Digital Transformation of TfL Surface Radio Network

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In This Session

- Show how the transition of London's Buses from Analogue to Digital Radio has been a key enabler of TfL's pan Surface Communication strategy
- Provide an overview of the drivers, scope of this delivery and what Tait's Unify Products have enabled for TfL
- Highlight the operational reality and challenges the project team faced during delivery
- Share lessons from the Digital Mobile Radio and Push To Talk projects

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London Buses

- Over 2 billion passenger journeys are made on the London Bus Network each year
- There are 9,500 Buses in the fleet
- Peak daily radio calls average 62,000 with snow/industrial action/major events seeing over 74,000 calls per day on the bus network
- There are a number of core applications and tools that assist us run the bus network. The radio system is an integral part of this

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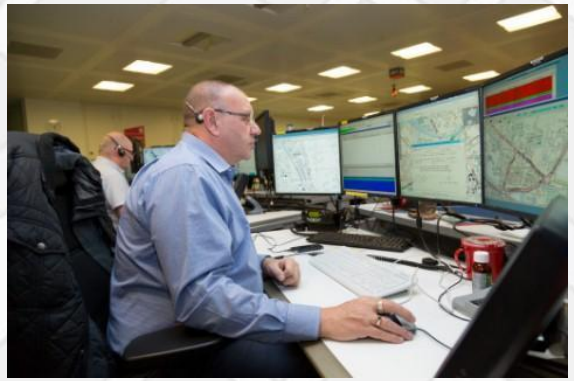
The Business Challenge

- We reached full capacity on the legacy analogue radio system
- Unable to address controller capacity with growing size of network (KM's)
- The bus network requires more intervention by service controllers to maintain network performance.
  - Roadworks
  - More traffic on London's roads
  - Less road space available for buses
  - More disruption

Therefore more voice calls



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Surface Narrow Band Radio Scope

TFL Surface Bridge

Unified Platform

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tait communications

Devices

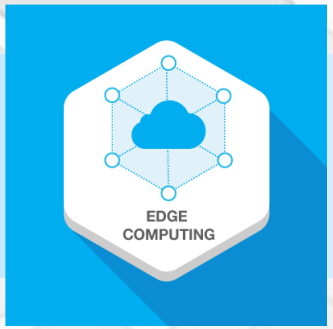
Applications

Platforms & APIs

Tait Unified Solutions

Voice & Data

Applications



Multiple Bearers

Multiple Devices

Data & Sensors

Any to Any

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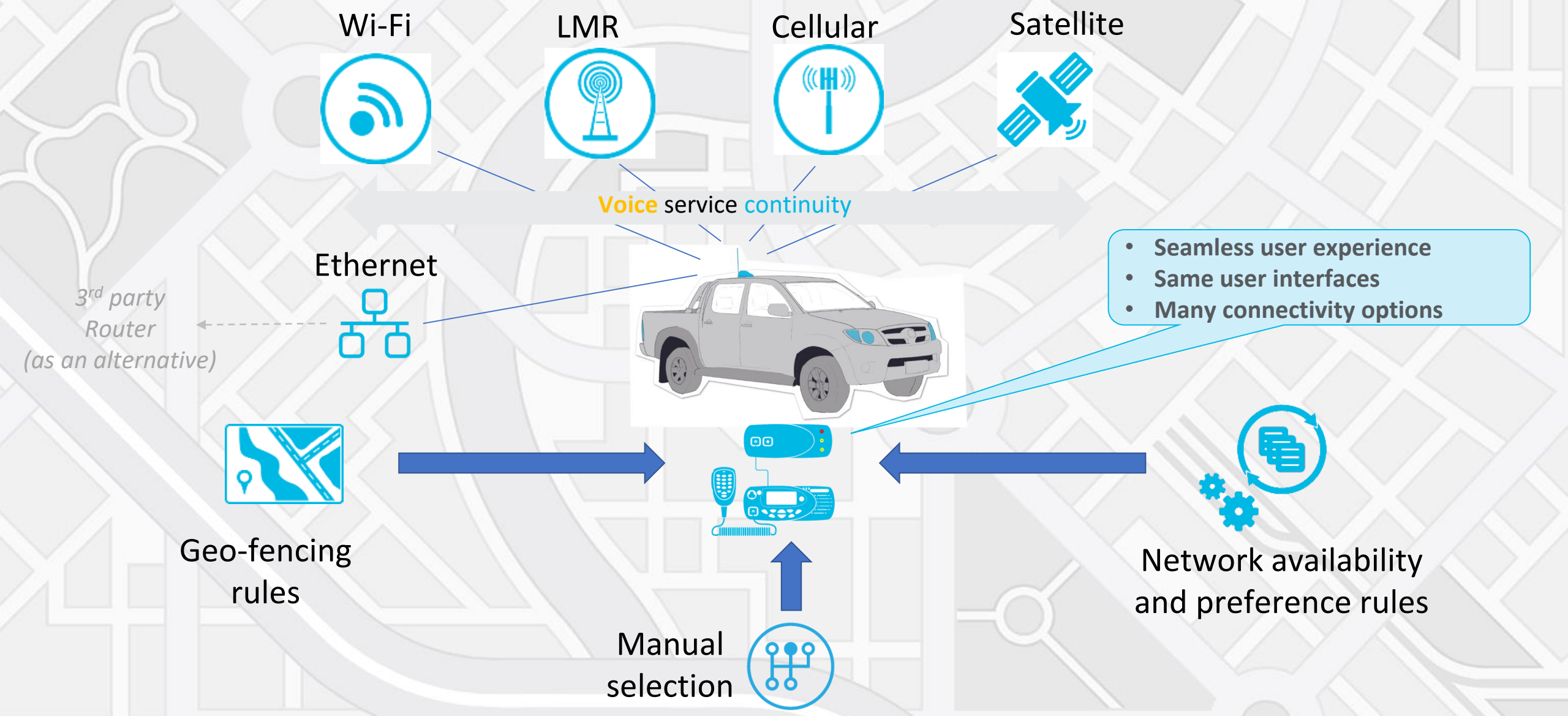
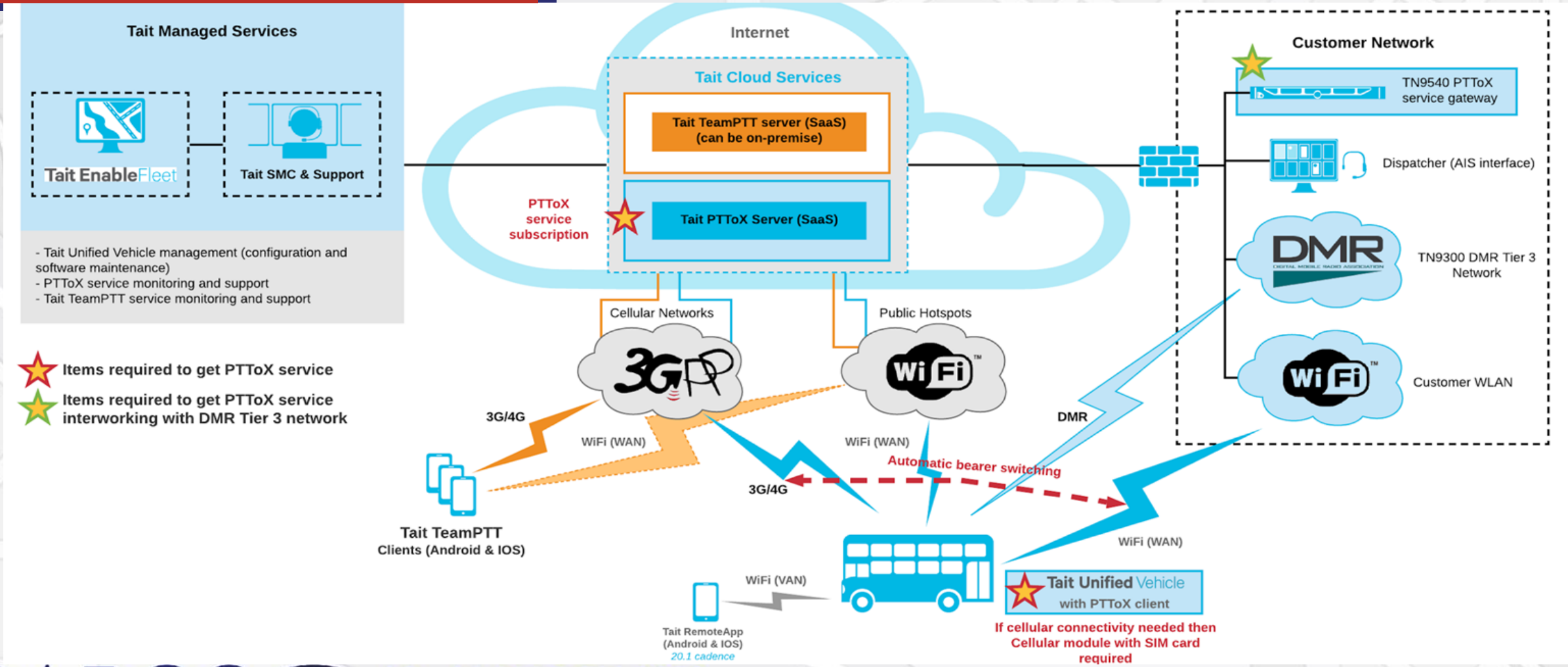
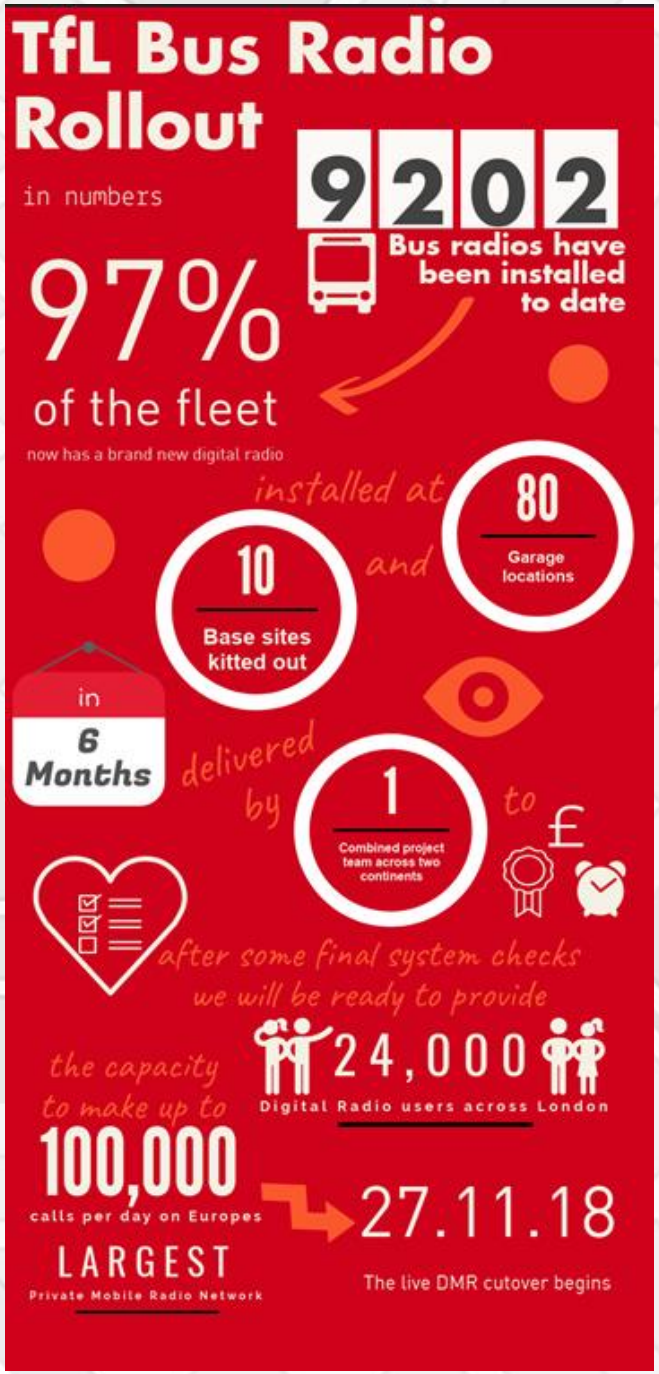

Wi-Fi
LMR
Cellular
Satellite
Voice service continuity
Ethernet
3rd party
Router
(as an alternative)
Seamless user experience
Same user interfaces
Many connectivity options
Geo-fencing
rules
Network availability
and preference rules
Manual
selection

The High Level Architecture



The Rollout



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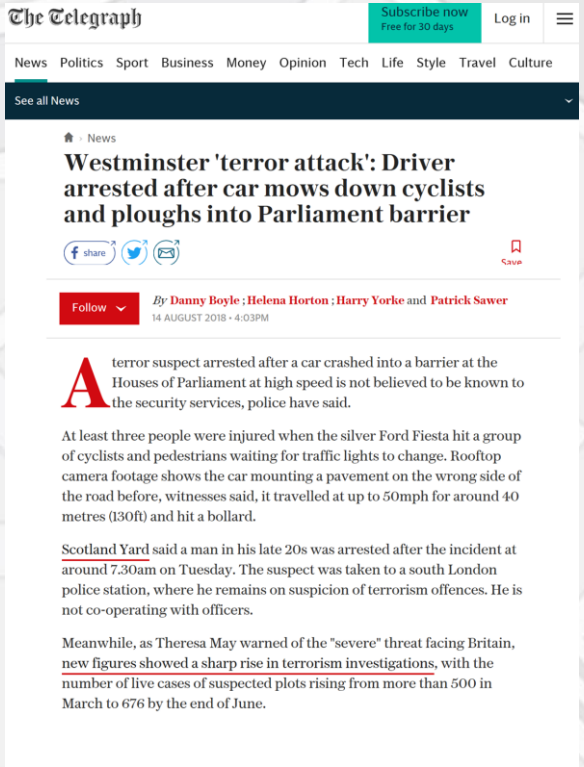
The Transition

- This was immensely successful due to the time it took to conduct the installs for this number of buses. 9,275 buses migrated in 9 months, on time with no interruption to service.
  - Availability and supply of radios

- Over this period we had a number of major incidents across London
- Over 450 planned service affecting events during rollout
- We lost some radios in Orpington



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Westminster 'terror attack': Driver arrested after car mows down cyclists and ploughs into Parliament barrier

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By Danny Boyle ; Helena Horton ; Harry Yorke and Patrick Sawer
14 AUGUST 2018 • 4:03PM

A terror suspect arrested after a car crashed into a barrier at the Houses of Parliament at high speed is not believed to be known to the security services, police have said.

At least three people were injured when the silver Ford Fiesta hit a group of cyclists and pedestrians waiting for traffic lights to change. Rooftop camera footage shows the car mounting a pavement on the wrong side of the road before, witnesses said, it travelled at up to 50mph for around 40 metres (130ft) and hit a bollard.

Scotland Yard said a man in his late 20s was arrested after the incident at around 7.30am on Tuesday. The suspect was taken to a south London police station, where he remains on suspicion of terrorism offences. He is not co-operating with officers.

Meanwhile, as Theresa May warned of the "severe" threat facing Britain, new figures showed a sharp rise in terrorism investigations, with the number of live cases of suspected plots rising from more than 500 in March to 676 by the end of June.

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Orpington fire: 'huge' explosions heard at London bus garage

Eight fire engines tackling blaze that broke out in early hours and engulfed 11 buses

Smoke rises from a bus at the scene of a fire at a garage in Orpington, south-east London. Photograph: London fire brigade/PA

Eleven buses have gone up in flames and "huge" explosions have been heard at a bus depot in south-east London.

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Protesters blocked off five major bridges in central London as part of a so-called "rebellion day".

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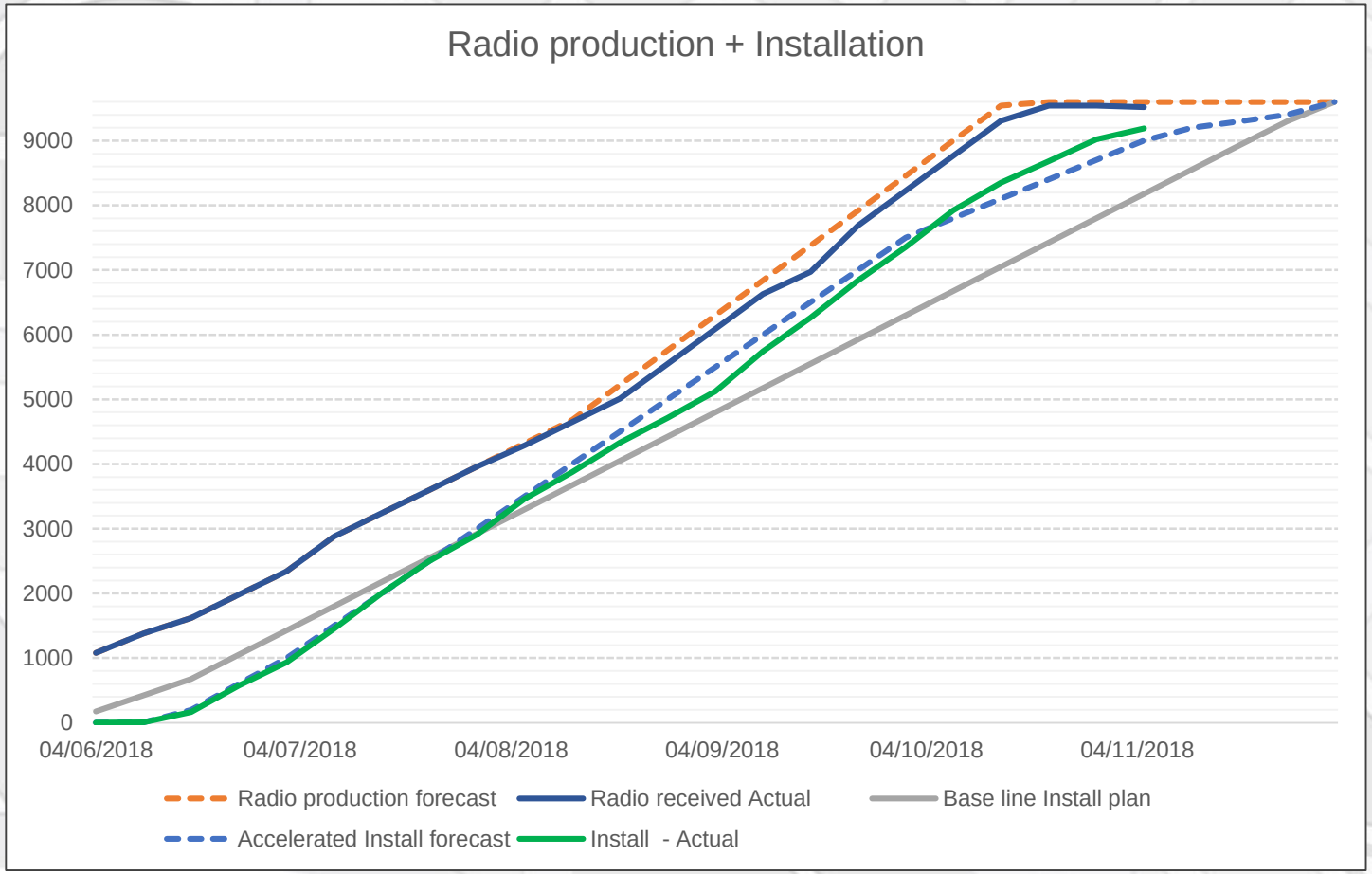
Progress of Installation

Management made easy

Tait EnableFleet



Key Considerations

- The radio is the only onboard system that if not working means a bus will not go out into service
- In frequency migration
- No system downtime – 24/7 operation
- Installations took place in busy garage environments with restricted time windows and available space
- High call volume meant balancing channel capacity on two dual running systems (First cutover was termed Critical Mass)
- The Legacy system being at full capacity added pressure to the delivery

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What DMR has enabled

DMR

- Doubled the number of talk paths within the confines of our frequencies. It is sufficient scalable capacity for TfL for the next ten years.
- Better reporting functionality – through Enable Insight, we can see not just demand but precise radio registrations on our sites.
- Reduced call set up times.
- The ability to integrate with Push To Talk over Cellular services.
- Added security and encryption.

PTT

- Enabled point to point communication rather than all communications being passed via the dispatch center.
- Ability to leverage the purchasing power of the whole organisation, but provide the tactical flexibility and configuration at a business unit level.
- Rapid remote deployment of radios.
- Enhanced communication capabilities (especially with third parties).
- Ability for our users to integrate the PTT with existing smart devices meaning they have less devices to carry.

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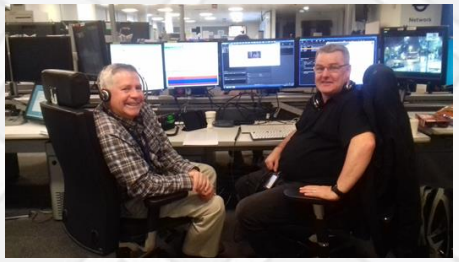
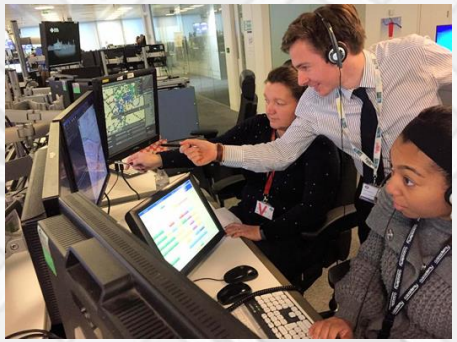
The Lessons - DMR

- However simple the transition may seem, the level of effort required in preparing users for adoption of new technology should not be overlooked.
- De-tuning and re-tuning to digital. When large numbers of users work daily with analogue radio for over ten years, it is key to re-assure them that that it sounds different and that they will adjust to it. This is key to reducing numbers of incident tickets being raised through the helpdesk for perceived faults with the new technology.
- Timing of messages - when to conduct training is as important as the message you aim to deliver.
- Post Go Live floor walking provided the best barometer of users attitudes towards the technology and transition.
- Rigorous Change Control Processes are essential.





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Tait Unified Solutions

Tait TeamPTT

- PTT CALLS OVER CELLULAR AND WIFI
- SEAMLESS INTEGRATION TO DMR
- CLOUD HOSTED
- USE EXISTING TFL DEVICES
- SECURE, AUDITABLE COMMUNICATIONS

The Lessons - PTToC

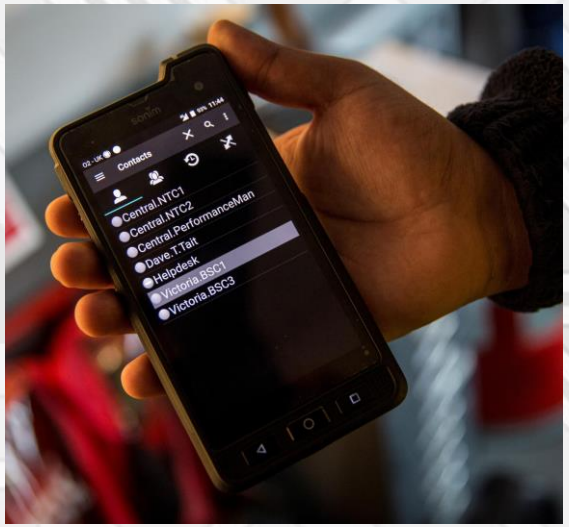
- Technological capability can be constrained by legislation (e.g. GDPR).

- Group calls have accounted for 85% of all PTT calls since go live. Within the first month, more PTT calls were made over the PTT gateway than the total of all handheld radio calls in the previous year.

- This delivery was successful because it was developed with user input from day one to go live. All Bus Operators and TfL users were involved from creation of user cases, to the pilot and ultimate delivery. The technology has allowed us to obtain feedback at each phase, and incorporate this into later releases.

- Even with a core group of users being involved from day one, others (and support teams) adopted the technology far quicker than anticipated.

- Rigorous testing regime lead to a smooth deployment.



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