



Possibilities

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Wireless Technologies in Industrial IoT

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Agenda

- Introduction
- Industrial IoT Wireless Landscape
- Industrial Wi-Fi portfolio
- Industrial Wi-Fi Software Innovations
- Use Case Examples
- Conclusion



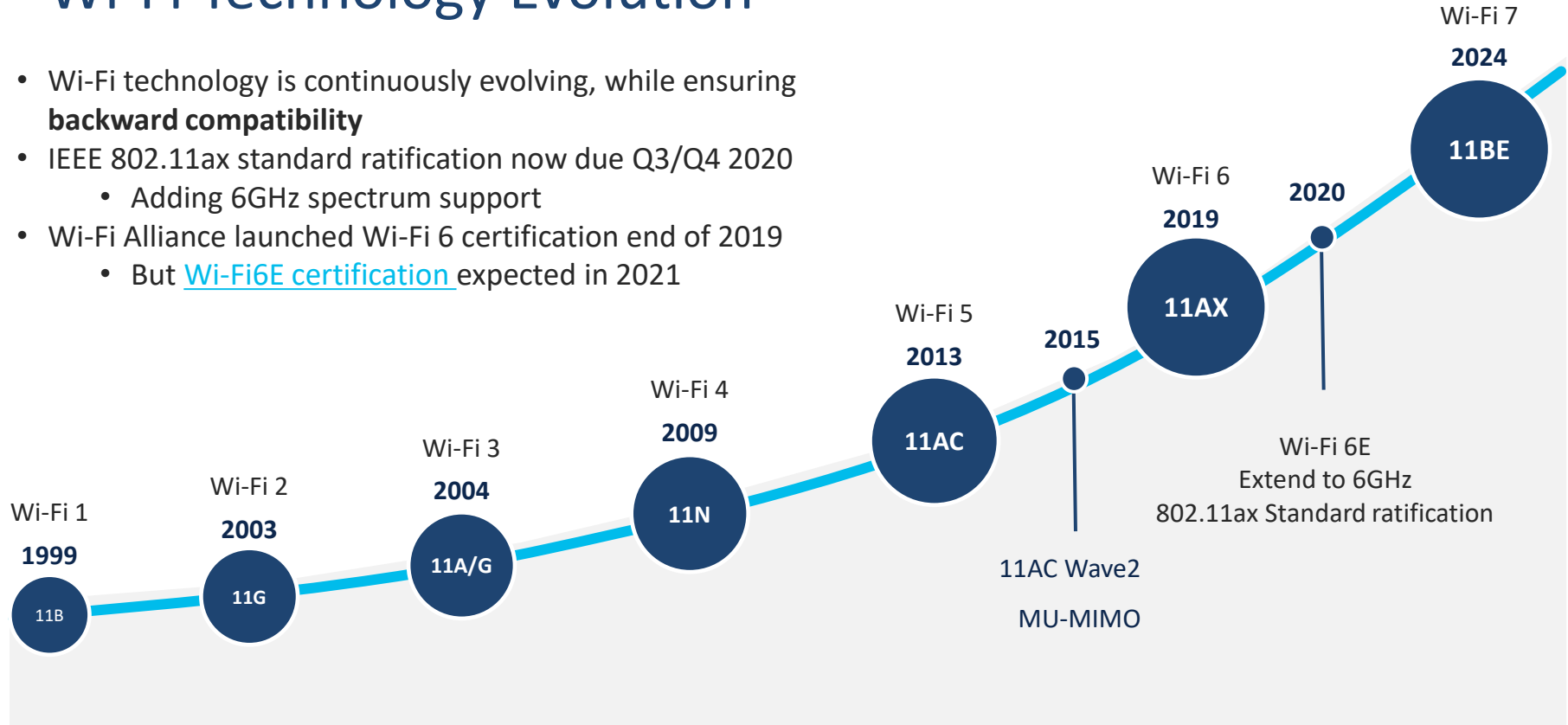
Agenda

- Wi-Fi 6E
- Fluidmesh Updates
- IW6300 Updates

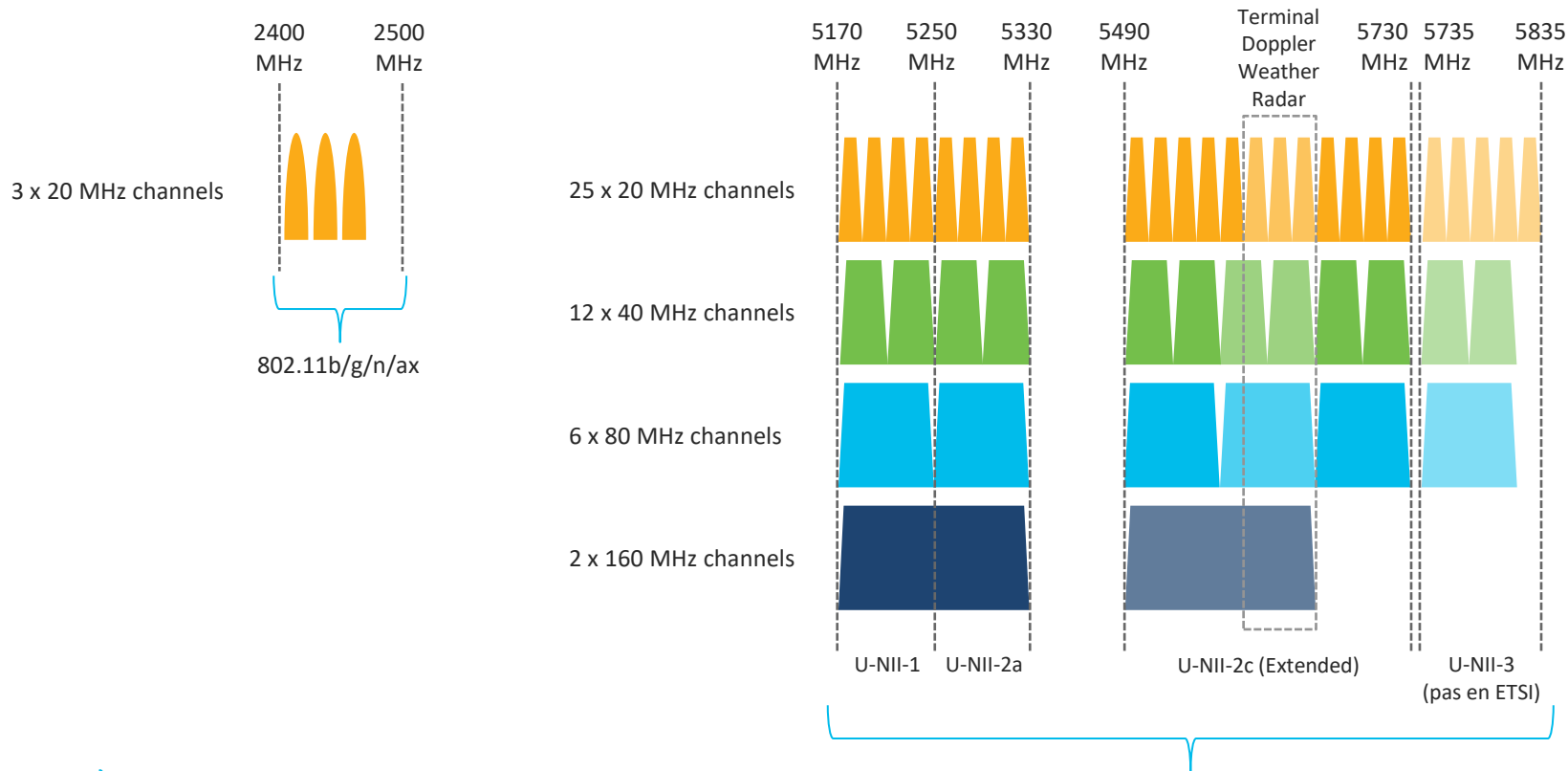
Wi-Fi 6E

Wi-Fi Technology Evolution

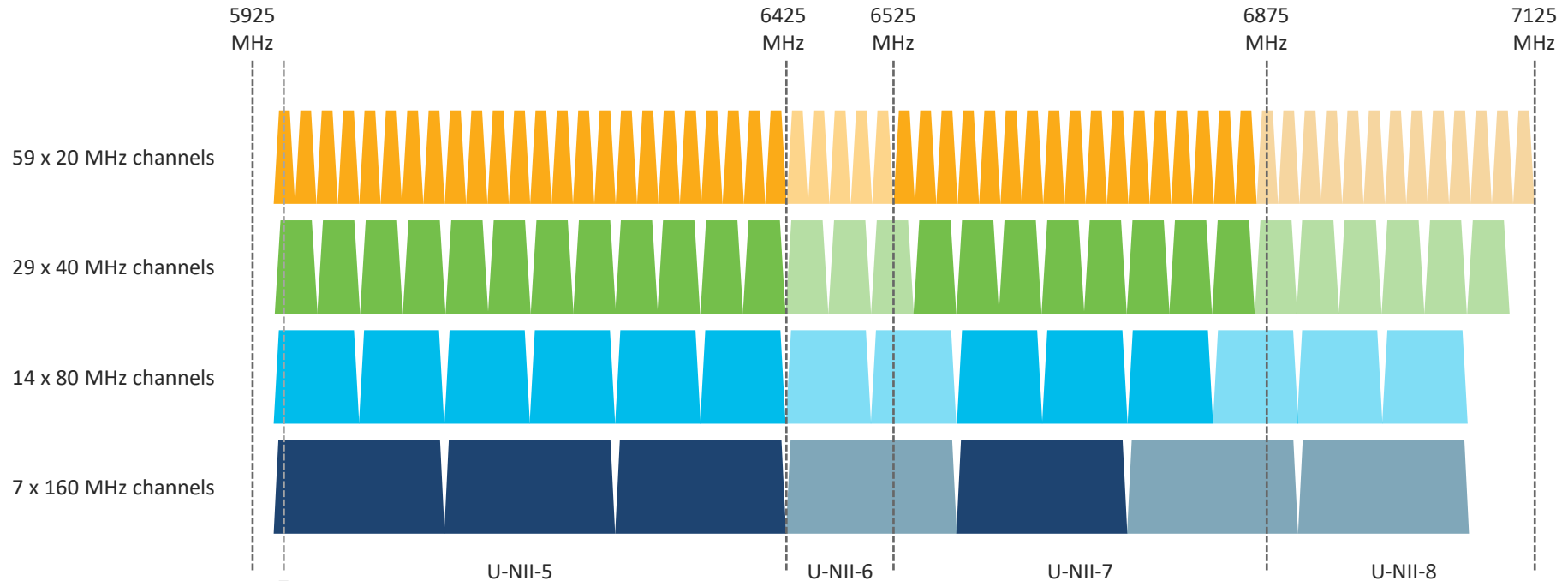
- Wi-Fi technology is continuously evolving, while ensuring **backward compatibility**
- IEEE 802.11ax standard ratification now due Q3/Q4 2020
 - Adding 6GHz spectrum support
- Wi-Fi Alliance launched Wi-Fi 6 certification end of 2019
 - But [Wi-Fi 6E certification](#) expected in 2021



Wi-Fi 6 in 2.4 GHz and 5 GHz



Wi-Fi 6E – adding 6GHz Frequency Band



5955 MHz : 1st 20MHz channel frequency
Start at 5925 MHz + 20 MHz guard band + 10 MHz to be at central of 20 MHz channel



Wi-Fi 6 Enhanced Data Rate: 1024-QAM

MCS Index	Modulation type	Coding Rate	Data rate (Mbps) for 1 spatial stream							
			20 MHz channels		40 MHz channels		80 MHz channels		160 MHz channels	
			1600 ns GI	800 ns GI	1600 ns GI	800 ns GI	1600 ns GI	800 ns GI	1600 ns GI	800 ns GI
0	BPSK	1/2	4 ¹	8.6	8 ¹	17.2	17 ¹	36	34 ¹	36 ¹
1	QPSK	1/2	16	17.2	33	34.4	68	72.1	136	144
2	QPSK	3/4	24	25.8	49	51.6	102	108.1	204	216
3	16-QAM	1/2	33	34.4	65	68.8	136	144.1	272	282
4	16-QAM	3/4	49	51.6	98	103.2	204	216.2	408	432
5	64-QAM	2/3	65	68.8	130	137.6	272	288.2	544	576
6	64-QAM	3/4	73	77.4	146	154.9	306	324.4	613	649
7	64-QAM	5/6	81	86	163	172.1	340	360.3	681	721
8	256-QAM	3/4	98	103.2	195	206.5	408	432.4	817	865
9	256-QAM	5/6	108	114.7	217	229.4	453	480.4	907	961
10	1024-QAM	3/4	122	129	244	258.1	510	540.4	1021	1081
11	1024-QAM	5/6	135	143.4	271	286.8	567	600.5	1134	1201

1 spatial stream = 600.5 Mbps → 4 spatial streams = 2402 Mbps (~2.4 Gbps)



Wi-Fi 6E – Realizing Multi-Gigabit Wireless

MCS Index	Modulation type	Coding Rate	Data rate (Mbps) for 1 spatial stream							
			20 MHz channels		40 MHz channels		80 MHz channels		160 MHz channels	
			1600 ns GI	800 ns GI	1600 ns GI	800 ns GI	1600 ns GI	800 ns GI	1600 ns GI	800 ns GI
0	BPSK	1/2	4	8.6	8	17.2	17	36	34	36
1	QPSK	1/2	16	17.2	33	34.4	68	72.1	136	144
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11	1024-QAM	5/6	135	143.4	271	286.8	567	600.5	1134	1201

1 spatial stream = 1201 Mbps → 2 spatial streams = 2402 Mbps (~2.4 Gbps)

(Real throughput = 50%-70% nominal data rate)

FluidMesh Updates



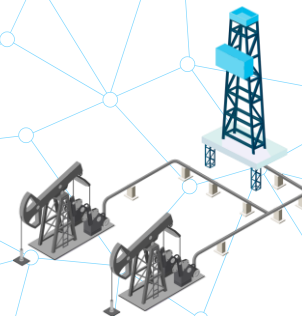
Manufacturing



Warehouse



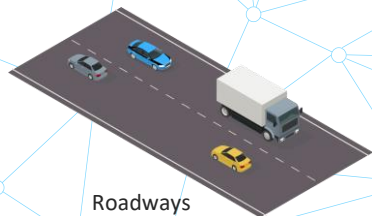
Gas Station / Kiosk



Oil & Gas



Utilities



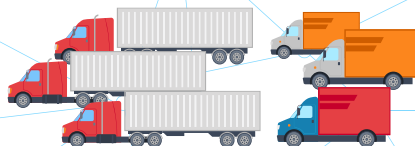
Roadways



Parking Lot



Distribution Center



Fleet



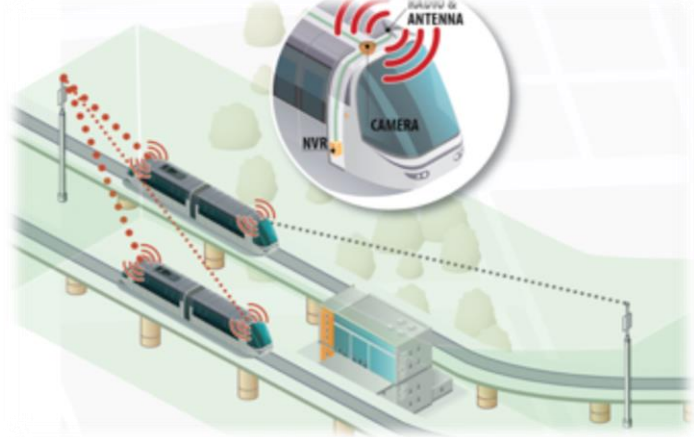
Seaport



Airport

Multi-Access Technologies are key pillars
of the Internet of Things but...
one size doesn't fit all.

MOBILITY Topology Overview



FIXED Topology Overview

Point-to-point



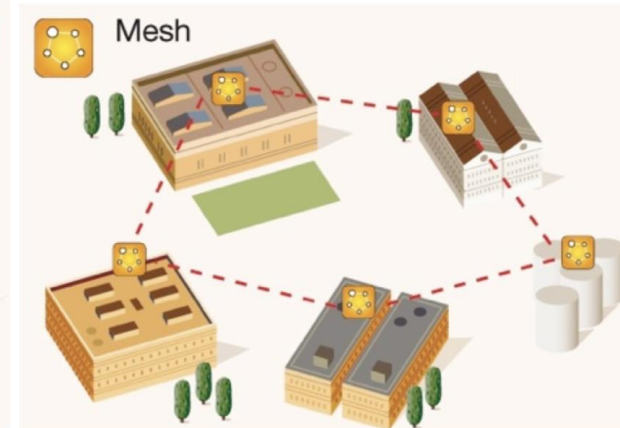
Point-to-Multipoint



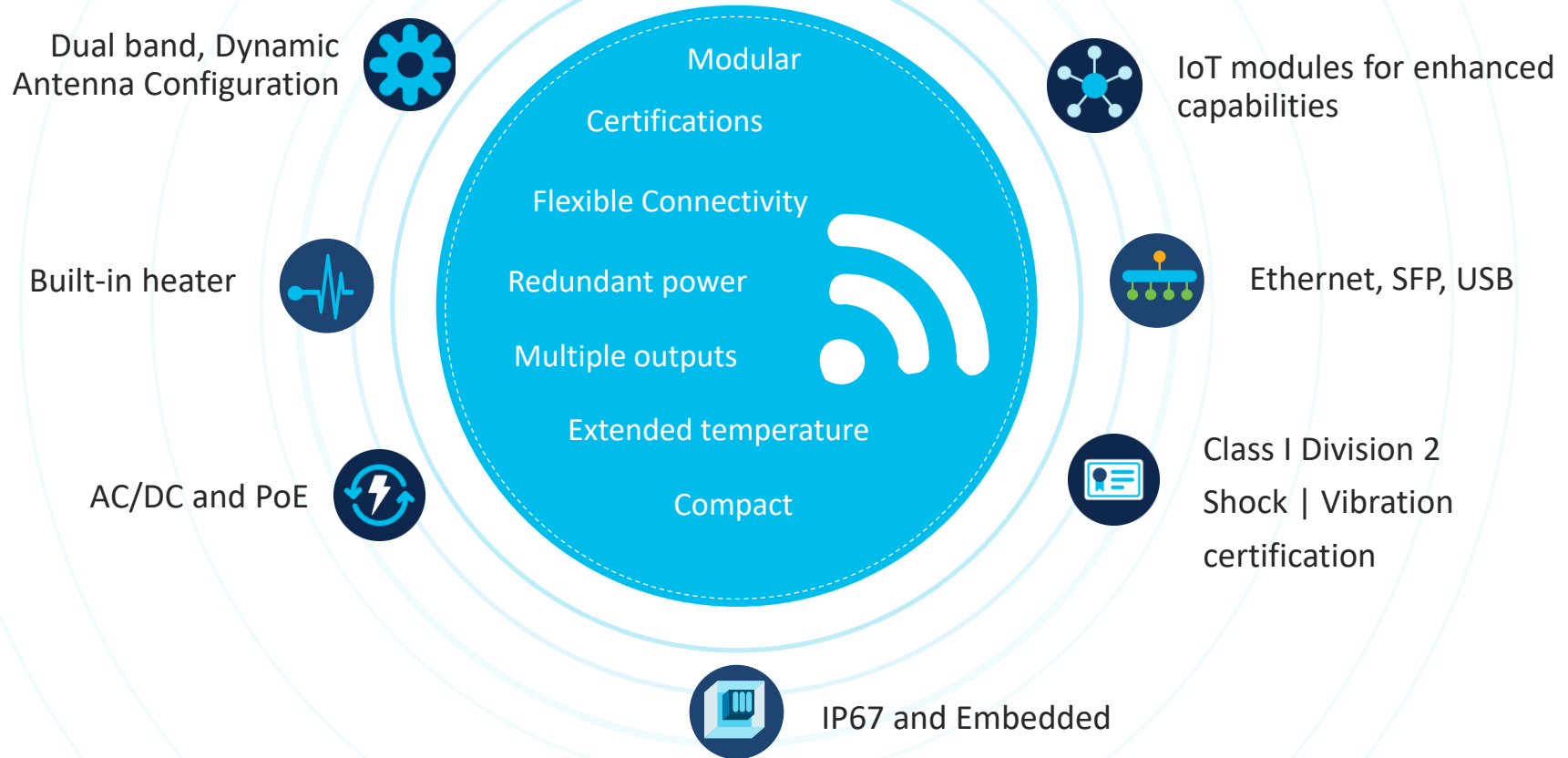
Mixed



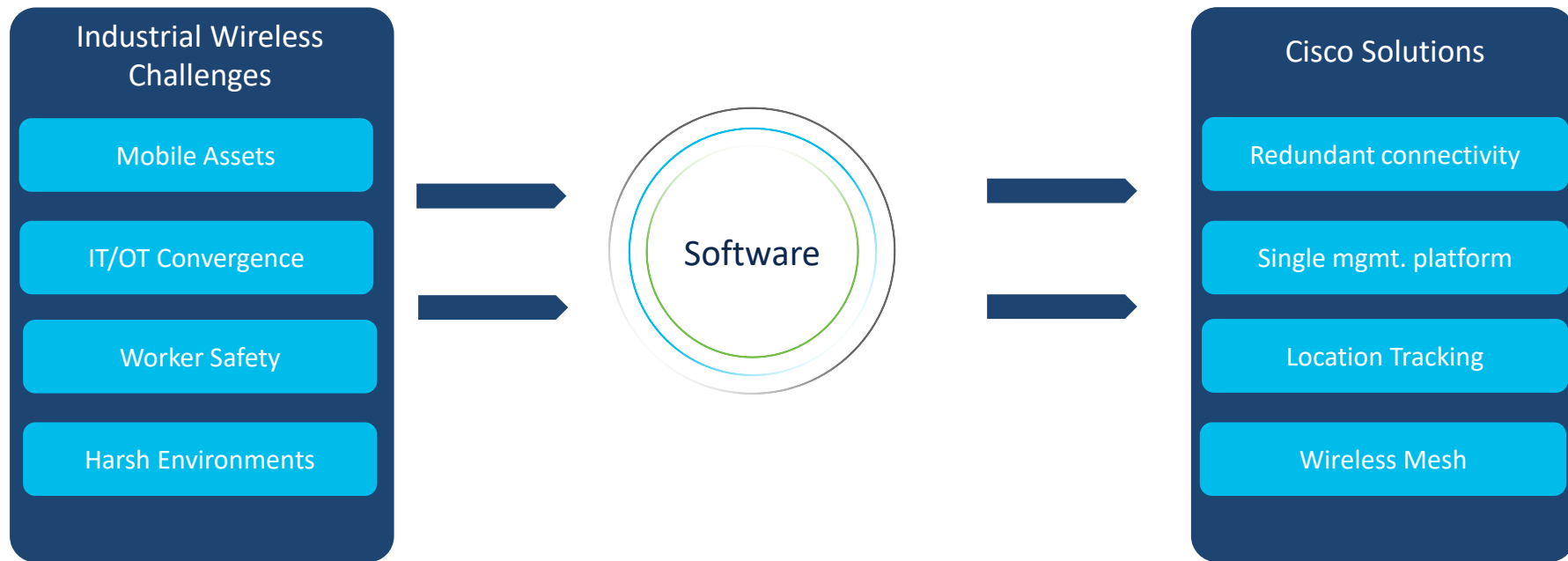
Mesh



Purpose built Access Points



Purpose built software



IW6300 Updates

Cisco Catalyst IW6300 Heavy Duty Series Access Point Wins Coveted Award



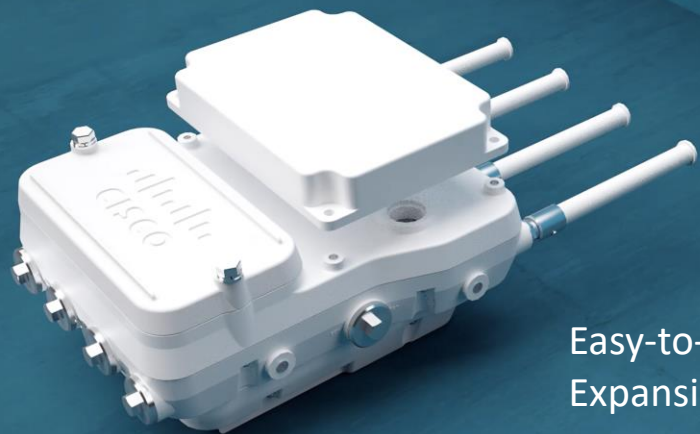
INDUSTRIAL IOT INNOVATION OF THE YEAR



Cisco Catalyst IW6300 IoT Partner module

Enabling partners to provide enhanced capabilities for their customers

Go further in your digital transformation. Connect to WirelessHART, ISA100 and more.



Easy-to-install
Expansion modules

- Future-proof your deployments
- Industrial IoT multi-lingual access brings IoT devices together
- Extend value to hazardous locations

WirelessHART

ISA100

GPS*

Bluetooth
Low-Energy*

Zigbee*

*under future consideration

Honeywell and Emerson IoT Modules for IW 6300

Roadmap



Available



Evolution of Class I Division 2 APs

NOW Catalyst IW6300H

THEN Aironet1552H

- IEEE 802.11n
- WPA2

TECHNOLOGY

- Three PIDs: 1552H/S/WU
- Power: AC/12VDC
- Temp: -40C to +55C
- Weight: 18 lbs
- Volume: 645 in³

HARDWARE

- AireOS Controllers

SOFTWARE

- PoE in
- 1 x PoE out

FEATURES

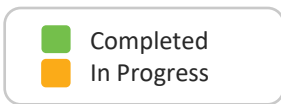
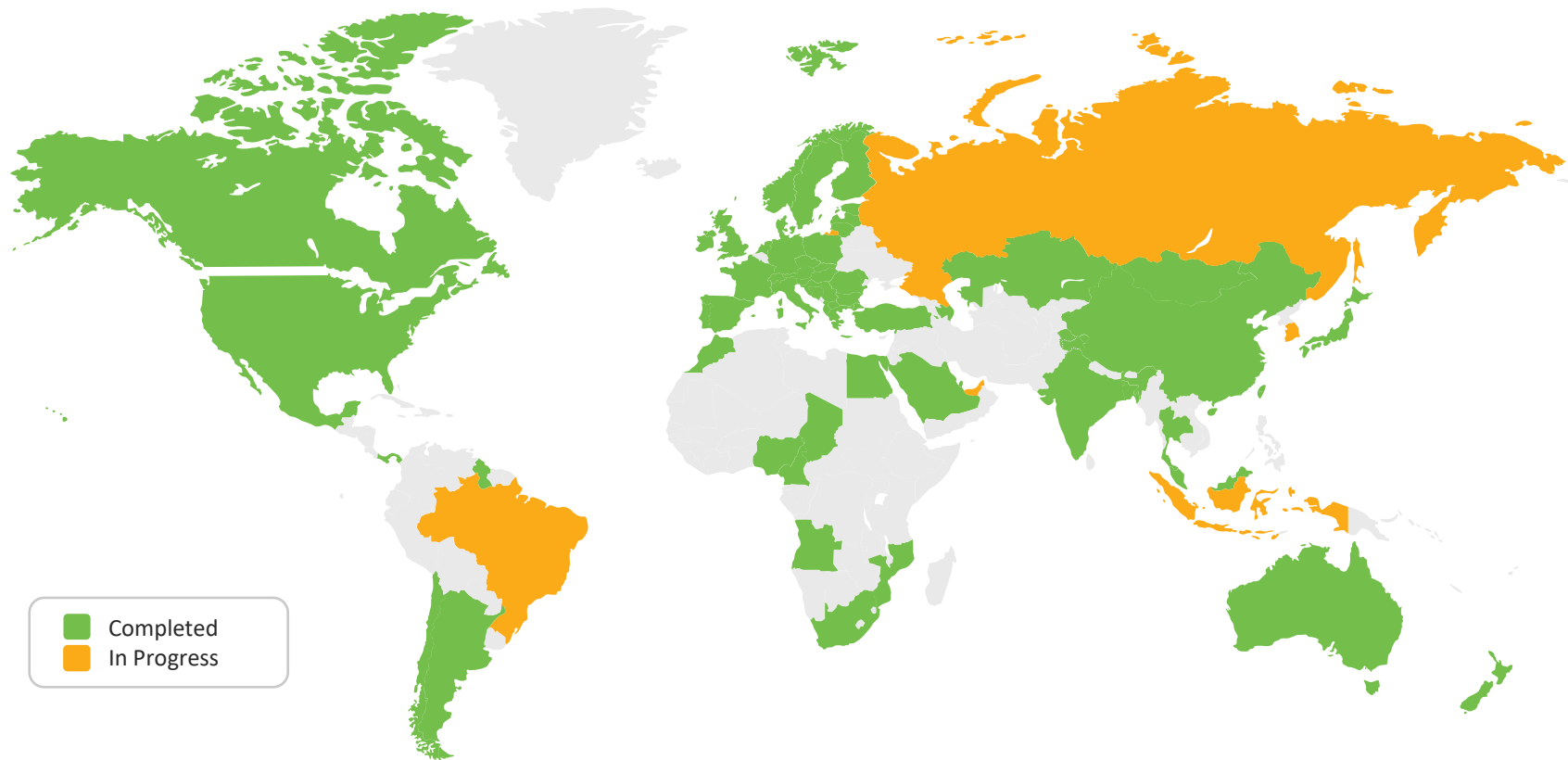
- IEEE 802.11ac Wave 2
- Wi-Fi Protected Access 3 (WPA3)
- Cisco DNA ready

- Single base platform
- Multiple Power Options: AC/DC/DCW
- Extended Temp: -50C to +75C
- Weight: 9.9 – 13.7 lbs
- Volume: 405 – 595 in³

- AireOS and IOS-XE Controllers
- IOx Support
- Mobility Express
- Flexible Antenna Port

- POE+/UPOE in
- 2 x POE out
- Redundant Power: AC/DC Fail-over to PoE
- Ethernet Daisy Chain
- IoT Module: ISA100/WHART

IW6300 Country Certifications





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Thank you



Possibilities

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