5G Co-Innovation with Accedian

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colt

ACCEDIAN

LEVEL UP
SKYLIGHT SUMMIT 2023

Types of Innovation

DEGREE OF NOVELTY — LOW → HIGH

Sustaining

Gradual improvements to existing products, services or technology to sustain existing market

Disruptive

New product or business model that disrupts an existing market

Radical

Technology breakthrough that transforms industry and often creates a new market

e.g. Automotive Industry

Car + Automatic Parking Assist

EV with Autonomous Driving

Personal Air Vehicle (aka flying car)

e.g. Entertainment Industry

Video Rental (BLOCKBUSTER)

Streaming Video (NETFLIX)

Personal Video Sharing (YouTube)

Focus of Innovation @ Colt

Disruptive

New product or business model that disrupts an existing market

Radical

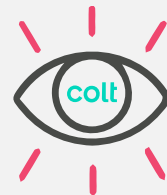Technology breakthrough that transforms industry and often creates a new market

New Revenue
- New solutions / products / services / markets
- Net incremental revenues

Cost Reduction
- New technologies / processes / ways of working
- Step change in the cost base

Brand Recognition
- Emerging trends and technologies
- Thought leadership and presence in the market

Create a sustainable path to long term economic growth, de-risk enterprise value erosion due to tech change

Colt Innovation to Enable *Smart X* with Partners

Smart Manufacturing

- Visual Inspection
- Digital Supply
- Remote Assistance
- Thread Perimeter Protection

Smart Building/ Office

- AR/VR-based Collaboration
- Smart Energy
- Physical Telepresence
- Water Leakage Detection

Smart City

- Gaming
- IoT & 5G Hub
- Footfall Analysis
- Utilities Management

Smart X Incubation Activities Launched in Various Verticals

Green Building Open Platform

Indoor 5G in Office Building

Smart City Connect Concept

Edge to Cloud Platform

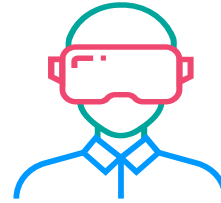# Private 5G for Smart Office in Business District

Private
5G

Connectivity is a challenge for our development pipeline to be at the "state of the art" upon delivery

Why Connectivity Can't Be an Afterthought

Increase usage of immersive remote operations/ assistance

Average Factory: 320 PB/Yr by end of 2023, +23% YoY

Source: IDC January 2023 – Transform Your Factory with Connectivity

47% of Enterprise need more than 10 PB for AI/ML workloads
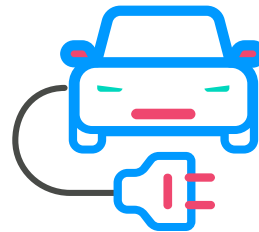
Requirement to move 60PB/month of vehicle sensors data to Cloud for part of manufacturers

5G: A New Business Model for Real Estate?

The building becomes a platform for data & services

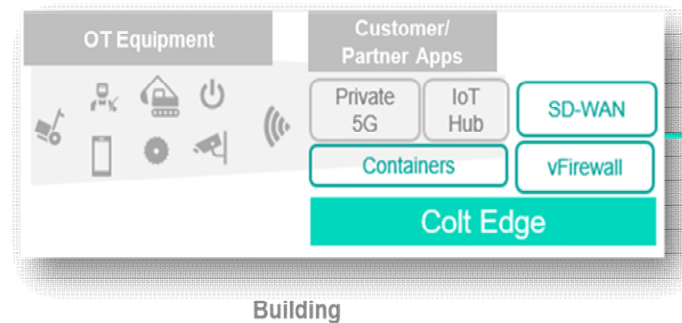|	
Service Assurance	**Customer Application**

Data Lake & AI

Data (CRM, City, BMS, IoT, …)

Operational Technologies (OT) ← → Enabling Edge-to-Cloud Architecture → Information Technologies (IT)

Building
- OT Equipment
- Customer/Partner Apps
- Private 5G
- IoT Hub
- SD-WAN
- Containers
- vFirewall
- Colt Edge

Powered by **colt IQ Network**

- Ethernet
- Internet
- SD-WAN
- Cloud connectivity

Public Cloud: ORACLE Cloud, IBM Cloud, aws
1000+ Data Centres: GLOBAL SWITCH, EQUINIX, DIGITAL REALTY, interxion, TELEHOUSE
31k+ Enterprise Buildings

Colt | Partners

To implement this vision in an industrial way, we need to standardize the way to produce/ transport/ store and process Smart Building data

8

Private 5G Ecosystem Consortium Led by Colt

Perfect integration in the office. 5G enabled devices to test several use cases

Private dedicated access to the different applications with 5G timing

WAN Connectivity **colt**
- Internet Access 1G
- Ethernet Link 10G between Paris & Amsterdam
- Network timing for 5G Synchronization

Grand Master Clock (London)

- 5 Radio Units
- 5G Indoor Hotspots
- Telepresence robot

Airspan
Airspan
AXYN

Possibility to share edge servers with other Virtual Functions: SD-WAN, Extended Cloud, IoT GW, CDN,…

Possibility to mutualize the edge infrastructure between several sites

Powered by **colt IQ Network**

Servers on site **CISCO**

On-Premise Edge (Paris)

Virtual Machines **colt**

Network Edge (Amsterdam)

Internet & Cloud Access

- 5G SA Core Network incl. IMS **ATHONET**
- O-RAN Management System **Airspan**
- Sensors for monitoring **ACCEDIAN**
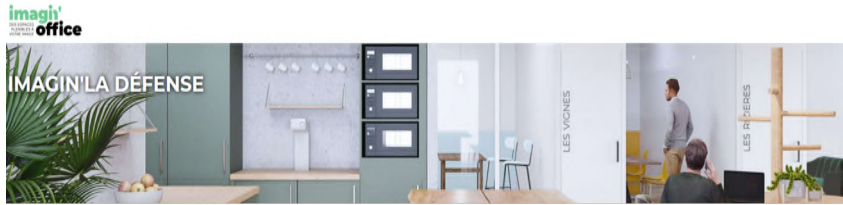- Security Gateway **JUNIPER NETWORKS**

- O-RAN Virtualized Functions (DU & CU) **Airspan**
- 5G Core UPF (local breakout) **ATHONET**
- Sensors for monitoring **ACCEDIAN**
- Security Gateway **JUNIPER NETWORKS**
- Hypervisor **ADVA**
- Local Switches **ADVA**

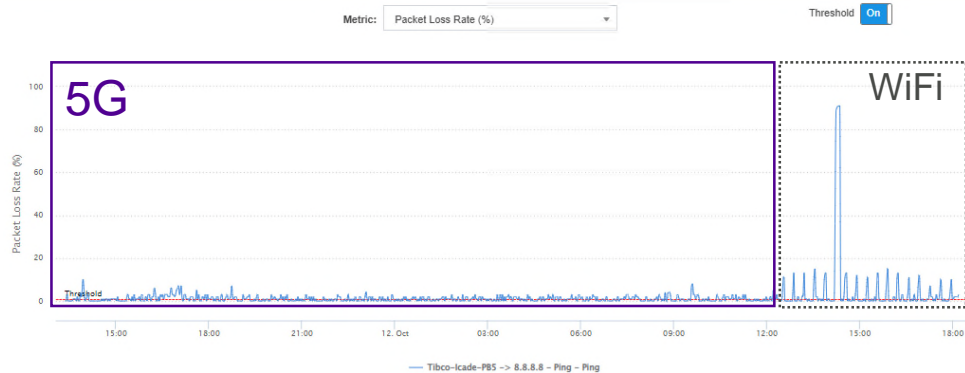**ACCEDIAN** ➡ 5G monitoring solutions – tests & live performance reporting
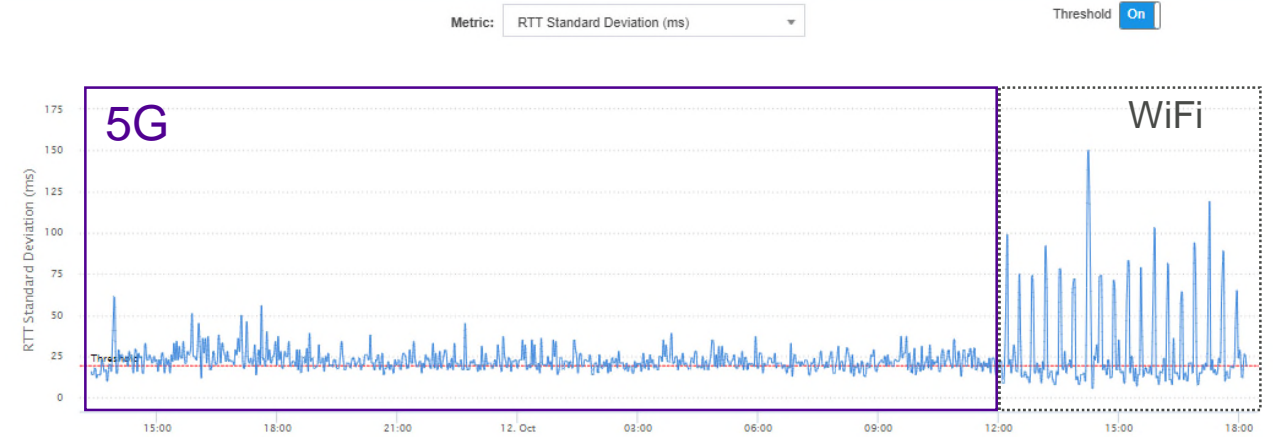
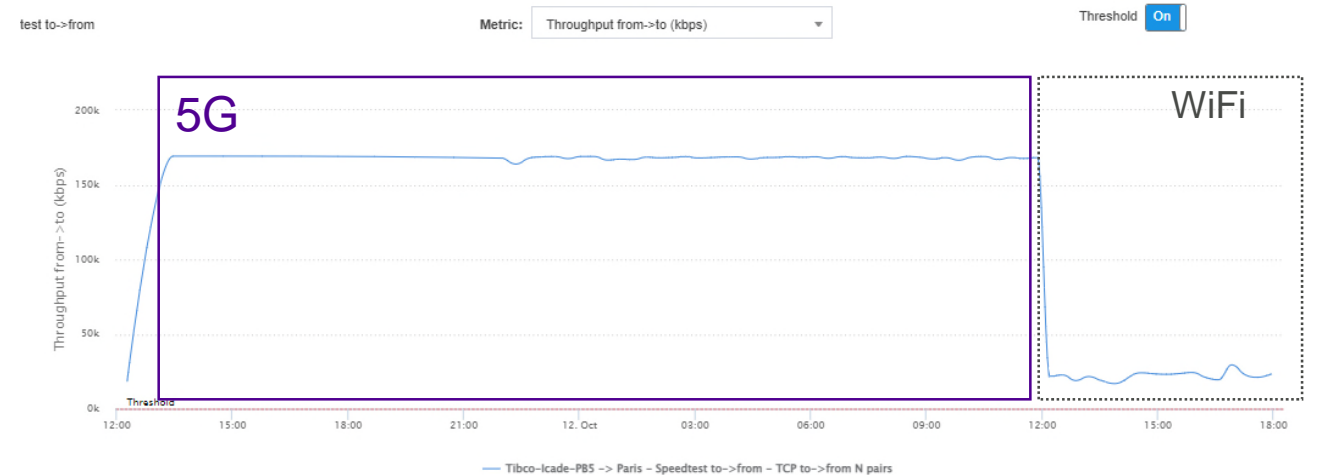# 5G Use Cases Tested: 5G Hot Spot – Premium Data Connectivity

Airspan Airspot 7621

Much better latency at ~10ms (RTT=20ms)

Better stability with much lower packet loss

Much better throughput x5 compared to WiFi

5G Use Cases Tested: Telepresence Robot

- Telepresence robot
- Mobile visioconferencing
- Co-working space visit
- Remote collaboration
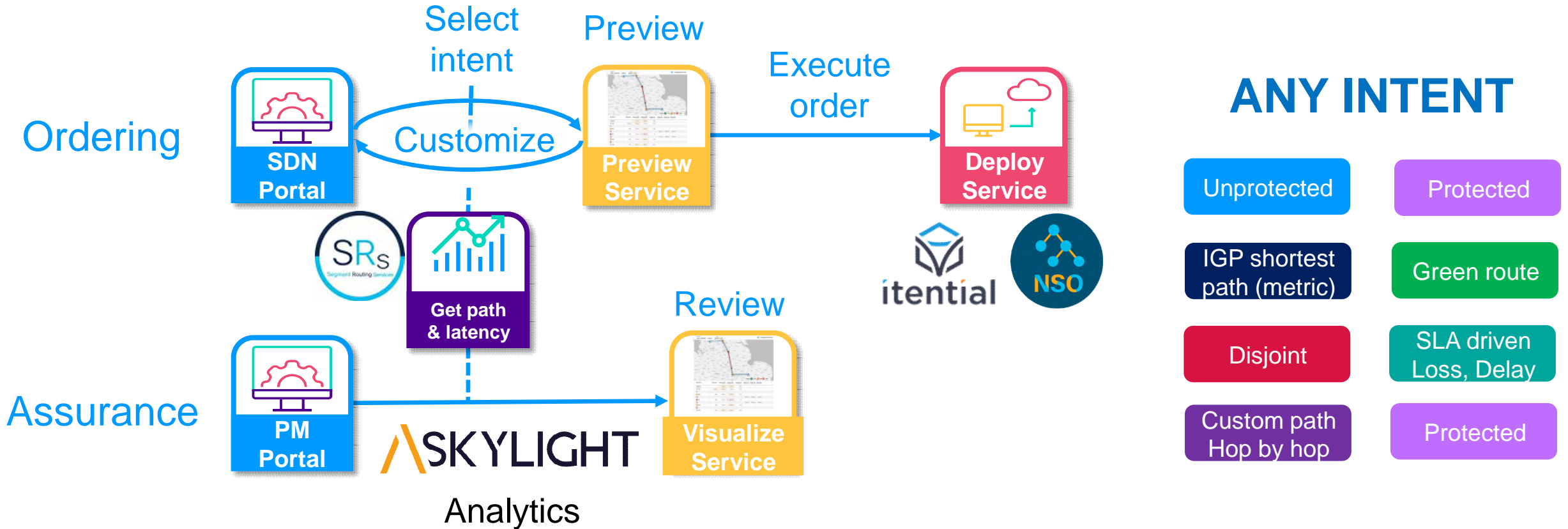- Remote Welcome desk
- Teleworking

11

Key Takeaways From the Indoor P5G MVP

- Need a reliable E2E ecosystem to build Private 5G network

- **Instrumental involvement of Accedian providing end-to-end visibility including application & devices**

  - Significant effort required to integrate and troubleshoot several 5G techno partners

  - Tools & data monitoring are essential pieces to integrate devices, introduce new use cases

- 5G lab activities with Icade still live in La Défense

  - Currently exploring Immersive Experience leveraging AR/VR & Video devices

Intent Based Network – Rethink Network Usage

Ordering

Select intent

Preview

Execute order

SDN Portal

Customize

Preview Service

Deploy Service

SRs — Segment Routing Services

Get path & latency

itential   NSO

Assurance

Review

PM Portal

/\SKYLIGHT

Visualize Service

Analytics

ANY INTENT

Unprotected	Protected
IGP shortest path (metric)	Green route
Disjoint	SLA driven Loss, Delay
Custom path Hop by hop	Protected

New way of consuming network resources to be evaluated based on these Intent-Based Network enabled by Skylight and Cisco NSO

13

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Thank you

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