

# Smarter Physical Infrastructure



***Unleashing*** Information Technology  
in the Built Environment

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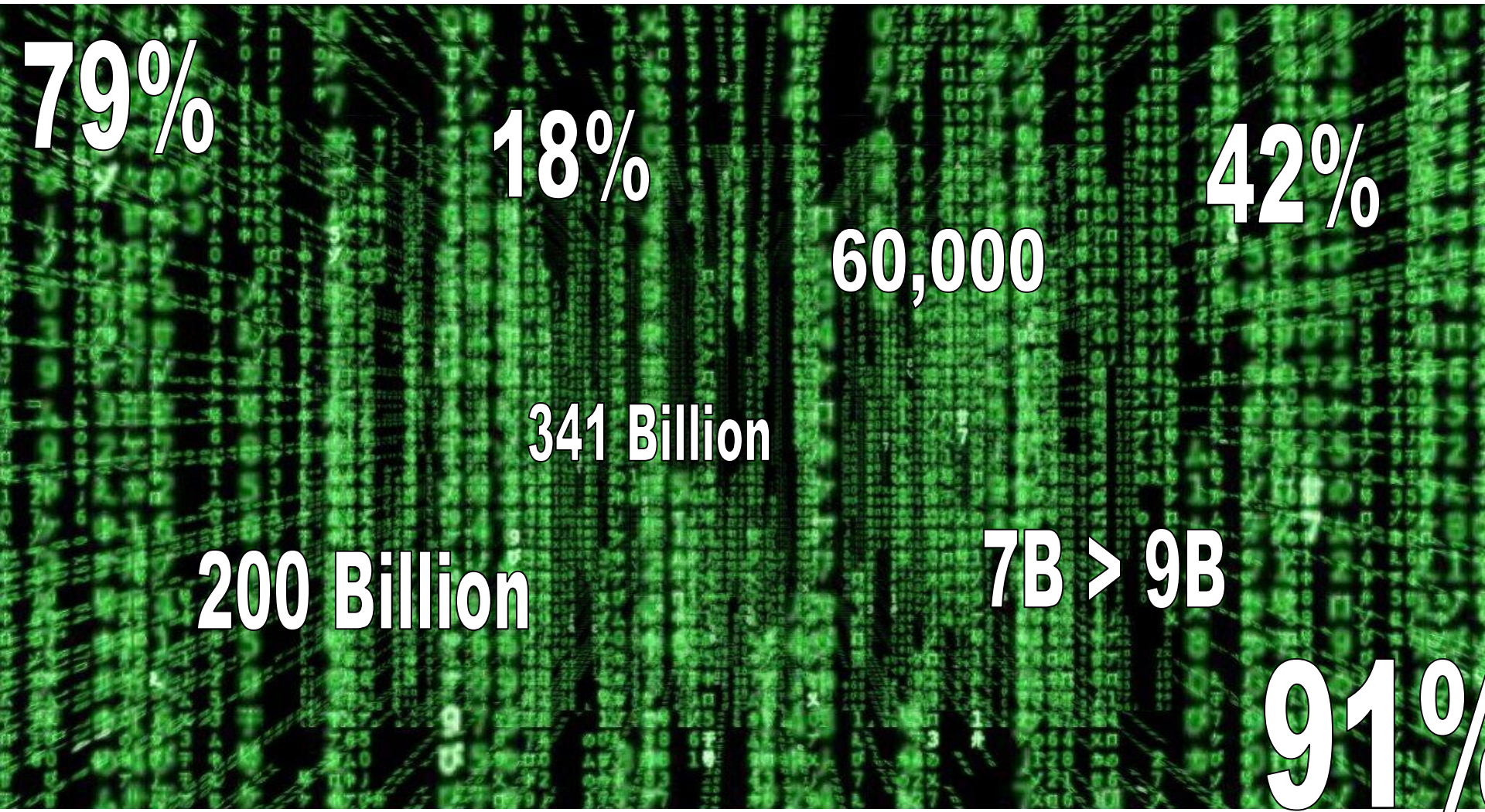
# Bending the Spoon

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# Data Points



# IT Enablers for Physical Infrastructure



- M2M
- IOT
- Big Data
- Mobility
- Cloud

What is a smarter planet?

**3** big ideas to build one smarter planet

1. Instrument the world's systems
2. Interconnect them
3. Make them intelligent

→ Here's how we make it work

A blue rectangular box containing text and a graphic. The text is white and lists three ideas for building a smarter planet. To the right of the list is a white icon of a globe with sun rays emanating from the top.



# IBM Rochester Campus

ESL-IC-13-10-57

## Real Time Task Aware Buildings Example

- 3.3M sq ft , 1950's
- mixed use industrial campus
- 4F avg low in Jan
- 300,000 digital sensors
- All upgraded BMS's
- 7% energy plan in place

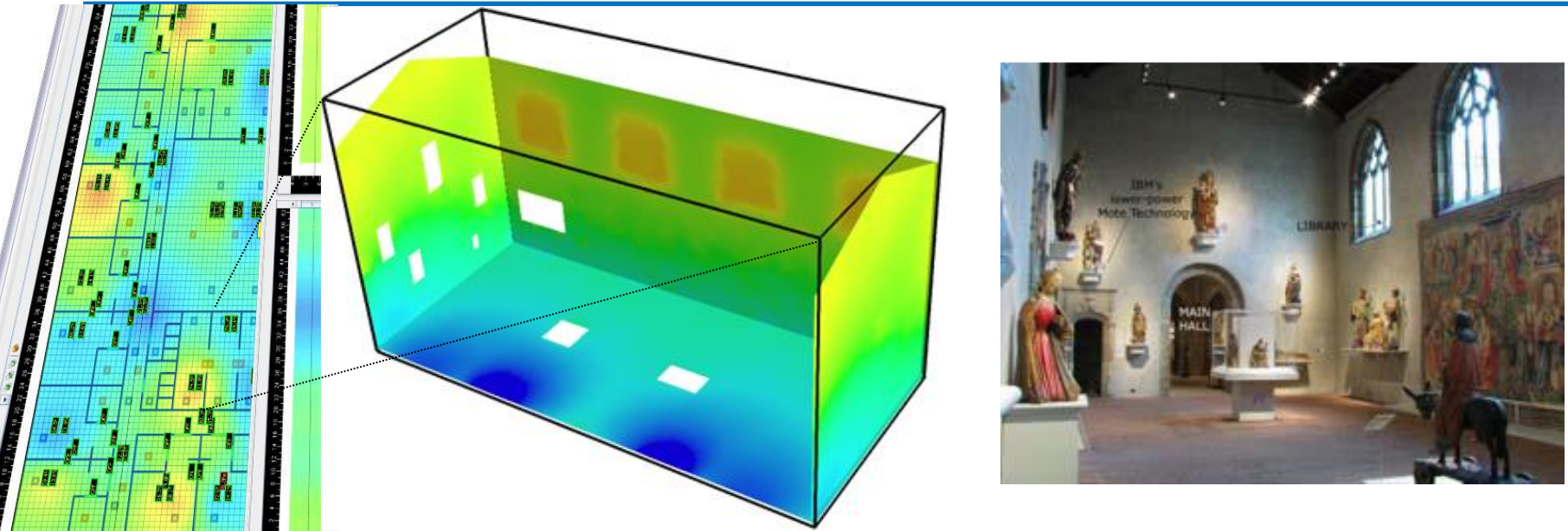
BMS/metering integration, HVAC sensors/metering point integration, Lighting, Perimeter pre-heat, Chiller optimization, Advanced analytics, Dashboard for energy, carbon, maintenance, space, etc



# The Cloisters at the Metropolitan Museum of Art

art and architecture of medieval Europe, >5000 works of art dating from A.D. 800

## Real Time Asset Aware Building Example



Real-time data directly fed into operational models which leverage deep physical analytics, to derive micro-climatic conditions

Models yield 3D temperature, humidity, dew point, contamination variations for optimal placement of art



# Los Angeles Unified School District

ESL-IC-13-10-57

## Real Time Occupant Aware Building Example

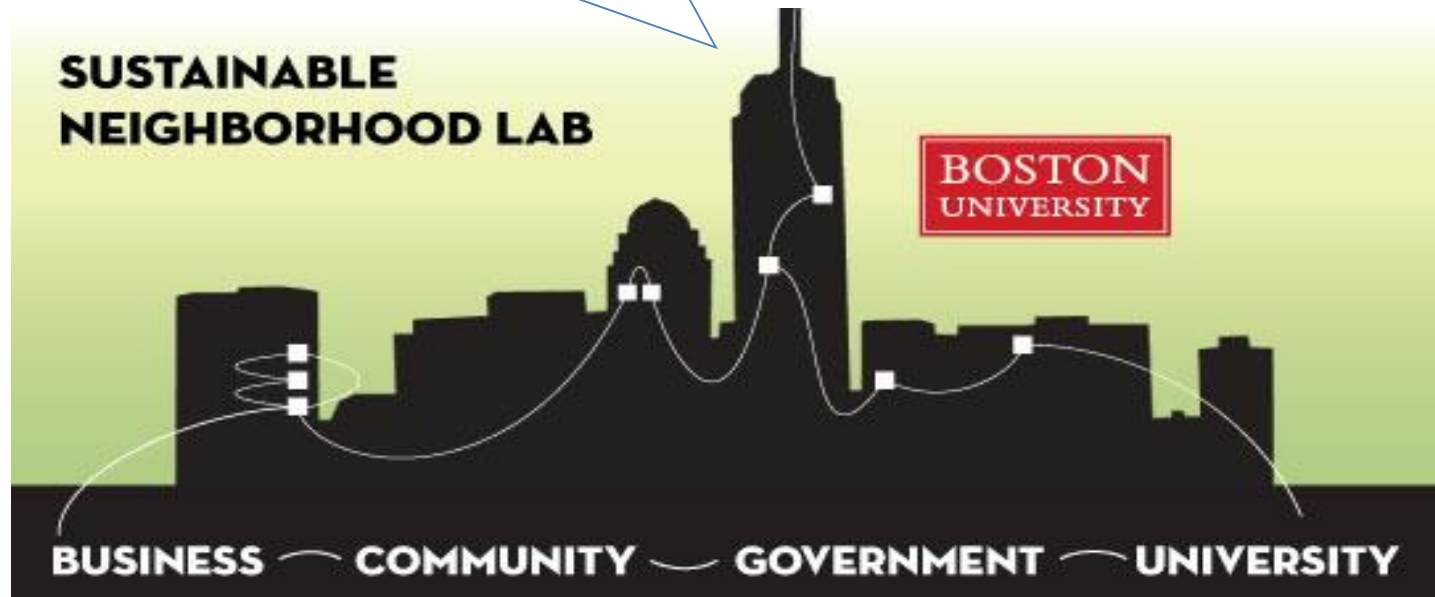
LAUSD largest public school system in California  
700,000 students, 14,000 buildings 710 square miles,  
300,000 maintenance requests annually



# City of Boston, Boston University, Mass. ESL-IC-13-10-57

## Real Time Ecosystem Aware Buildings Example

Boston Back Bay, Smart Buildings, Environmental Monitoring, Transportation, Renewables, Smart Grid





# Thank you!

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