



The future of mobility

*If the bus is to play a leading role in the long term future of urban mobility, we need to be **scanning the horizon now and sowing seeds of change** to ensure that a very different bus world stakes its claim to exist.*

*We shouldn't be spending time and energy implementing a retro 1980's governance model for yesterday's buses but be focused on **designing a new age of the bus looking toward 2030 and beyond.***

*This is the **fourth of fourteen weekly articles** on what different aspects of that new bus future could look like and the kind of things we need to be sowing seeds for now if we are to truly **ride the wave of future opportunity.***

*We need to **be bold if we are to shine** over the next 40 years and do more than invest in a zero emission fleet, tinker with governance and introduce the odd capped fare.*

Episode Four – Vehicles

If we are to **create a public transport first urban environment** as set out in **Episodes One** and **Two**, it will have major implications for the **volume, type and design** of the vehicles used.

That isn't a change which can simply be implemented overnight. It will **have to evolve gradually** but the sooner that evolution commences, the smoother the process will be.

In **Episode Two** on **Network Development**, there is a **critical** recommendation that operators should seek to **deliver at least one new flagship urban operation demonstrating the transformation in service quality that is possible.** Those flagship operations will **require vehicles designed for that purpose** so we need to be looking right now at how they can be designed, built and procured.

We need to **engage manufacturers in that process** and make **their contribution to a public transport first urban environment.**

There are **7 broad areas** where vehicles will require to evolve relating to **Operating Speed, Passenger Capacity, Fashion, Style and Quality, Environmental Impact, Autonomy, Digital Connectivity and Entertainment,** and **Service Type.**

Urban Service Operating Speed

Journey speed will be a **critical selling point** for buses if they are **to supplant the car** as the major means of mobility in towns and cities.

UK bus operations have been noticeably **slowed down** both by the **growth in traffic congestion** and the **conversion to One Person Operation** which took place in the 1970's and 1980's.

In addition to bus priority measures delivered by local highway authorities, **operators themselves need to take responsibility for ensuring that every other aspect of their operation is designed to make passenger journeys as quick and smooth as possible.**

The tradition, since the 1970's, has been for **virtually every bus operating outside London to have only one door** requiring **passengers wishing to board having to wait until passengers wishing to alight have done so** and then **also stopping to interact with the driver** either for payment or to touch their card on a validator.

Those processes add delay at every stop which, cumulatively, adds up to a material delay for each passenger and additional operating cost **which has an adverse knock on effect both on patronage levels and fares.**

Most urban buses around the world do not suffer from those problems as they **have at least two doors** with passengers able to board immediately the bus stops whilst passengers alighting do so simultaneously.

There is no good excuse for **UK operators slavishly sticking with single door vehicles impacting negatively on the customer product** when most of the rest of the World have adopted multiple door operation.

We need, therefore, to rapidly pivot to **all urban buses having multiple doors and operating practices which remove the need to interact with the driver on boarding** and parallel adjustments to bus stop infrastructure to suit.

No excuses!

Also, we should be encouraging manufacturers to **optimise speeds of acceleration and deceleration without compromising passenger comfort and safety**. Getting every ounce of benefit out of the smoother ride arising from the zero emission conversion.

It all simply needs to happen if we are serious about the bus being the foremost means of commuting in urban areas.

Capacity

The proposals set out in **Episode One** and **Episode Two** will see a **dramatic increase in the volume of bus use in urban areas** and, particularly in the major cities, substantial increases in demand on core urban routes **requiring much higher individual bus capacities**.

That will **most easily be achieved**, whilst maintaining the critical need for speed, **through the deployment of articulated 18m and, potentially, bi-articulated 24m single decks** where suitable adjustments to highways, street furniture and bus lanes are possible.

Following 18m articulated buses being '*banished by Boris*', the only major front-line use of this fleet type is in Belfast but, as our current Prime Minister has recently reminded us, Northern Ireland is in both the UK and the EU!

Fashionable, stylish and high quality

We identified in **Episode Three** that one of the **attractions of car commuting is the ability to travel in the car of your choice**, so it is essential, if we are to convert people to habitual commuting by bus, those **buses need to be materially more fashionable, stylish and high quality** so customers enjoy the experience.

The **higher travel volumes and load factors** should **allow a little more investment** in the vehicles, themselves, with creativity devoted to **ensuring they tick the fashion, style and quality boxes**.

Equally importantly, they should always be **well presented** every day of their lives.

Connectivity

For security, safety, reliability and information, vehicles should have **fully working reliable 5G connections powering live cctv, monitoring bus performance and supporting customer information**.

Particularly on longer distance commuter and interurban operations, **good quality, powerful wifi connections are essential** to allow customers to **connect**

devices for both audio and video entertainment purposes. Operators should also provide a **library of entertainment stored on a hard drive on the vehicle** accessible by Bluetooth connection.

This is **an area where the bus can fully outperform the car** allowing interactive digital activity which simply would not be available to a car driver.

Environmental Impact

The **transition to zero emission is a critical requirement** whether through battery electric, hydrogen or opportunity charging both to be kind to the environment and also to customers through a quieter, smoother ride.

Autonomous

There will clearly be a **role for autonomous bus technology in at least four forms.**

Firstly, the use of **autonomous Pods for relatively short feeder shuttles** where segregated alignments can be made available.

Secondly, in large depots in major cities, simply **using autonomous technology on the fleet within the depot environment for parking, shunting, cleaning and charging may provide efficiency gains and optimise staffing requirements.**

Thirdly, **where fully segregated infrastructure can be made available, for high frequency urban routes** using similar technology and operational procedures to fully automated driverless Metros.

Fourthly, where there are **DRT components in networks**, there will be **scope to deploy autonomous taxis** in appropriate areas where there is a need **for some simple ride hailing as opposed to ride sharing** to maximize inclusive access to the full network.

Service Specific Vehicle Types

The **Network Development** proposals set out in **Episode Two** refer to urban services, commuter and interurban express services, urban feeders, shuttles and DRT style operations.

There is a need for the **nature of vehicles to evolve under every category** but the **major changes will certainly apply within urban areas** with the fleets designed for much faster flowing operation. Some similar concepts will apply to the

commuter express and interurban operations which will also require to be **designed to minimize dwell time at stops.**

The **DRT fleets will comprise minibuses, people carriers and, potentially, autonomous taxis** where there is a need for some simple ride hailing as opposed to ride sharing to **maximize inclusive access to the full network.**

Evolutions in Operational Practice

It is well understood that **the cost of zero emission buses and the enhancements in vehicle quality** set out above **will change both the capital and revenue elements of financing** bus fleets.

The **more zero emission technology advances**, it is likely that the **ongoing full life ownership costs of the bus fleet will actually decline** on a like for like basis, excluding any major investment in the customer on board experience.

As the technology involves, **battery ranges will increase** whilst ongoing operational **maintenance of a battery powered bus will be significantly less than a diesel** equivalent.

Experience with previous generations of trolleybuses implies that the **vehicle life may also very well be longer.** That, however, **needs to be seen in the context of a customer requirement for a fashionable, stylish and high quality travel environment** which would call for a frequent refresh of vehicle interiors.

This will all, financially, need to be traded off against vastly different revenue streams.

Additionally, the **much-improved operating speeds, from a combination of bus priority measures and reduced stop dwell times, coupled with utilizing AI driven scheduling systems,** will have a **beneficial impact in reducing relative fleet size.**

Conclusions

It is clear that the new environment arising from the proposals contained in **Episode One** and **Episode Two** will require **significant changes to the volume, type and design of the UK bus fleet** which simply cannot be delivered overnight and echoes the comments made in **Episode Two** that **operators and manufacturers need to be thinking about those implications now** if they are to sow the seeds of a bus renaissance and deliver it over the next decades.