

Is Wi-Fi on Train a Doomed Value Proposition?

Lessons from the Trenches



Company

Software provider with offices in Europe

Developer of context-aware mobile middleware

Enabling technology for innovative mobile value-added services (B2E and B2C)

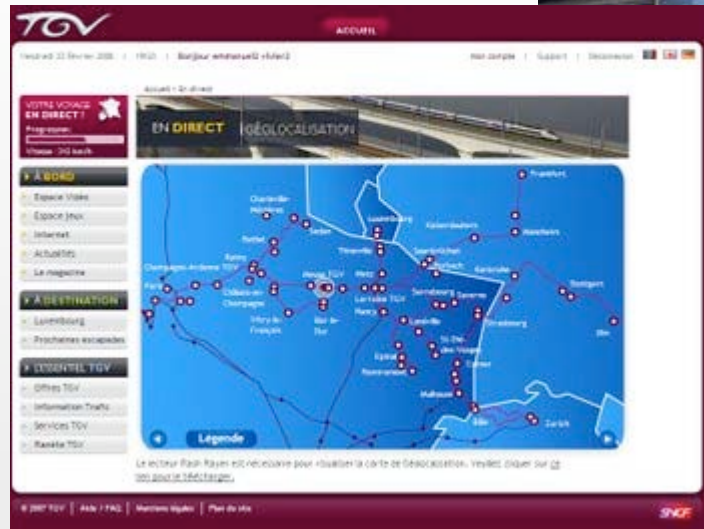
Focus Areas

Supplier of the **synchronization solution of the TGV Est project (SNCF)**

Supplier of a Wi-Fi **synchronization solution for 10,000 train drivers & conductors (Dutch Rail)**

Joint proposals with industry leaders Cisco, Orange, Capgemini, Icomera, Nomad and **telent**.





50

Cisco WLAN enabled stations

10.000

Appear IQ enabled Pocket PC PDAs

24x7

Operational Setting



**DUTCH RAIL:
LARGEST WI-FI
WORKFORCE
DEPLOYMENT
IN THE WORLD**

“ NS’ introduction of the wireless platform has generated an efficiency gain of 25 minutes per employee, per shift, **saving an estimated eight million Euros per year**. We had to select a reliable platform able to support our highly demanding requirements. The system must run 365 days per year, 24 hours per day, and support 10,000 users scattered through out the country in over 50 stations ”

Wim Liet, Head Business Applications,
NS Reizigers Production Services



Today: Dutch Rail is saving 8M Euros per year for 10,000 train drivers & conductors

Tomorrow: Dutch Rail will deploy Wi-Fi on train to support these users further

Some deployments are coming to a halt...

- Unproven or non-existent consumer related business cases
- Business cases based on “anchor tenancy” rejected by transport operators
- B2C access only, no value-added services
- High profile failures in related industries (Connexion by Boeing)

While other deployments are thriving!

- B2E or M2M-driven applications model instead of B2C only
- Numerous new RFPs/RFIs screaming for onboard access
- High dependency on young technology companies
 - Broadreach, Qinetiq, Pointshot: gone
 - Nomad, Icomera, 21 Net: proven deployments
- Large players moving in the market
 - Cisco (Finnish Rail, Trenitalia)
 - Nokia Siemens Networks (Thalys)
 - Orange, Capgemini, Eutelsat, Alstom (SNCF)



Lessons from the Muni-WiFi Space



Chicago backs away from muni Wi-Fi

In an interesting alignment of announcements, Chicago is putting its plans for a municipal wireless network on ice on the same day that EarthLink, one of its potential partners, announced 900 lay-offs, including the president of the company's muni division.

UPDATE EarthLink's role in San Francisco hangs in the balance

San Francisco's proposed municipal Wi-Fi network has been pushed back again—this time at the request of EarthLink, the provider tapped to build it. The company asked the city's board of supervisors to delay a vote scheduled this week until at least September. That's after the company's board of directors is expected to review its future direction in the muni market.

Tampa opts for downtown hot-spot, delays city-wide deployment

After considering deployment of a city-wide wireless network, the Tampa City Council determined today that it would opt, instead, for a downtown hotspot.

Two more EarthLink deployments on hold

Muni networks in the twin beltway cities of Alexandria and Arlington, Virginia, have joined cities in a holding pattern as EarthLink determines its future in the market.

Source: Esme Voss
MuniWireless

Moving Beyond Single-Use Public-Access Models

Source: Daniel
Aghion, W2I

Midway into 2007, intensive press coverage of the U.S. local-government broadband-wireless market continues both in the business media and in mainstream print and broadcast outlets. Whether in [BusinessWeek](#) or on [NPR](#), the stories often target the financial and political weaknesses associated with citywide wireless deployment models that center on single-use public-access models. Often naming Philadelphia and San Francisco, the reports typically cite low demand and quote dissatisfied network users complaining about their unsatisfactory customer experiences.

Cities Scrap Municipal Wireless Plans

Written By: Steven Titch
Published In: *Info Tech & Telecom News*
Publication Date: September 1, 2007
Publisher: The Heartland Institute

Source: Heartland
Institute

Anchorage, Alaska and Corona, California have discontinued their municipal wireless projects after MetroFi, the private industry partner in both cities, said it could not offer free service without a commitment from each municipality to be an "anchor tenant" on the system.

The decisions, which came in July, signal a reexamination of the so-called private-public partnership model for municipal wireless, which until recently has been viewed as a workable alternative to government-funded broadband networks, which over the years have accumulated a largely poor record.

New Focus

Although some cities may face considerable short-term pain, EarthLink's reorganization may be the reality check that the municipal broadband market needs.

Too many municipalities continue to focus on large, ambitious public wireless projects that have no clear path to profitability. The latest example: Long Island's Nassau and Suffolk counties are *embarking on a public broadband effort with an untested integrator*.

In stark contrast, the most successful municipal broadband projects typically involve a municipal department (police, public works, etc.) deploying a key application (public safety, video surveillance, automated meter reading, etc.) that delivers a clear return on investment. Corpus Christi (Texas), Buffalo (Minn.), Phoenix (Ariz.) and Providence (R.I.) and many other cities have thriving municipal broadband networks running government applications.

Once a municipality succeeds with an application deployment, it's far easier to build a case to offer limited or comprehensive public broadband access.

Source: Esme Voss
MuniWireless

Recommended Reports <https://muniwireless.microcast.biz/reports.php>

Recommended readings <http://www.muniwireless.com/article/articleview/6135/1/3/>

So what can we learn?



It's all about services

- WLAN access has become a commodity
- Only value-added services can generate revenues or cost-savings
- Which are the requirements of value-added services?
 - Interactivity (dynamic content adaptation)
 - Personalization (send to the right user at the right place at the right time)
 - User-friendliness ("click and run")

It's all about early adopters

- Early adopters are not only road warriors or geeks
- Early adopters are also
 - security personnel (ex: Fort Myers Airport)
 - public safety agencies (ex: Paris Subway)
 - field maintenance crews (ex: Cairo Airport)
 - public transport workforce (ex: Dutch Rail)

Contents of the Services and Internet Access Portal



Entertainment or information services

These are organised around several centres of interest aimed at making a journey by TGV an enjoyable and relaxing interlude.

Geolocalisation (development: Capgemini with the support of TBWA and Textuel). A map showing journey progress in real time; the train's position on its route and its speed. Interactive tourist information: the area through which the train is travelling and offers of interest.

Videos (selection: Orange; supplier: France 24; Aganc; the entry "Video", a space for "News" offers a telev (renewed overnight) as well as 6 current events pro. The main themes covered are Europe, Economy, Poli

Entertainment videos (selection: Orange). Under the entry "Video", an "Entertainment" section offers 6 short films, including 2 for children. These videos are partially renewed each week (2 general films and 1 film for children).

Games (selection: Orange; supplier: Obarens). 30 games, to be downloaded to personal computers, are available free of charge for one hour. Beyond that, the passenger can buy the game by accessing the supplier's Internet site. Games are renewed in series of three every month.

News (selection: Orange; supplier: AFP; Météo France). Contents are classified by theme and updated every 15 minutes by AFP press wire service, and every 3 hours for the weather forecasts.

- In French: la Une (+ dossier du jour); France; Monde; Politique; Economie; Sports; Football; Célébrités; Météo.

Useful TGV or tourist services

These services offer information concerning the destination of the journey currently being undertaken. Ideas for future trips and information concerning TGV services.

Information on the destination of the current trip is automatically foregrounded. The same depth of content is available on all of the TGV's eastbound destinations and other main TGV destinations in France.

> "Tourist" content

Local information (selection: Orange; supplier: AFP). The AFP news bulletins are uploaded every 15 minutes for the following French regions: Alsace-Lorraine, Champagne-Ardenne, Ile-de-France.

Useful addresses (selection: Orange; supplier: Cityvox). Addresses are updated every month under the following categories: Restaurants; Hotels; Nightlife; Bars; Evenings-out and clubbing; Discotheques.

Entertainment (selection: Orange; supplier: Cityvox). Programmes are updated every 15 days under the following categories: Cinema; Theatres & Shows; Concerts.

Walks and sightseeing tours (selection: Orange; supplier: Cityvox). Recommendations and programmes are updated every 15 days under the following categories: Exhibitions & Art; Children's outings; Sightseeing for tourists; Trade fairs.

Favourites (selection: TGV; supplier: tgv.com). This is information on main TGV destinations: Aix en Provence; Arles/Nîmes; Nice; Dijon; Lyon; Annecy; Nantes; St-Malo; Quimper; Bordeaux; Vannes and Bayonne.

These cities are classified into four categories according to the type of stay proposed: In town; in the country; in the mountains; At the seaside.

Contents are selected for TGV journeys and classified according to whether they are: Practical ("How to get there"); Not to be missed with children; In 2 or 3 days.

> TGV content

Timetables and bookings (development: Capgemini; supplier: journeys-sncf.com)

This service is available constantly, accessible on-screen in the left-hand bar. Customers can fill in the data for their proposed journey (place of departure, destination, date and time) and are then linked directly to the journeys-sncf.com website and the screen showing the results of their requests.

Traffic information (development: Capgemini; supplier: journeys-sncf.com). With a simple click, passengers can access the SNCF's information pages on the state of train traffic.

Prices (development: Capgemini; supplier: TGV). The home page is divided into information for Occasional Leisure Passengers, Frequent Leisure Passengers and Business Passengers.

Services (development: Capgemini; supplier: TGV). The home page is divided into information for Leisure Passengers and information for Business Passengers. There is also an interactive map of the train in this section.

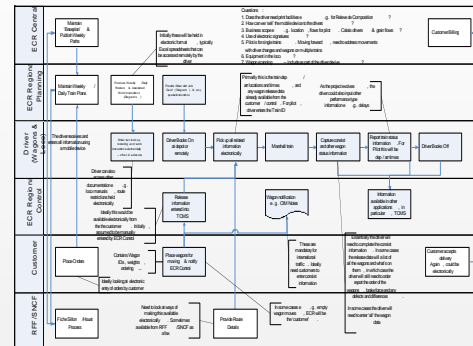
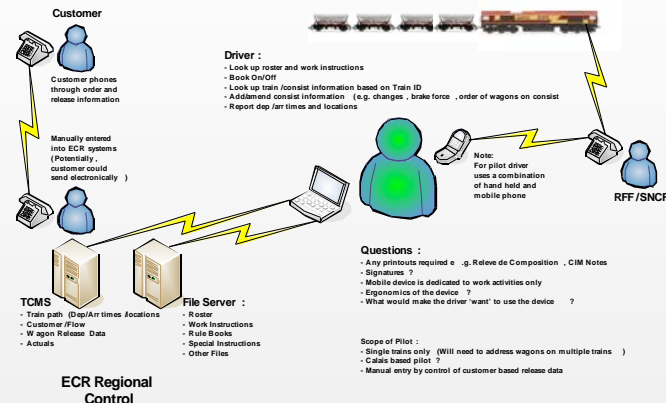
Planet TGV (development: Capgemini; supplier: TGV). This section presents the history of the TGV in a few words and pictures as well as the products offered in the TGV Boutique.

Source: SNCF
Press Kit

Customer Statement

In recent years EWS has made considerable investments in improving the systems that support its core real-time processes. These investments have typically concentrated more on the main, centrally based, systems as opposed to the 'sharp-end' interface with mobile staff or equipment. Having created such improved systems, it is now appropriate for EWS to consider improving this 'sharp-end' interface, in order to deliver things like improved driver efficiency, timely consist reporting and engineering maintenance management.

This statement is valid for many TOCs



Process
Analysis



Functional
Mapping



Mobile
Solution

What is the Best Engagement Model?

Example: SNCF

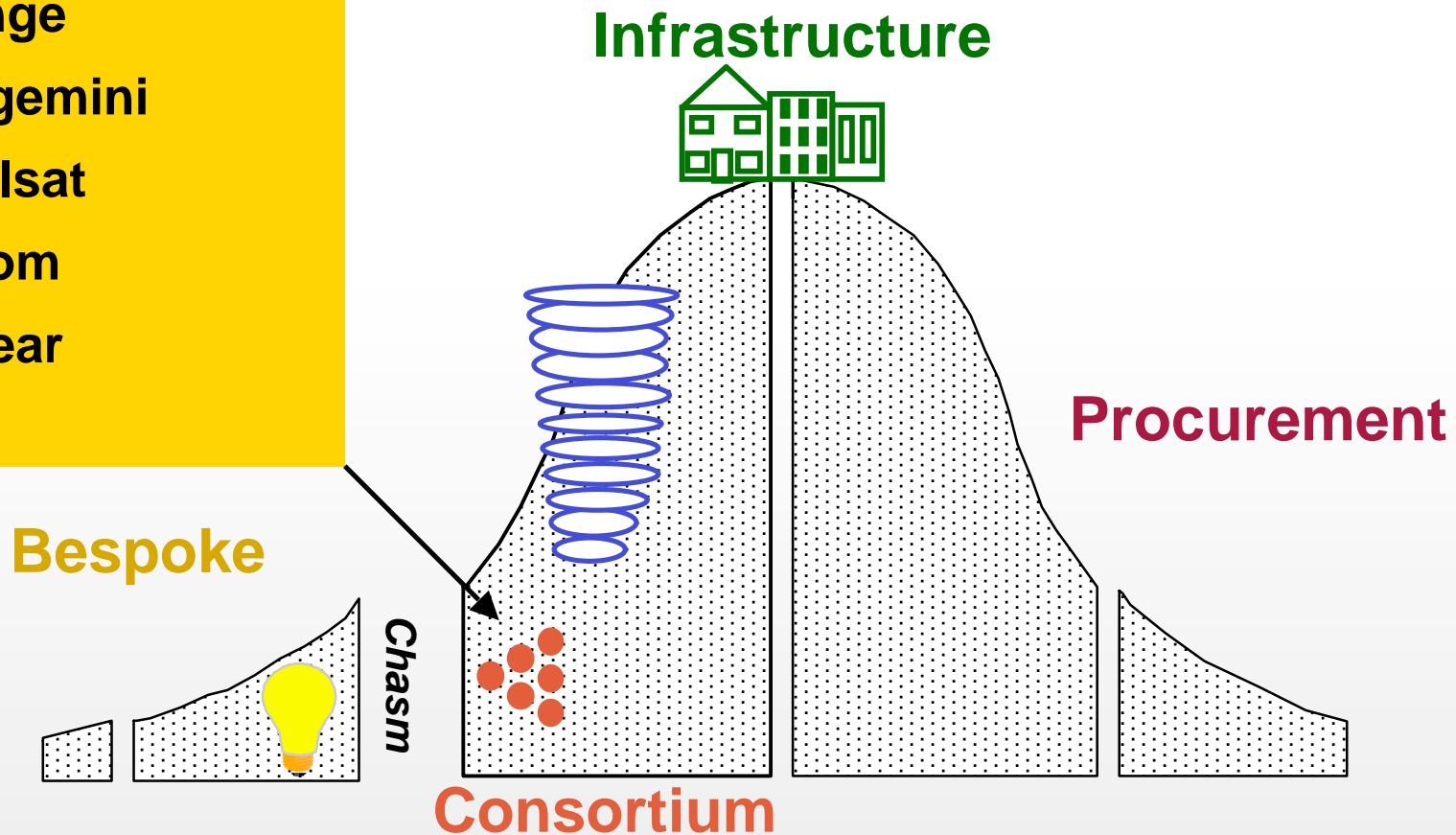
Orange

Capgemini

Eutelsat

Alstom

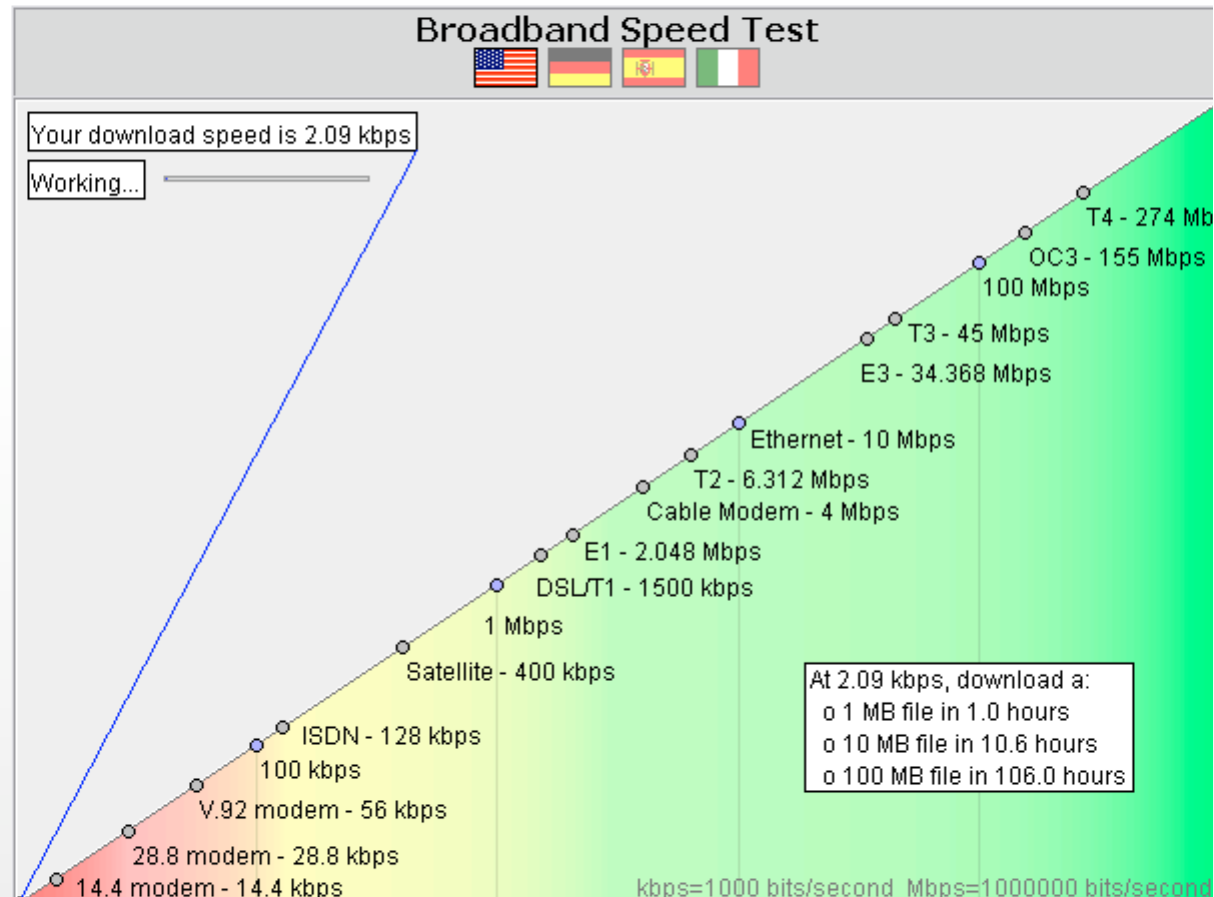
Appear



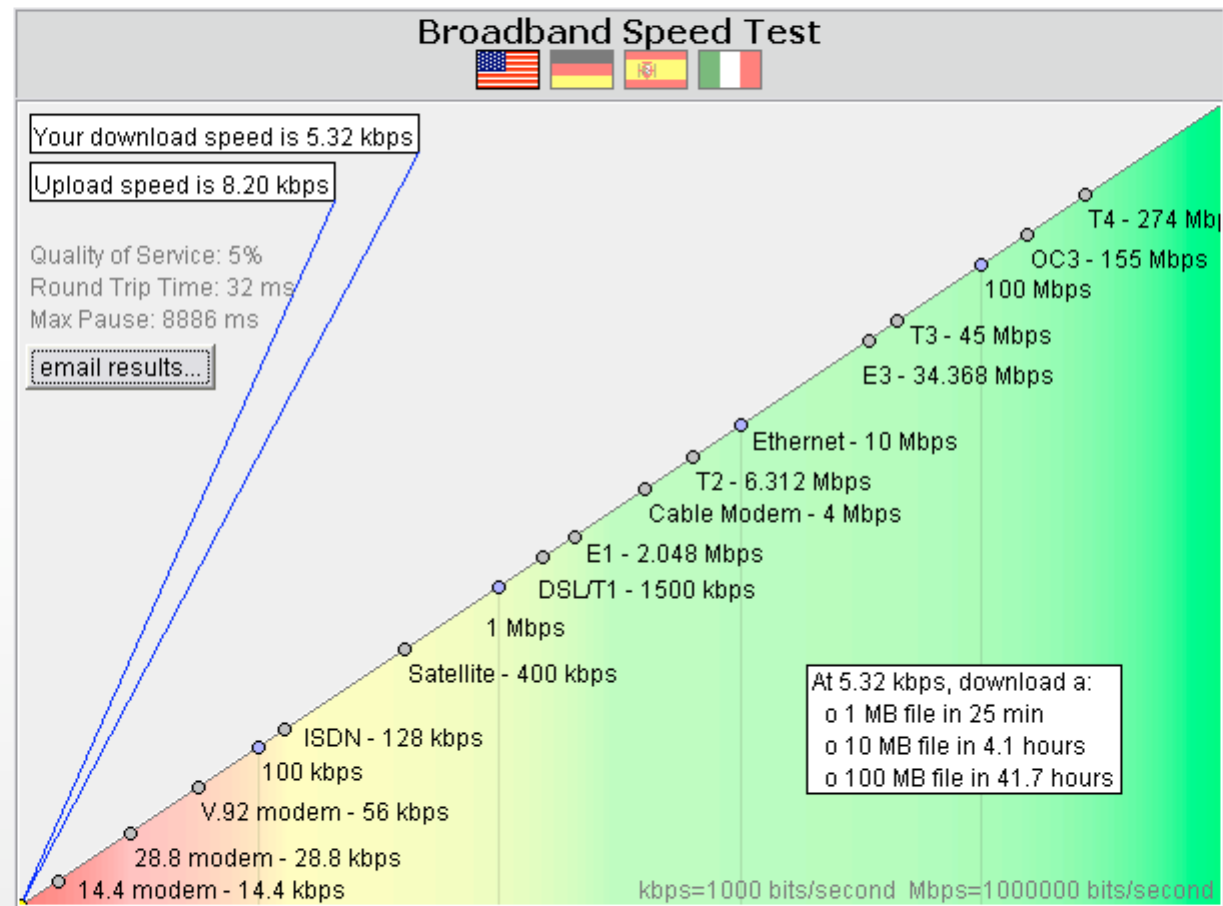


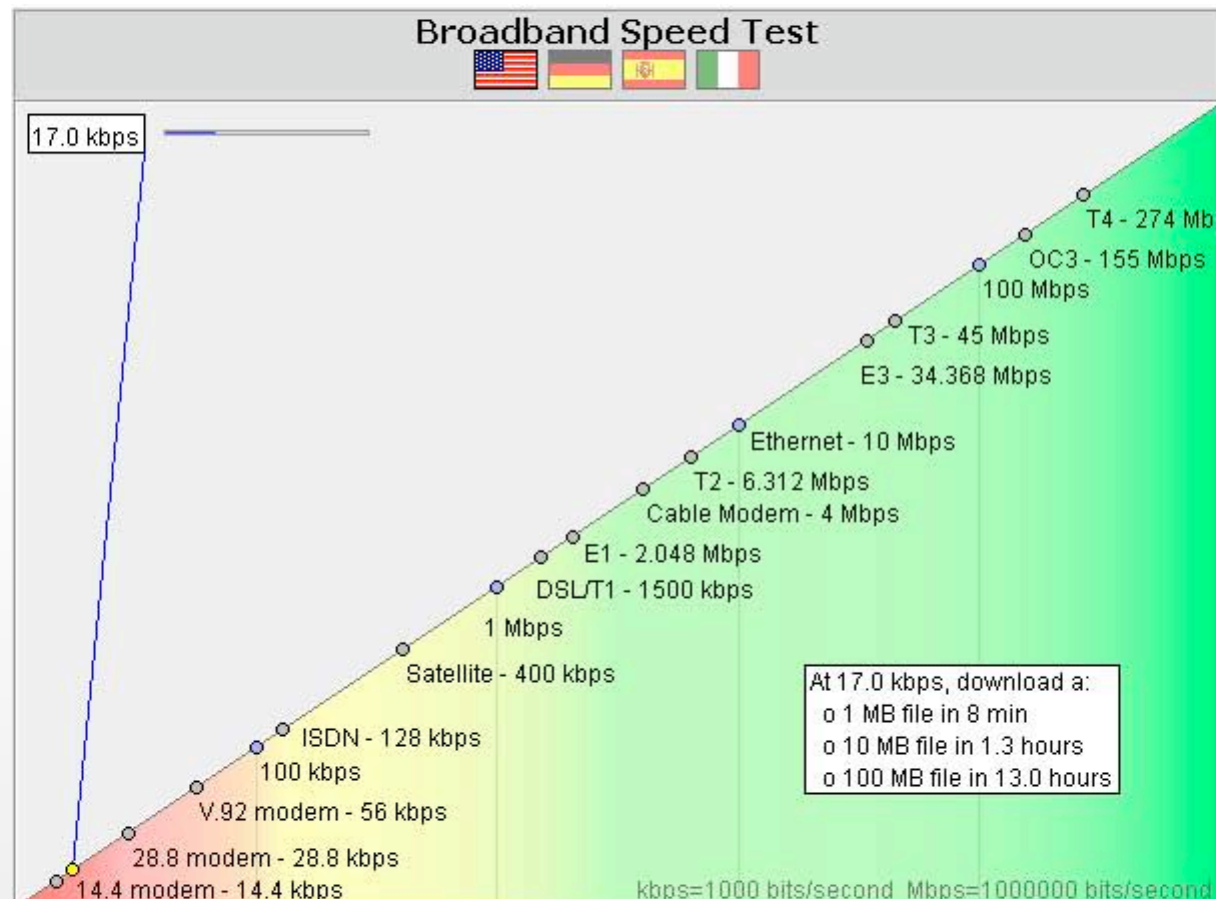
User Experience






On board an (unnamed) train





[:: terms & conditions ::](#) [privacy policy ::](#) [security](#)

HotSpot

Get Online	
Roaming to other HotSpots	
MyHotSpot	
Security	
Help	

We have been unable to send the email. Please try later or use an alternate email address if you have one.

Welcome to the Internet

You are now online with high-speed access.
The session counter to the right will tell you how much time you have left.

Secure connections

If you want to use a secure connection, please start your VPN-Client now. A secure webpage always starts with https:// and a padlock symbol appears in your browser.

You can end your session in a number of ways:

- Shut your VPN session down, if you are using one.
- Click the 'log-out' button below the session counter (We recommend you bookmark this page.)
- Type "logout." into your browser's URL field and press enter
- After 15 minutes of inactivity you will be logged out automatically

Now online

Username
P-ac8id67@t-mobile.co.uk

Password
djq-h2b-kkgk

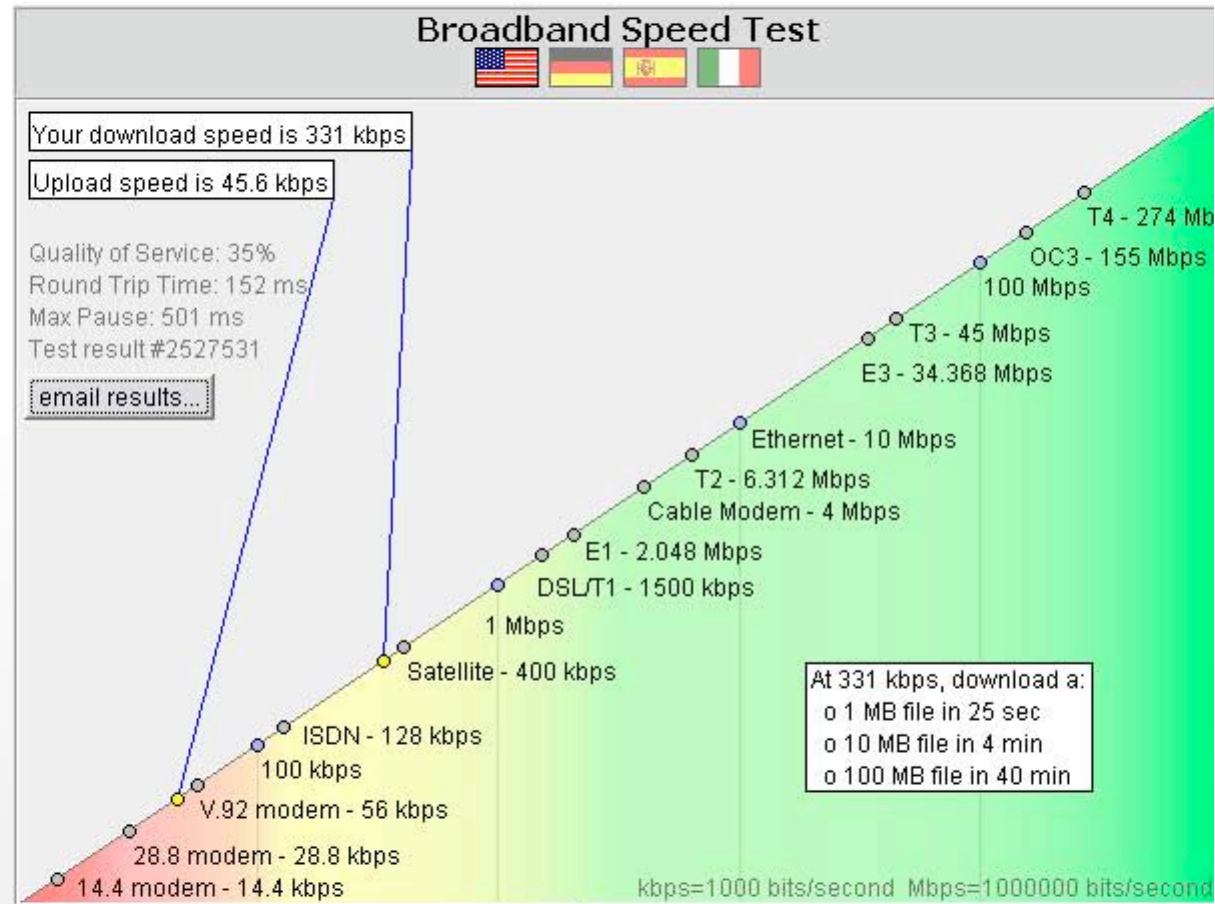
Time remaining

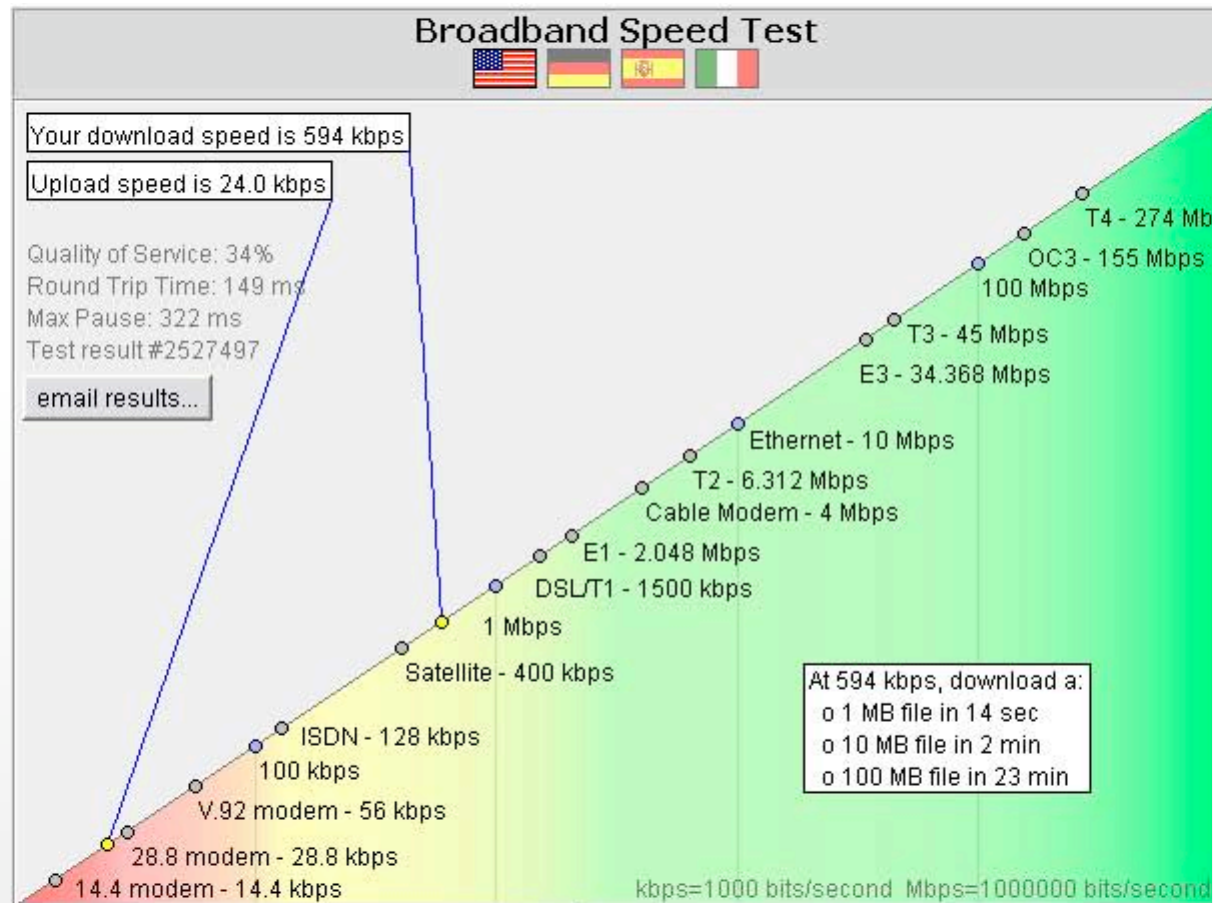
0:00:56:45

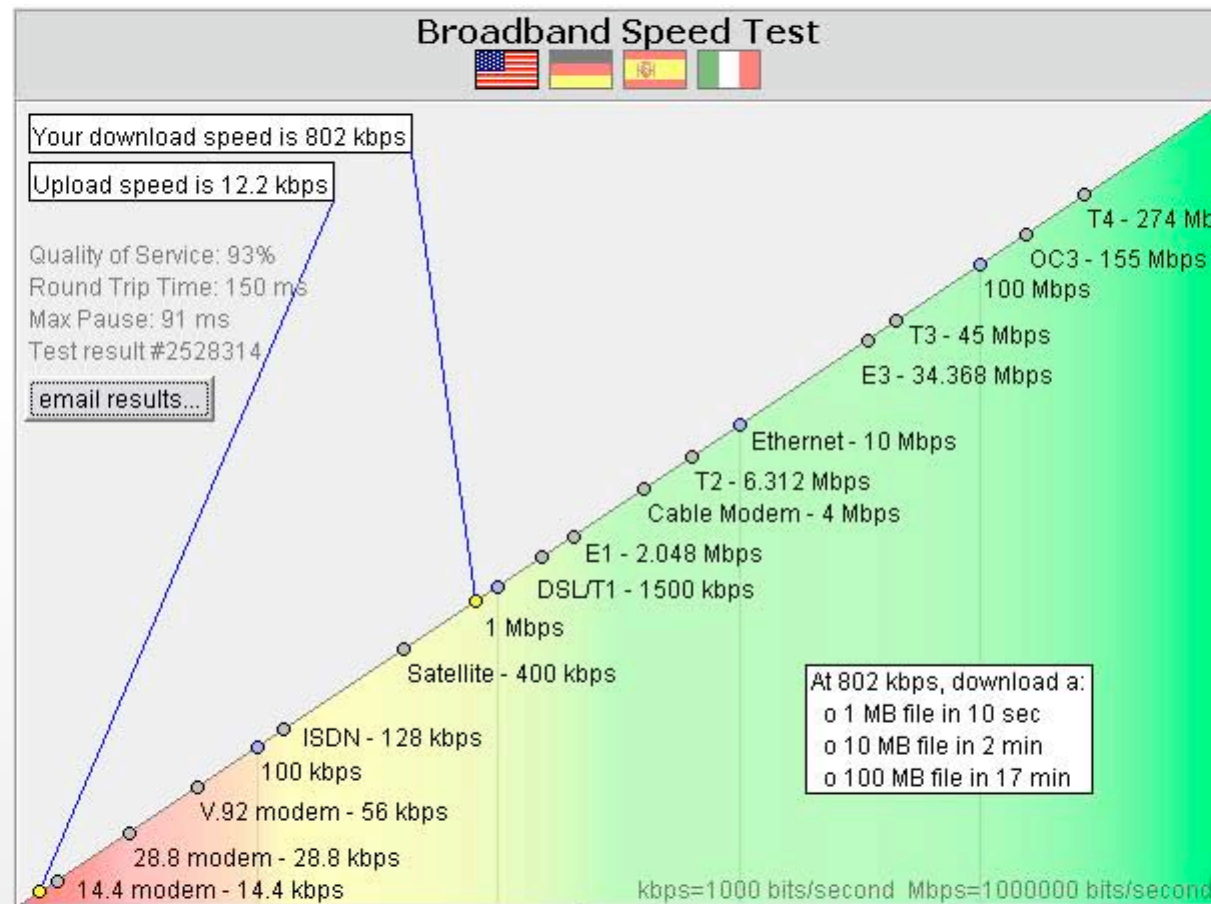
days:hours:min:sec

Log-out

Download Receipt
[| TXT | PDF |](#)









Technology Choices

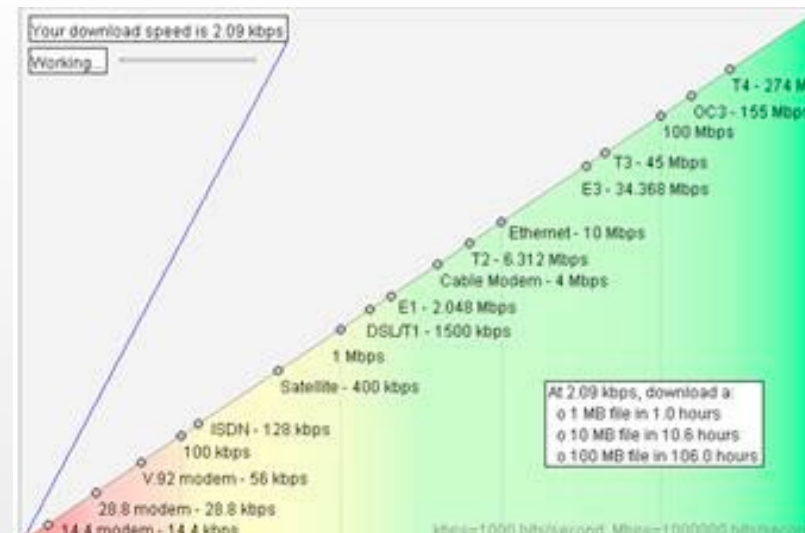


Implementing a ground-board broadband connection in a train is technically challenging and costly

Intrinsic technical limitations and high communication costs do not allow train operators to propose a quality of service similar to what can be offered on the ground: an 8Mb/s standard offering in a train cost many times more than a classical home broadband package

Are passengers ready to cope with a poorer Internet service offering when they are travelling for a relatively high price?

Real-time but no bandwidth



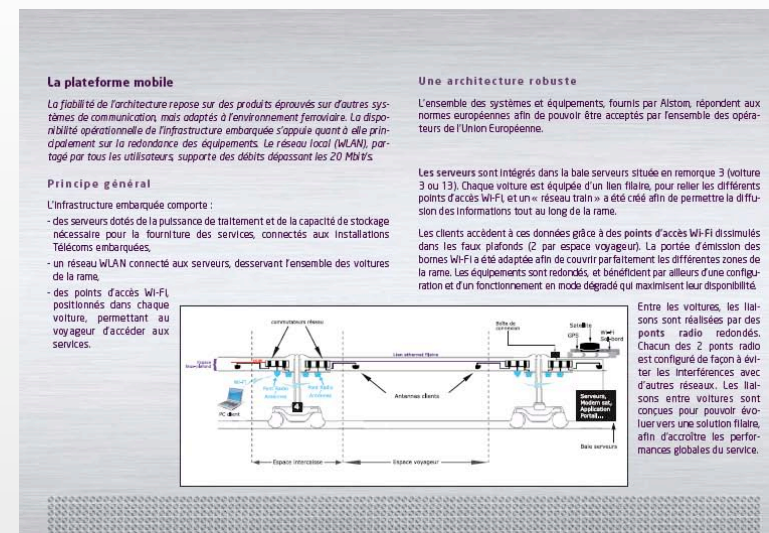
When travellers are questioned about Internet services during their trip, they are more talking about “**real-time experience**” than real-time communication.

They want to have the feeling information is personalized, dynamic and up-to-date.

What happens “behind the curtain” does not matter.

As soon as the train operator is able to propose them a “real-time experience” based on a **dynamic, customized access to up-to-date** information during their journey, a proper value proposition can be built.

Some of this content may be cached locally and synchronized regularly in order to reduce real-time bandwidth costs.





Technology Components

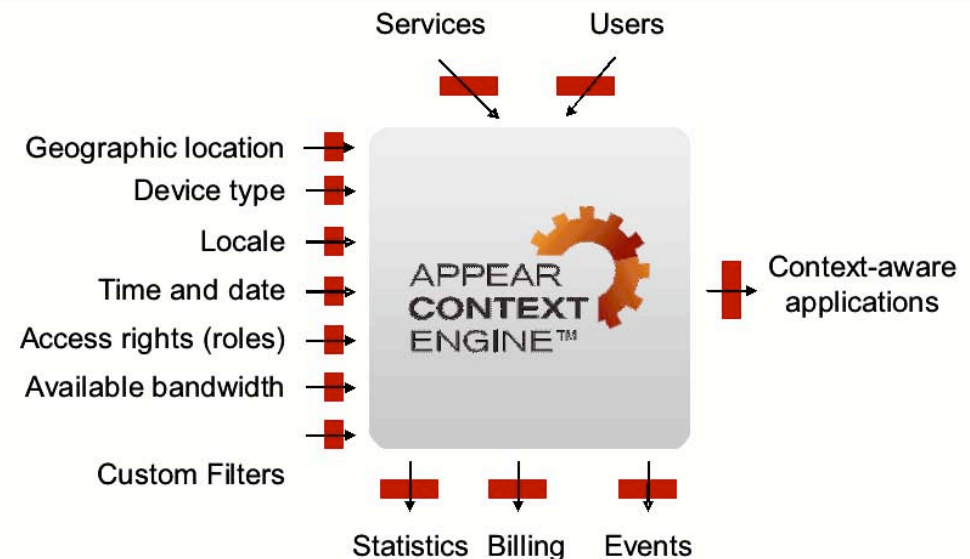


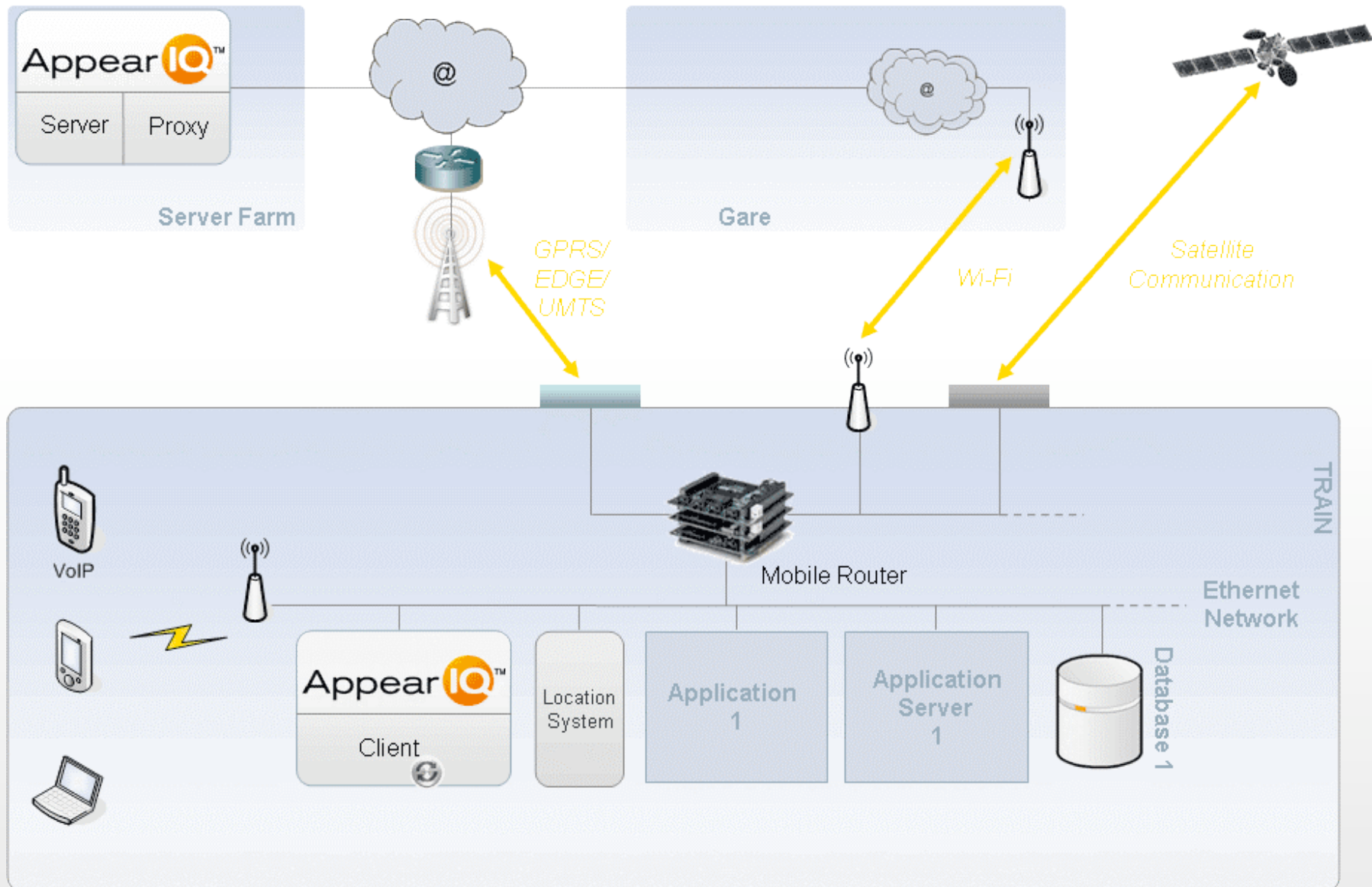
Context-aware bidirectional file transfer for M2M synchronization

Instead of sending very large files (ex: 50Gb) where only 10% of the files are relevant to a specific train in a specific situation, context-awareness allows a dramatic optimization of file transfers.

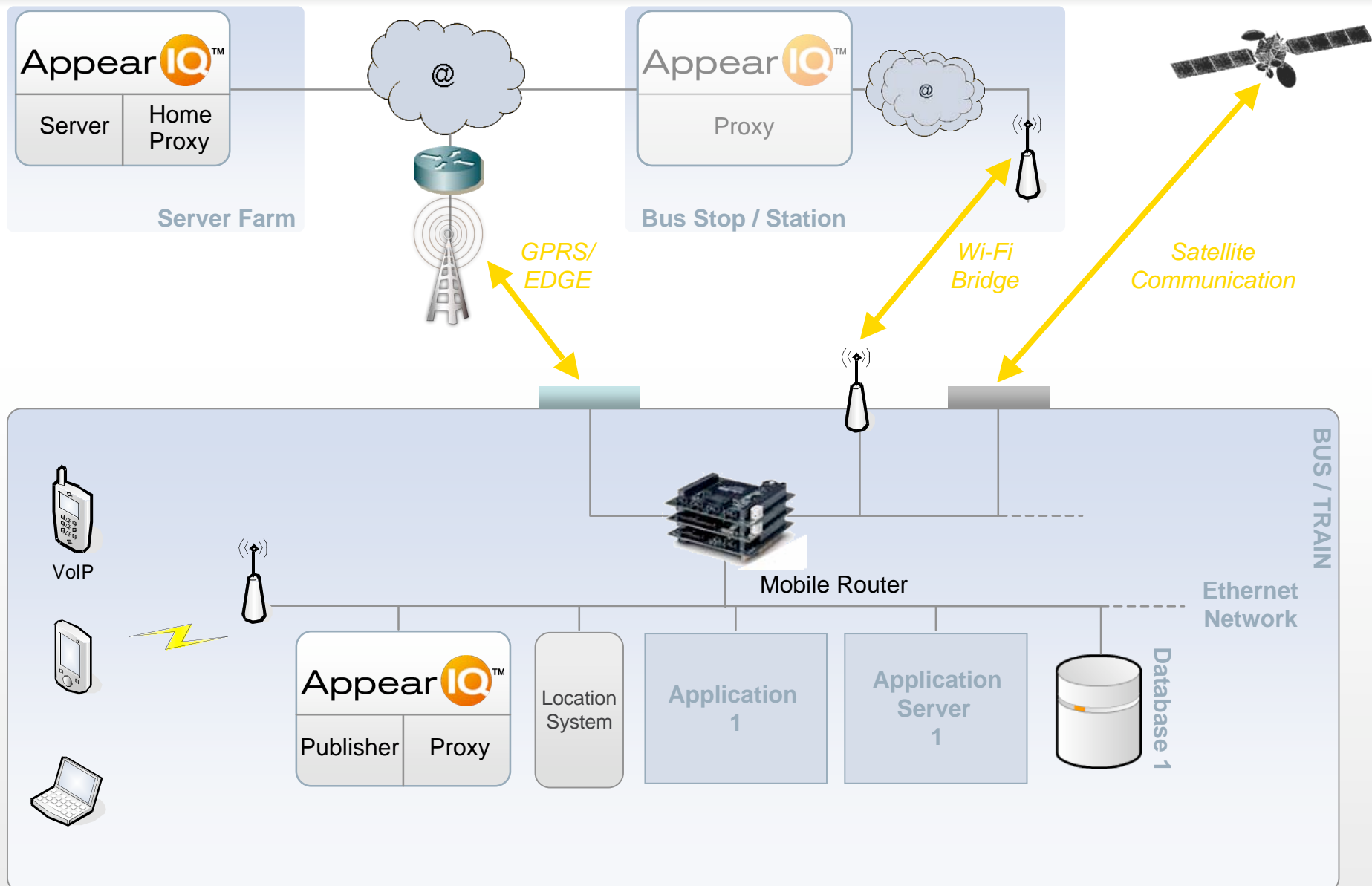
If the Train ID, its current route, its location, the time of the day/day of the year, the available bandwidth (available IP bearer) are known when sync is triggered, the file transfer, created on the fly according to this context, is then customized and much smaller.

Distributed architecture

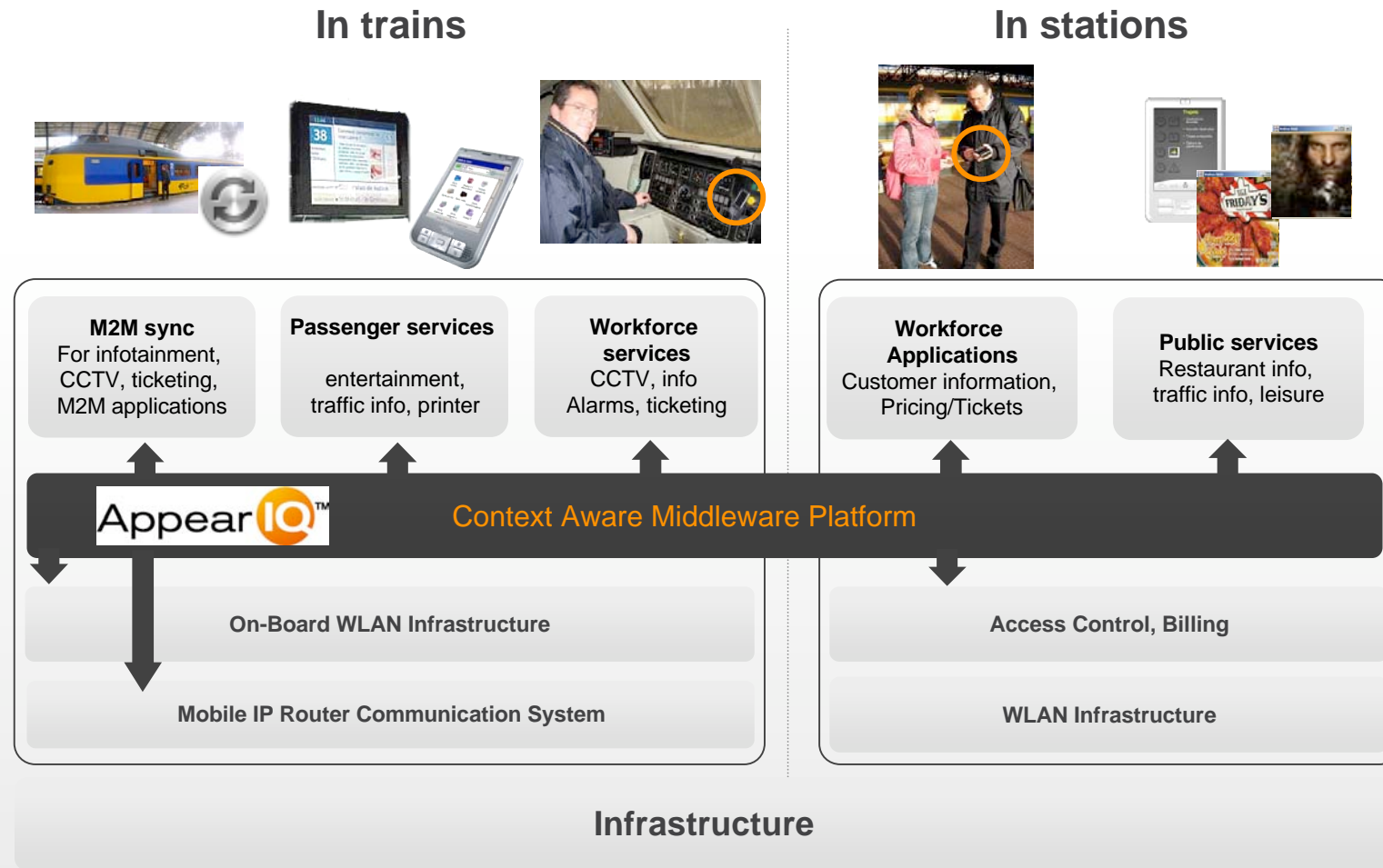




On Board Caching and Context Processing



With same mobile middleware, possibility to manage trains, stations, mobile services towards mobile staff and passengers





What's Next?

Supporting new Wi-Fi devices





iPhone



iPod Touch



And many others...



gPhone (Samsung)



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