

The use, barriers and opportunities for Quasi-Real Time data in transport

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Background and context

Quasi-real-time (QRT) data refers to data used approximately 1-15 minutes after being collected. It is therefore appropriate for use in the management of active systems. QRT is useful for assisting transport infrastructure controllers in making medium-term decisions in order to manage load on the system. An example of a control element is programmable road signs temporarily reducing the speed limit. QRT is sometimes referred to as near-real-time.



A literature review was carried out to capture the current understanding of data, and QRT data in particular, in transport together with identifying the key trends.

Most importantly, it highlighted open questions and issues for the stakeholders' interviews. The combined understanding obtained in this way was validated by asking feed-back to the interviewees before freezing the conclusions.



A 9-question list was prepared based on areas emerged from the literature review. Data standards, the availability of open access data, data quality, as well as five key areas in which barriers can

Leveraging contacts, a number of stakeholders were identified across several different types of transport infrastructure and data-intensive businesses.



Individual interviews with stakeholders were conducted in order to compare the literature with real experience, transcribed and analysed



Barriers

Privacy and Legal

- GDPR • Consumer Unwillingness to give permission for Data Sharing
- Personal data can also be inconsistent and inappropriate for analysis.

Cultural

- Habits of organisations and policy makers prevent data sharing.
- Feeds into other barriers eg Commercial (unwilling to recognise benefits)

Technical

- Data sharing formats.
- Historical data storage not accessible.
- This can include non-digital storage.

Political

- Changes in political leadership can lead to the breakdown of existing efficiencies.
- Leaders can be overcautious to act.

Security

- Data sharing results in data more vulnerable to cyber attacks.
- Fear of GDPR fines and loss of consumer trust can also reduce sharing.

Commercial

- There exists a financial incentive not to share data.
- Unilateral sharing can allow for "free-riders".

Emerging Themes

International Standards

The UK does not seem to align to the main trends of centralised management of QRT data access, as commonly found abroad. Instead, more opportunities are provided for technological development through private entities. The UK's use of technology in QRT for transport infrastructure was widely reported to be good.

Availability of sufficient **technical expertise** to maintain and improve transport infrastructure data.

Open Access
Availability often comes at the expenses of data quality

Data Standards, or lack of thereof, making further pre-processing a necessary operation.

FAIR Principles

The FAIR principles have achieved partial penetration, being well recognised by more senior figures in public transport infrastructure provision.

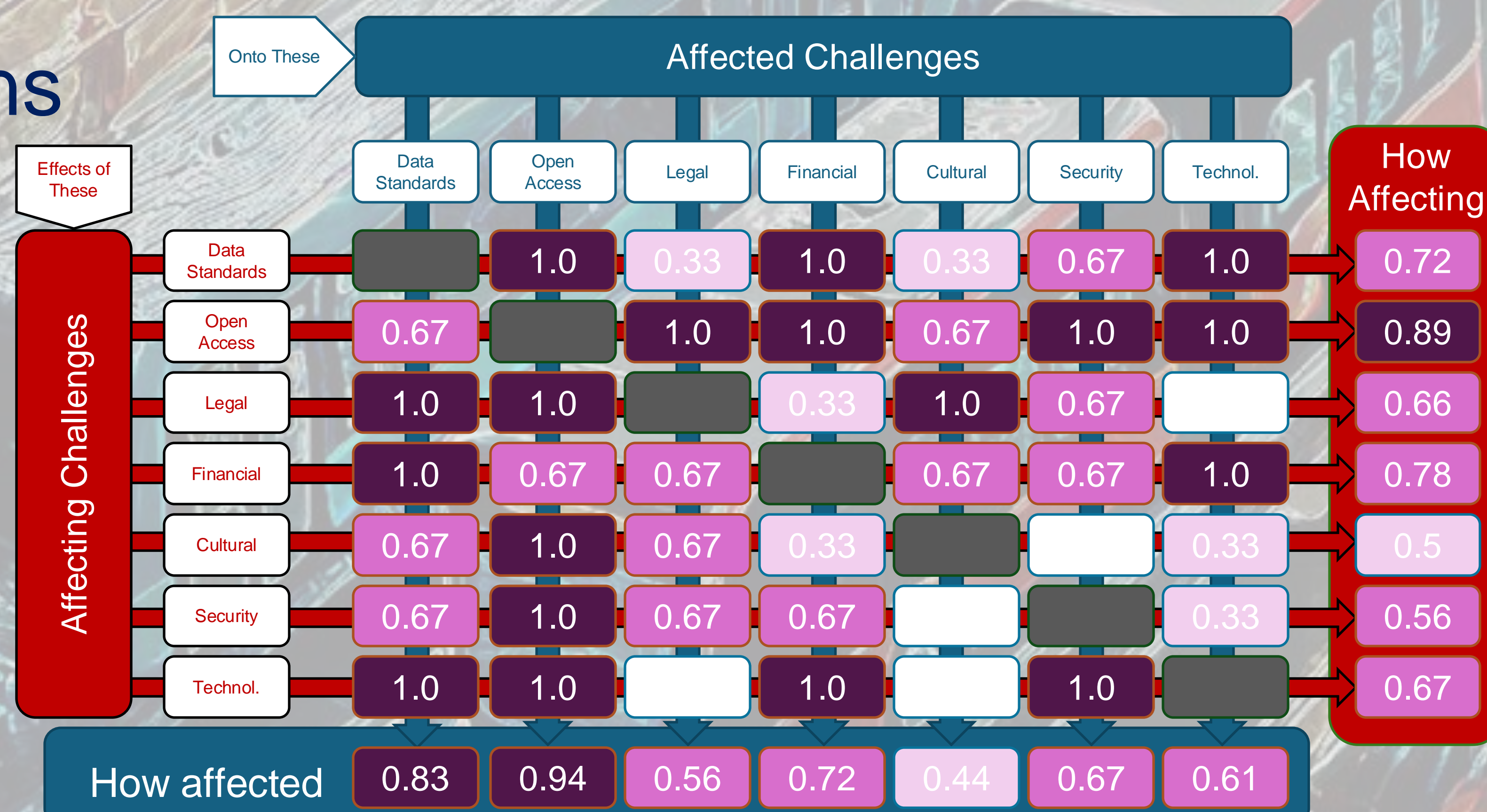
In the future of QRT we may find:

- Alignment to virtuous examples worldwide, such as the Dutch Talking Traffic model.
- The creation of a single public entity responsible for monetising data.
- Prioritising data quality, while allowing free market competition to improve infrastructure through technology driven by competition.

Recommendations

Data standardisation does not present a significant barrier to current QRT usage, but it provides an opportunity for improvement of national infrastructure through increased quality.

A choice should be made with respect to the form of national infrastructure provision to be pursued and the chosen strategy followed in order to make best advantage of its characteristics.



Efforts needed to improve connections between the highly decentralised technical managers of transport infrastructure, through both vertical data provision and an encouragement of horizontal knowledge sharing supported by professional institutions.

Additional efforts need to be made in order to secure the technical future of the field through the development of higher learning courses in transport engineering.

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