

Understanding Data Objects and Stores

The BPMN standard includes elements concerning data modeling and data flow. “Data” refers to information we use or produce during a business process. Data elements make explicit the key information a process uses, transforms, or produces.

BPMN provides us with two different elements to represent data: data objects and data stores. Both represent information within a BPMN process model. They aren’t intended to represent physical things or tangible objects. In other words, BPMN data elements describe information itself, not how it is conveyed or stored.

For example, a data object doesn’t represent a document. It represents the information contained within the document.

A data store doesn’t represent a database. It represents a collection of records that might be stored in a database.

Nevertheless, a data object is represented as a piece of paper with a turned-down corner. Data objects typically represent a single piece of information that is generated, consumed, or modified during the execution of a process but does not persist beyond the process instance. In other words, a data object is singular, transient, and process-specific.

A data object can be used as input for a process task. A data object can also be used to make explicit the key information that flows between activities within a process.

A data store is represented as a cylinder. Data stores typically represent collections of information that persist and can be used in multiple processes. That is, a data store represents a collection, is persistent, and is process-agnostic.

An invoice, purchase order, job application, or customer complaint would probably be depicted as a data object. Examples of data stores include accounts receivable, inventory records, employee profiles, and supplier information.

Parentheticals can be added to data element labels to indicate state or type where appropriate. Here are some examples: Invoice (unpaid), Job application (received), Customer complaint (resolved), Customer profile (active), Employee records (retired), or Inventory data (in stock).

To illustrate the use of data objects and stores, let’s consider the office supplies purchasing process at a branch office of a company.

- The process is instantiated when the receptionist determines that office supplies are required.
- The receptionist undertakes the task of creating a purchase order, the output of which is the purchase order (pending approval) data object.
- Next, the office manager reviews the purchase order.
- The process instance ends if the office manager rejects the purchase order. In effect, the purchase order prepared by the receptionist disappears.
- On the other hand, if the office manager approves the purchase order, the receptionist enters the information contained in the approved purchase order into the order repository data store.
- Next, the purchasing clerk references the information in the order repository to purchase the office supplies.

Understanding Data Objects and Stores

- Once the supplies have been purchased, the process ends.

To recap, a data object represents a single piece of transient and process-specific information, such as a purchase order. A data store represents a collection of process-agnostic information, such as employee profiles.

BPMN data elements describe information used, transformed, and produced by a process. They don't specify the mechanisms used to capture, transmit, or store such information. That level of detail is best left to other types of models or diagrams, such as a systems architecture diagram or a data flow diagram.