# Benefity verejnej WiFi pre mesto a občanov

## Cisco Smart+Connected City Wi-Fi

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Cisco Systems

# Cities challenged to improve delivery of services to highly mobile citizens and provide impetus to local economy

**Closing the digital divide**

**Boosting economic recovery and city prospects**

**Greater public safety and security**

**Greener, more efficient management of city infrastructure**

# Higher mobility, availability of unlicensed spectrum and lower costs are driving re-emergence of City Wi-Fi

Users expect anytime anywhere connectivity to data just like voice

Regulatory agencies around the world are making more unlicensed spectrum available

Wi-Fi is increasingly built into smaller, more mobile devices such as smartphones and tablets

# Cisco Smart+Connected City Wi-Fi

Providing ubiquitous connectivity and access to wide portfolio of city services

- Provides citizens with anytime, anywhere Wi-Fi experience and location based services
- Improves city planning process with network and people-flow analytics
- Adds impetus to local commerce by improving experience in retail and business districts
- Enables intelligent sensor-based IoT innovations in transportation, utilities, public safety, and environment

# A unified foundational network to address multiple service requirements

## All constituents leverage common wireless platform for data and services

INFRASTRUCTURE SERVICES
(Transportation, Utilities, Public Safety, Environment)

# Enable Internet of Things innovations and Smart City infrastructure management

- » Smart Traffic
- » Smart Parking
- » Smart Public Safety
- » Smart Street Lighting
- » Smart Waste Management
- » Smart Environment Monitoring

Wireless platform for delivering smart services e.g. parking, water metering, and traffic monitoring

Built using open standards/APIs to simplify integration with existing systems/apps

Drives investment consolidation and faster, improved return on capital employed

CITIZEN SERVICES
(Access, Participation)

# Provide ubiquitous connectivity and enable citizen services

- Citizens can access the Internet over their smartphone, tablet, and other computing devices when they are in public spaces and on the move. They have access to city information and city services anytime, anywhere
- Citizens become active agents contributing to the city by uploading pictures and sharing information on potential hazards such as a pothole or a broken streetlight

CITY
SERVICES
(City Information, Planning)

# Assist city planning with location and people-flow analytics

## City Center/Airport/Transit Center/Any Target Planning Location

Cisco Smart+Connected City Wi-Fi with location analytics can be used to measure:

- Density/utilization at given time of day or day of week
- People flows/footfall
- Time spent in the area
- First time versus repeat visitors

Platform can also be used to enable citizen portal/e-government/citizen services

BUSINESS SERVICES
(Local Commerce)

# Boost local commerce and local businesses

## Retail/Downtown Areas/Shopping Districts

- Location-based services offers new insight that can also be leveraged by local businesses/retailers to better target offers
- Commerce and local businesses are able to grow revenues
- Shopping centers can boost footfall by enabling shoppers to stay connected to social networks and share their experiences as they happen

# A Unified architecture to integrated Outdoor Wireless Mesh, Management and Connected Mobile Experience Capabilities

## Wireless Mesh Network

- Outdoor ruggedized wireless mesh end-points
- Self-organizing, self-healing, self-configuring wireless mesh infrastructure

## Network Management

- Wireless Controllers
- Management for large number of wireless mesh end points

## Connected Mobile Experience

- Real time location information in a secure anonymous way
- Location information and metrics exposed using open APIs

# Cisco Differentiation

## Technology

- ClientLink: Better range and throughput
- CleanAir: Mitigation of interference, self-healing network
- BandSelect: Optimize RF utilization, allow higher user density
- VideoStream: Video quality optimization, reliable multicast
- REP: Fast convergence, lower cabling needs

## Management

- RF planning tool and ongoing optimization services
- Large scale deployment manageability
- Fast and seamless handoff across access points
- Security and intrusion detection

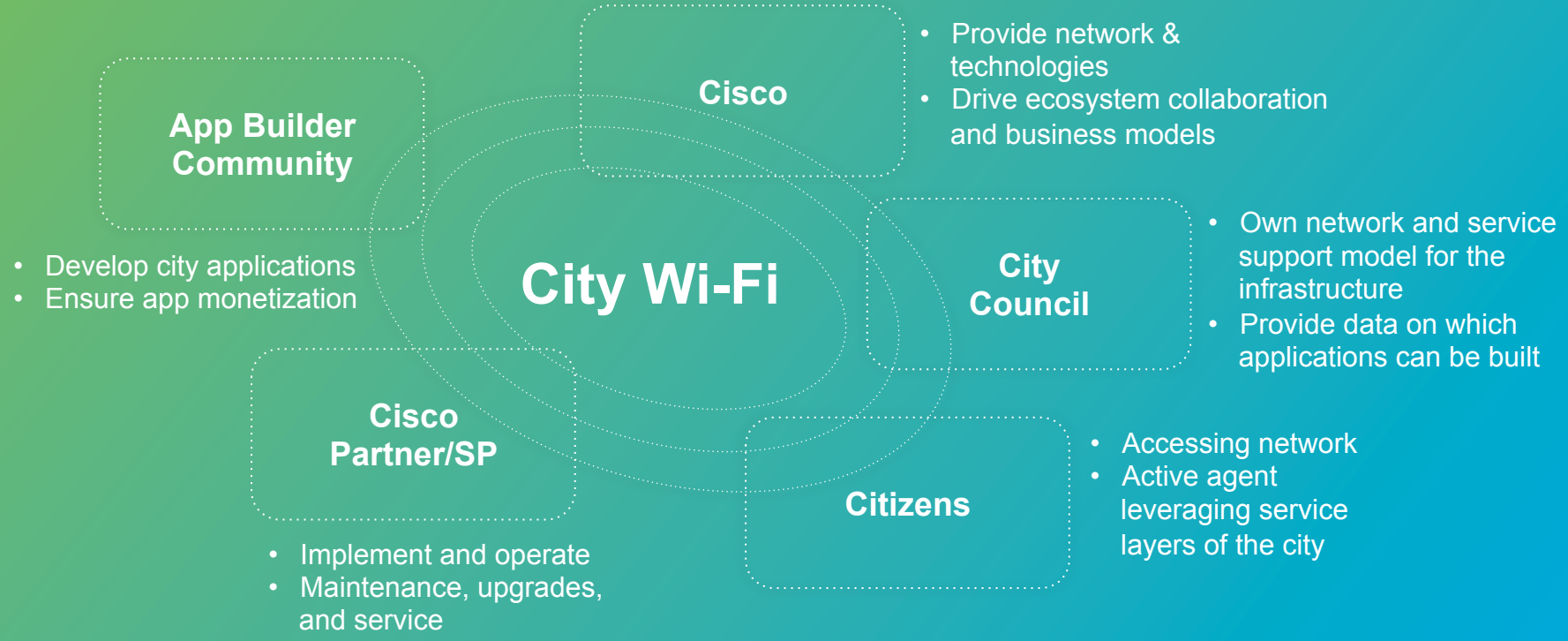
## Analytics

- Delivery of mobility services in centralized scalable way
- Location analytics that provide numerous metrics such as dwell time, crowding factor, churn, retention

## Ecosystem

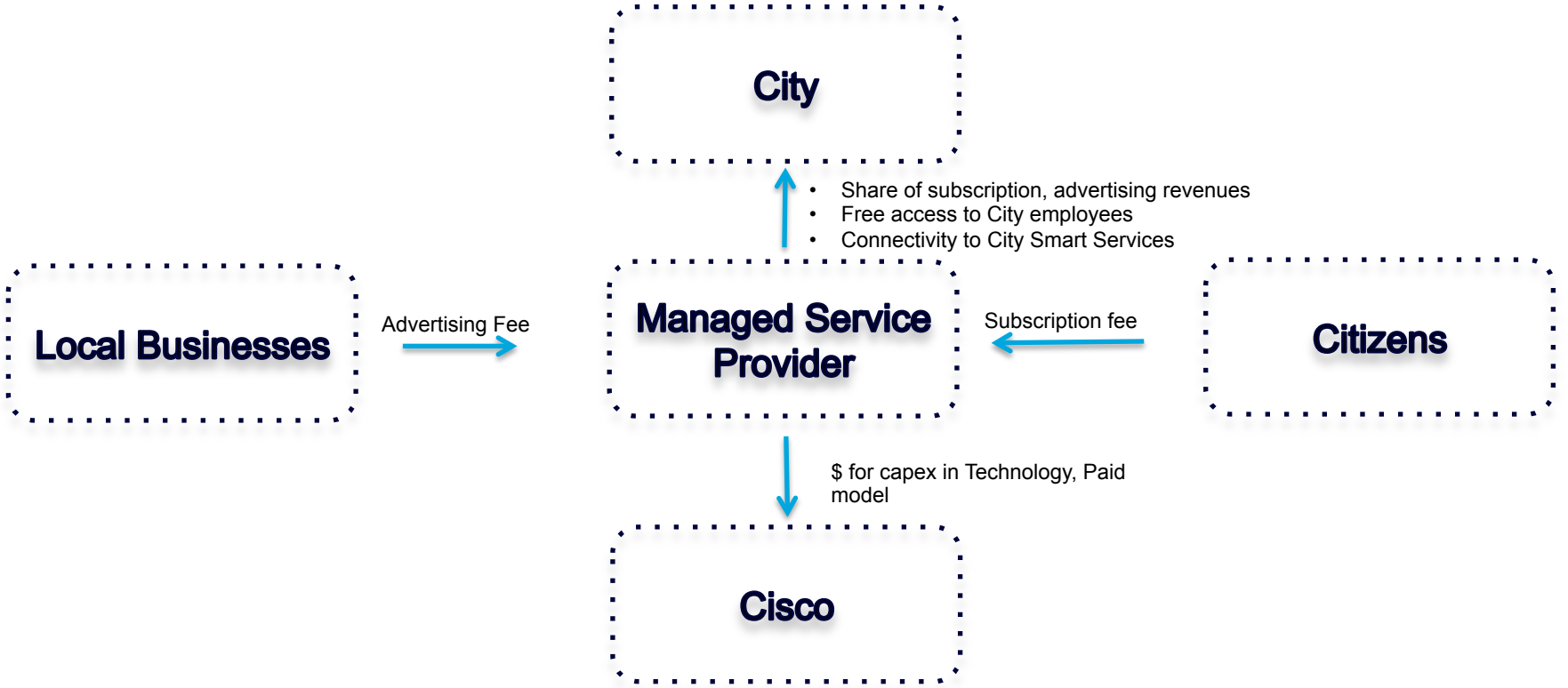
- Ecosystem of application providers to leverage location analytics data
- Solution partners for Internet of Things innovations

# Value of network will be realized in collaboration with ecosystem participants



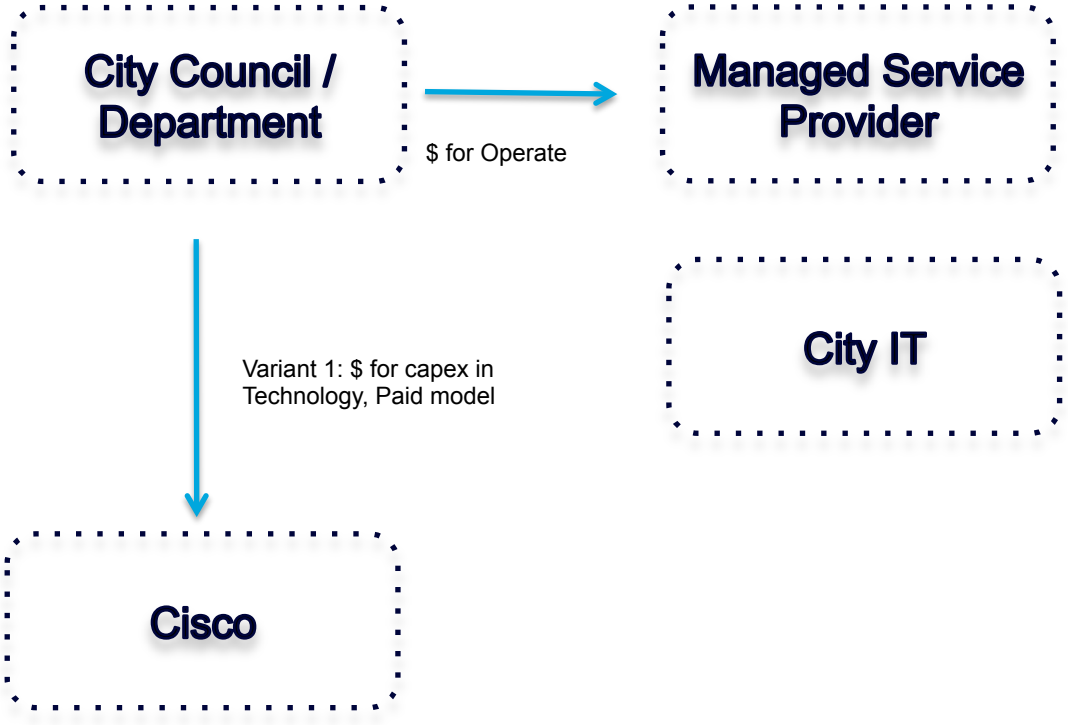
# Business Model (1)

## Managed Service Provider as buyer, Commercial Driver



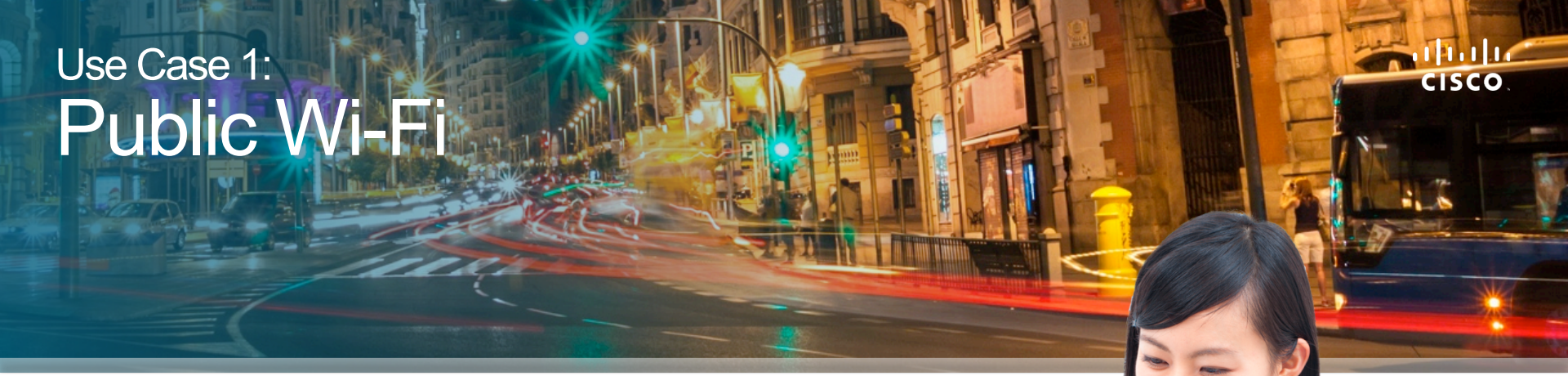
# Business Model (2)

## City as buyer, Managed Service Provider or City IT as operator, Smart Services as Driver



# Use Case examples

# Use Case 1:
# Public Wi-Fi



Mel, a citizen of the city, commutes by bus. While waiting at the bus stop, she receives live information of bus arrival time, she knows that the next bus is five minutes late and she now has a few minutes to grab a quick bite to eat.

Joanna, a teenager, needs a driving license. She easily connects over the network to the city services website and reads the procedure for getting a license and rules. Afterwards, at home, she takes a test online and reserves an appointment for a in person driving test.

# Use Case 2:
# Information Services

Alice recently moved to the city and would like to know more about her local community. While sitting in the local city park she gets online via her smartphone/ tablet.

She goes into the website/app and browses different services, attractions, and places to visit.

It's easy to find key information such as emergency services, hospitals, tourism, and social security.

Impressed, Alice bookmarks the website/app and instantly feels comfortable, confident, and at home in her new surroundings.

# Use Case 3:
# Citizen Engagement

Sofia is walking to a park, when she sees a sewer lid open in the middle of the street.

She opens an app on her smartphone to log the safety hazard with the appropriate council department.

The app automatically records her exact geographical location. Sofia writes a short description and takes a picture. The city repair team is dispatched and the issue attended to. Afterwards Sofia receives a thank you message to say the issue is resolved.

# Use Case 4:
# Location Analytics

As a city official, John wants to better understand how and when citizens move around the city.

Unobtrusively and without identifying individual users, the Wi-Fi network processes real time data via a dashboard.

With this new insight John and his colleagues can make better informed operational decisions regarding policing levels, traffic light management, and so on.

The end results is less crime, more efficient transportation, and enhanced citizen satisfaction.


# Signal Festival

13. – 16.10.2016, Praha 1,2,3

# Co je Signal Festival ?

SIGNAL festival je největší kulturní událost v České republice, propojující moderní umění a nové technologie s širokou i odbornou veřejností.

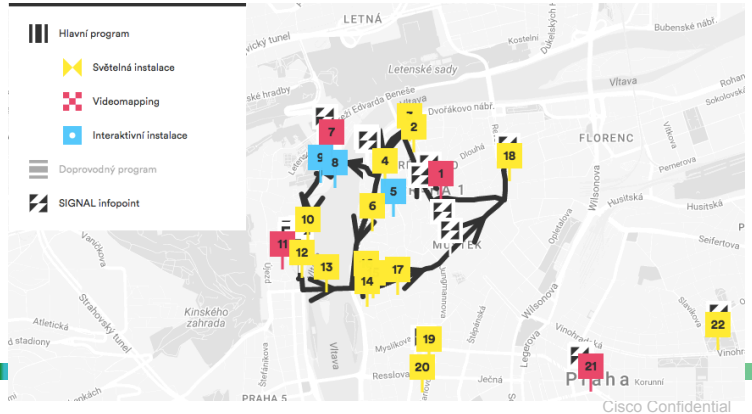
2 specifiká:

- **prioritní kulturní akce Prahy i České republiky**
- **Mezinárodní organizace festivalů světla** (International Light Festival Organisation)

Kdy to proběhlo: 13. – 16.10.2016

Ročník: 4.

Počet návštevníků: cca 600 000



# Průběh festivalu

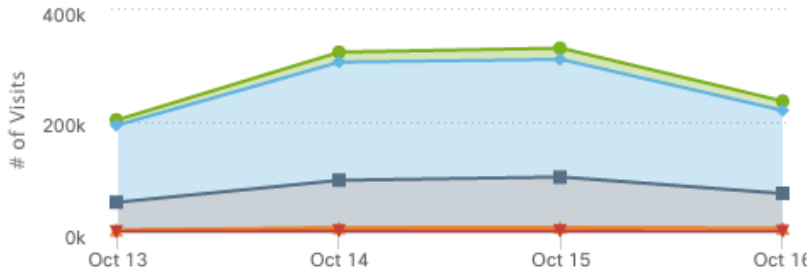
Dwell Time Breakdown | Oct 13 - 16, 2016

1,093,678

Dwell Time Breakdown of All Visits (?)

| 05.8% | 65.1% | 26.2% | 02% | 00.6% |
|---|---|---|---|---|
| 0-5min | 5-20min | 20-60min | 60-120min | >120min |

DAILY TREND




OR COMPARE DATA TO: PREVIOUS

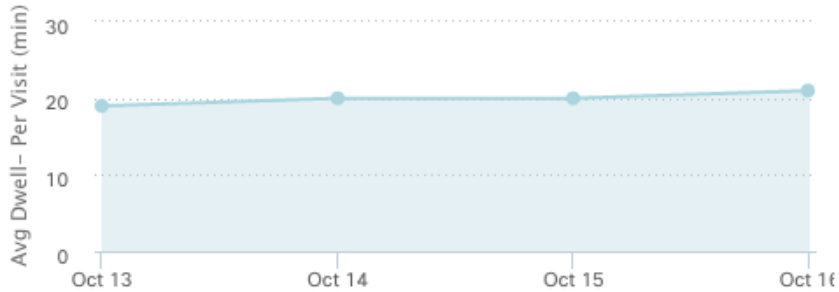
Average Dwell Time | Oct 13 - 16, 2016

20MINS

Average Dwell Time of All Visits (?)

| 29mins | 18mins |
|---|---|
| Repeat Visitors | New Visitors |

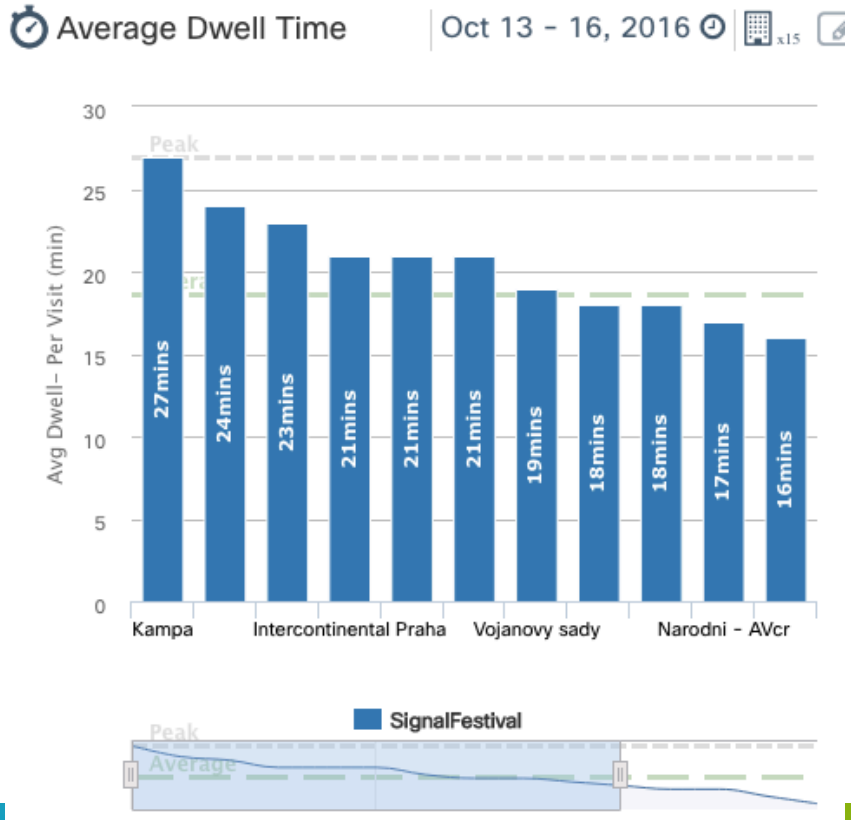
DAILY TREND




OR COMPARE DATA TO: PREVIOUS

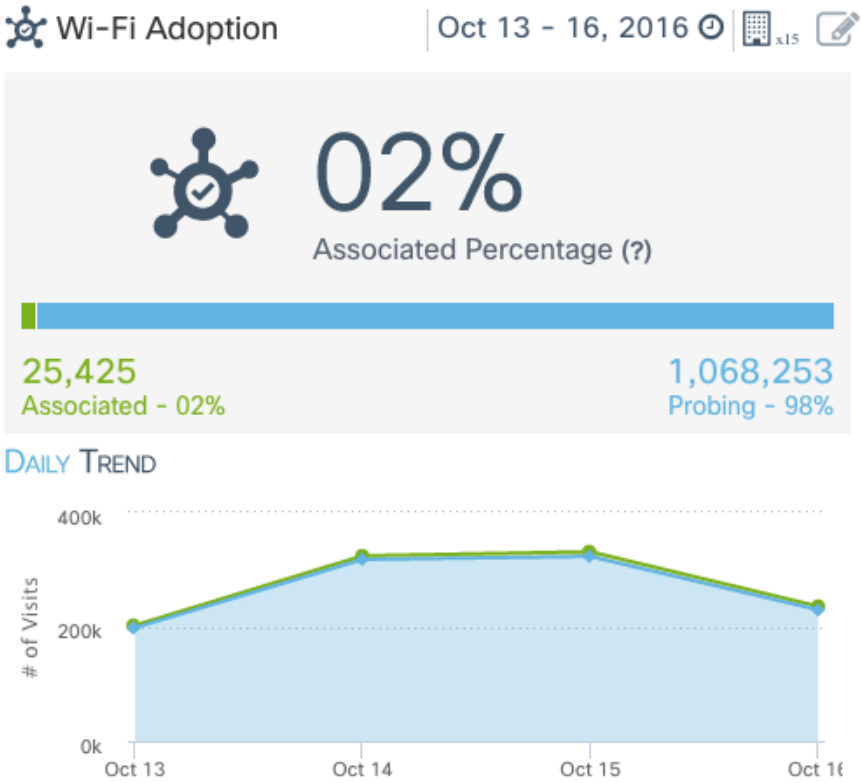
# Návštevnost jednotlivých instalací

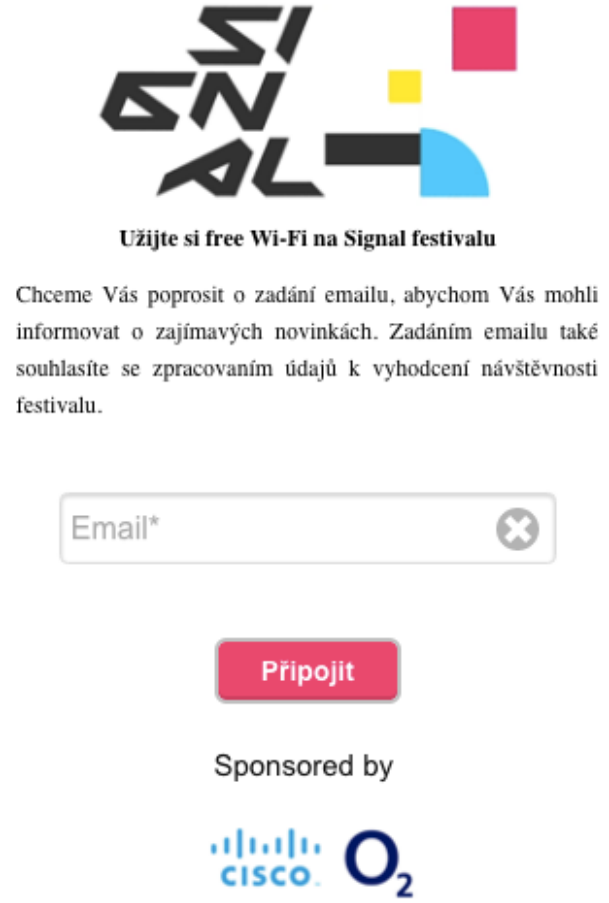
# Čas na jednotlivé instalaci



# Zavislost mezi návštěvníky a instalacemi

# Připojení návštěvníci



- ✓ Více detailů:
  - Website: cisco.com/go/smartconnectedcommunities
  - Blogs: blogs.cisco.com/government
  - Public Sector IoE Deployment Map: cs.co/IoEPSImpact
- ✓ Kontakt: zhumajov@cisco.com

# Use Case 5:
# Commerce

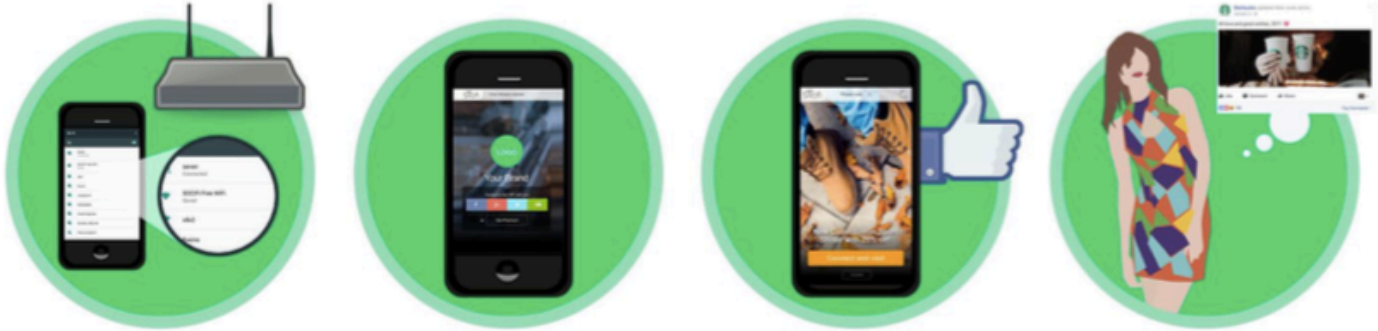
Steven, a city official, works closely with local shops and business owners to improve revenue and trading opportunities.

By using location analytics advertising, he pushes content including ads and promotions/coupons on behalf of local shops to citizens/ tourists.

The Wi-Fi network detects and triangulates the location of the citizen/ tourist and delivers targeted information to show their nearest tourist shops, restaurants and other retail outlets.

Business owners work together with the local municipality to add value to the city and to provide new retail experiences.

# How Guest Wi-Fi Works?



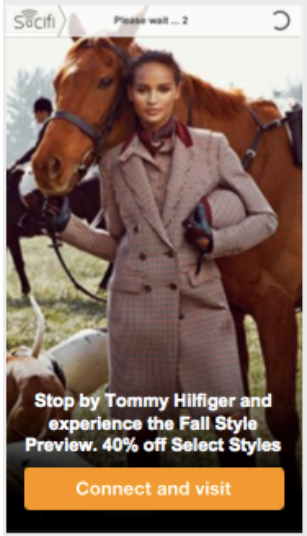
STEP 1
CONNECT

STEP 2
LOGIN

STEP 3
ENGAGE

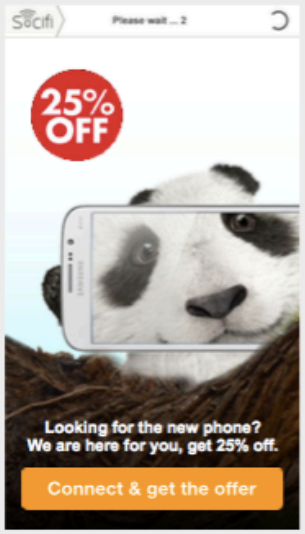
STEP 4
ENJOY

# Přístupový portál/reklamní portál



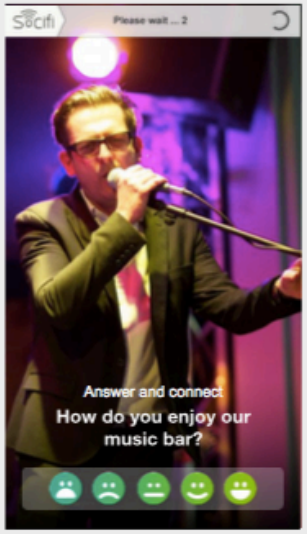

Click to Website


Video

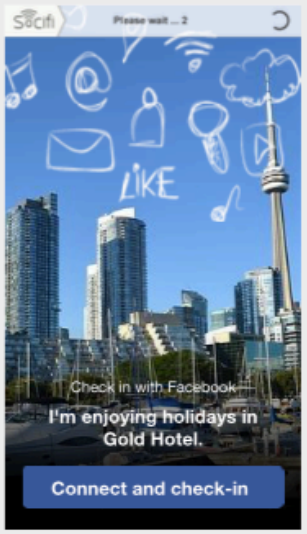



Offer / Voucher


App Install




Survey




Facebook Like / Check in
Twitter Follow

# Use Case 6:
# Virtual Tourist Guide


Juan is a visiting tourist in the city.

While walking in the street, he logs onto City Wi-Fi and is invited to download the city's official virtual tourist app on his smartphone. Once installed, the app highlights locations of tourist attractions and points of interest.

As he walks around, content is pushed to his smartphone, providing Juan with historical information and facts associated with his location.

Juan has a memorable experience and feels more immersed in the city's unique history and traditions. So much so that he vows to tell his friends and to return.

# Use Case 7:
# Public Safety

Richard, a law enforcement officer is monitoring live video feeds on his iPad from inside his police vehicle. The feeds are from surveillance cameras installed in the area covered by his patrol.

He observes that someone is vandalizing public property at Smith Street, a few blocks away from his current location

He immediately drives up to the zone, and reprimands the perpetrator for the act, before letting them go with a logged warning.

# Use Case 8:
# Smart Traffic

Nick, a traffic operator, is monitoring traffic conditions. After a few uneventful hours, he notices that one of the streets is showing heavy congestion.

Feeds from wireless-enabled video cameras allow Nick to observe the entire scene from multiple angles. He pinpoints the cause; a traffic accident.

Notifications are automatically sent to police and emergency medical teams.

First response teams arrive and start diverting traffic and attending to the accident scene. The situation is resolved within 30 minutes, a full 10 minutes faster than the average resolution time.


High passenger count at stop
233PP-SD Stadium.
Reroute more busses to this stop?
OK


High passenger count at stop
233PP-SD stadium.
Reroute more busses to this stop?
OK


Emergency Call
Send Emergency Responders?
OK

# Use Case 9:
# Smart Parking

Jack's got to go downtown shopping today, and finding parking is going to be a problem. He might have to circle the block a few times. As he gets closer a digital sign informs him that Pine Street, not too far from the mall, has parking. He drives straight there and takes an available slot. Glad to have avoided continuous circling, he walks to the meter and buys two hours of parking.

John, on the other hand, who's also parked in Pine Street, leaves without paying. This parking violation is automatically flagged via the wireless network to a parking enforcement officer, Peter, who issues a ticket. Now his iPhone's showing someone has stopped in Main Street, a no-parking zone. Peter views a live video feed of the violation and saves it as evidence. He's always got work to do…


VIEW
VIDEO 1
VIDEO 2


RESERVE

# Logical Architecture

Applications & Dashboards

Data Center Layer

Internet / Other Networks

Router

Wireless Controller

DC Switch

Virtualization

Compute/ Storage Servers

Management

Location Analytics

City Layer

Core Switch

Access/Aggregation Switch

Street Layer

Access Switch

Access Switch

Access Switch

MESH

Root AP

Mesh AP

Root AP

Root AP

Mesh AP

Root AP

# City benefits

Cisco Smart+Connected City Wi-Fi: Enabling governments and cities to provide enhanced services to citizens

- Improved productivity and service quality
- Standardized applications, tools, and infrastructure
- Digital era collaboration
- Better city planning and development
- e-Government services can be delivered to citizens, faster and at a lower OPEX
- Greater ability to attract residents with better quality of life

City-wide availability of services to citizens

# Citizen benefits

## Cisco Smart+Connected City Wi-Fi: Building layers of services around the needs of citizens

- Access to connectivity and city information
- More interactive and satisfying experience
- Greater enablement within a more participative citizenship and society
- Improved quality of life for citizens
- Increased access to Internet and online services
- Local economic development and social innovation

Ability to access services anytime anywhere

# Smart City - Barcelona

**Teplota, vlhkost, hluk, prach, CO2**
**a další plyny - senzory**

**Parking Management**
Senzory v silnici a kamery

**Odpadové hospodářství**
-Urbiotica sensory

**Smart Osvětlení**
- Mřiditelné LED osvětlení

**Kiosky pro občany = online komunikace s radnicí**
- Pilot v Born District

**Wifi analýza pohybu a lokace**

**Zavlažovací systém**
- V Turo Parku

**Smart Turismus**
Digitální grafiti, on-line průvodce a lokalizace

**Connected Bus**
- Autobusy s Wifi-GSM signálem, informační portál a integrace s jízdním řádem

**Smart Autobusové zastávky**
- Interaktivní tabule, Wifi
- JCDecaux, 50 lokalit

Město

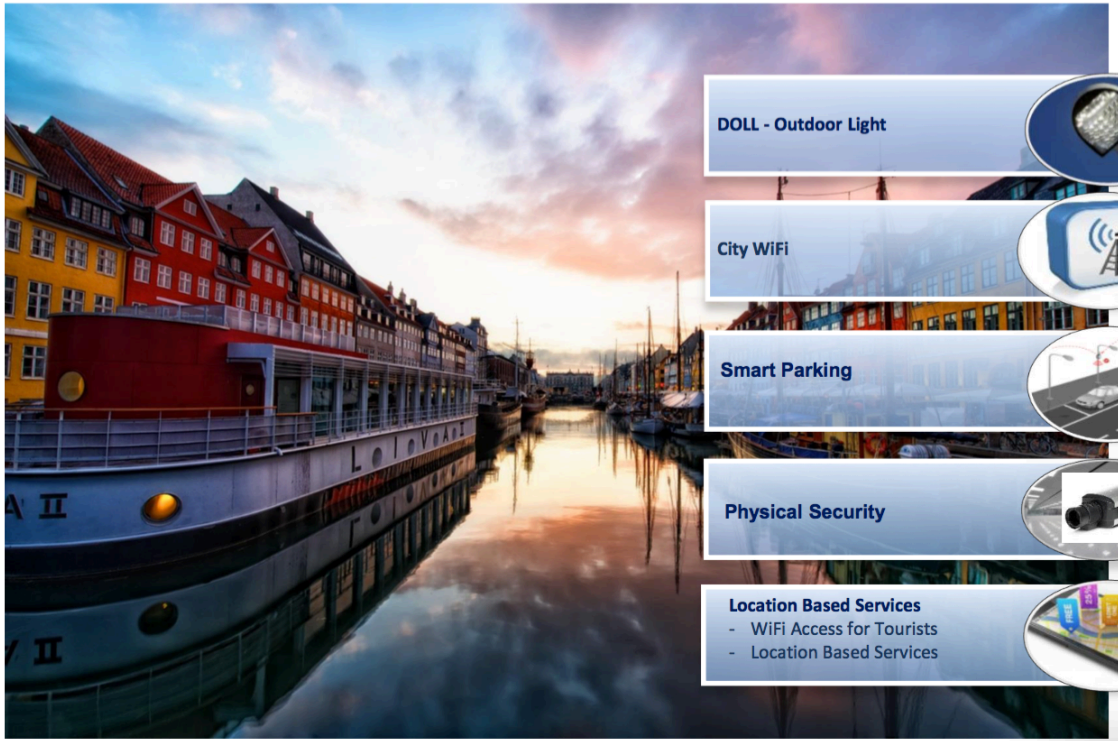
Cisco DPP

IoT Infrastruktura

Partnerský Ecosystem

# Street Digitization in Greater Copenhagen

*A Twin Deployment at DOLL, Albertslund and Inner City Copenhagen*



**DOLL - Outdoor Light**



**City WiFi**



**Smart Parking**



**Physical Security**



**Location Based Services**
- WiFi Access for Tourists
- Location Based Services



**Air Pollution Analytics**

**Smart Waste**

**Mobility Monitoring**

**Soil Sensing**

**Water Quality Sensing**
- Comprehensive water defences
- Forecasting, sensing, alerting, controls


Monday June 6

# Connected Digital Platform for Cities goes live in DOLL, Copenhagen

*Powered by Cisco & TDC*

Case Study

# Hotcity Luxembourg

## Boosting Attractiveness and Security With Location-Based Services


### Challenge

- Promote city image and visibility to attract new business
- Develop citizen's interaction and services
- Improve communications across day-to-day operations

### Solution

- Cisco ServiceMesh for a city-wide municipal Wi-Fi network

### Results

- About 12,000 registered users
- Citizens can pre-pay car parking fees or bus tickets online
- Key city information and emergency services are location-based and free
- Secure channels for emergency services, public transport networks, and the city administration

Case Study

# City of Zaragoza, Spain

## Using Wi-Fi and Environmental Sensors to Better Control Quality of Life

### Challenge

- Offer high-quality public services befitting digital, modern city
- Create high-speed Wi-Fi network for visitors, with long term vision for citywide connectivity
- Deploy most scalable, reliable, and proven technology

### Solution

- Cisco Unified Wireless Network
- 450 outdoor access points, provide coverage across all 17 districts and municipal facilities
- Also connects to university network, creating city-wide virtual campus

### Results

- Return on investment expected within seven years
- Easier for employees to access internal databases and applications remotely
- City council plans to deploy telemetry services e.g. for environmental control and mobility
- Platform for ongoing transformation, reinforcing the image of Zaragoza as an innovative city

Case Study

# Rivas Vaciamadrid, Spain

## Using Wi-Fi to Improve Services Management and Save Money

### Challenge

- Improve visibility of people and resources
- Remove barriers to communications and effective decision-making
- Speed retrieval of critical information
- Improve workflows and access to expertise

### Solution

- Cisco Wi-Fi and cloud solution
- Fully managed metropolitan fiber optic IP network and Wi-Fi MESH
- Supports voice, video, and data plus outdoor IP video surveillance, building automation, and traffic management systems

### Results

- 35% energy saving
- 3000 tons in $CO_2$ emissions eliminated
- 50% saving in water consumption, communications, and lighting
- 80% reduction in power consumed by street lighting

# Making the Transition

## Cisco Smart+Connected City Wi-Fi: Providing Ubiquitous Experience to Citizens in Cities

- **Proven and reliable Cisco technology**
- **Expert planning, design, and installation support from Cisco Services**
- **Hassle-free managed services from Cisco partners**
- **Budget-stretching financial solutions from Cisco Capital**

- ✓ Více detailů:
  - Website: cisco.com/go/smartconnectedcommunities
  - Blogs: blogs.cisco.com/government
  - Public Sector IoE Deployment Map: cs.co/IoEPSImpact
- ✓ Kontakt: zhumajov@cisco.com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