Bold approach needed to tackle city congestion, says White Paper

A new White Paper being launched at the Intertraffic exhibition in Amsterdam on March 26 says cities all over the world need to adopt bolder and more innovative approaches to speed road journeys and unclog their transport networks.

Highlighting successful initiatives in cities as diverse as London, New York and Hong Kong, *Traffic Management Transformed – Moving cities forward*, an independent White Paper commissioned by Siemens Mobility and Logistics and conducted by strategy consultant Credo concludes that more than half of the cities surveyed in an independent study are not making the most of the economic potential ambitious and long-term traffic management strategies can unlock. However, where that vision does exist the benefits are extremely significant.

Amongst the findings in the White Paper are that a stable political environment, clear planning process for what the latest Traffic Management Systems can achieve, and an understanding of the technology’s capabilities are vital for cities to maximise the economic, social and environmental benefits gained by smoother and faster traffic flows in cities.

As part of its extensive analysis Credo identifies four key success factors which are needed for a city to exploit the rapidly advancing possibilities offered by the latest Traffic Management Systems: Boldness, Knowledge, Creativity and Accountability. Although winning funding and making the case for investment in often hard pressed transportation budgets is invariably extremely challenging, the White Paper concludes that every city can make a compelling case, and that the benefits on offer for those which do are potentially vast.
Credo surveyed 2,000 registered attendees ahead of the Intertraffic exhibition in Amsterdam on March 25-28 to understand their use and expectations of traffic management systems. This survey was backed by interviews with traffic managers and city leaders to understand high level views of the technology and compare it with proven results from cities around the world.

**Significant challenges, big opportunities**

Although the latest traffic management systems are able to enhance urban traffic flows with relatively small infrastructure spend and disruption, Credo found that one in four cities surveyed does not have a clear vision and defined set of priorities to manage traffic flows in cities, and even amongst those that do, not all believe this is successfully translated into initiatives to manage traffic flows.

For those cities that do have a clear vision and initiative, three factors appear vital: a stable political environment; a clear planning process for what traffic management can achieve; and an understanding of the potential for traffic management. Yet when these criteria are all met, 40 percent of cities state that they have not been very effective in benefitting from traffic management over the last three years, and almost a quarter found they have not been very effective at all.
Major barriers
The reasons for this lack of effectiveness appear to come down to a lack of funding (40 percent of cities cited this), a lack of internal expertise and resources, and a lack of senior understanding. On this latter point, many traffic managers said they felt traffic management was not a significant enough priority for their city authority. A common theme was that the potential benefits had not been fully articulated and were not clearly understood. But where this understanding and vision does exist it creates a positive cycle that can secure more funding. As one European traffic manager explained: “There is a clear manifesto and good political stability which allows us to have a clear, consistent vision.”

Conflicting strategies
Although road transport is dominant in many cities, maximising the effectiveness of roads is not always a priority for cities. Just 35 percent are using traffic management systems to better accommodate demand, with 50 percent using the technology to reduce car usage via modal shift. Another European Traffic Manager put their situation in stark terms: “We want to avoid traffic through the city and encourage people to use the public transport system instead.” Many of the remaining 15% of cities with other priorities are still, nonetheless, seeking to cut car usage and increase public transport. These may be pragmatic and realistic aims but as the table below shows, despite the proven capability of the latest systems to make a meaningful impact on accommodating demand, views of its effectiveness are mixed, with less than 30 percent of respondents claiming that their measures had been very effective.

Effectiveness versus motivation

<table>
<thead>
<tr>
<th>A. What is your main motivation in modernizing and enhancing your existing traffic management system?</th>
<th>B. How effective do you think your city has been in the last three years in benefiting from the opportunities offered by traffic management?</th>
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<tbody>
<tr>
<td>Very effective</td>
<td>Very effective</td>
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<tr>
<td>Somewhat effective</td>
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<td>Not very effective</td>
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<td>Better accommodating demand</td>
<td>Reducing car usage (via modal shift)</td>
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Optimising for the future
As with all information and communications technology the capability of traffic management is developing rapidly, allowing management of car use rather than simple deterrence to become an ever more viable transport policy.
The latest wireless technology and near future smart car solutions present huge opportunities for cities all around the world. The Chief Transport Executive of a major European City is adamant: “We are going to make a step change. Our new ITS system will help the city prioritise types of traffic and make better use of road capacity.”

This approach is backed by 71 percent of respondents saying their investment is focused on implementing new solutions with more advanced and innovative features. For the remaining cities, many face a conflict between extending existing systems and maintaining what they have. Furthermore, there is a significant minority opinion – 29 percent of those surveyed - which believes that new solutions offer little benefit and are unnecessary: to convince these cities suppliers will need to communicate the benefits of their products more emphatically in order to make significant headway.

Funding inevitably remains a problem for many cities, with only 38 percent expecting to spend more on traffic management in the next three years, with 31 percent expecting funding to remain static, and another 31 percent expecting it to fall. To prevent a downward spiral of funding it appears vital that the economic benefits of cutting edge traffic management systems to generate economic growth as a complement to public transport rather than an alternative need to be better communicated.

It is telling, however, that the most ambitious cities appear to be the most successful. It does seem, according to the study’s findings, that the most advanced and innovative solutions seem to win the most funding. Those cities which are actively looking towards the future – as opposed to retaining legacy systems or incrementally improving them – are consistently more successful in winning funding.
Many cities, four types

Credo created a framework to evaluate cities based on their governance, priority afforded to traffic management and scale of ambition in using traffic management to improve mobility, accommodate demand and drive economic growth. Following this it was able to group cities into four different categories:

- **Strategic Ambition** – those cities which have appropriate governance for traffic management and have high levels of ambition for what traffic management can achieve
- **Advocates with limitations** – those cities that have high ambitions for traffic management but do not have the appropriate governance, policies and structures to capitalise on this ambition
- **Informed conservatism** – those cities which have some knowledge and structure around traffic management, but have made an informed decision not to capitalise on these opportunities
- **Unaware and unambitious** – cities that have a limited knowledge about the options for traffic management and very limited ambition to use it to accommodate demand.

The outcome of this is that it appears that less than half of the cities surveyed in Europe and North America have genuinely ambitious plans for traffic management. Most worryingly of all, 9% appear unaware and unambitious in their plans – and given rising traffic levels and ever growing environmental pressures this must be a major concern.
Changing the paradigm

Credo’s analysis has shown a disappointing picture for the use of traffic management technology in major cities of North America and Europe. The research highlights not that traffic management is incapable of providing step changes in urban mobility, but that the majority of cities lack the tools, resources, knowledge and ambition to capitalise on the opportunities.

In short, a lack of knowledge about global best practice is limiting the scale of ambition and making the challenge of implementation seem daunting and high risk. Concerns about funding are limiting ambition, and a lack of ambition means cities are unable to create a compelling case to secure funding; and finally, a limited appreciation of how traffic management system can accommodate traffic flows is forcing cities to view the technology as a tool to deter car use and by extension a less deserving cause for funding than public transport.

The way forward

Thankfully, the lessons of the most successful cities point a clear way forward, and a four stage process shows how advanced traffic management systems can be deployed to maximise road capacity and speed traffic flows.

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<th>The way forward</th>
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<td>Be bold</td>
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<td>- Set ambitious targets</td>
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<td>- Let the goals dictate the funding</td>
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<td>- Create the governance framework to innovate</td>
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<tr>
<td>Be knowledgeable</td>
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<td>- Monitor global trends</td>
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<td>- Learn from best practice</td>
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<td>Be creative</td>
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<td>- Capitalize on new technology</td>
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<td>- Develop new approaches</td>
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<td>- Leverage new sources of funding</td>
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<td>Be accountable</td>
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<tr>
<td>- Set targets and measure outcomes</td>
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<tr>
<td>- Compare return against other transport spending</td>
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<td>- Global benchmarking</td>
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Be Bold

The first stage is to be bold and ambitious to create a compelling funding case to develop new schemes. It requires a strong foundation of strategic planning and close collaboration with other partners, and a clear governance process to ensure that the initiatives are complementary and promote mobility across the city’s entire transport network.

Perhaps the best example of such boldness is London’s congestion charge. With peak time traffic speeds of 4.2min/km in 2002, only bold intervention could speed traffic flows, reduce harmful emissions and encourage the use of public transport.
Running from 0700 to 1800 on Mondays to Fridays, the congestion charge, which applies to Central London, has seen a 21 percent reduction in overall vehicle/km in the area from 2000 levels. Furthermore, because the revenue from the charge has to be used to improve transport in London, major investment in bus services has been possible, and rewarded with a 61 percent increase in usage. As another benefit, changes in road space allocation have seen cycling increase by more than 200 percent.

Congestion charging does require public support, and a key aspect of that is using revenues to improve alternative methods of transport – but London’s success is a lesson to the world.

Be Knowledgeable
With over £5 billion a year spend globally on traffic management systems across hundreds of cities, assessing best practice isn’t easy, but Hong Kong’s deployment and development of Intelligent Traffic Management Systems shows what can happen if attention is paid to developments elsewhere.

After an extensive study of global best practice, Hong Kong introduced new traffic data collection systems and began providing users with real-time alternative to congestion hotspots from 2001. By enabling commuters to choose less congested routes or take an alternative public transport option, Hong Kong found that traffic flows around the city were improved. By developing a total understanding of traffic patterns and providing users with the information they need to make intelligent decisions, Hong Kong has proved that the acquisition and application of in-depth knowledge makes a real difference.

Be Creative
One of the biggest challenges traffic managers face is responding to incidents rapidly and keep roads moving. It is technologically possible now to acquire and process huge amounts of real-time traffic data, identify patterns and automatically apply proven solutions while still giving controllers the ability to intervene in more serious situations.

Santiago in Chile is already reaping the benefits of such a system with its PC SCOOT installation. This is an adaptive system which responds automatically to fluctuations in traffic flow through the use of detectors embedded in the road. In the
Netherlands city of Utrecht, an automated safety system installed in the Ledische Rijn tunnel is able to identify traffic jams and emissions levels and change intersections further ahead to help clear them.

But the standout example of such creativity is New York’s Midtown in Motion project. By using 100 microwave scanners, video cameras and other sensors to manage traffic flow – mainly on existing roadside infrastructure to save costs and reduce disruption – realtime data is passed wirelessly to a traffic control centre where remote adjustments were made to signalling. This is backed by a two-level response strategy. In normal traffic an adaptive control algorithm adjusts green light signal phasing to anticipate congestion build-ups, while discrete incidents such as accidents can be resolved by operators at the traffic management centre, using options such as pre-determined signal phasing. The result, confirmed by GPS data, has seen average travel speeds rise from 10.5 km/h to 11.6 km/h between 0500 and 1700. More importantly for this global supercity, traffic flows are much smoother, and the capacity of its strained road network vastly improved.

There are other measures cities can take to improve their position: replacing traditional light bulbs in traffic lights with LED equivalents can offer a significant saving in energy consumption, for example. Those savings could then be reinvested. Better enforcement of traffic regulations can improve traffic flow, and revenue from fines be invested, and so on.

**Be Accountable**

Cities need to be empowered and accountable for driving city mobility through traffic management. They need to set targets to measure performance and progress by. Those who demonstrate improved performance will gain confidence and ambition for further more advanced implementation, creating a positive cycle for funding opportunities.

The aims of any project should be viewed in the context of a city’s whole transport network. Specific and measurable key performance indicators have to be identified and then achievable but ambitious performance targets set. London’s aim, for example, of not just increasing traffic speeds but also increasing the use of public transport and cycling is a clear case in point. When this happens a city is much better able to identify and then fund its transport policies.
It’s not just itself that a city needs to examine – it is possible to benchmark performance against other cities with similar strategies and then assess relative performance. If a city is underperforming measures can be taken to resolve that; if it is outperforming other cities, the lessons can be shared.

A bright future
In an increasingly competitive global marketplace cities are competing with each other on regional, national and international levels. At present it appears the majority of cities studied do not have the tools, resources, knowledge and ambition to capitalise on the opportunities offered by traffic management. This White Paper identifies how cities can learn from each other the best ways of harnessing traffic management to promote mobility and reduce congestion.

There is no question, however, that cities need to invest in better traffic management systems to drive economic growth. Winning the funding argument is challenging, but there are enough examples of bold, ambitious and creative thinking around the world for every city to make a compelling case. The potential benefits are vast for those cities which make the best use of the tools at their disposal: the costs for those which do not are equally significant.

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The full White Paper and more information about Intertraffic 2014 can be downloaded at siemens.com/press/intertraffic2014

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