

## NEC Group's Approach to Medical Care Solutions Business

The acceleration of a society with an aging population and a falling birthrate, the spiraling cost of medical care, reform of systems that support medical care for the elderly and other aspects of national health insurance, the launch of targeted health check-ups and guidance for issues such as metabolic syndrome... These are just a few of the trends and events related to medical care that are dramatically changing our society.

In this special issue, we will examine trends in medical care IT and healthcare IT and how NEC Group is meeting the many challenges. Also we would like to introduce our electronic medical record system and other medical care information solutions as well as our lineup of software package products that support them.

Chief Manager,  
Medical Systems Division,  
Community and Medical Solutions Operations Unit,  
NEC Corporation  
AOKI Jun

### 1 Medical Information System Reform

The concept of “computerization of hospitals” has long existed, and it was in the 1970s that computers were introduced mainly to meet the needs of individual departments such as medical accounting systems, clinical examination systems and pharmaceutical inventory management systems. Since those early days, NEC has been developing software packages tailored to the special requirements of medical facilities, as well as providing packages to national medical facilities and introducing systems to operate them.

From the 1980s into the 1990s, ordering systems and nursing support systems were being introduced as total hospital systems that crossed over traditional departmental divisions. Then in the early part of the current decade, electronic medical record systems began to enter widespread use. In the beginning, there was extensive debate as to what exactly constituted an electronic medical record, and a variety of forms of deployment and styles of operation were considered. The development of a practical system required research and trial-and-error on a variety of related themes ranging from the man-machine interface, listing/search of medical record data, the pursuit of

system response time, security issues and secondary utilization of data.

If the system of that time was the first generation, we can refer the current stage of development as the second-generation system since it has gone beyond a simple “electronic medical record system” and now is linked with the flow of clinical, accounting and logistics information within the hospital. While the primary aim of the system is to enhance the quality of medical care, this next-generation also must respond to demands to improve the business of managing a hospital, enhance medical care safety and raise work efficiency.

One other major trend is the standardization of medical information. Previously each vendor or medical institution created a master using their own unique coding systems, and it was necessary to develop and operate systems to define the data exchange format between each vendor when connecting subsystems. This approach has placed a huge burden on the maintenance of the masters, created a necessity to develop individual programs for inter-vendor data compatibility, and, in short, become a barrier to the effective exploitation of the accumulated medical data and inter-medical facility data linkage. Encouraged by the Ministry of Health, Labour and Welfare and the Ministry of Economy, Trade and Industry, the formu-

lation of medical care information standards has been very active in recent years. Also recognizing the importance and necessity of this task, NEC is incorporating the new standards in package products as required.

## 2 Approach of NEC Group

As shown in Fig. 1, NEC Group provides the medical care industry with a medical care information solution suite called MegaOak which is uniquely composed of 3 solutions.

### (1) Package Solution

We have constructed a system based on package products developed from long years of experience, and are constantly

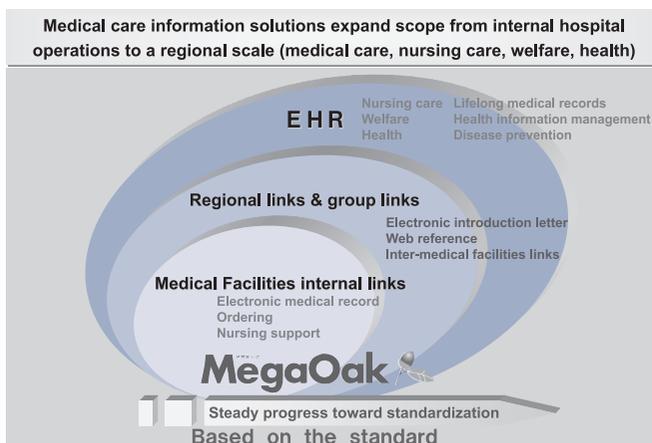


Fig. 1 Medical care information solution “MegaOak.”

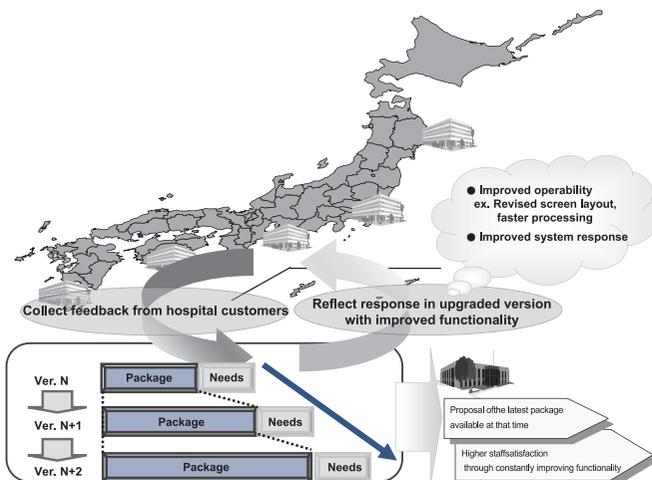


Fig. 2 Reinforcement of package functions.

endeavoring to further ensure system quality of our system and quick ramp-up to full operation. Keeping a close watch on the dynamic state of medical care and social trends, the functionality of packages will be reinforced. While naturally responding to regulatory revisions and evaluating new technologies and incorporating them where needed, we will constantly provide upgraded package versions, listening to and reflecting the expectations and needs of each hospital customer as shown in Fig. 2.

### (2) Multi-Vendor Solution

Regarding the deployment of departmental systems such as imaging systems and examination systems, NEC adopts a system integration approach. As a system integrator, we source and provide the packages recommended to the various departments as an integrated system in an approach that responds to more detailed needs of the hospital customer (See Fig. 3).

### (3) Total Support Solution

From the proposal for a medical care information system to the design, construction, operation and maintenance of the system, NEC is ready to support the customer every step. This comprehensive involvement enables us to acquire in-depth insights into the day-to-day needs of the hospital customer, and allows us to provide continuous support for the hospital’s business systems as a partner and offer proposals to further improve operations.

Especially in the case of introducing an electronic medical record system, we are ready with the “Work flow proposal approach” shown in Fig. 4. NEC offers various tools to ensure the smooth evaluation of the electronic medical record operations by hospital customers, provides early delivery dates, and supports the efficient and effective deployment of systems.

Next let’s look at the system from the perspective of package products. As shown in Fig. 5, 4 products are positioned and provided as the core system within the hospital.

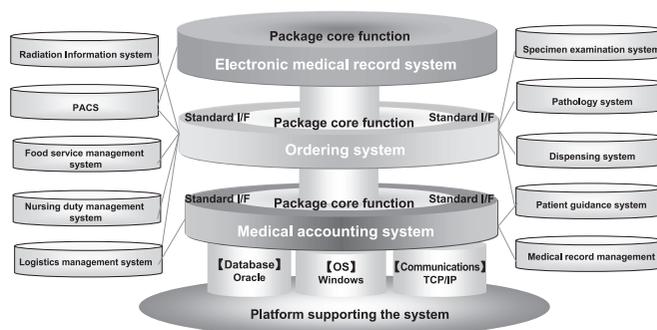


Fig. 3 Core systems & departmental systems.

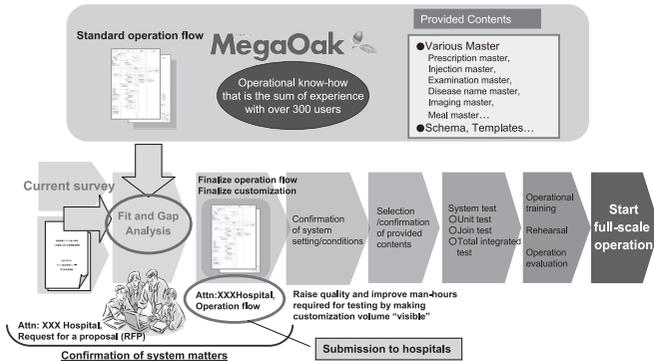


Fig. 4 Electronic medical record solution using a work flow proposal model.

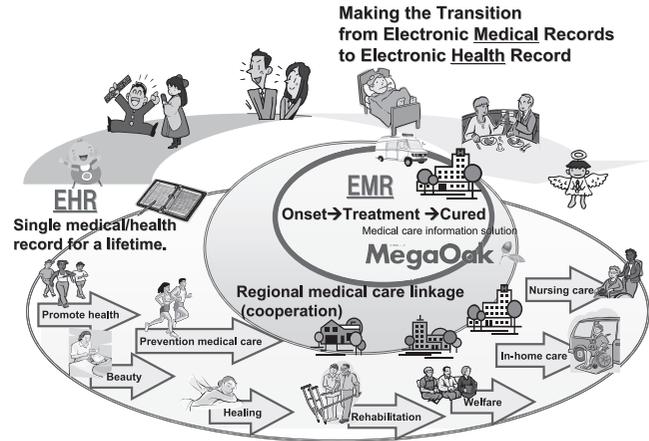


Fig. 6 The shift from EMR to EHR.

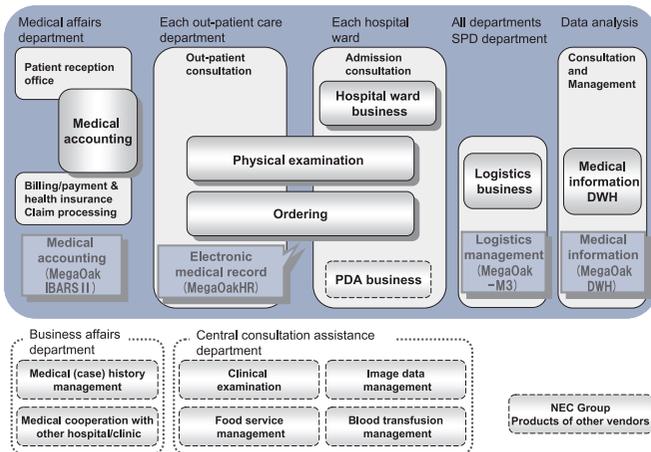


Fig. 5 MegaOak package products.

- MegaOakIBARSII medical accounting system
- MegaOakHR electronic medical record system
- MegaOak-M3 total logistics management system
- MegaOakDWH medical information DWH

Each of these products will be described in greater detail in the other papers in this special issue.

### 3 Future Directions

April 2008 saw the large-scale revision of medical consultation compensation, the start of the medical care system for the advanced elderly, the launch of the specified health check-up

and guidance system, and the building of a linked medical care system encompassing the “4 Illnesses/5 Service Areas”<sup>\*1</sup> as well as further adoption of online processing of health insurance claim forms.

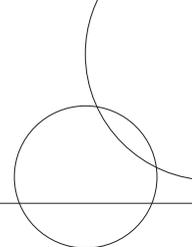
According to the mid-term report on the IT policy roadmap (released in April 2008), online processing of health insurance claim forms will be completed in principle by 2011, and the collected data will be analyzed and the results will be made public. Furthermore, the report extolled the introduction of a “social security card” (tentative name), and electronic post office boxes.

While helping medical facilities make the transition to Information Age technology and linking operations internally with the electronic medical record system as the core platform, NEC is also building inter-medical facility linkage which will enable electronic introduction of patients to specialists, regionally integrated clinical pathways and nationwide networks. NEC Group is unified in efforts to promote the advance of the health-care business, and we are working toward the realization of “open medical care system” that encompasses Electronic Health Records (EHR), which consist of not only the medical information shown in Fig. 6 but also nursing care, general health examination and immunization information, and including healthcare within the scope of our vision.

### 4 Guide to the Content of This Special Issue

In this special issue, this article is followed by an introduction to medical care IT trends and our vision for the future as

\*1 4 Illnesses: Cancer, Apoplexy, Acute Myocardial Infarction, Diabetes Mellitus / 5 Service Areas: Emergency Medicine, Disaster medical Care, Remote Area Medicine, Perinatal Care, Pediatric Care



well as an explanation of our core package products that are provided as an information system for hospitals and an explanation of our approach to the development of a health information system that takes into consideration the shift to specified health check-ups and guidance in the field of healthcare.

In the domain of research and development, we will report on demonstration trials of the utilization of electronic tags to enhance medical care safety. This issue will also present case studies: an example of secondary utilization of electronic medical record data by the Osaka University Hospital, and an introduction to the “real world” operation of the MegaOakHR electronic medical record system which was deployed at Fujinomiya City General Hospital in January 2008.