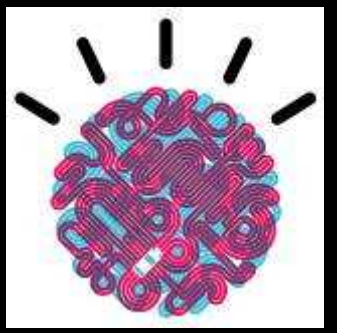
IBM Smarter Cities event - Budapest, September 15



Speaker:

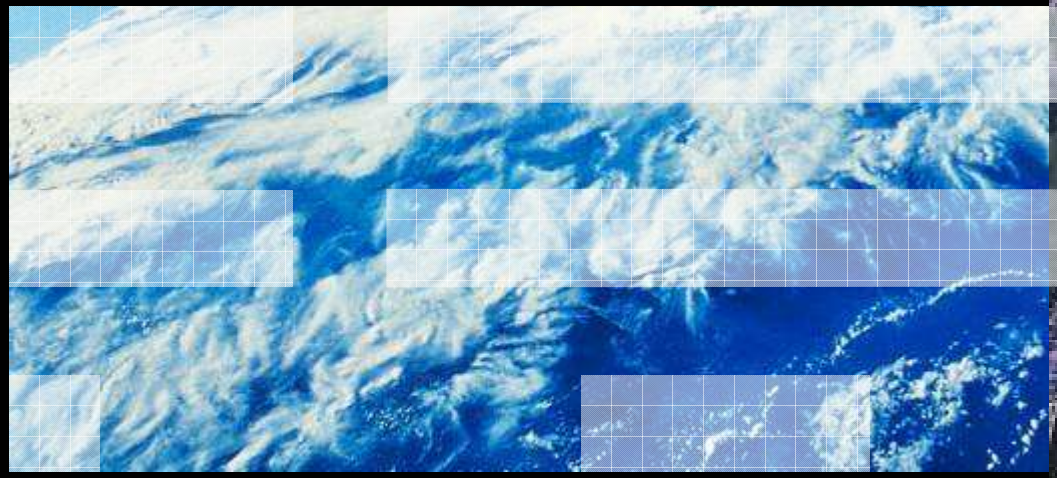
Eric-Mark Huitema,

European sales manager smarter transportation

Smarter Traffic Video

http://www.youtube.com/watch?v=nZPQeqAoydQ&feature=player_embedded

BUILDING A **SMARTER PLANET**



Drivers of change

Exploding populations, urbanization, globalization and technology are driving change, which creates unique challenges and opportunities for transportation providers.

2 billion / **7** billion

It took all of history for human population to reach 2 billion, and only one generation to more than triple to nearly 7 billion.

476 cities over 1 million

In 2010 there are 476 urban areas with at least 1 million people. That's an increase of 573% from 1950 when there were 83. Over half the world's population now lives in urban areas.

>100x growth

International trade in manufactured goods increased more than 100 times (from $95 billion to $12 trillion) in the 50 years following 1955.

4 billion / **1** billion

Today, there are over 4 billion mobile phone users, and over 1 billion internet users, growing rapidly to 2 billion.

Something meaningful is happening...

The world is flatter.

The world is smaller.

We have to solve the problems:

1. BECAUSE IT CAN.
2. BECAUSE IT MUST.
3. BECAUSE WE WANT IT TO

…the world is getting Smarter.

BECAUSE IT CAN. Smarter Transportation

Over the past years, IBM has been working with cities and nations around the world to improve many kinds of systems and make them smarter – with particular success in transportation.

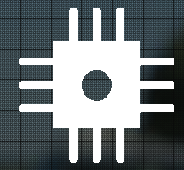
In doing so, we have learned that our transportation system isn't, in fact, a system. It's a collection of related industries, operating in close proximity to one another.

The opportunity is that as we think about transportation as a true system, we have the opportunity to reinvent transportation for the needs of the 21st century.

Smarter Transportation: A system of systems !

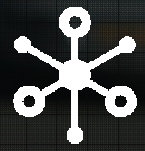
BECAUSE WE WANT IT FOR THE FUTURE.

How?



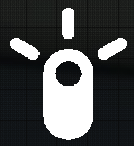
The world is becoming INSTRUMENTED

Smart sensors on road, in cars, Connected cars everywhere



The world is becoming INTERCONNECTED

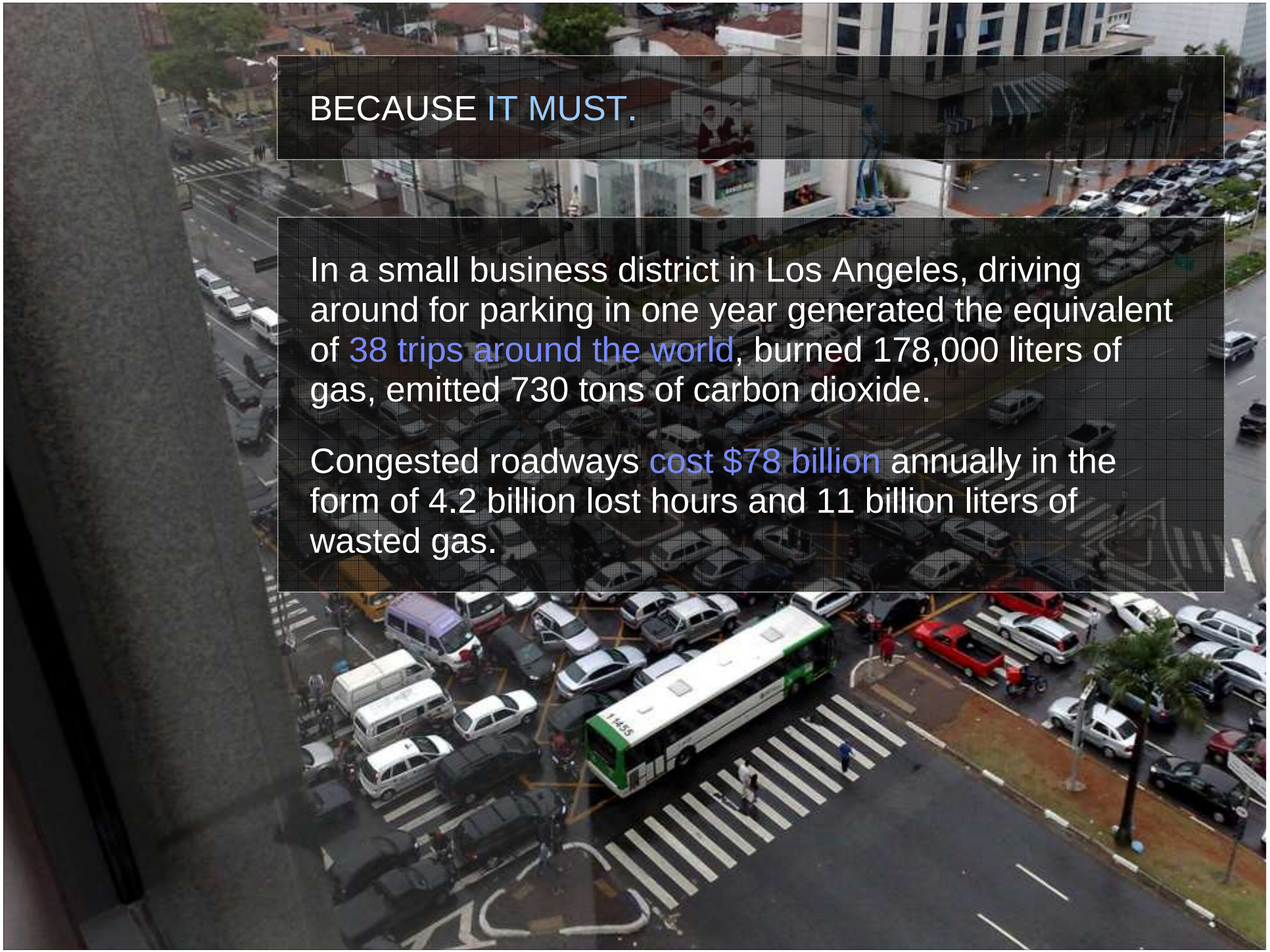
Linking information on road, in cars and railways, throughout the supply chain – “the internet of things”



The world is becoming INTELLIGENT

Cars talking to each other, sensors talking to each other, we can predict where traffic jams are, **before** and **while** you drive

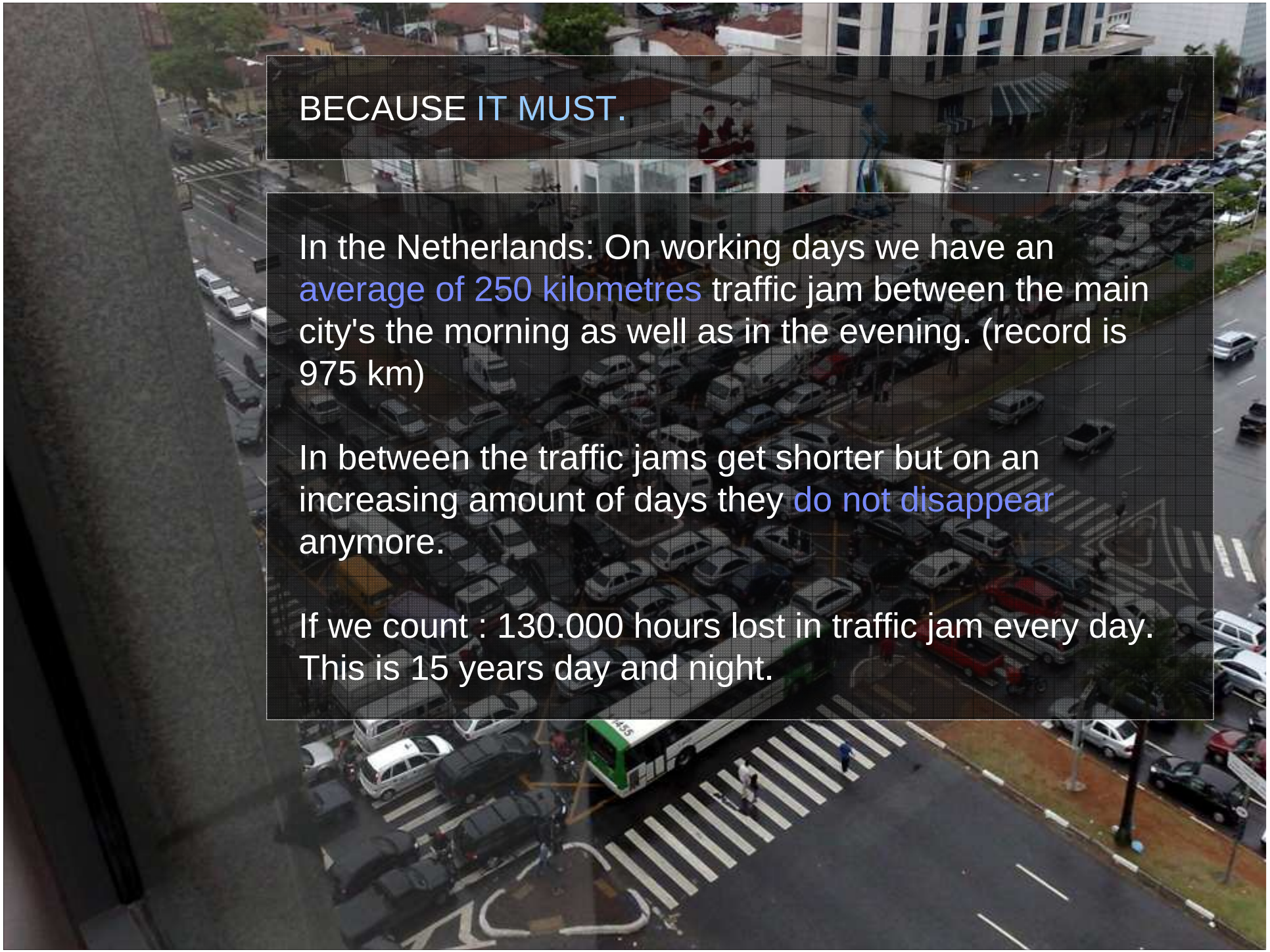
Cars avoiding accidents, Preventive maintenance, interaction with the environment, schools, signs, events, and POI info.



BECAUSE IT MUST.

In a small business district in Los Angeles, driving around for parking in one year generated the equivalent of 38 trips around the world, burned 178,000 liters of gas, emitted 730 tons of carbon dioxide.

Congested roadways cost $78 billion annually in the form of 4.2 billion lost hours and 11 billion liters of wasted gas.



BECAUSE IT MUST.

In the Netherlands: On working days we have an average of 250 kilometres traffic jam between the main city's the morning as well as in the evening. (record is 975 km)

In between the traffic jams get shorter but on an increasing amount of days they do not disappear anymore.

If we count : 130.000 hours lost in traffic jam every day. This is 15 years day and night.

IBM Smarter Planet Initiatives

smarter safe pharmaceuticals

smarter solutions for retail

smar
supp

SMARTER Transportation

Smarter Traffic Systems

turing

smarter industrial operations

smarter data center

smarter healthcare

smarter transportation

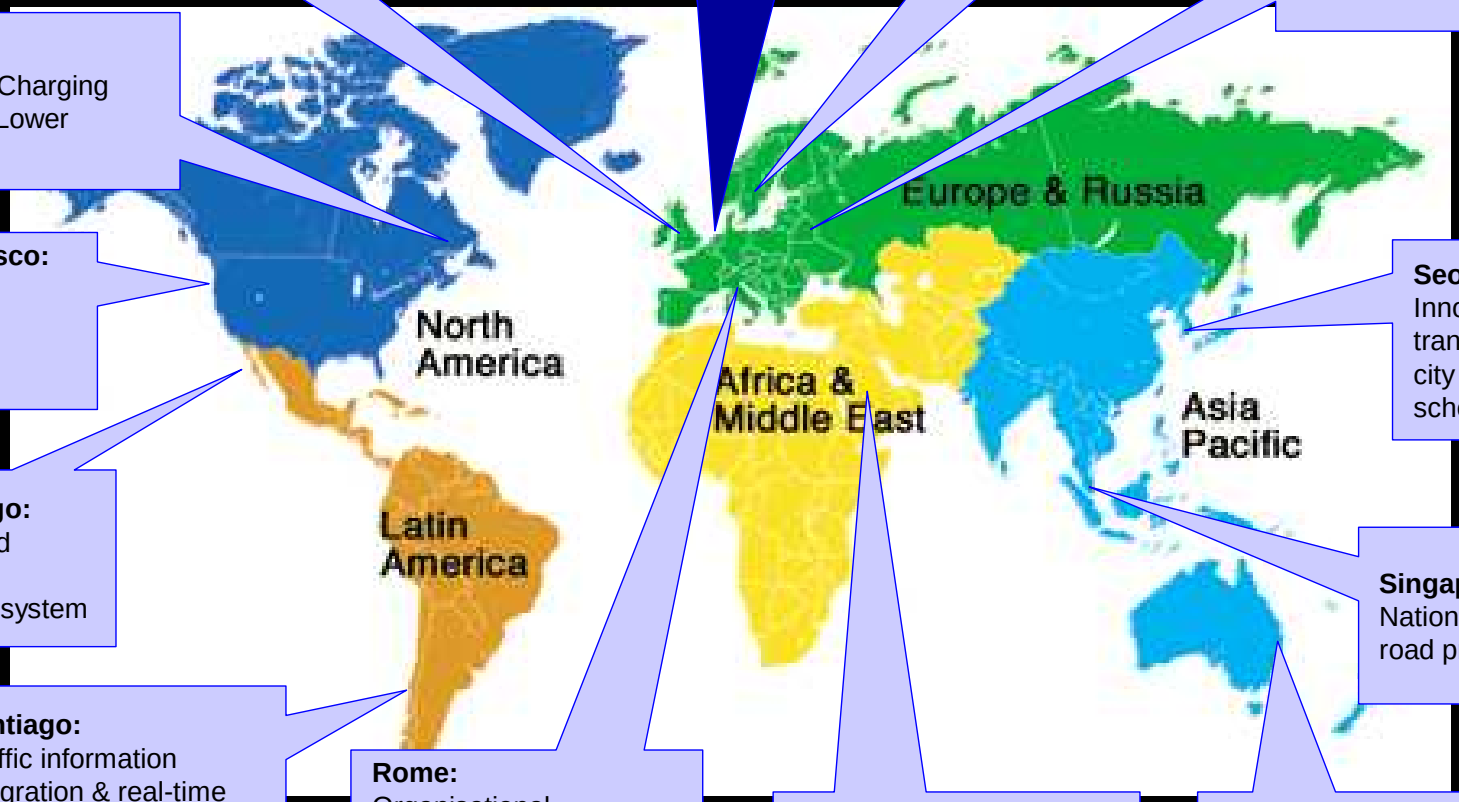
smarter traffic

smarter water management

smarter cities

BECAUSE IT CAN.

Building a smarter planet: smarter transportation



London:
City congestion charging scheme

Netherlands:
National road pricing schemes GPS-based

Stockholm:
City congestion charging scheme

Eastern Europe
Increase in national lorry charging schemes

New York:
Congestion Charging scheme for Lower Manhattan

San Francisco:
Universal Transport Account
RUC deal

Seoul:
Innovations in public transport smartcards and city congestion charging scheme

San Diego:
Integrated transport payment system

Singapore:
National GPS-based road pricing scheme

Santiago:
Traffic information integration & real-time end user dissemination.

Rome:
Organisational integration of multi-modal regulators and operators

Dubai:
road pricing schemes GPS-based with VAS

Brisbane:
ETC scheme

Stockholm Example: Movie
http://www.youtube.com/watch?v=33T7VxT2O40

Stockholm Approach en Results

Approach Stockholm

Growth model:

Pilot as the first step.

Stop the system and Referendum

Outcome referendum led to contract for final system for 5 years.

Back office was key from the start.

Results

- Public opinion from negative to positive
- IBM Delivery within time and budget
- 22% Traffic reduction of private car owners !
- 40% CO^2 emission reduction
- 40,000 new customers for public transport
- Public transport improved traffic flow (busses where ahead of schedule)
- Better occupancy Taxi's.
- Shops in the centre saw revenue increase with + 6%

The solution is good, but no system is perfect!

Building a smarter planet: smarter transportation

And it is a “sport” to avoid being charged!


BECAUSE IT MUST.
Smarter transportation must solve our daily problems:
1. Negative impact on economy
2. Negative impact on climate
3. Negative to our work-life balance
90
76
IBM

SMARTER Transportation: Connected car Video (8 min)

http://www.nederlandbreedbandland.nl/page/Intelligente-mobiliteit/Nationale-projecten/-Connected-

BECAUSE IT CAN.

Pay for use of roads (Km Price)

Private users

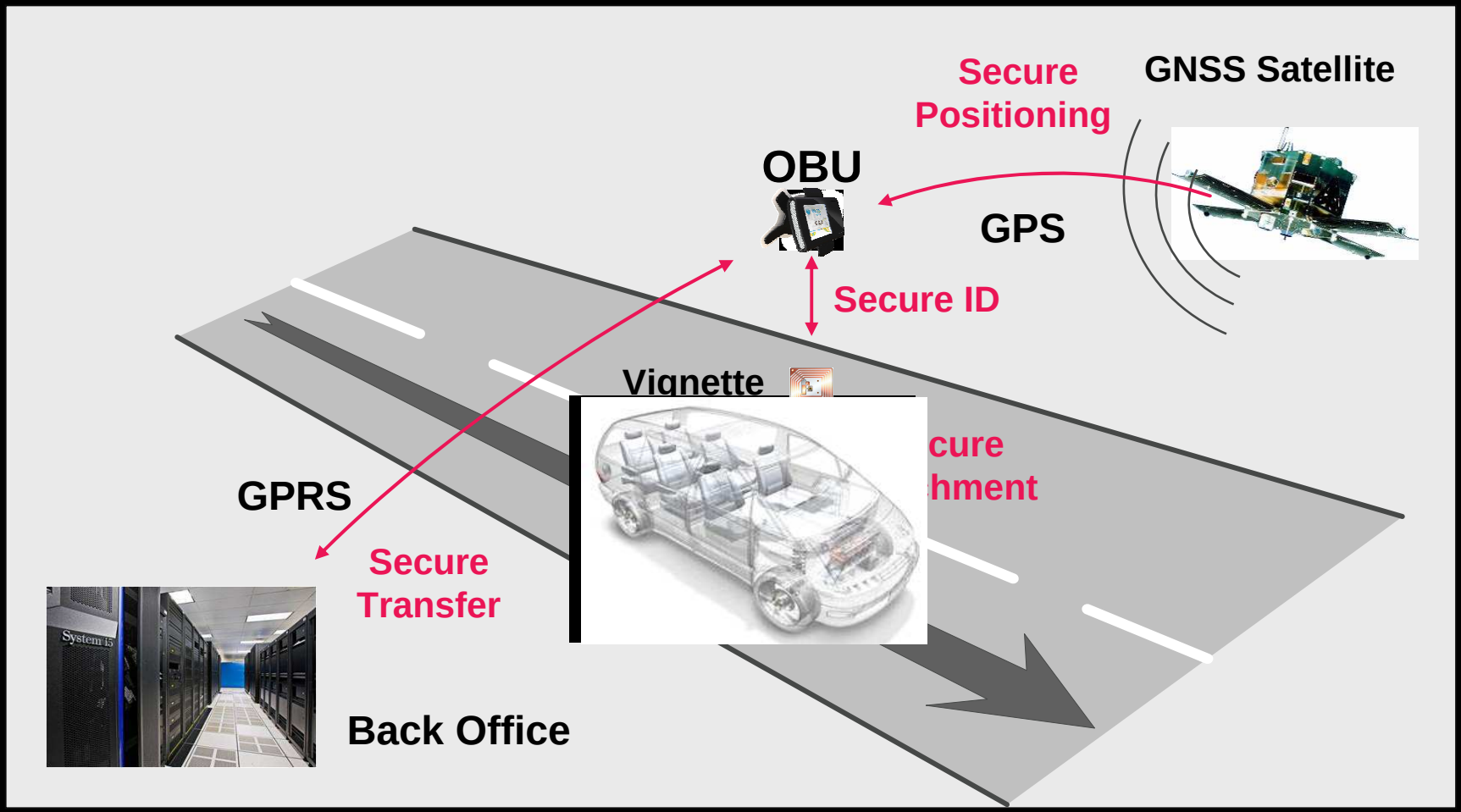
- Fair payment for use - not for owning a car
- Better information in car (VAS)
- Enhanced Security (E-call and B call/ ANWB)
- Better for our environment

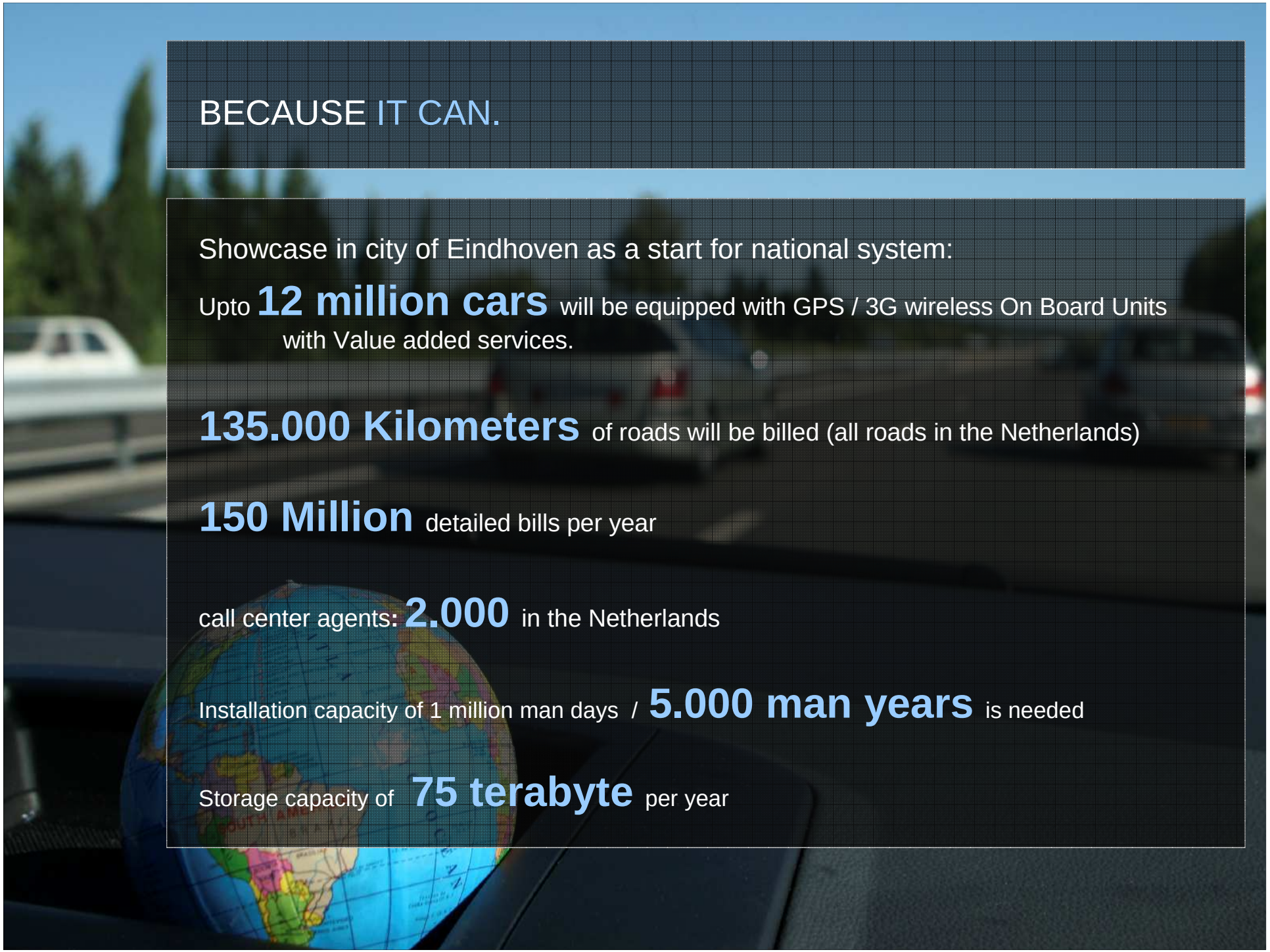
Business users

- Shorter traffic jams - higher predictability time of arrival
- more efficiency - increased revenue
- New business model
- Less hours Lost

Government

- Most return for every € spend
- Stabile Tax income
- Better use of roads





BECAUSE IT CAN.

Showcase in city of Eindhoven as a start for national system:

Upto **12 million cars** will be equipped with GPS / 3G wireless On Board Units with Value added services.

135.000 Kilometers of roads will be billed (all roads in the Netherlands)

150 Million detailed bills per year

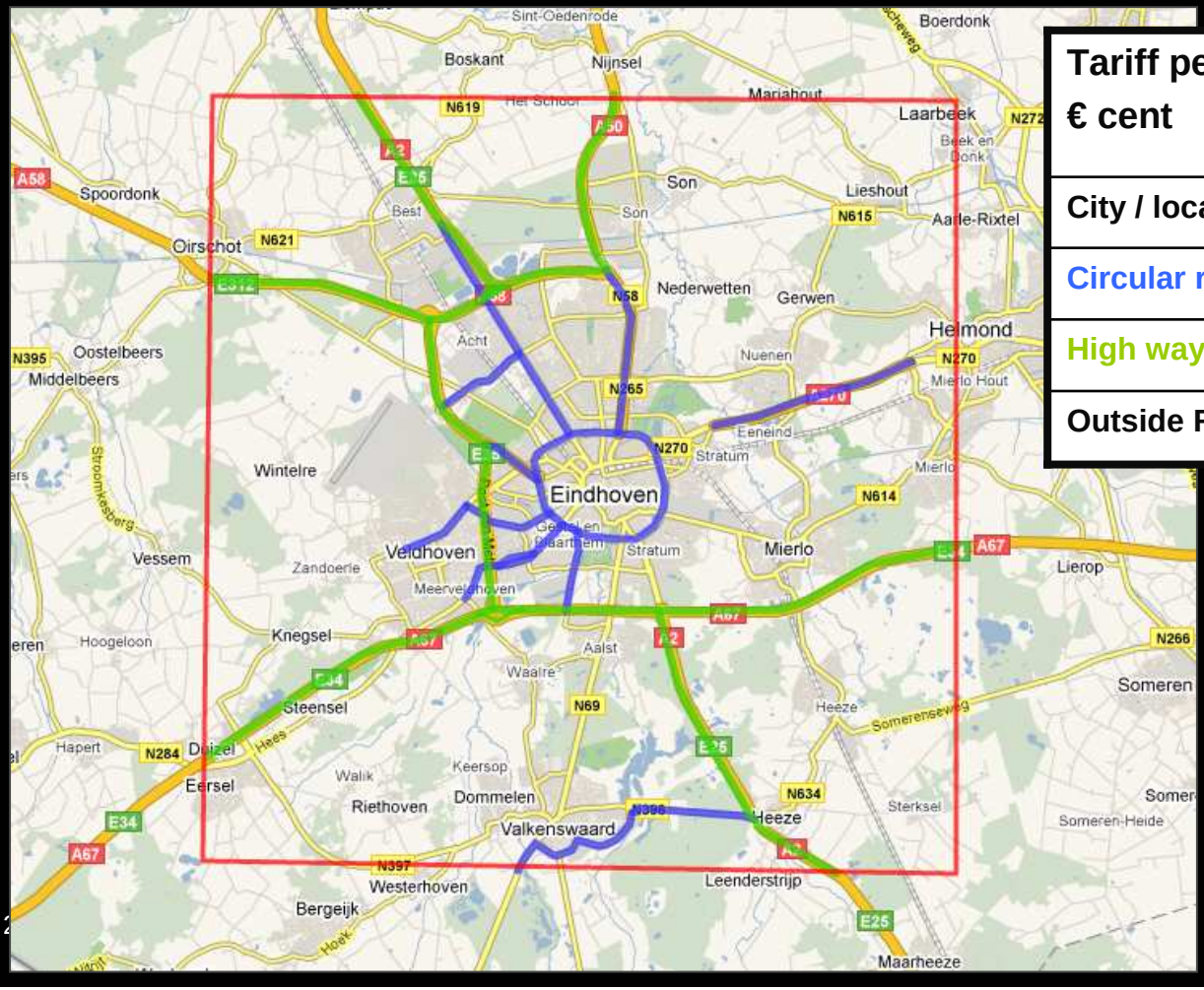
call center agents: **2.000** in the Netherlands

Installation capacity of 1 million man days / **5.000 man years** is needed

Storage capacity of **75 terabyte** per year

Trial Road Pricing South East Brabant / City of Eindhoven

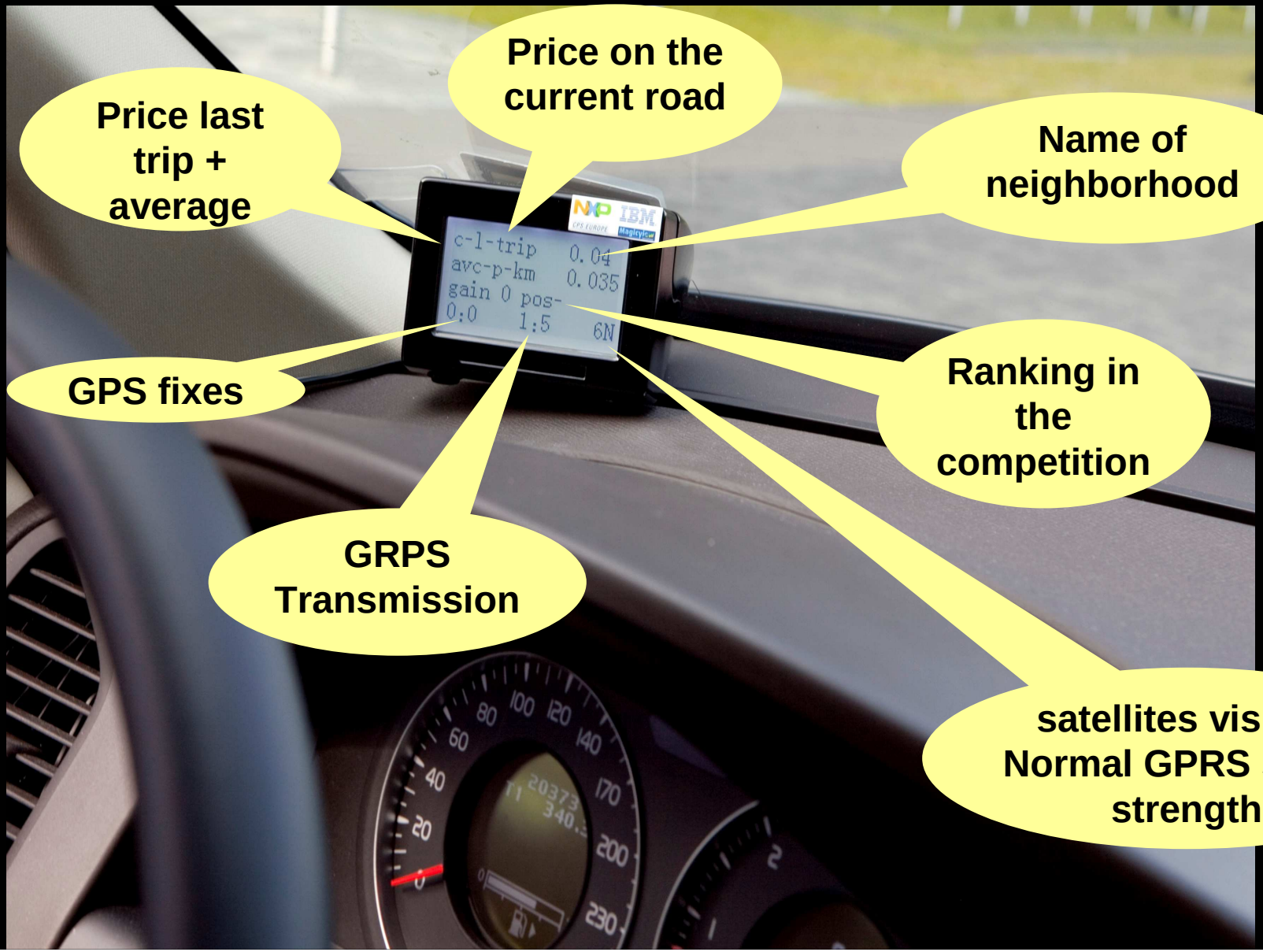
Tariff depending on distance, time and place (road type)



Tariff per km / € cent	08.00 - 09.00 17.00 - 18.00	Normal
City / local roads	20	12
Circular roads	10	5
High way	5	3
Outside Region	2	2

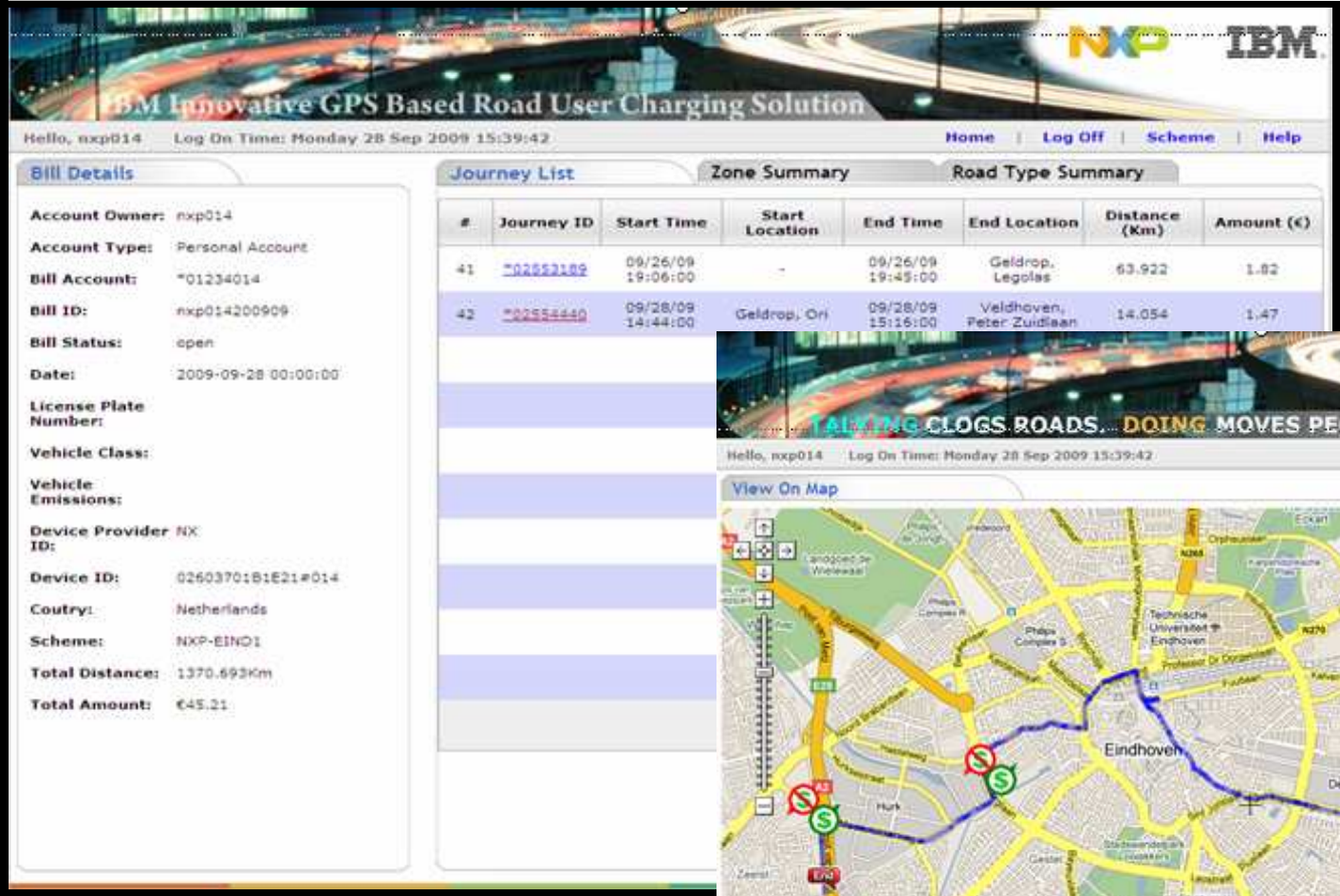
BECAUSE WE WANT IT FOR THE FUTURE.

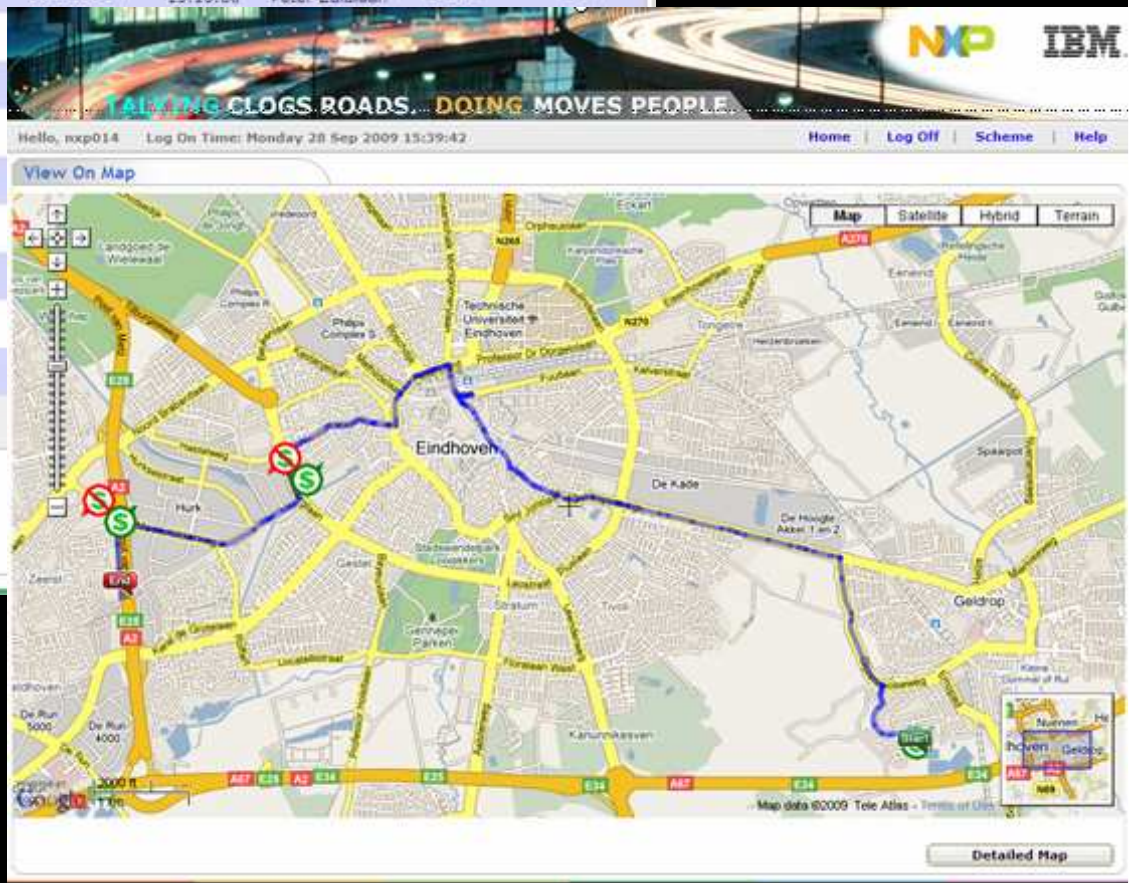
Building a smarter planet: smarter transportation



BECAUSE WE WANT IT FOR THE FUTURE.

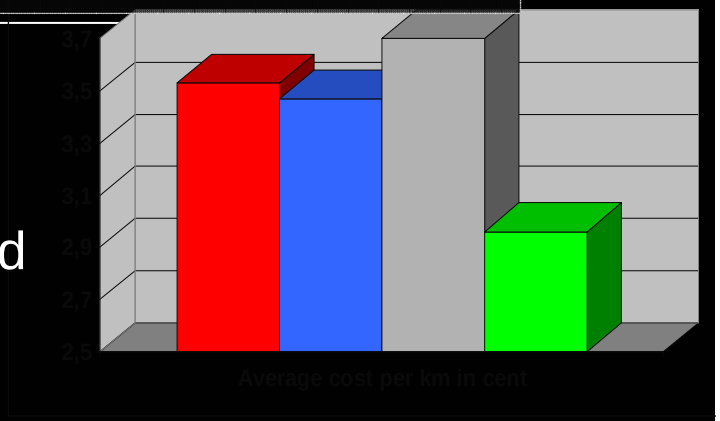
Building a smarter planet: smarter transportation





IBM's Smarter Mobility Back Office

Results: after 200.000 km



70% of drivers changed behavior when rewarded

- Overall result >16% lowered average cost / km
- The best half of these showed 24% improvement
- When reward was removed 2 out of 3 users increased average cost/km again

In commute traffic users will make trade off between costs and the behavior they are used to

No major issues in the technology, identified essential requirements:

Ease of Use, Robustness, Security, Privacy, Over the Air Updates

The Core Technology for 'Kilometerbeprijzing' is Available
It can also be used to introduce Value Added Services

BECAUSE IT CAN.

Smarter Working: ICT makes it possible

Place and location independent working environment

We at IBM Netherlands are:

Saving 6 million kilometres driving every year

Saving 1000 ton CO^2 every year

From 6000 employee desks at several offices to 2000 e-place in Amsterdam and Eindhoven

1000 people using the IBM shuttle bus (Riecker Circle line)

BECAUSE IT CAN.

IBM Netherlands is working SMARTER:
Answers to the Dutch mobility challenge (TFMM)

Smart Work Center

OV for visitors IBM events

Amsterdam Kilometer Rewards

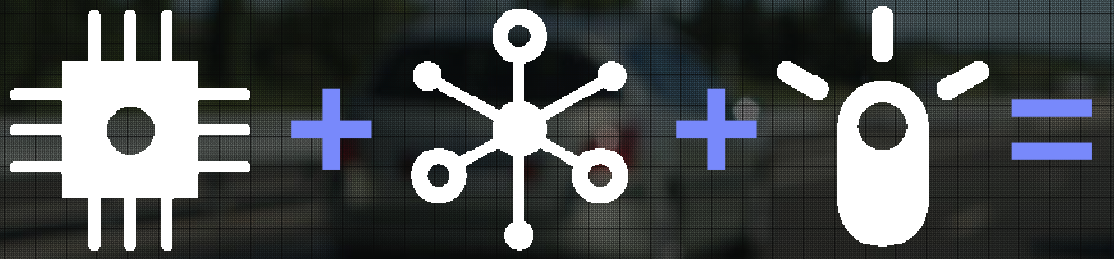
Bicycle plan

E-Places

Flexible working

NS Business Card

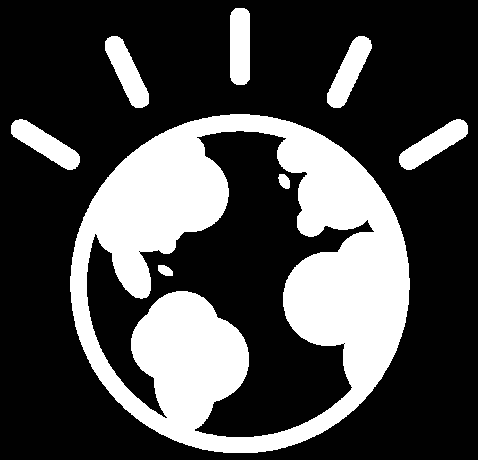
BECAUSE WE WANT IT FOR THE FUTURE.



Instrumented + interconnected + Intelligent =

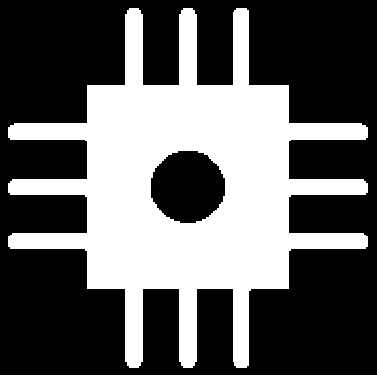
Smarter transportation
An opportunity to think and act in new ways.

Thank You … for a Smarter planet:



Thinking and acting in
new ways to make our systems more efficient,
productive and responsive.

APPENDIX



INSTRUMENTED

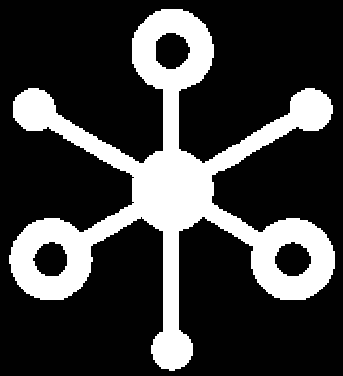
We now have the ability to measure, sense and see the exact condition of everything.

Today there are over 1 billion transistors for each person on the planet.

We are instrumenting vehicles in all modes of transportation, the infrastructure they move on, the streets and traffic lights, the aging bridges, railroad tracks and trains, airline baggage and aircraft parts, subway tunnels, freight pallets, ticketing systems, and even the mobile devices carried by travelers so we can understand where they are going, when, how often and perhaps why.

Instrumentation is all about sensing what is happening right now, whether it is the temperature of a train wheel bearing, the location of a misplaced suitcase, metal fatigue in a bridge or the number of cars on a highway at 6:00 AM.

The world is becoming more instrumented everyday, generating a flood of new data.



INTERCONNECTED

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

Integrating data laterally across an end-to-end process, system, organization, industry ecosystem or value chain.

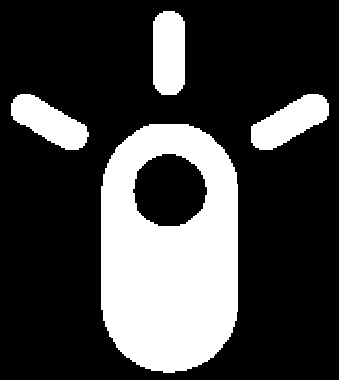
The Internet is now over 1 billion people strong. By 2011, one-third of the world's population will be on the Web.

There are currently nearly 4 billion mobile phone subscribers worldwide.

Pervasive communication channels including WiFi, Bluetooth, 3G, radio frequency and the Internet make connecting to and transmitting data from sensors and instruments constant and ubiquitous.

Within a mode of transportation, sharing information across the operating ecosystem can yield dramatic capabilities. Extending this concept across modes of transportation exponentially increases the potential benefits.

The interconnection of people and things—customers, drivers, employees, roads, aircraft, airports, cargo, suppliers—has become pervasive, creating the ability to improve performance.



INTELLIGENT

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

An average company of 1,000 employees spends US $5.3 million a year to find information stored on its servers.

Every day, 15 petabytes of new information is generated—more than 8 times the information in all U.S. libraries.

Example: A high speed passenger train is running at 350 kph from Beijing to Shanghai. Digital video surveillance and on-train sensors recognize that the train has slowed unexpectedly. Without human intervention the system instantly relays this information to the train following four minutes behind, automatically slows the second locomotive at a safe rate of deceleration, and notifies the operator.

Instrumented and connected objects and processes communicate with sophisticated analytic systems that enable patterns to be recognized, relationships to be drawn and decision making to be continuous and in near-real time.