



Making the Connection

Cooperative Vehicle Infrastructure Systems

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World's first realisation of CALM communications for cooperative vehicle- infrastructure systems

The **CVIS** Project

Supported by 
Information Society
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Transport & mobility today

The traveller

- pre-trip: little to no information
- on-trip: signs, radio, TMC (major roads only), some have route guidance (...but static in cities)

The vehicle

- few have (a limited) connection for basic telematics
- no messages to or from the roadside

The manager

- traffic: few monitoring sites, overall view based on estimates
- fleet: can track - but not direct - vehicles



CVIS: creating & using information



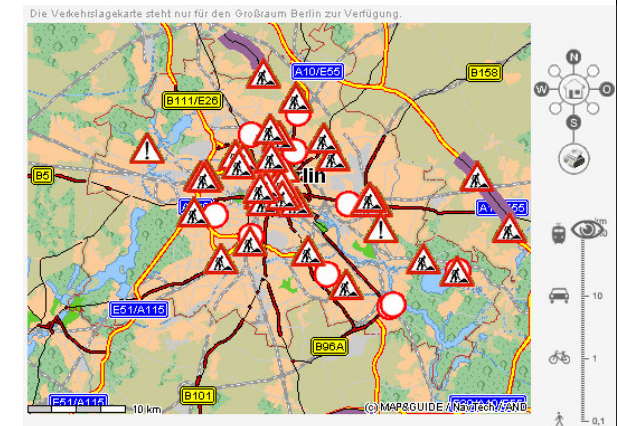
Case study: helping drivers on their way

Driver/traveller services

- journey & route recommendations to avoid traffic jams
- different drivers can receive different directions
- warnings of accidents, hazards, weather
- advice on parking, other modes
- display of network status
- journey time predictions

Benefits

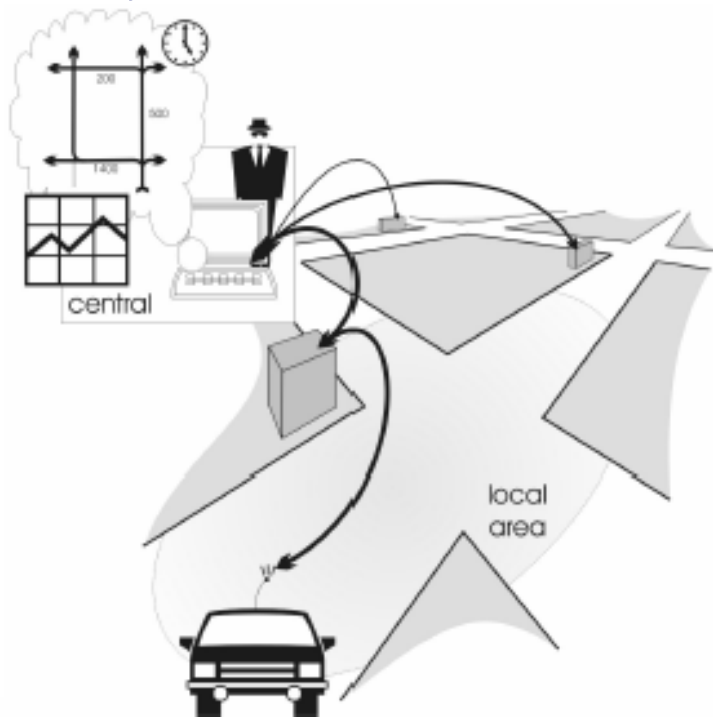
- less delay, more predictable journey time
- more comfortable journey
- less traffic congestion



Case study: managing city traffic

Traffic manager knows every vehicle's destination

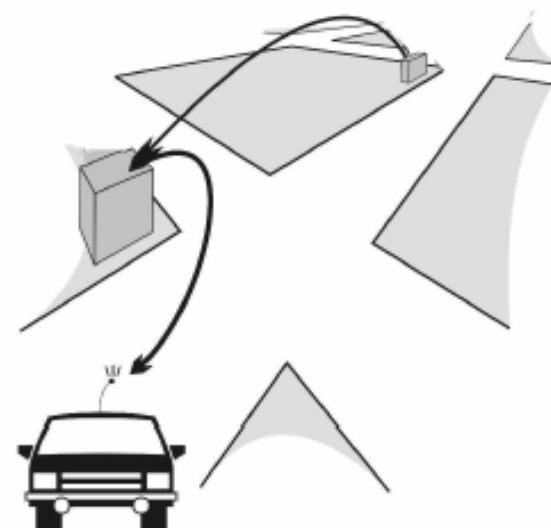
Minimise total network delay



Local junctions communicate with each vehicle

Vehicle "clusters" synchronised through local green wave

Reduce waiting time & costs



Case study: helping motorway drivers

Detecting & reporting incidents

Recommending alternative routes



Displaying messages & warnings inside the vehicle

Detecting wrong-way drivers



Case study: fleet & freight management

Access control to sensitive areas

- track vehicle continuously
- permit use of tunnel/bridge when there is a “slot” free
- warn driver

Hazardous goods monitoring

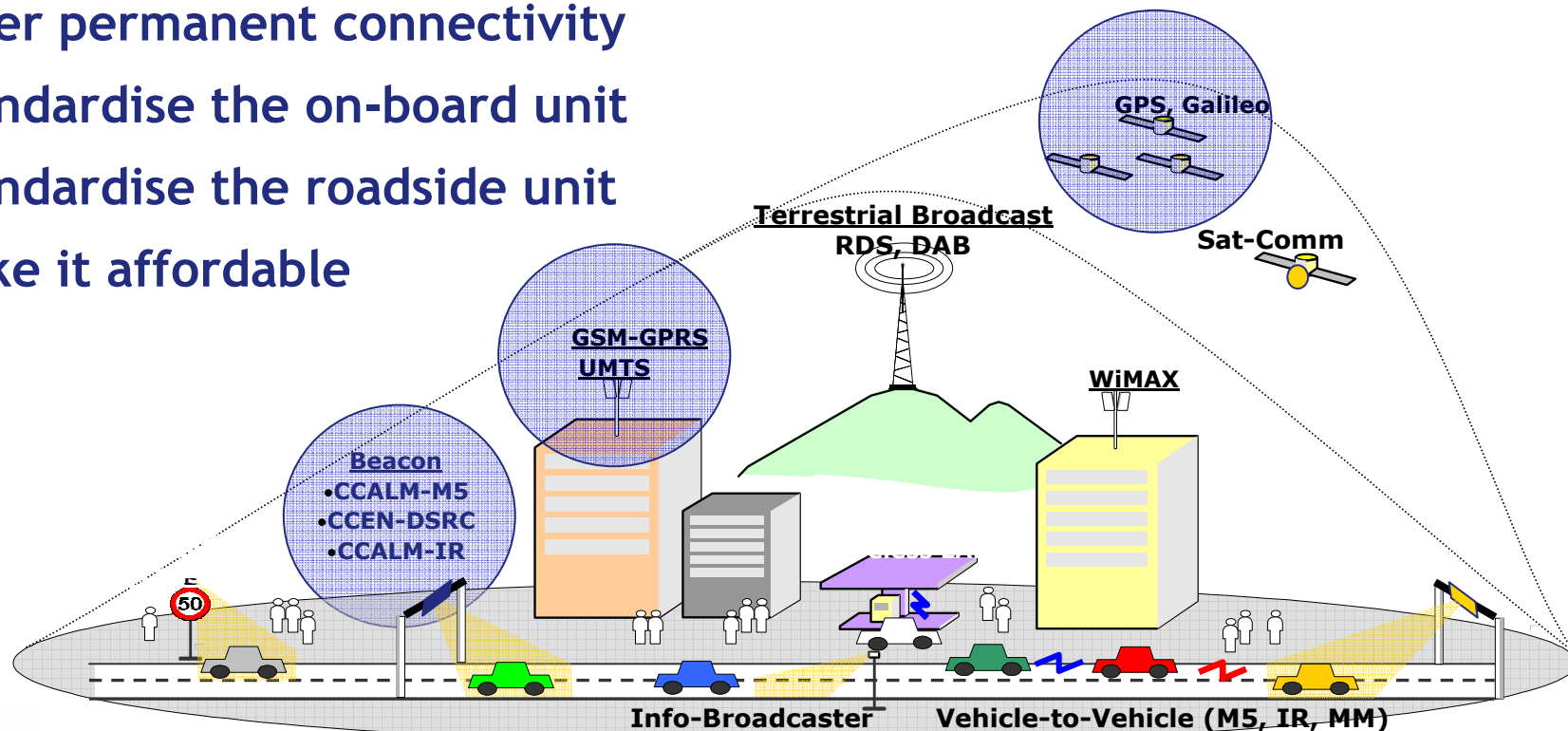
- report accidents automatically
- monitor load condition
- organise diversion, recovery

Ind	S	Tag	Stop	max	Kil	km	max	Stk	Weg	Zak	T	Abfahrt
2	15	12	2304.00	82	1489.00	53	1489.00	130	8.10	1	05.30	
3	17	15	4891.00	82	4951.00	77	4951.00	118	7.39	1	05.30	
4	22	27	9591.00	59	9616.00	166	9616.00	315	9.56	1	05.59	
5	10	10	1062.00	64	1262.00	76	1262.00	281	8.26	1	05.30	
6	11	10	1502.00	91	1602.00	97	1602.00	187	6.23	1	05.30	
7	14	26	2438.00	67	2638.00	94	2638.00	232	8.15	1	05.30	
8	4	10	5238.00	89	4972.00	84	4972.00	422	9.54	1	05.55	
9	16	11	5662.00	96	5143.00	87	5143.00	197	7.01	1	05.30	
10	18	15	3275.00	56	2803.00	48	2803.00	44	3.09	1	05.37	
11	1	19	917.00	62	717.00	64	717.00	132	6.39	1	05.30	



Communications: key to Cooperative Systems

- Use all kinds of local & area communications
- Offer permanent connectivity
- Standardise the on-board unit
- Standardise the roadside unit
- Make it affordable



CVIS addresses a number of issues for deployment of cooperative systems

- How far do we need to standardise content that is communicated between V2I & I2V?
- How can we ensure communications are safe, secure & fault-tolerant?
- How can we make sure that communications technologies are easy to use & meet user needs?
- How can we keep communications cheap while enabling a positive business model for stakeholders?
- What are the risks involved in using V2I technologies?
- What are the policy implications for deploying this communications infrastructure?
- What are the possible “roadmaps” for deploying this new V2I communications infrastructure?



Communication issues to be resolved

- Are the CALM standards sufficiently mature & stable?
- Is there sufficient bandwidth available/reserved for European users? Will it be secure enough for safety services?
- Who will build the broadband infrastructure appropriate for mobile users?
 - Can 3G/UMTS be the European backbone for cooperative systems communications? Can Operators make it affordable for the user?
 - What will be the cost (& the price!) of the new carriers (WLAN, Wimax...)?
- What requirements must be fulfilled before the automotive industry would agree to put a communication box in every vehicle?
- Can we make a inexpensive plug and play communication interface from current legacy infrastructure systems?



Cooperative systems: a win-win case for everyone!

Traveller

- can choose optimum balance of means of travel

Driver

- with full knowledge of traffic, will have easier & quicker journeys

Traffic manager

- reduce total network delay, increase network capacity

Policy maker

- new tools for demand management & traffic safety

Vehicle manufacturer

- new products & associated services

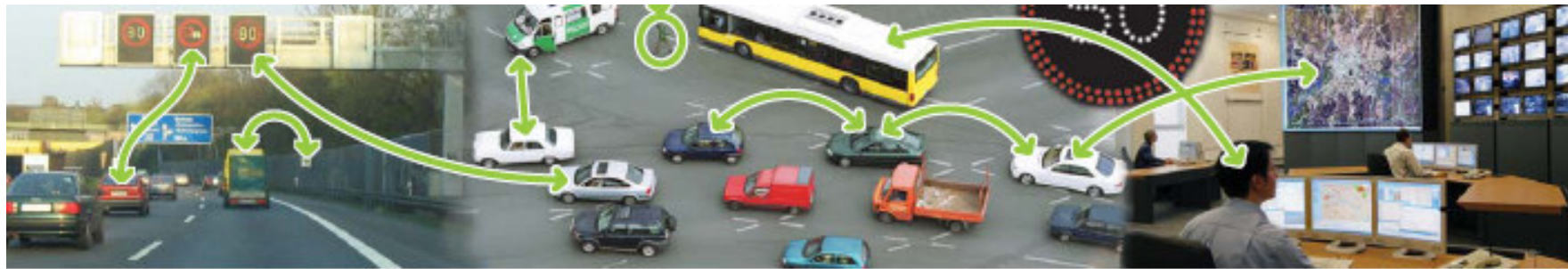
Fleet manager

- keep in contact with vehicle & freight load, integrate with logistics

Communication network operator & service provider

- increased customer base, new services & content





Help shape the future world of Cooperative Systems

Join us at the CVIS requirements workshop
18 - 19 October 2006, Brussels





Let's Connect

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