Brendan O’Brien  September COST Workshop
Dublin – World Class Location

- 5th Most Attractive European City for Inward Investment
- Strong City Brand – 12th in Europe and 29th in the world
- Ireland is the 2nd most **Globalised** country in the world -
- 8th Cities in Europe for cycling and the second safest City.
- One of the most **liveable cities** in the world - ahead of San Francisco, Helsinki, Boston, Madrid and Seattle.
- **Diversity** is main strength
Some Transportation Issues

- Historic City Core
- City approx 500K, Greater Dublin Area 1.4 m
- Majority of Irish imports/Exports through Port, Situated within 2 Km of City Centre.
- Central Business District 30% by Car
- Outer areas 70-80% by Car
- Policy decision in 1994 not to build additional road capacity but to prioritise Public Transport
New Light Rail System LUAS
Port Tunnel

- Trucks Banned from City Centre
- Electronic Permit System
- HGVS reduced by 97% in City Centre
- Very large Reduction in accidents.
• Large scale investment in ITS Systems
• Adaptive Traffic Systems
• CCTV
• VMS
• Parking Systems
• Footfall Counters
• Large Data Storage
Existing use of technology for efficient public services in Dublin

- Mobile Phone to pay parking

- 2.3 million journeys on Dublin Bikes (And growing every day!)

- Real Time Passenger Information using open technology
Data

Pedestrian Flow
Traffic Control

Large Amounts of Data

• Systems work well but are complex
• CCTV systems and VMS signage
• Why does traffic move so well today and not tomorrow.

Junction Optimisation

• Need control room Operators
• Great for incidents and accidents but Analysis.???
• Hmmm difficult to say could be too many cars. !!!
Traffic Control

Junction Optimisation

- Need control room Operators
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- Where is the investment needed.
Dublin City Centre
Micro Simulation Model

Parnell Sq
Mountjoy SQ
TCD
Merrion SQ
Stephen’s Gn
Questions for a City

• How to Visualise all its data
• How to understand what is important
• How to intervene effectively
• Where to invest
• What functions it needs to undertake.
• What should it do with it’s data.
• Should all data be available and how do we share real time data.
IBM / Dublin Smart City projects launched in 2009
Location of IBM’s Global Smart City Technology Centre in Dublin

City as a Test-bed for international product & service innovation

Current Dublin Smart City Seed Projects
- Water
- Movement
- Energy
Dublin: IBM Research’s First Smarter Cities Technology Centre

Developing Intelligent Solutions Across a System of Systems

- Optimization
- Forecasting
- Simulation
- Predictive Modelling
- Driving New Economic Models
- Significant Collaborative R&D
- Skills Development & Growth
- Competitive Advantage

Seed Projects

- Energy
- Movement
- City Fabric
- Water
- Constrained Resource Modelling Prediction & Control
Examples of Collaborative Smarter Cities Seed Projects in Dublin

Transportation

- Continuously assess the state of the public transport system
- Provides personalized, real-time advice to riders and dynamic load-balancing opportunities to transit providers

Water and Energy

- Collaborative sensing of water/energy consumption in public buildings
- Enables occupants and facility managers to manage and optimize resource usage, and utility providers to predict demand

City Fabric

- Open Innovation Platform (Dublinked) for publishing and managing Dublin city’s linked open data
- Positions Dublin as a hub for smarter city research, development, and innovation
Merrion Water Project – SMART water metering

Visualisation of high water consumption to support management and resource optimisation
DCC has Real Time data on Dublin Bus Fleet.
Allow IBM access to data and provide server space.
1000 vehicles provide location information every 20 – 30 Seconds.

Provide Visualisation of data
Allow a city wide view but also provide the means of seeing where problems are.
Handle verbose XML SIRI standard records.
DCC has Real Time data on Dublin Bus Fleet
Allow IBM access to data and provide server space. 1000 vehicles provide location information every 20 – 30 Seconds

Provide Visualisation of data
Allow a city wide view but also provide the means of seeing where problems are.
Handle verbose XML SIRI standard records.
• Dash Board type view
• Linked to visualisation using Google Earth
• Allows focusing in on data
Bus Lane Speed Over Time
Buses and bus stop locations

Transportation Awareness and Optimization System

Bus Delay Distribution

Bus Delay over Time

Average Delay (minutes)

0 1 2 3 4 5

Time

17:15 17:20 17:25
Data used for Bus arrival Predictions
PublishedLineName>123</PublishedLineName>
<OperatorRef>bac</OperatorRef>
<DestinationRef>MARINO</DestinationRef>
<DestinationName>Marino via O'Connell Street</DestinationName>
<Monitored>true</Monitored>
<InCongestion>false</InCongestion>
<BlockRef>123006:31</BlockRef>
<VehicleRef>28023</VehicleRef>

AimedDepartureTime> 2011-09-08 T13:21:22 <

ExpectedDepartureTime> 2011-09-08 T13:22:42 <
Suppose you want to go from here to here.

Many routes to accomplish the journey.

Each can involve connections, wait times, and uncertainty due to normal traffic patterns as well as unusual occurrences.

How should you make up your mind?
You are currently on a bus on the purple line,

Your plan is to transfer here

Five minutes ago, there was an accident on the red line

What if you had real time information about the status of the network and the value of your options?
SMART TRANSPORTATION SOLUTIONS

Your current route plan:
- Purple line Bus #7a; Transfer to Red Line Bus #14 at Trinity college

Warning! Accident at Rathgar road.
- This route has a high probability of being significantly delayed! Explore alternates options?
Smart Cities Interface

- Data is the key
- A Smart City Fabric is built on sensors.
- All systems in Dublin will have a “Smart Cities Interface “
- No systems should now be deployed that has no open interface.
- But large scale systems tend to have licences with high costs.
- SCATS / SIRI compliant systems licence per connection. (25 – 30 K per connection)
Dublinked

Open Data Sharing to support innovation & enterprise ecosystem

- Led by the 4 Dublin Local Authorities Project managed by National University of Ireland Maynooth
- Portal and technical support by IBM
Dublinked Data

Dublinked DataStore™

Find what you need

Enter Keywords

No category selected

No region selected

Search Now

Request New DataSets

Enter description

Add Extra Details

Request

<table>
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Datasets

Water consumption measured at DMA level
- Every 15 minutes
- For 1 month (April 2011)

Water consumption measured at household level
- Merrion road
- Every 15 minutes
- About 1 year
Real Time Data

- Problems with Interfaces/ Licences
- Large data volumes and a possible one to many relationship for data distribution.
- "stale" data is not real data.
- Systems tend to present data in a way that often requires expertise to decipher.
- What happens if City Stops supporting a system
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Later departures

Search again