

process descriptions, but clients generally find diagrammatic techniques, such as activity diagrams, easier to understand.

Activity diagrams can be drawn in the initial stages of development to help both developers and clients to analyse business workflow processes and gain a shared understanding of what is going on in the system. At this stage they provide a useful vehicle for discussion, helping developers, clients and users to visualize the system functionality.

The ability of activity diagrams to represent activities that can be carried out in parallel is particularly useful in high-level business modelling, as drawing the diagrams can help to identify potential for parallel processing, even where activities are currently carried out sequentially. Representation of parallel processing is especially useful in certain types of system, such as real time, where synchronization of activities and tasks is central to the system functionality.

Once the system use cases have been identified (see Chapter 3), activity diagrams can be used to illustrate the steps involved in achieving a use case goal, showing the activities and the order in which they take place.

Finally, when development has reached a stage where classes have been identified together with their attributes and operations, activity diagrams are a useful means of describing how the operations work, particularly when these are based on complex algorithms.

Technical points

Modelling iteration. When we discussed iteration in activity diagrams earlier in this chapter, we showed how to model it using a loop between activities (see Figure 8.6). It is also possible to show iteration using a multiplicity symbol * on an activity, which is useful when there is a risk of a diagram becoming cluttered. Figure 8.11 shows a section of an activity diagram illustrating what happens when Annie Price, the shop manager for Wheels, checks that the insurance on each bike is up to date. The multiplicity symbol on the activity 'Check bike insurance details' indicates that this activity is repeated until the details on all the bikes have been checked.

Omitting the diamond decision symbol. It is not mandatory to include the diamond symbol to indicate a decision leading to alternative courses of action in an activity diagram, although the different paths through the diagram are often clearer when the diamond is included. Figure 8.12 shows two versions of a section from Figure 8.5 (Activity diagram for the 'Issue bike' use case) with and without the diamond decision symbol.