Business Evolution and Enterprise Integration

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Mandate

To identify a major direction for future development in the area of enterprise integration.
Overview

- The problem of virtual enterprise design
- Proposed research direction
Virtual enterprise

- Consists of multiple co-operating autonomous entities (enterprises) which together fulfil a common enterprise mission
- These entities jointly act in a specified limited domain
- The joint action appears as if it was performed by one autonomous entity
Why virtual enterprises

- Natural option for
  - one-off project enterprise
  - manufacturing, service, research consortia
  - re-organisation of existing enterprises as a set of linked enterprises

- Clear delineation of decisional frameworks (tasks, commitments and operational options) among constituents

- Added agility and flexibility
What is to be designed

Management and Control System

Service / manufacturing
(operations)
Design and Operation through transactions

Management information flow

Management and Control System

Service / manufacturing (operations)

Material and information flow

Management and Control System

Service / manufacturing (operations)
Interactions to operate the VE

Strategic co-ordination interactions

Enterprise 1
Management and control system
Planning/scheduling interactions

Enterprise 2
Management and control system
Operational mgmt/ctrl interactions
Interactions to create the VE

Strategic enterprise design transactions

Enterprise 1

Management and control system

Enterprise 2

Management and control system
Interaction among multiple potential entities

Management and control system

Management and control system
Need for a theory of VE design

- Account for dynamic, emergent design
- Account for organic and/or planned design
Based on the theory develop

- VE design **methodologies**; design transactions (what is the minimum commonality?)
- Supporting modelling **languages** (extend existing languages) and ontologies
- **Tools** to support the design transactions and analysis of the VE designs
Based on the theory develop (cont’d)

- Reusable VE designs - **models** and design representations (maturity models, metrics, agent models, holons, etc.) and reference models

- Reference **architecture** showing the entities, life-cycles, life histories etc. of VE
Based on the theory develop (cont’d)

- Common building blocks or **modules**

- These components have been defined as specialised forms of GERAM components
THE END