



Enterprise Architect

User Guide Series

Time Aware Modeling

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Time Aware Modeling

The Time Aware Modeling feature allows analysts to create incremental versions of their models by providing easy access to tools that facilitate the migration of elements through multiple versions. It is now easy to see the evolution of a model over different versions, and create new versions of model elements automatically without altering the underlying structure of the as-is model.

Time Aware modeling is based on using tools to clone a package structure (packages and diagrams only) as a new version, and then selectively over-riding parts of the old version with new elements and relationships using either the "Clone as New Version" capability or simply adding new material to the model as desired. This method allows a highly selective and incremental revision or development of a model, while maintaining traceability in both the future and past directions.

Time Aware modeling is not dependent on version control or baseline functionality, but is an entirely separate capability that helps analysts manage multiple versions/revisions of a model in a consistent and fully traceable manner.

Time Aware Model

The screenshot displays the Enterprise Architect interface for a 'Glider Control System' model. The Project Browser on the left shows a tree structure with versions 1.0, 1.1, 2.0, and 2.1. The main workspace shows a Class Diagram for 'Glider Control System' with elements like Dashboard, Stick, Airspeed, StatusLight, and Wings. The Wings class is expanded to show sub-classes like Ailerons, Spoilers, Flaps, and Airbrakes. At the bottom, a 'Relationships' table provides a detailed view of the model's structure across versions.

Relationship	Source	Source Version	Target	Target Version	Target Role	Target Cardinality	Navigability	Target Type	Target Stereotype	View
Association	Dashboard	2.0	Stick	2.1				Class		Visible
Abstraction	Stick	2.1	(Stick)	1.0			Source -> Dest...	Class		
Association	Stick	2.1	Wings	1.1		2	Unspecified	Class		Visible

Notes

- Easily compare as-is and to-be models.
- Make changes to subsequent versions without altering the underlying structure of the as-is diagram.
- Get greater control over the evolution and traceability of your overall model.
- Create **Traceability diagrams** that outlines each stage of the elements evolution.

Clone Structure as New Version

Creating a clone of your current model structure is a simple migration process driven by version number. The structure migration process builds a clone of your current Package hierarchy, including Diagrams and updates them with a user defined version number. All diagram elements contained on the clone diagram are included only as linked elements (references) to ensure their encapsulation is maintained with the as-is model.

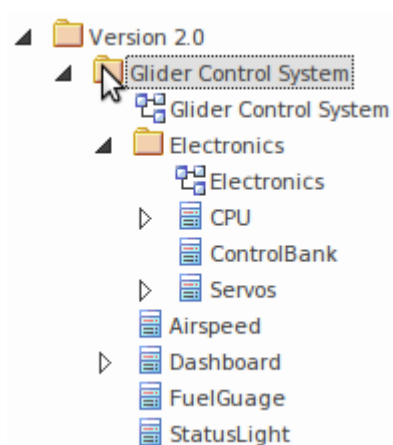
As the to-be model evolves linked diagram elements from the previous version can be selected and automatically cloned into the new package hierarchy as required. This ensures model assets continue to develop seamlessly between as-is and to-be model without crossing over.

Create new clone structure

Step	Action
1	Right click on a package in the project browser to open the context menu. See ribbon menu. 'Design Package Manage Clone Structure as New Version'
2	Select 'Clone Structure as New Version...' option.
3	You will be prompted by an input dialog to enter the new version number for the to-be model.
4	You will be immediately prompted to select the structure destination package in the Select Package destination dialog.
5	Select the destination for the to-be model, click OK.
6	The structure clone will be created in the destination package.

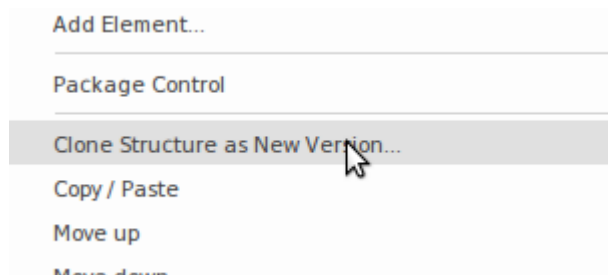
Example

Start with selecting the root of your as-is model structure.

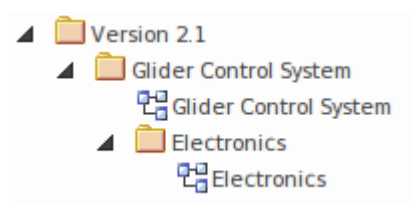


Select context menu option 'Clone Structure as New Version...'

Alternatively the option can be found in the ribbon menu. 'Design | Package | Manage | Clone Structure as New Version'



Finish with new to-be model structure.



Notes

- All Packages in the new structure will be updated with the newly entered version number.
- All Diagrams in the new structure will be updated with the newly entered version number.
- Project browser Elements in the new structure are linked elements from the as-is package source and retain their as-is version status.
- Note, Text and Boundary elements are cloned into the new version with the diagram.
- You can either select an existing package or create a new destination package in the Select Package destination dialog.

Clone Diagram as New Version

Creating a clone of your current model Diagram is a simple migration process driven by version number. The diagram migration process builds a clone of your selected diagram and updates it with a user defined version number. All diagram elements contained on the clone diagram are migrated as linked elements to ensure their encapsulation is maintained with the as-is model.

As the new diagram version evolves linked diagram elements can be selected and cloned into the new diagrams location as required. This ensures model assets continue to develop seamlessly between as-is and to-be model without crossing over.

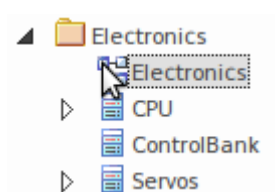
In most instances the Clone Package Structure will suffice to provide the required new diagrams, but this facility is useful if there is an ad hoc need to over-ride a specific diagram as a new version.

Create new clone diagram

Step	Action
1	Right click on a Diagram in the project browser to open the context menu. See ribbon menu. 'Design Diagram Manage Clone Diagram as New Version'
2	Select 'Clone Diagram as New Version...' option.
3	You will be prompted by an input dialog to enter the new version number for the clone diagram.
4	You will be immediately prompted to select the destination package for your diagram in the Select Package destination dialog.
5	Select the destination for the clone diagram, click OK.
6	The Diagram Clone will be created in the destination package.

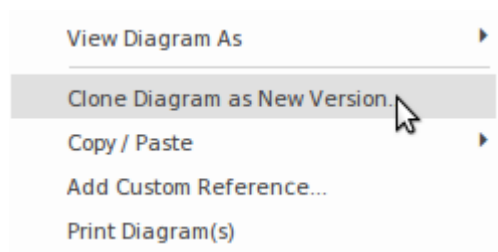
Example

Select a diagram to clone.

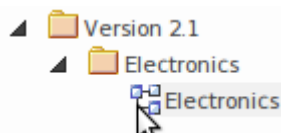


Select context menu option 'Clone Diagram as New Version...'

Alternatively the option can be found in the ribbon menu. 'Design | Diagram | Manage | Clone Diagram as New Version'



Finish with new to-be diagram.



Notes

- Clone Diagrams will be updated with the newly entered version number.
- Project browser Elements in the new structure are linked elements from the as-is package source and retain their as-is version status.
- Note, Text and Boundary elements are cloned into the new version with the diagram.
- You can either select an existing package or create a new destination package in the Select Package destination dialog.

Clone Element as New Version

Creating a clone of your linked Elements on a diagram is a simple migration process driven by version number. The element migration process builds a clone of your selected element and updates it with a user defined version number.

Cloned elements are the core of the Time Aware modeling capability. In addition to duplicating their base version, the necessary relationships between the clone and the original are created to ensure the logical consistency and traceability of the new model. When cloning an element as a new version, Enterprise Architect intelligently determines where to route the new element's relationships to correctly reflect the intent of the new model version.

Where a relationship exists to another model element in a previous version, the model is examined to see if there is a new version of the target element first - and if so, that element is now used as the target of the relationship. If there is no over-ride, the relationship is set to the existing element. This behavior is extremely useful when studying the impact of making changes to elements in base versions that are expected to remain unchanged throughout multiple versions of a models lifecycle.

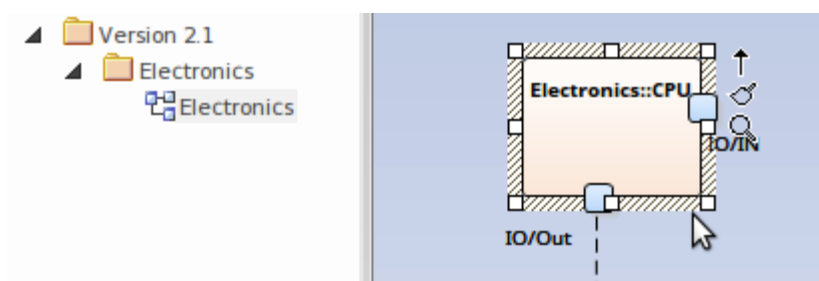
Creating clone elements helps maintain seamless development between the as-is and to-be model, ensuring changes are well defined, encapsulated and traceable.

Create new clone element

Step	Action
1	Open a diagram with linked Elements from another Package on the diagram.
2	Right click on a linked element in the diagram to open the context menu. See ribbon menu. 'Design Element Manage Clone Element as New Version'
3	Select 'Clone Element as New Version...' option.
4	You will be prompted by an input dialog to enter the new version number for the clone element.
5	The new clone element will be created as new version.

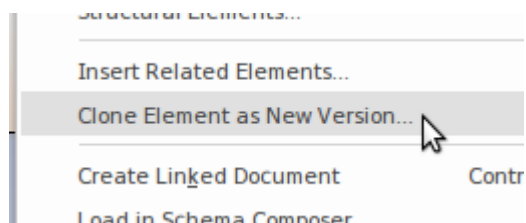
Example

Select linked element on to-be diagram clone.

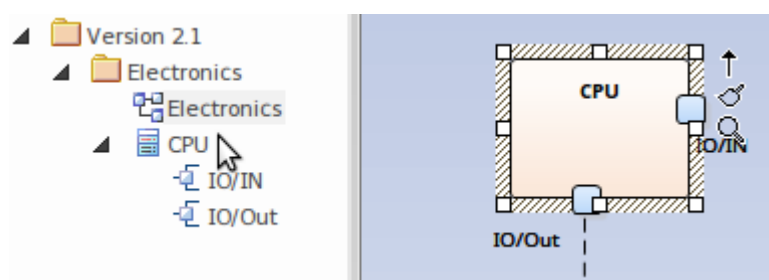


Select context menu option 'Clone Element as New Version...'

Alternatively the option can be found in the ribbon menu. 'Design | Element | Manage | Clone Element as New Version'



Finish with new to-be element.



Notes

- Clone Element will be created in the same package as the current diagram.
- When cloning an element all parent and child elements will also be cloned to maintain element hierarchy.
- Clone Element as New Version menu option is not available for elements contained in the diagrams' package.
- Package, Note, Text and Boundary diagram elements are excluded from this feature.
- The Clone Element will maintain relationship links with previous version elements.
- A Trace relationship link is created between the clone and source element.
- Use **Filter** to Version option in diagram properties to filter elements by version.

Traceability

Keeping track of Element relationships and versions is made easy with the following features.

Insert Related Elements

Use the **Insert Related Elements** feature to automatically create a Traceability diagram that outlines each stage of the elements evolution.

Relationships

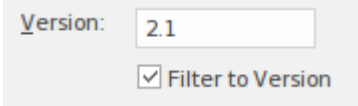
The Relationships docked window is a powerful tool to view the relationships between as-is and to-be models. Selecting Source Version and Target Version report columns brings clarity of relationships.

In the relationships window right click on a selected relationship to open the context menu; view properties, find usage and location of source/ target elements.

Relationship	Source	Source Version	Target	Target Version	Target Role	Target Cardinality	Navigability	Target Type	Target Stereotype	View
Association	Stick	1.0	(Wings)	1.0		2	Unspecified	Class		
Association	Stick	1.0	Wings	1.1		2	Unspecified	Class		Visible
Association	(Dashboard)	1.0	Stick	1.0			Unspecified	Class		
Association	Dashboard	2.0	Stick	1.0			Unspecified	Class		Visible

Version Filtering

When working on a diagram mixed with elements from different versions of your model, you can easily select to filter out element not in the current version.

Step	Action
1	Open diagram properties dialog.
2	Enter the version number you wish to exclude from the diagram element filter. 
3	Check the ' Filter to Version' option to enable diagram filter feature.

Filter Example

