



IoT Systems Group

making your business efficient

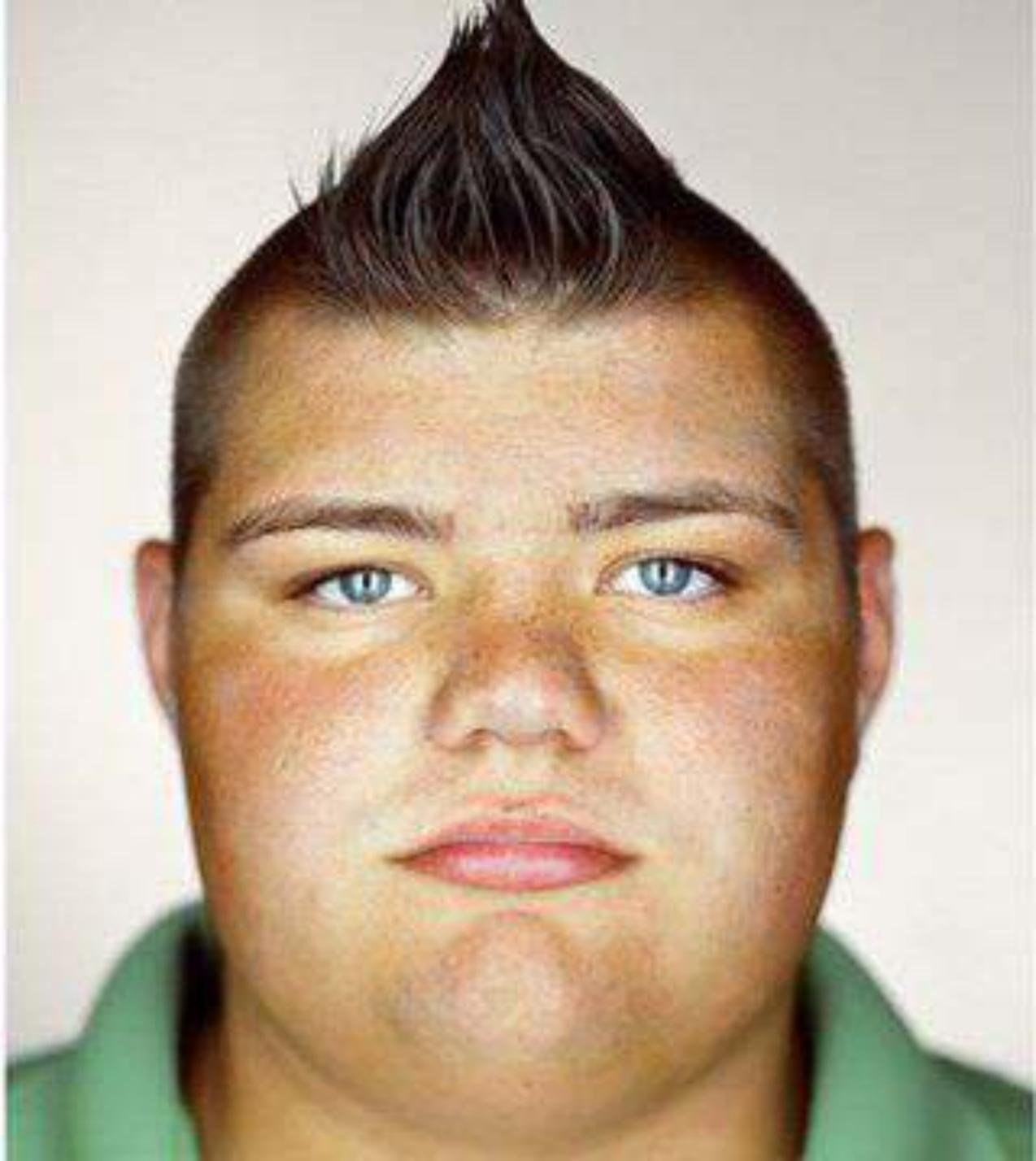
Jason Plent
CEO

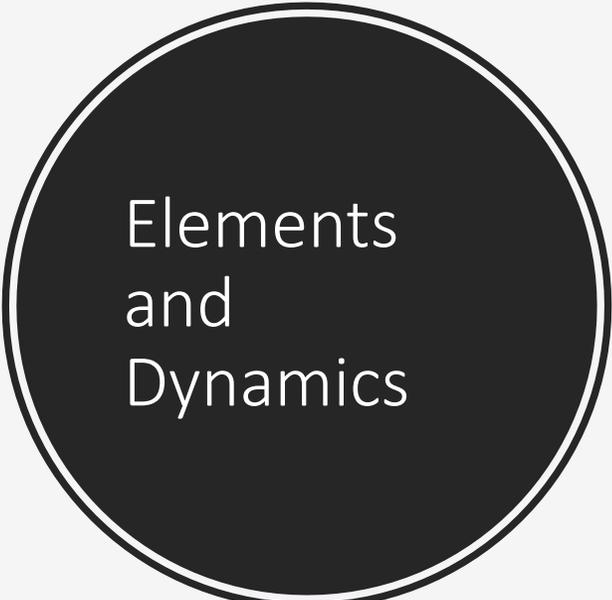
Digital Jersey Tech Week
October 2018
IoT Day

DIGITAL JERSEY

TWIN PEAKS

When being a twin was useful and other stories from when you were in trouble but didn't know it...





Elements and Dynamics

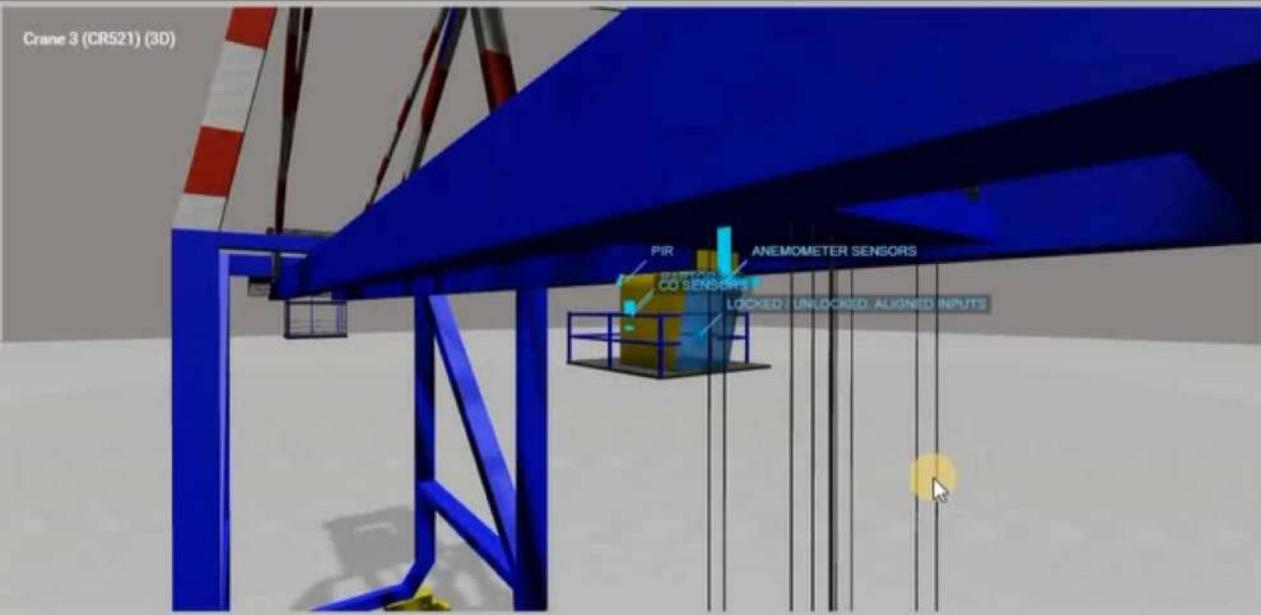
Lets separate those things out

Elements only tell you what things are and where things are? Useful if you need to know something about performance from that aspect of the reality, and so you can call up the twin to find out how its doing, and see it in the virtual world

But be careful...

You don't want everybody telling you how they are all the time, every time, every second over the cloud – this way madness lies

Key indicators are good – let me show you what I mean



Gateway - Connection status

Online

Gateway - Time since last comms received

< 1 MINUTE
AGO

Last Entry Time:
10/10/2017 09:01:59

Wind Speed

3
km/h

CO Concentration

40
%

Container - Locked

No

Container - Released

No

Containers move counts

14
Containers

Container average move time

1
Minutes

Container average wait time

0
Minutes

Vibration reading

1.02
G

Crane speed

0
km/h

Gateway - Tampered status

No

Gateway - AC OK

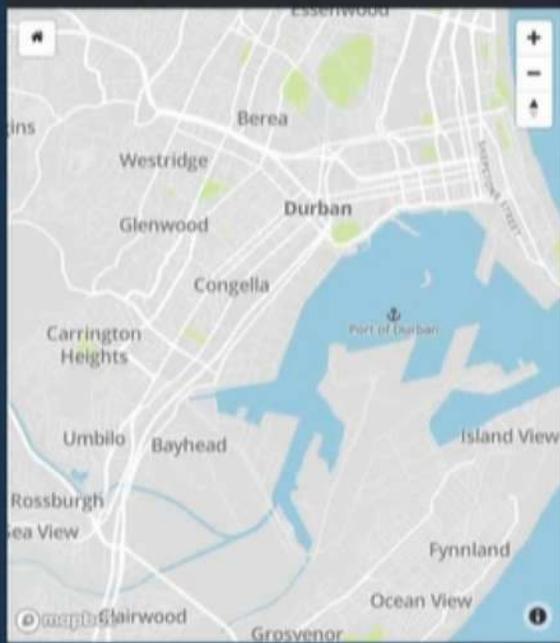
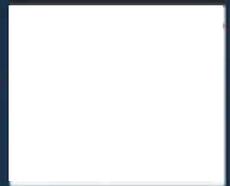
Yes

Gateway - Battery Low

No

Straddle Carrier

SC234

Connectivity



46

External Temperature



13 °C

Vibration



0 G

Humidity



12 %

Engine Status



On

Speed

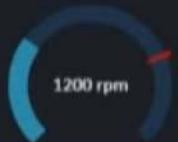


0 km/hour

Gear

Reverse

rpm



1200 rpm

Twist Lock Status



Unlock

Tyre 1



11 bar
Pressure

Tyre 1



12 °C
Temperature

Tyre 2



10.88 bar
Pressure

Tyre 2



13 °C
Temperature

Brake Status

0 %

Spreader Movement

4036 mm

Tyre 3



9.99 bar
Pressure

Tyre 3



13 °C
Temperature

Tyre 4



9.5 bar
Pressure

Tyre 4



13 °C
Temperature

Oil Temperature



12 °C

Engine Running Hours

26562
Hours

Tyre 5



10.04 bar
Pressure

Tyre 5



13 °C
Temperature

Tyre 6



8.32 bar
Pressure

Tyre 6



13 °C
Temperature



Battery Level

24 %

Tyre 7



6.98 bar
Pressure

Tyre 7



13 °C
Temperature

Tyre 8



9.62 bar
Pressure

Tyre 8



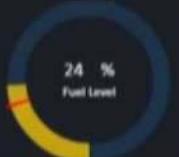
13 °C
Temperature

Tank 1



24 %
Fuel Level

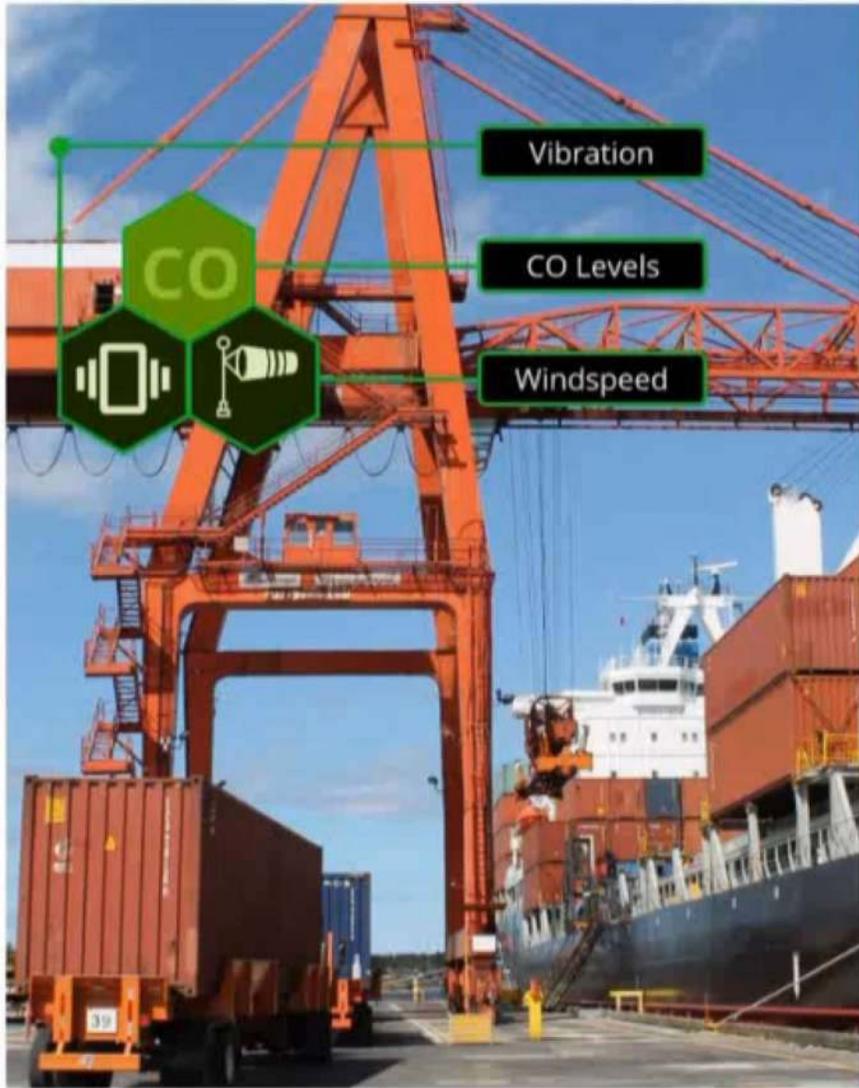
Tank 2



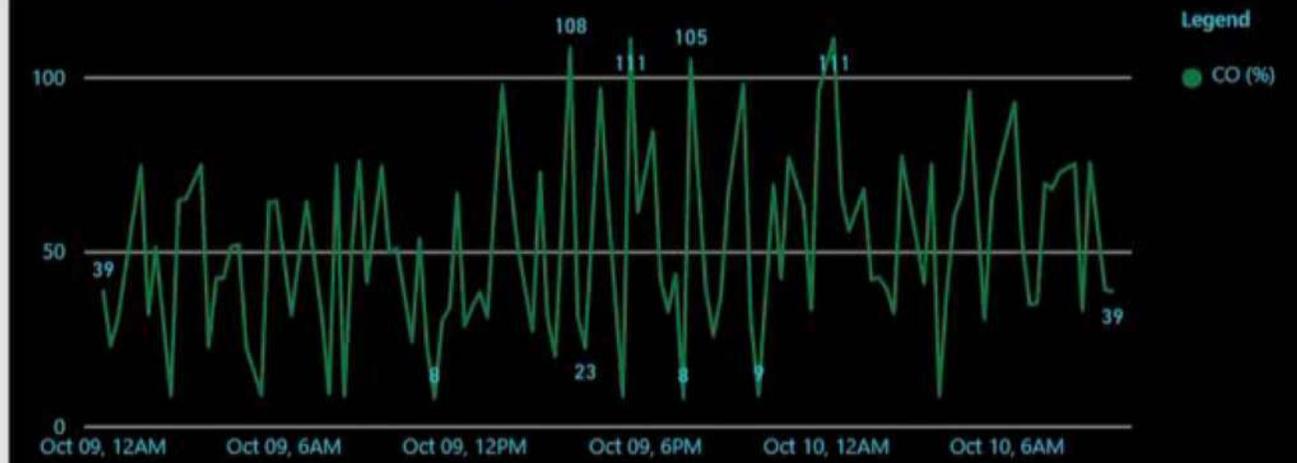
24 %
Fuel Level

Navigation

Crane Sensors



Average Values over Time



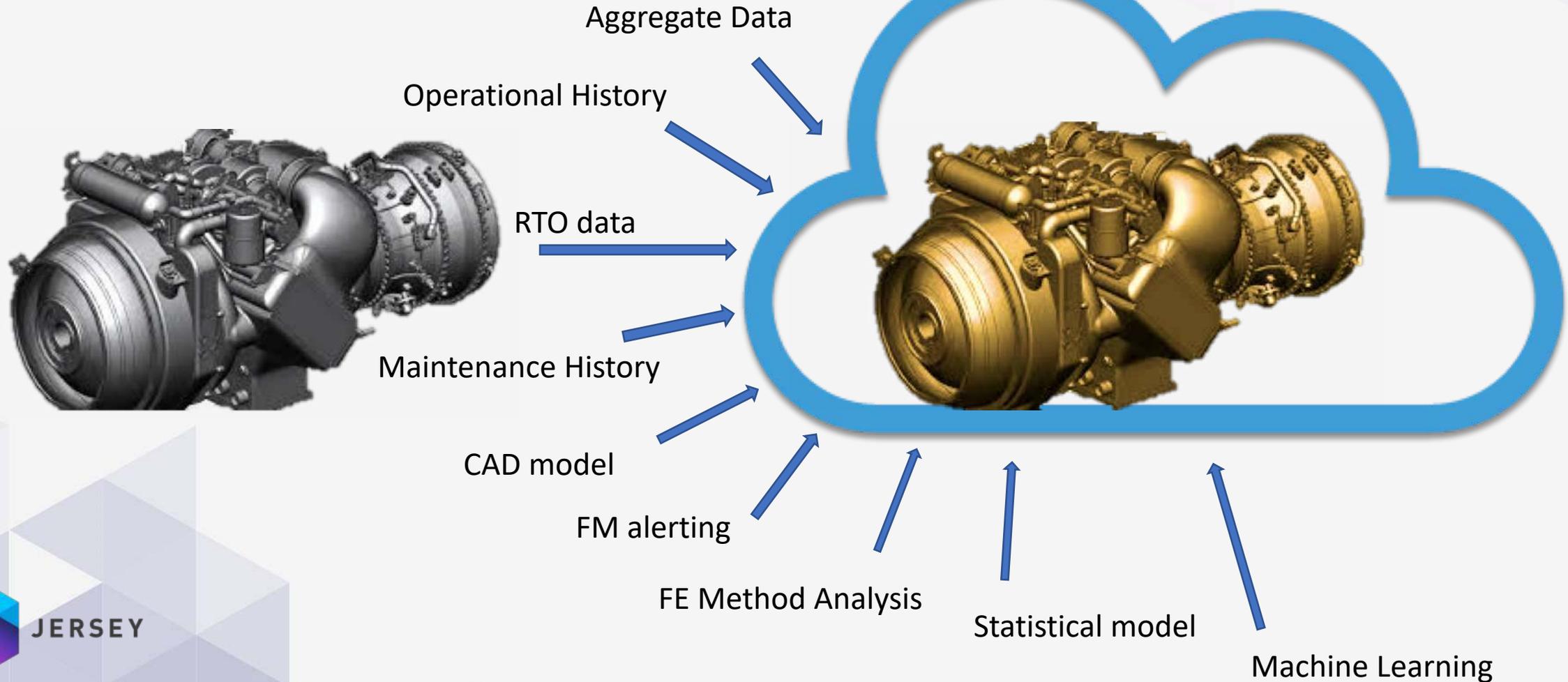
Locations



For when you were in trouble but didn't know it

Physical Asset

Digital Twin



KPI Period: 08:00 to 09:00

Overall Port KPI's

PORT OF DURBAN

Containers moved in last hour



Active equipment in last hour



Equipment utilization in last hour (%)



Filtering Options

All

Filter by Device Group

Filter by Alarm Type

APPLY

CLEAR

Alerts

Straddle SC202 - Equipment is due for a service based on the amount of engine running hours since last service (900 hours since last service).

Maintenance

09/10/2017 12:35:44

ACKNOWLEDGE HISTORY

Straddle SC225 - Machine is offline

Offline

09/10/2017 02:20:19

ACKNOWLEDGE HISTORY

Straddle SC203 - Equipment is due for a service based on the amount of engine running hours since last service (900 hours since last service).

Maintenance

08/10/2017 22:02:36

ACKNOWLEDGE HISTORY

KPI Period: 08:00 to 09:00

KPI's per equipment

CRANES

HAULERS

STRADDLES

HANDLERS

Crane Averages

Containers moved per hour



Equipment utilization per hour (%)



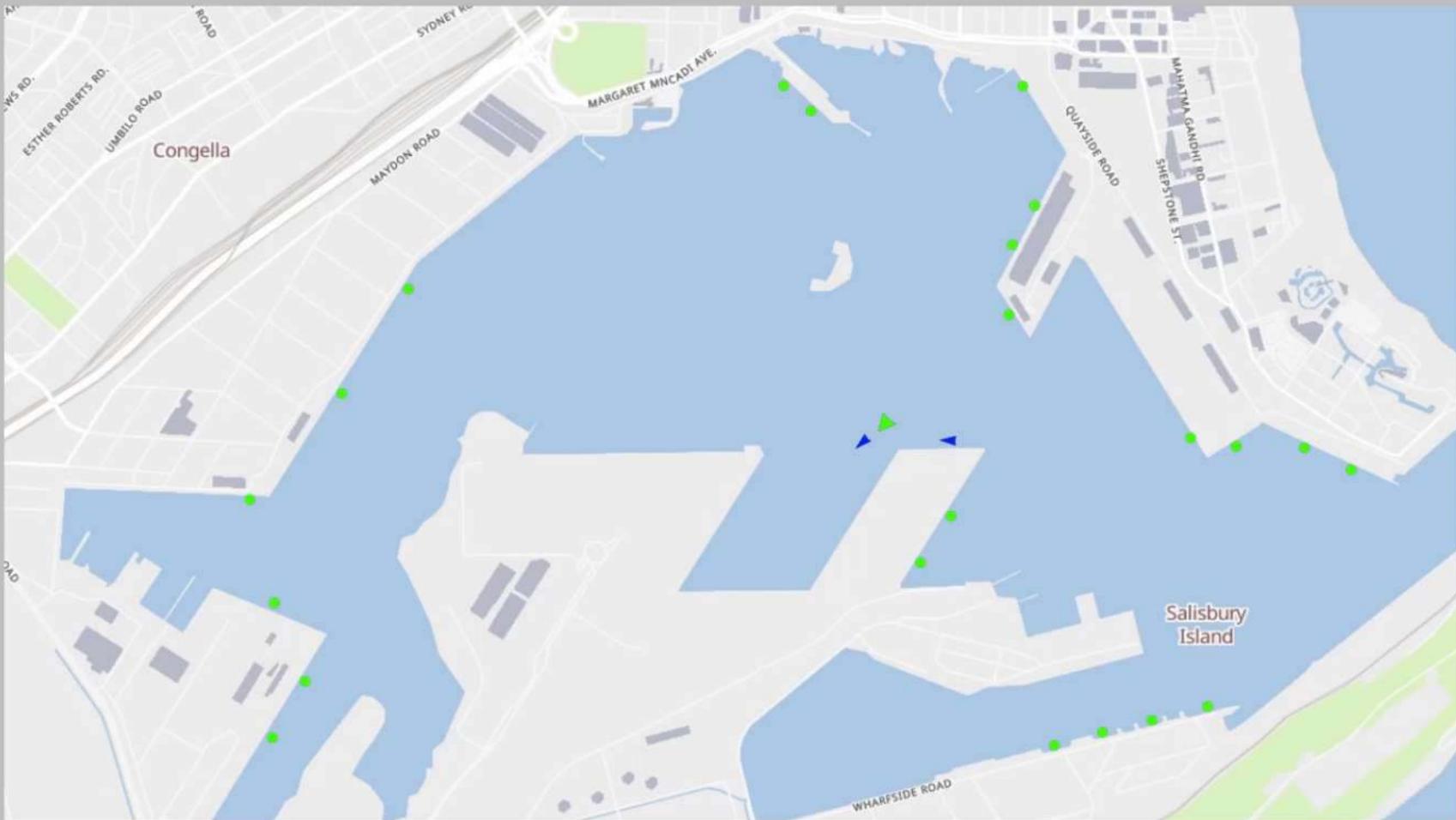
What do I
mean?

I don't just mean that the technology can simulate an environment

I mean the technology can know more about how it interoperates than you do

Aggregating this data is one thing

AI is itself a simulation of intelligence, but put the two together...



Resource Capacity

Resources Available		Resources Used	
Goal	Actual	Goal	Actual
95%	90%	95%	90%

Case Management

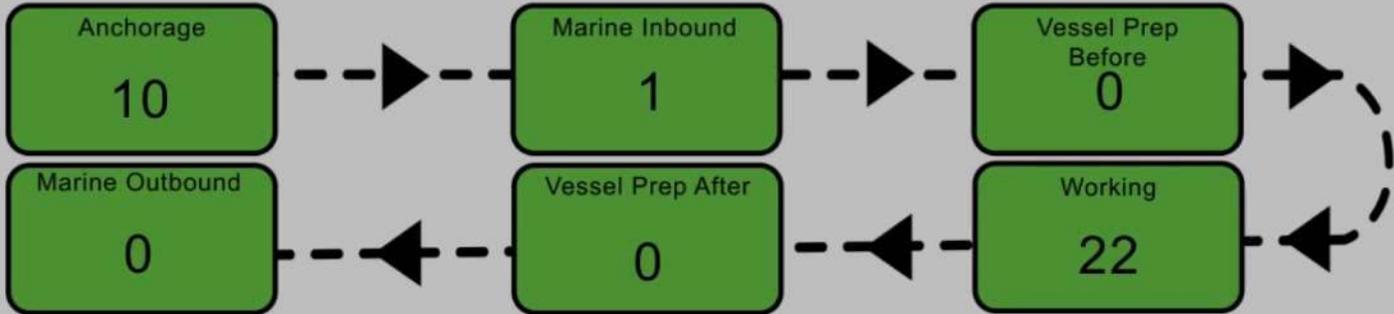
	
Cases Open	Cases Closed
153	155

Berth Occupancy

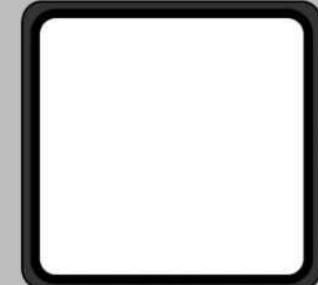
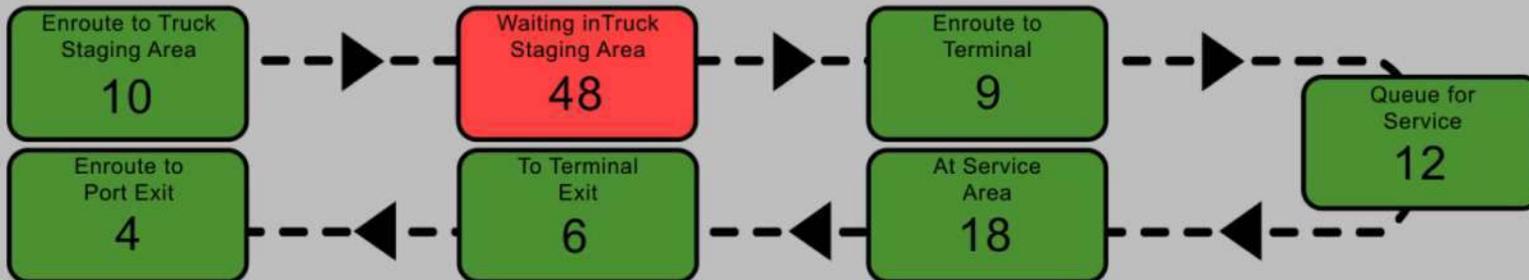
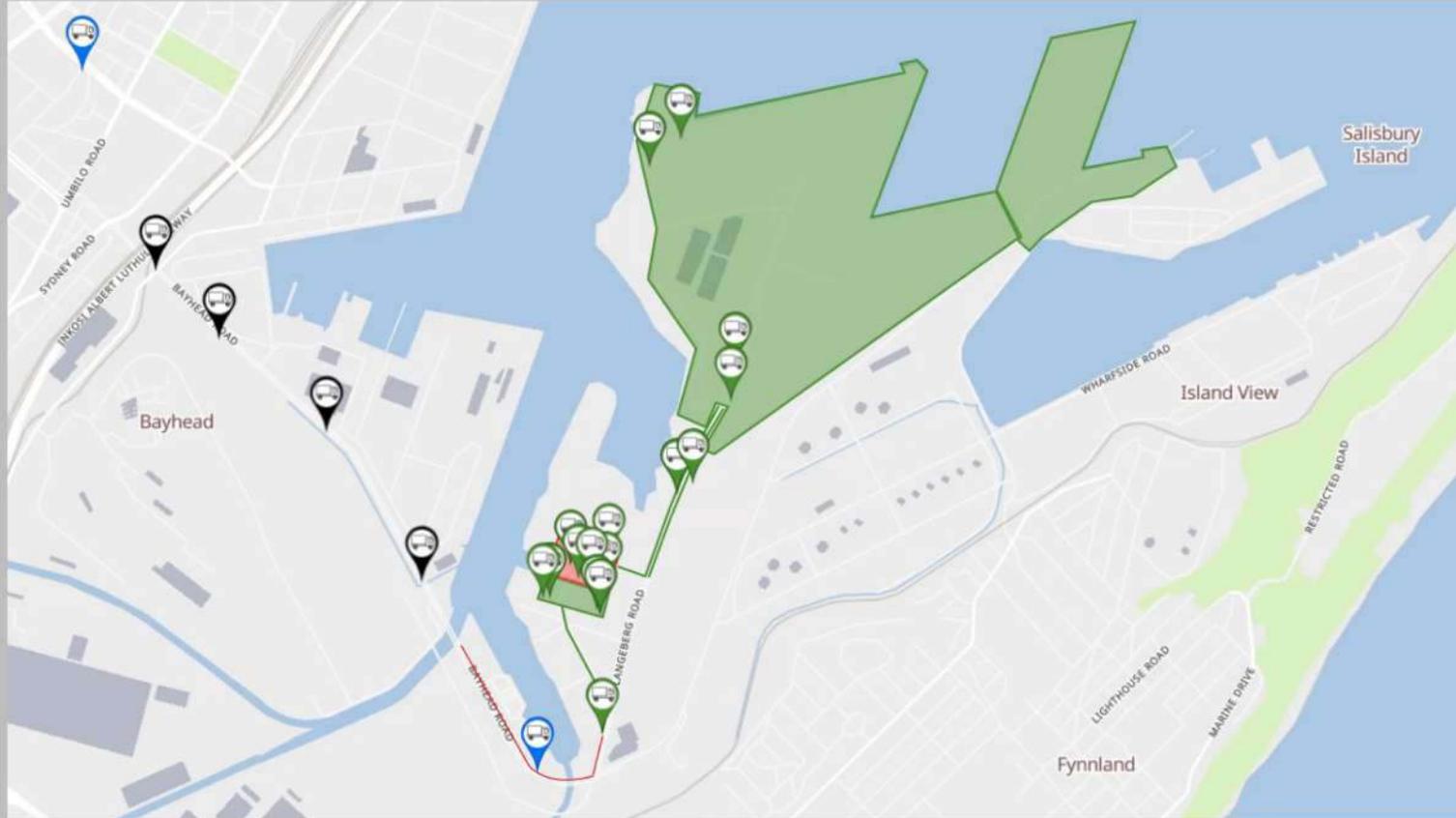
Goal	Actual
90%	85%

Weather

Wind	Temp
18km/h NNE	23°C



Truck Turnaround Time



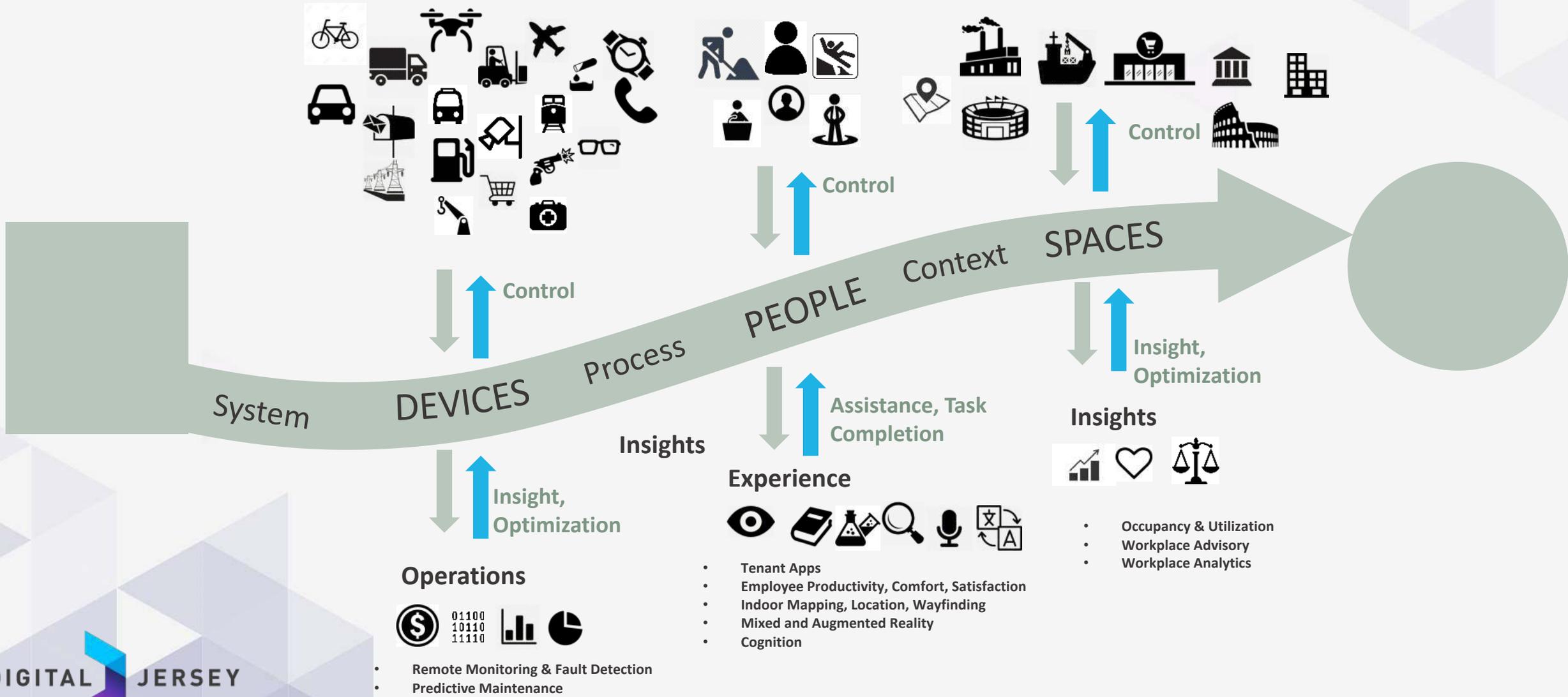
Performance Throughput			
Trucks Arrived This Week		Trucks Departed This Week	
Goal	Actual	Goal	Actual
3150	3118	3150	3102
Trucks	Trucks	Trucks	Trucks

Performance Rate			
Arrival Rate Per Shift		Departure Rate Per Shift	
Goal	Actual	Goal	Actual
150	153	155	143
Trucks	Trucks	Trucks	Trucks

Handling Capacity	
Goal	Actual
155	153
Trucks	Trucks

Average Processing Time	
Goal	Actual
70	82
Minutes	Minutes

Digital Twins: fusing physical and digital



Elements
and
Dynamics

This is how we can approach things for Jersey



PORTS OF JERSEY
YOUR ISLAND GATEWAY

What is interesting is how we go from discovery and improved control to integrate the Ports of Jersey data into the concept of the digital twin for the island as a whole, how the systems interact and bring benefit

I'm delighted to be here to help and delighted to participate in this exciting venture

Thank you for your time



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making your business efficient

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