

Smart City Technology Centre

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September 2010



Big Green Innovations is the latest step in a journey that began 35 years ago



1992

IBM becomes charter member of EnergyStar program

2005



2006



IBMers "jam" on innovations for a better planet, and IBM invests \$20M

45%

reduction in IBM's total worldwide CO2 emissions attributable solely to its energy conservation efforts between 1990 and 2005.

- * Big Green Innovations
- * Intelligent Utility Network

1990

1971

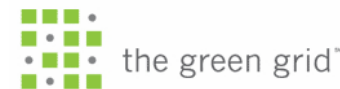
IBM formally establishes a Corporate policy on Environmental Affairs



1996

In remarks at a White House briefing on climate change, Vice President Gore applauded IBM's new PFC emissions reduction goal.

"These developments send a strong message: A healthy environment and a healthy economy go hand in hand," the Vice President said. "Through technology and innovation, we can turn this challenge into a huge opportunity for business and for America. And the sooner we act, the easier it will be."



Collaborating to solve problems

A Smarter Planet

Instrumented



+

Interconnected

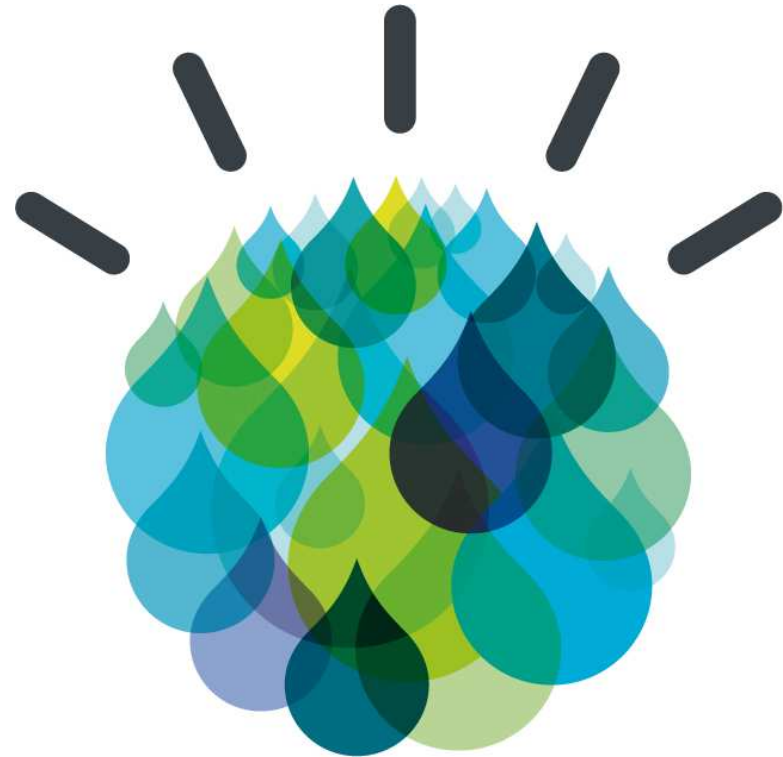


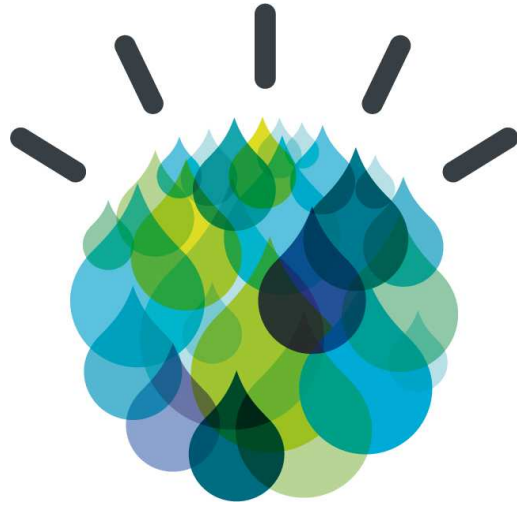
+

Intelligent



=





IBM Global Centre of Excellence for Water Management



Ireland - Water Quality – Smart Catchment / Marine



USA - Industrial Water



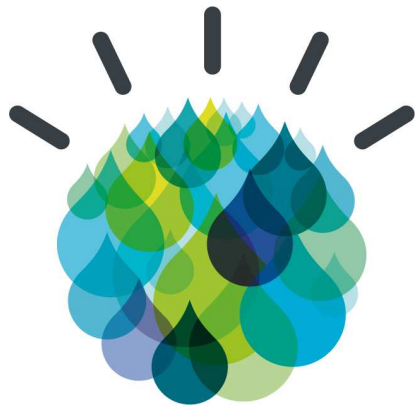
Netherlands - Flood Management



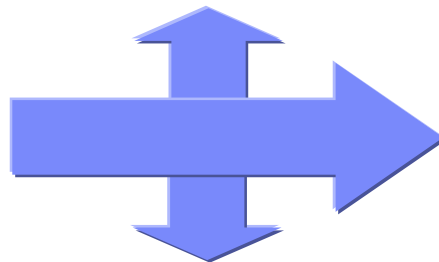
France - HPC



Smart Bay



Dublin Centre's Focus Areas



Smart Beaches

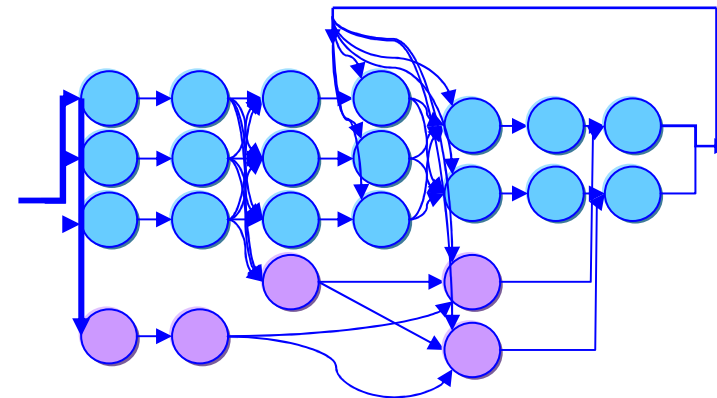


Novel Real Time Monitoring

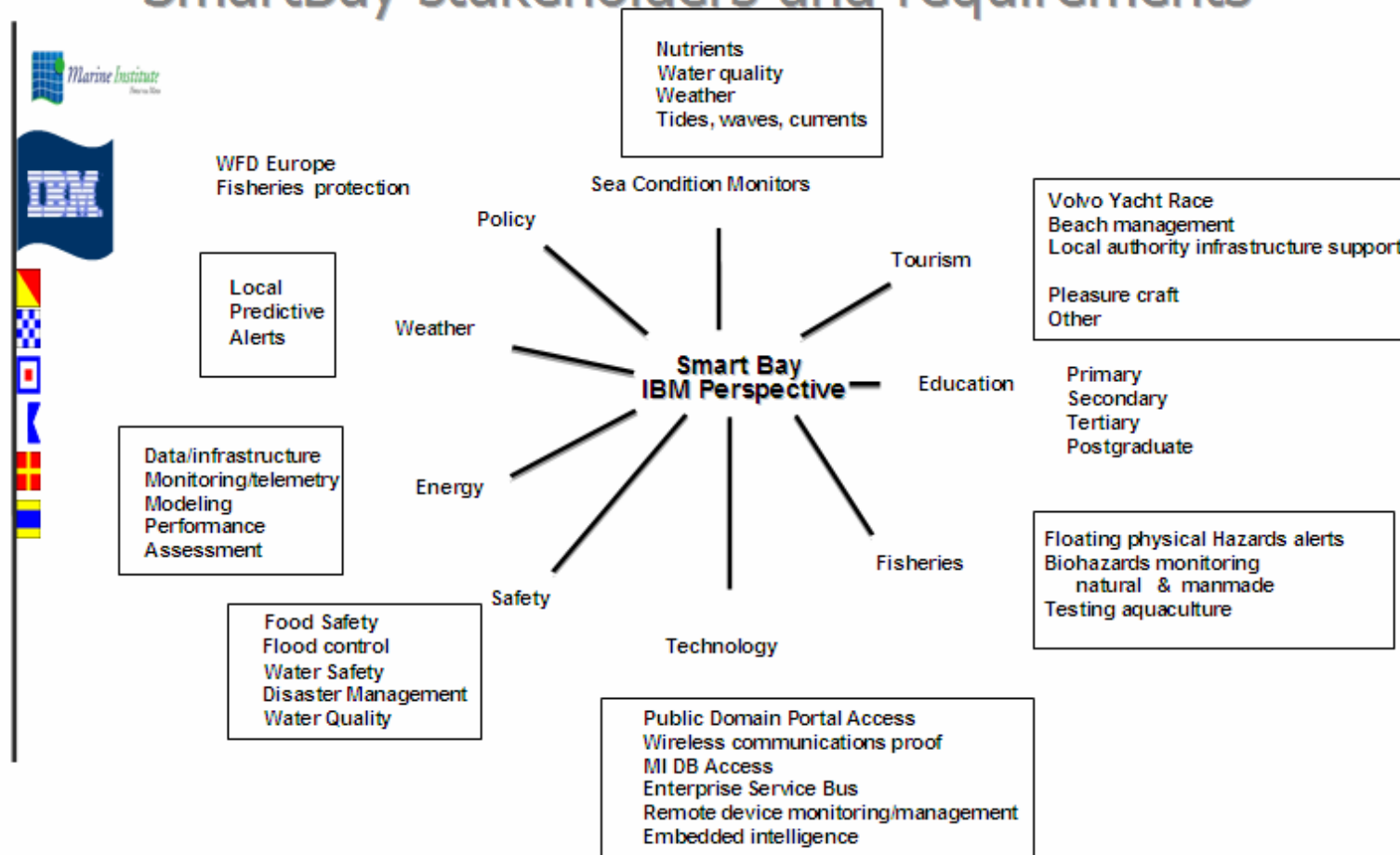


SmartBay: Four Innovative, Overlapping Projects

1. **Sensors in environment - enabling monitoring and management:** optimising real world assets
2. **Integrated data and information:** with innovative human interface and advanced visualization capabilities enabling stakeholders to collaborate better
3. **Advanced device monitoring and management** for remote sensors and data collection/aggregation platforms
4. **'Stream Computing'** – working with large volumes of real time data



SmartBay stakeholders and requirements



Data across various stakeholders / systems in the Marine environment can be synergized to yield information to an expanded stakeholder base for the most beneficial use of the environment.

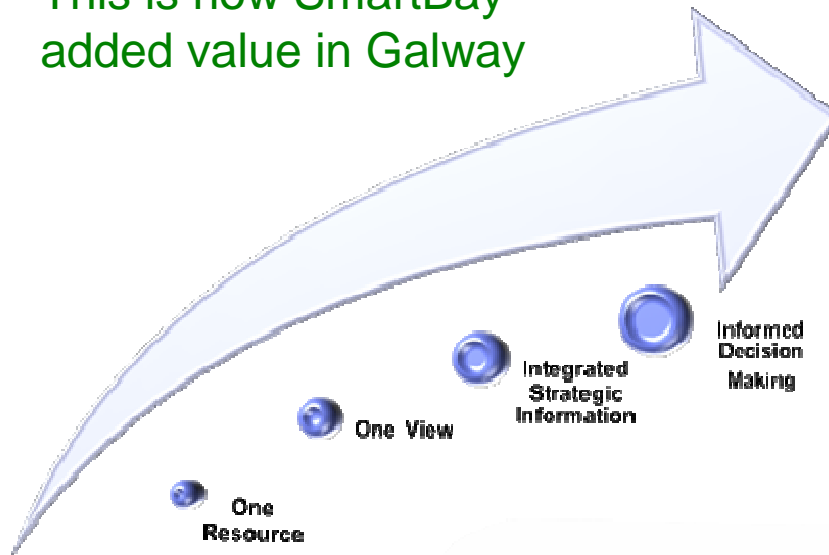
Link to Video:

<http://www.marine.ie/home/services/operational/SmartBay/SmartBayVideo.htm>

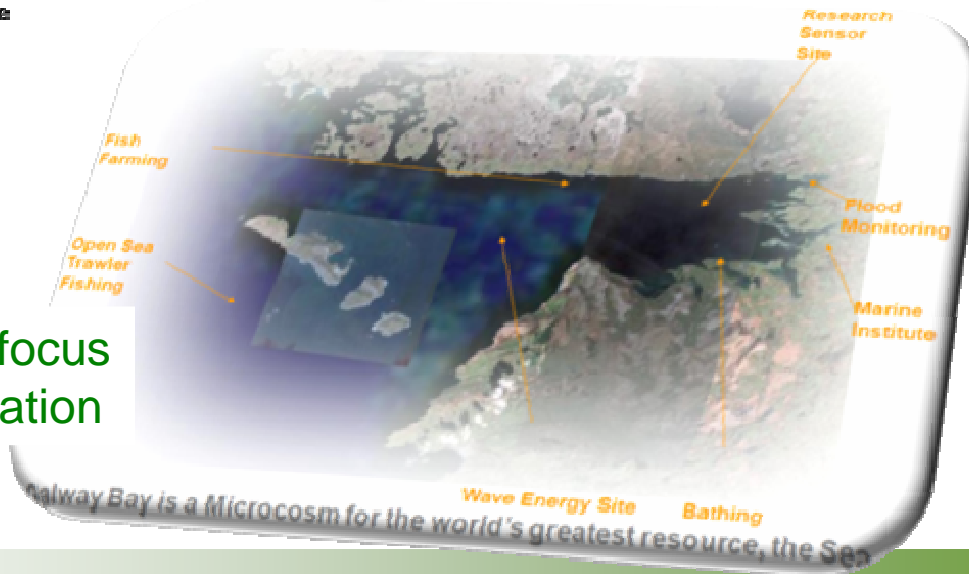
What is the Portal Value Proposition?

- Research
- Sensor Data
- Map
- Harbour Master
- Wave Energy
- Education
- Weather
- News
- Links
- Depository
- Navigation

This is how SmartBay added value in Galway



Creating a focus for collaboration



[Home](#) | [Administration](#) | [More...](#)

SmartBay
SmartBay Map
Object Tracking
Marine Institute
Green Sigma Home Page
Water Management

Advanced Sensor Research

Location: Period:

Report:

Tide Sensor Network

Tide Level: 1.34 m
Atm. Pressure: 1025 mb
Sea Temp: 0 °C

Location: Period:

Report:

EMS Sensor Network

Air Temp: 11.50 °C
Wind Speed: 0.00 m/s
Dissolved Oxygen: 5.77 mg/l
Salinity: 33.72 psu
Location: 53.3222 °N, 9.9322 °W

Location: Period:

Report:

Wave Power

Location: Period:

Report:

Galway Bay Map

Map data ©2008 Tele Atlas

Flooding

Attribute	Alert	Min	Max	Actual
Atm. Pressure	●	950.0	1050.0	1020 mb
Rainfall	●	0.0	20.0	19.0 mm
Tide Height	●	1.0	5.0	1.0 m
Tide Direction	●	240.0	60.0	60 deg
Wind Direction	●	240.0	60.0	230 deg
Wind Speed	●	0.0	20.0	5.0 m/s

Time:

Tourism And Water Safety

Boats currently docked:

Boats due in next 10 hours:

Report:

Smartbay Navigation

Alarm

MaceHdAirTemp ● 27% SeaTempInishMore ● 13% fish find ● 925%

Bulletin Board

[Mid Bay Buoy Safe in Rosseveal](#) by: James Ryan 18 Nov 2008 10:53
[BioToxin](#) by: 701141011013277115103 13 Nov 2008 19:55
[BioToxin](#) by: 701141011013277115103 13 Nov 2008 19:45
[BioToxin](#) by: 701141011013277115103 13 Nov 2008 09:09
[BioToxin](#) by: 701141011013277115103 13 Nov 2008 09:09

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Web2Bookmarks Portlet

- ♦ Marine Institute
- ♦ IBM
- ♦ CLARITY CSET
- ♦ Bord Iascaigh Mhara
- ♦ Volvo Ocean Race - Galway Stopover
- ♦ Nowcasting
- ♦ Hydraulics and Maritime Research Centre
- ♦ Ireland West Tourism
- ♦ Dublin City University
- ♦ University College Dublin
- ♦ Hydraulics and Maritime Research Centre, UCC
- ♦ Tyndall National Institute
- ♦ Irish Water Safety
- ♦ IDA Ireland
- ♦ Sustainable Energy Ireland
- ♦ Science Foundation Ireland

+ Add bookmark | More Actions



– Launched March 09



- Embedded Into Ireland's Knowledge
- Open To Public - June
- International Customer Follow Through, UN, Smart Ports, UK.
- Embedding R&D Assets - Stream
- Solution Problems - that could not have otherwise been approached.

Smart Bay Stakeholder Video

<http://www.youtube.com/watch?v=n2XakurQCgU>



In cooperation with:



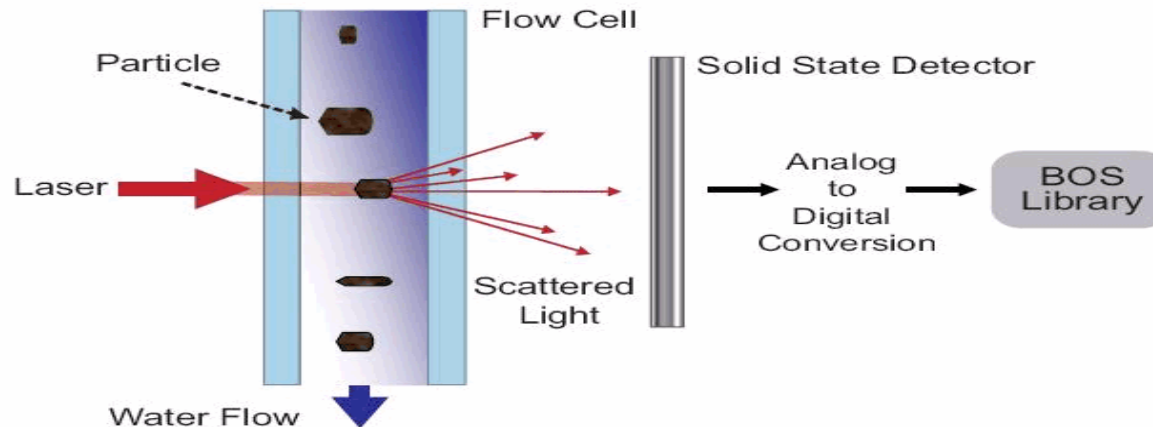
- Integrated up to Bathing Info
- Informed Decisions
- details about lifeguard availability,
- Blue flag status
- Tides
- Weather forecast
- A link to the Irish Water Safety website gives details of how to swim safely.

Parameters	Result	Status	EU Guide Limits	EU Mandate
Faecal coliforms (number/100ml)	230	Sufficient	100	1
Mineral Oils (mg/l)	Absent	Good	0.3	No film visible, no oil
Phenol (mg/l as C6H5OH)	Absent	Good	0.005	No smell
Surface Active Substances (mg/l)	Absent	Good	0.3	No foaming
Total Coliforms (number/100ml)	520	Sufficient	500	10

Date	Overall Status	Total Coliforms	Faecal Coliforms	Mineral Oils	Surface Active Substances	pH
20/07/09	Sufficient	Sufficient	Sufficient	Good	Good	8.0
15/07/09	Good	Good	Good	Good	Good	8.0
07/07/09	Good	Good	Good	Good	Good	8.0
06/07/09	Sufficient	Sufficient	Sufficient	Good	Good	8.0
01/07/09	Good	Good	Good	Good	Good	8.0
20/06/09	Good	Good	Good	Good	Good	8.0
22/06/09	Sufficient	Good	Sufficient	Good	Good	8.0
16/06/09	Good	Good	Good	Good	Good	8.0
14/06/09	Good	Good	Good	Good	Good	8.0

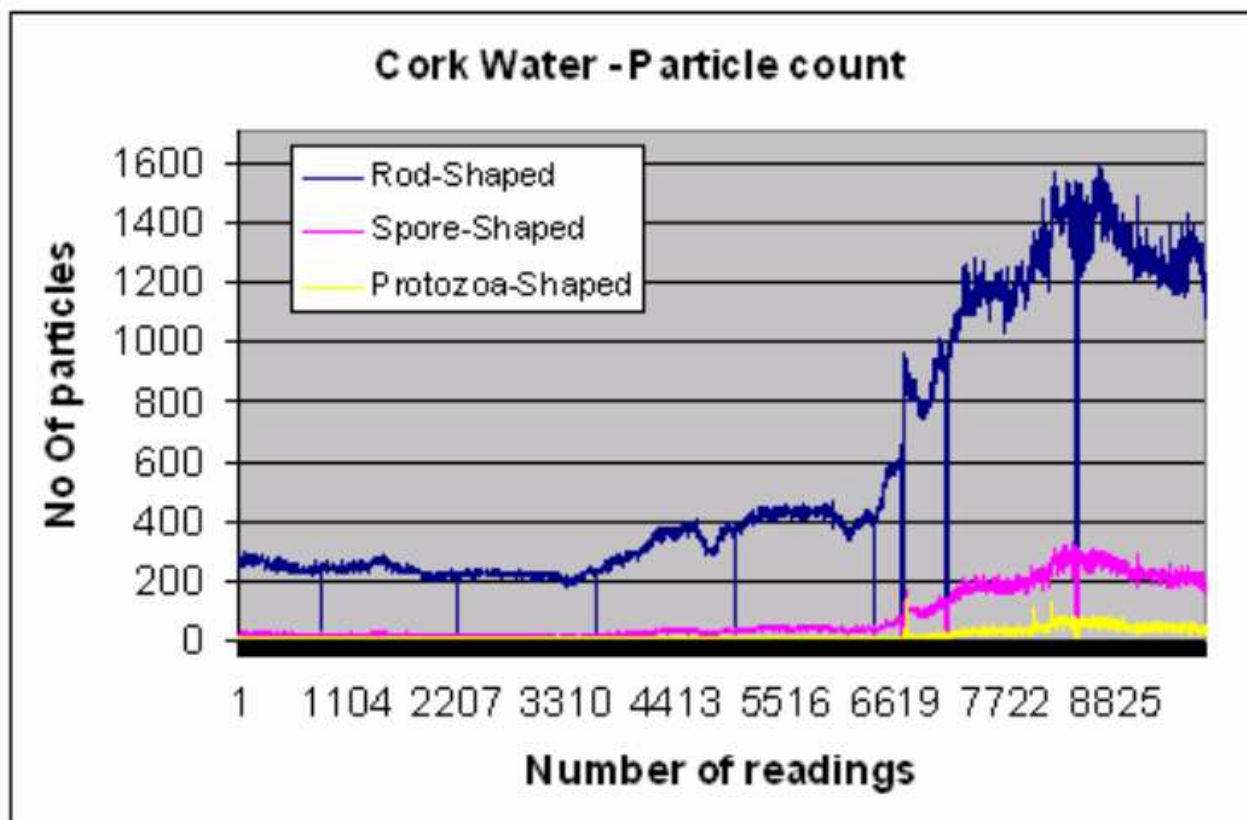
<http://www.bathingwater.ie>

Novel Real Time Sensing



- The Innovative Environmental Solutions water monitoring system is designed to act as an early warning system that alerts the user of potential harmful bio-pathogen contamination.
- The water monitoring system utilizes laser-produced, multi-angle light scattering (MALS) technology to differentiate between micro-organisms and inorganic particles by generating unique Bio-Optical Signatures (BOS) for classification.
- The knowledge-base contains information on the light-scattering patterns of specific organisms (e.g. Cryptosporidium, Ecoli, etc.)
- The light scattering pattern is just like a 'fingerprint' as it has unique features that capture the internal and surface features of the particle (including size, shape, morphology, and material composition).

Results -



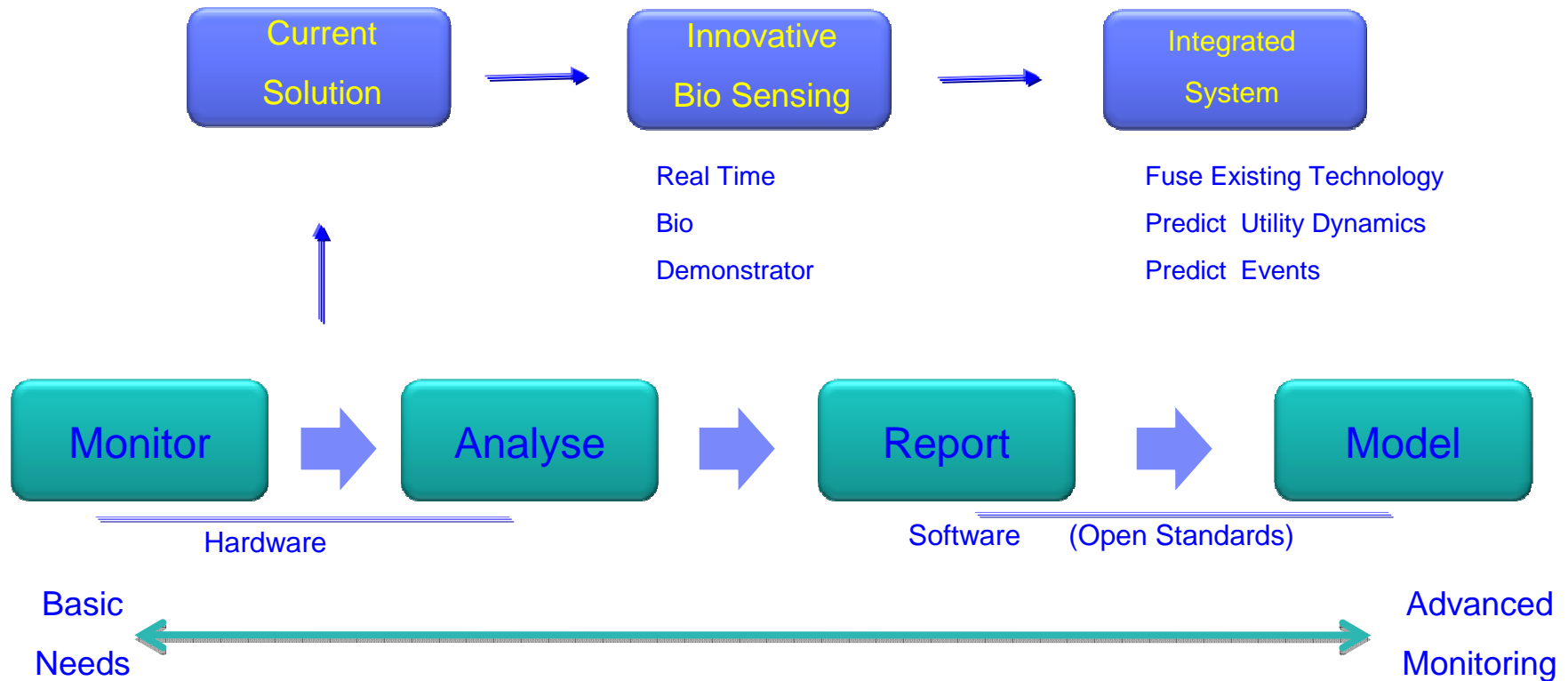
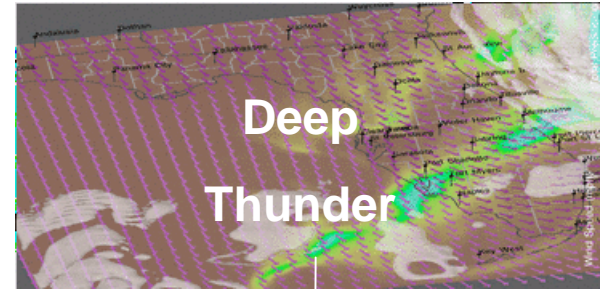
Severe Weather Events In Cork – 20th Nov 2009

Leverages innovative services

Real-time monitoring and inline analysis of biological water parameters such as e-coli and cryptosporidium

For monitoring, managing and forecasting of environmental challenges

Displayed in real time and in a tailored manner

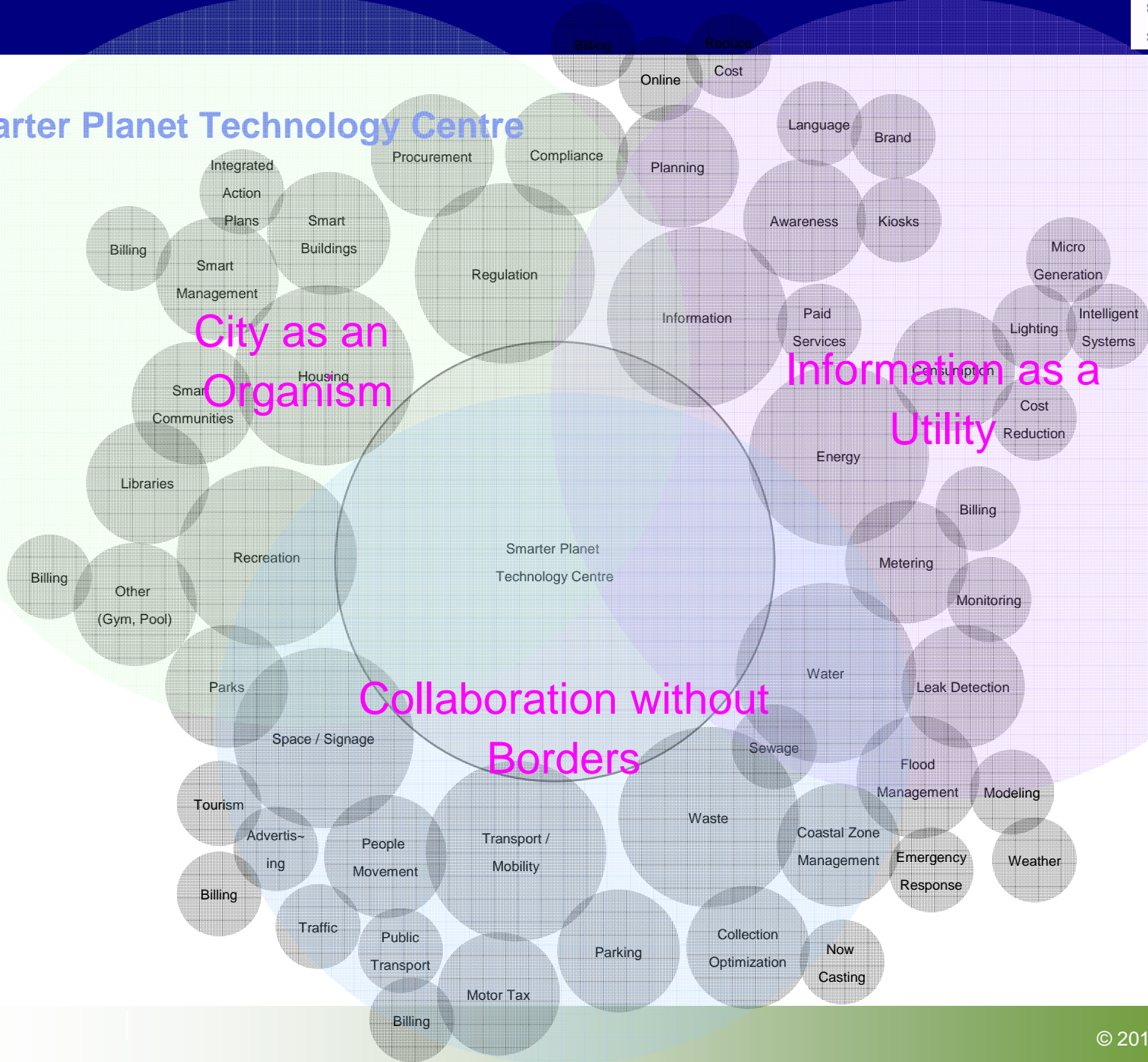


Advanced device monitoring and management for remote sensors and data collection/aggregation platforms leading to Real-time distributed stream analytical fabric for environmental monitoring and management

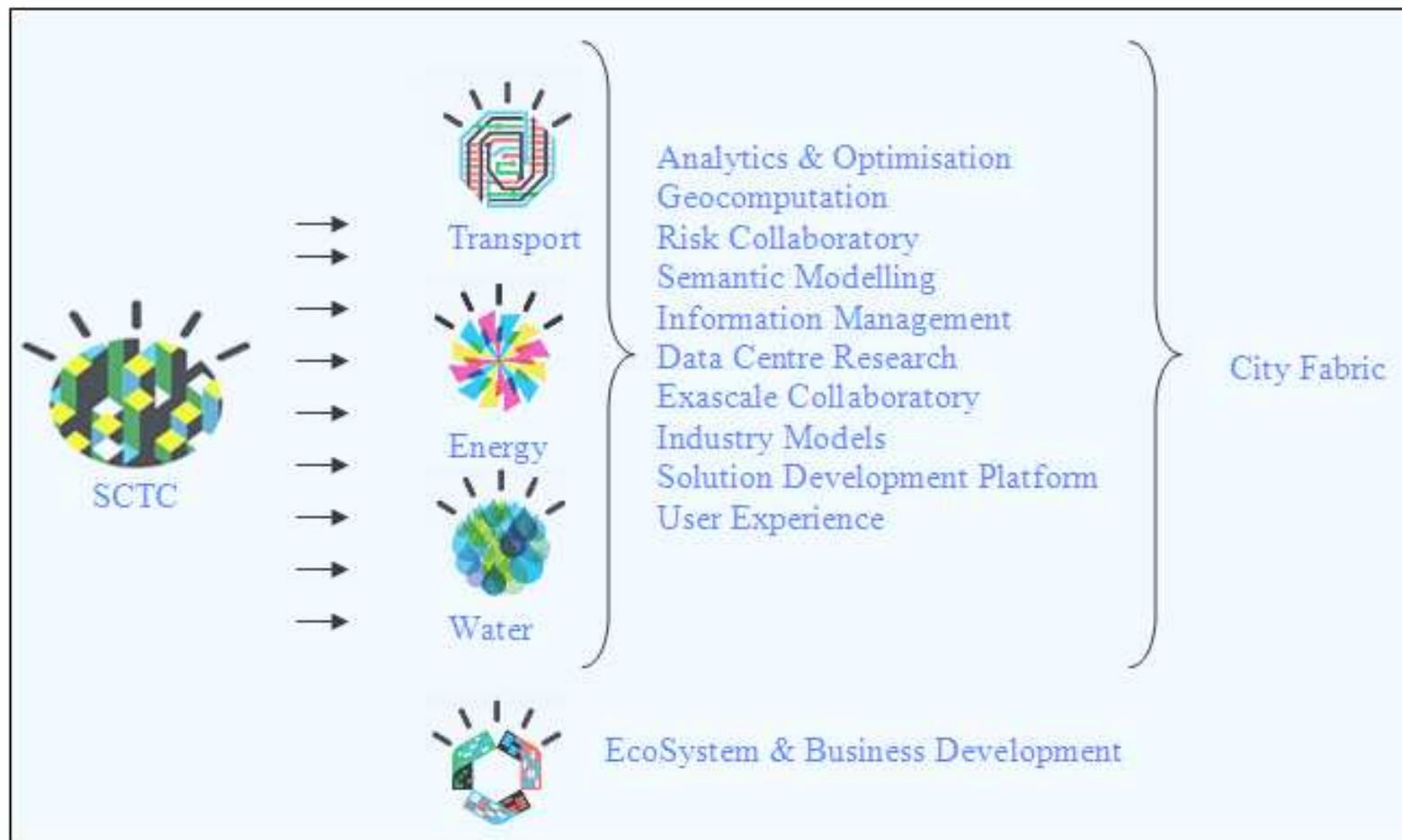
Smart Planet Technology Centre



Smarter Planet Technology Centre



Providing the Fabric to Enable Growth Through an Integrated Smarter City



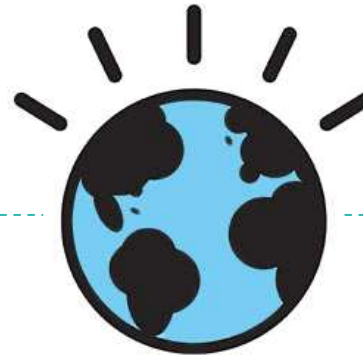
What is It ?

- ✓ Early Stage Companies – building ‘Smart Planet Solutions’
- ✓ Integrated Eco System
- ✓ Exposure to Worldclass Investors
- ✓ IBM – 3 Month Mentorshop Program

Who is involved ?



Business Innovation Hubs
Agencies
VC's
Universities
Local Govt
Enterprise Cust's
Smart SME's



SmartCamp

Why do it ?

- Develop SP Savy Integrated Overlapping Communities
- Market Driven Innovation
- Showcase & Develop Market Driven Smart Technologies
- Develop Export Led Leadership – Smart Export Hub
- Smart Cites Centre Of Excellence

Where is it ?

Stockholm

Paris

Tel Aviv

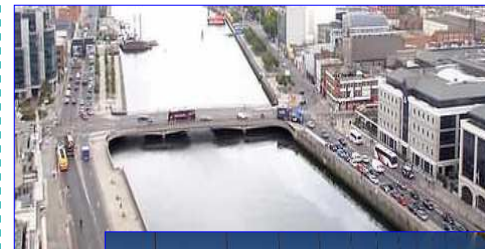
Copenhagen

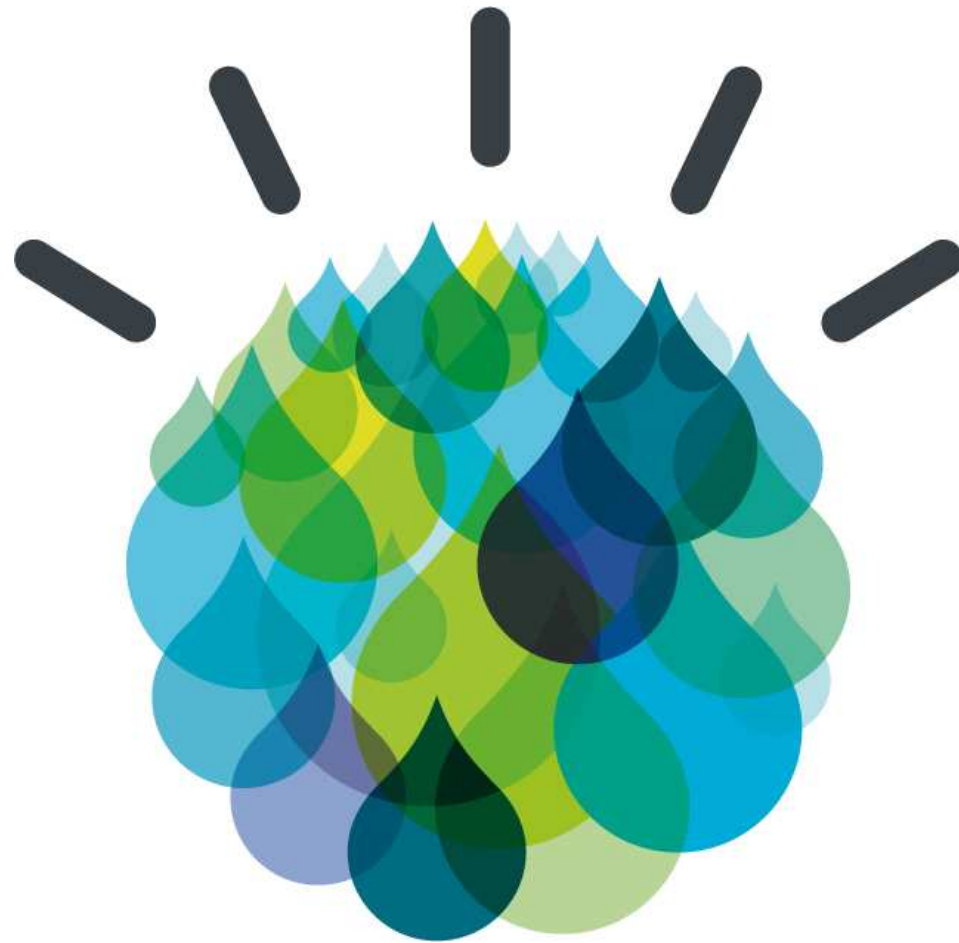
Berlin

London

Boston

Dublin





Thank you

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