SUN™ INTEGRATION
SOLUTIONS FOR HEALTH CARE

White Paper
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Overview

Europe's health care communities continue to adopt new ways of working as they strive to provide better service to increasingly complex patient populations. Improved patient choice, streamlined provisioning, more rapid and distributed access, as well as better clinical audits all place strains on health care infrastructures that were originally designed for a more provincial, locally accountable approach. Joining patient-centered health care with complex care pathways requires a new level of integration between services and the IT systems that support those services. As a result, the renewal and transformation of health care infrastructure is at the heart of the political agenda in many European counties.

The U.K. government has responded with an $8.3 billion National Health Service (NHS) program to deliver a fundamental transformation of health care IT and information services. Its impact is being felt across the entire health care supply chain:

- Care providers are integrating their islands of technology to create agile, patient-centered infrastructures to protect their investment in current service provisions, while realizing new benefits through regional and national ways of working.
- Pharmacies as well as pharmaceutical and medical device suppliers are modernizing their distribution and supply chains as a result of increasing international pressure to deliver supply chain efficiencies.
- The health IT industry is consolidating and investing heavily in emerging standards for data sharing and integration, to secure or expand their presence and penetration in this evolving market.

As a leading supplier of integration solutions to the health care industry, Sun has an unparalleled pedigree in helping software providers, pharmaceutical companies, hospitals, regional health care providers, and national programs deliver the next generation of health care systems. Sun™ software's proven integration, business process management, single patient view (enterprise master patient index), and Radio Frequency Identification (RFID) technology are now accepted as key to enabling this transition. Together, they augment the strengths of distributed core clinical and administrative applications to deliver the flexibility needed to support the aggressive evolution of health care infrastructures towards national and European Union (EU)-wide health care objectives.

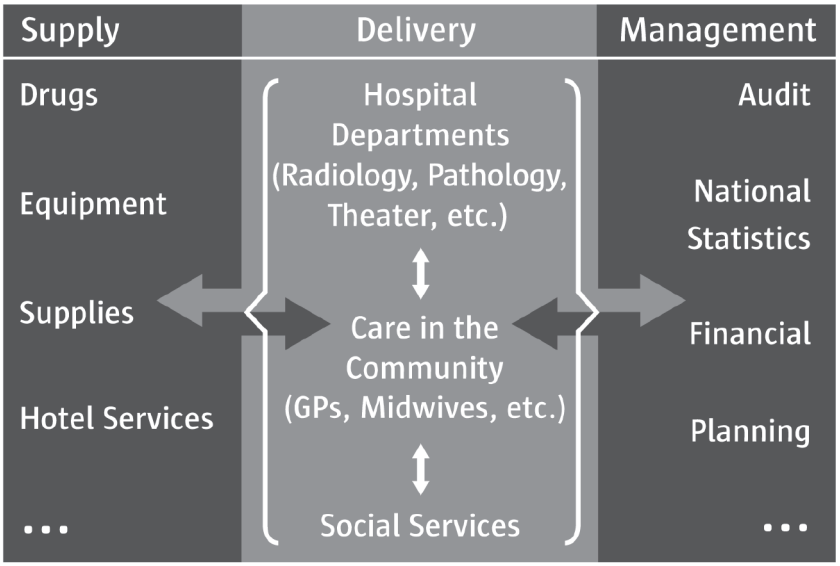

Figure 1. The health care integration challenge

The Changing Role of Integration in Health Care

For a number of years, leading hospitals have been using integration technology to capture and control the flow of important patient and process information across departments such as Patient Administration, Radiology, Theater, Pathology and Accident, and Emergency. The benefits of this approach are well documented, and include faster and more accurate service provisioning, reduced errors in diagnosis and treatment, and a reduction of clerical workload.

Regional health care providers are increasingly using integration and single patient view technology to create a unified picture of service availability and patient care across their geographic areas. Information coordination between and across regional organizations is essential in ensuring that care providers work together effectively to support integrated care initiatives, such as multidisciplinary care pathways.

National health care initiatives are applying many of the concepts introduced at the trust level, and augmenting these with new capabilities to deliver a consistent set of services and a unified view of the patient. The U.K. NHS National Program for Information Technology (NPfIT) is the most advanced of these initiatives, and is delivering an IT information infrastructure for the NHS that will improve patient care by increasing the efficiency and effectiveness of clinical and other NHS staff. This involves the rollout of common, regionally supported systems for key health care processes; sharing electronic patient records, online booking of appointments across a range of hospitals, electronic transfer of prescriptions, patient demographic services, and services to provide feedback on quality of care. Other current national initiatives include a central repository for pharmaceutical information, increasing access to high quality health care in rural areas, streamlining the claims and payments process through the use of smart card technology, and regulation of direct patient access to certain health care providers such as hospitals.

At the EU level, all member states have committed to have electronic health records in place by 2008. In addition, recent changes to legislation will mean that all patients living within the EU can be referred to hospitals outside of their geographic areas, even across country borders. In the longer term, this will put additional pressure on health care agencies, as they devise safe ways of transferring information from hospitals in one country to another.

Supply Chain Efficiencies in Health Care

A planned and integrated delivery of skills, infrastructure, medication, supplies, and medical devices to the point of care is essential if we are to control costs and track the effectiveness of different clinical and management practices. Equally important is the determination of common standards for health (or diagnostic) resource groups (HRGs), which can be embedded into care pricing systems for governments or health insurance companies. And just as RFID and bar code technologies are revolutionizing supply chains in other industries, they are already being piloted and implemented for health supplies, such as blood product storage and drug dispensing.

IT product and services suppliers have already been shaken up by the U.K.'s NPfIT, but the real changes and repercussions on software providers have only just begun. This market is now in the process of readjusting to the new world that is to come, where many island technology suppliers will adapt or go out of business. The most important aspect of this adaptation is developing the capability to support common data and communication standards as defined through national programs.

Coping with Change

The move from local to centralized systems, as is currently happening in the U.K. NHS, has a profound effect at both the individual hospital and at the regional level. Migration to some new systems will proceed quickly, while others will happen over several years. Some local systems will remain in place for the long term. As many of these systems are interfaced with each other today, it is important to maintain interface integrity throughout the migration process.

In health care, interfaces from internal to external systems have historically been supported through business-to-business (B2B) techniques using commonly agreed message formats. But even here, we see a move to more standard industry message types, such as Health Level 7 (HL7 v3) or Integrating the Healthcare Enterprise (IHE) protocols. At all levels, it will become increasingly important to support a range of message formats, and rapidly introduce additional support as these message formats change.

Going forward, multistep clinical and administrative processes will depend on a combination of local, regional, and national systems. The introduction of business process management and composite application technology can provide needed control of these end-to-end processes.

A *single view of patient* capability is at the center of many new regional and national initiatives, whether to support integration of clinical processes across departments, integration of clinical processes at a national level, or emerging initiatives such as customer self service across multiple channels. A key premise of many national initiatives is that patient information, once captured, should be available for use across all potential care processes. This can prove to be very challenging, as patient information is stored differently in each IT system, and the patient identifier conventions used are often not the same.

Sun — Enabling Health Care Change

Sun delivers integration solutions that make a difference. Our solutions have become the standard for health care infrastructures worldwide. In the U.S., Sun's integration solutions are used in more than 800 hospitals and regional Enterprise Master Patient Indexes (EMPIs). In Europe, Sun's integration solutions are used by more than 450 hospital sites and trusts. As part of the U.K. NHS NPfIT described earlier, Sun products support the integration and single patient view solution at the national level (National Application Service Provider or NASP), and to provide the integration solution for three of the five regional local service providers (LSPs).

Sun's integration solutions help health care organizations to:

- Decrease costs — through earlier invoicing where relevant, reduced administrative and clinical process time, elimination of errors in process and paperwork, and improved planning, scheduling, and process control.
- Eliminate waste — by reducing unnecessary transport and bed occupancy times.
- Better control expenditure — through automating procurement transactions and enabling a single view of provider to reduce erroneous payments.
- Provide better service — through "joined-up" health care.

Sun is the only vendor to offer an integrated package of application-to-application integration, organization-to-organization integration, master patient indexing, business process management, human workflow management, and an integrated patient access and update portal (single patient view). Our solutions provide a flexible infrastructure for hospitals, trusts, and national projects.

Sun Health Services Framework

Sun offers a comprehensive framework for the collection, management, and exchange of public health data, and enables the creation of new business processes leveraging existing infrastructures. This is achieved through service-based Packaged Composite Applications (PCAs) based on a Service-Oriented Architecture (SOA) and powered by the Sun Java™ Integration Suite.

As you will note from Figure 2, this framework covers all major aspects of health care integration, enabling you to implement best practices services in a rapid and robust manner.

Figure 2. An integrated health care framework

Sun Integration Solutions in Action

National Programs

U.K. National Health Service (NHS) National Programme for IT (NPfIT) — The Sun Java Integration Suite (formerly the SeeBeyond™ ICAN Suite) is being used by British Telecommunications PLC (BT) to help deliver and manage a national patient record database and transactional messaging service, which forms a core part of the NHS Care Records Service. As a National Application Service Provider (NASP), BT is using Sun software as the Web services and Java 2 Platform, Enterprise Edition (J2EE™) based integration platform for business process management within the transactional messaging service initiative. Sun software is also being used as the basis of the NHS Care Records Service to electronically record and cross index patient and care information, eliminating duplication of patient files and improving information sharing.

The General Medical Services (Payments) Board (GMS) — In Ireland, this group is responsible for processing more than 40 million transactions from 5,000 primary care contractors. Sun software is being used to integrate payment data coming from eight regional health authorities, matching it against a central index of claimants called the Central Client Eligibility Index (CCEI). Using the CCEI, the board is able to quickly verify the accuracy and reasonableness of submitted claims on behalf of the Regional Health Board. In addition to processing payments more quickly than before, the system is able to realize a cost saving of several million Euros annually through the elimination of duplicate or erroneous payments.

Regional and Local Health Care Providers

Capio AB — This organization is a market leader in the European health and medical care industry, with operations in its Swedish home market and six other countries. As well as providing health care and diagnostic services for private patients, it carries out work under contract for national health services in different countries. Capio chose Sun software to manage the flow of information between Oracle (formerly PeopleSoft) OneWorld and local Patient Administration Systems (PASs) such as Siemens Health Services (SHS) in France, and Cambio in Sweden and the U.K.. Information relating to customers, who include insurance companies as well as individual patients, is extracted from the PAS using Sun SeeBeyond eGate™ Integrator, and then fed into the enterprise resource planning (ERP) system for billing and accounting purposes. Capio has also taken advantage of the B2B functionality of Sun SeeBeyond eXchange™ Integrator to streamline the procurement process. Direct links have been set up with specific suppliers, and information relating to orders is automatically routed to and from the core ERP system.

Oberösterreichische Gesundheits-und-Spitals-AG (gespag) — The largest hospital operator in Upper Austria, with 13 hospitals and 8,500 staff. It employs Sun software to manage the flow of information coming from 400 interfaces across 50 heterogeneous IT systems to deliver accurate and timely data to medical staff, while considerably reducing work time in areas such as patient administration. Access to data across the group also allows gespag to plan and schedule more effectively, eliminating unnecessary use of resources in areas such as bed occupancy.

Salford Royal NHS Hospital Trust — One of the largest health trusts in the U.K., servicing a population of more than 300,000. It is using Sun software to manage the integration of information from patient administration, pathology, radiology, and other systems with a central electronic patient record system to provide the ward and consultants with a list of patients and their results in real time. Everything a care giver needs to know about a patient is visible on one screen, thereby improving the service that patients receive, both within the hospital and as outpatients.

Le Centre Hospitalier de Luxembourg (CHL) — A principal hospital center in Luxembourg, with 1,300 employees, 500 beds, and treating 20,000 patients annually. CHL uses Sun SeeBeyond software to link the SAP Hospital Information System (HIS) with a range of disparate systems including Radiology, Cardiology, Theater, Laboratory, and Picture and Archiving System (PACS). The ability to provide a seamless flow of information throughout the patient admission-to-discharge cycle has resulted in reduced operating cost and enhanced quality of service. Today, invoicing consistently includes all treatments, something that was difficult to achieve in the past. In addition, CHL now has real-time visibility into all services and results, with the automated management of errors and exceptions. Sun software has also been used to exchange information with other hospitals and third parties in the health sector.

Kalmar County Council — A local Swedish government organization providing services to a total population of nearly 240,000. It operates nearly all the health care services in its geographical area, and needed to implement its *one patient, one record* vision. Kalmar chose to implement the Cambio Cosmic health care information system from Stockholm-based, Cambio Healthcare Systems. This solution provides staff with access to medical data and a full range of administrative capabilities within a secure environment. To provide the all-important integration component, the council chose Sun SeeBeyond eGate Integrator, with process management functionality provided by Sun SeeBeyond eInsight™ Business Process Manager.

For the first time, health care professionals have access to an overview of patient medical data, which can be used for the documentation, planning, and administration of all aspects of Kalmar County's health care service. With the aid of Sun's process management functionality, a patient's progress through the health care chain can be logged and monitored, improving the standard of care since all the relevant data is readily available for decision-making purposes, and various parties can collaborate more effectively.

Software Providers

McKesson — The new electronic booking service, Choose and Book, allows general practitioners (GPs) and other primary care staff to make initial hospital or clinic outpatient appointments at a convenient time, date, and place for the patient. When patients need to be referred to a consultant or other health care practitioner, they are asked by their physicians where they want treatment to take place. They are then able to book appointments on the spot, and leave the office with their appointment times and dates. Sun, working in partnership with McKesson, is providing the integration technology which allows messages to be exchanged between McKesson patient administration systems and the NHS Choose and Book service in a reliable, secure way.

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