

smart travel  
smart revenues



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Change brings opportunities – and nowhere more so than in the complex world of transport. Operators and authorities alike are looking for better, faster, cheaper ways of providing linked services to customers – whether at local, national or regional level. In some countries, such as Finland, intelligent, or smart, transport services are showing the way forward to a truly integrated transportation system that meets customer needs.

Customers, as ever, are at the heart of future success. Those operators who understand what their customers need and can offer, as examples, easy ticketing, seamless transfer between modes of transport and services that run on time at the right price, will emerge the winners.

## INTRODUCTION

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The next ten years will see much change in the transport market, as the world economy slowly moves out of recession. Some of that change is already happening as previously experimental technologies become mainstream.

The latest innovations in intelligent transport systems (ITS) – smart travel – have opened the gates to interoperability and are taking down local and national borders. Many ambitious innovation programmes have begun across cities, nations and even continents.

Some transport organisations realise that smart travel is a way of becoming a global leader but may be tempted to invest recklessly in new, sophisticated but limited pilots and schemes. Others are reluctant to change when balancing the required amount of effort with the uncertainty of the outcome.

Our aim is to share our understanding of the marketplace and show how you can use smart techniques and best practices to overcome both the risks of innovation and the recession. Doing so will unlock benefits that will help your organisation become one of the strong players of the next decade.

This white paper has three parts:

- First, we describe the current transport market, showing in detail the origins of its complexity across very different geographical and social areas. Understanding the implications of the political, legal, economic, technological and social drivers affecting the industry is essential to avoid either gambling on inappropriate non-mainstream innovation or simply being left behind in a world that seems to spin ever faster.
- Second, we analyse the key factors involved in moving to smart travel systems, including costs, financing and revenue generation. You need a clear and reliable vision of your future to identify deliverable revenue streams and also adapt to the cultural changes required for survival.
- Finally, we look at some proven smart solutions that are already available to transform your transport business.

We are the European leader in transport consultancy and have strong partnership relationships with more than 90 per cent of the main transport organisations in Europe. As both a member of the ERTICO strategy board and technical and business adviser for the European ITS standard, we have an unrivalled understanding of future developments in transport.

## PRESSURE FROM ABOVE

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If you operate in transport, you'll know how European, national or even local politics are influencing changes in your business. Unfortunately, there's no common vision driving these changes forward, turning the transport marketplace into a confusion of contradictory measures that make it impossible to please everyone.

At a European level, there's a strong push towards transport interoperability and big plans are in place to make the navigation between cities a lot easier. New rail routes now ignore borders and are run by trains from multiple operators – for example, the new TGV Est line which is run alternatively by both SNCF and Deutsche Bahn. It has also become common to see operators bid for franchises in neighbouring countries – Dutch or French operators regularly bid for the UK franchises and SNCF/Eurostar have expressed interest in expanding their services to non-London destinations.

But even as the EU pushes these initiatives forward, it cannot agree on the ticketing standards that need to be adopted to allow true passenger access and use of the European transport network.

Consider the smartcard and mobile standards currently in use. Paris may be only two hours away by train from London but Oyster does not work with Navigo and there are suggestions that everyone should use the UK-based Integrated Smartcard Transport Organisation (ITSO) standard.

With a short time to go before the 2012 Olympic Games in London and the expected influx of French and other visitors to the capital, it's up to the schemes' owners to find a solution. This becomes all the more problematic when you consider that flying between London and Paris is often cheaper than the train and that neither of the two airports you go through allows you to use any of these three ticketing schemes for the flight.

Any solution will need to accommodate the inherent differences between a pay-as-you-go British sterling-based scheme and a season ticket euros-based scheme. It's a striking contrast with the mobile phone marketplace, where the consumer can make calls from anywhere within Europe and is charged for their roaming accordingly.

At a national level, pressure takes different forms. The development of ITSO smartcard schemes, which seem to have become key to winning new franchises in the rail industry in the UK, usually involve a good £20 million worth of additional investment.

Since the return on investment on such developments can take many years and the UK government has cut down funding since the beginning of the recession, local transport operators are now struggling with investment hurdles when required to provide new compliant electronic ticket machines and card readers in their vehicles. Even if the benefits of aligning to such schemes are guaranteed, the effort required to comply is often too large.

Reducing the carbon footprint is no longer a simple award-winning opportunity for transport operators – it makes financial sense. Reduction in carbon equals reduction in cost base – we have direct experience of this, where our own carbon footprint programme is delivering both environmental and cost benefits ahead of schedule.

Targets to reduce carbon emissions by 80 per cent by 2050 put huge pressure on transport operators. Given that public transport is responsible for one third of the emissions from land-based transport and private vehicles for the remaining two thirds, the pressure to lower carbon output equals the pressure to shift from private to public means of transport.

Congestion charging aims to encourage people to use public transport more but it's proved unpopular with locals – in Manchester, the population simply voted to reject it. Where authorities enforce congestion charging, it is grudgingly accepted but adds to the complexity of the public transport operators' work.

If they cannot deliver promised improvements to the quality of the public services this adds to the negative view of modal shift. This is particularly acute when operators, whose capacity is already stretched, can't accommodate the increase in peak-time travellers by adding new routes or services without failing to meet the green objectives that justified the congestion charging in the first place.

Local priorities can conflict with national policy. Some rural areas near to large towns try to stop interoperability since it would only make it easier for noisy urban folks to invade their peaceful land at the weekend. When asked, a country representative close to Paris Ile de France answered: "Do you really think I will be re-elected by the locals if I make it easier for the Parisians to come spend their weekends in our villages?"

So different forces at different levels are driving the market in different directions – and taking a step towards innovation now seems to involve so many unwanted consequences that a wait-and-see attitude is easy to adopt.

But for those who are willing to invest in a sound approach the prizes will be considerable.

## CHANGING THE INFRASTRUCTURE

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New technologies and the use of low-cost offshore IT development has led customers people to expect better-quality transport services at lower cost; even as the recession has hit the market hard. These factors imply that current infrastructures are no longer sustainable.

The impact of the recession has had several effects. Patronage of public transport is variable as unemployment hits demand for both commuter services and flights but other public transport areas are growing slightly as people cannot afford to use their cars. Governments across Europe have cut national budgets and funding streams for transport, since they have used central funds to shore up the banking sector.

At every level, reducing operating costs has become an obsession for transport operators and while small local players try their best not to reduce headcounts (the owner is often the driver), large organisations have been taking drastic measures for their business to survive.

For example, since it took control of BAA in June 2006, Ferrovial has brought about a huge amount of change including a major drive to reduce their IT costs by more than £100 million over five years. Such changes, often led by upgrades in technology, also involve changes in a company's own culture and way of working.

Another example of squeezes on finance is in the UK, where, despite the constant growth of the rail industry, the government reduced the grant for infrastructure work for the 2009-2014 period from £29.1 billion to £26.7 billion. Here again changes to the infrastructure would seem to offer the solution to the triple problem of handling more passengers with less money while introducing politically desirable innovations. .

Despite the urgent need for change, not everyone is convinced that intelligent transport services – smart services – are the answer. The basic problem is that, though the technology may be smart, the way it's used is often the opposite. With smartcards, for example, hesitation regarding the future of the interoperable standards scares away investors, who usually lack the internal skills to understand the extent and the boundaries of that investment.

Currently, even in the UK, the homeland of ITSO, connecting to an ITSO host operator or operating system appears more like adding spaghetti to the bowl, while the prospect of having to undergo certifications and re-certifications many times before the scheme go live is not very tempting.

Above all, central governments, which used to grant generous funding to encourage such initiatives, now ask operators to bear the full cost of the project. Unless the industry can address the issues surrounding the costs of mass deployment, new ways of tempting car drivers to become passengers on public transport and stimulating organic growth with existing passengers, then this bleak view will become the norm.

Similarly, in the growing mobile phone market, the slow penetration of near field communications (NFC) phone handsets is hindering innovations that could benefit the intelligent transport market. The manufacturers had been waiting to see if a killer application emerged to justify pushing the expensive NFC technology. The success of the iPhone has changed their attitude and they recognise they need new features to combat this app-filled competitor. NFC could provide an effective solution to ease information and ticketing issues for the traveller, including parking, airport or train station navigation – and management from the operators' perspective – but it will take years before this technology can replace existing systems.

Existing infrastructure remains old and expensive to run and while some organisations already undergo massive IT change programmes and follow the government advice to spend the budget fast, in order to re-inject funds as quickly as possible into the market, some others are understandably reluctant to commit themselves to investing limited budget in new innovative solutions whose benefits remain unclear.

These two attitudes are common across transport. One of the best examples concerns the use of paper tickets. There is a clear lack of a common standard for replacing the old expensive print and post fulfilment method. Some retailers prefer to stay with the old process, either absorbing the continuing cost of delivery or charging the additional cost to the passenger. Other organisations in the rail or the aviation sector have invested in self-developed solutions such as print-at-home, ticket-on-departure and SMS/MMS ticketing. This confusion of ticket types forces the final customer continuously to adapt and learn new travel patterns and places new demands on the validation devices in use for each operator.

## WORKING TOGETHER

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The high level vision of the future of transport is that of a harmonious, seamlessly integrated, reliable and efficient system – but working together still remains an issue.

The complex political and economic environment that surrounds transport unfortunately involves clear divergences of ambition. Whereas public transport authorities aim to demonstrate the efficiency, reliability and simplicity of their networks by investing in new interoperable solutions, local transport operators with few retailing capabilities evidently lack the motivation to invest in new hardware that may reduce their own revenues by allowing competitors with larger retailing facilities to sell tickets for their own routes and claim a percentage of it. And when the ambitions of one threaten the survival of another, tensions inevitably appear, making progress difficult and hindering the potential benefits of smart services.

Unfortunately this is not the only area where working together falls down. In some European countries, multimodality is an unknown word and travelling from one address to another within the same country involves the customer in accessing at least three websites, printing three maps, buying three different tickets on the basis of three different terms and conditions and generating three banking transactions for a total amount of less than €10.

Contrast this with Finland, where the National Journey Planner (our product, Navici) is the second most valued Finnish internet brand, behind Google, and covers all transport modes, including bus, train, car, walking and cycling.

## THE SMART WAY

In transport, the word smart has typically related to the development of smartcard schemes. But since autumn 2008 and the beginning of the recession, smart travel has finally come to mean a great deal more in the industry in general.

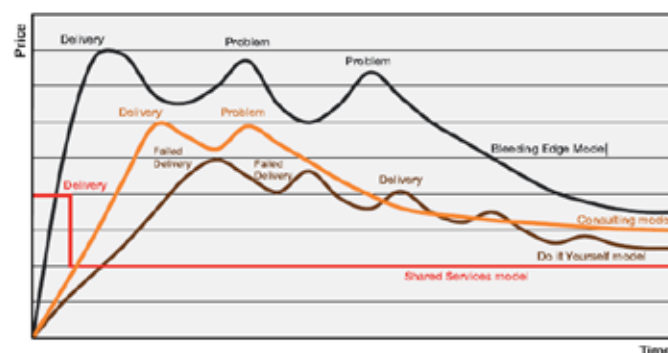
The assumption was that smartcard schemes would generate a fast increase of yield and revenue. But experience taught us all that setting up a scheme of, say, half-a-million cards would take a first full year and that realising the commercial benefits of the scheme would certainly take another two, not to mention the time needed for customers to adapt to the smartcard culture.

As the equipment lead times for full schemes have extended (pilots can be turned around very quickly but remain just that), the transport players are facing delayed benefits and short term cost issues. So smart solutions have turned out not to be so smart after all. We need smart systems and smart ways to install them that can reduce lead times and set up the correct infrastructure needed for future investments – which will both increase yield and generate revenues.

## SMART COSTS

Infrastructure in the transport industry is a prime target in the race for operators to reduce costs. Current infrastructure costs a lot to maintain, gives little room to innovation and struggles to keep up with the constant growth and new opportunities of the transport area. Further, maintaining the required quality of data in the face of the continuous increase in both volume and data sources is an expensive challenge for both transport operators and authorities. Investing in a brand new modern infrastructure may look attractive but it's neither a permanent nor the most cost effective solution.

The smart way of controlling infrastructure costs lies in the very competitiveness of the market. In the EU, the dream infrastructure that will allow you to both save cost and reinvest the money in business generating opportunities is probably already out there, and could be available to you as a shared service. It's an important change of culture for organisations – choosing not to own or control all parts of their back office or infrastructure – but it's still the best possible choice for saving costs:



Using shared services relieves you from the effort of sustaining a local dedicated specialist team and from the worry of ensuring data quality control and backup facilities. You also benefit from an expert maintenance team with experience of similar past and present contracts and priced at an outsourced rate for both day and night shifts. And your own local staff are now free to tackle more interesting and valuable tasks. Shared services are a smart way to achieve most of the infrastructure cost reduction needs and their flexibility opens the way to innovative value for money developments in the future.

Another smart way to reduce costs is to maximise the efficiency of your logistic operations. A structured analysis of the management of your main operations and of smart logistics products available on the market could lead to your identifying substantial benefits providing relevant savings with a ROI of less than one year payback time. Smaller players who are not able just yet to bring about major changes in infrastructure could find this a more attractive approach.

The best example of these kinds of smart cost saving with short ROI is more efficient management of fuel use. Reducing fuel consumption makes sense at a time of constantly rising energy prices coupled with the threat of more and more eco taxes on fleet operators. Smart logistics can help you to both avoid an increase of on-going costs around energy emission and reduce the overall fuel costs.

Very recently, one of our clients, a large European rail cargo operator, reduced its annual fuel consumption by seven per cent by using our smart metering system. Apart from an immediate reduction in the cost base, the associated carbon emission reduction contributes to further savings in avoiding future carbon footprint penalties.

Other examples include very specific fleet monitoring and survey (such as wheel temperatures or GPS positioning) to anticipate failures and breakdowns and reduce both delays (and associated service penalty costs) and maintenance costs. For large transport groups spread across multiple countries, a single global asset management solution will reduce recurring licensing fees for IT. As these solutions tackle smaller issues, they can be affordable with a very limited budget and can generate benefits in a timely manner.

For public transport, there's a smart way to reduce the overall continuing costs if you invest early in smartcard schemes. By adding business intelligence to the passenger information recorded at smartcard gates, you can get a better understanding of passenger patterns and improve the general efficiency of services by adapting them precisely to customer needs. But going this route does require a live smartcard scheme with sufficient tap-on, tap-off facilities.

## SMART FUNDING

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Under current market conditions, cost reduction will drive investment, so transport players are desperate to find external funding to support their investments. Major European players usually have a broad understanding of European, national and local funding opportunities but submitting a request for funding still requires extensive legal knowledge and experience to be successful.

The list of areas where external funding (usually in the form of fund matching) is potentially available is very long. It includes:

- Location-based services
- The greening of transportation
- Promoting equality of opportunity and social inclusion
- Co-ordinated interaction with other modes, interchange operations, modal shift
- Data collection and sharing and exchange of data and information; other information services,
- Vehicle priority systems ticketing
- Smart cards
- Co-operative vehicle highways systems
- Better safety systems and protection of vulnerable road users

Funding is available because central governments recognise that stimulating transport can produce an associated stimulus to the economy or underpin economic renewal. But there's a lot of competition for funds as a result of the focus on interoperability in European cities – and the demands from new EU member states for updating their infrastructure.

Political lobbying is also key to achieving successful outcomes to proposals. The budgets are set in advance and dedicated to certain themes, so it takes time to persuade the decision makers that the objectives sought are so important that specific budget lines should be established, or that the initiative fits within one of their existing or forthcoming themes. And for the same reason, winning the first tranche of money is usually the hardest.

National or international bodies seem to get comfortable with people they know. This has been illustrated in the UK by Bristol and Bath. Bristol was fortunate to gain a foothold on EU funding quite early on and has been engaged in projects of one type or another now for many years. Meanwhile, their neighbour Bath looked on from the sidelines and failed to become engaged either with the Commission or with any projects. So no quick wins – but achieving success normally leads to long term funding opportunities.

These are the basics of how smart funding works. Making a funding proposal can be quite daunting for people new to the process and it's often better to engage experienced specialist consultants to manage it for you. But, if you are successful, the rewards are more than just the funding – especially for projects with international backing. That level of approval can unlock political support at a national level, you can gain valuable insights into how others operate in different parts of Europe and it can help develop staff capabilities. Any contacts you make may also lead to further opportunities in the future.

## OUR JOURNEY - AND OUR ACHIEVEMENT

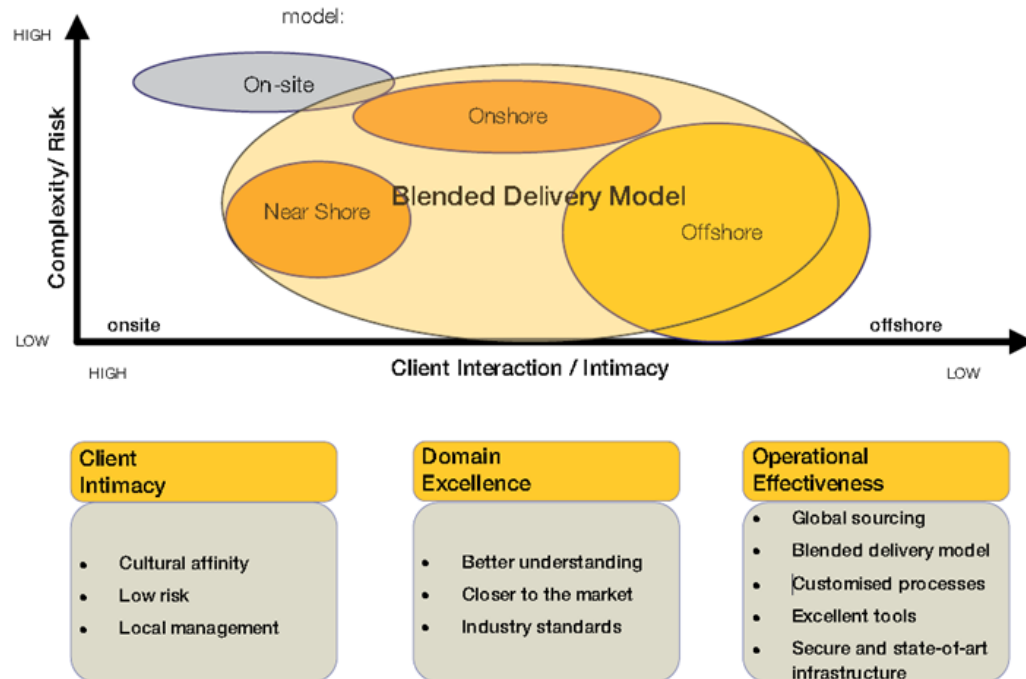
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While Europe faces difficult times with a struggling economy, most governments made it clear that, where there is budget, the goal is to invest to counter the effects of the recession. The hope is to motivate the launch of large programmes, generate sales and provide work for the whole transport industry during the few coming years. It is essential that expenditure is undertaken with smart to reap big benefits.

As IT delivery services based in India or China seem to have become necessary to survive in such a competitive sector as transport, some may question the wisdom of a major investment given the lack of both cultural and business experience of the staff working on the project or the risks generated by using such staff on critical parts of the business. Add to this the feeling of loss of local or in house technical expertise and of control over critical components of the systems.

When investment demands outsourced services and reason dictates local expertise, the smart solution for an inexpensive but reliable IT delivery is the use of a blended service delivery model using on-shore, near-shore and off-shore staff in a proportion set to mitigate risks.

The following diagram shows in detail how we would set up such a model:



As smart management of your costs will help you reduce your operating costs and the smart use of multi scale funding will provide the budget to invest in new programmes, you need smart blended delivery services to ensure an efficient, future proof and inexpensive delivery of services.

## SMART REVENUES

To make money in the future in transport you need a smart business approach with the right supporting technologies. As smart investments make it possible for operators and authorities to migrate towards a world of smart solutions, this will lead to many opportunities to generate revenue.

## PODUCTS

Here are just some examples of the possible range of smart products that are or will become available:

- Opportunistic travel offers for shoulder and off peak services – to help manage overloaded peak capacity and increase overall throughput of passengers
- Specific season products attached to specific services – people will choose these rather than generic products.
- New pay-on-account models – to allow freedom of travel and convenience.
- Zonal interoperable products – the product of the future.
- Five-days-a-week products – tailored for both workers and students.
- Green offset products offering discounts on road and congestion pricing, such as one-day free urban car travel for one month public transport use – to help promote green policies

## MEDIA

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New technology-based retail channels will attract the growing IT-friendly segment of the population.

Mobile ticketing, print-at-home and near field communications can all meet consumers' ticketing needs. The choice of 2D bar coded ticket types by SNCF for TGV reflects this. As the popularity of these products grows alongside traditional paper tickets, it is likely that the future will be multi-media, multi-channel. The aviation sector is where these technologies are growing the fastest, online check-in opportunities offering quick and efficient cost savings and helping boost revenues.

## PAYMENT

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Smart products will also provide significant benefits in the payment area.

- Bringing together payments for short, low cost journeys – as the development of electronic micropayments is becoming less of an issue, the wave and pay model is likely to leapfrog stored value to provide a lowered cost of transacting the fares.
- Attractive user-friendly ticket vending machines (TVMs), linked in with online ticket purchase and allowing customers to pick up their ticket on departure, will reduce cash handling problems. Just as banks are cutting down or even eliminating cash handling through major automatic teller machine (ATM) networks, transport retailers could replace their own ticketing offices by future proof smart-enabled TVMs.

## YIELD MANAGEMENT

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At its simplest, yield management aims to maximise revenues by creating different prices for journeys, determined by a host of factors such as availability of places, timing of the request and relationship with the customer.

This may extend into the loyalty area where the yield has personal dimensions other than just a straight calculation of supply/demand and throughput. For example, yield managed deals may lock in frequent travellers with irregular travel patterns, as in the case of Eurotunnel's frequent passenger carnet system.

Passenger travel information data gathered on smart media will help ensure the most efficient fleet use and reduce overall asset management costs

## REVENUE PROTECTION

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Last but not least is the potential profit to be gained from an improved revenue protection system.

If you have a smart infrastructure, you can analyse travel patterns to detect

- Dumbbell fraud – a passenger with two low-cost products (the classic dumbbell) at either end of a longer journey becomes visible and timings confirm the fraud.
- Patterns of usage that don't conform to footfall numbers – more passengers than the revenues record as having travelled – present obvious areas to target revenue protection activities. Targeted revenue protection activities can reveal astonishingly high levels of fraud (up to 20 per cent for revenue protection black spots).

Being able to see where issues may be occurring can have a large impact on revenue protection staff efficiency. Smart media also allow staff to perform 100 per cent revenue protection checks accurately and swiftly without passenger inconvenience. Smart handheld devices for train inspectors will allow ticket verification and penalty fares collection.

No matter the opportunity, being in touch with the passenger base remains at the heart of this thinking. Retailers know that this is the secret to increasing revenues and market share and if you are to succeed, you need to know what is going to be a winner with the customer.

## SMART TRAVEL SOLUTIONS

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There's already a proven range of smart travel solutions that meet all the customer's needs, from the very moment they research their travel plans and book their ticket to the moment they arrive at their destination. Available as shared services through our blended delivery model, these solutions provide smart revenues at lowered cost of sales – the smart way for any player wishing to become one of the main actors on the transportation scene.

## MULTIMODAL JOURNEY PLANNER

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Online customers usually want to buy their tickets from the same website where they research and plan their journey, so there is a clear advantage in becoming the number one journey planner for a particular country. In fact, the advantage is so great that for some retailers all their ticket sales will be online.

But journey planners can often be frustrating sites to navigate and use. Typical faults include: poor search engines, poor navigation within sites, lack of personalisation and lack of information in terms the customer understands.

While an effective journey planner will resolve these issues, it's other factors – smart factors – that will make the difference.

The first of them is multimodality.

There is nothing more discouraging for the consumer than to have to handle multiple journey planners to cover all the steps of a single trip. Every new website has a brand new page layout and a unique new process to understand, customers can quickly become confused and tempted to abandon their operations or to look for a more user-friendly website. When the frustration of the now systematic hassle of having to create an account and register an e-mail address in order to receive free spam on every new site is added, a single console for the passenger is essential.

A website with a familiar and comprehensive user interface will be much more attractive. That is what YTV in Finland understood when it decided, a few years ago, to install our Navici journey planning engine. The Navici journey planner not only covers the usual rail, bus and trams networks but also walking and cycling. Since the journey planner can be used for multiple purposes, customers have become so familiar with it that it's now the second most valued internet brand in Finland, just behind Google.

The second differentiator for a journey planner is real-time updating of travel status.

Making sure that the site the customer uses to plan his journey is also the one he uses to monitor it is the key. But updating information automatically from as many sources as there are operators in the area can offer quite a challenge – this is where a smart journey planner makes the difference.

Many planners today are beginning to use real time feeds to recognise “impossible itineraries” but even these suffer from the rules inherent within them. The decision to declare the itinerary as impossible is based on standard rules for interchanges irrespective of the geography of the interchange and the age/fitness of the passenger.

It would be smarter to warn a passenger where interchanges are possible but difficult, as well as those that are really impossible, allowing them to choose the right type of ticket. An advanced purchase, yield-managed, fixed service ticket will not go down well if the passenger gets to an earlier train which they cannot take without a penalty.

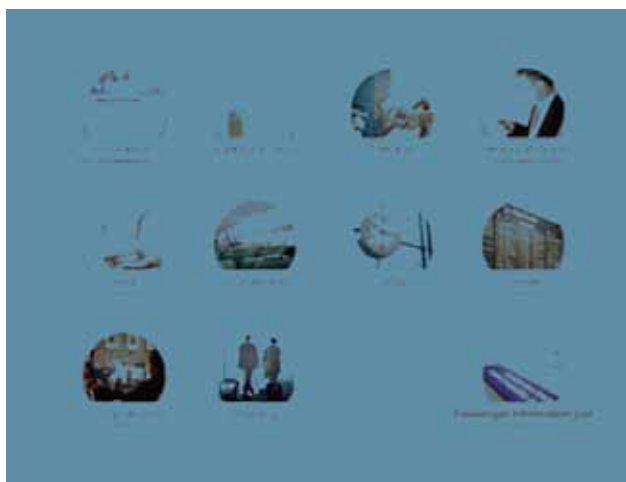
## TRAVEL ASSISTANCE

The best and most reliable way to inform passengers of delays and changes and to guide them through their trip is to make these services available on their own mobile phones. As a personal travel folder, a mobile phone has the potential to hold boarding passes, baggage tracking information and payment data, making travel truly paperless and location independent. Mobile phones have become smart. By using them on a smart way, you can save money, earn money and give value to your customers

Mobiles can also contain all kind of locally based information about departure times, news, car rental and so on. The future possibility exists to use mobiles to store payment cards and biometric information, adding to passenger travel validation security. Research carried out by Cambridge University in 2009 showed that such use of the mobile phone could save the travel industry more than £300 million a year.

Travel companies want to deliver service benefits to passengers at little added cost. But the main drivers for large-scale investments in mobility technology are likely to be access to new revenue streams or incremental improvements in operational efficiencies, such as reductions in passenger processing costs or trip delays.

We developed the Travel Assist solution to show how mobile communication can provide significant value in the travel business. Providing a range of services to passengers, operations control and crew, the Travel Assist offers mobile travel service from booking to check-in.



Although Travel Assist is meant for travellers with a mobile device, its functions can also work with simple smart card support. With a booking process managed by a service based web-application, which can be connected to any existing booking system, Travel Assist adapts to the needs of both travellers and travel organisations.

## FRONT OFFICE TICKET MANAGEMENT - SMART CARD SERVICES

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Once the customer has worked out their itinerary and travel agenda, using smart journey planning and/or smart travel assistance, it all comes down to managing the payment and/or ticket. Smart card services are the answer. Although at the beginning the smart card was merely seen as a reusable eco-friendly and paper-saving form of ticket, the scope of its services has been constantly expanding into other business areas. For those who do not wish just to reproduce a paper ticket on a chip embedded in plastic, new opportunities are available.

Whether it carries a currency value, tokens or even travel rights, the introduction of smart card is already potentially responsible for lower long term costs in infrastructure (reusable media), reduction of the carbon footprint, fewer station staff, reduction of fraud.

Yet when comparing these changes to the massive initial investment required for the understanding, design, development and installation of a scheme, coupled with the complexity of both the technology and required partnership relations, it looks as though it's only good to have if you have the money.

But the benefits of a smart scheme (albeit starting with smart cards) go well beyond these first advantages. We have identified many individual components that not only support a live scheme but also supplement it in a way that generates new business opportunities. A smart infrastructure minimises the need for further investment as new devices and business models come along.

Providing the smart card itself, which is a base component for a scheme, can be easily done as part of a shared service, in order to lower issuance and maintenance costs. Many of the cards schemes that we serve are already multi-application, gaining the maximum benefit from the issue of the card and providing a single, convenient device for the consumer to use. As there are few choices in terms of technology and safety is not critical but is cheap, outsourced shared services prevail. Services here go beyond the card encryption, since they cover the full process of registration of new customers and the maintenance and replacement of cards.

Next comes the customer/card management system (CMS). Usually mandatory, this piece of software is not just a large database of clients. You need the right business intelligence to support the CMS base role, seeking to understand the end user and use the flexibility of a smartcard scheme to both secure it and prompt its use in public transport services. It is both your tool for a smart management of your front-of-house and delivery service and your intelligence to monitor and record passengers' behaviour and habits, so as to generate targeted commercial offers with maximum impact

Third is the range of kiosks and ticket vending machines that will ease the fulfilment of electronic tickets on smart media. Smart investment here usually takes into consideration the number of TVM per station and balances the investment in hardware with the savings on station staff. It's usually better to connect TVM to a web interface that opens opportunities to retail tickets on departure and presents a navigation similar to the one used ahead of the ticket collection, during the booking or journey planning stage.

Last but not least are the ticket validators. Smart ticket media, if cost effective, require investment for checking and validating by the train inspectors. Unfortunately, current PDA-based ticket retailing devices carried by train staff don't allow mobile ticket validation. Visual checking is impossible when the ticket is electronic and, though gatelines can be adapted to read smartcards, you would need to upgrade the existing infrastructure.

As connecting a new smartcard validator module to the already overweight device carried by the train inspectors does not appear as a sustainable solution, the smart way would advise investment in a lightweight multitask PDA or the newer hybrid mobile phone/PDA devices.

These will add a valuable commercial dimension to the train inspector while reducing significantly all kinds of frauds, accidental or deliberate. There again the dimension of the mobile ticket issuer/smart card validator should be extended and the recent improvement in telecoms can ensure permanent connections to remote servers to relay any kind of real time information, including health and safety related.

These are the four essential front end components needed to run a smartcard scheme, as designed and provided by us across Europe.

Moving to the smart infrastructure is no longer about investing in a risky innovative market for vague hopes of benefits, it's about choosing flexible, modular, mature and inexpensive technology components, either as shared services or through available off-the-shelf products, to reduce overall infrastructure costs and open the doors to the future – all for a minimum price

## BACK OFFICES

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Any smart scheme infrastructure relies on an efficient back office. Its role is twofold – it must hold the hardware needed to enable secure smart card transactions and it must manage the complex reimbursement of fares versus travelled itinerary when more than one operator is running on the scheme. Current trends will expand the back office of the future to handle consumer billing and payment handling.

For long considered as the backbone of the ticketing industry, the back office used to require industry and local fare expertise. Now, it also requires extensive smart card expertise, something you usually only find among banks and smart experts.

We have noticed that this new development has progressively led to a change of culture in the scheme owner's strategy. Those who for long have held dear to owning every single piece of their back office would now rather opt for participating in a larger externally hosted programme and using an outsourced shared service.

And while the scheme owners and partners get rid of the maintenance, support and backup cost of their systems, they do like to retain control and expertise of the business and fare rules that govern them.

The back office component is critical to smart travel and, with the current drive for interoperability, the complexity and requirements behind the reimbursement system will increase dramatically for every new region connected. This further strengthens the argument in favour of a flexible and future proof infrastructure such a shared service can provide

## CONCLUSION

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As the market slowly overcomes a global recession, technologies that were yesterday experimental have finally become mature.

Smart travel, which, until very recently, was seen as a nice-to-have, now offers a real competitive advantage and will inevitably become the standard for the future. The players who still see a world of paper tickets and fixed base, bespoke infrastructure will be overtaken as large consortia emerge, sharing inexpensive outsourced shared services so that they can focus on extending their lines of business to new commercial opportunities neighbouring transport.

Customer understanding will still be at the heart of business, and smart analysis of passenger volumes and passenger expectations will help secure yield and reach both environmental and social objectives.

The smart way to smart travel will definitely lead the way to smart benefits and unprecedented growth. Those who adopt it first are more likely to lead the transport market of the future.

Logica is a business and technology service company, employing 39,000 people. It provides business consulting, systems integration and outsourcing to clients around the world, including many of Europe's largest businesses.

Logica creates value for clients by successfully integrating people, business and technology. It is committed to long term collaboration, applying insight to create innovative answers to clients' business needs.

Logica is listed on both the London Stock Exchange and Euronext (Amsterdam) (LSE: LOG; Euronext: LOG).

More information is available at [www.logica.com](http://www.logica.com)

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