Running a model with Alf

The Alf code in your project is not executed directly. Rather, it is translated by the Alf compiler into UML Activities within the larger model containing the Alf code. These Activities can then be executed using Magic Model Analyst (MSI), as part of an overall simulation of your UML model.

> ⊘ If an active Class is instantiated using an Alf instance creation expression, then the classifier behavior for the Class is explicitly started on the newly created instance *after* the completion of initialization of the instance. However, the default MagicDraw option is to **Autostart Active Objects**, in which case the classifier behavior for an active object will be automatically started as soon as the object is created. While MagicDraw will ensure that any Properties with default values are properly initialized before the classifier behavior is started, if you have initialization code in a constructor for an active Class, then this will *not* execute before the classifier behavior starts.
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> Therefore, if you intend to instantiate an active Class from Alf code using a constructor that carries out initialization on which the classifier behavior depends, it is important to make sure that the classifier behavior waits for the constructor execution to complete. You can do this by having the classifier behavior wait for a special *Start* Signal before carrying out any other behavior, and having the constructor invoke *this.Start()* when it is done with its initialization behavior. (If the classifier behavior is an activity, then use an Accept Event Action to wait for the Start signal. If the classifier behavior is a State Machine, have the State Machine transition from its initial Pseudostate to a *Waiting* State that is exited by a Transition triggered by the *Start* Signal.)
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> Alternatively, you can turn off the **Autostart Active Objects** option:
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> 1. Select **Options > Envronment** from the main menu.
> 2. Choose **Simulation** (the last option group on the left).
> 3. Uncheck the **Autostart Active Objects** option under **Simulation Frameworks** (so it is *false*).
>
> However, doing this will turn off the option globally for all projects, which may cause some other simulation projects to not work. You can turn this option off for just a specific project if you use a simulation configuration, by setting the **Autostart Active Objects** property to *false* in your configuration.

A simulation of a model that contains Alf code is run as for any other executable model using MSI. Either click on an executable element in your model and select **Simulation > Run** (or **Run in Context**, as appropriate) or create a simulation configuration and run that.

⚠

⚠️ MSI has a general **Animation Speed** property, used to slow down execution so it can be graphically animated on Activity and State Machine diagrams. The Activity models that are generated from Alf code do not have any diagrams that can be animated. However, the **Animation Speed** property affects all Activity execution, whether it is actually being graphically animated or not. Alf-generated Activities are often quite complicated, so, if the **Animation Speed** is less than 100%, these Activities may take a long time to execute. It is therefore recommended to set the **Animation Speed** to 100% whenever you are running a simulation of a model with Alf code.
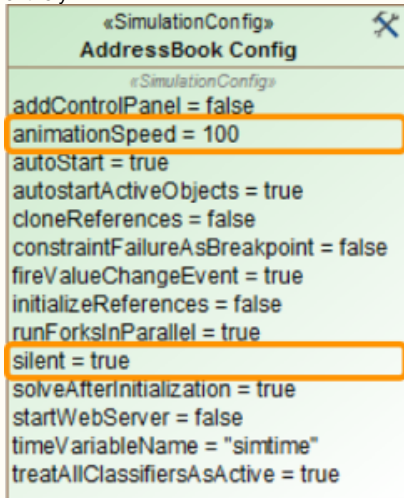
To set the **Animation Speed**

- Set the **Animation speed** slider all the way to the right in the MSI Simulation window (note that the default animation speed is 95%, in which case the slider may look like it is all the way to the right, even though it really isn't).
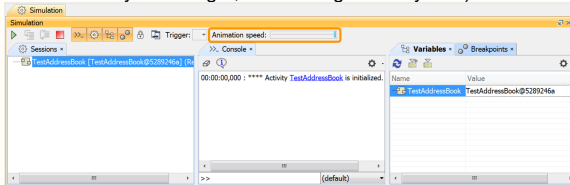
  OR

- If you use a simulation configuration, set the **[Animation Speed](#)** option in your simulation configuration to 100, or set the **Silent** option to *true* to disable animation entirely.

ⓘ If you wish to use an **Animation Speed** slowdown in the animation of a specific diagram, set a breakpoint within that diagram. Then, when the run stops at the breakpoint, use the slider to lower the **Animation Speed**, and continue the run. Once the execution leaves the diagram of interest, set the **Animation Speed** back to 100%. Note, however, that if the diagram includes any Behaviors specified using Alf code (e.g., State Behaviors on State Machine diagrams), these Behaviors may run slowly while the **Animation Speed** is set to less than 100%. (If you are using a simulation configuration, then **silent** must be *false* for this to work.)