Cisco Mobile Government

Itapa 2007

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Agenda

- Market Climate and Trends
- Cisco Mobile Government Solutions—Technologies that Enable Connected Communities
- Solution Overview – What's New?
- Intermec Government Applications
- IPICS 2.0
- Cisco 3200 Router – New Features
- Cisco 1520 Series Wireless Broadband Platform
- ServiceMesh 2.0

Mobile Government

Market Climate and Trends

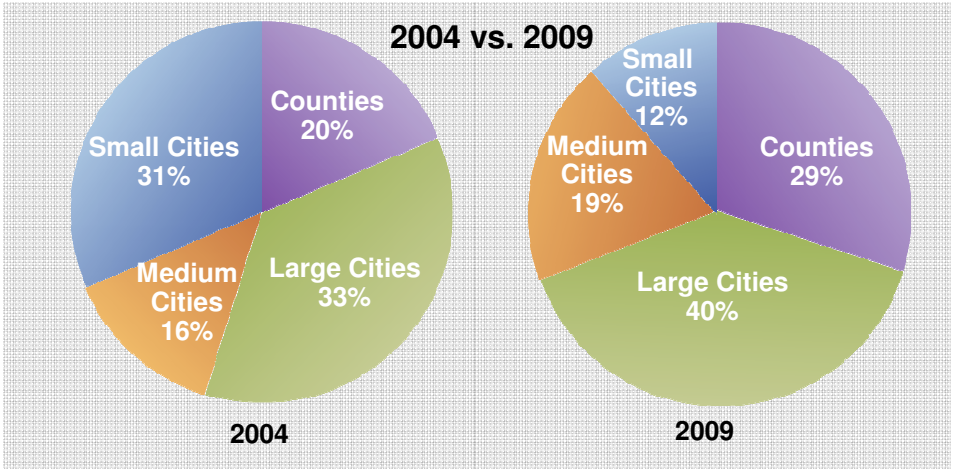
State of the Municipal Wireless Market

More Applications, More Simultaneous

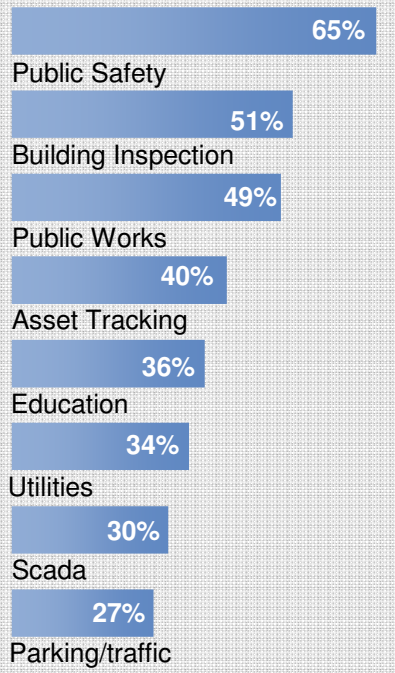
Larger Size Deployments

Doubling In Size Every Year

Municipal Wireless Spending by Municipality Type



Top Municipal Applications



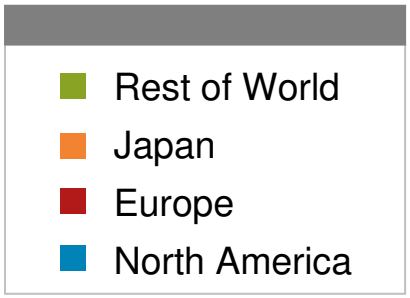
2004–2009 U.S. Spending for Municipal Wireless Networks

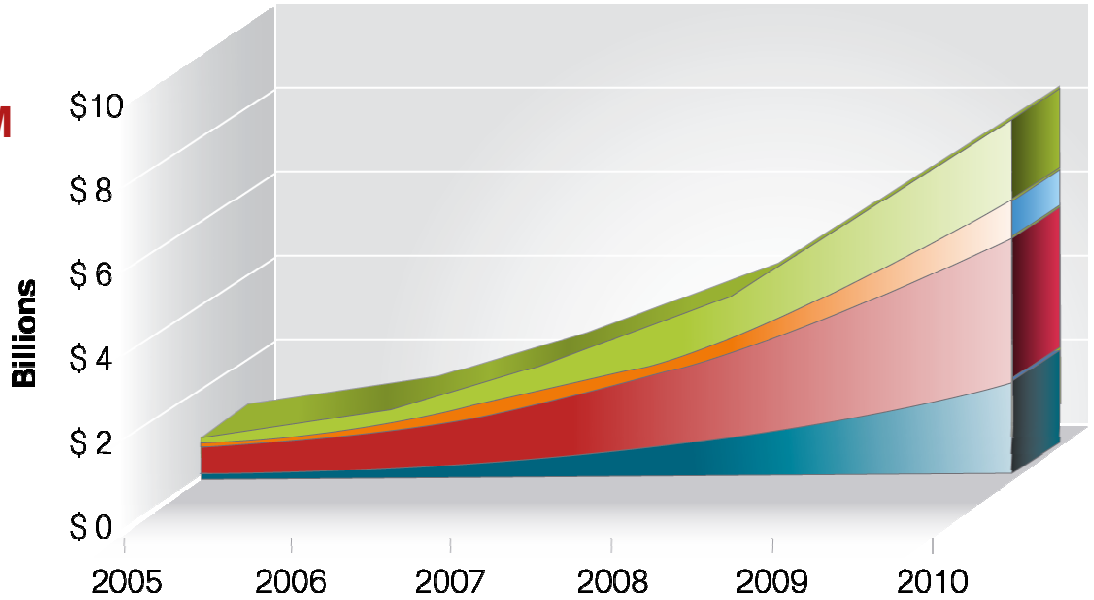
	2004	2005	2006	2007	2008	2009
Spending ($millions)	$47.4	$116.9	$235.5	$458.6	$941,0	$1,757.5
YTY Growth Rate	N/A	147%	102%	95%	105%	87%

Source: 2006 Municipal Wireless State of the Market Report

State of the Municipal Wireless Market, cont'd

- **Local government spending on mobile and wireless hardware to rise from $802M in 2005 to $8.6B in 2010 globally.**

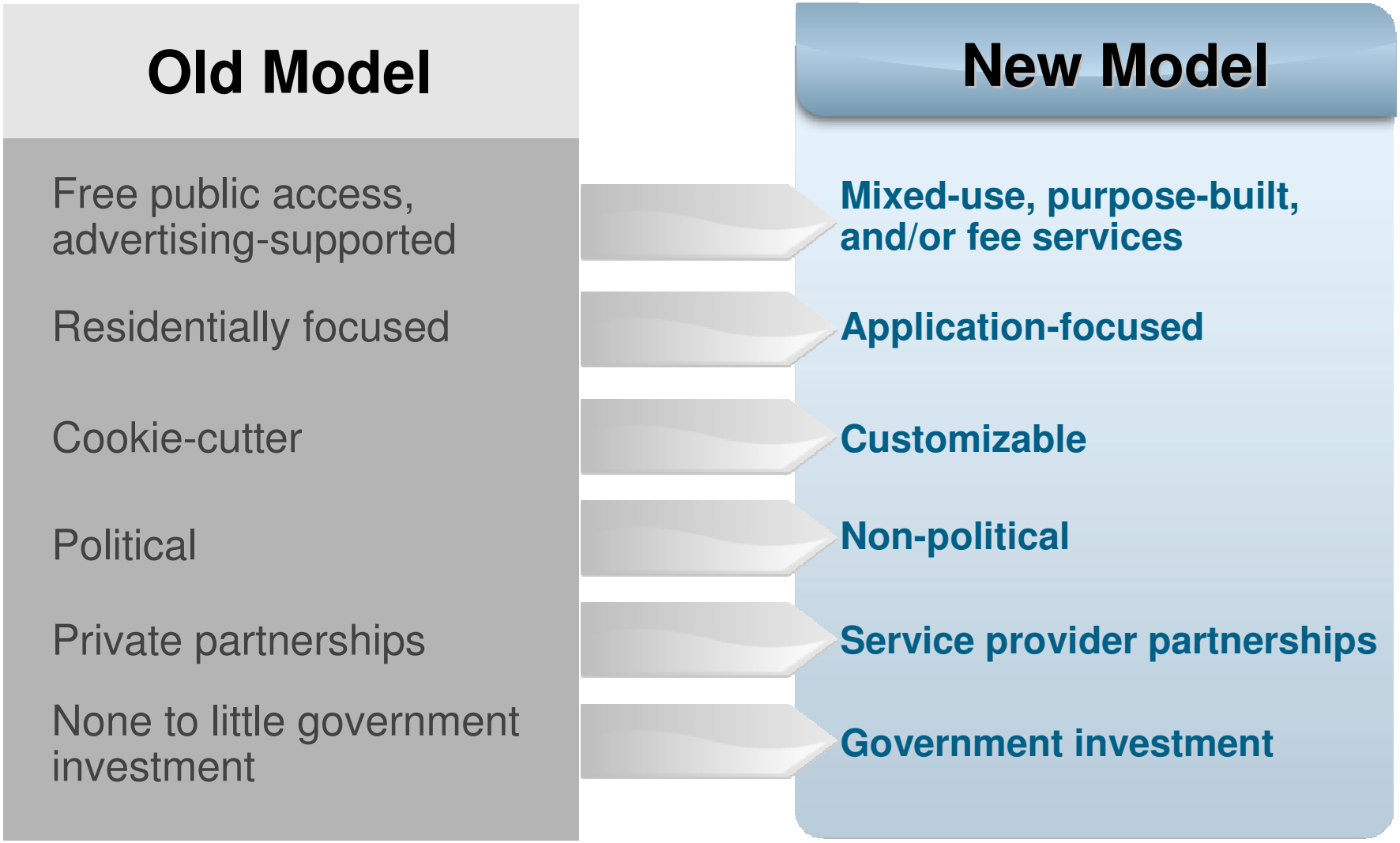




- **Systems Software/Hardware: $.012B (2005) to $1.3B (2010), overtaking systems hardware which will reach $1.1B by 2010.**
- **Handheld Devices: Advances in memory capacity, display and input technology, and seamless interoperability will gradually raise the number of handheld devices acquired annually for local authority use to 10M by 2010, overtaking procurement of wireless laptops.**

Jupiter Research, January 2006

A Market Shift Is Underway



Cisco Mobile Government Solutions—Technologies that Enable Connected Community

Cisco Mobile Government

Enabling the Human Network for Mobile Government

Flexibility

Enabling Innovative Government Services When and Where Needed

Collaboration

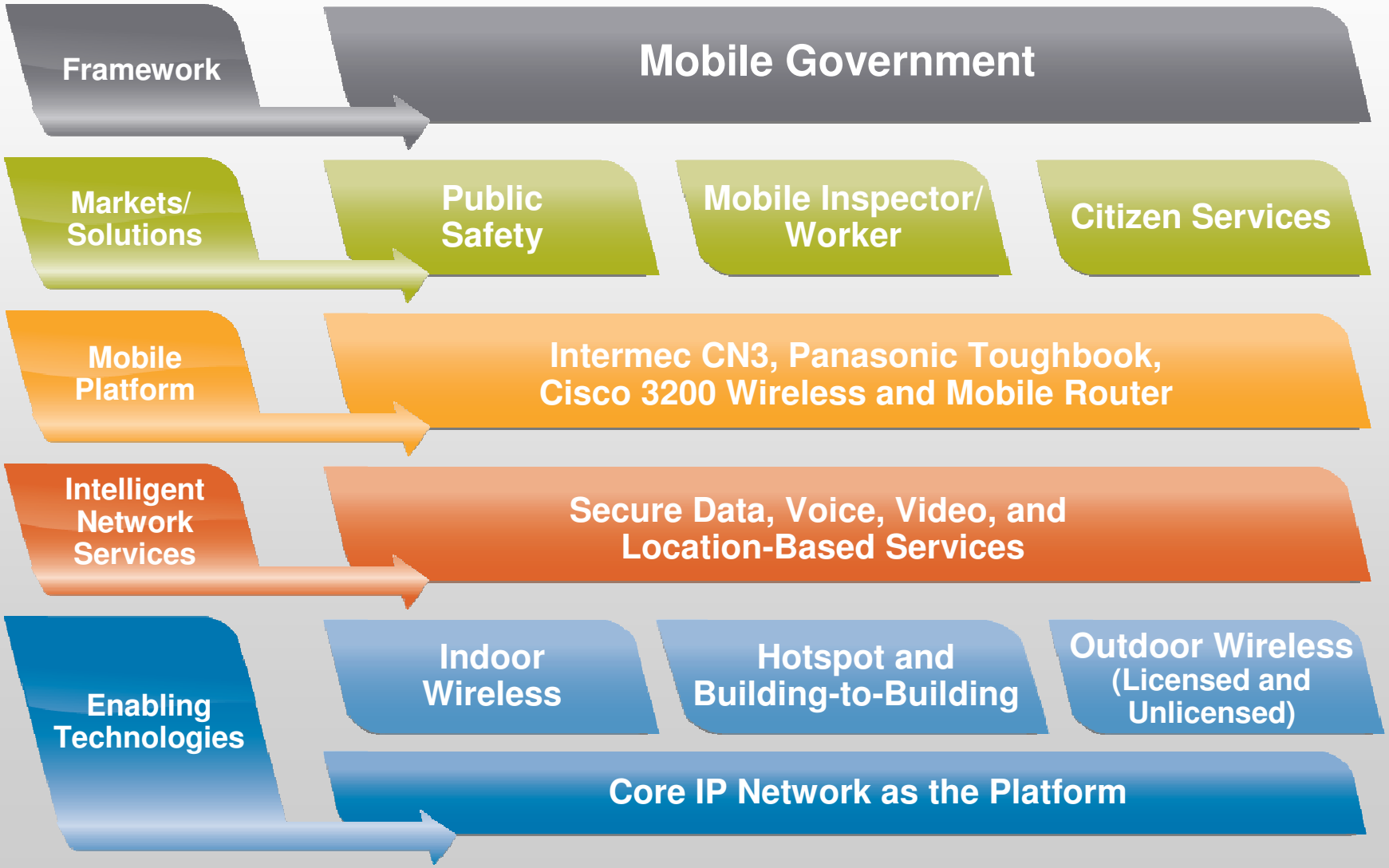
Ability to Share Information with Others and Across Government Agencies

Productivity

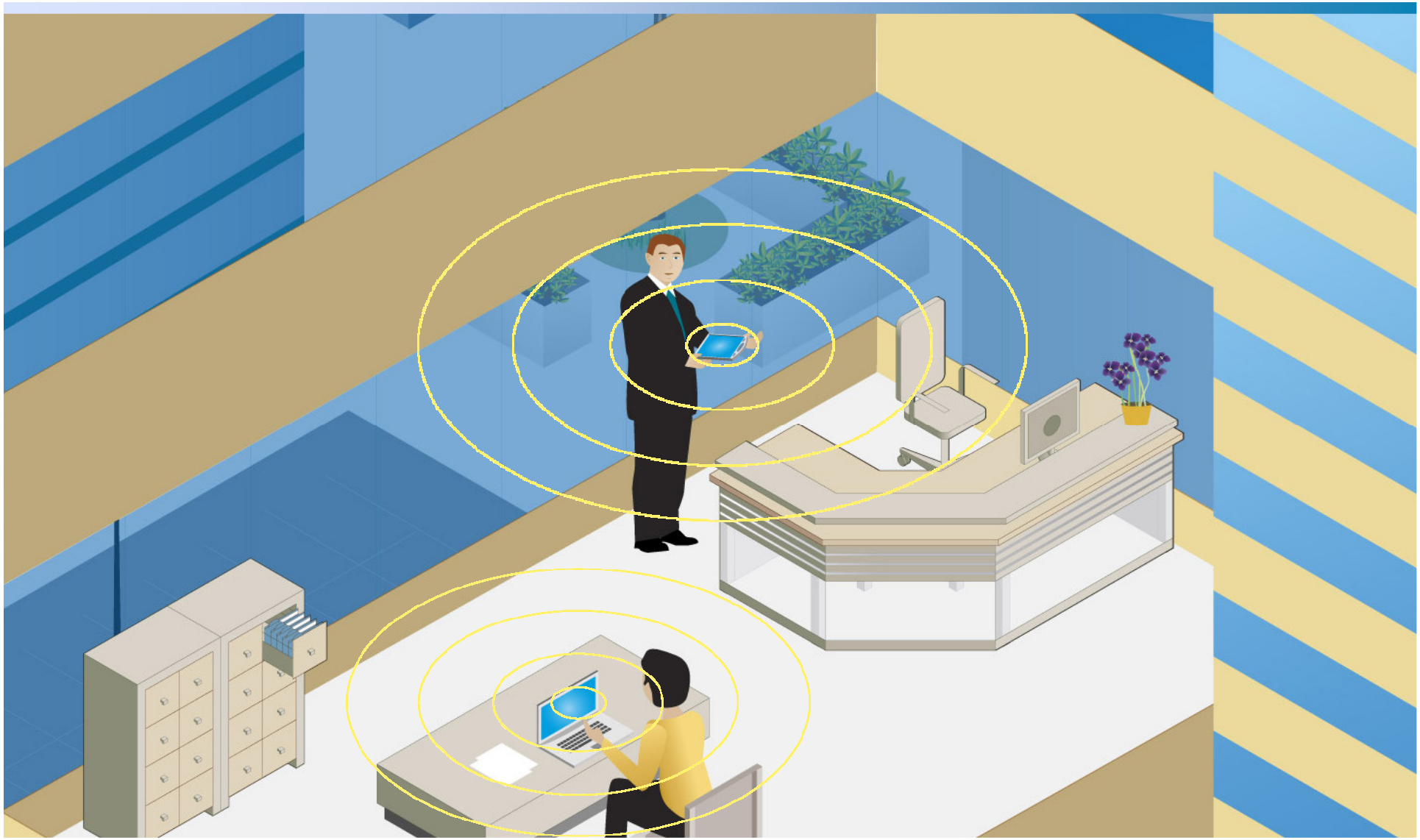
Driving Additional Efficiencies Of Existing Government Services

Delivering Government and Citizen Services Securely and Reliably

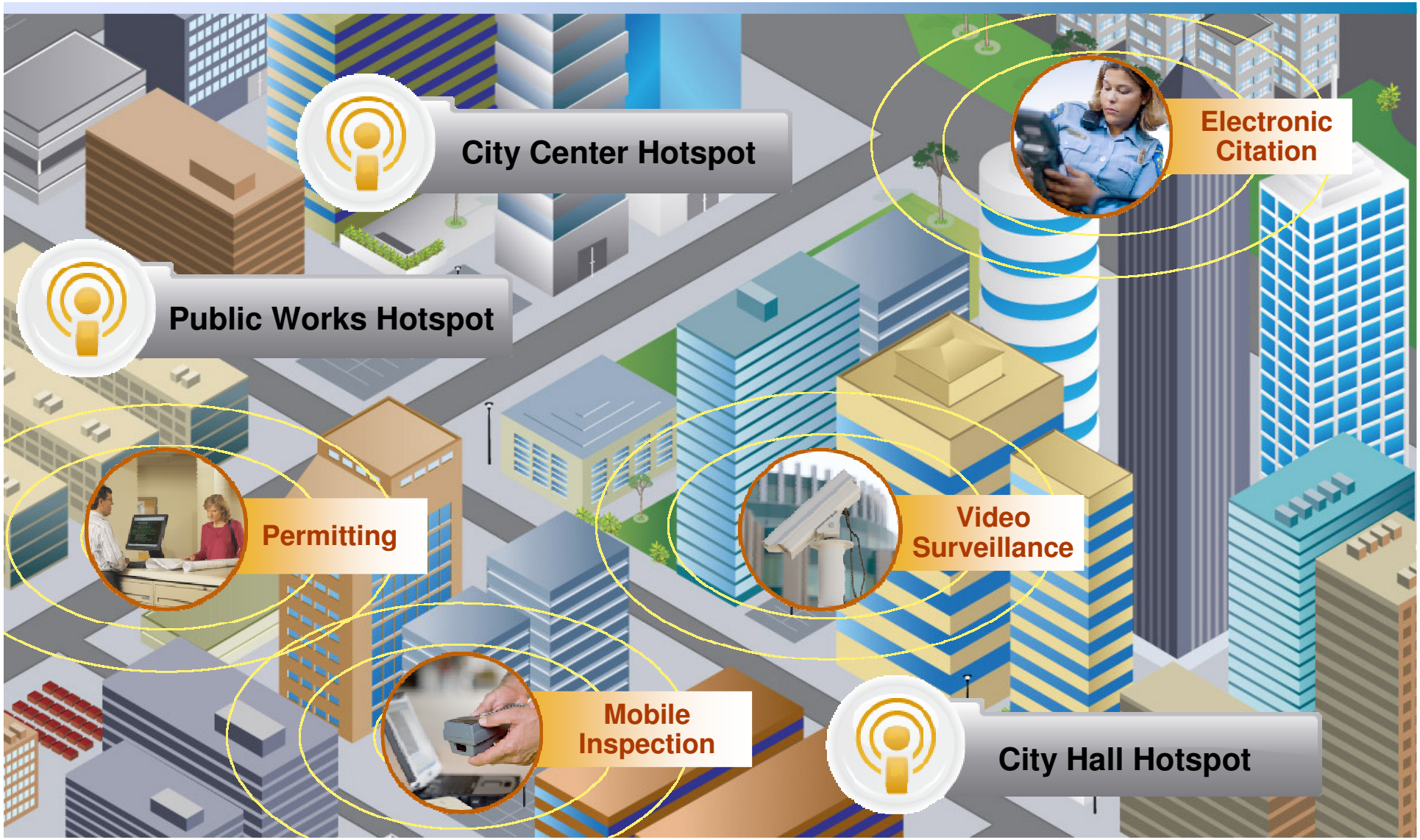
Cisco Mobile Government Solution Framework



Indoor Wireless



Hotspot and Building-to-Building Scenarios



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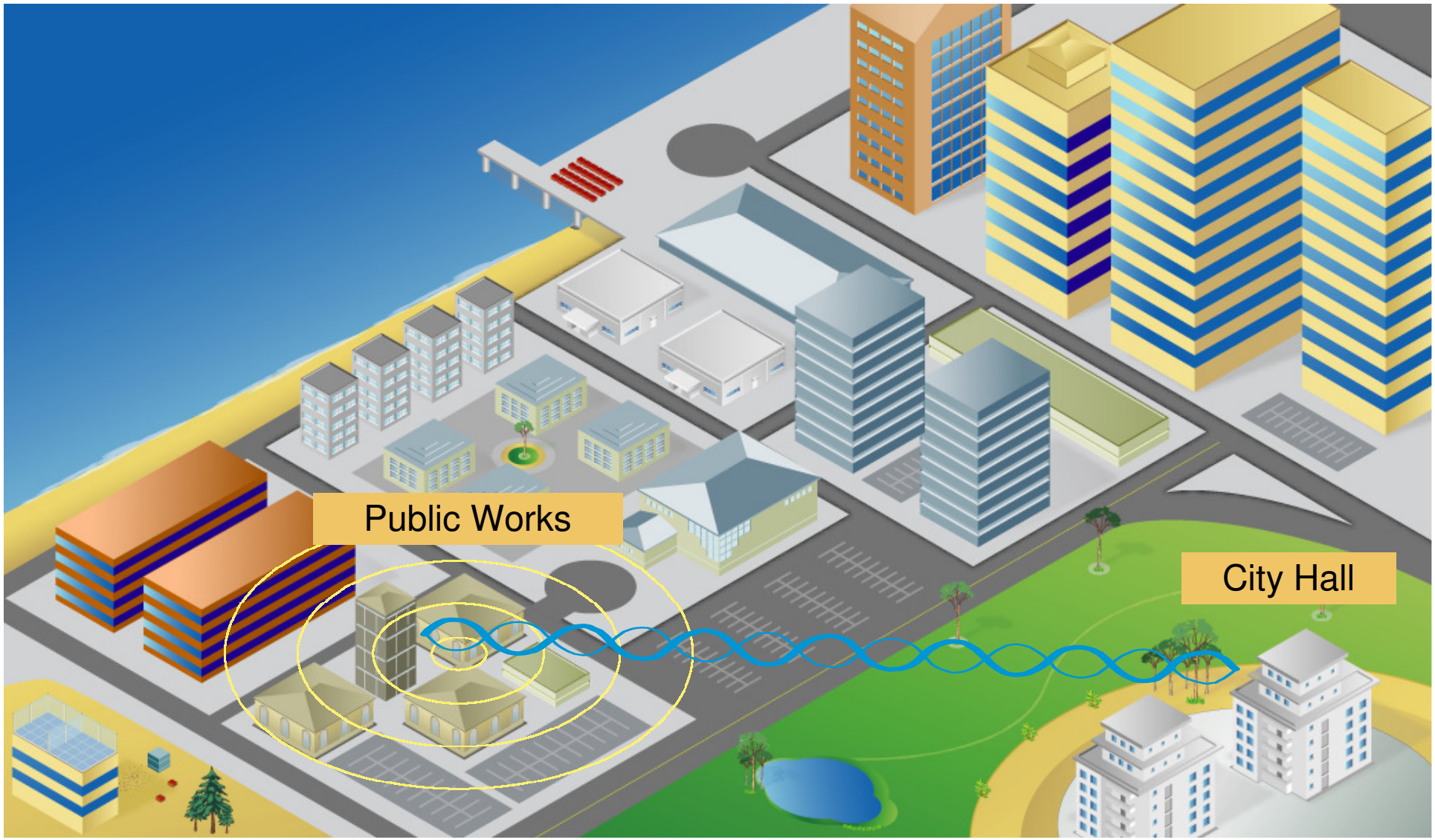
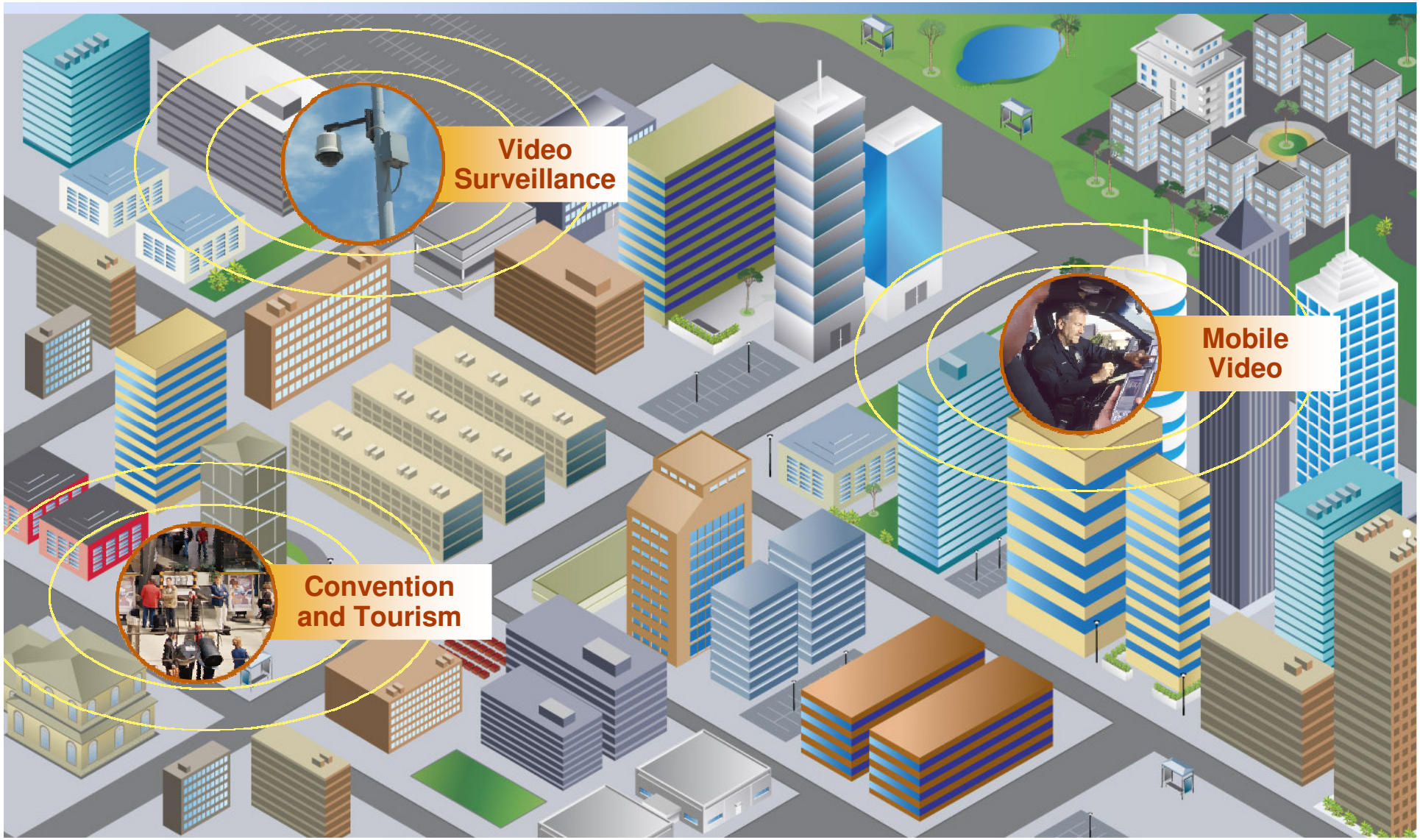


Pervasive Outdoor Wireless Scenario

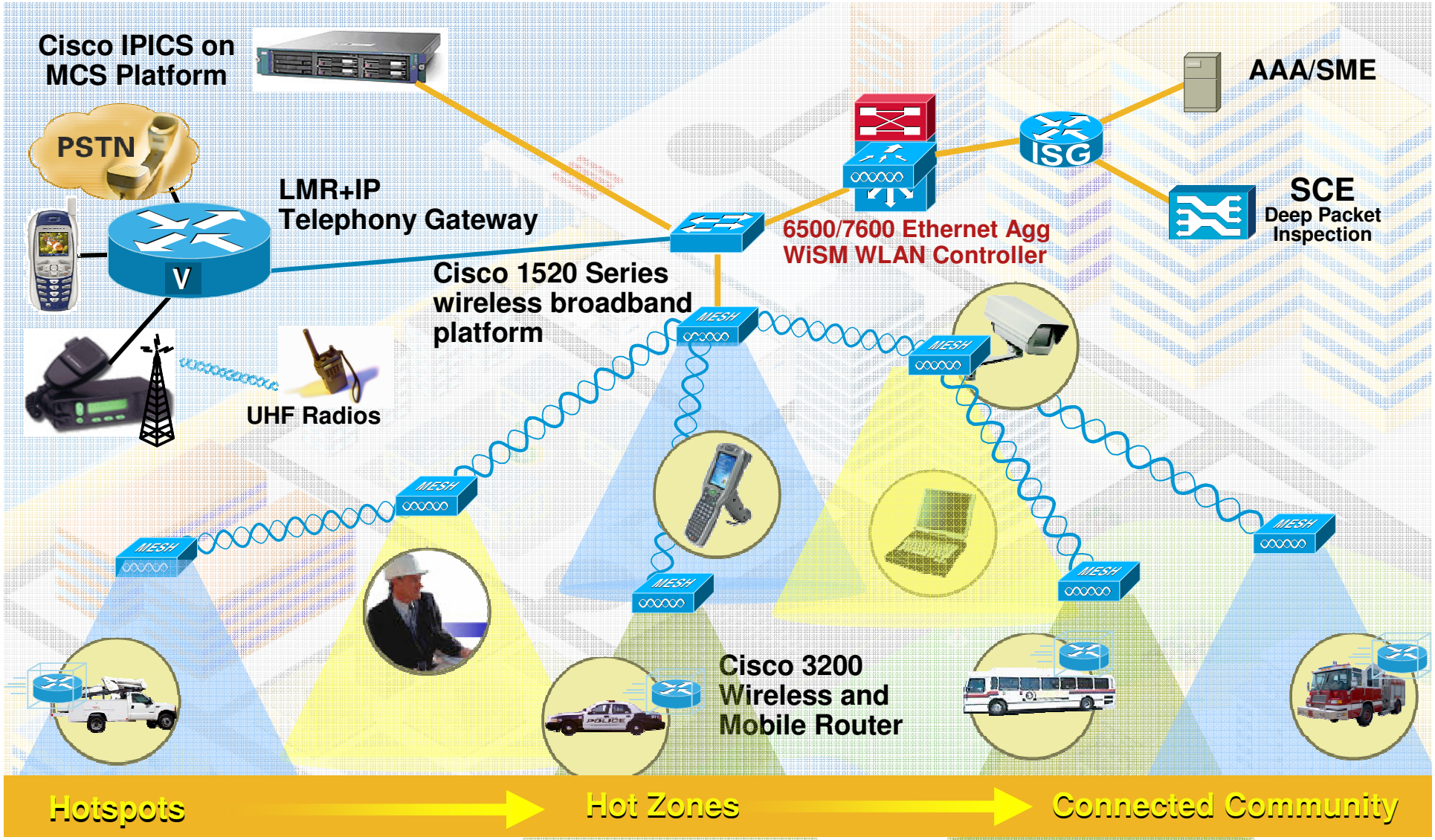


Pervasive Outdoor Wireless Scenario

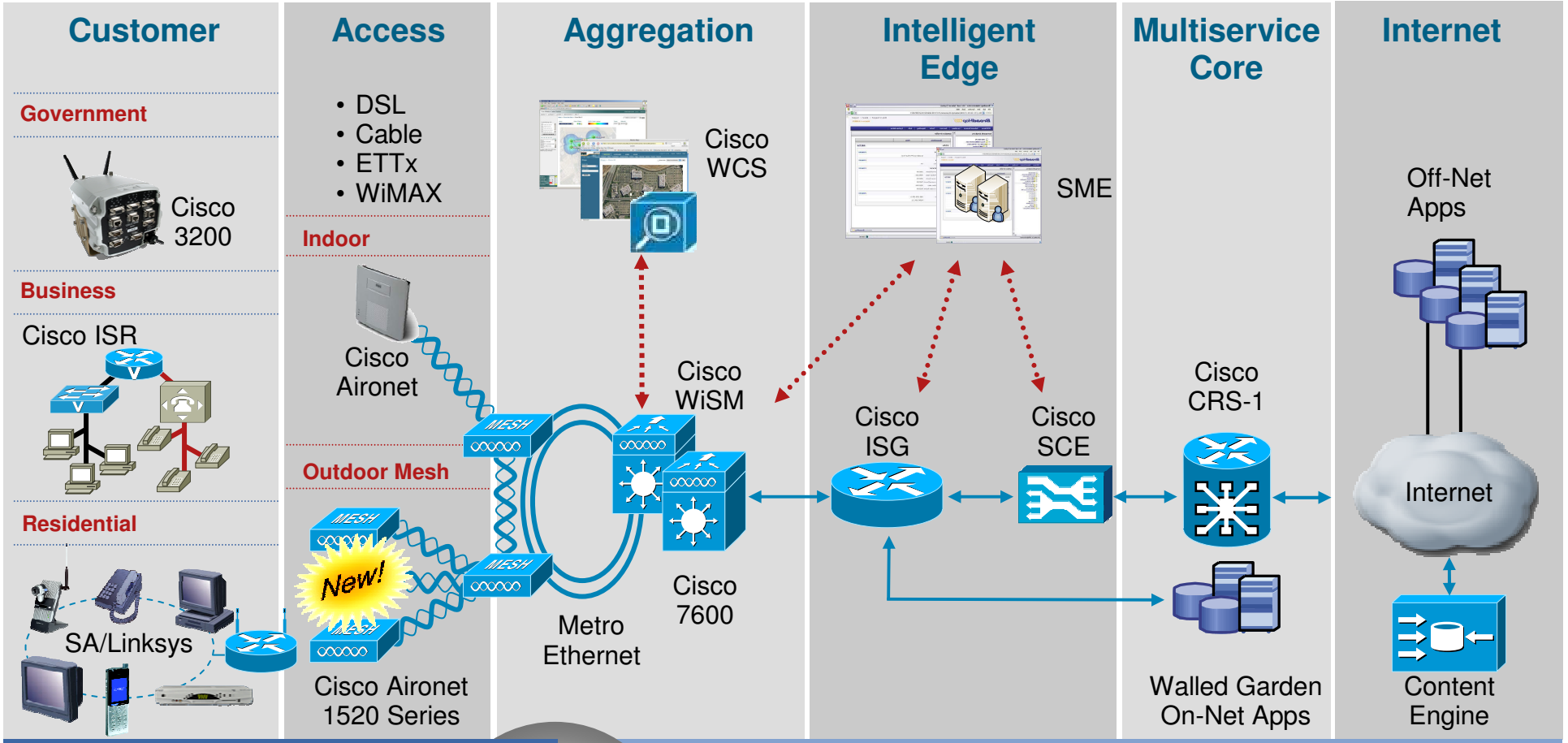
Mobile Government

Solution Overview

Cisco Mobile Government Solution



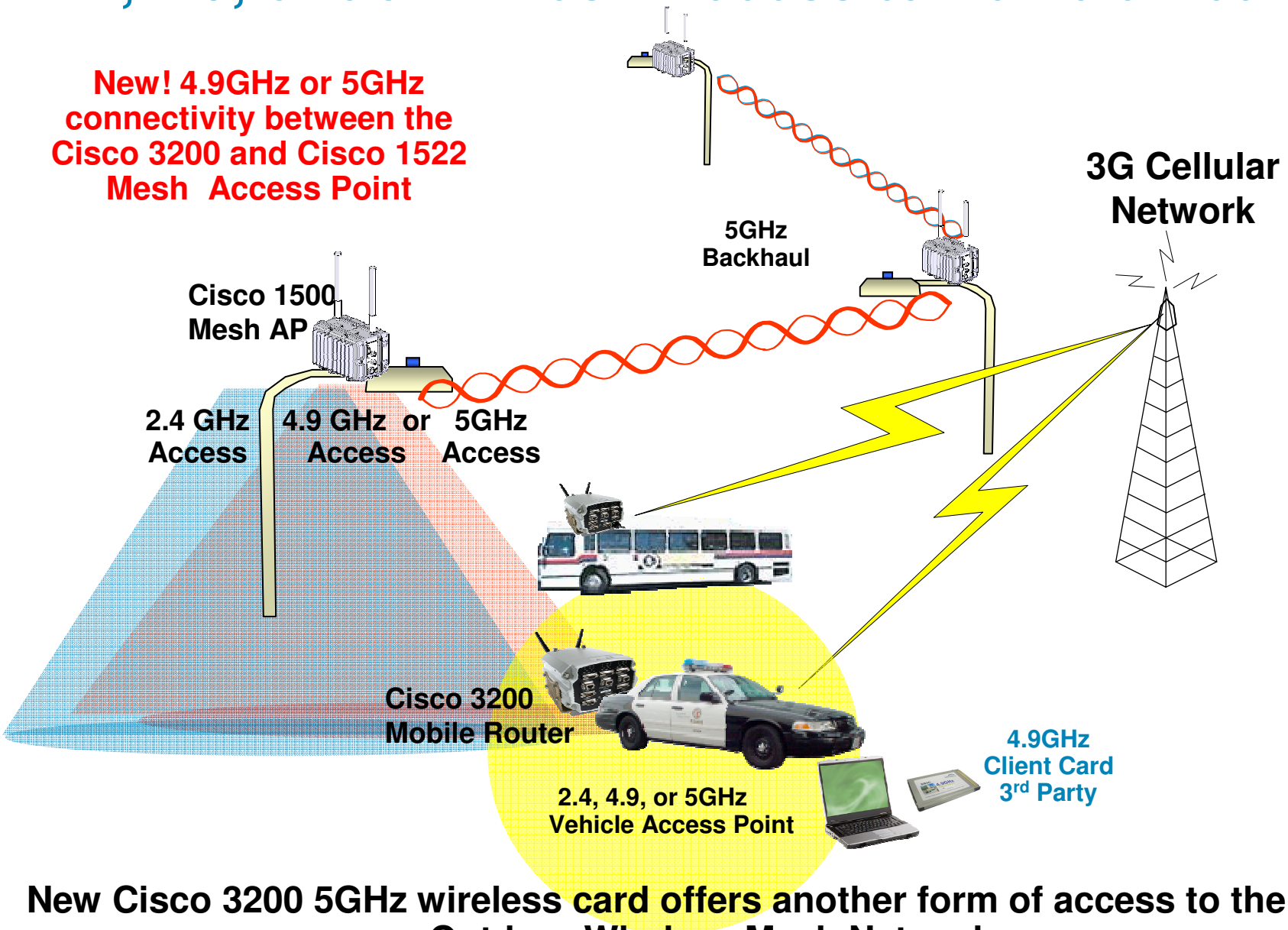
Cisco ServiceMesh Architecture



Reliable Hardware

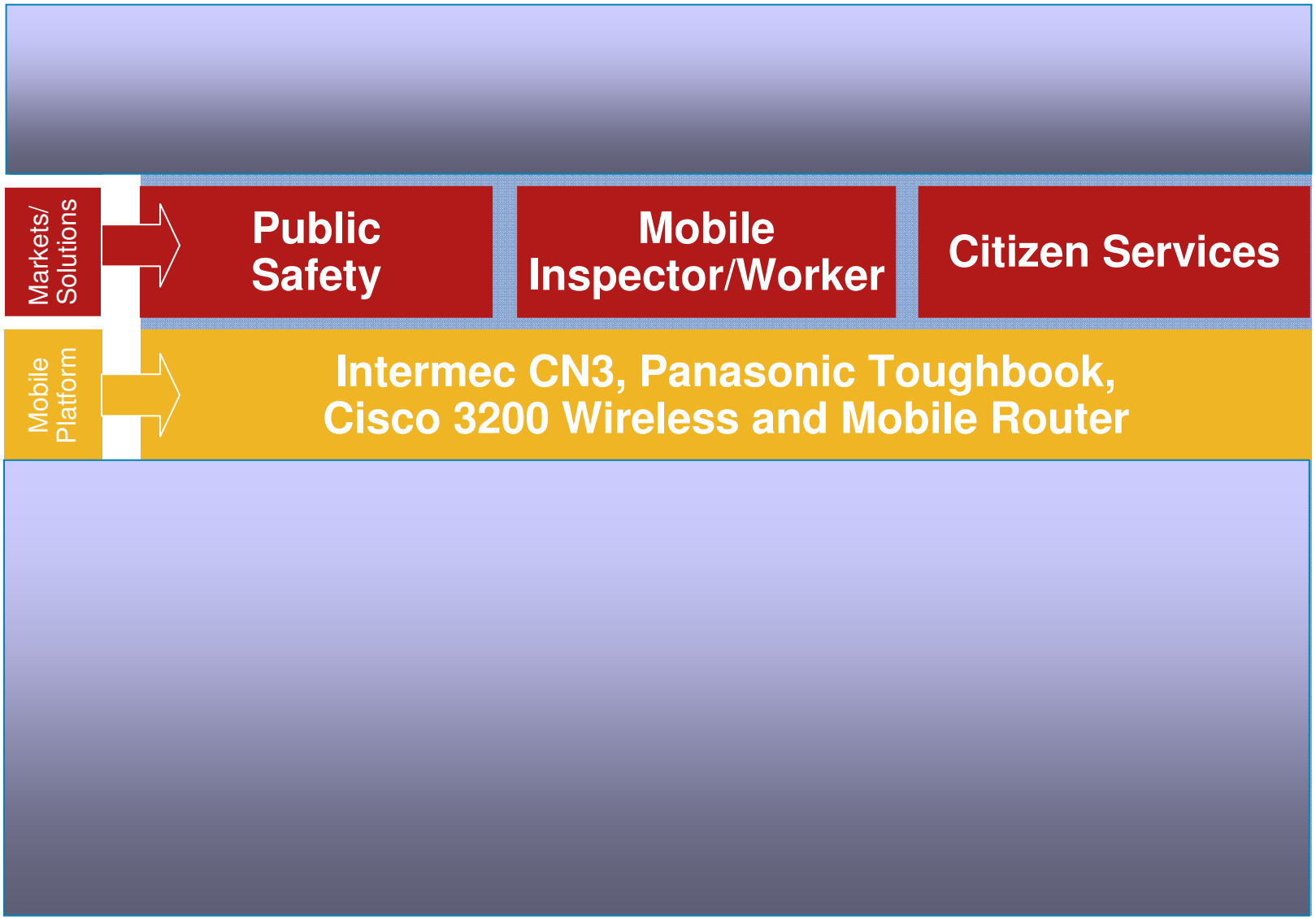
Industry Proven Devices at Every Layer

2.4, 4.9, or 5GHz Mesh Access to Vehicle Network



New Cisco 3200 5GHz wireless card offers another form of access to the Cisco Outdoor Wireless Mesh Network

Cisco Mobile Government Solution Framework



Intermec Mobile Worker Applications

Vendor Name	Mobile Apps. / Uses	Theaters
ACCELA Government Software	▪ Inspections ▪ Investigations ▪ Code Enforcement ▪ Work Order Management ▪ Service Requests	W.W.
MOBILEFRAME® Configurable Mobile Applications™	▪ Inspections, Code enforcement ▪ Repair and maintenance ▪ Project estimation ▪ Environmental enforcement ▪ Time management ▪ Facility management ▪ Hazardous material tracking ▪ Messaging and alerts	W.W.
Syclo	▪ Streets & Sanitation Management ▪ IT Asset & Service Management ▪ Facilities and Health Inspections ▪ Construction Project Planning ▪ Fire & Safety Round Inspections ▪ Emergency Dispatch & Repair ▪ Security Rounds & Screenings	N.A. & Europe

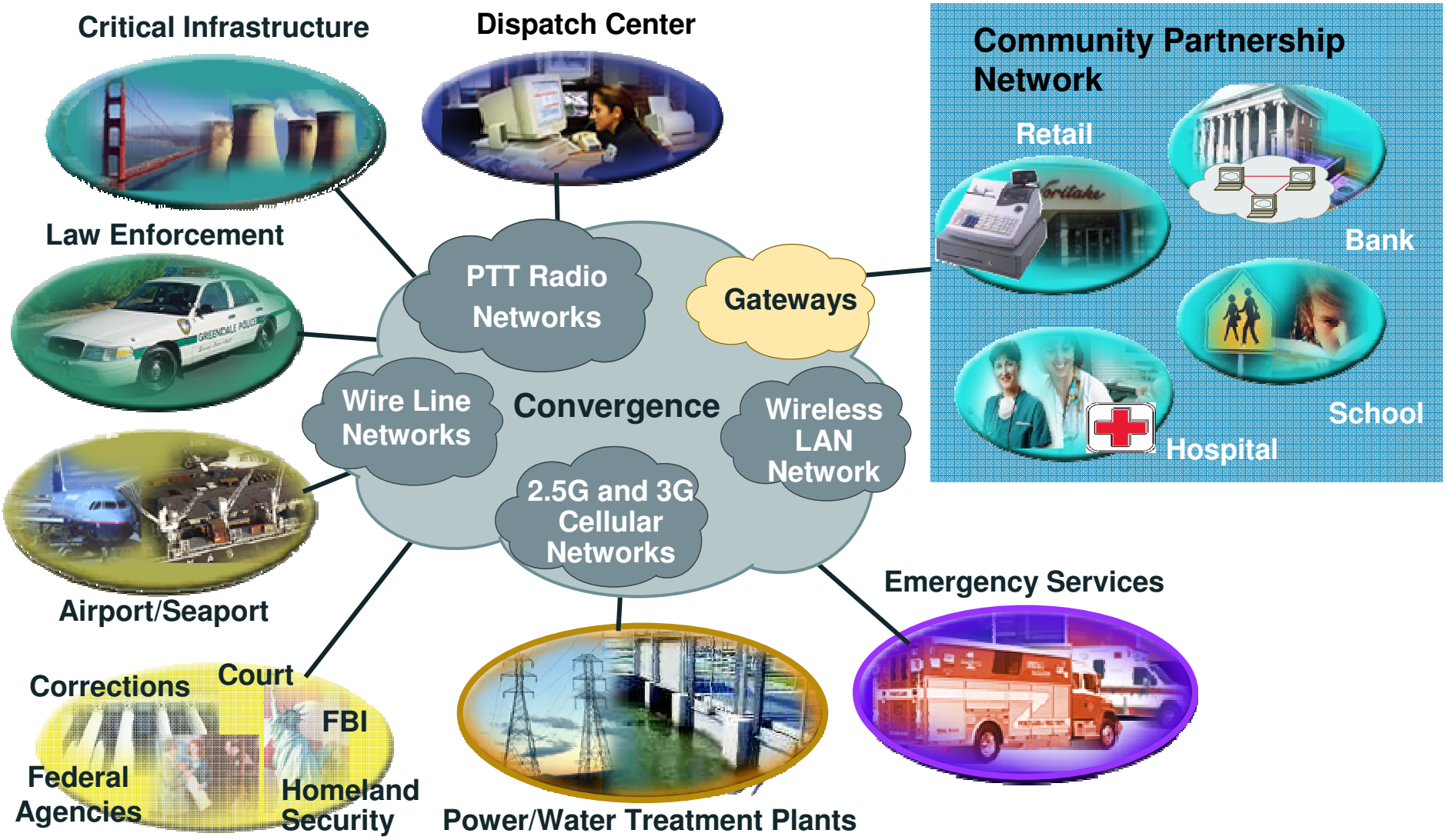
Intermec Public Safety Applications

Vendor Name	Mobile Apps. / Uses	Theaters
APS ADVANCED PUBLIC SAFETY A Trimble Company	▪ Electronic Citations ▪ Law Enforcement Fingerprint ID	WW (English only)
3i Infotech Innovation • Insight • Integrity	▪ Electronic citations ▪ Law Enforcement Fingerprint ID	US & APAC

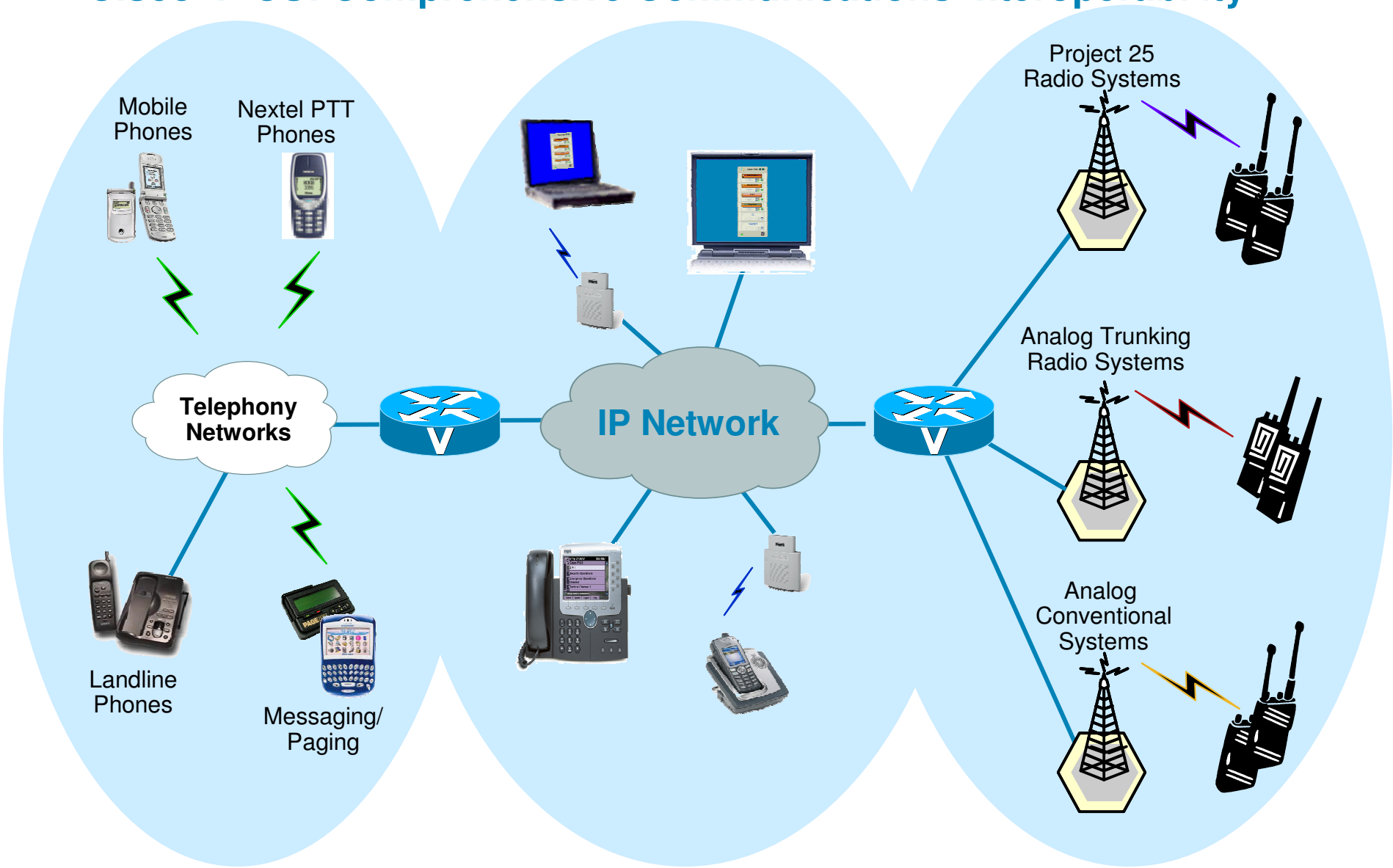
For more information and how to engage each of these Industry Solution Developers, please visit: http://wwwin.cisco.com/enterprise/partners/local_government/

Cisco Mobile Government Solution Framework

Interoperability is Critical for Effective Operations and Emergency Management



Cisco IPICS: Comprehensive Communications Interoperability



PTT Interoperability to Telephony. And Notification

PTT Interoperability to PC's & IP Phones

Interoperability Across PTT Radio Systems:

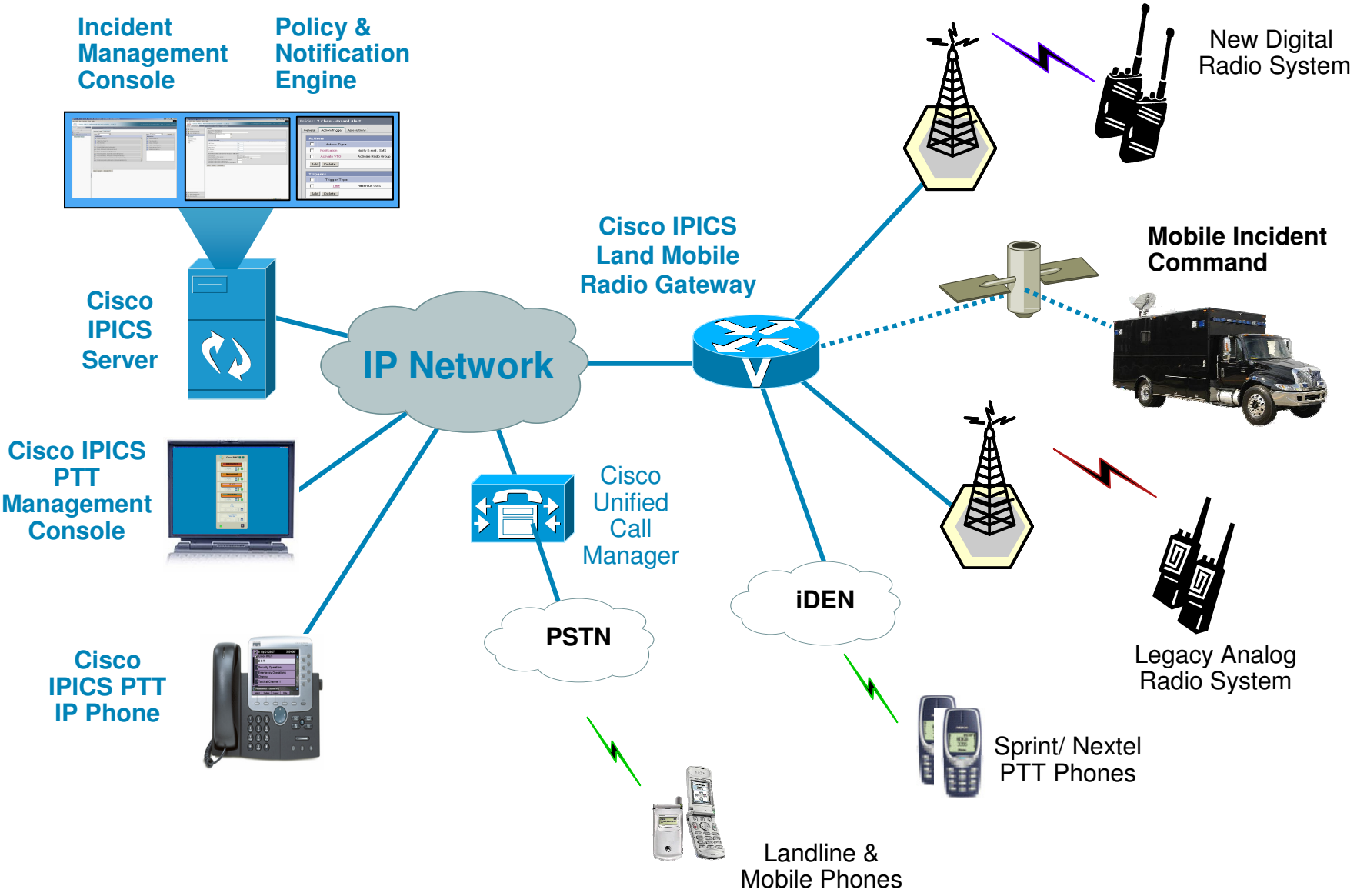
When Today's Emergency Strikes….

- **Rapidly inform and assemble the response team….**
  - **Notify individuals and groups wherever they are**
  - **Via whatever communications device they have**
  - **Quickly—at the touch of a button**
- **And enable them to talk NOW**
  - **Invite and join a Virtual Talk Group**
  - **With whatever device they have**
  - **From wherever they are**

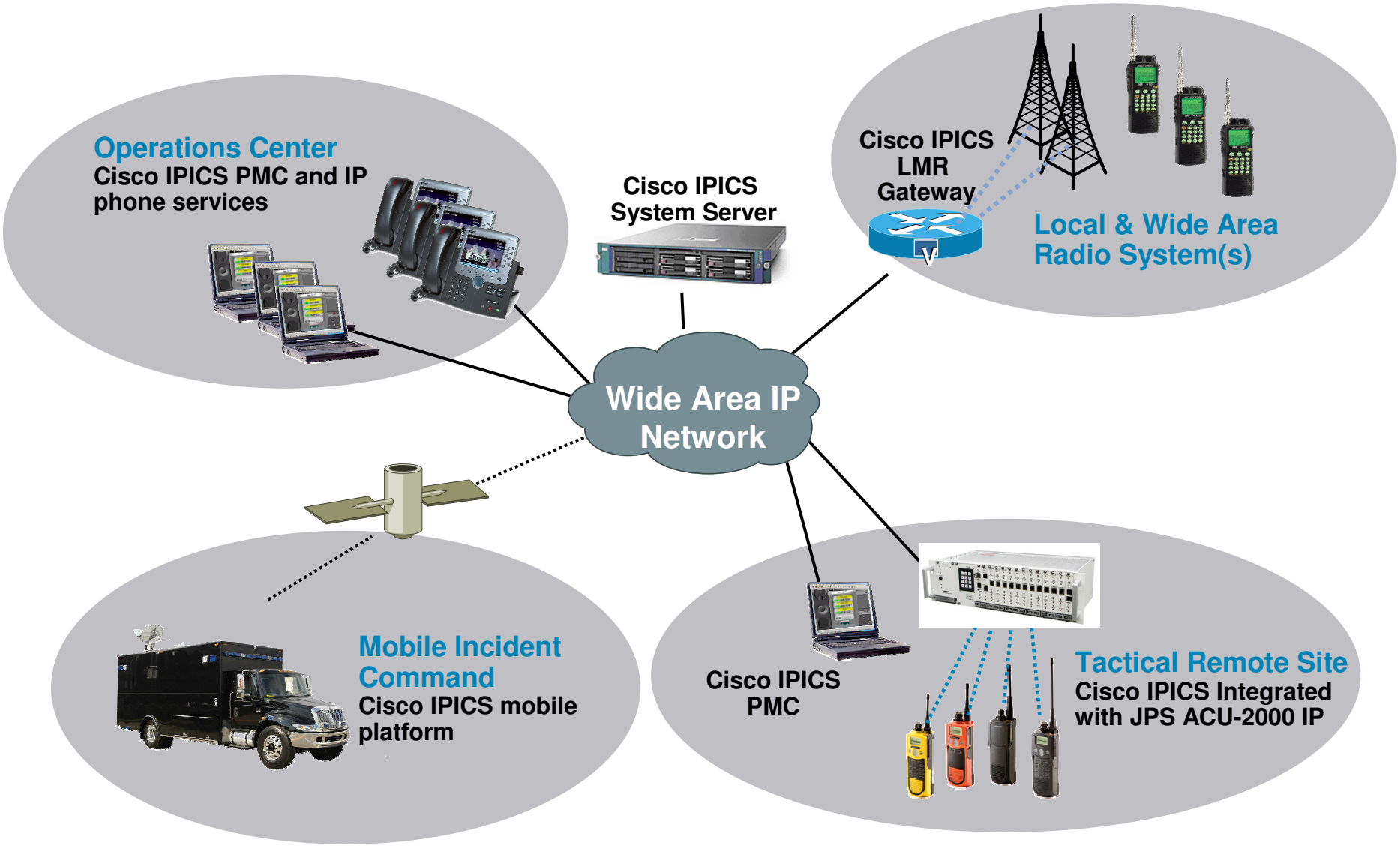
Increase Situation Awareness. Improve Response Times. Save Lives.




Cisco IPICS: IP Interoperability & Collaboration System



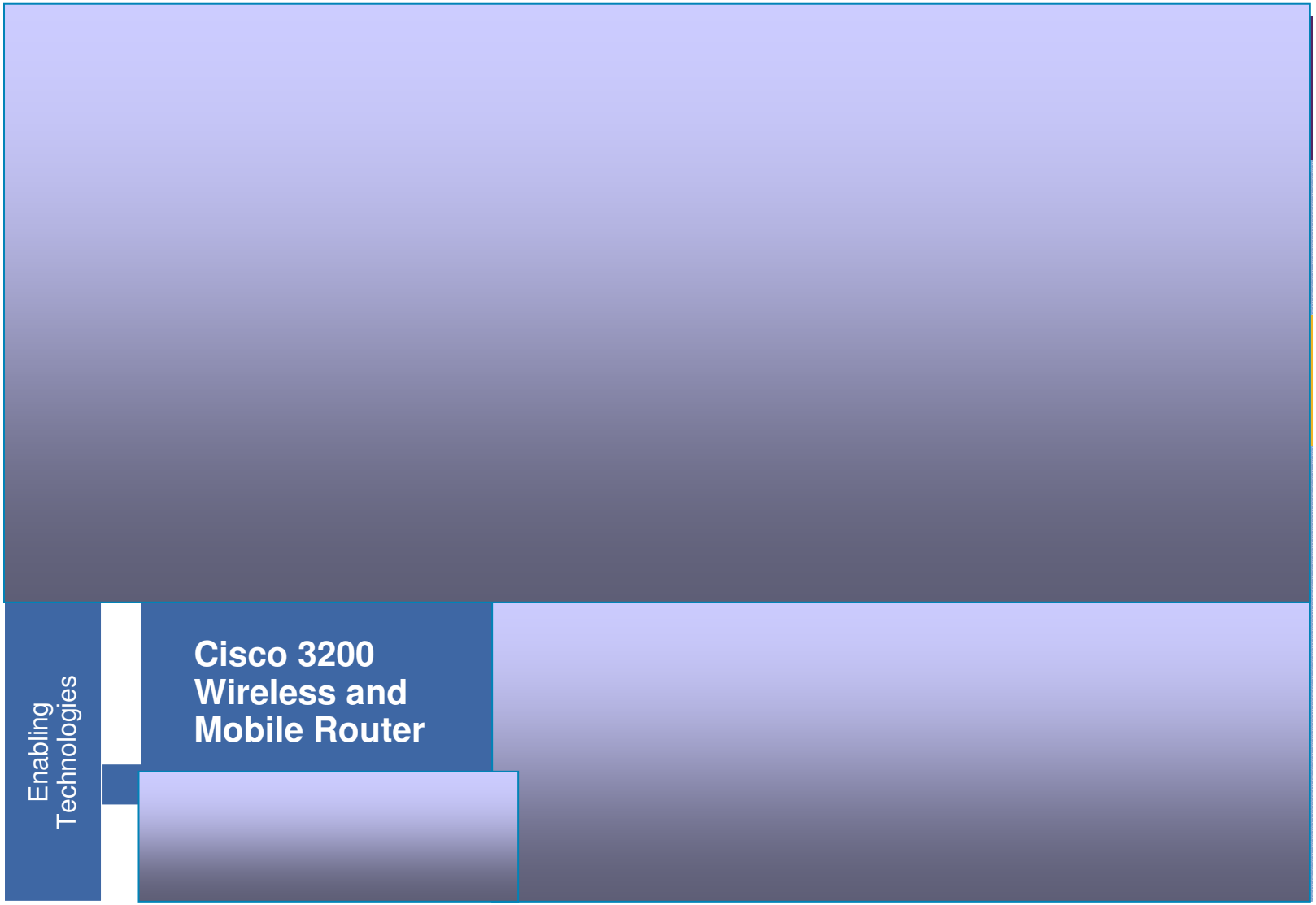
An Example Cisco IPICS Deployment: Tactical and Wide Area Interoperability



Maximize The Value of Your Networks

- Leverage the Infrastructure You Already Have
  - Enable disparate systems to function as a Network of Networks
  - Use secure, proven, reliable, and open IP standards to increase the value of your LMR, Telephony, and IP networks
- Gracefully Migrate to New Technologies
  - Link Legacy to Legacy, Legacy to P25, & P25 to P25 radio systems
  - Combine Today's Narrowband LMR with Tomorrow's Broadband Wireless
- Cost-Effective Interoperability Today
  - Deploy in a fraction of the cost, time and complexity of a radio replacement/upgrade
  - Fund with the Public Safety Interoperable Communications (PSIC) Grant—see the Grants Office!

Cisco Mobile Government Solution Framework



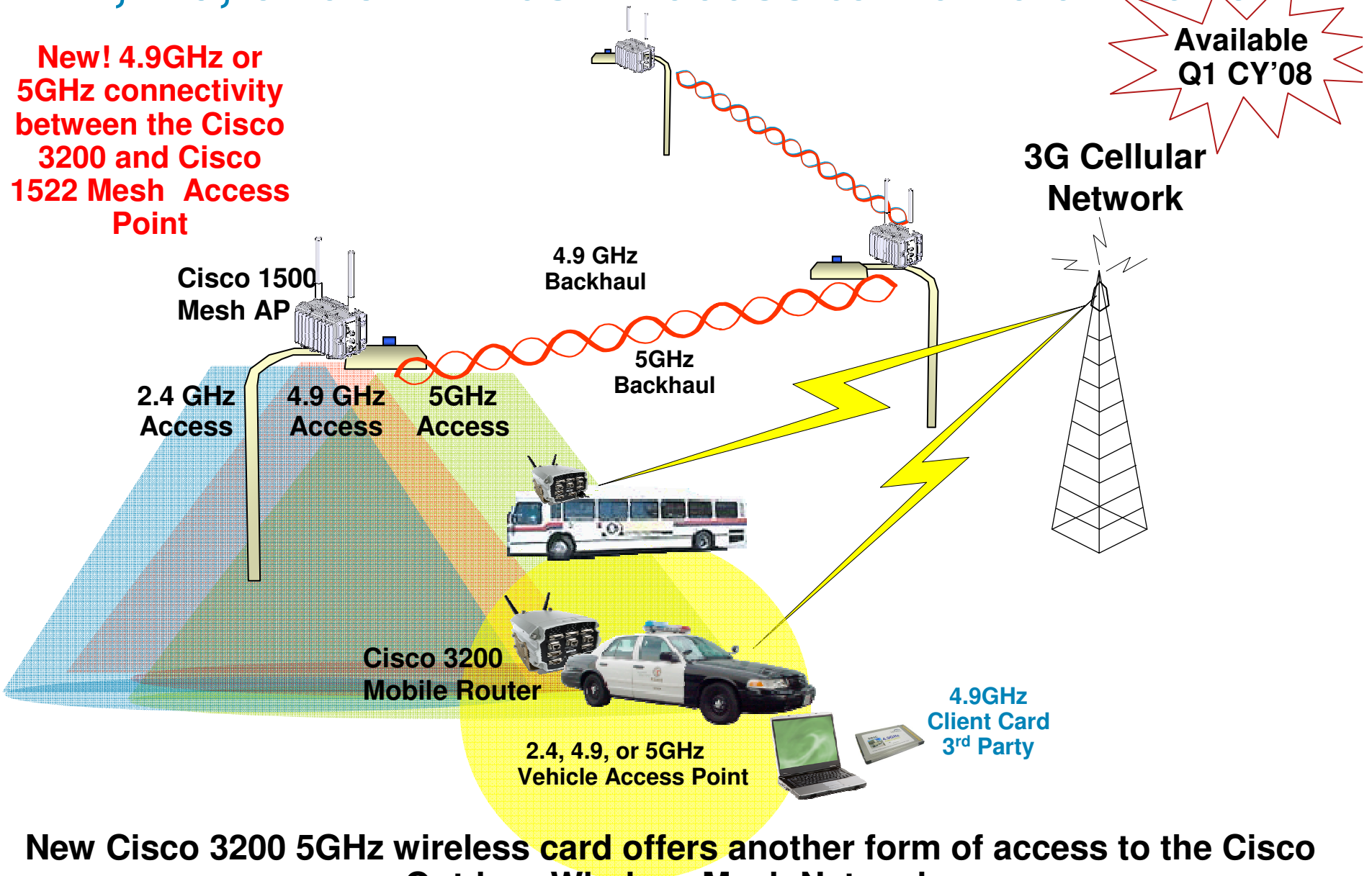
What's New with the Cisco 3200?

- 1500 Mesh AP & 3200 Mobile Router Interoperability
- Cisco Unified Communications Manager Express (CUCME) on Cisco 3200 Series Mobile Routers
- Cisco 3205 (5GHz) Wireless Mobile Interface Card (WMIC)
- Intelligent Vehicle Network Roaming with Multiple Client Profiles
- Reference-sell Video server card for the Cisco 3200 Series

Cisco 3270

Cisco 3230

2.4, 4.9, or 5GHz Mesh Access to Vehicle Network



New Cisco 3200 5GHz wireless card offers another form of access to the Cisco Outdoor Wireless Mesh Network

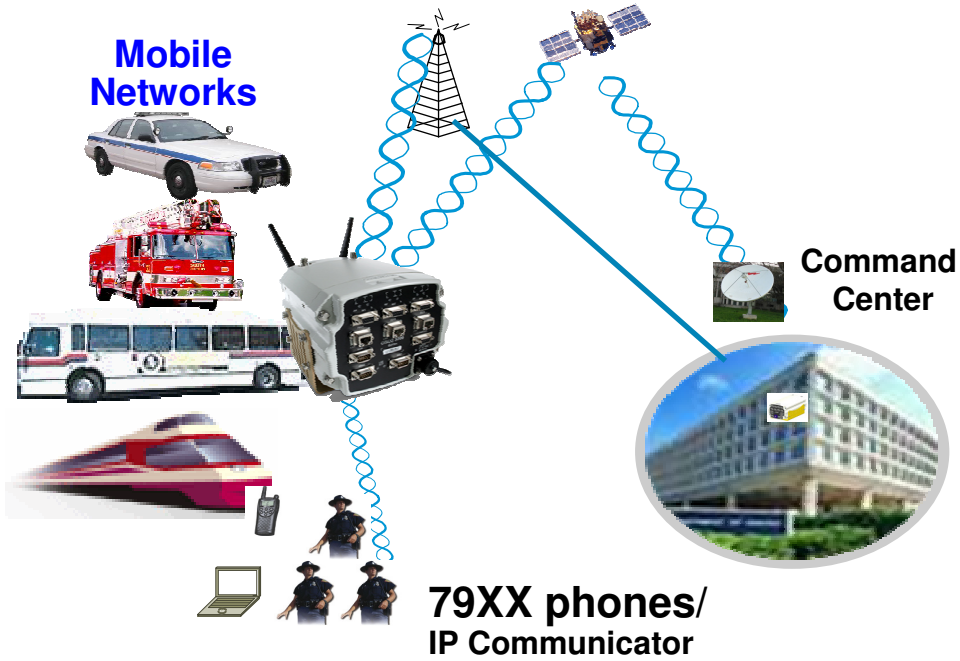
Cisco Unified Communications Manager Express (CUCME) on Cisco 3200 Series Mobile Routers

- What is supported
  - CUCME version 4.3 for Cisco 3230/50 & 3270 Mobile Routers
  - H.323 & SIP Trunks
  - SCCP Phones
- What is not supported today
  - MGCP
  - SIP Phones
  - Conferencing & Transcoding
  - SRST
  - Native DSP/analog interfaces
  - CUCME GUI
- Caveats
  - Testing done in a stationary environment only
  - Use external TFTP for phone loads

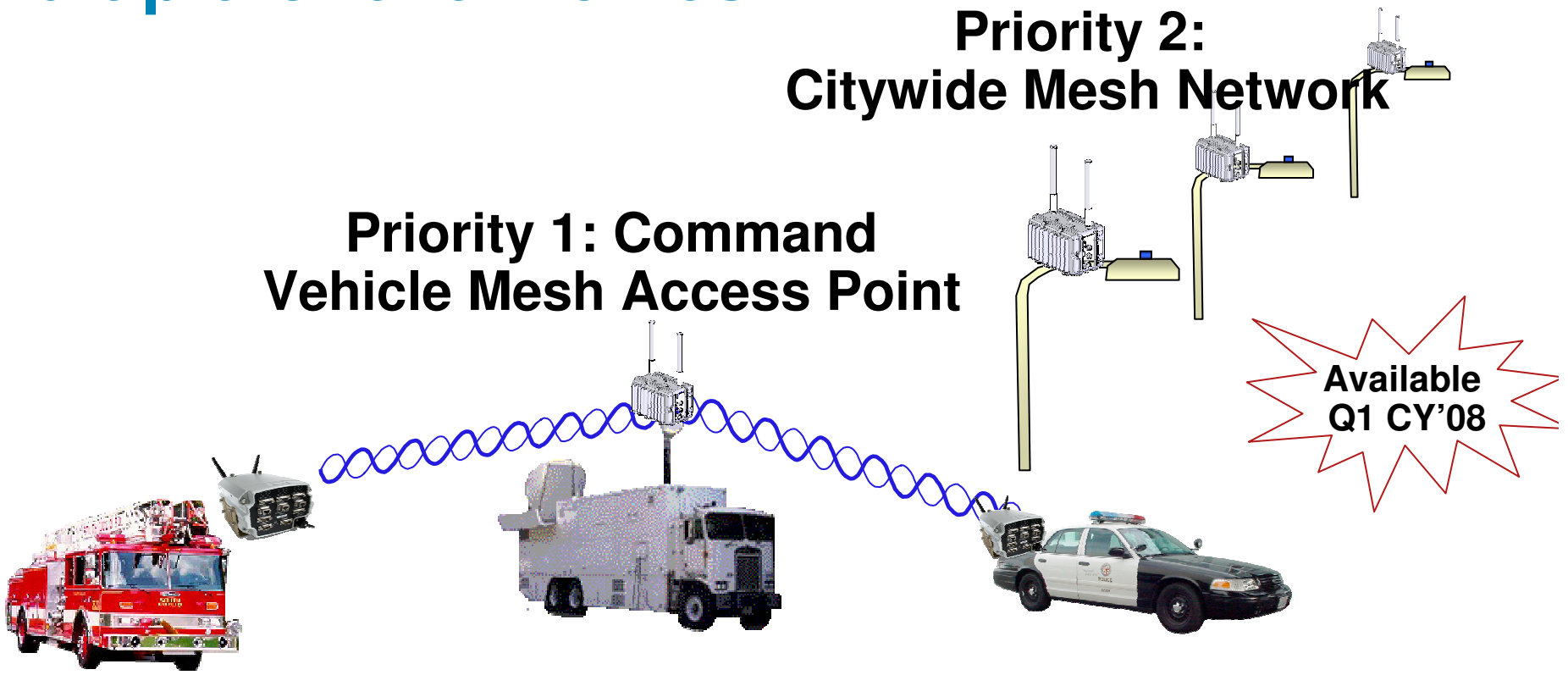
- Public Safety/Homeland Security Applications
  - Mobile Incident Area Network
  - Forward Command Post
  - Scenario: IP communications in absence of TDM infrastructure

Available Q1 CY'08

- Commercial Transit
  - Emergency communications for bus/train
  - 911 Push-to-Talk Panic Button



Intelligent Vehicle Network Roaming with Multiple Client Profiles



In this example, prioritized client profile feature on the Cisco 3200 enables the mobile network to prioritize command vehicle AP over citywide mesh

Wireless Video Networking

Intelligent Video

- Application Adaptive Video
- Intelligent Video Analytics
- Transrating
- Codec Interoperability
- Interoperability with Analog & Digital Cameras

+

Intelligent Wireless Networking

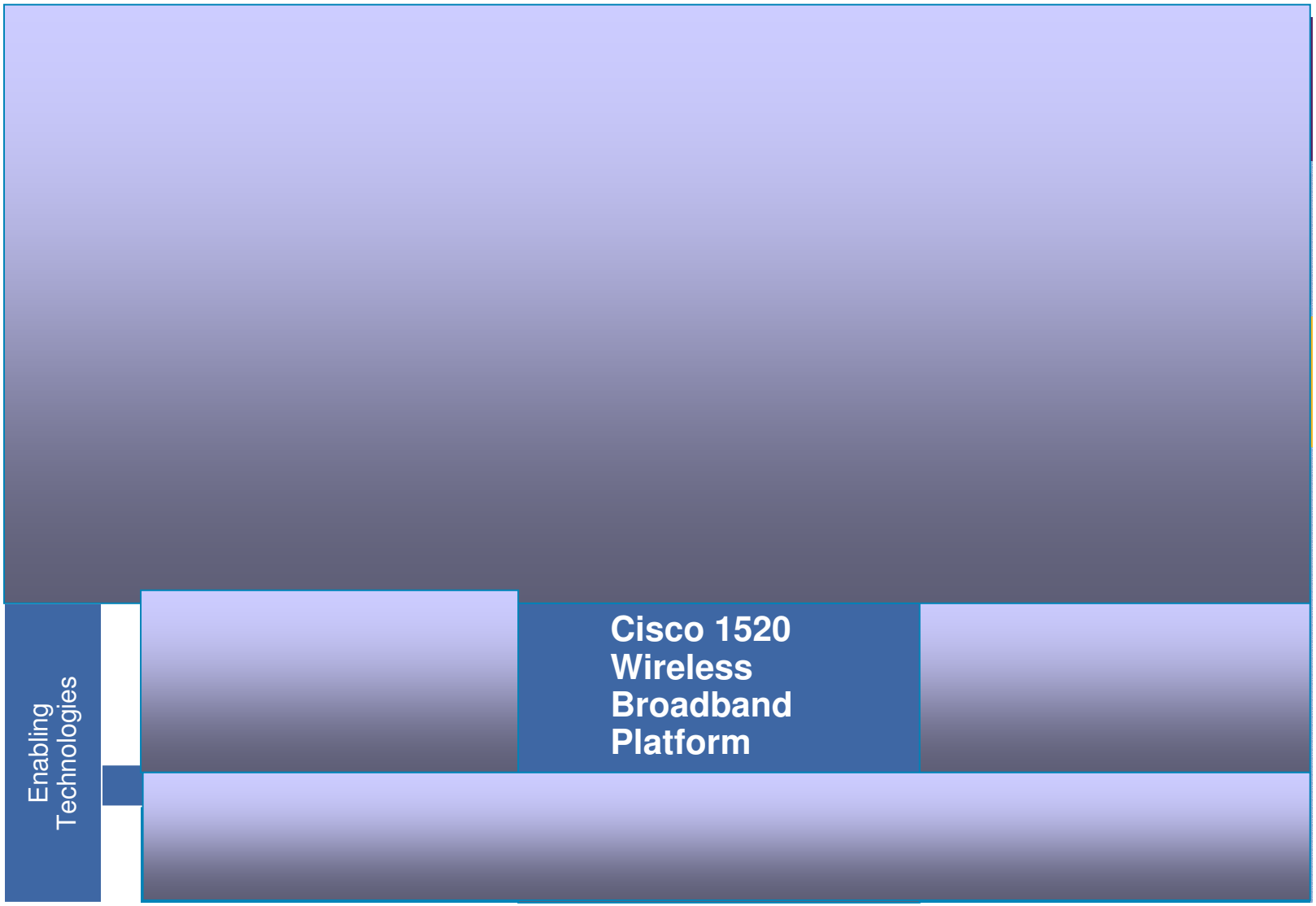
- Wireless Router Platform
- Multicast & QoS
- Multiple Layers of IP Security
- Support for Multiple Wired & Wireless Backhauls

=

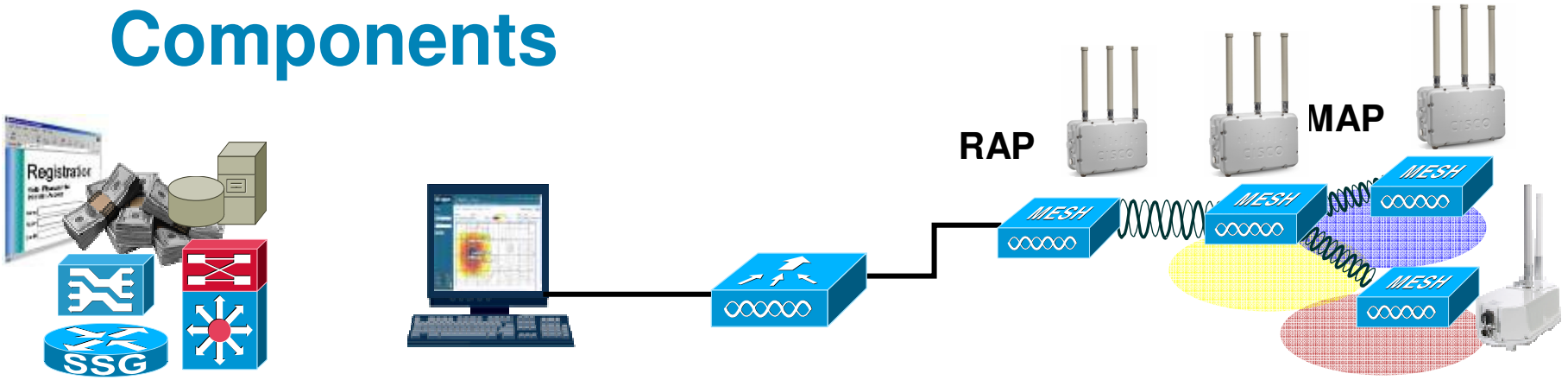
Intelligent Wireless Video Surveillance Networking

- More Effective Use of Data
- Efficient use of Network resources
- Shared Information in Real Time
- More Cost Effective Deployments
- Integration with other sensor applications

Cisco Mobile Government Solution Framework



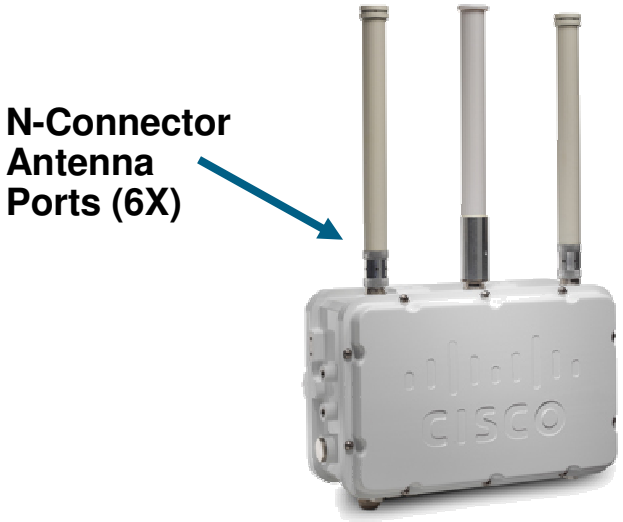
Outdoor Wireless Mesh Solution Components

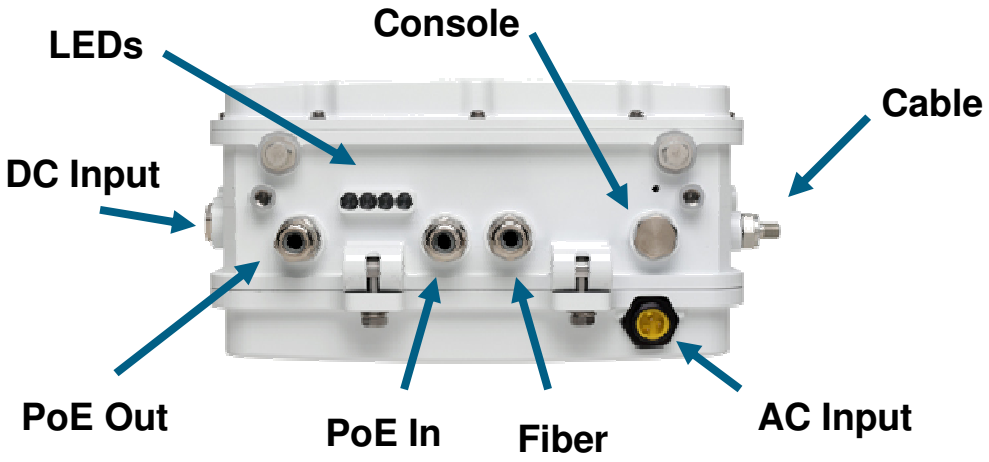


Back Office Systems	Wireless Control System (WCS)	Wireless LAN Controller	Root Access Point	Mesh Access Point
• Bandwidth Monitoring and Management • Policy Definitions • Subscriber Database Management • Billing and OSS Systems	• Wireless Mesh Management System enables network-wide policy configuration and device management\ • SNMPv3, Syslog, IPSec, AAA, etc	• Handles RF algorithms and optimization • Seamless L3 Mobility • Security and Mobility control • Image Management	• Serves as “Root” AP to the wired network • Typically located on roof-tops or towers • Connects up to 35 Mesh APs using 802.11a	• 802.11b/g client access • Connects to Root AP via 802.11a • AC/DC power; PoE capable • Ethernet port for connecting peripheral devices

Reliable Hardware ***Industry Proven Devices at Every Layer***

Cisco 1520 Series: Platform Overview





- Ruggedized enclosure
  - –40 to +55°C with solar loading
  - IP67, NEMA-4X
  - 165 mph wind gusts, 100 mph sustained winds
  - Hazardous safe
    - Class 1, zone 2/division 2
- Paintable chassis
- FIPS-140-2 certifiable

Cisco 1520 Series: Platform Overview

- Next-generation outdoor mesh AP portfolio
  - New Marvell-based radios
  - New Cisco IOS® software platform
  - Modularity for increased flexibility
  - Replacement for 1505 and 1510
- Enhanced capabilities to support muni wireless and enterprise campus mesh
- Extension to new markets
  - Service provider and cable MSO
  - Public safety
  - Industrial wireless verticals
    - Oil and gas, mining, power and utilities

1524 Multi Radio (Q1'CY'08)

Global Release

1522 Dual Radio

Cisco 1520 Series: Radios Overview

- Higher power radio performance: 5 GHz–28 dBm, 4.9 GHz–24 dBm

  Increased backhaul data rate (24 Mbps) for higher capacity and throughput

- 2.4 GHz–28 dBm

  MRC Diversity: maximum ratio combined signals from multiple antennas maximizes receive sensitivity

  Improved client coverage, throughput and link reliability

  4 dB better RX sensitivity than 1510

Mesh AP Models

- AIR-LAP1522

  Dual-radio mesh AP (5 GHz, 2.4 GHz)

- AIR-LAP1524

  Multi-radio mesh AP (2.4 GHz, 5 GHz, 4.9 GHz)

Product Positioning and Migration Path

1505
Single Band Mesh AP

1521
(Q2'CY'08)
Single Radio

- For countries not supporting 5 GHz
- Fill-in coverage gaps

1510
Dual Band Mesh AP

1522
Dual Radios Mesh AP

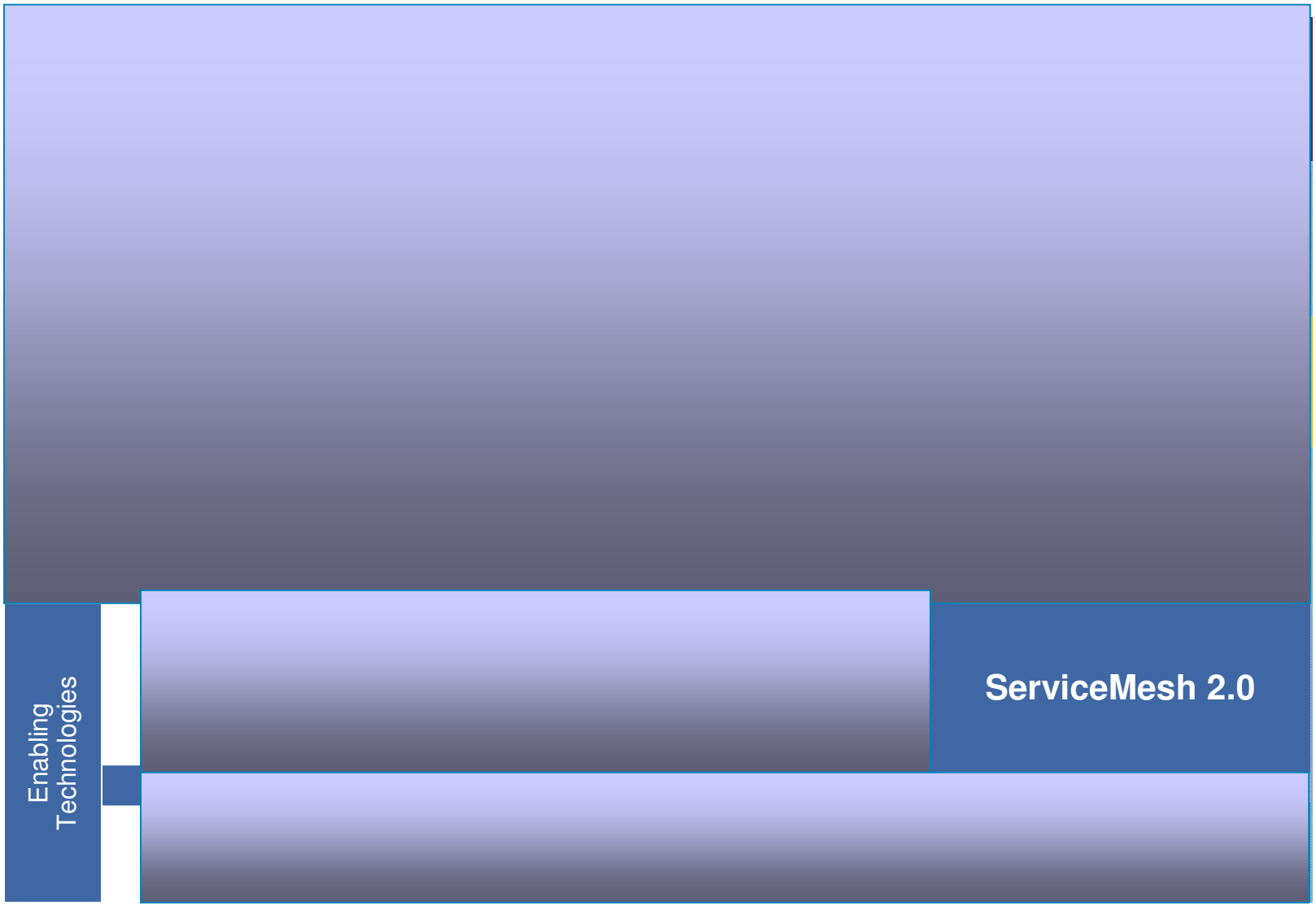
- For standard muni mesh deployment
- For enterprise-campus deployment

1524
(Q1'CY'08)
¾-Radios Mesh AP

- Modular platform for added flexibility
- For public safety and public access
- Linear deployment (railway)
- Dual-backhaul
- Integrated backhaul (future WiMax)

Radio Functionality

Cisco Mobile Government Solution Framework



What is Cisco ServiceMesh?

- Cisco ServiceMesh is an easy to deploy, high-speed wireless broadband network solution, delivering a scalable end-to-end design that allows service providers to layer new applications and classes of service in order to cost-effectively deliver secure government services from a single outdoor wireless network.
- New features on Cisco ServiceMesh provide added security, mobility, scalability and high availability, ensuring that carriers can confidently deliver mission-critical public safety applications alongside other government applications on a single mobile network.

NSITE ServiceMesh 2.0 System Test Topology