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CONSTRUCTION OF AN EVENT STRUCTURE FOR WORKFLOW ANALYSIS IN AN AUSTRIAN COMPETENCE CENTER

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One fundamental question in an organisational environment is often how to plan a sequence of actions that have to be undertaken by individuals so that the desired goals of the organisation can be efficiently reached. Organisations are characterized by rules specifying when and where a particular action is appropriate or not. The underlying assumption is that organisational actions, tasks and events are related to each other through an *implication relation* (so that, for example, the occurrence of a given event might require the occurrence of some other events). This imposes a structure on the set of the events that occur in an organisation. In this project, mathematical models and techniques mutuated from *knowledge space theory* (Doignon & Falmagne, 1999) - a mathematical theory for knowledge assessment – are transferred to the field of organisational and workflow analysis.

The core concept in our formal framework is that of an *event structure*, which is a mathematical model (a formal representation) of an organisational process. In short, the analysis focuses on a specific process of an organisation, which is viewed as a (finite) set of organisational events, tasks and actions. This set is called the *domain* of the process. The *operating state* of an organisation is, then, the collection of all events in the domain that actually occurred in that organisation. At the outset, such operating state is empty (no events occurred). As the process evolves in time, the organisation jumps from an operating state to another and each time an new event is added to its state. If the events in the process are related to each other through an implication relation then the question is which operating states are consistent with this relation. We arrive thus to the concept of an *event structure*, which is the collection of all operating states that are consistent with the implication relation underlying the process. Specific procedures and programs exist for the construction and validation of the event structure of an organisational process through a computerized query of a set of experts (see, in this connection, Koppen & Doignon, 1990; Koppen, 1993; Stefanutti & Koppen, 2002).

The above-mentioned approach is applied to an Austrian Competence Center (the Know-Center of Graz). The Know-Center is an organisation that provides a link between private companies and university. Its main objective is to carry out projects (either in the form of software applications, counseling or organisational studies) in the field of knowledge management. The aim of our investigation is to construct an event structure that models the *project management process* of the Know-Center ("how they carry out projects?"). This model will then serve both as an analysis and a workflow management tool.

The project consists of the following steps: (i) identification of the domain (the set of events) of the project management process; (ii) construction of an event structure for the process through a computerized query of three experts of the Know-Center (the top manager of the organisation and two employees with high degree of expertise) (iii) comparison of the three models throug statistical analysis (test of expert agreement) (iv) integration of the models into a single, maximally shared structure.

At the current state of development of the project steps (i) and (ii) were completed, and step (iii) is under development. The methods and results obtained in these steps will be illustrated in details. Moreover, some examples will be given on the practical implications of the model described above in the analysis and management of the investigated process.

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