

A roadmap for change

Health service embraces digital technology to become a leader in image access and workflow

Hunter New England Health, Australia

- Created on 1 January 2005 following an area health service (AHS) boundary change that led to the merging of Hunter, New England and part of Mid North Coast Area Health Services
- One of four rural health services in New South Wales (NSW) but the only one with a metropolis within its borders (Newcastle)
- Provides care for ~ 840,000 people across forty sites
- Employs approximately 14,500 people, including 1500 medical officers
- Covers a geographical area of more than 130,000 km² (an area the size of England)
- Includes large tertiary referral centres, such as John Hunter Hospital (pictured right) in metropolitan Newcastle, as well as small district hospitals and community health centres in regional and rural centres, such as Cessnock, Tenterfield and Moree



Digital efficiencies motivate change

Goal: Introduce a RIS/PACS system to improve service provision to patients, help attract and retain highly qualified medical staff and aid the move towards a fully digital (and filmless) environment.

With these objectives in mind, the AHS released an 'expression of interest' to digital imaging vendors in 2000. 'We wanted to have an electronic means of replicating workflow practices within the radiology department but we also wanted to extend that goal out to our referrers and to other hospital staff to improve their efficiencies as well as our own,' says Vanessa Janissen, Manager of Operational Support Systems with Hunter New England (HNE) Imaging, and project manager at the time of the original tender.

Challenges: The AHS's geographical spread, even prior to its expansion in 2005, was unique and required innovative solutions. 'At that time, our largest

centre, John Hunter Hospital, was performing around 100,000 examinations per annum while our smallest sites were doing about 7000. We were spread over a fairly large area and running systems off a less than perfect network – it was a complex geographical and IT infrastructure, and would present real challenges for whatever vendor we chose,' says Michael Symonds, Director, HNE Imaging and BreastScreen NSW (HNE).

Carestream Health solutions support Hunter New England Health's evolution

The 2000 Sydney Olympics was an important milestone in the relationship between Carestream Health and the AHS as it was then known, Hunter Health. A successful pilot of KODAK DirectView CR systems – units originally used during the games by the Olympic Village polyclinic – paved the way for a staged introduction of KODAK CARESTREAM PACS (Picture Archiving Communication System) throughout the health service.

'We chose Kodak (now Carestream Health) as our preferred vendor based upon the relationship we had built since the installation of those initial CR systems [from the Olympic Village], their competitive quote and their commitment to provide us with very strong levels of support even though we were based outside the Sydney metro area. Of equally high consideration was the intraoperability they could offer us and their desire to invest in a partnership with us over the long term,' says Vanessa.

In 2001, the introduction of CARESTREAM PACS enabled Hunter Health's two largest centres, John Hunter and Maitland hospitals, to become filmless. The addition of KODAK CARESTREAM RIS (Radiology Information System) in 2003 – to integrate with the existing PACS and replace the previous booking system (Hosrep) – further improved workflow by enhancing billing, booking and reporting functionality. These initiatives were rolled out to other sites, including the Mater Hospital, in 2004.

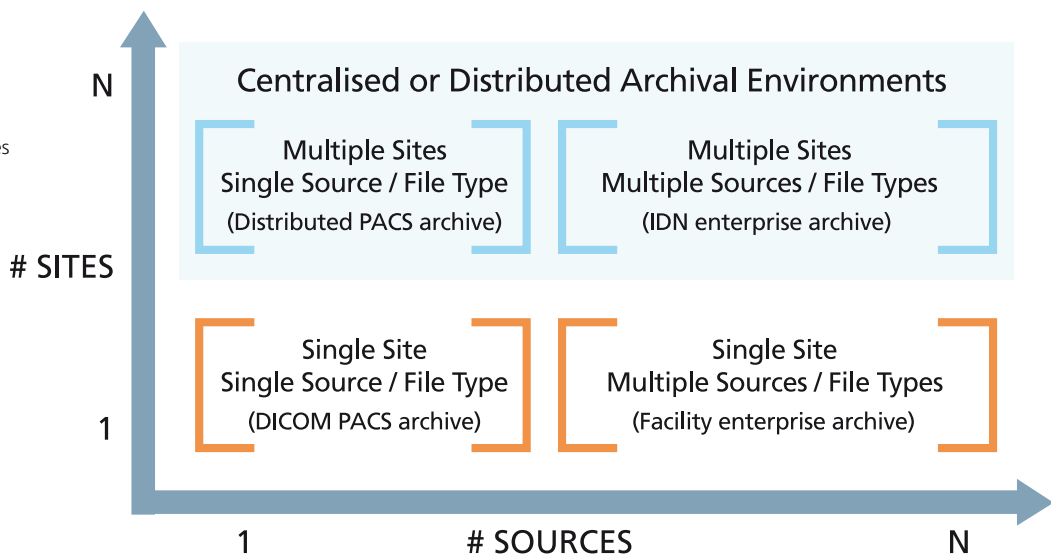
Confronted with an increasing volume of new digital information and the need to store its previous film history digitally for longer, HNE Health introduced KODAK CARESTREAM Information Management Solutions (IMS) storage architecture in 2005 to manage all DICOM and non-DICOM information. IMS uses internal Clinical Information Lifecycle management software to perform intelligent, rules-based retention and migration of different clinical data and data sets and allows multiple data types from multiple clinical systems, such as PACS, to be archived on one unified platform.

'With the help of Carestream Health, HNE Health has grown from a single-site to a multi-site shared-data facility. We changed from a centralised storage architecture to a central archive with some smaller archives to address redundancy and failure should they occur. The storage system is shared enterprise-wide; it is not restricted to the radiology department, so clinicians have real-time access to mission-critical images on the ward (within and between hospitals),' says Michael.

Tiered archiving (for short-, medium- and long-term storage) is achieved through a combination of tape and EMC² fibre disc technology. HNE Health can expand its archive's capacity as required, lowering IT infrastructure costs over the long term.

Software refresh agreements with Carestream Health have meant that HNE Health has been able to keep pace of the latest developments in digital imaging and electronic information systems (including the latest versions of RIS/PACS) throughout the 7-year partnership.

CARESTREAM Information Management Solutions scale to accommodate growing storage capacity, users, sites, data sources and technologies.



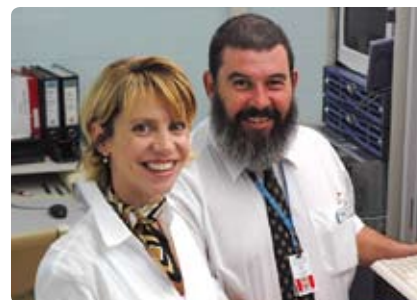
Partnership delivers tangible benefits

The new technology offered opportunities for revised work practices, and improved workflow and efficiency, says Michael. 'We've seen real and tangible improvements in many of the parameters we use to assess the quality of our imaging service, such as the number of exams per annum, exam throughput and reporting turnaround times.

'We now have a very sophisticated system servicing a very diverse geography and different sized hospitals. Based upon a sound partnership, which has made a point of focusing on win-win situations and dual cooperation, we've been able to implement one of the largest RIS/PACS systems (in terms of its geography and capabilities) in Australia. It could well be used as a model for similar installations.'

Vanessa likens the relationship between HNE Health and Carestream Health to a good marriage. 'We continually reassess the system and solutions we have in place. We talk with Carestream Health's technical staff frequently about how we can improve the system's functionality further or reconfigure it to best meet our changing needs.' Michael agrees: 'It's much easier for a vendor to provide you with a service if they understand who and where you are as a business, and where you would like to go in the future.'

'I see HNE Imaging as a leader in NSW. We work closely with Carestream Health to be innovative. We constantly ask questions like: how can we perform this particular function that we need to move into as our business changes? The systems we operate have to change as our business does and the staff at Carestream Health have been very flexible in the way they have worked with us – formulating and changing strategies with us so that we both achieve our goals,' adds Vanessa.



Manager of Operational Support Systems (HNE Imaging), Vanessa Janissen, with PACS Support Officer, Peter Jones

Milestones and achievements for HNE Health

- Single booking system across 12 of 40 sites
- Improved reporting turnaround: ~ 8 days to < 48 hours
- Improved average X-ray turnaround time (ED): 60 minutes to 14 minutes
- ~ 50% reduction in film costs*
- Improved patient satisfaction†
- Lower total cost of ownership of IT infrastructure

* Films are printed only for external users and those sites not yet commissioned with RIS/PACS.

† In 2005, patient satisfaction for John Hunter Hospital's Emergency Department moved to the top 25% of Australian peer hospitals.

Clever Networks makes expansion possible

Following a recent commitment for over \$3 million funding from the Clever Networks Program (part of the federal government's Connect Australia package), HNE Health is looking forward to expanding PACS and RIS throughout its more remote sites, says Michael. 'The expansion of this technology fits very well with federal and state government initiatives promoting the delivery of health services to the bush. HNE Health continues to develop forward plans with the assistance of Carestream Health to roll this technology out to areas in the north and northwest of our AHS. Clinicians in these areas often work solo and will benefit greatly from the support that teleradiology can provide them.'

Vanessa reports that software enabling speech recognition, orthopaedic templating and off-site softcopy reporting will also be installed in the near future. For now, though, HNE Health is keen to continue its strategic relationship with Carestream Health, says Michael. 'A lot of work has gone into this relationship. We have essentially reached our initial goals of film minimisation (at our major sites anyway) and improved services to patients and referrers. A lot of forward planning and mutual understanding have got us to where we are at this point in time. We look forward to where it will get us in the future.'



Director of HNE Imaging and BreastScreen NSW (HNE), Michael Symonds

For more information about Carestream Health, visit www.carestreamhealth.com

Carestream Health Australia Pty Ltd 181 Victoria Pde Collingwood VIC 3066

PO Box 2480 Fitzroy VIC 3065 Tel: 1300 651 786

Carestream Health New Zealand Ltd Level 1, Guthrey Pacific House, 93 Manchester St Christchurch 8011

PO Box 700 Christchurch New Zealand 8140 Tel: +64 3 379 4760

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