A Language/Action Based Approach to Information Modelling

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INTRODUCTION

There are several different views of the role of information systems. Two of the most important are the data view and the communicative view. According to the data view, the primary purpose of an information system is to provide a model of a domain, thereby enabling people to obtain information about reality by studying the model. In this respect, an information system works as a repository of data that reflects the structure and behaviour of an enterprise, and the system provides data that can be used for decisions about the enterprise. In contrast, the communicative view states that the major role of an information system is to support communication within and between organisations by structuring and coordinating the actions performed by organisational agents. The system is seen as a medium through which people can perform social actions, such as stating facts, making promises, and giving orders.

The data and communicative views of information systems are mirrored by two different views of organisations: the functional view and the constructional view (Dietz, 2003a). The functional view focuses on the functions of an organisation with respect to its environment, in particular, the resources that the organisation consumes and produces. A model of an organisation from a functional perspective is a black-box model, as it shows the interactions with the environment but not the internal mechanisms. The constructional view, on the other hand, focuses on how behaviour and function are brought about by the operations and structure of an organisation. A model of an organisation from a constructional perspective is a white-box model as it shows the inner workings of the organisation.

In information systems design, the starting point has often been based on the data view and the functional view, though frequently augmented by concepts like reasoning and monitoring. However, these views easily lead to a computer- and technology-biased management of the communication taking place in an organisation, and they benefit from being complemented by the communicative and constructional views. A promising theoretical foundation for these views is the language/action approach, which is based on theories from linguistics and the philosophy of language. In the language/action approach, business actions are modelled on the notions of speech acts and discourses, which provide a basis for distinguishing between different communication phases, such as preparation, negotiation, and acceptance. The purpose of this chapter is to outline how the language/action approach can be used as a basis for the information modelling of communicative aspects in organisations.

BACKGROUND

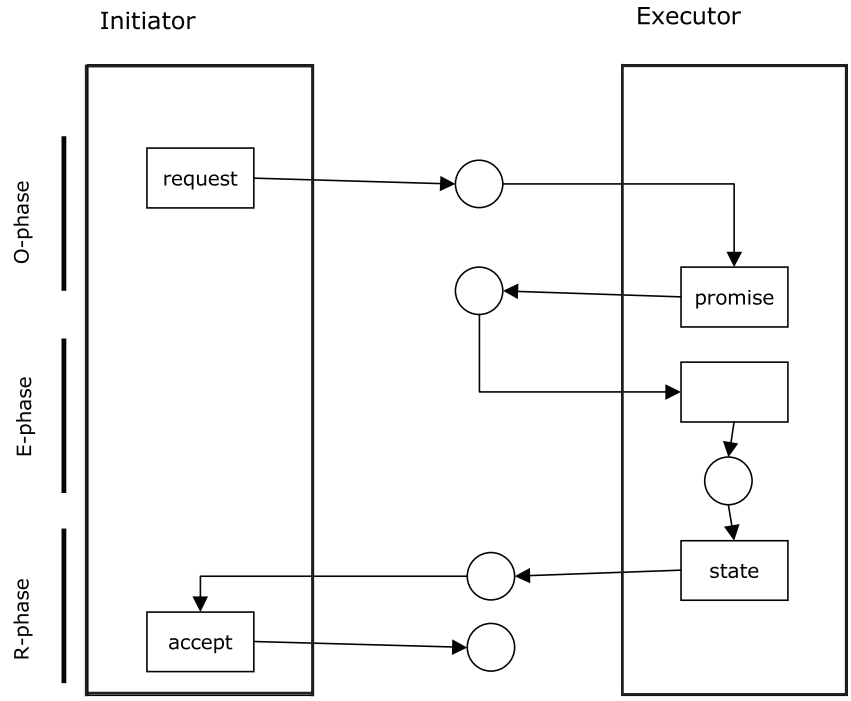
One important foundation of the language/action approach is speech act theory (Austin, 1962; Searle, 1969). The basic insight of speech act theory is that language can serve purposes other than that of representing the states of affairs of the world. Certain statements are equivalent to actions. For example, when someone says "I apologise," "I promise…," or "I name this ship…," the utterance changes the psychological or social reality. Statements such as these are called *speech acts*, and they enable people to use language as a means for acting as well as coordinating action.

In Searle (1969), a classification of speech acts is proposed based upon the way in which a speech act affects the social world. Searle identified five classes: assertive, commissive, directive, declarative, and expressive. An *assertive* is a speech act, the purpose of which is to convey information from a speaker to a hearer, e.g., "the cat is on the mat." A *commissive* is a speech act, the purpose of which is to commit the speaker to carry out some action or bring about some state of affairs, e.g., "I promise to bring it back." A *directive* is a speech act, where the speaker requests that the hearer carry out some action or bring about some state of affairs, e.g., "Please bring me the salt." A *declarative* is a speech act, where the speaker brings about some state of affairs by the mere performance of the speech act, e.g., "I hereby baptise you Samuel." An *expressive* is a speech act, the purpose of which is to express the speaker's attitude, e.g., "I like coffee."

In order to understand the role of speech acts, it is helpful to view human communication as taking place in three different worlds:

- The physical world—In this world, people carry out message actions. They utter sounds, wave their hands, send electronic messages, etc. Furthermore, other in-

Figure 1. OER pattern



strumental acts may take place in the physical world, such as repairing equipment.

- The communicative world—In this world, people express their intentions and feelings. They tell other people what they know and try to influence the behaviour of others through communication, i.e., they perform speech acts. These speech acts are brought about by means of message actions in the physical world. Note that a message action does not need to be verbal, as it can also be expressed by body language.
- The social world—In this world, people change the social and institutional relationships among them. For example, people become married or acquire possession of property. People perform such social actions by performing speech acts in the communicative world.

LANGUAGE/ACTION FOR BUSINESS PROCESS MANAGEMENT

The most important applications of the language/action approach have been made in the area of business process management (Lehtinen, 1986; Weigand, 2003). A language/action perspective provides a clear and well-founded basis for identifying and modelling recurring patterns in business processes. One such pattern is the order–execution–result (OER) pattern (Dietz, 2003b), which models a basic form of interaction that occurs in every business process (Figure 1). The interaction takes place between two parties—the initiator and the executor—and governs how they coordinate their actions. The interaction starts in the order phase by the initiator making a directive speech act, namely, a request to carry out some action (shown by a rectangle), which results in a state (shown by a circle in Figure 1), where there is an order from the initiator to the executor. The executor accepts the order by performing a commissive speech act (a rectangle labelled "promise" in Figure 1), resulting in a state where there is a commitment for the executor to carry out the action. This concludes the order phase, which is followed by the execution phase, where the executor actually performs the action (shown by an unlabelled rectangle in Figure 1) he or she is committed to. This action may be an instrumental action, e.g., delivering a package, or a declarative speech act, e.g., grading an exam. However, the execution phase is always concluded by a declarative speech act, where the executor states that he or she has carried out the committed action. The final phase is the result phase, where the initiator performs a declarative speech act and acknowledges that the executor has carried out the requested action in a satisfactory way.