

traceability, allowing the developer to track an early requirement via the different phases of development right through to the code.

Although the traditional system life cycle was concerned about issues such as quality, ease of modification and potential reuse, it tended to regard them as add-ons to the core development process. In the object-oriented approach such issues are regarded as central, and developers are encouraged to bear them in mind throughout the time they are working on the system.

The Rational Unified Process (RUP)

A life cycle provides a high-level representation of the stages that a development project must go through to produce a successful system, but it does not attempt to dictate how this should be achieved, nor does it describe the activities that should be carried out at each stage. A development method,¹ on the other hand, is much more prescriptive, often setting down in detail the tasks, responsibilities, processes, prerequisites, deliverables and milestones for each stage of the project.

Over the past decade, there have been a number of object-oriented development methods, such as Responsibility-Driven Design (Wirfs-Brock *et al.*, 1990), Object Modelling Technique (Rumbaugh *et al.*, 1991) and Open (Graham *et al.*, 1998). It is beyond the scope of this book to describe these in detail, but you can find references to all of them at the end of the chapter and in the bibliography.

Nowadays, almost all object-oriented projects use the Unified Modelling Language (see following section) as the principal tool in their development process. Use of the UML has been approved by the Object Management Group (OMG), which controls issues of standardization in this area. This has resulted in conformity between projects in terms of notation and techniques. However, UML is simply a notation or language for development; it is not in itself a development method and does not include detailed instructions on how it should be used in a project. The creators of the UML, Ivar Jacobson, Grady Booch and James Rumbaugh, have proposed a generic object-oriented development method in their book *The Unified Software Development Process* (Jacobson *et al.*, 1999) and this generic method has been adopted and marketed by the Rational Corporation under the name of the Rational Unified Process (RUP).

RUP incorporates not only modelling techniques from the UML, but also guidelines, templates and tools to ensure effective and

1. *Development methods used to be referred to as 'methodologies', and sometimes still are. As the true meaning of methodology is 'study of methods', we prefer to use the simpler term 'method' in this book.*