

## PLENARY TALKS: KEY POINT SUMMARIES

### CHAIRMAN'S OPENING REMARKS

*Walter Tuttlebee, WTIS Ltd*

- **Theme:** *Transport Benefits from Data: UK Strategic Perspectives*
- **Who:** Attendees from **local & sub-regional transport authorities** serving **75%** of UK population
- **Why:** A Local Authority complement & input to existing policy, technology & industry initiatives
- **Approach & Rationale:** Local Authority-led, promote integrated transportation, break down silos
- **Timescales & Today:** The structure of today's event

### DELIVERING TANGIBLE TRANSPORT BENEFITS FROM BIG DATA & IOT

*Matt Coleman, Department for Transport*

A recent report from Forbes shows that in the past 2 years data has been created in the entire history of the human race. This kind of data and the way we access it has transformed the way we shop, bank and use our leisure time. The same effect is happening with transport data.

#### **Key priority for the Secretary of State is to deliver a digital transport system.**

- It will improve efficiencies in our transport network.
- Maximize the economic opportunities for the UK
- This could mean integration into energy systems for data about peak usage.
- A data transport system also feeds into a wider government agenda and will help to make the world a greener and better place to live in.

#### **Transport is changing**

- Over 40% of Londoners use apps which use TfL open data.
- The use of open data has resulted in demand responsive buses by City mapper.
- MaaS (Mobility as service) is being piloted by Transport for West Midlands.
- There are uncertain timescales for CAVs, but this will be happening and along with it will create a lot of data.
- The government wants to grow the already active SME Sector in transport data.

#### **Learning more about what data means for transport**

A scoping study carried out explored –

- Opportunities – there are parallels with other areas.
- The role of open architectures and platforms.
- Possible business models – how can we release the benefits for the economy?
- Skills
- Challenges and enablers – Technology already exists that collects, transmits and analyses data, but there are issues on how we share that data. Security etc.
- Links to other policy areas –

Findings of the scoping report found that there are data gaps, but transport is a massive data generator.

Other findings included –

- The data is not being shared
- Cultural factors – modal way of working, geographical silos etc.
- Lack of standardisation of data – there are processes that can be implemented but this adds time to the process which isn't efficient.
- Benefits of the data capture don't instantly benefit those who are generating the data.

- The marketplace for data was lacking before oneTransport.
- There is a skill shortage in data for transports, but TDI has value in helping.
- There is a lack in understanding of responsibilities and values.
- Business cases are not easy to put together, lack of use cases and weak evidence.

**The study suggested a number of actions to help deliver the tangible benefits.**

**Awareness** – the government should raise awareness of the need, which could result in buy in and improve the coordination.

**Clear guidance should be outlined** – which could provide detail on the appropriate standards.

**National catalogue of data** (data.gov.uk) – starting to proliferate but needs work. This would be publically available.

Also help improve the capabilities of people using data in transport.

**Actions**

- Bus Services Act enables regulations to be made to require local authorities or bus operators to provide information i.e. routes, timetables, fares, tickets, live information and stops.
- Data quality needs improving i.e. tackle data gap.
- Data discovery project required, will communicate this through TDI

**TRANSPORT MODELLING: DATA USED AT ITS BEST**

*Drew Hill, Transport Scotland  
Chris Buck, Transport Scotland*

Transport Scotland is different to similar organization, as they look after rail as well as road.

**Transport modelling**

Travel is a derived need from land requirements. Land generates/ attracts movement of people and goods.

There are different models for different uses –

**Land** – population, employment, households.

**Movement of people and goods** – Person travel and freight

Strategy starting point for transport and land-use model – National to Regional to Local.

**Issues with transport modelling**

Data

- There are a lack of standards and a lack of metadata for modelling. Transport Scotland are starting to produce own standards.
- Under the 3\* data standard, CSV format doesn't allow for metadata, so maybe this is something that should be provided separately

- All transport projects are different, so the standards cannot be too rigid. But it needs to be considered where the standards should be hosted and who should have stewardship of the standards.

### **Different approaches on data - Air quality**

New data is required for air quality.

- Air quality models are currently being developed at local and regional level.
- Different tools are needed for different problems and applications.
- City, local and regional level looking at different levels.
- Data can be used to look how much changing the fleet would affect the air quality levels in different areas.
- With the help of data, Programme for Scotland (PfG) have pledged that there will be 4 Low emission zones will be introduced in 4 areas in Scotland by 2018.

### **Integration storage**

Key approach to integration and storage –

- Linking into other projects.
- Lack of high resolution traffic data in urban areas.
- Traffic modelling is not suitable for Air quality modelling and it not suitable for real data.
- Traffic monitoring is an ideal candidate for big data.

## **ADEPT REVIEW OF CONSTRUCTION, MAINTENANCE & USAGE OF HIGHWAYS AND ASSOCIATED ASSETS**

*Neil Gibson, ADEPT*

ADEPT covers a lot of different areas (places of the future through growth) not just transport, mainly in England, but have links in Scotland, Wales and Northern Ireland.

LEP CEs are now on Adept too, as well as corporate leaders such as Skanska are also on board.

Adept operates with a Leadership team, which then splits into sub- national boards in Engineering, Environment, Transport & Planning, Housing and regeneration.

- £100 million a year spend – half on transport; most goes to sub-contractors (Ringway Jacobs) – very dependent on these large organisations for insights into what is happening
- Review found that we are not using data as efficiently and effectively as we could be.
- Bringing together big organisations to get heads around why ICT & data isn't mainstreamed into highways assets. Data could be used to manage assets more effectively.
- 98% of road network is looked after by local authorities. With budgets it can be a struggle to find the resource to fill the potholes, let alone make the roads smart.
- Vehicles manufacturers – Manufactures are split in two camps. One that is not interested in digital infrastructure as they have to be independent of it, if selling in countries like India etc. The other argument is that needs it to be there because of safety.

Case studies -

- **Ringway Hounslow Highways** – converting street lighting to LED & putting in EV charging. Reduced energy consumption by 45%.
- **Staffordshire connected roadworks** - connecting data and planning utility works more effectively so fewer roadworks

Digital innovation is not happening because -

- Poor leadership
- Lack of business cases
- Don't have the right partnerships
- Short-termism
- Risk-averseness
- Lack of skills/knowledge in the sector
- No one quite knows what to do (except a small few)

A study of recommendations is out 'Digital innovation: the route to highways of the future' and is available on ADEPT's website [here](#)

### ***INTERACTIVE CASE STUDIES: REAL BENEFITS OF DATA USE BY LOCAL AUTHORITIES***

*A short technical overview of enabling transport data exchange across local authority boundaries.*

***Enabling Cross-Geography Data usage***

*Owen Griffin, InterDigital Europe*

#### **The oneTRANSPORT™ Platform**

OneTRANSPORT has created an open market place for data and data services, and aims to reduce the fragmentation within the market created by all of the isolated players, solutions and initiatives that already exist in the market. oneTransport platform will unite the market by integrating the data from the different systems, regions and transport modes into a single horizontal platform. The solution is based on the open global standard oneM2M™, which offers a non-vendor- lock-in option for authorities and vendors joining the ecosystem. Moreover, oneM2M™ allows the federation of platforms from multiple vendors, which ensures high scalability and a future-proof digital infrastructure.

The oneTRANSPORT platform benefits both the data publisher, by providing a unified way of publishing data, as well as being able to control how the data assets are shared with and under what conditions. The data consumer will also benefit as oneTRANSPORT is the one platform they need to access relevant data, which will help to develop technology faster and with the high transferability of solutions on a national and international scale.

#### **Approach**

oneM2M defines an infrastructure architecture that enables data, collected from the internet of things (IoT) device or IT system, via any type of communications infrastructure, to be discoverable and consumable via open, standardised APIs (Application Programming services).

oneM2M's provision of a standardized set of 'application enabling services', including real-time data discoverability, network abstraction, security, federation and semantic interoperability, makes oneM2M a comprehensive and internationally compatible approach to realizing a national open transport data market place.

Using an open standard implies that multiple vendors can develop standard-based solutions as they have access to specifications and documentation. This creates competition and interoperability of solutions from multiple vendors, minimizing 'lock in' problems.

The alternatives to open standards-based systems are less favorable:

- Proprietary solutions or platforms: have specific components that belong to a single vendor. These platforms can be 'freely open' to the public to use, but the provider will always be in control of system functionality and its future evolution to meet private objectives.
- Open APIs are interfaces used to allow enquires and provide information or data in return. Although APIs can be openly published and made accessible for public use, these interfaces are owned by a given entity that is free to modify or extend interface specifications at any time. This can generate unpredictable costs to maintain integrations with existing systems.
- Open-source code or platforms: are freely accessible software products that others can use and modify. A drawback of this model is the multiple and uncontrolled versions available.

### **Benefit Impact**

OneTRANSPORT is effectively a new layer, to enable transport system managers to expand the use of their data assets in new and value ways. As such it is fully complementary to and builds upon legacy systems like UTMC.

OneTRANSPORT solution:

- Cloud based and based on International standards.
- Enables a whole new application development community focus on transport systems.
- Opens up new revenue possibilities for local authorities.
- Introduces a whole new framework of data asset broker functionality to support such models.
- Provide a single interface to the application development community data licencing agreements through an 'open once, sell to many model'
- A turnkey Open Data solution that can implicitly provide compliance with any current or emerging regulatory requirements.

oneTransport is ready to rapidly expand its ecosystem, enabling the open sharing of transport data nationally.

If you would like any more information, please contact [info@oneransport.io](mailto:info@oneransport.io)

[www.onetransport.io](http://www.onetransport.io)

### ***Major events: Visibility and Parking @ Silverstone***

*Ian Achurch, Northamptonshire County Council*

#### **Silverstone Circuit Use Case**

The British F1 Grand Prix at Silverstone is the largest sporting event held in the UK each year.

- Over 300,000 attend the event with more than 125,000 attending race day.
- The F1 Grand Prix alone has a value of over £50m to the local economy.

The Grand Prix and other major sporting events held at Silverstone bring in influx of vehicles, as there is no direct rail link; visitors generally travel by private car or use the temporary park and ride during those events. The traffic associated with Silverstone has a major impact on both local road network and strategic network, partially A43.

Strengths of Silverstone and the F1 Grand Prix as a Use Case include:

1. The major economic impact – both positive in terms of costs of congestion:
2. The different challenges it presents because of the rural location and reliance on road access;
3. The wide impact on a number of local transport authority areas, including both the strategic

- and local road networks;
4. The high profile of this global sporting event;
  5. The learning is transferable to other events, including major concerts and outdoor sports venues.

### **Our Key Transport Challenge**

Northamptonshire county council, as the local authority, is keen to work with Silverstone circuit and other stake holders to improve the traffic management system with an intelligent approach. This should provide real time information enabling operational and tactical decision making both in the run up to and during the events.

As well as this, it should enable the travelling public to make real time informed decision on the use of alternative diversion routes. It should also provide time series information to inform post-event reviews and (including reported delays) and strategic decision making.

### **Our Approach**

Northamptonshire County Council approach to the Use Case involved in the following steps:

1. Identify potential beneficiaries of the use case (Race organisers, event visitors, transport authorities, other travelling public)
2. Identify the available data (static and live) and aggregate on a single open access platform;
3. Agree specific requirements associated with the Use Case – Principally traffic flow, journey time and car parking data;
4. Deploy journey time and parking sensors to address key gaps and provide more granular information to supplement existing data.
5. Work with traffic managers, Arup and InterDigital to develop a ‘real-time’ dashboard.

This included two key review stages. Lessons learnt from the 2016 review to identify improvements, and these were implemented before the 2017 event.

The 2017 review will identify conclusions and recommendations which will be used to inform the approach post completion of the one TRANSPORT Project.

### **Benefit impact**

Operationally, being able to identify where parking issues were occurring during the event meant it was possible for the Silverstone Circuit Traffic Manager to put in a intervention that specifically facilitated smoother traffic flows in to and out of various car parks.

This allowed;

- More efficient use of parking via distribution of vehicles.
- Addressing of potential congestion concerns pre and post race.
- Those travelling to and from Silverstone should experience more consistent journeys as well as less concern around parking on arrival.

On a strategic level, having the data available in an open and usable format will enable a more informed and comprehensive post event review and evaluation of the traffic management plan and its effectiveness. This will inevitably lead to improvements in the management of events in the future with benefits for both local and strategic networks, the public, businesses and specific event stakeholders.

### **Future actions and Recommendations**

- Northamptonshire County Council will continue to use the oneTRANSPORT platform as it's opened up new opportunities for reviewing and sharing data, both internally and with external stakeholders.
- A post-project review is currently underway to identify specific recommendations including wider access to the intelligence enabled through the platform, including wider access to the intelligence enabled through the platform, including through new products and services

available to event visitors to enable them to make smarter decisions on how they travel. This will need to be pinned by an associated business case to support any further investment.

### ***Major Events: Improved Traffic Flow (Football)***

*Joel Burton, Hertfordshire County Council*

#### **Watford F.C Use Case**

Watford Football Club is a UK Premier league side which has its ground in the heart of Watford.

- Home matches regularly have attendance figures of around 20,000, bringing an influx of private vehicles into Watford's town centre.
- Watford is already a busy shopping destination due to the presence of an Intu shopping centre in the town centre.
- Home match traffic on a weekend, combined with shopping traffic, can cause issues such as increased congestion and parking problems.

#### **Our Key Transport Challenge**

Hertfordshire county council is always looking to improve the journeys of both those traveling within its borders as well as those travelling into the surrounding local authorities. To this end, Hertfordshire County Council wanted to make the journeys of those travelling into Watford on a weekend home match day favorable and consistent ones.

#### **Our Approach**

Hertfordshire County Council was able to use the oneTRANSPORT platform to easily inspect travel to and from Watford on match days. The platform allowed the council to bring all the relevant data into a single location where it could be reviewed with ease. From this it became apparent there were specific issues that were happening on match days. For example fans were using one car park which lead to queuing on the main road. Once these issues were identified, it was then possible to put in place an intervention plan, whose impact could also be monitored by the oneTRANSPORT platform.

Intervention:

- Used variable message signs to leading into Watford to inform drivers when specific car parks were reaching capacity and directing drivers to other parking alternatives.
- A custom traffic signal timing profile that gave greater priority to traffic leaving the problematic car park. This mean that the car park had a more consistent exit rate and there was a reduced chance of conflict between exiting vehicle and vehicles on the main road.

#### **Benefit impact**

Identifying where the parking issues were occurring, made it possible to put in an intervention that specifically facilitated smoother traffic flows into and out of the car park. This allowed for more efficient use of car parking in the Watford town centre, as well as addressing potential congestion concerns.

This benefit is partly driven by the fact that the council can now create its own bespoke system using open source systems. Previously this was not possible for the council and they would have had to go out to tender for the service. This reduces costs for the council as they have staff with the appropriate skills available

#### **Future actions and Recommendations**

- Hertfordshire county council will continue to use the oneTRANSPORT platform as it has opened up new opportunities for reviewing and sharing data. Both within Hertfordshire county council, and more importantly those external to the council. The platform allows

authorities and their partners to work together to build better supply chains.

### ***City Management: Park & Ride***

*Katie Parnell, Oxfordshire County Council*

#### **Oxfordshire Park & Ride Use Case**

OneTRANSPORT aimed to use a wide range of datasets to inform users of fast public transport options available to them when travelling to their destinations, the case of Oxfordshire Park & Ride.

Oxford's park & ride already offers a vast data pool, such as car parking availability that was used to support this use case. The project has also secured Park & Ride bus service data from the bus journey times. Pulling together all of these resources into a web application has allowed predictions to be formed regarding the bus journey time savings made via trips from the park & ride.

#### **Our Key Transport Challenge**

Improvement to Oxford city road network is limited as there are many protected buildings and landmarks.

As well as being historically and visually pleasing, Oxford is also home to two universities, so has to cope with a vast number of tourists as well as thousands of students from all over the UK and all over the world. Traffic congestion is rapidly increasing and so there is a huge demand for an innovative solution.

Several different methods have been used to try and curb the amount of cars entering Oxford:

- Introduction of high parking charges in the city centre combined with maximum permitted stays.
- Push on use of the Park & Ride Scheme, due to a £6.7million investment.
- 20 hybrid buses have been introduced, and 10 more are to be introduced.

In addition, with demand for travel into the city set to rise due to the opening of a significant retail development, the Westgate Centre, our need to provide solutions to Oxford's congestion is growing.

#### **Our Approach**

The project was to use transport data to aid in the development of an 'app' for remote use by our user groups.

The app provides a means for external parties to access live data, with the potential to cover a wide range of travel data needs. This data is used to inform the initial journey suggestions presented to the users before departing for their destination. Due to the amount of congestion on Oxford's roads and high quality coverage of bus lanes running from the park and ride's into the city, so it is anticipated that the park and ride route will be represented as the fastest way into the city.

The data consumed includes predictions based on live traffic and congestion monitoring to enable greater accuracy in journey time planning and similarly predictions coming from live updates on parking availability, reducing circulation of traffic and frustration.

#### **Benefit impact**

- Park & Ride usage will tend to be promoted by the app as it is often the fastest method of accessing the city during peak times.
- Increased uptake of the Park & Ride can potentially increase the revenue for the local authority Park & Ride owners and bus operators.
- Users of the app are able to benefit from improved journey times when accessing the city centre.

- Should usage be increased, there would also be a significant benefit regarding reduction of air and noise pollution and the conservation of Oxfordshire's local environment.
- The app represents a new method of shifting people to different modes of transport using existing infrastructure. This is cost effective and has the potential to shift people away from less sustainable modes of transport. This is useful for cities like Oxford, where it is hard to make large scale changes to infrastructure due to limitations.

#### **Future Actions & Recommendations**

- oneTRANSPORT platform opens up as a result of the increased accessibility of datasets.
- Future projects could easily further this type of journey planning by utilising data from the platform to provide predictions for local buses, trains and other forms of public transport.

#### ***TRAAK: THE ROAD AHEAD – OPPURTUNITES AND CHALLENGES IN THE NEW DATA DRIVEN WORLD***

*Colin Balfour, Traak Systems Ltd*

Traak is a data science company that provides real times predictive analytic solutions. Traak also work with industry leading partners and customers. The Innovate UK oneTRANSPORT project was founded by Traak, based on the oneM2M standard.

#### **Current challenges**

- Saturated networks – Slower journeys
- Disconnected systems
  - Closed Architecture
  - Different and competing standards
  - Urban and Inter-urban areas
- Environmental impact - creating health issues and affecting climate change.
- Siloed data - Siloed across various governmental departments and bodies.
- Limited funding - Government efficiencies have hit transport budget.
- Increased competition from Smart city players, such as IBM.

Platforms are becoming ubiquitous, such as Google, Amazon, Uber and Apple.

Companies such as google are planning on turning Toronto into a futuristic city.

Smart cities link between transport and other services and analytics are key to unlocking the value of data within these cities.

Data is important as it has so many potential uses.

- Journey time prediction
- Air quality, which is also a good proxy for AQMA and LEZ.
- Enabling cities for CAV deployment
- Freight, logistics and supply chains.
- Multi modal: road, rail marine, air plus cycling, walking and even drones for deliveries.
- There is lots of data but it is all about finding the valuable data.

INRIX have calculated the direct and indirect cost of congestion for UK drivers in 2016, which was calculated at £30bn.

Data sources wise, we have more connected devices than people.

Wifi gives accurate journey time data – match rate is far better than Bluetooth.

OneTRANSPORT has a big potential to be used in other areas in the future, for example health and social care.

#### **Data audit**

*Step 1* - A data audit is required to as a starting point to identify all data sources.

*Step 2* - Establish to quality of data, what's new or out of date etc. The quality of the data is vital for analytics.

*Step 3* - Identify the data coverage ensure that the data covers the correct geographical area.

*Step 4* – Gap analysis

All of these steps provide a solid foundation for building new apps and service leading to new commercial models.

Collaboration is key to success of the project; procurement needs to be made easier for SME's as there are lots of good ideas out there.

Another point in collaboration, 'XaaS' everything is delivered as a service, meaning moving from CAPEX to OPEX.

BIDs are concerned with car parking, journey times and dwell times (all modes of transport). The big data focus can be combined with live data from a city wide Wifi network and real-time predictive analytics, which is a very powerful solution.

### **Standards**

It is important to use industry standard based solutions, as this can help to reduce vendor lock in, for example – oneM2M.

### ***CHAIRMAN'S SUMMARY, UPCOMING EVENT AND NEXT STEPS***

*Walter Tuttlebee, TDI*

The UK as a whole has come forwards a very long way since the beginning of TDI and oneTRANSPORT and we are in a time of rapid change, which has been accelerated in the last year.

### **Data-Enabled Transport: The Right Thing at the Right Time**

There are many limitations which are slowing the process down, people, cultures and politics, so it is going to take time to get exactly where we want to be.

Transport is an area where the UK can lead, as we have a global reputation and reach and we are pioneering in open data and standards. We are in a position to turn this challenge into growth.

The promise & the goal of data-enabled transport is to open data, open standards and open market solutions to help widen application.

oneM2M was created to breakdown silos, it wasn't created for transport but for IoT demonstrating the wider application. Korea has deployed oneM2M to replace a number of siloed data platforms and it can also help to create a data marketplace.

National approach helps to scale economies; all three factors combined imply reduces costs, which in turn improves cost, benefit ratios as well as providing a better transport service delivery.

### **Call to Action: Help Us Make it Happen...**

- **Build Local Awareness of the issues & of the TDI**  
Share the summary report from today with your *local colleagues*, your peers in *neighbouring authorities* & friends in *Central Government*

- **Connect with the Core Team & Working Groups**  
Help to shape the way forward and benefit in return like the authorities who have presented today. Help structure the TDI Forum events & future plans.
- **Newsfeed**  
Please send us articles and tell us about case studies so that we can share on our news feeds.
- **Steering group**  
The TDI Steering group will be taking place in January.

To get involved in a working group, to contribute, or host a future event please contact David Aimson [daimson@buckscc.gov.uk](mailto:daimson@buckscc.gov.uk).