Chapter 2
The Language: Rationale and Fundamentals

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2.1 Introduction

The Business Process Management domain has evolved at a dramatic pace over the past two decades and the notion of the business process has become a ubiquitous part of the modern business enterprise. Most organizations now view their operations in terms of business processes and manage these business processes in the same way as other corporate assets. In recent years, an increasingly broad range of generic technology has become available for automating business processes. This is part of a growing trend in the software engineering field throughout the past 40 years, where aspects of functionality that are potentially reusable on a widespread basis have coalesced into generic software components. Figure 2.1 illustrates this trend and shows how software systems have evolved from the monolithic applications of the 1960s developed in their entirety often by a single development team to today’s offerings that are based on the integration of a range of generic technologies with only a small component of the application actually being developed from scratch.

In the 1990s, generic functionality for the automation of business processes first became commercially available in the form of workflow technology and subsequently evolved in the broader field of business process management systems (BPMS). This technology alleviated the necessity to develop process support within applications from scratch and provided a variety of off-the-shelf options on which these requirements could be based. The demand for this technology was significant and it is estimated that by 2000 there were well over 200 distinct workflow offerings in the market, each with a distinct conceptual foundation. Anticipating the difficulties that would be experienced by organizations seeking to utilize and integrate distinct workflow offerings, the Workflow Management Coalition (WFMC), an industry group formed to advance technology in this area, proposed a standard reference model for workflow technology with an express desire to seek a common platform for achieving workflow interoperation.

Although a worthy aim, the proposal met with conceptual difficulties when it came to specifying the details associated with workflow operation and potential
interaction schemes. Moreover, individual workflow vendors were reluctant to commit to a common operational platform that would leave them with minimal opportunity for product differentiation. The net result was that the Workflow Reference Model and the associated standards proffered by the WfMC essentially constituted the lowest common denominator of workflow concepts acceptable to all parties rather than laying a foundation for the workflow domain more generally.

Nonetheless, the issues identified remain unaddressed and there is a marked absence of a common conceptual foundation for workflow technology or for the area of business process management more generally. Furthermore, there are a plethora of competing approaches to business process modeling and enactment, and the lack of an agreed set of fundamentals in the domain means that direct comparisons between them and integration of their functionality is extremely difficult. In light of these issues, in 1999, the Workflow Pattern Initiative was conceived as an empirical means of identifying the core functionality required for workflow systems.

During the past 10 years, over 100 patterns have been identified that are relevant to workflow technology and to the various perspectives of business processes more generally. One of the criticisms that the patterns faced early on was that they represented isolated process concepts and did not give a guide as to the form that a process language should take. In response to this, YAWL (Yet Another Workflow Language) was developed. Initially, it sought to show the manner in which the original 20 control-flow patterns should be operationalized in a workflow language. More recently, it has been expanded to encompass a broader range of the overall set of workflow patterns. In tandem with the language effort, the YAWL System has also been developed with the aim of providing a reference implementation for the YAWL language and workflow technology.

In this chapter, we will explore the fundamental underpinnings of the YAWL language, looking at the precursing workflow patterns, then examining the formal foundations on which the language is based and finally reviewing the language constructs of which it is comprised.