

LEVERAGING TECHNOLOGY IN FIELD SERVICES TO IMPROVE EFFICIENCY



**Endeavour
Energy**

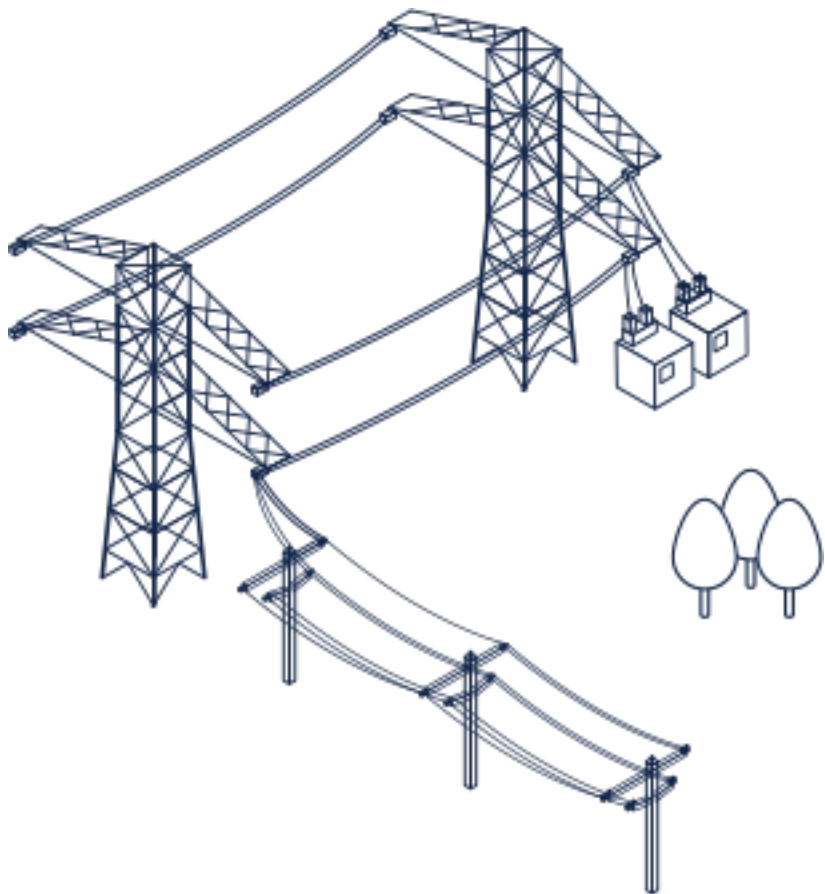


David Shepherd
Strategic Innovation Manager



Edmund Li
Network Technology and
Analytics Manager

Leveraging Technology



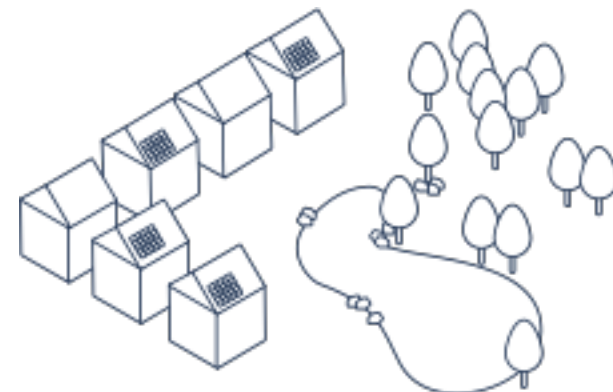
Self healing networks



Distributed Generation

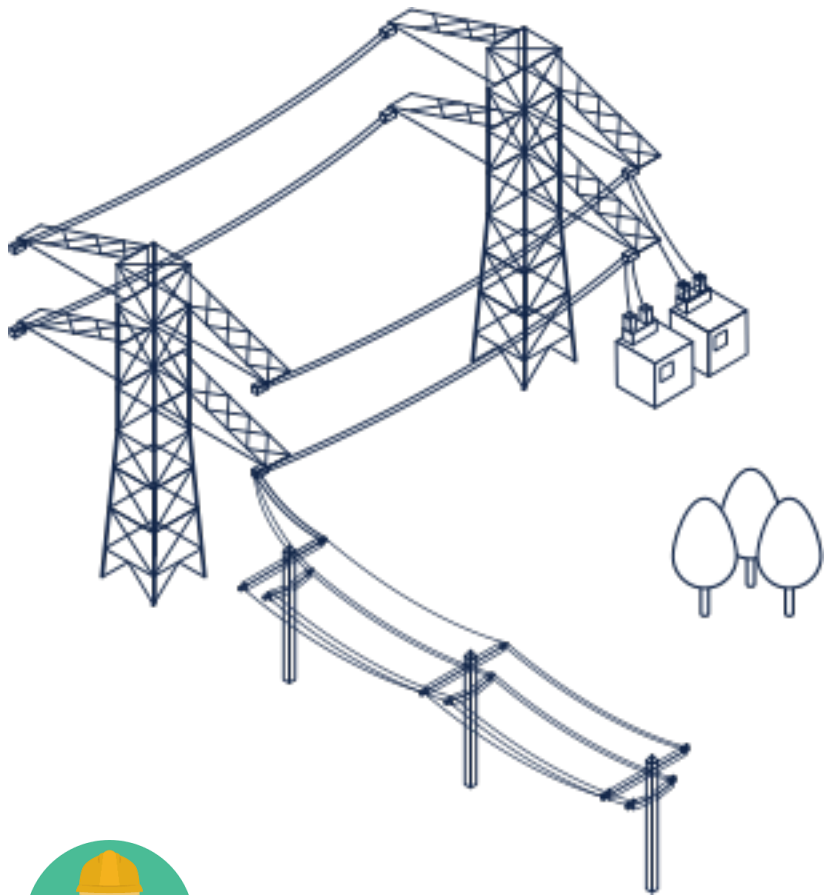


Storage



Micro energy trading

Leveraging Technology



Asset Management



Field Services



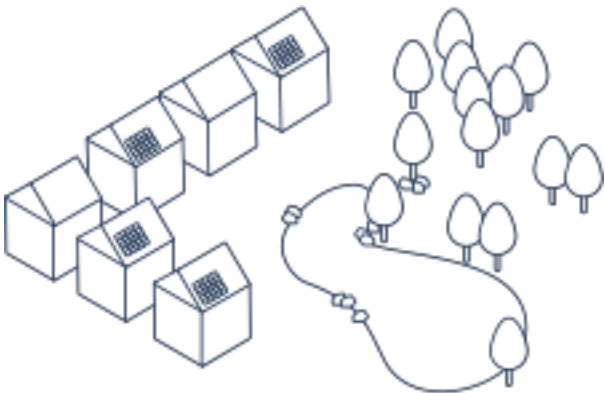
Self healing networks



Distributed Generation



Storage

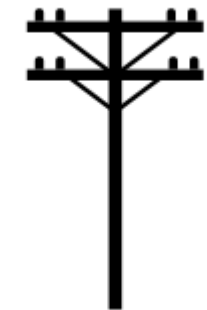


Micro energy trading



Scheduling problem

Work



Scheduling problem

Work

Tasks



Pre bore hole

Pickup/drop
off materials



LV pin pole
replacement

2 x LV pin pole
replacement



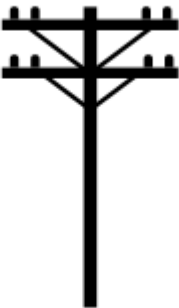
SL
replacement

Scheduling problem

Work

Tasks

Staff



Pre bore hole

Pickup/drop
off materials

LV pin pole
replacement

2 x LV pin pole
replacement

SL
replacement



OH
UG
Jointing
HVR

Skills



OH
UG
Jointing
HVR

Skills



OH
UG
Jointing
HVR

Skills



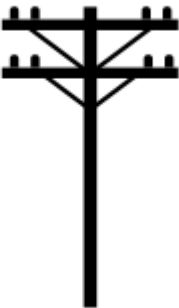
Scheduling problem

Work

Tasks

Staff

Equipment



Pre bore hole

Pickup/drop
off materials

LV pin pole
replacement

2 x LV pin pole
replacement

SL
replacement



OH
UG
Jointing
HVR

Skills



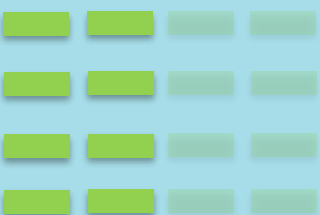
OH
UG
Jointing
HVR

Skills














OH
UG
Jointing
HVR

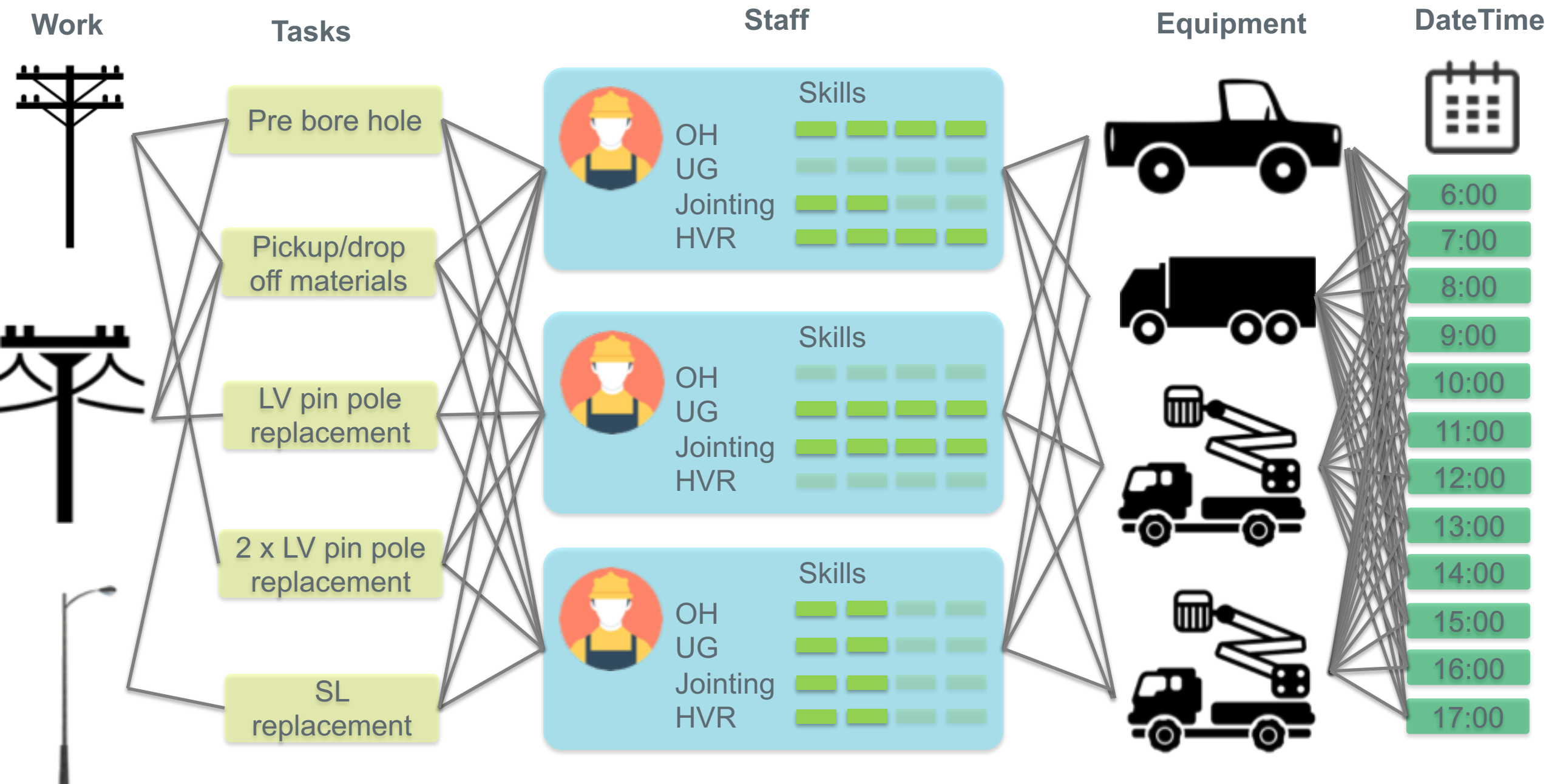
Skills



Scheduling problem

Work	Tasks	Staff	Equipment	DateTime
	Pre bore hole	<div><div><div>OH</div><div>UG</div><div>Jointing</div><div>HVR</div></div><div><div>Skills</div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div></div></div>		
	Pickup/drop off materials			6:00
	LV pin pole replacement	<div><div><div>OH</div><div>UG</div><div>Jointing</div><div>HVR</div></div><div><div>Skills</div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div></div></div>		7:00
	2 x LV pin pole replacement			8:00
	SL replacement	<div><div><div>OH</div><div>UG</div><div>Jointing</div><div>HVR</div></div><div><div>Skills</div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div></div></div></div>		9:00
				10:00
				11:00
				12:00
				13:00
				14:00
				15:00
				16:00
				17:00

Scheduling problem



Scheduling problem – The Hidden Impact



Keep variables static to simplify the problem

e.g. staff in a truck always doing a type of work



Over resourcing jobs

Staff are idle or not being used for the entire job



Missing opportunities to complete additional work

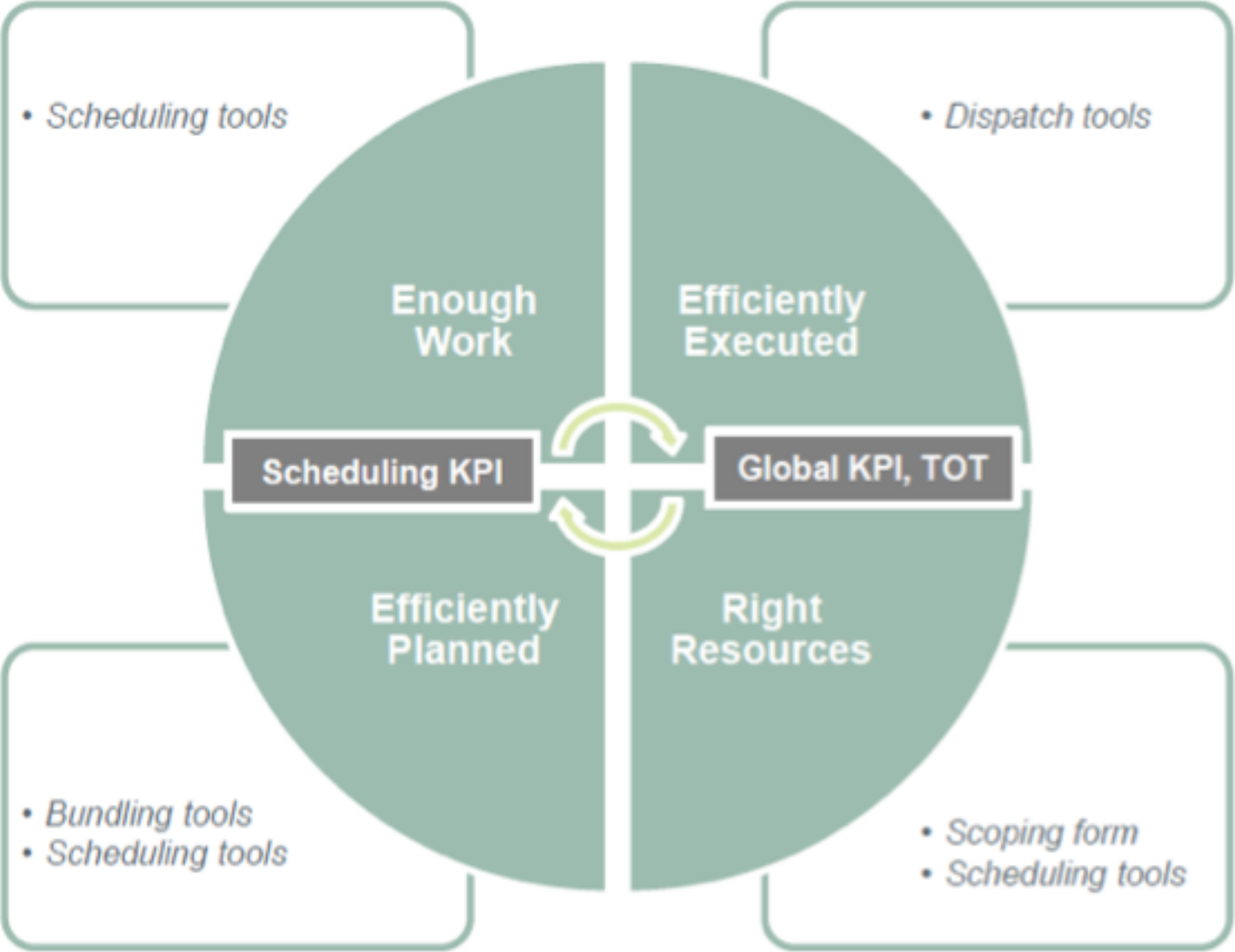
How can we leverage from technology?



Endeavour Energy

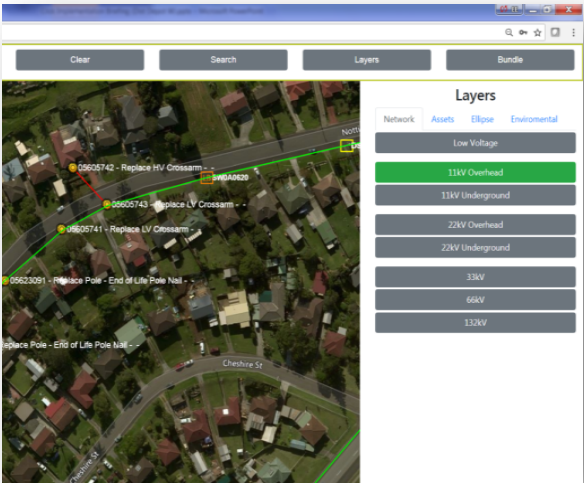


Breaking down the problem



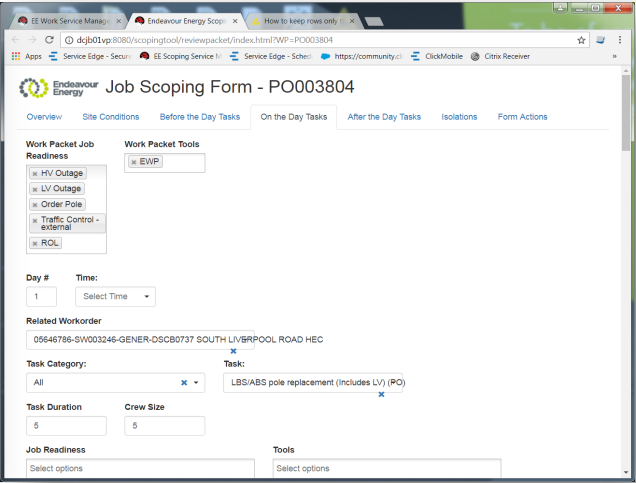
Technology Solution

STAGE 1



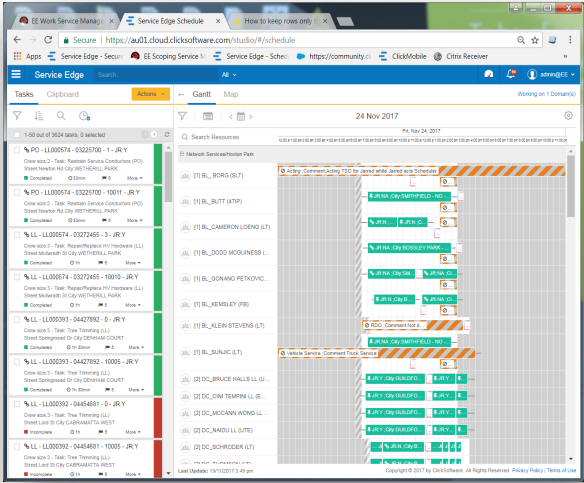
Bundling Tool

STAGE 2



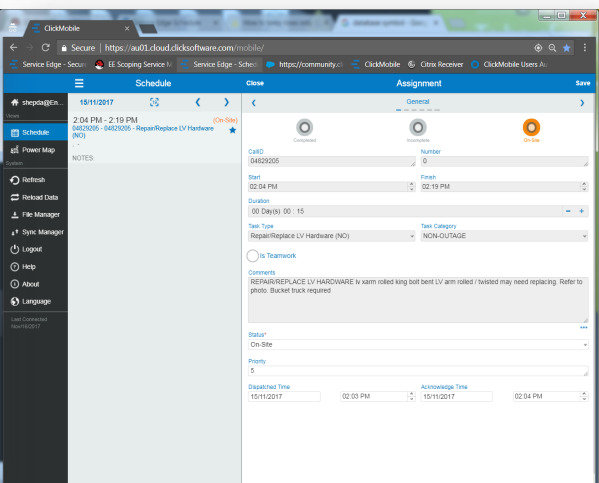
Scoping Tool

STAGE 3



FSE Scheduling

STAGE 4



FSE Mobile

Stage 1 – Bundling Tool

Work orders

Ellipse, spreadsheets, reports

Network topology

GNET

PSBI photos

Ellipse

Maps and Street View

Google Earth

Environmental information

EnviroGIS

Stage 1 – Bundling Tool

Work orders

Ellipse, spreadsheets, reports

Network topology

GNET

PSBI photos

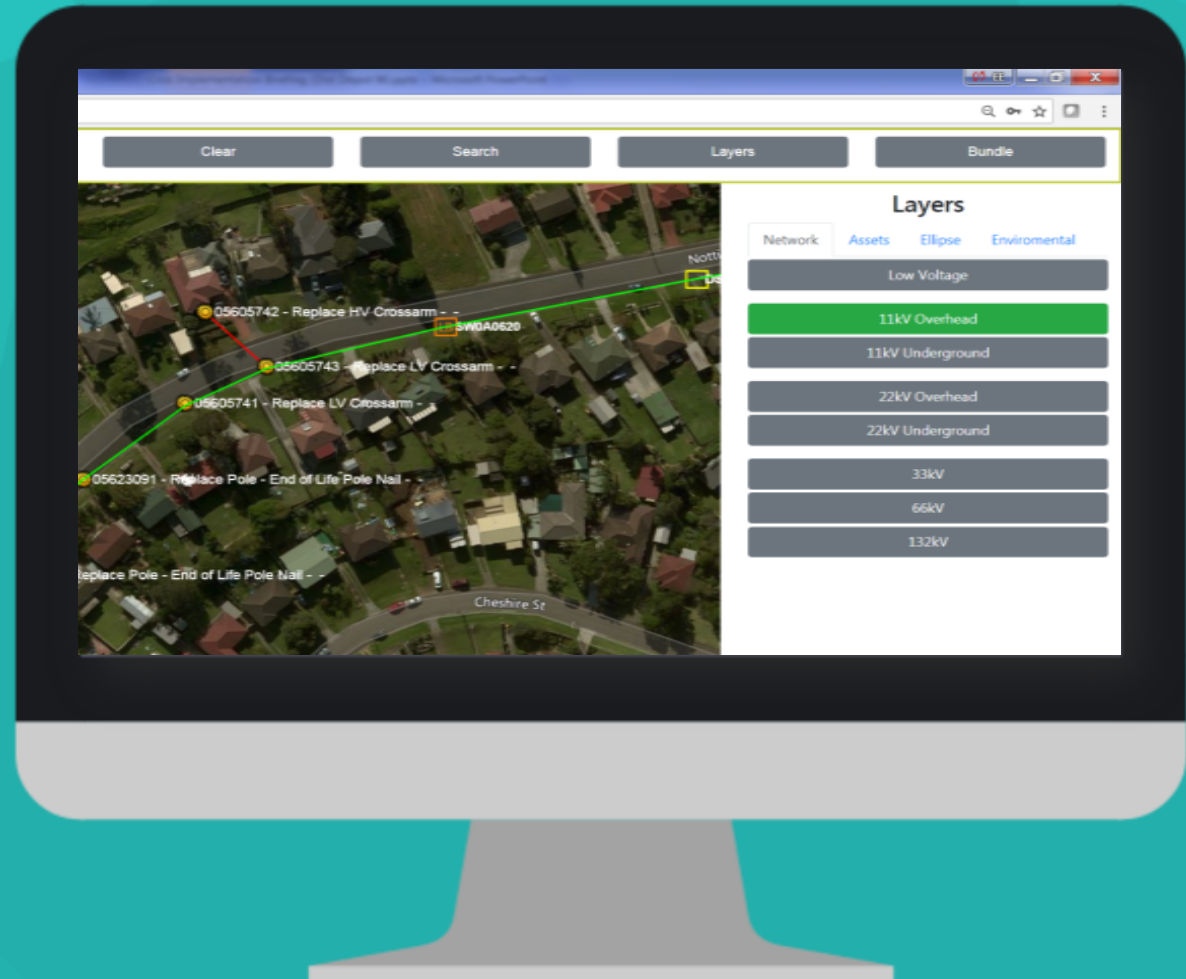
Ellipse

Maps and Street View

Google Earth

Environmental information

EnviroGIS



Stage 1 – Bundling Tool



Maximise outage opportunities
by bundling work



Reduce complexity finding
and understanding work



Reduction in travel and
planning costs



**Up to 40%
cost saving**

Stage 2 – Scoping Tool – Existing Process



Operations Managers scope
onsite using paper notes




In consistent task, staff and
duration breakdown



Poor auditability



Stage 2 – Scoping Tool

 Endeavour Energy

Job Scoping Form - PO003804

Overview

Site Conditions

Before the Day Tasks

On the Day Tasks

After the Day Tasks

Isolations

Form Actions

Work Packet Job Readiness

× HV Outage

× LV Outage

× Order Pole


× Traffic Control - external

× ROL

Work Packet Tools

× EWP

Office tasks



Day #

Time:

1

Select Time

Related Workorder

05646786-SW003246-GENER-DSCB0737 SOUTH LIVERPOOL ROAD HEC

Task Category:

All

Task:

LBS/ABS pole replacement (Includes LV) (PO)


Task Duration

Crew Size

5

5

Field tasks



Job Readiness

Tools

Select options

Select options




Electronic recording
of job details used
for scheduling



Defined tasks allow
us to nudge reduced
hours and crew size



Stage 3 – Scheduling – Existing Process

1	A	B	C	AI	AJ	AK	AL	
2								
3								
4				Wednesday, 30 August 2017				
B Week								
5	First day of sheet	28/08/2017		Work order	Asset number	Work description	Suburb - street	
6								
7								
54	Brendan Leshone			Notify				
55				REQ #				
56				DEPOTMO	0	DEPOT PREPARATION - MORNING	Hoxton Park	
57				05571617		NOTIFY SUB 12637 FOR 12/9/17		
58						81 GOV MAC DR CHIPPING NORTON		
59								
60								
61								
62								
63								
64								
65								
66								
67								
68								
69	TDI32589 (LT w/ Crane)							
70	TDI32905 (LT w/ Crane)			DEPOTAF	0	DEPOT CLEAN UP - AFTERNOON	Hoxton Park	
71				PWO		Est Crew Size - 3 People	0.0	St
72								
73								



Difficult to see if is a full days work



Poor version control and inconsistent between depots



Cannot easily audit or analyse schedule

Stage 3 – Scheduling



Simple drag & drop tasks
to crews to fill day



Automatic violation
notifications
e.g. inadequate skills,
number of staff.



Automatically allocate
tasks based on optimised
rules



Stage 4 – Dispatching work – Existing Process



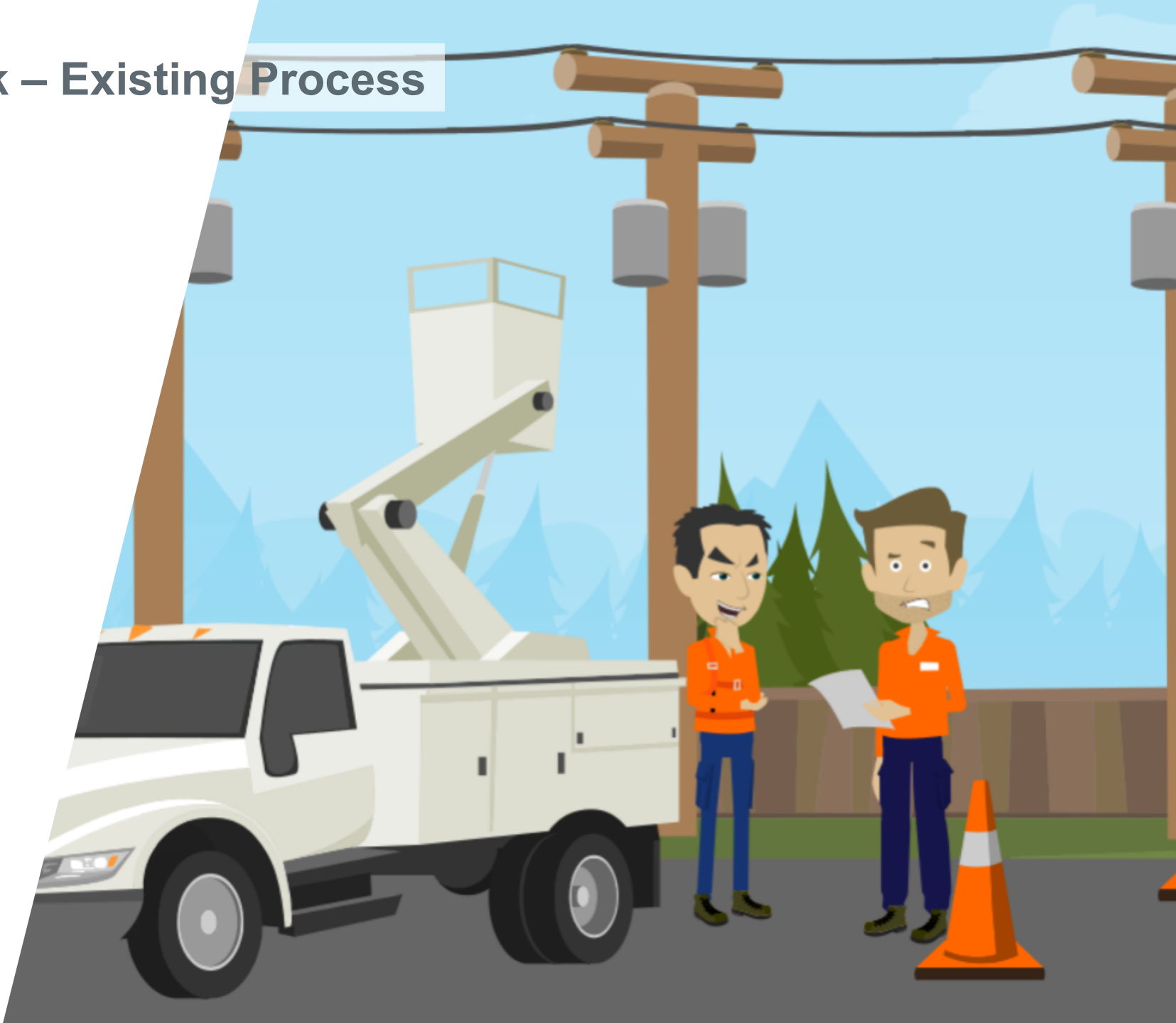
Only 1 folder with all project information



Difficult to monitor and keep track of completed and incomplete work



Manual data capture



Stage 4 – Dispatching work



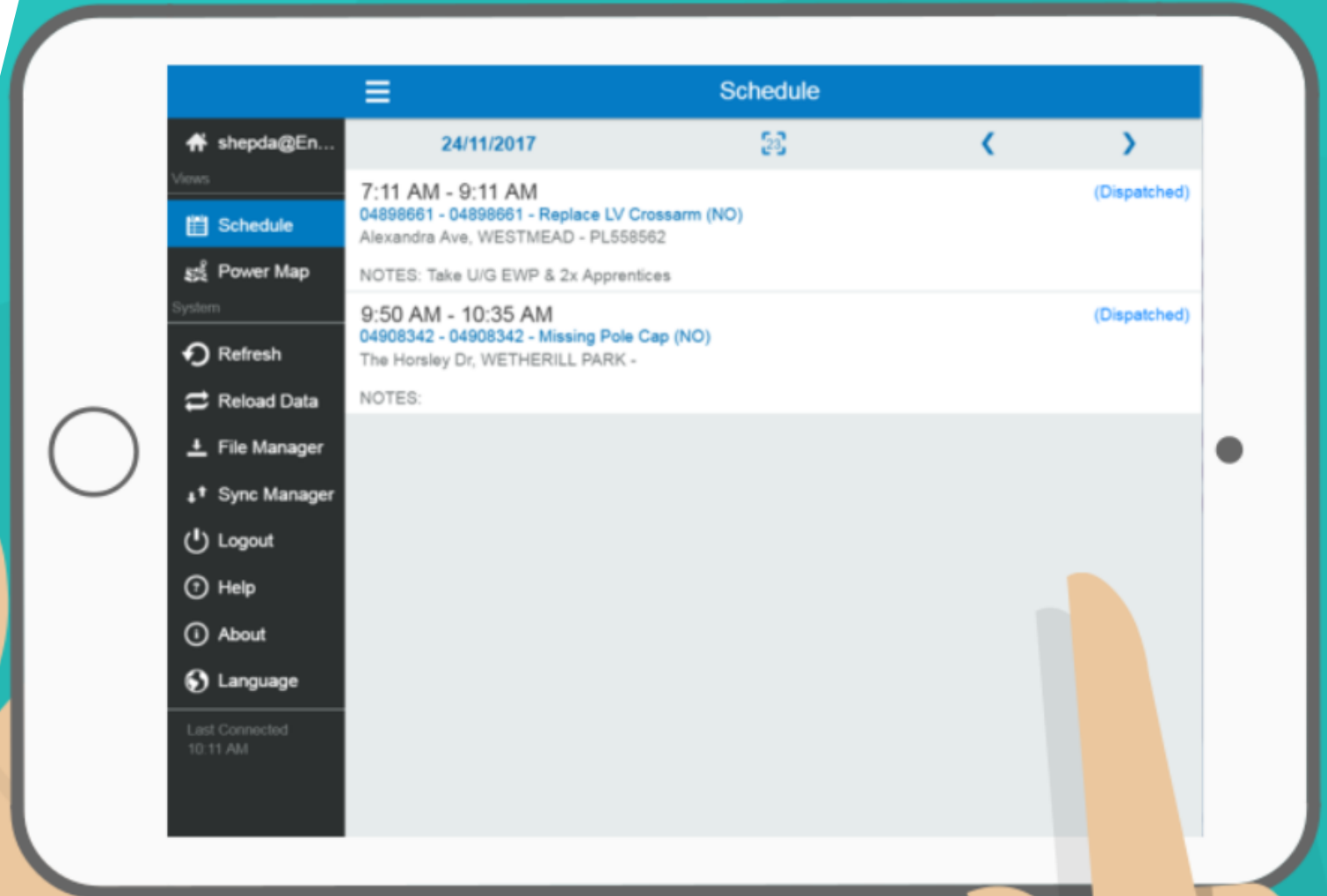
All work and documentation
is deployed via app



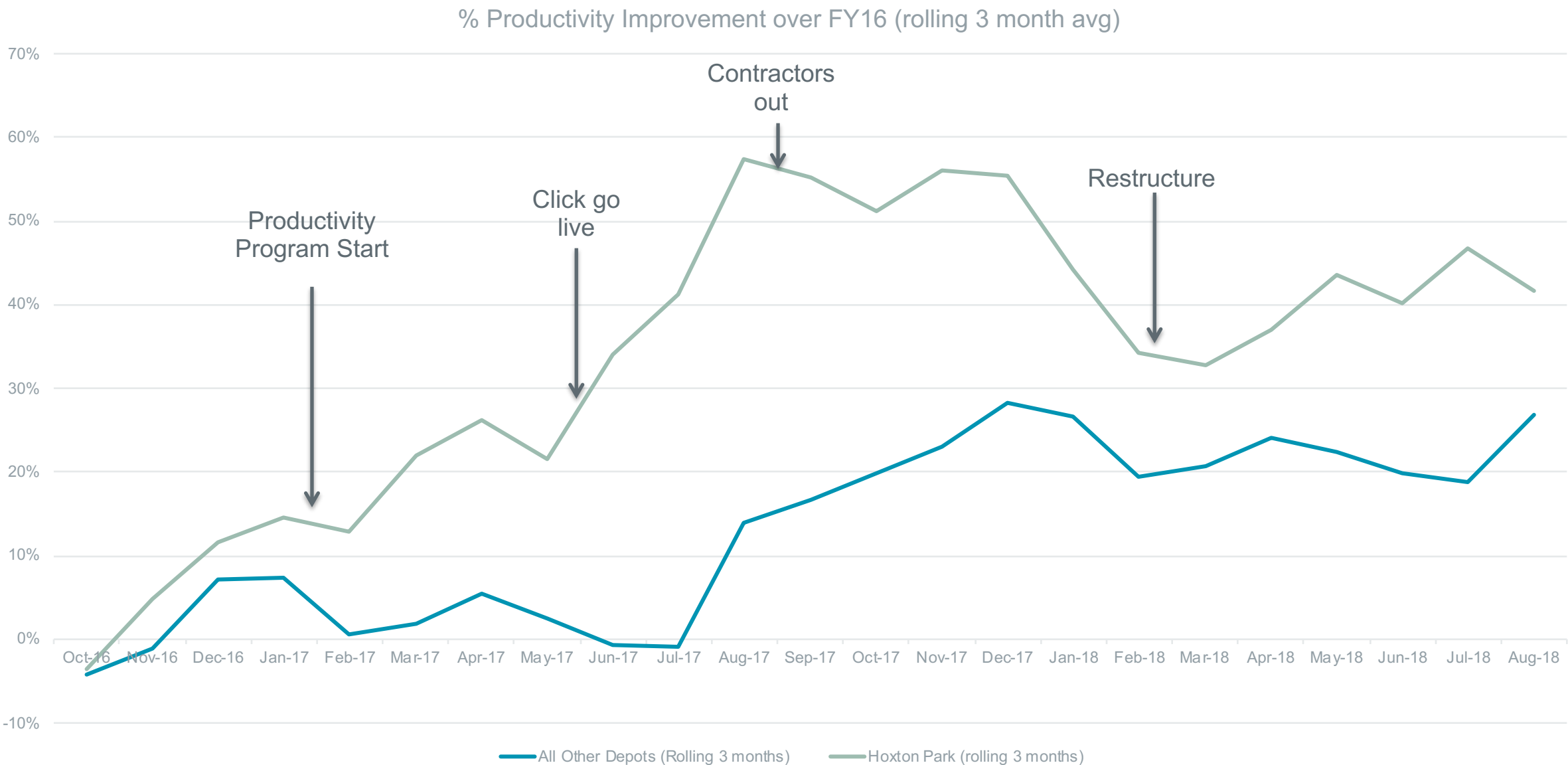
Task information updates
the schedule live



Strong transparency of
planning and task
execution



Impact on the business



Barriers to success

