



icomera

Connectivity in motion.™

Leading provider of cellular broadband gateways

- Established 1999, headquartered in Sweden
- Acquired Moovera Networks in August 2008
- Designing rugged technology that bridges cellular networks with Wi-Fi, Ethernet and GPS
- Delivering Internet access for rail, road and sea



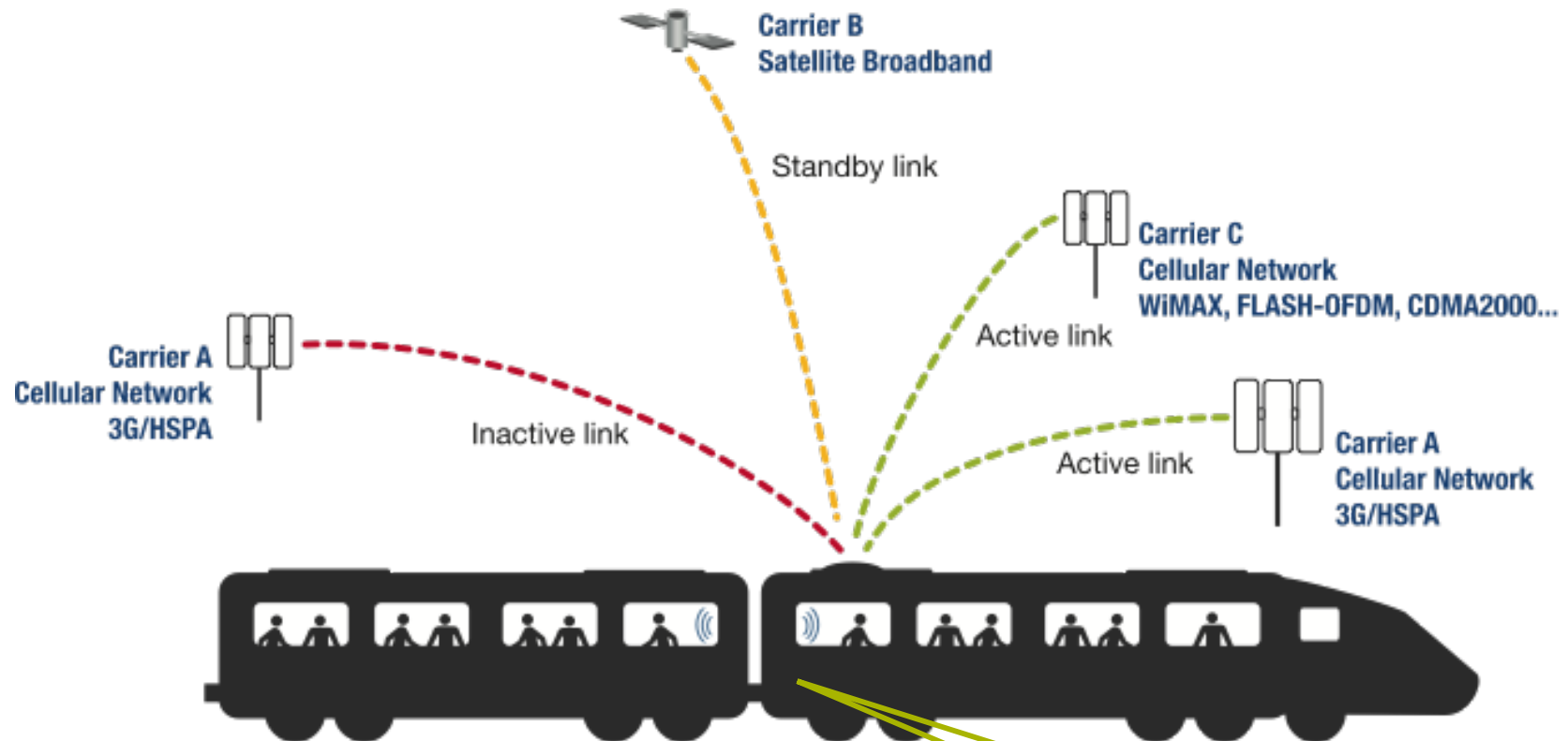
A light gray world map is centered in the background of the slide. Overlaid on the map is the large blue number 6,281,986.

6,281,986

Wi-Fi sessions at Icomera hotspots on
trains – until mid November 2009

Reliable Communication

icomera



- The systems should be technology agnostic
- Choose best available connection
- Seamless handover with no interruption in service
- Aggregate and load balances multiple connections

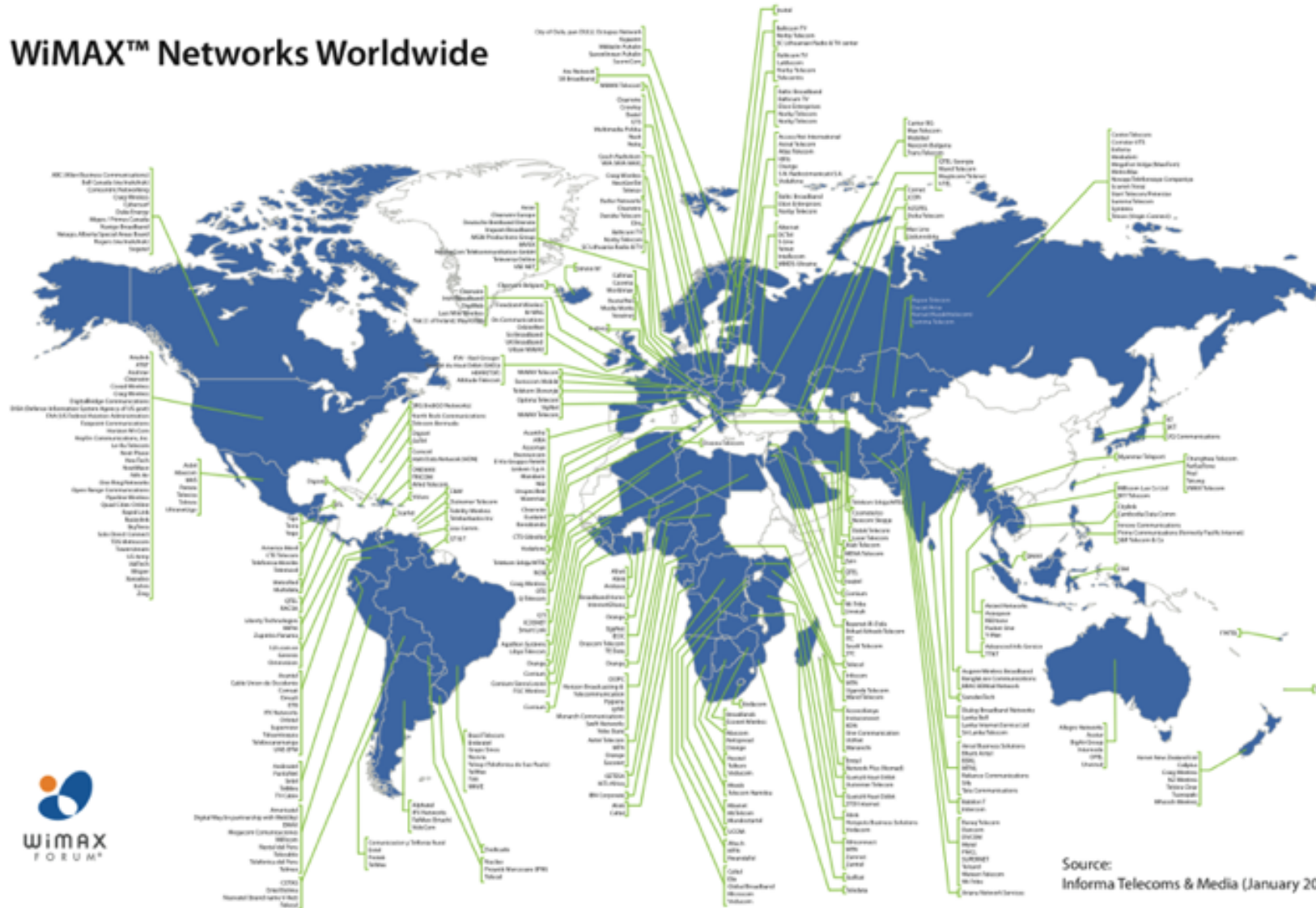


The Moovbox
Multiple WAN
radios for always-
on connectivity

4G WiMAX Has Arrived



WiMAX™ Networks Worldwide



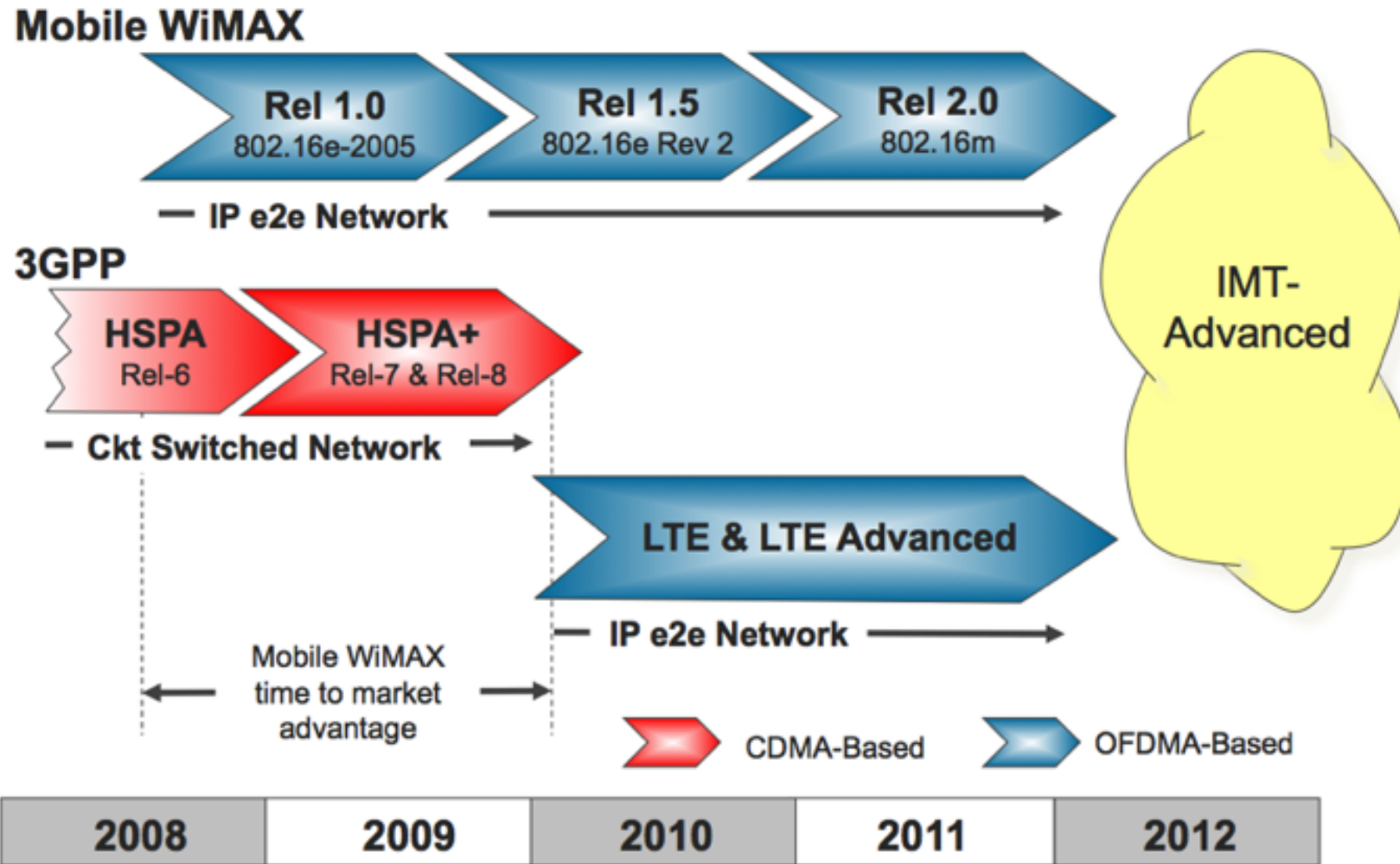
Source: Informa Telecoms & Media (January 2009)

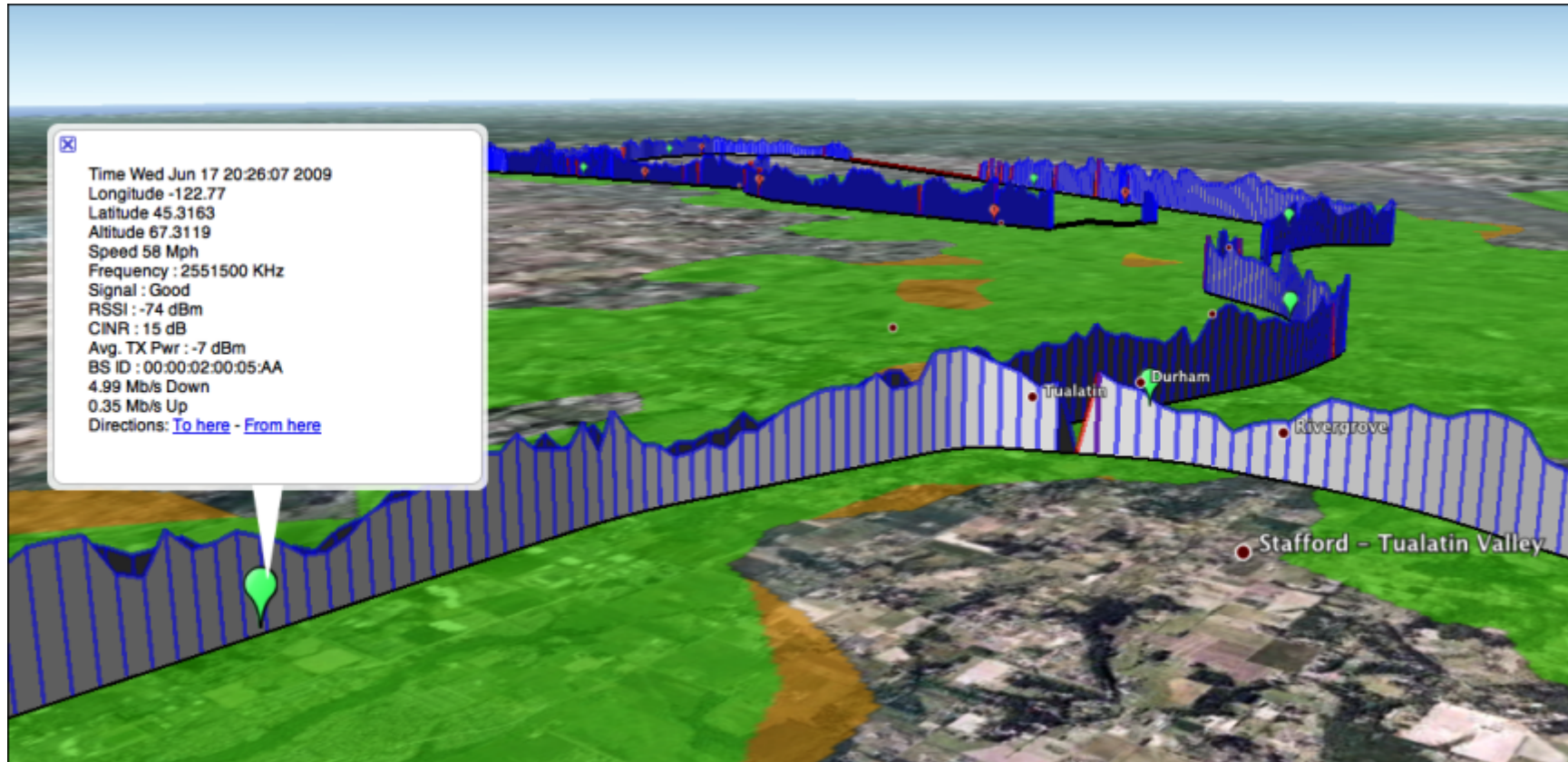
- 502 networks deployed in over 145 countries
- Mostly 3.5GHz spectrum worldwide but U.S. + few others use 2.5GHz
- Fixed (802.16d) and Mobile (802.16e) versions
- 802.16e deployments ~2 years ahead of LTE
- Faster than HSPA and EV-DO
- IP e2e network for data and voice
- Majority of early adopters offering mobile broadband only
- WiMAX operators looking increasingly at B2B, M2M opportunities



Transportation market offers significant revenue potential for WiMAX providers

4G WiMAX Evolutionary Timeline

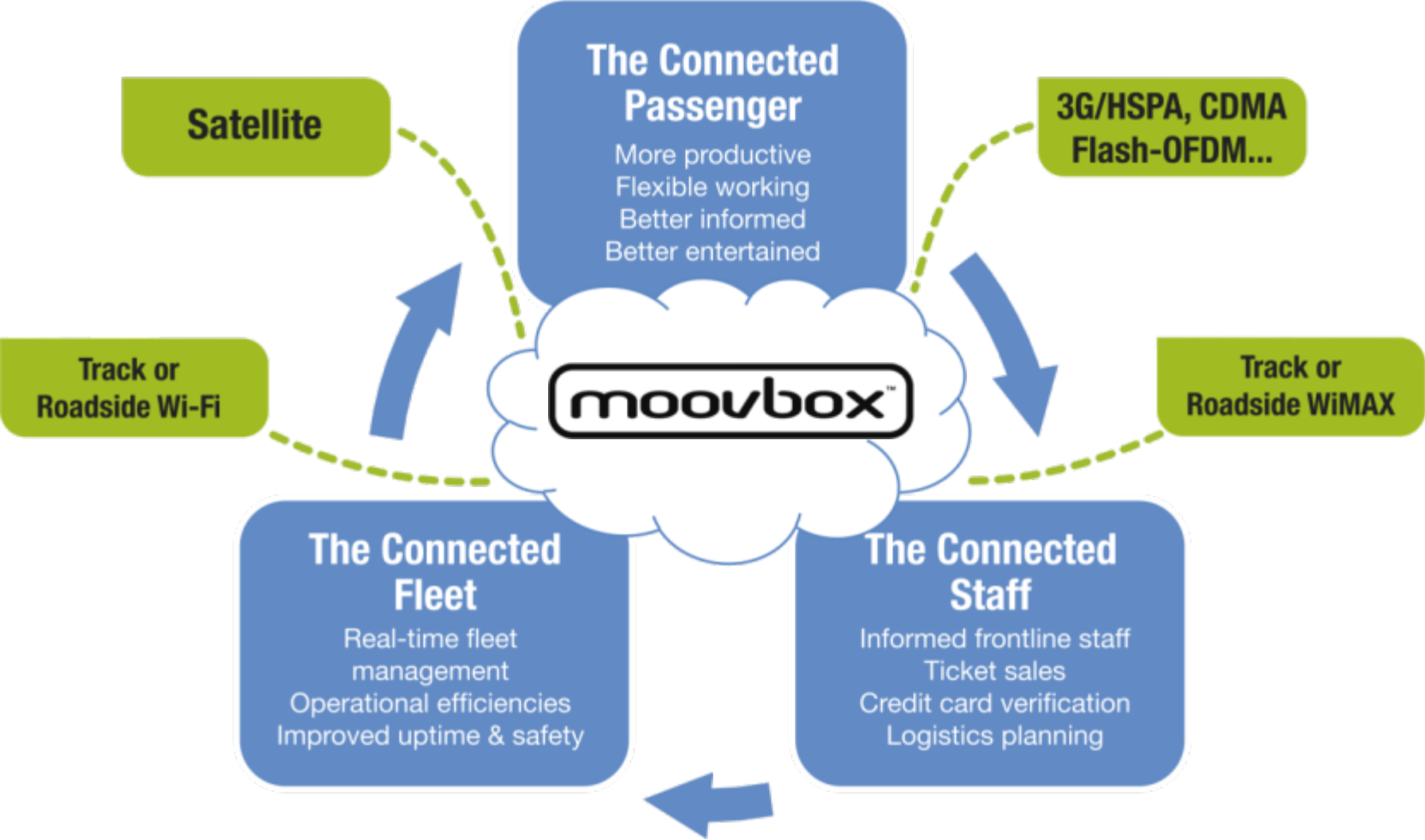




- Testing on Clearwire network in Portland Oregon using consumer account
- 5 Mbps downlink at 60 MPH (97 KPH) – Uplink throttled to <500 Kbps
- Excellent performance overall proved WiMAX capabilities for transport applications

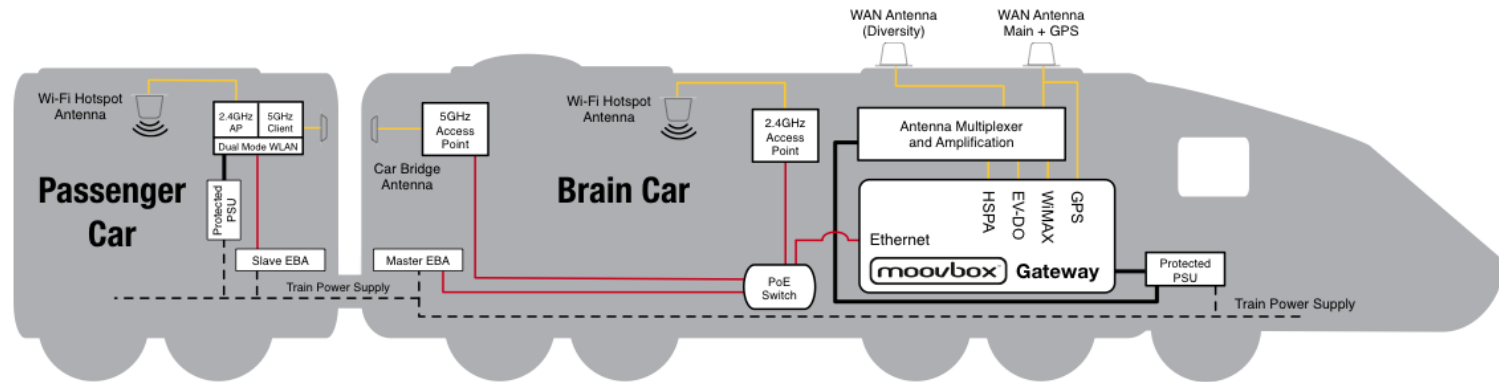
New technologies = more possibilities

icomera



Additional requirements on the train

icomera



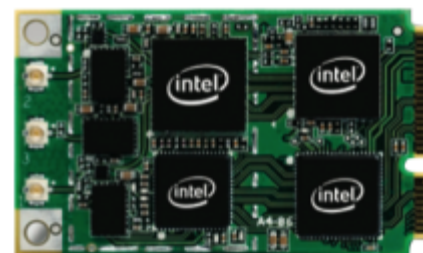
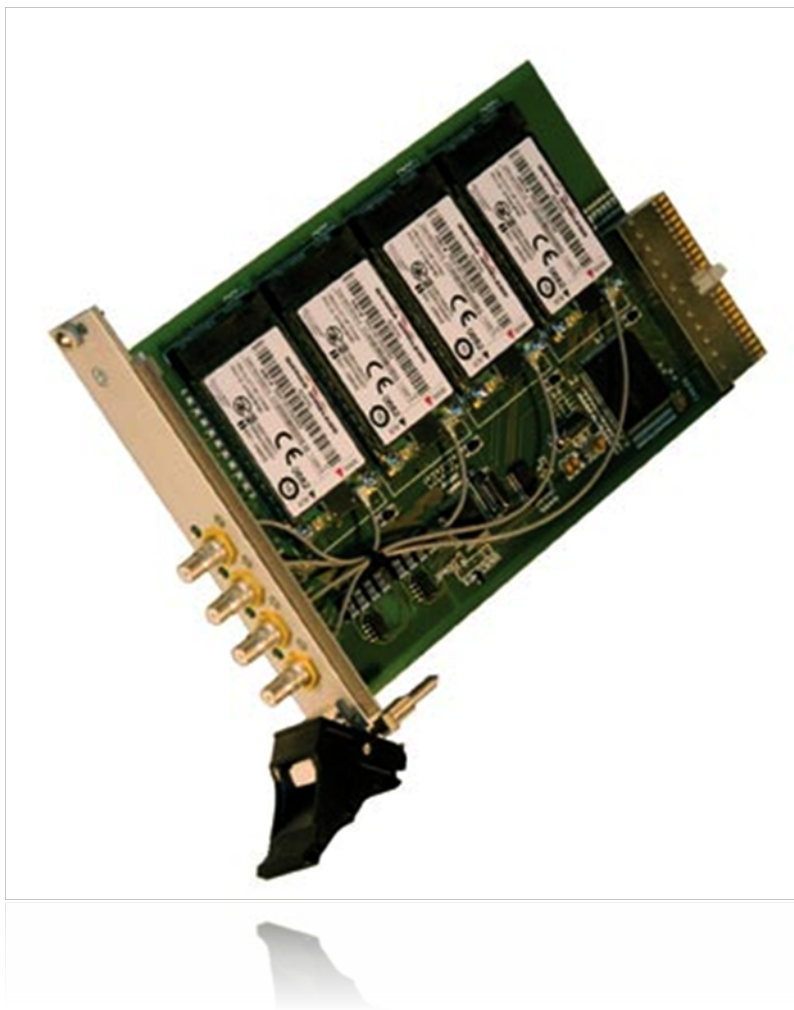
- Increased capacity to the train will lead to increased requirements on the train
- Onboard networks need to handle CCTV, streaming movies, etc.
- Opens for new possible solutions for the infrastructure onboard – the better communication/reliability the more data and applications can be stored “off the train”

And the hardware is of course important..! **icomera**



The communication is important..!

icomera



... But not as important as management

icomera

The screenshot shows a web browser window titled "MoovManage" with the URL "https://www.moovmanage.com/". The page header includes the "icomera :: MoovManage" logo and user information: "admin | Account info | Log out" and "Account ID: stagecoach".

The dashboard is divided into several sections:

- Monitor:** A sidebar menu with options: Dashboard, Device List, Usage Summary, User Trends, Session Details, Survey Trends, Survey Details, and Connection Log.
- Track:** A sidebar menu with options: Overview Map, Device Map, Location History, Route Survey, and Waypoints.
- Configure:** A sidebar menu with options: Captive Portal and User Survey.
- Account:** A table showing account details:

Account ID	stagecoach
Logged in as	admin
Activation Date	2008-03-01
Renewal Date	2009-02-28

Your subscription is due for renewal in 110 days

[more info](#)
- Devices:** A summary box showing:
 - Server Time 18:05 GMT 08/11/10
 - 19 devices online (indicated by a green dot)
 - 7 devices offline (indicated by a red dot)
 - 31 users online (indicated by a group of people icon)

[more info](#)
- Wi-Fi Users (Last 7 Days):** A bar chart showing the number of users per day:

Day	Users
Tue	240
Wed	240
Thu	240
Fri	360
Sat	240
Sun	240
Mon	120

[more info](#)
- Live GPS Tracking:** A map showing the locations of devices with green and red pins. Major cities like Worcester, Oxford, Reading, and London are visible.

[more info](#)

©2008 Icomera AB

Remote Management and...



icomera :: MoovManage

admin | Account info | Log out
Account ID: stagecoach

Monitor

- Dashboard
- Device List
- Usage Summary
- User Trends
- Session Details
- Survey Trends
- Survey Details
- Connection Log

Track

- Overview Map
- Device Map
- Location History
- Route Survey
- Waypoints

Configure

Device List

Devices Online

Status	Name	Uptime	Last Contact	Users	WAN	Signal	Mode	Firmware	
●	50102	0d 01:39:37	2009-02-10 14:58:59	1	1	-81 dBm	HSPA	1.7.0-c2	details edit map configure
●	50103	0d 02:31:07	2009-02-10 14:59:17	0	1	-51 dBm	3G	1.7.0-c2	details edit map configure
●	50104	0d 01:54:58	2009-02-10 14:51:50	1	1	-111 dBm	HSPA	1.7.0-c2	details edit map configure
●	50108	0d 00:48:40	2009-02-10 14:58:00	2	1	-113 dBm	HSPA	1.7.0-c2	details edit map configure
●	50109	0d 03:43:54	2009-02-10 14:59:04	2	1	-73 dBm	HSPA	1.7.0-c2	details edit map configure
●	50110	0d 01:53:22	2009-02-10 14:59:06	1	1	-79 dBm	3G	1.7.0-c2	details edit map configure
●	50111	0d 00:20:53	2009-02-10 14:59:12	0	1	-55 dBm	3G	1.7.0-c2	details edit map configure
●	50112	0d 09:14:33	2009-02-10 14:53:56	1	1	-93 dBm	HSPA	1.7.0-c2	details edit map configure
●	50113	0d 03:28:30	2009-02-10 14:59:55	2	1	-79 dBm	3G	1.7.0-c2	details edit map configure
●	50114	0d 02:48:16	2009-02-10 14:59:33	1	1	-107 dBm	3G	1.7.0-c2	details edit map configure
●	50115	0d 00:01:49	2009-02-10 14:42:40	0	1	-65 dBm	3G	1.7.0-c2	details edit map configure
●	50116	0d 10:35:50	2009-02-10 14:58:45	0	1	-87 dBm	HSPA	1.7.0-c2	details edit map configure
●	20112	0d 00:01:48	2008-05-10 14:45:40	0	1	-82 dBm	3G	1.7.0-c5	details edit map configure
●	20114	0d 05:48:18	2008-05-10 14:28:33	1	1	-70.1 dBm	3G	1.7.0-c5	details edit map configure
●	20113	0d 03:58:30	2008-05-10 14:28:22	5	1	-78 dBm	3G	1.7.0-c5	details edit map configure

- 'Traffic light' status display with uptime and last contact information
- Shows number of Wi-Fi users connected to any given device
- Displays signal strength and WAN mode (e.g. HSPA, 3G or EDGE)
- Links to drill down to deeper levels of monitoring and control

Control is key



Oxfordtube YOUR COMFORTABLE CONNECTION

Questionnaire

As you are a first time user, please take a moment and answer the following questionnaire:
Required fields are marked *

What is your main purpose of travelling?*

Will you be using this service mainly for business or personal use?*

Email Address*

[Continue](#)

If you are experiencing technical difficulties logging on please contact our **technical support department on 0906 3400 256**. Pie that calls to this number are charged at 50 pence per minute from a BT land line, calls from mobiles and other networks may vary (Call co at data publication 01/10/2006). Lines are open 9am till 5pm Monday to Friday.

[Terms & Conditions](#) Copyright ©2006 Oxford Tube. All rights reserved. Powered by Icomera

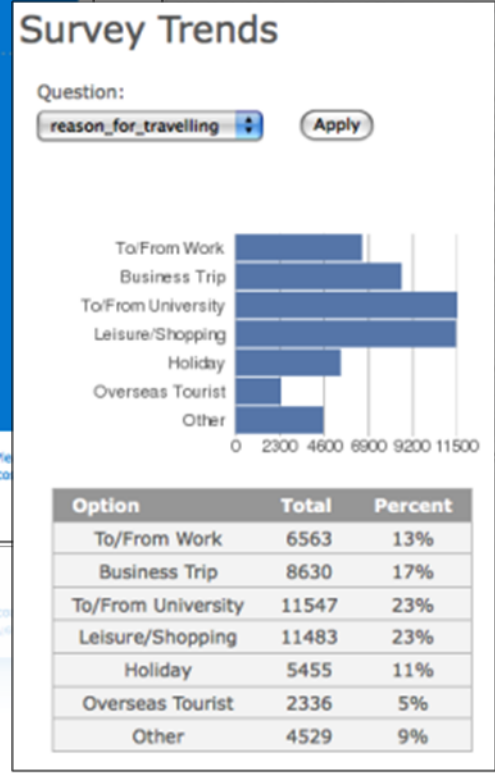
- Create simple user survey
- Landing page upgrades
- Advertising campaigns
- Software updates

Survey Details

50546 Completed Surveys ([download CSV](#))

Date From: Date To:

Date	MAC	reason_for_travelling	use_of_service	email_address
2009-02-10 15:58:14	00-23-12-08-PC-74	Business Trip	Personal	max@max@max.com
2009-02-10 15:56:32	00-1F-38-89-3E-3D	Business Trip	Business	viverr@max.com
			Personal	Elzabeth.peterman@gmail.com
			Personal	asd@max.com
			Personal	philip@max.com
			Personal	edward.peter@uk.sfu.org
			Personal	smc@max.edu
			Business	angela.davis@max.co.uk
			Personal	dumb@max.com
			Personal	anthel@max.com
			Personal	susa@max.com
			Personal	anthel@max.com
			Personal	max@max.com
			Personal	steph@max.com
			Personal	lisa@max.com
			Personal	lisa.ster@max.com
			Personal	heath@max.com
			Personal	max@max.com
			Personal	budd@max.com
			Personal	evan.peter@max.com
			Personal	Sally@max.com
			Personal	chris@max.com
			Personal	joeh@max.com
			Business	brad@max.com
			Business	raf_c@max.com



Will technology change the offering?

icomera



Bus & Coach



Light Rail

All with different needs and purposes



Regional Trains



Long Distance Trains

- Improve bandwidth and enhance current services
- Enable support for more and new types of applications
- Less focus on communication and more focus on back-end, management, communication intelligence and QoS
- The main reasons for connecting trains remains the same!

To Win Customers

icomera



To Keep Customers

icomera



“ Many of our passengers are commuters and students, and we have had an enormous amount of positive feedback about the Wi-Fi service. It puts Stagecoach at the forefront of offering next-generation on-board services. ”

Brian Souter
CEO, Stagecoach Group



To Gain Operational Efficiency

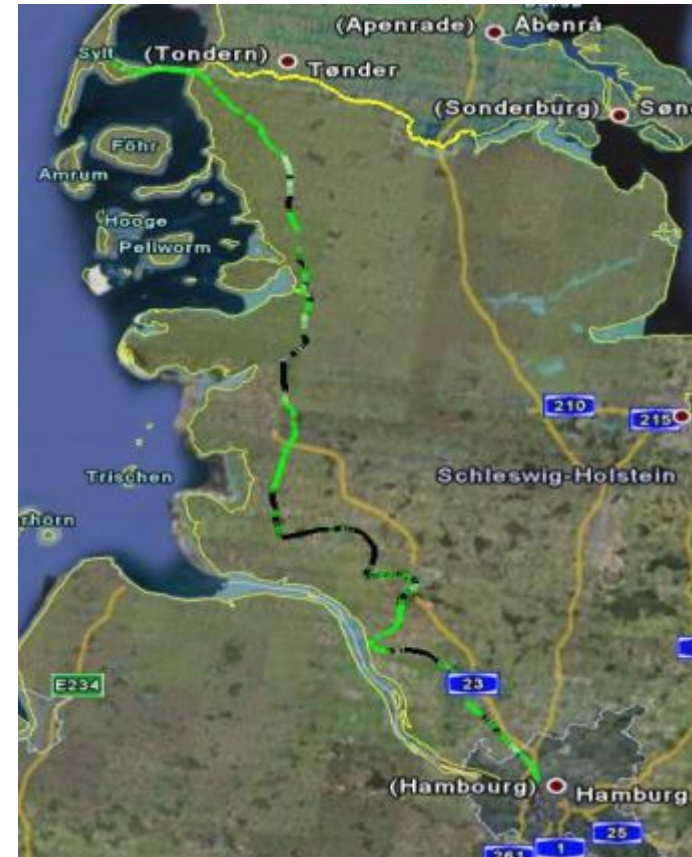
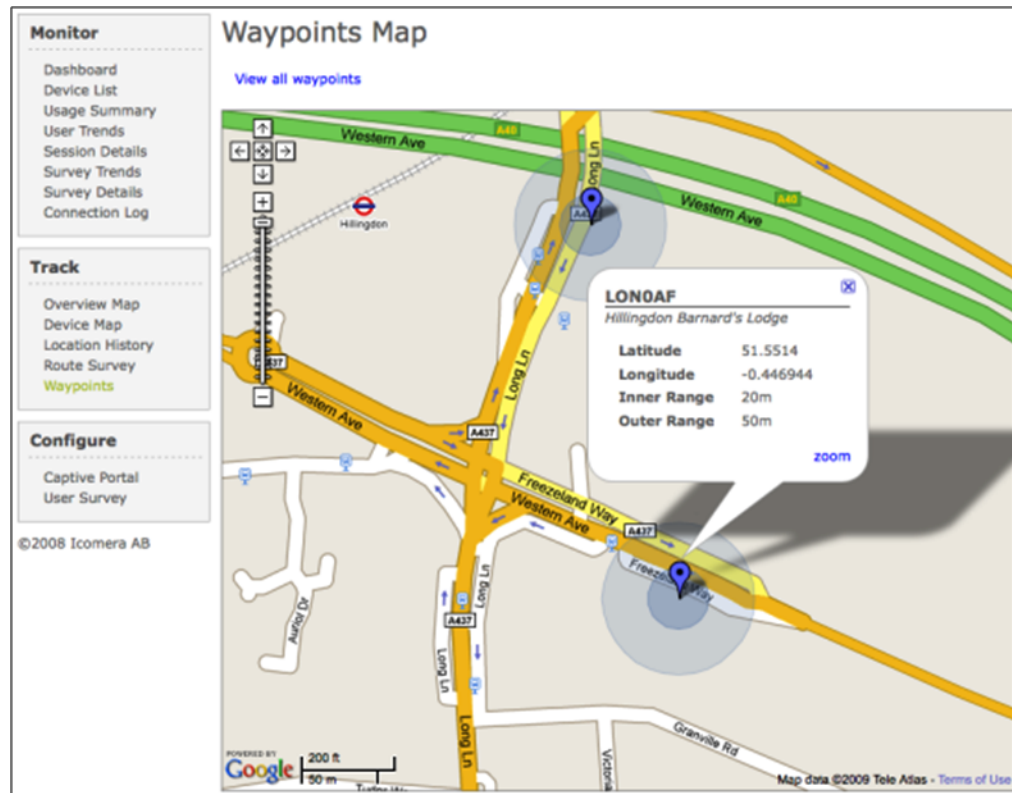
icomera

- On-line ticketing
- Real-time sale and validation of tickets
- Passenger Information



Tracking and Measurements

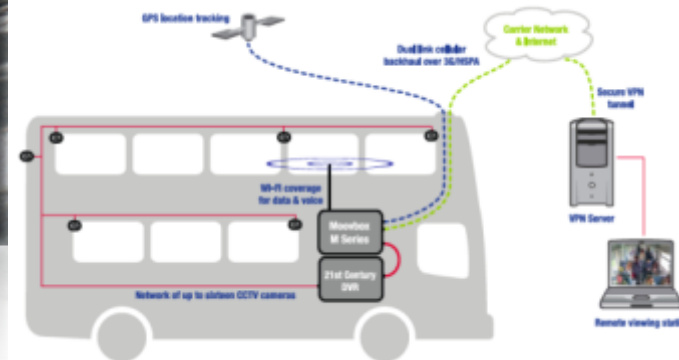
icomera



- Set up specific points on route at which to record entry/exit data
- Record frequency and time of device arriving and departing specific waypoint

To Enhance Security

icomera



- 21 double-decker buses equipped with live CCTV
- Moovbox M200 + digital video recorder and cameras
- Video streamed over HSPA network to headquarters
- GPS tracking, telematics including braking
- Six-month trial to assess impact on lowering crime rate

 Transport for London

Do not...

- Invest in solutions that can not be easily upgraded
- Wait until next generation technology – By then the customers will have chosen other means of transportation – use technologies available today and make sure your system is future proof
- Expect anyone else to solve your problem

- Use multiple networks to gain advantages – And grow/enhance when needed
- Make sure that the service can be launched when you want – use technologies and business models existing today!
- Control the business model – Change with the times, free WiFi, dongles etc
- Use the infrastructure for multiple things

- New technologies will not change the case – they will improve it!
- Make sure you have **flexibility** for the future – Capacity, Technology etc.
- Maintain **control** – Business model, Applications etc.
- Look at *connectivity* from a company perspective – **operational savings AND additional revenues**
- Communication technology should be agnostic



Connectivity in motion.™

frederik.gustafsson@icomera.com

+46 709 15 30 51

www.icomera.com