Business Evolution and Enterprise Integration
Workshop 4, Working Group 3

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Abstract. The development of a theory of design for virtual organisations or enterprises has been identified and presented in form of a potential research programme. The required results include a theory that explains the dynamic interactions among partners that create the virtual enterprise and a proposal for the representation of the result. Ensuing would be a methodology specialised to the case of the dynamic creation of enterprises using design transactions, typical models for the enterprise engineering process, typical models for virtual enterprises (to be reused in this process), and the potential extension of the enabling enterprise modelling languages and tools.

Keywords. Enterprise Integration, Virtual Enterprise, Business Evolution, Enterprise Engineering

1 Introduction

This group was assigned the task of identifying a major direction for future development in the area of enterprise integration. It was requested that the report of the discussions be presented in the form of a project proposal, to make it easier to operationalise the findings in terms of turning them into new research projects.

1.1 Definition of Virtual Enterprise

The group decided to concentrate its efforts on the problems of virtual enterprise design. We meant by virtual enterprise an association of entities, or partners, formed with the view of together satisfying some jointly agreed-on mission. Virtual enterprises are different from incorporated ones in that their constituent entities are highly autonomous and their association with the virtual enterprise is restricted to a well defined domain. Generally, partners will be autonomous incorporated entities, but some could be virtual enterprises themselves.
There is a growing interest in the methodologies and models available for ‘engineering’ virtual enterprises. If engineering virtual enterprises was made easy, then many endeavours would be better organised in that way because of the greater flexibility of organisational design then is usually available for an incorporated entity.

Typical virtual enterprises are:
- Project enterprises, which have a one-off production or service mission, (e.g. one-of-a-kind engineering and construction project, space mission);
- Repetitive service- or manufacturing consortia (e.g. a manufacturing consortium).

1.2 Engineering Virtual Enterprises

Enterprise design (see figure 1) involves:
- the design of the ‘operations’, i.e. the transformation process that produces the service or product (for any enterprise - virtual or not), and
- the design of the management and control system for the enterprise.

![Fig. 1. The Management and Control System and the Service and Production system ('Operations')](image)

The design of the management and control system further involves the satisfaction of three basic requirements:
1. Specifying the management functions (or roles) and how these functions relate to one another and to the ‘operations’;
2. Delineating the organisational entities to be involved (individuals and groups);
3. Determining how organisational entities fulfil these roles.