

United Kingdom holidays

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Joining the dots

The UK is to get shared taxis, writes Sean Dodson

Sean Dodson

Thu 1 Nov 2007 13.19 GMT

In Algeria they are known as taxi collectifs, in Israel they are Sheruts, Gambians call them Tanka Tankas, while the Madagascans refer to them as bush taxis.

Across the world, many cultures enjoy what are collectively known as [shared taxis](#), and this cheaper, greener form of public transport looks set to arrive in the UK.

Next week, National Express will launch a new airport shuttle service called [dot2dot](#). Basically, it is a minibus service running between Gatwick and Heathrow via central London that will shuttle passengers to the door of major hotels or to the opposite airport if they have a connecting flight.

Sharing with a handful of fellow passengers shouldn't slow you down. The service promises no more than three stops before you reach your destination.

With prices starting at £17.50 each way, it's a lot cheaper than hiring a traditional taxi, but slightly more expensive than the [Heathrow](#) and [Gatwick Express](#) train services. But for single passengers with heavy luggage, it might make a viable alternative, especially as it drives you right to your hotel door.

Despite the pretentiousness of the language on the website (why say "airport transfer solution" when you mean minibus?), dot2.com is further evidence that shared taxi systems are on their way to Britain.

Liverpool has been trialling [Texxi.com](#), a novel form of shared transport that reroutes taxis around the city to pick up more passengers via text message. In Catholic areas of Northern Ireland, [shared taxi services](#) already operate using black cabs. And the [Scottish Parliament](#) is recommending their adoption.

What the shared taxi schemes have in common is that they marry an old idea - sharing taxis with strangers - with clever network technology rather than old-fashioned timetables or waiting for the minibus to fill before it sets off.

An additional point of both systems is that passengers have the opportunity to reduce their individual carbon footprint as well as the cost of the journey.

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Interview

Talk time: Daniel Brown

Interviewed by Hamish Mackintosh

Daniel Brown is this year's Designer of the Year for his innovative web design and multimedia work

Thu 26 Aug 2004 17:17 BST

Is your Design Museum Award a sign of how important the integrated net has become to "real" life?

Yes, and that of multimedia generally. I think the award going to a new media designer is a good sign for the industry, which is only just shaking off the negative reputation caused by the collapse of the dotcom boom.

What's the idea underpinning your Play/Create work?

I saw how MTV had created a consumer audience for music videos, and how graphic design/arts has become commonplace in popular culture - on T-shirts etc - and thought it a small leap to add computer game technology and interactivity to create a new genre of entertainment.

Is your talent the product of a mis-spent youth on a Spectrum?

Definitely ... and before that a Commodore Vic-20 and then the Atari ST. Although my accountant would probably argue it apparently wasn't that mis-spent.

Were your design/computer skills self-taught?

Almost - I never trained formally. There are four people who can take the credit for my achievement. My father for inspiring my interest in computer graphics, Eric Masaba for teaching me how to really program, and the late multimedia pioneer Roy Stringer for nurturing my talent and employing me at [Amaze](#). The fourth person, my mother, a maths teacher, taught me how to solve all the mathematical problems that those glittery, spinnny patterns involve.

How did you first move into working on your seminal Noodlebox?

[Noodlebox](#) started as an extra curricular research project. I was creating little applications to demonstrate what a then-new technology could do. As their numbers increased, I decided to put them all together and present them almost as a curiosity. It was a friend, James Tindall, who said it came across as a product experience, like buying a new CD and avidly opening up the cover sleeve for the first time. And that gave me the idea for Play/Create.

How has the digital world changed since your early work?

In those days, websites were inherently experimental and so one could try new things. Today, there are usability standards, such as the fact that users are only willing to click once. So regarding commercial work, where the client always wants the largest possible target audience, it limits what you can offer a user. I think we're moving out of this phase now. New generation phones with things such as photo-messaging have taken off, and complex applications such as peer-to-peer software are becoming mainstream. As a result, I think the public is showing designers there is a willingness to learn when the reward is there.

Ticket to Ride

With a new carpool service, you can text your way home **BY MARK ANDERSON**



IT'S A SOLUTION any 14-year-old would love: The challenges of foreign oil dependency, global warming, and gridlock are not so big that you can't text-message your way out of them.

Today in Liverpool, England, if you're downtown at a pub and want to get back to your hotel on the other side of town, you can send a text message containing the postal code of your destination to 83994, and it's as good as done. By punching a dozen buttons on your cell phone, you've contacted the fledgling cab service called Texxi. ("The taxi you text.") The company, which owns no cars and employs no drivers, acts like an automated travel agent for your ride home: Its computer receives your request and finds other Texxi users whose pickup and destination points are roughly the same, and it summons a single cab from one of the city's cab companies for everyone to share.

The cost for this Texxi ride with, say, two or three other passengers is less than £4.6 (about \$9) each, instead of the £9 (about \$18) or more that it would cost to hire a cab solo, and the cab company, on average, earns more total fare per ride. The savings of fuel, pollution, and congestion are at

least as much as if you had arranged your own carpool back to your hotel.

Plus, perhaps the biggest drawback of taking a cab—standing outside and waiting—is eliminated: Each passenger receives a text message the moment their ride has arrived. Users can even set up their own Texxi groups to preferentially seek out ideal fellow passengers.

Eric Masaba, inventor of the Texxi system and managing director of its Liverpool pilot program, says that the shared-cab system he's created could easily be replicated for 9-to-5ers in Raleigh, North Carolina, or football fans in Brisbane, Australia, or—with a large enough passenger base to work from—a denizen of any city going anywhere within that greater metro area at any time. "When I calculated how much this idea is worth on the world market, I couldn't believe it," he says. "I kept coming up with figures in the hundreds of billions or trillions of dollars."

Masaba's lightbulb moment came in 2003, after he had spent more than a decade working as a consultant on problems, in economic wonk-speak, of "maximizing resource efficiency in power grids and in the wake of

massive corporate collapses"—such as the Enron implosion of 2001. "It just dawned on me that if we use the existing infrastructure rather than buy a new one, we could get a city up and running very quickly."

Make no mistake about it: Masaba has big plans for his start-up model, and is now schmoozing with entrepreneurs and potential investors around the world to ensure that someday soon you, too, will be able to text for your taxi.

The idea does have a few hurdles to jump—the main one being the very method that the call system works with. To make something like Texxi work, the majority of a city's residents, not just cell-phone savvy teenagers, needs to be familiar with text messaging (that heretofore unexplored menu option on your phone that lets you send short text messages to other cell phone users). Overall, Americans have not yet caught the texting bug. When asked in December 2005 if they would be sending a "Happy New Year" text message to anyone, 90 percent of Spanish respondents, 88 percent of Germans, and 92 percent of Italians surveyed said yes—compared to just 35 percent of Americans.

But the benefits of a Texxi-like system, once established, are quite attractive. The program would require no public subsidies or infrastructure, and would cut down congestion and emissions in the highest density regions and during the busiest times of the day. "The Texxi model is intriguing because it seems to be addressing some of the barriers about ride-sharing," says Susan Shaheen, a transportation expert at the University of California, Berkeley. One key benefit is that it can gather a critical mass of riders. "If they have a phone, they send a text message, and there you go."

The Liverpool model, where one in five residents are students and a massive club scene produces a predictable glut of passengers on Fridays and Saturdays, could be implemented differently in other areas. The cab service could be organized around schools, shopping, commuting, or large events, Masaba says.

The mass-market potential of Texxi has some investors already excited about setting up their own franchises. Masaba says he's in touch with potential backers in Australia,

where texting is about as popular as it is in Europe, as well as stateside. Officials and investors in Texas, California, and North Carolina are looking to get involved—and inquiries have come from both sides of the political aisle, with Masaba fielding recent e-mails from former employees of both the George H.W. Bush and Clinton administrations.

A British businessman, Joe Olmi of TaxiBus, has also been in touch with Masaba on promoting a similar but more ambitious plan aimed at out-greening public transit. Olmi proposes publicly owned fleets of GPS-enabled shuttles that are able to change their routes on the fly as new users request rides

with their cell phones. Olmi's version could be a subsidized transit system, with its own fleet of vans and drivers in its employ.

"The technology is not a complex issue," Olmi says. "There's no great rocket science to it: GPS street navigation is just a bolt-on component. Mobile phone networks are already set up. Minibuses already exist."

All that's needed are a handful of innovators to put these components together in the right way. Then, with a system like TaxiBus or Texxi in town, jumpstarting an eco-transportation revolution would just require a cell phone—and two green thumbs to punch those tiny keys. ☺

A GREENER OPTION

> As much as 50 percent of congestion in cities is caused by people looking for parking, some studies estimate. Taxi-sharing systems such as Texxi and TaxiBus would reduce this gridlock.

> According to the Oak Ridge National Laboratory, 10 trillion empty-seat miles are produced by American vehicles every year because most cars on the road are not fully occupied. This figure translates to 123 billion gallons of gas wasted and 1.2 billion tons of excess carbon dioxide emissions. Ride-sharing programs would increase the number of occupied seats per vehicle on the road.

> As Charles Lave of the University of California, Irvine has pointed out, empty seats in America's highway vehicles constitute the greatest oil reserve in the world. —M.A.



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Archive

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InMail | Texxi

The Demand Responsive Transit Exchange

To: Reid Hoffman, Eric Masaba

December 4, 2007 7:02 PM

www.texxi.com

hoffman



"Texxi provides a logistics resource cloud for physical transportation fulfillment in realtime demand conditions" -

www.texxi.com

Imagine if we had a Transit Exchange - similar to a Cotton Exchange or an Oil Exchange for each UK city. Taxi operators (more generally vehicle operators) could sell "ride futures" to guarantee cashflows and keep the transit system running smoothly, while customers would be able to guarantee service with certain attributes (e.g. I want a cab within 15 minutes of hailing every Friday at 4pm until further notice) ahead of time for a predictable cost.

As with commodity / bond markets, there will be yield (demand) curves which will help buyers and sellers mitigate risk and find a fair price to do more business in a regulated way. The current taxi environment (with the exception of wonderful UK firms like Addison Lee) can only be described as ad-hoc.

On 12/3/07 8:32 AM, Reid Hoffman wrote:

Eric,

I'm very supportive of your idea in concept; however, I almost never invest outside of the Silicon Valley since my time is in negative supply.

However, in Silicon Valley views, "large angel capital" tends to mean "venture capital." So, I'd recommend that you look at venture capital. If London VC is resistant, I'd consider trying Silicon Valley VC.

Good luck!

best,

Reid

On 11/25/07 5:25 AM, Eric Masaba wrote:

Hi Reid,

RE: The Demand Responsive Transit Exchange.

We are looking for large scale Angel capital: we need to boost our infrastructure and marketing operations.

I have attached 4 writeups on the Texxi concept which is a free market idea. We have had interest from the Institute of Economic Affairs in the UK and have been to several lunches hosted by them.

So far our funding has come from a combination of 40+ angel investors and friends.

If you in the UK on 6th Dec 2007, we are having a seminar at UWE Bristol.

Regards

Eric Masaba
ops@texxi.com

"Texxi is a new concept in urban transit that reduces congestion and petrol usage in a city. By using a cell phone (SMS) to summon a shared-ride taxi, the consumer gets near instant service. And the Texxi company knows each of the riders and the driver so there is comfort in knowing taxi occupants are safe. Texxi provides a logistics resource cloud for physical transportation fulfillment in real-time demand conditions. It also uses a 'social

network'-like reputation system to keep people honest / well behaved."

References / Writeups

<http://www.guardian.co.uk/travel/2007/nov/01/uk.travelnews>

http://www.plentymag.com/features/2007/06/ticket_to_ride.php

http://www.greencarcongress.com/2005/07/texting_sms_for.html

<http://tinyurl.com/367ken>

<http://www.ft.com/cms/s/0/af2a0ed4-9223-11dc-8981-0000779fd2ac.html>

Texxi will either solve or mitigate the problems of;

Congestion

Lack of Infrastructure funding

Pollution

Access to affordable transit for all members of society

Fuel Use (it will reduce aggregate fuel use by increasing load factors and overall efficiency)

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Cached messages

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Fw: Texxi - Nice to see someone "get it".

From: Eric Masaba/CraneDragon

To: ops@texxi.com

Date: 26 Jun 2009 - 4:27a.m.

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----- Forwarded by Eric Masaba/CraneDragon on 26/06/2009 04:26 -----

Eric Masaba/CraneDragon

04/07/2007 18:17

To

jabailo@texeme.com

cc

Subject

RE: Texxi - Nice to see someone "get it".

John,

RE: Thanks for the nice words about Texxi

Texxi is also similar to AirTroductions (http://www.coolbusinessideas.com/archives/social_networking_in_the_sky.html) and Pink Ladies (http://www.coolbusinessideas.com/archives/cabs_for_pink_ladies.html).

What we really push is the social networking aspect of shared travel by taxi (Texxi Groups)

www.texxi.info

www.texxi.com

RE: Texxi will be to Taxi Fares what JetBlue / EasyJet / Ryanair is to Airfares

http://news.bbc.co.uk/player/nol/newsid_4970000/newsid_4977500/4977542.stm?bw=bb&mp=wm

http://www.plentymag.com/features/2007/06/ticket_to_ride.php
http://blogs.brisbanetimes.com.au/rhymeorreason/archives/2007/05/i_wont_sidestep.html
<http://www.cbsnews.com/stories/2007/05/22/tech/main2836092.shtml>
<http://www.stagecoachgroup.com/scg/media/publications/policydocs/yellowtaxi.pdf>

I just saw some wonderful work on realtime demand mapping and felt it represents what we are trying to do at Texxi - a highly scalable Demand Responsive Transit Exchange.

We want to allow all transit systems in all cities to pre-emptively "sense" what people in a particular city are planning to do - it will be in fact the "database of travel intentions" based on historical information (like historical volatility in financial markets)

We have invented the "Transit Exchange Concept" whereby we can use the innovative ideas from capital markets and apply them to transit to make the whole transport system in a city more reliable than it is in most cities currently.

RE: The Exchange Traded Transit Model

Imagine paying only £2.50 for a cab ride each way every day from southwest London to the City. For a yearly total of 1,000 (£5 / day, 200 days per year) that is all your taxi rides covered to and from work. In a certain type of vehicle. With a maximum guaranteed waiting time (e.g. 15 minutes). (For 5 minute hire, you would expect to pay more - e.g. £10 per day each way.)

A car can cost as much as this to run per month. If we can apply the low fare airline model to taxi transit, we can change what services, choice and experience users have access to.

If 8 people are doing this, a cab driver can make a sure £10,000 for one ride each morning and one each late afternoon.

Better still, this can all be formalised onto an exchange and all the relevant innovation which has been tried and tested in financial markets can be brought to bear.

Exchange Traded Transit is the central concept to a Texxi model.

Texxi trialled in Liverpool Mar 2006 - Sep 2006. Please also refer to <http://www.texxi.info> and <http://www.texxi.com>.

Transit Futures will allow a taxi driver to get an idea of what income (s)he can expect for the next 12 months (assuming (s)he carries out the work). Drivers can sell futures on the exchange to fund bills / debt service after they have a certain behaviour rating.

Customers can buy a certain class of trip futures (immediate, 30 minute, day ahead, 3 day ahead) in bulk ahead of time so that they can hedge against fuel price rises. Drivers who fall ill can then sell their trips to other drivers of a similar behaviour rating, but are not allowed to profit take on this (to prevent market cornering). Customers can do the same.

This allows customers a guarantee that when they need a cab they will get it in a certain timeframe. It also allows drivers to know that as long as they honour their contracts, they will always have work.

Texxi provides a logistics resource cloud for physical transportation fulfillment in realtime demand conditions.

Imagine if we had a Transit Exchange - similar to a Cotton Exchange or an Oil Exchange for each UK city. Taxi operators (more generally vehicle operators) could sell "ride futures" to guarantee cashflows and keep the transit system running smoothly, while customers would be able to guarantee service with certain attributes (e.g. I want a cab within 15 minutes of hailing every Friday at 4pm until further notice) ahead of time for a predictable cost.

As with commodity / bond markets, there will be yield (demand) curves which will help buyers and sellers mitigate risk and find a fair price to do more business in a regulated way. The current tax environment (with the exception of wonderful firms like Addison Lee) can only be described as ad-hoc.

Amazon (the online retailer) has recently launched a couple of services called S3 and EC2. EC2 is an abbreviation for "Elastic Computing Cloud".

It allows people to buy as much or as little computational power / storage as they need for their projects. Because typically users do not know what they need and it is expensive and risky to invest in too much infrastructure ahead of time.

(<http://aws.amazon.com/s3> , http://en.wikipedia.org/wiki/Amazon_S3)

I coined a phrase in 2004 / 2005 that we use at Texxi called a Hospitality, Logistics and Transportation (HLT) Cloud. This is the same idea as Amazon's S3 service but is applied to transport (albeit up to 2 yrs earlier).

Perhaps (Holistic Logistics and Transit Cloud is better?).

HLT Cloud (Hospitality Logistics and Transportation Cloud)

This is a concept which emulates that of national postal services or the Internet. The Texxi system will allow a user to summon a vehicle by using a device like a mobile phone to allow for real-time transit fulfillment. In effect the user can "send" him/herself just like he/she may send a letter or email.

With national postal services, users put a letter into a letter-box after having addressed it and paid the fee (postage). They do not have to rely on a singular postal vehicle to take their letter.

With the internet, email documents are addressed and sent via the worldwide web cloud. There are many different carrier paths the message can take.

With Texxi, users address their destination and then get picked up by the nearest (in time / space and attribute matching) available vehicle. (think FedEx for people).

If one needs a ride each morning, the cloud supplies the fulfillment provider (FP - bus, taxi, helicopter, private jet). It may be the same taxi vehicle each morning or it may be a different taxi vehicle each morning.

In all cases, the user will be able to rely on the fact that once they have bought a trip, it will be fulfilled. Much like the EasyJet / RyanAir model.

Depending on how far ahead in the future people buy trips, the trips are cheaper. Depending on how flexible / inflexible people are about their choice of ride partner, the trip(s) are cheaper / more expensive.

Why have buses driving around mostly empty when no-one is using them. Is this 1806 or 2006? We know where users (potential users) are. We can predict with algorithms and models where users will be and based on rolling data gathered, we can even place those vehicles magically ahead of demand.

Virtual City

The "Virtual City Concept" will allow people who live in semi-rural areas with no large cities (most UK counties in fact), to effectively have a very reliable, robust transportation system without relying on huge government funded transportation schemes.

These concepts combine to form TExXI - Transit Exchange XXIst Century

Regards

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Another Piece in the Fulfilment of Search

The integration between the boundaries of online search and travel will become increasingly blurred to the point where the two activities are seamless.

If one considers that the intentions of a large number of people start with an online search (including mobile online search) then there are two fulfilment paths to consider:

In the first case, the intention is fulfilled by moving an item TO the person who executed the demand. This is handled extremely well by the logistics business space. There is room for evolution, but generally it is a problem with excellent solutions. When the item required is digital in nature, this is taken care even more effectively by the network / bandwidth provisioning companies (Digital Logistics).

Secondly, an intention is fulfilled by moving the person TO the intended place. This is handled neither particularly well nor seamlessly.

Assume I am a tourist looking for an attraction to visit in a foreign city. Normally I would use a (space-domain) map, figure out where the attraction was located, then figure out how to get there and how much the trip would cost. I would then go to find the transport and try to coincide my itinerary with a timetable.

Now with an evolved Texxi model, I would use my mobile communications device with either a time-location-domain map of attractions OR a cost-location-domain map of attractions (these are maps which show loci depending on how long it takes get there or how much it costs to get there; the actual distance is normally a secondary consideration, it is just that this normally has some reasonable relationship to the time it takes to get there).

Then the final and critical piece. I click on the map and instruct the DRT Exchange that this is where I wish to go. Texxi (the Broker) takes care of the rest through its DRT Exchange activities and I am moved by a DRT Fulfilment Provider (shuttle, taxi, bus, private jet) from either directly where I am located or from nearby with a group of people with a similar itinerary. This group is further filtered by behaviour/reputation parameters - so I don't get put in with football hooligans.

This is 21st century travel. Effectively "FedEx for People".

What (additional) revenue models are available for Texxi Operations?

1. Seat Revenue.
2. Text Revenue.
3. Bulk buy Palm Oil and Trans-Esterify into BioDiesel - supply to drivers at discount to further boost their profits.
4. Advertising & Channel Sales.
5. Bulk-buy of Fleet Vehicles at a discount and resell to users of the system.
6. Collateralised Bond Obligations and CDS on outstanding vehicle loans – why this is a great win for any of Mercedes, PSA Peugeot-Citroen etc
7. Carbon Abatement – the vehicles will be Carbon-Neutral or negative and we can become a net seller of Carbon Credits.
8. School Run replacement.

9. OAP (Senior Citizens) Supermarket Run.
10. English Heritage / National Trust / Football Matches / Concerts / Wimbledon.
11. Remote Community Linkage.
12. Train-ParaTransit Linkups (Text to get picked up from intermediate station and get taken home, e.g. Crewe-Chester)
13. Housing Development ParaTransit – instead of supplying parking spaces, supply Texxi passes.
14. Light Haulage Replacement - Texxi can become the entire intra-city delivery network broker.
16. Restaurant Deliveries.
17. Emergency Delivery / Courier Services.
18. Limousine Linkage Services – we can enable SME Limousine Companies to link up into a seamless Meta-Company.

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- TEXXI_BUTTON_PHONE(2).jpg

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GTA

Frugal cab patrons hail Texxi

If you have ever waited an eternity for a cab on a freezing Toronto night, then fought others when one finally stopped before paying a small fortune to get you home, a U.K. taxi-sharing system called Texxi might be the solution.

March 3, 2009 [📌](#) [🔗](#)



People in a dozen cities around the world, including Toronto, have inquired about the Texxi cab-sharing system.

TARA WALTON / TORONTO STAR FILE PHOTO

By San Grewal STAFF REPORTER

If you have ever waited an eternity for a cab on a freezing Toronto night, then fought others when one finally stopped before paying a small fortune to get you home, a U.K. taxi-sharing system called Texxi might be the solution.

Texxi, which uses text messaging to match riders travelling to and from nearby

locations so they can share cabs, is the brainchild of Eric Masaba.

“We now have the technology to make taxi sharing fair, quick, safe and economical,” says Masaba, CEO of London-based Texxi Ltd.

Riders text their postal code or address and their destination to a Texxi dispatcher, then GPS technology searches for other riders travelling between the same points at the same time. A fare is determined and messaged to the users for confirmation. Masaba says Texxi is linking up with social networking sites so users can customize rider groups, choosing who they do and don't want to Texxi with. Riders can also request a driver, child seats and even the type of car.

The system was successfully tested in Liverpool in 2006, using 60 licensed taxis, and is set to launch in four cities in the south of England.

Masaba says people in a dozen other cities around the world, including Toronto, have inquired about setting up Texxi.

They haven't decided whether to set up franchises in cities such as Toronto.

“It's a good idea,” says Toronto Councillor Howard Moscoe, chair of the city's licensing and standards committee. “Since we increased fares (last summer), ridership has been down. This sounds like a way of sharing a high-cost taxi ride.”

It also, in theory, reduces the number of cars on the road.

Moscoe says current taxi licensing bylaws would have to be reviewed, and no new taxi licences would be issued.

“But I think it wouldn't be too difficult to do.”

Increased demand

Richard Johnstone
Transport correspondent

Advances in communication are leading to new ideas in transport

Technology has changed our lives so much in the last 20 years that sometimes it is hard to imagine what life was like before. Now, new transport ideas are emerging that aim to make the most of these developments.

New developments in the so-called demand responsive transport (DRT) sector may soon have such an impact that the sharing of transport services will become more common.

DRT services have long been seen as part of the transport network which supports people who may not be able to use conventional public transport services. However, Derek Halden, director of Derek Halden consultancy who carried out a review for the Scottish Executive in 2006, outlines four sectors for DRT – premium value services, high value to agency services, high care needs, and best value public transport.

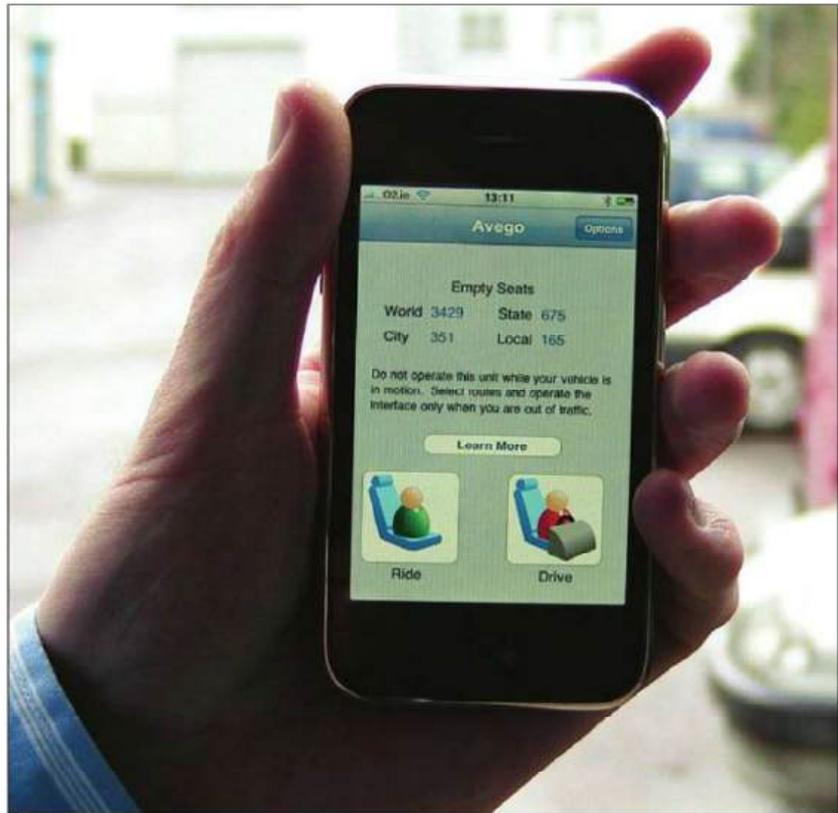
Demand responsive services are those that respond to the bookings for a service, and the service can plot a different route for each journey, dependent on where the demand is.

Halden says: "Wherever there is shared flexible transport, that's what I'd call DRT."

Of the four sectors that he outlines, it is the public transport one that is the smallest. "It only takes a very small change in [one of these other] markets to completely wipe out whatever change there is in this [public transport] market."

However, there are some companies who are now examining how technological progress may be able to be utilised in this sector. One concept, called Texxi, will seem familiar to anyone who recalls Stagecoach's Yellow Taxi-Bus service between Edinburgh and Fife, which was withdrawn in 2005, after being launched two years earlier. This service was described as "a high-frequency demand responsive transport operation that combines a fixed bus route with flexible pre-booked taxi pick-ups".

Texxi (an abbreviation of Transit Exchange



for the 21st – XXI - century) operates a system whereby users use SMS messaging to book their seat on a shared taxi with people travelling in the same direction as they are.

The system allows, at times of peak demand, for more people to get home from a bar, sporting event, concert, or to and from work.

The company's founder, Eric Masaba, says the thinking behind the idea dates back to 1993, but, in 2003, when working for a hedge fund in Connecticut looking at the impact of credit contagion, "I kept coming back to the idea of a group of people who are going in the same direction at the same time, but just don't know it".

"So, on that basis, I had a look at the total market for ridesharing, if that was on the basis that instead of paying £12 by yourself, you can pay £5 and share with three other people. So the driver gets £20, more for doing the same amount of work, but everybody pays less. I put it all together in 2003-04, started raising money in 2004 for the venture. When I looked into this,

it seemed like it's been the holy grail of transport research in a lot of countries."

Texxi was trialled in Liverpool from March to September 2006, and has been used in locations on the Isle of Wight since July 2008, with plans to take the system island-wide.

Masaba hopes the development will see franchises set up with taxi companies to take part in the scheme. He explains: "People text in where they are and where they want to go, and our system will see if anyone else is texting in at the same time, wanting to go from where they are to where they want to go, and our system groups the people, that's the basics of the system." People will receive a text back within 10-15 seconds, and Masaba said the usual wait time is about 5-10 minutes, where there is a well-trained team.

Masaba said that prices are determined by creating zoning maps of any city, with price for travel within each zone. "We said we wanted everybody to join in the consultation about what you think the rates are – we

would start them up arbitrarily and then we'd see where the market determines where they are."

Halden believes that technology makes the services viable, and can see "a huge gap in the market there for a shared taxi".

"In the past, if everybody had to book a trip, people don't get round to booking it. [But] say you turn up at a bus stop in Edinburgh, and it says next bus 15 minutes, you decide that's not good enough for me, I need to get to somewhere, at the minute, the only choice I have is a private taxi. Now, there's a huge gap in the market there for a shared taxi, dearer than a bus but cheaper than a single taxi. Vast numbers of people would use it, it involves sharing, efficient, low cost, and it's waiting to happen."

He sees that "something like Texxi will work, and will grow", and also foresees potential for another system, called Avego. This shared transport system "enables convenient carpooling for the iPhone generation".

Avego's iPhone application, launched late last year, has already been used by people in over 30 countries worldwide. Into this, drivers and passengers can input their journeys, and the company application will match the two, and allow for a payment from passenger to driver in a PayPal-style system.

Sean O'Sullivan, Avego's managing director, says that while the scheme is similar to carsharing or carpooling, "for a lot of people our lives these days are very ad hoc".

"Trying to overwrite ad hoc lifestyles onto

a carpooling system doesn't work, and it has been observed that cars provide freedom, and it's why cars are so attractive, that's what people want, the ability to be ad hoc.

"What we have to consider is the reason why public transport has not had more success is because it goes from somewhere you don't live to where you don't work at

Currently, transport people view demand responsive transport as plugging the gap in the fixed public transport network, but actually, it's the other way round

the wrong time, so we need more flexibility. We're hoping that this system will take that person who is car pooling, who has already made that decision, and it opens it up."

With the application already downloadable, O'Sullivan says that "the biggest challenge is a cultural adjustment issue", but said that the company is going to have to work in partnership to develop it further, and there are plans for a trial at University College Cork in Ireland.

O'Sullivan, who was the founder of internet map company MapInfo, adds: "The idea of the system requires a critical mass. That critical mass situation is to

have 1 per cent of the cars or more with this technology, and when you have that kind of penetration, you're going to have a critical mass. So it's like they're waiting for a bus, they wouldn't have to wait more than, say, about ten minutes. We're looking for that level." Another possibility is what O'Sullivan describes as the potential for "bus companies and other commercial companies where our technology can be incorporated in their commercial fleet."

Perhaps the most famous use of DRT as public transport currently is exemplified by airport shuttle buses, and John McCarthy, the president of the GO Airport Shuttle company – which included Lothian Buses' former Edinburgh Shuttle operation, which was closed on 18 April – says: "I think the use of the shuttle ride service will grow."

Looking to possible future applications alongside airports, he also highlights the need for scale. "You need a destination that has sufficient demand, a critical mass, [on which] to build."

Halden outlines what that future might be: "Currently, transport people view demand responsive transport as plugging the gap in the fixed public transport network, but actually, it's the other way round. Fixed public transport has to be plugging the gap in the demand responsive transport network, i.e. the places where there are just too many people going at the same time to make it efficient to have 20 minibuses going down the road – so you want a tram or a bus instead. I think that's the way we'll see things develop in the future."

Beyond the headlines

Scotland's pothole problem

The revelation, revealed on April 7, that half of the worst ten areas of Britain for car damage caused by potholes are in Scotland, and Ayrshire is named as Britain's pothole capital, will come as no surprise to some people.

The analysis of claims handled by insurer, Warranty Direct, also found that Renfrewshire was in third position, with Angus, including Dundee, fourth, Aberdeenshire, including Aberdeen, sixth and Lanarkshire, including Glasgow, ninth.

Midlothian – including Edinburgh – was in 12th place in the figures, which were compiled from claims made by Warranty Direct's 50,000 policyholders over the past eight years.

This follows a report earlier this year that Scotland's roads face a £2.5bn backlog in repairs to its crumbling road network, compared to a report by Audit Scotland, the public spending watchdog in 2004, which calculated

it would take £1.5bn to bring the country's non-trunk roads up to standard.

The £2.5bn figure comes from the Society of Chief Officers for Transportation in Scotland (SCOTS), which also found that nearly two-fifths of A, B and unclassified roads operated by councils caused concern, while just under 9 per cent – or 3,000 miles – were so bad they were classed as "Red", or requiring immediate repairs.

Jim Valentine, the vice-chairman of SCOTS, a body representing council roads' bosses, blamed decades of under investment for the state of the roads, especially in rural and suburban areas.

The long-term nature of this problem was acknowledged by Valentine, who said: "This is not a problem that has appeared overnight. Councils have always got difficult decisions to make and sometimes roads maintenance budgets have been an easy hit," while some believe the nation was now paying the price for failing to maintain thousands of miles of new roads and suburban streets laid during the house construction booms of the 1960s and 1970s.

Valentine's view that "you have got to concentrate on what you've got before you start on anything new", has been echoed by Derek Elder, the director for Scotland of

the Institution of Civil Engineers, who has said, "you can't reasonably invest in new infrastructure without having a regard to what's already there and really requires to be looked at". Neil Greig, director of policy and research for the Institute of Advanced Motorists' Motoring Trust, said: "There is very little official data on the problem, but minor rural roads tend to be in the worst condition. This report just highlights the huge backlog in road maintenance."

Perhaps more official data will soon be forthcoming, as it is in Audit Scotland's work programme for this year, to produce a follow-up report on road maintenance. Due for release in October this year, the report will look at the changes in the condition of Scotland's roads since the previous report and examine the extent to which councils have adopted asset management systems to manage their road networks and associated infrastructure. The last report concluded that greater priority needs to be given to tackling the backlog, and Philip Gomm, a spokesman for the Royal Automobile Club Foundation, argues that "failing to fix potholes is a false economy".

"If ignored, a damaged road surface very quickly gets to a point where it cannot be repaired and has to be completely replaced – at much greater expense."

Get home safely with taxi text

By Ross Findon

Friday, July 11, 2008

A NEW text service is to be launched in the coming weeks to help Islanders get home safely after a night out.

TEXXI, rolled out in connection with the Lucie Blackman Trust, will allow revellers to text an Isle of Wight Council licensed taxi from a pub or a club.

They will be sent a text message back to tell them when the taxi has arrived and is waiting for them.

TEXXI groups have been set up on social networking websites, such as Bebo, Myspace and Facebook, to allow people to meet up and share a cab to reduce costs.

Safety checks will be carried out and users will be able to report good or bad drivers and passengers.

• More on the TEXXI service online at <http://uk.texxi.com/pro/texxi.nsf/uk/evehow>



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Island Travel

Tweets from a list by IW County Press
Travel updates for the Isle of Wight

 **Southern Vectis** @SouthernVectis 24m
<GA> 07:45 There are currently no reports of delays, diversions, disruptions, incidents or other mayhem affecting your buses this morning.

 **Southern Vectis** @SouthernVectis 25m
<GA> 16/08/14 @ 07:45 We wish a very good morning to all of you travelling on your buses today. Enjoy the good weather & get out & about.

 dtm iow @dtmiow 21m

SIDEBAR: TEXXI

Title Here

(Approx. 255 Words)

By Anne Rawland Gabriel

Fleet routing is typically approached from a command center perspective. But one new application takes an approach that's a cross between Yahoo Groups and Craig's List.

Texxi aggregates individuals seeking a taxi rides to roughly the same destination. Via SMS text messaging and a back-end database, the system matches up passenger profiles and alerts users. Texxi system also allows drivers and passengers to secretly rate one another for more accurate future compatibility or to exclude deadbeats altogether.

Conceived while co-founder Eric Masaba was working for a hedge fund, Texxi is credit contagion theory modified to maximizing vehicle resources during spikes in demand.

"In Liverpool, as many as a million people come to the city center on weekends for entertainment," explains Masaba. With little public transport and steep penalties for drunken driving, revelers can stand in taxi lines for two hours. Many walk a dozen miles to get home. Fighting routinely breaks out, placing added burdens on police.

With Texxi, prospective passengers text message their destination postal code to the system's SMS number. The system aggregates passengers, placing priority on selecting companions from among "groups" that users have pre-defined. If no group members are present, Texxi matches other personal preferences.

When Texxi's ready, passengers receive the taxi driver's name and badge number as well as a pickup location. Similarly, drivers receive location and passenger details.

Although originally envisioned as a solution to a local dilemma, Masaba and his four co-founders next plan an Australia roll out. Subsequently, they plan to introduce Texxi throughout the industrialized world.

PIARC PRIZES 2007

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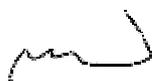
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The essay is submitted in relation to the following Prize(s): Road Safety

Title of essay: An Intelligent Journey to the Olympic Games, 2012: A Documentary

On behalf of all co-authors of this essay, I authorize the World Road Association-PIARC to publish -if it wishes to- all or part of the contents of the essay materials and I certify that the contents are free from any copyright.

Date and signature



15/04/06

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An Intelligent Journey to the Olympic Games, 2012: A Documentary

A. Dunford, J. Weekley, R. Tong and C. Harmer

TRL Limited

April 2006

Summary

There has been serious concern for many years that the road network is struggling to cope with rapidly increasing demand from road users, with significant detriment to the environment. In order to prevent damage to society and the economy, efforts have been made to develop solutions to this problem. Intelligent Transport Systems (ITS) show great potential in this arena.

We have chosen to illustrate the possible capabilities of ITS using a fictional television documentary, covering developments in transport since 2006, set on the day of the opening ceremony of the 2012 Olympics. The documentary follows three people, each using their preferred mode of transport to travel from their home to the Olympic Park in London. We discuss the intelligent transport systems applicable to private cars, public buses and coaches, trains and bicycles.

The documentary will show that, in private vehicles, there have been many developments mainly centred around car safety for the benefit of the occupants, and congestion reduction for the benefit of other road users. It examines, for example:

- Adaptive cruise control, which uses a forward-looking radar or laser to detect the relative speed and distance of the vehicle in front allowing the cruise controlled car to maintain a safe distance from the car in front without driver input;
- Fatigue awareness systems that detect tiredness in the driver of the vehicle, a major cause of road accidents, and alert him to take a break from driving;
- Congestion charging schemes to discourage unnecessary travel by individuals within areas that are particularly prone to high traffic volumes;
- Active traffic management systems, which allow the use of the full width of the road including the hard shoulder.

Active traffic management also has benefits for the public road transport sector. As well as this, the documentary discusses topics specifically affecting public transport such as:

- High occupancy vehicle lanes, promoting the use of multi-passenger vehicle (in fact both private and public) by allowing them to use dedicated running lanes on busy sections of the road network;
- Taxi sharing schemes, allowing taxis to take independent passengers from a central pick up point to their individual, but similar, destinations at peak periods. The passengers each pay a reduced fare but the driver collects more for the single journey;
- Intelligent bus communication systems that track the position of buses and inform passengers on board and prospective passengers waiting at stops of predicted journey times and allow more dynamic timetabling.

Finally, we will see that there is considerable potential for improvement to provision for the most sustainable forms of people movement such as cycling. These include:

- Integration with rail transport, allowing cyclists to cover long distances more easily by using dedicated on-train cycle carriages and improved changing facilities at stations as well as storage and bicycle repair and maintenance centres;
- Improvements to the general network of cycle paths including thorough maintenance programs for the existing network, and enhanced lane signage and demarkation.

We hope this documentary will demonstrate that ITS can play a part in making travelling safer, increasing the reliability of journeys and providing better information to transport users. Moreover, it can help to deliver economic, social and environmental benefits through reduced congestion and reduced journey times.

An Intelligent Journey to the Olympic Games, 2012: A Documentary

A. Dunford, J. Weekley, R. Tong and C. Harmer

TRL Limited

April 2006

Introduction

Traffic cannot be allowed to continue increasing at current rates. The road network will struggle to cope with increasing congestion and there are likely to be severe adverse implications for the environment, economy and society.

It has been suggested that there are several future scenarios, ranging from an ideal-world with no financial or spatial constraints, through to a complete lack of action of any kind. There are of course a myriad potential scenarios in between with influences such as government, markets, and sustainability all playing a major role [1].

There are some elements of all possible scenarios that will be more or less inevitable. Transport networks will become more congested and sustainable solutions for new infrastructure construction to handle increased burden will become more difficult. With limitations on new construction works and rapidly increasing demand there is only one solution, and that is to better use the existing infrastructure. One clear solution comes from Intelligent Transport Systems (ITS). By integrating new technologies into the transport network and the vehicles that use it, ITS is capable of achieving this goal with substantial economic, social and environmental benefits.

We have chosen to illustrate a few of the possibilities of ITS in the form of a television documentary set in the year 2012.

The documentary: London, July 2012

Earlier this year, the British Broadcasting Corporation commissioned a series documenting developments in various aspects of daily life over recent years.

This episode, covering developments in sustainable and intelligent transport systems, follows three different people on their trip to the Olympic Park during the 2012 summer Games in London. We will see how their travelling experience depends on their mode of transport, and seek to understand the reasons they have chosen each of their transport modes. Their experiences will demonstrate the appliance of various forms of ITS to everyday transport use.



Lord Peter Carr is an executive member of the board in charge of organising the Olympic Games.



Ms Susan Omnibus cannot afford to run a car, and she lives on the outskirts of a city where she works as a waitress. She will be working at the Olympics.



Dr James Rayleigh, a consultant paediatrician with a keen interest in the well being of the planet, has tickets for the opening ceremony.

Our day begins as we join Peter leaving his home in the suburbs of Manchester, four hours before the opening ceremony is due to begin. The first question to ask Peter is why he chooses to use his own luxury car to travel to London when it is by no means the quickest way to get there, and even though it uses new ‘green fuel’ technology, it is not the most environmentally friendly mode of transport. He says that he enjoys the feeling of freedom, and he likes being in control. Peter has been driving for over 40 years. He tells us that he recently passed the new refresher driving test, now mandatory every 5 years.

Refresher Driving Test

Every driver is sent a miniature recording device which they attach to the dashboard while they accumulate 2 hours of driving time. The device is fitted with a forward facing camera, and a driver facing camera, and it records the speed and acceleration of the car via Global Positioning System (GPS) as well as using motion sensors to detect erratic behaviour. Once the required driving time is reached, the examinee simply sends the box back to Driver and Vehicle Licensing Agency (DVLA) where the information is automatically assessed. Those people failing the basic criteria must complete a driver training course and a more formal driving test and risk losing their licence.

At the same time, Ms Omnibus leaves her home in Birmingham. She will be travelling to the ceremony by bus, a method of transport that she chooses because it is now so expensive to own and run a car. She starts her day by planning her trip using a website called www.everythingtransport.org which has information about all train, bus and coach companies in the UK, routes, times and prices.

She has chosen a coach company, based on the opinions of previous users posted on the website, to travel down to London. After booking her tickets online she leaves for the central bus station. We'll catch up with her later.

Back in Peter's car he is proud to point out many of the features of his top of the range saloon. Inside his car, Peter is king; it's easy to see why he feels so in control. His dash board is awash with instrument panels and lights. Peter explains that he feels as safe inside his car as he does inside his own home.

Car Safety and Intelligent Vehicles

In the early to mid 2000s intelligent car safety systems were undergoing rapid development. The majority of new cars incorporated a wide range of safety features (either as standard on luxury models, or as optional extras), designed to aid the driver in maintaining control of the vehicle.

These features include:

- anti-lock braking systems (ABS) which allow the driver to retain steering control during emergency braking
- electronic stability control (ESC) which reduces the potential of skidding on slippery surfaces or on sharp bends; sensors detect loss of traction on any of the wheels and transfer power to unaffected wheels which can maintain a grip on the road
- cruise control, which holds the vehicle at a constant speed, pre-determined by the driver.

Additionally, almost all new cars, regardless of cost, included passive safety systems such as airbags, pre-tensioned seat belts and a bodywork 'safety cell'.

Since 2006, vehicle safety systems have developed even further.

One such system is Adaptive Cruise Control (ACC). ACC involves a forward-looking radar or laser set-up behind the grill which detects the relative speed and distance (headway) of the vehicle in front. The car is slowed down when approaching the lead vehicle and accelerates back to the preset cruise speed once the way is clear. The benefit of this system over manual control is that excessive braking can be avoided. Excessive braking in busy traffic can cause a compression wave ("shockwave") to propagate backwards; braking spreads by the ripple effect causing traffic jams and stop-and-go traffic conditions which, for vehicles upstream, have no visible cause. Humans tend, naturally, to err on the side of safety whereas an ACC system can smooth out overreactions and merely get closer to the car in front so that the expected shockwave never occurs.

In 2004 it was shown, using computer simulations, that these 'shockwave traffic jams' (estimated to be 75% of all traffic jams) could be eliminated if as little as one vehicle in five was fitted with ACC.

By 2006 Adaptive Cruise Control was becoming standard on luxury vehicles. In the UK Mercedes-Benz had refined their ACC system to completely halt the car if necessary, a feature that wasn't present on early ACC systems. The 2006 Volkswagen Passat was the first to bring ACC to the mainstream market. Since 2006 ACC has developed to such an extent that it is now standard in all new vehicles.

A similar system to ACC has been developed to monitor a driver's lane discipline. A digital camera tracks the white lines on the road ahead and provides a visual or aural warning to the driver if they stray out of the lane. A combination of this technology and the further-refined ACC system means that luxury vehicles now come with capabilities for collision warning and hazard avoidance, lane keeping, speed limit control and cruise control for urban stop-and-go situations. All these systems can be turned off to allow the driver full manual control if required.

In 2012, research involves integrating anti-collision radar and road recognition video sensors with GPS technology and navigation maps; a constantly moving map of the road ahead is created and the system automatically engages the brake and accelerator when required. This also includes Intelligent Speed Adaptation (ISA) which uses the GPS technology in conjunction with speed limit information to automatically ensure the driver stays with the legal speed limit. [2] [3]

Before turning on the engine, he boots up the small console in the dash and programs in his details (a simple touch of his finger to a finger print reader) and then programs his intended journey. He explains that, through a pay as you drive pricing scheme, the computerized GPS device helps him reduce the cost of owning his car as well as giving him directions and optimizing his route as he travels.

Pay as you drive scheme

In the year 2008 a new pay as you drive scheme was developed by insurance companies to suit car insurance to each driver. Millions of drivers have been using this type of insurance since then.

The system is very simple and similar to pay as you go mobile phone technology, where drivers pay a fixed monthly fee plus costs based on the miles driven. A small Smart Box with its own GPS tracking system is installed into the car. The GPS technology monitors the driver's journeys, which allows real-time information to be relayed to a central computer. The driver's premiums are then calculated based on their usage and a monthly bill will be sent to the driver. The main benefit of this new insurance scheme is the built-in stolen car locator which is installed in the Smart Box so the car can be located if reported stolen. [4]

Meanwhile, Ms Omnibus, having arrived at the bus station, can see on a big information screen that her coach will be leaving on time and that the weather today will be overcast in London but there is not currently any reason to prevent the coach from arriving on time. Moreover, she was very pleased to see on another screen that the traffic on the motorway is not heavy and that there are no major road works on the way. Once on board, Susan could relax and rest because the on-board information system displays a map of the route and time until arrival in London Victoria station. Also, she knows that her journey is made easier by the active traffic management control and the high occupancy vehicle lanes in which the coach can travel that have been made available for the duration of the Olympic events to cope with increased volumes of traffic.

Active Traffic Management (ATM) and High Occupancy Vehicle (HOV) lanes

The first ATM section of road was developed between junctions 3A and 7 of the M42 near Birmingham in the mid 2000s. Inductive loop traffic sensors are installed in the road surface at frequent intervals to monitor traffic flow and speed and a large number of CCTV cameras are also used. In the event of an incident or congestion the traffic is managed from a central control room using a variety of techniques:

- Variable message signs (VMS), installed on gantries over the motorway, display temporary speed restrictions (usually compulsory); reduced speed restrictions create smoother traffic flow and prevent flow breakdown (stop-and-go traffic). VMS can also be used to display other information to motorists, e.g. warnings of upcoming slow-moving or stationary traffic.
- Hard Shoulder Running: in severe congestion the hard shoulder can be opened as an extra running lane to provide additional space for the flow of traffic. The status of the hard shoulder is displayed at regular intervals on the overhead gantries – a red cross indicates that the hard shoulder is not open to normal traffic. Emergency refuge areas are built at frequent (approx 500m) intervals to be used in the event of a breakdown during hard shoulder running. The hard shoulder will only be opened as a running lane to vehicles between junctions, and only opened once the control centre has checked that the lane is clear of obstacles.
- Ramp-metering: part-time traffic signals can be installed at entry slip roads to control the flow of traffic onto the motorway at congested times.

Since the initial trialling of ATM, many more badly congested sections of the road network have been installed with some or all of the ATM features.



A similar initiative to ATM is the development of HOV lanes in the UK which have been used in the USA since the 1960s, with the majority of schemes deemed successful. Before 2006 the only HOV lanes in the UK were on two sections of A-class road (Leeds and Bristol). However potential sites for introducing HOV lanes to the motorway and strategic network had already been identified by the Highways Agency and in 2006 the plans for the first carshare lane on the motorway was announced for the junction of the M606 and the M62. This HOV lane was opened the following year, quickly followed in 2008 by another on the stretch of the M1 between junctions 7 and 10. This latter scheme was implemented as part of the planned widening of that section of motorway.

New HOV schemes must either add an extra lane to a motorway or use an existing lane. Widening of large stretches of the motorway network was thought to be impractical in spatial, financial and environmental terms. Use of existing lanes was also thought to be unfeasible due to a combination of the reduction in road capacity and adverse public perception. Therefore, since the opening of the M1 HOV lane, new schemes have mostly been implemented only on short sections of the strategic network at particularly congested motorway junctions. Evaluation of these schemes shows that the majority have been successful with journey times in peak hours reduced by up to 10 minutes. [5]

The opening ceremony starts in just under two hours and Dr James Rayleigh is planning his journey from his home in Reading. His journey plan will use just two forms of transport. He uses his bicycle to get around as much as he can, and mass transit systems when he has to cover longer distances; he tells us of his concern over pollution. Knowing that the frequent trains from Reading to London Paddington take just 30 minutes, he leaves his home on his bicycle in no rush.

James reaches Reading rail station in plenty of time to get onto the next train leaving for London. He can take his bike on the train with him so he can use it when he reaches his destination.

Bike and Rail

In 2006, the combination of bike and rail was identified as offering a realistic and viable alternative for many journeys because 60% of the UK population lived within a 15 minute cycle ride of a railway station. However, its potential was not being realised.

There were several easily identifiable reasons why Bike and Rail was not being used to its full potential. Firstly, not all train operating companies (TOCs) provided for carriage of cycles in peak and off-peak periods. Secondly, less than 50% of stations had dedicated cycle parking facilities. Finally, access to and around most stations was difficult.

Since 2006, significant improvements have been made to help facilitate an increase in the number of Bike and Rail journeys.

- Improved cycle access to stations has been an important part of a national scheme to improve the network of cycle paths and cycle lanes. This scheme has included providing clear signage to and from stations from local cycle routes, continuous cycle lanes and tracks and clear and consistent road markings. Stations have now become cycle friendly ensuring that cyclists have easy access to platforms and other parts of the station. Dropped kerbs and automatic doors have improved direct access to stations and wheeling channels and ramps on steps have made it easier for cyclists to move their bicycles around.
- All stations now have dedicated cycle parking facilities which are protected from the weather and are sufficiently secure in terms of lighting, view of station staff and CCTV coverage. Parking facilities are found in convenient locations, for example on platforms or near to entrances and exits. Facilities vary from undercover cycle stands to cycle lockers which provide a very high level of security and room to store extra equipment such as a helmet or pannier.



- All TOCs now provide facilities on all trains allowing cycles to be carried at both peak and non-peak travelling times. There are two main types used by the operators. Firstly, on trains where there is a need to provide for a large number of bicycles the new 'Cycle Carriages' are included. These carriages are designated for cyclists and their bicycles and provide space for up to 50 cyclists. There is also space in this carriage to carry tandems and bikes with Rann trailers. Trains which require less provision for cyclists have space within carriages for bicycles. This space is either designated solely for bicycles or is flexible space which can accommodate passengers, luggage or prams.
- Clear logos on the exterior of the train indicate the designated 'Cycle Carriage' or the carriages which include bicycle storage helping the Bike and Rail users to quickly find their boarding point. It is not necessary for cyclists to reserve carriage space for their cycles. However, reservations can be made and are encouraged for longer journeys. Provision must now also be made for cyclists and bicycles to be transported when engineering work is being undertaken.
- At busy mainline stations, cycle centres have been introduced inside the station. These centres offer a variety of services including secure cycle parking, cycle hire, showering and changing facilities, cycle repairs and sales of bicycles and spares. [6] [7]

We join Peter again two and a half hours into his journey. He has made good progress, but has not yet had a break even though it is recommended that drivers rest every two hours.

Driver fatigue

Driver fatigue is a major cause of road accidents, accounting for up to 20% of serious accidents on motorways and monotonous roads in Great Britain. Episodes where a driver just nods off for a second or two before 'snapping awake' (micro-sleeps) are very dangerous while driving, especially when driving at highway speeds. The National Sleep Foundation found that Sleepiness slows reaction time, decreases awareness and impairs judgment. Sleepy drivers are more tense and impatient, and may even be speeding up when they should really be stopping to rest. [8] [9] [10]

Minutes later, while we are filming, a beeping noise starts to emanate from the dashboard. Peter explains that he is becoming tired, and a short alarm had been activated alerting him to improve his vigilance. He pulls into the next service station for a short break and a coffee.

Fatigue warning systems

There are several fatigue warning systems readily available, which provide various levels of warnings according to the driver's reduced awareness and in some systems to the estimated level of traffic risk.

Typical system components may include:

- **Hypovigilance Diagnosis Module (HDM):** detects and diagnoses driver hypovigilance (reduced awareness) by using data from on-board driver monitoring sensors (i.e. eyelid and steering grip sensor) and driver's behavioural data (i.e. lane tracking sensor, gas/brake and steering position sensors). The system will be matched to each driver's characteristics.

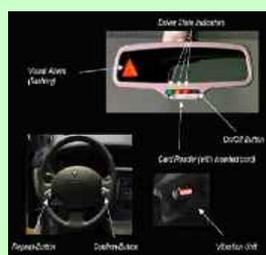


Eye gaze detection



Eyelid sensor

- **Traffic Risk Estimation (TRE) module:** assesses the risk of the traffic situation by integrating all information coming from sensors in the car (i.e. vehicle sensors, radar, GPS, cameras). The system then identifies risks and generates, from each risk event, a warning level (i.e. Frontal Collision Warning, Lane Warning, Curve Warning, Environment Condition Warning).
- **Driver Warning System (DWS):** Warns the driver about his reduced vigilance according to the traffic situation, and consults him on the appropriate course of action. The system uses acoustic, visual and tactile means (using a vibration device). The system provides different levels of warnings according to the risk level estimation and the drivers' estimated vigilance status.



Driver Warning System (DWS) Visual warnings

- **Hierarchical Manager (HM):** Co-ordinates all the above subsystems by processing HDM (vigilance level), TRE (traffic risk index) and information input (driver profile). The HM will also be responsible for error management and shut down procedure. [11] [12]

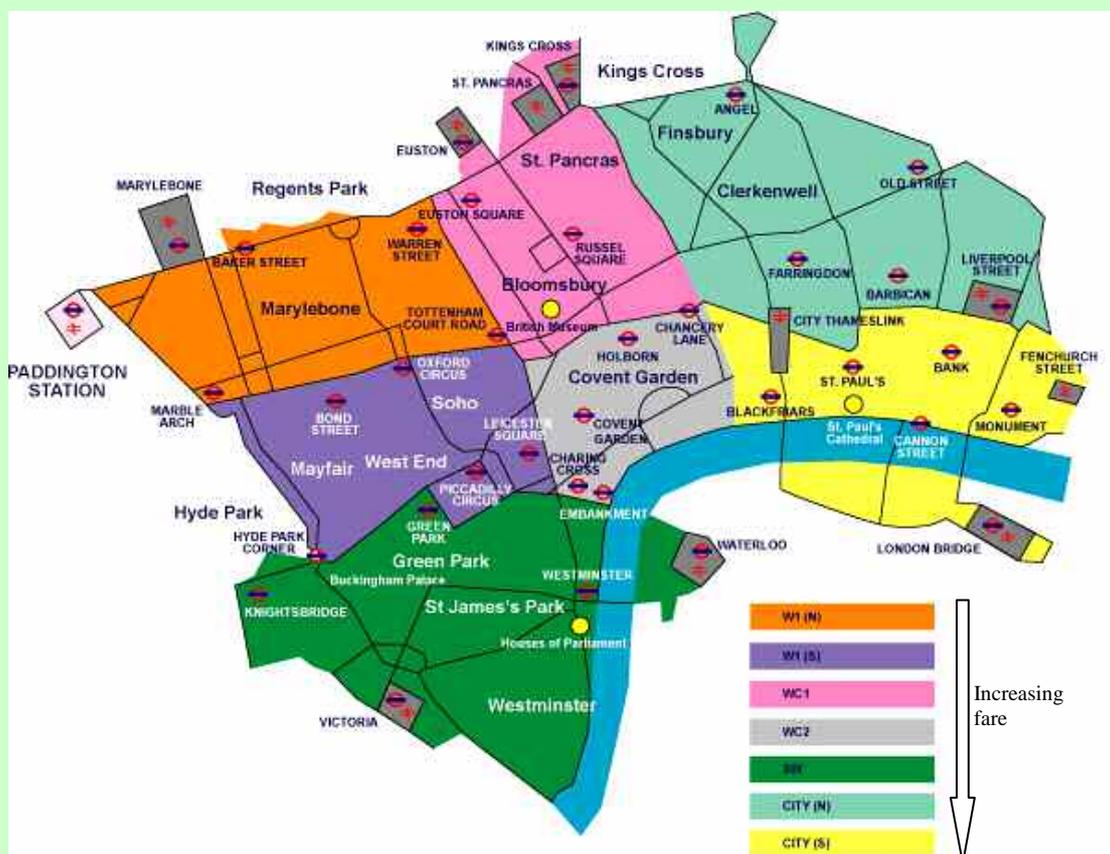
On arriving at Victoria main station, Ms Omnibus, despite never having travelled to London before does not worry about how she will find the correct bus that will take her to the stadium. Half an hour before she was due to arrive in London, she received a message on her mobile which provided her with the information she needed such as the exact time the bus should be at the station and whether there are any delays. When arriving at the bus stop, Susan noticed on the information system that her

bus will be delayed for 10 minutes. She cannot be late to work so she considers using a taxi to get to the stadium. Although she could not justify the cost of a taxi by herself, in most mainline stations now there is always the option to take part in a taxi sharing scheme.

Taxi sharing

The British public spent around £3 billion on taxis and public hire vehicles in 2003, for some 650 million journeys not including business customers and foreign visitors. Taxis have always played a very vital role in the transport world but as resources started to become more limited and road congestion increased in the early 2000s there was pressure to make their services more flexible. Under the provisions of the Transport Act 1985, it became possible to set up taxi-sharing schemes. The principle behind these schemes, in simple terms, is that a driver who carries three separately-paying passengers can make more than the metered fare for an exclusive hiring - while each passenger pays less. The driver wins, and the customer wins. However, for many years few shared taxi schemes were set up. Studies suggested that the reasons for the failure of preliminary schemes have been largely due to poor publicity and marketing as well as the limitations of small scale pilot schemes not fully demonstrating their potential to a critical customer base who initially did not consider taxis to be too expensive, nor in sufficiently short supply.

One of the first successful schemes was at Paddington railway station in London, which began with the introduction of Heathrow Express in 1998. Here it was found that taxi sharing works successfully as a way of maximising throughput of passengers during times when passenger demands are high and the supply of taxis cannot be increased to match this for typical taxi occupancies. The shared taxi conveys a group of up to 5 or 6 passengers (depending on the licensed capacity of the vehicle) to any one of a number of destination zones (an example of which is shown in the figure below) as defined by trained marshals with 'knowledge' of street locations. Each passenger pays a flat rate fare for that zone at set down. [13] [14] [15] [16]

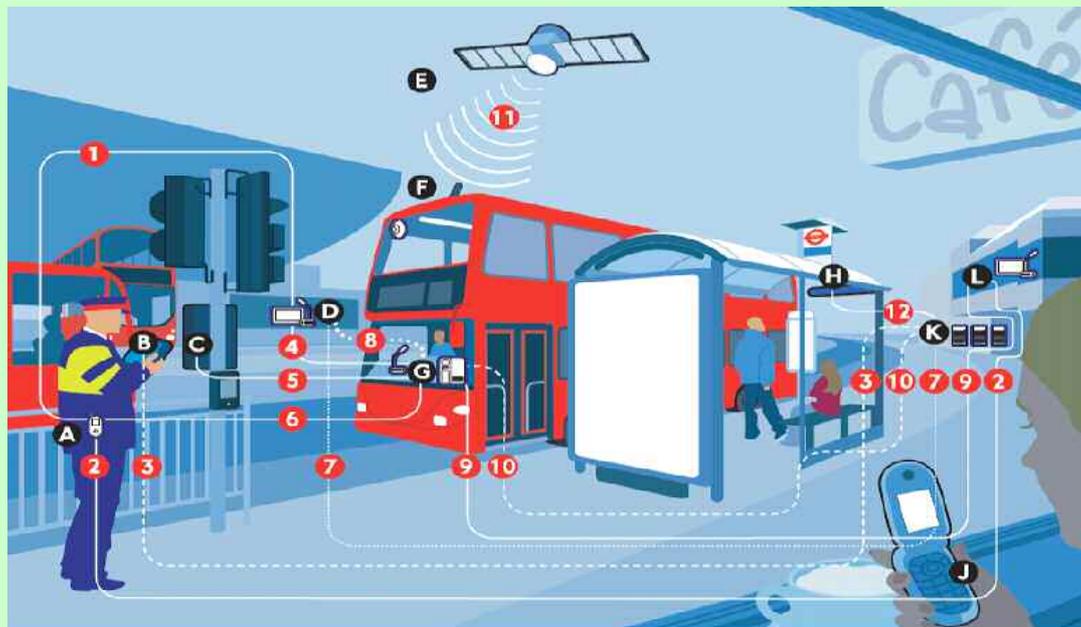


However, the queue for the taxis was so long that she decides to wait for the bus to arrive, which it does as predicted. Once on the bus, Susan knows exactly when she will need to disembark because the on-board information screen displays a map and indicates when each and every stop will be. There is also an audible warning stating the name of the station a few seconds before the bus stops.

Real-time bus information

A few systems (such as Star Trak in Leicester, or iBus in London) which provide real time information for public transport passengers were developed in the early 2000s.

Each of London Buses' fleet are installed with radios, an on-board computer with General Packet Radio Service (GPRS) and Wireless Area Local Network (WLAN) capability, information display signs and voice announcement systems. These systems report the bus location and other relevant information to a Central Computer System at a rate of about once every 30 seconds. This information is then processed and relayed to the garage on workstation screens allowing operators to see exactly where buses are at any time. The Central Computer System will interpret information it receives from a bus and use various algorithms to predict when the bus will reach the remaining bus stops along its route. Accurate predictions of arrival times are sent via Integrated Services Digital Network (ISDN) or GPRS to countdown signs on board - informing the passengers about every stop of the way. The iBus system is illustrated below. [17] [18]



Key

A	On street controller – hand portable radio	1 2 6	MPT1327 (standard for analogue trunked)
B	On street controller – hand held computer	5 10	General Packet Radio Service (GPRS)
C	Traffic light priority control	4	MPT1327 (standard for analogue trunked radio system)
D	Bus garage	8	Two-way wireless radio
E	Satellite	7	Virtual Private Network (VPN)
F	Bus Global Positioning System (GPS) receiver	8	Wireless Local Area Network (WLAN): Close Circuit TV (CCTV) and traffic enforcement camera download. Data provisioning up and download
G	London Bus with: On board computer, voice and data radio, nextstop sign and audio announcement, Close Circuit TV (CCTV), bus priority, camera/traffic enforcement	7	MPT1327 (standard for analogue trunked radio system) – Code Red
H			

Dr Rayleigh has arrived at Paddington station with time to spare so he begins his leisurely cycle to the stadium. Although he knows his way to work in London quite well, he is pleased to see that the designated cycle routes to the stadium are well sign posted and clearly separated from other road traffic.

Cycling

In 1996, a National Cycling Strategy was established with the aim of quadrupling the number of cycling trips by 2012. By 2006, achievements were mixed with some local authorities successfully promoting cycling in their areas. However, across England as a whole, cycling levels had not been significantly improved. Major design weaknesses in early cycle paths lead to under utilisation. For example, priority being given to traffic entering from the sides causing the cyclists to stop at regular intervals or placing barriers across the path which can be restrictive and dangerous.

Lack of progress led the government to increase funding for local initiatives. Between 2006 and 2010 the Government provided further funding to local authorities to help develop and maintain facilities for cyclists.

The new government funding initiative outlined guidelines for the construction and maintenance of cycle paths. The guidelines included various concepts such as simply ensuring the surface is smooth, well drained and well maintained and ensuring good side and overhead clearance by maintaining vegetation. More substantial concepts such as coloured cycle lanes, advanced stop lines for cyclists and cycle sensitive traffic lights have also been implemented. [19]



Peter arrives on the outskirts of the city. He is not in any particular hurry because he has reserved parking at the stadium. The traffic is quite light in any case, because during the Olympics, the normal congestion charge (now in place nationally) has been increased for the enlarged London zone for private vehicles to discourage unnecessary journeys in the capital.

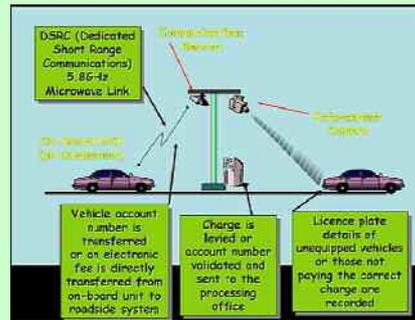
Congestion charging

Several electronic technologies are used or have been considered for charging. Some of these are briefly reviewed below.

Dedicated short-range communications (DSRC) systems

These systems require road-side equipment, typically mounted on a gantry, and an electronic tag mounted or attached to passing vehicles. These vehicle tags can be:

- Read-only, allowing the gantry to read an identification code registered to the vehicle or driver;
- Read-write, allowing data to be received from the roadside to be stored on the tag or smart-card based system. This read-write system has potential to be programmed to manage a number of different applications.

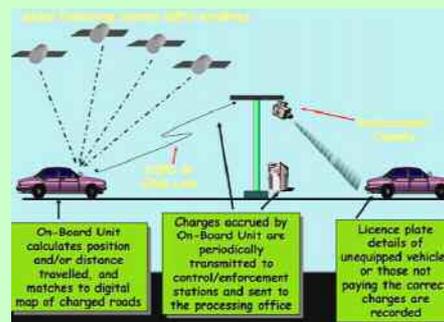


Schematic for a DSRC transponder-based charging system.

Wide-area communications-based systems

Wide-area systems use GPS and a two-way communications link based upon either the Global System for Mobile Communications (GSM) or DSRC. The in-vehicle unit (IVU) contains a GPS receiver and a simple computer to store a record of the locations of all charging points. At a charging cordon, the system will deduct the appropriate charge from the credit-units stored in its account.

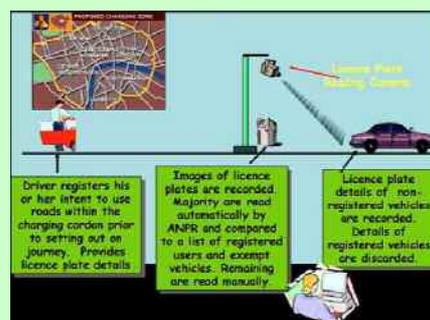
Periodic communication between the IVU and gantry stations allow accrued charges to be uploaded and changes in charging point locations to be downloaded.



Schematic for a mobile positioning-based road charging system

Video-based licence-plate recognition systems

Video-based systems rely on the accurate reading of vehicles' licence plates as the primary means of identifying, charging and enforcing vehicles in a congestion charging scheme. Automatic number plate recognition (ANPR) systems process the video images taken by a camera at the roadside or on a gantry, locate the number plate in the image and convert this into the appropriate alpha/numeric characters, without any human intervention. The significant advantage of such an approach is that it removes the need for any in-vehicle equipment to be installed. Moreover, it solves the "occasional user" problem, whereby those who rarely use a particular charging scheme do not have the necessary in-vehicle equipment to pay the charges automatically. [20]



Video based congestion charging scheme

We meet with Peter, James and Susan just before the ceremony begins. All have arrived on time and they all seem to be satisfied with the journey they have made. Although the cost of car ownership has increased dramatically in recent years, Peter says he likes the comfort of his car, and the control it gives him. Recent changes in the transport system for private vehicles have made his route less congested, his journey less traumatic and his chosen mode more sustainable than it was just 6 years ago. Susan has been relieved with the ease with which she could plan her journey, and the simplicity that the integrated transport systems has afforded. She is also pleased that she has been able to travel with a minimum of expense. James has also used transport integration successfully, but is particularly happy that his journey has been safe, but more importantly has had a minimal environmental impact.

We leave the three subjects to enjoy the opening ceremony, and wish them luck for their journey home!

The End...

This fictional documentary, set in the near future, has demonstrated a possible scenario based on examples of current research. The ideas above represent only a very small proportion of work that is being undertaken to ensure that transport systems and infrastructure will be able to cope with the inevitable demands placed upon it. Use of ITS and more environmentally concerned modes of transport will make a fully sustainable, un-congested and easy to use transport system of the distant future a more achievable goal.

Whilst many of the technologies presented are based on well developed concepts, considerable investment and commitment will be required from central bodies, industry and the public to implement these trial technologies on a more widespread national and international basis to deliver economic, social and environmental benefits for all.

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