Governing the service-chain: Challenges ahead

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Abstract. As Information Systems are evolving into an ecosystem of services, organizations face the persistent challenge of IT governance. In such a context, Cloud Computing shift has supported a growing service-chain that has transformed the business model from industry. In this position paper we outline the dimensions of this service chain reality and the role of Service Level Agreement as a foundation to support its governance challenges.

Keywords: service-chain,governance,sla

1   Introduction

In spite Service-oriented approach has been a success, its seminal orchestration model has been clearly questioned: Originally, SOC proposed a centralized governance approach mainly based on service buses and heavy middle-wares but industry trends clearly show a shift towards lightweight fine-grained services that are easier to replicate, evolve and test (i.e the Micro-services architecture [1]). In such a context, information systems in organizations face a new reality where traditional boundaries of applications are blurring to rather conform ecosystems of services that should be governed in a coherent and consistent way.

Moreover, the advent of Cloud Computing approach has boosted organizational integration where Infrastructures and Platforms are offered as services conforming a new commodity that is increasingly used in all sort of scenarios. This new model of externalized infrastructure makes it easy to overcome the traditional limitation of physical infrastructures to provide elasticity mechanisms and adapt to a changing environment.

As a consequence, from a business model perspective this reality of a highly integrated ecosystem of services, has paved the way for an important transformation: Information systems are no longer meant to be isolated entities with specific integration points that support an specific business processes; alternatively, Information Systems are starting to conform a global service chain where all components are both consumers and providers of services and where virtualized infrastructures and end-users are the terminals of the chain.

This service-chain can be characterized in different dimensions in order to analyze its current status and evolution:

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[1] http://martinfowler.com/articles/microservices.html

– Taking the tiers defined in Cloud Computing paradigm (IaaS, PaaS and SaaS) as an starting point, we can see two growth directions in service-chains:
  • **Vertical** Where service providers of inferior tiers (Iaas/PaaS) support to superior tiers (PaaS/SaaS).
  • **Horizontal** Where a functional integration is developed within the same tier in order to extend the service provided to a superior tier.
– From an organizational perspective, service-chains are applied in two scenarios (that could be integrated) with different governance goals:

In such a context, these scenarios and growth dimensions demand a higher level of coordination that could support the evolution and governance in a more automated way. These key challenges can be addressed by using the concept of a operational Service Level Agreement (SLA)[1] as a corner-stone to articulate the ecosystem of services that conform the service-chain [3]. Specifically , operational SLA would require a rich model and a supporting infrastructure that could include aspects such as Costs, Service Descriptions, Configuration properties [2], Guarantees or Compensations [6][5]; i.e. an evolved idea of SLAs as a digital artifact that can be instrumented and managed in an automated way.

As a promising consequence of this evolved SLA, we would be in the verge to integrate business models as an operational asset that would allow a leverage of information systems from a pure technical level to a business-driven ecosystem of services [4]. Moreover, this shift would be a foundation for new generations of service-chains that face key governance challenges to transform ecosystems in different dimensions:

– **Elasticity**, to adapt and recover from extra-ordinary situations.
– **Robustness**, to estimate and control potential risks.
– **Efficiency**, to optimize the operational processes and internal resource usage to deliver the service.

Summing up, these challenges represent an interesting horizon where service community should embrace the reality of an evolving ecosystem of services that needs better governance models and incorporate elements (such as the SLA) to develop novel business-driven systems integrated in a global service-chain.

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