Service-Oriented Business Intelligence

Alberto Abelló and Oscar Romero

Department of Service and Information System Engineering
Universitat Politècnica de Catalunya, BarcelonaTech
Barcelona, Spain
{aabello,oromero}@essi.upc.edu

Summary. The traditional way to manage Information Technologies (IT) in the companies is having a data center, and licensing monolithic applications based on the number of CPUs, allowed connections, etc. This also holds for Business Intelligence environments. Nevertheless, technologies have evolved and today other approaches are possible. Specifically, the service paradigm allows to outsource hardware as well as software in a pay-as-you-go model. In this work, we will introduce the concepts related to this paradigm and analyze how they affect Business Intelligence (BI). We will analyze the specificity of services and present specific techniques to engineering service systems (e.g., Cloud Computing, Service-Oriented Architectures -SOA- and Business Process Modeling -BPM-). Then, we will also analyze to which extent it is possible to consider Business Intelligence just a service and use these same techniques on it. Finally, we store the other way round. Since service companies represent around 70% of the Gross Domestic Product (GDP) in the world, special attention must be paid to their characteristics and how to adapt BI techniques to enhance services.

Keywords: Services, Business Intelligence, Service-Oriented Architectures, Business Process Modeling.

8.1 Introduction

As defined in [26], “services are economic activities offered by one party to another, most commonly employing time-based performances to bring about desired results in recipients themselves or in objects or other assets for which purchasers have responsibility. In exchange for their money, time and effort, service customers expect to obtain value from access to goods, labor, professional skills, facilities, networks, and systems; but they do not normally take ownership of any of the physical elements involved.” In [40], we find a much simpler way to identify what a service is: The “Unified Services Theory” states that all managerial themes unique to services are founded in customers providing significant inputs into the production process. In [44], it is explained that emerging services emphasize economies of knowledge and adaptiveness,
shifting the focus from mass production to mass customization. This shifting is intended to provide superior value by meeting their unique needs for services. Thus, in this work we will analyze the specificity of this sector and present specific techniques to manage and engineer their systems (e.g., Cloud Computing, Service Oriented Architectures and Business Process Modeling). Then, we will analyze to which extent Business Intelligence (BI) can be regarded or even managed as a service and use these same techniques in its engineering methods.

Fig. 8.1. Kinds of services

Services can be provided, mainly, at four different levels. As depicted in Figure 8.1, these are different layers built one on top of the other. Firstly, we can virtualize hardware and provide memory, CPU, disks, etc. This is known as Infrastructure as a Service (IaaS, Section 8.2) and, for example, Amazon’s EC2 is a first-class IaaS citizen. Specific benefits of IaaS are fast provisioning and scaling, while the customer still controls the software. As a disadvantage, development and maintenance of applications remains at the customer side. Above this, we find Platform as a Service (PaaS, Section 8.3), where basic software (like Database Management Systems -DBMS- or programming platform) is provided (such as, for example, Google Application Engine). The benefit obtained at this level is that the environment is already installed and periodically maintained, while customer still keeps control of the application. On the other hand, some constrains may appear on what can be installed and porting the application to another service provider may not be easy. At the third level, we can also consume Software as a Service (SaaS, Section 8.4), where not only the platform, but the whole application is installed and maintained by the provider (e.g., Google Apps). On the contrary, now we are tightly tied to the provider and it will be even harder to move to another provider. At the top, we could contract the implementation of parts of our business processes, i.e., Business Process as a Service (BaaS, Section 8.5). In this case, we are externalizing part of the business (not just the software). Well known examples are PayPal, iPhone App store, Chrome web store, etc. Some advantages come now in the form of flexibility, scalability and scale economy, but the relationship with the service provider is of complete dependency.