

A night-time photograph of the Seattle skyline, with the Space Needle prominently featured on the left. The city lights are glowing against a dark blue sky. In the foreground, there are decorative red geometric shapes (circles, triangles, squares) and a faint network diagram overlay.

Internet2 CINC UP Webinar: Smart Campus & Cities Working Group

Presented by: Greta Knappenberger
Director of Smart Cities, iSoftStone North America

Agenda



1

**iSoftStone
Overview**

2

**What is a
Smart Campus**

3

**Global Trends &
Developments**

4

**Features & ICT
Elements**

5

Case Studies



iSOFTSTONE | **SMARTCITIES**

Our Vision

To leverage technology to create safe, sustainable, and prosperous communities for all residents.

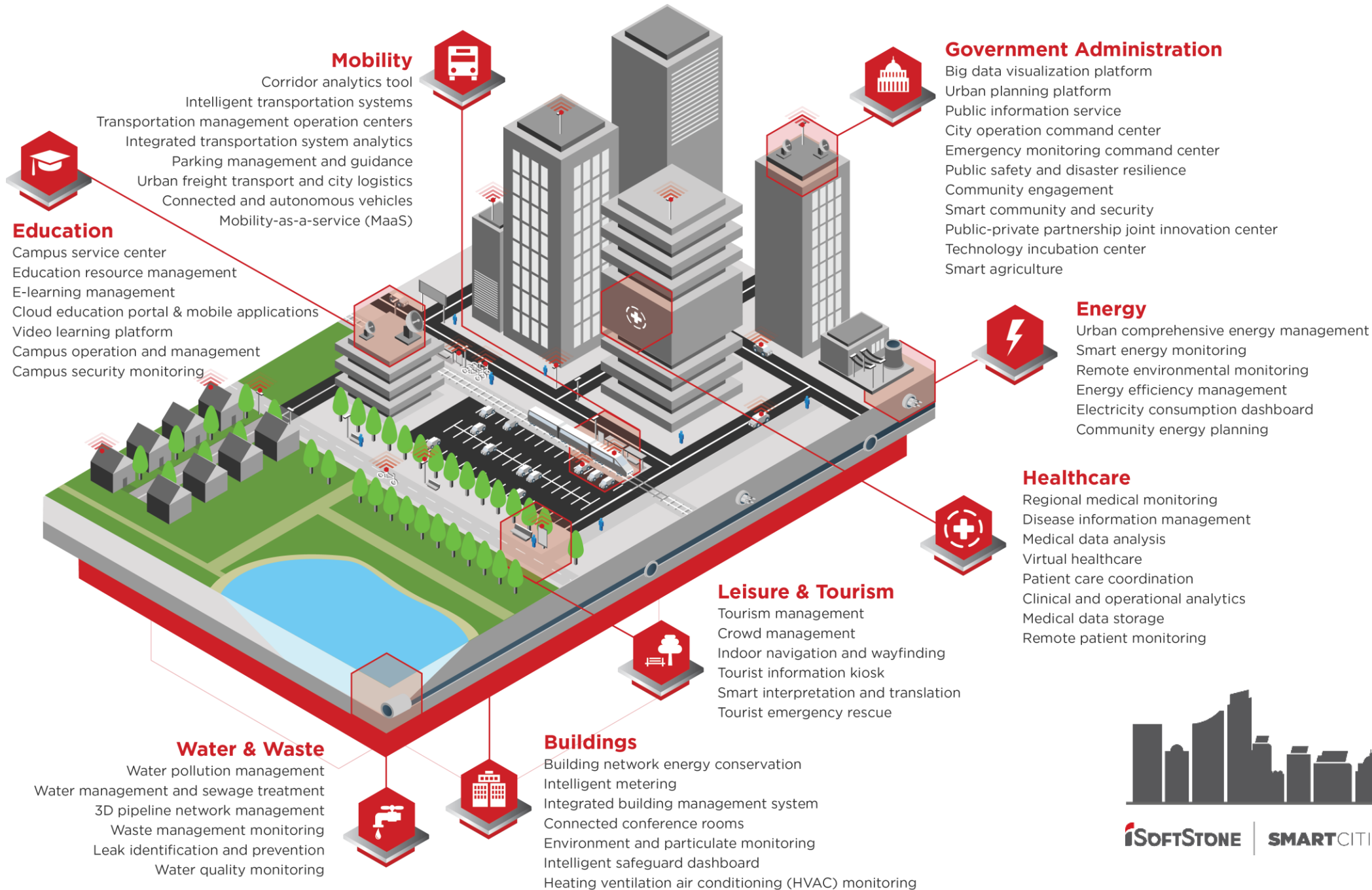
Our Mission

To create value for our communities by implementing innovative technologies and solutions.

Core Values

Quality, innovation, openness, learning, value creation





“Behind every smart city is a smart university”

– Dr Simon Eassom, IBM



What is a Smart Campus?

Transforming digital campuses into smart ones

A Smart Campus leverages data to improve student success, experience and campus operations.

-Florence Hudson, Internet2



Characteristics of a smart campus include:

- Integration of Information Technology
- Operational technology to better inform decision making in each domain and across the campus
- Cross-campus collaboration with multiple stakeholder partnerships.





Smart Universities Use Technology

... and informatics to improve the efficiency of services in order to:

- **enhance** quality, performance and interactivity of campus services
- **reduce** costs and resource consumption
- **enable** unified decision-making across campus operations
- **optimize** service quality and overall satisfaction of students, faculty and staff.

This is the potential future for every campus, university and school.....



Emerging Trends & Developments

The path to becoming "Smart"

Digital Transformation the “smart” trend of future



1. Traditional (~1998)

- Paper
- Manual Process
- PC

2. Electronic (~2006)

- Paper
- Manual Process
- Electronic Teaching
- LAN

3. Digital (~2009)

- ICT Planning by Department
- Separate Applications
- Internet/IPV4
- Data Center
- Broadband Network

4. Smart (~2010 and beyond)

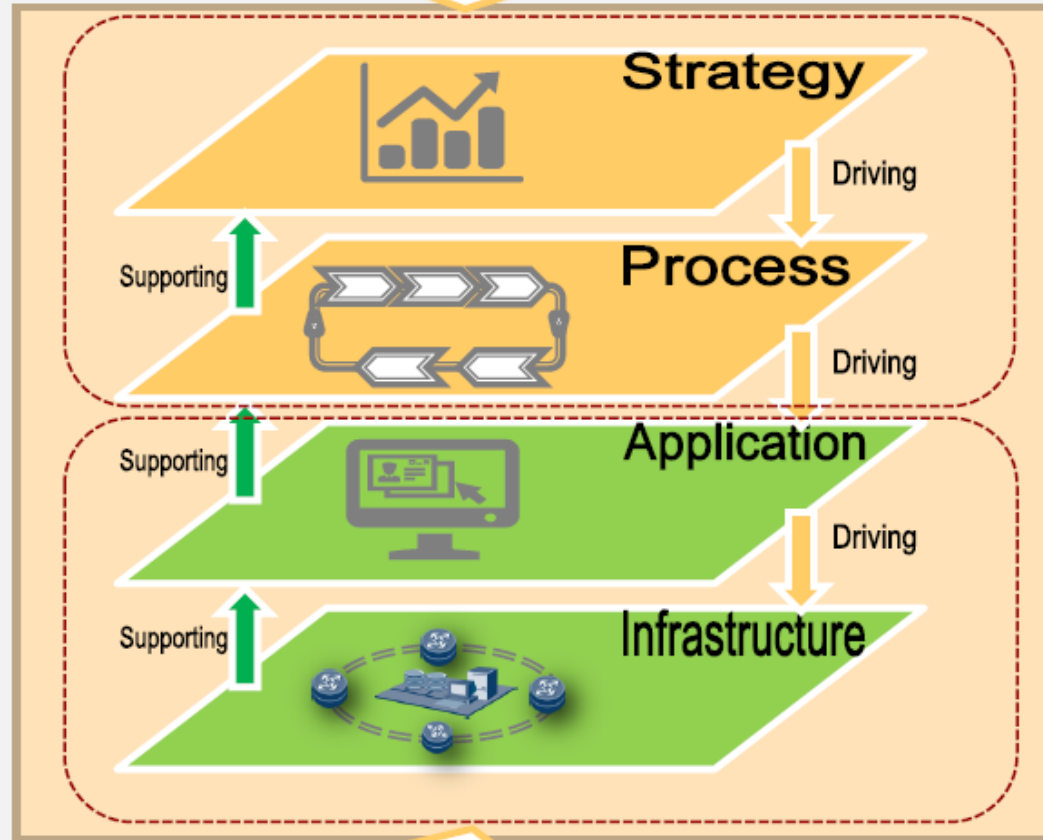
- ICT Planning by School
- Smart teaching & research
- Smart school management
- Cloud Computing
- Internet of Things
- Ubiquitous wireless
- IPV4/IPV6
- Smart Grid
- Smart Buildings
- Distributed Data & Analytics
- Connected Vehicles
- CyberSecurity
-and much more....



Digital vs Smart Campus



Smart Campus Consideration!



Digital Campus Consideration!

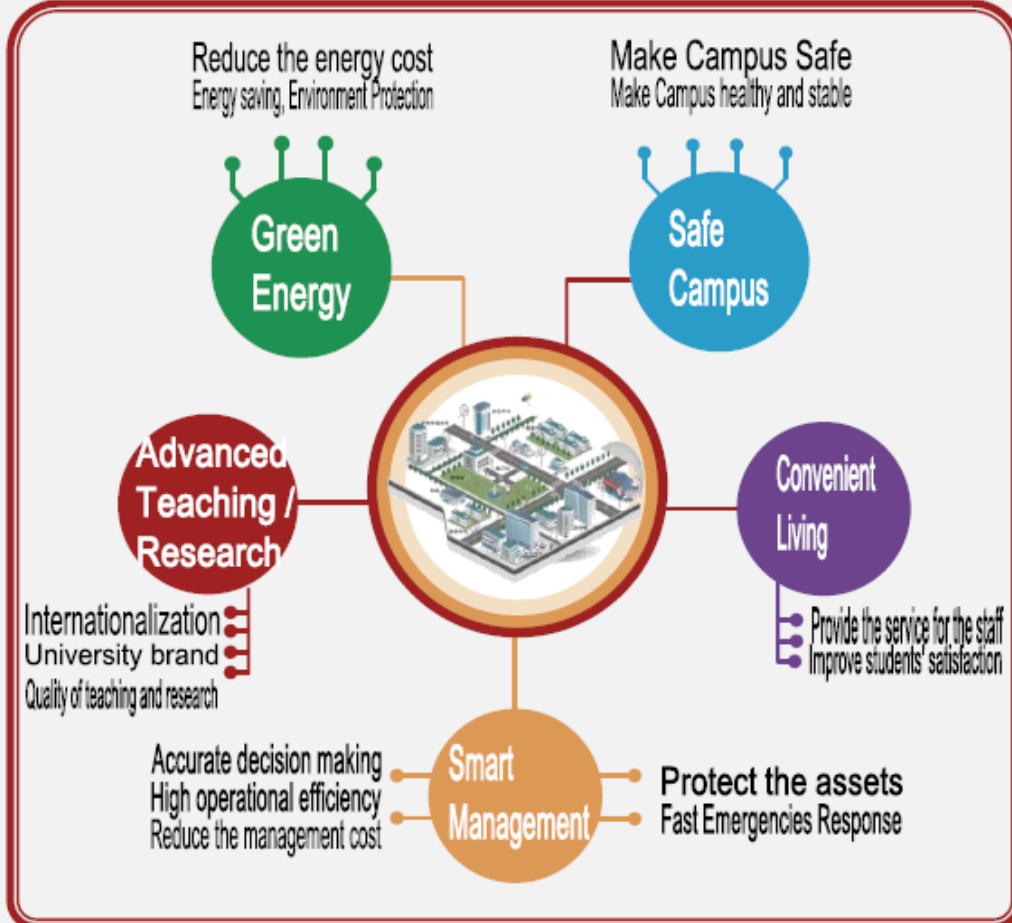
Digital Campus	Smart Campus
Management-Based	Service-Based
Department Level	School Level
Passive Supporting	Active Optimization

Courtesy of Huawei Enterprise

Features and ICT elements of Smart University



Features of Smart University

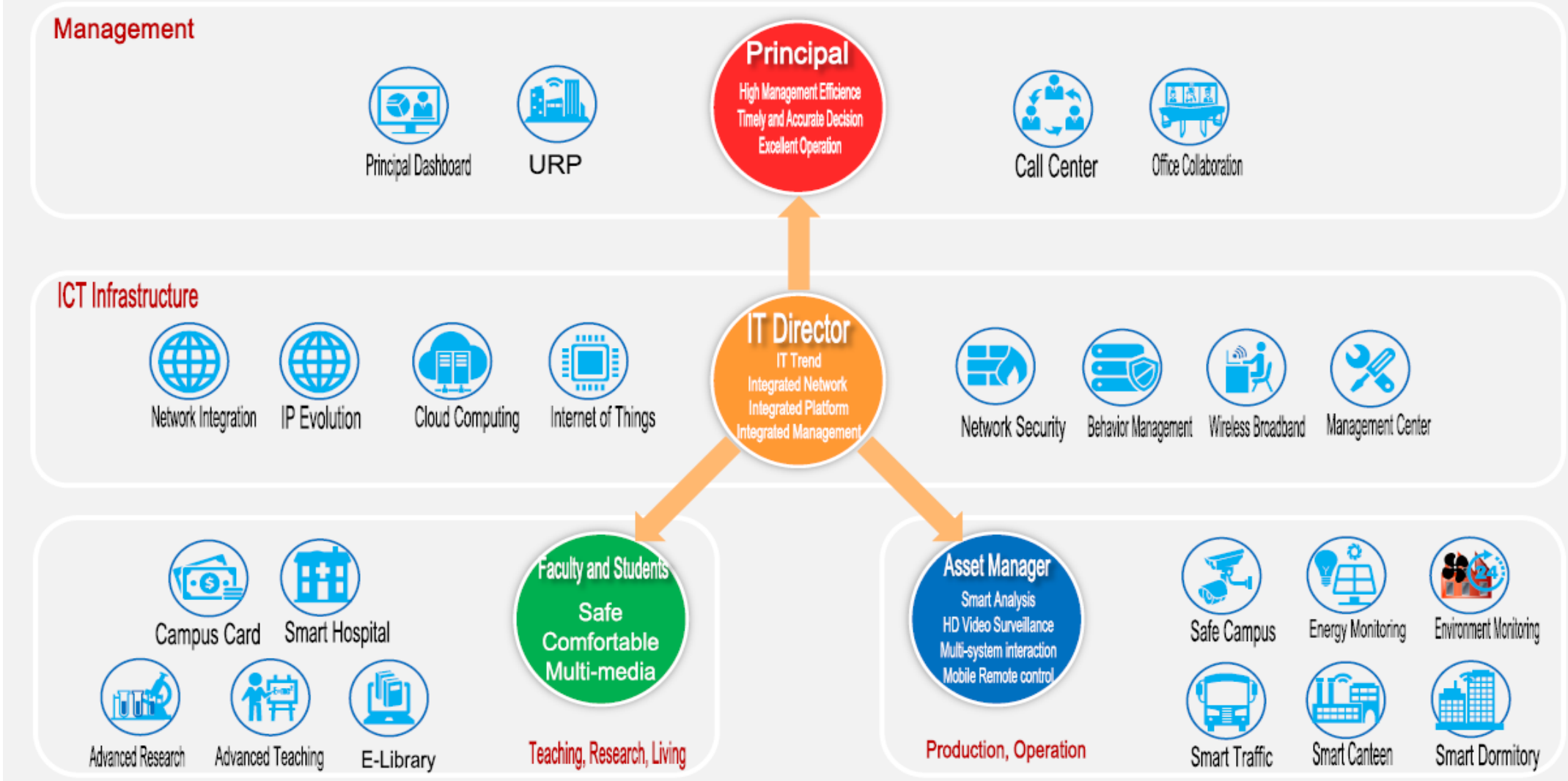


ICT elements of Smart University



Courtesy of Huawei Enterprise

Smart Elements of Smart University



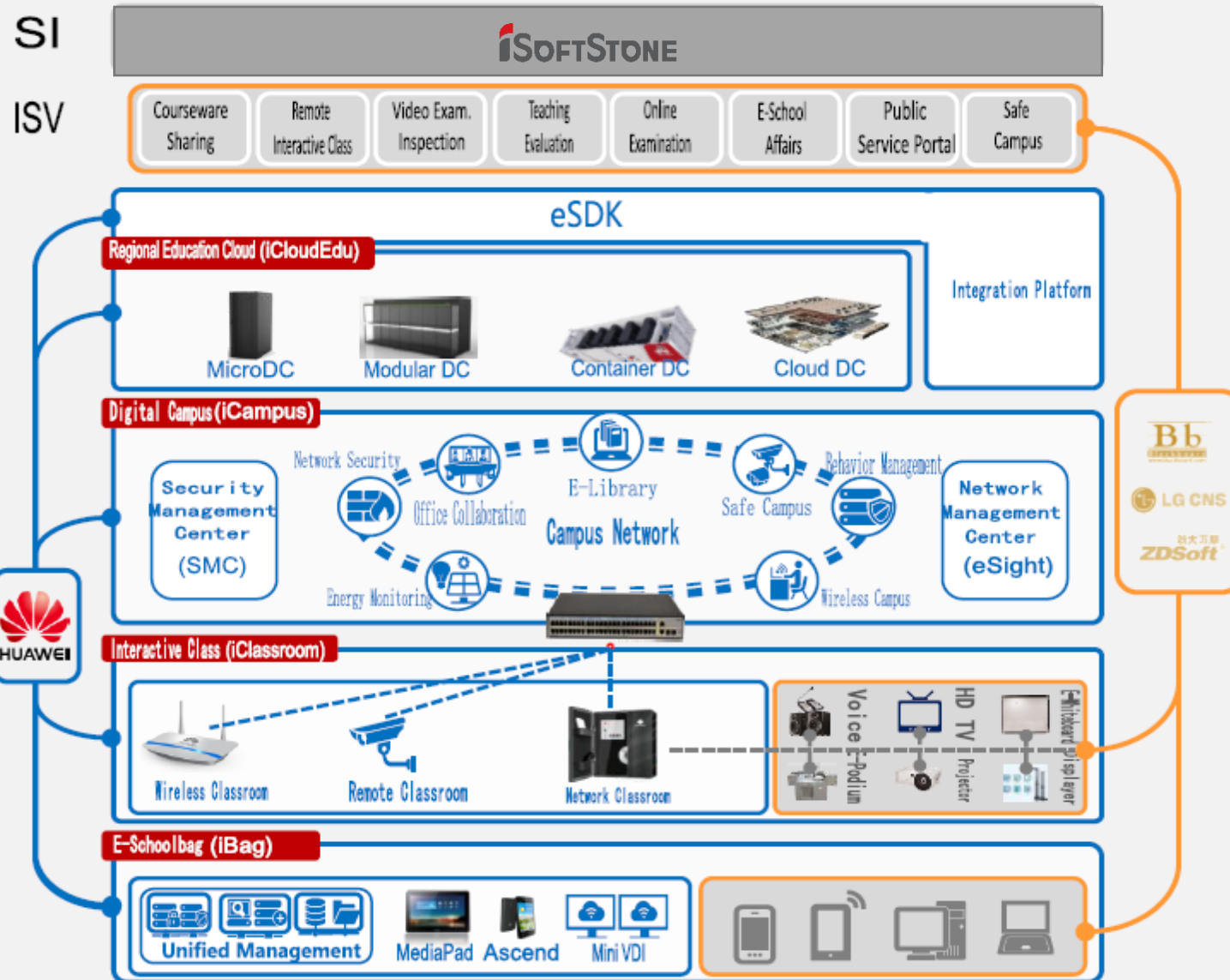
Courtesy of Huawei Enterprise



Smart Solutions

Navigating Real-World Smart Campus Applications

Partnering is Key!



Smart Campus Examples

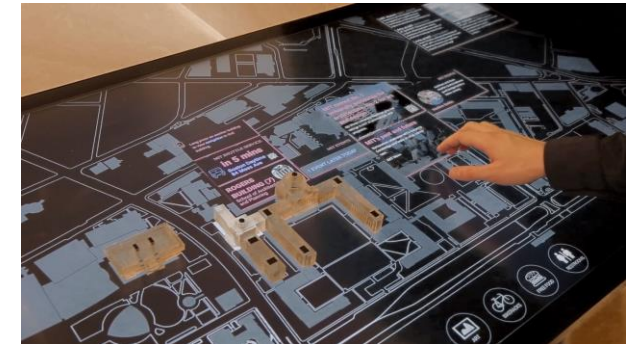


Guangzhou Education Information Center

Melbourne Australia, Huawei Yangmei dormitory, Shenzhen

Tsinghua University, Pingshan, Hefei City

MIT Atlas Center



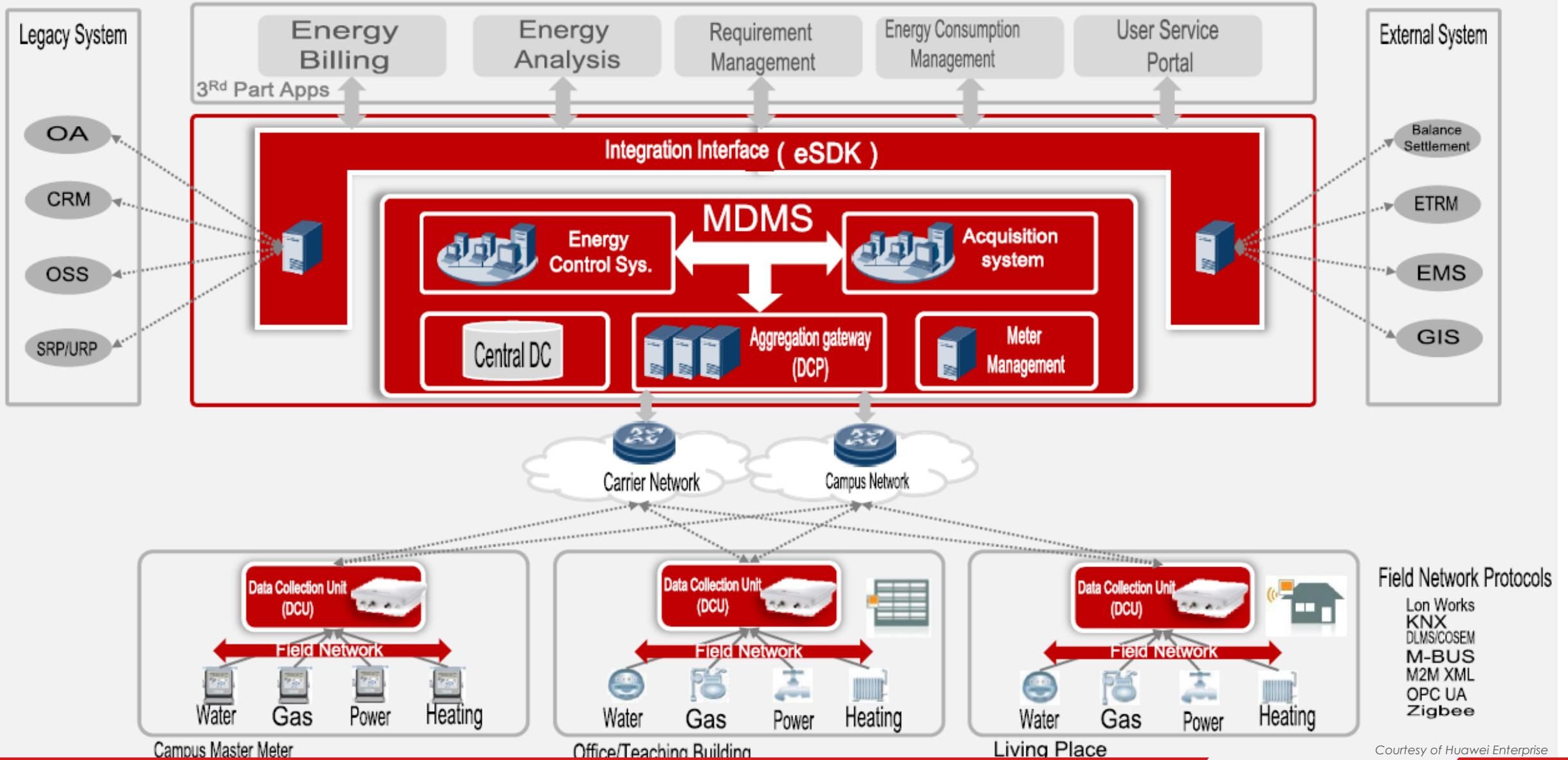
Based on **digital technology**, Lead the traditional classroom to the future.

Based on **agile network** to achieve efficient energy conservation in buildings

The **networked, intelligent and visualized** solution secures a safe campus with smart management of the persons, vehicles and events, and networked and intelligent systems.


With an interactive media-wall, touch-sensitive **3D Campus Map**, digital kiosks, and app-integration

Smart Energy Overview




Smart Energy Benefits

Key areas monitoring




● Real-time monitoring
● Monitoring over equipment operation
● Real-time control energy consumption
● The critical event log




● To monitor the energy consumption
● Identification of abnormal energy consumption

Key load monitoring




● Real-time load monitoring of energy consumption
● Analysis of dynamic load energy consumption
● Load management control
● Fine power management




● Energy monitoring of key equipment in Campus
● Electric power data supporting at peak period

Energy warning system



● Predefine energy warning value
● Automatic warning
● Integrate with OA, eSpace



● Obtain the latest status about the energy excessive consumption
● Timely adjust the energy consumption structure
● Enhance energy management efficiency



Scenario

- Mainly used in the classroom, office space, data center;
- Areas without the accurate statistics of energy consumption.
- Low unit informationization about the energy consumption
- Unable to identify abnormal energy consumption

Solution

Achieve green energy through energy consumption monitoring and energy efficiency management over the key equipment in key areas in campus based on AMI and data network.

Customer Value

- Master the energy consumption, and improve energy efficiency
- Effectively achieve energy conservation, and lower operating costs
- Identify abnormal energy consumption, and improve energy management

Lessons Learned



62.5% reduction in the power required

Looking Ahead



THANK YOU



Internet2 CINC UP Webinar: Smart Campus & Cities WG

Jonathan Fink

Portland State University, Professor of Geology

University of British Columbia, Visiting Professor of Urban Analytics

Arizona State University, Emeritus Professor of Earth & Space Exploration

October 27, 2017

Smart campuses ideal testbeds for smart cities

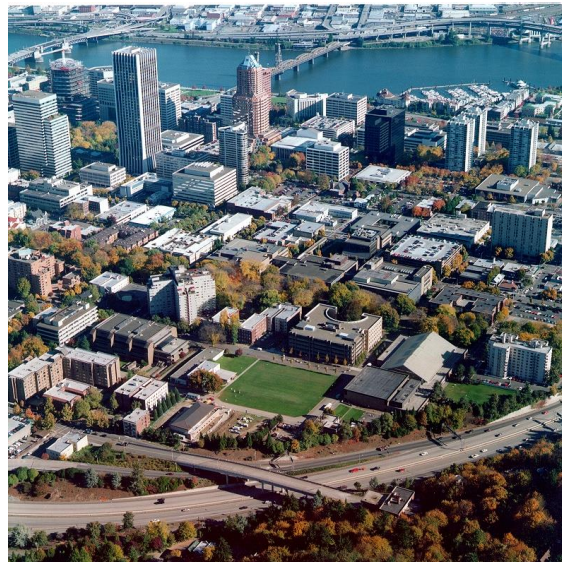
- Cities incorporate smart technology to improve services, reduce costs, reduce environmental impacts, improve equity outcomes
- Governance and privacy issues slow the testing of new tech in cities
- Campuses have single owners and a variety of boundary conditions
- Universities generate and have access to latest technologies
- Powerful partnerships possible between cities and universities
- Networks of cities and campuses accelerate adoption of innovations
- Campuses benefit from corporate and startup partnerships

Examples from three campuses in three cities

- Arizona State University (ASU) in Tempe, AZ
- Portland State University (PSU) in Portland, OR
- University of British Columbia (UBC) in Vancouver BC



ASU



PSU



UBC

Tempe one of four ASU campuses in Phoenix

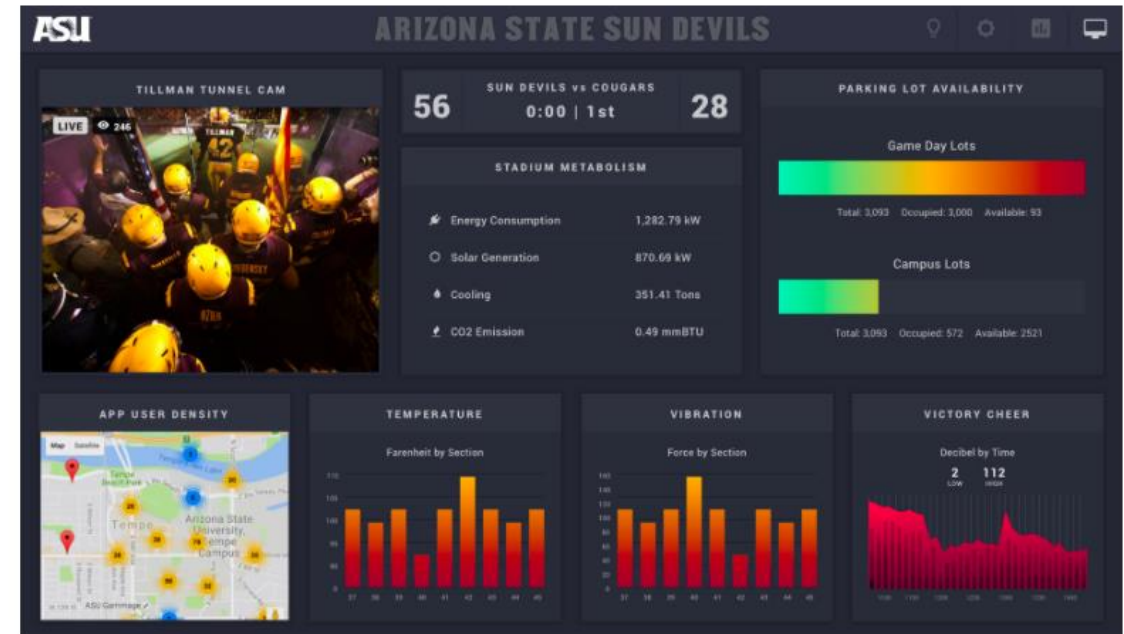


- US News: Most innovative university
- Most populous campus in US
- 1st School of Sustainability
- Top solar campus in US
- Smart Sun Devil Stadium project
- IT Office partners with Campus Ops
- Companies want access to ASU's scale

ASU smart campus technology



ASU wins Best Game Day Technology Experience honor



- IOT gives “Best Game Day Experience”
- Includes smart parking, smart noise meter, smart suite experiences
- Amazon-ASU Alexa voice-tech partnership

PSU campus in downtown Portland



- US News: Top 10 Most Innovative
- Most diverse university in Oregon
- \$1.5M (EDA) to meter HVAC systems
- District heating and cooling loop
- Digital energy dashboards
- Outreach/analysis in visualization lab
- Campus major multimodal transit hub
- Led “data science collaboratory” with all four Oregon research universities
- At PSU, “Green” leads “Smart”

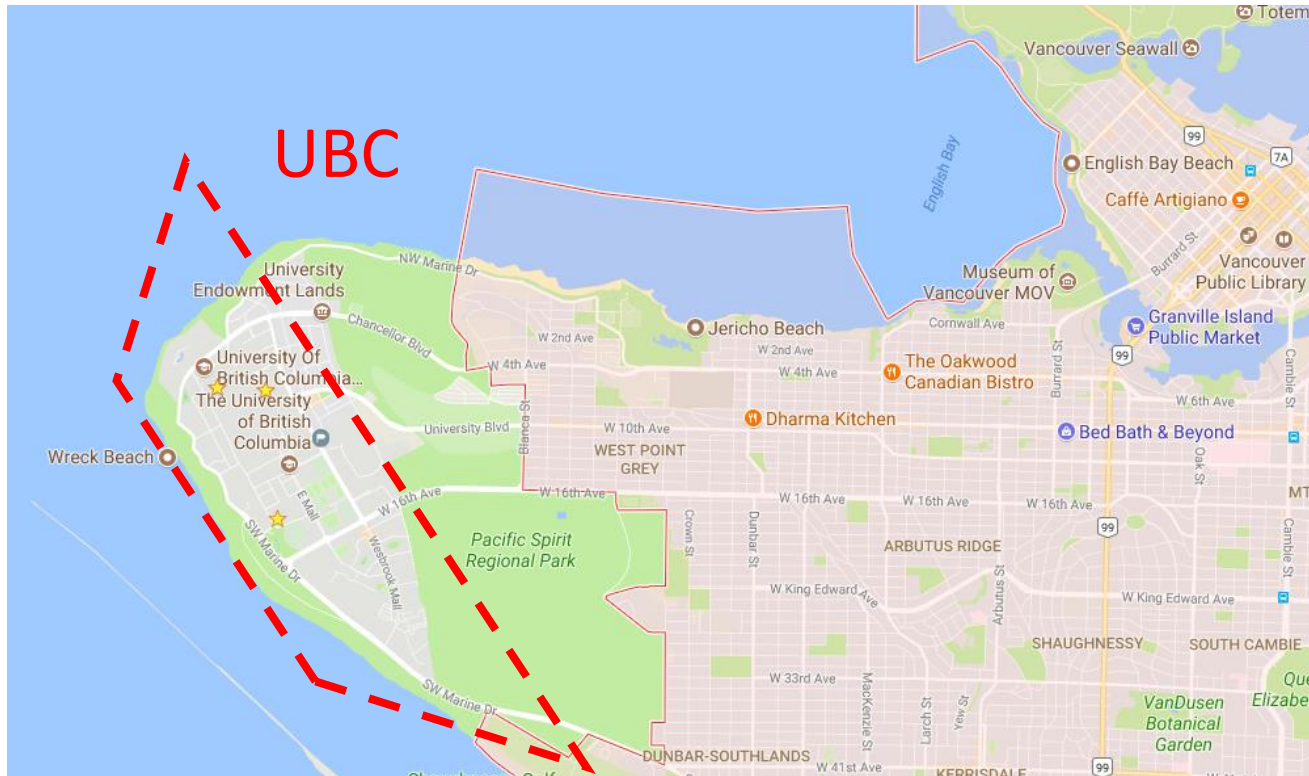


PSU's Electric Avenue



- Electric Avenue partnership w/PGE, PDX
- Multiple charging types and companies
- First multiple public charging site in PDX
- 4-yr pilot made permanent by PGE
- Usage data informed EV policy

Separated urban UBC Campus is ideal testbed



- Centre for Interactive Research on Sustainability (CIRS)
- Comprehensive list of onsite sustainable technologies: rainwater harvest, solar energy, digital lighting, geothermal, green roof, wastewater treatment, living wall
- Close collaboration between IT and Operations
- “Green” now becoming “Smart”

Opportunities for leverage

- MetroLab Network (city-university pairs) spreads new understanding
- Can AASHE make their STAR system easier to use and understand?
- NIST's Global Cities Team Challenge (GCTC) links with companies
- World Bank's World Council on City Data (WCCD) & ISO 37120
- International Sustainable Campus Network (ISCN)

Campus/Community Implications of Last Mile Transit

Wilfred Pinfold CEO, Urban.Systems Inc.

Agenda

- Why Last Mile
- Connected: Convenience
- Electric Vehicles: Sustainable
- Autonomous Vehicles: Safe
- Community
- Density -> Walkability

Transit Hub: Focus on Cars



Transit Hub: Focus on Community



Connected: Convenience



www.openbikeinitiative.org

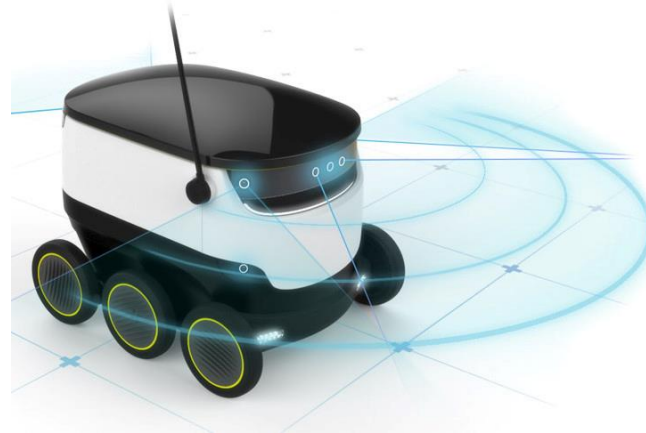
OpenSidewalks



Electric Vehicles: Sustainability



Autonomous Vehicles: Safety & Equity



Community Opportunities

Campus

- National Institute of Health
- Hong Kong Science Park
- OMSI Campus
- NIST



Vacation

- Babcock Ranch TX
- Disney World FL
- Seaside FL

Military Base

- Joint Base Lewis-McChord
- Andrews Air Force Base
- Aberdeen Proving Ground
- Fort George G. Meade



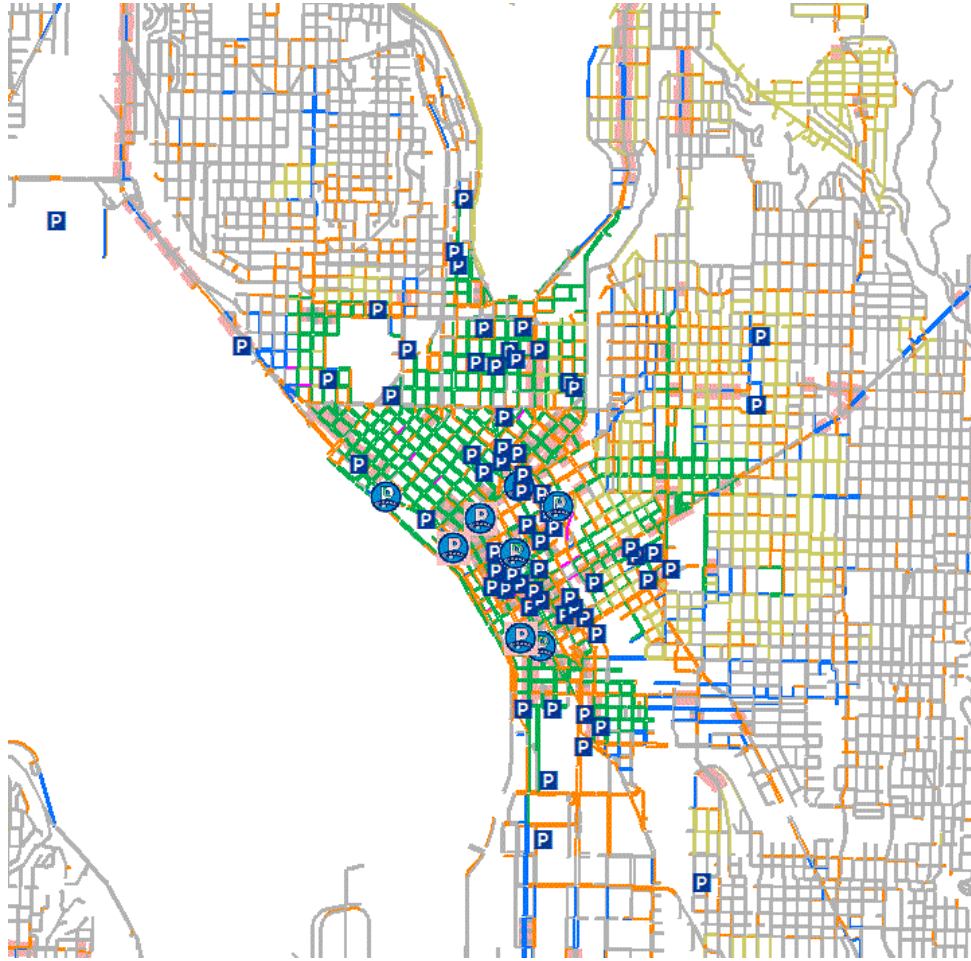
City

- Columbus OH
- Portland OR
- Baltimore MD
- Washington DC

Before and After



Claim Back Parking Space



Call To Action

- Walkable Campus with Low Speed Options
- Provide Door to Door Options for all Students, Staff and Visitors
- Sustainable Options are also Healthy Options
- Autonomy Improves Safety and Equity
- Re-purpose Parking Space to Community Space