NSW Ambulance: Building the Foundation for a Connected Future

Background

4,500 employees

1,409 vehicles

801,600 km² served

3,048 responses to the public daily

Industry
Emergency Services

Challenge
Legacy technology

Solution
Emergency Response Solution

Results

» Anticipated network savings of over $1 million p.a.

» Anticipated 21% saving on vehicle OPEX

» Guaranteed fleet interoperability

» Network upgraded to 4GX
High user acceptance

New South Wales (NSW) Ambulance replaced its legacy hardware and back-end infrastructure with an integrated platform, creating fleet interoperability, improving staff safety and establishing technological flexibility for the future.

Background

NSW Ambulance provides clinical care and health-related transport services to the state's 7.5 million residents across 801,600 km², making it the world's third-largest ambulance service. The service responds to one incident every 28 seconds.

90% of NSW Ambulance employees are frontline operational staff, including paramedics and specialised staff such as special operations, counter disaster, aeromedical, medical retrieval and intensive or extended care paramedics.

NSW Ambulance has been a customer of Corvanta for 15 years.

Challenge

NSW Ambulance was facing challenges on several fronts:

- Demand for emergency services had increased dramatically and disproportionately to funding, prompting urgent need to deliver more cost-effective solutions.

- The fleet Mobile Data Terminals (MDTs) and supporting back-end infrastructure was over 10 years old and required increasing maintenance, thus incurring mounting costs.

- Legacy technology was preventing NSW Ambulance from participating in Smart City initiatives and blocking its progress towards achieving the Connected Clinician vision.

- The Telstra 2G GPRS service would shut down on 01 Dec 2016, leaving the rural fleet with only a single bearer and no backup data service.

The organisation determined that the issues in most urgent need of resolution were the network shutdown and old technology. The system's declining performance had the potential to negatively impact critical functions such as duress alerts, vehicle location information and data network coverage, which introduced risk to operational efficency and staff safety.

"NSW Ambulance got a great bang for its buck out of that network; it's done very well to stand up for 12 years," said Geoff Waterhouse, Senior Project Manager at NSW Ambulance.

"It was still functional, but it had run its pathway and reached end of life. It did the job, but you couldn't enhance it or make any real improvements to it."

The limitations of this legacy technology were holding NSW Ambulance back from joining other Smart City projects such as the Roads and Maritime Services' green light corridor initiative. It also prevented the organisation from integrating the necessary devices and systems needed to transform its frontline staff into a truly mobile, connected workforce.

"The vehicles needed to undergo re-equipment to incorporate the new technology and improve connectivity," said Tim Blake, Operational Support Manager for NSW Ambulance's Radio Telecommunications Capital Works Program.

"But it wasn't just about the communications equipment. It was also about aligning the back-end ICT infrastructure and building a solid foundation for future integrations."

Solution

NSW Ambulance undertook a program of work to assess organisational requirements and evaluate available options. Ultimately, they decided to refresh their rural fleet's MDTs in preparation for the impending 2G shutdown.

In choosing a new solution, several other organisational goals were considered: reducing the recurring cost of access to the Metropolitan Data Radio Network (MDRN) and RDRN; improving efficiency in network maintenance and upgrades; and enhancing staff safety and patient outcomes.

Following extensive internal and external stakeholder consultation to discuss objectives, NSW Ambulance identified several technology-related requirements:

- Integrate disparate systems for scheduling, dispatch, mapping, navigation and automatic vehicle location (AVL)
- Enhance paramedic safety by providing more reliable duress systems
- Improve patient care by enabling high-speed real-time information feeds from the control centre to paramedics for quicker, more efficient responses
- Enhance network redundancy to ensure seamless, uninterrupted access to mobile data services

To surpass the technological limitations of the fleet's existing MDTs, the rural ambulance fleet needed to be fitted with new MDTs that had the appropriate capabilities. They also had to be compatible and scalable with NSW Ambulance's existing technology so that vehicles in the rural fleet could be interoperable with the metropolitan fleet.

Immediate Benefits

The new MDTs have multiple functionalities and redundancies that mitigate the risk of communications technology failure and offer future opportunities to streamline other technology and devices:

- Provides flexibility and scalability without significant further capital investment
- Offers a more intuitive user interface while retaining familiar workflows
- Includes accurate GPS equipment, including error-correction and monitoring functionalities
- Improved duress functionality, visibility and reporting
- Allows access to Telstra's dedicated emergency services mobile network channel, LANES®

"We now have the redundancy of multiple bearers," said Tim. "This is key for a big state like NSW. We've got multiple commercial networks, radio and satellite, providing availability that wasn't there before. We also now have 4GX technology and the benefits that come with that: faster speeds and better coverage, both in buildings and in rural areas."

Combined with the new MDTs' superior AVL capability, NSW Ambulance now has better visibility of where each ambulance in the rural fleet is. This has allowed the control centre to dispatch the right cars to incidents more efficiently and also improved the effectiveness of staff duress systems.
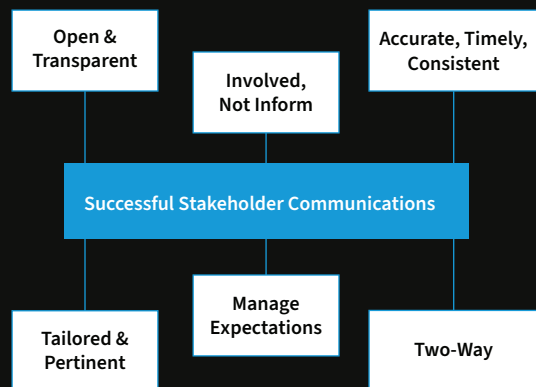
High User Acceptance

The new MDTs were well-received by frontline staff as easy to use and rich in functionality. Besides obvious enhancements like a larger, full colour touchscreen and a more intuitive menu, the MDTs had additional capabilities like a dimming function for night driving, turn-by-turn mapping and a duress button.

"Our staff were up and running within five minutes," said Tim. "We've had feedback from paramedics saying they think the system is really good and they enjoy using it. It's been really well accepted."

Change Management: Consultation and Communication

NSW Ambulance developed a detailed and robust change management strategy following consultation and feedback from the Education, Industrial Relations, Media and Marketing divisions.

Consistent, open communication with stakeholders including network controllers, network operators, technical field staff, paramedics, ICT specialists and management was the key to identifying critical requirements for the project and indeed the project's overall success.

Open & Transparent	Involved, Not Inform	Accurate, Timely, Consistent
	Successful Stakeholder Communications	
Tailored & Pertinent	Manage Expectations	Two-Way

In a sign of success, the project received extremely positive verbal and written feedback from operational staff and station managers.

"

Together, we developed a change management strategy. That's been the key to making everything happen."

Tim Blake, Operational Support Manager

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Interoperability

The Rural Refresh Project is the first phase in a long-term plan to bring NSW Ambulance's entire fleet onto a single, consistent platform and ensure interoperability of the metropolitan and regional ambulances. The next step is to move NSW Ambulance's metropolitan fleet to the same platform so that all vehicles are interchangeable and operating on the same network.

> *The amalgamation of the metro and regional networks represents more value for money by streamlining and taking away double-ups. This will save us roughly $80,000 – 90,000 a month through reduction of managed services.*

Geoff Waterhouse, Senior Project Manager

Savings from a fleet perspective are also anticipated. With all ambulances being interoperable, NSW Ambulance will be able to transfer vehicles from rural areas to metro and vice versa to balance out the number of kilometres travelled per car and avoid lease penalties.

This load-sharing has the potential to extend the operational vehicle lifecycle from 36 months to 42 months, saving NSW Ambulance approximately 21% in operational expenditure on vehicle replacements.

Ambulance, Unplugged

The new MDTs ensure each ambulance has its own vehicle area network (VAN) and therefore WiFi connectivity, opening up numerous information transfer possibilities that were previously not feasible.

"Instead of relying on a bearer to connect us to the outer world to download or upload material, we can now do this via WiFi – which means less capacity that we pay for," explained Geoff.

The significance of this feature was illustrated by Tim, who pointed out that paramedics work in a far more fluid and dynamic environment than they did previously. This made system maintenance difficult to manage as software upgrades could not tak eplace without ambulanves being taken off-road and impacting shifts.

"Ambulances are so mobile today, you're out all day. The current mode of operations is very specialised and fluid. This often means more time on scene with patients to ensure the optimal care path is sought and the movement of resources to the areas with the highest demand," said Tim.

"With WiFi though, firmware updates can now happen without the ambulance having to be parked in a station or a workshop."

"This over-the-air update is definitely a winner for us, as we can keep the cars on the road."

Tim also foresees other non-critical communications being carried out more commonly now that the ambulances are better equipped to receive information through the data network.

"WiFi also allows us to get other important information out to paramedics in a cost-effective way while they're out on the road," he said.

"This could be on-the-road training videos that can't be facilitated any other way, or even real-time clinical updates informing them of the most appropriate care facility according to location and the level of care required at the time."

Future-Ready

The new system in place has provided NSW Ambulance with an integrated technology platform that other systems, devices or healthcare providers can plug into in order to realise the Connected Clinical vision. Tim and Geoff are optimistic about the future:

"We've commenced with the jouney now," said Geoff. "We've got the structural foundation of technology now and our integration pathway will magnetise other activities that associate themselves with the VAN."

"We are now working on joining the Green Light Corridor program to improve response times," added Tim. "This will be the first of many improvements to ensure we drliver a truly staff-foused, patient-centric service."

There are also now more options to improve workplace health and safetly for frontline personnel in the future. Geoff suggested that paramedics could become their own area network in future, providing more redundancy for communications and duress plus improving the control centre's oversight in the field:

"At the moment the paramedic is connected through the ambulance, but we're set up now to potentially keep paramedics connected through a multi-layered, independent system on their person.

"This will mean seamless communication, multiple duress functionality and the individual will be visible on the network through GPS, even if they are out of the vehicle's range."

> *With other vendors, it can take you two years to get the message across. Corvanta has lots of experience in this sector and the knowledge they've gained is priceless. IT for emergency services is about harnessing the way we work, and I think Corvanta has done that.*

Tim Blake, Operational Support Manager

"It's been great to see both parties committed to the relationship," said Tim, referring to how closely NSW Ambulance worked with Corvanta to update the rural fleet.

"I think the important takeaway here is that good contract management isn't just holding your vendor to the contract; it's a two-way street. Put the work in, and you get the results."

"This project was supposed to be a challenge to get off the ground: not just getting it working, but getting people to believe in what we were doing," Geoff concurred/ "It was quite an aeffort to put it together but it all came to fruition in the end.

"What made it a great project was the team behind it – and Corvanta was a part of that team."

Success

» Anticipated savings on networks of up to $90,000 per month

» Expected savings of 21% in operational expenditure on vehicle replacements

» Guaranteed future interoperability between metro and regional NSW ambulances

» Network upgraded from 2G to 4GX

» Extremely positive staff feedback and high user acceptance

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NSW Ambulance Rural Refresh Project:

It was critical to complete the refresh before 01 Dec 2016 when the Telstra 2G network would shut down. The installation program began in Oct 2016, which meant there was only 9 weeks to upgrade NSW Ambulance's 809 rural fleet vehicles.

As NSW Ambulance's MDT supplier, Corvanta Group played a major role in the Rural Refresh Project and supported them by:

- Developing a technology transition plan as part of the NSW Ambulance change management and communication strategies
- Engaging stakeholders at various levels of the NSW Ambulance organisation to communicate significant events and requirements
- Leading the replacement of legacy in-vehicle equipment from October – December 2016
- Establishing an international supply chain and coordinating equipment dispatch and installation across NSW
- Coordinating with over 40 NSW Ambulance operational staff members
- Delivering fleet and operational logistics across 35 NSW Ambulance service areas

The project was successfully completed on time despite the tight schedule. At the rollout's peak, Corvanta crews were completing installations on 42 vehicles a day. The maximum weekly completion rate was 212 vehicles.

Project Achievements

809 operational ambulances fitted in 9 weeks

3,000 frontline employees supplied with training materials

2 ICT data centres commissioned

0 disruptions to ambulance operations post-2G network shutdown

0 major defects in completed installations

The Rural Refresh Project provided valuable lessons that will be used to form a framework for future fleet upgrade procedures.

"We divided the fleet into clusters, which created economies of scale for the technicians and allowed them to really speed up," said Tim Blake, Operational Support Manager. "It's created a blueprint for how we do mass fleet upgrades in the future."

> *The rural fleet refresh project proves the government / commercial entity partnership does work.*
>
> Geoff Waterhouse, Senior Project Manager

Making Smart Decisions: Testing and Trialling

NSW Ambulance and Corvanta conducted an eight-week, state-wide pilot test to inform the choice of technology, devices and bearers and develop a detailed scope of work.

4 decommissioned ambulances tested new and existing technologies in various configurations

2 weeks in Sydney metropolitan areas

6 weeks in regional NSW

72,000 km travelled

1,800 hours of driving

0 major safety incidents or lost-time injuries.

This minimised the risks involved in the procurement process and delivered a cost-effective result for NSW Ambulance. For example:

"We worked out which cars would go into the nooks and crannies of NSW and put a satellite configuration only in cars that would really benefit from it, instead of in every single car," said Geoff Waterhouse, Senior Project Manager.

When every second counts, Corvanta supports critical on-demand response through timely, integrated, patient-centric technology that enables healthcare providers to improve patient outcomes.

Our suite of solutions includes a Critical Communications Hub, Integrated Patient Care Records, an Incident Response App, CAD Integrated Drone, and Non-Emergency Patient Transport Booking & App.

For more information contact us at info@corvanta.com

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