New Efforts for ProjectWEB to Be Business Infrastructure

● Nozomu Murakami

Since its introduction in 1998, ProjectWEB, Fujitsu's in-house knowledge management tool has played an essential role in Fujitsu's systems engineering work. Recently, increasing numbers of business units have been using ProjectWEB to prevent security incidents, which demonstrates its ability to be used not only in projects, but also in various other business arenas. Not content with its current role, we will aim to position ProjectWEB as a business infrastructure for all Fujitsu engineers to be used also outside the Company. In order to achieve this, three priority subjects have been set: 1) realization of multiple-project management, 2) promotion of rules and manners, and 3) improvement of service levels. This paper will introduce the background to why ProjectWEB has been developed, its major features, and the approaches taken toward the goal of making it a business infrastructure.

1. Introduction

To accumulate various types of expertise and know-how generated in the systems engineering field and accelerate on-site problem-solving, Fujitsu has developed and introduced ProjectWEB, its in-house knowledge management tool. ProjectWEB has become firmly established and widely used as Fujitsu's systems engineering work style. Fujitsu has also been continuously working to enhance functions and security with the aim of having it used by external parties.

To present the whole picture of ProjectWEB, this paper first explains the circumstances of how it was developed with the historical background taken into account, and describes how it has come to be widely used in-house. An outline of its major functions is given next, followed by the security that ProjectWEB offers with regards to information leaks, an issue of public concern. Lastly, this paper presents new approaches to having ProjectWEB evolve.

2. Introduction of ProjectWEB

ProjectWEB was distributed and introduced in projects within Fujitsu in 1998 as a Web application system that runs on Windows NT Server. Subsequently, an ASP-type service on the Intranet running on UNIX server started in 2000 and the service began on the Internet in the following year, providing an environment that can be used by customers and business partners as well.

In the 1990s, for Fujitsu's system integration (SI) business to gain an advantage over other companies, improving speed and quality was the highest priority issue. In this period, the IT industry entered an age of network computing and the time came for multi-vendor and system integrators to play an active role. A wave of downsizing accelerated the diversification and birth cycle of new technologies and reduced the periods and scales of system building at the same time. This period also witnessed the progress

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of diversification, distribution and division of development environments and the demand for new approaches to allow efficient work between different companies or offices.

To meet this challenge, Fujitsu introduced ProjectWEB as a mechanism for practicing knowledge management (KM) on the network. ProjectWEB is based on the concept of providing a work site on a network[1] allowing activities across different business locations at all hours. Because it is a Web-based application, it allows real-time sharing of information between different business locations by having clients connect to a network.

By practicing day-to-day systems engineering activities on ProjectWEB, important knowledge was obtained regarding discussions in the process of and know-how for problem-solving or how conclusions were reached, which was difficult to do in the past. ProjectWEB focuses on providing an effective environment that allows automatic accumulation and use of knowledge in day-to-day workflows rather than organizing information. The biggest reason why ProjectWEB did not become obsolete seems to be that it has allowed knowledge to be accumulated without needing to know in detail about the process of information organization, which is a major issue with conventional KM.

As of the end of March 2009, almost 3000 ProjectWEB installations are running as services. More than one project environment can be built in each ProjectWEB and the number of projects using it amounts to nearly 8000.

Functions provided by ProjectWEB have been effective as a mechanism for speeding up communication and implementing real-time management in addition to practicing KM. Computerizing information conventionally recorded on paper and sharing it on ProjectWEB has facilitated its in-house diffusion especially in project sites, where distributed development was rapidly becoming popular.

While ProjectWEB was initially intended for introducing a new style of systems engineering work in SI projects, it has proved to have an effect on organizational use as well, from the viewpoint of information sharing, and its scope of application has expanded to areas other than systems engineers. This paper does not give a description of the use of ProjectWEB for information sharing, which accounts for approximately 30% of its use, but presents its role in projects as a major point.

3. Overview of functions

ProjectWEB is a Web application embracing multiple functions and it helps people manage projects in real time as a whole, while its respective functions fulfill their own purposes. The following sections describe its major functions and cases of its effective use.

3.1 Communication function

ProjectWEB's communication function refers to a group of functions that assist communication including sharing of information between project members. Functions of especially frequent use among them are the Library and todo list functions.

3.1.1 Library function

The Library function provides file sharing with high operability similar to that of Windows Explorer. This function, which manages documents relevant to the operation of a project with a systematized directory structure, is used for purposes such as sharing files between project members.

3.1.2 todo list function

Unlike a common personal todo list, the todo list function of ProjectWEB is positioned as a shared E-mail function on the Web. It allows sophisticated sharing of information among multiple people on the Web, a process that tended to be cumbersome via E-mail. It achieves centralized management of the progress of work and visualization of problems by allowing multiple

recipients to make reports on the same screen in response to the sender's work instructions.

While the Library and todo list functions are respectively independent, linking between functions has been realized to effectively support day-to-day work. One example is that linking between todo list and Library functions allows the user to always view up-to-date files attached to messages. When files are updated by multiple members, this function linkage eliminates the need to send an E-mail every time an update is made. This allows easy management of the latest versions, a process that tended to be cumbersome with conventional E-mail.

3.2 Project management support function

The project management support function (commonly known as PMPACK/C) was developed based on Fujitsu's standard system development methodology called SDEM.[2] This function roughly consists of two groups: a progress management function and a quality management function. The progress management function is equipped with a work breakdown structure (WBS) progress management function for grasping the progress of a project and a program development progress management function for gaining an understanding of work progress for each process or program. The quality management function is provided with features that allow the user to manage information to be shared with customers and grasp the progress on the actual site of development including the issue control function, incident control function, specification change control function and review record control function.

The project management function is also linked with the communication function, while being independent, and provides users with a means of efficiently sharing information.

4. Security in ProjectWEB

Since 2001, Fujitsu has been providing an environment for sharing ProjectWEB, which was built in an Internet environment, with customers and business partners. To that end, efforts for ensuring secure operation of ProjectWEB are essential. Because ProjectWEB itself is operated securely, there have been an increasing number of cases in which ProjectWEB is used as a security measure. Such applications are outlined below.

To address information leaks, which have recently become an issue of public concern, the effectiveness of ProjectWEB has long attracted attention. Rather than using personal computers or portable media to take out data such as customer information that is to be seen by authorized people only, ProjectWEB stores that data and allows it to be accessed it from the outside. In this way ProjectWEB is used as a means of preventing information leaks caused by loss or theft of hardware outside the Company, which has become more and more common in Fujitsu.

There are also cases in which departments in Fujitsu that have been certified for the information security management system (ISMS), build a secure operational environment by making use of the Intranet version of ProjectWEB for information asset management to implement information security management.

ProjectWEB provided a highly flexible access-right-setting function early on and achieved secure encrypted communication via SSL with the Internet version of ProjectWEB, which is used for external linkage. In response to growing expectations for safe and secure services, we have successively offered functions and measures that are intended to reinforce security even further.

We began providing major security measures with ProjectWEB Version 7, which was released in April 2007, and they include password entry using a software keyboard (**Figure 1**), user-specific setting of password expiration dates, a login ID locking function, selecting the complexity level of the password pattern and adding an access control function by IP address.

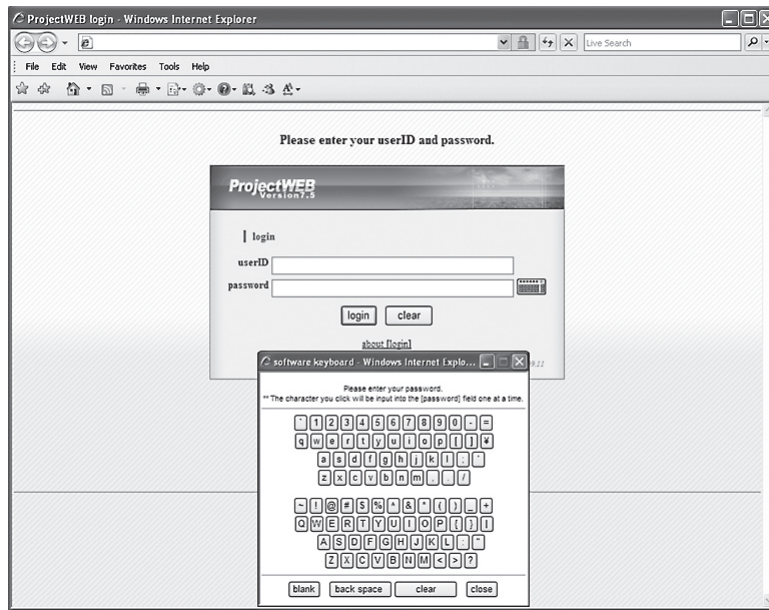FUJITSU Sci. Tech. J., Vol. 46, No. 2 (April 2010)

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Figure 1
Entering a password with a software keyboard.

We introduced the software keyboard to help prevent password leaks through keyloggers and such like, and our aim is to prevent project information from being leaked to the outside world via malicious software. Having access control by IP address allows the user to specify the terminal IP addresses to which access is denied or permitted. By making use of the latter, only the specified terminals can be granted access to ProjectWEB.

With access control by IP address, access to ProjectWEB can be granted only to terminals provided with security measures and authorized by a given project. In recent years, leaks of business information from personal terminals via file exchange tools and such like have become a social problem. By putting restrictions on IP addresses, the aim is to prevent security incidents through controlling access to ProjectWEB from personal computers with inadequate security such as those at home or in Internet cafés.

5. New efforts

ProjectWEB has been continuously evolving to overcome challenges in project activities and will be oriented toward a business infrastructure, meaning essential tools for systems engineers, from now on. We have planned the following three points as the main focus of activities to that end:

1) Approach to multiple-project management;
2) Higher quality and efficiency by promoting rules and manners; and
3) Further improvement of service levels.

5.1 Approach to multiple-project management

In the future, ProjectWEB will be enhanced to strengthen the linkage with other systems so that real-time management is further evolved by visualizing quality, progress, costs and risks. Eliminating failed projects is an important theme for Fujitsu and we intend to continue to enhance ProjectWEB so as to make even greater contributions to this theme.

Recently, centralized management of multiple projects has become more popular in many departments and the introduction of a system to offer comprehensive project information to organizations is essential.

ProjectWEB manages individual projects in which using it alone is not enough for effectively managing many small projects and a mechanism for bringing together information encompassing multiple projects at an upper level is required.

To have such a mechanism, we intend to provide a multiple-management tool capable of overseeing an entire project operated by an organization. This tool will offer, as an external system of ProjectWEB, a management view that visualizes an at-a-glance view of the operational status of multiple projects. This will not only help to accelerate management decision making, but also provides a system that allows a third party to conduct risk assessment. This tool calls project quality and progress data from the linked ProjectWEB as required, allows detailed investigation of the status and manages the cost and budget of the project by linking with the budget system, and even visualizes profit and loss situations.

5.2 Promotion of rules and manners

The "rules" (or templates) of project management are defined by standardizing the basic data of project management, which is used as the required data for forms managed by ProjectWEB. Within Fujitsu, there is still room for improvement in terms of project management techniques and standardization of documents. Different forms are often used by departments in charge of different types of business, which is believed to be due to the different work characteristics. In reality, however, the required basic information for implementing project management does not depend on the type of business and, in most cases, the reason is the different reporting formats required by customers. Standardization of basic information to allow project-specific customization of necessary information leads to basic data linkage for multiple-project management, as mentioned above. Storing such common information on forms or in a specified place in the library

hierarchy makes it easy to aggregate and retrieve data across projects and supports sound project operation through appropriate assessment, which is the aim.

Dissemination of "manners" for using ProjectWEB at the same time will assist in the development of sites capable of even more effective use of ProjectWEB. Manners here refer to the know-how and behavior for making good use of ProjectWEB. They include, for example, small pieces of know-how on how to make full use of and effectively realize information sharing using ProjectWEB, such as using the todo list function and ordinary E-mail in different ways.

These pieces of know-how are maintained on various sites but are not necessarily disseminated. In the future, we will focus on helping to disseminate across sites the know-how generated on individual sites as part of the activities to further improve the level of utilization.

5.3 Improvement of service levels

The future theme of prime importance for ProjectWEB is reducing service downtime because of maintenance or other reasons.

The high operating rate of 99.8% for ProjectWEB services was achieved in fiscal 2008. This shows that downtime due to problems amounted to 10 minutes or less in the year, which can be considered to pass muster in terms of service stability. On the other hand, as scheduled downtime due to regular maintenance such as system enhancement and patch application, approximately 20 hours were required in fiscal 2008.

In addition, ProjectWEB does not readily allow flexible expansion of resources such as disk space and that area needs to be improved. ProjectWEB is composed of more than 60 sets of servers at present and the relationship between each server set and storage is logically fixed. In addition, any use exceeding the disk space first allocated requires disk reallocation among server sets, and services must be suspended to do this.

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What is crucial for making ProjectWEB a business infrastructure for systems engineers is the achievement of a non-stop service through reducing scheduled downtime and having real-time expansion of resources. Currently, we are considering using virtualization techniques to achieve non-stop service availability.

To reduce scheduled downtime, application servers can be virtualized with a server container to provide a redundant configuration, thereby increasing the maintainability and reducing downtime due to maintenance. In addition, virtualization and separation of storage for library and database storage can flexibly ensure space without system downtime at the time of disk reallocation or database expansion, which leads to continuous operation.

In the future, we plan to improve service levels by having non-stop service availability in view of operation that takes advantage of Fujitsu's Cloud computing environment.

6. Conclusion

ProjectWEB has so far made significant contributions to the establishment of a new style of systems engineering work of Fujitsu as fields of project activities and of organizational operation as well. From now on, we intend to establish its position as a system that can be reliably used internally and externally through further strengthening security and improving functions. At the same time, we are committed to making even more contributions to the improvement of value offered to customers through functional enhancement and utilization to practice multiple-project management.

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Nozomu Murakami
Fujitsu Ltd.
Mr. Murakami majored in philosophy and ethics and graduated from Doshisha University, Kyoto, Japan in 1990. He joined Fujitsu Ltd., Tokyo, Japan in 1990 and was engaged in the overseas business for 13 years, initially in sales and marketing, and later in the engineering field. Since 2002, he has specialized in the development of an in-house knowledge management framework.
In autumn 2009, he joined Fujitsu's Field Innovation Development Program and has been preparing himself for a new career as a field innovator.