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Programming Elasticity and Commitment in Dynamic Processes

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In the past, elasticity and commitment in business processes were underexplored. But as businesses increasingly exploit pay-per-use resources in the cloud for on-demand needs, elasticity and commitment have become important issues. Here, the authors discuss the value of using elastic resources and commitments to create more dynamic organizations that can easily balance the need to be adaptable and flexible, while also retaining a high level of manageability.

Availability, easy access to a huge number of software and human resources in the cloud (and from the crowds), and current market dynamics push organizations to scale efficiently (and save costs) but to be adaptable and meet on-demand customer needs. Such organizations search for intensive customizable solutions that could deliver specialized services while spotting and serving market opportunities through high adaptability. This leads to a clear tendency towards flexible process models that are highly reusable and adaptable, but with less manageability and control.[1,2]

A team-oriented, flexible process model[3] could potentially address these challenges for adaptable organizations. However, in this organizational shift, from the process perspective two goals collide:

- the need to be adaptable and manageable, and
- the fact that adaptation is boosted by keeping a flexible process system, but manageability usually is derived from a strict process environment.

One way to deal with this dilemma is to harmonize the concepts of *elasticity* and *commitments* among individuals, teams, and organizations as the key ingredients to support efficient management of resources, which in turn leads to more adaptable process models for organizations. Elasticity allows for dynamic on-demand changes, offering functions and associated costs and quality by leveraging existing resources onsite and on the cloud.[4] Commitment represents an explicit statement of settings (that is, the resources' compromised capabilities), objectives, and the compensation model over the potential outcomes delivered.[5] Obviously, both have a strong influence on composing and executing processes. Between them, commitment has a strong influence on elasticity, although this hasn't been well studied in dynamic processes. Here, we explore the relationships between elasticity and commitments to elaborate a list of research directions for taking elasticity into account and committing to the development of dynamic, elastic processes.

Elasticity and Commitment in Dynamic Process Management

Let's consider preventive maintenance as a prominent case where elasticity and commitments

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Table 2. Elasticity and commitment relationships.

Primitive	SCU commitments	ICU commitments
Create	Single commitment created from the different ICU commitments.	Created from the ICU profile and target actions.
Dissolve	A fulfillment check over the commitment is developed, and global compensations are calculated.	Evaluating the ICU's performance over its commitments to update its profile (with an improved reputation, for example) and calculate the appropriate compensations.
Scale up	It can change if the reason of scaling was exogenous to the organization (such as a new customer request).	The new resources must commit and some reassignment of tasks can modify the commitment of the pre-existing ICU.
Scale down	It normally remains unaltered.	They normally remain unaltered.
Merge	A new commitment should be created by combining the different commitments of source SCUs.	A recommitment could be made based on the aggregation of responsibilities in the newly created SCU.
Split	New commitments must be made based on a distribution of responsibilities from the source SCU commitment.	A recommitment could be made based on the delimitation of responsibilities of the newly created SCUs.
Compose	A new commitment should be created, taking into account the coordination model and the commitments of the source SCUs that remain unaltered.	They normally remain unaltered.
Cluster	New commitments for each created SCU must be made based on the source SCU and the coordination model defined.	A recommitment could be made based on the delimitation of responsibilities of the newly created SCUs.

We need to see the importance of promoting the concepts of elastic resources and commitments, to create more dynamic organizations that can adapt their behavior while keeping a high level of manageability. Innovative management approaches that utilize elasticity and commitment could significantly improve the classical business models. Still, from a technical perspective, we must revisit concepts of process modeling, composition, and execution to be able to take into account elasticity and commitment models in Internet-scale resources.

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