



# Experiencing Smart Cities

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April 25, 2012



Future Cities,  
a History

HUMPING  
STATION  
6



Future Cities,  
Here and Now



Who's City?

# The Social Life of Cities



The way people interact and engage with the city, with their communities and with each other.

The social life of cities is made from the rhythm and patterns of the lives people in cities and communities live in common.

It is about the way they connect, communicate and collaborate for community, commerce and creativity.

Creative dimension

Domestic dimension

Services dimension

Work-life dimension

Governance dimension

# Three Simple Ideas

- User participation – insight, innovation and value (products and services get better the more people use them)
- Open systems and data
- The network effect

*Web 2.0: Principles and Best Practices*, John Musser with Tim O'Reilly Fall, 2006



# Enabling the Participative Web

In the circumstances of:

- Modularity of activity
- Granularity of task
- Low cost integration

“Commons Based Peer Production” provides a more efficient model of economic production versus the Market and Organisational Hierarchy



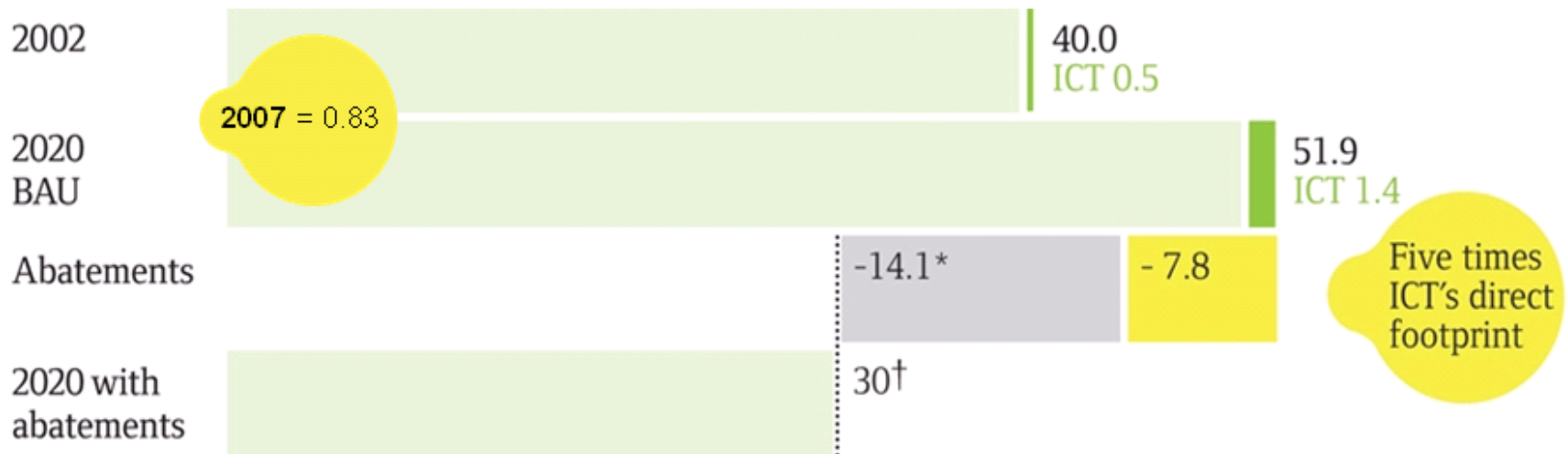
*Coase's Penguin, Linux, and The Nature of the Firm, Yochai Benkler, 2002*

# Smart2020: Key Findings

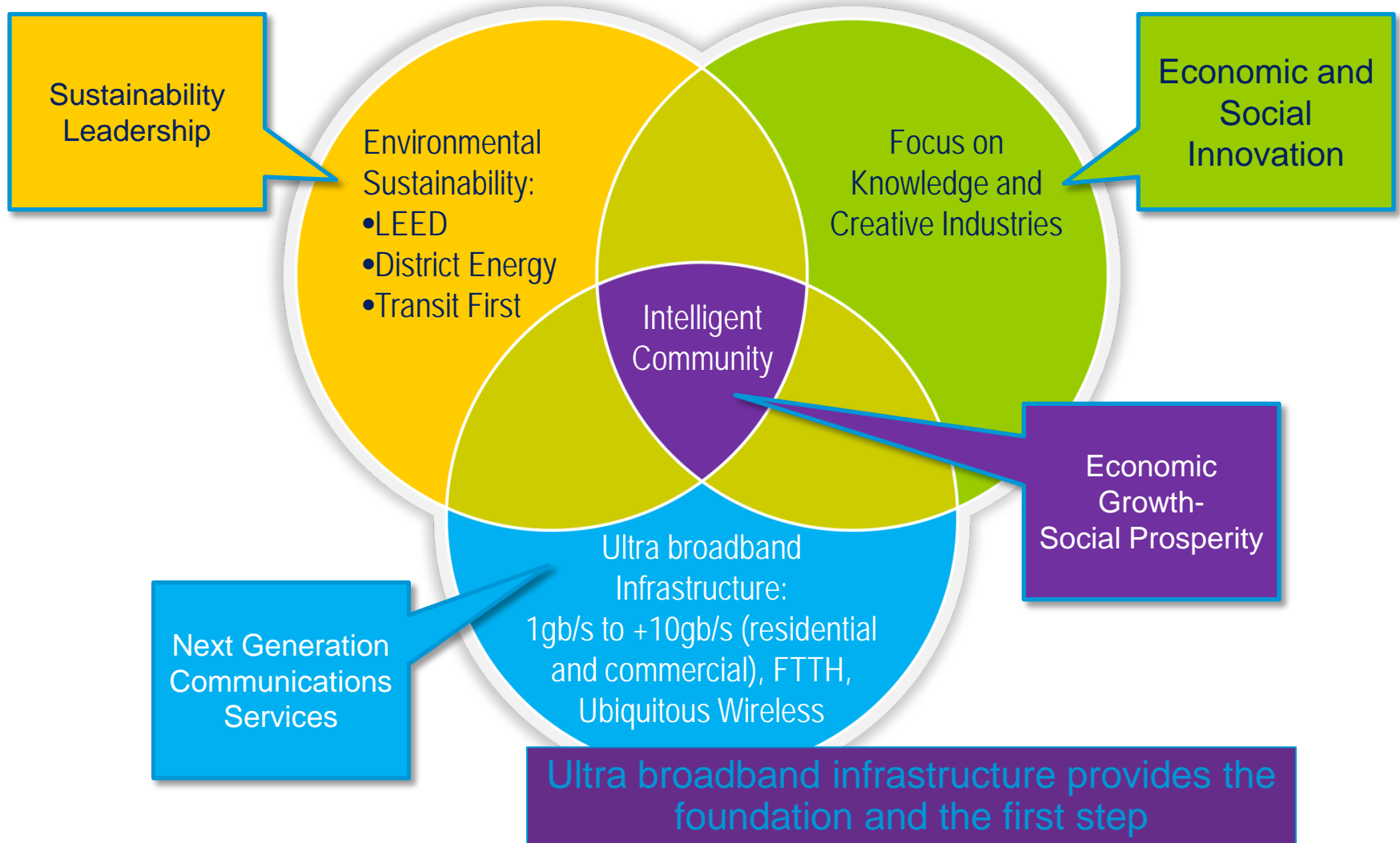
SMART 2020 identified savings of **7.8 Gt CO<sub>2</sub>e** that could be delivered by ICT solutions in 2020 – **FIVE** times the sector's footprint and **15%** of global emissions.

All units are **GtCO<sub>2</sub>e**

- Emissions
- ICT footprint
- Selected ICT-enabled abatements
- Other abatements†



# The 21st Century Intelligent Community





# Data Is The New Currency

91% of Internet data in 2015 will be video  
IBSG, 2011

50 billion connected things, by 2020  
IBSG, 2011

Big Data market: \$3.2 billion in 2010 to \$16.9 billion in 2015. = 40% CAGR (7x ICT market).  
IDC March 2012

By 2020, one-third of data will go through the cloud  
IBSG, 2011

But only 5% of the available digital information is currently being used\*

[http://blogs.cisco.com/wp-content/uploads/internet\\_of\\_things\\_infographic\\_3final.jpg](http://blogs.cisco.com/wp-content/uploads/internet_of_things_infographic_3final.jpg)  
\*The Economist 2010 . Being used means understandable/treatable by a machine

# 5 billion

people will be living in cities in 2020

Buildings use **40%** of world's energy savings and up to 40% of energy savings are not captured today

**Smarter logistics** could yield **27% fuel savings**

Access to public data is estimated to be worth **€27 billion** in the EU

**15%** of emissions can be saved in 2020 through ICT-enabled energy efficiency

ICT-enabled energy efficiency could translate into over

**€600 billion** worth of cost savings for the public and private sector

Smart grid creates **50%** more jobs than the average infrastructure project

South Korea's **Green New Deal** and low carbon strategy create over 500,000 jobs

**Smart grid initiatives** have created over **12,000** jobs in Silicon Valley

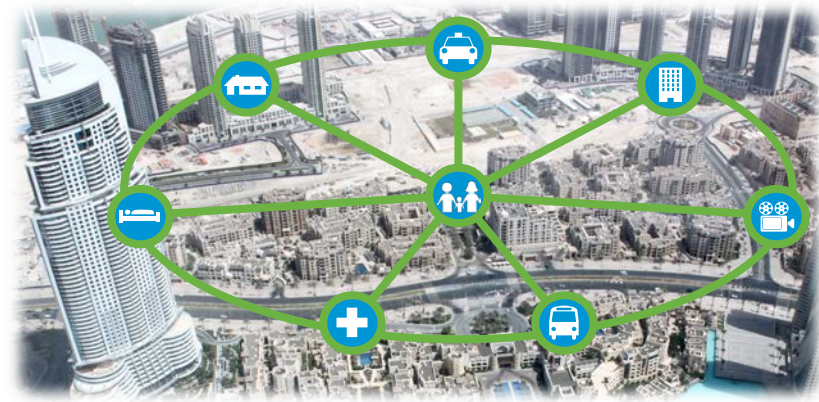
**5 billion** people have mobile phones today

More than **50%** of web connections will be mobile by 2013

<http://www.theclimategroup.org/publications/2011/11/29/information-marketplaces-the-new-economics-of-cities/>  
[http://www.mckinsey.com/Insights/MGI/Research/Technology\\_and\\_Innovation/Big\\_data\\_The\\_next\\_frontier\\_for\\_innovation](http://www.mckinsey.com/Insights/MGI/Research/Technology_and_Innovation/Big_data_The_next_frontier_for_innovation)



# A New Trend In The City



Big Data

Open Public Information

Open Innovation and Peer Production

User-Centered Design

Networked Placemaking

Community and Trust

Issues related to **sustainability** cannot be solved in **isolation**

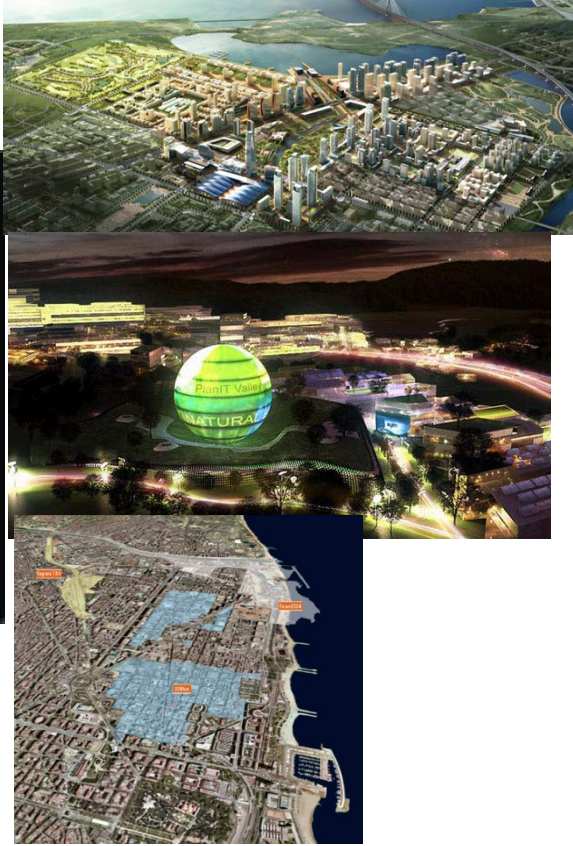
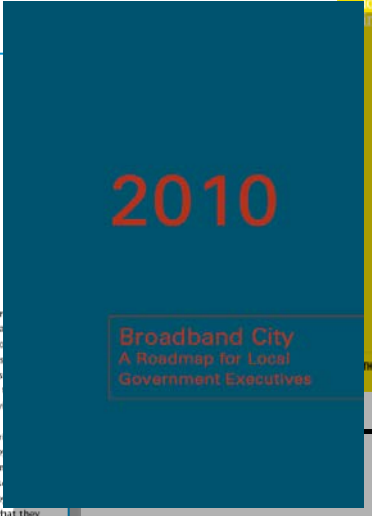
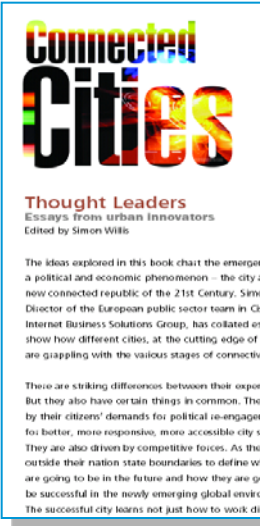
<http://www.cisco.com/web/about/ac79/docs/ps/Participation-Collaboration-and-Community.pdf>

# Cisco has a long history in Cities

2009-2012

2005-2008

1998-2004



Public Sector Vertical

Connected Urban Development

Smart+Connected Communities

Internet of Things

Broadband

Connected Real Estate

EcoBoard

Globalization Center

Smart Grid

# The Starting Points Vary ...



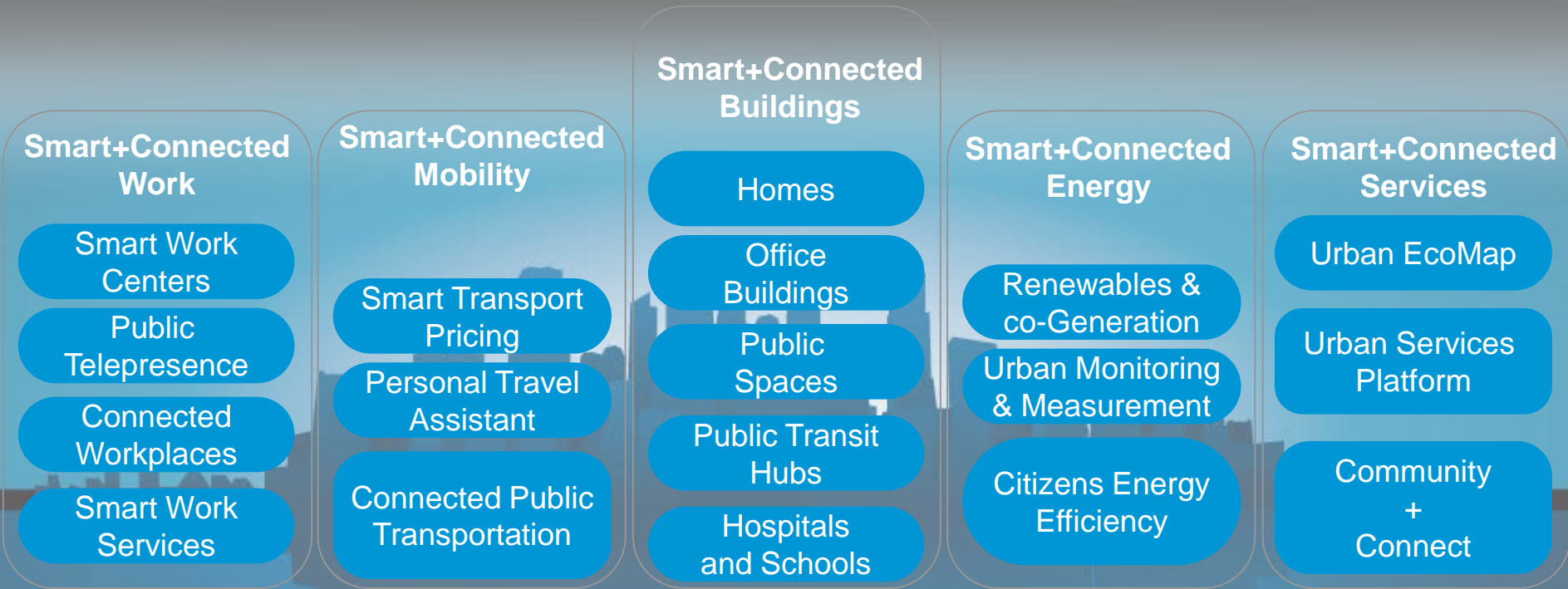
## New Cities and Older Cities

Cities in the developing world often lack the basic infrastructure that cities need



# Connected Urban Development

## A Blueprint for City Transformation



## Sustainable Urban Planning + Governance

### Broadband Platform – 4<sup>th</sup> Essential Infrastructure

IP-Enabled Homes and Offices, Roads, Utilities, Workplace Design

# From Incubation to Market Transition

## Smart+Connected **communities**

 <p><b>Kuwait:</b> Al Hamra Tower</p>	 <p><b>South Korea</b> Songdo, Busan</p>	 <p><b>Toronto</b></p>
 <p><b>Seoul</b> Personal Travel Assistant</p>	 <p><b>China</b> Chongqing</p>	 <p><b>San Francisco</b></p>
 <p><b>Amsterdam</b> Smart WorkCenters</p>	 <p><b>China</b> Chengdu</p>	 <p><b>San Francisco</b></p>
 <p><b>San Francisco</b> EcoMap</p>	 <p><b>India</b> Lavasa</p>	 <p><b>Barcelona</b></p>
 <p><b>NYC</b> Yankee Stadium</p>		 <p><b>Holyoke</b></p>
 <p><b>Singapore</b> EPIC</p>		 <p><b>Colorado</b> Connected Communities Initiative</p>
 <p><b>Qatar</b> Gate Building</p>		
<b>Connected Urban Development</b>	<b>Greenfield Cities</b>	<b>Brownfield &amp; Urban Regeneration</b>

# Harnessing The Power of Participation To Change a City, a Province, a Country

## SMART+CONNECTED COMMUNITIES



**Social**



**Economic**



**Environmental**

## SUSTAINABILITY ADVANTAGE



**Retail**



**School**



**Government**



**Health**



**Telecom**



**Utilities**



**Safety &  
Security**



**Travel**



**Sports &  
Leisure**



**Home**



**Office**



**Transportation**



**Building**



**Emergency  
Response**

## COMMUNITY+CONNECT

## COMMUNITY+EXCHANGE

**CLOUD COMPUTING**

**BORDERLESS NETWORK**

**COLLABORATION**

**DATA  
CENTERWIRTULIZATION**

## SERVICE DELIVERY PLATFORMS

# Smart+Connected Mobility

## Smart Transportation Example Connected Bus

one world.  
green & connected.

- Bus Location
- Wait Times
- Get Connected
- Go Green!
- My Green Calculator
- Fut
- Em

Source: IBSG

### Personal Travel Planner

My Today: 2009.04.13

Travel Option

Route	GREEN FACTOR	COST	DURATION
1 Destination			
Route1 : Car/Train SUGGESTED ROUTE	██████████	██████████	██████████
Route2 :	██████████	██████████	██████████
Route3 :	██████████	██████████	██████████
Route4 :	██████████	██████████	██████████

Selected Route

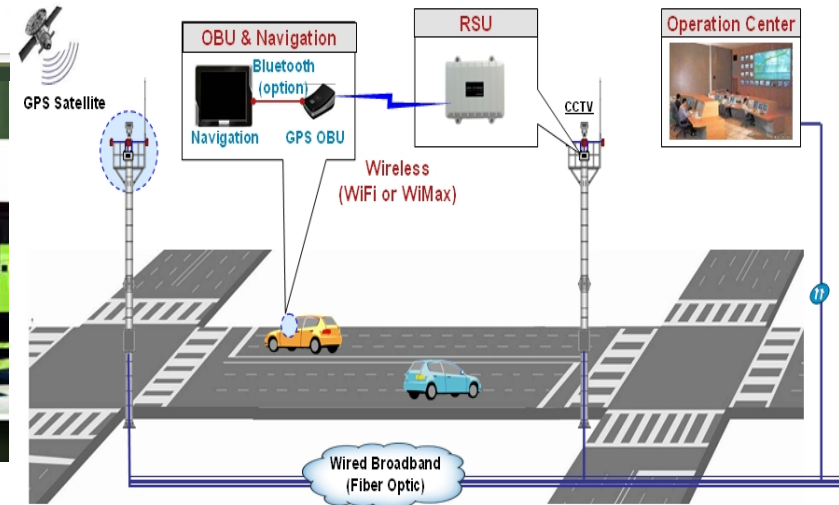
From: [Map Location]

Destination: [Map Location]

Distance: [Map Location]

Route Guide

Virtual Assistant: cost, I recommend route number 1.



# Smart+Connected Energy and Buildings

## Madrid and Amsterdam: Urban Energy Management



## Lisbon: Smart Urban Energy in Schools



# Urban EcoMap

## Working Together to Improve Urban Environments

Urban EcoMap is an interactive decision space that empowers individual citizens to make informed decisions about their daily lives, along with how to participate in the vitality of their communities. We aim to build awareness, fostering a sense of community, and provide actions for citizens to take to enable the reduction of greenhouse gas emissions in cities. Please join us.

### Amsterdam

Population: **746,935**



Residential CO2 Emissions:



Transportation: **30.2%**



Energy: **63.7%**



Waste: **6.2%**

Explore

Residential CO2 per capita: **3.4 t**

Total CO2 per capita, Netherlands: 11.2 t \*

### San Francisco

Population: **762,611**



Residential CO2 Emissions:



Transportation: **78.1%**



Energy: **19.4%**



Waste: **2.5%**

Explore

Residential CO2 per capita: **8.2 t**

Total CO2 per capita, United States: 19.1 t \*

Together we can strive to achieve a reduction in carbon emissions to 2 metric tonnes(t) per capita. [Learn More](#)

# Further Development - Urban EcoMap v2.0: City Manager Portal

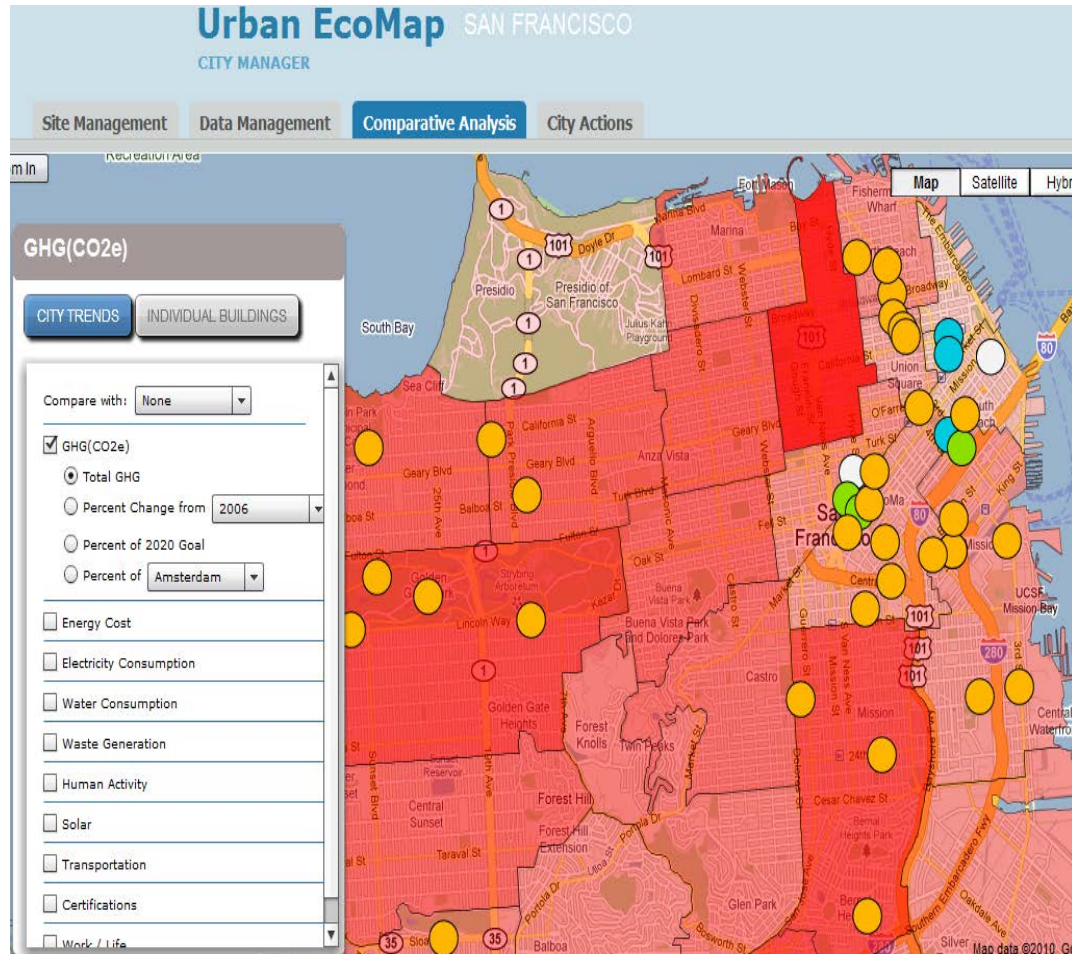
## Amsterdam

Population: 746,935



## San Francisco

Population: 762,611



City Manager, a new feature of Urban EcoMap using new data sets, features and functionality, as defined with SF Environment

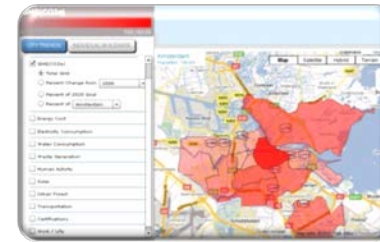
# Developing a Multi Stakeholder Urban Sensing Framework



Global Indicators



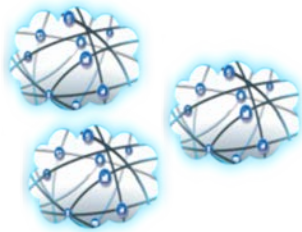
Citizen Engagement



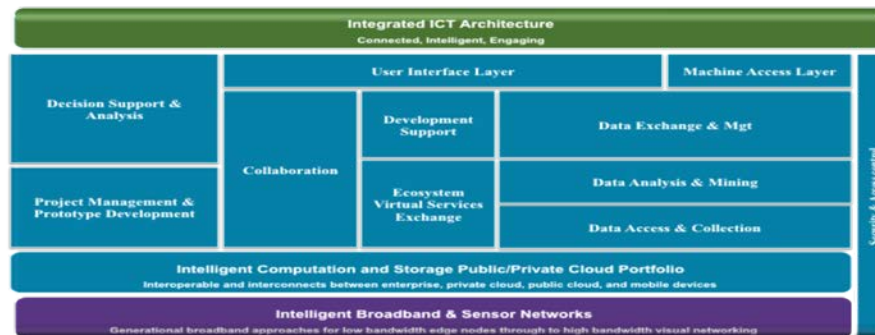
City Management



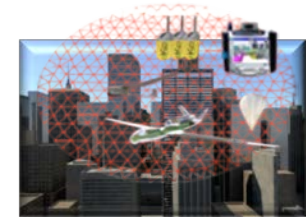
Enabling Transaction Experiences



Specialized Data Exchanges



Urban Intelligence Framework



Urban Sensing

Urban Labs

Collaboration Exchanges

Education Programs

# Busan Green u-City Cloud Service Platforms

## Metropolitan-wide Brownfield Revitalization

- Co-create citizen-centric smart city services (SaaS) supported by a mobile application development platform (PaaS) and an innovative distribution model
- Boost up the economy and create high quality jobs ... facilitating creative start-ups and incubating smart city apps
- Sustainable open innovation business architecture: smart city services become profitable through multi-phased public-private partnership approaches

### Video overview:

[http://www.youtube.com/watch?v=UuJ9yWJ6BS4&feature=player\\_detailpage](http://www.youtube.com/watch?v=UuJ9yWJ6BS4&feature=player_detailpage)



## Green U-City Services Cloud Infrastructure

**Busan Mobile Application Center (BMAC)**  
Application Development Platform  
(Platform as a Service)

Applications  
↔  
Public Data

**Integrated Operation Center (IOC)**  
Personal Life Assistant Services  
Platform (Software as a Service)

# Open Innovation

Video overview:

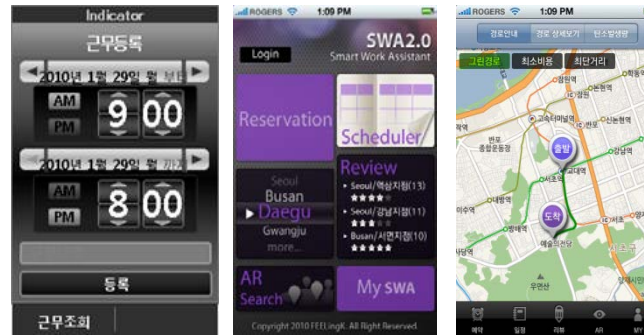
[http://www.youtube.com/watch?v=UuJ9yWJ6BS4&feature=player\\_detailpage](http://www.youtube.com/watch?v=UuJ9yWJ6BS4&feature=player_detailpage)



Development Platform



Smart Work Assistant



Smart Tour Assistant



Busan Bus Assistant



Source: Busan Mobile Application Contest, BIPA, 2011

# The Future of Work

## The Cisco Connected World Report

- 3 of every 5 (60%) employees believe they don't need to be in the office to be productive, efficient
- 2 of every 3 (66%) employees desire work flexibility
- 2 of every 3 (66%) employees would accept a lower-paying job with more work flexibility than a higher-paying job with inflexibility
- 45% of IT professionals are unprepared or struggling to make their workforces more mobile, distributed
- Employee behavior makes work flexibility more than a technology discussion – IT-employee relationship, policy, education



# Industrial to Knowledge Era Evolution

Many Silos

New, Blended Approach



Buildings



People

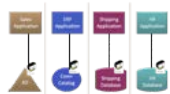


Hierarchies

*Convergence*



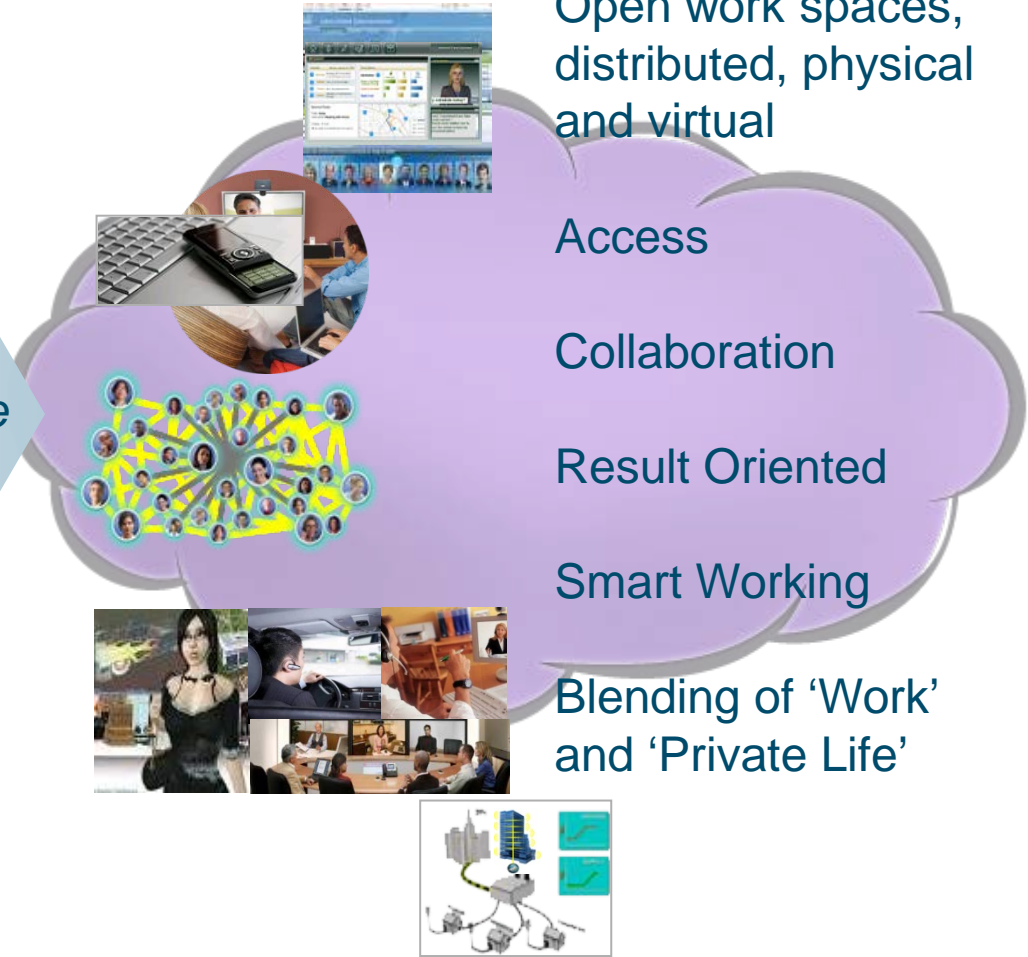
Teleworking



Applications



Rigid Hours



Open work spaces,  
distributed, physical  
and virtual

Access

Collaboration

Result Oriented

Smart Working

Blending of 'Work'  
and 'Private Life'

Adapted from "Connected and Sustainable Work," Cisco IBSG, presented at CUD Global Conference, 2008

# The Transformation Of Work

## Knowledge Era

### Industrial Era

- Location-Centric
- Radical Control
- Carrot & Stick
- Asset-Centric
- Silos
- Centralized
- Mechanical

### ICT-Enhanced

- Email
- Office Automation
- Internet
- Mobile Phone

### Telework

- Co-Working
- Telecommute
- Remote Work Centers
- Satellite Offices
- Home Shoring

### Work 2.0

- Collaboration Tools
- Telepresence
- Video
- Peer-to-Peer
- Wiki
- Social Media
- SWCs

### Smart Work

- Location- and Time-Independent
- Intrinsic Motivation
- Service-Centric
- Cloud



# Four Pioneering 'Smart Work' Communities Four Cisco Engagements

## Amsterdam's Smart Work Approach

From 1 to 100+ locations in the Netherlands  
From 1 proof of concept to Network of SWCs



### Double U Network

- 100+ SWCs (June 2011)
- Portfolio approach of physical smart work environments and networked services
- Double U Reservation Tool [www.w-smartwork.nl](http://www.w-smartwork.nl)
- Public Telepresence (October 14, 2010)
- Work Snug Augmented Reality Smart Phone Application



- Reduced Carbon Footprint
- Reduced Commute Traffic
- Reduced work place costs per employee
- Facilitating a Smart + Connected Work environment for communities, employers and workers
- SWCs as platforms for new business, SMEs, incubation and education



## Korea's National Smart Work Strategy



- National Smart Work Strategy announced by the President of Korea, July 20, 2010
- 450 Smart Work Centers to be deployed 2010-2015
- National Strategy follows various Korean missions to the Netherlands and exchanges with counterparts from the City of Amsterdam, Cisco and the Dutch Double U Smartwork Foundation
- National Information Agency (NIA) initiates first steps towards the creation of a global Smart Work Association in collaboration with Cisco and other founding communities



## Forging the Wallonia Smart Work Network



To create a Wallonian Smart Work Network within 18 months...

...Creating a smart, connected and green work environment, facilitating people to connect, communicate and deliver intelligently

...as well as a low threshold, high end access-for-all environment, facilitating companies, government, start ups, students

...while also serving as a chain of international hubs allowing for seamless high end video communications with businesses, universities and governments - globally



## Planning a Smart Work Network Consortium, France



# Double U Smartwork Services

www.w-smartwork.nl

WorkSnug

**SMARTWORK**  
Platform voor Smart Work Centers

**Waar wilt u werken?**  
haarlem

**Wat wilt u reserveren?**  
Nog geen keuze gemaakt

**Wanneer wilt u werken?**  
Datum:   
Tijdstip: 08:00 17:00

**Hoeveel personen zijn er aanwezig?**  
1 persoon

[Go terug](#)

**Touchdown CENTER**  
leidrevaart 594, 2014HT Haarlem

[Direct aanvragen](#)

**Omschrijving**  
Het Touchdown Center is een werkhuis voor zelfstandige en ambulante professionals. Aankleding en concept zijn ingericht rond het thema van het Nieuwe Werken. Wij bieden een passende accommodatie van werkplekken, ontmoetingsruimte (vergader, telepresence, club) en (semi-)permanente kantoren van uur tot drie jaar. We zijn te vinden in stedelijke omgevingen, veelal op de scheidslijn van wonen en werken. Wij streven ernaar voor iedere (kennis)werker een passende schil te bieden om optimaal met veel plezier zijn of haar werk te doen.

100 parkeerplaatsen ter plekke en 150 m lopen (5 minuten) van NS station Heemstede Aerdenhout.

**Bereken hier uw CO2 uitstoot**

**Locatie**  
Map Satellite Terrain

**Foto's**

**Adres informatie**  
leidrevaart 594  
2014HT Haarlem  
T (+31)019 5434592  
E-mailadres

[Direct aanvragen](#)



**SMARTWORK**  
Platform voor Smart Work Centers

**Waar wilt u werken?**

**Wat wilt u reserveren?**  
Werkplek:

**Wanneer wilt u werken?**  
Selecteer de datum: 17-09-2009  
Selecteer het tijdstip: 10:00, 12:00

**Hoeveel personen zijn er aanwezig?**  
Onbekend

**Extra voor uw werkplek** (0)

A woman in a grey top and black pants is standing in the background, looking at her smartphone.



# Public TelePresence enabled Smart Work Centers



First Ever Public Telepresence in the Netherlands, Opening in Amsterdam. **Hello World.**

A vertical banner featuring the following logos from top to bottom: TPEX Telepresence Exchange Europe, 'I amsterdam.' with a stylized skyline, the Cisco logo, the ZUIDAS logo with the tagline 'ALWAYS BRIGHTER', the SMARTWORK logo, and the TATA logo.

A photograph of a modern telepresence meeting room. It features a large, curved wooden conference table, several black office chairs, and a large screen at the far end of the room. The room is well-lit and has a professional appearance.

Smart+Connected **communities**



# A variation on work-life, and all about social innovation

[www.dialoguecafe.org](http://www.dialoguecafe.org)

## Dialogue Café

DIALOGUE  
cafe



A global network that works as an open environment for ordinary people, where innovation and creativity develop in the intersection between global messages, universal values and cultural diversity  
- A global networks of cities and communities talking and learning from each other

[Home](#)[Home](#)[Innovation Centres](#)[NVI](#)[The BIG Awards](#)[Who's involved?](#)[Blog](#)[FAQ's](#)

## What's the BIG idea?

Are you on the verge of something BIG?

Would you benefit from wider collaboration?

Do your business ideas need more traction?



The British Innovation Gateway (BIG) is a Cisco-led programme, endorsed by the UK Government, to support hi-tech business and innovation.

If your idea, prototype or technology solution needs new impetus, then BIG could be just what you're looking for.

[More about Cisco BIG >](#)[Watch the video >](#)

### Innovation Centres >

- > Two Innovation Centres are based in London: Shoreditch and the Olympic Park
- > Linked through the NVI to other centres across the UK



### National Virtual Incubator >

- > NVI is an online network enabling collaboration between the 'innovation community'
- > Essential for building an 'innovation ecosystem' of support, advice, facilities and resources



### The Cisco BIG Awards >

- > Recognising and rewarding excellence in innovation for startups and SMEs
- > Providing mentoring and expertise from Cisco to develop the winning ideas



# Special Purpose Vehicles

am **smart** erdam  
**city**



**AIM** Amsterdamse Innovatie Motor



**FORUM VIRIUM**  
HELSINKI

[www.aimsterdam.nl/english](http://www.aimsterdam.nl/english)  
[www.forumvirium.fi/en](http://www.forumvirium.fi/en)

# Amsterdam Smart City Multi-sector Ecosystem

## Founding Partners



## City of Amsterdam



## Utilities & Infrastructure



## Universities & Knowledge institutions



## Techno starters



## Living, Offices & Buildings



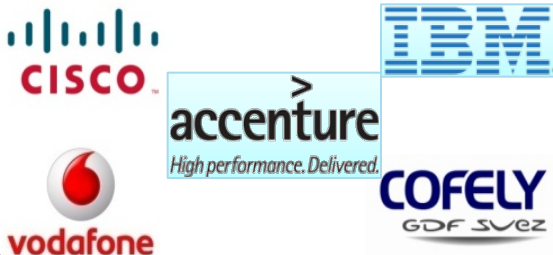
## Network platforms



## Consultancy



## Technology & Communications



## Various



Visit: [www.amsterdamsmartcity.com](http://www.amsterdamsmartcity.com)

### TWEETS

 Delicious: smart cities:  
<http://bit.ly/dD0wdl> [Research]

 Six Sigma Makes Its Way to the  
Contact Center | Virtual Predictive ...:

[> MORE TWEETS](#)

### TIP OF THE WEEK



*Less CO2 emission with public transport*

[> MORE TIPS](#)

### LATEST NEWS

- ▶ Cutting our carbon by 10% in 2010
- ▶ The World's Smartest Cities

[SUBSCRIBE](#)



# WikiCity

wikicity [\*]

"Engineer invitation, implement experience"

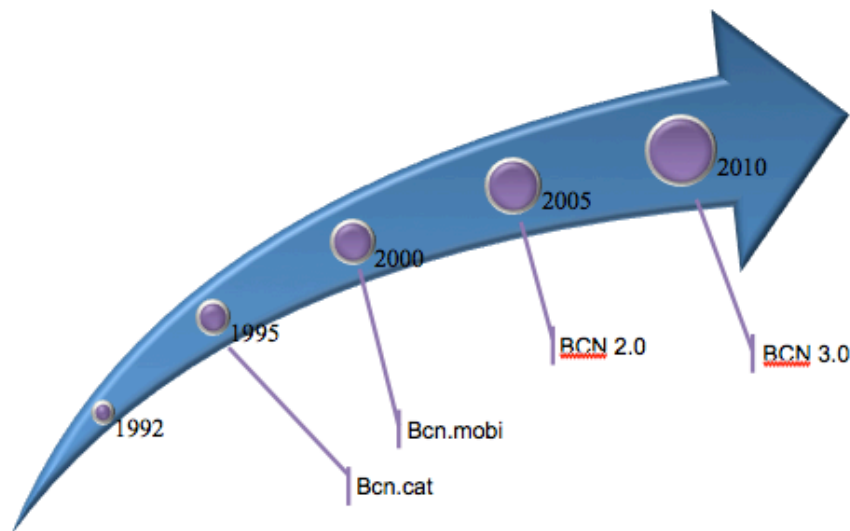
In order to become an ecological footprint, planning should start bottom-up on a local level, 'the wikicity'. A shared vision, vested on the wisdom of crowds, with the purpose to be a platform, a possibility to challenge dialogue and implement experiences, stories, recommendations in a concrete plan. By not selecting every step, the plan sustains within a paradox, just as in real life.

Zef Hemel, Department of Physical Planning (DRO),  
City of Amsterdam

<http://senseable.mit.edu/wikicity/>

[Wikicity Amsterdam practicing Open Planning 2004-2011](#)

# Barcelona 2020 Vision



## The Olympic Games

### Delivering The Vision

“ Barcelona as a recognized worldwide leading City in sustainable growth, quality of living and Citizen services thru the innovative use of ICT’s for urban management ”

“Barcelona as the innovation and economic engine of south Europe”



# i-Waterfront Toronto: “Town Square” Concept

## *Physical and Virtual Environments*

Example of the “Town Square”, for the new i-Waterfront. Builds on the Vasteras model which is operational in Sweden.



# Future Communities

FIND A PROJECT | SUPPORT US | CONTACT US | BASKET: 0 ITEMS

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Home » Social Life

## Social Life

Today the Young Foundation announces the development of Social Life, a new independent social enterprise supporting innovation in place-making which will be launched in 2012.

Social Life will work in the UK and internationally to provide a new space for rethinking the practice and politics of creating new communities to meet the pressing challenges of urbanisation including climate change and ageing societies. Undertaking research and practical work with professionals and agencies on the ground, the new organisation would enable social designers to cross boundaries between the different professions involved in creating new places.

The enterprise has already developed a partnership with **A2 Dominion** to work on the Bicester Eco Town and is discussing opportunities with **Cisco** to draw on its experience in technology, innovation and sustainability to develop a sustainable cities programme.

 [Download a full pdf of new Young Foundation report 'Design for Social Sustainability'](#)

 [Find out more about the work of Young Foundation programme Future Communities](#)

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### Sign up

Join our mailing list for periodic updates on the latest from the Young Foundation

Lots of talk of YF-backed movement [@actionhappiness](#) recently- find out more about them:  
<http://t.co/eaO4sH1u>  
About 5 hours ago »

'Chemist with a soluble microchip hopes patients swallow 'intelligent medicine' in [@FT](#): £ (<http://t.co/mn1eogH1>), innovation in health?  
About 5 hours ago »

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# Serendipity

[SERENDIPITY

] is the effect by which one accidentally stumbles upon something fortunate, especially while looking for something entirely unrelated

The serendipious city: the land of unexpected opportunities.

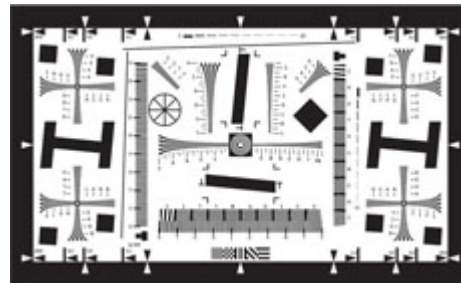
# Physical and Virtual Place

## STUDIOX GLOBAL NETWORK INITIATIVE

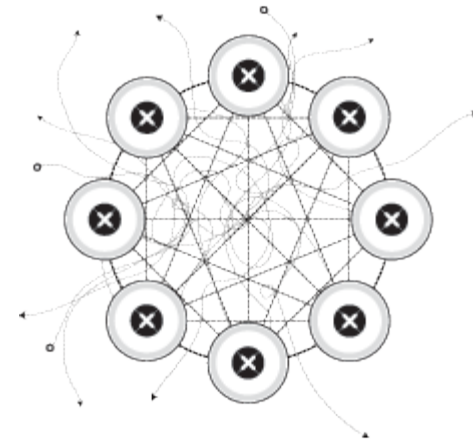
IF WE DON'T THINK ABOUT THE FUTURE IN AND WITH ALL THE TRANSFORMATIVE REGIONS OF THE WORLD, THEN WE ARE NOT THINKING ABOUT THE FUTURE - MARK WIGLEY, DEAN GSAPP



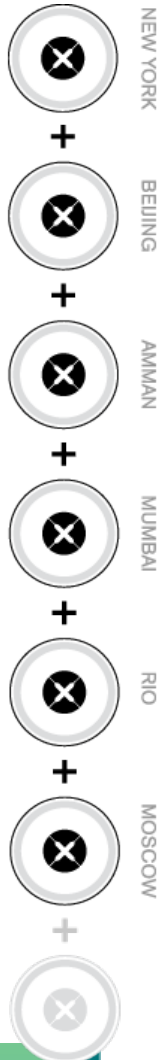
Studio-X is GSAPP's global network of advanced research laboratories for exploring the future of cities.



Studio-X is a place to invent, test and celebrate new ideas. A lively **hub** of the most exciting discussions. An **incubator** of energetic thinking in the heart of the city. An **interface** for direct exchanges between colleagues from around the world.



Studio-X is a new platform for incubating a whole new kind of conversation about the future of the built environment





# So, What Have We Learnt About Smart Cities?

Within 20 years, a Community of 5 Million:

Community  
Revenues

**+\$15B**



Economic  
Growth

**9.5%**



Energy  
Efficiency

**+30%**



New  
Jobs

**375,000**



# Smart Cities Is Now About How To Get There

To help summarise our learning about smart cities we need to review the following questions :

- Why - ICT makes a city smarter (economic business case)
- What - are the crucial ICT components in a smart city (where and how is ICT operating)
- How - do you enable smart city policies and solutions to be implemented in a city



The “why” is partially understood and accepted

The “what” is most popular with product / solution vendors

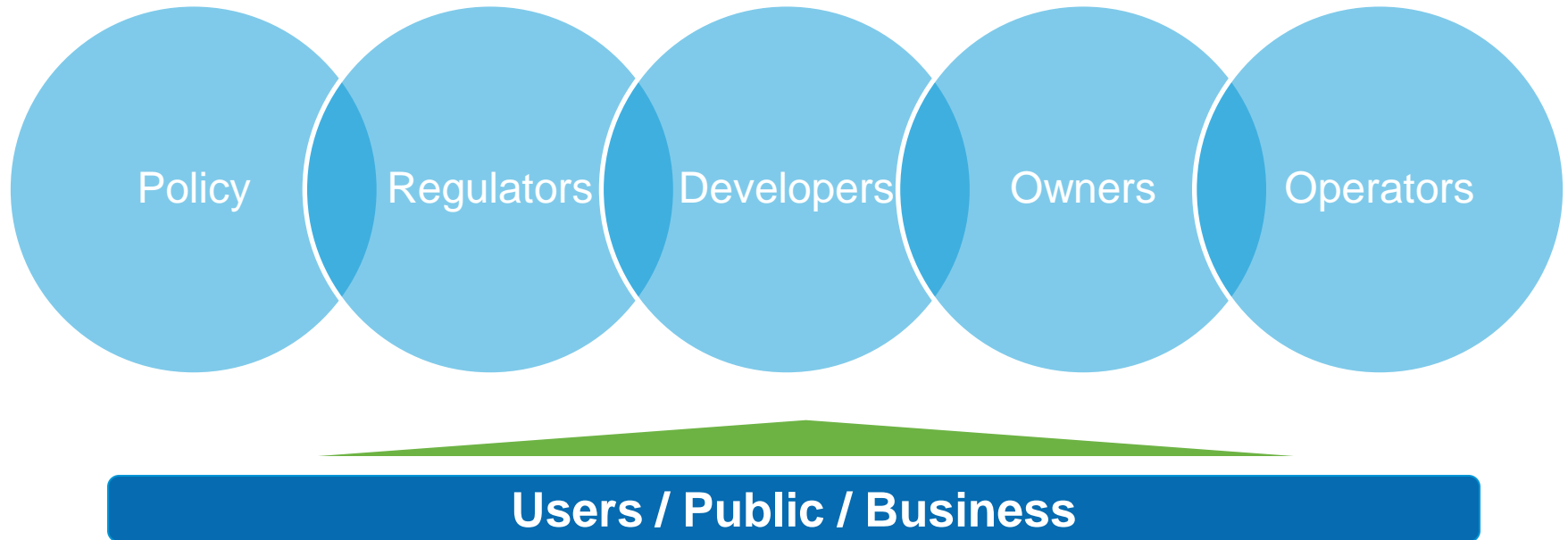
The “how” is the biggest challenge facing smart cities

# We first need to understand how cities work to make the city smart



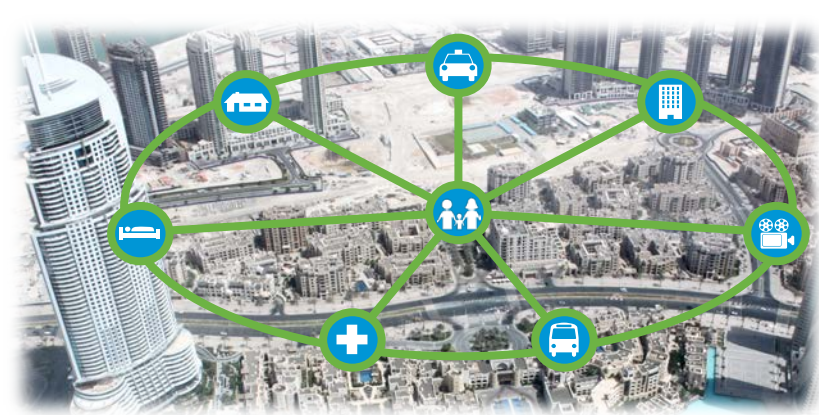
# Stakeholder Roles Require Better Understanding

Where is the role of “smart cities” actually inserted within each stakeholder ?



- Stakeholders ultimately determine the shape of cities and how they will evolve and at what speed
- In many cities the above roles are often performed by the same or related entities which changes the interdependences and dependencies (e.g. state controlled countries or cities)
- Where and how “smart” ICT solutions / designs actually fits into the components of the city needs to be carefully examined / understood within each stakeholder role

# Network Based Open Innovation



... and a **New Participative Democracy**



Visionary  
Leadership



Global Open  
Standards



Smart  
Regulation



Public Private  
Partnerships &  
People



New  
Ecosystem

Thank you.



Shane Mitchell

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