Modern healthcare facilities generate large volumes of data daily, primarily due to the high number of departments and specialist areas and strict legal regulations. Specific applications such as 3-D animations in computer tomography, X-rays and genetic sequencing and analysis increase data volumes yet further. In addition, e-health and networking within healthcare are presenting the sector with an ever-increasing array of challenges. To address these challenges Klinikum Wels-Grieskirchen opted for a unique private cloud solution built on unified storage systems and information management solutions from Hitachi Data Systems.

**Challenges**

**Industry-Wide Trends**

The emergence of the big data phenomenon has brought with questions regarding how data in the healthcare sector can be consolidated efficiently. How can it be archived in a secure, highly available and, above all, long-term manner? Most conventional IT infrastructures are no longer able to cope with these growing requirements. Holistic IT solutions that enable organizations to better manage their information, optimize clinical workflows, cut waiting times and reduce compliance risks provide the answer. The main priorities here include clinical efficiency, exchange of health-related information and improving quality of care.
In view of these priorities, organizations such as the Klinikum Wels-Grieskirchen need open, scalable, flexible and future-oriented storage solutions that deliver functionalities including virtualization, thin provisioning and dynamic tiering. It was functionalities such as these that prompted the hospital’s decision to implement storage solutions from Hitachi Data Systems. Using the virtualization technologies provided by Hitachi Data Systems, the Austrian hospital successfully established a private cloud that is unique across Europe.

One Platform for All Data
Following the merger of several individual institutions to form the Klinikum Wels-Grieskirchen, IT administrators worked together with the hospital’s management team. They also tasked the company x-tention with IT operational management, to look for reliable and powerful storage solutions. The aim was to create a dynamic infrastructure and a unique platform for all data. This infrastructure would form the backbone of a private cloud environment and adapt flexibly to the hospital’s future requirements. With these requirements in mind, the decision was made in favor of storage and data management solutions from Hitachi Data Systems. “The primary systems for a cloud must be chosen with care. It is not just the availability and performance of enterprise systems that support medical treatment, a consolidated long-term strategy plays a key role, too,” explains Elmar Flamme, strategic CIO at the Klinikum Wels-Grieskirchen.

The Solution
The hospital’s data is stored in a multitier storage solution based on Hitachi Unified Storage VM (HUS VM), which replaces the previous Hitachi Universal Storage Platform V (USP V). HUS VM is the 1st unified storage platform to offer enterprise virtualization for block, file and object data, thereby vastly simplifying data management. With HUS VM, Hitachi Data Systems is the only provider to guarantee 100% availability of all stored data, a factor of key importance for the healthcare sector. HUS VM enables the Klinikum Wels-Grieskirchen to maximize storage efficiency, benefit from 1st-class scalability of the internal and external repository, and migrate large volumes of data quickly and easily. The reliability and availability of HUS VM combines with optimal control of data growth, optimized management and cost efficiency. These traits guarantee maximum benefits when it comes to the complex requirements of a healthcare facility’s IT system.

“When selecting a solution, our key criteria were value for money, technical excellence and superb service. The Hitachi solution could provide all of these standards.”

Elmar Flamme
CIO
Klinikum Wels-Grieskirchen
Klinikum Wels-Grieskirchen Innovates With Information

Using virtualization technologies provided by Hitachi Data Systems, Klinikum Wels-Grieskirchen successfully established a private cloud. The Austrian hospital relies on Hitachi Unified Storage (HUS) 150, which replaces Hitachi Adaptable Modular Storage (AMS) 250 predecessor systems previously in use. They enable centralized storage, management and archiving of all data on a single platform, and deliver high performance, scalability and cost efficiency. Functionality such as thin provisioning and auto-tiering reduce costs and guarantee maximum benefits for the Klinikum Wels-Grieskirchen.

The hospital is using Hitachi Content Platform (HCP) for its long-term archiving needs. This multipurpose archive forms the core of the organization’s storage environment and enables all clinical and nonclinical data to be stored, backed up, preserved and retrieved on a single platform. The clinical archive repository archives at object level data that is associated with metadata, such as retention, hashing, shredding and comprehensive search criteria. It not only allows all relevant patient data to be found and retrieved efficiently, but also provides an intelligent data lifecycle management system. This metadata approach enables automated and optimized storage of data that takes into account clinical usage patterns. The hospital stores data in the auditing-compliant archive, including data from the picture archiving and communication systems (PACS), reports from the medical information system (MIS) and SAP data, to name a few examples. Some compulsory retention periods can be up to 30 years. “It is here in particular that the consolidation of different medical archiving systems to form a centralized solution offers significant potential,” explains Flamme.

Benefits

Guaranteed Interoperability

Now that the concept of a metadata archive via the HCP is in place, the hospital is planning to further optimize access to information. In the future, it will employ intelligent semantic application solutions. Together with x-tension, the hospital has already designed and developed eMIND. This software solution uses a metadata robot to generate specific meta-information that makes it even easier to search for data. The software also links picture archiving and ehealth solutions to the archive.

Data Mobility

The hardware components supplied by Hitachi Data Systems also form the basis for Hitachi Clinical Repository (HCR). This information management solution combines hardware and software with an integrated, standardized interoperability framework. In addition to HCP, the Hitachi Data Discovery Suite (HDDS) plays a key role. This management software offers sophisticated search functionalities for very large file- and content-based data volumes, further simplifying cross-platform intelligent file tiering. The capabilities ensure independent clinical data and data mobility.

Uninterrupted, Secure Access

Thanks to Hitachi Content Platform, the Klinikum Wels-Grieskirchen can integrate centralized and decentralized repositories such as radiology, mammography and cardiology in line with applicable guidelines. The integrated results give authorized medical staff at the hospital uninterrupted and secure access to all treatment-related data, content and information on a particular patient. This access helps to avoid medical errors, improves the quality of patient treatment and care, and increases the efficiency of medical services.

“We decided to implement HCR to ensure that users were able to access the right information at the right time, in the right place and in the right format,” says Flamme. “The ability to search for data across all our systems, regardless of manufacturer or location, is the key benefit. Hitachi Clinical Repository gives us the flexibility to integrate any type of clinical system into a comprehensive archive. At the same time, the system gives us access to data for all clinical and administrative requirements, enabling us to improve patient care.”

The HCR solution together with HUS VM, HUS 150 and HCP has created an IT environment that is unique throughout Europe. The hospital will continue to expand the Hitachi Clinical Repository and its medical metadata archive. There are currently no bounds to the possibilities of this development work.