



Geo-Building Smarter Cities

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AECOM: A Premier, Fully Integrated Infrastructure and Support Services Firm



AECOM

150+

Serving clients in more than
150 countries

100K+

100,000+ dedicated
Professionals globally

\$20bn

US\$19.2 billion in revenue as of Jun 30, 2014

Industry Leadership

As the premier, fully integrated infrastructure firm, we hold the following *Engineering News-Record* 2014 rankings:

#1 Top 150 Global Design Firms

#1 Top 500 Design Firms

#1 Pure Design

#1 Transportation

#1 General Building

Top 150 among *Fortune 500* companies with **nearly \$20 billion** in annual revenue¹

Recognized as a leader in the workplace:

– **“Best Workplaces”**
Financial Times

– **“One of the world’s most ethical companies”**
2011-2014 *Ethisphere*®

– **“Greenest Big Companies”**
Newsweek

– **“Best Diversity Company”**
Diversity/Careers magazine

¹ Based on 2013 data

Professional Excellence

2013 ENR Top 500 Design Firms

	Top 500 Design Firms	1
	Top150 Global Design Firms	1
	Top 5 Green Design Firms	3
General Building	General Building	1
	Commercial Offices	1
	Government Offices	1
	Health Care	1
	Hotels, Motels, Convention Centers	1
	Sports	1
	Correctional Facilities	1
	Multi-Unit Residential	1
	Education	1
	Multi-unit Residential	1
Retail	4	
Transportation	Transportation	1
	Mass Transit & Railway	1
	Marine & Port Facilities	1
	Highways	1
	Airports	1
	Bridges	2
	Environment	Transmission Lines and Aqueducts
Dam & Reservoirs		1
Water Supply		2
Wastewater Treatment Plants		2
Sanitary and Storm Sewers		2
Sewerage & Solid Waste		3
Chemical and Soil Remediation		3
Hazardous Waste		4
Water Treat. And Desalination Plants		4
Site Assessment and Compliance	5	
Power	Hydro Plants	1
	Cogeneration	1
	Solar Power	1
	Wind Power	2
	Power	2
	Transmission and Distribution Plants	3
PM/CM	Program Management	5
	Construction Management for Fee	6



No. 1

2013 No.1 Tunnelling Consultant in Asia

No.332

2014 Fortune 500 list

Why be sustainable?

For us, sustainability is not a separate service or “add on.” It is an approach that allows us to create value for our clients and our communities.

What does sustainability mean to AECOM?

- As a business: how we help our clients for future needs.
- As an integrative approach: drawing on our boundless diversity.
- As an operational idea: how we operate as a company to reduce waste and consumption.
- A point of view: how we look at the future.
- A corporate culture: An “Our AECOM” approach to sustainability.

What does sustainability mean to our clients?

- Being able to use scarce resources wisely and effectively.
- Minimizing waste generation.
- An investment decision.



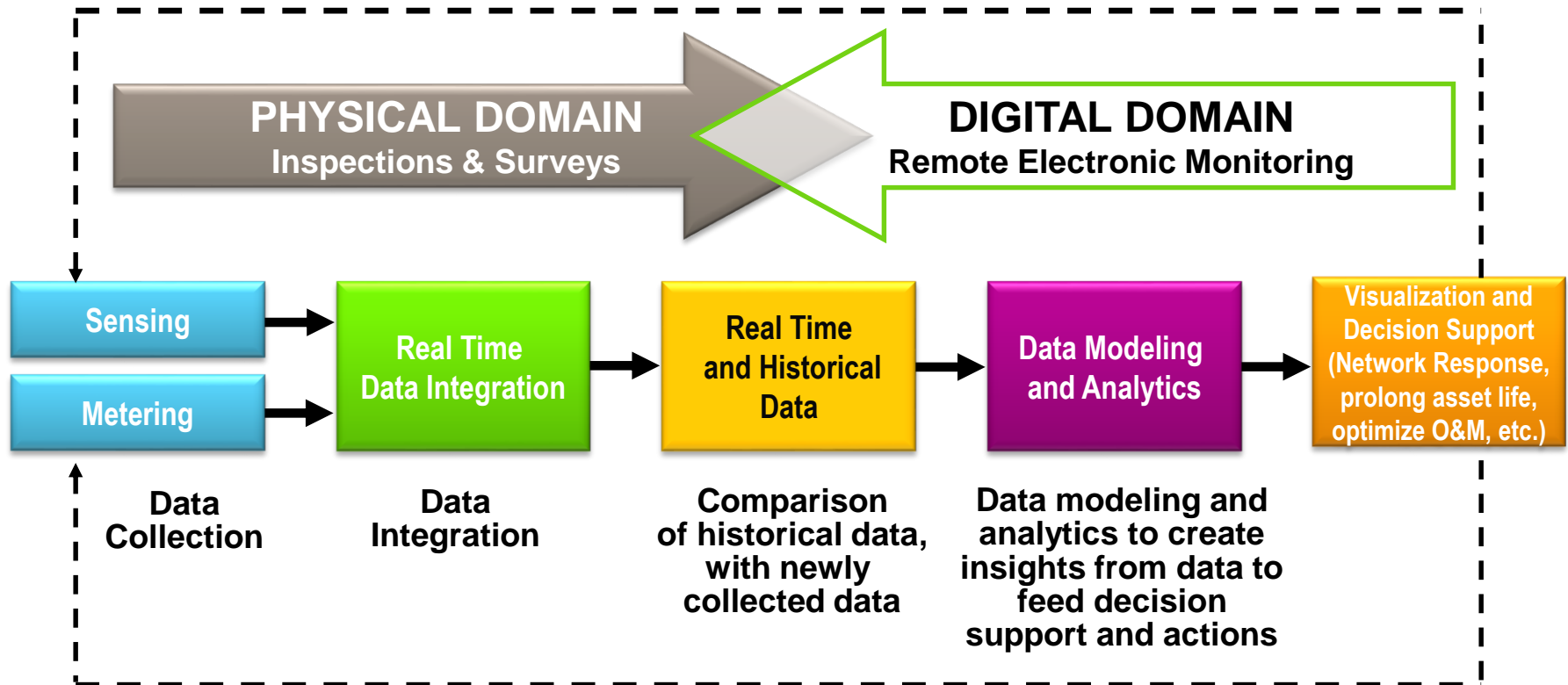
Background

- SMART is based on the principal that better information enables individuals or organizations to make better decisions
- SMART is defined as:
 - Self-Monitoring, Analysis, and Reporting Technology
- Cities are comprised of numerous stakeholders each with different principles, objectives, influences, and criteria
 - Can we find commonality?
 - How do we collect data for better decisions?
 - What do we measure?
 - How do we influence change?
- More than half of the world is now urban (and more are becoming so)
- Cities climate change trends: Cities consume over two-thirds of the world's energy and account for more than 70 percent of global CO2 emissions
- We need to create common outcome measures

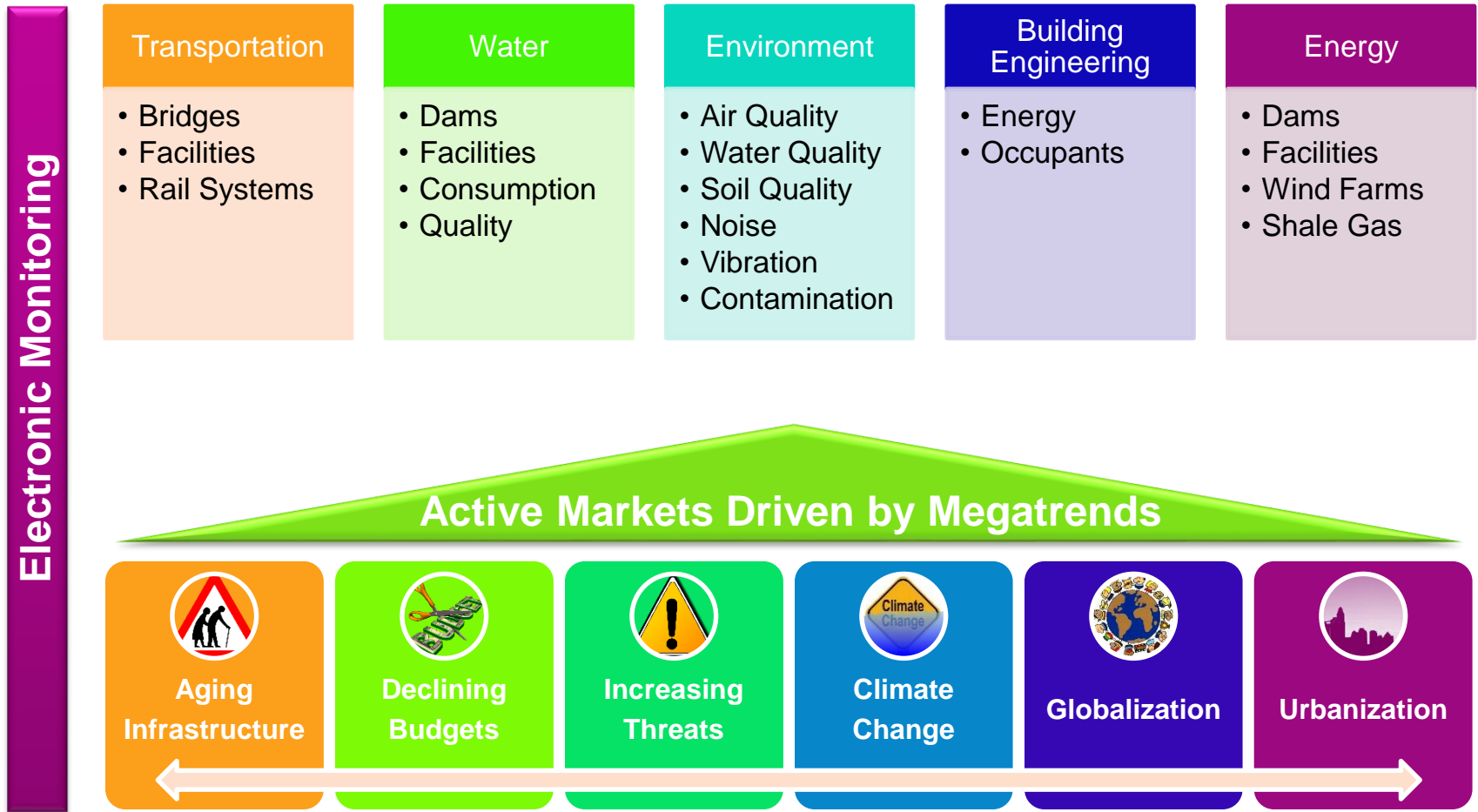
SMART Technology Initiative

- **Vision:** SMART Asset & City = Instrumented + Interconnected + Intelligent
- **Mission:** Harness technology to enable sustainability, drive operational efficiency & ensure safety

The intersection of the 'physical' with the 'digital' creates SMARTer opportunities

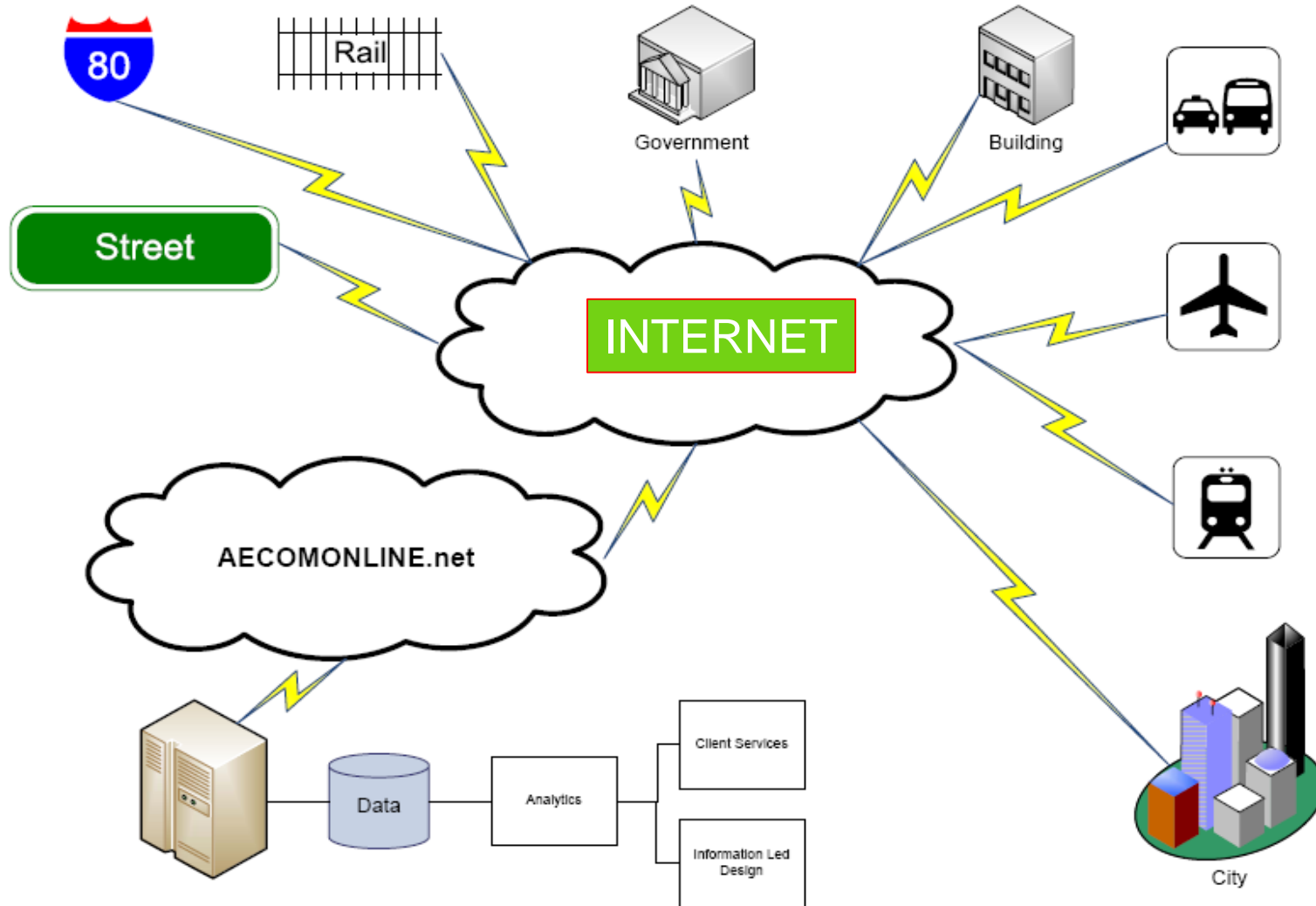


AECOM SMART Technology Program

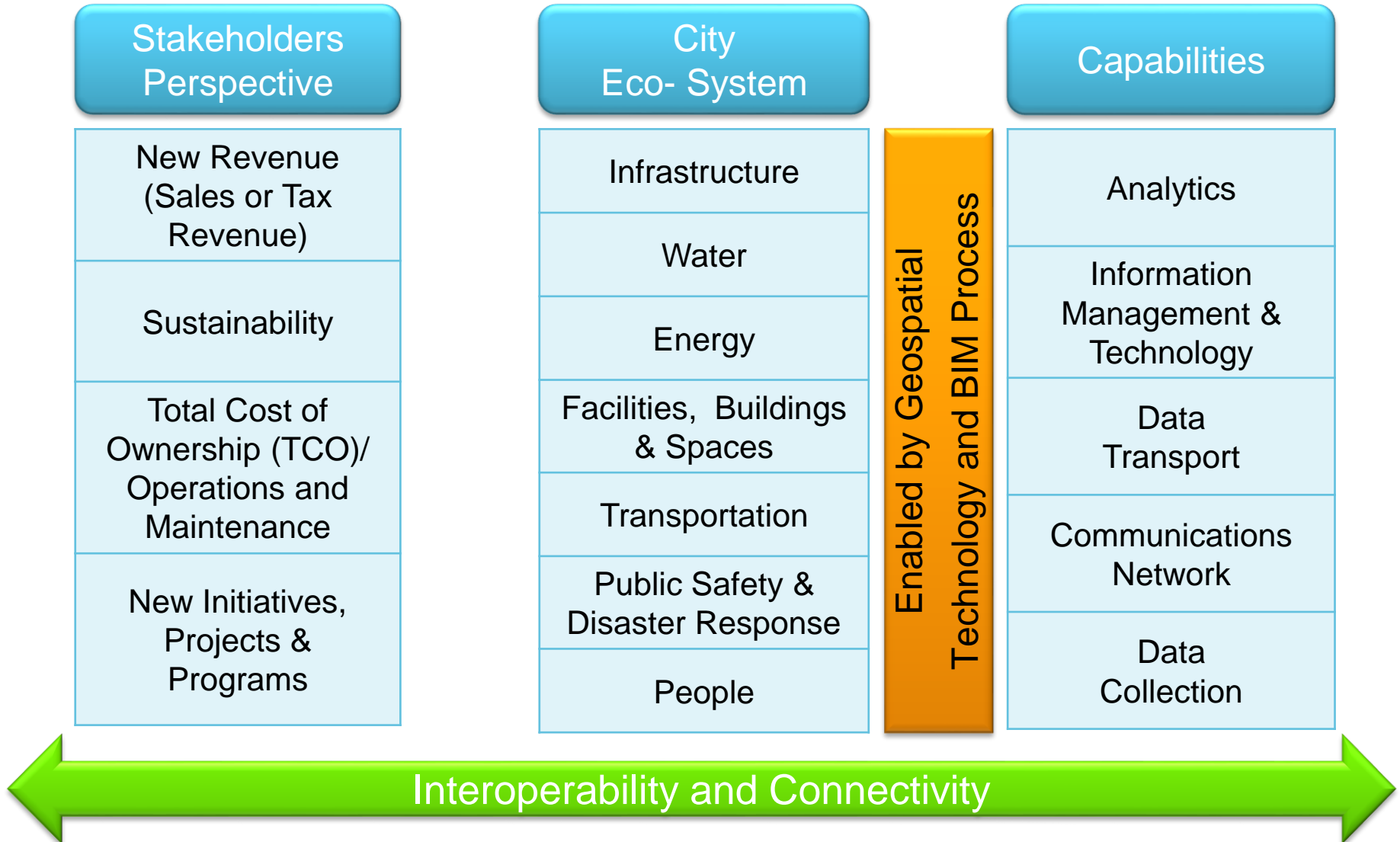


SMART Technology program aligned with Business Lines & Global Trends

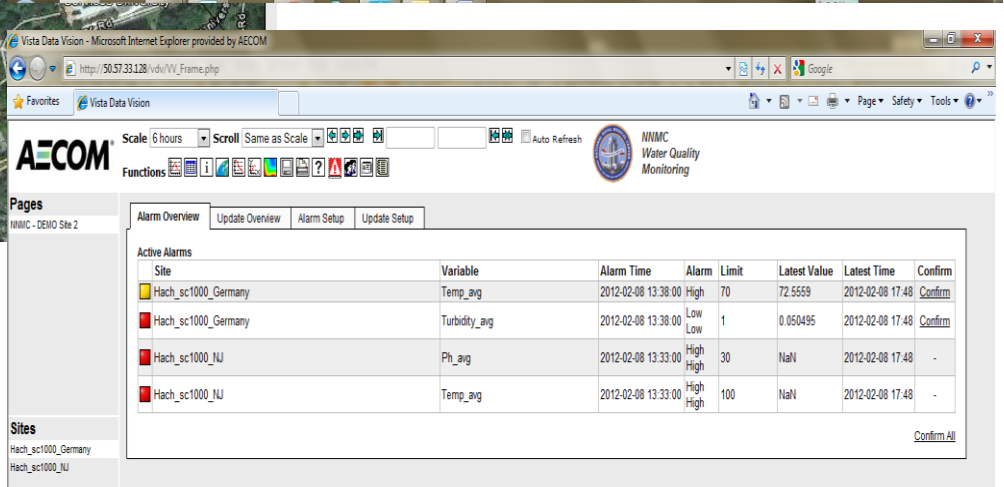
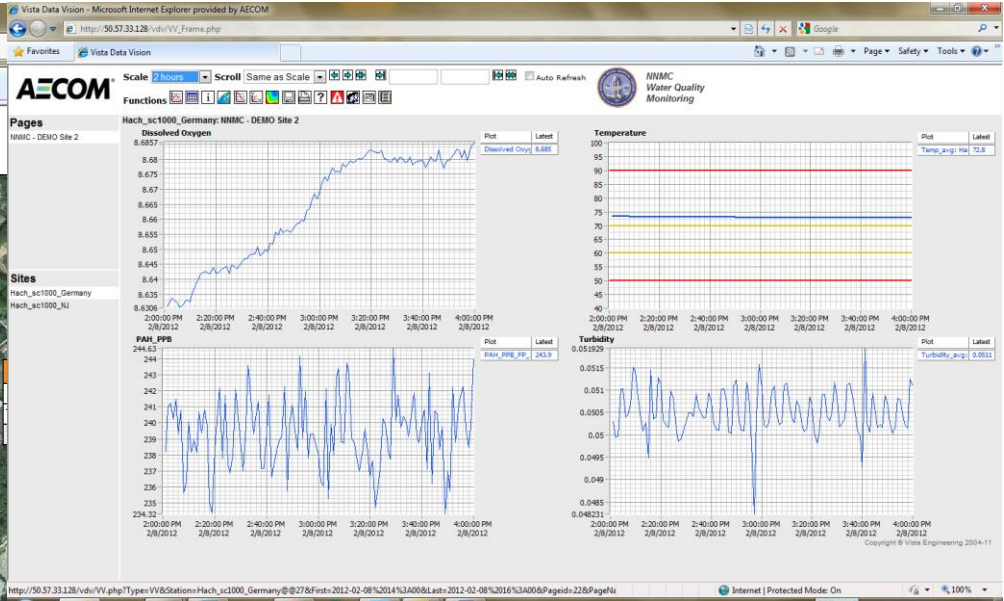
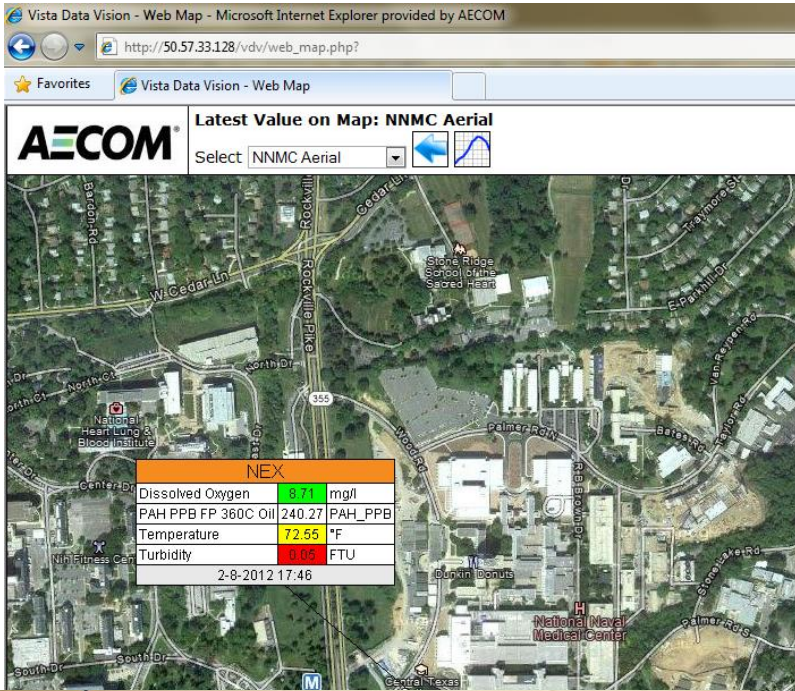
SMART Technology Eco-System



Enabling the Eco-System



Water Quality Monitoring



Construction Noise & Vibration Monitoring

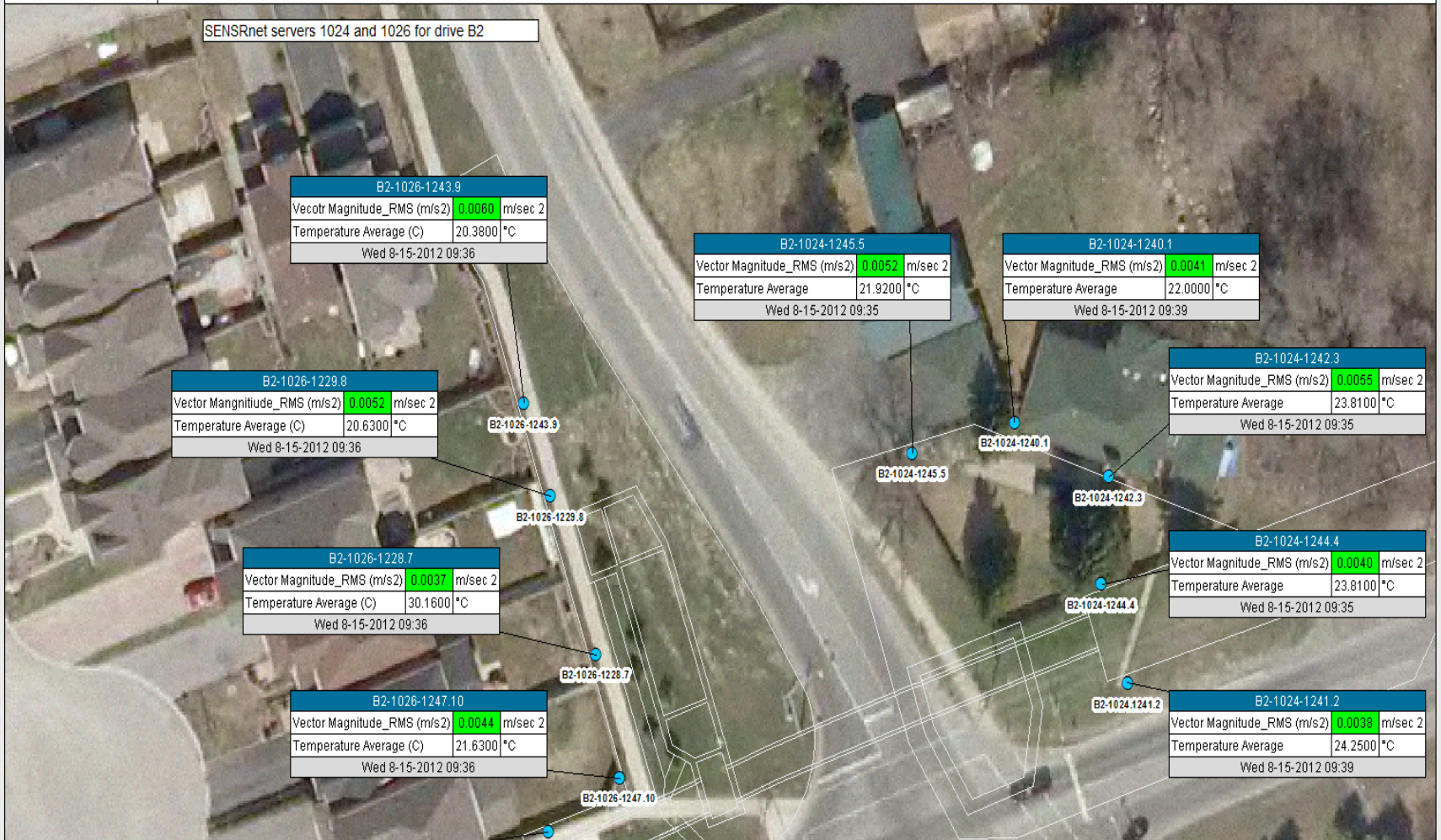


Latest Value on Map: Southeast Collector Drive: B2

Select Southeast Collector Drive: B2



SENSRnet servers 1024 and 1026 for drive B2

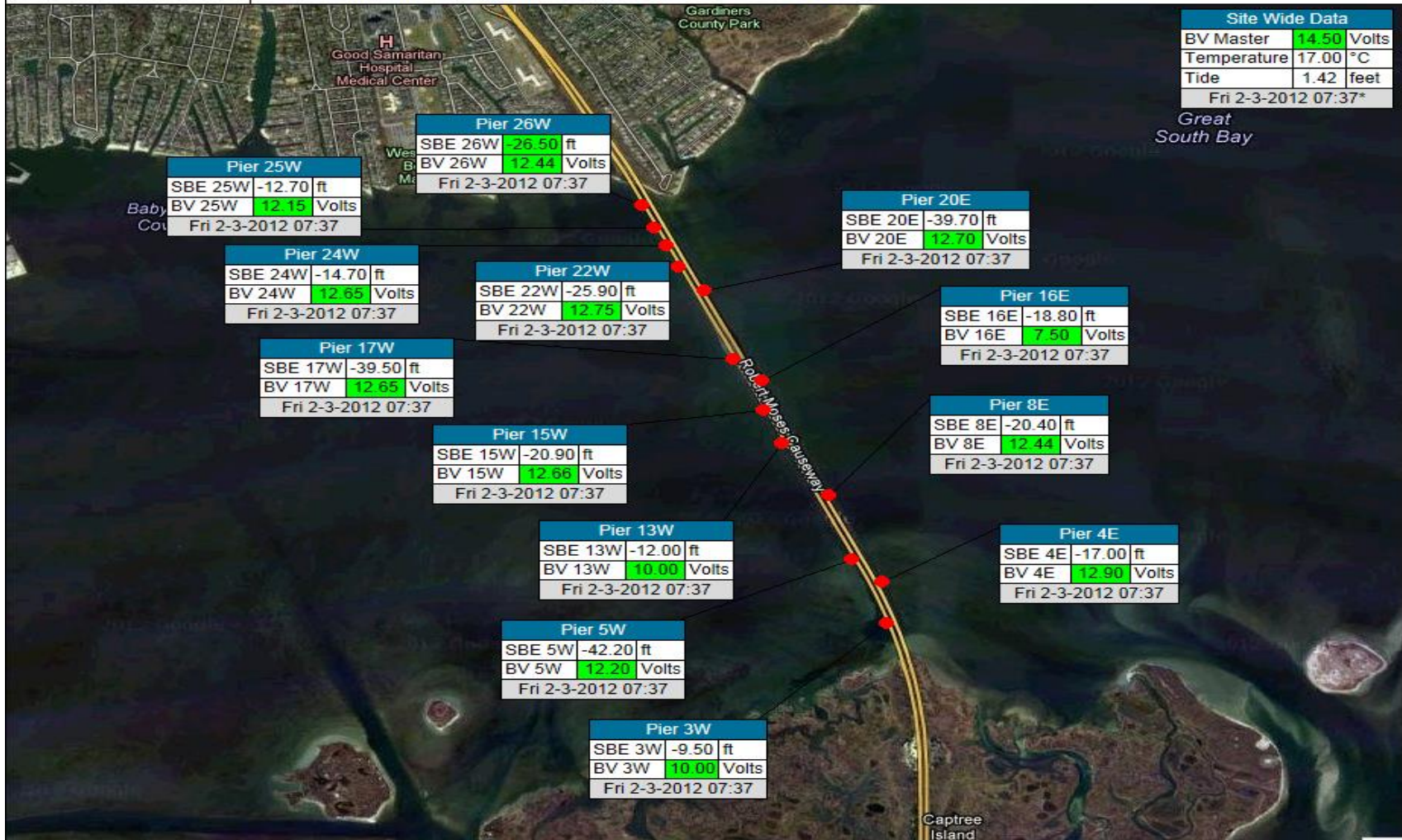


Bridge Health Monitoring



Latest Value on Map: Robert Moses Causeway Sensor Locations

Select: Robert Moses Causeway Sensor Locations



Site Wide Data		
BV Master	14.50	Volts
Temperature	17.00	°C
Tide	1.42	feet
Fri 2-3-2012 07:37*		

Great South Bay

Air Quality Monitoring



Scale 1 week | Scroll Same as Scale | [Navigation icons] | [Zoom icons] | Auto Refresh

Functions [Icons for various data visualization and tool functions]

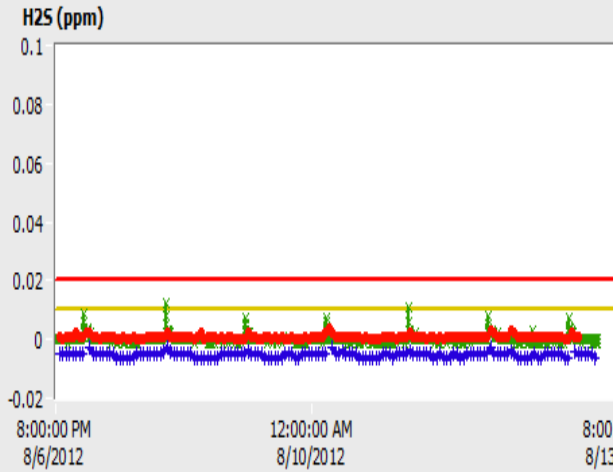


Pages

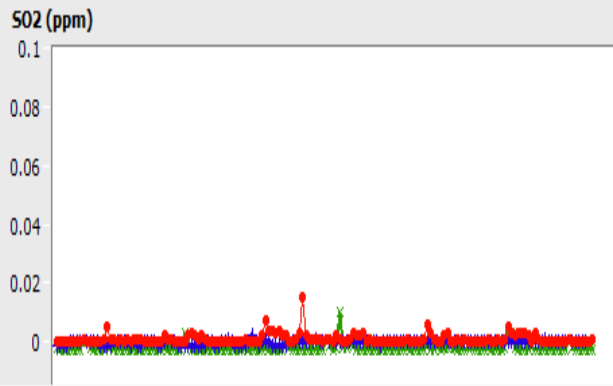
- AQ_5Min
- AQ_Hourly
- Tall Tower Site 1
- Winds at Sites 1, 3, and 5

- GenChemWY_MetHourly
- LAWA AQ
- LAWA MET
- LAWA_AQ_1min
- Pump05-12_1hr
- Pump05_5min
- Pump06_5min
- Pump07_5min
- Pump08_5min
- Pump09_5min
- Pump12_5min
- Reid Gardner Air Quality
- Reindeer
- Sinclair Met
- Sinclair SO2 Hourly
- Sinclair Span

Reid Gardner Air Quality: AQ_5Min

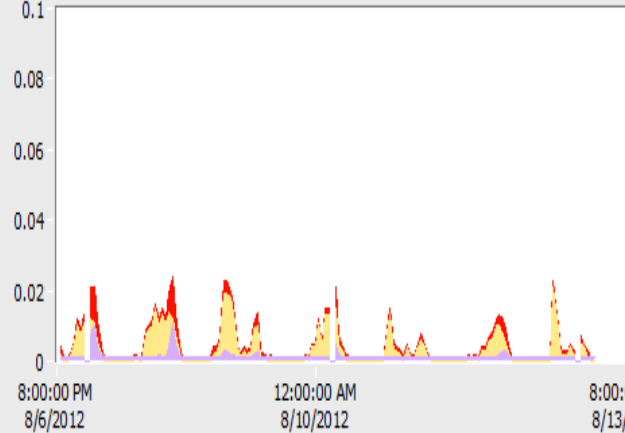


Plot	Latest
Site 4 H2S 1 Hr	0.001
Site 5 H2S 1 Hr	-0.006
H2S_Avg: Reid	-0.001



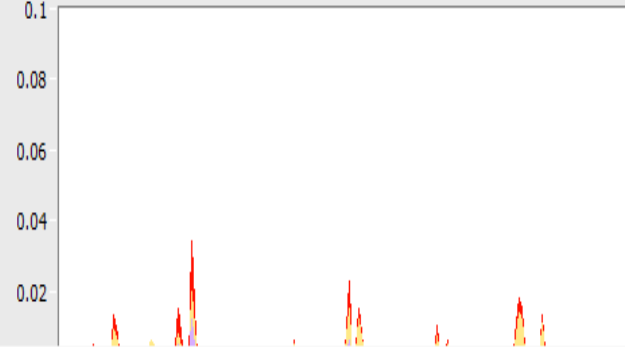
Plot	Latest
Site 2 SO2 1 Hr	0.001
Site 3 SO2 1 Hr	0
Site 5 SO2 1 Hr	-0.003

NOx Site 3 (ppm)



Plot	Latest
Site 3 NO 1 Hr	0.001
Site 3 NO2 1 Hr	0
Site 3 NOx 1 Hr	0.001

NOx Site 5 (ppm)



Plot	Latest
Site 5 NO 1 Hr	-0.002
Site 5 NO2 1 Hr	-0.002
Site 5 NOx 1 Hr	-0.002

Dashboard
Create project
Search for a project
Admin

Project No.

Date From:

Date To:

- AECOM Region -

- Climate Zone -

- Building Type -

- Market Sector -

- Project Type -

- Data Source -

- Low Energy Strategies -

Federal Mandates Apply

Total As Designed Building Area	1,031,912	sf	Total As Operated Building Area	0	sf
Energy Use per person	10,664	kBTU/person/yr	Energy Use per person hour	4.1	kBTU/person/hr
Average PUE	1.5		Average CUE	1.61	
Average % Energy Reduction (inc. Process)	17.4	%	Average % Energy Reduction (excl. Process)	24	%
As Operated Energy Use / sf	0	kBTU/sf	As Operated % Energy Reduction (inc. process load)	0	%
Average Baseline Lighting Power Density	1.16	W/sf	Average As Designed Lighting Power Density	0.9	W/sf

Average Energy Use Spectrum kBTU/sf/yr										
Baseline	Space Heating	Space Cooling	Fans / Pumps	DHW	Indoor Lighting	Exterior Lighting	Receptacle	Process	Other	Total
	9.3	11.6	16.6	5.3	10.3	2.8	16.8	6.5	5	84.2
As Designed	Space Heating	Space Cooling	Fans / Pumps	DHW	Indoor Lighting	Exterior Lighting	Receptacle	Process	Other	Total
	9.8	5.9	11.6	4.8	7.9	1.3	16.8	6.5	5	69.6

As Designed Energy Use Intensity
kBTU/sf/yr

69.5

Building Intelligence Portal

>> Measuring the impact of our high performance buildings

Intelligent Transportation



The IBM-AECOM team is developing an ATMS software to enable NJ Turnpike operations staff to learn from historical data to improve accuracy and quality of decisions.

- NJ DOT
- NJ Turnpike
- Garden State Parkway
- 511 Traveler Information
- State Police
- EOC
- Data Center

Public Safety



MA-CDMC Jeddah, Saudi Arabia

– Crisis and Disaster Management Center

- Command Center
- 7 X 3 Video Wall
- FM Broadcast Booth
- Radio tower
- Flood Warning System
- CCTV system
- Traffic and Road Information System (TRIS)
- Mesh Network / Microwave Radio System
- Event Management System
- VHF Radio System
- Automatic Vehicle Locator (VHF)
- Mobile Command Vehicles
- Video Conferencing System
- Incident Management System
- Integrated Cisco voice/data network

Considerations

- Analytics are important after:
 - The approach is understood
 - The measurements are defined
 - The sources of data are identified
- The technology works:
 - Does an ROI exist to support the technology investment
 - What are the commercial terms
 - Data integration and normalization is not simple
 - Data security and protection will continue to grow in complexity
- Stakeholder
 - The stakeholder mix is complex don't underestimate the need to address conflicting interests
 - Geo/Political constraints may hinder full adoption

Innovative leaders

create opportunities from today's harsh realities





Connected City Program

‘Why, AECOM?’

‘Well, all you have to do is just **take one city...**’





Thank you.

Questions, please.

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