

VETW 938
3595

IBBT

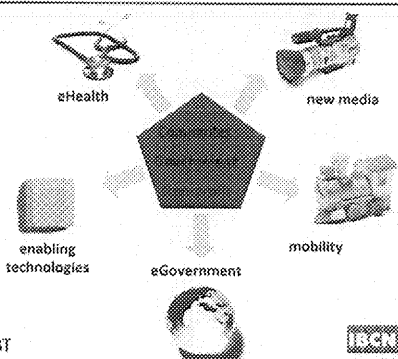
IBBT Tr@ins project
TRAIN IP Network Services

Jan Van Ooteghem & Daan Pareit
UGent - IBCN



05/11/2008
Railway Interiors Expo, Amsterdam RAI



IBBT: Demand driven ICT research



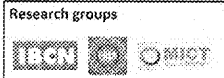
eHealth
new media
mobility
eGovernment
enabling technologies




Tr@ins project

- Apr 2006 - Mar 2008
- Tr@ins = TRAIN IP Network Services
- Focus on
 - Technical
 - Broadband Internet
 - Onboard mobility support
 - Uninterrupted Internet
 - Quality of Service
 - Economical
 - User studies
 - Business model


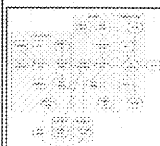

Research groups



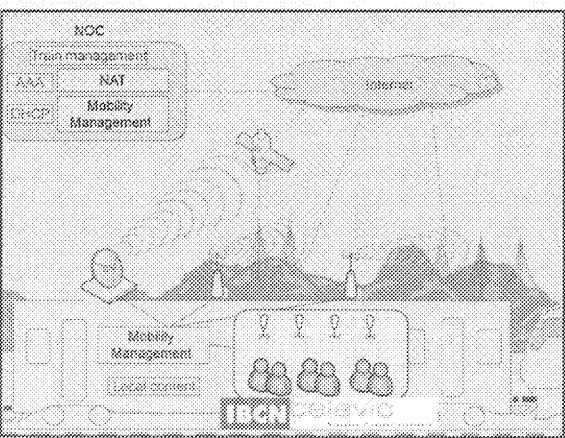


Industrial partners

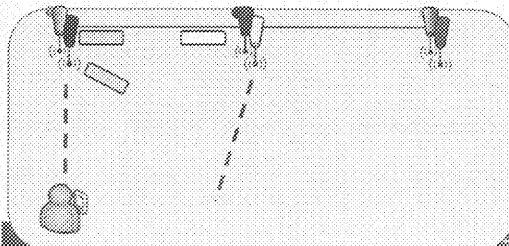

IBBT Tr@ins project

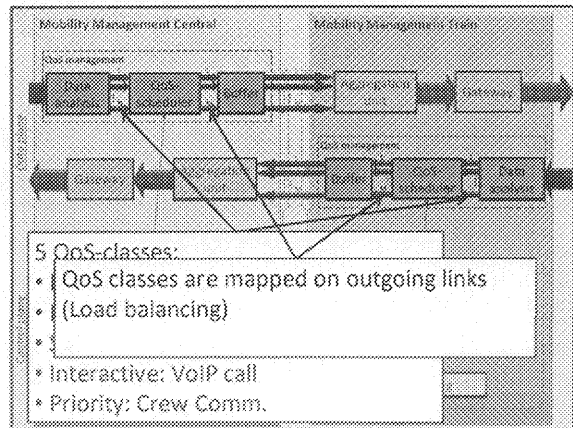
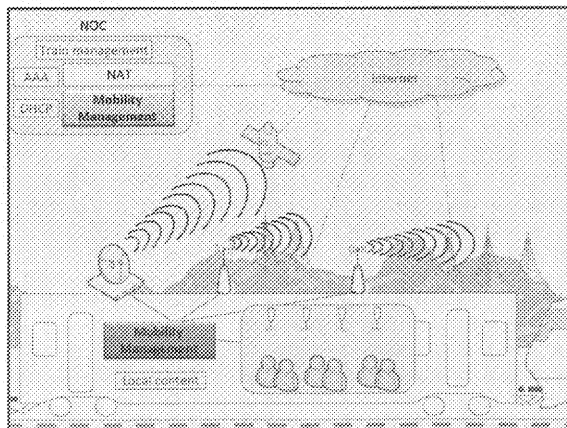
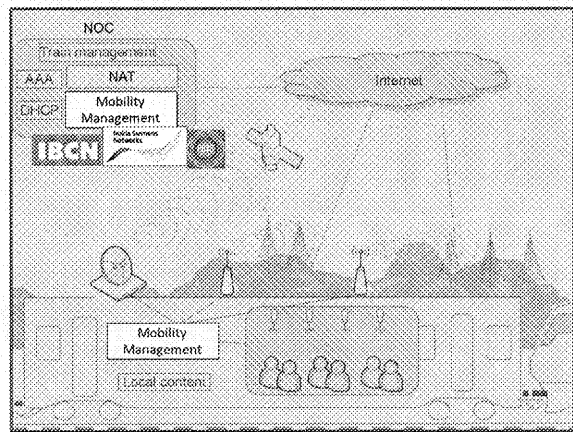
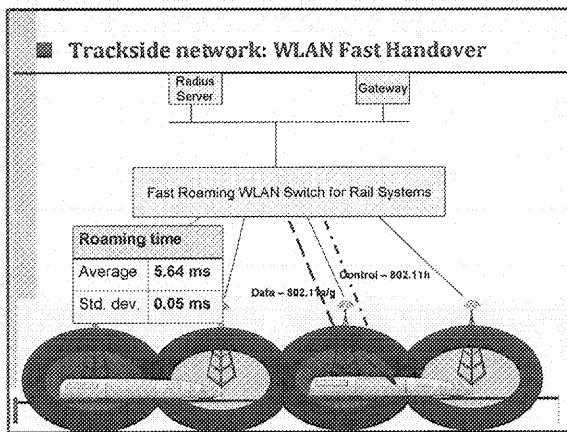
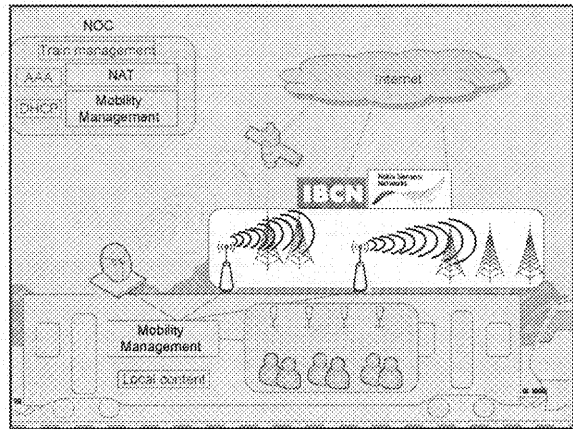
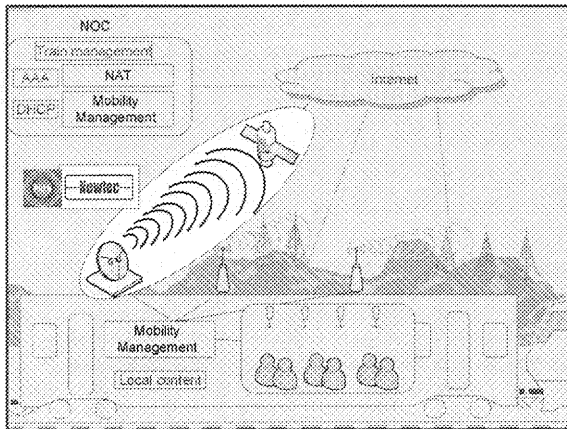
Technical	Business model	Conclusions
		

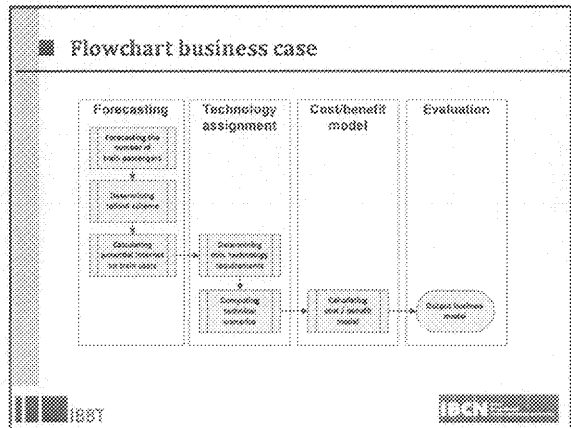
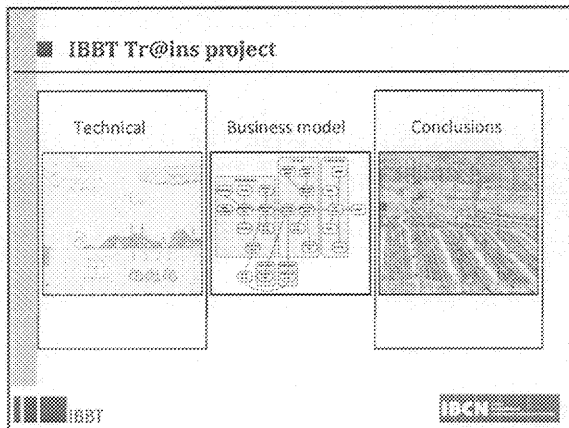
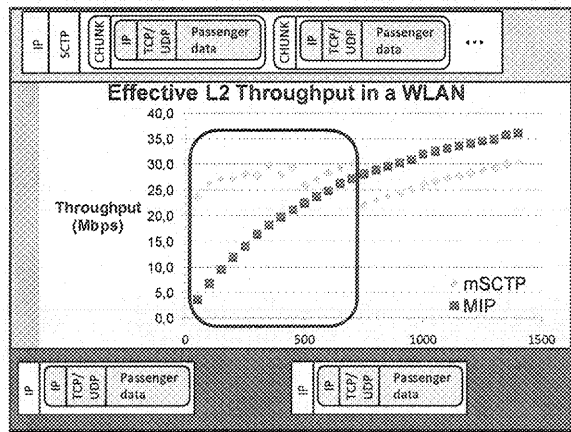
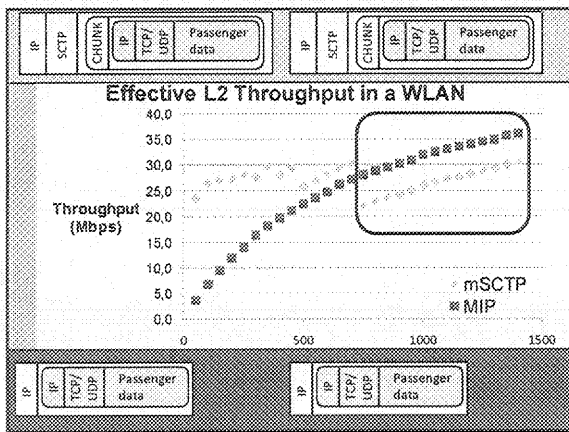
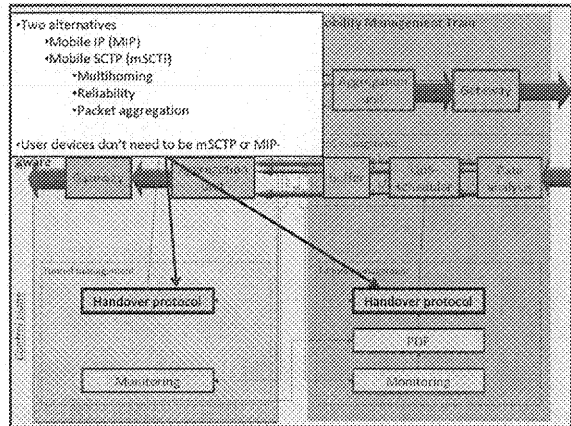
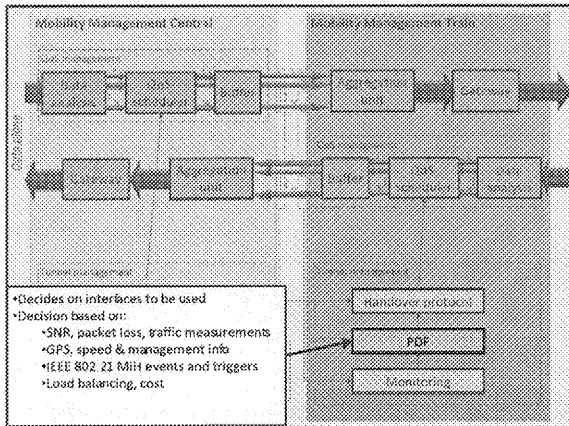




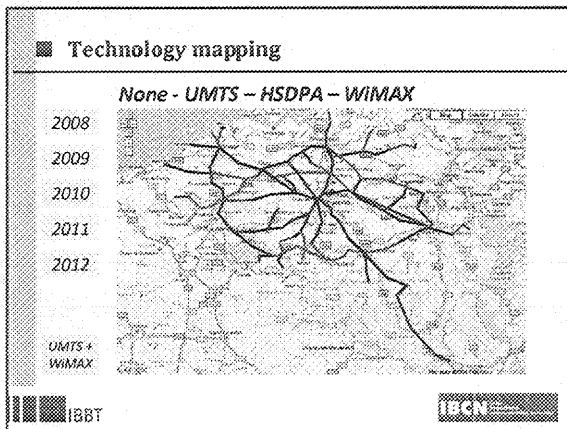
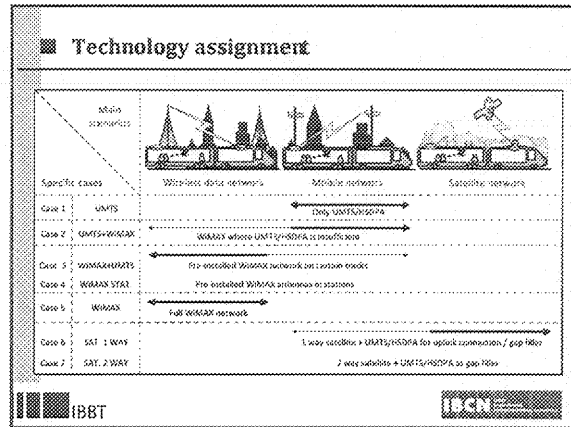
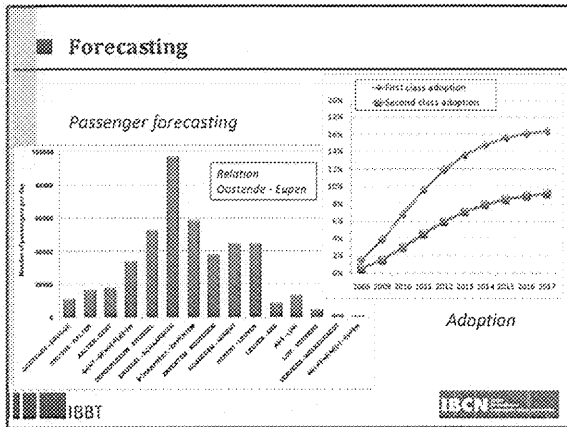
Onboard network

- Horizontal handover
 - From Access Point to Access Point
 - Switch in < 50 ms for VoIP





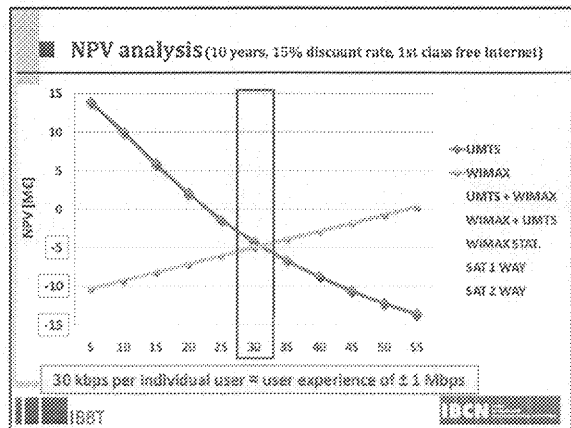


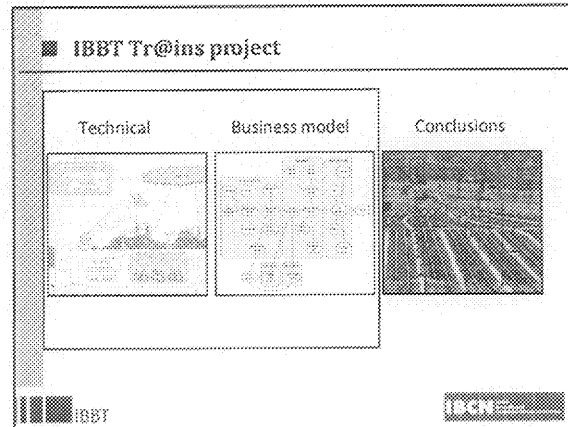
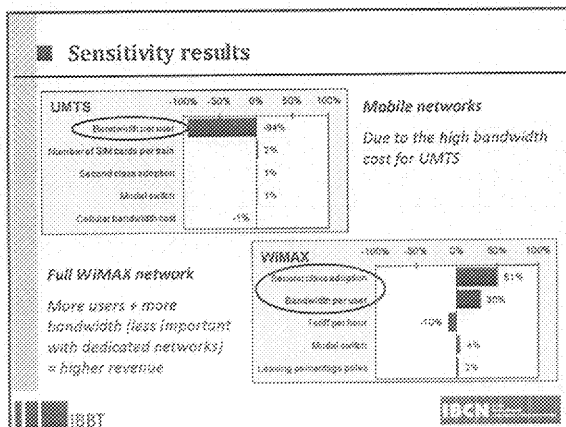
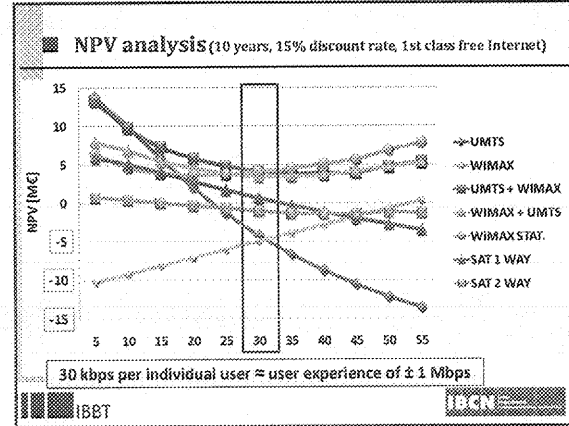
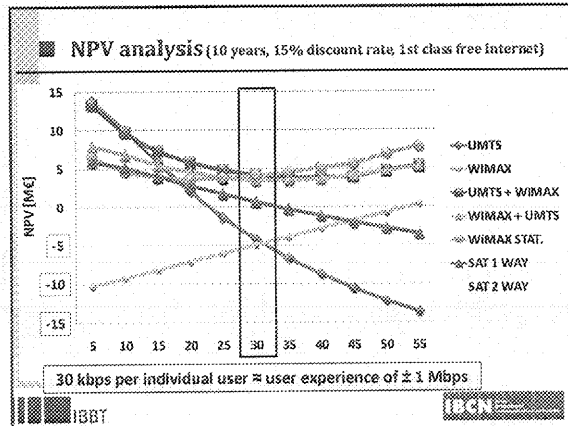
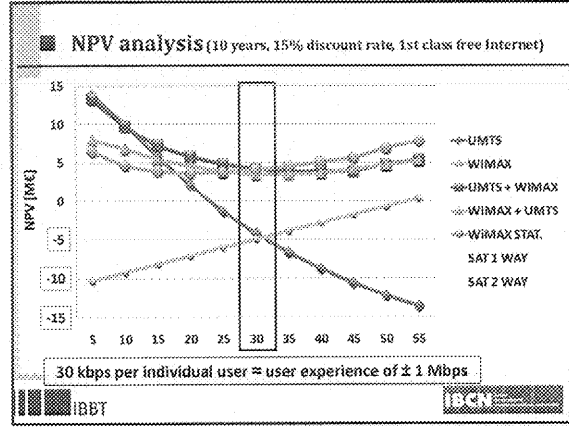
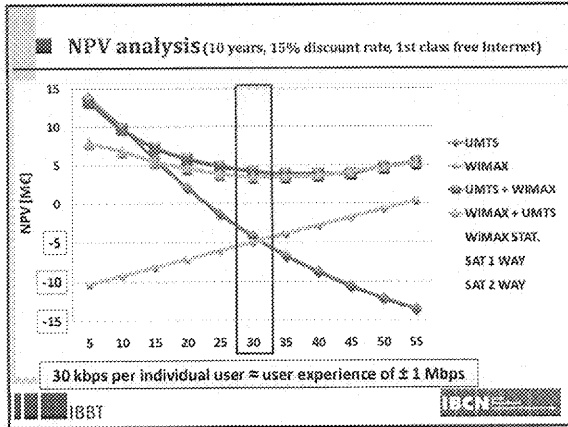
Cost parameters

		Wireless data networks	Mobile networks	Satellite networks
CapEx	Train equipment	<ul style="list-style-type: none"> Outdoor antenna Indoor network 	+	+
	Network equipment	<ul style="list-style-type: none"> Trackside network NOC 	+++	+
OpEx	General costs	<ul style="list-style-type: none"> Helpdesk Sales (billing) Marketing 	++	++
	Operations	<ul style="list-style-type: none"> Maintenance and repair Network management License costs 	+++	+
	Network connection	<ul style="list-style-type: none"> Outdoor link 	+	+++

IBBT IBCN

- ### Revenue schemes
- Ticket types**
 - Prepaid cards per hour (e.g. hotspot service)
 - Monthly subscriptions
 - Ticket price**
 - Dependent on offered service: €2.9 - €3.9 (3 - 55 kbps)
 - Service of 30 kbps: Prepaid: €3.4 / Subscription: €18
 - Two revenue scenarios**
 - Both first and second class paying
 - First class free internet, second class paying
 - Modal switch from 1st to 2nd class!!!
- IBBT IBCN





■ Summary 1

When more bandwidth is guaranteed to the customer:

- UMTS cases
 - Only UMTS: Problems → No QoS
 - Combination with WiMAX: QoS can be guaranteed
 - Pre-installation WiMAX: more optimized network rollout
- WiMAX case:
 - Only interesting for large bandwidth
- Satellite cases:
 - UMTS as gap filler: bandwidth problems
 - 1Way Satellite: uplink bandwidth problems (UMTS)
 - 2Way Satellite: less dependent of bandwidth

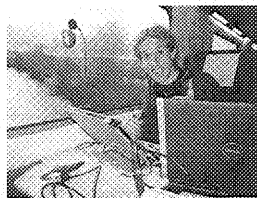


■ Summary 2

- Combination of technologies required
 - Dense railway network: UMTS + WiMAX
 - Rural railway network: Satellite solutions
- Business case
 - Positive case in Belgium is possible
 - Influenced by many factors
 - User forecasting, rollout scheme, offered bandwidth
 - Business models
 - Role and participation of the partners important



■ Thank you!



Contacts:

jan.vanootehem@intec.ugent.be
daan.pareit@intec.ugent.be





WEDNESDAY 5 NOVEMBER DAY 2 – AFTERNOON SESSION

MODERATOR - Dave Gorskov, CEO, Digital Grape

The networked railway – developments, passenger infotainment and future applications

13.05 Train communications for passenger entertainment, operational applications and enhanced security – where are we today and where next?
Nomad Digital – Jay Saw, commercial director

Jay Saw will outline developments in the continued evolution of train communications for passenger entertainment, operational applications and security enhancements, particularly focusing on the past 12 months. The primary aim will be to communicate the successes made and what the future holds

13.30 WiFi on trains – making the business case
Lloyds Register Rail Europe – Hans de Grauw, senior consultant

How a shared infrastructure can lower costs per application and still meet all the requirements, while making the best use of scarce resources and making upgrading of vital components easier as well.

13.55 IBBT Tr@ins project
Ghent University - IBBT – Jan Van Ooteghem, researcher & Daan Pareit, PhD Student
The IBBT Tr@ins project has studied broadband wireless access solutions for train commuters, dealing with movements of passengers and crew in the train and high-speed movements of the train, from a technical as well as a business perspective.

14.20 Mobile digital signal – why digital signage has finally reached into the trains and buses of today
Inova Multimedia GmbH – Frank Lichonski, managing director

The latest developments in wireless communication and affordable mobile screens have made it possible to reach the captive audience inside our public transportation systems. Who is profiting from this development and what precautions are being taken?

14.45 Portable media on the rails – PMPs give passengers freedom of movement, choice and connectivity while riding the rails. The diversity available in modern devices presents options for entertainment as well as for business practices. ITE is as robust as IFE!
digEcor – Brian Lynch, vice-president, sales

This presentation will discuss, revenue share models, distribution and collection, establishing provisioning assets for large rail networks, labour-reduction initiatives, content selection for movies, music, TV, video games, price point initiatives and luxury packages.

15.10 Private branded online entertainment store for in-station/on-board kiosks – downloading and custom DVD burning
Raging River – Web Barth, president

Five years ago the principals of Raging River developed the very first portable video hard drive players for the airline industry worldwide and railroads in North America. This presentation looks at state-of-the-art solutions for infotainment on board.

15.35 FORUM FINISH

16.00 Presentation of the Railway Interiors Expo 'Innovation and Excellence' Awards followed by the winners' drinks party



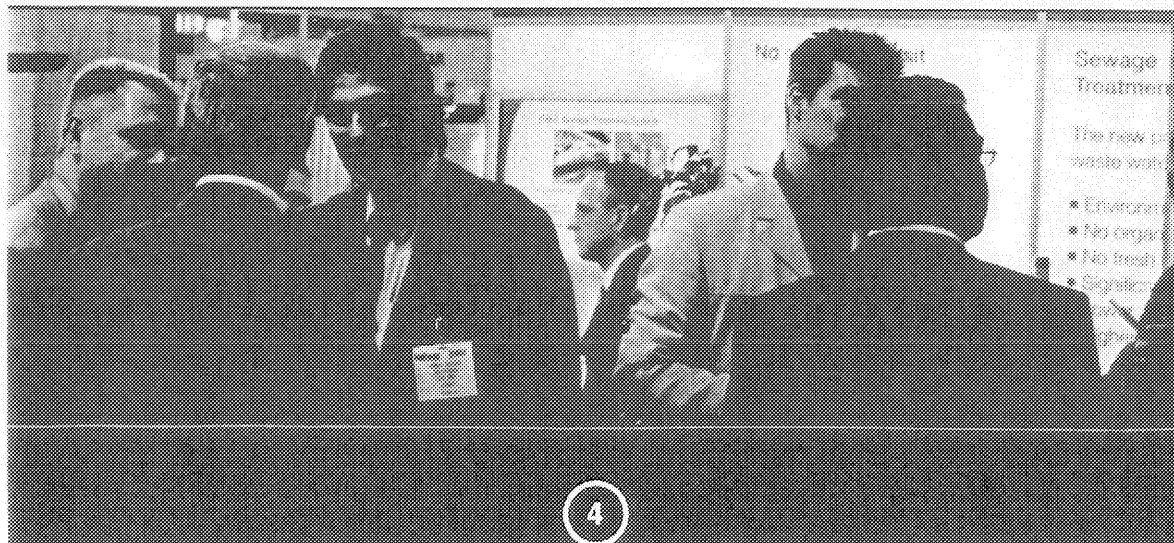
REGISTER ONLINE NOW FOR YOUR COMPLIMENTARY PASS TO THE WINNERS' DRINKS PARTY.
www.railwayinteriors-expo.com

RAILWAY
INTERIORS EXPO

Innovation and
Excellence'
**AWARDS
2008**



**Register
pass for
TECHN
WWW**



OPEN TECHNOLOGY FORUM UPDATE



FREE TO ATTEND

Railway interiorsexpo

UPDATED PROGRAMME

**4, 5, 6 NOVEMBER 2008
AMSTERDAM RAI, THE NETHERLANDS**

**The world's ONLY international exhibition
and open technology and ideas forum
devoted to rail-car and mass-transit
interiors, passenger services and comfort**

**REGISTER ONLINE NOW FOR YOUR FREE
EXHIBITION AND FORUM PASS
www.railwayinteriors-expo.com**