Traffic Management as a Service

Pieter Morlion, November 2016

"If they can do it to music, we can do it to traffic management"

Current traffic management centres are not adapting fast enough to the disruptive trends within the transport & mobility area. This leads to a digital divide which can result in governments and communities loosing control over traffic on their territories. To close these gaps, I suggest to 'Spotify' traffic management: organise it as a cloud-based service. Enabling us to partner up with the disruptive services and solutions erupting everywhere.

As you are reading this, you have already noticed the mobility industry is shaking. Earthquakes like Uber, Tesla and Google's self-driving car are *finally* sparkling up the hundred-year-old automobile. Technology helps us building the transport systems and schemes smart species deserve.

However, have you ever visited a traffic control centre? They're not evolving at the same pace. It's just rooms with screens. Lots of screens. And people watching them. How do they expect to keep up with the visionaries? Are they on top of things? Are they prepared for the decades to come?

I had the pleasure to visit traffic control centres around the world and meet many of their managers. Instead of dancing to the new grooves, many people are sitting at the bar. Putting old wine in new bags, as we say in Belgium.

The good news: it's not that hard. Whatever Airbnb and Spotify are doing, we can do it for traffic management. That's why I would like to advocate a new concept: traffic management as a service. To shift the focus from 'being in the middle' to 'being in control'. To close the gap with whatever is going on out there. To both join *and* challenge the technology sector in developing the mobility that we deserve.

How does a traffic control centre work

It's not hard to understand how traffic control centres work. They gather insights in what is going on in traffic. Operators watch this information to detect problems. If something unintended is happening, they intervene to bring the situation back to normal.

Why this could be done better

Information is collected mostly through infrastructure that is bought and maintained by the government itself. Through car detection systems and video camera's, control centres try to get a grasp of what is happening on their roads. This hardware is however expensive and it's nearly unfeasible to supervise the whole road network this way. It takes years of investments, and still then it requires some luck to spot an accident.

The information gathered by this equipment is usually displayed on a lot of screens. Operators watch them 24/7 to check if somewhere something is not as it is supposed to be. Meaning, a lot of the time those operators are bored. Really bored. Apart from this being a waste of beautiful human brainpower, it's also a waste of money. Can't we let those people use their expertise on other things when nothing really is going on?

And now: the most interesting part of the current traffic control centres. When something is going wrong, the investments should finally pay off and the true value of traffic management is kicking in: making it right again. This is probably the biggest disappointment: can they really? The tools at hand are quite limited: calling the police to intervene on the spot, putting warnings on digital billboards and reaching out to drivers through the radio or social media. In the best case: changing traffic light plans. Should we expect more for a $3.000.000 yearly operational cost [*]? On top, these are all actions that could probably be managed by the processor in an average microwave oven.

What do we do then?

First of all, any traffic management should start with a clear vision, reflected in policies. How can we get people in a safe, efficient and sustainable way from one place to another? Where do we want cars? How to cope with negative side-effects? How do we design our cities? How to organise public transport? What do our citizens actually want and need?

Only after a clear vision has been established, a traffic management centre makes sense. It informs people of the mobility choices they have within the given policy framework. Traffic management centres gather real-time information about all transport modes and share it with those to whom this is relevant. So citizens get to choose for themselves what transport mode, route and time they consider best for travelling.

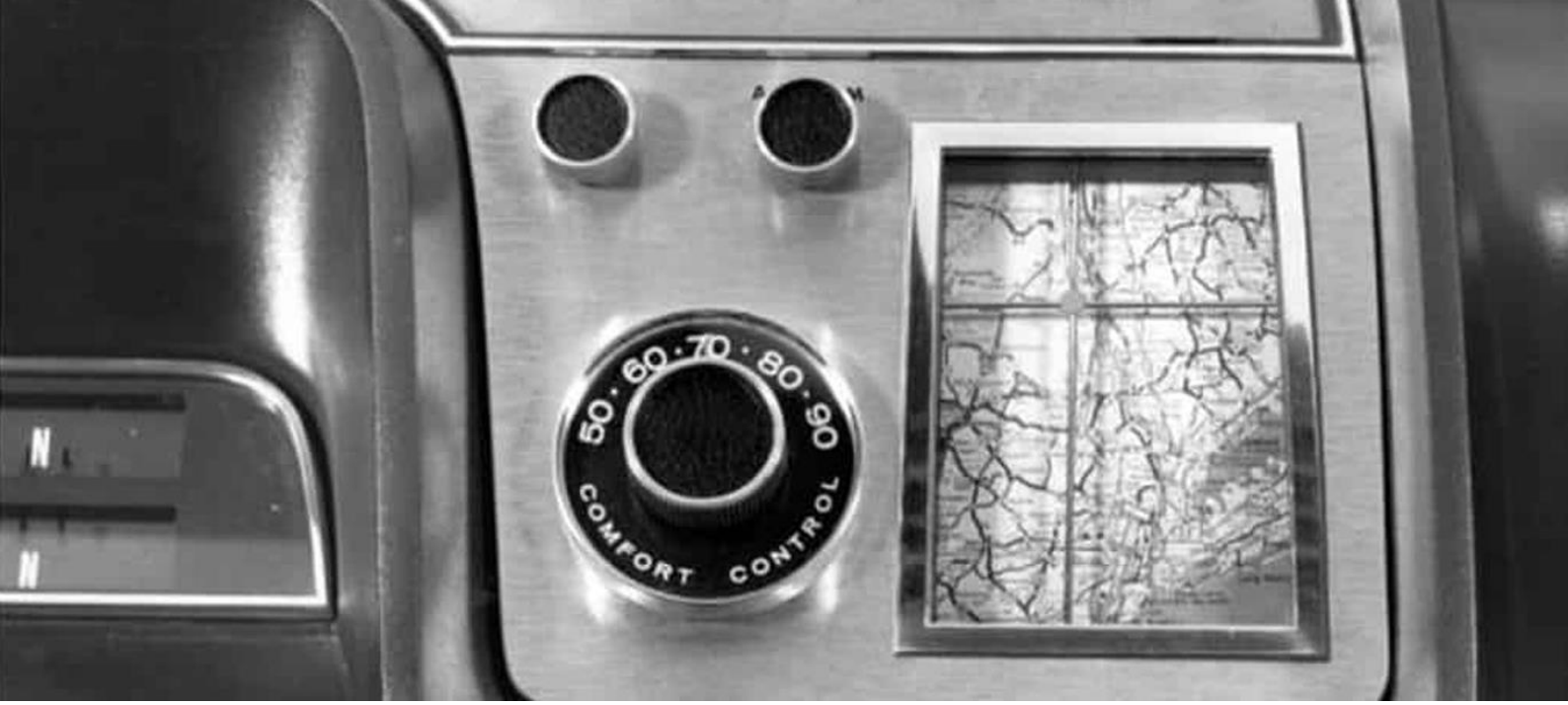
The traffic management centre of the future should look definitely different than the ones today, in order to achieve the above. It will have to move away from being an infrastructure-based system in the middle that claims a monopoly on traffic management and traffic information. Look around you. There are plenty of solutions, communities and services available that can do a lot better than we, governments, do.

Think about Google Maps, Uber, TomTom, Strava, Moovit, Open Street Maps, Blablacar, Waze ..

These solutions have a stronger impact than the traditional traffic control centres. They provide a personalised service to millions of individuals, and allow citizens to feed back information about what is happening out there on the road. This way, these services and companies collect way more information than traditional systems do.

If we don't adapt the way we manage traffic control, the market will take over. This means that what traffic looks like would be determined by the sum of the interests of millions of individual customers. This means that the reality on the street could differ from the visions and desires of the communities owning those streets. It might be essential for governments to keep an eye on the general interest, and not loose control.

Therefore it is not the task of the government to build huge control *rooms*. The task of governments is to *be* in control. We, governments, should partner up with disruptive solutions that can serve our citizens better than we do. But not without challenging them. It is the task of the government to create a policy framework in which these service providers can freely operate. And to ensure that those services *serve* the best interest of the communities their customers are part of. That is the essence of sustainability.



How to put this into practice

How to bridge the gap between our current traffic control centres and disruptive mobility solutions? A step in the right direction would be to ‘Spotify’ traffic management. Instead of each city constructing it’s own control room, build a cloud-based traffic management centre. Any city who wants can subscribe by paying a monthly fee. Without any big prior investments. Immediately enjoying all the traffic management functionality. I think 'traffic management as a service' would be an appropriate name for the concept.

Traffic management as a service

The basic idea stays the same. Information is gathered, processed and actions are taken if necessary. The difference is that is everything is automated and centralised.

Most of the information needed for traffic management is already out there. Road operators, public transport companies, social media, traffic lights, mobility services and apps all contain loads of information. On top of that, every car is stuffed with sensors. The problem is that a lot of this information is unaccessible for traffic control centres. By partnering up with all these organisations and services, the information can be made available to the central platform.

The basic idea is that traffic information is getting more and more standardised. Information about a traffic jam, accident, bus delay or snow blizzard looks the same everywhere. Meaning that getting this information for the city of Ghent is done in the same way as acquiring it for Rome. Next to that, there a number of services that operate in nearly any country. A connection to these services only needs to be built once and can be used to gather information for almost any territory worldwide. After that, it's just a matter of defining for what area the subscriber needs the information.

The central platform also takes over a lot of the tasks of human operators. Governments can configure what they consider important and how traffic and mobility should be managed on their territory. Based on this configuration, the traffic management service can automatically take decisions or inform an operator when something goes wrong. This way, the operator can spend her or his time in a more useful way than watching screens all the time.

Also when it comes to acting upon information, the traffic management service can automate a lot of tasks. It can send out tweets, share information as open data, send notifications to navigation systems, notify in-car applications, put text on digital message signs and change traffic light signal plans if needed. Because a computer is taking over communications, there are few limits for spreading information. The traffic management service can come with an app that is available in the app store. Citizens can download the app and configure it to their needs. This way they only get notifications when something is going on in their neighbourhood, on their daily commute and for the transport modes they use. It's technically not difficult to send messages to individuals like "Hey Nick, road construction coming up in your street next week" or "Sandra, the train to work has a 18 minute delay today - taking the car will be 29 minutes quicker and cost you €8".

What are the benefits?

Traffic management as a service saves money and time, as it requires very little hardware. There's no need to wait for years until investments finally start paying off. By subscribing, you get access to all the information available and functionality at once.

Because it's one platform that is used by all the subscribers, things only need to be done *once*. Instead of doing it for every city around the world. A large number of functionalities can be made available centrally and subscribers can select the ones they need. If new technologies are available, they are implemented once and immediately available for everyone. No need for updates and upgrades to be done in every city in the world individually. Everyone moves at the same pace. *The fastest*.

Also, when a lot of governments use the same way of processing data and look at traffic management from the same angle, it's much easier to exchange information and recycle knowledge. Not only between the subscribers, but also with external services and systems.

As the platform can send individual notifications to individual citizens that are actually relevant to them, the gap between traffic management and the community they serve grows smaller. The communication should not only be one-way: citizens can provide

feedback to the information they receive, be heard, and help improve the quality of the service.

Traffic management as a service is about more than only cars. It connects with authorities and companies providing services for trains, busses, metro's, taxi's and cyclists. This makes it easer to advocate smartly combining and shifting between transport modes.

Finally, and most important, traffic management as a service will make traffic management more accessible, also for smaller and poorer regions. Governments that have a lot of mobility problems but lack decent infrastructure or budgets will also be able to access the service. The pricing could even be depending on the GDP of the subscriber. Traffic management as a service gives those governments the opportunity to catch up with the frontrunners that have decades of experience.

So?

I wanted to share these insights with you to get the discussion started about where to head with traffic management. I believe in the traffic management as a service concept, and invite you to join me in making it happen.

Pieter Morlion is a project manager for the public administration of Ghent, Belgium and building a traffic control centre for the city – Nevertheless, all the views represented in this article are his own and do not necessarely reflect the position of his employer.

images courtesy of: NASA, CNN, US Department of Transportation, Op Weg Door Gent, ANP / Peter Van Zoest