



**NOIE**

The National Office for the  
**INFORMATION ECONOMY**

# Advancing with eBusiness



## Smart Patient Data

C A S E S T U D Y

# Information Technology Online (ITOL) Program

The *Smart Patient Data* project was awarded \$75,000 under Round 4 of the ITOL program. This consortium sought to improve business efficiency and health outcomes by providing health care professionals rapid access to current, patient specific clinical data stored on a secure network that protects patient privacy. This solution introduced a uniform, *one to many* information management system with the potential to improve cost efficiency within the health industry.

*Smart Patient Data* is a simple, user friendly and secure system that uses Public Key Infrastructure and secure tokens to access records and share patient summaries over the Internet that provides a means of increasing productivity while reducing operational and administrative costs.

## Introduction

In April 1999, the Federal Minister for Health said in a speech to health professionals –

“Your overriding task is to find ways to harness the potential of information management and technology and translate it into better ways of providing health care – in particular, better quality care.”

The Minister also emphasised that when information technology solutions are implemented in the health arena they must pass the test of ensuring the community’s right to privacy.

The policy direction provided to the health industry in Australia is clear. The three critical aspects to be addressed include quality of patient care, patient safety and costs. Better information management through electronic means is a key requirement.

Accessing a complete patient history is important and potentially provides life saving information. *Smart Patient Data* was specifically designed to meet providers’ requirements, understand clinical interactions and the results of services provided by other professionals (radiology, pathology, pharmacy etc).

When treating patients after a discharge General Practitioners (GPs) need to know the medications and treatments resulting from a hospitalisation. Much of this information is paper-based or relies on the patient’s memory of treatment and medication or is simply non-existent. Doctors are usually frustrated with the time required to track down the treating physician at hospitals or specialist practices to verify these treatments. *Smart Patient Data* provides certainty, using real-time clinical information that enables health care professionals to minimise phone time and maximise their opportunities of providing quality patient care.



Brisbane Waters Private Hospital CEO, Graham McGuinness signs on to the administrative area and says of *Smart Patient Data*, it is simple to use, low cost and proven, it complies with Commonwealth Government security standards, delivering privacy and security of data for patients and providers.

## Objective

The primary purpose of the project was to harness the power of IT and channel it into better quality care for patients by providing health care professionals with rapid access to the current clinical records of patients who choose a health Smart Card.

The project commenced by establishing strict guidelines around patient privacy and data security. The methodology adopted was to build on lessons learned from the European experience and establish a unique Australian ‘proof of concept’ pilot project by applying appropriate technology tools that met the requirements of health care providers.

Doctors, health care providers and administrative staff spend many hours per week playing telephone tag, returning calls and passing information on paper to peers that could be available electronically

The system was tested against the following requirements:

#### PROVIDERS

- Rapid access to patient's clinical records
- Minimal operating costs and maximum efficiency
- Secure data storage

#### PATIENTS

- Access to knowledge-based health care
- Assurance that medical records remain confidential

#### ADMINISTRATORS

- Assurance that all legal and ethical obligations concerning patient information are fulfilled.

These clinical, business and administrative requirements were tested and proven during the proof of concept trial.

The *Smart Patient Data* product specifically addresses quality of patient care, patient safety and costs; particularly the costs associated with inefficiencies that exist in current communication and paper based information-sharing mechanisms. By introducing a uniform, *one to many* information management system with the potential to strip out large layers of cost from the health industry this product provides a means of reducing operational and administration costs.

## Project Team

Smart Card Applications Pty Ltd, the consortium leader conceptualised and designed the solution and collaborated with the consortium to conduct the proof of concept trial at the Brisbane Waters Private Hospital.

The consortium included global technology providers such as Schlumberger Measurement & Systems Pty Limited, who contributed secure tokens (smart cards) and card readers and Sun Microsystems who provided computer hardware and seed funding. Macquarie Bank and Cable and Wireless support the project locally and also provided some seed funding. Brisbane Waters Private Hospital contributed patient facilities, staff support and a collaborative and cooperative site.

*Smart Health Solutions* Pty Ltd was established as a new business entity to commercialise the project following the success of the proof of concept trial.



## The Project

The project team conducted workshops with health care providers to document in detail and formally agree on the operating guidelines for *real-time* data sharing and *Smart Patient Data* went live in May 2000.

The project was designed to be "patient centric". This means the starting point is when the patient chooses to participate in *Smart Patient Data* and delegate authority to various health care providers. All data is stored in a secure environment. Data transmitted over the Internet is encrypted with the highest level of security using Commonwealth mandated security products.

Health care providers are each issued with a unique smart card that they use to launch a consultation session and connect with the server.

Patients are each issued with a personal smart card that is used in the consultation session to "point" directly to their data on the server. This means the entire patient history provided by multiple health care professionals is available and the patient history can be updated in the current session. *Smart Patient Data* builds an accurate patient profile and provides health care professionals with a valuable tool to improve health outcomes.

A record is created when patients are first issued with a card and a summary is generated following each session. A summary of treatment and medication is generated following discharge from hospital. An event summary is generated following a medical consultation, a specialist referral or a diagnostic service. Summaries are also generated from other types of notifications.

Participants in the project reported that it is flexible, extensible, and simple to rollout to health professionals, hospitals and authorised health care administrators.

The infrastructure components are:

- Point of service application and smart card reader
- Legacy systems integration
- Secure, web based hosting containing patient record summaries

Tokens issued to each health care provider have an associated private key certificate. Clinical data is now stored in a Gatekeeper Certified iTrust Centre. This environment has Australian Security Intelligence Organisation (ASIO) T4 Accreditation. The data is secondary data provided by multiple sources from both the private and public sector. Primary Data is held at source.

## Privacy and Security

The Australian Privacy Charter Council developed the Australian Privacy Charter as a benchmark for privacy protection in both the private and public sector.

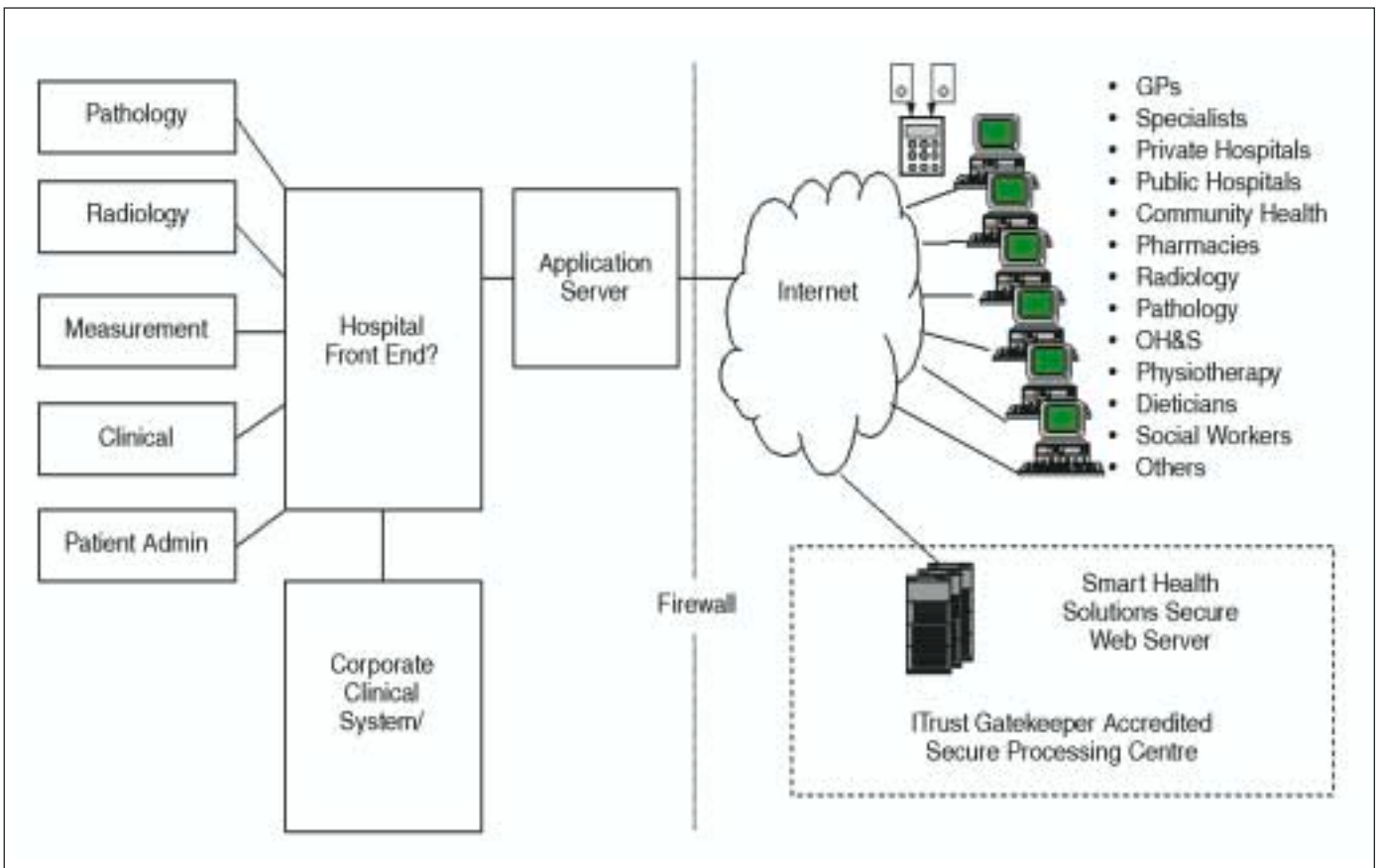
This solution complies with the National Privacy Principles, the Australian Privacy Charter and Australian Standard AS 4400-1995, and the NSW Privacy and Personal Information Protection Act. The Office of the Privacy Commissioner released the National Principles for the Fair Handling of Personal Information (NPP – National Privacy Principles). These principles took effect in December 2001.

Access to patient records that are stored on a central web server is limited to only those with access authorised by the patient. This method ensures that patients maintain control over who has access to their records with the added level of security access in an emergency or exceptional circumstances.

Within this framework access is more rigorously controlled than in comparable paper based environments, and is more rigorous than in comparable user-id and password based automated systems. As the patient determines who has access to their data the risk of a patient data security breach is minimal.

*“Smart Health Solutions has been working for us for more than two years now. Gradually the take-up rate by doctors has increased and the acceptance by patients has been phenomenal. We have just done a mail-out to patients and we are getting close to 90% “opt-in” rate. There is significant pressure on doctors from patients to join the program and we are seeing more and more doctors come on board.”*

Graham McGuinness, CEO, Brisbane Waters Private Hospital. September 2002



## Outcomes

*Smart Health Solutions* has been operating for more than two years in the health care community based around Brisbane Waters Private Hospital. Hospital staff, GPs, specialists and diagnosticians use this solution to provide more informed care to almost two thousand patients on the NSW Central Coast. Hospital discharge summaries provide the core information for this implementation, with health care providers now able to access patients' treatment details on line. This implementation went from pilot to full commercial basis in January 2002.

The *Smart Patient Data* system addresses the burden of costs associated with inefficiencies in current communication and paper based information-sharing mechanisms. Operational and administration costs are significantly reduced by the introduction of this *one to many* patient information management system.

The *one to many* system operates on a principal of health care providers collaborating on patient care. Because the *Smart Patient Data* system allows simultaneous access from a desktop in private or public hospitals and from an office practice, further costs savings are possible related to –

- Defensive medicine, redundant testing, etc, and
- the costs related to current one to one information sharing systems including fax, e-mail, letter and telephone

"I got involved with *Smart Patient Data* and began using the system fairly recently. As a radiologist typically I get to see images in isolation with little or no patient history. With patient summary history data available at my desktop I can interpret an image faster and greatly improve the quality of diagnosis. I receive numerous phone calls daily from colleagues seeking information on patients - exactly the sort of information that *Smart Patient Data* provides. Broad adoption of these types of system will save the health industry millions while delivering safer, better quality care."

Dr Douglas Lingard, Central Coast Radiology.

In 1999 when the project commenced sharing patient clinical data using Internet technology was a new concept to many health providers.

Today most GPs have desktop computers and depend on the Internet to communicate across the health care sector. Public key infrastructure and secure tokens are a good marriage as the means of securing sensitive health information. Tools to secure information over the Internet are available to be downloaded as free ware and are compatible with *Smart Patient Data*.

The *Smart Patient Data* concept is now also being trialed by the Renal Care Group within the New England Area Health Service. A scoping study conducted by the New England Area Health Service recently indicated cost savings of at least 20% from using this solution for information management for chronic patients.

In May 2002, planning began at The Alfred Hospital in Melbourne to provide a clinical information management solution for Cystic Fibrosis patients and their doctors. *Smart Health* expects to begin transmitting over Broadband its first diagnostic images in mid 2003 in a new joint project with Telstra.

## Future

A new *Smart Health Solutions* consortium, was awarded \$130,000 under Round 7 of the ITOL program to extend the core technology developed during Round 4 by developing an e-billing and e-payment system.

The aim is to streamline the electronic data sharing facility and automate payment interactions between patients, health care providers and payment organisations. Integral to this phase of the project is a robust research and evaluation component to test the viability of the concept for wider application in the health care sector.

The Round 7 Consortium comprises *Smart Health Solutions*, Department of Veterans Affairs, Brisbane Waters Private Hospital Giesecke & Devrient Australasia Pty Ltd and Commonwealth Department of Health and Ageing.

This project will make veterans' clinical histories available to providers at their desktop and includes a component to report treatment details to the Department on-line to make claim management more efficient. This project is supported by the HealthConnect office of the Department of Health and Ageing and the National Office for the Information Economy. The project will grow to almost 10,000 users in 2003.

## Need Further Information?

More information about the ITOL program is available at:

Website: <http://www.noie.gov.au/itol>

Email: [itol@noie.gov.au](mailto:itol@noie.gov.au)