: EA Toolbox | MG Toolbox Tab

User

Creating a User for each of your modelers allows you to control what they can do in the model. The User is assigned one or more Roles, which have associated Diagram Types that control the modeling effort. Assigning a User to a Group controls what MG Runtime Tasks the User can perform.

Viewpoint Rules

This is an association that links a Diagram Type into a relationship with Object Types Enforcement, Connector Types Enforcement, Non-Profile Object Types Enforcement, Non-Profile Connector Types Enforcement, Non-Profile Relationships Enforcement constraints.