



A new approach to Urban Innovation

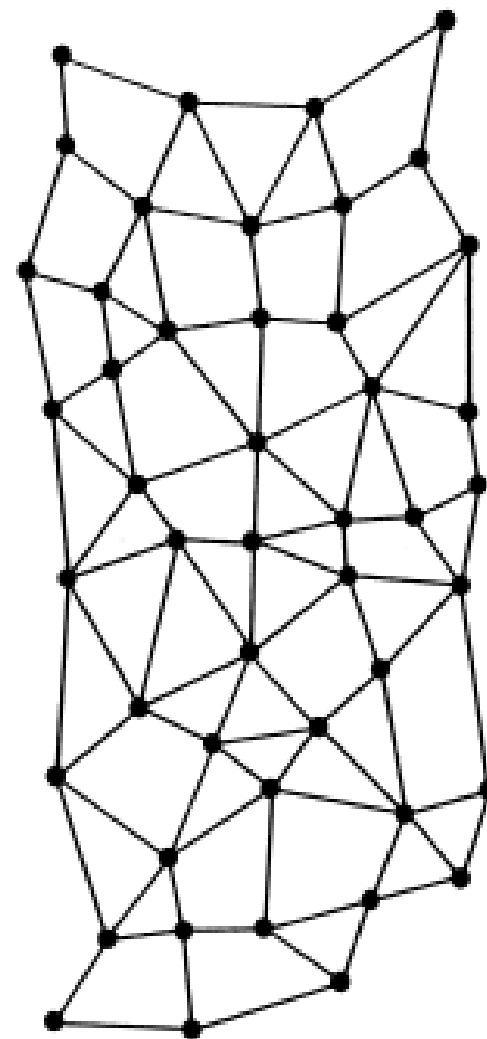
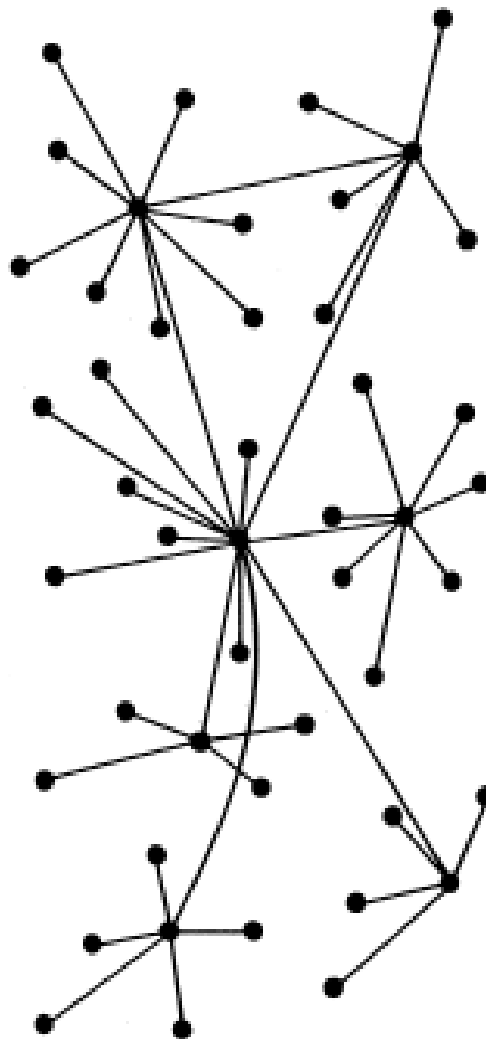
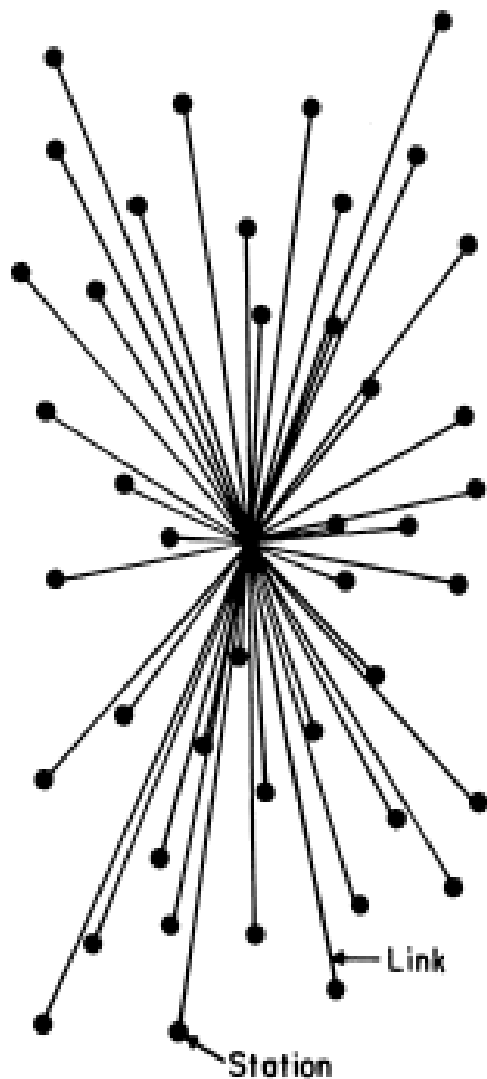
network and web based tools for
urban citizen engagement and
sustainable outcomes

The Comparative Genetics of Cities Workshop
UCL, Friday 21st May 2010



Shane Mitchell

Global Program Manager, Urban Innovation
Internet Business Solutions Group



Central



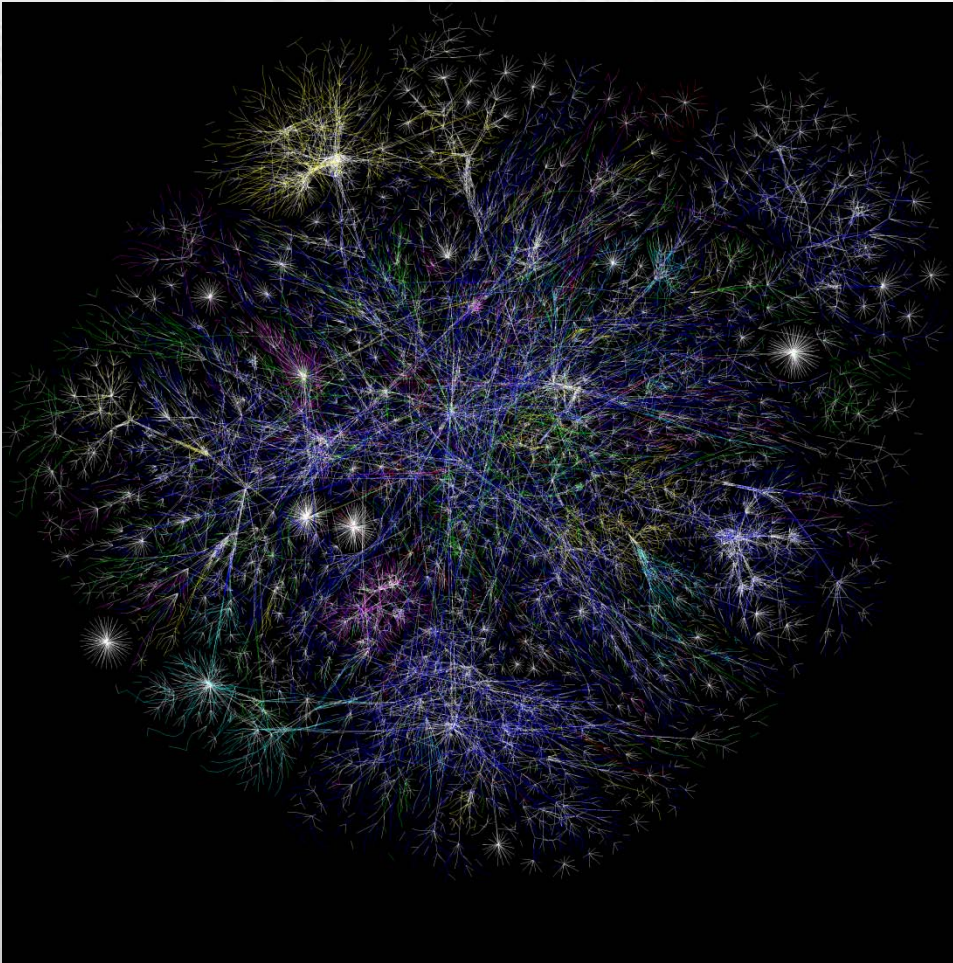
De-Central



Distributed

Paul Baran's Theory of Distributed Networks...the World of "Connectedness" (1964)

The Internet is the most complex network ever built



- >1 trillion web pages
- >4 billion unique IP addresses housed on ~50 million servers
- 1.4 to 1.8 billion users (estimated Feb 2010)
- Researchers project the the Internet could double in size every 5 years
- Totally decentralized, moving toward distributed architecture

Meanwhile, the planet is growing a new skin

“ Our skin is a unique piece of engineering. It has the ability to measure and sense changes in temperature and movement in air; it can size up objects and identify their make. It achieves all of this with the help of a huge number of tiny integrated chemical sensors that talk to each other through the nervous system....

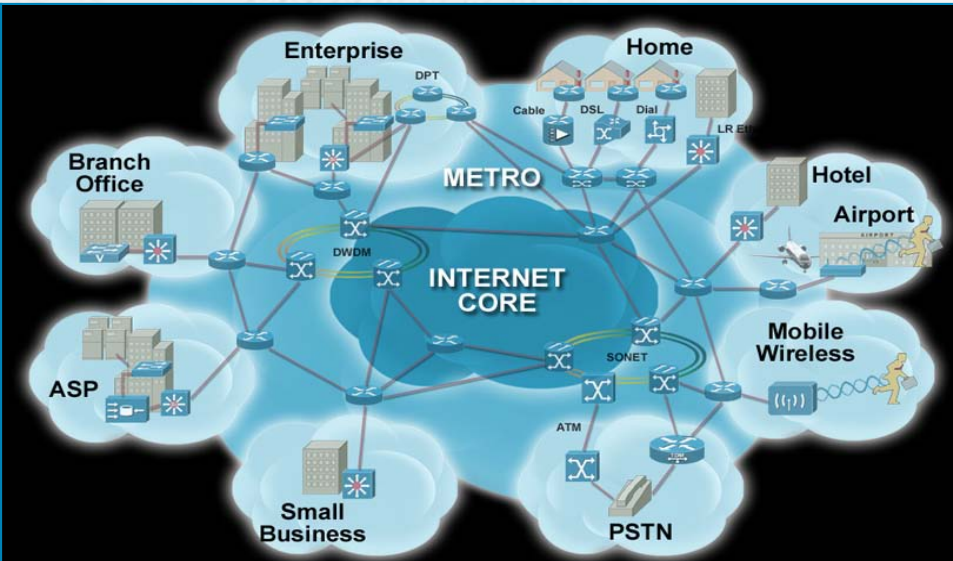
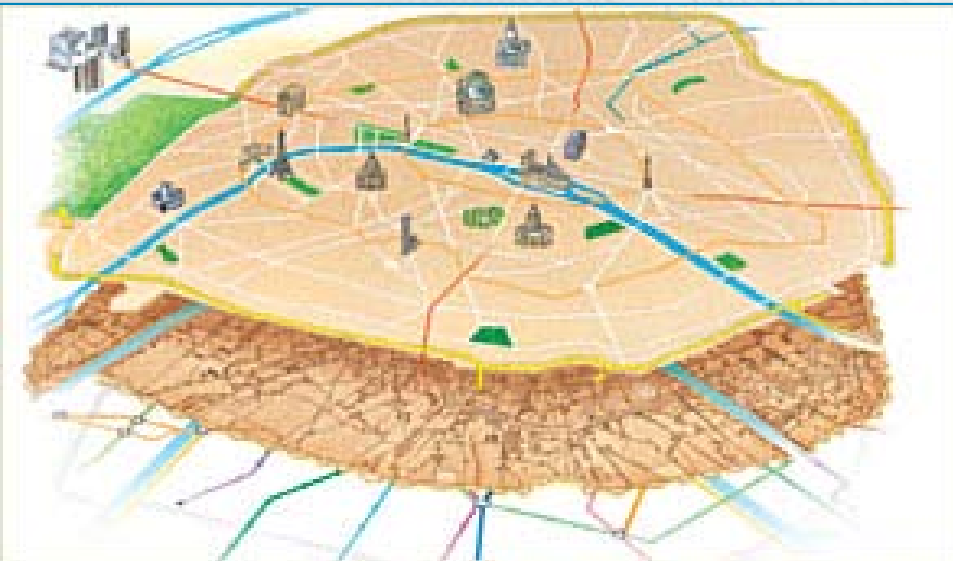
A skin of similar sensitivity is enfolding the earth right now. Millions of measuring devices, including cameras, microphones, thermostats and temperature gauges, light and traffic sensors, and pollution detectors, are popping up everywhere, feeding information into increasingly fast and sophisticated computers. Experts predict that by 2010 there will be around 10,000 telemetric devices for each human on the planet.

Our planet is evolving into a single vast computer made of billions of interconnected processors and sensors. The question being asked by many is, when will this computer become self-aware? ”

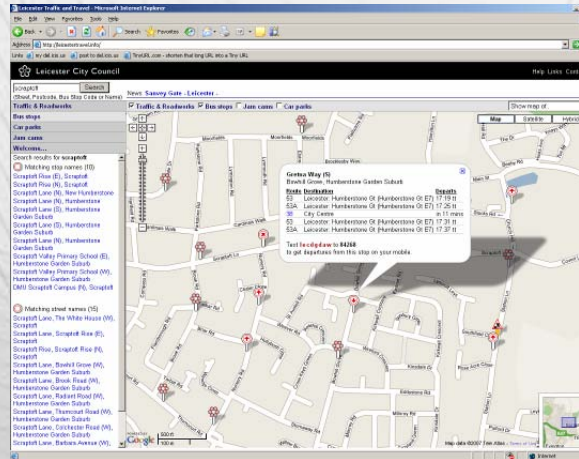
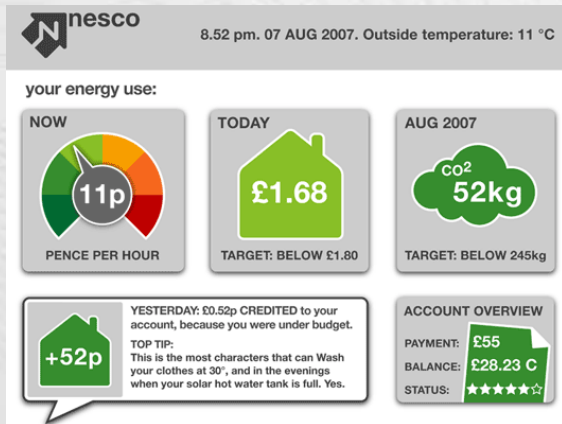
Albert-Laszlo Barabasi, 2001

The 4th Utility: Broadband as the New City Infrastructure

1. Infrastructure that provides intelligence
2. Infrastructure that is used intelligently
3. Infrastructure that is designed intelligently
4. Physical & virtual environment are intertwined
5. Location freedom of social and economic activities



Cities depend on ICT for their operation...



...but we lead, plan and manage in silos

ICT can improve the way cities function

Three ways to improve management of cities:

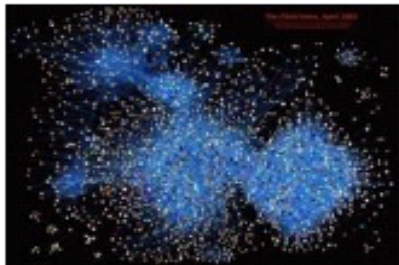

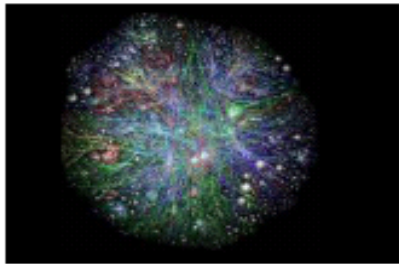

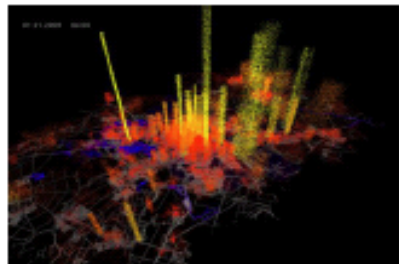

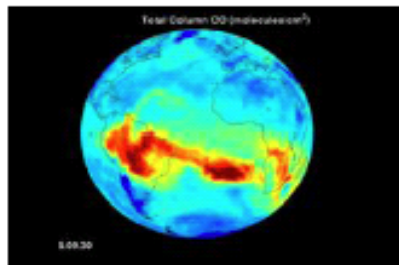
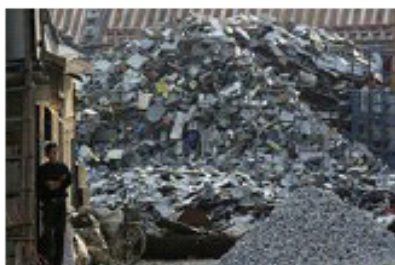
- Improve fidelity of decision-making through improved data collection, simulation and modelling
- Improve participation and governance:
 - Gives people the appropriate information to make well-informed decisions
 - Create new vehicles for participation and feedback
- Learn lessons from other cities: create an urban commons for cities to collaborate around the world

What's The Problem

We hear alot about greenhouse gas emissions and the need to reduce them. The first step is to understand where they originate.



Hybrid Experiences

	Digital Spaces	Physical Places	Hybrid Experiences
People			Social And Cultural Life Overlapping virtual and geographic communities, which are collaborative, diverse, creative, and interactive. Affordable access to information.
Economics			Economic Vitality Agile, networked, and distributed companies drive job growth and innovation, utilizing a combination of physical and virtual presence and means.
Location			Local Geography Polycentric urban regions characterized by decentral concentration, mixed-use, digitally mediated urban environments, and real-time view of urban performance.
Environment			Environmental Stewardship Information based tools for environmental monitoring, smart flows, and resources management. Reduction of environmental impact of technology.

Connected Urban Development (CUD)

- 5 year Cisco commitment under the Clinton Global Initiative, initiated in 2006
- Public-Private partnership with Amsterdam, Seoul, San Francisco, Madrid, Lisbon, Birmingham, and Hamburg
- Objectives:
 - Develop innovative solutions using ICTs to reduce CO₂ emissions
 - Blueprints, models ... influence policies and practices that help to create successful, connected, competitive, attractive and sustainable 21st century cities



Connected Urban Development

A Blueprint for Smart and Connected Communities



Broadband Platform

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

Smart Work Centers

Driving distributed work environments



www.w-smartwork.nl

W SMARTWORK
Platform voor Smart Work Centers

Waar wilt u werken?
Amsterdam

Wat wilt u reserveren?
Werkplek

Wanneer wilt u werken?
Selecteer de datum:
Selecteer het tijdstip:

Hoeveel personen zijn er aanwezig?

Extra voorzieningen (0)

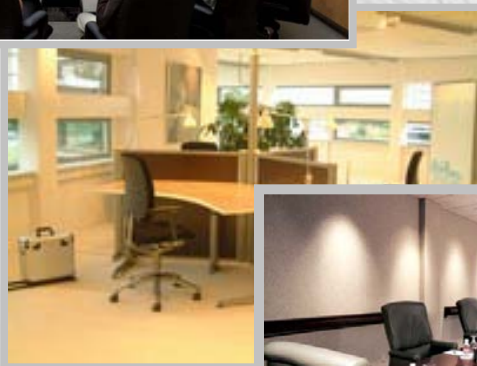
[← Ga terug](#)

2 vestigingen gevonden in: Amsterdam
→ [Terug naar de zoekresultaten](#)



→ [Terug naar de zoekresultaten](#)

[Terug naar de zoekresultaten](#)



W SMARTWORK
Platform voor Smart Work Centers

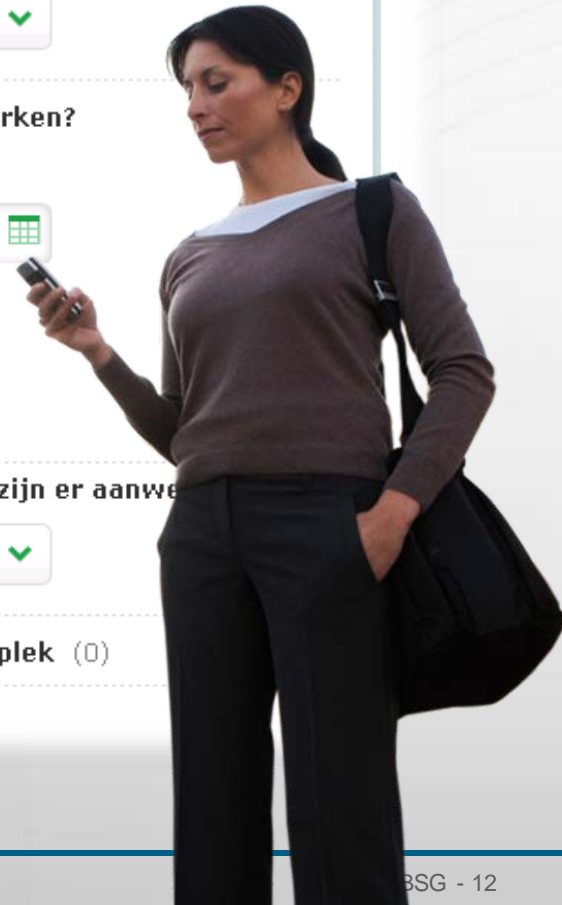
Waar wilt u werken?

Wat wilt u reserveren?
Werkplek ☒

Wanneer wilt u werken?
Selecteer de datum: 
Selecteer het tijdstip:

Hoeveel personen zijn er aanwezig?
Onbekend ☒

Extra voor uw werkplek (0)





WorkSnug.com



Mega Trends Impacting the Urban Work Environment

Energy and Sustainability:

- Quest for sustainable modes of work and transport

Access:

- Urban Mobility
- Access to work, information and education for all – *the remote, the aging, the newly started*

Changing the Way We Work & ICT:

- Work follows the worker
- Push to improve quality of life
- Collaboration and autonomy
- A work force in flux

Seoul Personal Travel Assistant

Trip Planning – Minimize Carbon Impact

The screenshot shows the 'Seoul Personal Travel Assistant' web application. The interface is divided into several sections:

- My Today:** Displays the current date as May 19, 2009, and a list of tasks: 1. Seoul PTA 업무협의 [], 2. Meeting [무학동 7], and 3. PTA 회의 [쌍림동 1-1].
- Travel Planning:** Contains a 'Travel Option' table comparing three routes.
- Virtual Assistant:** Features a cartoon character and a message box.
- Transcript:** Displays a message from the virtual assistant.
- Selected Route:** Provides details for the chosen route: BIKE→SUBWAY→WALK, Origin: 순화동 5-1, Destination: 쌍림동 1-1, Distance: 5.89km, Time: 26.42분, Carbon Emissions: 0.33 g.
- Map:** A map showing the route from the origin to the destination.

Travel Option	Carbon Emission	Travel Distance	Travel Time
Route1 : GreenRoute1	Low	Medium	High
Route2 : GreenRoute2	Medium	Low	Medium
Route3 : Shortest-Time Route	High	Low	Low

Selected Route: BIKE→SUBWAY→WALK
Origin : 순화동 5-1
Destination : 쌍림동 1-1
Distance : 5.89km
Time : 26.42분
Carbon Emissions : 0.33 g

Transcript: You have selected 'Green Route 1'. It is the route which has the least carbon impact.

<http://topis.seoul.go.kr/PTA>

Link to flash demo at: http://www.connectedurbandedevelopment.org/multimedia/proof_of_concepts/seoul_pta

Smart and Connected Energy and Buildings

Madrid and Amsterdam: UrbanEnergy Management



Lisbon: Smart UrbanEnergy in Schools



Connected and Sustainable Socio-Economics - Urban EcoMap: San Francisco and Amsterdam



www.urbanecomap.org

Link to flash demo at:

http://www.connectedurbandevelopment.org/connected_and_sustainable_ict_infrastructure/eco_map/multimedia

- Challenge: Currently, no universal collaboration, visualization, and measurement tool exists for greenhouse gas emissions from city activities.
- Solution: Develop an open source collaboration web 2.0 platform that will enable citizens and business to see the collective results of their individual climate change behaviours, aggregated by zip-code, to take actions to mitigate environmental impacts, and track the results of these actions.
- Results: CUD prototype. 10+ cities in North America, Europe, and Asia are engaged, with the City and County of San Francisco taking the lead.

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](#)

Working Together to Improve San Francisco's Environment

Understand the challenge. Become part of the solution.

Your current zip code is **94109**

If this is not correct, [Click Here](#).

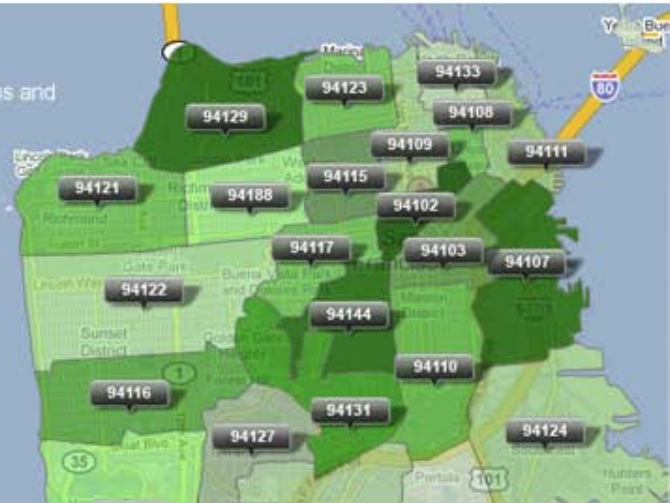
What's The Problem?

We hear a lot about greenhouse gas emissions and the need to reduce them. The first step is to understand where they originate.

50% TRANSPORTATION

30% ENERGY

20% WASTE



John Rides His Bike to Work

On average, transportation is responsible for 50% of green-house gas emissions. By using alternative forms of transportation, Joe is part of the solution.

[Are You?](#)



Transportation



Energy



Waste

Do it Now!

Want some quick suggests for how you can reduce your environmental impact? Tell us what's most important to you, and we'll show you the best options.

- ☐ Low Cost
- ☐ Lowest Effort
- ☐ Greenest Option

[Go](#)

See What's Happening In Your Neighborhood



Use our interactive map to better understand the environmental impact of your neighborhood, relative to others. Compare two zip codes, or compare your zip code to the current City average and the future City goal.

[Compare Neighborhoods »](#)

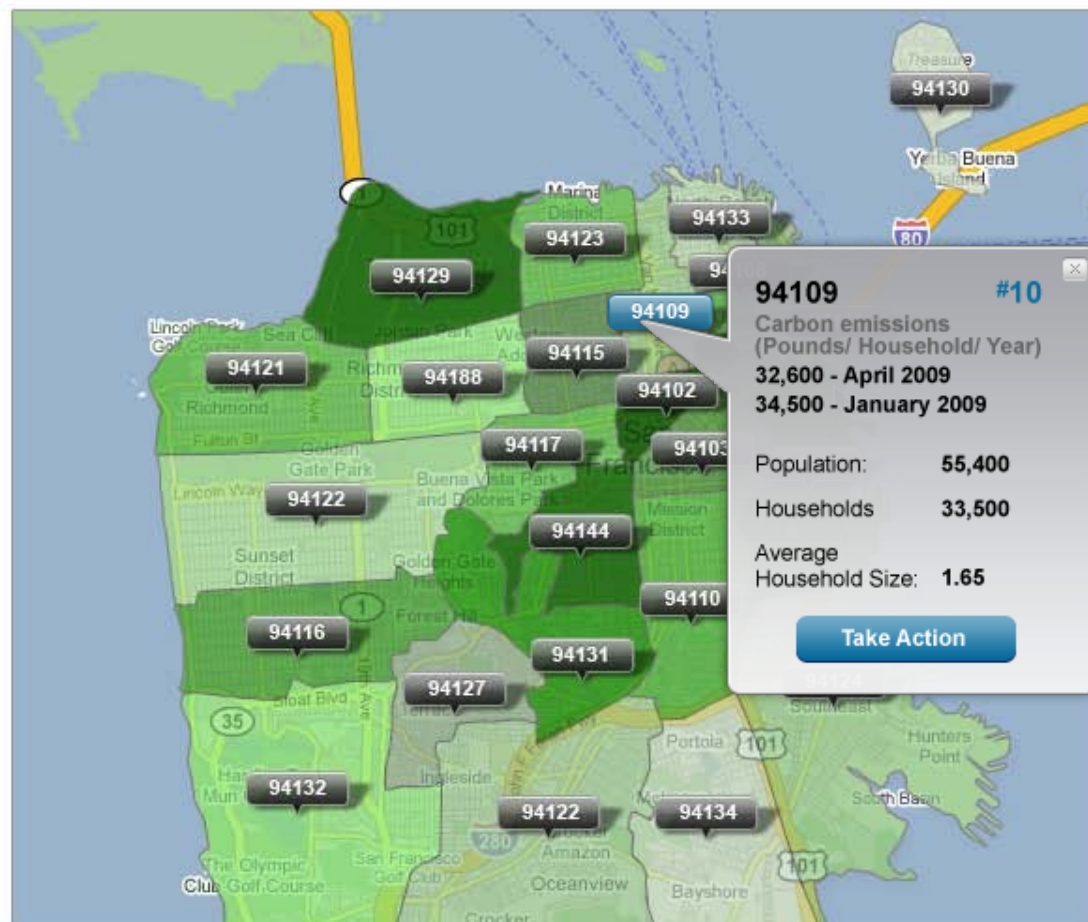
Are You Part of the Solution?



Use the "Action Advisor" to learn more about available environmentally friendly options. Identify what is most important, and the "Action Advisor" will build a list of suggestions and resources that are right for you.

[Take Action »](#)

Explore San Francisco's Carbon Emissions by Zip Code



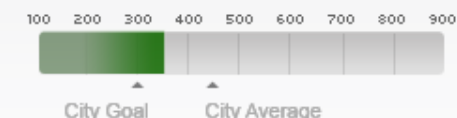
Best Performing Zip Codes - April 2009

	ZIP CODE	TRANSPORT	ENERGY	WASTE
1	94108	50%	46%	4%
2	94107	81%	16%	3%
3	94102	66%	31%	3%
4	94103	59%	33%	8%
5	94111	21%	74%	5%
6	94105	53%	46%	1%
7	94133	70%	26%	4%
8	94124	71%	24%	5%
9	94104	8%	86%	6%
10	94109	71%	27%	2%

[Show All »](#)

Zipcode Current Emissions

100 pounds of CO₂/Household



How is San Francisco Doing?

San Francisco is one of the cleanest and greenest cities in the U.S. and is well on its way to reducing overall greenhouse gas emissions to 20% below 1990 levels—ahead of the Kyoto Protocol.

Facts

At last measure San Francisco's total carbon emissions were 9% below its level of emissions



Reduce Your Carbon Emissions

1

Set Your Goals

Move the sliders to adjust your starting point

By Effort



By Cost



By Impact



2

Plan Your Actions

Identify actions that you will take in each of the following areas



Transportation

- ☐ Bike or Walk to Work
- ☐ Bike or Walk for Daily Travel in Town
- ☐ Carpool
- ☐ Drive a Hybrid
- ☐ Take Public Transit to Work
- ☐ Take Public Transit for Daily Travel in Town
- ☐ Utilize A Car Share Program for Regional Travel



Energy

- ☐ Cold Wash Clothing
- ☐ Do Not Use Heating and Cooling
- ☐ Flip the Switch and Unplug
- ☐ Hang Clothes to Dry
- ☐ Install Double Pain Windows
- ☐ Install Energy Star Appliances
- ☐ Install Programmable Thermostat
- ☐ Insulate Water Heater
- ☐ Run Dishwasher Washing Machines with Full Loads
- ☐ Take Short Showers (5 minutes)
- ☐ Upgrade Light Bulbs



Waste

- ☐ Compost Expired Food and Table Scraps
- ☐ Compost Yard and Garden Waste
- ☐ Recycle Plastic
- ☐ Recycle Aluminum
- ☐ Recycle Cardboard
- ☐ Recycle Glass
- ☐ Recycle Paper, Newspaper and Magazines
- ☐ Reuse Containers, Bottles, etc.

3

See Your Results

Chart your contribution

My CO2 Impact _____

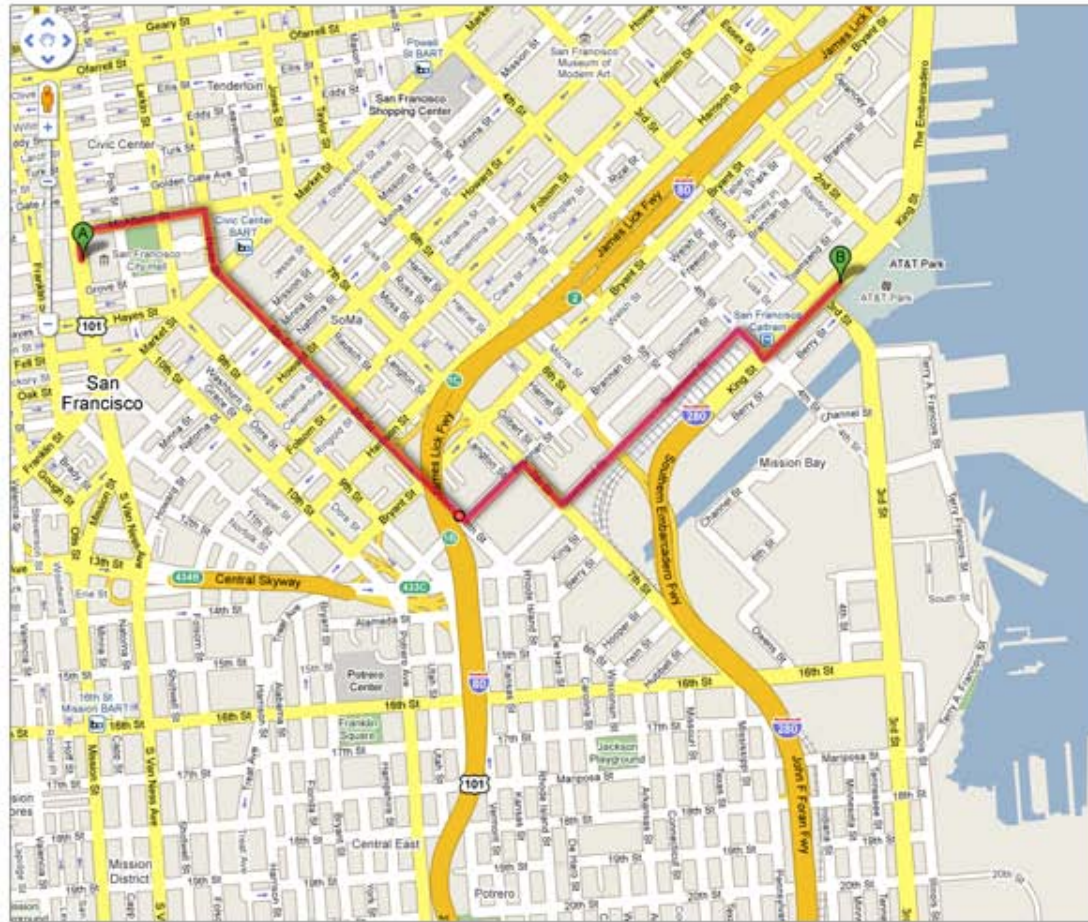


Take Action

[delete plan](#)



Plan your bike route



Plan my route

Start

1 Carlton B Goodlett Pl., San Francisco CA

Finish

24 Willie Mays Plaza, San Francisco, CA

Show my route

Route information

Distance: 2.3 miles

Difficulty: Easy



Elevation change

Bike for daily trips in town

Biking is often the quickest and cheapest way to get from one side of the city to the other, and everywhere in-between. Bikes can be used for shopping, exercising, and simply getting from one place to another emissions-free.

☒ Find a bike buddy

Cisco / NASA : Planetary Skin

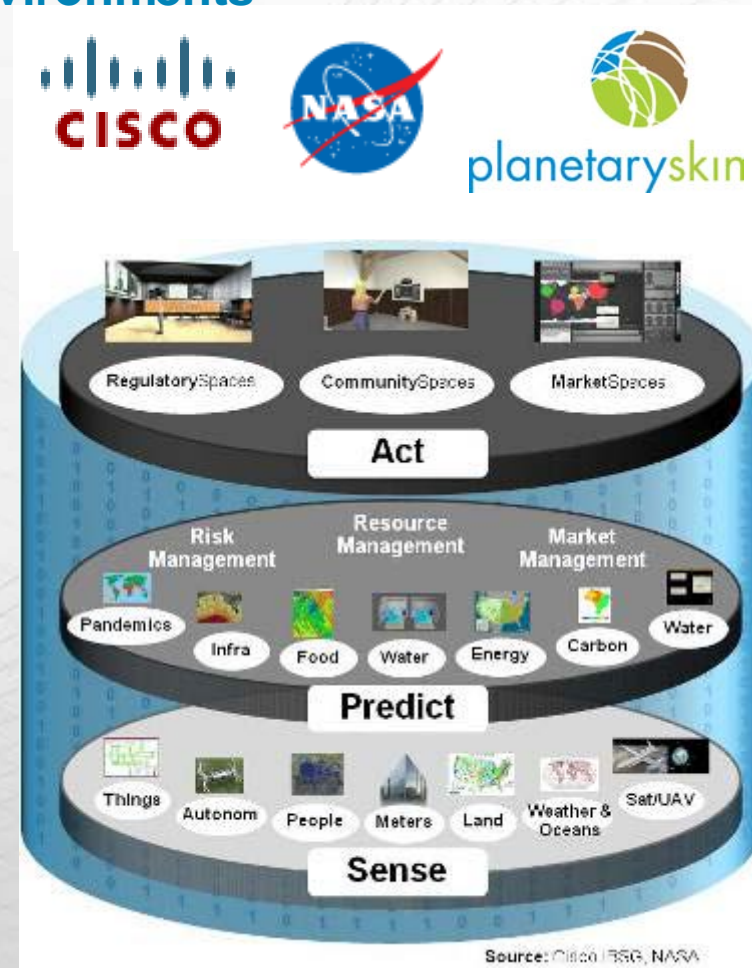
“Unifying monitoring, measuring, and managing rural environments, rural to urban interconnects, and urban environments”

The Problem:

- You can't manage what you can't measure, especially for resources, risks and environmental markets

The Solution:

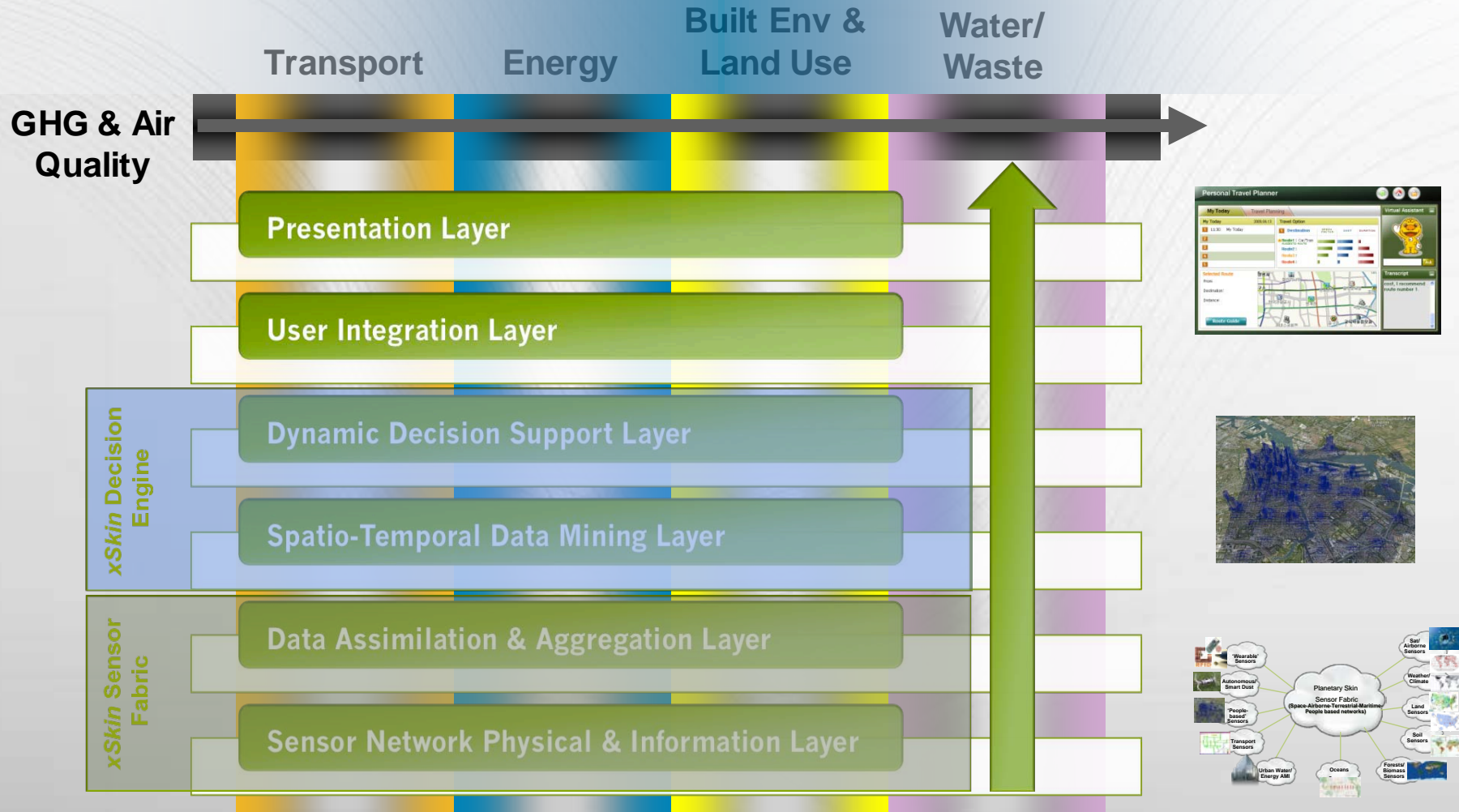
- A web-Platform capable to :
- Manage resources productively and effectively (energy, water, land, waste, and infrastructure)
- Manage risks (climate change risks related to rises in sea level, affecting coastal infrastructures, drought-related crop yield reductions, and disease proliferation and pandemics)
- Manage new environmental markets (carbon, water, biodiversity, and more)



www.planetaryskin.org

A Urban Services Platform Approach

Smart Infrastructure Management



From Incubation to Market Transition

Smart+Connected **communities**

Connected Urban Development

metropolis ●

Amsterdam: Smart Working Centres

Seoul: Personal Travel Assistant

San Francisco: EcoMap, Connected Bus

City Projects

Toronto

NYC: Yankee Stadium

Barcelona

Singapore: EPIC

Qatar : Gate Bldg

Greenfield Cities

China: Chongqing

South Korea

India: Lavasa

Globalisation Centre East

Community+Connect

Citizen Service Menu



Community+Exchange

One Common Urban Services Platform



Rethinking Urban 'Design'

from infrastructure to behaviour



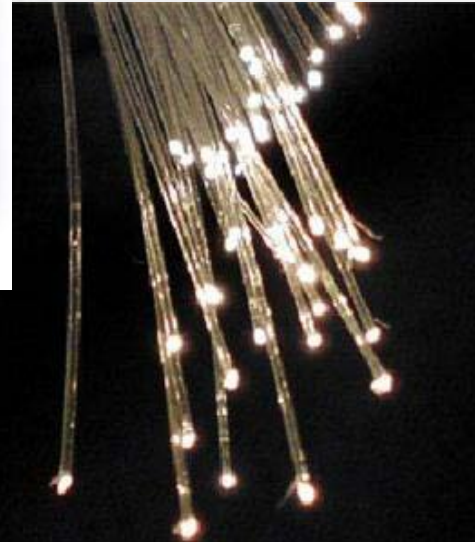
**Design of
Behaviour**

**Design of
Policies,
Organizations,
Business
Models,
Services**

**Design of
Infrastructure**

Questions

- What is the case for the city to become connected and sustainable ?
- How do we move from PPPs to PPPPs ?
- How is the 4th utility changing urban design and planning processes ?





cisco

cisco