



People, Policy & Purpose

# Unlocking the growth potential of 5G in Europe

Cisco's contribution on 5G coverage  
information network

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## Agenda

- 5G enabling new business opportunities
- P5G use case
- Policy recommendations

## Connected Home



- Home automation
- Building security
- Network equipment – printers + routers +
- Network infrastructure – routers +
- White goods
- Tracking applications
- Household information devices

## Connected Work



- Office building automation
- Building security
- Office equipment – printers +
- Routers +
- Commercial appliances

## Connected Car



- Fleet management
- In-vehicle entertainment systems, emergency calling, Internet
- Vehicle diagnostics, navigation
- Stolen vehicle recovery
- Lease, rental, insurance management

## Connected Health



- Health monitors
- Assisted living – medicine dispensers +
- Clinical trials
- First responder connectivity
- Telemedicine

## Connected Cities



- Environment and public safety – closed-circuit TV, street lighting, waste removal, information +
- Public space advertising
- Public transport
- Road traffic management

## Retail



- Retail goods monitoring and payment
- Retail venue access and control
- Slot machines, vending machines

## Manufacturing & Supply Chain



- Mining and extraction
- Manufacturing and processing
- Supply chain
- Warehousing and storage

## Energy









- New energy sources – monitoring and power generation support apps
- Smart grid and distribution
- Micro-generation– generation of power, by residential, commercial and community users on their own property

## Other







- Agriculture – livestock, soil monitoring, water and resource conservation, temperature control for milk tanks +
- Construction: Site and equipment monitoring
- Emergency services and national security

# P5G and Wi-Fi 6 are complementary technologies – align choice to application and business needs

Private 5G		Judgement		WiFi 6 (802.11ax)	
Mission-critical applications requiring ultra-low latency, or broad geographic coverage					
					
<b>Wide Area Coverage</b>	<b>Process Automation</b>	<b>Automated Guided Vehicle</b>	<b>Enhanced Mobile Broadband</b>	<b>Digital Health</b>	<b>Digital Campus</b>
Large indoor and outdoor coverage (10K+ sqft per cell)	HA & SLA Five-9's to Six-9's E2E latency ≤10ms	Eliminate Interference Roaming delays of ≤ 50ms w/ 5G	2Gbps+ download immersive experience	Advanced care Tele-medicine and mobile health	AR/VR/ MR-based Education E-learning
Performance		IOT Scale	Capacity	Security	

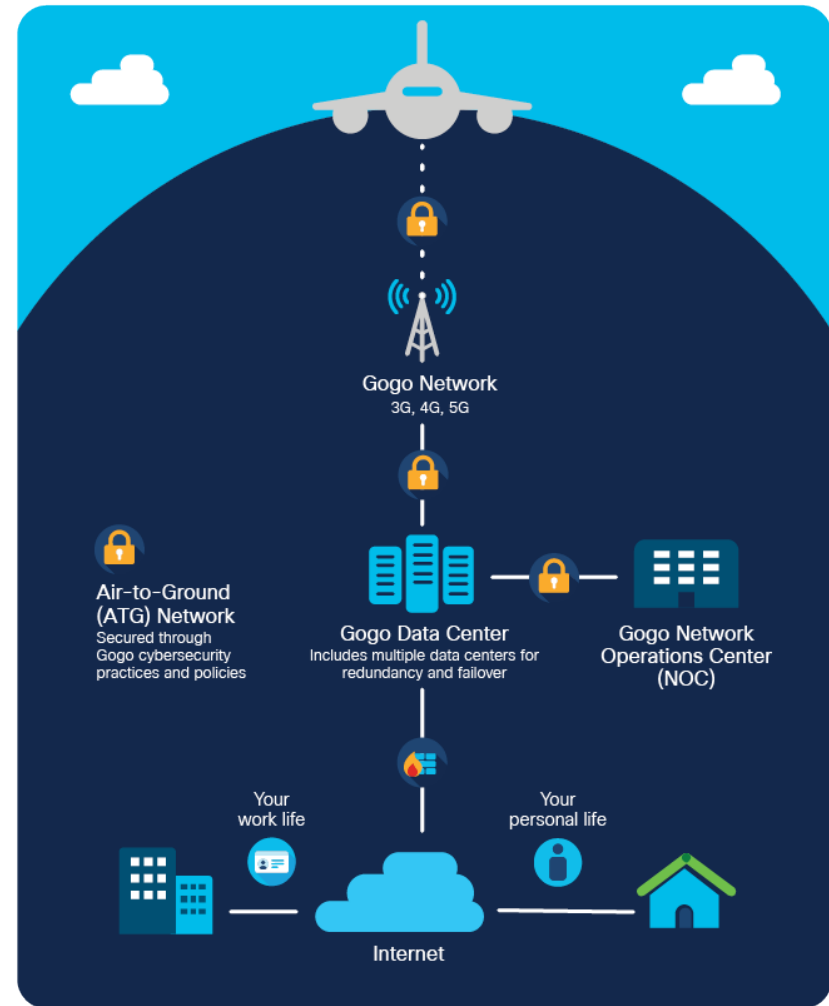
### Other considerations

-  **Device ecosystem**  
5G IoT device availability expected to be limited until 2025
-  **Spectrum**  
Added complexity and cost to acquire licensed spectrum for 5G
-  **Operations**  
Currently higher operational complexity for 5G compared to Wi-Fi (tempered by Cisco P5G aaS offer)
-  **Cost**  
Unlikely that 5G devices and infrastructure will be cheaper than Wi-Fi anytime soon

“Whatever the application and business model need”

# P5G: Gogo and Cisco partnership for 5G network for aviation

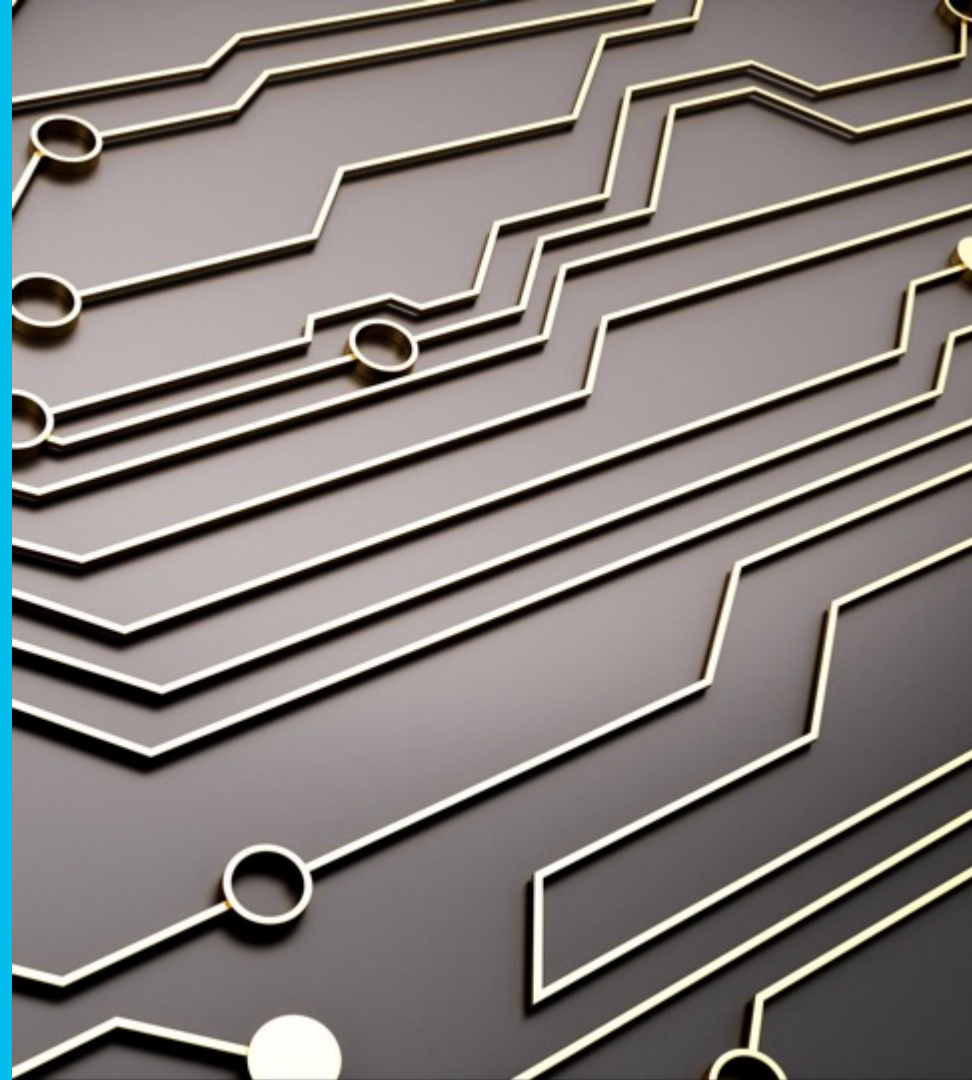
- **Business challenge:** create an inflight experience with faster service and greater bandwidth, while having a scalable and future-proof network for expanded capacity and emerging technologies.
- **Network solution:**
  - New 5G core systems (incl. network component & on-board equipment) leveraging existing Gogo tower infrastructure,
  - Using both licensed and unlicensed spectrum to provide more bandwidth to aircraft.
- **Result:** minimally invasive, high performant and convenient network solution, leveraging existing infrastructure and incorporated scalability without forcing customers to swap out hardware.





## Recommendations:

1. Public vs private networks
2. Spectrum availability for enterprise use
3. Network Access regulation
4. Open RAN



# Public VS Private Networks

- Ensure enterprise networks and services being used in a closed end-user group setting continue to be considered as private networks, irrespective of deployment/business model (i.e. even if SP offered and managed network and services).



# Spectrum



- Licensed and unlicensed spectrum in low-, mid- and high bands.
- Spectrum for industrial use (local licensing 5g).
- More coordinated spectrum assignment in Europe needed: use this first-mover experience to develop a shared approach in Europe so that enterprises and verticals can benefit for a global ecosystem.
- Ensure access and rights of way, least onerous procedure for authorisations and minimal local requirements for deployment of small cells.
- 5G does not replace Wi-Fi: new spectrum needed for Wi-Fi6



# Spectrum for industrial use



## Today's spectrum not suited for all use cases

- **Unlicensed** is free, but non-deterministic\*.
- **Licensed** is deterministic but \$\$\$
- Advanced manufacturing, critical infrastructures and healthcare will need deterministic spectrum.
- **Shared** spectrum emerging, but not globally available & lacks suitable regulations.

## Create new spectrum category for IND/EN use:

- High reliability & technology neutral
- Licensable by businesses on prem, via site-specific geographic basis
- Flexible own/operate/manage by

# Network regulation



- Implement the EECC in an investment-friendly manner, in particular the new provisions on co-investments in Very High Capacity Networks (VHCNs)
- Definition of VHCN should remain technology neutral whilst still future-proof improvements in capacity.
- Shift regulatory focus from civil engineering to lower cost.
- Encourage infrastructure sharing and joint deployment.
- Welcome in this regard the Code banning spectrum conditions that prohibit sharing.

# Consider the opportunities of Open RAN for 5G coverage

- Lower cost to deploy as there's less hardware per deployment
- Lower total cost of ownership (TOC) as functionalities are delivered via software and the cloud
- Lower cost to deploy and operate service for wider deployments in both densely populated urban and low-density rural areas.





the bridge to possible