Volume 1 / Issue 1 2005 - Investing in IT

An Up-to-Date Evaluation of Clinical Data Processing

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The health sector is undergoing a period of consolidation as the number of acquisitions and mergers of hospitals and healthcare companies increases. This process has resulted in the formation of chains of healthcare providers. The changes in the market have also created uncertainty among actors in the health system. In some cases, acquisitions have resulted in the migration of software application systems and extensive databases. Due to developments in the corporate structures of healthcare institutions and rapid technological advances over recent years, many subsystems of computerised hospital information systems, including the first digital archives, have migrated.

Information Management – A Strategic Factor

Information management has emerged as a strategic factor in the health sector. Computer-based process management can accelerate and improve treatments, reduce the workload of medical and nursing staff and cut costs. However, achieving these practical objectives is a slow process because few hospitals recognise the urgent need to increase investment in data processing and storage systems and to ensure they have sufficient numbers of trained data processing staff.

The central problem in this respect is the lack of willingness to invest in electronic information processing. On average, data processing currently accounts for approximately 2.5% of the annual budget of German hospitals.

IT Steering Committee Directly Answerable to the Board

The hospital sector must also take action in the area of information systems management. Establishing a technically competent steering committee directly answerable to the board is one example of the practical measures available to hospitals. The committee should be given responsibility for strategic planning, management and monitoring in information processing. Unfortunately, hospitals do not devote sufficient resources to the strategic importance of information system management.

Consolidation Required

In future, we can expect convergence in the health sector in the fields of information technology, telecommunications, medical technology, archiving, media technology and facilities management. This is because these areas share certain common core elements, namely, computer systems, storage area networks, communications networks and comprehensive software packages. Moreover, given that they all need similar organisational structures, it will be possible to consolidate them within a leaner structure, while retaining or increasing current levels of efficiency.

What will a Hospital Information System Look like in Future?

The computer-aided health professional workstation for doctors, nurses and other healthcare staff is a core element of an integrated hospital information system and a key tool for the efficient management of service and documentation processes in the health sector. The competitiveness and viability of hospitals depend on the availability of optimal support for daily work processes. In terms of content, the health professional workstation system is being transformed from a documentation system to a process management tool.

A substantial number of the software products on the market are out of date because they do not yet incorporate new methodologies, tools and

technologies in IT and telecommunications. There are, for instance, very few service oriented services and architectures currently in use. According to German hospital and healthcare professionals, the development of information and communication technology is being impeded by deficiencies in the products provided by manufacturers. Furthermore, the information systems used in the health sector pay scant attention to enterprise data modelling. Every institution providing healthcare services should, over the medium term, ensure it introduces an enterprise-wide, uniform data storage, archiving and security strategy.

It is already possible to replace telephones and pagers with intelligent UMTS telephones, which include features such as notepad, calendar, telephone, knowledge access options, overview data and limited access to the computer-aided hospital information system. On a more general note, new services being offered in the area of mobile data processing include radiolocation systems, radio frequency identification (RFID) and wireless communication systems for hospitals.

External communications between hospitals and independent health practitioners is another area in need of development. Currently, integration with external bodies is still in its infancy and tends to be limited to regional projects.

Health Telematics Platforms – The European Future

The introduction of health telematics platforms – a key activity in Europe – can improve the current low rates of integration. The introduction of the electronic health card is the largest data processing initiative ever undertaken in Germany. Unfortunately, service providers and citizens have not been sufficiently co-opted into the planning, design and implementation processes for this new health platform. Public acceptance of projects is pivotal and causes major problems in terms of a project's introduction and use if it is not forthcoming.

Standards, Universal Integration and Data Protection

Standards present an ongoing challenge. They are indispensable assets in developing networked solutions, particularly health telematics platforms. Without standards, it would not have been possible to develop current c o m p u t e r- a i d e d telematics applications such as teleradiology, telepathology, electronic patient records and many others. Standardisation requirements are diverse and affect semantics, data, documents, information sharing, devices, etc. While standards have made considerable advances over the past 20 years, they have not reached the point where they can be used in diagnostics and therapies.

The overarching principle governing system architectures is the need to integrate all subsystems in order to establish seamless information flows for the purpose of having complete electronic patient records. Complex communications servers and platforms supported by standards are now available for heterogeneous information systems. These systems have helped to significantly simplify system integration for many companies' software products in recent years. A similar trend is under way in the area of imaging equipment, notably in radiodiagnostics. The integration of medical devices, e.g. pulmonary function testing units and ECG equipment, is a new focus in systems integration.

As networked data processing in healthcare has grown, so too have requirements in the areas of data protection and data integrity. High levels of security must be guaranteed when processing and sharing patient-related data. To this end, hospitals have invested heavily in security features such as firewalls, virus protection programmes, encryption, signatures, authentification, access authorisation strategies, master patient indexes and so forth. It is also recommended that highly vulnerable health service institutions carry out risk analysis.

Conclusion

The work carried out in recent years has, for the most part, delivered major benefits to patients. It has resulted in improved information logistics, enhanced quality in therapeutic procedures and faster medical care.

Despite the wide range of easily identifiable benefits computer-aided data processing delivers, targeted development and evaluation of this technology has been neglected in the health sector. In future, healthcare institutions must place a stronger accent on evaluations to ensure projects can meet their objectives and to improve the operational effectiveness of information systems.

National and international funding programmes could prove useful. Projects of this nature could provide evidence to support the contention that IT systems deliver added value, not only additional costs, in the health sector.

Published on : Sat, 8 Jan 2005