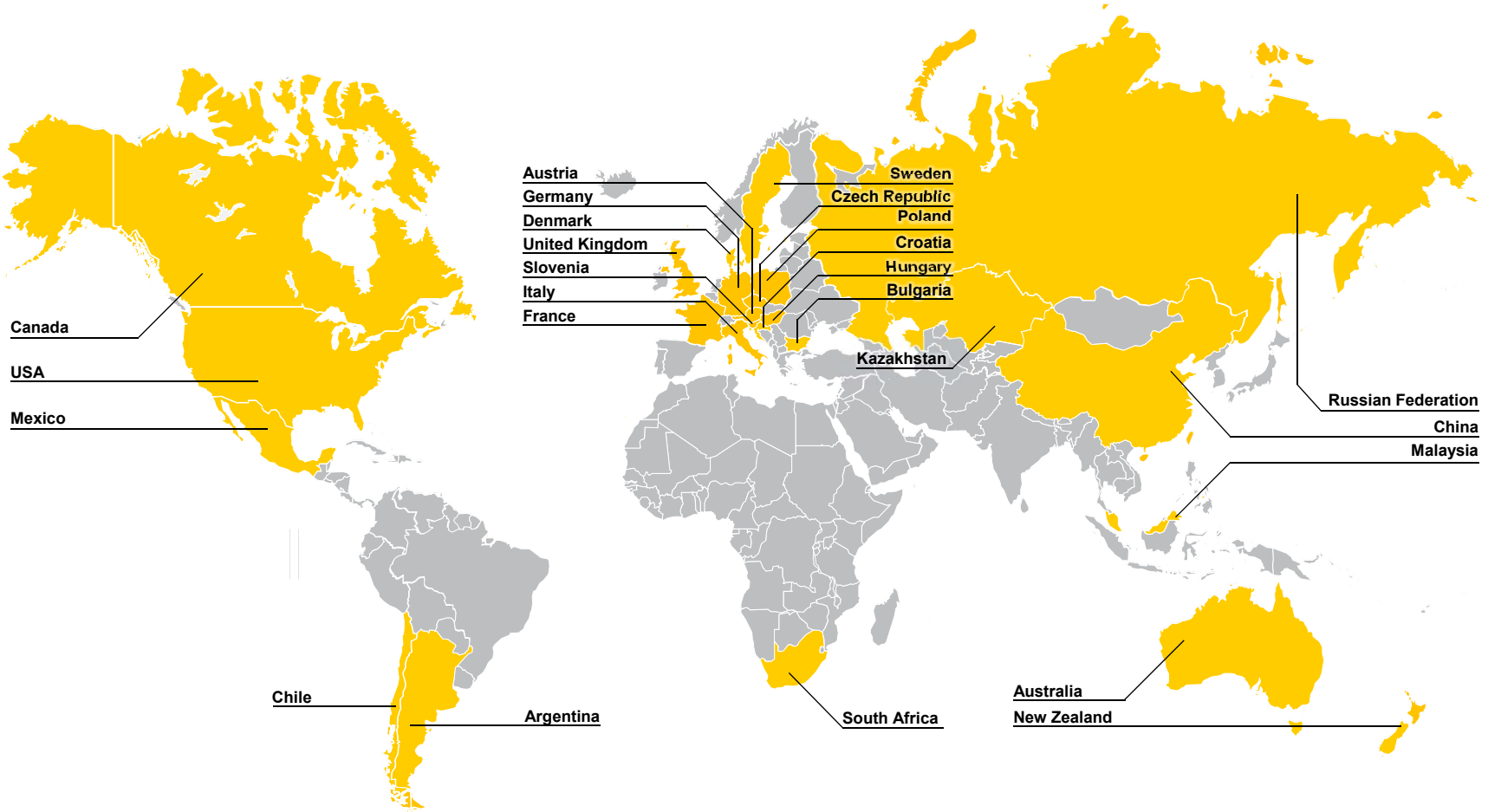
DOOMSDAY OR PARADISE?

Solving road traffic challenges with intelligent information technologies

Josef A. Czako, Kapsch TrafficCom
The Norwegian Roads Conference
Kristiansand, 23.5.2012

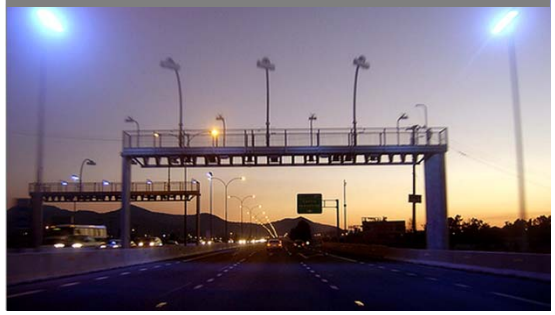
Kapsch TrafficCom.

Where we are.


Canada
USA
Mexico
Chile
Argentina
Austria
Germany
Denmark
United Kingdom
Slovenia
Italy
France
Sweden
Czech Republic
Poland
Croatia
Hungary
Bulgaria
Kazakhstan
Russian Federation
China
Malaysia
South Africa
Australia
New Zealand

Our Portfolio.

Tolling Systems

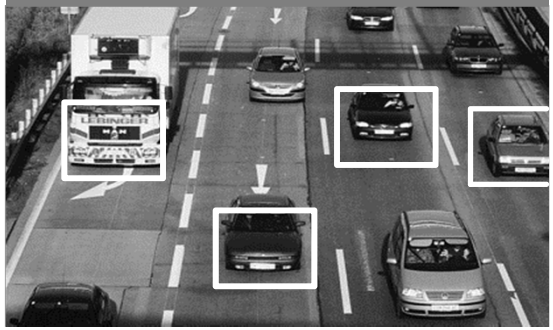


Urban Traffic Solutions

Operations

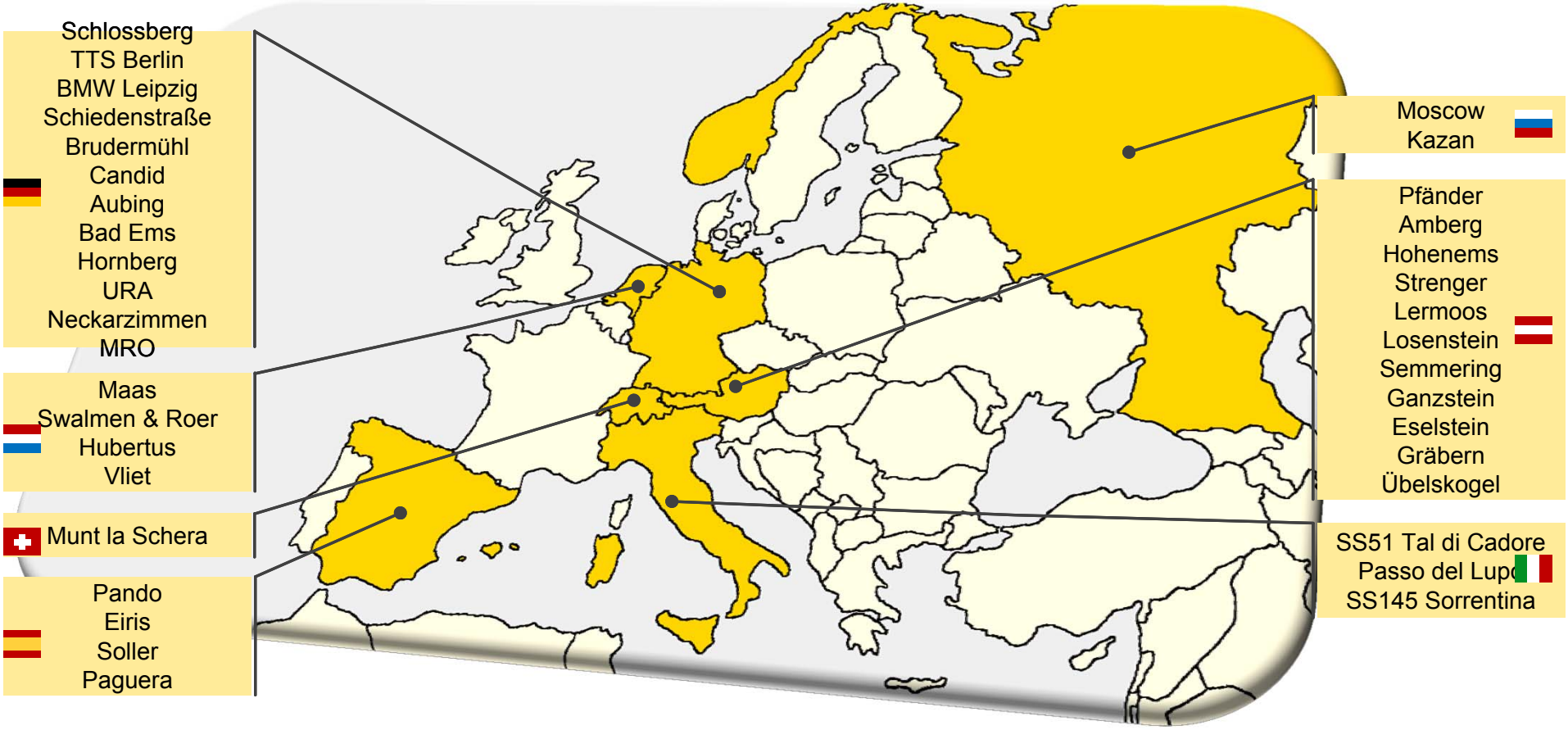
Components

ITS & Telematic Solutions



Tunnel Safety: Kapsch IDS Projects

- 37 Projects
- 20 customers
- ca. 150 km covered
- ca. 1500 cameras



IDS Functions Portfolio.


Speed Measurement


Distance Measurement


Vehicle Classification


Counting (Virtual Loops)


Traffic Jam & Stopped Car


Slow Driving Vehicle


Wrong Way Driver


Wrong Lane Driver


Movement in Non-Traffic Area


Breakdown-Bay Occupancy


Pedestrian on the Road


Smoke


Lost Cargo


Hazardous Goods Plate

Kapsch Incident Detection System.

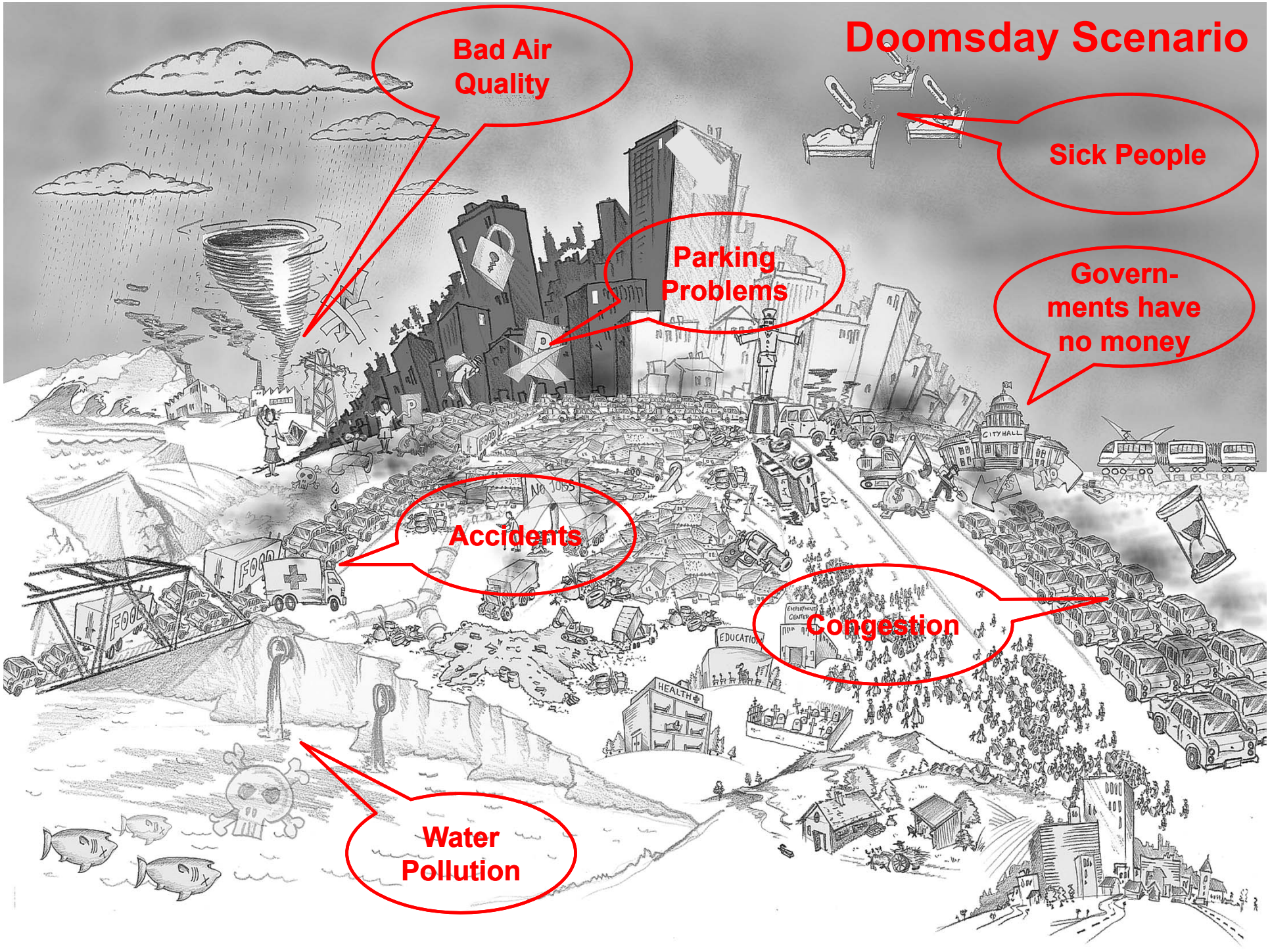
Who is IRF ?

- **Not-for-profit Organisation, founded 1948**
- **430 members in 90 countries (public & private sector)**
- **4 Workgroups and Committees**
- **Knowledge sharing**
- **Provide expertise**
- **Voice of the members**
- **Education and training**
- **World Road Statistics**

IRF promotes roads, that are safe, economically viable, and environmentally friendly

IRF - Working Groups & Committees

From Doomsday to Paradise.


Doomsday Scenario
Bad Air Quality
Sick People
Parking Problems
Govern-ments have no money
Accidents
Congestion
Water Pollution
CITYHALL
HEALTH
EDUCATION
FOOD


Let's Go
for the
Paradise Scenario !
LOGISTICS €€
CITY ACCESS €€€
PARKING €
PARK & RIDE

Questions need Answers.

I am am here to ask, not to answer

Henrik Ibsen

I am here to ask, and to answer

Josef Czako

Trends & Facts.

Trends & Facts.

- 57% of people nowadays communicate more via new medias, rather than face-to-face.
- By 2014 mobile internet will surpass desktop web access.
- By 2020 over 50 billion devices will be linked to each other.
- By 2050 around 70% of all people are expected to live in cities (urbanization).
- The number of cars in the world is projected to increase from around 750 million today to more than 2.2 billion in 2050 (Trend to mega cities).

→ This inevitably leads to questions…

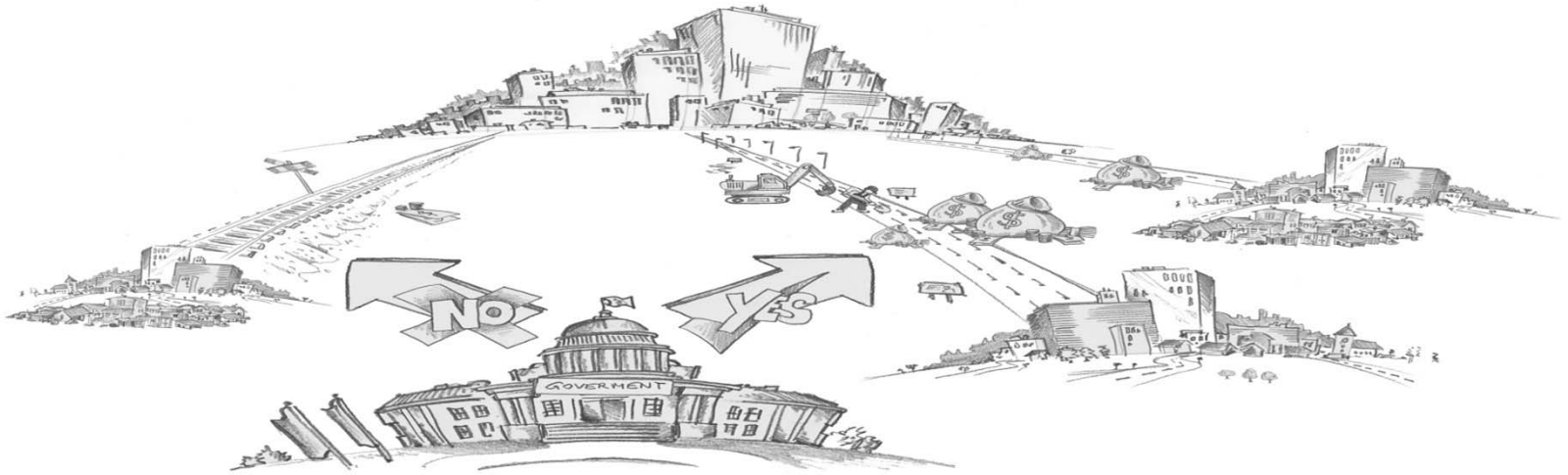
Questions to be answered.

- How city infrastructure (planning) responds to these developments?
- How quality of life in cities cope with polluted areas and overpopulation of vehicles?
- Are environmental damages from energy production going to change the equilibrium of the environment, with unpredictable consequences?
- Will the rising temperature of oceans increase the probability and strength of hurricanes?
- Will this cause serious health problems for people living in cities all over the world?

➡ “Doomsday” scenario?

Challenges & Kapsch approaches.

Challenge – Financing of road infrastructure.



- Tight budgets.
- Financial crisis.
- External costs and “user pays” principle.

ITS to finance road infrastructure.

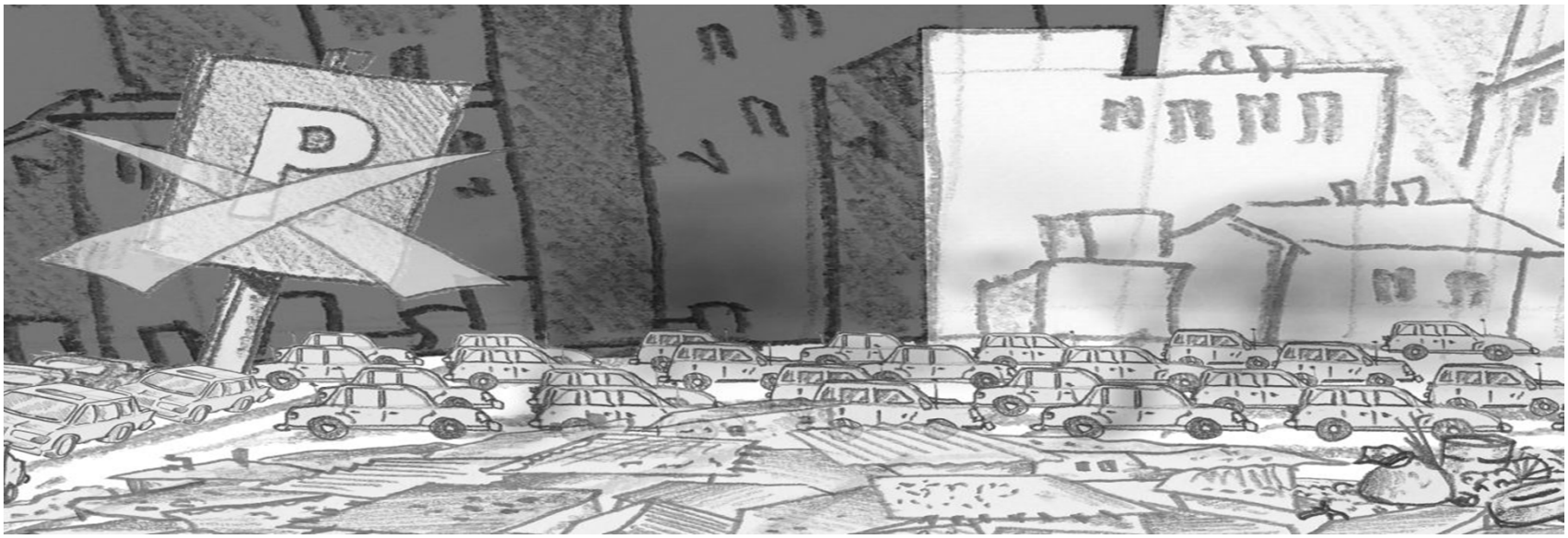
State Budgets:

- Limited funds
- Budgetary implications and restrictions

Role of ITS :

- Apply the “User pays principle” to finance road infrastructure (ear-marked funding) and to internalize external costs
- Finance general budget, to cross-finance other modes of transport and to make road transport directly comparable (in prices) to other modes of transport

Challenge – City Access.



- Many cities are already not able to handle existing traffic volume.
- Commuting leads to accidents, congestion and pollution.
- Cities are not able to adjust infrastructure and as quickly as traffic volume grows (budgetary constraints, lack of political will to change travelling behavior).

ITS to optimize traffic flow & reduce congestion.

Urban Congestion in the US:

- 4,2 billion hours wasted in traffic jams,
- = US $ 87 billion congestion costs (2007)

Congestion in the European Union:

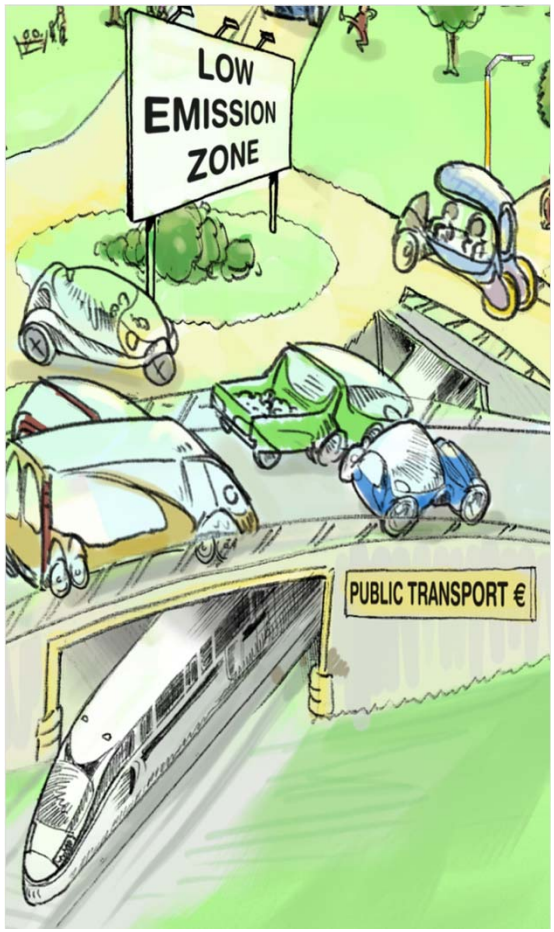
- 1,9 % of GDP “eaten” by congestion,
- = € 233 billion congestion costs

Role of ITS :

- Create a traffic management tool or “steering mechanism” to make better use of existing infrastructure, to optimize capacity of the network and to better distribute traffic
- Apply pricing strategies to set incentives to users to choose different routes, different departure times or different modes of transport
- Assure high level of service to travellers (provision of real time information, ..)

Challenge – City Access.

- City Access solutions are necessary to keep traffic flow.
- Traffic modes will be split up to increase safety and routing.
- People using public transportation systems will have easy access to the city center, paying less than people using their car.
- If the charge on cars rises, less traffic and a shift to public transport will be the result.
- An improvement of public transportation systems can be realized using revenues of private car users (cross financing of public transport).

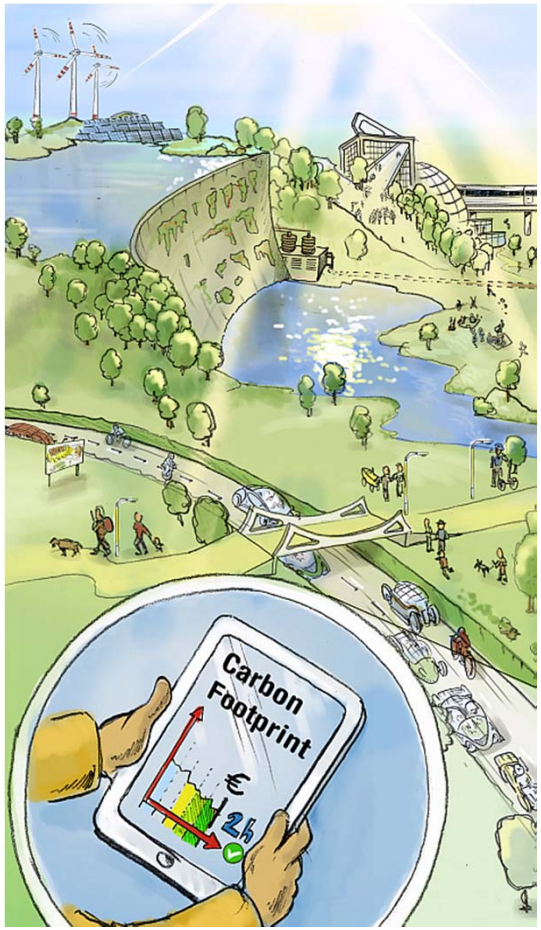


Challenge – Energy Management.

- A total power outage will result in chaos…
- People are trapped in vehicles of public transport and elevators.
- Car traffic will collapse with limited fuel reserves.

Challenge – Energy Management.

- Fully integrated energy management will become an important role in our future scenario.
- Checking your own carbon footprint helps to minimize loss of energy and to move on into a more efficient and greener manner.
- Vehicles recharged by alternative energy largely decrease pollution from the sector of traffic.
- Buildings can interchange their environment and help cooling or heating each other.

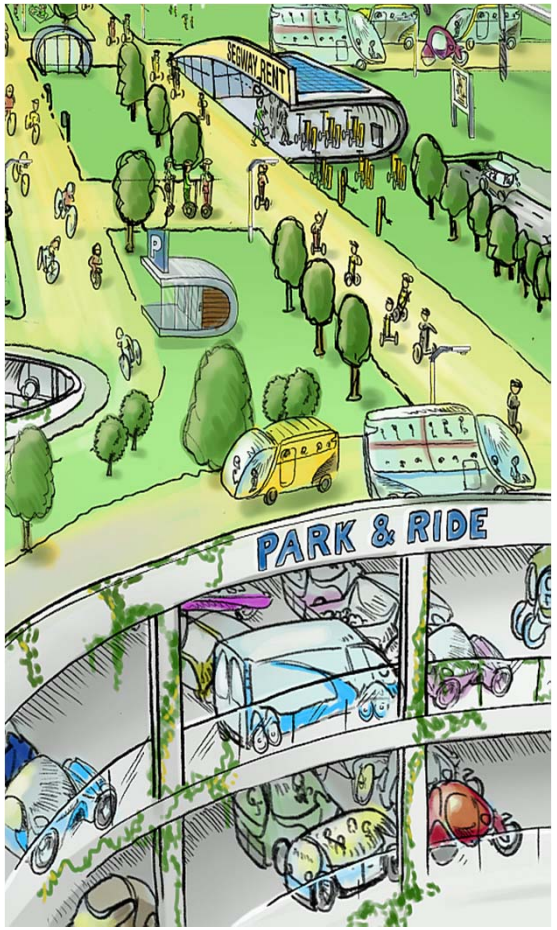


Challenge – Parking Management.

- The rise in motorization level has expanded the demand for parking ground.
- On average, vehicles park 23 hours a day – mostly on public property.
- Expulsion of living space in downtown areas as consequence of vehicle overpopulation.

Challenge – Parking Management.

- Parking management is a substantial part of a city's success in managing traffic volume.
- Parking management systems should motivate people to use public transportation inside the city.
- Park and ride facilities on the border of a city provide commuters the opportunity to change their mode of transport.
- Cars with more than 2 or 3 occupants as well as emergency vehicles have free city access.



Challenge – Traffic Coordination & Management.

- Different vehicles with massively different driving patterns cause problems.
- Uncoordinated traffic leads to accidents, congestion and environmental pollution.

ITS to improve road safety.

United Nations:

- 1,3 million “road deaths” a year !
- 50 million people injured !
- Costing society 100 billion US$ annually

Role of ITS:

- Provide real time information to users (conditions of road, weather, traffic flow, ..)
- Smoothen traffic flow and prevent speed variations
- Enforce speeding
- Detect incidents, shorten reaction times for appropriate rescue measures

ITS to protect the environment.

WHO - World Health Organization:

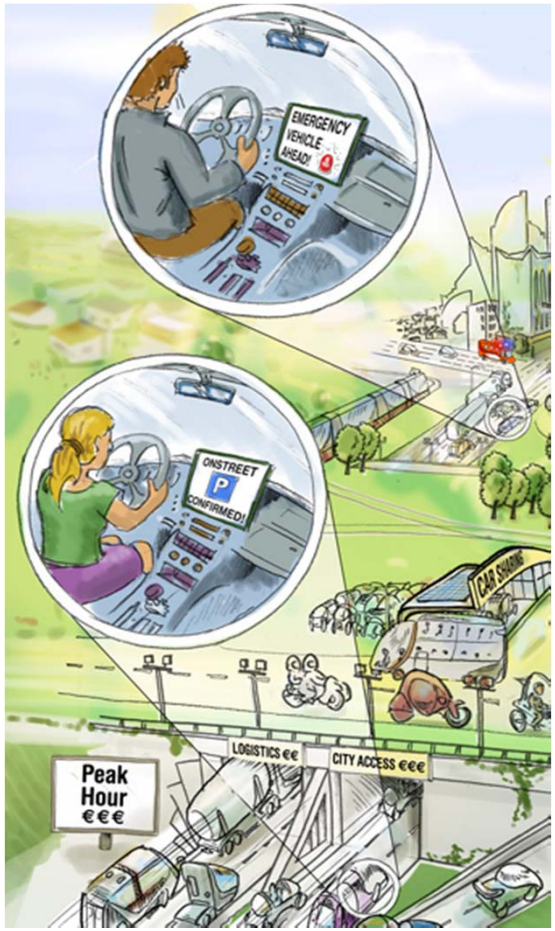
- Urban air pollution kills ~ 1.2 million people annually!

Role of ITS :

- Reduce emissions through smoothed traffic
- Adapt drivers behavior to real time situation (e.g. high particulate concentration, slippery lanes, ..)
- Assure seamless linkages between different modes of transport to offer the “greenest” routing
- Show one’s carbon footprint and valorize ecological behavior (e.g. mobility card/points, ..)

Challenge – Traffic Coordination & Management.

- Traffic coordination and management is required.
- Information is provided through text, speech or audio in order to support driver with tailor made advices.
- A cooperative traffic management system is able to monitor the entire traffic of a city.
- Road user charges, depending on environmental circumstances, can be increased or decreased (static/variable/dynamic adjusting tariffs responding to real time traffic information in order to keep traffic smooth).



The future ITS market.

Potential fields of ITS applications.

Urban Access Management (UAM)

- **City tolling systems***
- Low emission zone systems
- Access restriction
- Low emission zones
- Open zone parking

*** Core system of this segment**

Highway Traffic Management (HTM)

- **HTM system***
- IDS Tunnel + Highway
- Safety monitoring of trucks before tunnels
- Traffic information platform / Mobility Apps

V2X

- V2X in-vehicle OEM equipment
- V2X in-vehicle After Market equipment
- V2X in-vehicle applications

Traffic Law Enforcement (TLE)

- **Consolidated Law Enforcement Back Office System***
- Speed enforcement (Highw.+City)
- Red light Enforcement (City)
- Commercial Vehicle Inspection
- Lane enforcement (City)
- Weigh-in-Motion

UrbanTraffic Management (UTM)

- **UTM systems***
- Intersection monitoring / IDS City (pedestrian detection)
- Intersection monitoring / iControl (vehicle detection)
- V2X enabling of UTM systems
- Traffic information platform / Mobility Apps

Electronic Vehicle Registration (EVR)

- **EVR systems (ePlate)***

Crucial elements to facilitate transport policy.

From Patchwork to Network

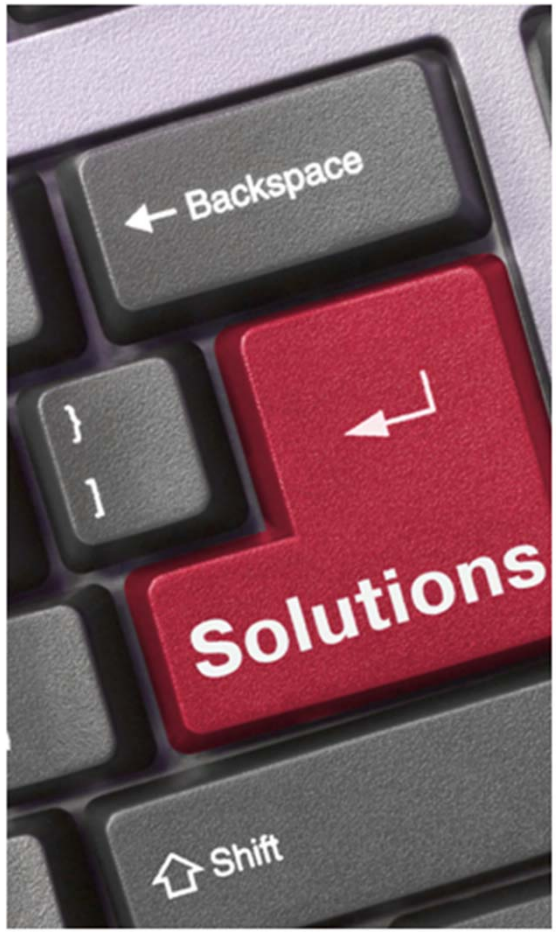
- Network connections on nationwide, federal and municipal level and harmonized systems
- Migration of systems

Communication & Education

- Communication of pros and cons
- Education on Road user behaviour and alternatives
- Consider different customer experiences with user fees

Cooperation

- Inter agency cooperation on nat. level (MOI, MOT, MOF)
- Cooperation on international level with IO's
- Macro-regional cooperation (EETS, EasyWay, ...)

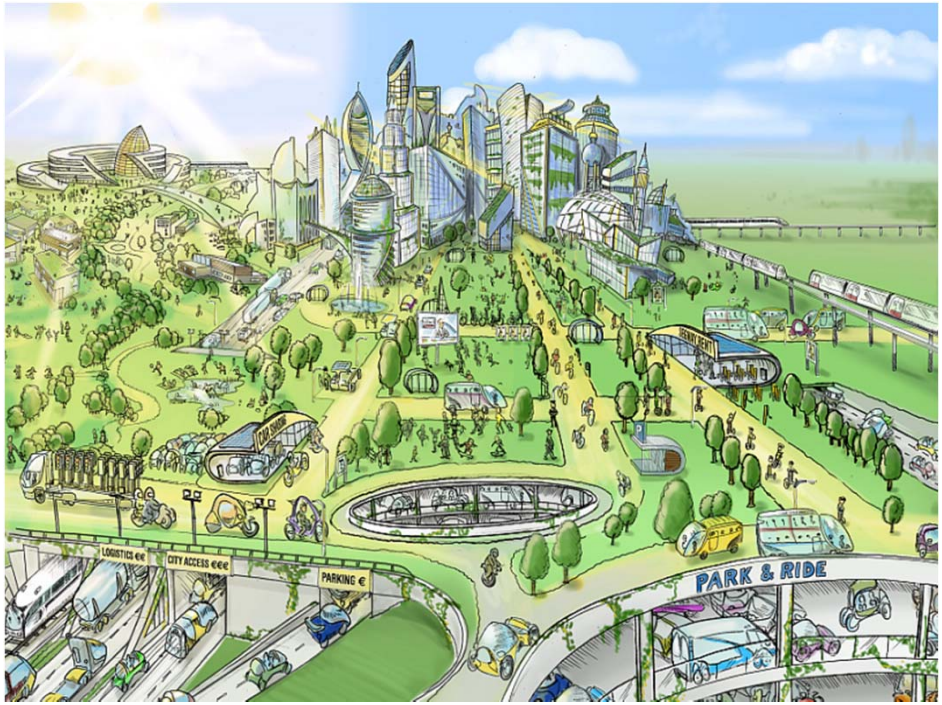



kapsch >>>
… always one step ahead …
The Kapsch Group will always pursue
the vision of
Sustainable Mobility
with Intelligent and Smart Solutions
LOGISTICS €€
CITY ACCESS €€€
PARKING €
PARK & RIDE

Act.

For every minute, the Future is becoming the Past

Thor Heyerdahl



Contact.

Josef A. Czako,
Vice President, International Business Development
Kapsch TrafficCom

Am Europlatz 2 | 1120 Vienna | Austria
Phone +43 50 811 2150 | Mobile +43 664 628 2150
E-mail josef.czako@kapsch.net | www.kapsch.net