

# Process Modelling

## Abstract

This report draws attention to applications from business process modelling and possible use of process models/maps in the shape of process diagrams.

## 1. Document information

### 1.1 Author(s) and Institution(s)

Marie-Therese Christiansson, Senior Lecturer in Information Systems, Karlstad University.

### 1.2 Who commissioned the work

n/a

### 1.3 Intended audience

Within Smart Cities, this research brief is specifically aimed at members of Work Package (WP) 3 and the leaders of WP 2, 4, 5 and 6.

### 1.4 Critical issues addressed

The need of a strategy in process modelling to gain the benefits of a modelling situation and to create useful process diagrams (i.e. descriptions).

## 2. Benefits of process modelling and use of process diagrams

When developing and evaluating businesses and information systems, business process modelling has become an important and increasing task. The process oriented approach is based on values such customer-focus and value added activities and results (to do things right and to do right things). Process diagrams give a horizontal view of the business that elucidates connections, handovers and the responsibility for what happens between administrations and organisations.

Knowledge concerning business processes are essential when analyzing, (re)designing, testing, evaluating and launching new business logic and information systems. Process modelling is used to reach an understanding of business performance and may focus on former, present, possible and future business processes (e.g. use of e-services). Process modelling is a way to:

- understand and to change business in and between organisations
- identify, describe, define and decide on why, what, who and how to perform business processes for different target groups and services (e.g. different business logic, results and channel choice)



- involve citizens, companies and co-workers (in and between organisations) to participate with their knowledge about their daily work, prerequisites, needs and expectations of services
- intensify communication, learning and dissemination of changes
- base changes and requirements on e-services on knowledge from people who are working in the organisations, citizens and companies who have experiences of the services and their results
- get an overall picture of the business practice in the organisation to communicate, measure, evaluate and improve, i.e. flexibility and readiness to adapt to changes

Process modelling are often performed in workshops. The result of a process modelling can be described either as “the journey is the goal” or “the process description is the goal”. It depends on the motives for the process modelling and if it is the communication, the knowledge sharing and learning or the process descriptions that matters, or perhaps both. Motives can e.g. be:

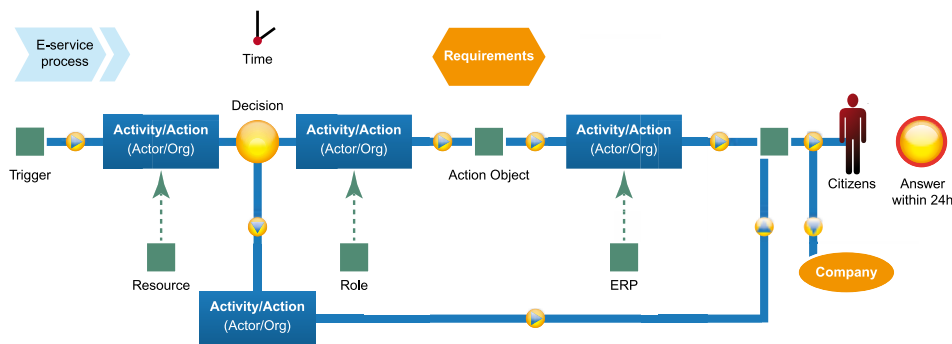
- to be able to base decisions on actual conditions, i.e. from what is actually performed
- to clarify a service in the present/what-if and to be as an e-service
- to control that resources end up where they are needed
- to gain a quality assurance for organisations by an increased orientation towards those who utilise the results, i.e. the “customer”
- to create an overall picture as a base to follow-up and improve results in and between organisations
- to strengthen the exchange of experiences between co-workers in interorganisational processes
- to improve communications between co-workers
- to find motives for enhancing or terminating relationships between organisations
- to create commitment and participation among co-workers by forming a “picture” of how organisations are fulfilling their assignments and how the work of the co-workers and systems (e.g. in e-services) is contributing to this
- to take advantage of the full potential of the co-workers and systems

The main issue is to discuss and decide, preferably in advance, what the benefits of process modelling could be and what the main use of the process descriptions (diagrams and/or scenario descriptions by text) should be. In studies and projects it's revealing that process diagrams may be used as an identification and description of business (e.g. to explain, understand, learn and report ideas within or between organisations) and IT as business support or enabler (knowledge to be used in decisionmaking and change concerning requirement specifications), in design, test, introduction, education, support and evaluation of information systems and their effects.

Business process diagrams can be used as a map of the information systems context (i.e. the use of e-services in business and by citizens or companies), in requirement specification by the customer (e.g. the municipality) of a system and as a system solution specification by systems suppliers. This presupposes that both the customer and the supplier of a system (or software components) are familiar with process diagrams and have a common language and notation to support the communication.

From studies and analysis of several process definitions and process models, used in theory and in practice, seven generic business process elements (categories) have been identified. These are process goal, activity (action), flow (start event, connections, decision points, relation types and end point), action object (input/ output/information/resource/result), actor (role, system), customer/

client (citizens/ companies) and organisation. All elements are essential in the reconstruction and description of business processes. There are lots of different business modelling techniques and notations. With a starting point in the process oriented approach, motives for the process modelling and plans for using the process diagrams (e.g. close to business and/or close to systems) focus on, degree on details and ways of describing process elements will differ. In Figure 1, a process modelling tool is used in the example of essential process elements illustrated in a process diagram with focus on indicators for measurement and requirements (to be used in e.g. descriptions to monitor an e-service).



**Figure 1**

Example on a notation to describe the process elements

What knowledge the process model capture of the business and systems is in fact “What you see is what (knowledge) you get.” It’s all about focusing on the “right things” in the process modelling by questions to co-workers, co-producers, citizens and companies in the business process. A useful process diagram should consist of elements that reflect the aspects you want to highlight. It may be useful to connect business process diagrams to other areas of analyse, e.g. to stakeholder analysis, goal analysis and conceptual analysis.

Modelling efforts needs to be efficient as they depend on people’s time, effort and involvement. This means, for one thing, that it may be wise to define an explicit strategy for process mapping to articulate why, how and to whom the process modelling is useful. By strategy I mean deliberate choices and decisions to make on critical modelling factors which have been proven to make a difference together with a focused and reflective modelling (i.e. continuous improvements of the strategy). The possibilities of running effective projects and achieving good results may increase if a well-defined strategy is adopted from the start, process mapping in e-service development is no exception.

### 3. Further information

#### 3.1 References

Christiansson, M-T. and Christiansson, B. (2006) The Encounter between Processes and Components – Towards a Framework for a Close-to-Business Requirements Specification for Acquisition of Component-Based Information Systems, Dissertation No. 14, Linköping University, Sweden (in Swedish).

Nilsson, A.G. Tolis, C. & Nellborn, C. (1999, Eds.) Perspectives on Business Modelling – Understanding and Changing Organisations, Springer-Verlag, Berlin.

Tolis, C. & Nilsson, A. G. (1996) “Using Business Models in Process Orientation”, in Lundeborg, M. & Sundgren, B. (Eds.) Advancing Your Business – People and Information Systems in Concert, Studentlitteratur, Lund.

Wilhelmsson, J. (2008) Final Report from the Project - Development of E-services





### 3.2 Results from projects

PROCOMP (Process - and component based requirement specifications). A study of requirement specifications for component-based systems in close co-operation with the County Council in Värmland, Karlstad. Results in terms of a framework for a close-to-business requirements specification and a business modelling approach called FORM (a focused and reflective modelling) with 11 identified critical modelling factors to take into account concerning why, what and how to perform business process modelling.

PRALIN (Process oriented business development with the County Council in Värmland), in close co-operation with the County Council in Värmland, Karlstad. A study of methods and ways of working to support business development of health care processes. Focusing on and resulted in critical modelling factors in a strategy for business modelling and business process modelling.

VINST (Business development through inter-organizational IT co-operation), in close co-operation with Frontec in Stockholm and PartnerTech AB in Åtvidaberg. A study of an inter-organizational business development (customer and supplier business processes). Focusing on methods and forms of co-operation to support information systems development. Results in terms of ways of working and methods to use in an inter-organizational business- and information systems development. The work with Frontec focused on and developed business models to use to support analysis and development of e-commerce processes.

### 3.3 Contacts with expertise within Smart Cities partnership

Marie-Therese Christiansson in the first instance.

### 3.4 Document history

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