Smarter Connected Societies
New products & solutions launched in 2016

Follow | Link | Watch

| Wireless Access & Transmission	Telco Software Solutions	ICT Solutions & Services	Renewable & Energy Management Solutions	eHealth Services

Intracom Telecom, abreast with the latest technological developments, offers a comprehensive products and solutions portfolio to address customer existing and future needs. Over 100 customers in more than 70 countries choose Intracom Telecom for its state-of-the-art technology.

Research & Development
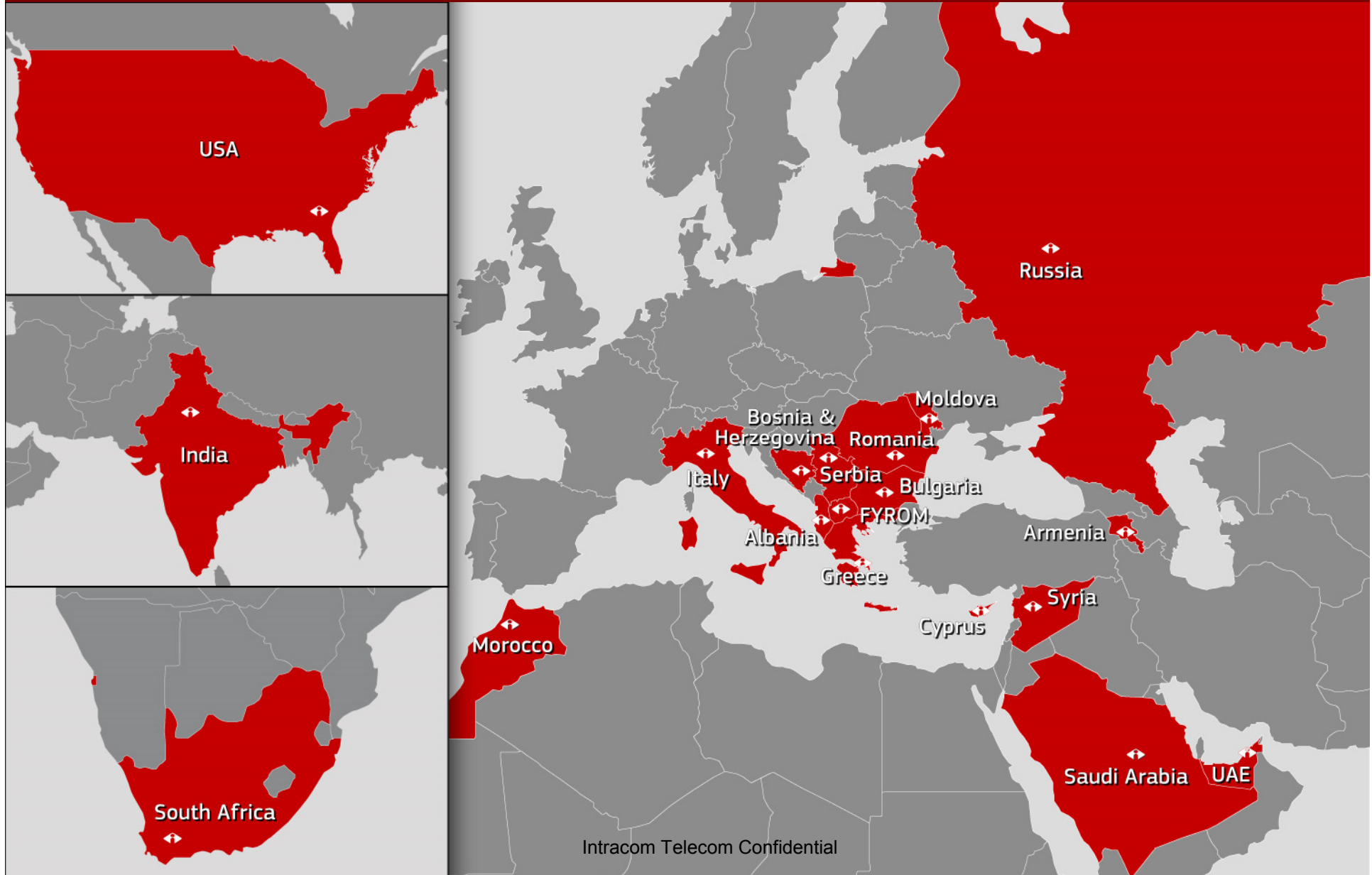
- ▶ Vertical organization from idea-to-market capability
- ▶ Average 7% of revenue on annual R&D investments
- ▶ Research labs with state-of-the-art infrastructure, for design, rapid prototype development & validation of advanced telecom products
  - • Microelectronics ASIC / FPGA design
  - • Microwave & millimeter-wave design lab
  - • DSP & System Modeling lab
  - • Embedded Software & NMS development
  - • Sophisticated mechanical part design
- ▶ OEM Design Center for 3rd party vendors

- ▶ Strong R&D presence at European level - key participation in EU H2020 research framework
  - • Continuing the company's innovation legacy in the European research arena for more than 25 years.
- ▶ Strategic research: strong participation in EU's flagship initiative for 5G
  - • Participation in 3 of the 18 forefront research and innovation projects that will lead Europe's way to 5G.
- ▶ Research focus on SDN/NFV, high-performance low-latency wireless transmission, smart broadband access, intelligent network management, information-centric networking, smart grid, big data, e-health.

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Solution Highlights
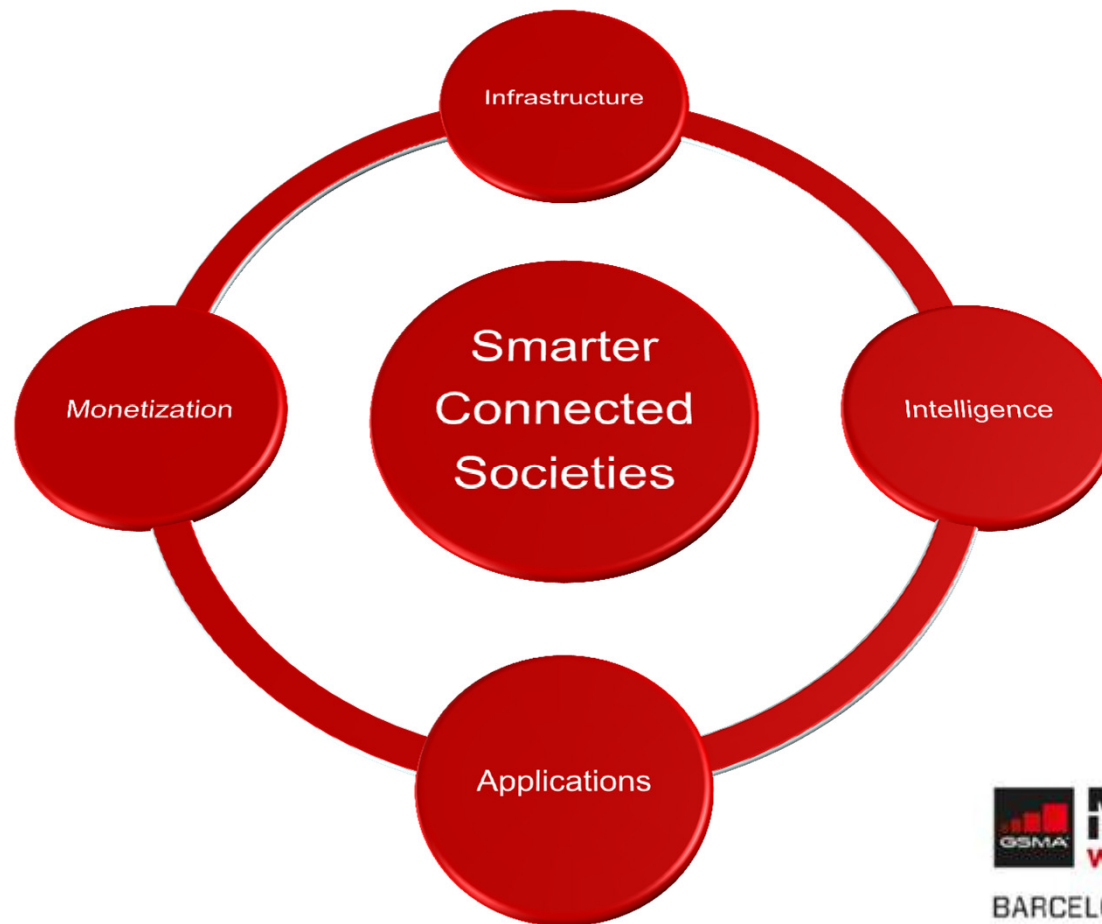
Any Location Reached
Software-defined PtMP or PtP operation in microwave frequencies with customization of different firmware profiles enables extended range in urban landscape

CapEx & OpEx Savings
Microwave multipoint architecture offers CapEx savings by connecting multiple terminal stations with a single hub. Millimeter-wave StreetNode™ units, operating in license-free, result in Low OpEx

Flexible Powering
Powering options (direct DC, direct AC or PoE) adapt to the most convenient powering available on site

Unified Management
uniMS™ is managing radio equipment and wireless services as well as protecting the entire network and managed elements against intentional or accidental unauthorized access

Breakthrough Performance throughout the City Landscape!

Automations for Fast & Easy Deployment
Zero-touch configuration and auto-alignment capabilities StreetNode™ radios. Each radio can be installed and configured in just 30 minutes by non-specialized personnel using an Android tablet and Bluetooth

1 Gbit/s Backhaul
Available capacity satisfies and exceeds the requirements of high-definition IP cameras used for demanding face-recognition algorithms

Flexible Networking
3 x Gigabit interfaces per radio and an embedded switch make the deployment in complex topologies possible and offer trouble-free connection to surveillance IP cameras or other type of sensor equipment

All-in-one
Compact and aesthetically-pleasing box with embedded antenna; custom finishes on demand

Solution Highlights

CapEx & OpEx Savings
Same hardware for backhaul and less equipment compared to purely PtP deployments

Configurable Operation
Point-to-MultiPoint (PtMP) or or Point-to-Point (PtP) at street level

Flexible Powering
3 x powering options – direct DC, AC PoE, DC PoE – to adapt to the power source available locally (StreetNode™, OSDR-S)

Unified Management
One management suite, uniMS™, manages everything, from radio equipment to wireless services

Innovative Non-LOS Network Build-up with StreetNode™ Terminals!

Fast Installation
Terminal is installed and run in less than 30 minutes by non-specialized personnel using an Android tablet and Bluetooth

Unique Auto-alignment
Network is configured automatically when StreetNode terminals are added or removed
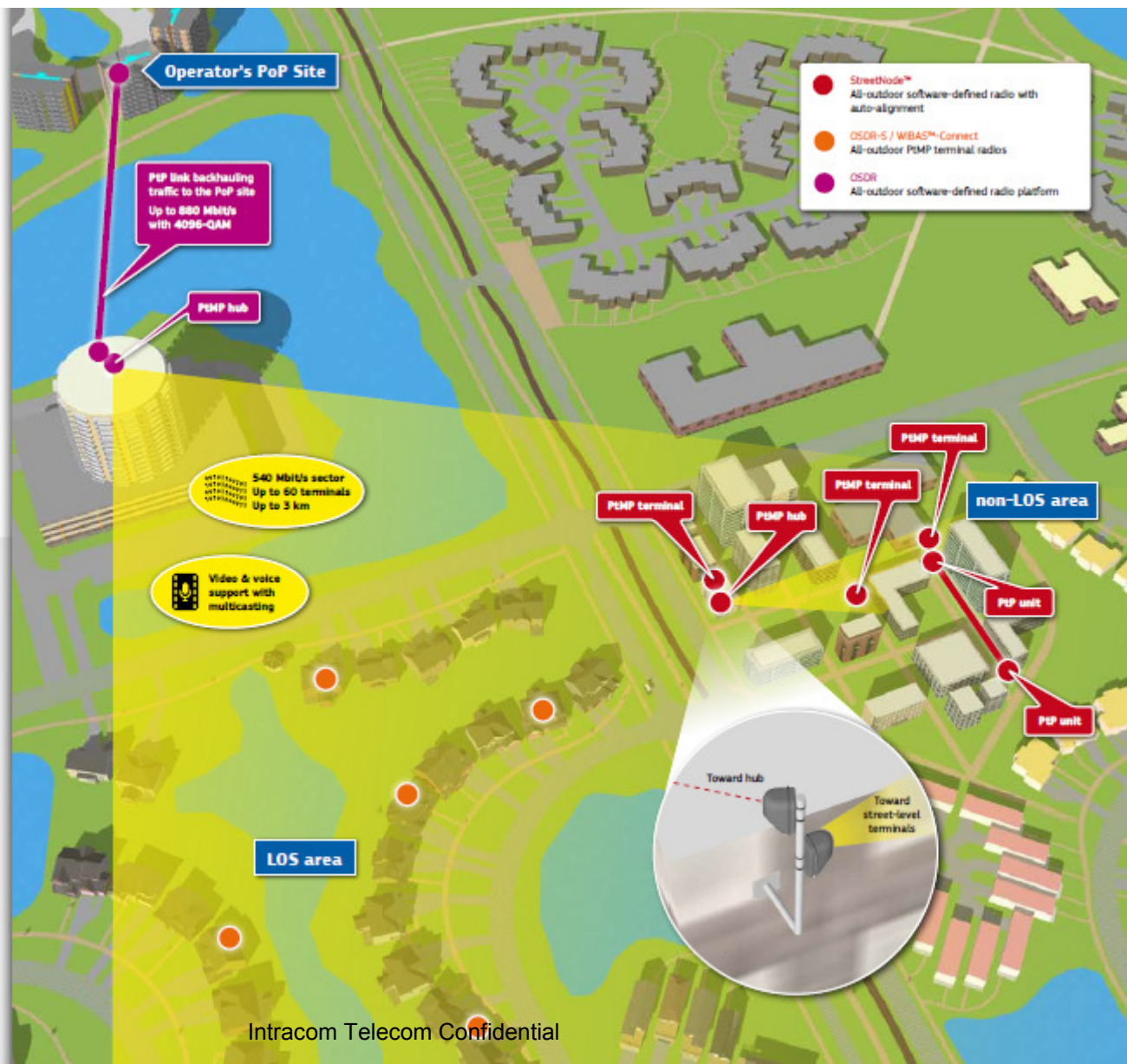
Advanced Features
3 x Gigabit interfaces and an embedded switch make additional external Ethernet switches unnecessary

All-in-one
Compact and aesthetically-pleasing box with embedded antenna; custom finishes on demand

Operator's PoP Site

PtP link backhauling traffic to the PoP site Up to 880 Mbit/s with 4096-QAM

PtMP hub

540 Mbit/s sector Up to 60 terminals Up to 3 km

Video & voice support with multicasting

PtMP terminal

PtMP terminal

PtMP terminal

PtMP hub

non-LOS area

PtP unit

PtP unit

LOS area

Toward hub

Toward street-level terminals

StreetNode™
All-outdoor software-defined radio with auto-alignment

OSDR-S / WiBAS™-Connect
All-outdoor PtMP terminal radios

OSDR
All-outdoor software-defined radio platform

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Solution Highlights

OpEx Savings
Most links operate only in OpEx-free unlicensed or light-licensed E-Band spectrum

CapEx Savings
Up to 3 Gbit/s Ethernet capacity with minimum hardware, two small-size all-outdoor radio units per link. No, or minimal, requirements for additional installation infrastructure

Unified Management
One intuitive management suite, uniMS™, with advanced SON features manages everything, from radio equipment to wireless services

Enhancing Quality of Internet Service Experience!

Automations for Fast & Easy Deployment
Zero-touch configuration and auto-alignment (StreetNode™ V60-PTP). The radio is installed and configured in up to 30 minutes by non-specialized personnel using an Android tablet and Bluetooth
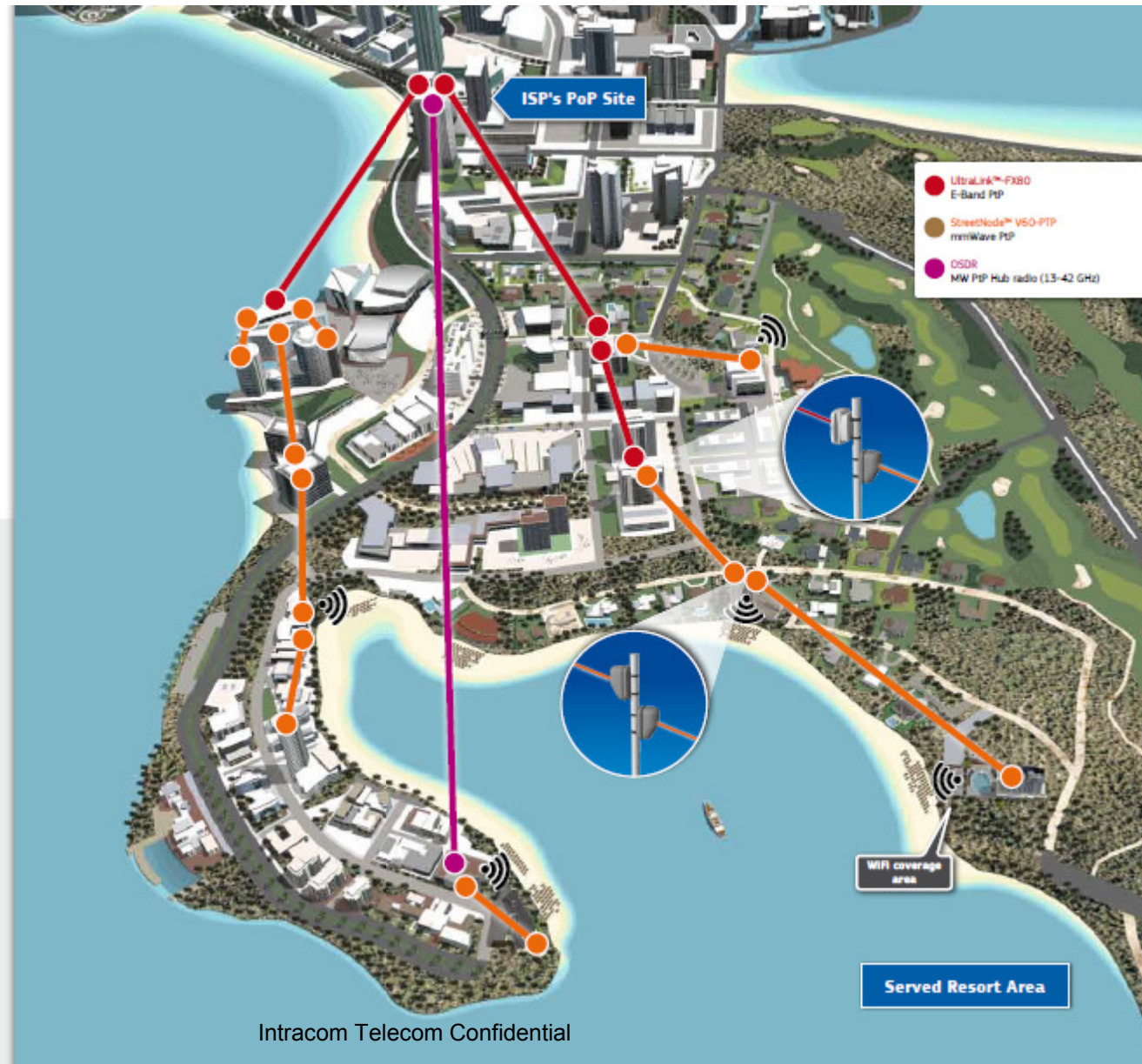
Flexible Networking
3 x Gigabit interfaces per radio and an embedded switch make the deployment in complex topologies possible and offer trouble-free connection to standard in-building switches and/or routers

Flexible Powering
Powering options (direct DC, direct AC or PoE) adapt to the most convenient powering available on site

ISP's PoP Site

UltraLink™-FX80
E-Band PtP

StreetNode™ V60-PTP
mmWave PtP

OSDR
MW PtP Hub radio (13-42 GHz)

WiFi coverage area

Served Resort Area

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Solution Highlights

Backward Compatibility
Legacy interfaces can be accommodated in all-outdoor cabinets to provide legacy connectivity where available

Unified Management
One management suite, uni|MS™, manages everything, from radio equipment to wireless services

Powerful & Flexible Connections!

Industry-Leading Capacity
Highest radio throughputs per link with modulations up to 4096-QAM

Configurability
Point to Multi-Point (PtMP) or Point-to-Point (PtP) operation for all-outdoor systems (OSDR)

Complete Portfolio for Transport
The PtP family of products span all the segments of the network, from the edge sites to the high aggregation nodes

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Solution Highlights

Excessive IP Bandwidth Over the Air at Long Distances

Best suited for remote areas Gigabit wireless connectivity, with ranges from hundreds of meters to several km

OpEx Optimized

Install-and-forget equipment that is extremely reliable in challenging environments, requiring minimal maintenance

Efficient Management

One management suite, uniMS™, manages everything, from radio equipment to wireless services

Fast Network Buildup & Robust Performance!

Fast Installation & Activation

All-outdoor lightweight units for simple pole installation. StreetNode™ V60-PTP also features unique auto-alignment of the its embedded antenna. Multi-Gigabit interfaces per station enable the connection of multiple cameras

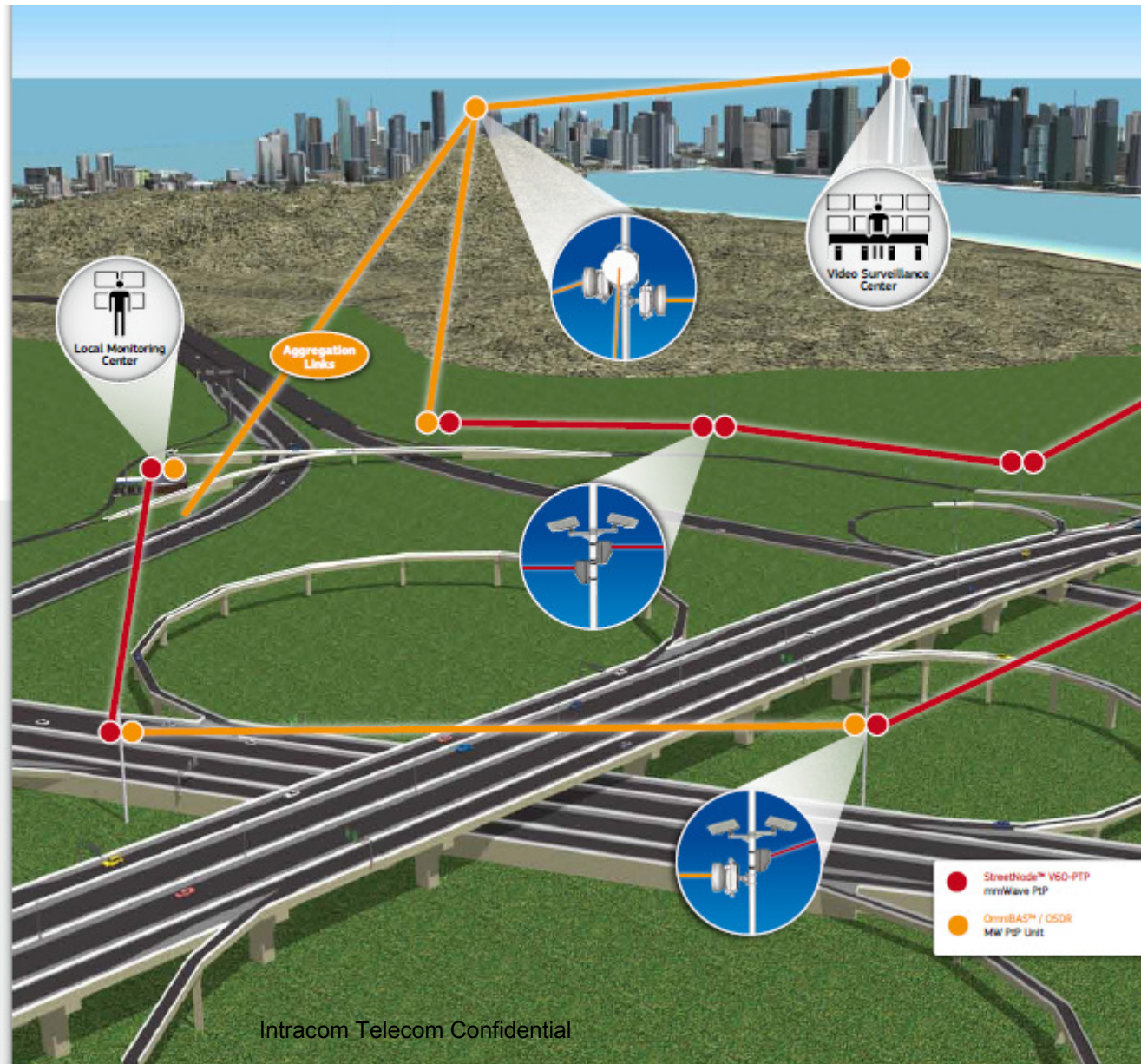### Advanced Features for Efficient IP Over-the-Air Transmission

Embedded Ethernet switch and QoS for efficient video streams and other IP traffic transmission. Robust radio performance also ensures high IP bandwidth under all conditions

All-in-one Solution Delivery

Integrated (OmniBAS™, OSDR) or embedded (StreetNode™ V60-PTP) antennas and modular indoor units (OmniBAS™) for the central sites

Local Monitoring Center

Aggregation Links

Video Surveillance Center

StreetNode™ V60-PTP mmWave PtP

OmniBAS™ / OSDR MW PtP Unit

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Solution Highlights

OpEx Flexibility
Backhaul network operates in both licensed and unlicensed bands

Flexible Powering
3 x powering options – direct DC, AC PoE, DC PoE – to adapt to the power source available locally (StreetNode™, UltraLink™-FX80)

Unified Management
One management suite, uniMS™, manages everything, from radio equipment to wireless services

Breakthrough Performance on the Street!

Configurability
PtMP or PtP operation in MW (licensed) frequencies at street level

Fast Installation
Radio is installed and commissioned in less than 30 minutes by non-specialized personnel using an Android tablet and Bluetooth

Unique Auto-alignment
Network is configured automatically when StreetNode™ radios are added or removed
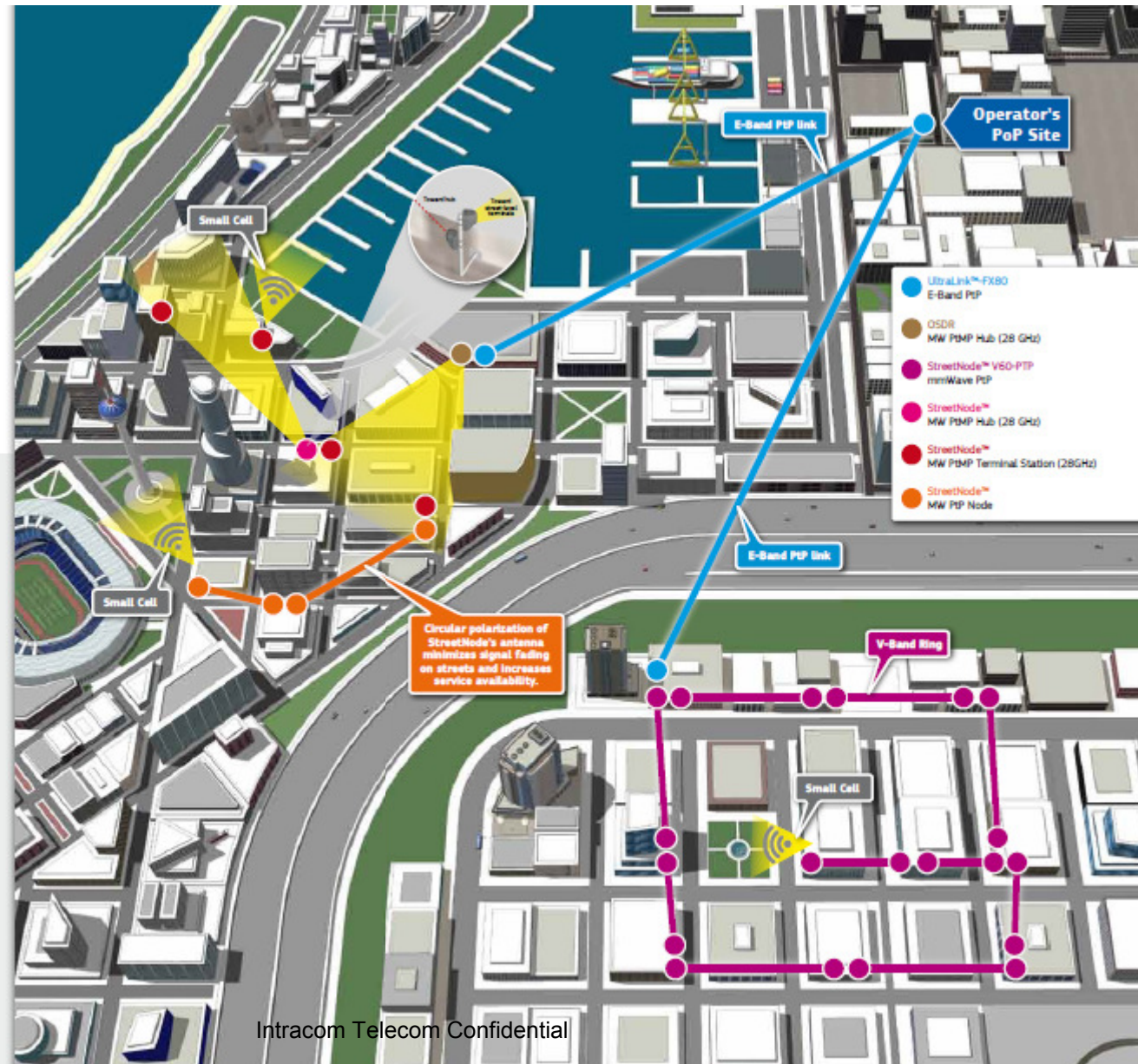
Advanced Features
3 x Gigabit interfaces and an embedded switch make additional external Ethernet switches unnecessary
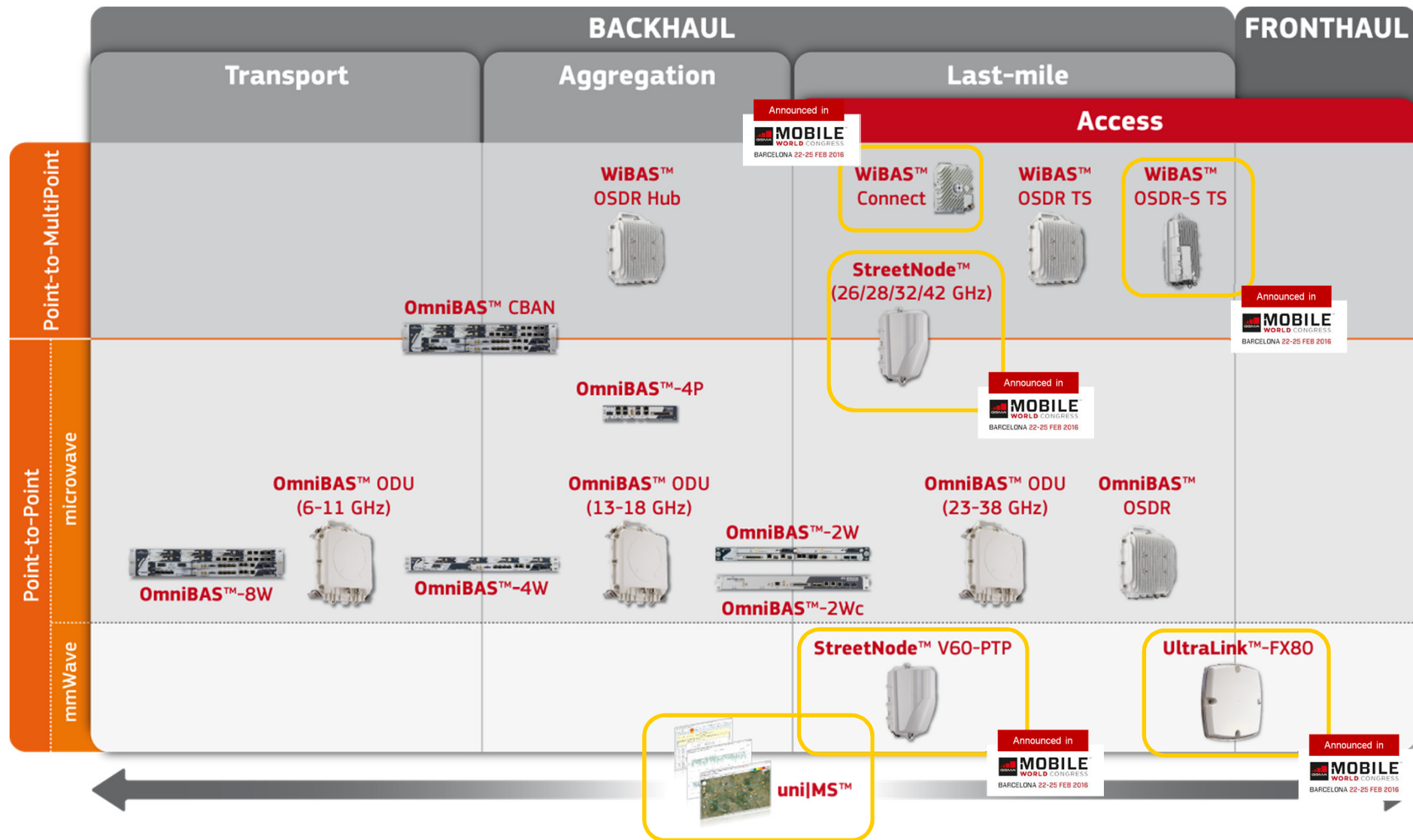
All-in-one
Compact and aesthetically-pleasing box with embedded antenna; custom finishes on demand
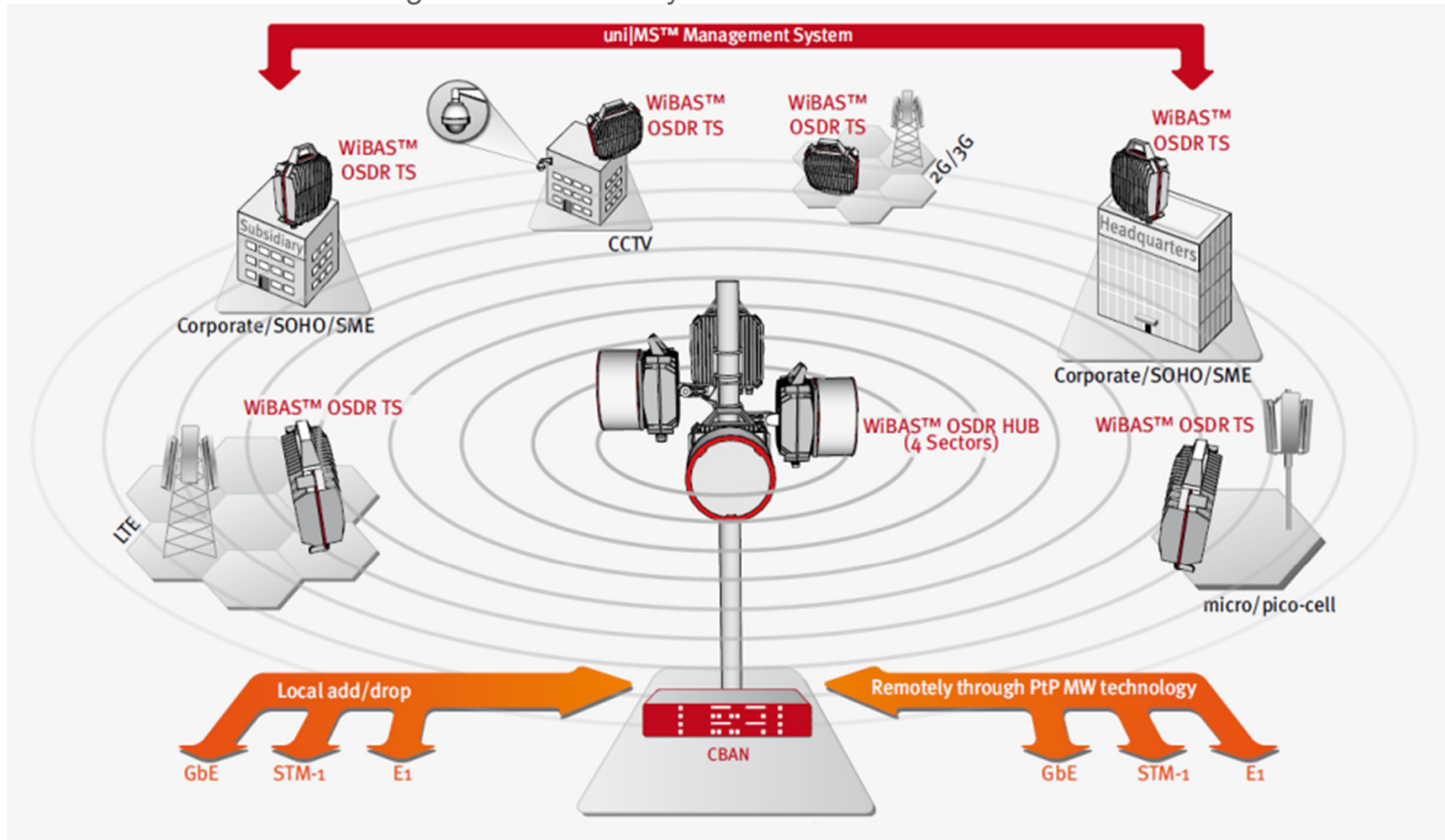
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Telecommunication Infrastructure Produced in Romania

INTRACOM TELECOM

BACKHAUL | **FRONTHAUL**

Transport | **Aggregation** | **Last-mile**

Access

Point-to-MultiPoint:
- WiBAS™ OSDR Hub
- WiBAS™ Connect (Announced in MOBILE WORLD CONGRESS BARCELONA 22-25 FEB 2016)
- WiBAS™ OSDR TS
- WiBAS™ OSDR-S TS
- OmniBAS™ CBAN
- StreetNode™ (26/28/32/42 GHz) (Announced in MOBILE WORLD CONGRESS BARCELONA 22-25 FEB 2016)
- (Announced in MOBILE WORLD CONGRESS BARCELONA 22-25 FEB 2016)

Point-to-Point, microwave:
- OmniBAS™-4P
- OmniBAS™ ODU (6-11 GHz)
- OmniBAS™ ODU (13-18 GHz)
- OmniBAS™ ODU (23-38 GHz)
- OmniBAS™ OSDR
- OmniBAS™-8W
- OmniBAS™-4W
- OmniBAS™-2W
- OmniBAS™-2Wc

Point-to-Point, mmWave:
- StreetNode™ V60-PTP (Announced in MOBILE WORLD CONGRESS BARCELONA 22-25 FEB 2016)
- UltraLink™-FX80 (Announced in MOBILE WORLD CONGRESS BARCELONA 22-25 FEB 2016)
- uni|MS™

INTRACOM TELECOM

Point-to-MultiPoint Single-Carrier FDD System

WiBAS™ miniOSDR
Compact software defined radio at 42GHz

INTRACOM TELECOM

▸ **Frequency Bands 42GHz**

▸ **One Unit, Three Profiles** (PtP, PtMP Hub, PtmP TS)

▸ **Max Sector ETH Capacity: 540Mbps @ 1024QAM/56MHz**

▸ **90º / 180º coverage (sector)**

▸ **0.3 and 0.6 antennas (terminal)**

▸ **ETH Interfaces**

▸ **Up to 30 Terminals (per sector)**

▸ **Direct AC, DC, PoE versions**

Announced in

GSMA **MOBILE** WORLD CONGRESS

BARCELONA 22-25 FEB 2016

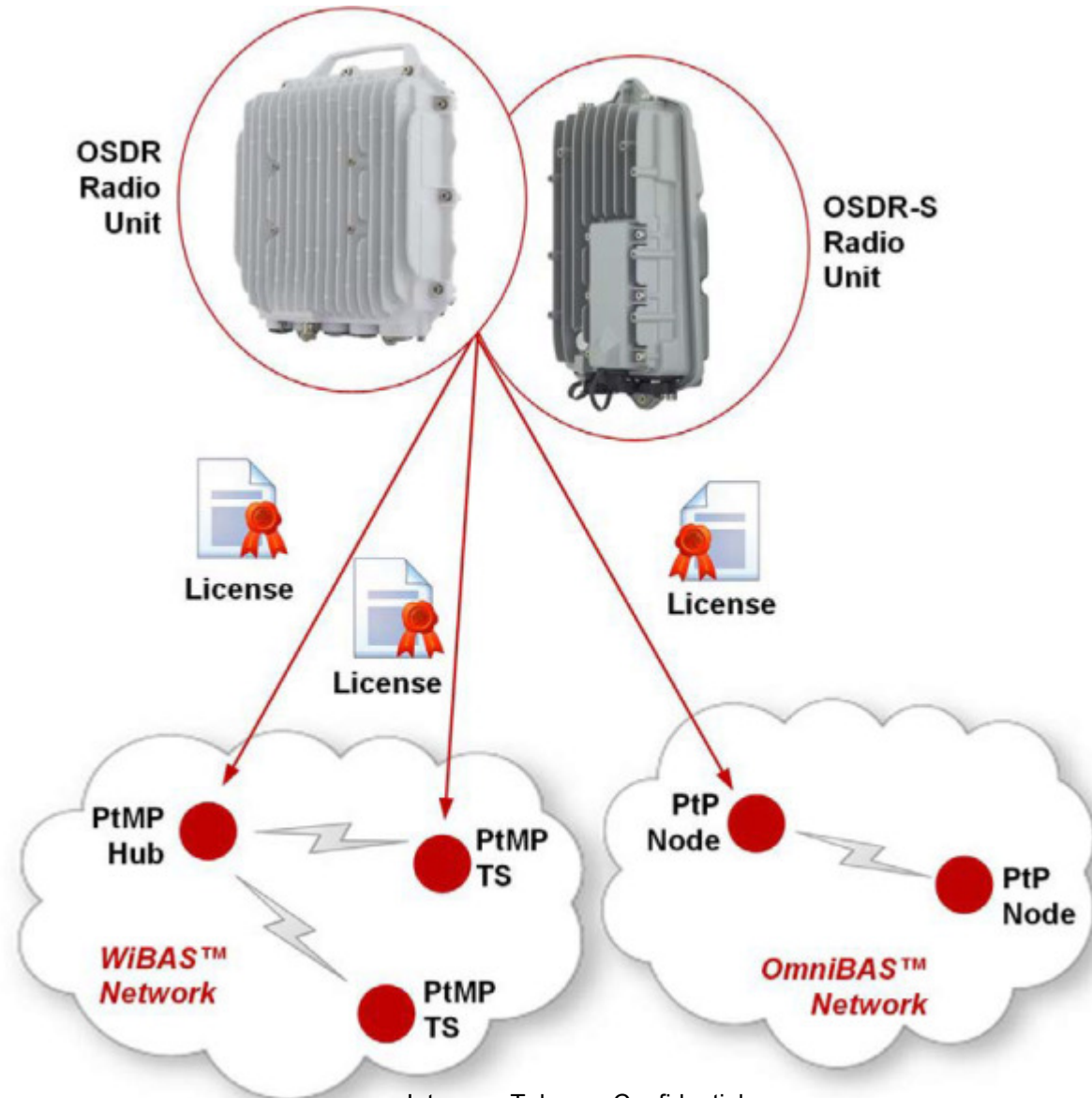# WiBAS™ Connect*
Compact Low Cost Terminal Station
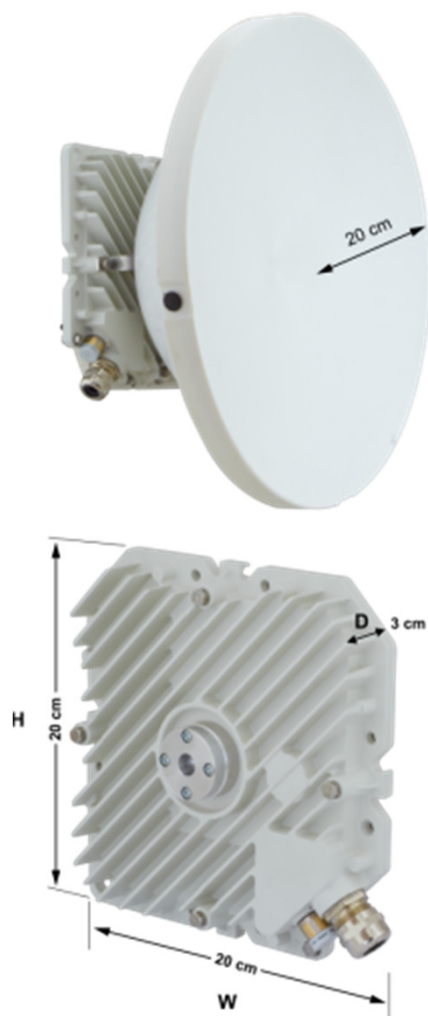
▸ **HFDD**

▸ **Compact Form Factor (20x20x3 cm)**

▸ **Frequency Bands 10.5, 26, 28GHz**

▸ **Max Sector ETH Capacity: 540Mbps @ 1024QAM/56MHz**

▸ **Max Terminal ETH Capacity: 270Mbps @ 1024QAM/56MHz**

▸ **0.3 and 0.6, panel antennas**

▸ **1xETH Interfaces**

▸ **Up to 60 Terminals (per sector)**

▸ **Interoperable with WiBAS OSDR (following SW upgrade)**

▸ **PoE**

Announced in
GSMA MOBILE WORLD CONGRESS
BARCELONA 22-25 FEB 2016

*Q3 2016

Intracom Telecom Confidential

STREETNODE™ microwave radios
Unparalleled deployment agility

INTRACOM TELECOM

- ▶ **SON transmission**

- ▶ Versatility with Software Defined Radio
  - ▪ PTP link
  - ▪ PTMP Sector
  - ▪ PTMP terminal
- ▶ All with the same HW !

- ▶ Compact shape/size:
  - ▶ 276 x 184 x 146 mm, 2.5kgr
- ▶ Blends with Urban shapes and sizes
- ▶ Available in different colors
- ▶ Suitable for street level deployment
- ▶ **Certified for FCC and ETSI/ITU**

Announced in
MOBILE WORLD CONGRESS
BARCELONA 22-25 FEB 2016
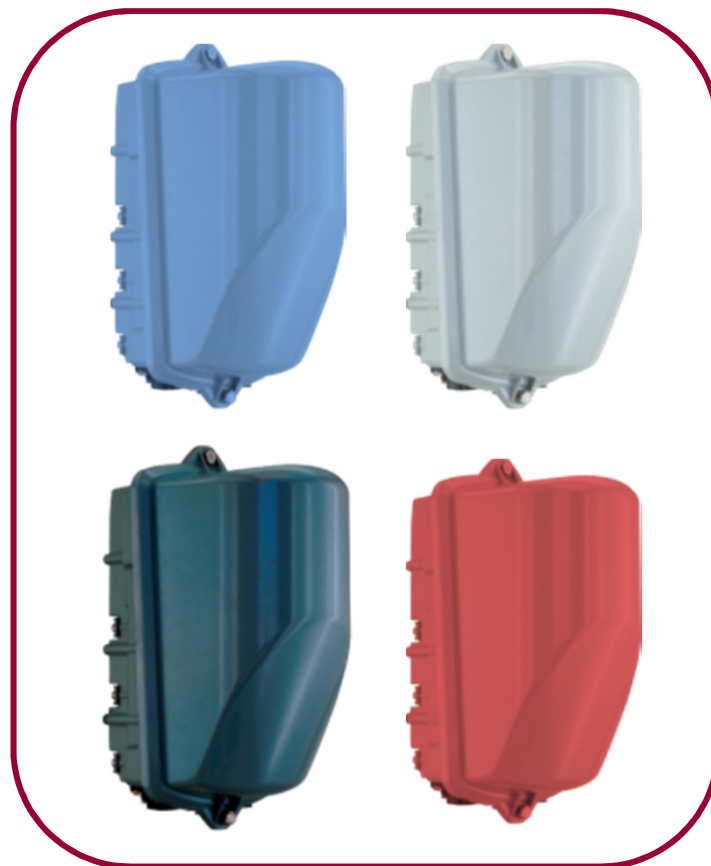
STREETNODE™ millimeter wave radios
Unparalleled deployment agility

▶ Operating in the **57- 66 GHz** spectrum

▶ Different HW variants

- **57- 64 GHz / D.S. : 3.5GHz**

- **59 - 63 GHz / D.S. : 2GHz**

- **58.25 - 63.25 GHz / D.S. : 2.5GHz**

- **64 - 66 GHz / D.S. : 990MHz***

▶ **6-Level** HACM up to **128QAM**

▶ Up to **1.7Gbps Full Duplex** throughput

▶ **Integrated antenna with Automated Link Alignment**

▶ **Automated Channel Scanning & Interference Detection**

▶ **Certified for FCC and ETSI/ITU**

Announced in
MOBILE WORLD CONGRESS
BARCELONA 22-25 FEB 2016

Ultralink-FX80™
Leading the capacity race

▶ Operates across the entire E-Band 71-76/81-86GHz

▶ **7-Level** HACM up to **256 QAM**

▶ Maximum **Ethernet Full Duplex** capacity:

  - **Up to 1.8 Gbps @ 250 MHz**
  - **Up to 3 Gbps @ 500 MHz**

▶ **CPRI transport mode** (up to 2457.6 Mbit/s)

▶ Multiple Antenna options

  - **Integrated Flat Panel Antenna (43dBi)**
  - **30/60 cm external Parabolic (44/51dBi)**

▶ Manual Alignment – Optional alignment assistance by scope

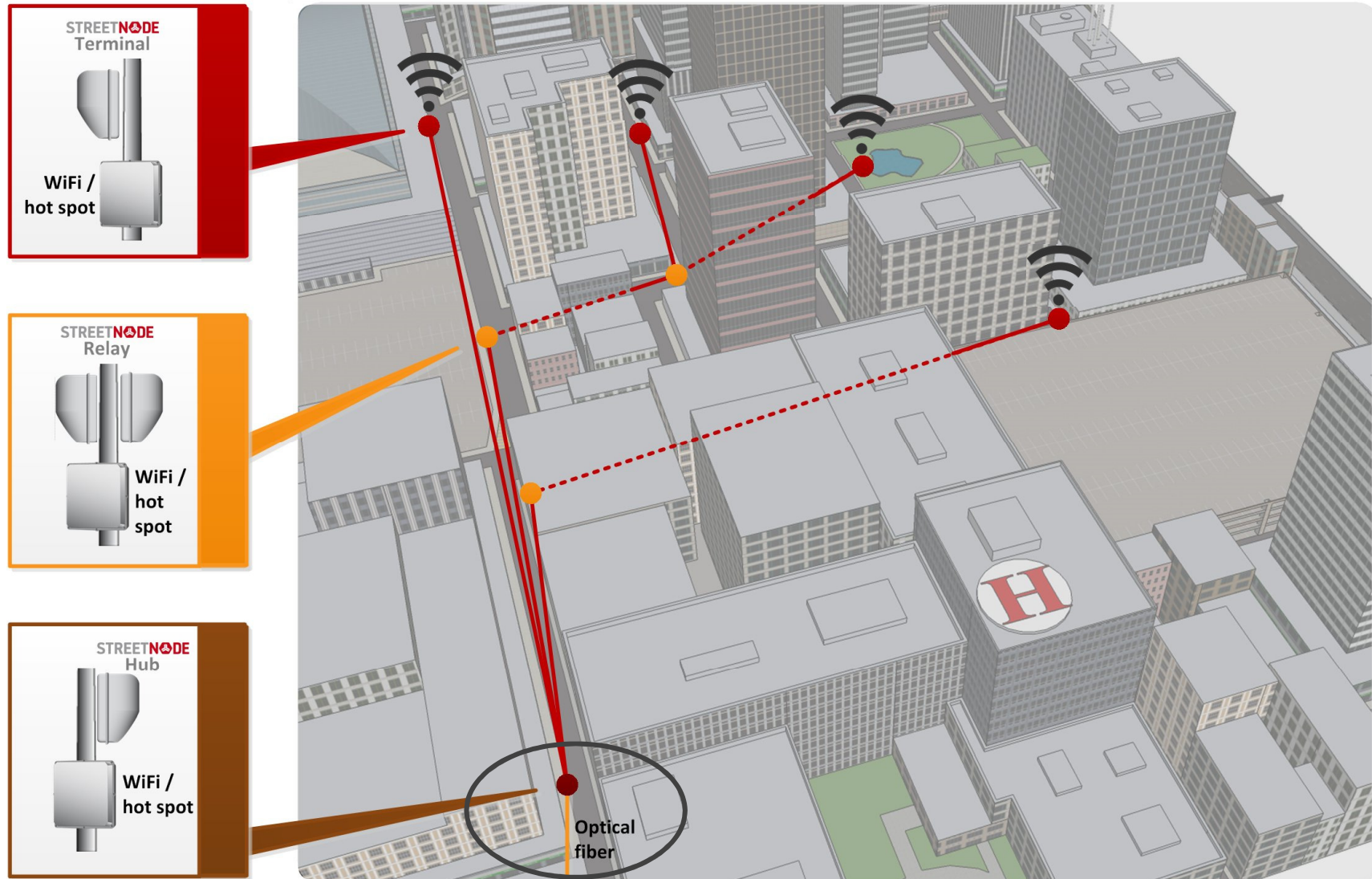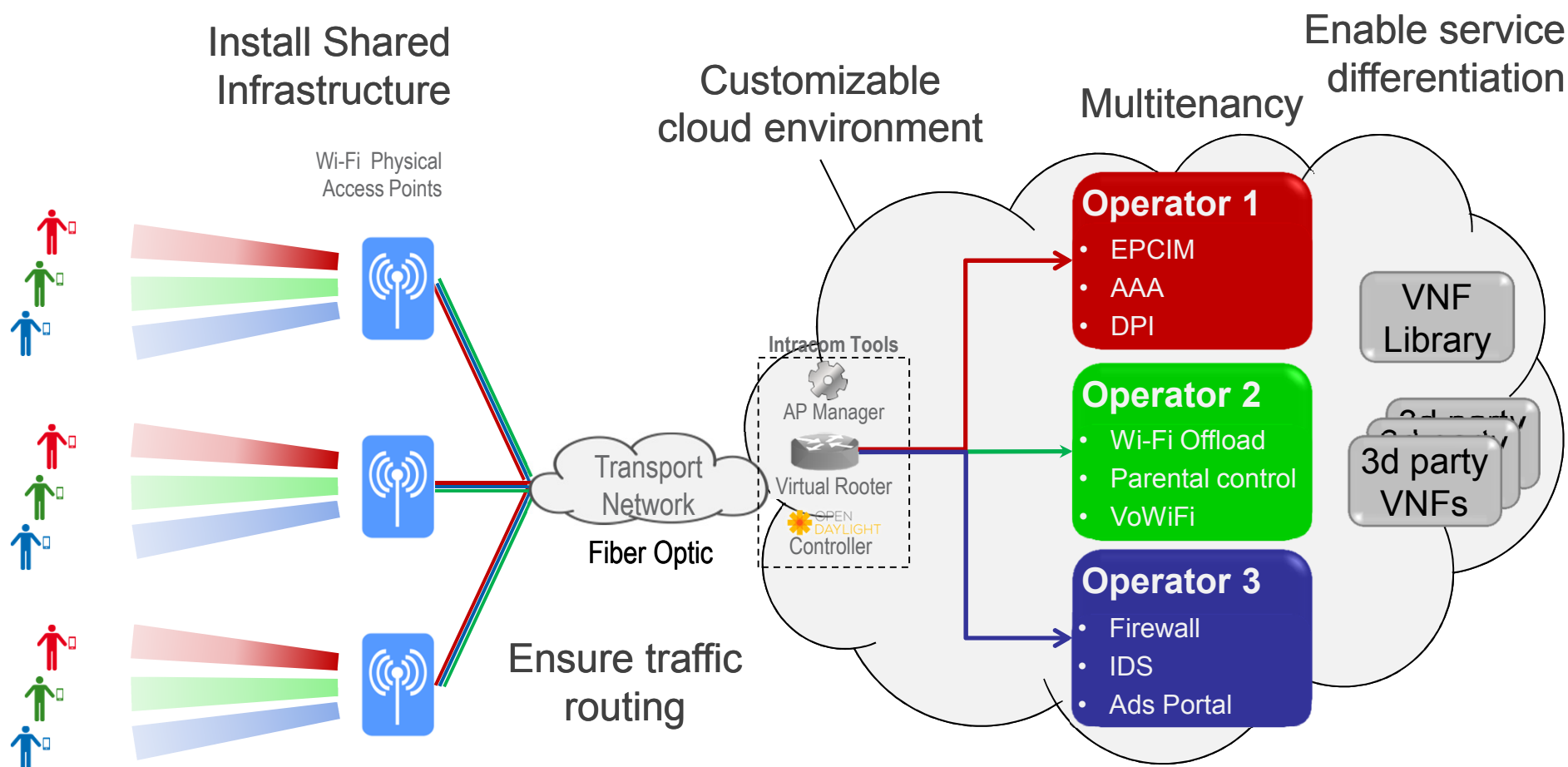▶ **Confirmed evolution for 1GHz bandwidth, 6Gbps capacity**

Announced in

MOBILE WORLD CONGRESS

BARCELONA 22-25 FEB 2016

Adding Intelligence to the network

STREET**NODE**
Terminal

WiFi / hot spot

STREET**NODE**
Relay

WiFi / hot spot

STREET**NODE**
Hub

WiFi / hot spot

Optical fiber

Intracom Telecom Confidential

Virtualized Wi-Fi is an add-on over NFV

INTRACOM TELECOM

Install Shared Infrastructure

Wi-Fi Physical Access Points

Customizable cloud environment

Multitenancy

Enable service differentiation

Operator 1
- EPCIM
- AAA
- DPI

VNF Library

Intracom Tools

AP Manager

Virtual Rooter

OPEN DAYLIGHT Controller

Transport Network

Fiber Optic

Ensure traffic routing

Operator 2
- Wi-Fi Offload
- Parental control
- VoWiFi

3d party VNFs

Operator 3
- Firewall
- IDS
- Ads Portal
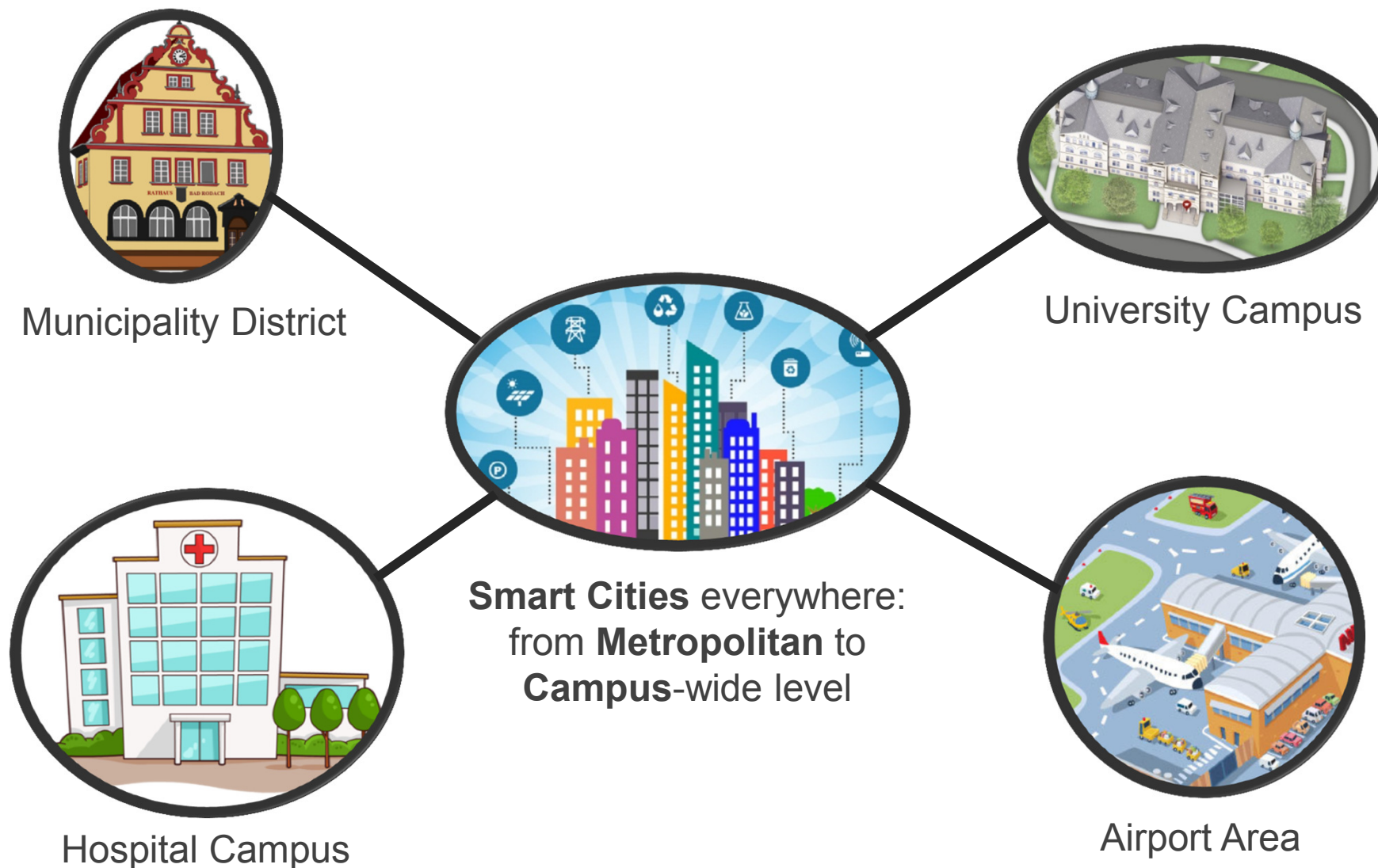
Announced in

MOBILE WORLD CONGRESS
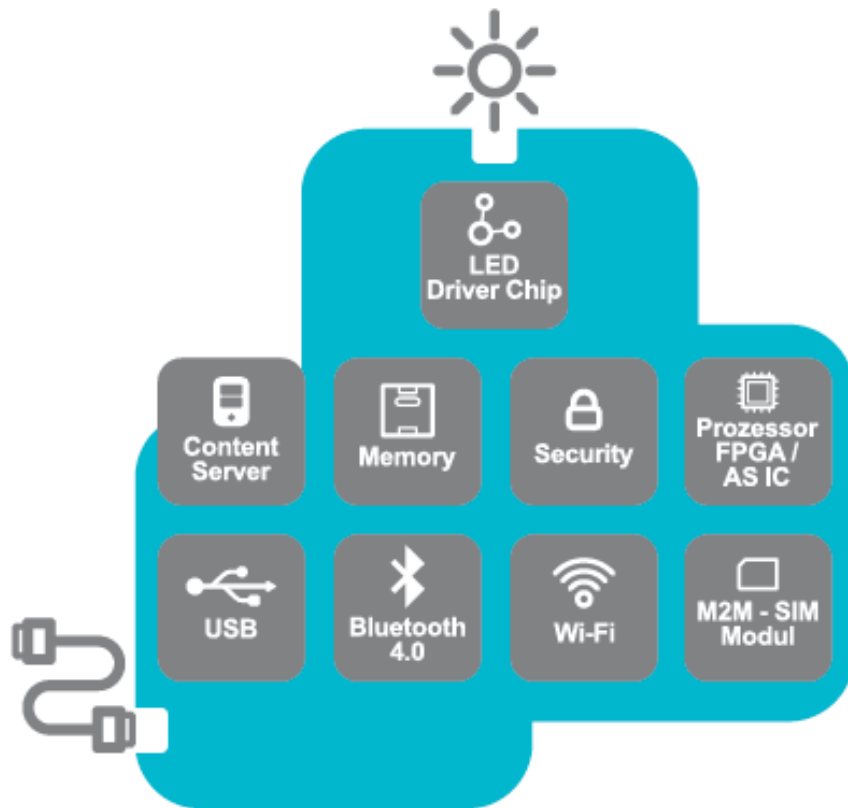BARCELONA 22-25 FEB 2016

- VNF deployment 'at the **click of a button**' (DIY)
- Support operators' innovation at **low cost**
- Avoid '**cross-contamination**' due to misconfiguration
- Minimize time to market

Who is Virtualized Wi-Fi for?

Municipality District

University Campus

Smart Cities everywhere: from **Metropolitan** to **Campus**-wide level

Hospital Campus

Airport Area

Smart Lighting Application

▶ Transform lights into smart communication hubs through a complete end-to-end LED system combining local multi processor intelligence

▶ Deploy and offer Lighting as a Service, with a suite of cloud-based portal for lights management, remote management and maintenance

▶ Manage and monetize location-specific & personalized content push in touristic or other public areas

▶ Deploy and manage public high-speed WiFi hotspots – securely share or lease software defined network infrastructure to other Communications Service Providers
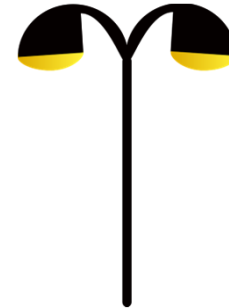
Smart Lighting

▸ Electricity savings

▸ Traffic info measurements

▸ Public messaging

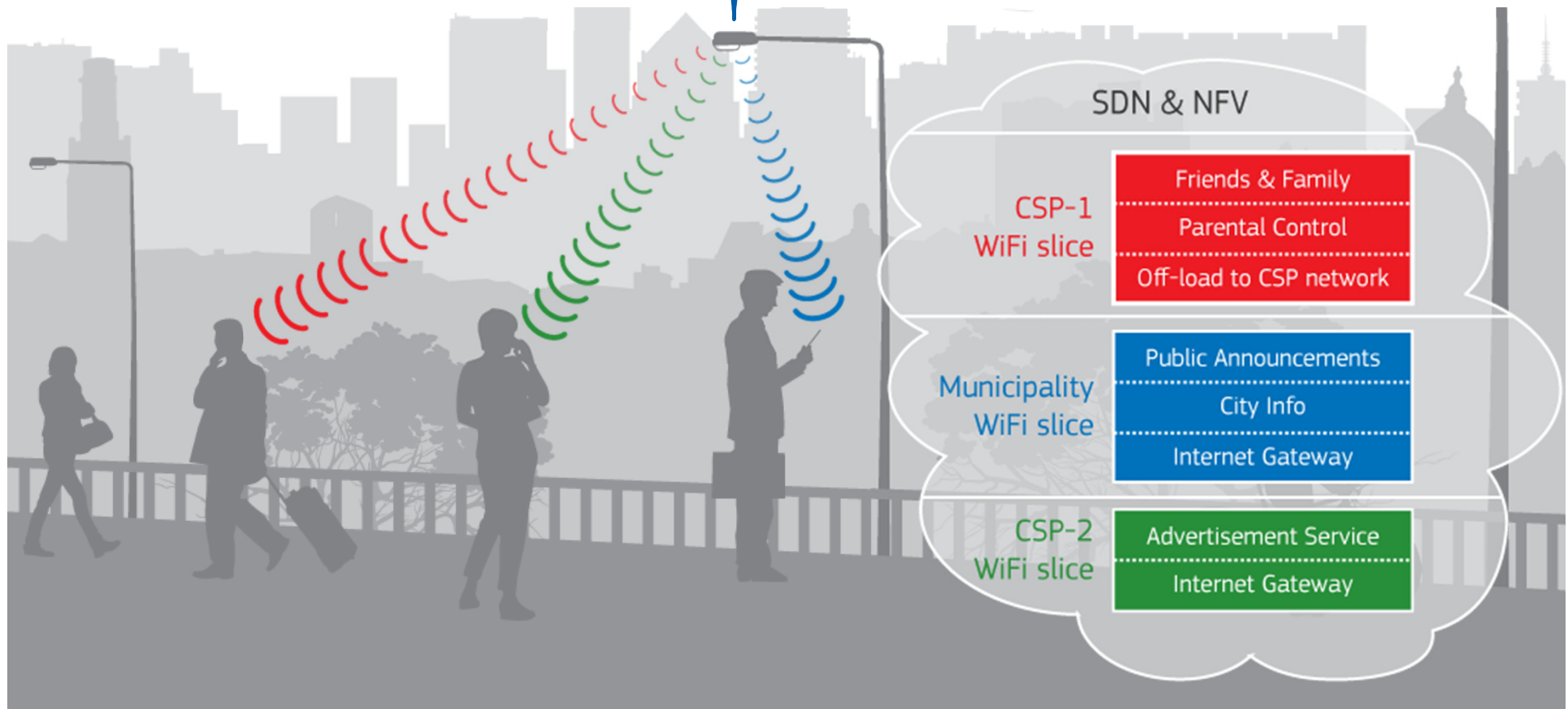Hint: Smart lighting infrastructure is very often **Wi-Fi enabled**

+

City Challenges

▸ Meet environmental & economic objectives

▸ Offer innovative digital services

▸ Generate new streams of revenue

Virtualized Wi-Fi

▸ Sell virtual slices of Wi-Fi capacity

▸ Fund shared infrastructure

Wi-Fi access points are installed across the Smart City

SDN & NFV

CSP-1 WiFi slice
- Friends & Family
- Parental Control
- Off-load to CSP network

Municipality WiFi slice
- Public Announcements
- City Info
- Internet Gateway

CSP-2 WiFi slice
- Advertisement Service
- Internet Gateway

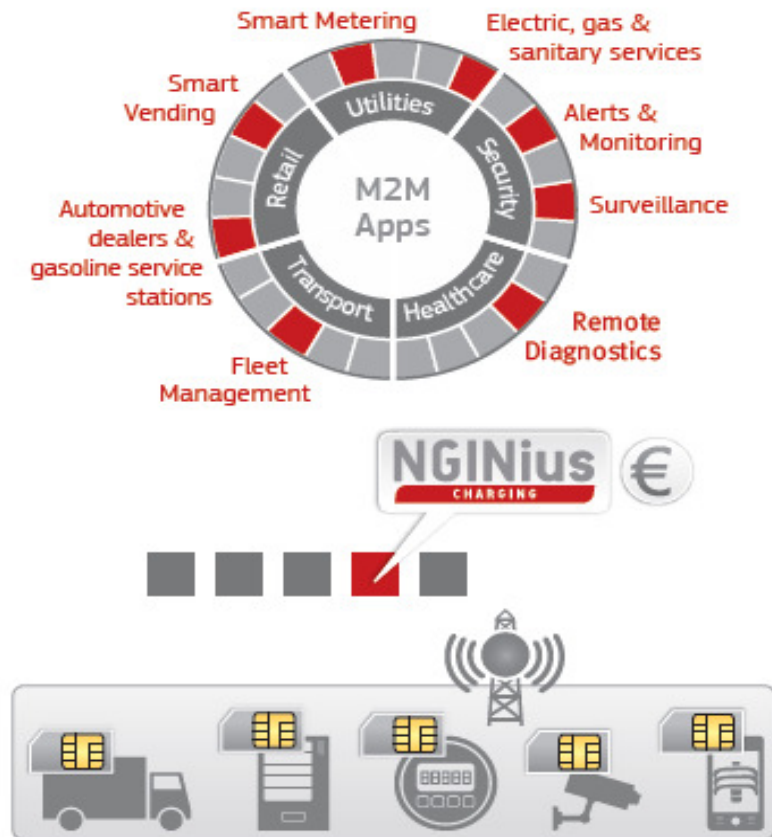End-users experience the unique service offerings of their associated operator

Each virtual network manages only the traffic of its own subscribers

Announced in

MOBILE WORLD CONGRESS

BARCELONA 22-25 FEB 2016

▶ IoT/M2M Revenue Management solution brings value across a number of vertical sectors including Logistics, Transportation, Retail, Utilities, Healthcare and Security, enabling Service Providers to introduce innovative business models. The solution includes:

1. IoT Customer profile & subscription management

2. IoT/M2M product catalogue

3. IoT/M2M SIM management and AAA

4. Partner management

5. Billing & Charging

6. Alerts & notifications

thank
you

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