

Smarter Products for a SMARTER PLANET

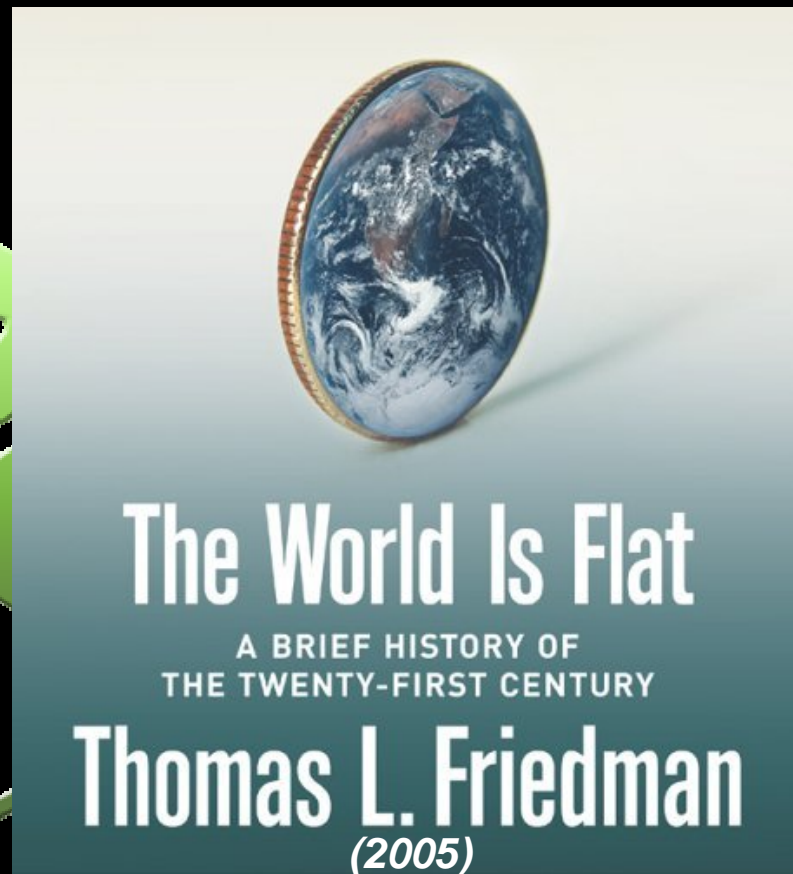
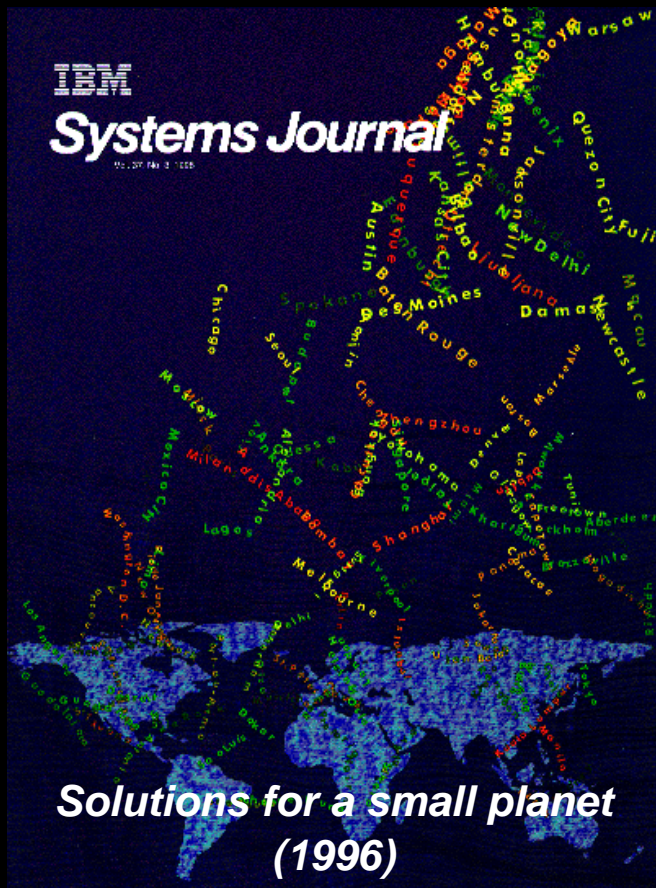


Stefano Stinchi
Director of Rational SW IOT

Rational. software



The world is smaller and flatter and is getting smarter

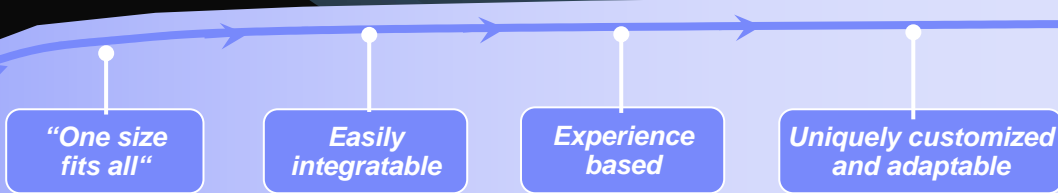




Products Are Getting Smarter Every Time We Look *Sometimes in Ways We Can't Even See*

Products are getting increasingly smarter to meet more demanding and **unique** needs of their customers

- Demand for more customizable products unique to the needs of individual people or businesses
- Customer desire to better integrate into multi-product 'experiences' or workflows
- Leverage of information and environmental conditions to achieve desired outcomes
- Improved use of scarce resources such as time, energy and money



Evolution of Customer Product Expectations

Computational power is being put into things we wouldn't recognize as computers.

Indeed, almost anything -- any person, any object, any process or any service, for any organization, large or small -- can become digitally aware and networked.

What Makes a Product Smarter?

Software is Driving Much of the Value in Products Today



Electronics

- Apple's iPhone is completely instrumented, with GPS positioning software that helps the device know where you are



Automotive

- 90% of innovation is based on electric / electronic systems
- 80% of this innovation is based on embedded software



Aerospace & Defense

- F-22 Raptor (2003) contains 1.7 million lines of code
- F-35 Lightning II (scheduled for 2010) will have 5.7 million lines of code

*“Embedded software has evolved from a hidden component driving functionality to the **keystone of product differentiation** and end-user experience.”*

VDC Research,
October, 2008

“Our civilization runs on software”

-- Bjarne Stroustrup

Yet the art of creating it continues to be a dark mystery.
Never in history have we depended so completely on a
product that so few know how to make well.

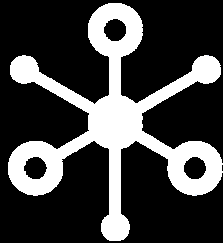
A small software problem...

- *After 10 years and \$7 billion of development, the Ariane 5 is ready to be launched on June 4th, 1996*
- *37 seconds after the ignition sequence of the main engine at an altitude of 4000 meters the internal Inertial Reference System software caused an exception during execution of a data conversion from 64-bit floating point to 16-bit signed integer value. The floating point number which was converted had a value greater than what could be represented by a 16-bit signed integer.*
- *The nozzles received the order of an important correction of the trajectory. Therefore, the rocket turned violently and disintegrated because of the high aerodynamic loads. Self destruction has been activated immediately after the beginning of the disintegration.*



How a Smarter Planet “happen”

It requires Smarter Products which are Intelligent, Interconnected and Instrumented



INSTRUMENTED

We now have the ability to measure, sense and see the exact condition of everything.

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30 billion

By 2010, 30 billion RFID tags will be embedded into our world and across entire ecosystems.

1 billion

By 2010, there will be more than 1 billion camera phones in existence.

85%

Nearly 85% of new automobiles will contain event data recorders by 2010.



Instrumented



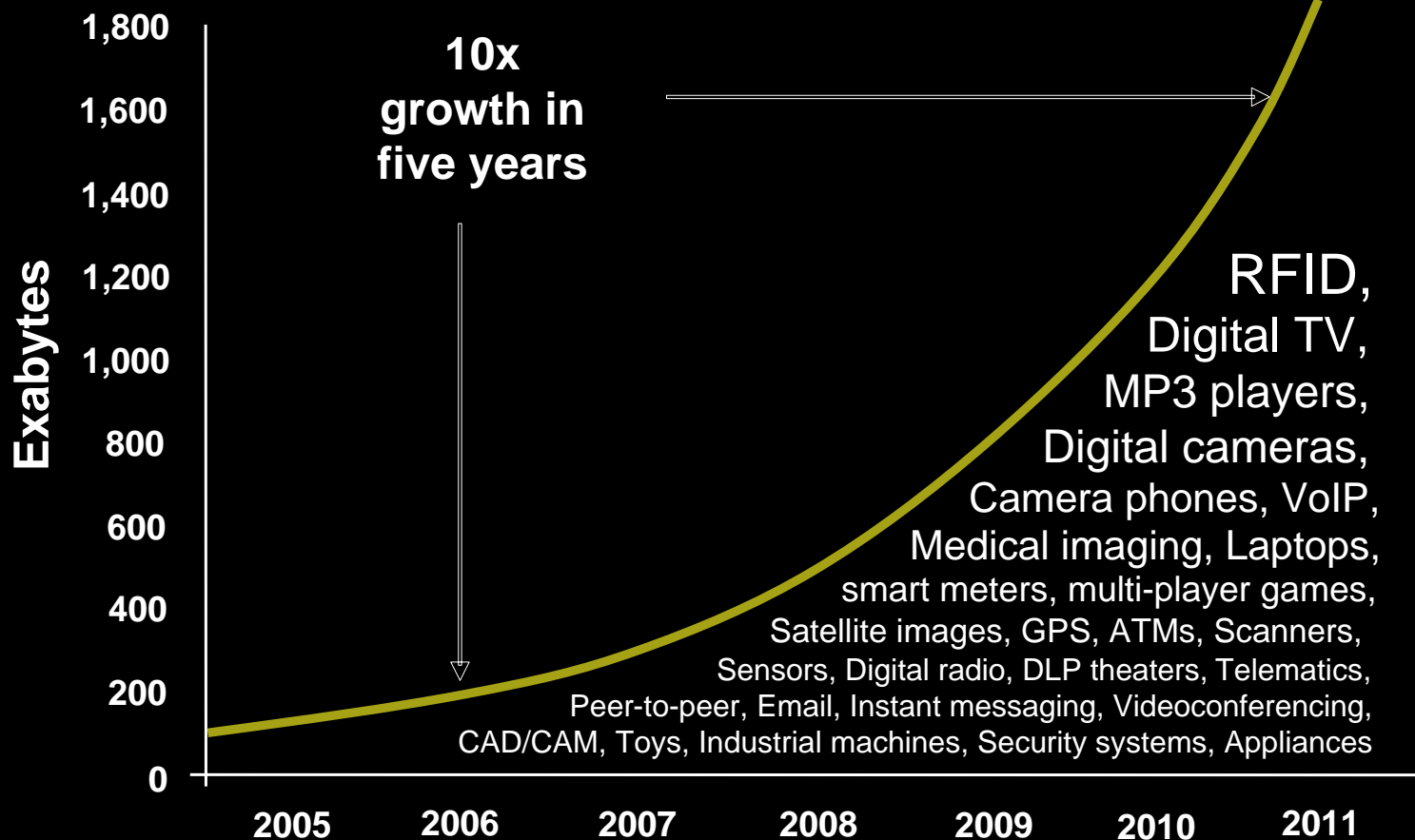
Interconnected



Intelligent



By 2011, the world will be 10 times more instrumented with connected devices **leaping from 500M to 1 Trillion**



Approximately 70% of the digital universe is created by individuals, **but enterprises are responsible for 85% of the security, privacy, reliability, and compliance.**

Spimes

MobileMe helps you find your lost iPhone.

Sometimes it's your keys. Other times it's your glasses. Misplacing things happens all the time. Now, if you misplace your iPhone, Find My iPhone can help you find it.

Locate your iPhone on a map.

Now, if you lose your iPhone, MobileMe can help you find it. MobileMe includes a new feature called Find My iPhone. Just enable Find My iPhone in MobileMe settings on your phone.* Then you can log in to me.com from any computer to access Find My iPhone and display your phone's approximate location on a map.



Find My iPhone and Remote Wipe

Locate your lost iPhone with MobileMe. No chance of getting it back? Remote Wipe protects your privacy.

[Watch the QuickTour ▶](#)

just google them.

W O R K

Fleet Management

Daimler FleetBoard



“Focal Point helps us discover the optimal set of customer features and balance those against the needs of our business, allowing us to deliver continual enhancements to our telematic solution.”

What's Smart?

- Smart end-to-end system optimizing vehicle usage and routing
- Innovative technology for advanced telematic solutions

Smarter Business Outcomes

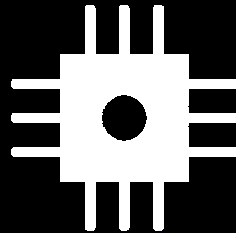
- 5-10% reduction in fuel consumption due to optimized vehicle management
- 10% reduction in telecommunications costs due to increased automation

How Rational Software Enables Smarter Products

- Improved collaboration in the product portfolio planning process
- Automated release planning balancing cost, risk and reward

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INTERCONNECTED

**People, systems and objects
can communicate and interac
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ways.**

People, systems and objects can communicate and interact with each other in entirely new ways.

2 billion

There will be an estimated 2 billion people on the internet by 2011.

4 billion

There are an estimated 4 billion mobile phone subscribers worldwide.

1 trillion

Soon, there will be 1 trillion connected devices in the world, constituting an "internet of things."



Instrumented



Interconnected

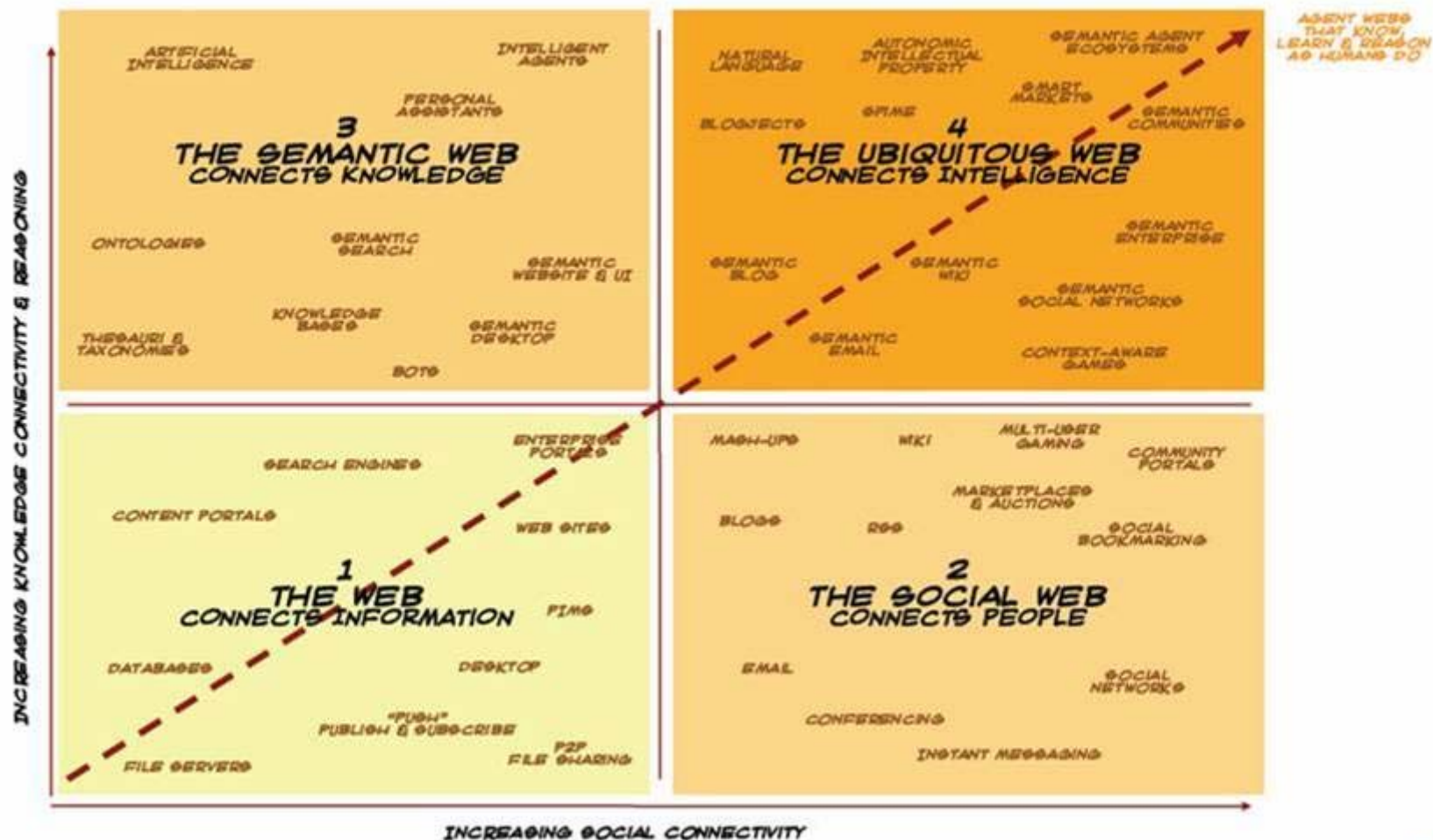


Intelligent



The internet of things

What is the evolution of the internet to 2020?



SOURCE: MONA SPINIC, GADAR NETWORKS; JOHN BIRDAK, DEZIR; & MILES SMITH, PRODUCTION



Car2Car



WiFi is coming to the fast lane as European automakers like DaimlerChrysler make progress on in-car networking systems designed to make driving safer. Cars equipped with the system can relay information about temperature, road conditions, fog, or road obstructions to vehicles within 500m, warning other drivers about problems so that they can take corrective actions. This project uses existing vehicle sensors such as the anti-lock braking system, electronic stability control, thermometer, or navigation system to detect black ice and road problems, and it can integrate with in-car radar and collision systems to report the location of road obstacles or disabled vehicles.

Mobile Access to Medical Images

Merge Healthcare



“We rely on Synergy and Change to manage the complexity of the software and to ensure that our global development teams operate as one, for the best result to our customers. This software from IBM is part of our livelihood; it's our DNA.”

What's Smart?

- Provides medical professionals access to complex medical images on mobile devices
- Helps ensure prompt emergency diagnosis – anytime or anywhere

Smarter Business Outcomes

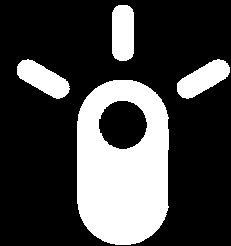
- Reduced hospital operations costs
- Reliable, secure, scalable delivery of medical images and reports

How Rational Software Enables Smarter Products

- Collaboration across globally distributed development teams
- Change management across the end-to-end software lifecycle

How a Smarter Planet “happen”

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INTELLIGENT

We can respond to changes quickly and accurately, and get better results by predicting and optimizing for future events.

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50 terabytes

Agricultural consultancy Lanworth crunches more than 50 terabytes of satellite images, digital soil maps and weather forecasts to make more accurate crop forecasts.

1 petaflop

Scientists are working to prevent influenza outbreaks by modeling the viruses with a super-computer that can operate at one petaflop, or one quadrillion operations per second.

100,000

Electronic medical records could prevent an estimated 100,000 deaths a year from medical error.



Instrumented



Interconnected



Intelligent



Intelligence will be created through integration

Vehicle Services



- Vehicle Monitoring
- Roadside Assistance
- Advanced Diagnostics
- Software Fault Analytics
- Service & Warranty Data

Traffic Services

- Police/Emergency
- Traffic Congestion
- Weather
- Concierge
- Insurance (“pay as you drive”)

Personal Services

- News
- Entertainment
- Banking
- Government
- Utilities



Vehicle to Vehicle



Dealer



Tolling



Electric Vehicle/
Hybrid Charging



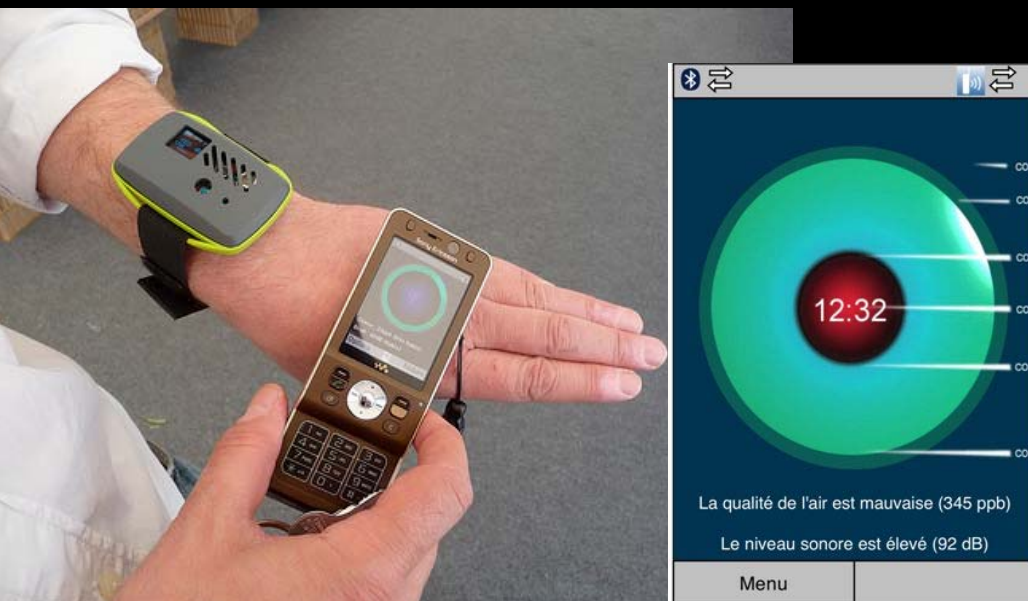
GPS



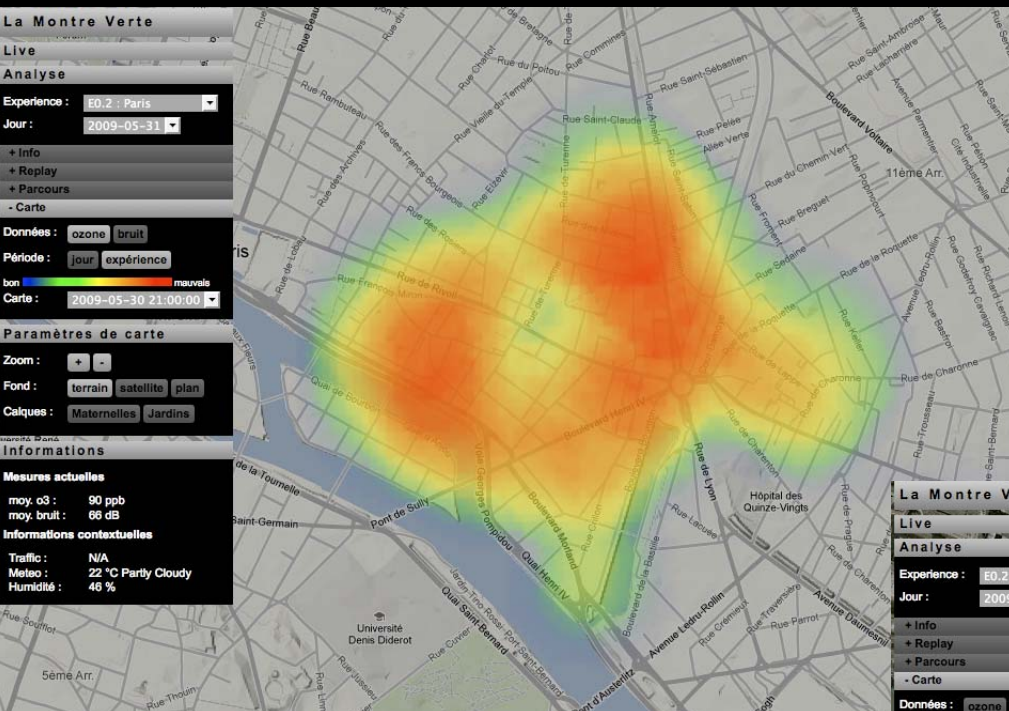
Vehicle to Roadside

Cities 2.0

- Multiply the number of urban environmental sensors by 1,000
- Promote people's participation in building sustainable cities
- Encourage other sensor networks to share their data
- Facilitate the emergence of new knowledge, new services, more informed decisions, new discussions...
- The watch measures Ozone (O₃), Noise every few seconds. It carries a GPS and a Bluetooth chip.
- The phone displays the information in a graphic way (the "Eye").
- It transmits the data to the CityPulse platform.



The collective maps



Ozone



Noise

Smart reduction of fuel consumption and emissions

Eaton corporation

What's smart?

- Innovative hydraulic hybrid technology for urban delivery trucks
- Smart software to optimize energy usage and reduce greenhouse gases

Smarter business outcomes

- 60-70% increase in fuel economy (per EPA)
- 40% reduction in CO₂ emissions



Software tools are needed to:

- Model and optimize system performance
- Automatically generate in-vehicle software code

Smarter Products for a Smarter Planet

In Summary...

- Software is driving the **value and differentiation** in products and systems
- The development of smarter products requires:
Innovation, Collaboration, Efficiency
- IBM Rational provides an integrated software platform dedicated to helping companies **develop and deliver smarter products** and to **develop software that can benefit from smarter products**
- IBM can offer the software, hardware, expertise and services to help you get ahead of the competition



A good hockey player plays where the puck is. A great hockey player plays where the puck is going to be.

Wayne Gretzky



How smarter products can make our life smarter ?

