

ORACLE

Managing a Construction Site During COVID-19

Innovation in Action

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Oracle Global Business Units

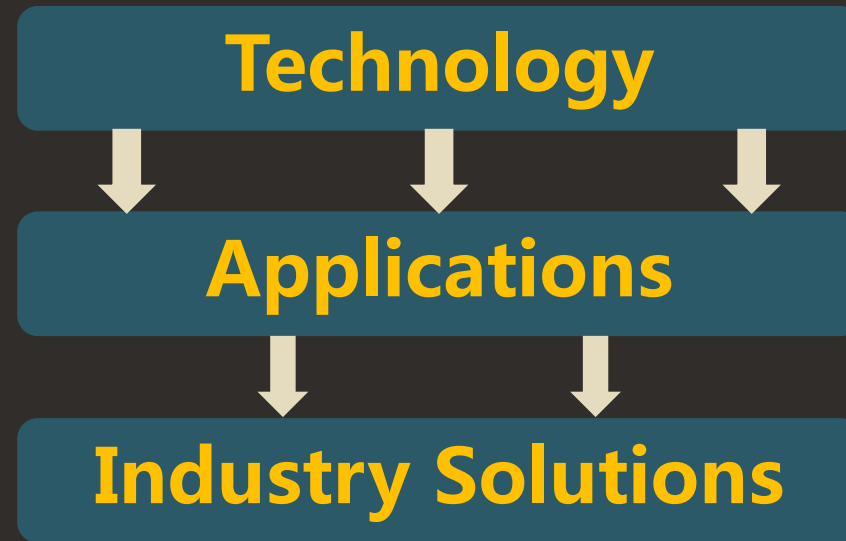
November 5, 2020



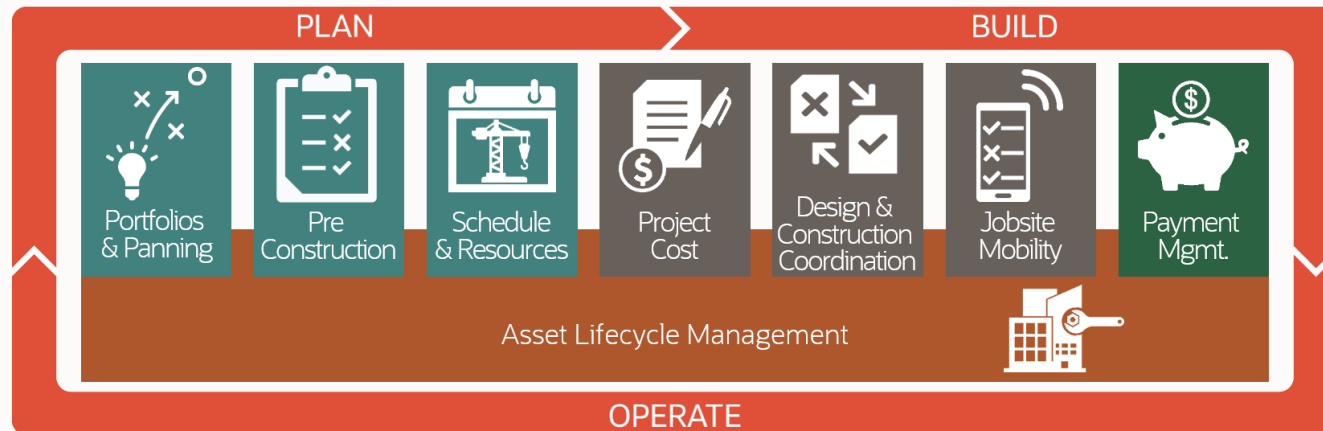
Our mission is to help people see
data in new ways, discover insights,
unlock endless possibilities.



Our Heritage



Our Execution Approach



Lab Vision

A place for Oracle and our partners to prove how our customers can achieve efficiencies and grow profits

Phase I

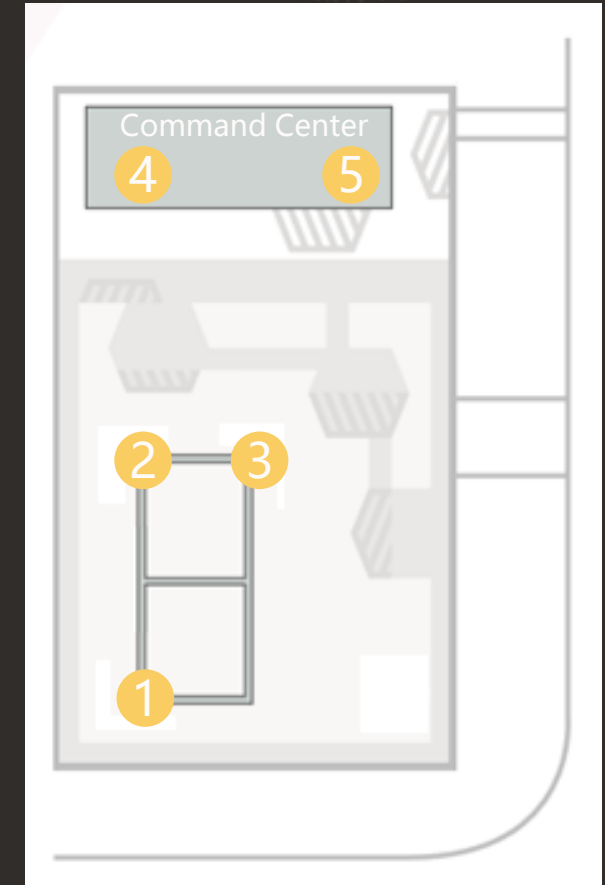


Phase II

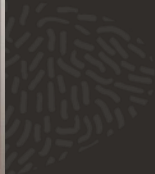


Phase I Experience Map

- 1. Material Tracking and Readiness:** Tracking + drone + gate reader
- 2. Progress Reporting with Autonomous Devices :** Drone + rover + camera
- 3. Internet of Things:** Worker location + equipment authorization + fall alert + tool tracking
- 4. Command Center:** BIM model coordination and review with VR + virtual progress and risk reporting + Lean task management + earned value management + 4D/5D BIM + AI-powered image recognition + site delivery tracking + virtual training
- 5. Augmented Reality and Industrial Knowledge Transfer Platform:** Punch list + equipment tagging + built progress with 3D model overlay + data visualization







Innovation Lab Phase II - Construction and Tech on Site



ORACLE
Construction and
Engineering

ORACLE
Aconex

ORACLE
Primavera

ORACLE
Textura

verizon✓

here

SENSERA
SYSTEMS

atlas RFID
solutions

SMARTVID.IO

RECONSTRUCT

triax®

ITI

Milwaukee®

CATERPILLAR

BOSCH

VERSATILE

FARO

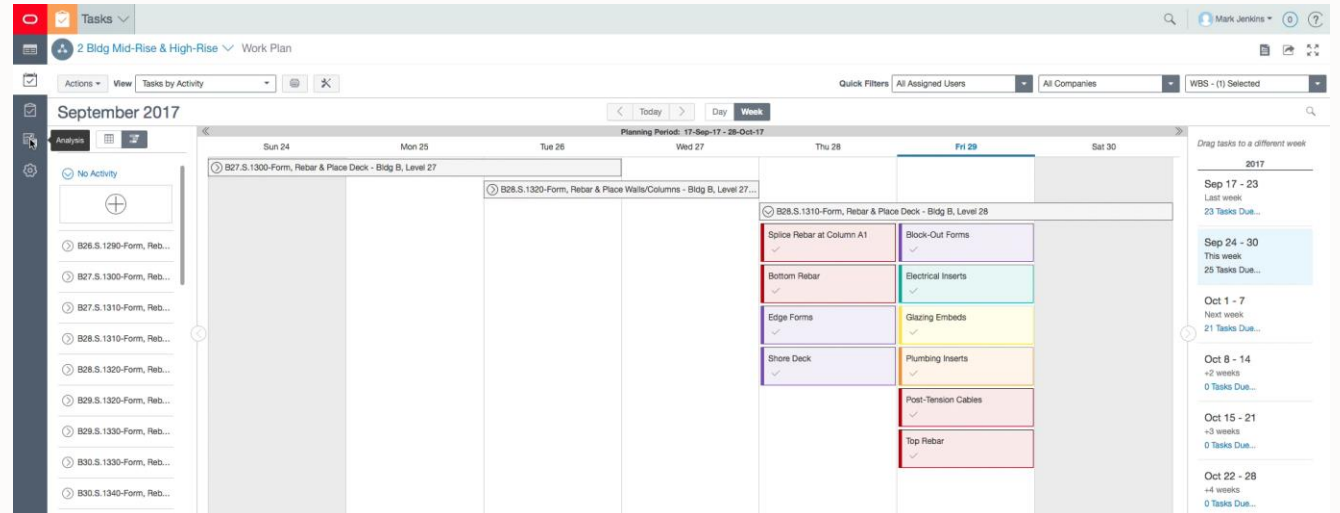
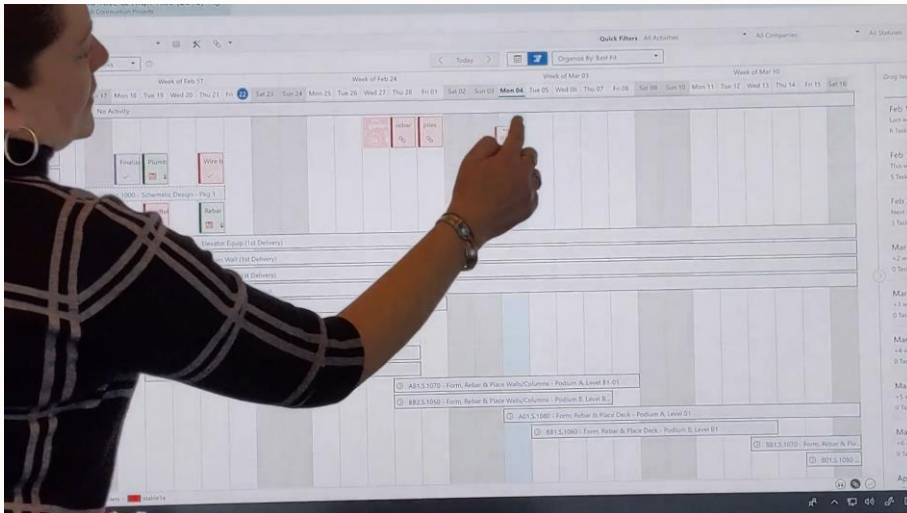


Visual Command Center – BIM Model Coordination – Asset Digital Twin



Virtual Command Center – Digital Planning Board – CPM + Lean

ORACLE
Primavera



Material Readiness and Contactless Site Deliveries



- [Jovix's Supplier Mobile apps](#) are paired with automated gate readers
- Materials are equipped with passive RFID tags to automatically notify teams of arrivals
- Material data is then visualized in Jovix throughout the supply chain
- The general contractor can see the materials within the supply chain as they relate to the work package and the Oracle Primavera Cloud Schedule ID



Autonomous Laser Scanning



Common Data Environment

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Visual Data

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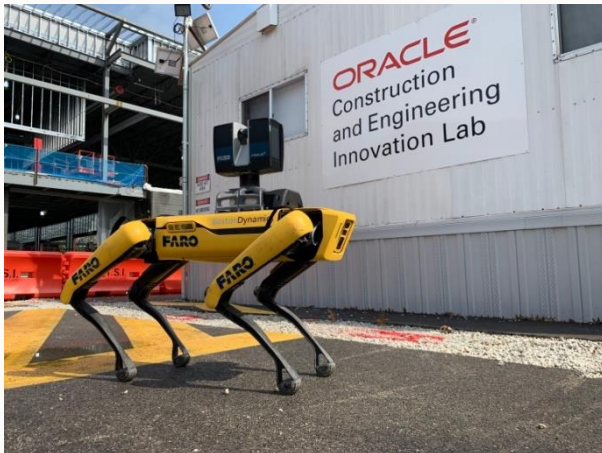
Aconex

Model
Coordination
(BIM)

ORACLE

Primavera

Schedule



Name (C/S)	Company	Start	End	Progress
Fire Protection Mains - Ground	United States Alliance Btl			
Plumbing Wall Bathroom - Ground	Martin Peterson Compas			
Plumbing Plenum - Ground	Martin Peterson Compas			
Plumbing Overhead - Waste & Vent Mizz	Martin Peterson Compas/Overhead - Waste & Vent Mizz			
Plumbing Plenum - Mezzanine	Martin Peterson Compas			
Unit Condit - Ground Office	Take Electric			
Wall Condit - Ground Office	Wall Condit - Ground Office			
Plumbing Overhead - Waste & Vent Grou	Martin Peterson Compas/Overhead - Waste & Vent Grou			
Fire Protection Mains - Mezzanine	United States Alliance Btl/Primavera - Mezzanine			
Fire Protection Branches - Mezzanine	Fire Protection Branches - Mezzanine			
Fire Protection Beams	United States Alliance Btl/Protection Beams			
Plumbing Overhead - Water Ground	Plumbing Overhead - Water Ground			
Priority Frame - Mezzanine	Priority Frame - Mezzanine			
Duct Distribution - Mezzanine	Admetal Heating & Vent			
Plumbing Overhead - Water Mizz	Martin Peterson Compas			
Wall Condit - Mezzanine Priority Walls	Wall Condit - Mezzanine Priority Walls			
Duct Distribution - Ground	Admetal Heating & Vent			
Duct Runways	Admetal Heating & Vent			
Unit Condit - Dry Lab	Take Electric			
Gas Pipe Distribution - Ground & Mezz	Admetal Heating & Vent			
Wire Pull - Dry Lab	Take Electric			
Exhaust Fan Wiring	Take Electric			
Wing Hoist in Dry Lab	Admetal Heating & Vent			
Unit Condit - Mezzanine	Take Electric			
Wire Pull - 1st Floor/Mezz	Take Electric			
Elevators	Elevators			
Stairs	Stairs			
Interior Framing	Interior Framing			
Priority Frame - Mezzanine	ES&J of Chicago			
Air Room Change Framing	ES&J of Chicago			
Misc Walls - 1st Floor/Mezz	ES&J of Chicago			
Misc Blocking	ES&J of Chicago			
M&P wall rough	Take Electric			
Wall Condit - Mezzanine Priority Walls	Take Electric			
Curtain Wall Steel Framing	Take Electric			
Dynamic tagging & sanding	Take Electric			
Air Room Wall Build Out	ES&J of Chicago			



Visual Command Center – Monitoring Progress, Schedule, Risk + Quality

Reality Capture

- Photos
- Laser Scan **FARO**
High quality
- Lidar University of Illinois
Medium quality
- Drone
- 360 Video
- Live Camera **SENSERA**

verizon
4G LTE A
Data

Common Data Environment

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Aconex

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Primavera

Visual Data

Model Coordination/BIM

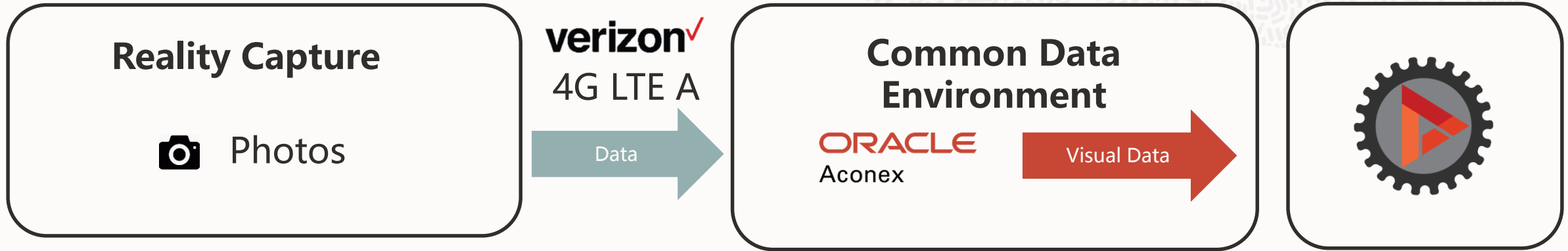
Schedule

Data

Images uploaded every 5 minutes



Social Distancing – Monitoring Health and Safety



Use Cases:

- PPE compliance
- Housekeeping
- People in group – mobile access in near real time*
- Work at height
- Construction activities

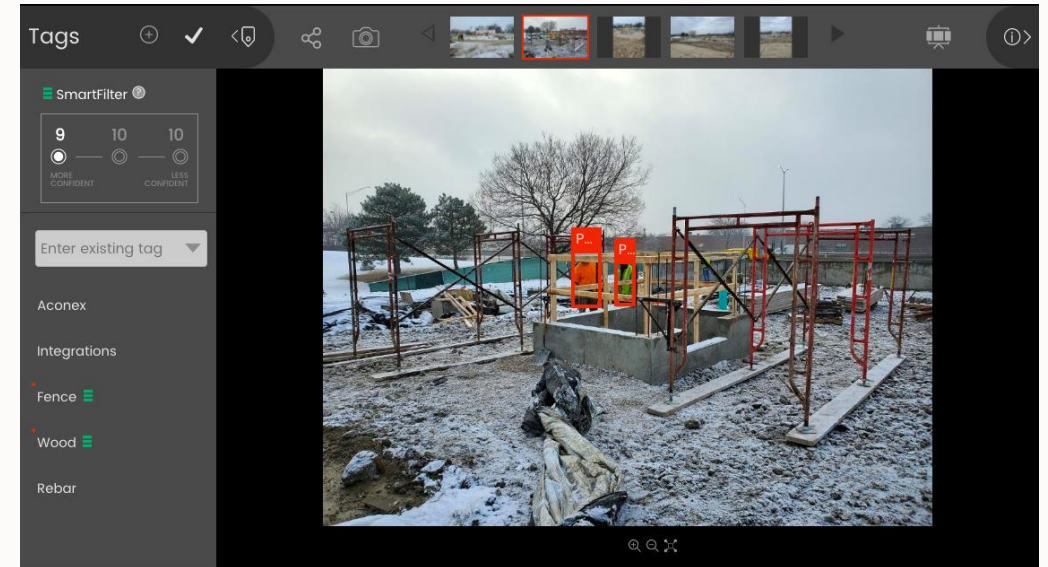






Image from Jan. 31, 2020



Social Distancing – Monitoring Health and Safety




System Details:

 TraceTag: <ul style="list-style-type: none">• Real-time audible alert for close contact interactions• Records worker interactions for contact tracing• Rechargeable battery with weeks to months of battery life between charges• No GPS or off-site tracking	 Gateway: <ul style="list-style-type: none">• Logs headcount/attendance, transmits interactions to cloud• Can facilitate remote configurations, including sounds	 Alert: <ul style="list-style-type: none">• Real-time audible alert and flashing red LED will be emitted when worker interaction is registered• Alert and LED can be turned off for contact tracing only• Escalation alert allows warning beep for timely distance correction; alarm increases in intensity if distance is not corrected• Alarm can be silenced or temporarily disabled with a button push for accepted close contact work	 Dashboard/Data: <ul style="list-style-type: none">• Headcount/attendance• Worker profile management• Device management and administration• Self-service contact tracing report; data includes timestamp, duration of interaction and participants
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Proximity Trace at a Glance:

- Gateways are cellular
- Device-to-device and device-to-gateway signaling
- No dependency on client WIFI or internet
- No location data - on site or off site

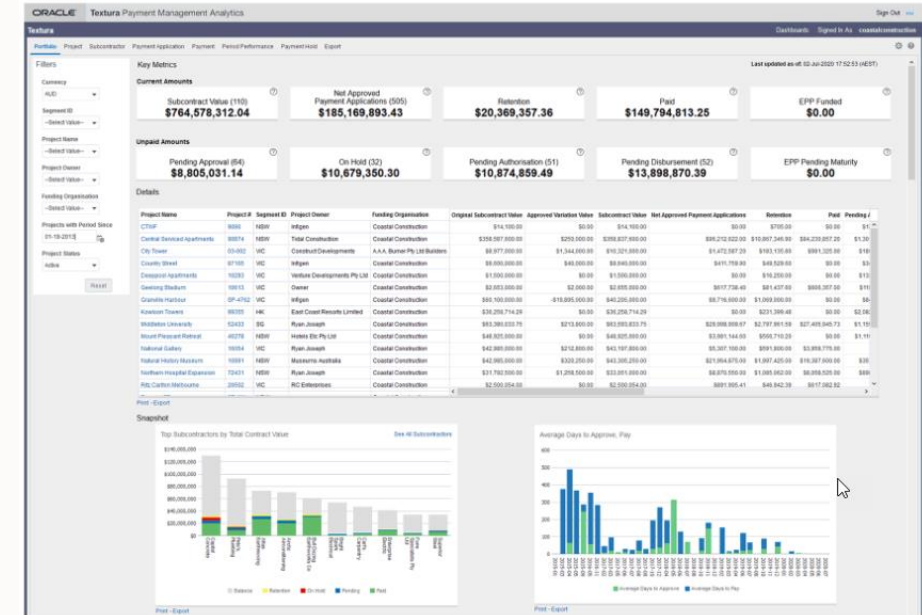
A white hard hat is shown from a three-quarter perspective. A black rectangular sensor is mounted on the front. Red concentric circles emanate from the sensor, representing the detection range of the proximity tracing technology.

Improved Payment Outcomes

Oracle Textura Payment Management

On the Innovation Lab project, Oracle's cloud billing, compliance management and payment solution:

- Enabled accounting staff to **work remotely**
- Reduced the average time it takes to pay subcontractors by **two weeks** from March to May
- Cut the time to produce an approved invoice by **more than 50%**



Oracle Construction & Engineering LAD team



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Public Sector

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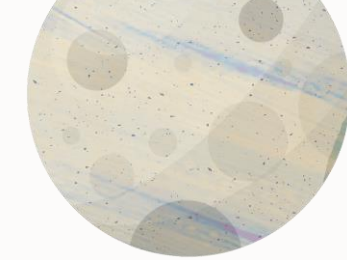
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Solutions Engineer



Thank you

