CUSTOMER CASE STUDY

GIFU UNIVERSITY

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Naoki Kato
Professor at the Faculty of Education's Co-Creative Research and Development Center for Learning
Gifu University

Gifu University asks Fujitsu to build a Strategic Integration Database that could pull data together and present it visually to improve education quality.

At a glance

Country: Japan
Industry: Education
Founded: 1949
Website: gifu-u.ac.jp

Challenge

Gifu University had vast reserves of data scattered across its campus and various departments. It wanted to develop a strategic integrated database that could give a visual insight into this information.

Solution

Trusted partner Fujitsu built a Strategic Integration Database based on Azure Document DB and Azure Data Lake Store with a Microsoft SQL Server at the front-end and Power BI - enabling interactive data visualization for the various types of data collected.

Benefit

- Created a highly flexible database to integrate different types of data and analyze it from various angles
- Delivered a highly-expandable system in just three months using PaaS - keeping costs low
- Enables the University to become more competitive, identify weaknesses and strengths, improving research capacity and education quality

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Customer

Founded in 1949, Gifu University in Japan has five faculties: Education, Regional Studies, Medicine, Engineering and Applied Biological Sciences. In addition, it has nine graduate schools with 6,000 undergraduates and 1,600 postgraduate students. The university is a place for personal development, producing graduates who strive to never stop "learning, exploring and contributing" for the benefit of society. The university itself also operates under the motto of "learning, exploring and contributing" in its local community.

Products and Services

- FUJITSU Strategic Integration Database

Unlocking on-campus data

Gifu University's plans to become central to revitalization efforts in the Tokai district and form a hub for education and research, both internationally and domestically. This requires improving its institutional research (IR) capabilities and opening up its data reserves.

Gifu University's faculties each have a unique, long history and their own system for storing on-campus data. Development of a strategic integration database began in 2016 to collect and manage data scattered across faculties and enhance the University's research capacity. Apart from academic papers, a key aim was to build a database that could use a variety of evaluation indices to analyze and present data visually. The system also needed the ability to process many different types of data.

"Exploiting on-campus data is key to achieving our goals and making evidence-based improvements to university management," says Hideto Fukushi, Vice President and Executive Director for Academic Research & Information Affairs at Gifu University. "The new integrated database will be key information infrastructure."

The University wanted the new system to use the Platform as a Service (PaaS) cloud computing model: "Compared to on-premises options, a cloud-based environment enables rapid system development and smooth deployment without the need to procure hardware," adds Naoki Kato, Professor at the Faculty of Education's Co-Creative Research and Development Center for Learning. "It also ensures a system capable of expanding as required."

Co-creating a strategic database

The University chose Fujitsu because, as Kato explains: "We worked with Fujitsu on an on-campus system in the past and were very impressed by how Fujitsu worked with us and adopted our standpoint to problem solve. Most crucially, Fujitsu was able to use a familiarity with our operations to demonstrate knowhow for aiding university IR."

A prototype of the Strategic Integration Database was built in just three months after development began in December 2016, and was subsequently demonstrated at a meeting attended by faculty deans. For the cloud-based component, Fujitsu suggested the use of Microsoft Azure. Fujitsu then created a system characterized by a highly-flexible multi-database.

At its core are user-friendly schema-less document database Azure Document DB and Azure Data Lake Store, which capture data in native formats and are unbound by size limitations. This enables the system to avoid data type restrictions on values pertaining to one single column type. Fujitsu also included Microsoft SQL Server at the front-end to accommodate the University's desire to use Excel. Finally, it included Power BI to enable interactive data visualization for the different types of data collected.

"The system is being developed by Fujitsu's developers from a remote location and offered up to us for feedback. The Strategic Integration Database will be used by all faculties and the University's administration team, so we started by collecting opinions from those who would use the system on a daily basis," continues Kato. "We started small, and slowly increased funding as we confirmed positive results. This approach used by Fujitsu suited us: we avoided developing unnecessary features and focused solely on what we needed."

Flexible, scalable data analysis

The new system is a multi-model database based on schema-less databases that award high flexibility and allow data residing in different faculties and data formats to be collected and managed centrally. It also includes business intelligence (BI) tools that analyze data strategically to look for weaknesses and new strengths. The result is a system that helps the University enhance its research capacity and deliver high-quality education.

"The previous system produced aggregate results from each faculty, but the data cannot be analyzed from different angles," remarks Kato. "The Fujitsu system enables exploratory data analysis, displays data as graphs and enables data mining to reveal more information, granting greater freedom with analysis tools and ways to visualize data. The prototype clearly demonstrated the importance of an environment that allows exploratory data analytics."

"Having a variety of data on hand helps us evaluate performance from different standpoints, for example by looking at the number of academic papers published or the number of co-research projects being conducted, which allows us to better identify our strong points and unique offerings," concludes Yutaka Ohya, Professor at the Faculty of Engineering and Associate Director General for the Organization for Research and Community Development. "If we do decide to involve artificial intelligence (AI) in our operations further down the track, our on-campus data will already be under centralized management and readily accessible, which provides the essential basis for effective analysis."

FUJITSU
Phone: +81-3-6252-2220