Transport: Where Are We Going?
And How Are We Going to Get There?

Digital transformation is a journey that the transport sector needs to take, but what are the priorities that must be addressed to ensure it arrives at the right destination?

shaping tomorrow with you

On the Move

The transport sector has a unique dilemma in the Digital Age: how do you get your customers from A to B, for the right price and service level while utilizing a capital-intensive, physical infrastructure?

Digital disruption, as the contributors to this Insight Guide stress, will not come from building new roads, railways or aircraft, but only from transforming the way transport providers engage and interact with their customers; how they set up and organize their internal processes to not only be more efficient, but also create a travel experience that's fit for the digital era.

It's a huge challenge, and one that needs to be addressed quickly. Fujitsu is working with all kinds of transport operators to do just that. Our contributors are experienced across all modes of travel. Their views are both timely and practical. And they're all on the move...

They are:

Gary Watts
Chief Executive Officer, ACT, a Fujitsu Company

Claus Gabriel
Principal Consultant, Transport Sector, Germany

Elisabeth Maragrit
Consulting Manager, Spain

Javier Gil
Programme Director, Spain

Russell Goodenough
Client Managing Director, Transport Sector, UK

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Ticket to Ride, Drive, Fly... Anyway You Want

"Future transport experiences will be far more personalized, uniform and consistent."

Gary Watts

Ticket to Ride, Drive, Fly... Anyway You Want

Gary Watts travels from Fujitsu Global HQ, Tokyo to Munich.

"Please forgive the pun but, technology is driving change in the transport sector," says Gary Watts. "It's really that simple." Gary is sitting on the Tokyo Monorail heading for Haneda Airport. He has a Lufthansa flight booked to get him to Munich. The 12 hour, five-minute flight time is, of course, augmented by the time it takes to get to the airport (the Monorail, luckily, is very efficient), but he had to take the Tokyo subway from Shinagawa station to Hamamatsucho, to get the Monorail. Then there's the time he needed to allow for bag-drop (he's checked-in online), and that extra time which frequent flyers allow to reduce the stress caused by unexpected delays.

Gary is a very seasoned traveler. In fact, his life is dominated by travel, specifically, the ticketing that links all modes of transport together. "It's often taken for granted," he says, "most of us are used to a world of multiple tickets, and multiple interconnections where different tickets are needed to make one single journey. But that's changing – big time."

Our experience as passengers is the key to why technology is changing transport.

"Passengers want a seamless experience that's effortless and transparent," says Gary. "And they don't want to have to stop, start, queue, interact with ticketing agents or machines, or even get checked by an inspector. They just want to flow from one node to another and get to their destination without thinking about tickets!"

The modern passenger wants to get where they're going, confident that they'll be charged the best price in a secure manner. "Future transport experiences will be far more personalized, uniform and consistent," says Gary.

And that's what Gary's company, ACT, now owned by Fujitsu, is all about. "We're working with transport companies and authorities to make the most of the two main drivers of change in the sector," he says. "First, passengers want a more responsive service that's of high quality, is as reliable as possible, and is just better at every stage of the journey. Second, operators, private and public, want to be more efficient so they can deliver what the passengers want at an affordable cost." Electronic ticketing is at the heart of that effort. "The long era of little bits of paper being checked as people get on and off different modes of

transport, is most definitely over," states Gary emphatically as he taps his phone to a screen at Haneda Airport, and a baggage tag prints almost immediately and is delivered into his hands in seconds.

"As you can see, we're almost there – but not quite. There's still a lot of work to do to ensure that we get ahead of passenger needs and expectations," says Gary, as he winds the tag around the handle of his suitcase, and then rolls it to an operative who scans it and places it on a conveyor.

His phone pings: his flight's gate has been allocated. The airport Wi-Fi has already engaged, it tells him the gate number and how long it will take him to get there. Gary wonders if he'll take the train from Munich airport or take a cab. He can't quite decide. "What I want, in the end, is to experience that seamless journey and have choices all along the way. So, I can decide exactly how I want to get from A to B, and be confident that it's all booked."

"We have the technology already," Gary says, "we're used to tap and go when we pay for coffee... so why not do that on buses and trains and cabs

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and planes? Like I said, it's almost there, but right now there's a critical gap between what's actually happening and what passengers and operators need to make happen."

"We have the technology on phones, we have real time planning, we have open traffic data, we have social customer services... and we see a real drive for providing those kinds of real-time, reactive, informative digital platforms that put passengers at the center of everything we do. Whoever can do that brilliantly, will be successful in the modern transport industry. It's as simple as that."

So, what's stopping the sector getting ahead of the curve? "It's a fragmented industry," says Gary. "You have a mix of public companies, recently de-regulated ones, and private operators. There are franchise models and state-run ones existing side by side. Also, the infrastructure itself is, necessarily, in need of huge investment. So, the mix of private and public will always be important. And there are, of course, legacy issues. Building new roads is always hard, and repairing existing ones is expensive. The same is true of railways and airports. But that's not the passenger's fault: they just want to travel for work and pleasure."

Gary sees the need to travel as a fundamental human desire. "The point, I believe, and it's a fundamental one, is that leading transport operators are now thinking and acting like retailers," says Gary. "Through a brand promise focus, operators will put the needs of passengers at the heart of what they do, and that will generate brand loyalty. To do that operators need to get to know their passengers. Digital technology enables you to do that very quickly and comprehensively. Big Data meets transport. And, of course, what's important is the way that operators use that data to make the customer experience better."
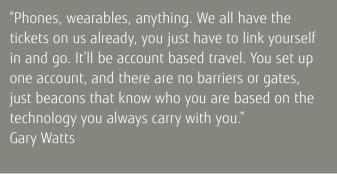
So, can a passenger really become loyal to a transport brand? "Sure, they can" says Gary. "If you use digital intelligence you can achieve that. You gather data and use it as actionable intelligence. You must act on what you know about people. That's the point of data."

Think about the introduction of smart cards on metro systems and buses. Passengers took to them very quickly. The Oyster card in London swiftly became a fixture.

Each transaction on a specific transport card yielded data. And each use of a personal payment card yielded even more data. "The data gets broader and deeper at the same time as you make buying a 'ticket' easier – I put tickets in quotes, because actual paper tickets are getting less and less common. The data enables operators to understand behaviors – both in terms of travel and

"Phones, wearables, anything. We all have the tickets on us already, you just have to link yourself in and go. It'll be account based travel. You set up one account, and there are no barriers or gates, just beacons that know who you are based on the technology you always carry with you."
Gary Watts

how journeys intersect with cities, commerce, work, sports – everything. That then helps operators encourage those who could travel for less at different times of day to do so. Which then helps regulate the system and ease congestion. Which has a knock-on effect for the efficiency of cities and all modes of transport. You can see the point. It's a cascade of benefits."

No tickets, just digital links. "That's right. Phones, wearables, anything. We all have the tickets on us already, you just have to link yourself in and go. It'll be account based travel. You set up one account, and there are no barriers or gates, just

beacons that know who you are based on the technology you always carry with you. In a way, it'll be like banking; almost completely digital."

But if transport is a necessity, why should operators bother? "In a world where the state is always looking to get more value for taxpayers' money, then franchises will go to those operators who deliver the best service and can do so more efficiently for less subsidy. That's why I believe they need to think like retailers."

Gary is clear about the threats to established operators: "There are five disruptive forces; the rise

of personalized travel, the need to know each customer – note I didn't say 'passenger'; the account based system that delivers the best price for a whole journey; automation of vehicles will make a difference too; and private innovation that will come from small start-ups."

"Reward passengers, treat them like consumers, be a retailer: It's a journey they have to take," concludes Gary. And Gary takes his seat on his flight to Munich.

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Every Journey Should Start on Your Sofa!

"You can't work in silos. There's no point having hundreds of different projects that aren't connected. You have to get the business side in with the technical people and the operations specialists to have new ideas."

Claus Gabriel

Every Journey Should Start on Your Sofa!

Claus Gabriel travels from Frankfurt to Munich.

"Or anywhere you happen to be," says Claus Gabriel as he takes his pre-booked seat on the Deutsche Bahn train to Munich's Central Station. Claus has been working with a range of both private and public railway operators. "In my experience transport operator CEOs are afraid that their company could get lost in the new world of digital travel portals," says Claus as the train eases out of the station.

How could transport operators get lost, when they are fundamental to transport infrastructure? It sounds like a very far-fetched statement. "It isn't, if you think about it," says Claus. "When someone is sitting on their sofa thinking about a city-break in Berlin, or visiting their family in Stuttgart maybe, they search for the quickest and cheapest way to get from where they are to where they want to go. And a host of portals compete to tell them how to

do it. That could be by plane or bus or, maybe, train. It's rare that a customer goes straight to a specific transport brand's website, they look at the options first, while they're still on their sofas."

The point is the journey. "Yes, you don't think of the airline and then the destination, you think of the destination and then, maybe, the airline or the train company. That's how operators lose out to

> "You don't think of the airline and then the destination, you think of the destination and then, maybe, the airline or the train company. That's how operators lose out to their competitors."
> Claus Gabriel

their competitors. Especially across key demographics," says Claus. "Think of someone who needs to get somewhere for business, they have different priorities, for instance, a student who has the time to take a bus, which is much cheaper."

So how does a transport operator address these issues? The key to doing that is, of course, digital technology. "Right now, in most countries, buying a railway ticket is confusing. In some places – for instance in the UK, it's so complicated that it makes headlines in the news." Claus is right. Not long ago, stories appeared about a football fan who wanted to travel from Newcastle to Oxford to see a match. To save £56 he had to buy 56 different tickets![1]

And it's not just the train ticket that counts. "A journey doesn't start at one station and end at another. You want to get to the station, then stay somewhere the other end, and get to the hotel and

find a place to eat. What companies, like Deutsche Bahn in Germany, are starting to do is bring all that together into one travel experience that goes way beyond the booking itself. It's a complete journey, not just a portion of a journey."

That's why the portals like Kayak, TripAdvisor, Expedia and many others are becoming so ubiquitous. The value resides in the whole journey. "Adding hotel options, restaurant recommendations, entertainment possibilities… and even money-off vouchers, is vital now. And it's also a source of revenue."

The data generated from every booking is also important. "That's why you have to be active in the digital realm to get both customer engagement and data. That then helps the operator do more and do it for less. It aids efficiency as well as helps them regulate the service across all their lines. It also helps them, more importantly, to focus on the immediate needs of the customer as they are traveling. So, if there are delays they can be informed about alternative ways to get to their destination. The point is to help the customer get to where they want to be, not just fulfil the specific booking. To do both that, and regulate their service, they need to know more about who is traveling and why they're traveling. That means

they can put on more trains – or less – and encourage people to shift their travel patterns to suit the better management of an entire system. All because you have the right data," says Claus.

He shows his phone to a train guard making their way through the carriages. Everything Claus needs to make the journey is stored in the operator's app. "It's my 'travel buddy'" says Claus. "It has disrupted how they engage with customers. That sounds strange, but it's true. They realized that the only way to be more visible in the online world, and get closer to the customer, was to have an app that offered a simple, but extensive, range of information and facilities."

They disrupted themselves? "That's what every transport operator must do. Do it before someone else does. I know my colleague, Russell Goodenough from London, believes that there's going to be a major new player in the sector soon that will change everything. You need to get disrupting now, before someone else does. This app is the start of that."

"We have many railways operators in Germany and most of them have a range of digital projects on the go. They're all looking to invest in digital to take them into the future as well as cope with the current marketplace," explains Claus. "It's about the

[1] BBC News Online: February 2nd 2017

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passenger and it's about efficiency. They're looking at more intelligent trains, offering more entertainment wirelessly on the train, improving communication between trains, and to do that they're working with start-ups to develop new ideas."

The approach is one that Claus recommends for all transport operators. But he cautions against departmentalization, "You can't work in silos. There's no point having hundreds of different projects that aren't connected. You have to get the business side in with the technical people and the operations specialists to have new ideas."

Claus is keen on another idea: pre-order your dinner and collect it at the station! "It's happening. You know you'll get back home late, so why not have a fresh box waiting for you at the station before you get on the train – and you booked it via your train operator's app!

That's service."

You Are the Ticket. You Are the Journey!

"...Working with a partner that can bring knowledge from the transport sector together with expertise in all areas of technology, gets you ready for the future quicker."

Javier Gil

You Are the Ticket. You Are the Journey!

Elisabeth Margarit and Javier Gil meet up in Barcelona to join a Skype call with Munich.

Barcelona's Gran Via de les Corts Catalanes, the second longest street in Catalonia, is home to Fujitsu's local office, and it's where Elisabeth Margarit and Javier Gil are due to join a conference call with their colleagues who are meeting in Munich. Both have relatively short and simple journeys into the city, but they highlight the issues that all transport operators need to address: ease, value and quality.

Sitting in a café in the shadow of the monumental Banco Vitalicio building, Elisabeth and Javier have some time to kill before the conference room they've booked is available. Javier pays for two coffees through contactless payment. As he sits down, he says, "You see, I don't even think about the way I do that – pay by phone just by waving it. Near Field Communications technology (NFC) seems to me to be a natural part of the environment now. That's what transport operators should do at every stage of the journey, no matter how complex it is, make moving from one system to another as simple as paying for a coffee."

"In a way, you should be the ticket," Javier says.

"You are the journey," Elisabeth adds.

They like the way those phrases work together. Javier continues, "Let's say you have to go to the airport. If you are the ticket – the cards you've registered with your account are available through your wearable devices or your phone – then you can get information about the best way to get from where you are to the airport that takes into account what's happening in real time on the roads, the rails and buses. So, you can be routed to the quickest way for the same price and get there on time."

"This is being trialled in Barcelona on the Metro." says Elisabeth. "We all want to avoid queues, barriers and constantly having to search for paper tickets in our pockets or our bags, and we want to just travel and know that we'll be charged the best price. Easy."

"It's all about digital transformation in a wider sense," says Elisabeth. Javier agrees; "Operators have to be able to see the big picture – they're not doing so yet. It's starting. But they should understand how the technology can be integrated, how platforms can be built to support applications that deliver that ease of travel and account based

pricing. Big Data must be tamed, and analytics put in place to deliver the insights into passenger needs and behaviors."

Can a traditional operator do all that on their own? "It's possible, but doing it all on your own takes time and resources," says Javier. "And time and resources are always limited. So, working with a partner that can bring knowledge from the transport sector together with expertise in all areas of technology, gets you ready for the future quicker."

That's where Fujitsu comes in. "Yes, because co-creation is always more effective that trying to innovate in isolation," says Elisabeth. "You need to be able to integrate IoT technologies with face-recognition, with NFC, with Wi-Fi, and bundling options like parking, hotels and entertainment, and do it all simply through a single portal. That's a challenge for anyone, let alone a transport operator."

"IoT is a very important point," says Javier. "For instance, you can put sensors in any device and know where it is, which helps you regulate the system and anticipate things like train faults. That helps you reduce delays, improves service, and makes passengers happy."

"But it also means that you're able to get data from other moving things – that is, the passengers!" adds Elisabeth. "And you can integrate with taxi services, buses, planes... and support the whole system. You need a lot of technical expertise to do it. Connecting all that to automobiles is important too. Let's not forget, that's an important mode of transport."

"The connected car has been the future... for quite a while," says Javier, "but's going to mature very quickly. Integrating it into the system is important – finding parking spaces, booking parking at airports and paying for it without much human interaction, and even sending messages that suggest public transport options that would be faster than driving, are all possible."

The point is to create an intelligent ecosystem that spans all modes of transport. "At Fujitsu, we have the experience to help create new ideas and improve old ones," says Javier. "We're a partner that understands the digital arena in the sector and can help the industry share ideas and achieve a standardized solution to the urgent needs of modern life," says Elisabeth, who realizes that it's time to get to the office.

They walk.

"You have to build a profile of each traveler and then match the route they take to their preferences and needs. That's the role of data and digital technology like Big Data and NFC."
Elisabeth Margarit

The Future is Mobility-as-a-Service

"Mobility is the key – both in a literal and a technological sense. And it's got to be Intelligent Mobility. It's the absorption of digital technologies into one seamless system to underpin the sector as a whole."

Russell Goodenough

The Future is Mobility-as-a-Service

Russell Goodenough ponders the future as he walks down London's Baker Street to catch the tube and train to Heathrow Airport for his flight to Munich.

"I could have decided to do this journey any number of ways," says Russell. "But I decided to go by tube. It suits me best today." He's going to take it to Paddington Station and then catch the Heathrow Express, an over-ground service that goes straight into the heart of the airport.

"There's a quote you hear quite a lot - 'It is better to travel well than to arrive' - well, whoever said it didn't need to catch the 4pm flight to Munich. The future of travel is all about traveling well and always arriving well too," says Russell. "Mobility is the key – both in a literal and a technological sense. It's got to be Intelligent Mobility. It's the absorption of digital technologies into one seamless system to underpin the sector as a whole."

Russell is sure about one thing: "There is going to be a major disruption to the industry very soon, that will be a provider that manages to fulfil, the demand we all have – a truly joined up travel experience. You can talk about driverless taxis and totally automated ticketing all you want, but the big

change in the future will be that total experience."

"It will know you because it will be based on your personal data, and the data of millions of people like you. It will book the flights you like in the class you prefer, with all the small details that make a difference to your journey. Your preferred route to the airport, the right meal, a duty-free order waiting for you, a hotel the other end. And all the same things in reverse. If you want them."

Are we talking about a broker or services which brings everything together? "Yes. That's it exactly. It's Mobility-as-a-Service. You use intelligent mobility to literally dial up a service. Right now, people use something like an Uber app just to get a cab. That kind of app will get you the entire journey."

Russell's view sums up the points made by Gary, Claus, Elisabeth and Javier: the journey as a unified whole. "So, any digital technology should be able to get you moving. And keep you moving. You just dial it up. But that takes a lot of work in the background. Every journey is an end-to-end

concept, which demands end-to-end technology to enable it. Arriving well depends on so many factors, and none of them should be apparent to the traveler." Russell adds, "What's needed is an app that's intelligent enough to work it all out for you. That's what true brokerage is – getting the right mix of prices and times and transport options so you can just set off." Open data technology is the key to enabling the integration of information from a range of sources into one, easy to use source for customers. And let's not forget the need for enhanced security to protect both passenger and transport operator data against cyber attacks.

Transport needs the kind of human-centric

approach that Fujitsu is committed to: "Good transport makes society better. Better societies are ones in which people thrive. At Fujitsu that's the reason we do business. By enabling better transport systems, we help more people do more. We free them to pursue their interests, overcome limitations, and work together to generate value – both financial and social. A transport system that works efficiently makes all our lives better."

Fujitsu connects all the elements together: from the device on which a journey is planned and booked to check-in machines and baggage drop stations, the trains, the buses, the cabs and connected cars – it's all part of the portfolio with the protection of

invisible security to keep personal and corporate data secure. "If I were to do a video about my journey, Fujitsu would link every element together, and soon we can even add Virtual and Augmented Reality as well as AI, RPA and Big Data, all working seamlessly."

As Russell steps into Baker Street Station he pauses, "We're able to deliver the future we've been talking about. And I'm excited about doing it. And Fujitsu is already traveling into the future – we're working on some of Europe's biggest transport projects to push the boundaries of technology in the sector.

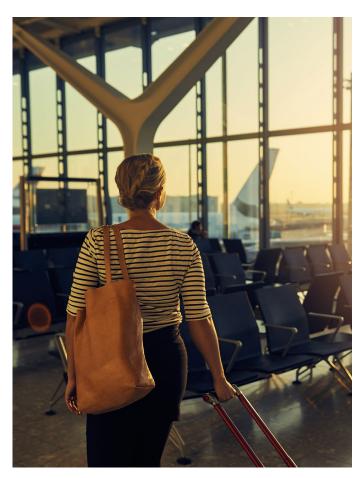**These are exciting times."**

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Arriving Well

"Every journey is an end-to-end concept, which demands end-to-end technology to enable it. Arriving well depends so many factors, and none of them should be apparent to the traveler."

Russell Goodenough

Arriving well

Everyone arrived safely and connected – in person or virtually – to have a good meeting about the future of transport in the Digital Age. The conclusions were clear:

- Digital transformation needs to be an urgent priority for transport operators because their customers – the passengers – demand a seamless, simple, traveling experience that makes the most of their digital tools, from their sofas to their desired destinations

- That digital transformation must link the back-office to the front-office so that buying a ticket is easy and quick, and all passenger data is collected and fed back into making travel more efficient and cost-effective. This data needs to be kept secure.

- Transport operators should think more like retailers and work back from what should be a great experience to how that experience is delivered via existing transport infrastructures augmented by the right kinds of digital technologies

To do that you need help to gain a broad perspective on what's needed now, and into the future. At Fujitsu we enable organizations to realize digital transformation through co-creation.

Talk to us about how we can help transform your organization together.

Talk to us about how we can help you.