Museum Solutions and Plans for Global Expansion

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The importance of museum materials is increasing as time passes, and there is a growing need to manage them with databases by making use of information and communications technology (ICT). In addition, with the strong originality of individual museums, such management systems should be highly flexible. Under these circumstances, Fujitsu offers museum solutions designed to help create value for museums. The main one is FUJITSU Education Solution Musetheque, a collection management system characterized by its flexibility that enables items in museum collections to be easily added and that enables information located in different categories to be easily stored in management databases. Its excellent search response is not degraded by the addition of large amounts of data. This paper describes Fujitsu's museum solutions including their strengths and its plans for their global expansion.

1. Introduction

Fujitsu has been providing solutions directed at museums for some time. The administration of a museum involves a variety of operations including collection management, exhibition planning, research, and public relations, and Fujitsu has been enhancing and expanding its solutions based on these museum-specific operations. A product group centered about a collection management system provides the foundation for these solutions, and the compatibility, flexibility, and performance of these products with respect to the work of a museum have been rising through many years of experience.

The concept of Fujitsu's museum solutions is based on a collection management system, as shown in **Figure 1**. The idea is to provide all-around support for the main operations of a museum including research activities, educational activities such as exhibitions, and the operation and management of the museum itself. Fujitsu considers these solutions to be just as applicable to museums throughout the world as they are to those in Japan. Our mission is to make a substantial contribution to museums on a global basis.

In this paper, we introduce Fujitsu's museum solutions including their strengths and its approach to expanding those solutions globally.

2. Importance and diversity of museum materials

The word "museum" refers to an institution that collects and stores materials, surveys and researches those materials, and holds exhibits and educational events. In Japan, there are more than 5500 museums of all sizes officially classified as registered museums, museum-equivalent facilities, and museum-like facilities.[1] The core element of any museum is its collection of materials, which are used to conduct surveys and research, to hold exhibits, and to support educational activities. In short, information on the wide variety of materials that a museum possesses is valuable, and how to efficiently manage that information and effectively use it for surveys, research, exhibits, and education has become an issue in this field.

Additionally, many local governments perform evaluations of museums in their region to assess their worth, and they attach much importance to finding ways of making those museums more meaningful and valuable. In one example, the significance and value
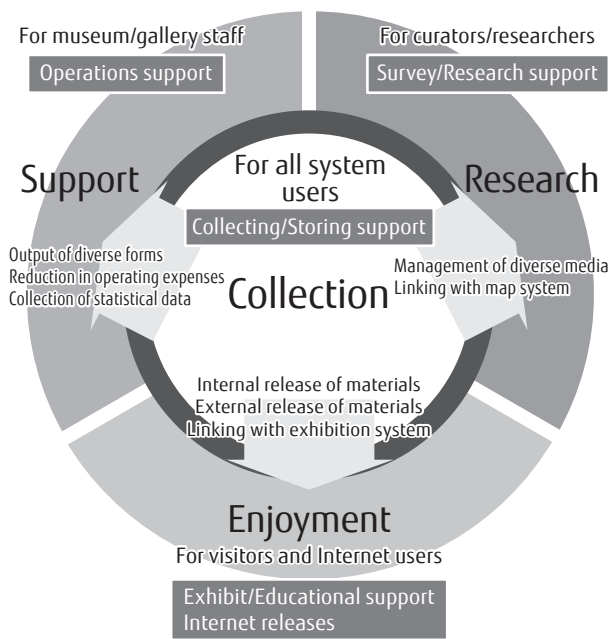
Figure 1
Concept of Fujitsu's museum solutions.

of a certain museum was raised by resurveying the value of the materials in its collection, entering the information into a database, and using that information to promote the use of the museum's collection.[2]

However, entering information on a collection into a database is easier said than done. Museums come in many types such as history museums, archeological museums, local folk museums, art museums, natural history museums, science museums, and literature museums, meaning that museums on the whole collect a very wide range of materials.

Since the categories of objects to be managed differ among these museums, the items to be managed in a database (control items) likewise differ. For example, a history museum may collect materials in the category of "documents," which could be managed by such items as period, author, and addressee, while a natural history museum may collect materials in the category of "animal specimens," which could be managed by such items as scientific name, collector, collection location, and collection date. In other words, control items can differ completely from one materials category to another. Individual researchers may also manage materials in their own unique ways.

Although control items are being unified at

many libraries through Machine Readable Cataloging (MARC), the standardization of control items has not been progressing in the Japanese museum industry. The current situation is such that control items may even differ for the same materials category among different museums.

There is therefore a need for a system that can store materials information in a database and facilitate its use without detracting from the diversity of collected materials. Fujitsu's Musetheque collection management system is one solution that meets this need.

3. Features of Musetheque collection management system

When managing a variety of collected materials in various categories in a database, a museum must be able to set control items in a flexible manner. It must also be able to perform various types of operations on control items such as add, modify, sort, and delete in a straightforward manner even after the system has been constructed and launched.

Musetheque manages items by using XML, so there is no limit to the number of characters, control items, hierarchical levels, data items, etc. in the database, and control items can be added later as needed. An example of adding a control item to a screen display is shown in **Figure 2** and the difference between adding a control item in a conventional database and doing so in Musetheque is shown in **Figure 3**. With Musetheque, a control item can be added without having to shut down the system, which is different from a conventional system.

Musetheque enables information in different categories to be easily stored in a database and enables information searching across those categories. As a result, it is possible to uncover various types of relationships among stored information that could not be seen before. Furthermore, as an XML database, Musetheque uses the FUJITSU Software Interstage Shunsaku Data Manager, Fujitsu's XML-type search engine, which enables it to provide flexible setting of control items while maintaining high-speed and stable searching even for complicated search conditions. Musetheque can also manage diverse types of media such as image, video, audio, and PDF in addition to text, thereby acting as a digital archive. It provides total support for the work of a museum such as managing information on the

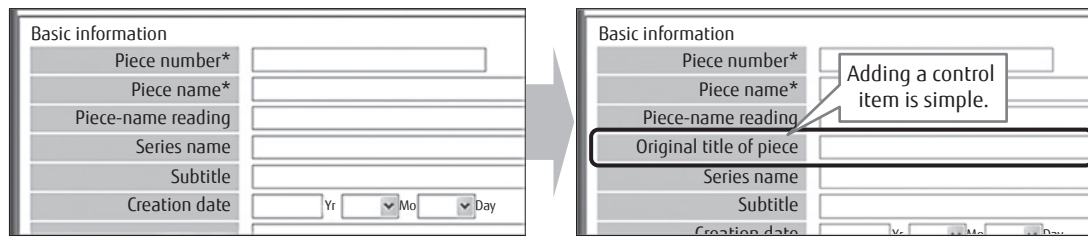FUJITSU Sci. Tech. J., Vol. 51, No. 1 (January 2015)

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Figure 2
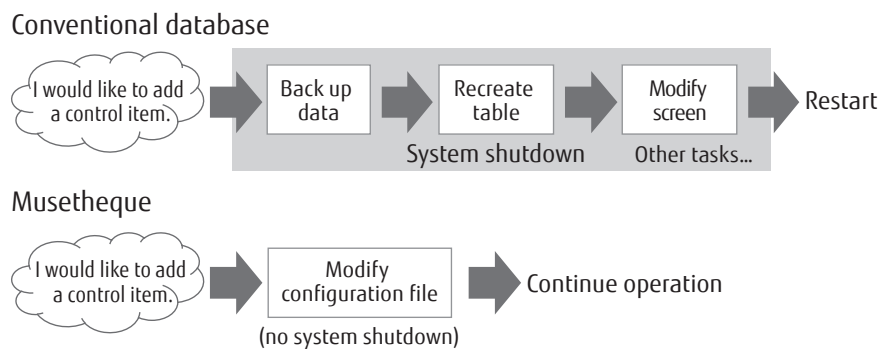Adding control item to screen display.

Figure 3
Difference in adding a control item between database systems.

acceptance of materials and on the history of received/shipped materials.

These features demonstrate that Musetheque can provide across-the-board management without detracting from the diversity in the materials making up a museum's collection. For this reason, joint use of Musetheque by multiple institutions can be easily achieved, as shown in **Figure 4**. Such joint use enables cross-searching to be performed across institutions so that new relationships among materials can be uncovered in contrast to using only one's own materials information as in the past. Providing new services in this way enables Musetheque to help a museum enhance its value.

4. Toward global expansion of museum solutions

As described in the previous section, the strong point of Fujitsu's museum solutions centered about Musetheque is that they can be applied in a flexible manner both at the time of initial deployment and afterwards. Fujitsu believes that this strength can be

leveraged to expand these solutions beyond museums in Japan and contribute to collection management and public relations in museums around the world. Today, there are a great number of museums and art galleries in the world, including museums with a long history (such as the British Museum in the United Kingdom, which opened its doors in 1759), museums with a large collection of natural-history specimens (such as the Smithsonian Institution in the United States, which holds about 142 million items), and art galleries holding collections from around the world. Musetheque can make a great contribution to museums and art galleries with huge collections. By providing search response times that do not deteriorate with an increase in materials.

At the same time, many of the business system packages developed in Japan have been tailored to cultural norms, laws and regulations, and social customs unique to Japan, and this has been an obstacle to global expansion. Musetheque, however, is a package developed with the aim of managing information on a wide variety of materials in a museum, so it does not
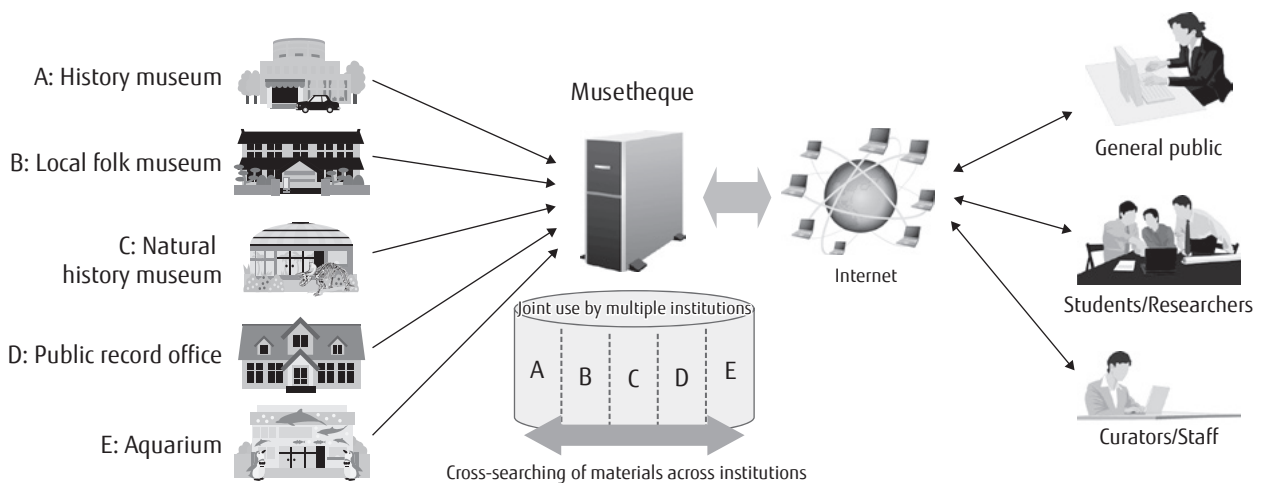
Figure 4
Joint use of Musetheque by multiple institutions.

incorporate any constraints in terms of cultural norms, laws and regulations, social customs, standards, etc. In other words, it is a package having high compatibility, flexibility, and performance with respect to the work of a museum—it is a product capable of making a global contribution.

Moreover, the demands Musetheque was designed to meet are increasing rapidly on a global basis. In August 2013, Egypt's Malawi National Museum was suddenly attacked, and most of its artifacts were looted. This was indeed a tragedy, but from a global perspective, there have been not a few cases in which priceless antiquities have been looted or destroyed through attacks carried out by radical groups. Museums are therefore being called upon to defend themselves from such attacks or to adopt security measures that can withstand such attacks. Furthermore, in addition to protecting actual artifacts, the need for storing and protecting "information" on a museum's materials through a thorough program of digitization is becoming increasingly important. Musetheque can also contribute extensively to meeting this need as a management system.

To demonstrate that Musetheque can indeed make a contribution to world museums, we need to introduce it into museums outside of Japan and evaluate its effects from a digital perspective. Given its proven track record in Japan, we are studying the prospects for evaluating Musetheque in East Asian and Southeast Asian countries, which have a culture basically similar to that of Japan. We stated above that Musetheque is a product with great potential for making a global contribution, but that is not to say that another country's culture, laws and regulations, and customs will have no effect at all. In the case of a history museum, for example, the method used for managing its collection may depend on the history of that country's founding, while for a natural history museum, its management method may depend on the plant and animal specimens collected in that country. Accordingly, how to leverage the strong points of Musetheque to make it into a packaged product that can easily accommodate the particular conditions of different countries is a future research topic.

The flow of globalization is an irreversible process, and the globalization of museums cannot be avoided. This trend is reflected by the Fukui Prefectural Dinosaur Museum, which continues to cooperate and partner with museums around the world with a focus on dinosaur fossils.[3] Absorbing differences in control items that depend on the particular conditions of each country and each museum and adopting a uniform data format can help promote tie-ups between museums and support the globalization of museums. Musetheque can fill that role. We plan to develop solutions that facilitate collaboration among museums throughout the world and enable the creation of new value. We aim to contribute to the development of

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museums that foster innovation in research activities and satisfy the intellectual curiosity of people around the world.

5. Conclusion

This paper described the strong points of museum solutions offered by Fujitsu with a focus on the Musetheque collection management system and introduced Fujitsu's approach to expanding these solutions globally. Looking forward, Fujitsu aims to make significant contributions to the world's museums by making good use of the museum solutions that it has been developing and enhancing in Japan over the years. Fujitsu also aims to support further developments in

Japan's museums by incorporating positive results achieved by its solutions in overseas museums.

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