# Sharing Excellence

## in Health and Disability Information Management 2004

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# Foreword

This is the second year of the Sharing Excellence in Health and Disability Information Management Awards. Following the success of last year's awards I am very proud again to showcase the best of health information management innovation in New Zealand. The Ministry of Health has enjoyed working alongside Health Informatics New Zealand to highlight the lessons learnt from those who have 'been there, done that'.

This year's awards bring to the forefront the diversity of innovation of Health Informatics in New Zealand. The variety and quality of the applications show there is considerable work taking place to find innovative ways of using information technology to improve health care delivery.

Thank you to this year's finalists, who have taken time out of their busy schedules to provide insight into their projects. We all gain valuable knowledge and potentially benefit by not having to 'reinvent the wheel'. I hope you find ways to make use of the information contained in this booklet for your own projects and apply for next year's awards with your successful projects!

Debbie Chin
Deputy Director-General
Corporate and Information
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# Contents

# Introduction

The Sharing Excellence in Health and Disability Information Management Awards is a joint initiative between the Ministry of Health and Health Informatics New Zealand (HINZ). Last year's inaugural awards recognised an exciting range of innovative projects from across the New Zealand health and disability sector. This year is no different. The awards represent the best in innovation, demonstrating how information management can support the continued improvement of care and services in the sector. These awards recognise the people who have developed and implemented highly effective systems using information management. The spotlight is on sustainable projects that are able to improve health outcomes. The awards celebrate success and excellence, providing an opportunity for all of us to share and learn.

Information management plays an ever-increasing role in the health and disability sector, and the projects showcased here are leading this transformation. The 2004 award finalists have been chosen for their proven excellence in supporting the delivery of health care and are outstanding examples of sound information management practices in information technology development. Each project was judged by a panel of experts and assessed for a range of qualities including:

- benefits to the health and disability sector
- whether the innovation is transferable to other settings and applications
- the degree of innovation involved
- the level of information technology and information management competency demonstrated
- the cost/benefit analysis.

This year there are four finalists who demonstrate innovation and improvement in widely different scenarios. Our 2004 finalists include a website that connects both consumers and health professionals, and a data management solution that has led to significant improvements in business intelligence and cost savings. We have an innovative use of new hand-held technologies that reduce paperwork, increase data quality and allow nurses to spend more time with patients, and a new way to use technology that's been around for a while – videoconferencing. With this project, patients, health professionals and researchers can collaborate to improve outcomes, increase training opportunities and connect once-isolated individuals.

## NZORD

### New Zealand Organisation for Rare Disorders (NZORD) and absolutely.co.nz Ltd

The difficulty in finding out more about a rare disorder can often compound the issues of coping with a disease. While the Internet offers a huge amount of diverse information, people often lack the search skills to find exactly what they're looking for. The NZORD website has been designed so that people can quickly find meaningful information about support groups, resources, reports and policy. Information is in plain language and presented in a user-friendly way. The website is focused on building partnerships between individuals, families, support groups, clinicians, researchers, policy-makers and industry. With an estimated 9000 rare disorders, presentation and access to information is important. The designers have paid considerable attention to accessibility and usability issues.

The website has been developed by The New Zealand Organisation for Rare Disorders, a charitable trust formed in 2000 to provide a single point of contact for information and support. Their challenge was to use technology to improve the way information about rare disorders is organised and accessed. The development partners for the project are Wellington-based web company absolutely.co.nz Ltd, specialists in user-friendly, accessible websites and web application development, with sponsorship from the Ministry of Health.

The goals of the project were to increase certainty of access to high-quality information at the time of diagnosis, to connect people to the right support groups and to provide a communications system to 'support the support groups' and promote their common interests. It was important to recognise the support groups are operated by volunteers and often have limited resources.

## Referred Services Management Reporting Project

### Central Region's Technical Advisory Services Ltd

Where NZORD's website focused on connecting people to information, the second finalist improved operational efficiencies by using information technology and management to streamline the way existing data is distributed.

Central Region's Technical Advisory Services Ltd (TAS) is a shared support agency jointly owned by the six District Health Boards (DHBs) supporting: Capital and Coast, Hutt Valley, Wairarapa, MidCentral, Whanganui and Hawke's Bay. TAS provides the DHBs with consultancy and advisory services to support planning and funding functions. Included in this role is support for information, service planning and external service audit functions.

Balancing quality services with value for money is a top priority for DHBs. TAS has built on the work done by the New Zealand Health Information Service (NZHIS) enabling health providers to monitor trends, benchmark against other DHBs and discuss findings with general practitioners.

The Referred Services Management (RSM) reporting system combines existing NZHIS and TAS regional data through a comprehensive reporting tool that delivers DHBs a clearer picture of service costs and their ability to compare themselves with others.

Community-based laboratories and pharmacies perform services for health practitioners. Achieving value for money is complex because DHBs do not influence the volumes, which are largely determined by the referrer (in most cases the general practitioner). The project's original requirement was to target areas where savings could be made and improve health outcomes for laboratory and pharmaceutical services.

Before the RSM reporting system was implemented, information was incomplete and often fragmented across various regional DHB data collections. TAS had limited tools to make effective use of data. Gathering appropriate and usable regional information was seen as a way of helping DHBs to manage their local expenditure and growth in referred services.

Data is needed for a variety of purposes and had to be extracted, merged and aggregated so that it could help DHBs form robust, evidence-based strategies. This called for a new approach, moving away from the traditional reporting systems to the concept of 'business intelligence'. The RSM reporting system became part of an integrated information decision support strategy, providing monthly reports from data organised by DHB localities, organisations and practitioners. This included the use of current and forecast future services so DHBs could 'drill down' through primary health organisations (PHOs), practices and contractual affiliations of practitioners to enhance the data and reports. By introducing *profiling*, using population demographics with adjustments per capita, fairer and more equitable comparisons between districts and practices became possible.

# ECLIPS: Electronic Community Liaison Information Portal System

## Northland District Health Board, firstBASE and Microsoft

Northland DHB's district nurses have come out victors in a paper war by introducing leading-edge technology that allows them to report back on visits in a simple and efficient way. The DHB worked with Microsoft's Innovation Centre and consultants firstBASE to take Microsoft's new .NET technology platform, Pocket PCs and an Internet-ready application into the remote communities of Northland. The result is a reduction in data entry errors, an increase in the quality and accuracy of information recorded and a massive reduction in both paper and duplication.

District nurses provide vital information for funding and service contracts, but increasing workloads had forced them to limit time spent with patients in order to complete paper work. The nurses were recording their notes in diaries, then transposing this information onto paper forms to be typed up by data operators in Whangarei. Given the remoteness of some staff, there were often delays. The nature of the process meant that incomplete, illegible or incorrect forms were inevitable. This in turn meant statistics were difficult to generate and often inaccurate, putting the DHB in a poor bargaining position for funding support.

It was clear nurses needed better support to deliver more timely, high-quality information, data had to be more accurate, legible and accessible, and statistics needed to be easier to generate. Ultimately, data had to align better with service contracts and identify the real costs of service provision.

The ECLIPS pilot was launched in January 2004. It provided district nurses with Pocket PCs, a clinical application and a scheduling tool for community patient visits. Already the pilot has demonstrated that data entry can be improved by developing electronic versions of forms. Inbuilt validation increases data accuracy. Completed forms are emailed and associated with the correct service contract. The system allows a subset of patient information to be downloaded from a desktop PC and for data to be updated directly from the Pocket PC.

# TelePaeds

## New Zealand TelePaediatric Service and Telecom

Parents, particularly those outside the main centres, often find it difficult and expensive to visit a paediatric specialist. This is compounded by the increased stress caused by being away from friends and families. New Zealand TelePaediatric Service (NZTPS) has been created to build a network of specialists who are connected to patients, other health practitioners and researchers through a videoconferencing facility. NZTPS has partnered with Telecom to develop a practical application that takes advantages of continued improvements in videoconferencing technology. NZTPS was created by the Starship Foundation and Paediatric Society of New Zealand, a not-for-profit incorporated society owned and directed by New Zealand's paediatric health care providers. The new service connects health professionals in Whangarei, Auckland (three sites), Tauranga, Whakatane, Palmerston North, Wellington, Christchurch and Dunedin.

While the primary aim of the NZTPS project was to provide a better level of paediatric care and improved access to services, the project has also connected once-isolated sites to provide evaluation and teaching. It has enabled researchers to build a communications network that has increased collegiality, reduced isolation and can contribute to developing more highly skilled paediatric service providers. The system also provides a superior support service for health professionals where clinical or teaching sessions involve multiple hospitals and specialist expertise needs to be shared more effectively.

The Ministry of Health and Health Informatics New Zealand invite you to continue to read and find out more about these innovative projects and the four finalists of the Sharing Excellence in Health and Disability Information Management Awards.

# New Zealand Organisation for Rare Disorders (NZORD)

## NZORD and absolutely.co.nz Ltd

Members of the Absolutely Smart Web Solutions Team. From left: Patrick Fitzgerald, Kathy Olsen, Rowan Smith.

Kevin seats himself anxiously at his home computer and keys in the website address. He is fighting the tears and desperate for information about a disease he has difficulty pronouncing. His doctor can't give him information about his daughter's condition or the care she will require. Back at the medical centre, his doctor keys in the same website address. A simply presented, no-nonsense website loads quickly, guiding both Kevin and his doctor immediately to facts, links, support groups and researchers . . . the journey begins.

### Introduction

People diagnosed with a rare disorder not only have the hurdle of coping with their disease but also the hard realisation that there's often little information available to help them understand what they are facing.

A rare disorder is less common than 1 in 2000, and may be just one in four million. NZORD's executive director John Forman estimates there are about 9000 rare disorders.

In order to help bridge the information gap the NZORD website is designed to help people quickly find meaningful information about support groups, resources, reports and policy matters. It delivers information in small, palatable chunks and uses friendly, no fuss language.

The website is geared to build partnerships between individuals, families, support groups, clinicians, researchers, policy-makers and industry. It minimises technological barriers by actively applying recommendations from the Web Content Accessibility Guidelines for disabled users. It incorporates features that consciously minimise stress and inconvenience to its visitors.

### About NZORD and absolutely.co.nz Ltd

The NZORD is a charitable trust formed in 2000. It is steered by a board of experts in research, law, education, journalism and medicine. It provides a single point of contact, delivers regular newsletters, organises conferences and receives sponsorship and grants.

Its challenge was to use technology to improve the way information about rare disorders is organised and accessed. And after working through that process it developed an award-winning website.

In 2001, John received the Genetic Alliance advocacy award in Washington for developing NZORD and promoting patient and family interests. In 2003 the organisation's website won the *Site of the Month* from CommunityNet Aotearoa, and is now a recipient of the Sharing Excellence in Health and Disability Information Management Awards.

The site was developed in partnership with absolutely.co.nz Ltd and with financial assistance from the Ministry of Health. The Wellington-based web company, established in 2000, specialises in user-friendly, accessible website and web application development. The NZORD project 'highlighted the incredible difference the Internet can make to both consumers and professionals in the health and disability sector,' says general manager Kathy Olsen.

## What were the needs?

NZORD wanted to improve access to, and organise, information that catered to the needs of both families and health professionals. It needed to provide this service to people who were often in emotional situations, as well as providing peer and expert support to clinicians and researchers. Most general health and disability websites do not cater for rare disorders and relevant information is more likely to be held in specialised databases that are often difficult to access.

While the Internet was revolutionising access to information, few people had the searching experience to 'hone in' on valuable information. NZORD and absolutely.co.nz needed to cater to novice users, those with slow connection speeds and old computers, as well as well-equipped expert users. This called for well-coded HTML and lean file sizes, says Rowan Smith, absolutely.co.nz's technical director.

## How the needs were met

NZORD's website gives friendly, well-organised online guidance to those who need to find reliable information. People can now find in a few hours what previously may have taken years to access. John should know. He has spent hundreds of hours over several years finding information for his family and others.

With the support of the absolutely.co.nz team, a range of technology tools were introduced to provide easy access and remove the 'frustrating' aspects of working on the Internet. The website's information architecture, visual design and functionality have been designed to support the user, every step of the way.

## What were the outcomes?

NZORD monitored the site's statistics, sought comments from users, kept a log of feedback and took note of links from other sites. Initially, the website attracted 500 visitors each month, but now receives double that each week. Today, the visits and enquiries regularly received from overseas account for up to 25 percent of site use. It continues to attract growing numbers of visitors.

The website delivers credible and relevant information to four distinct groups: patients and families, health professionals, researchers and policy-makers. There has been strong positive feedback from professional groups such as researchers and clinicians. John says that the outcomes have reduced anxiety for users, enabling them to plan their care in an informed way – often with the support from others in New Zealand and around the world. 'It is very common for New Zealand families to link to similarly affected families in other parts of the world through the links on our site, and this can give them access to considerable useful information about practical issues and symptom management', says John.

## What were the additional outcomes?

Applying the Web Content Accessibility Guidelines (http://www.w3.org/TR/WCAG10/) attracted compliments from CommunityNet Aotearoa. The guidelines are for web developers, and explain how to make web content accessible to people with disabilities no matter what 'user agent' they are using (eg, desktop web or voice-based browser, screen reader, mobile phone, etc). The guidelines do not discourage developers from using images, video, and so on, but explain how to make multimedia more accessible, or provide equivalent text content.

The CommunityNet Aotearoa's 'site of the month' reported that on their first visit with the graphics off (simulating visits by blind people or those on slow connections, cellphones, etc) the site made a 'powerful impression'. All images have alternate text allowing an instant overview and easy navigation. The links use sensible text and there is a link to accessibility features. With graphics on, the impression is of an attractive and clearly laid-out site.

Discussion at Dystonia Society planning meeting. Pictured from left: Philippa Hooper, Christine Blackler, Toby Hooper.

## What unique contribution was made to the community?

The rare disorders 'community' is not geographical but reaches across the world to include individuals, families, clinicians, researchers and others. The tone used in the website is typified by the introductory guide written 'by family members for family members' which adds a warm start to the journey.

> *We know how tough this time can be . . . emotions can range from disbelief and denial, through to anger and grief . . . finding good, reliable information about the condition that affects you or someone you love, will make it easier...*

The fundamental goals were to:

- increase the certainty of access to high-quality information for people at the time of diagnosis, including the correct link to a New Zealand support group
- provide the communications system for 'supporting the support groups' and promoting their common interests, while allowing for the fact that most rare disorder support groups are run by volunteers from their home.

In particular, rare disorder communities can:

- be efficiently guided to find quality information about disorders from specialised medical databases around the world
- have a public listing for their support group, enabling new patients to find them easily
- have free webpages to support groups so cost and technical barriers are removed
- have policy matters noted and communicated back to groups regularly
- have their voices heard.

# What value was added to the organisation?

The website provides NZORD with a publicly accessible 'window' to the services and support it provides. It addresses the geographical isolation of people and the lack of access or searching knowledge that prevents them from finding information quickly and effectively. NZORD's functions and purpose have been spearheaded by their new website. The organisation is now in a better position to perform its roles, promote itself to its supporters and reach more people and groups.

# What technology was used?

The absolutely.co.nz project team worked with NZORD to develop and co-ordinate the following.

- A website, www.nzord.org.nz, was developed with the following features:
  - carefully structured and thoroughly researched content
  - customised design and navigation using international accessibility guidelines
  - the ability to service multiple queries online (which was impossible manually)
  - a comprehensive and accurate directory of New Zealand health and disability support groups
  - free web pages for groups without a site of their own
  - up-to-date policy commentary and press releases.
- Vital communication links from people are never lost, preventing further anxiety. A 'failsafe' email address system removes the risk of people receiving 'lost' or 'bounced' emails sent to support groups that no longer hold a listed email. This can occur when a provider or support group changes Internet Service Providers, or needs to clear over-quota mailboxes. The system uses a series of alias email addresses for groups that do not have addresses associated with their website server. Using an xyz.info@nzord.org.nz address, and redirecting the email through Taranaki Internet Service Provider WebFarm's email control system, no person ever gets a 'could not deliver' reply. Undelivered emails default to NZORD, who send an interim reply to the person while the contact is followed up.
- A newsletter design and distribution system integrates MS Outlook contact addresses, distribution lists and website information into one loop. The system maintains comprehensive details about support groups, categorises them and establishes quick and easy distribution lists for monthly newsletters. Distinct categories allow separate distribution to news media, rare disease groups, common disease groups and others. Newsletters are in html format (the language of the web) and optimised for visually impaired users who have screen reader technology. The site has an efficient and attractive newsletter format with minimum text and live links back to website articles.

# How information and technology management served the project

## Keeping it real

NZORD was conscious of the reality of user situations, including possible technology constraints, and probable knowledge of Internet searching. The website was designed to meet a person's online needs when under pressure. It uses no gimmicks and removes as many barriers as possible for disabled users. This is because high-quality, current and accurate content is paramount, and it has to be easy for a small organisation with limited resources to maintain. This was enabled through an easy-to-use content management system.

### User-centred design approach

John is delighted that his original 'do it yourself' efforts were translated into a professional, well-structured website through absolutely.co.nz's expertise. From the early stages of planning absolutely.co.nz brought users into the project to determine how information should be organised.

'This testing gave us confidence that the website could be used successfully even by an inexperienced web user under high pressure,' says information architect Patrick FitzGerald.

## How strategies and policies served the project

The NZORD website and approach captures the essence of many national-level strategies, including the Primary Health Care Strategy (2001), the New Zealand Health Strategy (2000) and the WAVE (Working to Add Value through E-information) project (2001). In particular, its focus on improving access to high-quality information features in all three and is a core function of NZORD's project.

## How work documents served the project

'User input is inherently destabilising because we're testing for what we can't see,' says Patrick. 'This can show up usability issues and improvement opportunities that aren't in the project plan.' He says it requires strong commitment within the team to accept user feedback and to keep on working to get it right, along with flexibility to adapt processes and tasks within the overall bounds of the final delivery date and budget.

Key documents were the:

- project contract
- delivery blueprint
- information architecture plan
- site map
- page schematics (paper)
- visual designs (paper and electronic)
- CMS user manual.

Members of the Absolutely smart web solutions team discuss website development. Pictured from left: Patrick Fitzgerald, Rowan Smith, Stephen Falealili.

## Critical factors and how they were managed

### Reducing the barriers to users

The absolutely.co.nz team said they needed to do the basics well. 'No flash, no gimmicks, no pretence.' It was critical to understand the needs of visitors to the website, the information and support they would be looking for and the sources of information they would need, and to guide them step-by-step through the maze of information.

## What lessons were learned?

NZORD had an 'exceptionally clear vision', and was well attuned to its web users' needs, says Patrick. 'That made our job – to take NZORD's vision and make it happen online – much easier.'

Patrick and Kathy say the real eye-opener was the tremendous potential of the web for consumers, professionals and policy-makers to find new ways to collaborate and make a difference in people's lives.

## What were the costs?

John estimates NZORD has operated on less than $150,000 over five years. Approximately $30,000 was used for website development and researching and writing the content. He believes these costs are modest and further financial sponsorship and funding, following initial project funding from the Ministry of Health, will be critical to maintain the site's value.

## Is the project useful to similar organisations?

The technology is not unique, but its application is. The approach to health and disability information is transferable. 'Too many try to do too much – and deliver too little,' says John. He believes the Internet is littered with health and disability information websites that are glaringly empty of content or substance.

## Where to next?

The future of the project includes promoting its existence so that specialists, doctors and families know it is available. Promotion of the website is entirely by word of mouth currently, but John believes it needs greater reach in order to help more people. Ideally that would include television and other media, but that would require financial support from sponsors and funders.

The website will eventually provide online resources that people can download, such as information sheets and brochures. John would also like to see further functionality, including the enormous task of cross-referencing the 9000 rare disorders to relevant support groups.

## The project team

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Dystonia Society member Toby Hooper looks at information on the NZORD website.

# Referred Services Management Reporting Project

## Central Region's Technical Advisory Services Ltd

A courier delivers a CD to a central region DHB office. A manager looking after the primary health care portfolio stops what she is doing and drops the CD into her drive. Within seconds she has the data she has been waiting for to complete her five-year strategy to the CEO. On analysing the figures she calls up a local primary health care provider to find out why their data has taken an unusual dip. This CD is really proving its worth she thinks: less time trawling through numbers, less effort debating the details with her colleagues, and more time negotiating practical solutions. Even time for a coffee break!

RSM CDs and data at TAS offices, Wellington.

### Introduction

It is a top priority for DHBs to balance the need to get value for money from health services with improving health for people. Through the synergy of the work undertaken already at the New Zealand Health Information Service (NZHIS) and the innovative work of the Central Region's Technical Advisory Services Ltd (TAS), data is available to enable health providers to monitor trends, benchmark against other DHBs and discuss findings with general practitioners.

Community-based laboratories and pharmacies perform services that are ordered by health practitioners, and getting value for money is complex because DHBs do not influence the volumes: the referrer (in most cases the general practitioner) influences the number of pharmaceuticals dispensed and laboratory tests performed. DHBs in the TAS region needed to find out about where possible savings could be made and health outcomes improved for their region.

TAS developed the Referred Services Management (RSM) reporting system to combine existing NZHIS data and TAS regional data to provide comprehensive data and reporting that would enable DHBs to show how they are 'stacking up'. The RSM reporting system unlocked the potential, using new tools and combining data from multiple collections.

### About Central Region's Technical Advisory Services Ltd

Central Region Technical Advisory Services Ltd is a shared support agency for six DHBs: Capital and Coast, Hutt Valley, Wairarapa, MidCentral, Whanganui and Hawke's Bay. It provides consultancy and advisory services that support DHBs in their planning and funding functions, with emphasis on quality assurance, customer service, enhanced analytical services, information and project management. TAS supports DHBs with information, service planning, and external

service audit functions so they can meet the objectives of the New Zealand Health Strategy and the New Zealand Public Health and Disability Act 2000.

TAS is a limited liability company under equal joint ownership by the six DHBs. Its board of directors comprises the chief executive officers of each of the six shareholding DHBs. This ownership structure provides governance.

## What were the needs?

The region's DHBs needed to target areas where savings could be made and health outcomes improved for laboratory and pharmaceutical services. Information was incomplete and fragmented between various data collections within the region's DHBs, and technical tools to make the best use of data did not exist within TAS. DHBs needed to gather regional information in a useful and accessible way to help manage their local expenditure and growth in referred services. They wanted information for varied uses. The data needed to be extracted, merged and aggregated to help DHBs form robust, evidence-based strategies.

## How the needs were met

TAS developed its information strategy and a technical design methodology, and by December 2003 it had developed the RSM reporting system, a system that sourced data from various national data collections such as the PharmHouse and LabWarehouse maintained by NZHIS, and HealthPac's financial payment statements and contract management data. While NZHIS and HealthPAC already provide considerable national data, TAS wanted to focus on regional data. Other data sources included lists of practitioners and organisations they work in or with, as notified by DHBs and the New Zealand Medical Council. The RSM reporting system created links and mapping between data collections to enable broad use of the information.

## What were the outcomes?

DHBs were introduced to the functions and potential of business intelligence reporting through the RSM reporting system, which moved away from ad hoc and 'short lifespan' reporting. The RSM reporting system became part of an integrated information decision support strategy, providing monthly reports from data organised by DHB localities, organisations and practitioners. This included the use of current and forecast future services so DHBs could 'drill down' through PHOs, practices and contractual affiliations of practitioners to enhance the data and reports. Further, profiling using population demographics with adjustments per capita gave fairer and more equitable comparisons between districts and practices.

The reports allowed referred services to be viewed from regional population, geographic, funder, referrer, service use description and quantity, financial, provider behaviour, and management perspectives. Information included pharmaceuticals, labs, and general medical subsidies 'spend' and use, which was summarised at multiple levels, including the ability to see the finest level of detail available. Such analysis might combine regional actual practitioner/claims-level data, referrer organisation relationship data, financial payments, statistical forecasting time-series and population-based comparatives.

In summary, the RSM reporting system could:

- electronically distribute a set of regular standard reports
- calculate quarterly PHO budgets and savings
- analyse the capability required to expand into further detailed information and subject coverage
- complete and report on evidence-based research for strategies relating to the management of and demand for primary health care services, with an emphasis on referred services.

Daniel Kilpatrick (at screen) directs a group presentation to DHB managers considering level trends.

## What were the additional outcomes?

The RSM reporting system provided the opportunity to suggest improvements to managers of DHB data collections as the project team and users became familiar with the variable quality. They could also consider new applications for existing data.

## What unique contribution was made to the community?

The user community included managers, analysts, primary health care portfolio managers and pharmacy facilitators. The regular analysis provided by the RSM reporting system was a big step beyond TAS's previous efforts to provide their DHBs with regional information. It gave DHBs a pragmatic technical tool and a way to access meaningful reports. It provided information to DHBs, PHOs and health practitioners on how they could better serve their communities and enhance their practices.

## What value was added to the organisation?

TAS believes it has established a specialised area of expertise with input from a wide range of external experts within DHBs, PHOs, and an independent researcher. Momentum gained through this collaboration has resulted in increased sharing of skills, greater innovation and an improved product.

## What technology was used?

The RSM reporting system reports are a series of templates that deliver information graphically and interactively on a 'pick and go' basis. They use analytical functions through a data 'cube' that acts as the data source. The reports deliver enriched analysis techniques such as statistically derived forecasts, smoothed trends and confidence limits. TAS Information and Analysis Manager Jonathan Jourdain says the RMS reporting system provides better coverage of detail in a user-friendly way.

Apart from some initial set-up requirements, the cost to DHBs is virtually nil, says Jonathan, as most DHBs already have the software.

The applications are Microsoft SQL Server 2000 and Analysis Services as the 'back end' and Microsoft Excel 2000 or later versions as the 'front end'. Data is transformed (removing errors, standardising and enriching data) in a data mart and structured into a highly compact and powerful 'cube' of pre-packaged data.

## How information and technology management served the project

An initial governance group, primary health care reference group and management support ensured the project would be focused, says Jonathan. The user community included DHB executives, management, analysts, contract administrators and special committees. TAS formalised a 'sign-off' process for documentation and used its website to provide updates and notifications, email, teleconferences and face-to-face workshops to communicate with the groups. Status reports and summaries were created for major milestones.

## How strategies and policies served the project

The Primary Health Care Strategy (2001) represents a move towards a population view of health and the reduction of health inequalities in communities served by DHBs. Comparing services used by different geographic regions and determining where under or over utilisation of services may occur, helps to provide better information for promoting new or improved services.

## How work documents served the project

A variety of documents were produced as part of communications in the project, from the initial project scope, to technical installation guides and a user overview document. The overview document explains the development, how each of the reports can be used, current issues and future directions.

## Critical factors and how they were managed

### Working together

The RSM reporting system highlighted the importance to health sector organisations of working with each other and the Ministry to solve problems and enable projects that benefit stakeholders. TAS is developing systems that will preserve and grow the knowledge gained from the RSM reporting system project for the future.

### Good design and documentation

By creating a well-documented and well-designed product the risk of losing continuity is reduced. The RSM reporting system captured the knowledge and skills of many contributors in a way that supports knowledge management. It has become a value-added service and will prove increasingly important.

### Buy-in

The RSM reporting system was designed to cater to an expanding user base. Feedback from users helped foster collaboration and improve the quality, timeliness and reliability of information. Participation included DHB staff, an analyst forum, a primary health care reference group, a general manager's forum, and independent experts. The team used a combination of website updates, teleconferencing, workshops and face-to-face meetings.

## What lessons were learned?

### Supporting users

Even with the best product it is important to realise people need help and have different learning styles, says Jonathan. Human contact is important to allay any assumptions about the RSM reporting system being too difficult to use. He says it was important to acknowledge heavy workloads and follow through with learning and support.

Dr Kate Wang (Hutt Valley DHB Analyst Planning and Funding) meets with Joanna Williams, (Referred Services Co-ordinator, Hutt Valley Independent Practice Ass. Ltd part of Kowhai Health, Hutt Valley) to discuss latest trends in referred services.

## What were the costs?

All of the expenses were covered by the TAS operational budget. TAS estimates that if a complete system was built to the same standard with the same capability by 11 DHBs, and run with the same ongoing development programme commitment, then it may have cost approximately 10 times that of centralising the development. Separate organisations trying to achieve the same solution independently may mean greater costs and important synergies would be lost, says Jonathan.

The ability to support multiple requirements of analysts (eg, board reporting, provider engagement, health needs assessment, monitoring, financial/risk management, clinical analysis) created further potential savings of approximately 19 FTEs (full-time equivalent staff) across the participating DHBs and (potentially) PHOs, an opportunity cost of approximately $1.3 million.

## Is the project useful to similar organisations?

The RSM reporting system:

- is of sector benefit, as shown by its use within different regions and a variety of diverse users
- uses readily available software and hardware, including a virtually zero additional client cost at most sites
- has a high IT/IM component of at least 75 percent
- has an estimated return on investment via cost savings and other benefits of potentially 10-fold, depending on the alternative scenarios used to compare against.

# Where to next?

TAS is excited about developing more powerful analysis utilising linkages between primary and secondary data, and practice and practitioner profiles that will potentially improve *best practice*.

As users become more familiar with the system, their interest in further developments grows. Initially, TAS will provide more analysis and a dialogue (text) that can be used in DHB reports. The project was initially developed for the six DHBs that TAS served. It now serves 11 and could potentially have a national application.

Although security, privacy and file download size constraints need to be addressed, there is a vision to provide further access via a secure website.

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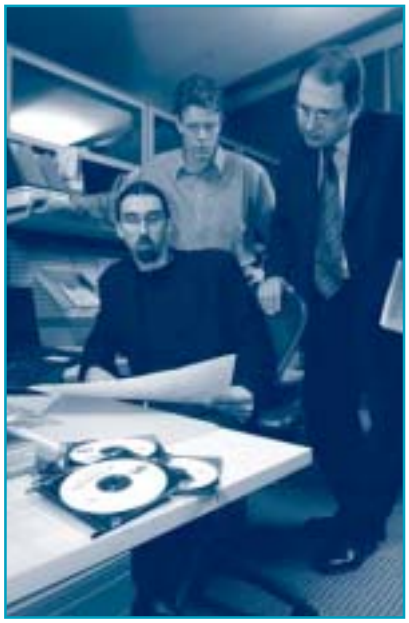


Part of the project team at TAS have development discussion of report. From left: Matt Smith, Daniel Kilpatrick and Zoran Bolevich.

# Electronic Community Liaison Information Portal System (ECLIPS)

## Northland District Health Board, firstBASE and Microsoft

Picture a scenic Northland panorama drenched in sunshine. In the distance a lone car kicks up dust from a metal road and winds its way to a remote cottage. The peaceful scene is broken only by cheerful greetings between a district nurse and her patient as they compete with a gnarly dog barking over his patch, bravado tugging at a leash. A hot cuppa brews . . . but the nurse's assorted papers flutter and fly off in the breeze . . .

Nurse Alyesha Godfree on the road accessing her pda for the next patient she is to visit.

### Introduction

When Northland District Health Board (NDHB), firstBASE and the Microsoft Innovation Centre team met with district nurses, the discussion quickly turned to their battle with paper. Recording visits was time consuming and unwieldy. Data was often inaccurate, illegible, inaccessible and incomplete. The real cost of providing services in the community needed to be measured. To provide better information and reduce the paperwork the three organisations decided to introduce ECLIPS (Electronic Community Liaison Information Portal System).

### About Northland District Health Board

NDHB provides services to Northland's population of 142,000. The region has a high rate of deprivation with remote locations and limited access to health services. NDHB's district nurses work in people's homes and from clinics. They provide specialist services such as oxygen therapy and wound management for newly discharged patients and those with chronic conditions.

### What were the needs?

District nurses filled in vital information for funding and service contracts but their increasing workload often meant they had to limit time spent with patients in order to complete paper work. And while NDHB's hospital system was becoming more efficient at reducing the length of hospital stays, the workload of district nurses was increasing along with the paper work.

Nurses wrote in diaries and later transposed the information onto paper forms that were sent by fax, internal mail or delivered by hand to data input operators in Whangarei. This could take days and remote area staff often missed submission deadlines. Data input operators found forms incomplete, illegible or incorrect, resulting in further delays as they tracked down staff to verify information.

Statistics were time-consuming to generate and often inaccurate, implying that some contracts were not performing. That put NDHB in a poor bargaining position for funding support.

Nurses had to be better supported by more timely, better-quality information. Statistics needed to be easier to generate. More accurate, legible, accessible and complete data was required that aligned with service contracts and the real costs of providing services.

## How the needs were met

In January 2004 the ECLIPS pilot provided district nurses with Pocket PCs, a clinical application and scheduling for community patient visits. The pilot reduced the paper war to a small scuffle, as follows.

- ECLIPS enabled data entry that mimicked the paper form and used data validation rules to increase accuracy. Data was submitted via XML forms attached to emails. Each referral request was associated with the relevant Ministry of Health service contract.
- Patient visit scheduling handled initial scheduling and sundry information and was transferred to the Pocket PC. Subsequent visits were scheduled on that device.
- Referrals were recorded on the PC-based system and a subset held on the Pocket PC. Edit functions were enabled on the Pocket PC.
- Recording of visit and procedure statistics on the Pocket PC and the PC system allowed multiple procedures to be recorded, and the Ministry of Health Services Contract rules were applied later.
- Reporting visit statistics can be viewed on the PC and reported for Ministry of Health Service contracts.

## What were the outcomes?

ECLIPS saved 7.5 hours per week on paper work per district nurse, estimates firstBASE consultant David Warren. The benefits include:

- better service:
  - more time for patient care
  - Pocket PCs can capture photographs such as the status of a patient's wound, to be reviewed by nurse colleagues
- better data and access:
  - validation rules and pick lists reduced errors, and electronic records eliminated handwriting problems
  - time taken to collect statistics was reduced by 95 percent
  - clinical audit information was improved by providing user, date and time stamp information for transactions
  - access to referral and patient data was improved because a single file copy was held by an office-based PC, and a subset on the Pocket PC for field review

- better integration:
  - referral requests were associated with their Ministry of Health service contracts, and statistics resulted in complete capture of all procedures during visits, enabling an analysis of unfunded services.

## What were the additional outcomes?

MIMS Interactive was installed on the Pocket PCs and provided information on drug dosage, adverse reactions and interactions. Patients commonly went to different health providers for various medications and now nurses could assess the risks of incompatibility.

A further outcome was the use of digital photo capability on the Pocket PC, enabling nurses to discuss cases collaboratively using the visual information.

District nurse Pam Moore, synchronising her handheld computer with the main server.

## What unique contribution was made to the community?

Moving away from the previous paper-based system has given nurses significant time back to spend with patients. The data is more secure, protecting patient privacy. ECLIPS delivers improved information that contributes to the quality of care, and the ability of NDHB to negotiate better services for the community.

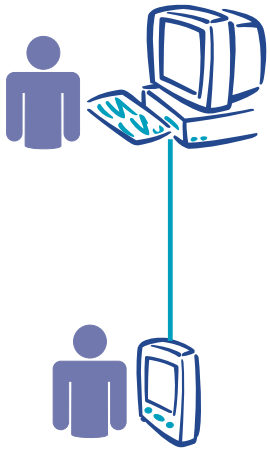
## What value was added to the organisation?

NDHB now has more accurate data about its services and contracting reporting. Its district nurses are better informed and able to reduce paper work while increasing patient time. Technical security and the ability to adhere to non-disclosure and privacy policies have increased.

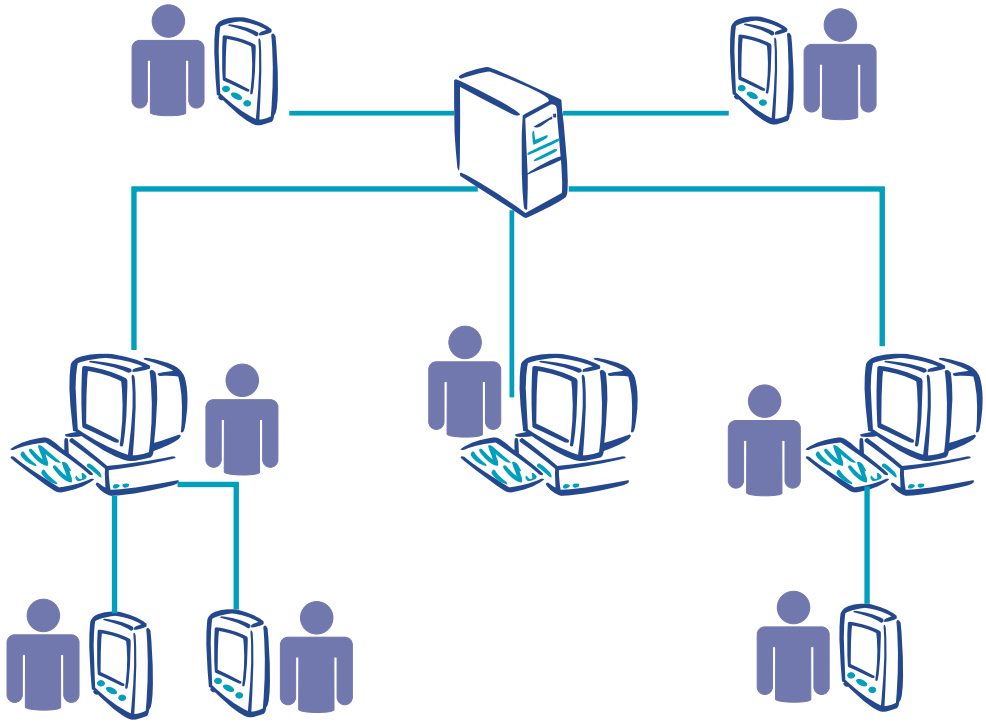
## What technology was used?

The extensible modular design enabled ECLIPS to scale from a small environment to a system capable of hosting several hundred users. The pilot was built on a single desktop that hosted all services. Pocket PC devices synchronised with the desktop through the Microsoft ActiveSync interface with no need for networking.

## Figure 1: Physical design as implemented in the pilot



## Figure 2: Physical design as it could scale



Each component could be installed separately on the server and used by several desktops. Pocket PCs with Ethernet connectivity could synchronise directly with the server or via General Packet Radio Service (GPRS). The system used:

- a web browser (Internet Explorer) to enter and edit the data and navigate the portal
- InfoPath 2003 to fill in the patient form and submit it to the system.

The server technologies on the desktop were:

- a web server (IIS), to host ASP.NET application for scheduling, data editing and statistics viewing/editing
- SharePoint Services, to store pending and submitted patient files in XML form

- BizTalk Server, to receive submitted XML data and store it to database
- SQL Server, to store the systems database.

A custom application on the HP IPAQ Pocket PCs runs on the .NET compact framework, enabling the user to view and edit data, and schedule new visits.

# How information and technology management served the project

## Keeping it simple

The initial wish list was reduced to a small set of achievable objectives to increase the likelihood of a successful implementation, minimise potential errors during development and hold the enthusiasm of the district nurses. The training matched the functions of the nurse's job and avoided all the 'bells and whistles' available on the Pocket PCs.

## Managing three organisations

'Managing the three organisations was straightforward', says Jo Wheat-Connelly, NDHB Chief Information Officer. 'We talked over the issues and discussed how bad it could possibly be until we were clear about what the system would do.' Microsoft provided funds and technical support, firstBASE managed the relationships and software development, and NDHB managed the district nurses' schedules and supported technical developments.

## Working with pre-release technology

Microsoft's pre-release technology had not been tested elsewhere. 'The technical teams were creating new solutions and approaches as they went along, and learning was challenging and enjoyable,' says David.

# How strategies and policies served the project

NDHB used their existing non-disclosure, patient confidentiality and technology security policies to ensure the safety of patient information during the pilot. This included district nurses entering homes of patients during the pilot while ECLIPS trainers stayed in the car. Policies also guided the use of password protection on the Pocket PCs and during the transfer of data to office computers.

NDHB says the project goes a long way to addressing some of the recommendations of the WAVE project (Working to Add Value through E-information).* The Primary Health Care Strategy (2001), and The New Zealand Health Strategy (2000). The DHB says the application of policies and alignment with strategies has improved a number of activities that have resulted in better co-ordinated care.

Information management's Dennis Pram (at rear), Lynette Wharfe and Adam Christy.

* Ministry of Health, *From Strategy to Reality: The WAVE project*, Wellington: Ministry of Health, 2001.

## How work documents served the project

Working documents – including a vision and scope report, development and prototype delivery plans, functionality specifications and project debriefs – were important in showing a strong rationale for moving forward and in the preparation and review process.

## Critical factors and how they were managed

### Reducing the impact on district nurses

The decision not to re-engineer the business processes ensured that district nurses were not learning both new technologies and new workflows at once. Training was provided and additional resources assisted the extra duties of the liaison nurse. Limiting functionality to the basics was critical, says Jo, otherwise, the good faith of the district nurses would have been lost while wading through numerous issues and bugs.

### Technical abilities

Using pre-release products and new technology could have been a risk. The project team performed selected critical juncture design, development quality reviews, and component testing. This reduced the risk of technology components failing to integrate correctly.

## What lessons were learned?

While district nurse workflows were well documented, the reality could have been different. Getting the district nurses and the information technology team together provided both groups with invaluable learning. David says this could have been done earlier and could have included more field work, thereby reducing early assumptions in the design.

## What were the costs?

Much of the work was via contributions.

- Microsoft contributed $60,000 for technical and consulting services.
- firstBASE contributed $40,000 in consulting services.
- Three Pocket PCs were loaned by Vodafone at between $800 and $1000 per unit.
- Time saved was 7.5 hours a week.

‘Measuring the non-funded activities of our nurses is important,’ says Jeanette Wedding, NDHB General Manager of Community Nursing Services. A nurse is funded for only one service given to a patient during a single visit. However, in reality the nurse may provide a number of services. ECLIPS enables NDHB to show trends and bring accurate statistics to the funding table.

## Is the project useful to similar organisations?

Other DHBs are interested in the solution because it addresses a common business problem, says David. The architecture is extensible and will support the development of similar ‘field’ solutions for other government agencies. The technologies have wider applicability for the electronic management of clinical records.

# Where to next?

NDHB will present the ongoing project as a business case and seek collaborative partnerships with other DHBs and government agencies. ECLIPS can be further developed for community services that require synchronised records, scheduling and capture of operational statistics. NDHB aims to integrate patient records in the region and increase the provision of co-ordinated care.

Functionality for possible future production includes:

- supporting the management of a wider set of clinical and contractual data (eg, ACC) and for additional clinicians (eg, specialist nurses, therapists)
- developing automated Ministry of Health nursing service contract validation rules
- integrating the solution with ACC or other community-care-related databases
- enhancing the Pocket PC application to support a permanent connection via GPRS
- integrating data outputs with the Resource Utilisation Systems
- providing for electronic notification of general practitioners on referred patient discharge through HealthLink
- developing a decision support system to help nurses assess the care for a patient
- automating referrals from general practitioners.

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Nurse Karen Devine, entering information into her pda while she is with a patient.

# New Zealand TelePaediatric Service (TelePaeds)

## Telepaeds

## Telecom

Wellington Mother Treena Percy with her son Benjamin after his livesaving heart surgery by cardiac Starship specialists.

Gone are the days of watching jerky images that are out of time with the audio (remember the first Star Wars movie?). Video conferencing technology now produces images and audio output that are closer to watching live television – setting in motion the realisation of a dream, where a sick child living in a remote small town can access specialist paediatric services by going to the local hospital rather than a strange city hundreds of kilometres away.

## Introduction

Medical video conferencing is neither recent nor unique in many parts of the world. However, in New Zealand it is largely untapped. When the New Zealand TelePaediatrics Service wanted to enhance its services and research, it selected video conferencing as the technology tool of preference, and with sponsorship and expertise from Telecom, TelePaeds was born.

Many paediatric specialists are in Auckland, Wellington or Christchurch and in the past children and families travel to one of these centres from their smaller towns. This is daunting, expensive and stressful, and often a barrier for treatment – *'Dad couldn't get time off from work – or the farm',* or *'My child is too sick to travel . . . '*

TelePaeds brings online conferences, research discussions, case discussions with leading specialists and the ability to discuss diagnoses with sites around New Zealand. The outcome is an effective face-to-face tool for improving services and learning and providing support throughout the country, and has excited interest from health sector practitioners everywhere.

## About the New Zealand TelePaediatric Service

The Starship Foundation and Paediatric Society of New Zealand created the New Zealand TelePaediatric Service, a not-for-profit incorporated society that is owned and directed by New Zealand's paediatric health care providers, including doctors, nurses, allied health professionals, service providers (DHBs) and the Paediatric Society.

Starship Foundation's executive trustee Patricia Wright explains that the organisation's purpose is to improve access for families to specialists and paediatric care regardless of geographical location.

TelePaeds has the following aims.

- To significantly reduce the time and expense to patients of travelling to specialist health care. Emotional and physical dislocation from family and friends can also be far more pronounced when children are involved.
- To draw on expert health care services by linking remote sites with key medical centres for long-distance evaluation and teaching by appropriate medical specialists. It is also designed to allow persons undertaking clinical research to be linked together despite geographical separation. The service provides a collegial communications network to reduce isolation and provide access to highly skilled paediatric service providers, paediatric clinical and nursing updates, education, remote conference participation and institutional knowledge sharing.
- To improve medical education for health care professionals. Where teaching or clinical sessions are linked to several hospitals, the availability of additional expertise may prove invaluable for patients and health care professionals alike.

## What were the needs?

Worldwide, people living in rural or remote areas struggle to access timely, high-quality specialty medical care. Specialists are likely to be located in areas of concentrated population. TelePaeds wanted all children in New Zealand to have access to paediatric services and to reduce the stress on families created by travel, dislocation and costs. Equity of access and availability of paediatric services and collegial dialogue were identified as a compelling need.

## How the needs were met

TelePaeds partnered with Telecom to supply the 'best possible quality of service to patients and paediatric caregivers with minimal cost or inconvenience.' Both organisations recognise that through ongoing innovations in computing and telecommunications technology, many elements of medical practice and communication can be accomplished despite being geographically separated. Warren Hurst, Telecom's regional manager health, says Telecom had been monitoring advances in video conferencing and recognised its ability to spearhead the TelePaeds project.

## What were the outcomes?

The DHBs connected to TelePaeds are Whangarei, Auckland, Counties Manukau, Waitemata, Bay of Plenty, Northland, MidCentral, Capital and Coast, Canterbury and Otago.  Initially, TelePaeds has:

- significantly reduced the time and expense to patients involved in travelling to specialist health care services (this is not just a monetary figure, emotional and physical dislocation from family and friends can also be significant)
- linked remote sites for long-distance evaluation and teaching by medical specialists
- enabled researchers to form a collegial communications network, which reduces isolation and contributes to higher-skilled paediatric service providers
- improved medical education for health professionals, where 'grand rounds', teaching or clinical sessions are linked to several hospitals (the availability of varied expertise will prove invaluable for patients and health care professionals alike).

## What were the additional outcomes?

TelePaeds national manager Simon Hayden explains that the service is managed centrally at the TelePaeds Network Centre, where administration and set-up tasks are performed. The aim, he says, is to have people just 'turn up' rather than teach them how to set things up or troubleshoot. Getting TelePaeds to the point of effective centralised administration and management without the need for technical training is a key outcome for the project and its users.

The conferencing system at work. The TV screen shows the people at the other end and the projection screen is what the people at the other end are seeing on their screen.

Nurses who do not usually get travel budgets eagerly 'take to' the video conferencing as they can talk to colleagues face to face, says Simon. 'People can even show a colleague elsewhere how to use a piece of equipment.'

## What unique contribution was made to the community?

The ability to connect multiple sites to a specialist lecturer or session means health care providers around the country have access to knowledge and information that would otherwise be unavailable, claims Starship Foundation's executive trustee Patricia Wright. TelePaeds enables follow-up treatment for patients in remote centres. Rather than travelling away from family and friends for prolonged periods, a child can travel to a hospital that has a video conferencing unit.

## What value was added to the organisation?

The NZTPS has successfully applied video conferencing technology to help its paediatric community share information, improve communication and reduce time and cost. The organisation benefits from the professional application of the technology, including grand rounds, paediatric clinical and nursing updates, education, remote conference participation and institutional knowledge sharing. It also provides an effective service to children and families by enabling access to services, thereby reducing stress and costs.

## What technology was used?

TelePaeds operates over an Internet protocol-based network using video conferencing equipment. It has a gateway service provided by an external company. The speed and quality can be turned up to almost broadcast quality, says Telecom's Warren Hurst. The product is scaleable to many sites.

All connections and bookings can be made remotely from a console anywhere on the network via a web-based booking system that automatically connects end-points. The network also enables remote access to video conferencing units for diagnosis and troubleshooting for non-physical problems. Telecom says these are both future proofed and upgradeable.

## How information and technology management served the project

Telecom's industry development manager Candace Kinser explains that Telecom wants to increase the adoption rate of video conferencing for both the public sector and the corporate arena by showcasing how it can be applied well and adopted as a 'business as usual' method of communication. TelePaeds provides that opportunity. Telecom estimates that about 200 video conferencing units are not being well used in the secondary sector and TelePaeds provides a way to demonstrate it effectively.

Simon, who manages the relationship between Telecom and TelePaeds via the Starship Foundation's business management contribution to the project, says aims and outcomes were well understood, making co-ordination easy. Telecom managed the technology and NZTPS managed the overall project and users.

## How strategies and policies served the project

Patricia reiterates that NZTPS was guided by the Ministry of Health and Paediatric Society of New Zealand's document *Through the Eyes of a Child: A national review of paediatric specialty services* (1998). In particular, equity of access regardless of geographical location was the driver for TelePaeds and influenced the aims of NZTPS.

## Critical factors and how they were managed

Some users had used ISDN services, which enable two 128 kbit/sec communications channels over the public telephone network, and found the technology complicated, unreliable and difficult to use. In addition, there was resistance to changes in the way people worked.

Telecom assisted by sponsoring 'free time to play' with the technology, with the TelePaeds governance board championing and modelling the use of the technology to others. This improved the uptake by staff at hospitals and has resulted in a variety of uses.

## What lessons were learned?

Simon says the approach was to reduce problems for users by not introducing the technology until it was well understood and tested. 'Break it and fix it until you know just about everything that will go wrong before the users use it.' The cultural change was also interesting to Simon, who says initially video conference units were 'dropped off' and not used. Some users found the television screens too big while others felt uncomfortable on screen. Smaller monitors resulted in increased use.

Warren says Telecom is prepared to spend a great deal of time developing useful ideas as the health sector is already overwhelmed 'doing their jobs'. Giving access to clinicians and specialists is just one of many possible practical applications and Telecom will work closely with the health sector to understand its needs and apply resources to new ideas.

## What were the costs?

TelePaeds has a sponsorship and network services agreement with Telecom New Zealand which provides technical and structural support and offers free network use to new sites for an initial period of operation. Telecom values its technology assistance and free networks across 11 site connections at $250,000 over three years.

Warren explains that operating on an Internet protocol-based network means users can budget a monthly flat fee rather than trying to predict costs on a time basis (eg, ISDN costs per line rental and charges for each call). Candace says studies show an actual cost benefit of using video conferencing as opposed to travelling to meetings or sessions.

TelePaeds has also significantly reduced the time and expense to patients of travelling to specialist health care. This is not necessarily a monetary figure, as emotional and physical dislocation from family and friends can be far more taxing when children are involved.

## Is the project useful to similar organisations?

This technology has been used in the education sector as part of the SchoolZone project (www.telecom.co.nz/schoolzone). SchoolZone is similar to the TelePaeds project and provides schools with a secure private network and online services and tools that offer cost-effective ways for schools to provide an 'enriched learning environment for students', says Candace.

## Where to next?

Initially TelePaeds connected 10 DHBs to establish the service as a vital component of paediatric communication. Once the usage has become a core competency for regional hospitals, TelePaeds intends connecting as many centres as possible to create a truly national Telemedicine Service.

Candace says it is important to see the potential of the service and technology, and which is not limited to paediatrics, or even just to New Zealand. Collaboration is possible across other medical disciplines for training and education, and clinical care. It is possible to link to medical facilities in Australia, Hawaii and the US, and around the world.

Simon Hayden, National Manager, New Zealand TelePaediatric Service.

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The conferencing system at work.

# Conclusion

The four projects outlined in this booklet prove that technology innovation is alive and well in New Zealand. These successful implementations of new technology-based projects reduce costs, improve service delivery and provide direct benefits to health consumers, practitioners and managers. All use information management techniques to transform and improve an existing process, whether it is streamlining access to information through the NZORD website, providing better quality data as evidenced in the RMS Report System and the ECLIPS project or improving service delivery in which has been the outcome of ECLIPS and TelePaeds.

Many global trends in health informatics are illustrated by the innovation of these four finalists, including a move towards consumer-driven health care, adherence to national standards, the use of open source development tools, security, the use of web services and workflow automation. The finalists closely align with current strategies and policies in their respective areas of the health and disability sector. This alignment is important if projects are to be replicated, as it represents opportunities for others and highlights key strategic benefits.

Data security and the protection of information are of paramount importance and a major consideration for three of the finalists. The ECLIPS project provides an outstanding example of a web-services approach, with an Internet-enabled connection between remote users and a central data store. ECLIPS also delivers considerable workflow automation opportunities as its use of form validation improves efficiency and data quality. The RMS reporting system reorganises information that already existed in such a way that those who need it can access and analyse the information.

Information management projects succeed when they are focused on delivering real benefits to users. The NZORD development team recognised the importance of providing accurate information and timely communication, and built their website around the principles of accessibility and ease of use. The website works because it does the basics exceptionally well. The people behind TelePaeds recognised that, despite the benefits, people are often understandably nervous about using new technology. To help overcome these initial fears, the project provided opportunities for 'free play'. Technology use was monitored and adjustments made to make the experience easier and more acceptable.

These days we increasingly suffer from the blizzard of information. NZORD addresses this in two ways. First, it provides 'quality' and 'qualified' information, because not all Internet content is created equal, and, second, it provides a way of communicating this information so it is timely, targeted and effective. For TAS, the information blizzard was internal, and the RMS reporting system made it more accessible by bringing existing datasets together. Adopting 'business intelligence' rather than an 'ad hoc reporting' approach meant that information could be aggregated and integrated, and users given tools to work directly and powerfully with the data. ECLIPS was a response to the sheer volume of paperwork being generated and the inefficiencies of a slow and inaccurate paper-based system. Its introduction resulted in a reliable measure of what was really going on.

The NZORD website isn't simply about information: it's also about communication. The adherence to international web accessibility standards ensured a wide range of people, including those with disabilities, could use the site from a range of devices.

Equally important is the focus on connecting people to networks at a stressful point in their lives. The development of a 'failsafe' email system ensures important messages don't go missing or bounce when a support group changes its email address, for example. Behind the scenes, a

sophisticated contact management system allows focused information distribution, linking contacts directly through newsletters that are optimised for reading on screen or via a screen reader. The newsletters provide a direct link to relevant and timely information on the website.

As health care becomes more complex and expensive, issues arise in terms of equity of access. In recognition of this NZTPS uses the latest video conferencing technology and an Internet-based delivery channel to provide access to the very best paediatric services without the need for patients to travel and be separated from friends and families. The technology, designed to bring services to remote consumers, can also connect health professionals and researchers, ensuring specialist skills and knowledge are shared more easily. Training and collaboration can also be improved. In Northland, ECLIPS is overcoming the tyranny of distance by providing Pocket PCs. This means district nurses now have access to clinical records and databases while they are visiting their patients and information recorded during the visit is verified and quickly fed back to the DHB. As a result, district nurses are better informed, able to reduce paper work and increase patient time. For the DHB, the system provides faster, quality data and the ability to accurately report against contracts. ECLIPS demonstrates how the smart use of a brand-new technology can deliver considerable benefits to all stakeholders.

ECLIPS can save each nurse around 7.5 hours each week, giving them more time to spend with patients. The addition of *MIMS Interactive* on the Pocket PCs means information on drug dosage, adverse reactions and interactions is now immediately available, allowing nurses to assess the risks of incompatible medications provided by different health providers. ECLIPS has increased the security of patient data and improved information which contributes to the quality of care, giving the DHB more accurate data about its services and contract reporting.

Improved service delivery is an important factor for Health Informatics projects but so is ensuring costs are optimised. The TelePaeds videoconferencing service doesn't just improve the quality of service delivery; it also makes it more cost effective. A centralised administration system can co-ordinate bookings, greatly reducing travel costs. The project is, according to partner Telecom, an excellent example of how video conferencing technology can support 'business as usual'. The system uses readily available technology and the Internet, making it accessible to others who wish to join, ensuring costs remain known and reasonable.

The RMS reporting system is built using readily available technology. Data is stored in a Microsoft SQL Server database, and end-user access is available through Microsoft Excel. The flexibility of the database combines with the functionality of a spreadsheet to provide managers, analysts, primary health care portfolio managers and pharmacy facilitators not only with information but the power to extensively manipulate and model data.

The RMS reporting system is an excellent example of collaborative development, aggregating large amounts of existing data so it can be used more effectively when and where it's needed. It reduces resource needs and demonstrates significant operational savings for its six DHBs, showing a significant potential return on investment.

While ECLIPS demonstrates significant time savings for nurses, it also delivers value to the DHB through ensuring accurate and timely provision of data. Without this data Northland DHB was finding it difficult to report back on service contracts, significantly compromising its position to negotiate new contracts.

Finally, the real value of innovation comes in its replication. All four projects showcased here can be extended to include new partners or easily replicated by other health and disability providers. The lessons to be learned from these projects are transferable and generic. The NZORD website demonstrates that access to information can be improved by paying close attention to the needs

of the user. ECLIPS shows that new hand-held technologies have created an opportunity to take information technology 'out on the road' and deliver significant benefits right through the value chain.

The TelePaeds project has taken a technology that was already in place (being used in many New Zealand schools) and given it a new role and purpose. TAS has shown with its RMS reporting system that it is possible to look at data differently, resulting in an improvement in the level and availability of information and a reduction in the cost of managing and maintaining it.

All finalists are to be congratulated for achieving recognition through the Sharing Excellence in Health and Disability Information Management Awards and encouraging others to continue to innovate and share their successes.

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