Electronic Transfer of Bus Service Data

A Brief Introduction

Foreword

2008 marks a significant milestone in the electronic transfer of bus service data. Through extensive co-operation, bus service data is now flowing electronically between different organisations that can now realise major business and bus service policy objectives.

Over the next few years, more organisations will be involved in this electronic flow of bus service data, so improving the completeness, timeliness and accuracy of that data.

The story of electronic transfer of bus service data and electronic bus service registration is told here so that all stakeholders can become engaged and join in the success.

Background

Bus service data is needed by many stakeholders ranging from bus operators to their end customers. The underlying data is needed to provide paper-based bus timetables and at-stop information display. It is also required within journey planning and electronic information systems, including "departure board" information displays at bus stations and some bus stops. Finally, the data is required for regulatory purposes and the delivery of local transport plans.

Currently, the transfer of this underlying data is far from ideal, with data being re-entered manually into systems from paper records. This requires a large amount of effort and is vulnerable to simple typing mistakes.

What if all of this data could be transferred electronically between all interested parties?

The Vision

The bus data supply chain from operator through to all interested parties is completely electronic.

The operator creates and owns the data such that it can be re-used effectively and efficiently by all.

Value can be added to the data as it moves through the supply chain.

Realising the Vision - Electronic Bus Service Registration (EBSR)

Customer-Facing Online Services

The process began in 1999 with a major business transformation programme within the Traffic Area Network (now part of the Vehicle and Operator Services Agency –

VOSA). As part of the "Modernising Government" agenda, VOSA transformed the way in which it delivers its services to its customers, including bus operators. In 2003, as the culmination of this programme, the operator licensing business system was launched by VOSA, enabling bus operators to license their vehicles through an online internet service available 24 hours a day, 7 days a week.

Electronic Bus Service Registration - Pilot

In 2005, Arriva and Stagecoach started to pilot a new electronic bus service registration (EBSR) system with VOSA.
In 2007, this pilot was completed. Bus services of all types had been registered successfully with VOSA and other key stakeholders, such as local transport authorities (LTAs), had been engaged in the process.
The pilot was about more than just EBSR. It was also about the use and re-use of electronic bus data:

▸ Effective use of buses and drivers;

▸ Providing detailed and granular bus schedule data to real-time information providers for vehicle monitoring and customer information.

EBSR - What will it involve?

Everything that would normally be in a paper-based registration will be contained in the TransXChange file.


The route and stopping places will be described and the timetable (with all its variations) will be included. The contents of the TransXChange file can be viewed and read using the associated "publisher" software package, which writes them into a printable (and human-readable) PDF document.

The route is described in the TransXChange file by reference to precise points, at

Outbound, Monday to Friday

	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Oxford City Centre, George Street, Stop A3	05:37			06:52	07:12	07:20	07:38	07:58	08:13	08:28	08:43	08:58	09:13	09:28
Oxford City Centre, Gloucester Green Bus														
Botley, Elms Parade Shops, Outside	05:46			07:01	07:21	07:30	07:48	08:08	08:23	08:38	08:53	09:08	09:23	09:38
Eynsham, Eynsham Church, Outside	05:54			07:09	07:29	07:39	07:58	08:18	08:33	08:48	09:03	09:18	09:33	09:48
Witney, Market Square, A	06:06			07:21	07:41	07:54	08:15	08:35	08:50	09:05	09:20	09:35	09:50	10:05
Witney, Market Square, A	06:07	06:26	06:51	07:21	07:41	07:54	08:18	08:38	08:50	09:05	09:20	09:35	09:50	10:05
Witney, Bus Garage, Opposite	06:08	06:27	06:52	07:22	07:42	07:55	08:19	08:39	08:51	09:06	09:21	09:36	09:51	10:06
Witney, Thorney Leys, Southbound	06:14	06:33	07:00	07:30	07:50	08:03	08:27	08:47	08:59	09:14	09:29	09:44	09:59	10:14
Curbridge, Well Lane, Opposite		06:37	07:04	07:34		08:07	08:31		09:03		09:33		10:03	
Carterton, Bovington Road, Corner		06:43	07:10	07:41		08:14	08:38		09:10		09:40		10:10	
Carterton, Crossroads, Opp Post Office		06:48	07:15	07:46		08:19	08:43		09:15		09:45		10:15	

which stops are located and junctions through which the route passes.
The route will be presented on maps as a series of lines joining adjacent routing or stop points. Pilot registrations have shown that it is easy to understand the route that the bus will follow.
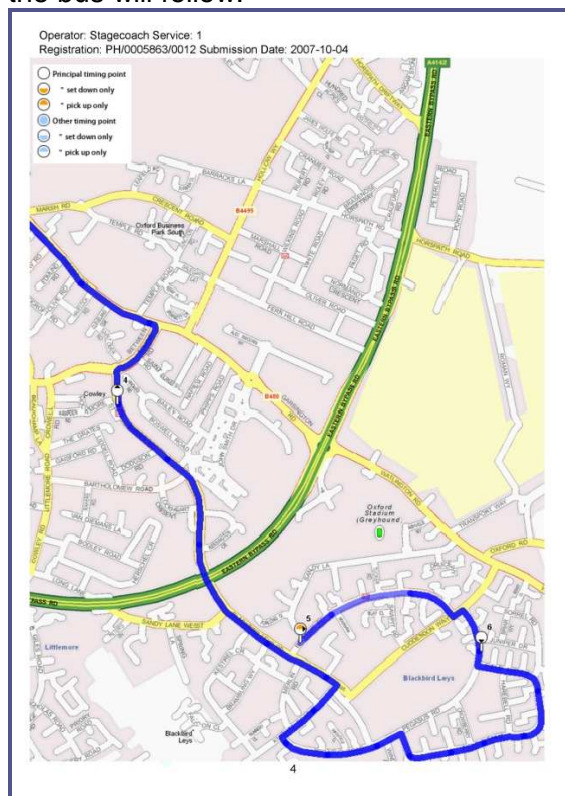
There will be no map in the TransXChange file - just the stop records, from the National Public Transport Access Node (NaPTAN) database, and the co-ordinates of any road junctions that have been included by the operator. Operators are responsible for keeping their bus schedules and service registration up-to-date. Local Transport Authorities (including Passenger Transport Executives)(LTAs) will continue to maintain the bus stop records for their area.

EBSR - The Formal Process

1. An operator creates its application as a TransXChange file and submits it to VOSA.

2. The TransXChange file is tested by VOSA to ensure validity against the TransXChange standards.

3. Once validated by VOSA's system a message is sent by e-mail to the operator and to each LTA through whose areas the service passes.

4. The TransXChange file also passes into the VOSA operator licensing business system for attention by the caseworker.

5. Once reviewed by the caseworker VOSA issues an "Acceptance" of the file by e-mail and makes available securely to the operator and LTA a PDF rendering of the "registered particulars", including maps illustrating the bus route.

EBSR - Launch and Rollout

EBSR was formally launched on 31 January 2008, enabling bus operators to submit bus service registration applications to VOSA online, rather than via the current paper-based approach.

The roll-out by the pilot bus operators (Arriva and Stagecoach) is expected to start as soon as they have completed the transfer to electronic registration at their pilot locations. These operators are planning to extend steadily to their depots nationwide.

VOSA is inviting other operators to transfer to electronic registration now that the system has been tested and shown ready for use.

As EBSR rolls out, more and more data will be transmitted electronically through the supply chain. Data quality will improve significantly.

Learning and Evolving

We started with a vision that was created by the stakeholders. The standards, tools and processes were built around this vision.

But things have evolved for the right reasons. We have learnt and improved.

We started with three levels of granularity ("sizes") of electronic bus service data:

- *Light*, with the principal points of the bus service needed for registration;
- *Standard*, with all bus service details needed for journey planning and timetable-based information;
- *Rich*, with the additional operational characteristics needed for real-time automatic vehicle location (AVL) systems and "departure boards".

Indeed, two flavours of the TransXChange schema were developed for this purpose. However, whilst building the EBSR systems and processes, we realised that we could invert this into a "*one size fits all*" model:

- The bus operator creates a single version of the bus service data from the scheduling system that is suitable for all uses;
- In effect, this is a "single version of the truth";

▶ Each user creates a "window" into this rich data in order to see it from their own perspective (whether light, rich or anything in between).

The bus operator clearly owns all aspects of the rich dataset and focuses on creating only a single version of it.

The users of this data can create their own window to it so that they can extract what they need. They may also benefit from having the full set of data. For example, the route maps used for registration are significantly improved through the availability of data for all stops (not just the principal timing points) and the road route tracking points – data that is clearly needed for real-time automatic vehicle positioning.

Realising the Vision - From EBSR to Electronic Transfer of Bus Service Data

In addition to use as part of a bus registration, TransXChange files can also streamline the transfer of schedules between various parties:
▶ Bus operators;
▶ Local transport authorities;
▶ Real-time information systems;
▶ Journey planning systems;
▶ Travel and transport information systems and services.

And ultimately to:
▶ Give passengers confidence in their bus service;
▶ Help bus passengers make intelligent travel choices.

The increased precision in schedule creation should improve timetable accuracy and speed up the import of data to local and regional databases - and therefore to traveline, Transport Direct and others.

The Stakeholders

Bus Operators

The bus operators are a core stakeholder. *It's their business.*
Bus operators generally start the bus data supply chain. Quality data and information is paramount to the running of their business and the effective and profitable use of vehicles and drivers needed to deliver customers' expectations.

Bus Passengers

Bus passengers are the other core stakeholder. *The bus services and supporting information services are ultimately there to meet their travelling needs.*
Bus passengers value timely and relevant information delivered through appropriate paper-based and electronic channels. They are consumers at the end of the data supply chain.

Local Transport Authorities / Passenger Transport Executives

Local Transport Authorities (LTAs) and Passenger Transport Executives (PTEs) represent their communities to ensure that the right bus services are in place. This

may require the commissioning of bus services to meet social needs that may not otherwise be commercially viable.

As well as being stakeholders in their own right, LTAs and PTEs are in effect proxies for the travelling customer in their area. *As such, they are very important stakeholders.*

Licensors and Registrars

The Traffic Commissioners are the licensors and registrars of the bus service operators.

Road safety, fair competition and confidence in the road haulage industry and in bus travel sit at the centre of operator and driver licensing. These are the abiding objectives of the Traffic Commissioners and motivate their work.

Against accepted criteria, the Traffic Commissioners and VOSA determine whether or not bus service registrations can be accepted. Once accepted, they also monitor the compliance of the service to that registered.

It is clear that improved data quality, through electronic delivery, will result in more informed decisions that will ensure fair competition and promote confidence in the services being provided.

Travel and Transport Information Providers

Transport Direct, traveline regions and other public- and private-sector organisations provide travel and transport information to the travelling public before and during their journeys in a number of different ways, through:

▶ Paper timetables;
▶ Information boards located in bus stations or at bus stops;
▶ Telephone call centres;
▶ Internet web sites;
▶ "Departure boards" located in bus stations or at bus stops;
▶ Mobile phone;
▶ Digital TV.

The travel and transport information providers are themselves customers of the bus service data, adding value before providing it to the ultimate consumer.

Engaging the Stakeholders

The EBSR pilot demonstrated the need for and benefit of the engagement of the stakeholders. The level of collaboration to achieve a common goal was clear to see. This level of engagement needs to continue through the whole rollout of EBSR and the wider implementation of the electronic transfer of bus service data.

Training

Training has been developed jointly by Transport Direct, VOSA, the operators and "experts" in the field. This has been designed to meet the needs of management and operational staff in the different stakeholder organisations. Each has different needs to satisfy and objectives to meet.

The training materials and process have been developed on the learning gained from the pilot and the combined knowledge of the stakeholder community. It will be continuously improved to accommodate feedback and learning from its use in the EBSR rollout.

Stakeholder Workshops

As EBSR is rolled out, workshops will be held with the key stakeholders in that area to ensure that they share the same goals and objectives, albeit from their different perspectives.

Communications

Communication, communication, communication is a pertinent adage. We recognise the importance of keeping stakeholders informed of key events, activities and deliverables. We will follow the success of the INFORM conference in November 2007 and the formal launch of EBSR at the CPT Dinner in January 2008 with various communication events, press releases and material such as this brochure.

Listening, Learning and Improving

Engaging the stakeholders will be crucial to the success of EBSR and the electronic transfer of bus service data.
We need to listen to these stakeholders so that we can learn and improve the way in which we roll out EBSR and the wider electronic transfer of bus service data.

Additional Information

NaPTAN

*The National Public Transport Access Node (**NaPTAN**) database is a UK nationwide system for uniquely identifying all the points of access to public transport in the UK. It is a core component of the UK national transport information infrastructure and is used by a number of other UK standards and information systems. Every UK station, coach terminus, airport, ferry terminal, bus stop, etc. is allocated at least one unique NaPTAN identifier.*

*The **NaPTAN** schema is a UK de facto standard, sponsored by the UK Department of Transport, that supports both the public registration of bus timetables by the Vehicle and Operator Services Agency (VOSA) and the data collection for the Transport Direct Portal.*

The TransXChange Standard

*As part of a family of coherent transport-related XML standards, **TransXChange** is the UK de-facto standard, sponsored by the Department for Transport, for exchanging bus schedules and related data. It is used both for the electronic registration of bus routes with VOSA, and for the exchange of bus routes with other computer systems, such as journey planning and vehicle real-time tracking systems.*

Glossary

Term	Meaning
AVL	Automatic Vehicle Location
CPT	Confederation of Passenger Transport
EBSR	Electronic Bus Service Registration
INFORM	The Passenger Transport Telematics Group
LTA	Local Transport Authority
NaPTAN	National Public Transport Access Node
PDF	Portable Document Format
PTE	Passenger Transport Executive
VOSA	Vehicle and Operator Services Agency

Contacts

How do I get involved in the electronic transfer of bus service data?

We have identified some initial points of contact in each of the stakeholder groups. These contacts will point you in the right direction for further information and help you to become more engaged in delivering the electronic transfer of bus service data.

Stakeholder Contacts
Bus Operators
LTAs / PTEs
Licensor / Regulator
Travel and Transport Information Providers

Testimonials

Arriva

Our customers want transport to take them to their destinations - safely, on time and with the minimum of fuss. People want to have a real choice in their use of public transport. Arriva uses clear customer information to encourage people to use our services.

Electronic bus service registration will facilitate the supply of bus service information directly from the scheduling system and so will remove any possibility of errors.

All the information will be provided in a standard format with an improved quality of mapping compared with the manual system it replaces. It will also play a crucial role in the future of data exchange between stakeholders and partners in the public transport sector.

Public transport thrives on partnerships. We work closely with local authorities and information providers to achieve our success. The use of electronic bus service data will strengthen this partnership and ensure that more timely, accurate and clear information reaches our customers.

"Quote" from CEO / MD (UK Regional Bus)?

Stagecoach

Our customers want buses that turn up when they say they do and good quality information on the services, delivered in an understandable and usable way.

Bus service information needs to be accurate, consistently delivered and available 24 hours a day, 7 days a week.

The need for the integration of systems is long overdue and Stagecoach Group fully supports the introduction of EBSR as a means of improving the way our business communicates timetable, schedule, and geographic data to both internal and external stakeholders.

We believe that this will enable Stagecoach Group to deliver what our customer wants whilst also improving the efficiency and effectiveness of our operations.

It will allow us to shift our focus to precise service and schedule design and reduce the turnaround times for bus service registrations.

We look forward to the vision of EBSR being fully implemented across the public transport industry.

"Quote" from CEO / MD (UK Bus)?

VOSA

EBSR represents a further and significant step forward in VOSA's transformation programme that will enhance the services provided to our customers, the bus operators, and our partners, enabling VOSA to meet its e-government targets.

The use of automatically generated and transmitted timetable and routing information has the potential to save significant resource within local authorities. Information will move swiftly through the registration process meaning that local authorities have more time to get information to the public so that new services and changes get known about more quickly. All of which will increase bus service usage.

EBSR will enhance the integrity of data, making it more accurate and comprehensive. It will also make casework handling more consistent and effective. Bus monitoring and overall bus service compliance will also be improved.

Ultimately, EBSR will improve our productivity and service standards, and reduce the total cost of registrations.

Transport Direct

EBSR has demonstrated the power of partnerships: a shared investment for a shared success.

That success is to move bus service data seamlessly, coherently and electronically between authorised and interested stakeholders, resulting in the efficient and effective management and handling of bus service data.

Data and information quality will be improved throughout the whole supply chain, and value can be added to data, services and processes where appropriate.

The wider travel information community has worked together to deliver the success of EBSR and will continue to work together to deliver the widespread electronic transfer of bus service between all parties.

Travel and transport information will improve … and passengers will be better able to make intelligent travel choices.