

Context-aware Business Process Evaluation and Redesign

K. Bessai, B. Claudepierre, , S.Nurcan, O.Saidani

Université Paris1 Panthéon Sorbonne
Centre de Recherche en Informatique (CRI)

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Introduction

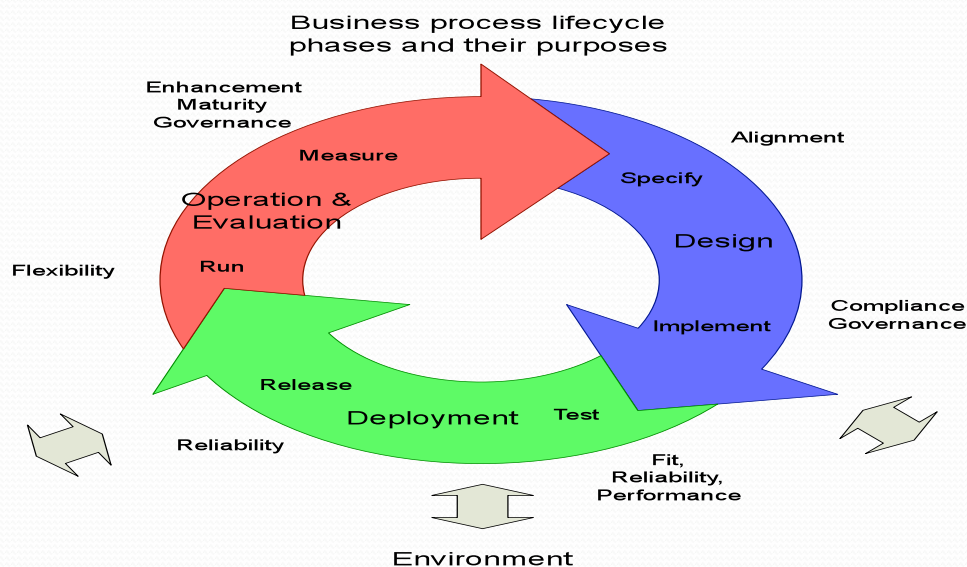
Business process (BP) development plays a fundamental role in the enterprise systems engineering. Enterprises should be adaptable and interoperable with current complex and dynamic environments

➔ BPs need to be adequate to the context and flexible

□ The needs for researches on both BP redesign and context-awareness are significant.

Introduction

Business Process Life-Cycle



Introduction

- ❖ How to redesign the BP model with respect to the process execution context ?
- ❖ What are the relevant features characterising a BP context?
- ❖ Which support can provide the context related knowledge for BP evaluation and redesign



The objective is to reengineer BP models allowing them to better support evolving *business requirements*.

Process Nature

- ❖ Production process (PP) : involve repetitive and predictable BPs. They implement the core processes of the enterprise.
- ❖ Administrative processes (AP) : refer to bureaucratic processes where the steps to follow are well established and there is a set of rules known by everyone involved.
- ❖ Ad hoc processes (AHP) tend to deal with exceptions or unique situations and depends on the users involved.
- ❖ Collaborative process (CP) are mainly characterized by the interaction between the involved participants.

Workflow pattern

"a mean of categorizing recurring problems and solutions in modeling business processes".

This collection of patterns is used mainly as a formal basis for

- understanding the requirements of the control-flow , resource and data perspectives.

- evaluating the capabilities of BP modeling languages .

In this paper we use two families (resources and controls) of patterns for redesigning business processes in various contexts.

Business Process Evaluation

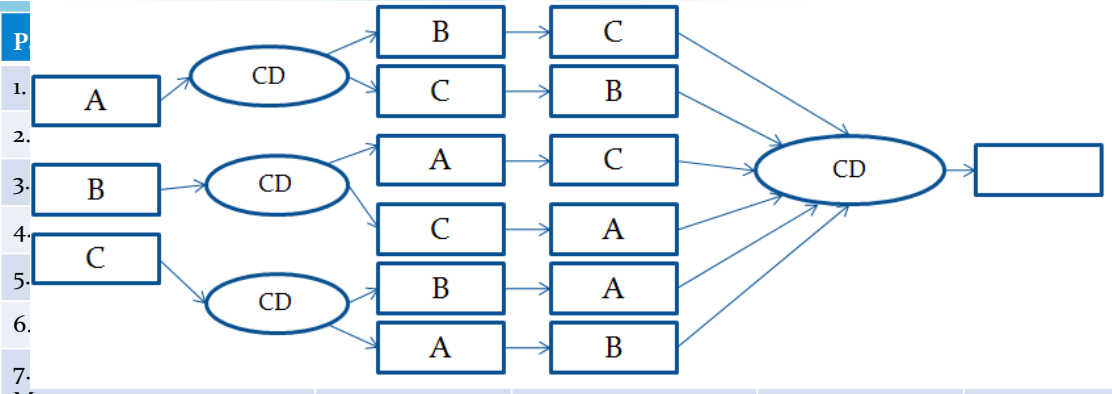
The evaluation process consists in:

- ✓ identifying the process nature
- ✓ identifying the appropriate workflow patterns for the process redesign.

The proposed framework aims to answer the following question:

How to take into account the nature of the process when selecting workflow patterns to redesign it?

- We evaluate each workflow pattern in different contexts: the patterns relevance varies from a process nature to another.



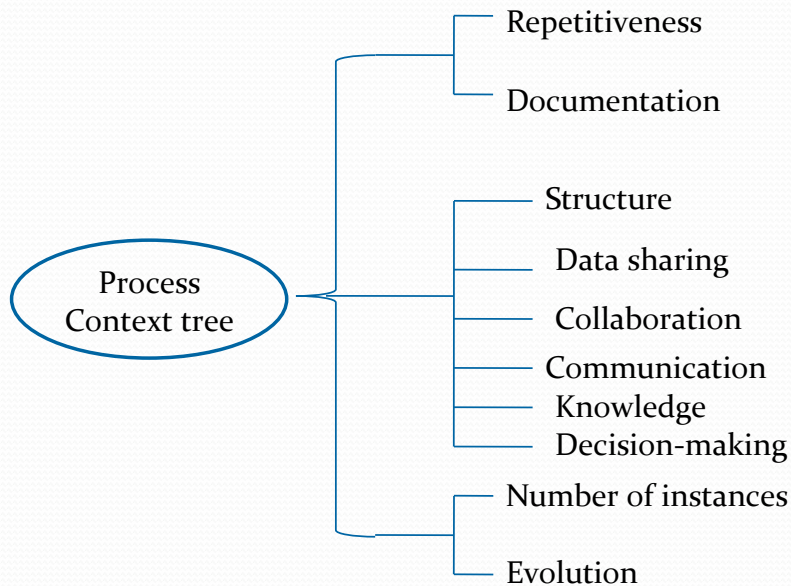
14.M.I with a priori Run-time Knowledge	-	+	+	++
17.Interleaved Parallel Routing	--	--	+	++
18.Milestone	-	-	+	+
13.M.I with a priori Design time knowledge	+	++	++	-
14.M.I with a priori Run-time Knowledge	-	+	+	++
15. M.I.without a priori Run - Time Knowledge	--	-	+	++
16. Deferred Choice	--	--	-	++

PR	PP	PA	PC	PA	PR	PP	PA	PC	PA
PR1	+	+	+	--	PR22	+	+	-	-
PR2	++	++	++	-	PR23	--	--	++	+
PR3	-	-	+	++	PR24	++	+	-	--
PR4	+	++	++	-	PR25	-	-	++	++
PR5	++	+	+	+	PR26	-	-	++	+
PR6	-	-	-	+	PR27	+	+	++	++
PR7	+	+	+	-	PR28	+	+	++	+
PR8	-	-	+	+	PR29	+	+	++	+
PR9	+	+	-	-	PR30	+	+	++	++
PR10	++	++	+	-	PR31	-	+	+	++
PR13	-	-	-	-	PR13	++	++	++	++
PR13	-	-	++	+	PR34	-	+	+	++
PR14	++	++	+	-	PR35	--	--	-	+
PR15	+	+	--	-	PR36	+	+	+	+
PR16	+	+	-	-	PR37	+	+	+	+
PR17	++	++	+	-	PR38	++	+	-	-
PR18	+	+	++	--	PR39	+	+	--	--
PR19	++	++	++	+	PR40	-	+	++	+
PR20	-	-	+	-	PR41	-	+	+	+

Distribution by Offer-Multiple Resource

Collaborative process

Process nature identification



□ Process nature Identification

We use three dimensions to understand the context of the process instances:

□ **Task** dimension describes the repetitive aspect of the tasks and the documentation level

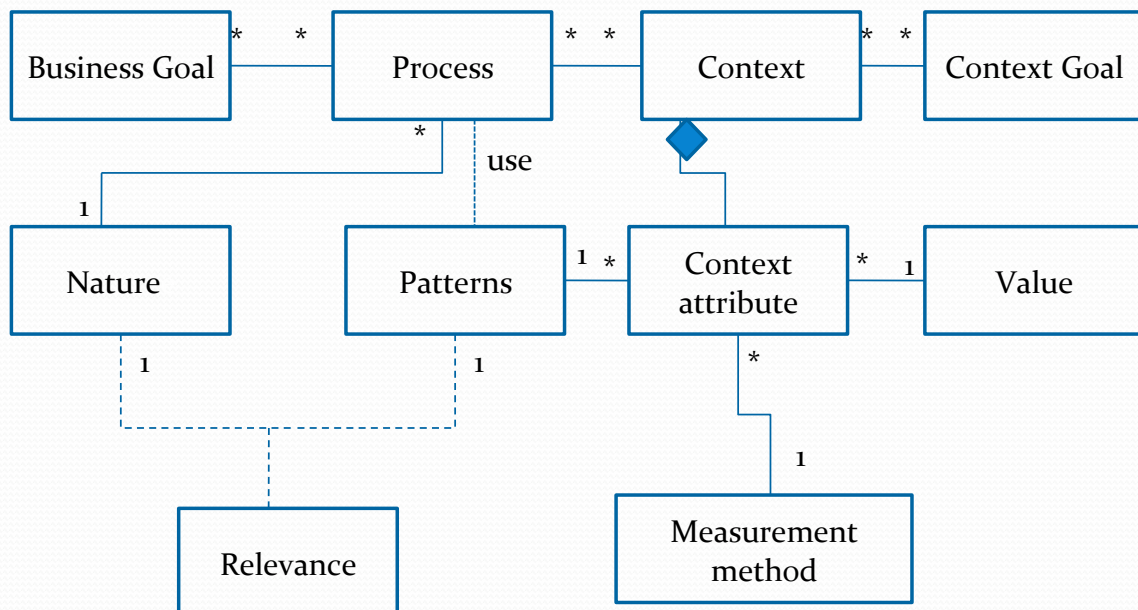
□ **Process** dimension is used to analyse the number of the process instances and the evolution

□ **Resource:**

- human resources (communication, collaboration, knowledge and decision-making)
- data support system (data sharing)

Attributes	Values	Comments	Mesure
Repetitiveness	Boolean	The repetitiveness aspect of a task	Log evaluation
Documentation	'none', 'task', 'process'	Documentation level of a process	interview
Structure	'group', 'person'	Organisational structure of actors	interview
Data sharing	Boolean	Data sharing support	interview
Collaboration	'High', 'medium', 'low'	Level of collaboration between actors	Log evaluation
Communication	Boolean	Availability of communication between actors	Log evaluation
Knowledge	'presence', 'use', 'sharing'	Level of knowledge usage	interview
Decision-Making	Rate of occurrence	The context of decision-making	questionnaire
Number of instances	Integer	Number of process instances	Log evaluation
Evolution	'static', 'dynamic'	Process evolution during its execution	Log evaluation

Selecting patterns for process Redesign



Selecting patterns for process Redesign

Analyse the process to be redesigned and evaluate its instances in order to discover its nature

Identify the weaknesses (misfit between the nature of the process and the process patterns used) of the process; Determine which behavior it has to integrate for its improvement.

Improve the original process model using the selected patterns

Conclusion

- Introduce a first set of research issues as a starting point for context-aware BP reengineering.
- We propose a framework for evaluating the relevance of control and resource patterns with respect to the process nature.
- Identify the weakness of a process model and determine which patterns the later has to include for its improvement.

- ❖ The proposed BPR methodology requires further development and experimental testing in order to determine its effectiveness.
- ❖ This relevance is based on our experience in business process modelling we are working on a statistical study for validation

References

- Russell, A. Hofstede, D. Edmond and Van der Aalst, Workflow resource patterns, Beta working paper Series, WP 127, Eindhoven University of Technology, Eindhoven (2004).
- Russell, A.H.M.ter Hofstede, W.M.P, Van der Aalst and N.Mulyar, Workflow Control-Flow Patterns, BPM Center Report BPM-06-22, BPMcenter .org(2006)
- M. Rosemann, J.Becker , Context-Aware Process Design Exploring the Extrinsic Drivers for Process Flexibility (BPMDS06)



Thank you for your attention

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- Kahina.bessai@malix.univ-paris1.fr
 - Selmin.Nurcan@univ-paris1.fr
 - Oumaima.Saidani@univ-paris1.fr
 - Bruno.Claudepierre@univ-paris1.fr

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