

Business Process Management with Web-Service Integration Technology

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The rapid changes occurring in the business environment, for example, changes in global politics, economies, and production activities, require a new framework for building an IT infrastructure that enables real-time management. Business Process Management (BPM) is a new IT framework for visualizing, improving, and executing new or existing processes. Fujitsu has introduced Web-service integration technology for this new framework. This paper introduces Web-service integration technology.

1. Introduction

The accelerating changes in the business world call for the integration and management of various business processes inside and outside of enterprises, real-time business decisions about changes in the environment, and optimization of

overall business processes. IT systems need to be better organized and integrated to advance the use of business information in enterprises to the next stage and thereby promote innovation in business processes and customized services for individuals (**Figure 1**).

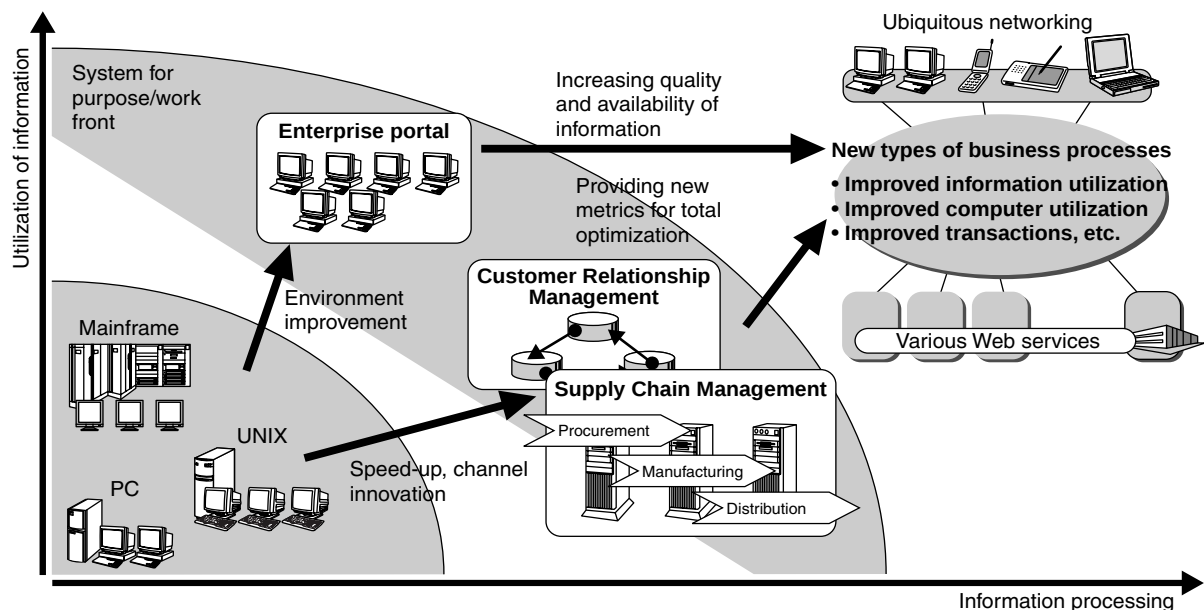


Figure 1
Information systems in the future.
Integration of systems developed for specific purposes or work fronts.

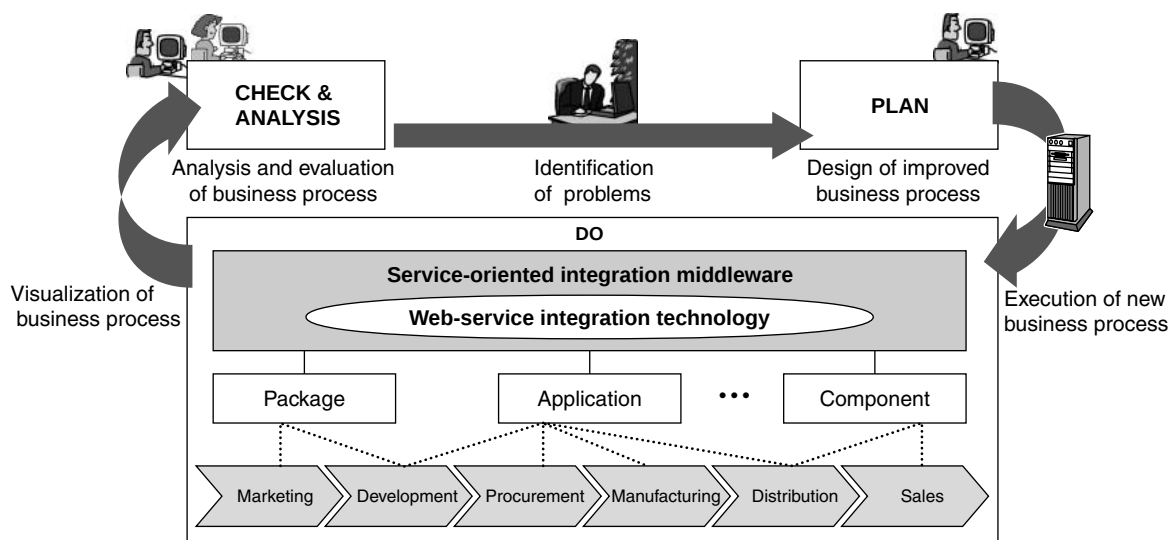


Figure 2
Service-oriented integration middleware in BPM.
Dynamic utilization of operational information for BPM, and management for continuing business process improvement with the PDCA model.

2. Business Process Management framework

Fujitsu has proposed a new IT framework called Business Process Management (BPM)¹⁾ to improve business processes using the following cycle:

- 1) Visualization of a business process,
- 2) analysis and evaluation of a business process,
- 3) design of an improved business process, and
- 4) execution of an improved business process.

To support this framework, Fujitsu has introduced service oriented integration middleware that utilizes Web-service integration technology to connect applications on different types of systems (Figure 2).

3. Service-oriented integration middleware

The current use of business information is very limited, because it mainly consists of financial data in a fixed-format report and is only used by a small group of people, for example, executive managers, corporate planning teams, and finance teams. However, people in all levels, including the operational level, now require raw, real-time

information so they can continuously improve their business processes. In addition to the financial data they have been using, executive managers are now looking for real-time information to help them identify current problems and make faster and more reliable corporate decisions.

Fujitsu's service-oriented integration middleware enables the use of dynamic, real-time information to meet these needs. This middleware enables real-time monitoring of business processes and visualization of operational business processes (Figure 3).

4. Web-service integration technology

Service-oriented integration middleware enables real-time use of business information by using Web-service integration technology, which consists of the following:

- Business process integration
- Front integration
- Business contents integration

These technologies are described in Figure 4.

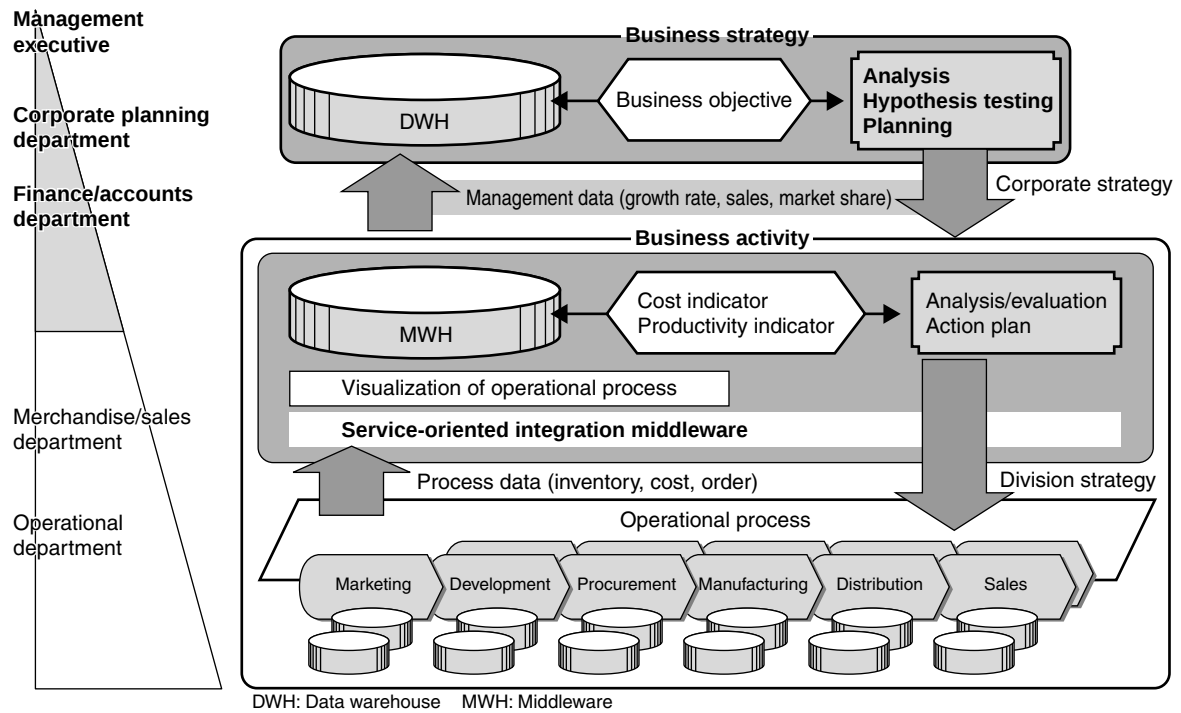


Figure 3
Dynamic utilization of operational information.
A new approach to corporate-level and division-level improvements through visualization of operational processes.

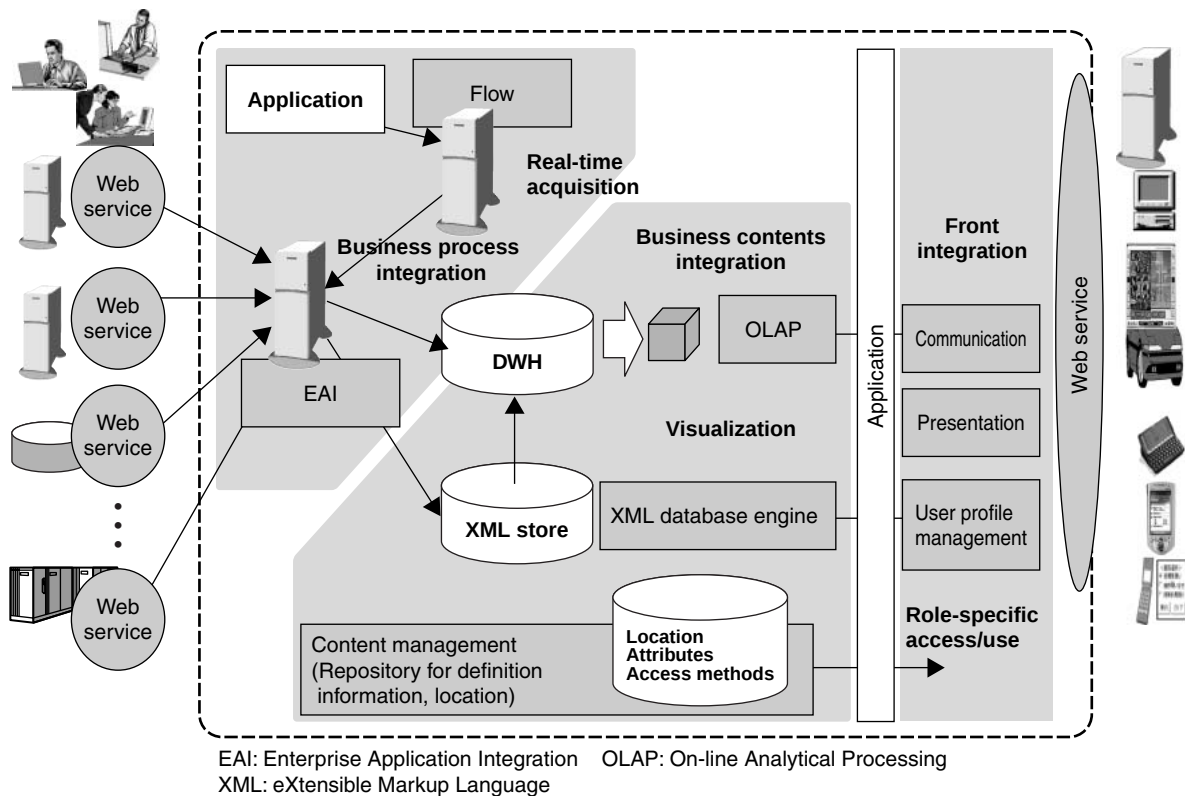


Figure 4
Web-service integration technology.

4.1 Business process integration

Business process integration is the core part of the Web-service integration technology. It used to mean simply the interconnection of applications on a variety of systems, for example, Enterprise Resource Planning (ERP) and applications running on mainframes. However, business process integration now includes the management of operational processes in enterprises.

The technologies of business process integration are as follows:

- 1) Enterprise Application Integration (EAI) for seamlessly connecting applications on ERP/mainframes as Web services.
- 2) Flow technology to enable business process monitoring. This technology includes human flow monitoring technology and event tracking technology.

4.2 Front integration

Front integration, which interconnects people and their broad range of knowledge within enterprises, plays a significant role in applying enterprise systems in the ubiquitous environment. User profile management, which is the key technology for front integration, categorizes the roles of groups and people so that information based on the categorization can be managed.

Front integration consists of the following technologies:

- 1) User profile management for managing user roles and user status.
- 2) Communication for linking systems to a variety of mobile environments
- 3) Presentations to publicize systems and services as Web services.

4.3 Business contents integration

When redesigning a business process that involves vast amounts of data distributed among

various systems, it is very important to optimize the way in which that data is used and integrated. Business contents integration expands the group of data users from executives to operational personnel and allows each member of that group to access various types of business contents by building a new type of data warehouse (DWH) and handling event information.

The technologies of business contents integration are:

- 1) Relational On-line Analytical Processing (R-OLAP), Multi-dimensional On-line Analytical Processing (M-OLAP), and Business Process Event Analysis
- 2) Content Management for handling meta-information used to build a DWH
- 3) An eXtensible Markup Language (XML) database engine for acquiring real-time information.

5. Conclusion

Fujitsu has introduced service-oriented integration middleware equipped with Web-service integration technology to support the BPM framework. By using Web-service integration technology, enterprise personnel from the executive level to the operational level can use real-time information.

The integration middleware has been adopted in the systems of industry-leading enterprises and will be used in other systems in various industries. We expect this new middleware will bring about significant and beneficial changes to enterprise systems in the coming ubiquitous and grid computing era.

Reference

- 1) M. Nakagawa: Business Process Management (BPM) is mandatory in the Web services age. (in Japanese), Web Services Conference 2003.
<http://interstage.fujitsu.com/jp/events/2003/828wsc.html>



Masahiro Nakagawa received the B.E. in Applied Mathematics and Physics from Kyoto University, Kyoto, Japan in 1976. He joined Fujitsu Limited, Tokyo, Japan in 1976, where he has been engaged in the development of OLTP products. He is currently in charge of integration middleware development using EAI, EIP, BI, and BPM technologies.