



UCL CENTRE FOR
ADVANCED SPATIAL ANALYSIS



OPEN DATA & VISUALISATION

The Smart City

*A “city” that uses **information and communications technologies** to make the critical infrastructure components and services of a city — administration, education, healthcare, public safety, real estate, **transportation**, and utilities — more **aware, interactive, and efficient**.*

Forrester (2010)

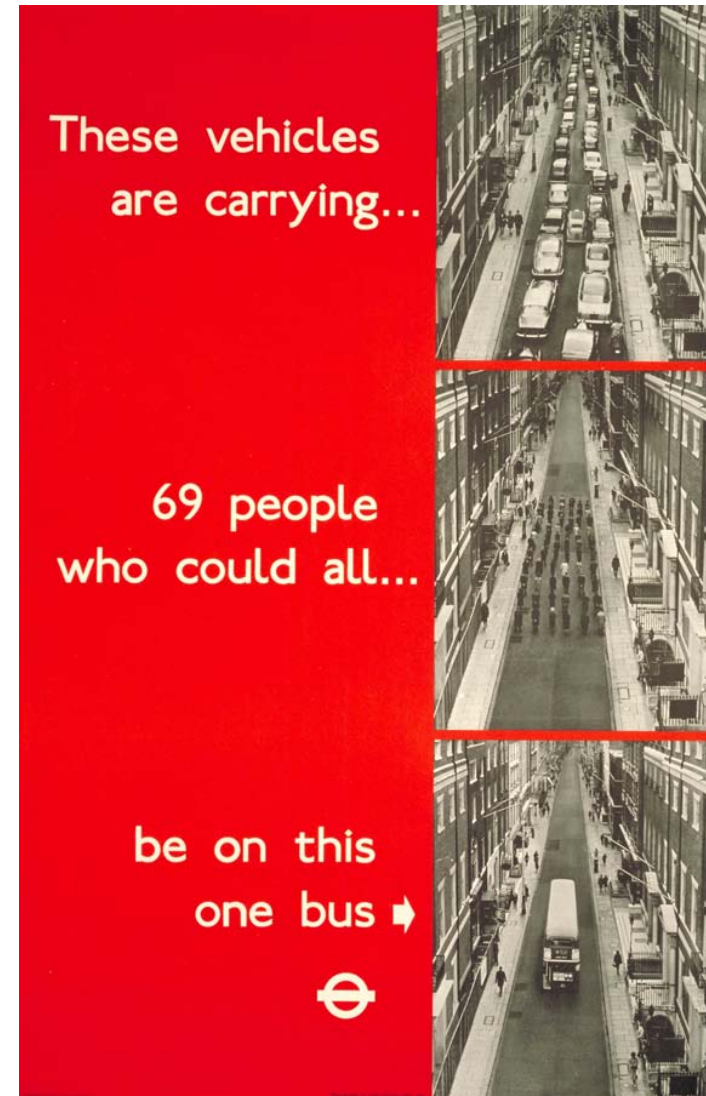
Multiple ‘grand challenges’ facing the contemporary city including: climate change, energy use, security, ageing, migration, and distribution management. The ‘smart city’ seeks in part to address these through instrumentation, interconnection, and intelligence. Tying all of this together is data.

The Question

Transport data – and in particular the behavioural data derived from smart ticketing – is essential to realising the smarter city.

The question is: *are you placed to benefit in an era when most of this will be open?*

1. Why open my data?
2. To whom should I open it?
3. What should I open up?
4. How should I open it?
5. What costs can I expect?
6. What value can I realise?



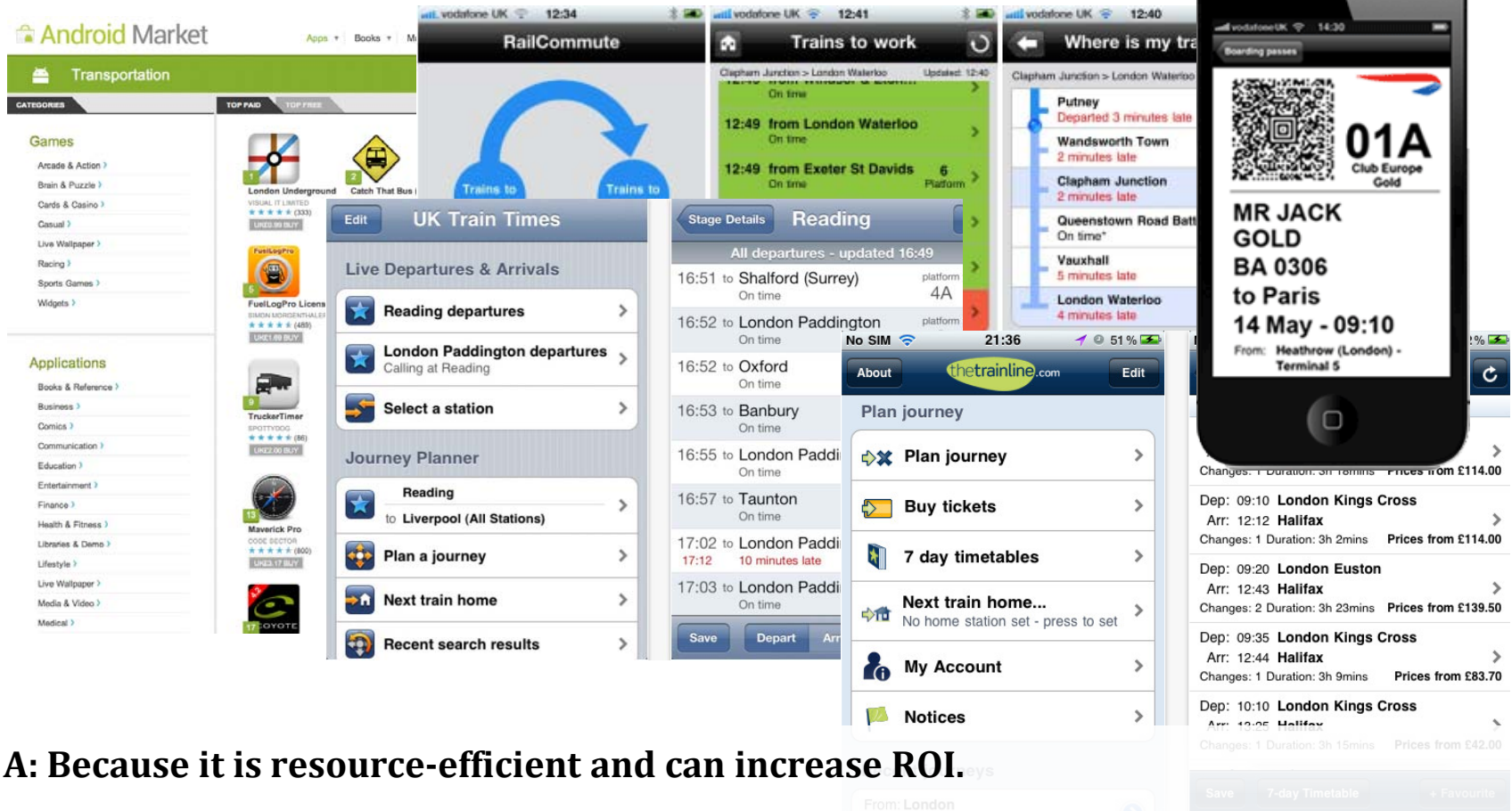
Q: Why open my data?

The collage consists of three overlapping web pages. The top-left page is data.gov.uk, featuring the 'Opening up government' header and a search bar. The bottom-left page is the Transport for London website, showing a news article titled 'TfL makes data freely available for smart development' dated 15 June 2010. The right page is london.gov.uk, showing the 'london datastore' section with a map visualization and a welcome message.

A: Because it is going to happen anyway.

Local and national governments are increasingly 'data literate' and are increasingly committed to opening up data to spur the next wave of innovation through the creation of 'information ecologies'.

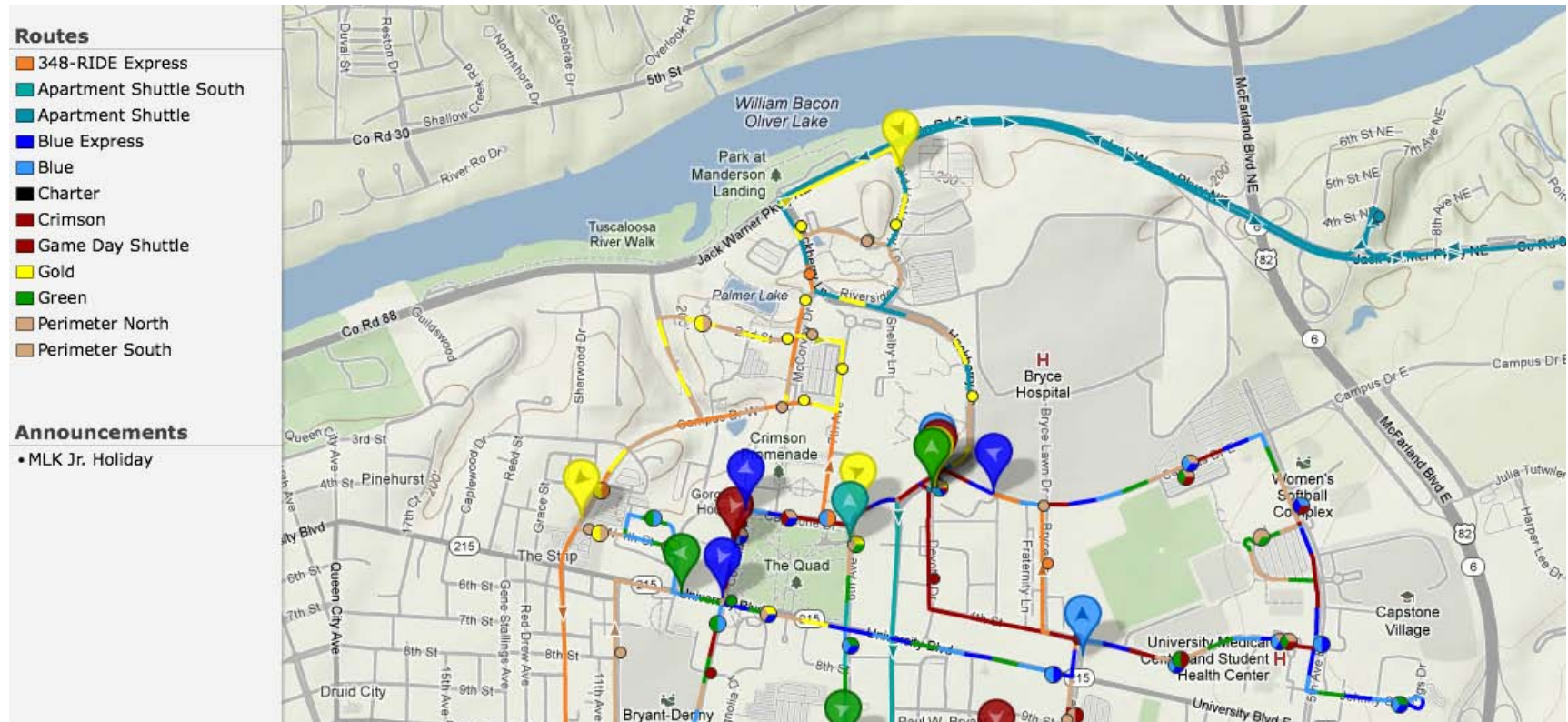
Q: Why open my data?



A: Because it is resource-efficient and can increase ROI.

The increasing interest in 'big data', apps, and visualisation means that you can effectively out-source work to a huge number of academics and developers for *free*. This dynamic can accelerate innovation while side-stepping internal silos. Moreover, increased access means increased usage.

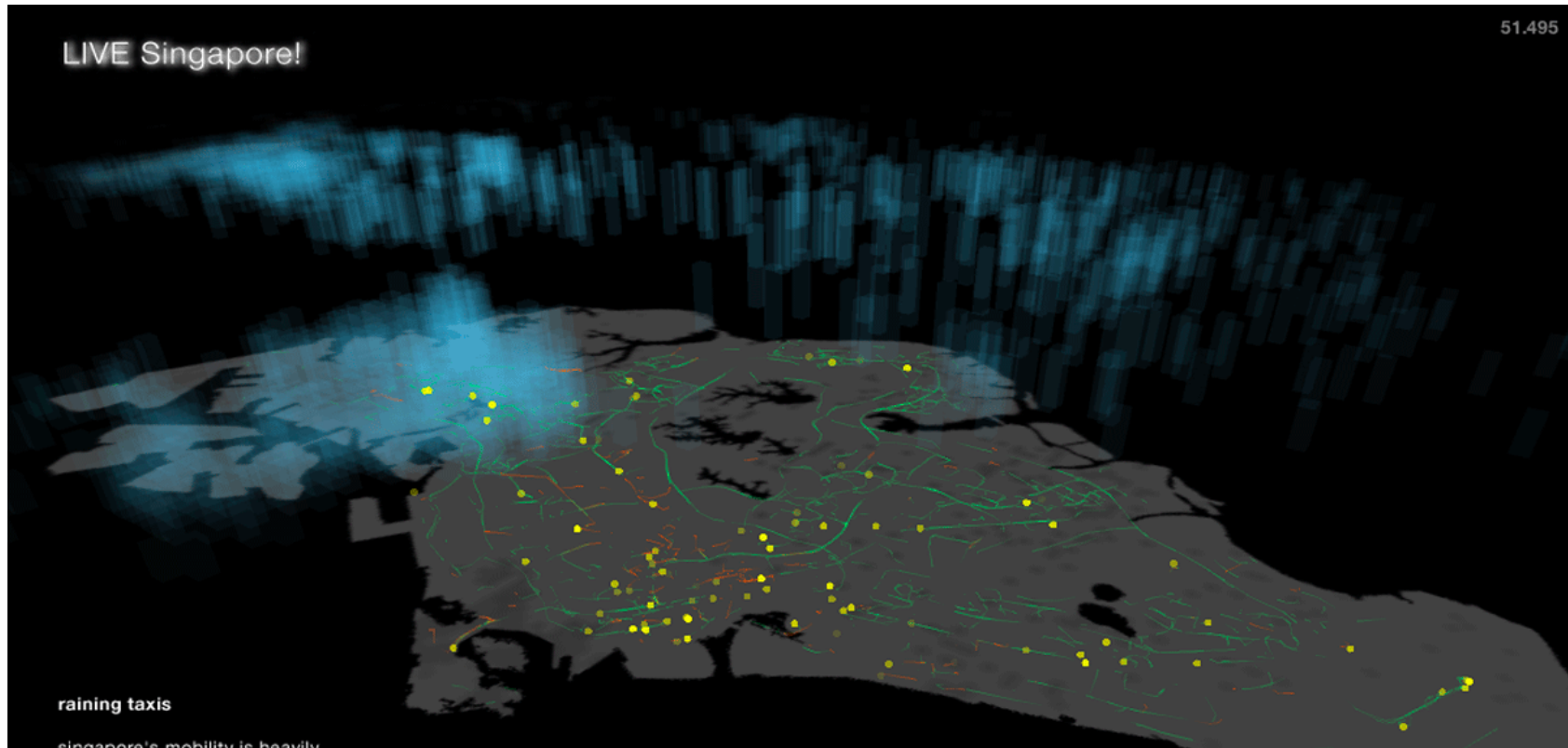
Q: Why open my data?



A: Because it increases the embeddedness of your products and services.

The more people depend on your data, the more they depend on you. By getting ahead of the open data curve now, you have a chance to help set the agenda for policy, researchers, and the public.

Q: Why open my data?



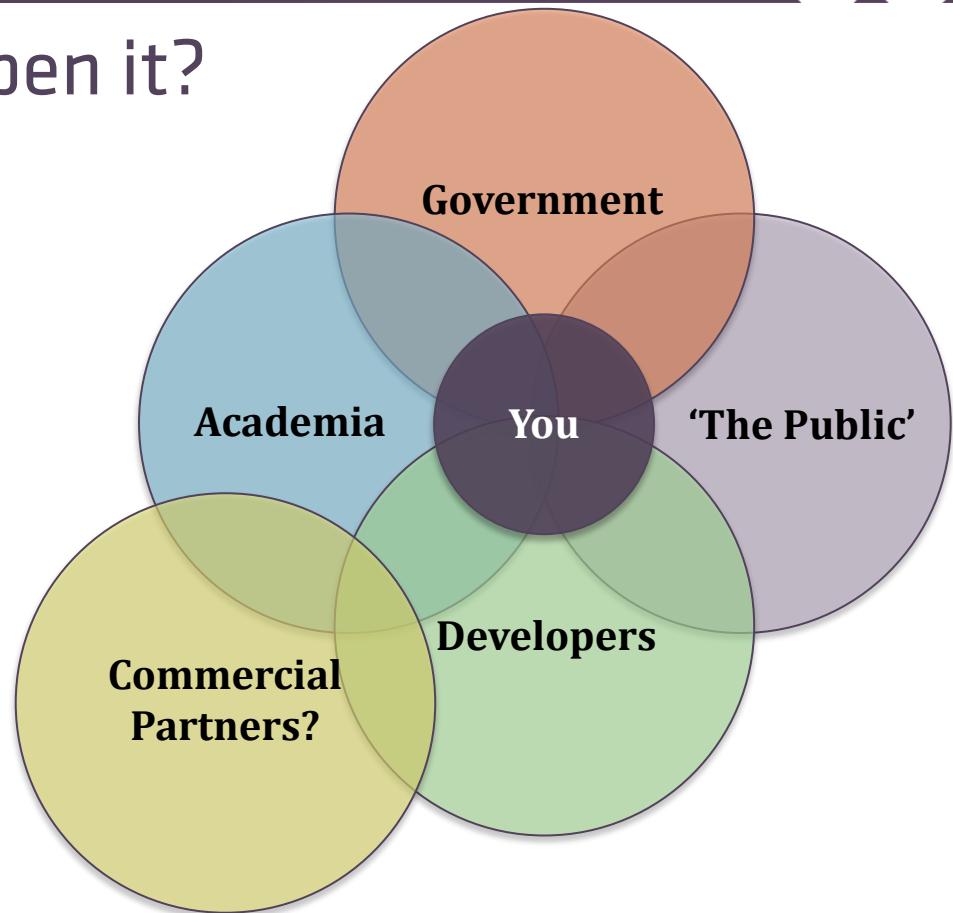
A: Because there is a wave of interest in behavioural data and visualisation.

Computer visualisation communicates more complex data more powerfully than ever before. Ride the wave of public interest in data-driven visualisation to 'good will' from developers and to newspaper coverage that you couldn't buy.

Q: To whom should I open it?

"Open data doesn't mean it is all given away for nothing."

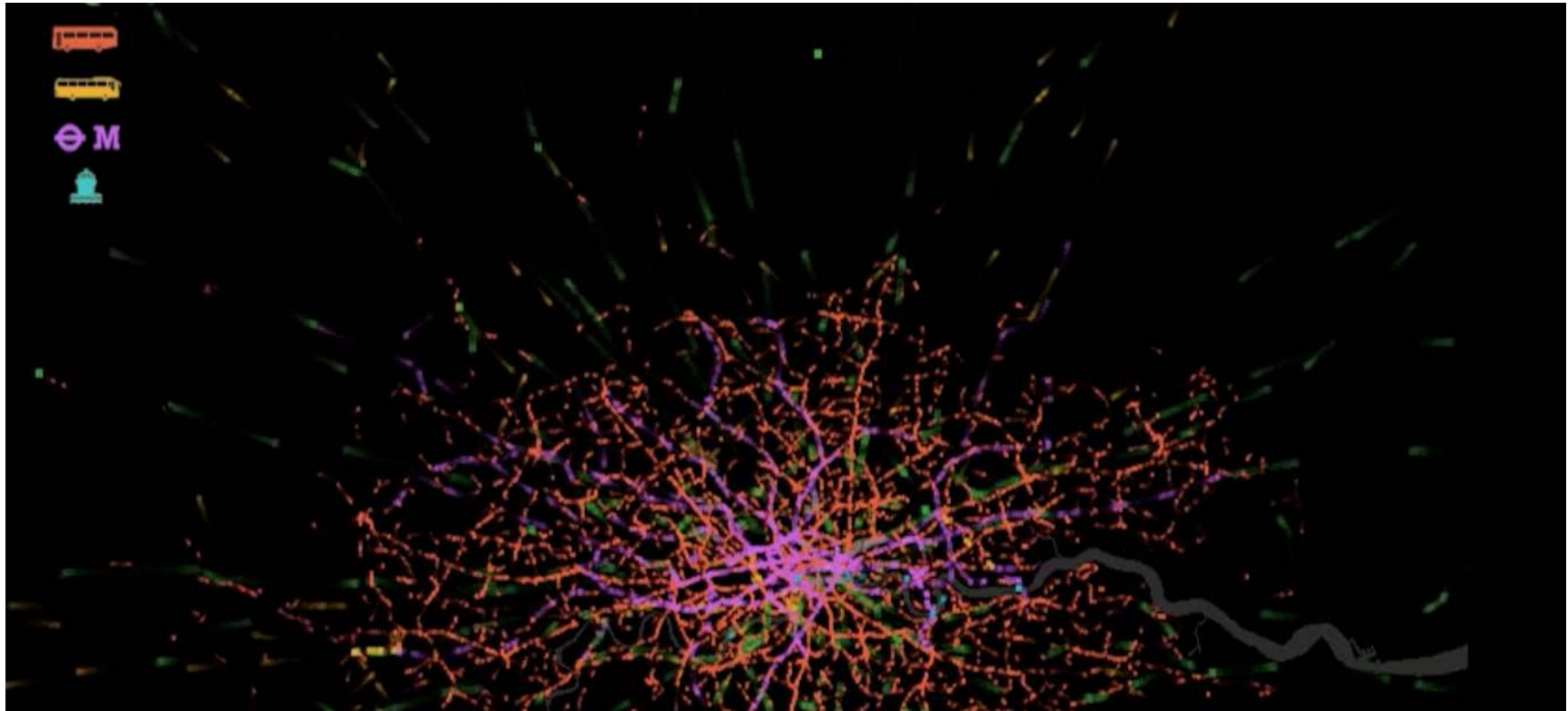
*Nigel Shadbolt,
Open Data Institute*



A: It depends, because the 'public' is not a monolithic entity.

Open data doesn't always mean accessible to any one, at any time: there are a continuum of interests between government, commercial parties, academia, application developers, and the general public. The right degree of openness will vary with the type of data and type of user.

Q: What data should I open?



A: Whatever you are comfortable with and can clear with regulators.

Don't rush! Take your time to coordinate with regulators, local government, and the developer community to avoid privacy problems down the line. You will also need to prepare for allowing others access to large volumes of data in a range of formats.

Q: What data should I open?

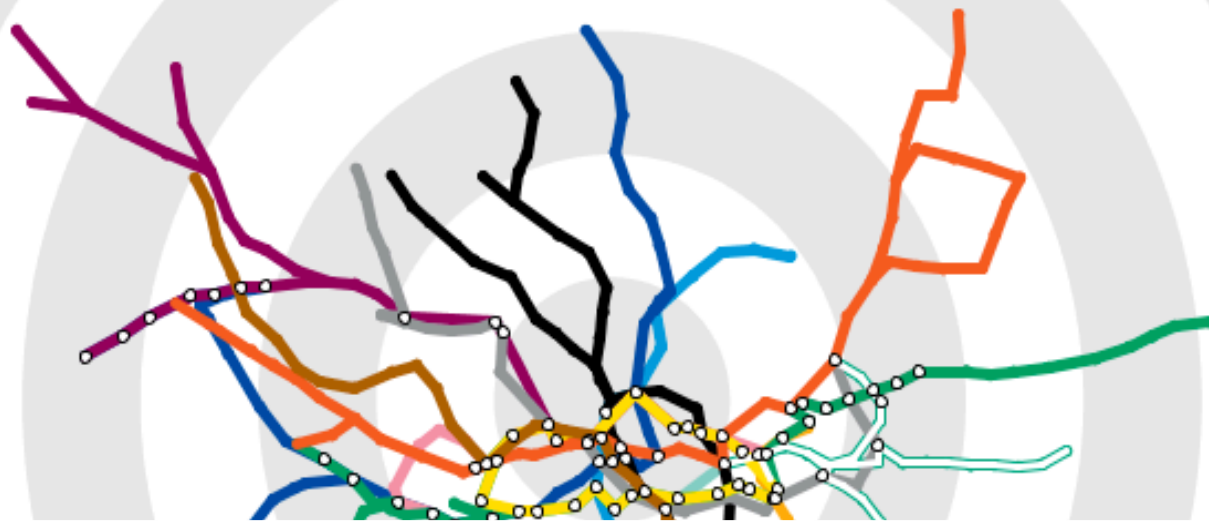


A: Start with aggregate data and work 'down' from there.

Aggregation and sampling reduce sensitivity: the finer the spatial and temporal resolution and the greater the coverage, the greater the risk. You also can trade off different types of resolution and recency to fine-tune the opportunities and the risks. Besides, the big picture is what most people want to see anyway.

Q: How should I open it?

Time to Travel from Euston



A: By establishing reasonable objectives, expectations and policies.

Realistically, open data is not a road to riches. However, by putting in place clear policies for each user-group you can reap good will and new operational or strategic insights while holding data users accountable for their actions.

A: By reserving the right to review and request changes prior to release.

For app developers this can be implemented through a ‘fair use’ policy to mitigate bandwidth and data usage. For academics this can be implemented through NDAs, storage and security policies, and a ‘right-of-review’ prior to submission of articles or other publications.

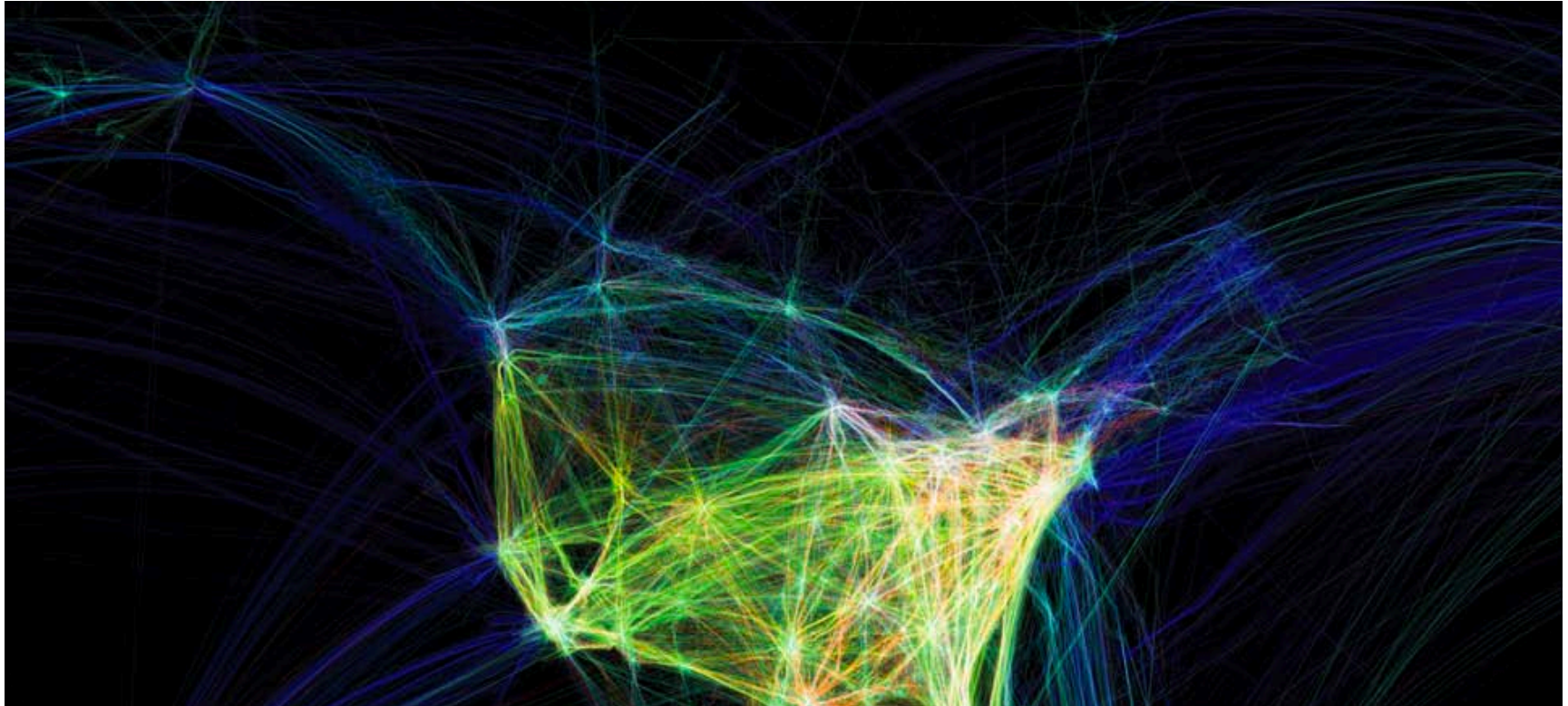
Q: How should I open it?



A: By thinking about the tradeoffs between real-time APIs and static data.

App developers are typically interested in *current* data, while researchers and policymakers are typically interested in *historical* data that encompasses long-term change within and between elements of the system.

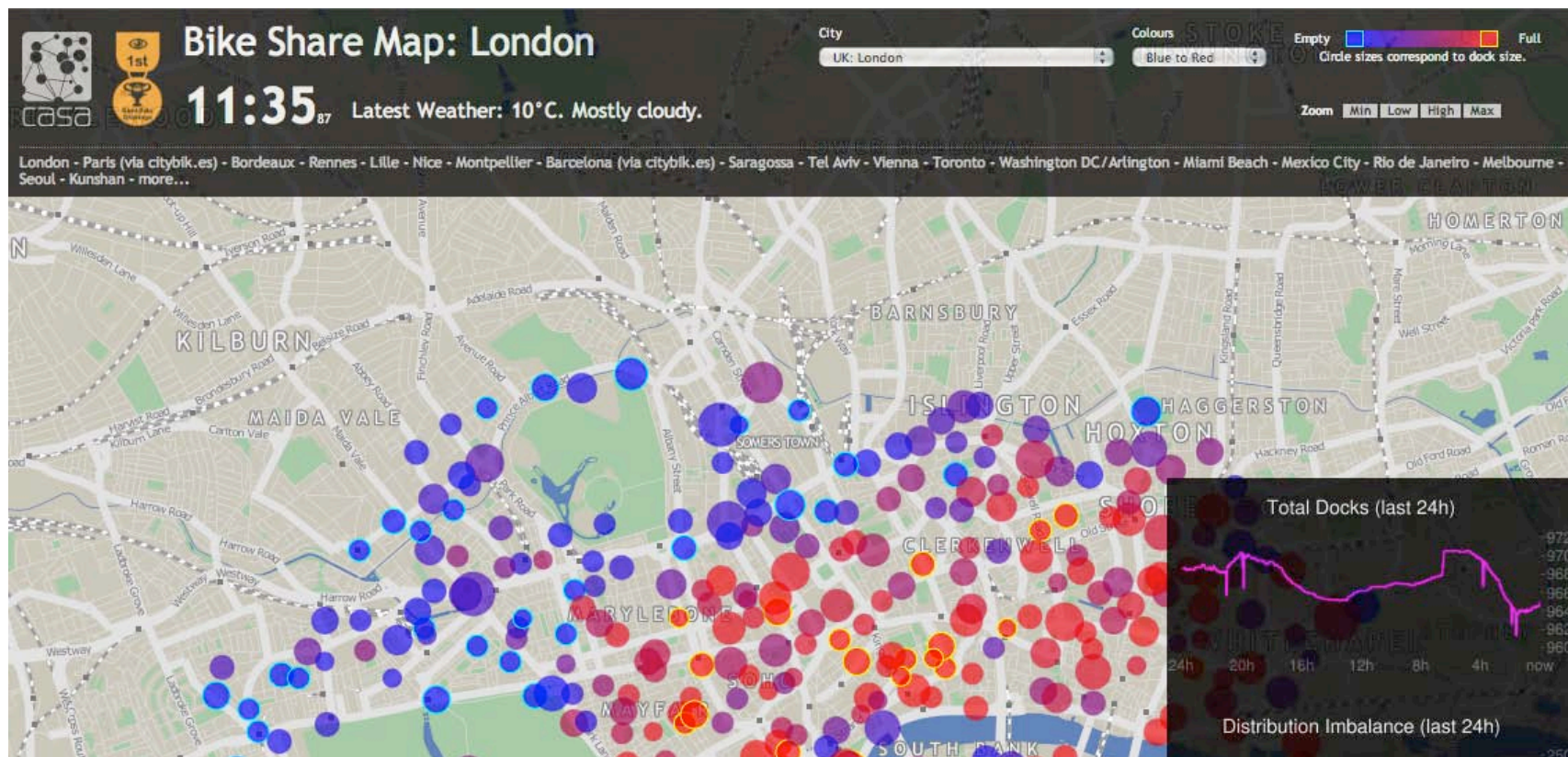
Q: What costs can I expect?



A: Costs will generally cluster around provision, consumption, and support.

The provision of open data is not necessarily cheap and will depend greatly on your existing reporting systems. However, staff time that is usually the most overlooked cost centre: people who are knowledgeable about the data *and* able to communicate effectively are vital.

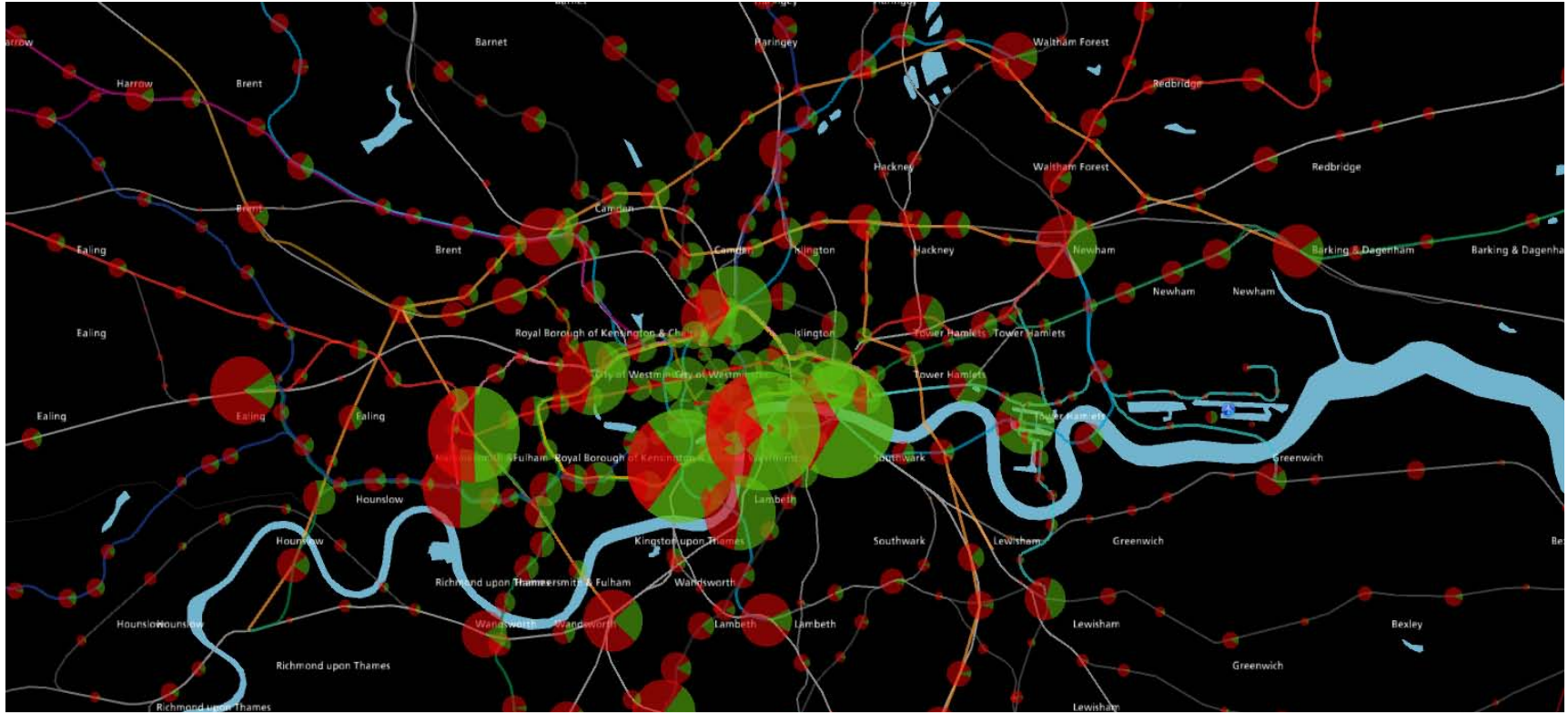
Q: What value can I realise?



A: Better visualisation helps to realise operational and strategic goals.

A proliferation of views into your data will enable you to understand your system in a more flexible and holistic way, while also helping the public to appreciate the work that you do every day!

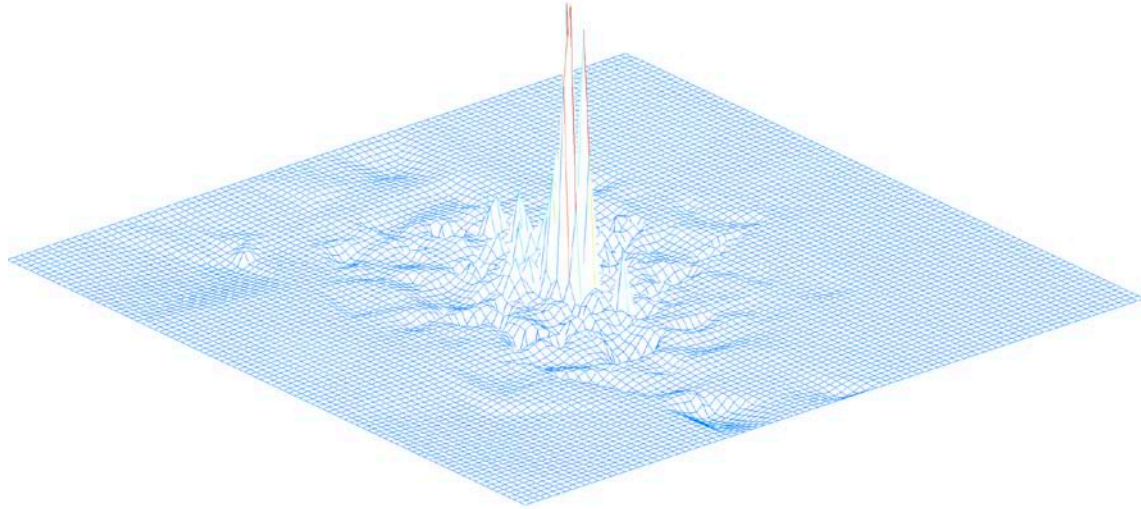
Summary



Although the ongoing costs of creating and maintaining open data should not be underestimated, the ecologies that these support underpin the emergence of a 'Smart City'. Open data and visualisation offer you new ways to harness 'big data' to operational and strategic goals, while engaging the public, academia, and policymakers through 'sticky' data provision.



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<http://simulacra.info/>

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