

Taxonomy of Flexibility in Business Processes

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The aim of this working paper is to suggest a taxonomy of flexibility in business processes. The taxonomy should be generic. Hence, it relies on a minimal set of assumptions. We consider business processes as the dynamic aspect of an organization. Business processes can be addressed using the two layers of instance, and type. A process instance layer is an actual occurrence in the organization. The process type layer aggregates the instances as a template they all should fit.

Business process flexibility

Flexibility is the ability to yield to change without disappearing, i.e. without losing identity [ReWe05]. A business process is flexible if it is possible to change it without replacing it completely. Business process flexibility [Bide05], [Soff05], [Schm05] is the capability to implement changes in the business process type and instances by changing only those parts that need to be changed and keeping other parts stable.

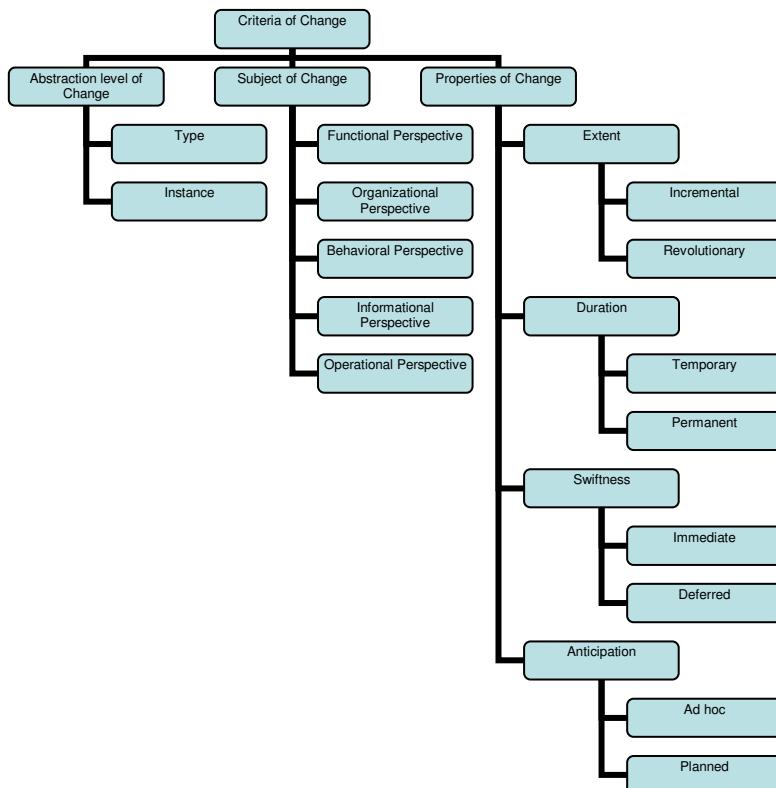


Fig. 1: Notions of change

There are different notions of flexibility in business processes. Since flexibility is the capability of changing, it can be classified with respect to the types of changes it enables. The taxonomy presented in Fig. 1 includes three orthogonal dimensions: the abstraction level of the change, the subject of change, and the properties of the change, which include extent, duration, swiftness, and anticipation. In what follows we explain each one of them.

Abstraction level of change

Changes in the goals, strategy, constraints or stakeholder needs may require changes on different abstraction levels. Usually, there may be changes in the business process type and process instances as shown in Fig. 2.

Changes of the business process are called process type evolution: the standard way of working, as defined in the process type, is changed. The changed type has to be executed and process instances have to be created.

Changing process instances means, that a deviation from the standard way of working is created for one or more instances. This may be necessary when the current situation does not allow the achievement of the process goal in the “normal” way, and forces the organization to act differently in order to achieve its goals. This is called instance evolution. Whereas type evolution often reflects the redesign of processes, instance evolution is necessary to cope with exceptional situations.

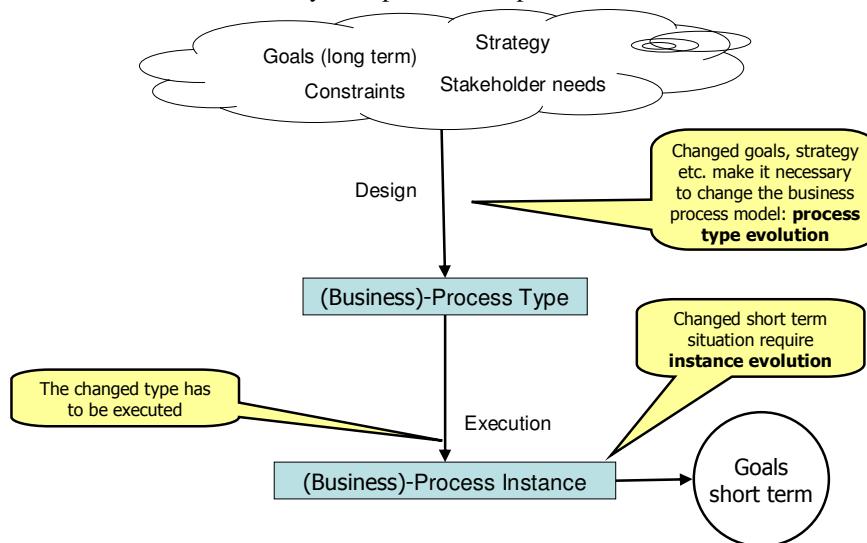


Fig. 2 Abstraction level of changes

Subjects of change

The subjects of change can be differentiated by associating them with different perspectives. Perspectives can be found in the type and instance layer. We consider five basic perspectives as shown in Fig. 3. The functional perspective describes what

the process has to do; particularly it defines the process goal. The operational perspective describes activities executed during the process. The behavioral perspective defines, when and under which preconditions activities are performed. In the informational perspective the information which shall be exchanged between activities is defined. The organizational perspective describes who participates in which roles in the process. Additional perspectives may be needed for business processes in special environments.

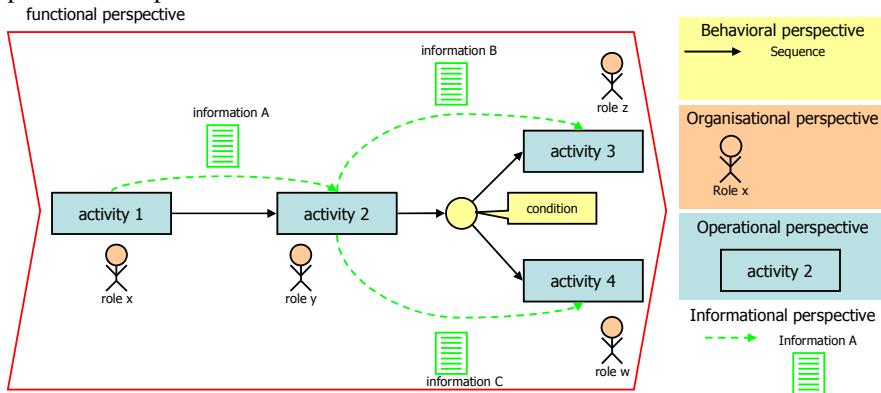


Fig. 3: Perspectives in business processes

Properties of change

We consider four properties of change: the extent, the duration, the swiftness and the anticipation of change.

Extent of change

The extent of a change can be incremental or revolutionary. Incremental changes start from an existing process type and only introduce changes to the already existing process type. Revolutionary changes abolish the existing process type and create a completely new one. Often experts are required to do the revolutionary changes.

Duration of change

Flexibility may include the capability to implement temporary or permanent changes. A temporary change is valid only for a limited period of time and reset afterwards. Permanent changes are valid until the next permanent change, they are not reset.

Swiftness of change

Changes may become valid immediately or deferred as shown in Fig. 4. Immediate means, that the change is applied to all instances of the process, also the running ones (instance 2 and 3). This implies that a migration of the running instances has to take place (instance 2). Deferred changes are only applied to new instances of the process (only instance 3). The already running instances remain unchanged (instance 2). Deferred changes require the coexistence of different versions of the same process.

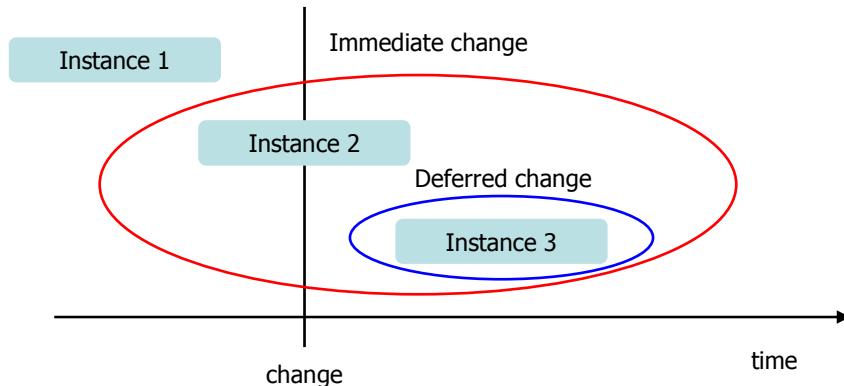


Fig. 4: Swiftness of change

Anticipation of change

The anticipation expresses if the change is planned or ad hoc. Ad hoc changes are often made to cope with exceptional situations. Planned changes are often part of a process redesign. Yet, they may relate to different levels of abstraction and be either temporary or permanent.

References

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