



# Innovation and Digitalization: Implications for Business

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# Shared Vision

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# Mission

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*Use Smart Technology  
to seek new justice for the world!*



## Urbanization and migration trends


- 54%.of.the.world's.population.live.in.urban.areas.who. consume.two-thirds.of.world.energy..

- By.2050,.urban.population. will.increase.to.about.6.3. billion.(66%.of.the.world. population).






## Urbanization and migration trends

A cluster of decorative hexagonal icons in shades of blue and teal. The icons include a thumbs-up, a lightbulb, a smartphone, and a magnifying glass.

Urbanization has converted cities into intellectual hubs and cultural and financial capitols. Cities also bring in congestion, pollution and public safety issues.



## Urbanization and migration trends

A cluster of five hexagonal icons in various shades of blue and teal. The icons include a thumbs-up, a lightbulb, a smartphone, and a magnifying glass.

The continuous increase in globalization and urbanization has tested the limits of cities' health, power, security, and transportation infrastructure.



## Urbanization and migration trends

- Globalization changed the relationship among production, sales and consumption.
- Only a few cities with local characteristics will play an important role in global competition.
- Cities must become **smarter** to be able to compete globally.



## From IoT to IoE

- When everything is connected, data/events will grow explosively. **Real-time detection, big data analysis, and process optimization** are trends that will change the lifestyle of everyone and businesses.

### The Internet of Everything

Networked Connection of People, Process, Data, Things



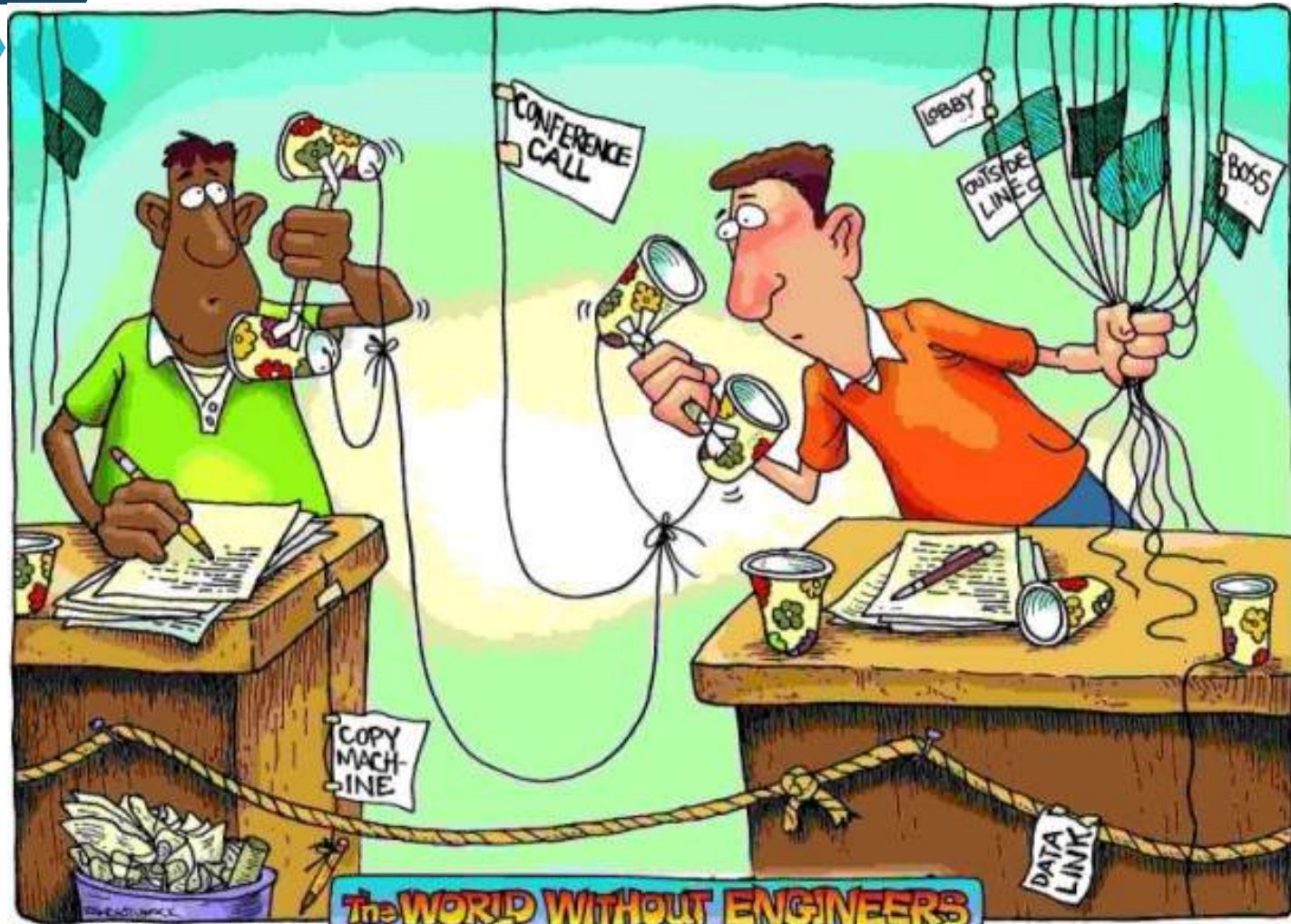




# 2020









## 5I Data Sharing, Collaboration



- **Interconnected**
- **Interchangeable**
- **Interoperable**
- **Interactive**
- **Integrated**

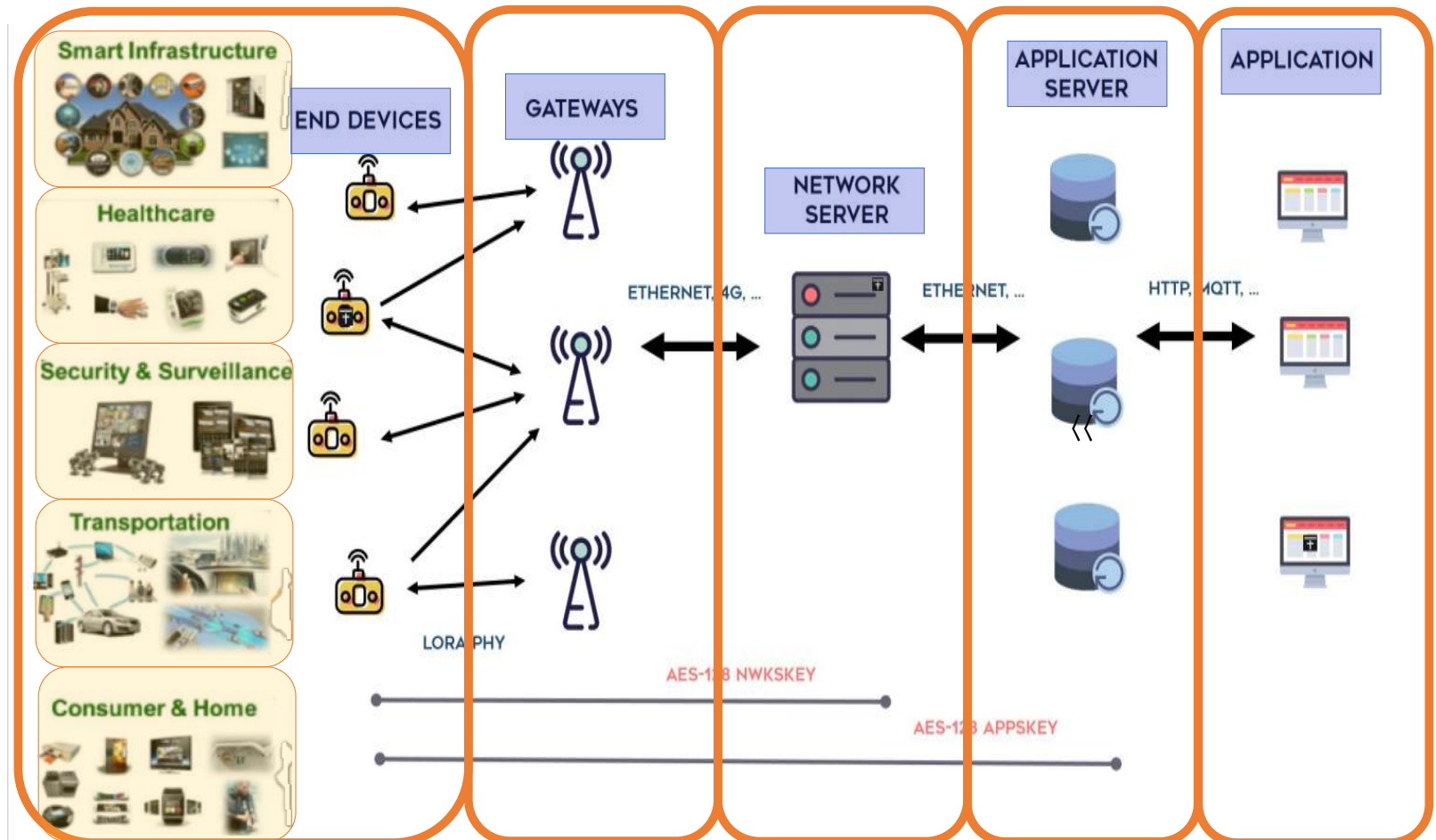
**Collaboration**  
**Information Sharing**







# Smart City Network Architecture





# Smart City Network Architecture





Surveyed 22 cities/counties on smart city progress in seven categories:

1. Smart transportation,
2. smart health,
3. smart security, disaster prevention
4. smart governance,
5. smart energy,
6. smart building, and
7. smart innovation.

# Taiwan Smart City Applications



- Award winning ETC and big data applications using ETC data
- Using IoT with sensors, monitors, ANPR, provides real time traffic condition for better congestion management
- Real time bus location inquiry
- Public bike systems (Ubike, Tbike, etc.)





# Taiwan Smart City Applications

- Smart Payment







# Taiwan Smart City Applications



- Smart Bus Stop with Real time bus location





# Taiwan Smart City Applications



- Parking 4.0: Smart Roadside Parking Management System



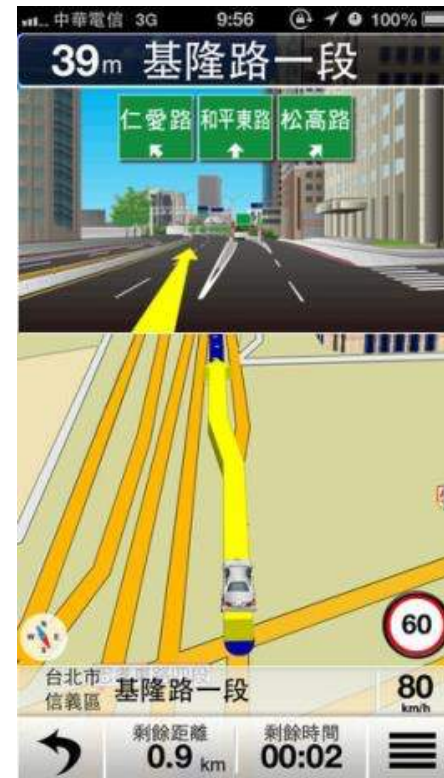


# Taiwan Smart City Applications



## • Parking 4.0: Smart Roadside Parking Management System

The real-time attendance data can be transmitted to the on-street parking toll collector's billing machine.



- Roadside parking information
- Parking guidance
- Member automatic payment
- Time reminder
- Parking photo confirmation

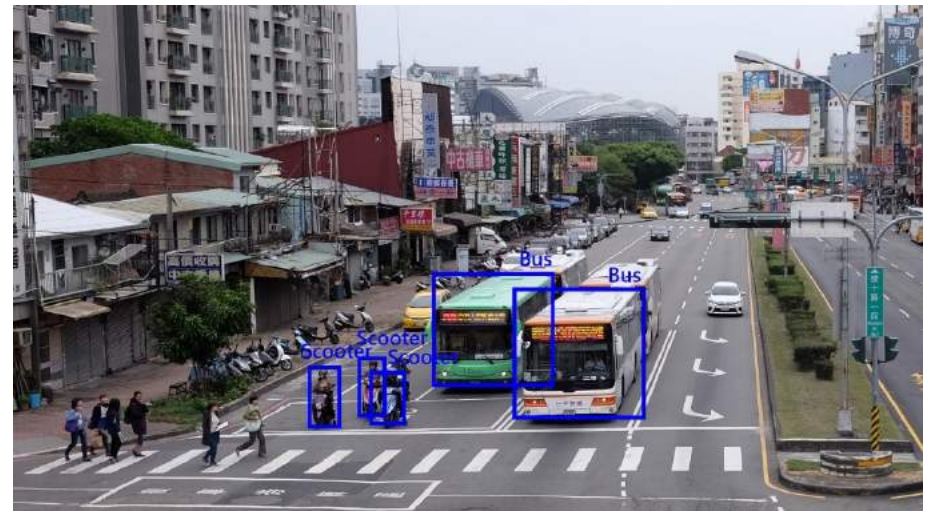
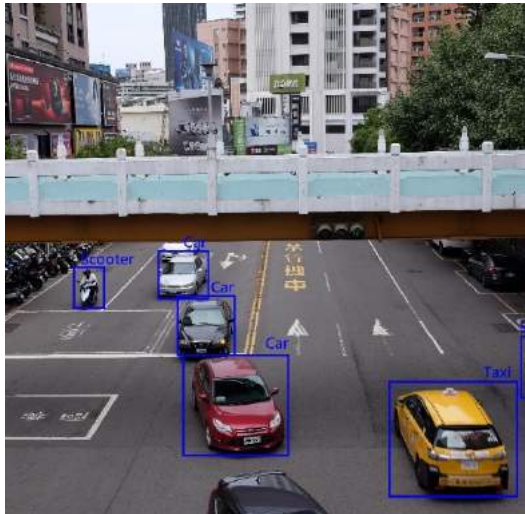




# Taiwan Smart City Applications



- Intelligent Video Management System
  - Vehicle Detection







# Taiwan Smart City Applications



- Intelligent Video Management System
  - License Plate Recognition



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# Taiwan Smart City Applications



- Intelligent Video Management System
  - Cross Red Light Detection

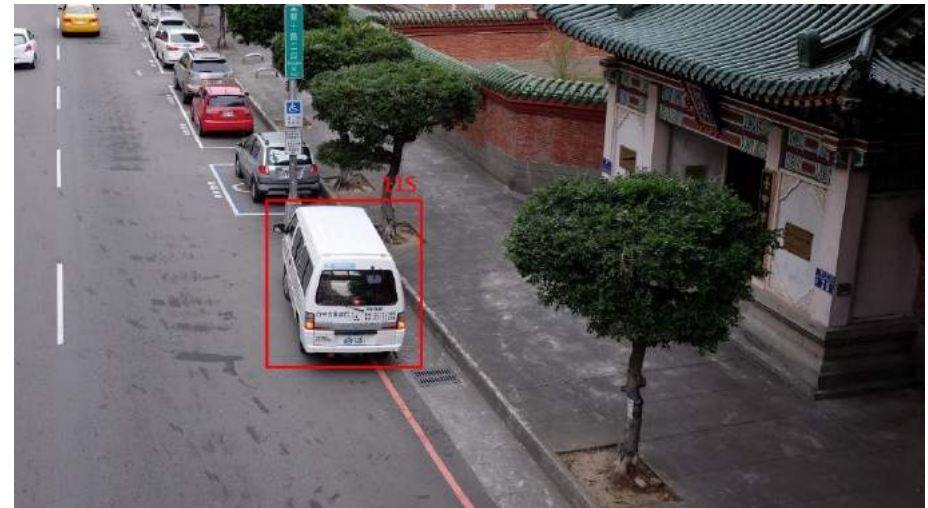
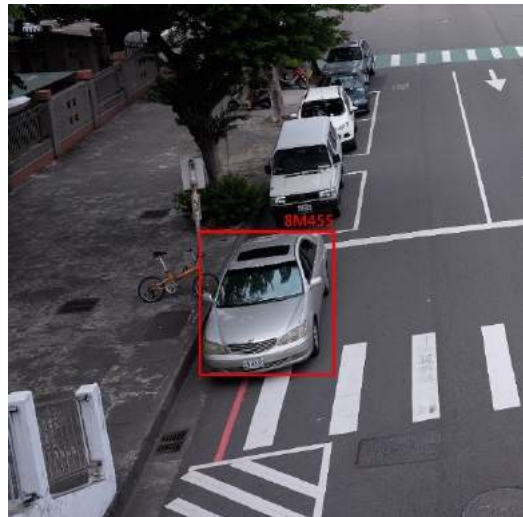
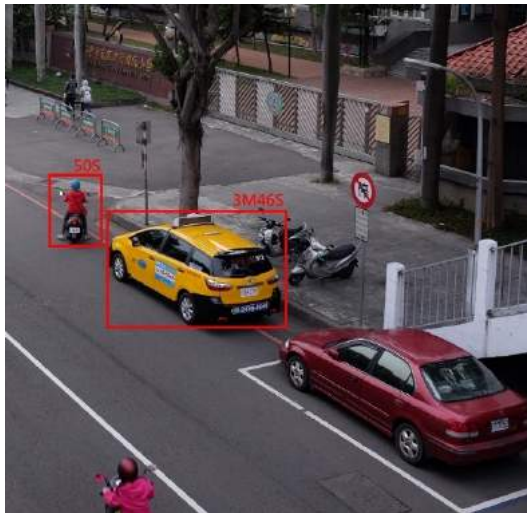




# Taiwan Smart City Applications



- Intelligent Video Management System
  - No Parking Zone Detection



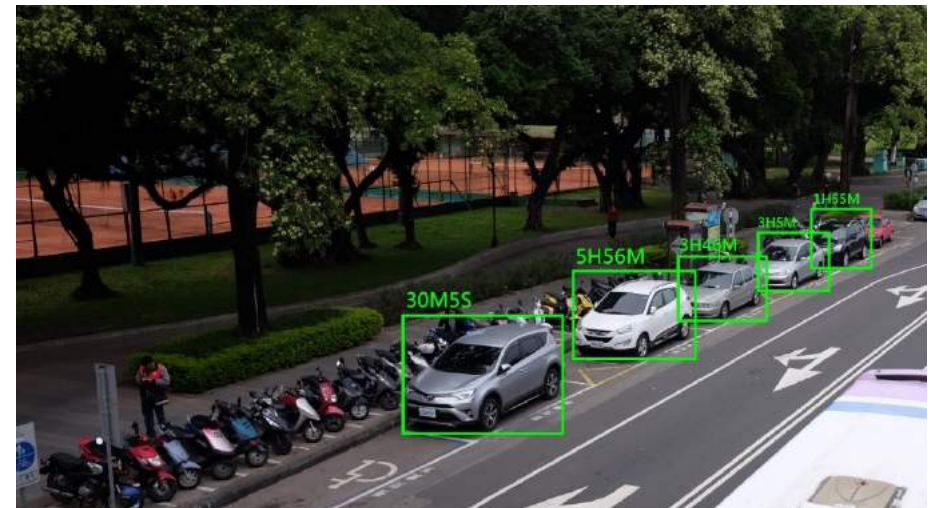
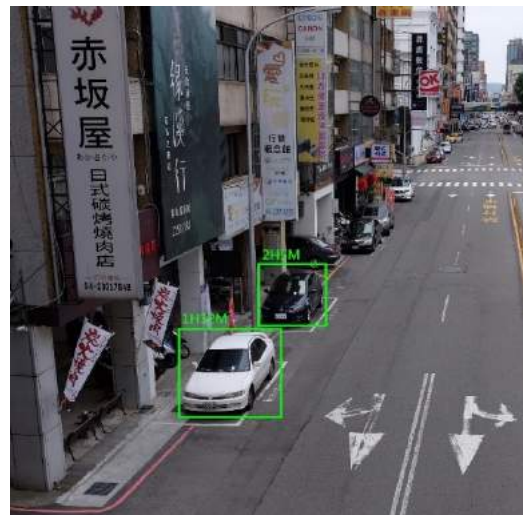
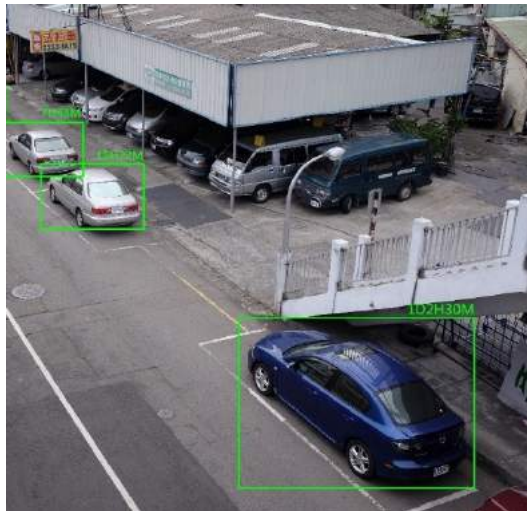




# Taiwan Smart City Applications



- Intelligent Video Management System
  - Parking Zone Ticketing







# Taiwan Smart City Applications



- Intelligent Video Management System





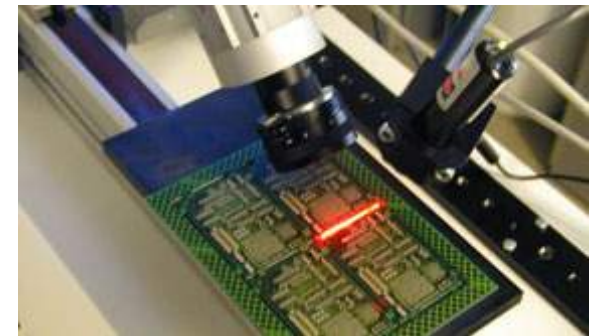




# Taiwan Smart City Applications



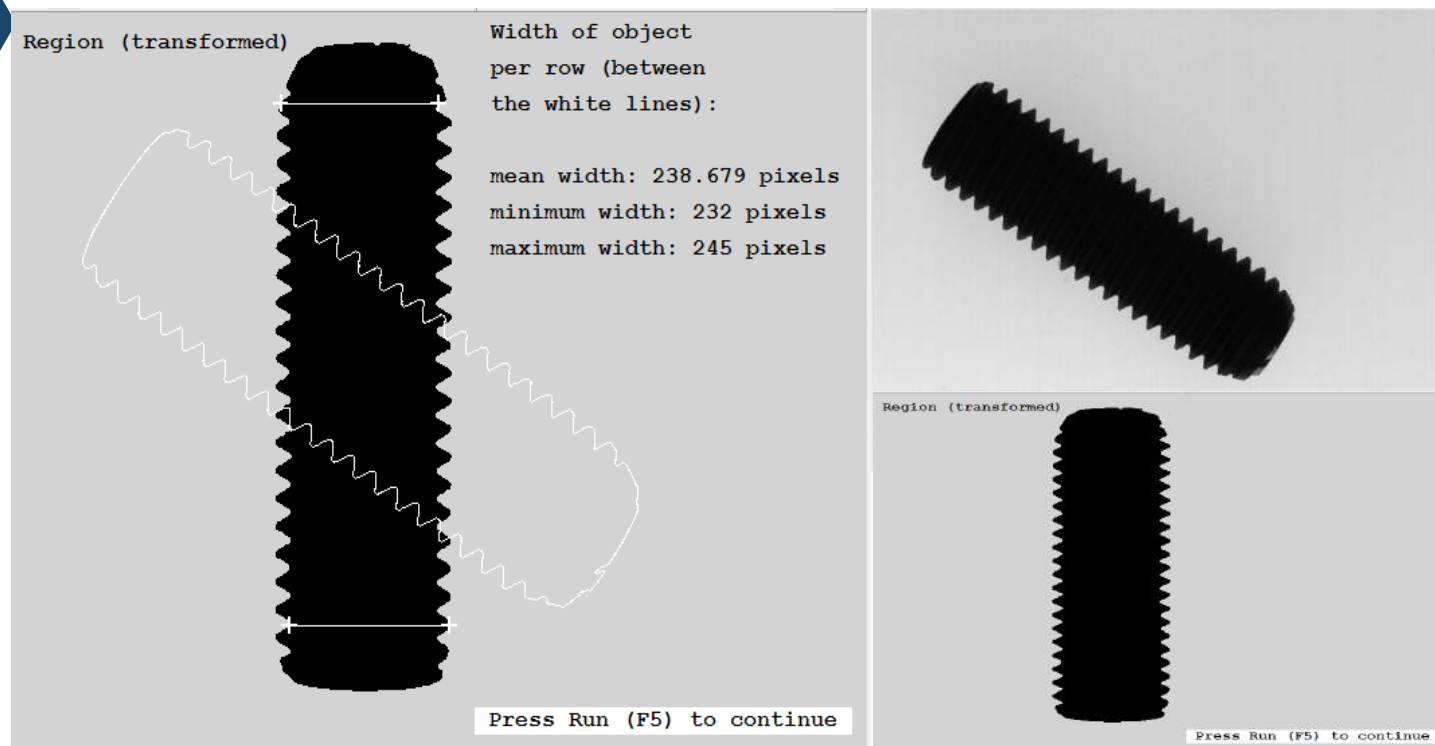
- Intelligent Video Processing





# Taiwan Smart City Applications

- Intelligent Video Processing
  - Inspects the dimensions of a screw

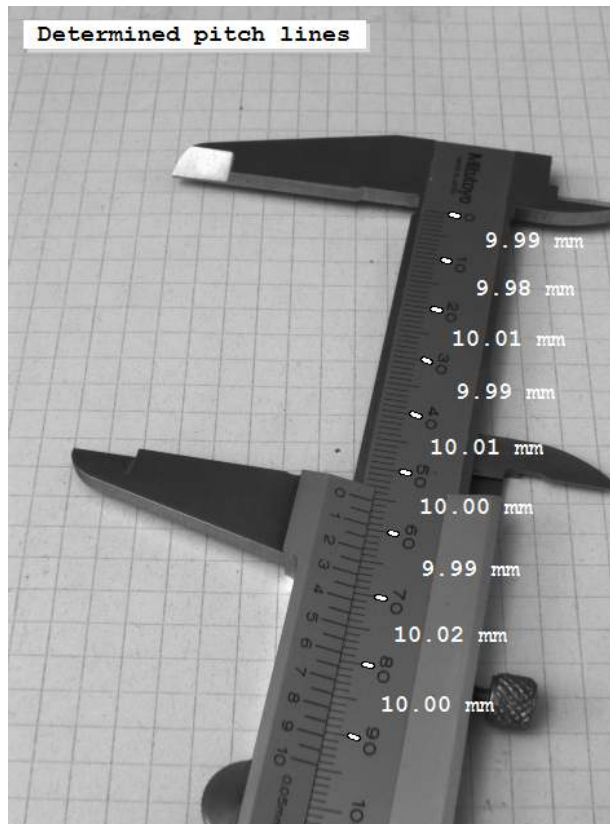






# Taiwan Smart City Applications

- Intelligent Video Processing
  - Determine a gray value profile



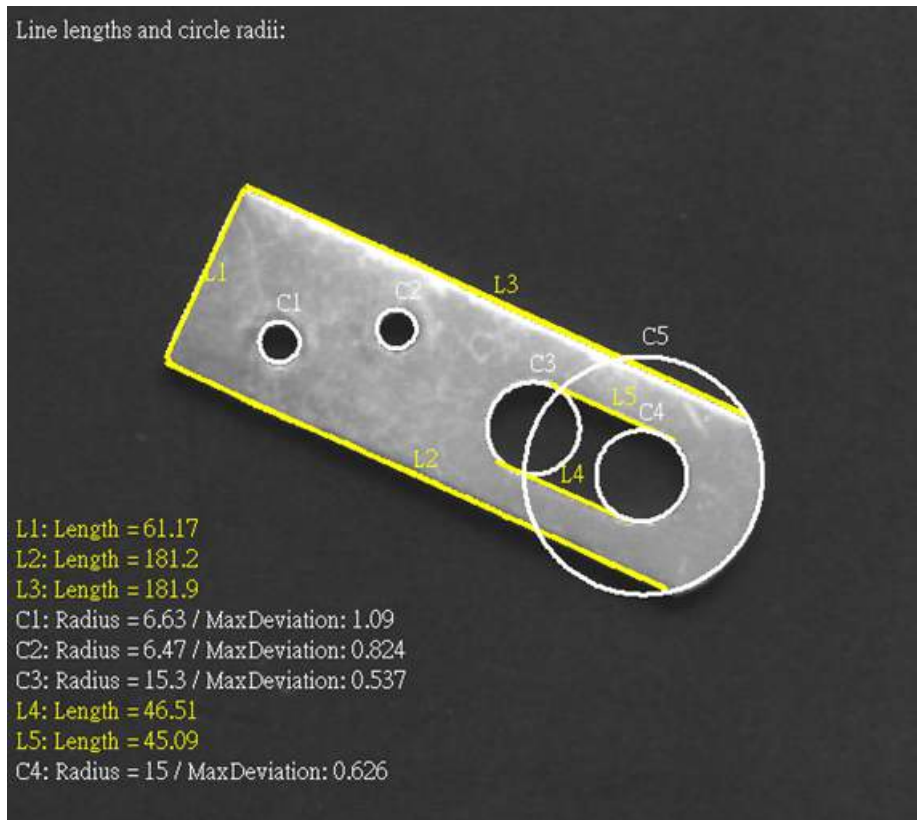


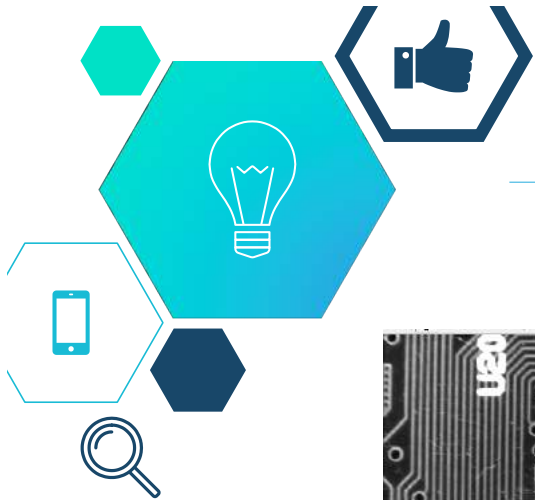
# Taiwan Smart City Applications



- Intelligent Video Processing
  - Inspects metal part

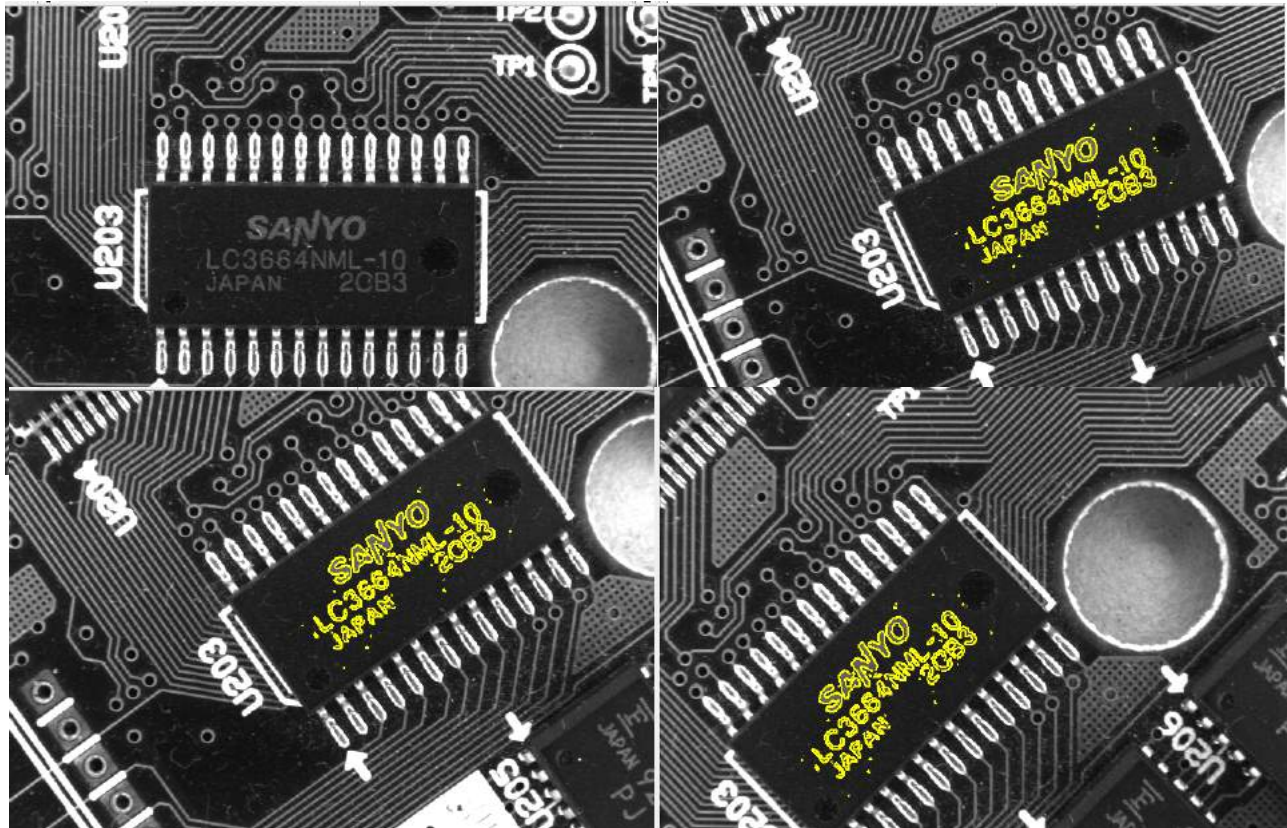
Line lengths and circle radii:





# Taiwan Smart City Applications

- Intelligent Video Processing
  - Shape-based matching







# Taiwan Smart City Applications



Surveyed 22 cities/counties on smart city progress in seven categories:

1. Smart transportation,
2. smart health,
- 3. Smart Security, Disaster Prevention**
4. smart governance,
5. smart energy,
6. smart building, and
7. smart innovation.



- Earthquake warning systems
- **Water level monitoring system**
- Flood and bridge closing warning system
- **Food traceability platform**
- K-12 school nutritional lunch traceability cloud services
- **3D GIS Pipe Line Management System.**
- Digital Victim ID APP records services and help victim search
- **Disaster donation map**

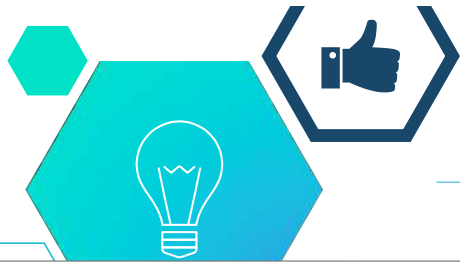


# Taiwan Smart City Applications



- Smart Security & Disaster Prevention

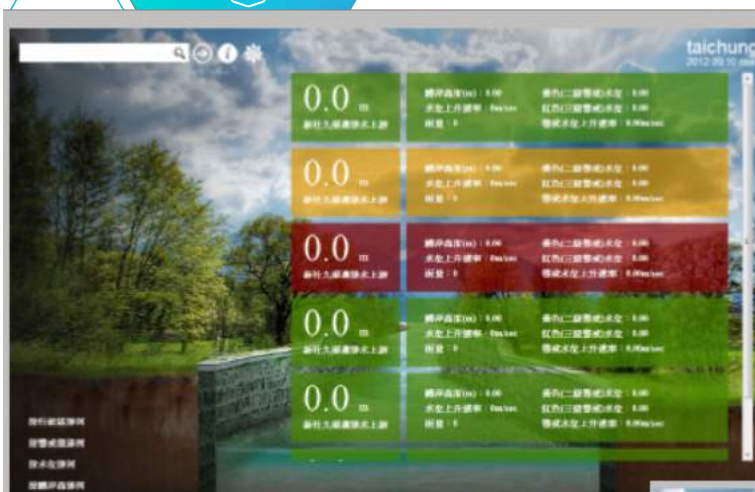




# Taiwan Smart City Applications



## Smart Security & Disaster Prevention







# Taiwan Smart City Applications

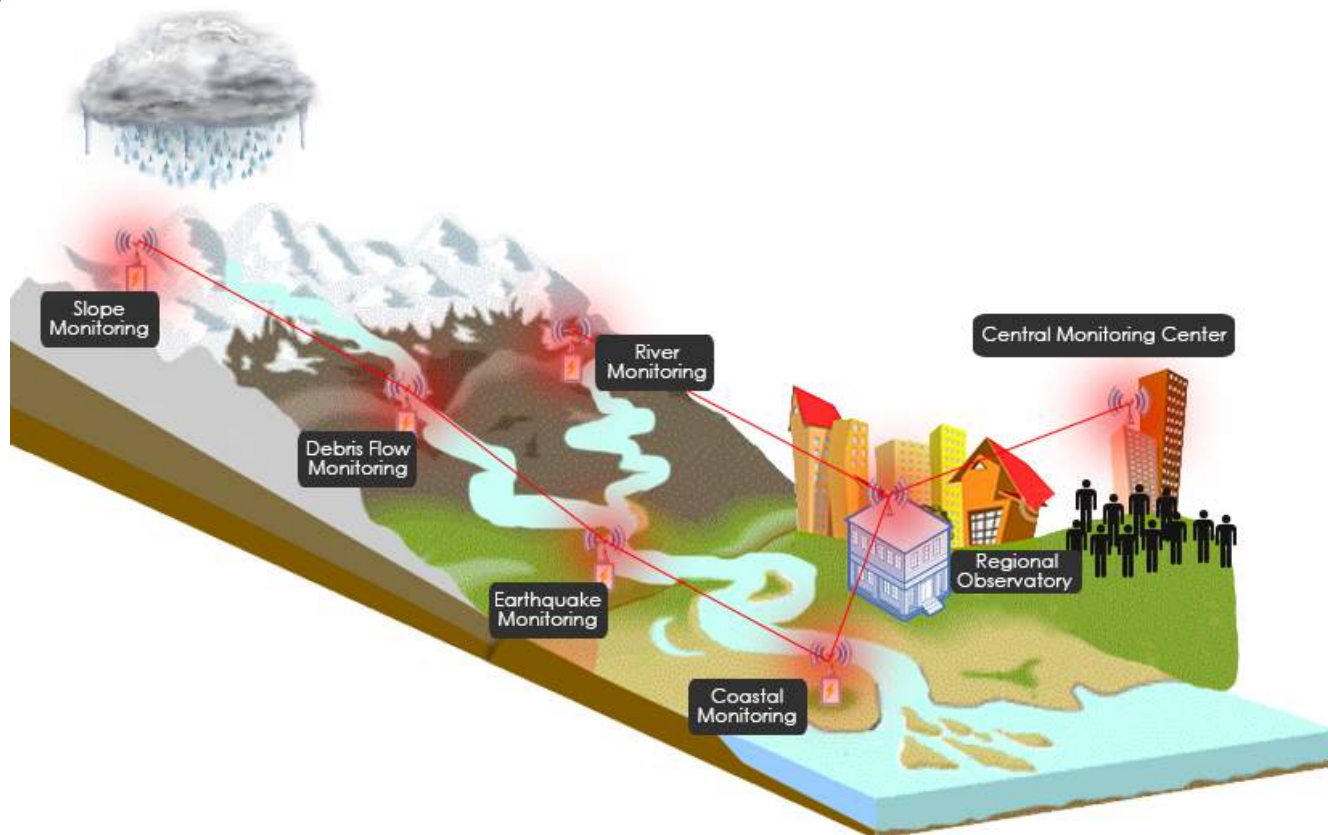
- Smart Security & Disaster Prevention





# Taiwan Smart City Applications

- Smart Security & Disaster Prevention





# Taiwan Smart City Applications



- Smart Security & Disaster Prevention
  - Natural Disaster Early Warning





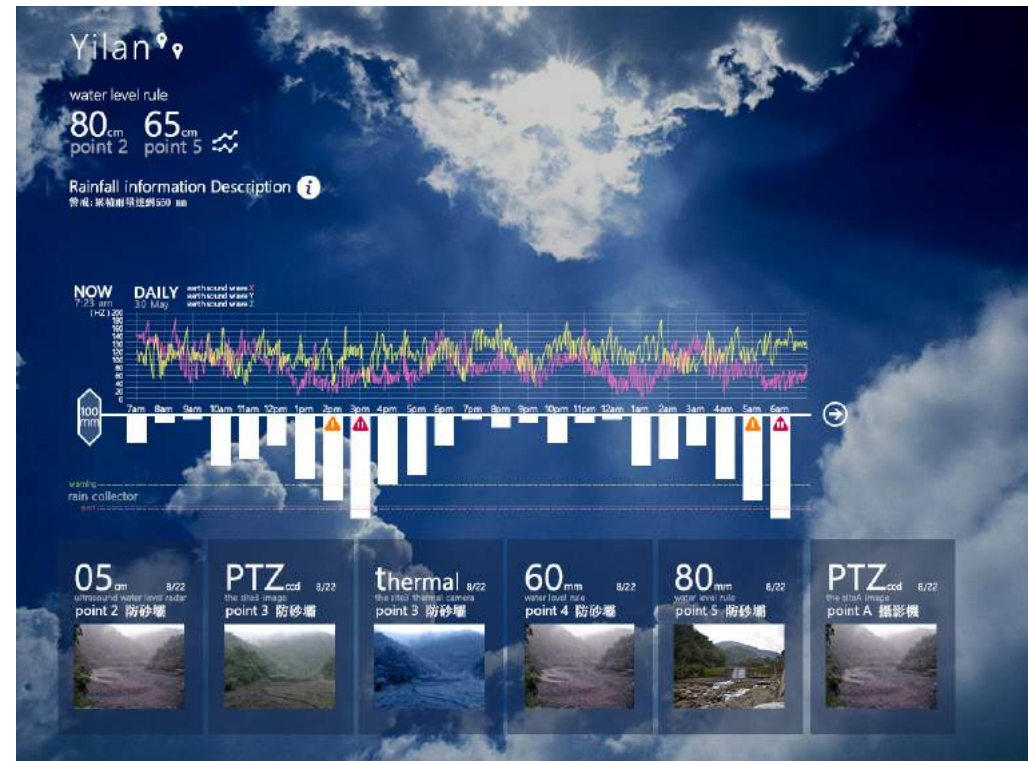


# Taiwan Smart City Applications



- Smart Security & Disaster Prevention
  - Early Warning Water Monitoring & Alert System

## Natural Disaster Early Warning





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# Taiwan Smart City Applications

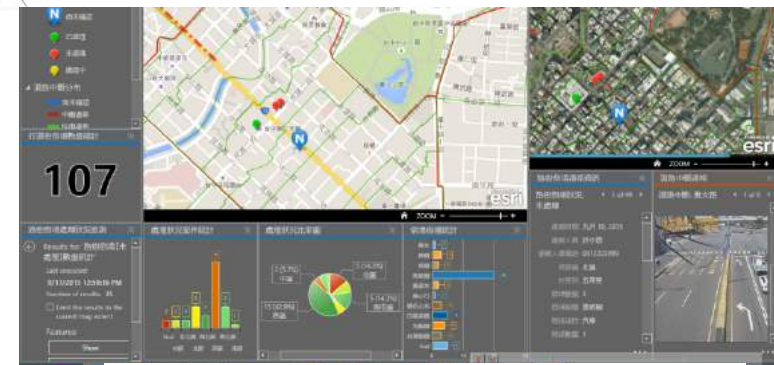


- Residents Benefit online, disable and disaster victim ID, Cloud ID purse
- Smart resident cards: expanding from smart cards for public transportation with additional functions, including IDs, library cards, government fees, social benefits, volunteers, activities, and small amount purchases.



# Taiwan Smart City Applications

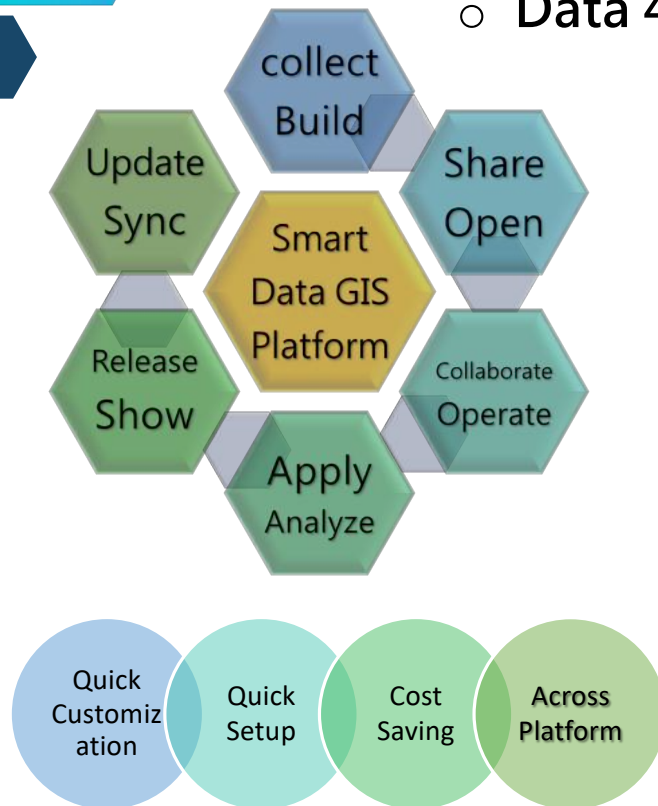
- Smart City Strategic Planning – Nantou County
  - Efficient Data Integration and Sharing GIS Platform





# Taiwan Smart City Applications

- Smart City Strategic Planning – Nantou County
  - Data 4.0: Smart Data GIS Platform





# Taiwan Smart City Applications



- Smart Public Services - New Taipei City

## Core Concept: User-Oriented Services

3O: One government, Open Government, On-Hand Services

## Smart Governance

- One stop data services for high efficient government services
- Vertical and horizontal staff connection
- Covers 35,000 employees in 500 agencies
- Open data services (served 48,050,000 requests)

### New Taipei City eService Counter

#### 105 cross-district services





# Taiwan Smart City Applications



## Smart Public Services - New Taipei City



Policy platform  
Mobile government  
Open data



Digitalized Data

Welfare searching  
platform  
Silver service website

Cross-district service  
ID cloud package  
Cashless payment (Fin-Tech)  
E-counter

Citizen  
Welfare

Customer  
Service



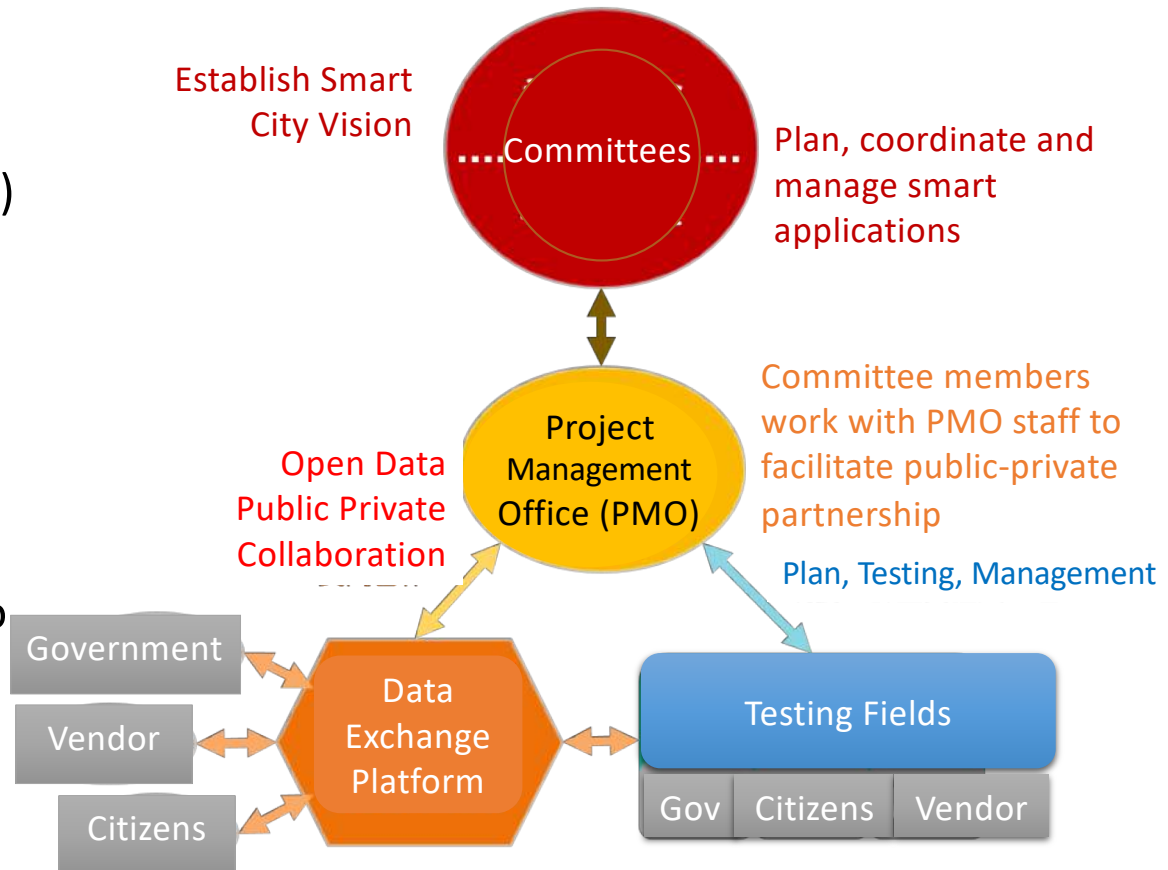




# Taiwan Smart City Applications

## • Smart City Strategic Planning - Taipei City

A project management office (PMO) was established to facilitate **public-private partnership**, to manage the **data exchange platform**, and to plan, test and manage the **testing fields**. A customized **stakeholders participation plan** was developed to facilitate an effective communication of the action plans among stakeholders.





# Taiwan Smart City Applications



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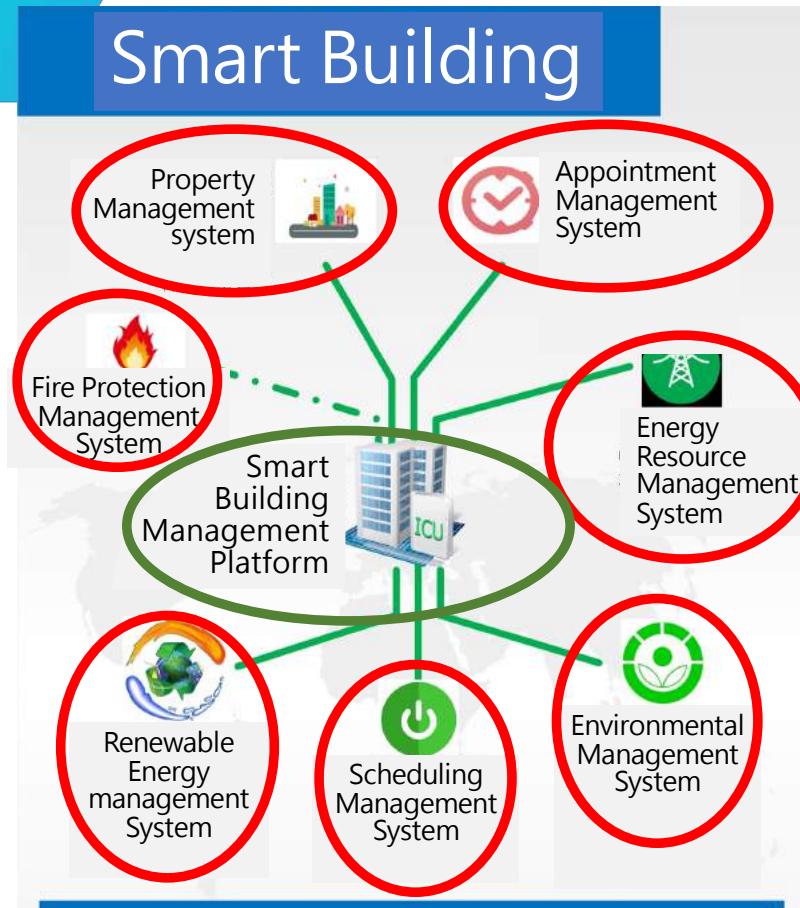
1. Smart transportation,
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7. smart innovation.



- Smart energy platform for parking lots, industry zones, and large communities.
- Smart Community Development Planning Guideline emphasizes the installation of smart meters (water, electricity, gas) and smart energy management system.
- Building Information Modeling (BIM) licensing.



# Taiwan Smart City Applications



**Smart Building Management Platform** includes seven smart systems:

- 1) **Property Management system**: access control management, parking management, safety management, property personnel management;
- 2) **Appointment Management System**: conference room management, classroom management system, air conditioning billing management, space management system, rental management, dormitory management;
- 3) **Energy Resource Management System**: power management, energy resource management;
- 4) **Environmental Management System**: temperature and humidity monitoring system, air quality monitoring system, air conditioning control system, production management;
- 5) **Renewable Energy management System**: solar power management, wind power management, rainwater recovery management;
- 6) **Fire Protection Management System**.





# Taiwan Smart City Applications



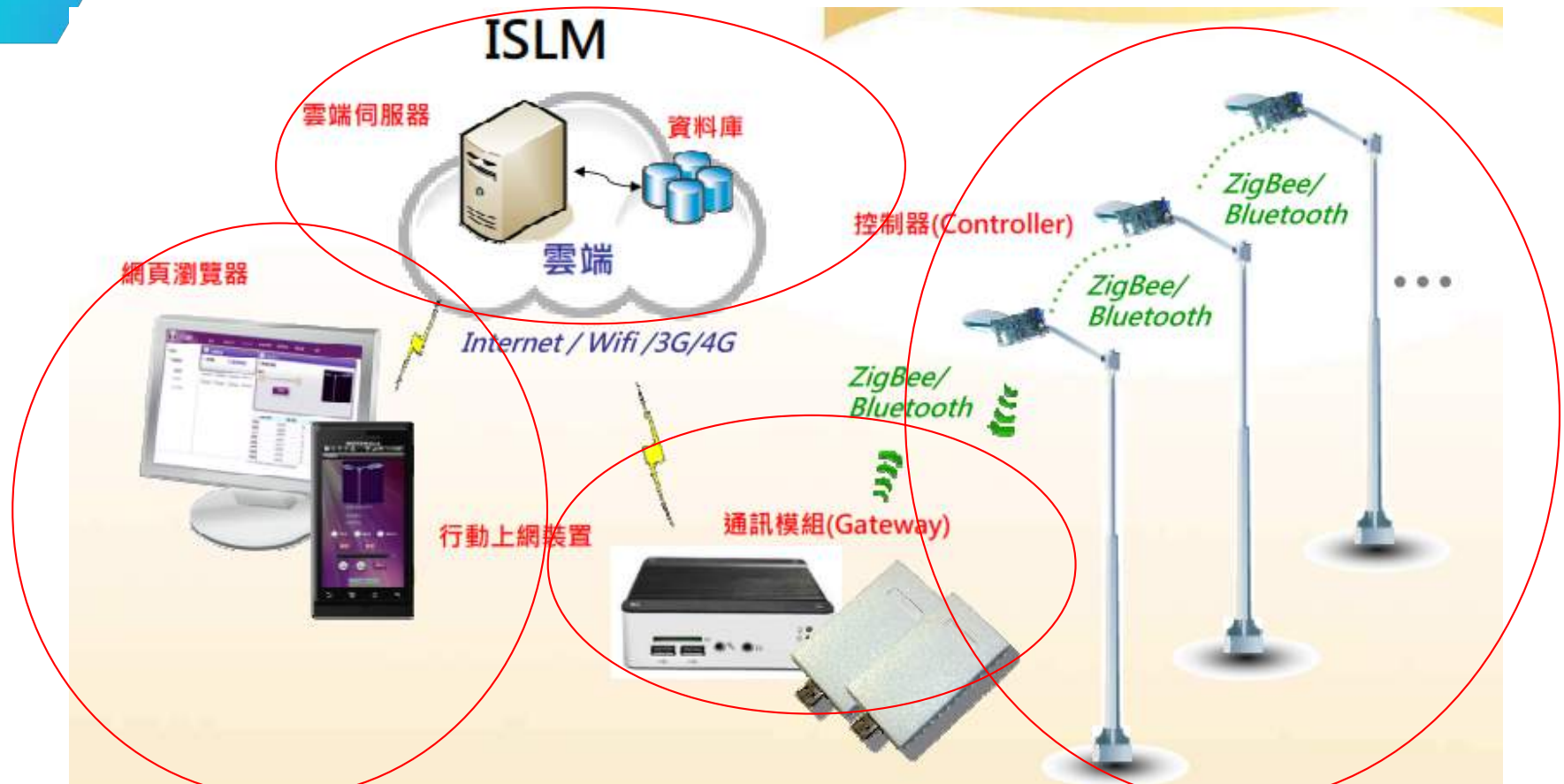
Through **real-time monitoring, effective management, information records, and strategic planning**, the school/property management team will be able to effectively

- monitor energy consumption,
- control waste,
- replace inefficient energy equipment,
- introduce energy-saving practices and equipment, and
- deploy renewable energy systems.



# Taiwan Smart City Applications

- Smart Street Lighting System Architecture



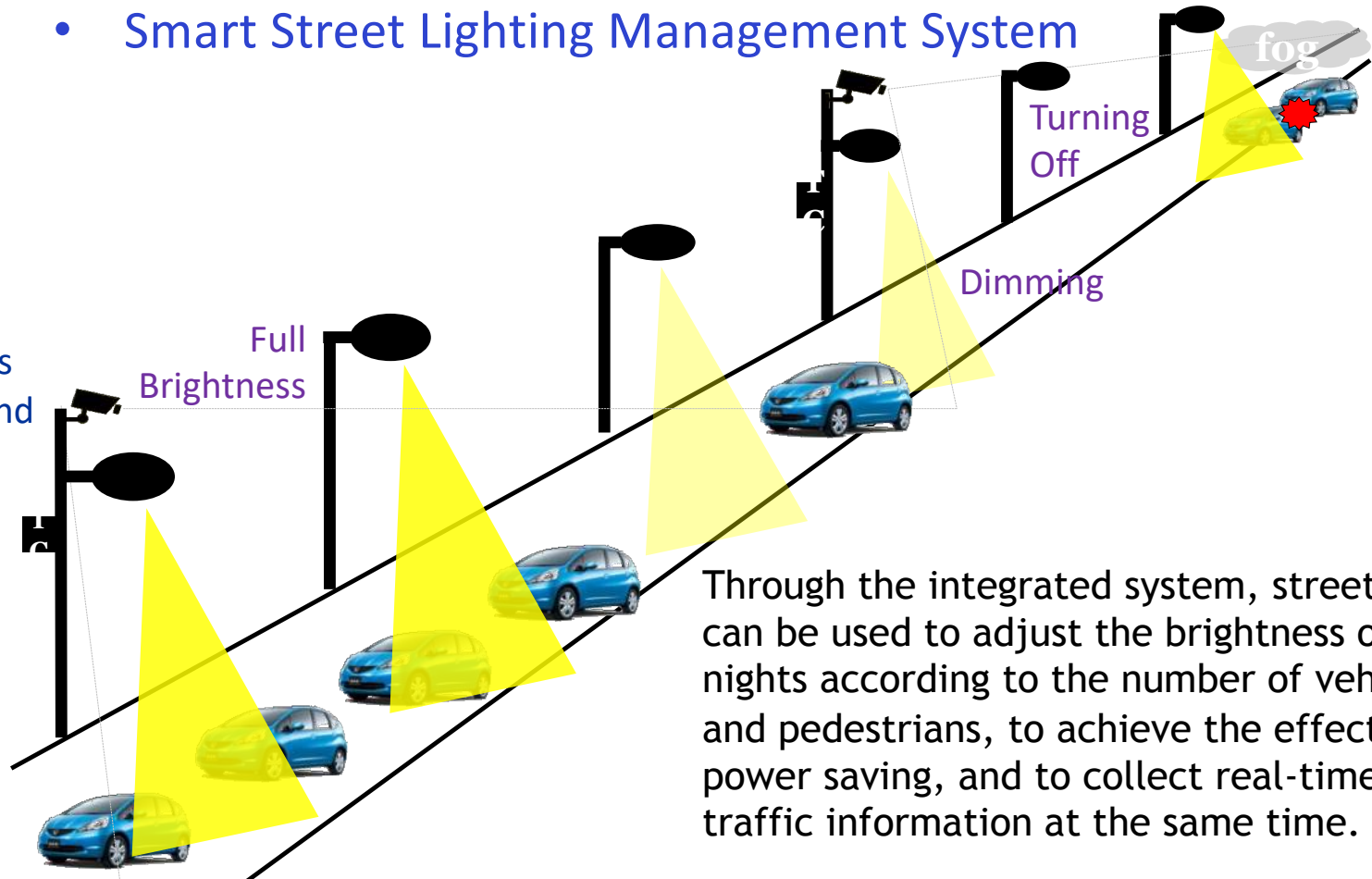


# Taiwan Smart City Applications



- Smart Street Lighting Management System

Detecting changes in different environments (visibility, accidents) and road congestion (vehicles, number of people) using a video camera, with dimmable LED lights to adjust brightness and power consumption



Through the integrated system, street lights can be used to adjust the brightness of nights according to the number of vehicles and pedestrians, to achieve the effect of power saving, and to collect real-time traffic information at the same time.





# Taiwan Smart City Applications



- Smart Street Lighting with COBLED

Low temperature, low light failure, and long life span.

Customized, the best light distribution curve design.

Unique LED package and chip bonding technology

Simple mechanism, less failure, durable, IP68

**Protection class**, Competitive installation and maintenance costs, improve investment efficiency

Brightness smart control



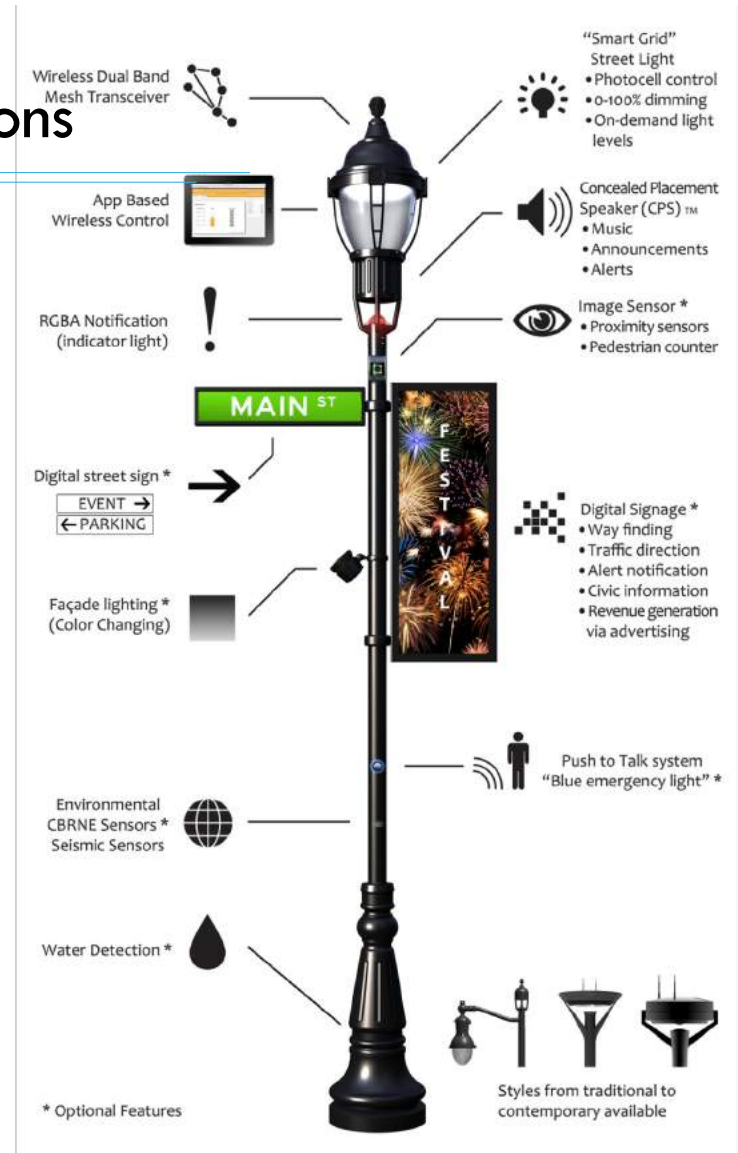


# Taiwan Smart City Applications

## • Smart Street Lighting

**The first stage:** Smart street lighting can start from regulating street lighting by regulating objective **energy efficiency**, using such as time, weather, and traffic conditions.

**Phase II:** Smart LED Street Lighting Applications **IoT + AI Technologies** Equipped with sensors, gateways, edge computers, and networks to connect all cities, **collect and analyze real-time information**, provide citizens with **smart services**, and **improve the quality of life** in cities.





# Taiwan Smart City Applications



- Travel 4.0: Smart Travel

## Smart Shopping District

Mainly in conjunction with consumer information and services, and online community, through IOT infrastructure, provides interactive and personalized services. Vendors take advantage of available data of customer shopping behavior and preferences.

The construction of a smart business district focuses on business services, audio and video contents, and smart networking (IoT).

### A win-win-win solution.

Beacon sensor, IoT, O2O, mobile payment, cloud services, SMS (Short Message Service), mobile APP, AR (Augmented Reality), gamification.

## Smart Travel APP

Integration of all food, clothing, lodging, transportation, attractions travel, entertainment, and shopping in one-stop service for visitors. **A win-win-win solution.**

The big data generated by this service can make businesses more aware of the tourist spending and travel behavior.

For Tourists: can get high quality services and products with discounts and experience a relax travel.

For government: can make more customized tourism policies to better respond visitors' needs.

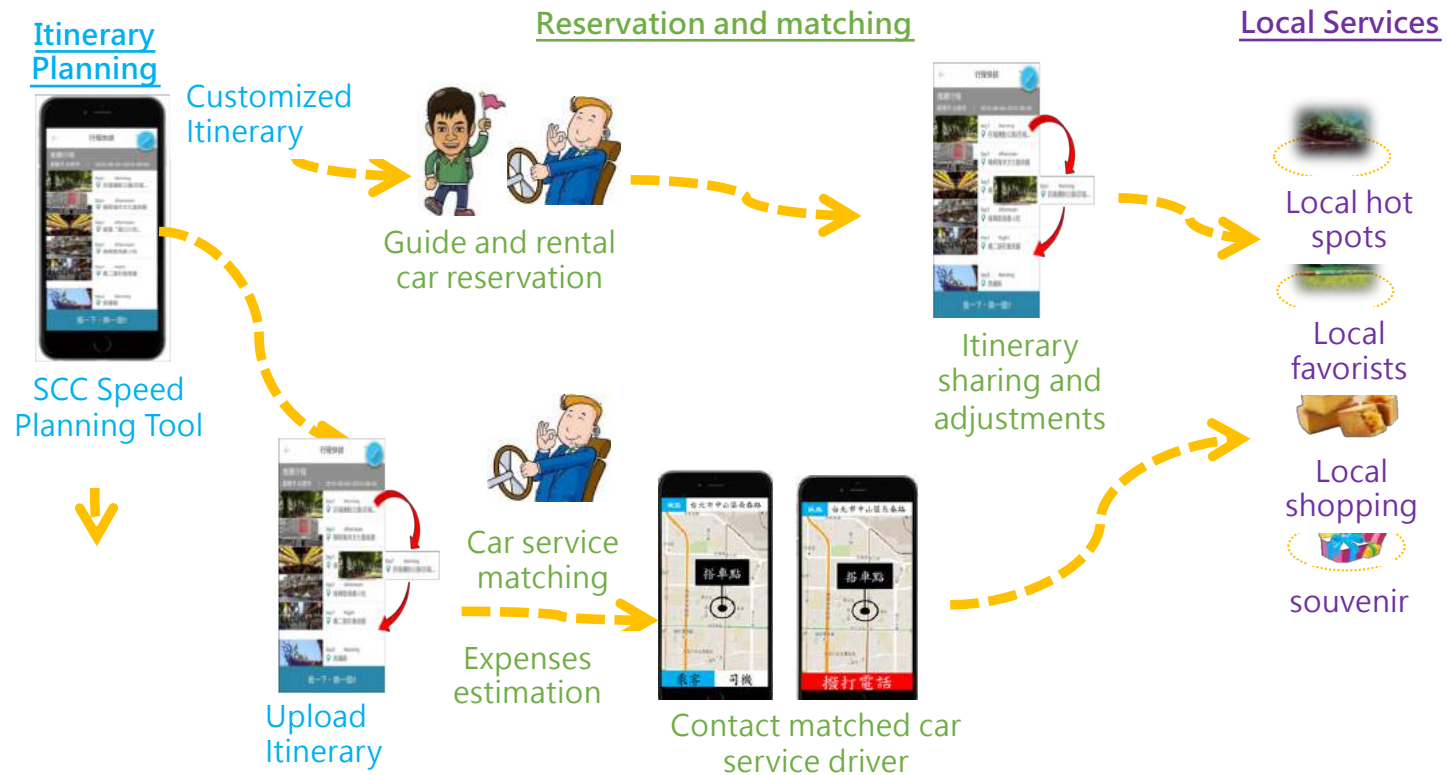




# Taiwan Smart City Applications



- Travel 4.0: Smart Travel





# Taiwan Smart City Applications



- Travel 4.0: Smart Travel

Transform travel into a smart, relax, and comfortable life time experience.



Provide real time weather, transportation, lodging, food and Tourist attractions.

On the road



On the beach



Thank You

*Embrace Healthier Life,  
Build Livable Community*

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