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ClickSoftware

Improve Service Delivery with Predictive Field Service

Andrew Vlachiotis

Vice President and Managing Director Asia Pacific

April 2018



Agenda

- What is Predictive Field Service?
- Improving Service Delivery
- Artificial Intelligence and Field Service Management
- Case Studies
- Takeaways

What is Predictive Field Service?

Using historic information to deliver future insights for Field Service Management

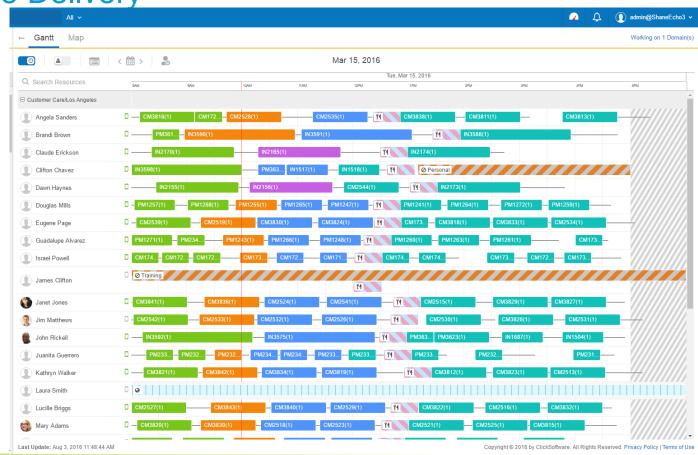


Improving Service Delivery

- Task assignment step
- Automated and optimized based on business KPIs
- Happens before the day of service and in real-time throughout the day

Two fundamentals:

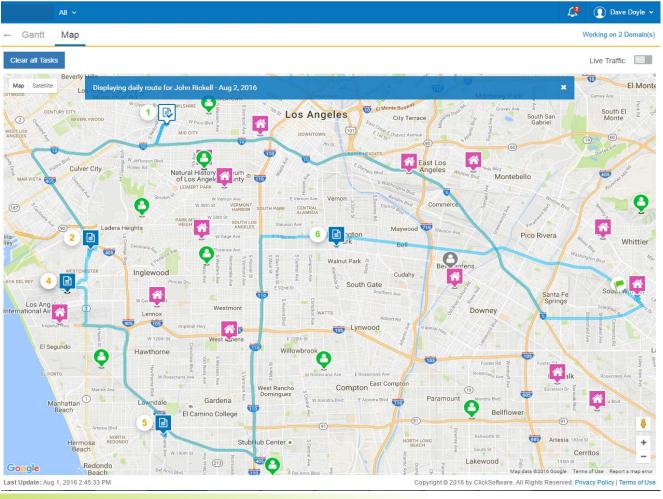
- (1) Travel Time
 - (2) Task Time



Travel Time (1)

- A to B
- Z to A
- B to C

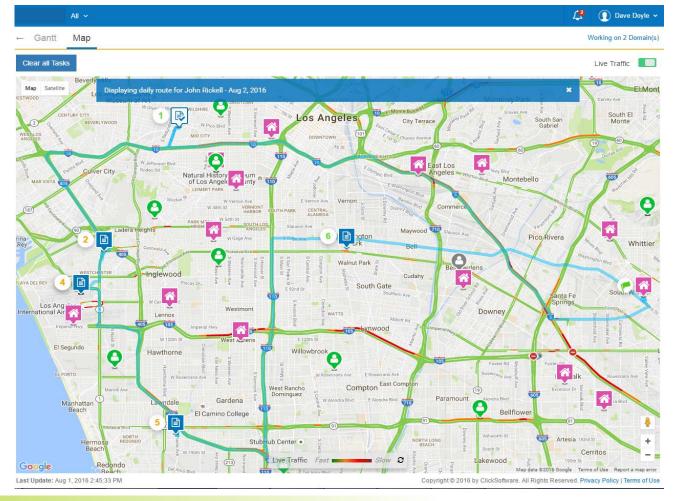
 Task scheduling and appointment booking incorporates predictive
 TRAVEL



Travel Time (2)

- A to B for 12PM
- Z to A for 11AM
- B to C for 1PM

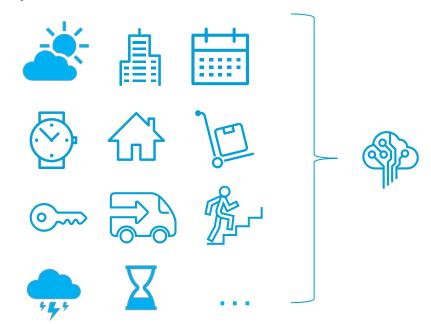
 Task scheduling and appointment booking incorporates predictive
 TRAFFIC



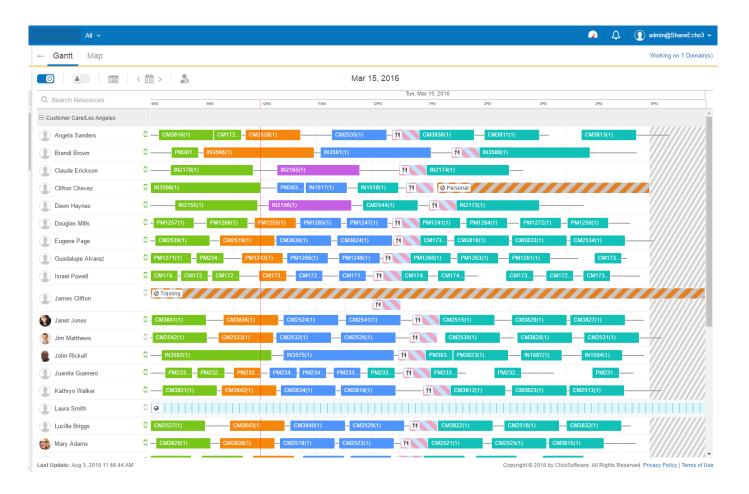


Predictive Task Duration

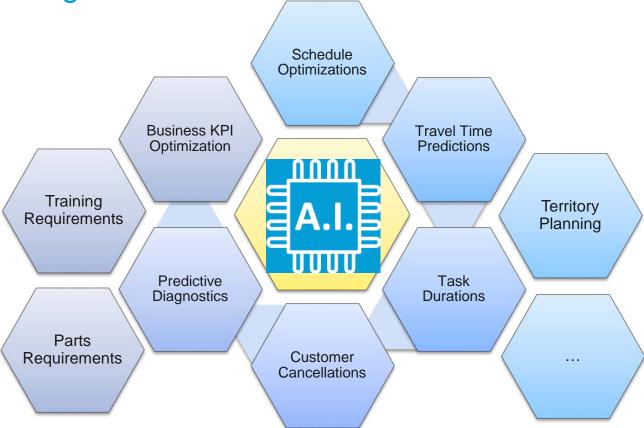
- Task Duration varies by field service employee
- Task Duration varies by:
 - Weather
 - Age of equipment
 - Weight of equipment model
 - Time of day
 - Number of previous service calls
 - Apartment building / home
 - What floor the service call is on
 - Type of truck deployed
 - ..







Artificial Intelligence and FSM



What is Predictive Field Service?

Using historic information to deliver future insights in Field Service Management



	PLAN		EXECUTE		ANALYZE
Predictive staffing	Predictive territory planning	Predictive traffic, Predictive job duration	Predictive cancellations	Predictive tools, parts, skills, knowledge	Predictive business outcomes

Case Studies







Takeaways

Predictive Field Service applies across the whole service chain Artificial Intelligence helps reduce costs and improve customer experience

Effective Artificial Intelligence requires the <u>right</u> data

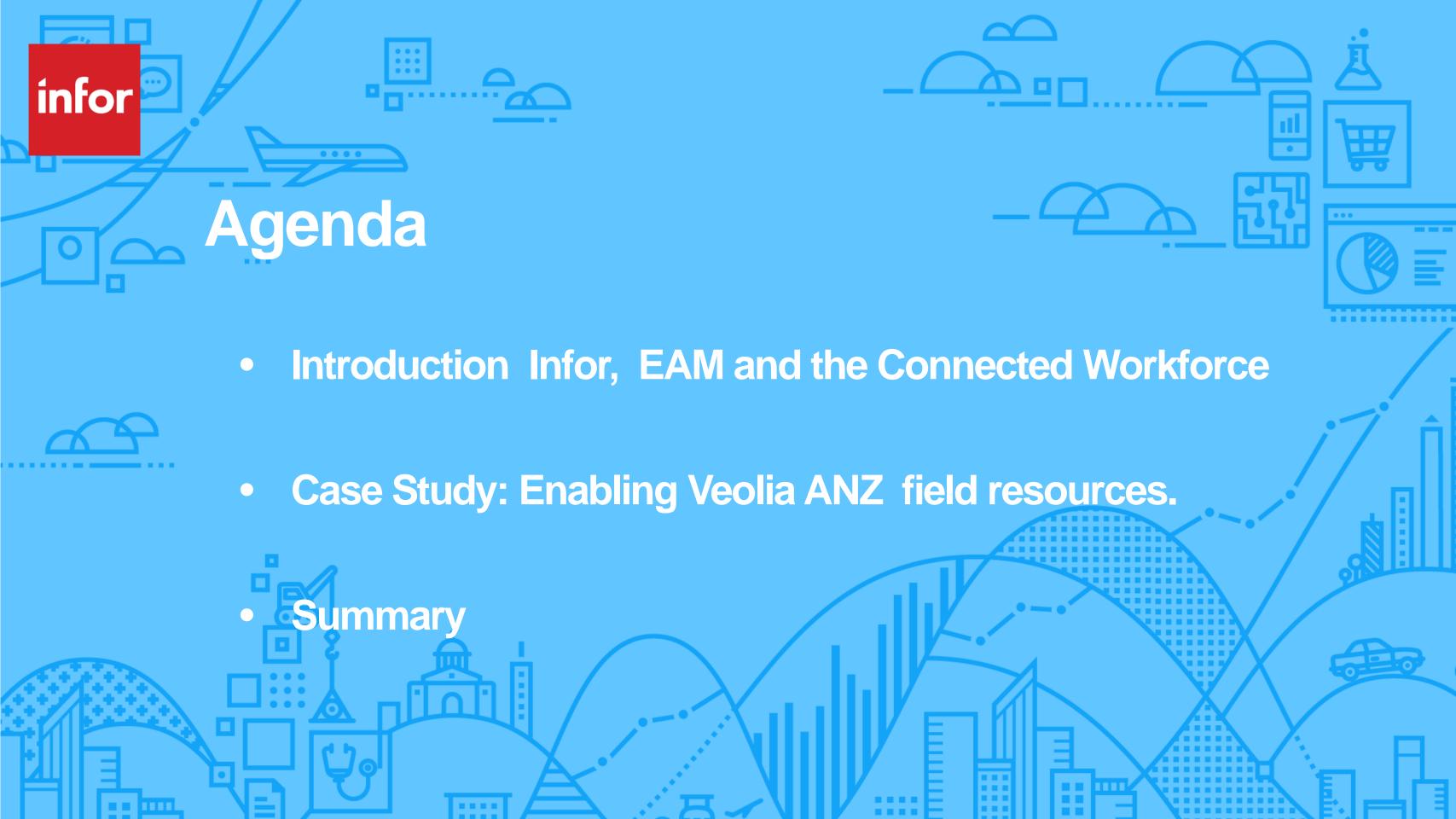


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infor **Gaining Operational** Insight form Field Service **Enablement at Veolia** Australia **David Whitfield EAM Solutions Specialist Infor**







Who is Infor?

Infor is an enterprise software provider and strategic technology partner for more than 90,000 organizations worldwide.

Our software is purpose-built for specific industries, providing complete suites that are designed to support progress – for individuals, businesses, and the world. We believe in the beauty of work, the importance of relationships, and the power of ideas to drive significant positive change.

Infor Strategy

DELIVERED WITH DESIGN THINKING



A.I.

Coleman

Analytics

Birst BI

Network

Commerce and IoT

Cloud

Industry cloudsuites

Industry

Last-mile features



Specialized by industry



18 of top 20 aerospace companies



20 of top **20** automotive suppliers



10 of top 10 pharmaceutical companies



17 of top 20 industrial distributors



7,000+ industrial machinery manufacturers



6 of the top 10 global luxury brands



15 of the top **20** global retailers



4 of the top 5 brewers



21 of the 25 largest U.S. healthcare delivery networks



10 of the top 10 high tech companies



6 of the 10 largest global hotel brands



More than
5,500 industrial
manufacturing
customers



18 of the **20** largest U.S. cities

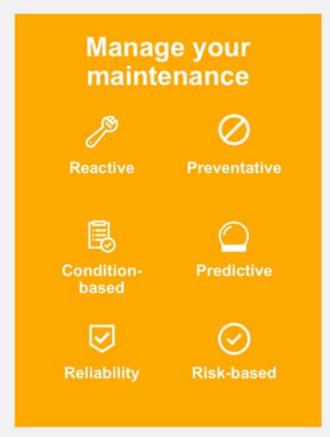


21 of the top 30 global banks

Infor **EAM**





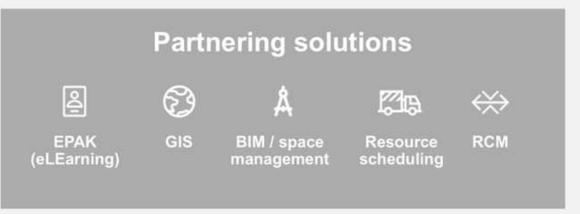




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Who is Veolia - what do we do?

- Headquarters in Sydney
- ♦ Operating revenue \$AUD1.45B
- ♦ 4000 Employees
- Over \$10B worth of infrastructure assets that we manage in Australia and New Zealand
- Manage 123 water and wastewater treatment plants, plus waste management and resource recovery sites





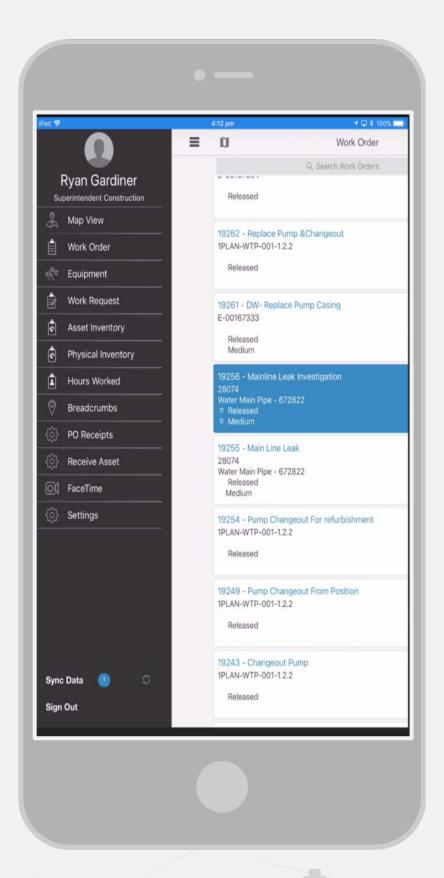


Our Business Needs



What Veolia wanted/needed/were challenged with

- Democratise the data to use and share widely the outputs
- Flexibility across the organisational processes
- Optimise the maintenance effort
- Answer client and business needs
- Improve the data quality to make informed decisions



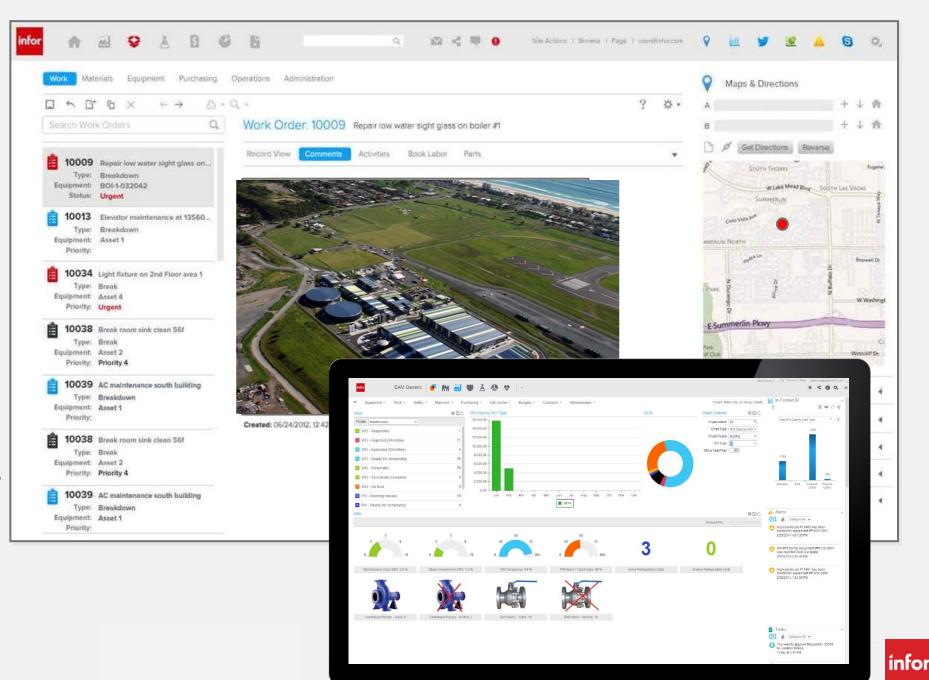


Our Foundation - Infor EAM



An established EAM system

- Has been used by Veolia since 2008 for its infrastructure assets
- Can adapt to various energy, waste and water business processes
- Has been configured to only collect essential data
- Allow us to meet contractual obligations and regulatory compliance
- Is integrated with back-office ERP and client systems





Mobile Deployment

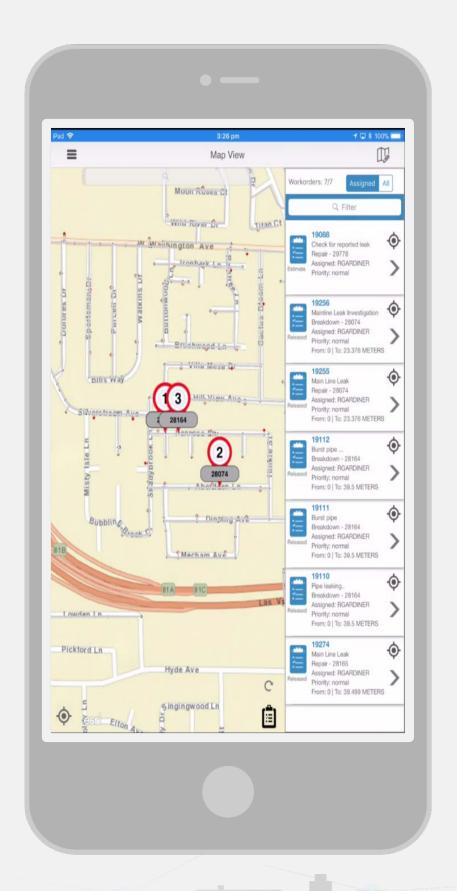


Where and how we deployed

- First deployment in 2014 for the Hunter contract on iOS devices
- Veolia ANZ had tried to roll-out its own mobile application prior to that
- Now being used in multiple contracts in Australia and New Zealand

What we deployed

 First deployment for Work Order management purpose had to occur within a 2-3 month period







Business Outcomes



Lessons learned

- A journey to better asset data management
- ♦ (Good) Asset Management data is very expensive to collect
- Mobile and flexible app allows an optimal data collection

Value gained and improvements made

♦ CMMS/EAM platform is the core of our data management

We are getting real and increased value from our CMMS/EAM data





VEOLIA

infor

Specialized by industry. Engineered for speed.

Thankyou

Queensland Urban Utilities

Kathryn Turner April 2018





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Work Orders and Going Paperless

Operators at Queensland Urban Utilities' sewage treatment plants are either on site or travelling from site to site. In either case they may be a long way from the control room. The mobile computing solution, first used to improve efficiency of field workers, is being implemented to increase the ease and efficiency of raising work orders, completing daily inspections, mobile access to SCADA and having a digital view of the plant. It involves the use of Panasonic Tough books which were chosen by the workers themselves and a shift to paperless record management.

- Creating a seamless mobile computing solution for onsite operators
- ➤ The impact of going paperless on worker efficiency
- Embedding more functionality for greater time savings: Digital zonal Inspection





About Us



- As an essential service provider, we provide water and sewerage services to **1.4 million customers** across South East Queensland.
- We were formed in July 2010 through the merger of five local government water and sewerage businesses.
- We are a **statutory body** with a 99-year term.
- We are the fourth largest water authority in Australia.
- We have a customer-centric philosophy and strong innovative culture.
- We have a \$5 billion asset base with a \$3.2 billion,
 10-year, capital works program.

Key Statistics





14,384km² geographical area

5 local government regions

136,000ML of water delivered

9,028KM water mains



125 reservoirs

107,000ML of sewage collected and treated

9,185KM of sewerage mains

27 sewage treatment plants

10 field service depots

331 sewage pump stations



Our Purpose – Enrich quality of life

VISION

'We will be recognised for our excellence in water and sewerage services that meet the evolving needs of our customers and enhance our communities.'

Values



Strategic Pillars

CUSTOMERS

We understand our customers and deliver a quality service that meets their evolving needs.

SHAREHOLDERS AND COMMUNITIES



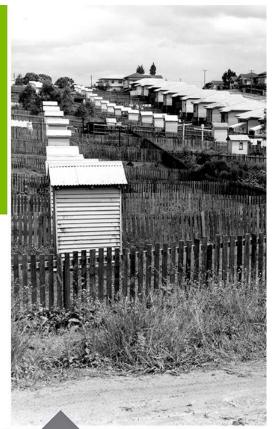
We understand our shareholders' aspirations and are accountable to them and their communities.

OPERATIONAL EXCELLENCE

We innovate to drive operational excellence to achieve outcomes at the lowest long-term cost.

PEOPLE

We are safe, adaptable, capable and committed to achieving our vision and living our values.





1960s

As most suburban Brisbane properties were not sewered in the early 1960s, human waste was disposed of in buckets or pails and collected by "night soil men".

Brisbane City Council operated night soil sanitation depots including one located beside Cedar Creek, which closed in the late 1960s as the need for night soil collection declined.

Image: Night soil carts were used to collect and transport human waste in pails, which were often covered with dirt or soil.



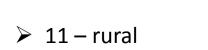
1970s

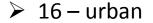
Prior to Brisbane being completely sewered, most properties had an outhouse – a toilet located outside, away from the main house, without a flush or sewer attached.

In response to the flood that devastated Brisbane in 1974, construction of Wivenhoe Dam commenced in 1976 to mitigate future severe floods and prevent smaller ones.

Image: Rows of outhouses lined backyards in Brisbane.

Sewage Treatment Early Days ➤ 27 Sewage Treatment Plants







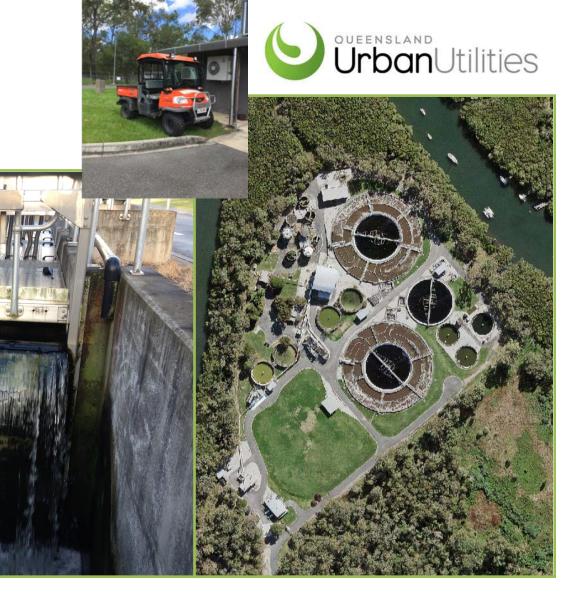


- > Largest is Luggage Point treating 140 mega litres of wastewater per day
- > Smallest at Aratula with 48 kilo litres per day
- Regional coverage using mobile computers has been in place for 7 years due to the distance covered and the multiple plants managed by 1 operator
- Urban plants are typically managed by 1 or more operators on site 24/7 on 2 largest and daylight hours on the remainder
- Urban plants have control rooms with PCs, CCTV viewers and SCADA terminals – why need a mobility solution?





Justification -UV System Failure







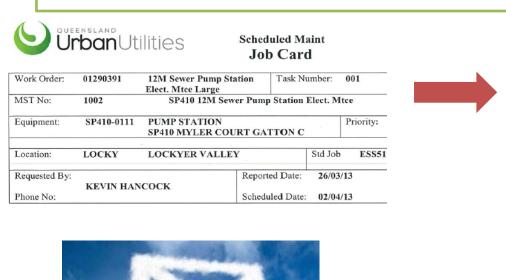
On the spot oversight and control



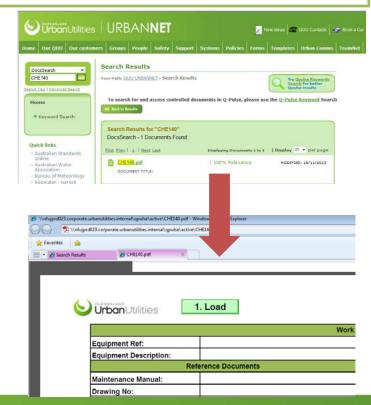


Complex Process – Complex Systems

Sample Testing – process control and environmental licence Periodic Inspections – zonals – daily, weekly ,monthly etc Work Order Creation







Data Captured

Task Lists

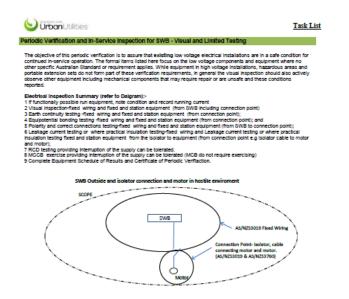
Risk Assessment

4 1 444

Maintenance Records

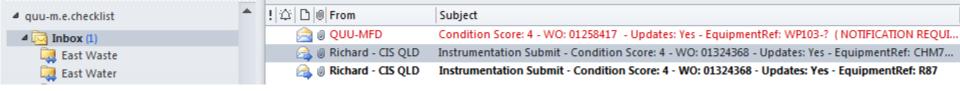
A QUEENSLAND

 Equipment Data



Urban Utilities 1. Load										Schedu	le of Test	Rest	
			Wo	ork Order									
Equipment Ref:	CHM76-1090	MST No:	MST No: 1002										
Equipment Description:	Walloon					•							
Reference Documents					Test Equipment								
Maintenance Manual:				Type & Me	odel:	DPD							
Drawing No:				Serial Nur	mber:								
Description		Setup		Before Cal		After Cal							
		Range (PPM, NTU, mgf., µskm, mV, mA)	Tolerance (Maxallowable Deviation for site)	Grab Sample (PPM, NTU, mg/L, µskom, mV, mA)	Transmitter (PPM, NTU, mgf., µskm, mV, mA)	Deviation (PPM, NTU, mgL, µs/cm, mV, mA)	Cal Method Range and type used Ref Cell, Sandard or Companitive	LRV Record instrument readings	URV Record instrument readings	Slope	Operating Point Fundon check on return to service	Condition	
Tag & Desc	Analyser 2 Total CL	0-10mg/L	0.1mg/L	3.1mg/L	5.28mg/L	+2.18 mg/L	DPD		3.07mg/L		3.07		
Transmitter Make & Model	EMEC LDCL										Local 3.0	. ,	
Transmitter S/N	ST09250006741											-	
Element Model	ECL8/20										SCADA		
Tag & Desc	Analyser 1 Free CL	0-5mg/L	0.05mg/L	0.26mg/L	0.56mg/L	=0.3m	DPD		0.26mg/L	21.54uA	0.26		
Transmitter Make & Model	Connex DIA-1					g/l				/ppm	Local		
Transmitter S/N	10/120096											1	
Element Model	ALLDOS										SCADA		
Tag & Desc	Analyser 1 Ph	5-9pH	0.7pH				pH Buffer		6.98pH	-59.23m	7.72		
Transmitter Make & Model	Connex DIA-1	_					4pH 7pH			V/pH Asym.po	Local	. 1	
Transmitter S/N	10/120096			İ		ĺ	.,,,,,	ĺ		t	7.7	1	
Element Model	ALLDOS									-6.10mV	SCADA		

Condition





Outcomes

- Operators on urban plants are now able operate their plant from any location including their home
- ➤ Paper trails are digitally managed and stored in 1 location no more filing cabinets
- Work orders for maintenance can be loaded at the work area enabling the operator to monitor and control the issue

In Conclusion

This project has not only helped to enable efficiency in process in treatment plants, but it also means more reliable real time meta data. The efficiencies achieved lead to reducing our cost to serve per property, less interruption to process, and better performing assets, confidence in compliance to regulations and legislation.



Field Services Management Conference 2018

Presenter: Luke Jenner, General Manager Network Services

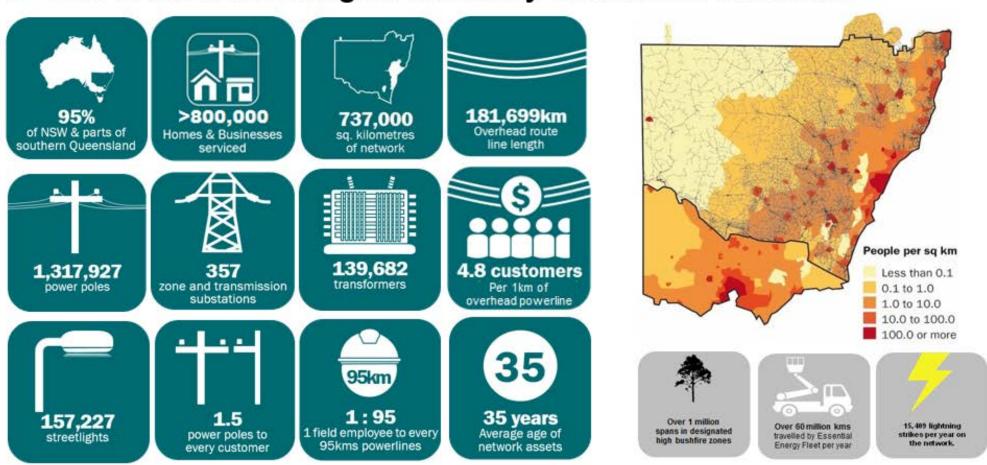
ESSENTIAL ENERGY

empowering



Introducing Essential Energy

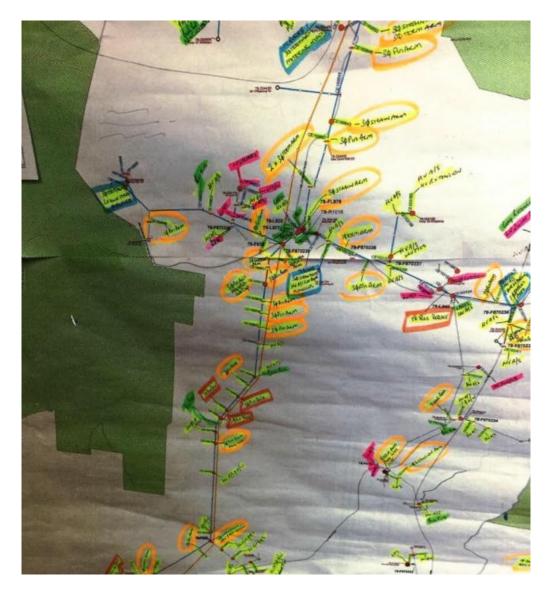
One of Australia's largest electricity distribution networks:



...with safety, reliability and efficiency driving everything we do.



Paper Overload







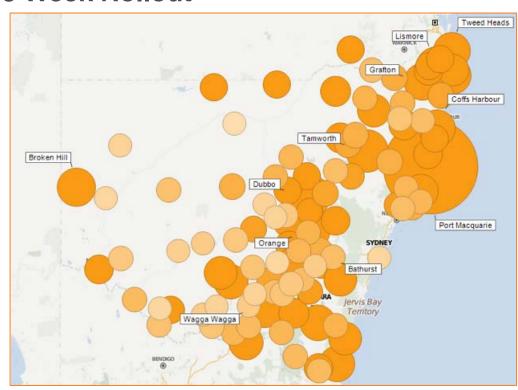


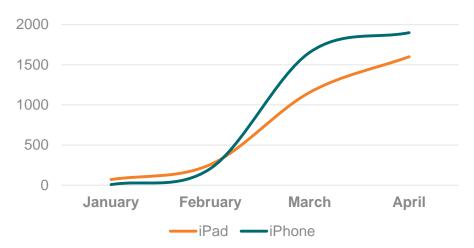
- 1. Asset Map
- 2. Schedule
- 3. Work Pack



Working Mobile

- > 3500 Devices
 - 1600 iPads
 - 1900 iPhones
- > 107 Depots across NSW
- > 8 Week Rollout







Clint Collins – March 16 at 6:12pm from iPhone

Bega today - where the technology has gone from Vintage to Extra Sharp!





Our Hallmark App – The Field Portal



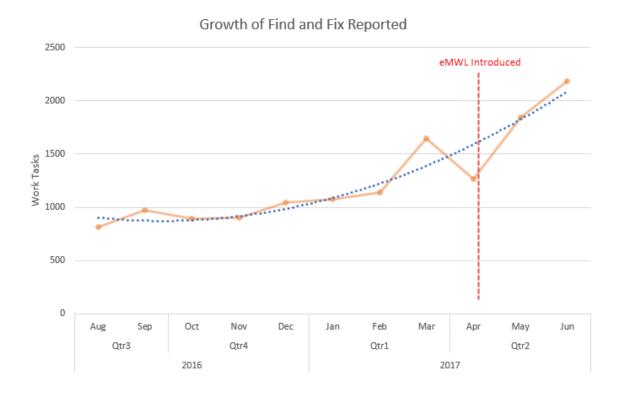
iPADs in the Field

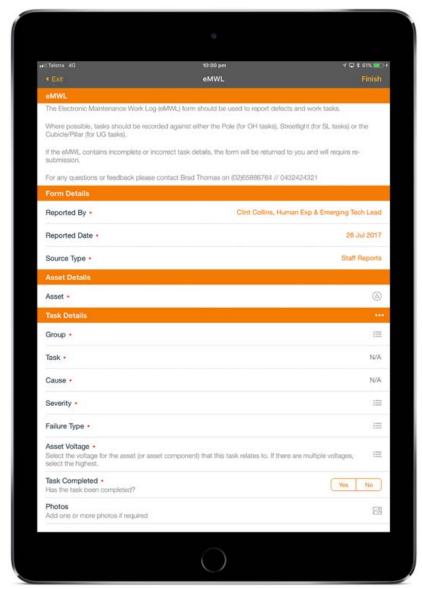




eMWL - Electronic Maintenance Work Log

- Previously a paper form, many works performed were not reported leading to skewed asset health data
- > 250% increase in reporting; better decisions







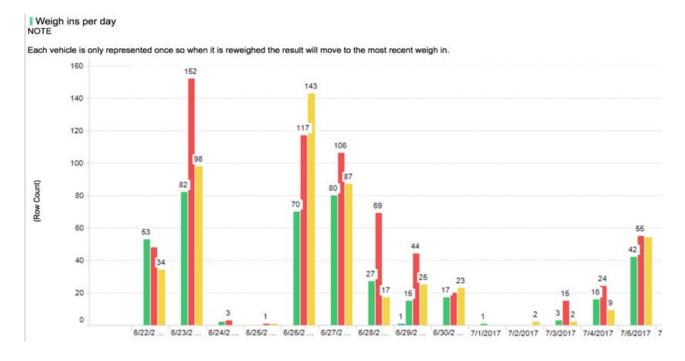
iPADs in the Field

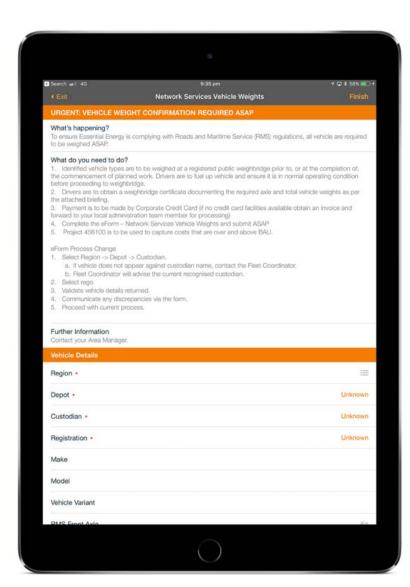




Incident Response - Vehicle Weighing

- > All vehicles taken out of service until weighed
- Need minimise operational impact
- > 100% vehicles weighed in 10 days (compared to 20% before iOS Devices)
- Significant savings in administration and data entry





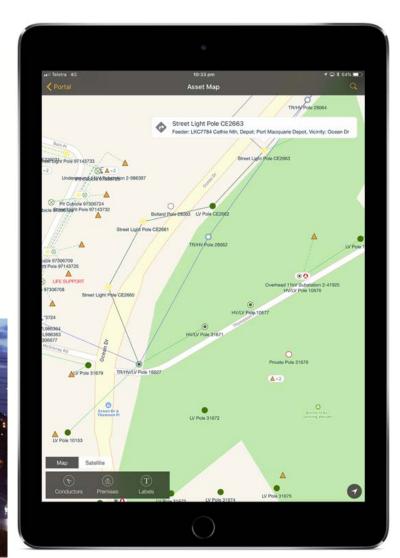


Streetlight Inspection

- Street Light inspectors were required to exit their vehicle to read Asset IDs
- Inspectors can now remain in their vehicle, located Asset IDs and submit issues from their iPads
- Significant increase in Safety and Productivity



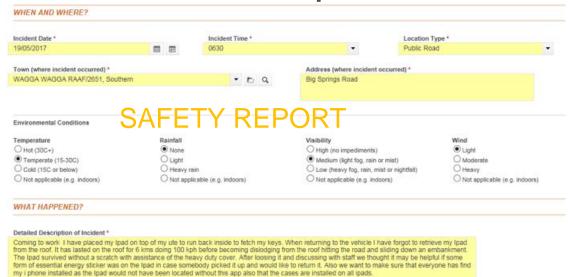




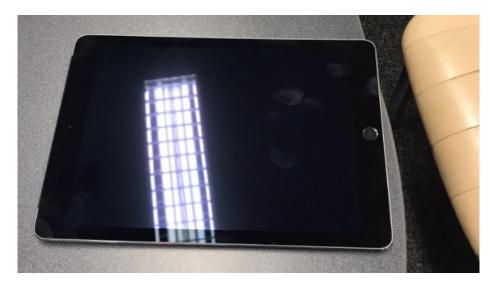


Not Just a Consumer Device

- > 2000 Windows Phone in 2016 (41%)
 - 828 requests for replacement
- > 3742 active iOS devices (1.5%)
 - 10 HW Failures
 - 9 Cracked Screens
- Field Employee left iPad on roof of vehicle– survived 100km/hr impact









What worked? What could we have done better?

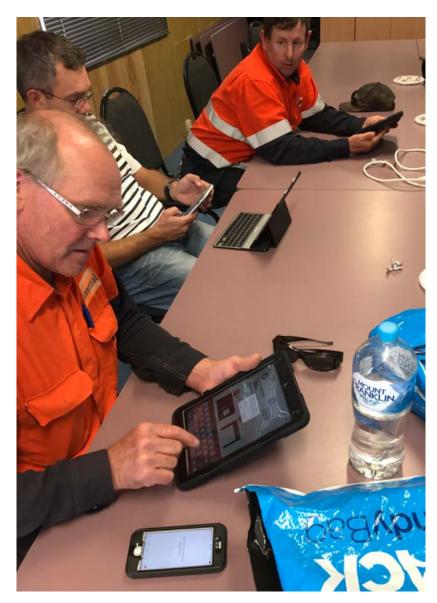
What worked?

- Face to face rollout Meeting great people and building relationships
- Investing in solid device protection

What could we have done better?

- Choosing our MDM more wisely
- > Creating/testing Apple IDs in advance
- Migrating personal contacts from old Nokia phones is PAINFUL!







Outstanding in the Field



David Griffith The EWP I was using while working away from my area for a fortnight had major electrical problems!!!!!

The iPhone was a game changer in getting the EWP temporarily running for the remaining time working away.

I was in constant communication with "Redmond Gary Australia" in Queensland. Together we came up with filming the problems I had and Email it to the technician so he could diagnose the problems.

After sending the footage, the next morning an email came through to me on my iPhone with a list of things it could of been and how to overcome them. This is only one example how IPhones have saved the company loads of time and money. Not having a 23t EWP towed from a remote rural area to have repaired in an area without the experience working on this equipment, let alone the down time.



Love - Reply - 0 3 3 - 23 July at 10:09

Andrew Rajkovic 5/5 6:51 PM

Being part of Mobility was fun

It kept us busy as we fixed problems on the run

Solutions were plenty and mindsets were won

We delivered the devices with service second to none

Driving long vistas or riding in Cessnas

Working long hours to meet up with Out-of-Towners

We've left them with smiles and a device to navigate miles

From barren west plains to picturesque isles

We showed the true face of helpful eTech



Working Mobile

NEW CONVERSATIONS ALL CONVERSATIONS FILES NOTES Q SEARCH

Justin McDean Follow - April 3 at 8:41pm from iPad

more useful for travelling crews.

helpful and I hope this can continue

Would just like to give some feedback on the iDevices. The last few days Hastings

Hunter crews have been involved in the storm response on the North coast .This event provided the perfect opportunity to really use and rely on the new devices . They have

made a big impact in our ability to navigate and communicate with each other when

with others using the same platform through text/email while in the field has been

development continues and more tools become available these devices will be even

Glen Clarke From an operators point, on numerous occasions field staff have

appreciations of fault conditions and required reactions. This has been very

sent photos and videos of fault conditions to assist me in making

Tree across hy mains, we de-energised line and I asked if we needed to isolate and earth? He seemed unsure then replied back that he thinks he will. I asked for a photo and he sent this.

great, and this has removed some of the confusion these events can create. As

working out of area. Having the field portal asset maps and being able to communicate



Stephen Borchart ³ feeling happy in ⁹ Moonee Beach, New South Wales, Australia

How's your Friday looking?



Garry Worth After updating my work computer I lost the capability of adding photos to my defects so out came the iPhone for reporting major defects such as this destroyed insulator



David Griffith The implementation of iPads & iPhones, allows all staff to be connected to everyone within our company at our fingertips 24/7. It gives everyone a platform to voice their opinion and maybe get a 👆 !!!!!!! In the field you have control of all elements to get the job done. When you hit a SNAG in your days work you have complete confidence you can overcome anything with INSTANT communication/information on hand.









Where To Next?

- Field Switching
- Workforce Scheduling
- > Enterprise Social Network
- Multipoint Video Conferencing
- > Augmented Reality
- Live Event Streaming
- Supply Chain Workflow
- > Asset Maintenance Workflow
- > Legacy Application Delivery
- > 30+ apps in development pipeline



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If you're interested in attending the 11th Field Service Management in 2019, please find our details below to receive more information!

EMAIL US

VISIT