

ENABLING modern healthcare

The role of IT in raising productivity, improving outcomes
and supporting patient-centric services.

WHITE PAPER
GLOBAL HEALTHCARE

Introduction

In other industries, information and communications technology (ICT) solutions have been adopted to raise productivity and enable innovation, and are now widely accepted as part of daily work practices.

The healthcare industry today faces huge challenges, due to ever increasing demands. Healthcare professionals are under pressure to continually improve the services they offer to care for a growing number of patients - often with inadequate resources.

In other industries, information and communications technology (ICT) solutions have been adopted to raise productivity and enable innovation, and are now widely accepted as part of daily work practices.

However, in the healthcare industry, although ICT is widely used, it has still not yet reached its full potential. Part of the reason for this is that healthcare providers are typically more cautious than their counterparts in other industries; a sensible outlook given that they are dealing with human lives. Nevertheless, the enormous challenges facing the healthcare industry are now forcing healthcare providers to seek better efficiencies in an effort to stretch limited funds further and keep up with new medical advancements.

There is compelling evidence to demonstrate that the adoption of health informatics results in improved patient safety and the delivery of a higher level of patient care. When ICT is introduced by healthcare providers, the result is that teamwork improves; information to assist with diagnosis is delivered faster; potential drug interactions and allergies are identified earlier; and health records are maintained more consistently and securely. By demonstrating the substantial savings that can be achieved through using ICT in the healthcare industry, we believe that we can accelerate the deployment of new technologies to help healthcare providers tackle the challenge of stretching budgets further.

This paper looks at the current trends in healthcare, outlines some of the areas where ICT is being used to provide better healthcare services, and describes Fujitsu's global healthcare experience.

Fujitsu's Japanese heritage ensures our absolute commitment to the outstanding quality and timely delivery of our solutions. Our approach is to provide our customers with long-term support.

Our focus is to try to understand our customers' issues in detail, from government policies through to the needs of individual organizations and end users. We also believe that we can learn from our customers and work with them to achieve optimal healthcare outcomes.

CHAPTER 1:

What challenges are being faced in healthcare today?

GRUPO PORTUGUÊS DE SAÚDE'S IN PORTUGAL

Grupo Português de Saúde's is a Portuguese healthcare provider. A television channel for patients has been launched in partnership with Fujitsu in GP Saúde healthcare clinics.

The digital television channel focuses on patient education and internal administration and is accessible by patients in 80 hospitals and clinics. The screens are located in waiting rooms and next to patient's beds.

A variety of programs educate patients on issues such as health and well-being, society and citizenship, technology and innovation, as well as leisure and culture. These are all delivered by a dedicated production team. In addition to information and entertainment, patients can access information on specific health issues and request leaflets.

The system is also used to manage patient flow, allowing doctors to call for patients through the same television screen – saving professional time and improving patient flow.

Today, the healthcare industry faces a range of significant challenges in the delivery of patient care. These include rising healthcare costs, high patient expectations, resource management, emergency management, long-term planning and strategic investment.

HEALTHCARE COSTS

Rapidly escalating healthcare costs are quickly becoming a key issue in many countries around the world. This is largely attributable to ageing populations and the increased prevalence of chronic diseases.

According to a report by the National Institute of Population and Social Security Research in Japan, the percentage of people aged over 65 will increase to 25% by 2014. This trend is expected to continue, increasing to 50% by 2030.¹

As chronic diseases typically endure for an extended period of time and frequently reoccur, they are also a leading factor in increasing healthcare costs. In addition, these types of illnesses significantly reduce the quality of life for sufferers and adversely affect families who lose loved ones prematurely or who are left to care for those with disabilities.

PATIENT EXPECTATIONS

Patients today have much higher expectations of healthcare providers than they did before. Advanced communication channels - such as the media, call centers and the Internet - are now providing people with 24 hour access to services in the retail and financial sectors. This consumer expectation has flowed on to the healthcare sector where a similar level of service is wanted. However, up until now this consideration has been widely disregarded by healthcare providers. This attitude is now changing because of patients' views becoming an important element in the evaluation of healthcare services.

¹ Population Projections for Japan: 2001-2050, January 2002, National Institute of Population and Social Security Research (Japan)

CALL CENTER FOR HURRICANE KATRINA VICTIMS IN THE USA

In the aftermath of Hurricane Katrina in 2005, the Federal Emergency Management Agency (FEMA) rapidly found itself unable to cope with the volume of calls for assistance from the residents of New Orleans.

FEMA requested additional short-term call center services from Fujitsu to manage the unprecedented volume of calls from hurricane victims. Fujitsu quickly scaled up its call center capability. This became the first point of contact for people, providing valuable information and coordination of health, housing and available assistance. The call center also maintained continued contact with victims to help them put their lives back together.

During its peak, the Fujitsu call center employed more than 1,200 staff, operated 16 hours per day, 7 days a week and managed up to 30,000 calls per day. During its 12 weeks of operation, the call center handled more than one million calls.

RESOURCE MANAGEMENT

Healthcare is a labor-intensive industry, with human resources being the most important component in the provision of healthcare services. However, the sector is severely under-resourced due to a global skills shortage.

The increase in demand for healthcare services has made the recruiting and retaining of experienced and qualified staff a priority for healthcare organizations. This situation is expected to worsen as the first baby boomers begin to retire and the population continues to age.

EMERGENCY MANAGEMENT

Healthcare services are required to manage medical emergencies around the clock.

The World Health Report 2007 – A Safer Future: Global Public Health Security in the 21st Century² describes how the world is at increasing risk of disease outbreaks, epidemics, industrial accidents, natural disasters and other health emergencies which can rapidly threaten global public health. Never before in history has global public health been dependant on international cooperation and the willingness of all countries to act effectively in tackling new and emerging threats.



²The World Health Report 2007 – A Safer Future: Global Public Health Security in the 21st Century, World Health Organization

“We risk seriously lagging behind patient and citizen expectations – they will continue to escalate health as a serious political issue.”

Jeff Smoot – National Director Health Solutions, Fujitsu Australia & New Zealand

LONG TERM PLANNING AND STRATEGIC INVESTMENT

Governments are facing a wide variety of challenges and pressures, especially the continuously rising cost of healthcare. An injection of additional funding is not sufficient to solve the problem. The answer will involve the development of good strategies which respond to the healthcare challenges and provide clarity for stakeholders.

In summarizing the various healthcare challenges, Jeff Smoot, National Director Health Solutions, Fujitsu Australia & New Zealand, said:

“Health funding is under pressure and long-term care and chronic disease care take an ever-increasing slice of the budget. The increased pace of change in healthcare challenges both providers and professionals, and I am concerned that the focus on preventative medicine and chronic disease management may only shift the cost from one service to another without any real savings.”

“Individual care now comes from many different services in different locations and settings. IT solutions must be based on specific strategies around communication; collaboration and monitoring that are patient-centric.”

“Customers will achieve the efficiency gains required for sustainable health delivery by investing in linking professionals and presenting one patient record. We risk seriously lagging behind patient and citizen expectations – they will continue to escalate health as a serious political issue.”

CHAPTER 2:

What will healthcare in the future look like?

NATIONAL ELECTRONIC PATIENT ARCHIVE IN FINLAND

Fujitsu was contracted to provide the national electronic patient archive and an e-prescription service. This will be extended to include web services that allow patients to access their own personal health information and also a national electronic clinical document archive.

Fujitsu, in partnership with TEO, is using PKI and certificate services to ensure the security of national healthcare information for all healthcare professionals in Finland. Advanced technologies will support authentication, integrate hospital and primary care electronic patient records, and deliver information to national statistical services.

Given these challenges, action must be taken to change the way that healthcare services are delivered. Complacency is no longer an option. Urgent and radical improvement is now imperative. Dramatic changes in the healthcare system are needed to empower, enhance and preserve vital resources. These changes include reducing waste, removing inefficiencies and optimizing entire processes.

CHANGE IN DELIVERY METHODS

Until now, most healthcare services have been provided separately by private doctors, hospitals, clinics, community centers and social welfare agencies. In the future, delivery methods are expected to become more patient focused and will utilize an integrated model that shares patient records, thus providing a continuum of care across all healthcare providers. The implementation of this new model, however, will only succeed if healthcare providers choose to collaborate.

The technology now available provides us with the opportunity to make a real difference by ensuring efficient and effective services are delivered to patients through the full use of available resources.

BEST LIFE PROMOTION IN JAPAN

Given Japan's declining birthrate and ageing society, and in order to curtail rising healthcare costs, the Japanese government is now shifting the emphasis from medical treatment to preventative medical care.

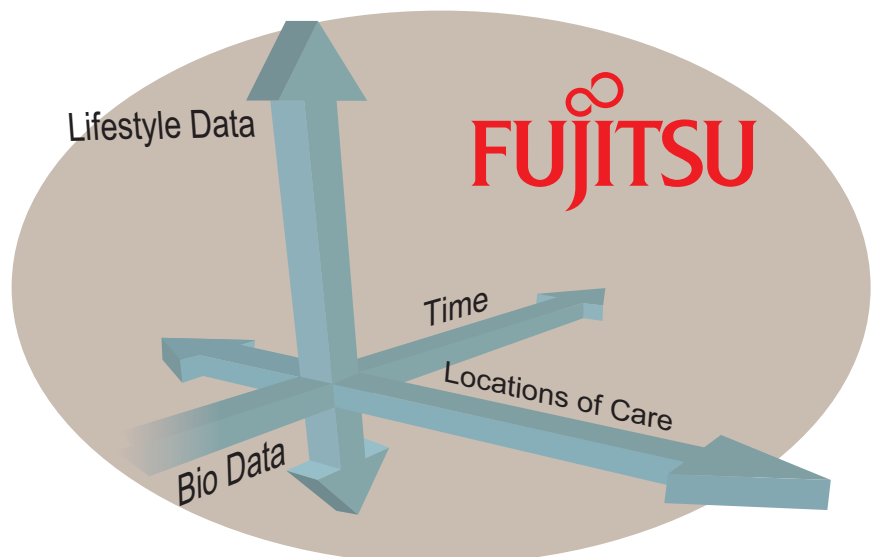
In February 2007, in response to this shift in focus, Fujitsu established a company called Best Life Promotion Ltd. (BLP) to expand its business in this new area. The company aims to promote solutions for preventative medical care and better health. Based on the premise that each person is responsible for maintaining their own personal health, from the cradle to the grave, BLP will provide new services to citizens and their families in cooperation with national and local governments, medical institutions, medical screening organizations, and healthcare insurers.

PROACTIVE INVOLVEMENT OF INDIVIDUALS

The proactive involvement of individuals will be key to the future of healthcare. One of the most important things that we can do for our health is to prevent diseases. This can be achieved through preventative care screening programs and examinations, by developing a healthy lifestyle, eliminating high-risk behaviors, and also through gene analysis, which will become available in the near future.

Allowing clinicians to monitor a patient's health via centralized records provides a better opportunity to promote optimum health.

The diagram below contains an integration model depicting the ideal flow of healthcare service delivery. Patient records need to be comprehensive and include all of the health-related events impacting on a person's health during their lifetime.



CHAPTER 3:

How is ICT helping to meet these healthcare challenges?

MARSHFIELD CLINIC IN THE USA

With 750 physicians and 80 medical specialties at 45 locations across Wisconsin, Marshfield Clinic is one of the largest private healthcare practices in the United States. They were the first healthcare organization to deploy a chartless Electronic Medical Record (EMR) solution back in 1985. Waiting to find a mobile technology advanced enough to meet their needs, the clinic turned to Fujitsu. They combined their EMR software suite with Fujitsu Stylistic® ST5000 Series and LifeBook® T4000 Series Tablet PCs for reliable and high-performance mobility.

Marshfield Clinic soon realized a substantial return on investment. The pre-EMR cost of \$4.50 for retrieving a record, virtually vanished. By eliminating all chart rooms, and converting them into new clinical spaces for patient care, noticeable improvements have been made in patient care, safety and overall health.

When focusing on the future of the healthcare industry, it is difficult to see how these challenges can be overcome without the use of ICT. Healthcare organizations are in a race to adopt a fully functional health record system, which is broad, deep and longitudinal. It is therefore inevitable that ICT-enabled care will become standard practice to allow more services to be delivered with a smaller budget.

The move to convince healthcare organizations of their need for ICT is well under way. However, uptake of ICT solutions is still very slow despite evidence that clearly demonstrates how valuable ICT is in the healthcare sector. The healthcare solutions that Fujitsu delivers can benefit enormously.

VALUE-BASED THINKING

A key approach for accelerating investment in ICT is to quantify and convey to shareholders the benefits which can be attained. Clear evidence of return on investment (ROI) goes a long way toward creating a believer. ROI is not only about increased revenue or reduced costs - it can also factors such as error reduction, improved service delivery and better quality of care. This is important for all types of organizations. It is reasonable to expect ROI data to show that a return is achievable.

**CORNERSTONE HEALTH CARE
IN THE USA**

Cornerstone Health Care was formed in 1995 and is a 125 multi-specialty physician group, with headquarters in High Point, NC. Cornerstone has adopted an Electronic Health Record (EHR) solution and is now reaping the benefits.

The solution consists of Fujitsu's document imaging scanners and Touch Works™ EHR from Allscripts, which together work to improve patient care across Cornerstone's 41 locations. Fujitsu's fi-4120C and fi-5120C color duplex workgroup scanners electronically capture paper-based data. The result is a paperless medical office with a single EHR system.

"We've received tremendous value from Touch Works™ and the Fujitsu scanners have been reliable workhorses in every sense of the word," said Tim Terrell, Chief Information Officer. "We scan more than 10,000 documents per day and the ability of multi-specialty clinics across multiple sites to have a single chart for each patient is a powerful thing. It allows our doctors at different sites to simultaneously view the chart while discussing a patient over the phone, avoid duplication of services and to have more accurate information for decision making. We have been recognized as a leader in the industry with our ability to coordinate the care of our patients because of this solution."

Cornerstone estimates that they save more than \$60,000 each year per clinic, in charting supplies and materials. The efficiency is also allowing Cornerstone to reduce staffing levels by as many as two full-time employees in each office.

TECHNOLOGY-LED PROCESS IMPROVEMENT

Process improvement is the ongoing quest to identify and eliminate the main sources of problems. A unique process improvement management methodology, known as "Kaizen", was developed by a Japanese automobile manufacturer and is well known not only in Japan, but also globally. Kaizen is now attracting a lot of attention in the healthcare sector. The methodology involves making improvements via incremental steps, rather than implementing changes all at once.

Today, many healthcare information systems are being significantly revamped to improve their effectiveness and efficiency, and also to allow costs to be monitored. This process can be accelerated by implementing the Kaizen methodology and ICT.

NHS IN THE UK

“Map of Medicine³” is a decision support initiative being used by the National Health Service (NHS). Developed by clinicians, it is an online clinical information resource that takes clinicians through logical steps, from symptoms through to possible diagnosis and treatments. Map of Medicine currently includes information that covers 28 medical specialties and more than 370 care pathways.

Fujitsu deployed Map of Medicine as a web application for use by a wide clinical community in England. This ensures that the most up-to-date version is available at all times when authorized healthcare professionals use their browser to access the tool.

DECISION SUPPORT

By integrating a medical knowledge base with patient data, clinical decision support systems can be developed that provide case-specific advice to assist physicians and other healthcare professionals.

As clinical processes become more complex, an increasing number of healthcare organizations are adopting tools that offer decision support to improve patient outcomes and reduce errors. The implementation of effective clinical decision support systems is a challenging task involving interaction between technologies and organizations.

³Map of Medicine: ©Informa PLC

**CAROLINAS HEALTHCARE SYSTEM
IN THE US**

Carolinas HealthCare System (CHS) has deployed Fujitsu's PalmSecure™ biometric authentication sensor as part of a solution to effectively register patient information, and protect medical records and identity. As the largest healthcare group in the Carolinas, and the third largest public group in the nation, CHS will be installing these biometric sensors for patient registration in all of their hospitals in the Charlotte area.

CHS was initially searching for a non-invasive, secure solution to the problem of protecting patient's medical records and privacy, as well as making the registration process as efficient as possible. After carefully considering a number of biometric options, CHS chose Fujitsu's PalmSecure™ for its high level of accuracy and non-intrusive user interface.

"After evaluating several technologies for patient authentication, we chose the highly-accurate palm vein scanner because of the technology's positive performance in our testing, and its great track record," said Jim Burke, director of CHS' Information Services Department. "Furthermore, because the biometric sensor creates a unique identifier for each scanned palm, it does not require the storage or use of an actual image or picture. This technology really reduces the chance of identity reproduction or theft."

DATA VISIBILITY, INTEGRITY AND INTEROPERABILITY

Healthcare organizations traditionally used systems that focused on single departments or functions. They are now facing the huge challenge of integrating these disparate systems. This is not only a problem for hospitals; primary, secondary, home and community carers are also affected. When these systems are integrated, the delivery of healthcare services is optimized, resulting in the best possible care of patients.

The data stored in the integrated system is updated daily and also assists with medical research. This is a powerful benefit for the future of medicine.

SECURITY AND PRIVACY

Data security and identity management in healthcare has never been more critical. In the US, for example, with the passage of the Health Insurance Portability and Accountability Act (HIPAA), healthcare organizations are now required to use two or more forms of authentication to access electronic health records and other sensitive data.

An accurate patient identification system not only helps organizations combat medical identity fraud but also helps to reduce the chance of medical errors occurring through the mistaken identify of patients. As healthcare organizations begin to adopt more automated clinical workflows and information sharing across departments, the issue of correct employee identification at each point of access plays an important role in ensuring operational efficiency while complying with government regulations.

THE GREGORIO MARAÑÓN UNIVERSITY GENERAL HOSPITAL IN SPAIN

The Gregorio Marañón University General Hospital has over 1,800 hospital beds, is state-run and belongs to the autonomous region of Madrid.

One of the challenges faced by the hospital was to ensure maximum safety throughout the process of distributing medication. Consequently, different programs and projects were trialed in an attempt to eliminate the chance of mistakes occurring during the dispensing of drugs; from their prescription by the doctor through to their administration in the ward to each patient. This procedure is very error prone as the nurse issuing the medication is usually alone with the patient. If a mistake is made, there is often no other healthcare employee nearby to notice and correct the error.

To solve this problem, Fujitsu, Microsoft, Intel and Philips formed a partnership to develop a solution. An exhaustive analysis of the medication supply process was carried out and the solution was implemented at the hospital. The new process was then optimized through the integration of applications and the use of RFID technology.

The solution deployed by the team provided the hospital with a ground-breaking tool which will enable it to continue improving the quality of its healthcare service provision.

REDUCING ERRORS

Human beings, no matter how careful and conscientious, make mistakes. As the delivery of healthcare is complex, there are many opportunities for errors to occur. In addition, the high level of complexity makes it unrealistic to expect healthcare professionals to perform their jobs perfectly so that mistakes are avoided and patients are not harmed.

Also, to avoid being involved in litigation arising from mistakes, the tendency is for physicians to order excessive medical testing which is often expensive. This creates a vicious cycle in healthcare which prolongs treatment and stretches resources.

Patient safety has now become one of the most pressing healthcare challenges and ICT has the potential to contribute to better outcomes.

DRIVING RESEARCH

The genomic era is now a reality. Clinical opportunities for gene-based pre-symptomatic prediction of illness and adverse drug effects are emerging at a rapid pace, and the therapeutic promise of genomics has ushered in an exciting phase of expansion and exploration in universities and research institutions.



CHAPTER 4:

Partnering with Fujitsu

ABOUT FUJITSU

Fujitsu is a leading provider of customer-focused information technology and communications solutions for the global marketplace. Since Fujitsu's establishment in 1935, we have maintained a commitment to cutting-edge technological innovation and uncompromising product quality. Comprising approximately 500 subsidiaries and affiliates, the Fujitsu Group operates in over 60 countries across the globe.

Established: June 1935

President: Hiroaki Kurokawa

Principal Offerings: ICT services, ICT platforms, PCs, servers, optical networks, telecommunications platforms, advanced semiconductors, and other electronic devices

Employees: 161,000

Revenue: 5,100.1 billion yen

R&D Expenditure: 254.0 billion yen

Stock Information: Fujitsu Limited shares are listed on the Tokyo Stock Exchange (Code: 6702), as well as the Osaka, Nagoya, Frankfurt, London and Swiss exchanges.

[As of March 31, 2007]

Fujitsu is a truly global organization with healthcare interests in a vast range of geographies. We deliver innovative ICT solutions that accelerate business change.

We focus on the inextricable links between business process and ICT design to offer solutions that are both leading-edge and effective. Our aim is to continually deliver business solutions that are supported by standardized ICT platforms and infrastructures, and that are individually tailored to suit each customer. We believe that our consistent approach allows us to build fruitful, long-lasting and trusted relationships with all of our customers.

LONG-TERM VIEW

Fujitsu delivers exceptional customer service. This is achieved by looking at how we can help our customers to address their strategic goals in the long term.

"Fujitsu works together with healthcare providers to improve services based on a partnership model. It's all about us understanding the business challenges and working with healthcare professionals to solve them," said Narutaka Nakao, Director of the Healthcare Solutions Group, Fujitsu Limited.

GLOBAL BUSINESS SUPPORT

Fujitsu takes great pride in and places significant emphasis on our ability to continuously improve the healthcare industry as a whole. We have a solid global support structure in place that includes technology infrastructure, comprehensive support processes, and a network of skilled support professionals that collectively optimize worldwide knowledge management. Regional diversity is leveraged, ideas are shared, and other valuable knowledge assets are exchanged between practitioners in a global forum. This fluid exchange and expanding repository of industry, cultural, procedural, and other such knowledge, enables Fujitsu to promise the healthcare industry rapid and responsive support on a worldwide basis.

What **NEXT**?

Fujitsu can help you to assess, redesign, update, maintain and increase the value of your business, and deliver extra benefits to your staff and patients.

Our solutions and services vary from country to country accordingly to specific regional requirements. To find out more please contact your local Fujitsu office. Details are available from our website <http://www.fujitsu.com>

