

Informatica Helps Nanjing Children's Hospital Achieve Information Exchange and Sharing



"After building the data integration platform, a high degree of sharing, centralized and uniform standardized management of data among electronic medical records, mobile nursing, HIS, LIS and other systems has been achieved, which reduces the complexity of data fetching, increases the speed of data extraction and cuts the cost of data management."

- Qian Lvnan, Chief of Information Section, Nanjing Children's Hospital

Founded in 1953, Nanjing Children's Hospital is an affiliate of Nanjing Medical University. It is a third-grade, Class-A hospital integrating medical treatment, scientific research, teaching, learning, health recovery and health care. The hospital covers all areas of medical treatment for children and has developed many advanced diagnoses and medical technologies and performed some highly challenging surgeries. Over the years, Nanjing Children's Hospital gradually improved management and humane service while vigorously constructing its infrastructure and improving its overall medical environment. The hospital has decided to enhance its information infrastructure by taking advantage of electronic medical records and other information solutions so that medical personnel can spend as much time as possible on patients.

With the hospital's continuous development, construction of information systems never stops. Over time, Nanjing Children's Hospital has built dozens of application systems

including HIS, LIS, PACS, electronic medical records, mobile nursing, medical records, financial management, logistics management and surgical anesthesia. These systems provide strong technical support for the rapid growth of various businesses. However, data among these heterogeneous systems are too scattered to achieve centralized, uniform and standardized management. Moreover, tightly coupled data exchange interfaces bring great difficulties to application development and later maintenance, which makes data exchange and information sharing issues even more difficult. With the Informatica data integration platform, Nanjing Children's Hospital has built the main data management system and data warehousing system, and constructed the hospital's public data resources call center repository with a data warehouse and achieved realtime data exchange and information sharing. With clean and standard data, the hospital has laid a solid foundation for correlation analysis across different application systems.



Since its founding in 1953, Nanjing Children's Hospital has built dozens of application systems, including electronic medical records, mobile nursing, logistics and financial management, and surgical anesthesia. Over time, data among these heterogeneous systems became too scattered to achieve acceptable levels of centralized, uniform and standardized management. To address this problem, the hospital has implemented an Informatica data integration platform to help build its main data management and data warehousing systems. The hospital is also currently constructing a public data resources call center repository based on its data warehouse. As a result, Nanjing Children's Hospital has achieved real-time data exchange and information sharing. With clean and standard data, the hospital has laid a solid foundation for correlation analysis across different application systems.

Business Needs:

Improve competitive advantage in the entertainment software market:

- Achieve data exchange between heterogeneous systems and improve the hospital's information sharing and work efficiency
- Improve patients' electronic treatment data, treatment efficiency and clinical quality

Challenge: Urgent need for a unified data integration platform

Real-time or bulk data exchange among different systems is one of the most common tasks for hospital application systems. Usually restricted by many factors, this is very complicated and energy-consuming work. For Nanjing Children's Hospital, the problem was not only reflected in the interconnection among dozens of new and old systems of different versions built by different manufacturers, but also in high costs of future upgrades and expansion. To solve such problems, the hospital spent a lot of time on interconnecting some of those systems through tight coupling between different systems achieved by means of point-to-point direct interface connection. This method of integration and development is very cumbersome. Moreover, as systems increase, the hospital will encounter more and more puzzling challenges. For patients, various data generated in the hospital is scattered in outpatient, inpatient, LIS, PACS and other systems. Although the electronic medical records system integrates most of the treatment data, it still needs to consult in different systems to obtain comprehensive information on a patient. If hospital leadership wants to obtain comprehensive operational information, they also need to combine information from different systems. Nanjing Children's Hospital needs to collect and sort out data in different formats scattered in different systems through a cross-system data integration platform to improve the hospital's information sharing and work efficiency, and provide a foundation for further data analysis.

According to Qian Lvnan, Chief of Information Section, Nanjing Children's Hospital, "The ideal solution is to build a data warehouse and form a public resources call center data repository. Thus, all valuable data can be collected

and extracted in a single data transfer to facilitate in-depth data mining and utilization afterwards." Since the disease state of pediatric patients can change quickly, and such patients cannot express themselves very well, observation and nursing for such patients is more difficult than for adults. Therefore, pediatricians and pediatric nurses work under more pressure. The information section needs to simplify their information query process and provide pediatric patients' disease states information as comprehensively as possible to avoid added pressure and problems. Meanwhile, while Nanjing Children's Hospital is under the supervision of the Ministry of Health, it may be asked to provide statistical reports from time to time, which requires the information section to provide clean and standard reported data.

The hospital's business intelligence (BI) platform is also integrated with the data warehouse. It's designed to achieve internal performance management, carry out comprehensive analysis of various work and business indicators, identify any management problem in operations and achieve improved management. The first step for a successful BI construction is to integrate and save data in a unified data warehouse. Only in this way can data sources be separated to ensure that preparation of statements and reports will not affect the performance of business systems. A unified data warehouse also reduces the difficulty of learning data structures of different systems for operators.

When reviewing data integration solutions, Nanjing Children's Hospital performed comprehensive comparison and testing of general data integration platforms and specialized platforms for the medical industry from several manufacturers. The hospital carried out a comprehensive evaluation on various data integration platforms in support of data sources, data extraction speed, management and scheduling functions,

- Provide hospital leadership with comprehensive operational information to achieve improved management
- Provide the Ministry of Health with the clean and standardized report data

Challenges:

- Manage the cumbersome development of a tightly coupled interface model as well as all data from heterogeneous systems in an integrated manner which is now impossible
- Eliminate inconsistent data standards and formats which make in-depth data mining and utilization impossible

Benefits:

- Achieved uniform centralized data management and a high degree of sharing
- Increased data processing speed and reduced data management cost
- Improved data quality significantly and provided data guarantee for statistical analysis of the business intelligence (BI) platform

Product & Solution:

- Informatica PowerCenter
- Informatica PowerExchange

availability and openness. Finally, the hospital's Information Section chose Informatica PowerCenter and PowerExchange, which allow users to quickly and easily access, integrate and transfer data, and outperforms in ease of use, data processing efficiency and scalability. The hospital decided to build an open, unified and safe data integration platform on the basis of Informatica solutions to organically integrate data from different sources, in different formats and with different features and natures to achieve overall data sharing.

Customer Benefits

Nanjing Children's Hospital is now experiencing easier data exchange and higher data quality. In addition, the hospital has completed the construction of its data warehouse. With Informatica's real-time data acquisition solution, business data in electronic medical records, mobile nursing, HIS, LIS and other systems have been effectively integrated. Data transmission and exchange among outpatient, inpatient and inspection systems no longer rely on intermediate table, and instead, are uniformly carried out through the data integration platform. Meanwhile, the tight coupling mode of a data exchange interface has been changed to loose coupling. Therefore, data exchanges are no longer restricted by interfaces. This reduces the need to modify a large number of interfaces for large data transmission needs. Failures are also reduced.

After the data integration platform was built, a high degree of sharing and centralized standardized management of data among heterogeneous systems was achieved, the complexity

of data transfer reduced, speed of data extraction increased, and data management cost greatly reduced. It is no longer necessary to directly extract any kind of data, statement and report from the business application system database. The time to generate complex statements and reports from the hospital's data call public resources center repository is greatly reduced. Data support for a BI application has been achieved so that hospital leadership can obtain various data needed quickly and completely to achieve improved management.

Today, more than 1,000 doctors and nurses have benefited from Informatica's data integration solution. They can track patients' examination states and obtain examination reports and images faster which improves treatment efficiency and clinical quality. For patients, the data integration platform provides full protection of their data treatment in the hospital, and improves their electronic data in the hospital. In addition, Informatica cleanses the data value domain of the hospital when data is reported to the health administrative department, which in turn improves the data quality and ensures clean and standard reported data.

After witnessing the effects of Informatica products coupled with data integration product management, Lvnan points out that in the era of big data, he anticipates establishing a data masking management mechanism with Informatica products to provide a security guarantee for big data access and utilization. This will avoid sensitive data security problems in future big data applications.

Solution: Informatica PowerCenter, the foundation of data integration

After Nanjing Children's Hospital decided to build its data integration platform, the hospital studied many solutions implemented by its domestic and foreign counterparts. However, Lvnan explained that some data exchange technologies lack flexibility and cannot be deemed a real data acquisition solution. "They have restrictions in many aspects, and are not applicable to Nanjing Children's Hospital which needs constant business system upgrades and transformation," according to Lvnan. Informatica PowerCenter has the most comprehensive acquisition means, such as bulk processing, realtime and incremental CDC (the way of reading logs achieves incremental capture). Lvnan added that Informatica PowerCenter can access and integrate data in any format from almost any business system and is the most prominent data integration platform in the industry.

PowerExchange's CDC function can also parse logs from the mainstream database systems which enables Nanjing Children's Hospital to achieve real-time capture of incremental data. During the process, source data tables will not be locked, which solves the performance problem caused by inquiring ergodic source tables during data extraction.

Informatica's data integration platform also enables the management of the main data in dictionary tables. For example, to realize unified identity information management for operators during setup of SSO (single signon), they can access all application systems with one login. Meanwhile, the platform has also solved the problem of non-uniqueness of the hospital's section codes, employee status, medicine dictionary, charge item dictionary and other keywords in heterogeneous systems and the problem of non-standardization in the institution. Thus, it avoids inconsistency of statistical standards, and will directly affect data accuracy and availability in statistics, accounting and reporting, etc.

In addition, Informatica PowerCenter client provides a non-coded and fully graphical design and management scheduling interface for the users' convenience in debugging and utilization. With business development, system update and data increase, the platform can provide adaptability and scalability for future needs. Informatica PowerCenter can be expanded to support big data, adjust and modify data integration strategies and process tasks, reduce costs and achieve wider information exchange and sharing.



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