Distribution Extensions

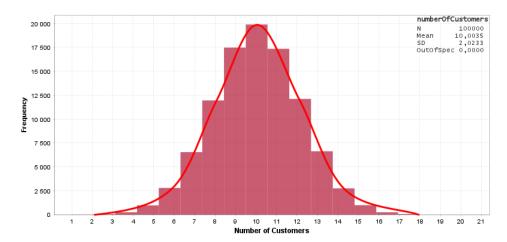
A Distributed Property is a property of a Block or a Value Type used to apply a probability distribution to the values of the property. Specific distributions can be defined by applying a Subclass of the «DistributedProperty» stereotype to a property according to OMG SysML 1.4, E.7 Distribution Extensions. Magic Model Analyst supports three types of distributions: Uniform, Normal, and Triangular.

To set a distributed property

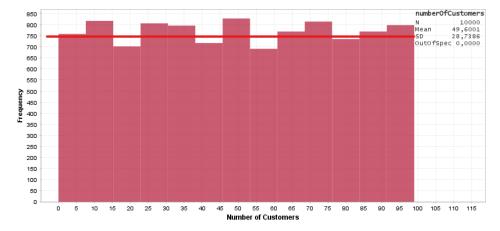
- 1. Select a property and double-click it to open the Specification window.
- 2. Select Applied Stereotype and click [...] to include a distribution property.
- 3. Specify the required properties. These include Mean, Standard Deviation, etc. for «normal» and Min, Max, etc. for other distributed properties.

	Specification of Value Property	normal	×
		properties Value Property in the properties specification table. om the Properties drop-down list to see more properties.	
«block» b {value < 11}	🗉 🗟 🖸 😂 norm	nal	
constraints {value < 11} values value : Real = Math.random()*15 value 1 : Real = value	Usage in Diagrams Diag	Image: Composite Image: Composite ppled Stereotype Image: Composite efault Value Image: Composite efault Value Image: Composite efault Value Image: Composite Derived Image: Composite Read Only Image: Composite Outuplicity Unspecified) ame normal Landard Deviation 2.0 op Do op Real [SysML::Libraries::PrimitiveValueTypes] ied Stereotype Image: Composite otypes applied to this element. Image: Composite	
interval» interval : Real{max = 10.0, min = 0.0} in : Real = 5.0	< > Q T	Type here to filter properties	
		Close Back Forward He	elp

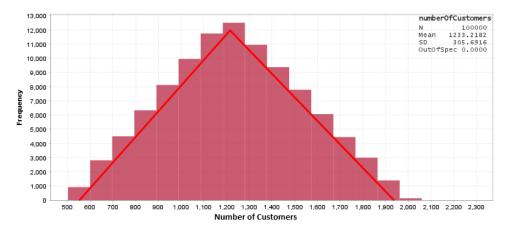
- 4. Click Close. The distributed property will be applied.
- 5. Run the simulation model. Depending on the applied stereotype, the distributed properties will be initialized with a random value, such as normal distribution, constant distribution between min & max values. You can review sampling results by running the model with association end multiplicity (e.g., 100), and keep the result with «CSVExport» for analysis.
- 6. Results of the distributed property «normal» (with 100000 samples) with a Mean value of 10 and a Standard Deviation value of 2.



7. You can apply a «uniform» distributed property stereotype with Min and Max properties (e.g., 0 and 100) to plot a uniform distribution chart.



8. You can apply a «triangular» distributed property stereotype with Min, Max, and Peak properties to plot a triangular distribution chart. The sample project used is <modeling_tool_installation_directory>\samples\simulation\AircraftProjectAnalysis.mdzip.



Related pages

- Supported SysML elements
- Requirements traceability from the Variables pane