

Using sequence and collaboration diagrams

As sequence and collaboration diagrams are logically equivalent (they display the same information), there is no point in drawing both at any given stage. Both types of diagram convert a textual scenario into a graphical view of the flow of events, and both can be shown at varying levels of detail. If either diagram gets too cluttered with messages we can choose to model only the main flow of messages. Both diagrams can be used to represent the functionality of the system at different levels, for example to illustrate how a use case is realized or to show the workings of a complicated operation.

The main advantage of the sequence diagram is its ability to represent the passage of time graphically. The order of messages is very clear: a sequence diagram reads from top to bottom. It is, of course, possible to figure out the sequence of messages from the numbers on a collaboration diagram, but it is not so intuitively clear. Sequence diagrams can also include return arrows; collaboration diagrams never show return arrows. Another feature that can be added to a sequence diagram is object activation, showing when the object is active. Collaboration diagrams don't have the equivalent of activations.

The special feature of collaboration diagrams is that they include explicit links between objects. A message from one object to another means that there should be an association between the classes to which they belong. In a collaboration diagram this association between classes is represented by an explicit link between the objects of the classes (for example, the link between :Customer and :Payment in Figure 6.14). Sequence diagrams do not explicitly show links, although an underlying link can be assumed or the message could not be sent. Collaboration diagrams are also useful when you want to view the complete set of messages from the point of view of one object. This is valuable when you are preparing a state diagram (see Chapter 7), since the state diagram needs to know everything that can happen to a class of objects.

There are no hard and fast rules about whether to use a sequence or a collaboration diagram in any particular situation. Some people like to use sequence diagrams early in the development process, as their layout tends to be easier for users to follow, and collaboration diagrams later on since they map more clearly onto the class diagram, but in the end the type of diagram used is a matter of individual choice.

Model consistency

Interaction diagrams bring together many existing models and modelling elements: from the use case model, the use cases, the actors, use case scenarios and descriptions; from the class