Best practices oriented business process operation and design

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Abstract. Business process flexibility has become one of the most important factors in organizational operation and development. One of the approaches to achieve the flexibility of the business process is bottom up business process best practices propagation and leveraging of those practices at higher organizational levels by appropriate information systems design. The approach is applicable for fractal enterprises where branches of fractals are free to develop their own processes and supporting systems. The paper discussed two stages in the multilayer business process development life cycle in fractal enterprise: namely, operation and evaluation, and business process design.

Keywords: business process, best practices, fractal enterprise

1 Introduction

Business process flexibility has become one of the most important factors in organizational operation and development. Opportunities to achieve the flexibility of business processes depend on various organizational issues, including organizational culture, organizational structure, its technical infrastructure, etc. For instance, flexibility in a small enterprise is achieved mainly by effective utilization of tacit knowledge of employees, while flexibility in large centralized organizations is addressed by introduction of sophisticated manufacturing and information technologies, including intelligent agents, semantic networks and specifically organized ERP systems [1].

In his book "The Fractal Company: A Revolution in Corporate Culture" H.J. Warneke [2] envisioned a new organizational structure for manufacturing - a fractal enterprise where each fractal is an independently acting corporate entity, whose goals and performance can be precisely described. While a precise description of performance is not the ultimate necessity in non-manufacturing business processes, it is quite common to have explicit descriptions for well understood and elaborated processes, which are supported by appropriate information technologies. The most important issue here is that understanding and explicitness of the process are achieved not necessarily by following a process design. Most commonly well elaborated processes emerge gradually by seeking the best possible performance of the performers.

In this paper we discuss emergence of the best practices processes in fractal enterprise, which tolerates different sub-processes used by different structural units to achieve one and the same organizational goal. Those sub-processes may compete until superiority of one of the approaches becomes visible. At that time-point a process common for all structural units may be designed and introduced for leveraging the best practices in the enterprise. Thus the stage of operation of the process on a small scale is followed by the stage of design on a larger scale of the process.

The paper is structured as follows. In Section 1 we introduce the notion of fractal enterprise and illustrate how different sub-processes may be used for the achievement of one and the same goal. In section 2 we describe a procedure of change analysis for the propagation of best practices. In Section 3 the process design for leveraging the best practices is discussed. Section 4 consists of brief conclusions.

2 "Competing processes" in fractal enterprise

The notion of fractal enterprise [3, 4, 5, 6, 7, 8] stems from Warneke's "fractal company" [2], where basic patterns of fractal geometry are applied to the design of industrial corporation. Architecture of a fractal enterprise consists of self-similar, self optimizing, goal-oriented fractals (independently acting corporate entities), which perform services, are the object of constant change (dynamic restructuring), and are integrated into the goal-formation process. One of the essential features of fractal enterprises is the possibility to execute in parallel different processes for achievement of one and same goal. On first sight this feature contradicts with the notion of process optimization, however this parallelism allows for higher flexibility in situations of differences in local external environments and internal performers, as well as supports the emergence of best process execution practices. An example of an enterprise, which to a considerable extent exhibits fractal features, is a university (Fig. 1 a and b).

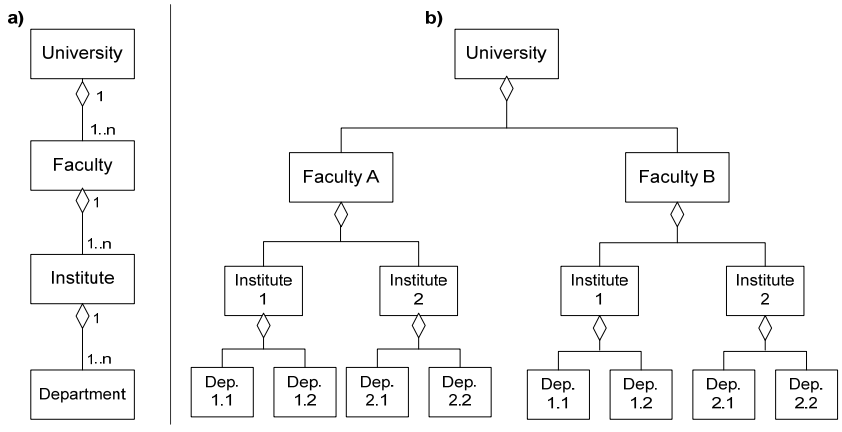

Fig. 1. Fractals (University, Faculty, Institute, Department) in the university

The situation of the use of different parallel processes for achieving the same goals is illustrated in Fig. 2 and Fig. 3. University annually has to prepare a report about its scientific activities. It is achieved by the delegation of goal "Prepare the report" from University fractal down to the Department level fractals. Departments are free to achieve this goal in the most suitable way for them. For instance, Department 1 uses sub-processes 5 and 6 and their scientific activities information system for achieving the goal, while Department 2 of the same institute uses sub-processes 7, 8, 9 and Department 3 uses sub-processes 10 and 11. All departments send information to the higher level fractal for preparation of the institute level annual report about scientific activities.

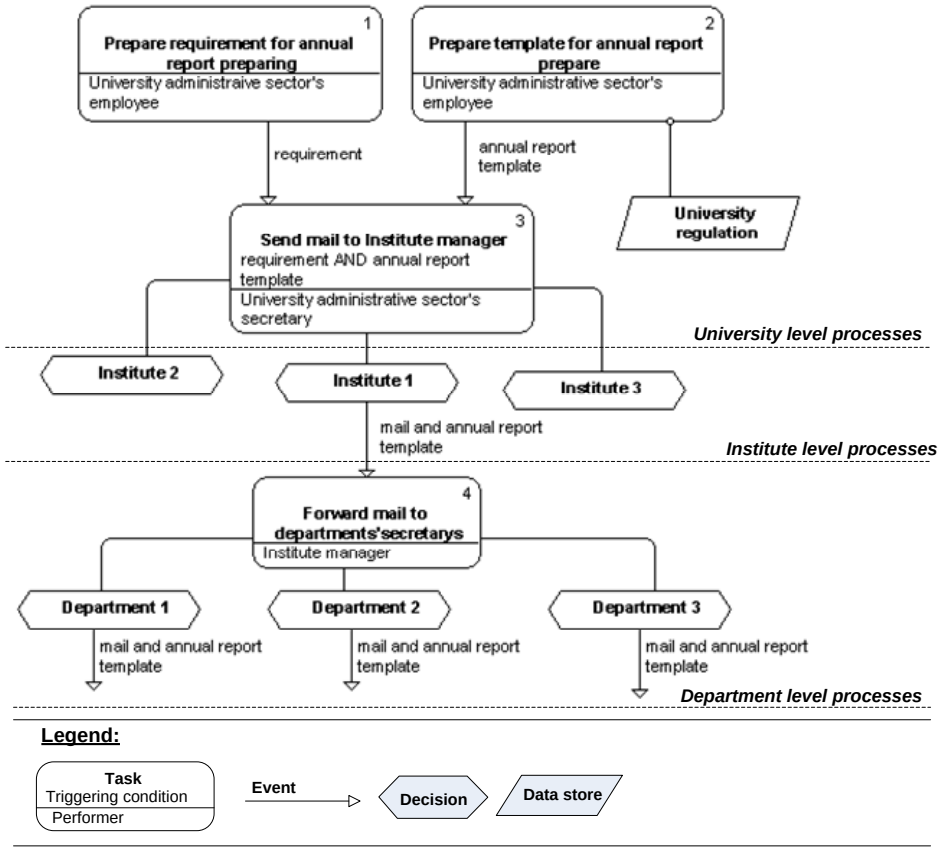

Fig. 2. "Competing" business processes: Dep. 1 →(5, 6); Dep. 2 → (7, 8, 9); Dep. 3→ (10, 11) – Part 1

Suppose Department 1 has a larger staff than other departments and a capability to develop a business process support system for the acquisition and maintenance of information about scientific activities. The use of the system allows the department to

accomplish the process more efficiently in comparison with two other departments. This attracts the interest of both departments and they consider the possibility to acquire the practices of the Department 1. To achieve this, each department has to manage the change from the AS IS process to TO BE process which is equal to the process performed by Department 1. This involves the change of information and knowledge processing systems of Department 1 and Department 2. The change procedure [9] for switching to a new process is proposed in Section 3.

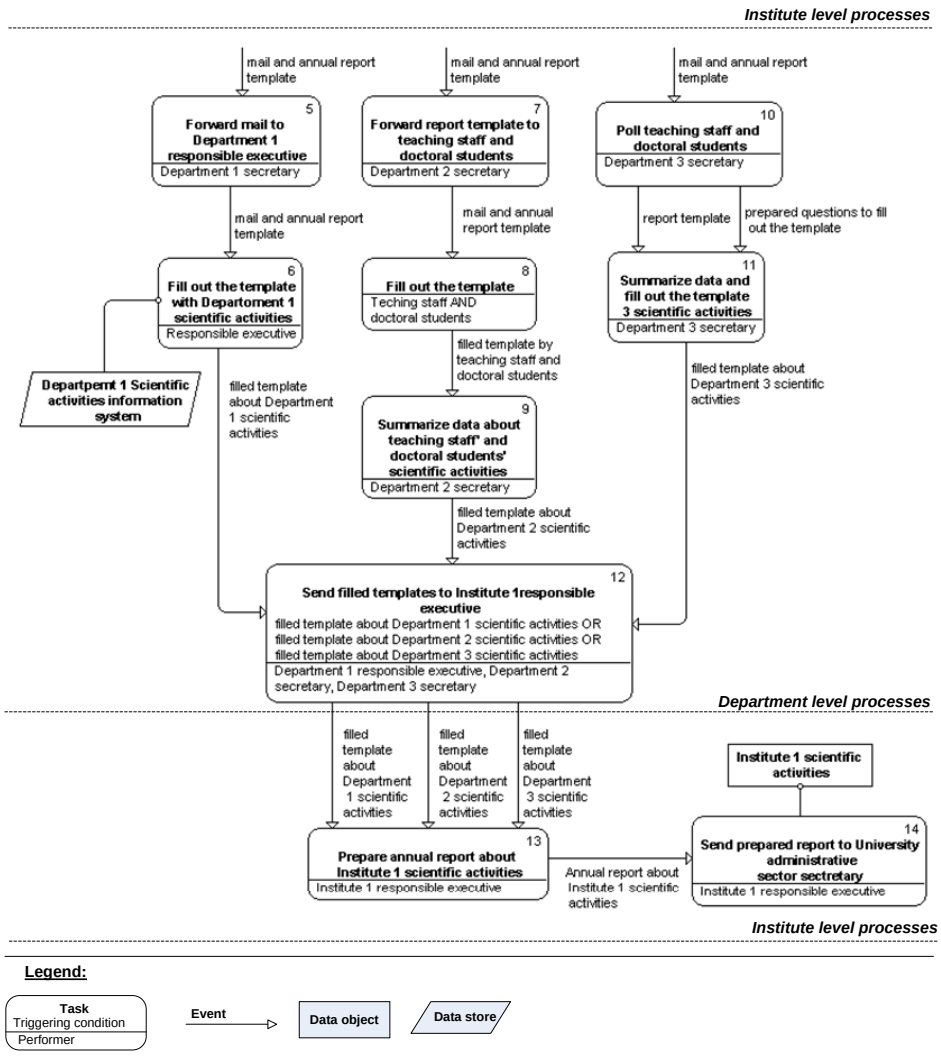

Fig. 3. "Competing" business processes: Dep. 1 →(5, 6); Dep. 2 → (7, 8, 9); Dep. 3→ (10, 11) – Part 2 (continuation)

3 Business process change procedure

The business process change procedure discussed in this section is developed on the basis of the studies of 14 information systems change cases [9]. It is applicable and has been used for new business process and information systems design. In this paper it is applied for best practices transfer in a fractal enterprise. The procedure consists of the following four steps:

1: Best practices identification
2: Best practices acquisition planning
3: Best practices acquisition cost estimation
4: Best practices acquisition

In this paper we consider informal identification of best practices, i.e., the situation when one way of performing of a particular task is acknowledged as worth to be imitated by several structural units. When best practices are identified it is necessary to plan for their acquisition. This involves analysis of AS IS and TO BE business processes (Step 2). The best practices acquisition planning involves the following sub-steps:

2.1: Changing granularity of process description
2.2: Identification of activities to be changed
2.3: Change process risk analysis.

Business process description granularity is one of the most sensitive issues in business process modeling. It is obvious that the level of granularity represented in Fig. 2 is not suitable for best practices transfer; therefore it is necessary to decompose the sub-processes in smaller granularity units to identify actual changes in business processes. Smaller granularity tasks are analyzed in order to identify how they will or will not be affected by the transfer to target practices. Specific tables used for transition task analysis consist of columns of performer activities, which are marked for both AS IS and TO BE cases. Change analysis table for Department 2 referred to in Fig. 2 and Fig. 3 is represented in Table1 and Table2. The sign "+" denotes completely performed task, the sign "–" denotes partly performed task because another part of it is performed by computer system or other business processes and empty TO BE cell means that the task is fully performed by another business process or computer system.

Table 1. Business process change analysis table: Department 2 secretary's tasks

AS IS	Department 2 secretary: tasks description	TO BE
+	Receive the template (7)	
+	Create the list of employees to whom to send the template (7)	+
+	Send the template (7)	
+	Determine who has not sent back the filled template (9)	
+	Send filled template to Institute 1 responsible executive (12)	
+	Make sure the template is sent (12)	
+	Find out who is not available (business trip, conference, vacations) (7)	+

Table 2. Business process change analysis tables Department 2 employee's tasks

AS IS	Department 2 employee: tasks descriptions	TO BE
+	Receive the template (5)	-
+	Fill out the template (6)	+
+	Send the filled template (12)	
+	Send again the filled template, if secretary has not received it (12)	
+	Get modification request (6)	+
+	Inquire about modification details (6)	+
+	Send the modification (6)	
+	Receive the reminder to fill the template (5)	+
+	Prepare questions to administration about report details (6)	+

Business process change analysis table may be applied several times until all processes are analyzed up to the level of granularity that allows to make an informed decision about the reasonability of process change i.e. acquisition of the best practice. This decision is based on risk analysis which is performed on the basis of the Business process change analysis table. Business process change may considerably influence responsibilities, knowledge/information patterns and tasks of business process performers [10, 11, 12, 13]. Therefore multiple aspects are to be analyzed to assess risks of best practice acquisition. For instance, in the case reflected in Table 1 and Table 2, the control of the process moves from the secretary to the employee. It means that the responsibility of receiving and filling of the template is delegated to the employee. Taking into consideration the fact that the employee has already performed similar functions and has had similar responsibilities the risk may be considered as not very high. It would be different in Department 3 where the templates were filled by the secretary not by the employee. In this case more attention is to be paid to the knowledge patterns that are to be changed together with the process change.

After risk assessment, business process change cost estimation is to be performed, taking into consideration tasks with "+" in Business process change analysis table and all issues discovered in risk analysis. After this sub-step the final decision about best practice acquisition may be made.

4 Leveraging best practices by business process design on a higher fractal level

In Sections 2 and 3 the best business processes practices acquisition at one fractal level was discussed. However, in a situation when one and the same practice is acquired by all fractals at a particular level of fractal system, it is possible to leverage the practice and apply it on a higher fractal level. This operation is illustrated in Fig. 4. Leveraging of the best practice requires business process design on a higher level of hierarchy. It concerns mainly those business sub-processes that are to be performed by the information system, because the difference between three similar information systems services on the lower level of hierarchy and one service on a higher level of hierarchy,

which is used by three structural units, does not considerably change the manual processes at the lower level of hierarchy. Therefore, in business case exemplified in this paper, the decision whether to leverage or not the process depends mainly on the suitability of needed technical and administrative changes with respect to maintenance of scientific activities information system in centralized manner inside the Institute 1 fractal (Fig. 4).

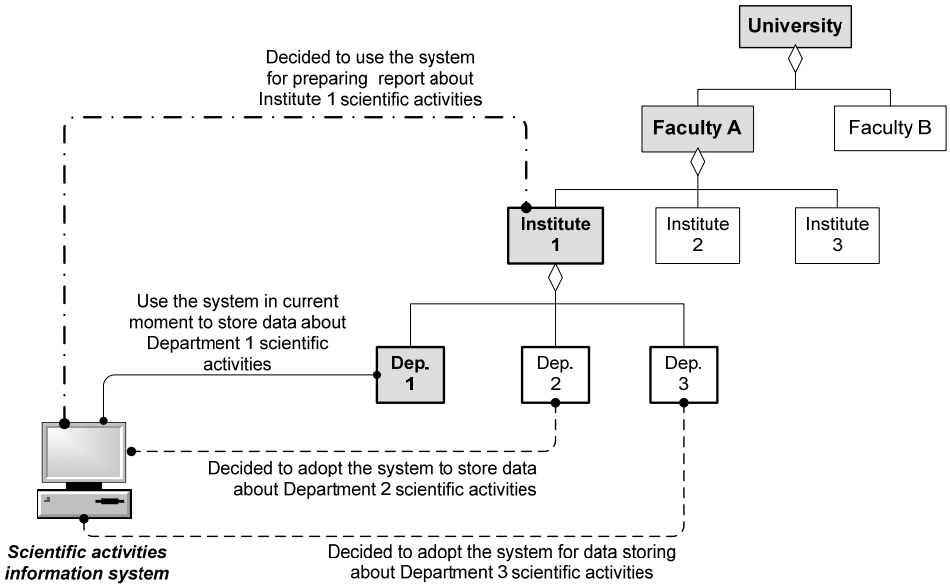

Fig. 4. Leveraging the best practices

In this case best business practices leveraging involves the change of ownership of the scientific activities information system. Instead of having three separate systems it is possible to operate with only one Institute 1 level information system. This involves slight changes in all business processes; yet those changes influence a small number of employees (Fig. 5).

For the leveraged process the information system has to be changed to accommodate three departments instead of one. This allows to assume that in fractal enterprises a fractal approach to business process and information systems development is applicable [14] and allows incremental bottom-up changes in enterprise processes and supporting information systems. This approach reflects the systems development process that is in line with living systems theory, where common processes are gradually delegated to higher fractal levels of the system for the sake of higher functional efficiency of the system [15].

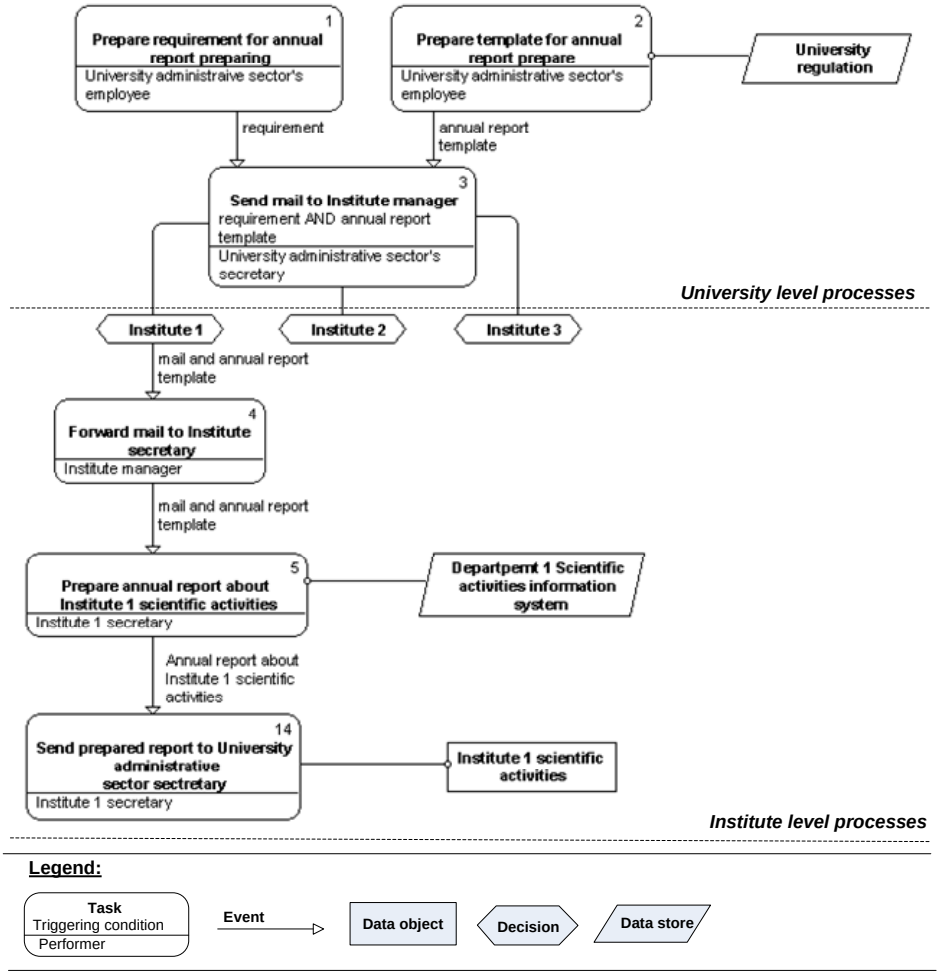

Fig. 5. Leveraged business process.

Conclusions

The paper discussed two stages in the multilayer business process development life cycle: operation and evaluation followed by business process design. This approach permits bottom up business process best practices propagation and leveraging of those practices at higher organizational levels by appropriate information systems design. The approach is applicable for fractal enterprises where branches of fractals are free to develop their own processes and supporting systems.

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