9.3.2.12 ItemFlow

Description

An ItemFlow describes the flow of items across a connector or an association. It may constrain the item exchange between blocks, block usages, or ports as specified by their flow properties. In addition, an ItemFlow can occur between parameter nodes and pins along "Object Flow" edges on an activity diagram. An ItemFlow can be illustrated in an example of a pump connected to a tank: the pump has an "out" flow property of type Liquid and the tank has an "in" FlowProperty of type Liquid. To signify that only water flows between the pump and the tank, we can specify an ItemFlow of type Water on the connector. One can label an ItemFlow with the classifiers of the items that may be conveyed. For example: a label Water would imply that instances of Water might be transmitted over this ItemFlow. In addition, if the item flow identifies an item property, then one can label the item flow with the item property. For example, a label of "liquid: Water" means Water items might flow and these items are the values of the property "liquid," i.e., the values of the "liquid" item property are the instances of Water flowing at any given time. Item properties are owned by the common (possibly indirect) owner of the source and target of the item flow, rather than by the source and target types, as flow properties are. Item flows on connectors shall be compatible with flow properties of the blocks usages at each end of the connector, if any. The direction of the item flow shall be compatible with the direction of flow specified by the flow properties. (See 9.3.2.12 and 9.3.2.13 about flow property direction.) Each classifier of conveyed items on an item flow shall be the same as, a specialization of, or a generalization of at least one flow property type on each end of the connected block usages (or their accessible nested block usages recursively, see 9.3.2.8 about encapsulated blocks). The target flow property type shall be the same as, or a generalization of, a classifier of the item flow or the source flow property type, whichever is more specialized. (See 9.3.2.13, for tighter constraints on flow property types across connectors without item flows.).

9.3.1.5 ItemFlow

An ItemFlow describes the flow of items across a connector or an association, on a BDD & IBD Diagrams; as well as, an "Object Flow" edge on an ACT Diagram. The notation of an item flow is a black arrowhead on the connector or association. The arrowhead is towards the target element. For an item flow with an item property, the label shows the name and type of the item property (in name: type format). Otherwise the item flow is labeled with the name of the classifier of the conveyed items. When several item flows having the same direction are represented, only one triangle is shown, and the list of item flows, separated by a comma is presented. There is no designated symbol to represent an ItemFlow along an "Object Flow" edge, on an ACT Diagram.