INTELLIGENT MOBILITY

IM MARKET UPDATE 2016

CATAPULT
Transport Systems

FOREWORD

Imagine a world where journeys are seamless, transport is smart and connected, and delays and congestion are a thing of the past. The Transport Systems Catapult is working to make this vision a reality.

Faced with the combined challenges of an ageing global population, rapidly increasing urbanisation and the corresponding strain on the environment, policy makers are more aware than ever that current approaches to transport will not be sufficient for our future needs.

Our solutions are helping to create intelligent, integrated transport systems that work across multiple forms of transport.

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TEMPLE

Intelligent Mobility: A Global Market

The global transport system is changing. Technology innovators are creating products and services that are solving long-standing problems. This is helping more passengers travel safer and quicker, with a better experience and less impact on our environment.

This innovation is driving growth, encouraging a new breed of transport start-ups and changing the business model for large established multi-nationals. Autonomous vehicles might be the poster child for this revolution but the digitisation of transport is leading to rapid progress across the sector. This new approach is defined as Intelligent Mobility (IM) and uses emerging technologies to move people and goods more smartly and efficiently.

This new market for IM is already estimated at £275bn globally. This includes wireless technology in cars, the modelling and visualisation of transport systems, the internet enabled management of transport assets, automated control systems and digitisation of logistics and fleet management. This market cuts across what we traditionally consider to be transport (enabling the movement of goods and people) in ways not previously possible with more traditional systems.

The prediction for technology to solve the fundamental problems in transport is driving innovation. The combination of increased connectivity, automation, seamless integration and the understanding of risk is opening up new fast growing markets. Beyond these markets are additional supporting supply chains and much wider economic development.

2025
£900bn
Market Value

2020
£550bn
Market Value

2015
£275bn
Market Value

Growing at an Extremely Fast Pace

The global transport market is estimated to be in the region of £5tn and continues to grow, particularly in emerging markets where transport is an enabler of growth. The digital augmentation of this market is set to grow at a much more rapid pace and the market for IM, estimated at £275bn in 2015 could be in excess of £900bn by 2025. This growth of nearly 13% per year provides a significant opportunity for companies that enter early.

There is expected to be new products and services around sharing platforms, insurance, infrastructure products, transport planning consultancy services, drones and future innovations in IM that have not yet been sized. This market is large, it is growing and it will have new entries that go outside of what we can predict.

Innovation is Great Britain

The Transport Systems Catapult (TSC) have identified sectors where the UK is particularly well-placed to capture a sizeable market share. UK skills and resource will help to grow businesses in this market and attract in-ward investment from global companies.

A good example is the Autonomous Vehicles market set to start its sharp growth when governments around the world address the legislative framework as the technology is proven. The UK is amongst a group of pioneering nations making this leap which is encouraging research, development, growth in skills and capability.
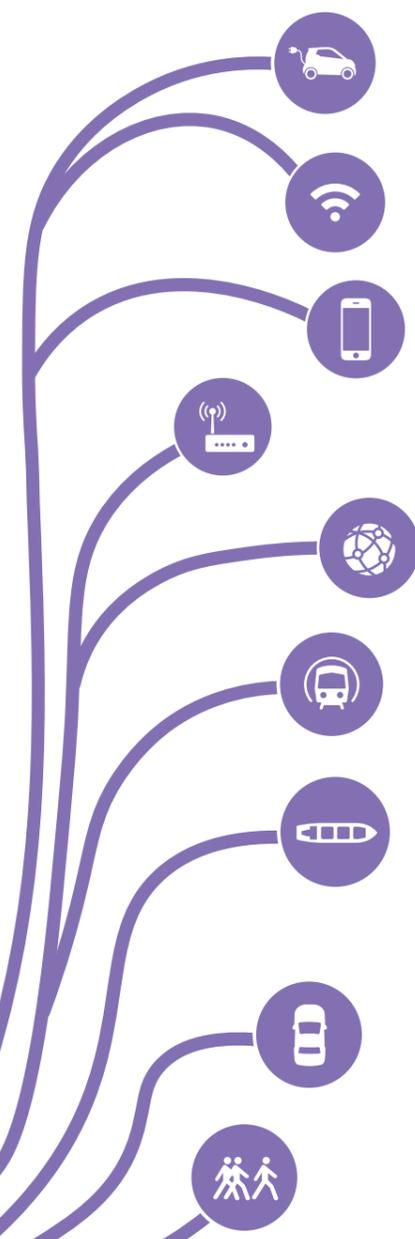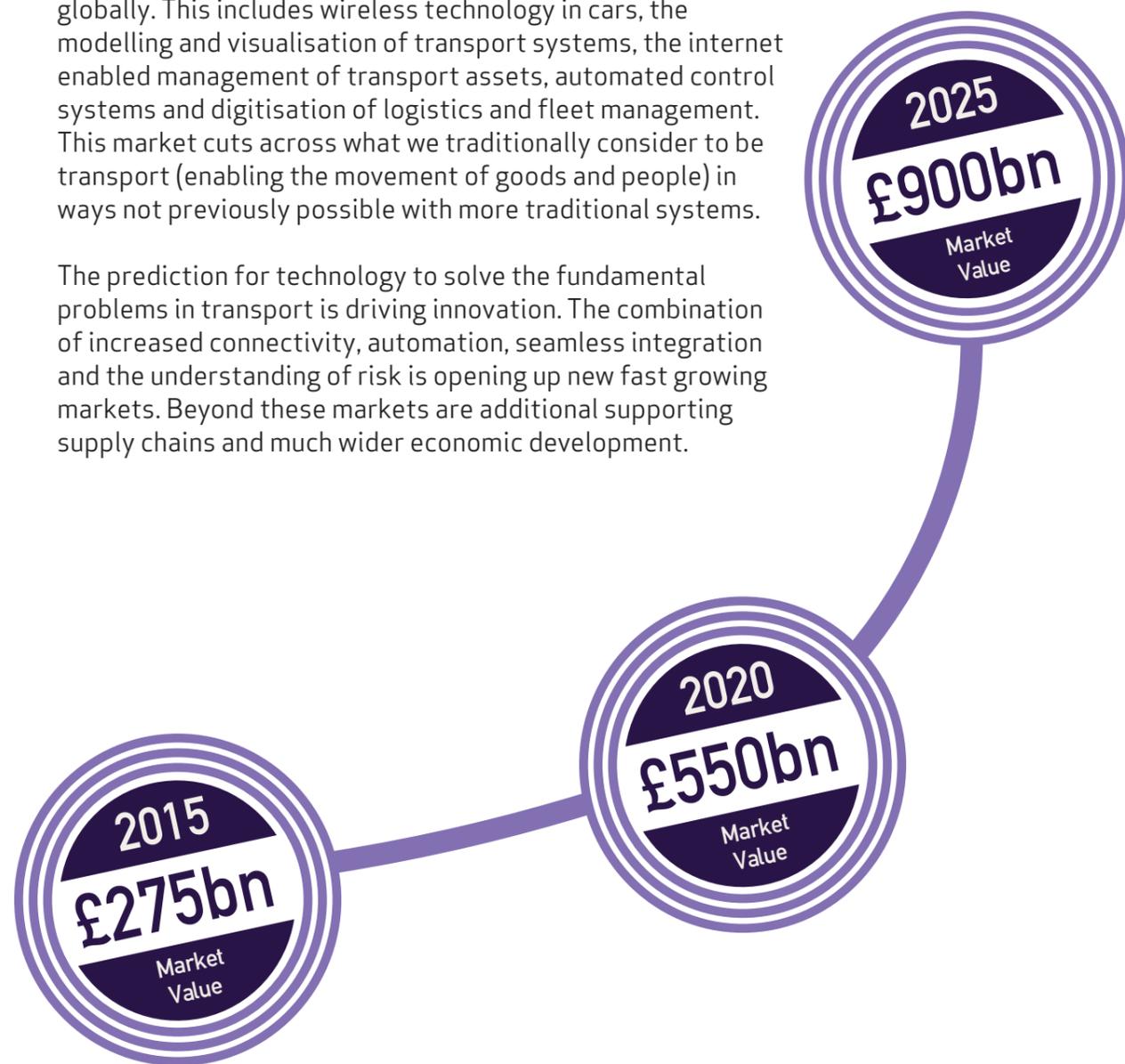
Exploring the Intelligent Mobility Market

IM is not a new concept. The emerging market for new technology stands on the shoulders of innovation in the transport sector that has provided opportunities for some of our most well-known companies. Billion pound markets that are now part of the traditional transport sector were once emerging markets.

The Urban Consumer: Proctor and Gamble (P&G)

P&G's tracking system revolutionised the fast moving consumer goods market through intelligent logistics. P&G's system generated orders based on real-time withdrawals and sales data between retailers / wholesalers and manufacturers. This allowed P&G to simplify the scheduling and planning process by quickly generating accurate delivery schedules which improved efficiency where there are complex constraints. By creating models and what-if scenarios, P&G also used this as a decision support tool, allowing companies to compare various scenarios to enable smart reactions to change. P&G's history of innovation has helped them reach annual sales of over £55 billion (2014) and build a reputation as one of the leading companies in this market.

The intelligent mobility market offers similar opportunities to new and existing companies. With the rise of mobile commerce, last mile delivery has become ever more competitive and innovative. Companies optimise logistics through the use of predictive analytics to predetermine sales, complex metrics and incentive schemes. For example, Uber RUSH is providing business owners with a means of delivery right when it is needed. Delivery costs are low and overheads non-existent and with real-time tracking, the courier can be tracked from start to finish, all from a smartphone.

The market for digital logistics is set to grow by over £15bn between 2015 and 2025. Freight tubes, automated delivery, 3D printing and virtual reality have the potential to disrupt the logistics market further relieving congestion in cities with ever increasing population densities.

A step-change in IM

We are now experiencing a step-change. Emerging technologies in IM are becoming household names, improving the movement of people & goods and making money for their developers, creating jobs and improving overall economic performance. The examples of Citymapper, Zipcar, Uber and Tesla stand alongside the more established players like Volvo, Jaguar Land Rover, IBM, Siemens or GE that are investing in this space.

The Urban Traveller

Taxi Apps are changing the way people travel in urban areas. They solve an issue commuters across the world face; finding a taxi at the right location at the right time. Uber is now the world's largest taxi company valued at £18 billion in 2014 with some commentators now valuing it in excess of £40 billion. Uber is following an underlying trend. Car ownership is no longer seen as a rite of passage and a more convenient supplement to public transport is being sort by urban travellers across the globe.

The idea of 'mobility as a service' is gaining traction. Helsinki for example plans to transform its public transport network by providing commuters with a platform to purchase mobility in real time, all from their smartphone. Everything from driverless cars to a universal payment platform could be incorporated, challenging private car ownership on cost, convenience and ease of use. Intermodal smart ticketing, smart transportation platforms and the associated data management is set to grow to a near £100bn market by 2025 making mobility on demand a reality.

IM is solving global challenges, supporting the growth of cities and responding to social, environmental and economic drivers.

The following sections highlights key growing areas of this market:
- Hyper Connected Transport
- Autonomous Vehicles
- Seamless and More Efficient Travel
- Changing the Game: Intelligently Managing Risk

PICK ME UP
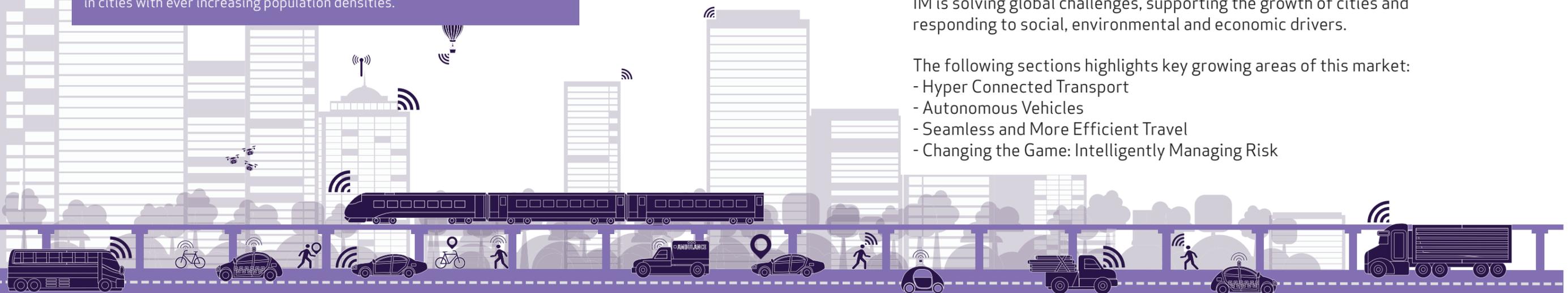
Hyper Connected Transport

Digital connectivity is becoming almost tactile. A whole new experience is emerging in how we interact with and within the transport system.

From real time digital models of assets and self-repairing infrastructure to wireless enabled experiences for passengers and safety technology on a system wide level. Enabling this hyper connectivity is a combination of increased connection speeds, integration of the internet of things in transport, access to open data and a new developer ecosystem that is focused on providing content for the transport system.

Building this market: A common standard is needed so all applications can connect with each other through the internet (or the internet of things (IoT) in transport). There are opportunities for developers, device manufacturers, systems suppliers and major opportunities for the cross fertilisation of ideas. Urban planners and operators will be looking to link with the transport sector in new ways, creating new products and services.

2025
£514bn
Market Value

SmartEye – Parking made easier
Created by Smart Parking, the SmartEye technology allows users to search for parking availability in real-time, all through the use of a mobile phone app. The technology, now being used by various councils, has encouraged the more efficient and effective use of parking spaces whilst feeding valuable information back to the council, helping them to better understand how the spaces are being used. Westminster City Council have installed 3,000 SmartEye sensors across the borough.
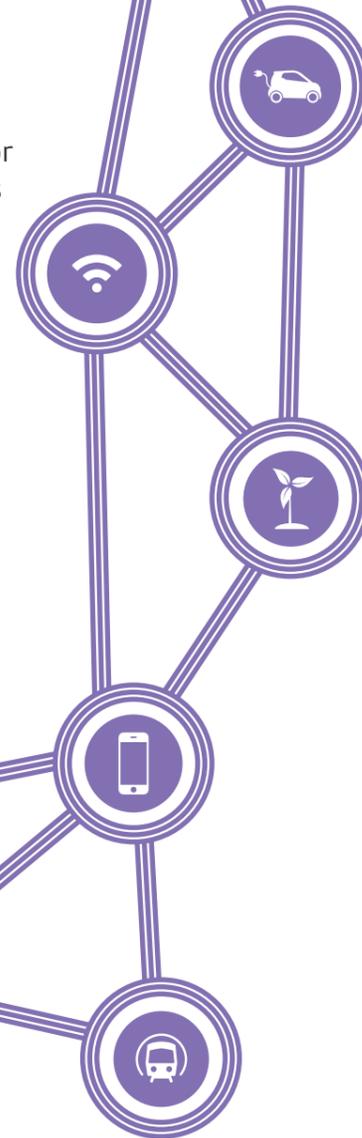
The TSC Technology Strategy has identified IoT Asset Management, Monitoring and Management Systems, Data Management & Analysis and Data Collection & Communication Platforms as key segments of the IM market in which the UK industry has the potential to play a major role.

Autonomous Vehicles

Driverless vehicles are a reality. Investment in this technology is growing and includes government, traditional manufacturers and global tech companies. It has the potential to become the fastest growing market in transport.

This rapid growth would significantly change our society. The models being proposed, from Uber style automated taxis to personal automated chauffeurs are just the tip of this market. Beyond the automotive market is automated mass transit, interconnected systems, automated freight and new delivery models. Our transport corridors could be utilised on a whole new level of efficiency.

Building this market: The automation of various modes of transport is slowly becoming a reality. Opportunities are widespread from insurance and transport planning to logistics, manufacturing, modelling and visualisation, systems engineering and civil engineering. Many of the opportunities in this developing market are not just focused on the manufacturing of vehicles.

A wide range of technological solutions will need to work together, from established examples such as autonomous emergency braking or valet park assist and emerging technology such as 3D cloud based navigation. These technical solutions are expected to help overcome the 'Critical Barriers' (things that are limiting the development of autonomous vehicles in this case). Once they are solved, expect an explosion of autonomous vehicles. Examples of these critical barriers include: legislative, insurance, 5G mobile connectivity and safety standards.

2015-2025
58%
CAGR

The TSC Technology Strategy has identified Authonmous Vehicles as a key segment of the IM market in which the UK industry has the potential to play a major role.

Seamless and More Efficient Travel

We all want more time in our lives. It could be a few more minutes at home, arriving to meet our friends on time, fitting in that extra business meeting or getting that last email off before leaving work. Time on the move is often wasted and delays affect us more than they should.

The availability of new data and technology is changing what we can do on the move. Companies are already utilising open data available from transport operators to provide better traveller information. Real-time data is improving the experience across modes. Smart phones are, in particular, making us more productive on the go and smart ticketing and mobile commerce are revolutionising our experience. Augmented reality is a new technology that if properly adapted could present new opportunities for developers.

Building this market: There are Opportunities for technology providers, app developers, software and platform developers. There will also be opportunities for marketing spin-offs that go beyond traditional transport.

2025
£92bn
Market Value

Citymapper
– Making it easier to navigate a city
Citymapper is a web and mobile based application that combines various sources of open data to provide users with real-time transport information for multiple modes of transport.

When is my next bus? What would be the best route for me to take to work this morning? Which carriage of the train should I get on to be closest to my stations exit? City Mapper helps answer these questions and more, allowing commuters to be more productive with their time.

City Mapper recently raised almost £30 million in Series B funding and currently estimates that the application has been downloaded on half of the iPhones in London alone.

The TSC Technology Strategy has identified Intermodal Smart Ticketing as a key segment of the IM market in which the UK industry has the potential to play a major role.

Changing the Game: Intelligently Managing Risk

Transport enables the world economy, bringing prosperity to new regions and increasing the liveability of global cities. It drives development and gives access to goods and services with the power to address social needs. However, there has been a trade-off in safety, security and impact on the environment. The transport sector continually seeks to drive down risk and improve the safety of the system. Nonetheless addressing the impacts of poor air quality, noise and global effects on our environment continues to be a challenge for the sector.

The underlying need for safe, secure, resilient and environmentally sustainable transport continues to drive markets. IM will manage these risks enabling the efficient movement of goods and people that stimulates growth whilst changing the relationship with society and the environment. The ability to predict the need for transport and more efficiently use natural resources by using technology to share assets will have a significant effect. Automation will also bring with it improved safety and an increase in electric vehicles, improving air quality in cities and reducing global impacts as commitments to de-carbonise grid electricity take hold.

Automation and digitisation also brings with it their own risks and the need to address cyber security will continue to develop. The market for cyber security, safety and resilience will be in excess of £30bn by 2025.

Building this market: IM is uniquely placed to solve this issue. Companies will be able to translate skills from other sectors like defence or energy.

2025
£30bn
Market Value

The TSC Technology Strategy has identified Security, Resilience, Safety & Cyber Security as a key segment of the IM market in which the UK industry has the potential to play a major role.

Intelligent Mobility: The Journey

Scenario

A client has just contacted you at short notice to arrange a meeting for you to demonstrate your prototype.

Unfortunately a virtual meeting just won't cut it as the prototype needs to be seen in person.

Passenger Info

With massive amounts of real-time transport data available, a way finding mobile app quickly finds you the most efficient route to your destination.

You have all the information you need to make an informed travel decision.

IoT Asset Management

A landslide has been predicted to be at high risk of occuring due to the high rainfall. Connected sensors immediately detect the risk & communicate with the train, telling it to slow or if necessary stop entirely.

You receive an alert on your mobile phone.

Train terminating at next station:

High risk of landslide

Please select your onward travel

Estimated delay:
BUS - 1h30m   POD - 30m
50% refund   20% refund

HOME

STATION

New Route

You decide to take the pod as you must meet with the client ASAP. When you arrive at the next station a driverless pod is waiting for you. Your new arrival time is automatically updated, syncing with your online calendar and notifies the client and other relevant people of your new arrival time.

Autonomous Pod

You were due to drop the kids off at school! The early meeting means you won't have time so you arrange an autonomous pod to pick them up from home and drop them to school.

SCHOOL

Prototype Delivery

The prototype you were meant to pick up at the train station is automatically adjusted in response to the delay and arrives via an UAV.

You arrive only 30 minutes later than planned, have a successful meeting and the client is happy with the prototype!

A combination of IM solutions working in unity helped you respond to the delay. This scenario contains just a few of the many examples of the potential for IM.

CLIENT

Smart Ticketing

Your mobile smart ticketing account, applicable for any type of transport, automatically refunds your payment method for the delayed train.

Working On The Go

Your driverless pod is equipped with all of the technology required to have a virtual meeting so you bring forward an existing appointment. This technology within the pod ensures that your time spent on the move is not wasted and minimises disruption caused by the delay.

CONTACT US

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