Chapter 1.5
Information Technology as a Service

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ABSTRACT

In this information era, both business and living communities are truly IT driven and service oriented. As the globalization of the world economy accelerates with the fast advance of networking and computing technologies, IT plays a more and more critical role in assuring real-time collaborations for delivering needs across the world. Nowadays, world-class enterprises are eagerly embracing service-led business models aimed at creating highly profitable service-oriented businesses. They take advantage of their own years of experience and unique marketing, engineering, and application expertise and shift gears toward creating superior outcomes to best meet their customers' needs in order to stay competitive. IT has been considered as one of the high-value services areas. In this chapter, the discussion will focus on IT as a service. We present IT development, research, and outsourcing as a knowledge service; on the other hand, we argue that IT as a service helps enterprises align their business operations, workforce, and technologies to maximize their profits by continuously improving their performance. Numerous research and development aspects of service-enterprise engineering from a business perspective will be briefly explored, and then computing methodologies and technologies to enable adaptive enterprise service computing in support of service-enterprise engineering will be simply studied and analyzed. Finally, future development and research avenues in this emerging interdisciplinary field will also be highlighted.

INTRODUCTION

With the significant advances in networks, telecommunication, and computing technologies, people, organizations, systems, and heterogeneous information sources now can be linked together

more efficiently and cost effectively than ever before. The quick advances of IT in general significantly transform not only science and engineering research, but also expectations of how people live, learn, and work as we witnessed during the last decade or so. Life at home, work, and leisure gets easier, better, and more enjoyable.

In the business world, because of rich information linkages, the right data and information in the right context can be delivered to the right user (e.g., people, machines, devices, software components, etc.) in the right place and at the right time, resulting in the substantial increase of the degree of business-process automation, the continual increment of production productivity and services quality, the reduction of service lead time, and the improvement of end users' satisfaction. As a variety of devices, hardware, and software become network aware, almost everything is capable of being handled over a network. Many tasks can be done on site or remotely, and in the same manner, so are a variety of services provided or even self-performed over the Internet. At the end of day, end users or consumers do not care about how and where the product was made, by whom, and how it was delivered; what the end users or consumers essentially care about is that their needs are met in a satisfactory manner.

In manufacturing, the deployment of integrated information systems is accelerating (Qiu, 2004). A typical IT-driven manufacturing business can be created by deploying enterprise-wide information systems managing the life cycle of both the business and its electronic aspects; that is, an order is taken over the Internet, and the products are made and delivered as promised. For instance, customers submit their orders via Internet browsers directly through a sales-force automation center, which automatically triggers the generation of the appropriate material releases and production requirements. It also informs all the other relevant planning systems, such as those for advance production schedule, finance, supply chain, logistics, and customer-relationship man-

agement, of the new order entry. The scheduler then assigns or configures an on-site or remote production line through the production control in the most efficient way possible, taking into account raw material, procurement, and production capacity. A shop-floor production-execution schedule is then generated, in which problems are anticipated and appropriate adjustments are made accordingly in a corresponding manufacturing execution system. In the designated facility, the scheduled work is accomplished automatically through a computer-controlled production line in an efficient and cost-effective manner. As soon as the work is completed, the ordered product gets automatically warehoused and/or distributed. Ultimately, the customers should be provided the least cost and best quality goods, as well as the most satisfactory services (Qiu, Wysk, & Xu, 2003).

No matter what is made and how services are delivered, in reality, high living standards with a better quality of life are what we are pursuing as human beings. When the communities we are living in are deeply studied, we understand that our communities are truly IT driven and service oriented in the information era. Here are a few daily noticeable, inescapable, and more contemporary service examples that could be on demand at any time and place (Dong & Qiu, 2004; Qiu, 2005).

- A passenger traveling in a rural and unfamiliar area suddenly has to go to a hospital due to sickness, so local hospital information is immediately required at the point of need. The passenger and his or her companions wish to get local hospital information through their cellular phones. Generally speaking, when travelers are in an unfamiliar region for tourism or business, handy and accurate information on routes and traffic, weather, restaurants, hotels, hospitals, and attractions and entertainment in the destination region will be very helpful.

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