Robert is a promising analyst working for the Wellington Independent Practitioners Association. Not long ago she felt more like a courier as she did the rounds of her regional general practices. Her job was to extract data from each of their patient management systems onto an assorted array of floppy and compact disks. Practice staff would have to wait as their systems groaned under the load. And the disks would slide around the front seat as she wound her way over the region’s notoriously windy roads driving from practice to practice. Roberta knew a client somewhere needed the information before it became too outdated. But this data collection would take at least three weeks and she still needed the time to analyse it all.

Today, Roberta stretches in her office chair. Now, that same collection takes just three days. She is pleased to have more time to delve deeper into the rich data, rather than spend weeks navigating Wellington roads.

Introduction to the project

The primary health sector bases its decisions on timely information that comes from patient management systems held in medical practices in their regions. However, extracting the data from patient databases is time consuming and requires skills that are not always available to individual practices.

The Wellington Independent Practitioners Association (WIPA) offers a shared service amongst its members that solves the problems of time and skills. It has developed a useful software tool called the Integrated Query Engine (IQE).

IQE enables Primary Health Organisations (PHOs) to remotely and automatically extract data from their members’ practice databases. It combines and analyses the collective data in an infinite number of ways, giving managers information about patients, providers and diseases.

About the organisation

The Wellington Independent Practitioners Association Ltd was formed in 1995 with 32 general practitioner shareholding members. It is a limited liability company but does not pay dividends to its shareholders. It prefers its revenue to support the provision of ‘high quality health
services’. WIPA’s Board comprises elected and appointed members. Over time, the company has evolved into a management service organisation and it now works across four District Health Boards in the lower North Island. WIPA contracts to a range of health sector organisations including ACC, PHOs and the Ministry of Health. The company also manages a range of referred services such as radiology, retinal screening, and secondary services such as diabetic podiatry and sexual health.

What were the needs?

A large data collection project in 2001 highlighted the difficulties in extracting large volumes of data from WIPA’s general practices. Data had to be extracted manually, practice by practice. Staff found it difficult to find the time and skills to extract the data themselves. So, WIPA’s staff would write automated queries in the office and then travel to each practice and extract the data manually. They would then bring the assortment of disks back to the office to analyse and report on.

The performance of patient management systems was also a problem as sometimes the queries would slow the systems and disrupt staff’s day-to-day work. Even running the systems after practice hours caused problems from time to time as long-running queries interfered with other scheduled, automated tasks such as nightly systems backups.

WIPA’s Information Management Team set its sights on an automated tool to solve these problems. The new tool needed to:

- minimise disruption in the day-to-day business of the practice
- be self-sufficient so practice staff would not have to maintain or run it
- transfer data securely from the practice to WIPA
- be controlled from a central point such as a PHO
- run both adhoc and regular scheduled data extracts.

Until recently automating the process remotely also posed another problem – broadband had not been available to all practices, and not all of them could afford those services.

How are the needs met?

WIPA has been able to effectively develop the Integrated Query Engine (IQE): a software tool that enables its PHO members to extract data from their members’ patient management systems efficiently and securely. PHOs can send remote queries to any number of patient management systems, extract the data, and have it returned for analysis. This can be done quickly and regularly with data arriving in a timely manner, on a quarterly, monthly, weekly or even daily basis. IQE also routinely produces data about service utilisation, immunisation and service improvement data, and for special projects.

WIPA’s Information Management Team Leader Jayden MacRae says WIPA was the first in the country to deliver service utilisation reporting to the Ministry of Health that spanned PHOs across three District Health Boards (Capital and Coast, Wairarapa and Mid-Central).

IQE is now installed in more than 60 practices and performs tasks without needing any intervention from practice or PHO staff. This frees up staff to spend time providing health care and managing their core business.
‘PHOs can retrieve data from their patient management systems, and combine and analyse it in infinite ways,’ says Jayden. IQE has also enabled WIPA to undertake in-depth analysis to a level far beyond that provided by the old manual data extracts. ‘The benefits have been tremendous and help us to understand and make decisions that improve services,’ says Jayden.

What unique contribution is made to the community?

Jayden explains that PHOs and practices get better quality and depth of information to help with their decision-making. WIPA can aggregate data and use it to feedback to practices allowing comparison with their peers. In addition, practice staff are not disrupted or expected to run or maintain complicated tasks.

Patients benefit from new or better targeted services and are set up in an information-rich environment.

What value is added to the organisation?

By developing IQE in-house, WIPA has created a system that is an asset and which can be further developed. WIPA’s analysts can now spend more time on in-depth analysis bringing new insights to the information. Better understanding of the information allows for better decision-making.

What technology is used?

Jayden says that the technology that IQE is built with is not new but merges different components that creates an innovative product. The major challenges in development were remotely controlling the software in a reliable offline, store and forward fashion, and load balancing large volumes of data through the HealthLink system.

WIPA’s information technology staff created IQE using Microsoft’s Net technology which loads data into a Microsoft SQL Server 2000 data warehouse. It enables PHOs to send remote query requests to each of their practice systems via HealthLink, a secure messaging network service here in New Zealand and Australia. It extracts, compresses and splits the data into manageable sizes, sometimes sending a single extract over one to two days, minimising interruptions to the HealthLink traffic of normal practice functions such as electronic referrals, lab results, and more. The extracted data is returned to a data warehouse for analysis.
How information and technology management serves the project

WIPA’s information management style is disciplined according to Jayden, who says they first developed a prototype before gaining buy-in from the WIPA organisation and representatives from PHOs, general practitioners, nurses and managers. Project, policy, technical specifications, administrator, user manual documents and more were developed during software development to add documented support for the future.

Critical factors and how they were managed

Good relationships with practices was considered important to ensure that the uptake of IQE was easy. From the start WIPA needed to make sure the software fit alongside practice processes with as little interference as possible. It involved key people from the WIPA information committee and its members early on to ensure their needs were met and that user issues were addressed during development.

Privacy and security were a priority during development. Because the software is potentially powerful, policies on its use had to be developed to give confidence to WIPA’s members and their practices.

What lessons were learned?

Jayden says that one of the successes of IQE is that it performs its tasks so well in the background and out of hours that practices often forget that it exists on their systems. This is not usually a concern, until practices need to rebuild servers and forget to reinstall the IQE software. That requires ongoing management by WIPA staff to keep monitoring and liaising with practices when data does not arrive.

WIPA’s initial expectation for technical support had to be extended as the company had not anticipated the needs at the beginning of the process. The automated processes in practices had to be refined to reduce the disruptions to day-to-day activities, and ongoing technical support has been necessary as systems are reconfigured.

What are the cost factors?

Cost benefits come about due to the automation of the software. While costs occur in the time needed to set up the software and occasionally reconfigure it, the cost savings are large compared with the old manual data extracts. Jayden estimates that based on a single extract being done on a monthly basis, the cost benefit ratio is 1:5 and 1:2 respectively for the practice and PHO.

However, the intangible benefits from IQE are the greatest. The ability to generate ad-hoc datasets without having WIPA staff travel extensively to its regional practices, or having the practices expend any of their time is
invaluable. Having the ability to drill down into data (by sending more specific queries) is also a huge benefit for analysts and PHOs.

Is the project transferable to other organisations?

The potential for IQE throughout the health sector is enormous. IQE can have many applications in health settings where remote locations want to aggregate data to a central point. The only requirements are:

• that the data sits in an Interbase, Firebird or Microsoft FoxPro database as these are the technologies that patient management system databases are built on
• the remote sites have access to HealthLink (or any other secure store and forward mechanism). IQE relies on the lowest common denominator, that is, dial-up HealthLink access, and so will cater to a very low level of technology.

IQE also currently integrates with practice management systems MedTech32, Profile for Windows, and Houston VIP. With minor modifications it could also support most other database management systems such as MS SQL Server, Oracle, and Microsoft Access.

Where to next?

IQE has been available for about three years and is being refined continuously. Jayden says it has the potential to provide PHOs with detailed performance management data beyond what is provided by the base project.

Jayden claims that the potential is boundless, and IQE can get any data as long as it is available in the source systems. ‘All we need,’ he says, ‘is time to analyse it. The data is so rich we are only touching the tip of the iceberg.’

The project team

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IQE combines and analyses collective data in an infinite number of ways benefitting patients and health providers.