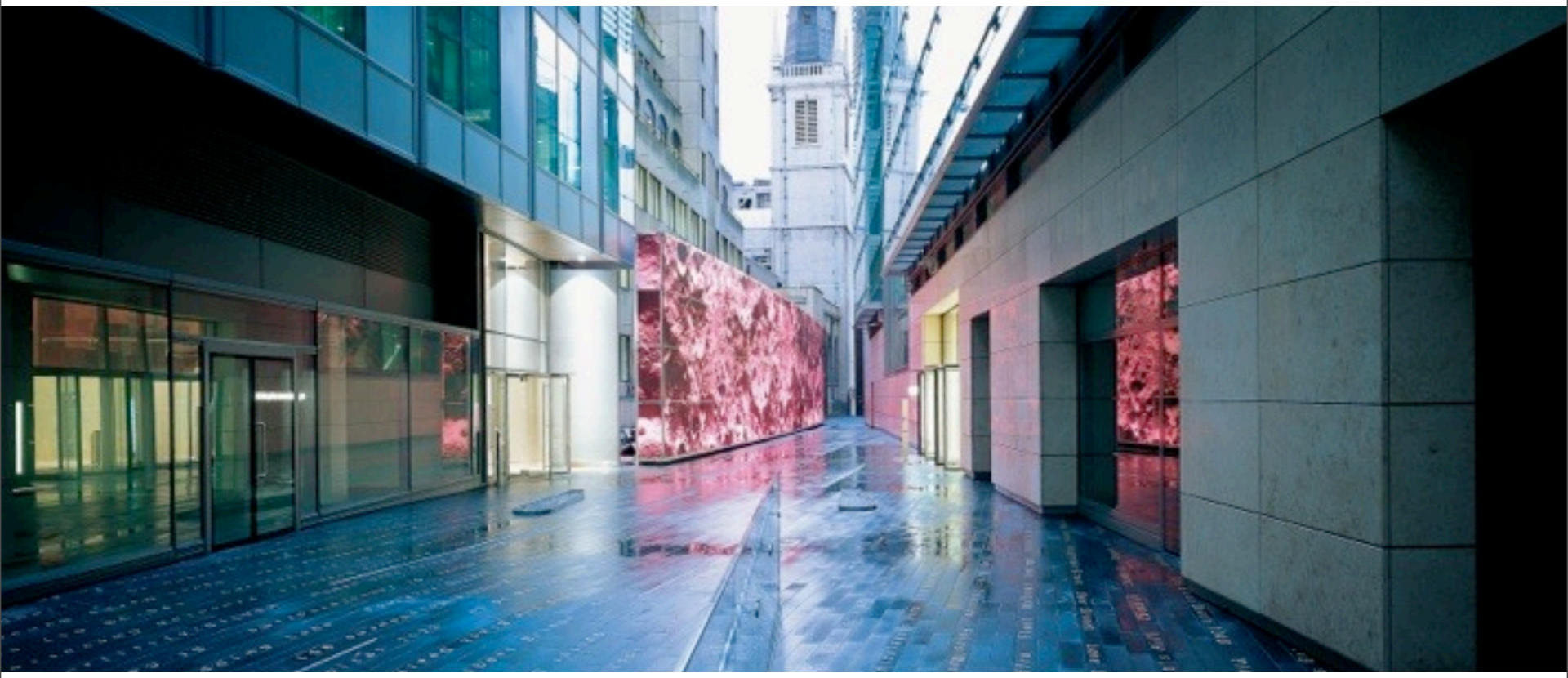
Smart Streets

Principles, Concepts and Delivery



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UK Planning background

Focus on transport

Started working mostly with engineers

Transitioned into urban regeneration projects & master plans

Spent 3 years in New York and San Francisco working on innovative systems

My background…

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Getting smarter because we must

£2.5 billion wasted in energy bills by UK companies due to inefficiencies such as leaving lights and computers on.

£7-8 billion is the estimated cost of road congestion in the UK economy per year.

76% of apples consumed in the UK come from overseas – traveling on average 3700 miles to reach us.

One third of the amount of food purchased by UK consumers is thrown away.

Life span for a UK citizen is reduced by 8 months due to poor air quality.

Financial markets spread risk but can't track it; this has led to undermined confidence and uncertainty.

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The Challenge

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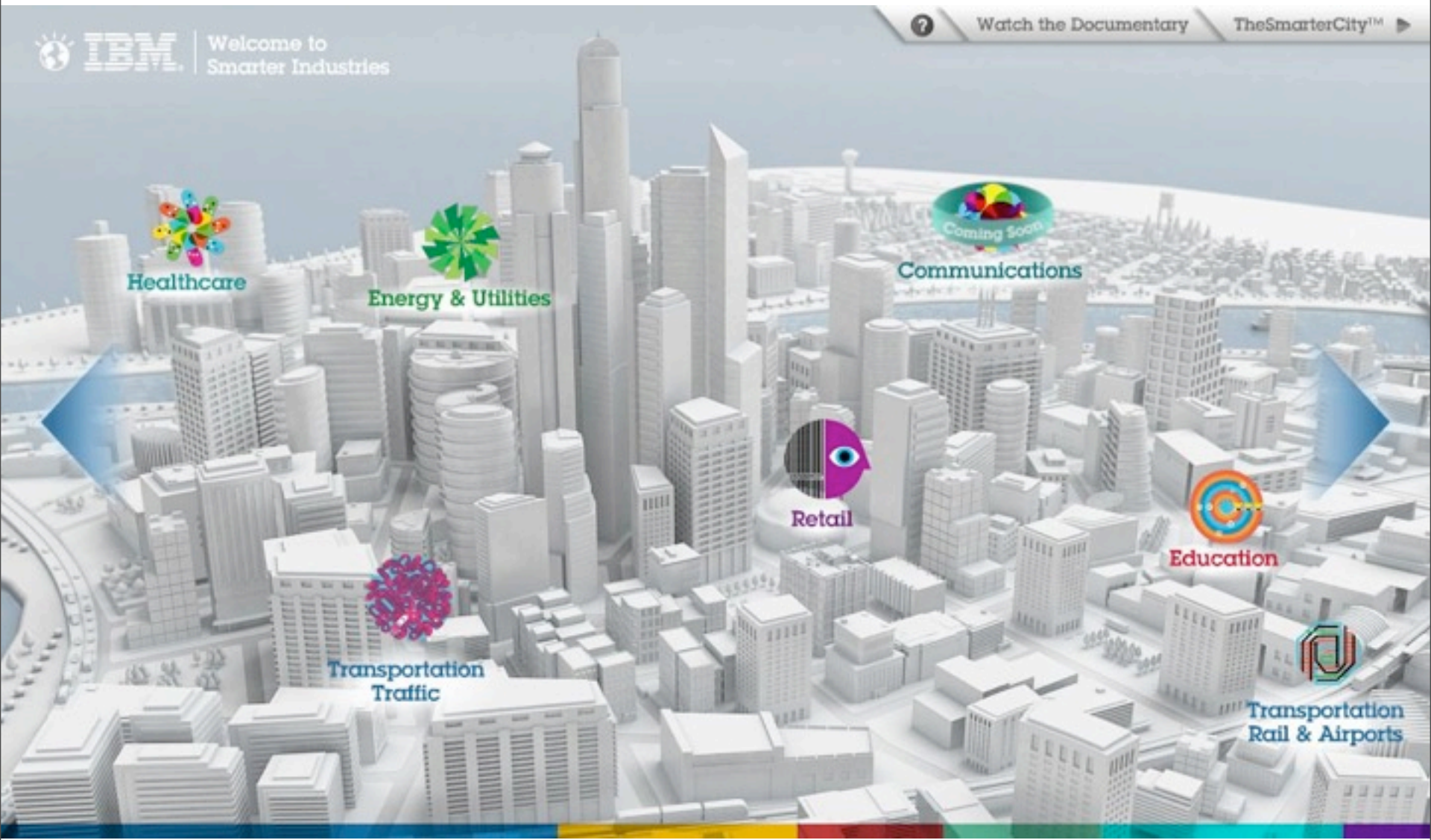
Existing Concepts



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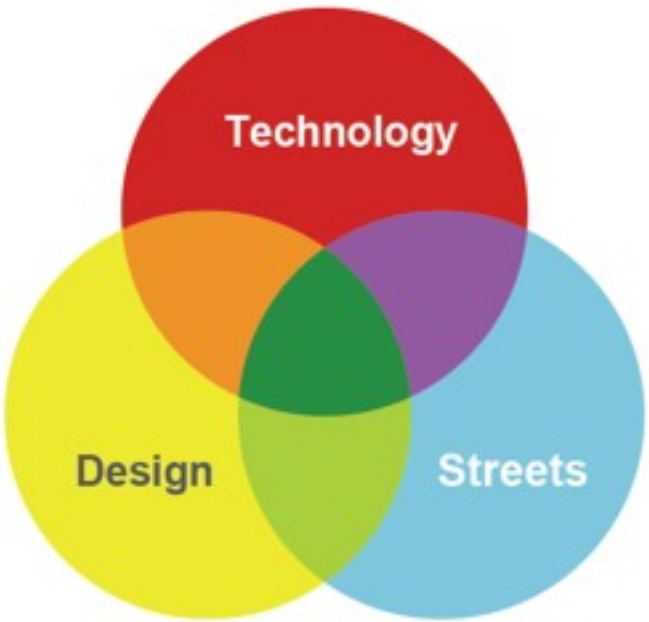
An Approach to Smart Streets

Technology

- Smartphone Apps
- Informatics
- Websites
- WIFI networking
- ICT / Realtime
- Data collection
- Data process software

Design

- Urban Design
- Landscape Arch
- Art
- Acoustic Soundscapes
- Media Content
- Furniture Design
- Architecture



Streets

- Urban Planning
- Urban Design
- Wayfinding
- Landscape Arch
- Street Furniture
- Lighting
- Transit Facilities
- Cyclist Facilities
- Smart Parking
- Civil Engineering

Smart Systems Examples:

U.S.

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NYC Smart Bins

Orange County Smart Streets

Houston Smart Street Efficiency

Smart Streets Harlem 125th Street –

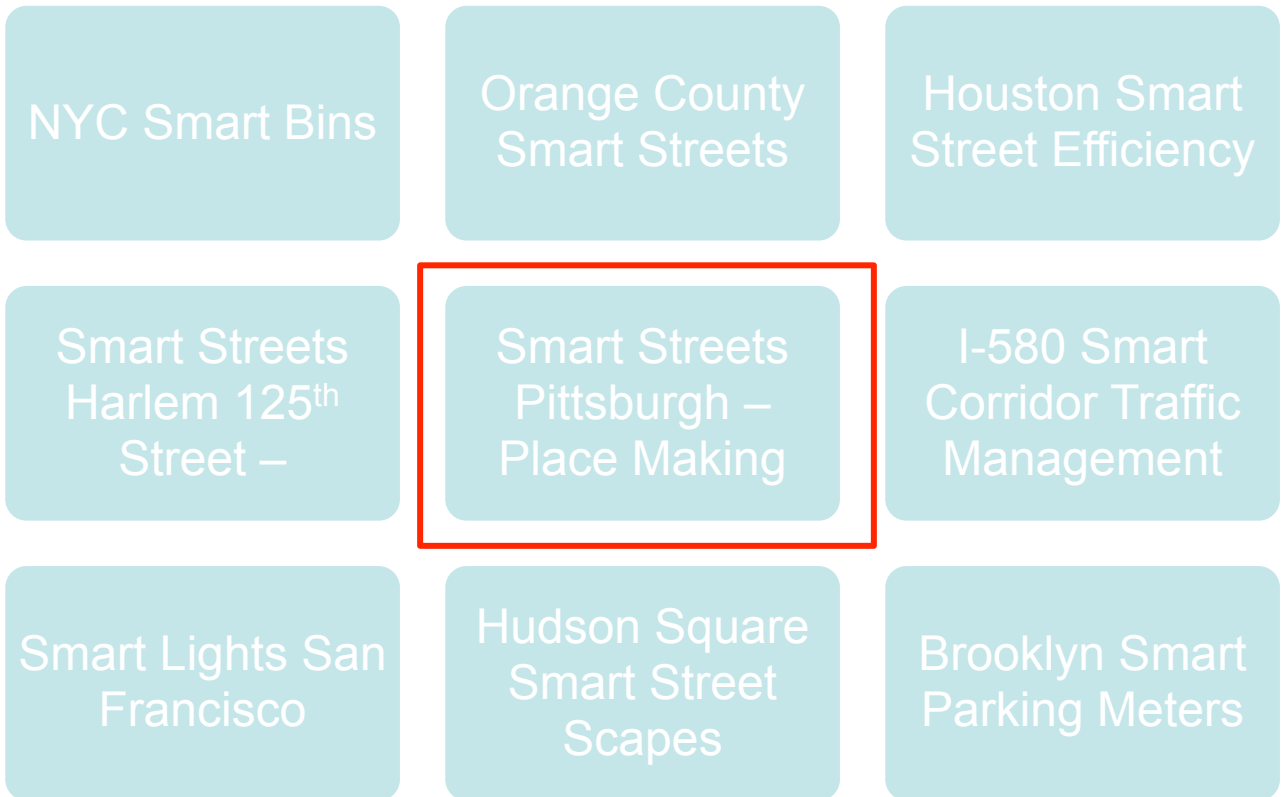
Smart Streets Pittsburgh – Place Making

I-580 Smart Corridor Traffic Management

Smart Lights San Francisco

Hudson Square Smart Street Scapes

Brooklyn Smart Parking Meters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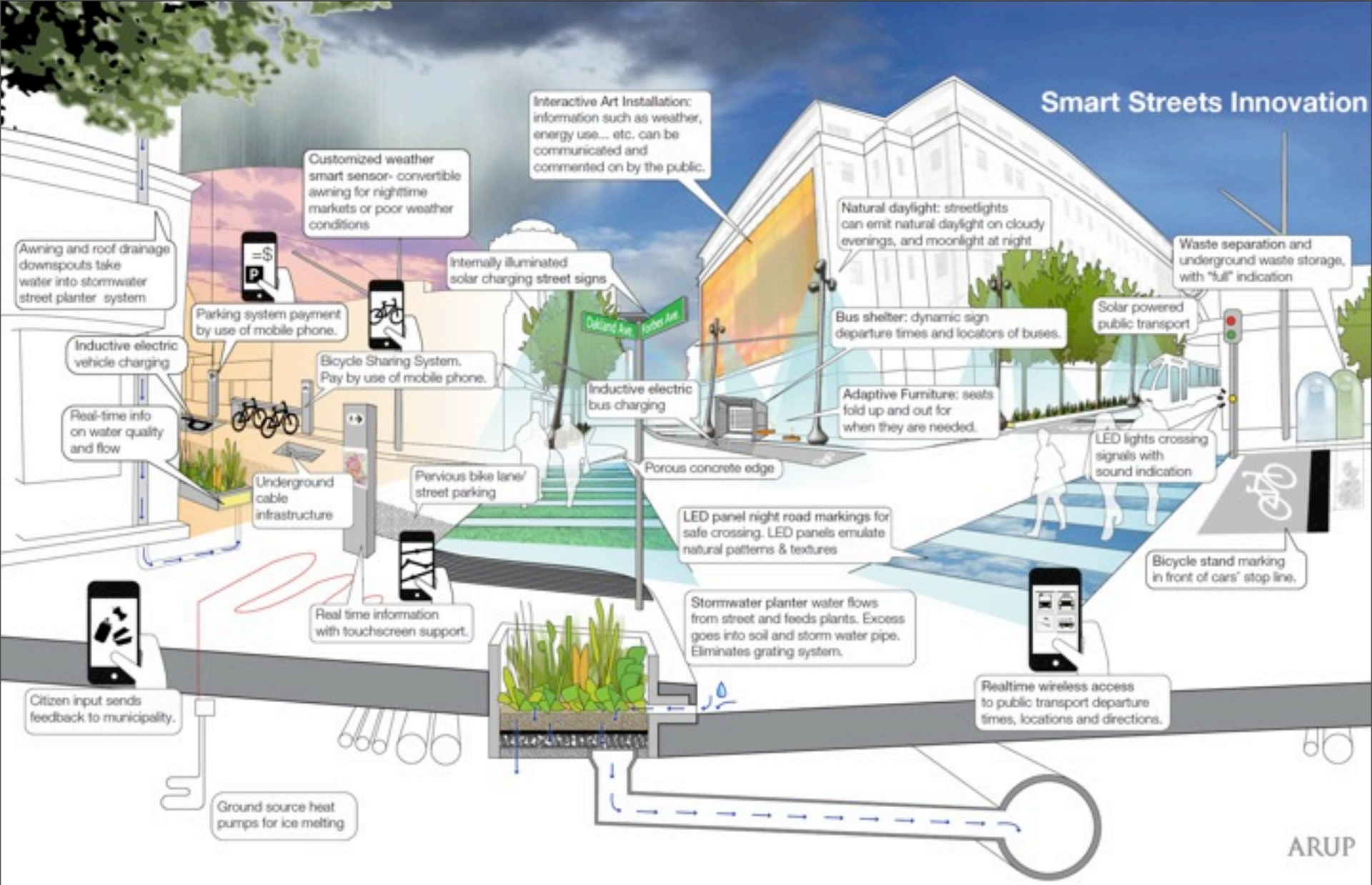
Smart Streets Innovation
Interactive Art Installation: information such as weather, energy use... etc. can be communicated and commented on by the public.
Customized weather smart sensor- convertible awning for nighttime markets or poor weather conditions
Natural daylight: streetlights can emit natural daylight on cloudy evenings, and moonlight at night
Waste separation and underground waste storage, with "full" indication
Awning and roof drainage downspouts take water into stormwater street planter system
Internally illuminated solar charging street signs
Parking system payment by use of mobile phone.
Bus shelter: dynamic sign departure times and locators of buses.
Solar powered public transport
Inductive electric vehicle charging
Bicycle Sharing System. Pay by use of mobile phone.
Inductive electric bus charging
Adaptive Furniture: seats fold up and out for when they are needed.
Real-time info on water quality and flow
LED lights crossing signals with sound indication
Underground cable infrastructure
Pervious bike lane/ street parking
Porous concrete edge
LED panel night road markings for safe crossing. LED panels emulate natural patterns & textures
Bicycle stand marking in front of cars' stop line.
Real time information with touchscreen support.
Stormwater planter water flows from street and feeds plants. Excess goes into soil and storm water pipe. Eliminates grating system.
Citizen input sends feedback to municipality.
Realtime wireless access to public transport departure times, locations and directions.
Ground source heat pumps for ice melting
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Proposed Rate Structure

	Current Rate	Progressive Rate
15 Minutes	25 c	
30 Minutes	50 c	
60 Minutes	$1.00	$1.50
90 Minutes	$1.50	$2.50
120 Minutes	$2.00	$4.00

Smart Street Examples:

Australia

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ICT on Freeways

VicRoads Smart Streets

Climate Smart Precincts Adelaide

C40 Cities – Melbourne

AusGrid Smart Grid Australia Gov

ICT on Freeways

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Informatics: Realtime Street Signage


Mobility
Distributed mobility
Collins Street
2 min walk
Next tram #74 Vermont South
3 mins
Flinders Street
5 min walk
Tram stops, bus stops and train stations are 'informationally-rich' spaces, embedded with real-time transit data & wayfinding elements.
Distributing pervasively (mobile, web, street) increases the amenity and quality of service associated with walking, cycling and public transit.
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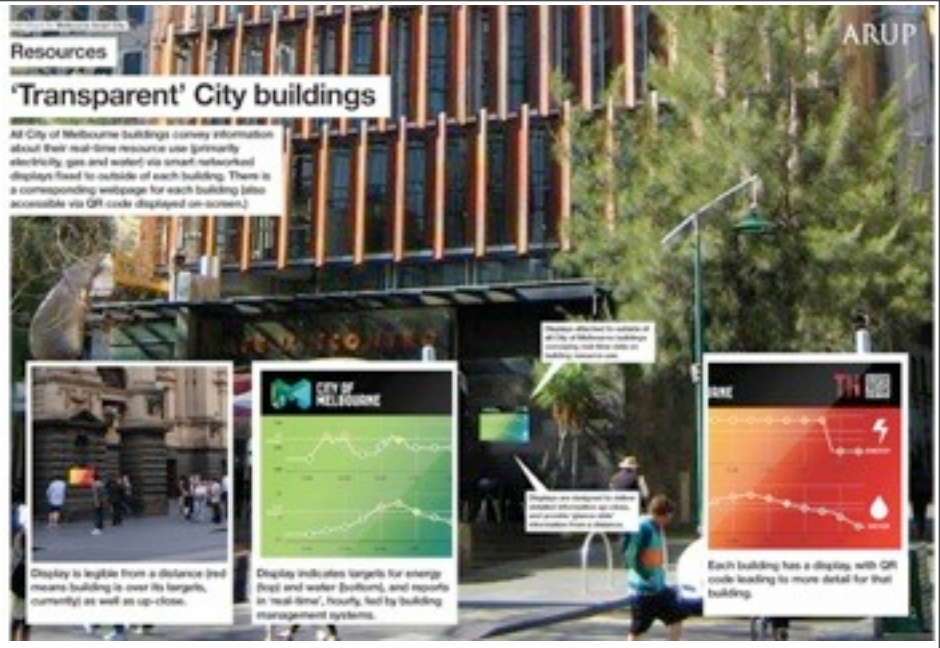
Resources
'Transparent' City buildings
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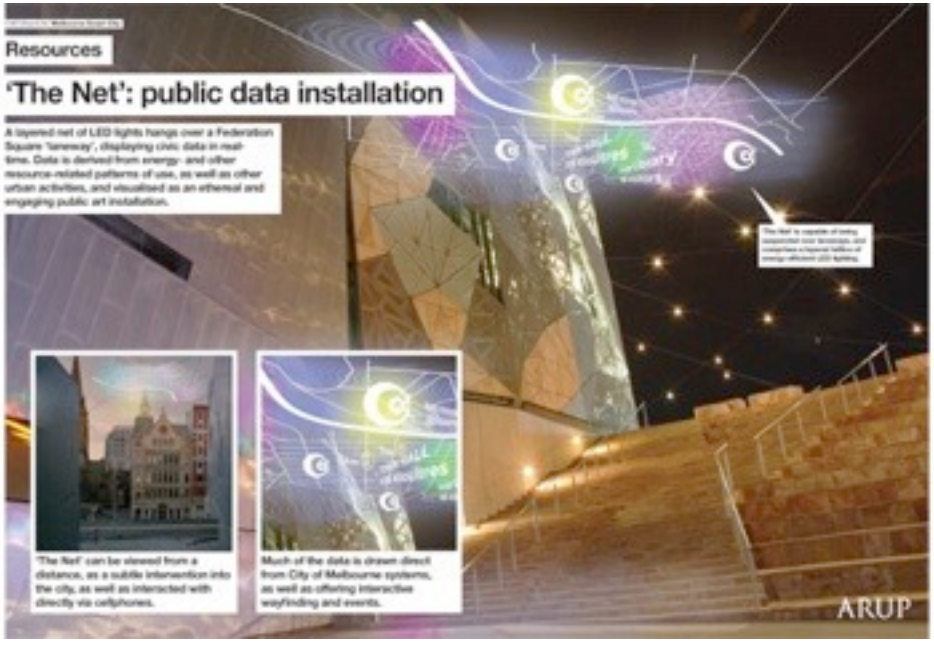
Display is legible from a distance (red means building is over its targets, currently) as well as up-close.
Display indicates targets for energy (top) and water (bottom), and reports in 'real-time', hourly, fed by building management systems.
Each building has a display, with QR code leading to more detail for that building.


Resources
'The Net': public data installation
'The Net' can be viewed from a distance, as a subtle intervention into the city, as well as interacted with directly via cellphones.
Much of the data is drawn direct from City of Melbourne systems, as well as offering interactive wayfinding and events.
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Mobility
Public transport space
THIS TRAM
ROUTE 75
VERMONT SOUTH
Wi-Fi
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ICT on Freeways

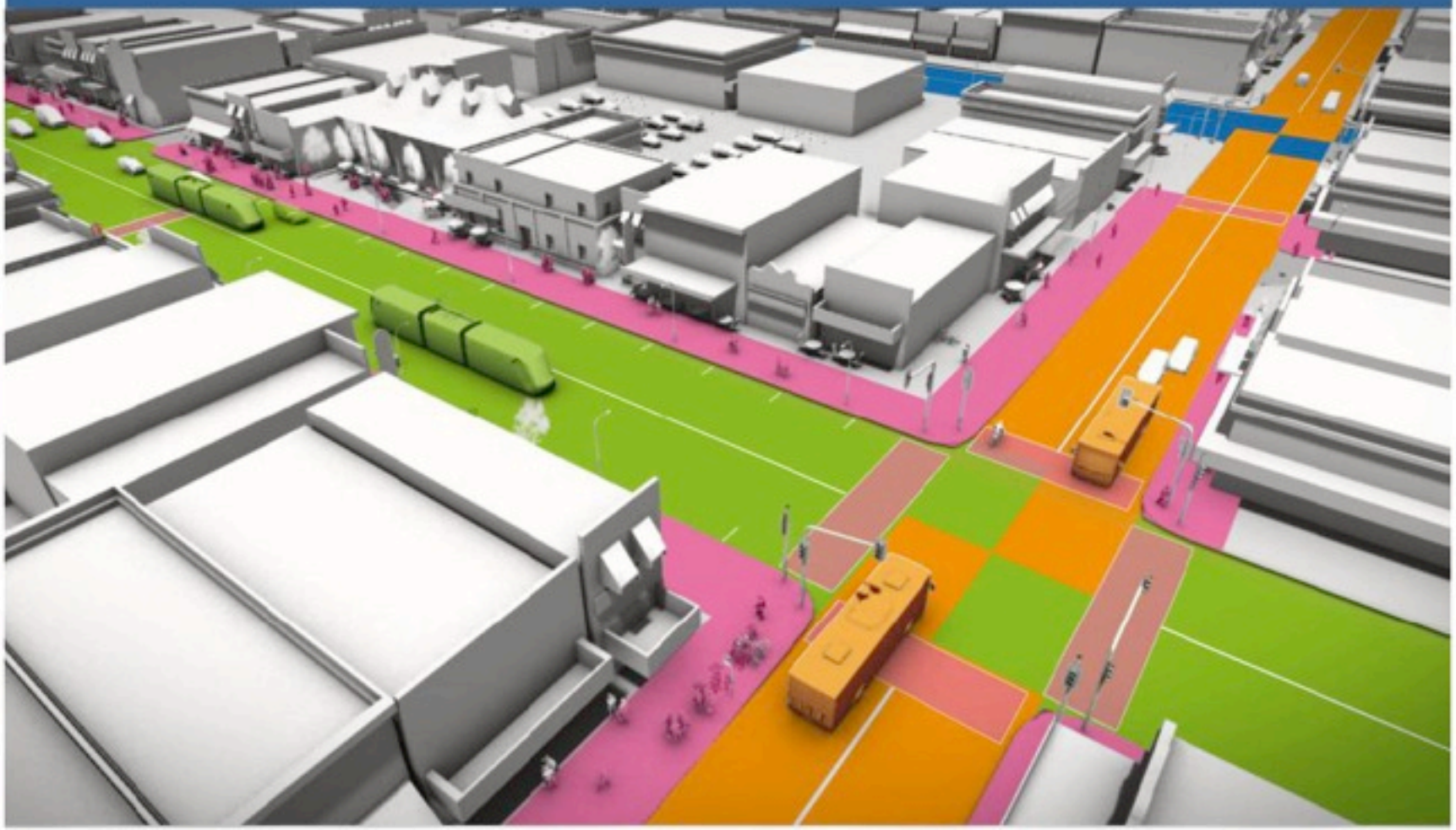
VicRoads Smart Streets

Climate Smart Precincts Adelaide

C40 Cities – Melbourne

AusGrid Smart Grid Australia Gov

SmartRoads Guidelines Version 1.13



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Smart Systems:

Delivery

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Delivering Smart Systems

- Champions:
  - Pittsburgh
  - New York
  - California
  - Melbourne

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Delivering Smart Systems

- Champions:
  - Pittsburgh
  - New York
  - California
  - Melbourne
- Funding
  - Private Sector
  - Multiple Business Entities (BiDs, Chamber of Commerce etc.)
  - Electoral Leadership
  - Open / Crowd Sourced

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Smart Street Elements:

Technology

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Public Information – Behavioral Change

Digital Wayfinding

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Free WiFi

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Smart Street Elements:

Design

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Public Art: Soundscapes

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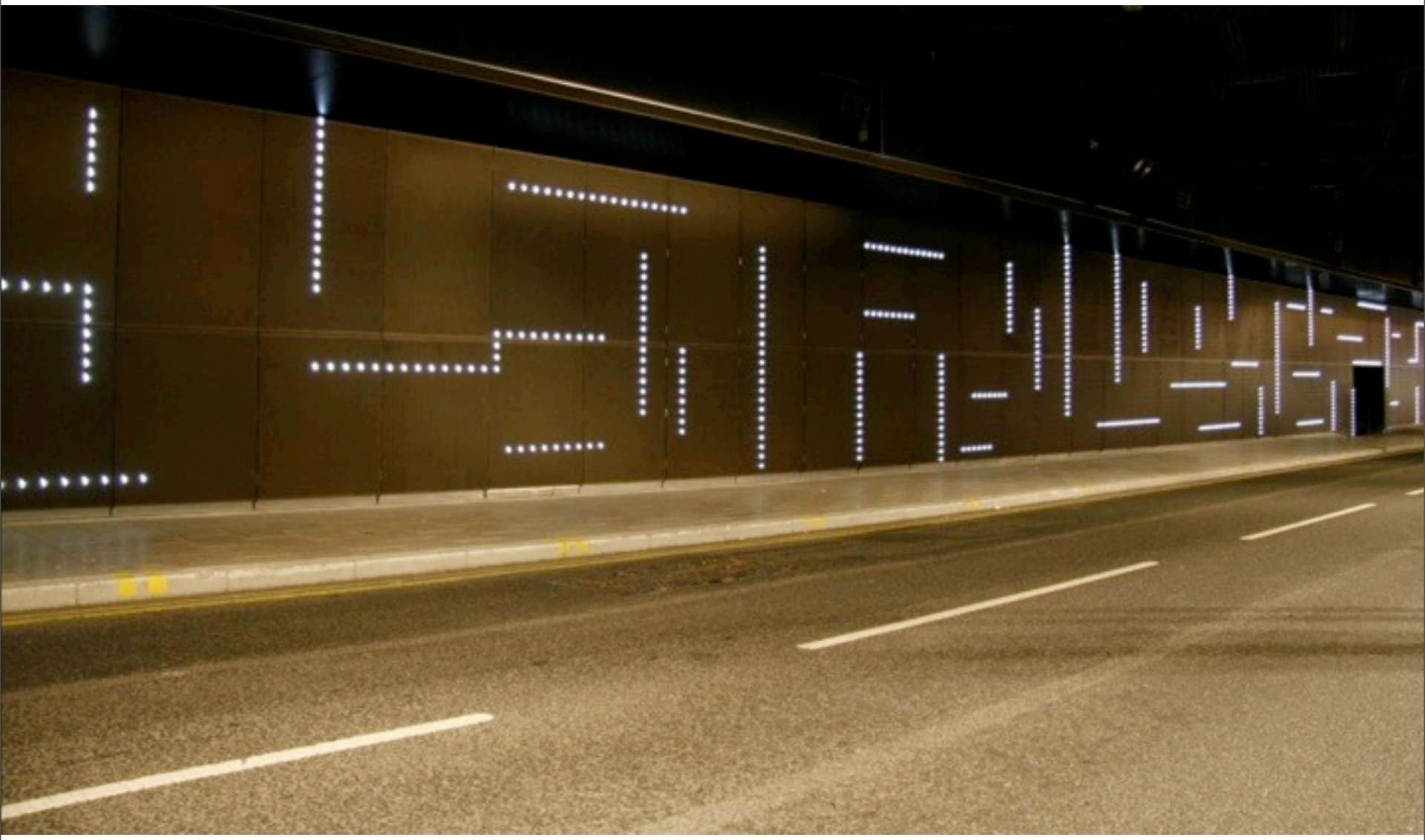
Public Art: Light and Urban Design



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Still Smart

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Design and Orientation

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Landmark, Placemaking, Identity

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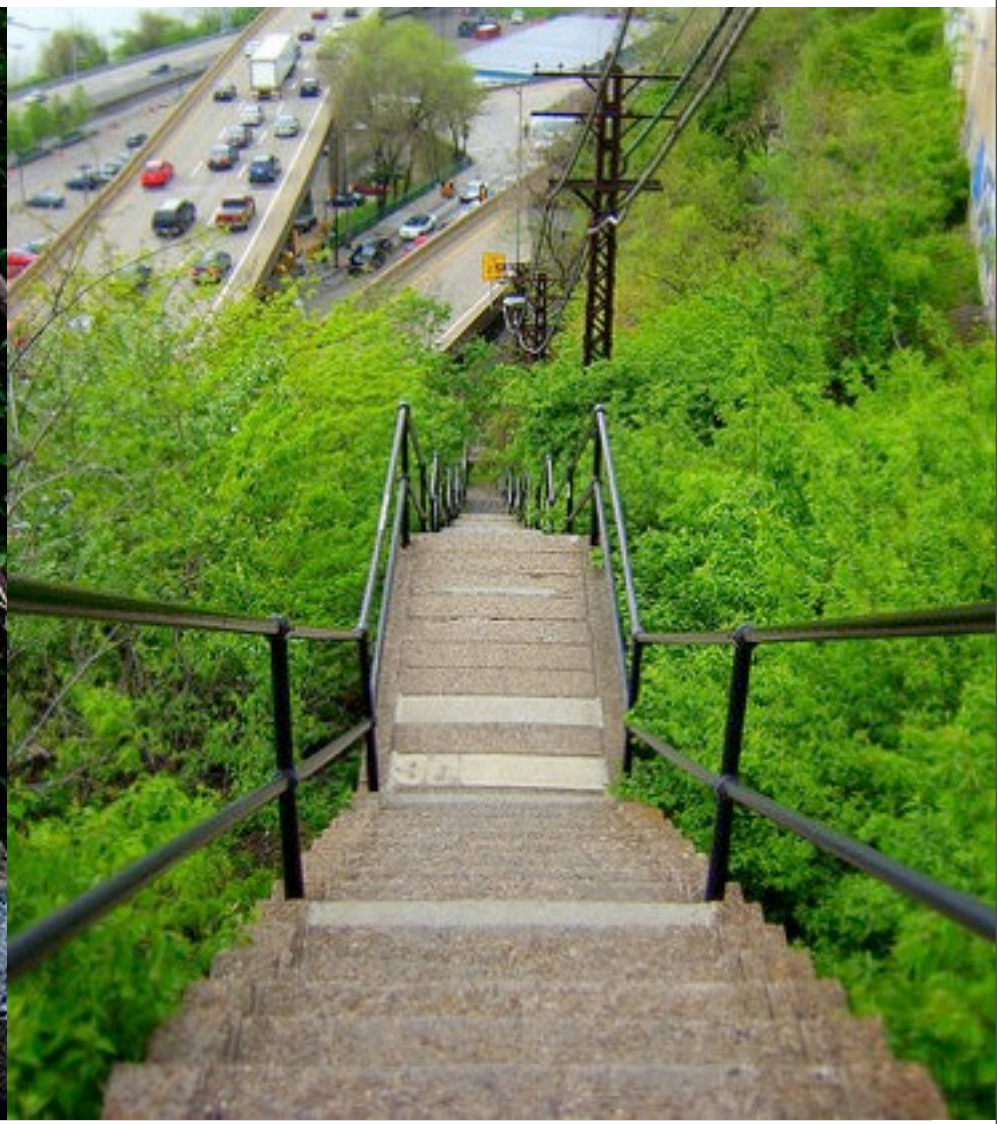
Connectivity



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Smart Systems:

Future Technologies

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Future Technologies

Automatic for the people

Driverless cars and the future of mobility

Could the signing, in September 2012, of a bill to bring driverless cars to the roads of California mark the start of the next major change in mobility? Could it even redefine our relationship with the car?

Josef Hargrave, a consultant with Arup Foresight and Innovation, thinks so: "Driverless vehicles will have wide-ranging implications for society," he predicts. "There's no doubt that as the potential of automated vehicles unfolds, we will experience a massive shake-up in how we live, work and travel."

New ownership models, new city designs

For a start, Hargrave expects driverless cars to drive an entirely new model of manufacturing and ownership. "I think we'll see manufacturers transforming into mobility service providers to build on the growing success of car sharing schemes such as ZipCar," he says. "And, in the longer term, private companies, governments or local authorities could work together to own and maintain a fleet of automated vehicles for consumers."

John Eddy, Arup's global civil engineering leader, believes that widespread adoption of automated vehicles could lead to a radical change in the way we design and use our cities. "This will give us the chance to evolve our cities away from an auto-centric construct where private cars clutter up our city space and return instead to cities designed around people."

"The automated vehicle will gift our dense urban areas with quieter and more

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Future Technologies

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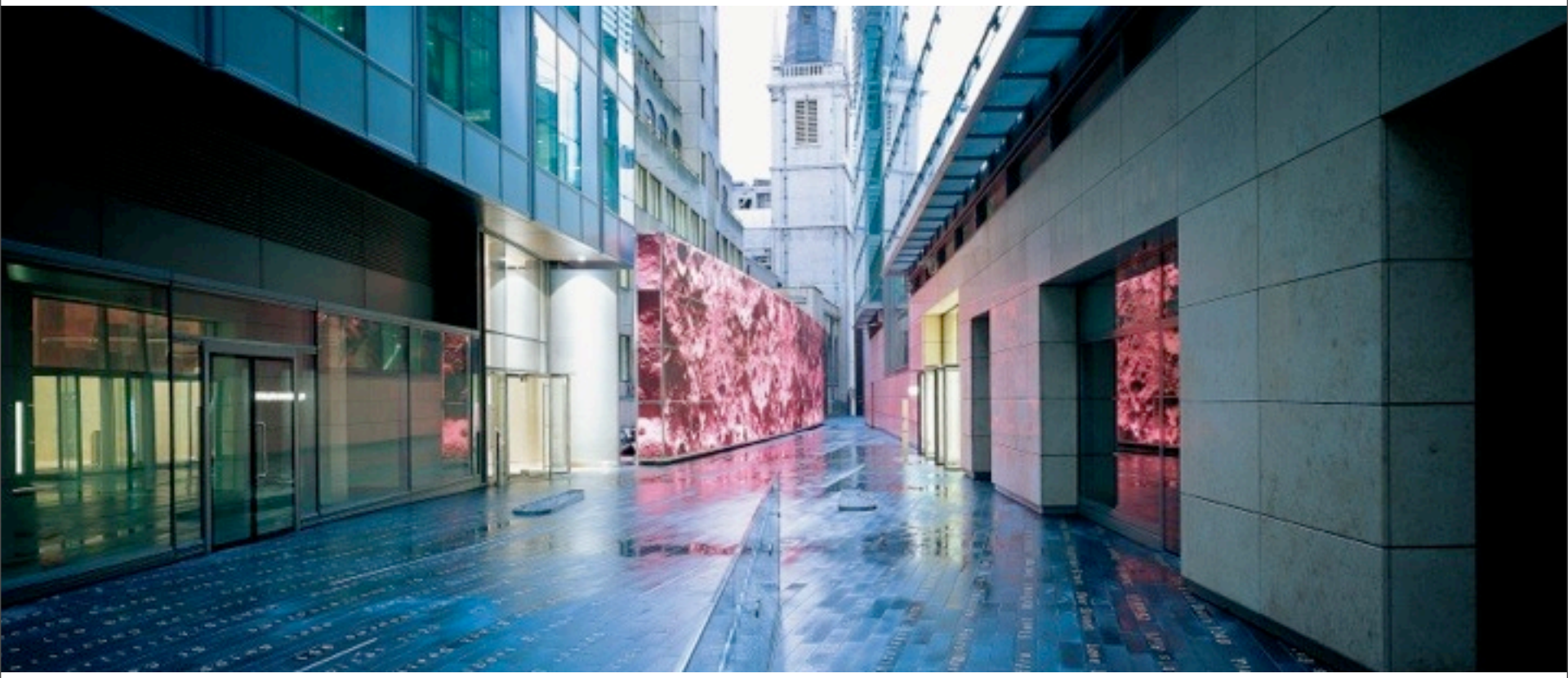
Thank you

Phil Carter



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