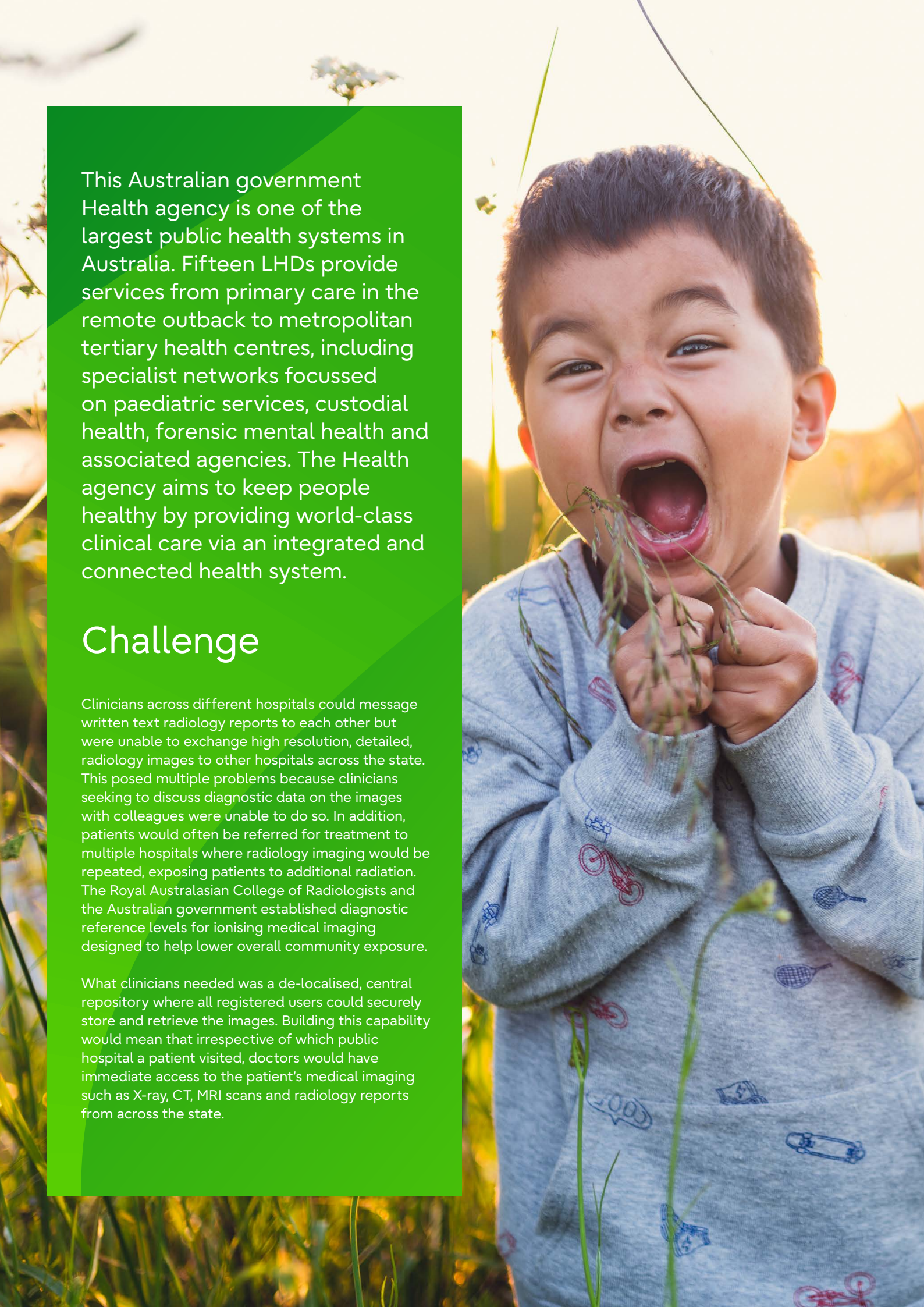# FUJITSU

Enterprise Image Repository

With the advent of improved health system interoperability, there is increased demand for transfer of patient information among multi-disciplinary, clinical specialists, across sites and across Local Health Districts (LHDs). The digital transfer of medical imaging from a central repository enables medical staff to quickly share and view critical Picture Archiving and Communication System (PACS) and Radiology Information System (RIS) information to inform diagnosis and therapeutic decision making regardless of geographic location.

This Australian government Health agency is one of the largest public health systems in Australia. Fifteen LHDs provide services from primary care in the remote outback to metropolitan tertiary health centres, including specialist networks focussed on paediatric services, custodial health, forensic mental health and associated agencies. The Health agency aims to keep people healthy by providing world-class clinical care via an integrated and connected health system.

Challenge

Clinicians across different hospitals could message written text radiology reports to each other but were unable to exchange high resolution, detailed, radiology images to other hospitals across the state. This posed multiple problems because clinicians seeking to discuss diagnostic data on the images with colleagues were unable to do so. In addition, patients would often be referred for treatment to multiple hospitals where radiology imaging would be repeated, exposing patients to additional radiation. The Royal Australasian College of Radiologists and the Australian government established diagnostic reference levels for ionising medical imaging designed to help lower overall community exposure.

What clinicians needed was a de-localised, central repository where all registered users could securely store and retrieve the images. Building this capability would mean that irrespective of which public hospital a patient visited, doctors would have immediate access to the patient's medical imaging such as X-ray, CT, MRI scans and radiology reports from across the state.

Solution

Fujitsu delivered a state-wide Enterprise Image Repository (EIR) for the Health agency enabling sharing of images, patient information and their studies across hospitals without being constrained by the boundaries of LHDs. The winners in this program are the large numbers of patients who now have reduced unnecessary imaging and associated exposure to radiation which could place them at increased risk of developing unwanted effects, including cancer later in life.

The EIR project delivered enterprise application integration, enabling data flows of thousands of imaging studies per day across core applications:

- LHD Patient Administration System (PAS) with the Enterprise Patient Registry (EPR)

- LHD Picture Archiving and Communication System (PACS) and Radiology Information System (RIS) with the EIR

- EPR with the EIR

- LHD Electronic Medical Record (eMR) with the EIR

The EIR also provided a foundation for the Health agency to deliver the HealtheNet program, a state-wide system that connects eMRs across all the public hospitals. Fujitsu provided architectural oversight to this program collaborating with multiple vendors to provide the Clinical Repository (CR) and eBlueBook (a health care record for child health and development.)

Fujitsu also contributed to the design and build of the application integration between these repositories and LHD eMRs and between external health data sources including the Medicare Health Identifiers Service (HIPS), GP broker networks and My Health Record.

The program was completed successfully and delivered within budget, achieving the scope and realising the intended benefits.
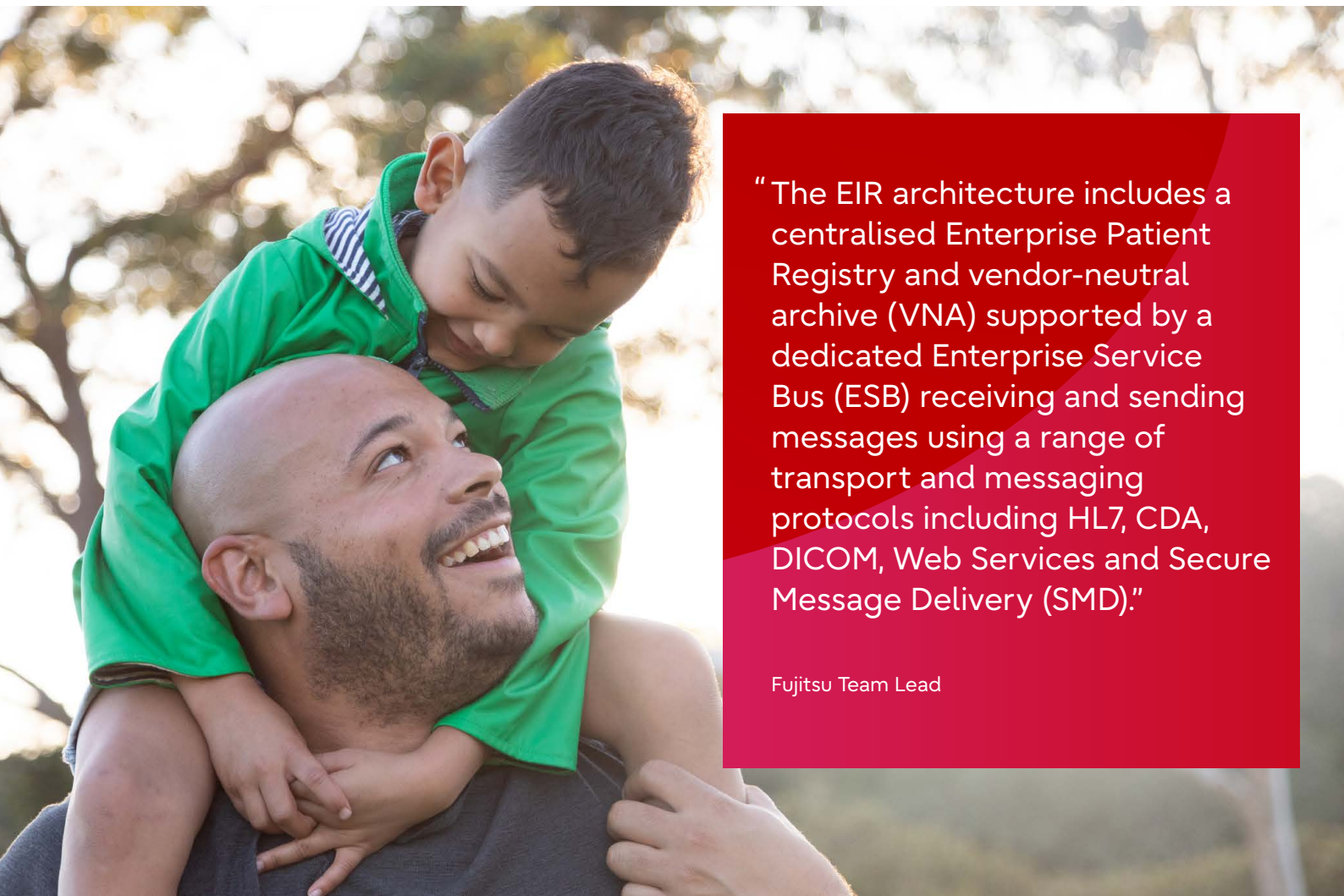
" The EIR architecture includes a centralised Enterprise Patient Registry and vendor-neutral archive (VNA) supported by a dedicated Enterprise Service Bus (ESB) receiving and sending messages using a range of transport and messaging protocols including HL7, CDA, DICOM, Web Services and Secure Message Delivery (SMD)."

Fujitsu Team Lead

Outcomes

> "The EIR is a truly trailblazing solution, not only here in Australia but also internationally. I'm not aware of an integrated imaging repository as large or as complex as what we have built here in NSW. Fujitsu has been a terrific partner throughout."
>
> Program Manager, Medical Imaging, Health Agency

The successful implementation of the EIR and the subsequent rollout of HealtheNet across more than 220 public hospitals in the state's fifteen LHDs are now integral parts of acute hospital health services delivery.

Better productivity and communication between radiologists and other medical staff has led to improvements in safety and quality of clinical care. Staff can now easily share, visualise and discuss images and reports for their patients without being confined to the site where the study was made. The decrease in repeat imaging across hospitals and across LHDs has reduced the cost of imaging, reduced waste and improved value for money.

Looking forward, the Health agency's proposed Single Digital Patient Record envisions a single, holistic, state-wide view of every patient and for that information to be readily accessible to anyone involved in the patient's care. Positioning the patient at the centre will generate improved patient experience, optimise health outcomes and sustain a productive and capable health service workforce.