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The bridge to possible

Build Pervasive Wireless Mobility in Industrial Environment

Karan Capoor, Technical Solutions Architect, Partner Managed and as-a-Service Sales

BRKIOT-1127

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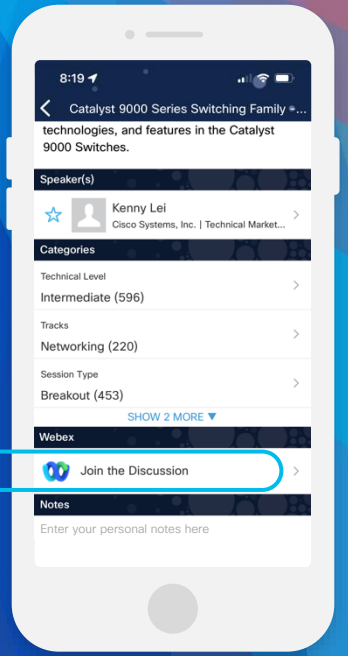

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Knowledge Shared **= Knowledge 2**

– Unknown

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Agenda

Pervasive wireless

- Where it is required
- Why it is required
- What is “Pervasive wireless”?
- How to select & build “wireless infrastructure”
- Summary
- Q&A

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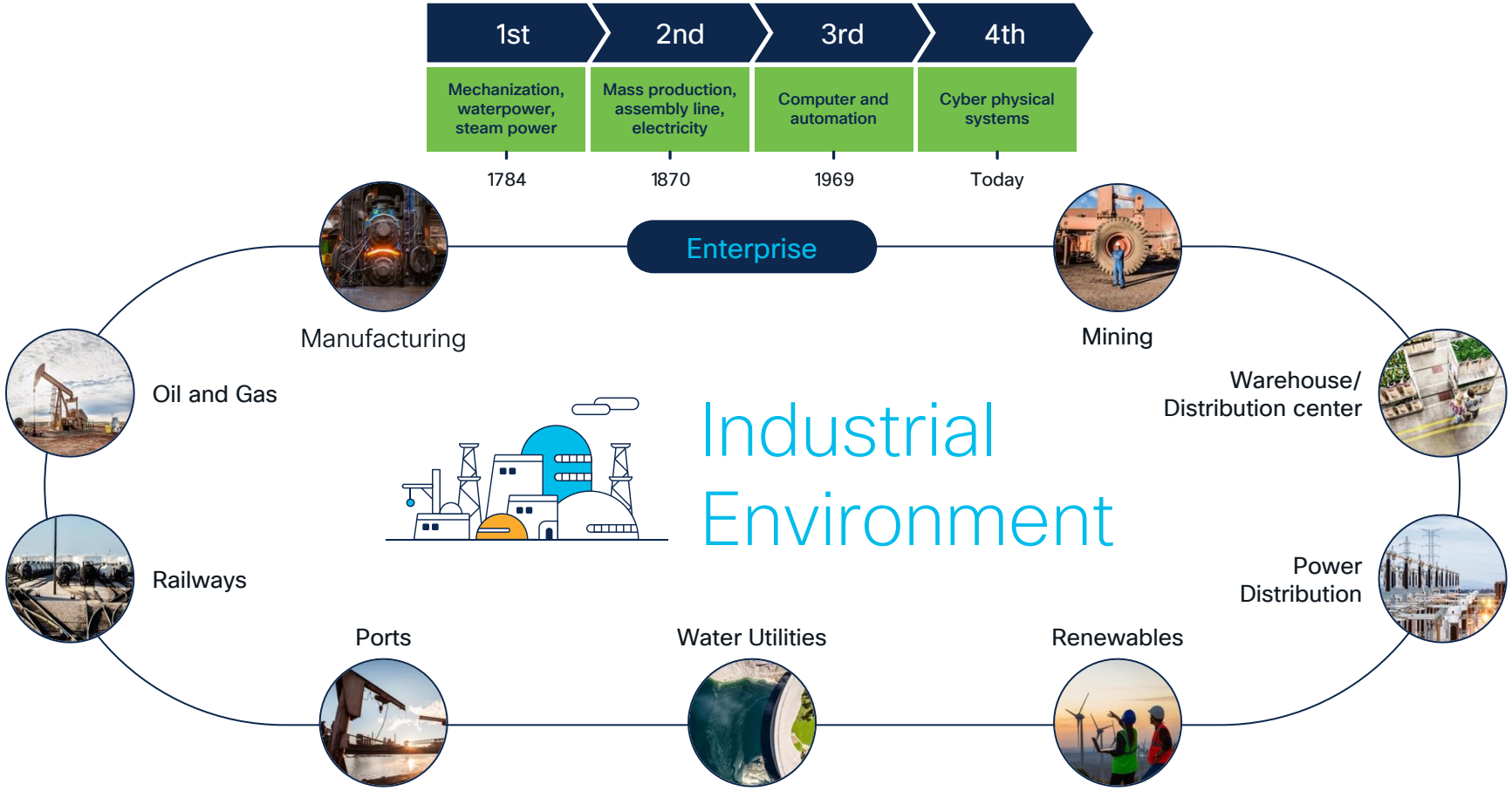
Where
Industrial Environment/Customer



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“Digital Transformation” in Industrial environment

Soup Bowl (Digitization – Digitalization)

Connectivity

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Why
Industrial Environment/Customer

Industrial organizations are not looking for technology, but Business Outcome

Improve operational efficiency

Improve resiliency

Reduce downtime

Sustainability is a rapidly growing business priority

Enhance safety and security

Increase reliability

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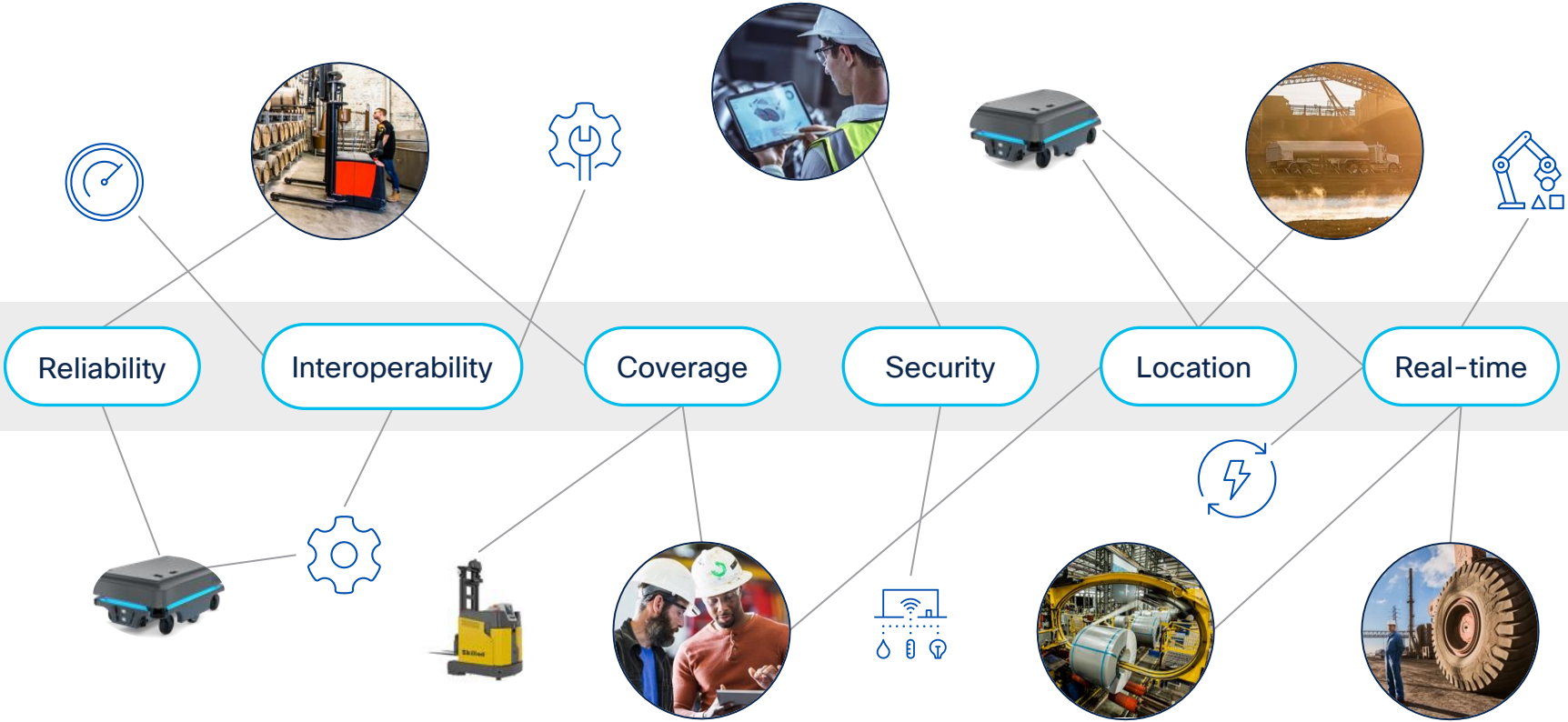
What
Pervasive Wireless

Pervasive wireless

Industrial environment



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Choosing wireless technology based on just technical capabilities are not enough

Technology	Through-put	Latency	Energy efficiency	Mobility	Range	Reliability	Device density
5G	25-50 Gbps	1 ms	> 10 years	High	300 m (28 GHz); 3 km (3.5 GHz)	Very High	1 million connected devices
Wi Fi 6	10-20 Gbps	< 10 ms	-	Low	< 1 km	Very High	-
LoRa	27 kbps (Max)	Similar to NB-IoT	~ 13 years	Medium	11 kms.	Low	-
NB-IoT	250 kbps	1.6 - 10 s	~ 11 years	Low	15 kms.	Medium	1 million connected devices
Lte Lte	100-1000 Mbps	10 ms	< 10 years	High	800m (dense urban) - 50 km (flat rural landscape)	High	2000
CURWB	500 Mbps	< 10 ms	~ 10 years	High	5-10 kms.	Very High	-

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How should you build your pervasive wireless environment?

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CDO Decision path tree

Characterize

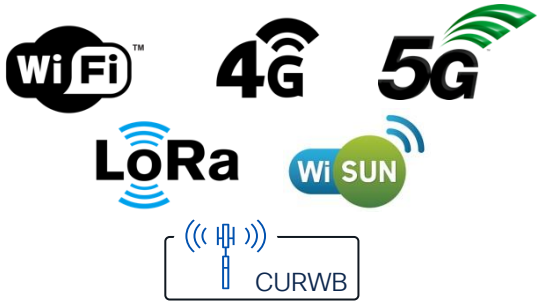
1. Devices/types/connectivity
2. Coverage (indoor/outdoor)
3. Throughput/Bandwidth
4. Assets – static/moving
5. Latency/Reliability

Deployment

1. Country/regulation/ certification
2. Scale (no of sites)
3. Licensed / unlicensed spectrum
4. Client – access/backhaul

Operational

1. Security policy (on prem/Cloud)
2. Capex/Opex
3. Investment protection (backward compatible)
4. Eco maturity & interoperability



Business Outcome

1. Improved Operational Efficiency
2. Reduce downtime
3. Sustainability
4. Safety and security

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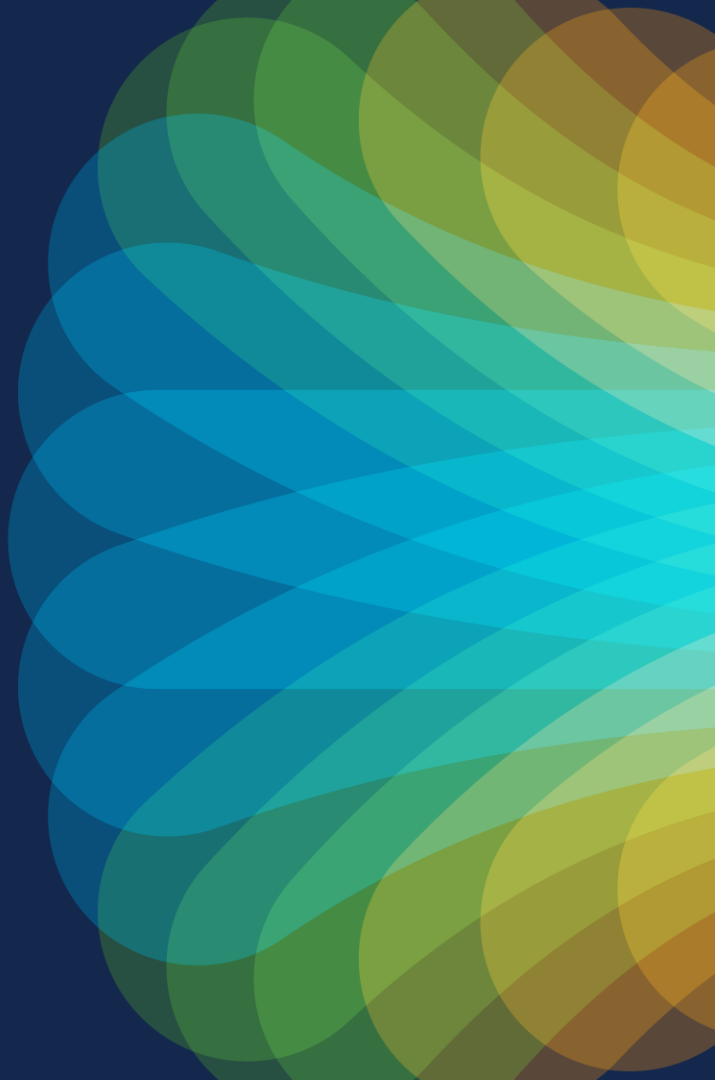
Game of Building pervasive wireless using CDO

Based on True Stories

(Name and location are changed for protection)



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Manufacturing Example

Want mobility for workers, forklifts, trucks to access inhouse manufacturing applications anywhere, anytime within manufacturing plant

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Business use cases

Applying the CDO approach

Manufacturing

Characterize

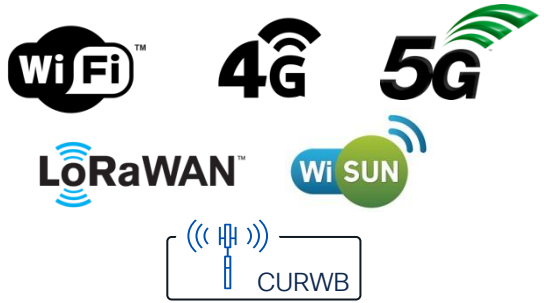
1. **Devices** – ruggedized tablet , Voice picking gears
2. **Coverage** – Indoor / Outdoor
3. **Bandwidth** – 1-5 Mbps
4. **Assets** – Moving (10-40 kmph)
5. **Latency/Reliability** – M/H

Deployment

1. **Country/regulation/ certification** – Multiple Country
2. **Scale** (no of sites) - 5
3. **Size** of each site – 2-5 Sq Km (varies)
4. **Total Clients**– 1000-2000

Operational

1. **Security policy** – On Prem
2. **Capex/Opex** – Managed service
3. **Investment protection** (backward compatible) – Wi-FI
4. **Eco maturity & interoperability** - Yes



Business Outcome

1. Operation efficiency
2. Sustainability

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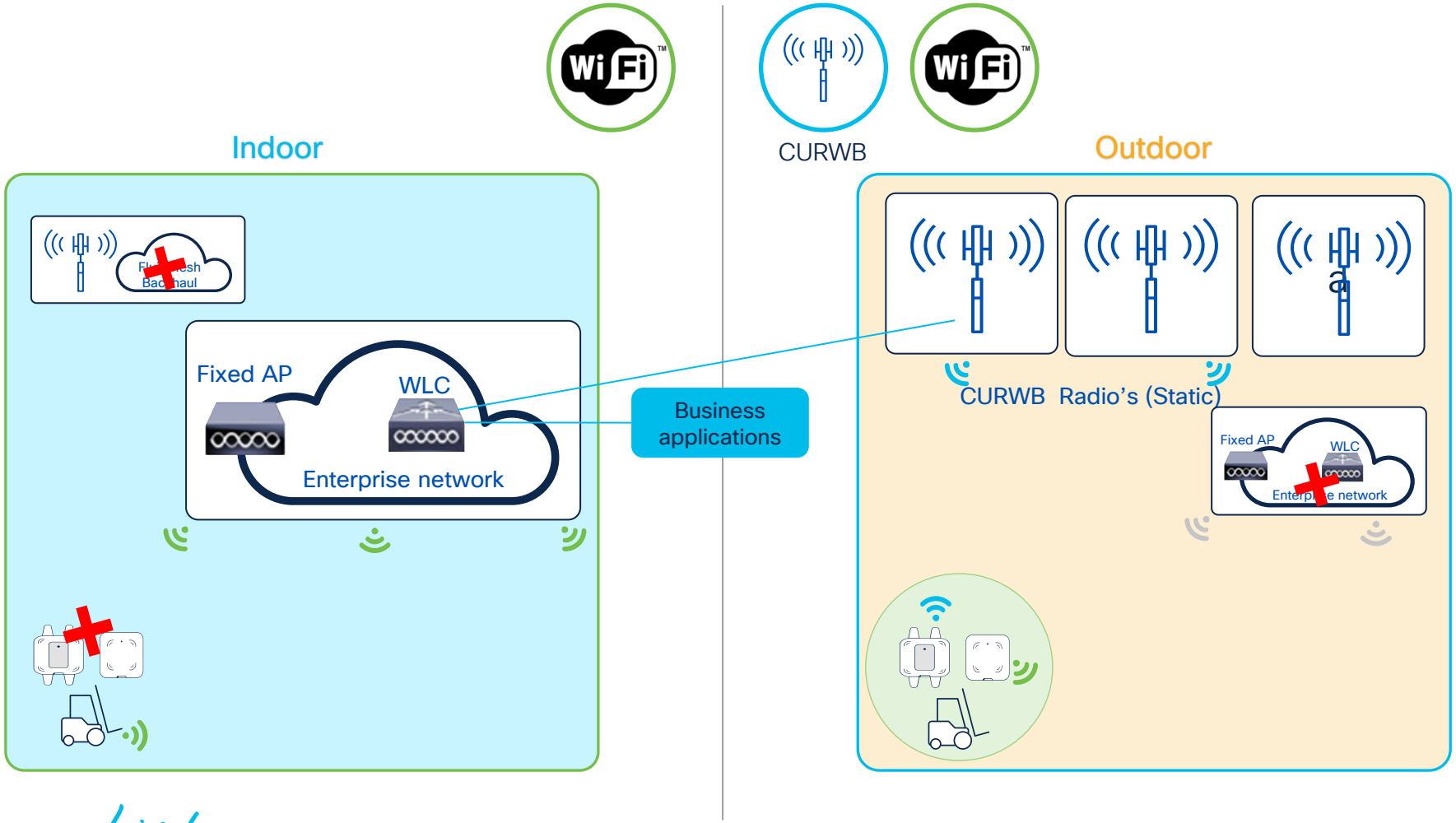

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Mining

- Poor visibility and tracking of People and Assets inside underground mine
- Longer process and manual data gathering due to interconnectivity
- Improve health safety and security of man and material

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Business use cases

Tracking

- Manpower and vehicle

Fleet

- Traffic management
- UG fleet monitoring

Automation

- Automated planning and scheduling
- Recovery improvement
- Data driver decision making

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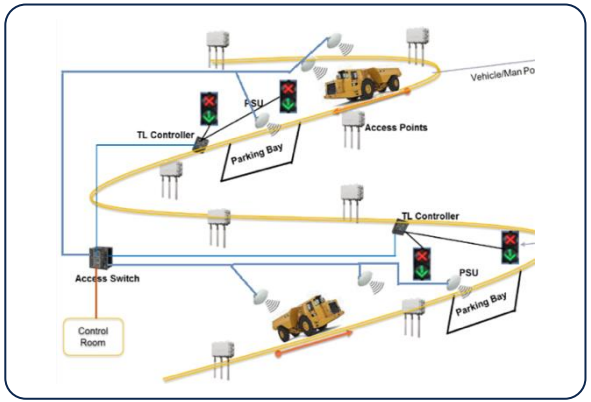
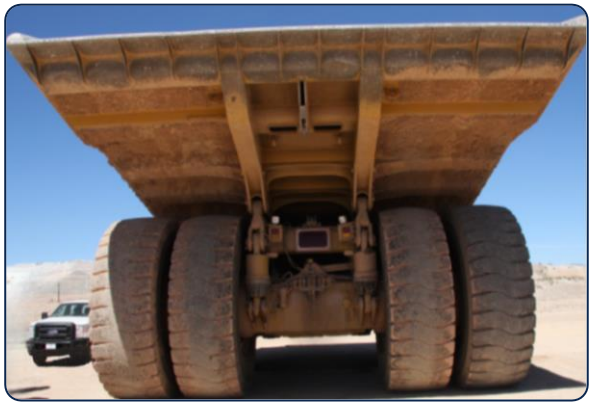
Personal story





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Technology to business outcome journey

Characterize

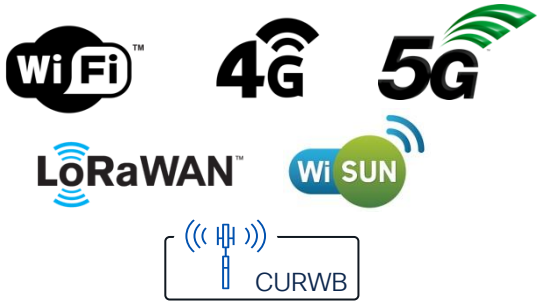
1. **Devices** – Tablets, traffic lights, sensors, CCTV, miners, mobile phone, Trucks , drilling machines (Many more...)
2. **Coverage** – underground
3. **Bandwidth** - 1- 100 Mbps; Gbps (backhaul)
4. **Assets** – Static/Moving
5. **Latency/Reliability** – L/H

Deployment

1. **Country/regulation/certification** – Single Country , Ruggedized
2. **Scale(no of sites)** - 4
3. **Size**– 50+ Km
4. **Total Client** – 1000-4000

Operational

1. **Security policy** – On Prem
2. **Capex/Opex** – Capex
3. **Investment protection** (backward compatible) – leaky cable, Wi-Fi
4. **Eco maturity & interoperability** - Yes



Business Outcome

1. Enhanced Safety,
2. improved productivity
3. reduced cost
4. Sustainability

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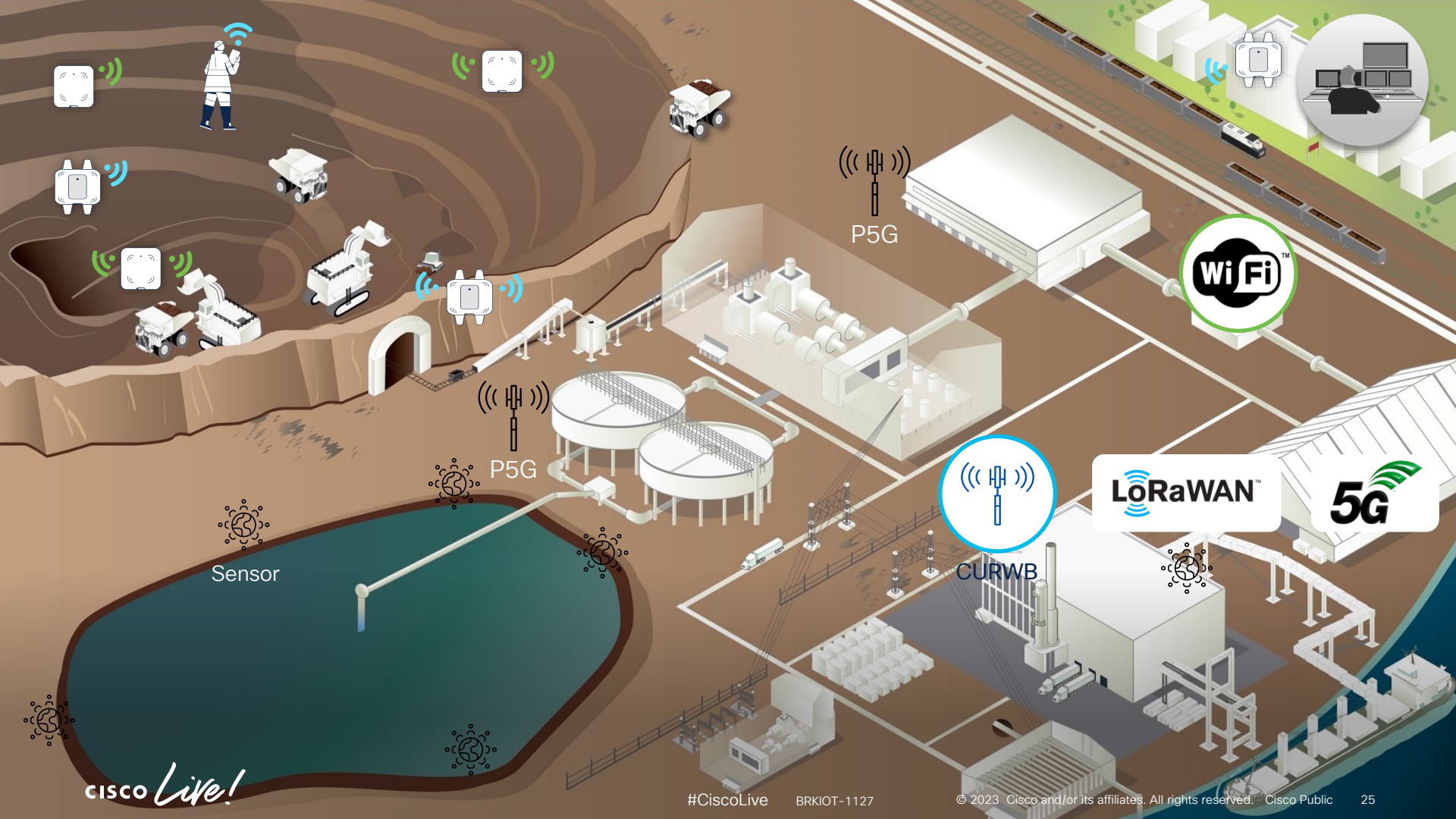

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Ports and terminals/ Mass transport

Improve terminal operating system by connecting multiple STS crane (ship to shore) to central control and integrate OCR (optical character recognition). Improve efficiency of RTG cranes

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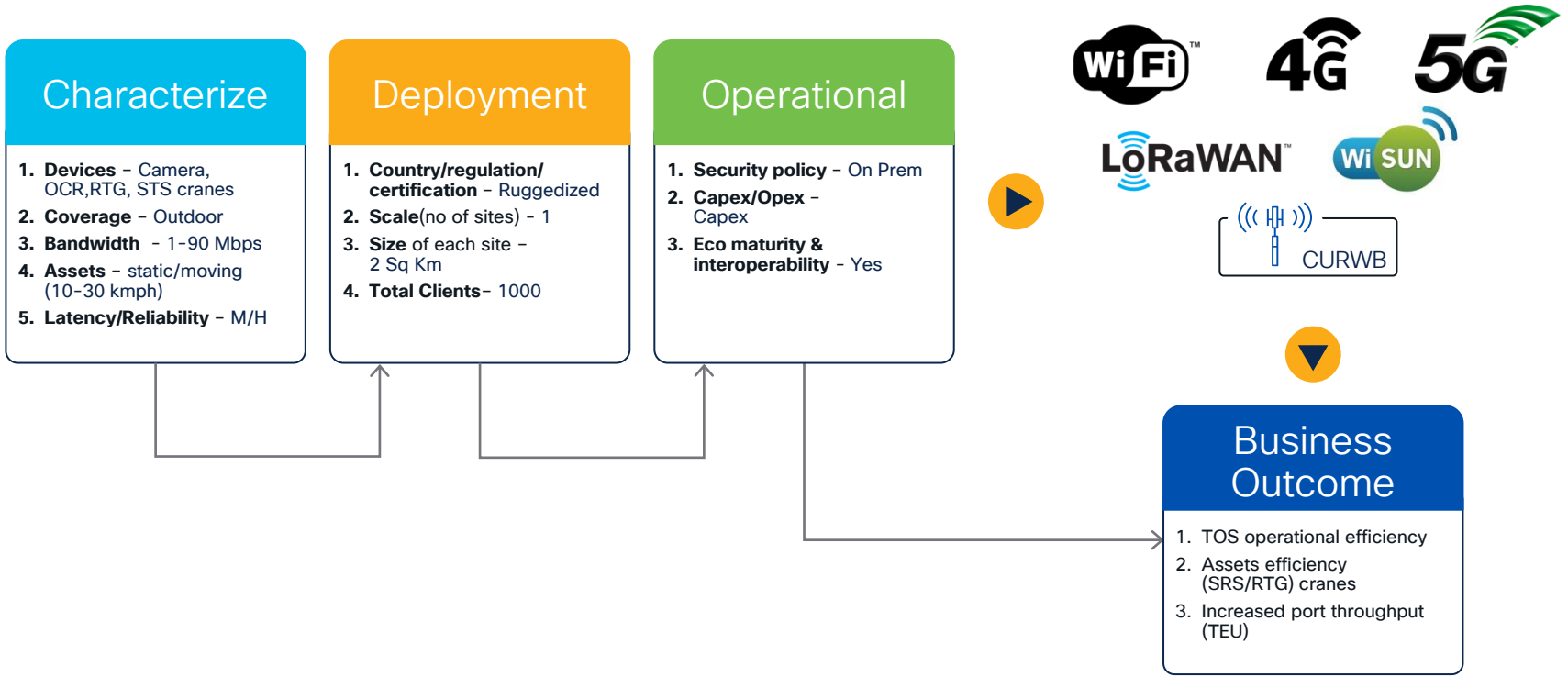
Technology to business outcome journey



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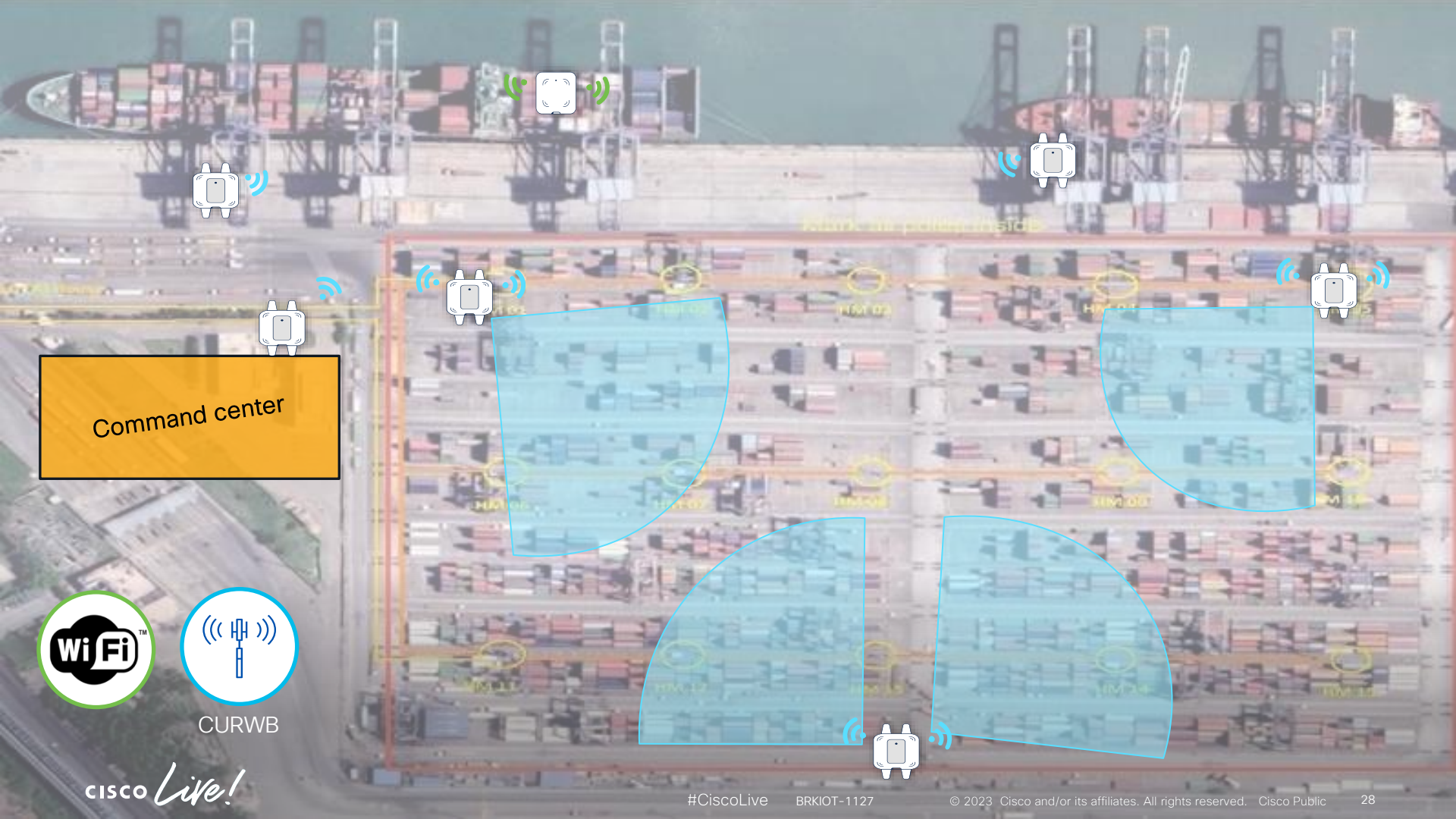

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“we want to make this even easier and consumable for our Industrial customers”

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Managed Service IOT*

Pervasive Wireless for Industrial

Service description

Mobility in industrial space is always a challenge due to security, interconnectivity, training and un deterministic for industrial process. Cisco and Partner as part of its overall IT-OT convergence.

Offering stack releases pervasive wireless as a service to Industrial customers.

Why Cisco?

- Cisco is the IoT and wireless Market Leader
- Broad portfolio that meets variable customer needs
- Network, security, Connectivity, and Edge Compute Integrated

Target verticals

Manufacturing, Mining, Ports

Capability

- Fully Integrated outcome-based offer
- Professional service for end-to-end solution roll-out

Why Partner?

- Providing NaaS to Enterprise IT and extendable to OT
- Understanding of Cisco wireless Stack
- Expertise in Industry 4.0
- Large Industrial Customer base

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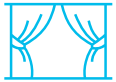
Engage and Learn more



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BRKEWN-2036 - Designing Enterprise Wireless Networks for Large Complex Environments

TECIOT-2584 - Designing IoT Wireless Networks

PSOGEN-1033 - Unlock business outcomes from connectivity with a Private 5G solution

BRKGEN-2001 - Cisco P5G a robust and secure architecture

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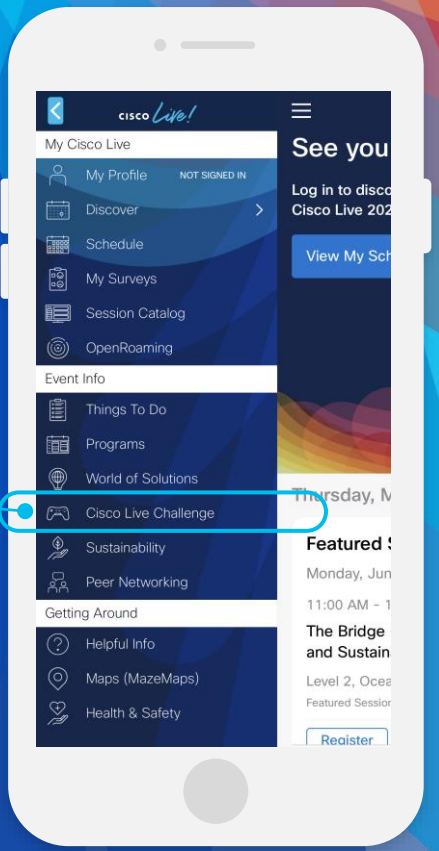

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