

GUIDELINES FOR IMPLEMENTERS OF

Financing and Implementing Traffic Management Centres



What is it about?

Characteristics

A potential method for financing the development and day-to-day operations of Traffic Management Centres is through a form of Public-Private working or alliance (e.g. PPPs). Successful schemes require co-operation from both public and private partners. These working collaborations:

- enable the public sector to share financial burden and risk with the private sector;
- are applied to a diverse range of projects within the transport sector, with varying levels of effectiveness;
- depend upon the political, legislative and financial regimes within a country or city.

This concept can be transferable all over Europe, if it is tailored to the local (or national) context, particularly in political and financial areas.

Concept definition

"A Traffic Management Center (TMC) is the hub of a transportation management system, where information is collected and combined with other operational and control data to manage the transportation network" (ITS Decision).

Identifying an appropriate finance model to obtain the required funding for a TMC is an important first step. Many cities considering TMCs may not have the financial means and could consider joint finance models with private sector partners, not only for setting up a TMC, but also for day-to-day operation. This guideline will help identify appropriate financial models and ways of implementing a new TMC or improving/upgrading an existing TMC.



5T, Torino
Photo: 5T

Key benefits

Innovative financial models for TMCs:

- enable a new TMC to be implemented, or an existing TMC to be upgraded;
- enable appropriate management and day-to-day operations;
- can allow private partners to develop their expertise to establish marketable products, such as data streams collected from the TMC systems;
- help cities identify and implement appropriate traffic management policies, sharing expertise between schemes;
- ultimately enhance the overall accessibility, safety and environmental quality of a city through the successful implementation of a TMC.

5T (Telematic Technologies for Transport and Traffic in Turin), Torino, Italy

5T has a multi-modal focus, involving Torino's bus, tram, metro and suburban rail networks. Originally, 5T was financed by a public-private partnership involving Turin City Council and Gruppo Torinese Trasporti (GTT), AEM, Torino, Fiat, Mizar Automazione and CSST. Today, it is a S.C.R.L. (Limited Liability Consortium Company) and is owned by Piedmont region (30%), Turin Municipality (30%), Turin province (5%) and GTT group (35%).

The main functionalities provided by 5T are: mobility supervisor, traffic and access control, public transport information, information for citizens, VMS panels, information regarding car-parks, monitoring of pollution, road safety and video-surveillance of public transport.

Is this something for us?

Public-Private collaboration enables industry to innovate, think long term and influence the thinking of the public sector.

In some countries, where legislation permits, private sector organisations can manage a public TMC to improve efficiency and reduce costs.

Key conditions for implementation are:

- clearly defined objectives, leadership and partner responsibilities;
- open dialogues and administrative agreements;
- an inherent and robust Public-Private collaboration agreement.

“Focus the attention on your goals, on how to obtain and measure results. Develop, implement and deploy all elements of your system keeping, in mind they have to be operated and maintained.”

Massimo Coccozza, Senior Researcher, 5T, Torino, Italy

Check list	
City size	City or region-wide
Costs	<ul style="list-style-type: none"> • For new TMC, high capital outlay, including tender cost, building works and ITS procurement; • For an upgraded TMC costs are marginal, and usually relate to technology implementation; • Running and maintenance costs.
Implementation time	3 years (from planning to full operation)
Stakeholders involved	Contractual roles should be clearly defined between: <ul style="list-style-type: none"> • local authorities; • public transport authority / operators; • private transport companies; • private sector funding bodies; • TMC operating organisation; • technical experts/advisors; • legal advisors; • financial institutions; • emergency services.
Undesirable secondary effects	Financial burden falling upon the taxpayer



Traffic Information Display
Photo: Siemens

“Cork will implement a scheme to provide mobile travel information services for the public. This should make public transport more attractive and ensure reduced car use in the city centre.

Understanding the best ways to obtain public and private sector funding opportunities, including possible partnerships, is key to developing the best possible system for Cork.”

Ian Winning, Senior Executive Engineer, Cork City Council (Traffic Division), Cork, Ireland
(NICHES+ Champion City)

Benefits & Costs

Benefits

Public-Private collaborations are a potential method for financing the development and day-to-day operations of TMCs. Different financial agreements may be required, depending on the current stage of the TMC's lifespan, but such agreements can enable innovation, long-term thinking, an improvement in efficiency and a reduction in cost. Once funded, the successful delivery of a TMC can have many benefits:

- developing a good TMC opens up new **travel options** and **services**, and may allow new **policy ideas** to be introduced, such as improving traffic conditions to reduce localised pollution emissions;
- a TMC can be a technological **platform** upon which additional services can be developed by private partners;
- services provided by TMCs can help **control traffic flows** and help meet **pollution/emission targets**;
- depending on the national/local legislation, TMCs may be able to provide additional **revenue streams** for private partners, although these can be hard to quantify;
- one potential source of revenue is from Road User Charging, derived as an output from the TMC. Private partners may request access to TMC output data, which can be sold on to other parties as another possible revenue stream;
- profits can be hypothecated into concurrent improvements to public transport services.

Costs

Solid **financial backing** is imperative for new or upgraded TMCs, both in terms of initial capital outlay and subsequent running costs.

Financing a new or enhanced TMC will often be a **political** challenge. The public like **free** services but politicians may be less enthusiastic, especially if public spending is a local/national political issue or if it may be viewed as an additional tax on the road user.

Private sector capital can be used to **build** TMCs even if public sector revenue is used to **operate** them. Public partners are able to obtain bank loans with greater ease than private partners, so consideration needs to be given to the best financial source for the TMC.

Life cycle costing is important, i.e. for the whole duration of the TMC's operation. Technical drivers include the technical and design aspects of the TMC. The private sector may be more innovative in accepting this burden. Technical expertise can be shared with the public sector, but public sector expertise is required to fine-tune the application of new products.



M42 Active Traffic Management, UK
Photo: Mouchel Group plc

Users & Stakeholders

Users and target groups

Although the ultimate users of the information supplied by the TMC will be the travelling public, transport operators and policy-makers, there are no 'users' as such in this concept.

Instead, there are target groups of implementers who embark on a partnership to raise the necessary capital, and spread the financial burden and risks associated with the setting up and operation of a TMC:

- **public sector stakeholders:** require **reliable**, high quality data provision with wide coverage in real-time or near real-time, to improve public services with low operating costs (e.g. no maintenance);
- **private sector stakeholders:** require a **continuous revenue stream** and **marketing opportunities** for their core product/service to justify their investment in a TMC. It is important to understand what advantages can be gained for these partners to encourage them to invest. Research from France suggests some TMC services can have a benefit-cost ratio of between 2 and 4 (ECMT TRC Report (2007), p235).

National Traffic Control Centre, UK

The National Traffic Control Centre (NTCC) based in the West Midlands provides free, real-time information on England's motorways and trunk roads, allowing drivers to plan routes and avoid congested areas. The National Traffic Control Centre is a Private Finance Initiative (PFI) project. The centre opened in March 2006, cost £160m to build and covers 5,130 miles of the primary road network in England.

Key stakeholders for implementation

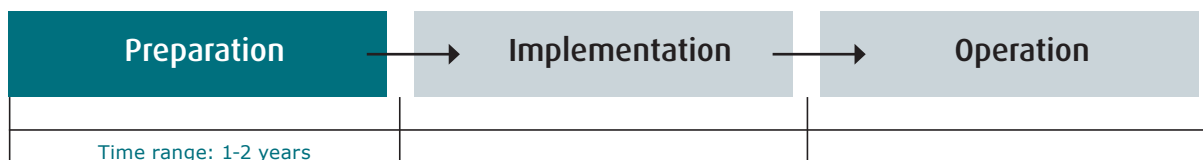
Implementing a TMC requires a dedicated team to manage the project which itself requires a substantial amount of financial outlay. There are three key areas within which stakeholders fall: service provision and operations, technical and financial support, and advisory:

- **public authorities:** responsible for service provision, project initiation and the main driving force behind the TMC;
- **TMC operator:** a service provider, responsible for day-to-day TMC operations (may be a public or private sector partner);
- **emergency services:** a key user of the TMC output;
- **private sector:** provides support through infrastructure (ITS, materials, personnel etc.) or professional knowledge/expertise;
- **technical advisors:** responsible for providing bespoke technical advice or services as and when required;
- **legal advisors:** responsible for providing legal advice, drawing up contractual agreements from the outset, and continued legal support as and when needed;
- **financial institutions:** provide financial support through initial capital outlay for TMC.

TMCs can bring these various public and private stakeholders, each with differing views, around one table. It is important to understand that different organisations have various political, managerial and financial regimes. The effectiveness of these collaborations will also be dependent on the political and financial regime in the country/city concerned.

From concept to reality

Preparation



There are two circumstances in which this concept applies:

- the introduction of a new TMC;
- the upgrading of an existing TMC.

Introducing a completely new TMC will require a significant amount of extra preparation compared to improving or upgrading an existing TMC.

Nevertheless, it is important to prepare for either of these changes and both will require substantial amounts of capital investment and collaborative working.

Key aspects at this stage

Focused core project team

The delivery of a TMC requires inputs from a number of different partners, but it is important to have a small and focused central project team to manage the scheme and optimise the performance of the project from inception through the launch to full operation.

TMCs rely upon the successful integration of a number of different technologies and data streams. Appropriate composition of partners in the core team with a clear administrative agreement between them is essential for this integration to work.

One example of a focused core team is Traffic Wales, which has been established and operated through a Public-Private Partnership involving the Welsh Assembly and the engineering consultants Atkins (see text box).

A strong commitment from all partners, public and private

Collaborative working will only succeed if all partners are committed to the common goals of the project, facilitated by clear objectives, leadership and responsibilities, with good communications and an open dialogue throughout the TMC lifecycle.

For example, the 5T TMC in Torino, Italy, was developed using a consortium where the objectives, leadership and partner responsibilities were clearly defined, and an open dialogue between all partners was observed at all times. To do this, the 5T consortium was transformed into an Italian S.C.R.L. (Limited Liability Consortium Company) to follow up the management, integration and development of telematic technology in order to improve traffic and Public Transport.

South Wales TMC, Wales

The South Wales Traffic Management Centre (SWTMC) provides dynamic traffic information for motorists through a variety of sources, including VMS, the internet, mobile phones, and local radio stations.

The centre, based in Cardiff, was set up and operated by a PPP involving the Welsh Assembly and the engineering consultants Atkins. The main beneficiaries are motorists on South Wales' trunk road and motorway network.

Following on from the success of the SWTMC, a North Wales Traffic Management Centre was set up in Conwy, completing the coverage of the Principality. The Cardiff and Conwy centres communicate regularly, sharing best practice.

Consider the local situation

TMCs should be unique to their area and it is important to understand that 'one size does not fit all' in relation to their planning and operation.

The different demographics and characteristics of the area in which a TMC is to be implemented and the fundamental issues behind traffic problems and solutions must be understood. Local knowledge of the transport networks involved with the TMC can be invaluable in identifying the main problems and suitable solutions for which the TMC is to be designed.

Identify the technological barriers and understand the solutions

Whilst it is important to understand who is going to pay what, it is no good having an excellent financial model if the **technological model** is deficient, the barriers are not identified, and the solutions not fully understood.

Understanding technological models also has wider implications for legal issues (e.g. personal privacy when using traffic cameras for enforcement), and data sharing and management issues (e.g. who is responsible for monitoring and maintaining the infrastructure).

Donor designs may utilise a different generation of technology, making integration with existing TMCs difficult. However, if a model is borrowed from donor cities, overall technological risks are reduced.

When developing a new TMC, it will be useful to consult common design methodologies like **Systems Engineering SE (ISO 15288)**: this has all the elements based on functional descriptions which are suitable for a PPP project.

Understand the business process

It is important to understand what the day-to-day running of the TMC will look like and identify the information required to achieve this. By doing this, an appropriate technical solution can be defined. Early **consultation of end users** can then take place.

A full assessment and understanding of the available financial models

Life cycle costing is important, i.e. for the whole duration of the TMC, along with the level of funding required (e.g. Design, Build, Finance, Operate), and responsibility for providing the funds.

Appropriate financial models require the financial burden and risk to be spread. This will vary slightly between different regions, cities, or countries, depending on political and strategic approaches. Expert financial and legal advice should be sought from relevant external experts on which model is best suited to the local TMC during the preparation phase.

Consider future expansion of services provided

TMCs can act as a platform to deliver future services which can provide private partners with suitable revenue streams. Care must be taken to ensure truly open standards and system architectures are in place from the start: poor TMC design may restrict future policy and service options; good TMC design can open up new policy and service options.

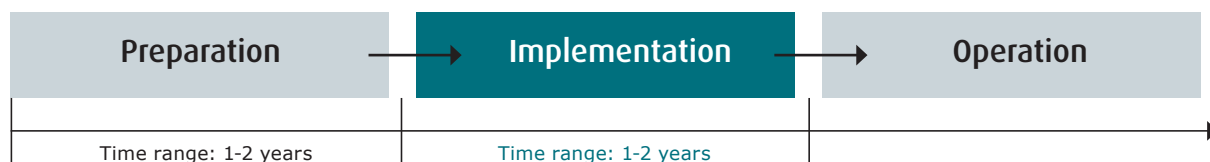
Ready for implementation?



Establish a core project management team	
Obtain commitment from all partners	
Agree a robust financial model	
Eradicate any technological barriers	
Ensure ability to provide future policy/vision and integrate new services – 'future-proofing'	
Understand the business process	

From concept to reality

Implementation



The implementation of a TMC requires a great deal of preparation as early success with the scheme is crucial to ensure good public acceptance.

Key aspects at this stage

Engage all financial stakeholders

Effective control over work and costs is necessary for successful implementation.

There are a number of stakeholders that have a vested interest in the funding of a TMC, but need not be involved directly in the core team. These include strategic stakeholders such as politicians, senior public officers, company directors and managers, all of whom will wish to be kept informed of progress due to the financial commitments of the public and private partners. It is vital that stakeholder roles are clearly identified in contract form.

Consult end users

The emergency services and public transport operators will benefit from the TMC once it is up and running, and may have specific service requirements.

Having identified any technical barriers in the planning phase, consultation with the end users to identify their needs can begin and will reach momentum in the implementation phase.

Operational personnel including control room staff, data managers, maintenance staff, trade unions and customer relations departments will take a keen interest in progress, so it is important to maintain their support throughout the project.

Identify synergies with other policies

A TMC provides a platform for other services. The justification for implementing a TMC (and other services) can be made easier if it can be demonstrated that the TMC has links and synergies with other policies.

In turn, the rationale behind these other policies can be strengthened by demonstrating the links and synergies with the TMC.

Policy areas which have particularly strong synergies with TMCs are:

- **safety and security:** video cameras play a key role within TMCs, which can be combined with improvements in safety and security management;
- **incident management:** TMCs can be used to mitigate the impacts of an incident, minimising the effects of traffic collisions upon the overall network flows and conditions;
- **public transport operations:** TMCs can be used to improve the movement of public transport services across a city, e.g. providing priority at junctions.

Adopting may be difficult if donor policies do not match adopter policies, particularly if an adopted model could lock in state operations and exclude private sector competition.

Use proven technologies

There is a need for reliable and adaptable technology as it can have beneficial effects on the implementation process, particularly when the TMC is entirely new. For upgrades to existing TMCs, use of proven technologies can minimise interoperability issues. Use of technologies that have not been commercially proven raises the risk of failure.

Establishing a solid alliance from the outset will enable technical knowledge to be shared. The local authorities usually seek technological support from a private sector provider who then takes care of placing the components on the roads and sometimes manages the operations.

Data sharing agreements

Significant amounts of data are involved with TMCs, both in terms of input to, and output of, the TMC system.

Data are a valuable resource, so strong data sharing agreements need to be drawn up between all parties during the implementation stage, in order to ensure that there are no contractual breaches throughout the lifespan of the TMC.

If data are to be supplied by a private sector partner, consideration needs to be given to how these data are paid for, and also what level of return could be achieved through such an investment.

Develop media relations

The Media are outside influencers, who should have restricted involvement during the preparation phase.

During implementation, media support and trust becomes vital to enable the true value of the TMC to be publicised. If multiple policy areas potentially benefit from a TMC, then the value-for-money effect can help further promote the TMC.

Good examples of media involvement in TMCs include: Traffic Wales and Trafik Stockholm which uses a wide range of media channels to disseminate information (see image below).

The core project team needs to initiate contact with media partners to build relationships, and establish trust and confidence in the TMC and the services which will be provided.



Road Traffic Management
Image: Trafik Stockholm

From concept to reality

Operation



TMCs have existed since the 1970s/1980s and are becoming widespread. However, the various partnerships used to deliver them have had disparate levels of success. Once in full operation, it is important to ensure the substantial investment (both in terms of finance and time) delivers a quality service.

Key aspects at this stage

Allow TMC to operate freely

In countries where legislation permits, private sector partners involved with day-to-day operations should be taking the lead. Public sector stakeholders become less involved as financial and operational risks spread to the private sector, whilst legal and technical advisors are only recruited on an 'as required' basis.

Use media to promote the TMC

Given the scale of investment from the public sector, it is essential to promote the new services and opportunities provided by the TMC in a positive light. Strong links with the media should have been established in the implementation phase.

As the TMC moves into full-scale operation, media stakeholders will play a new and ever-increasing role in the promotion of the TMC services.

Politicians and the public may have conflicting views, so it is important to ensure the TMC is portrayed in a positive light by everyone. Private sector partners will be expecting a return on their original investment, so it is crucial that the TMC services are able to provide this. Effective promotion is paramount to ensuring all expectations will be met.

Explore future technologies

A TMC can be used as a technological platform upon which new services can be developed. Existing TMCs can also be expanded using new technologies, so the system design must be open to incorporate new advances in technologies.

The potential of new technologies must be explored before any integration with existing TMC services is considered.

Be-Mobile, Belgium

Be-Mobile was started in 2006 by TC-Matix, a holding company investing in traffic technology. Through two consecutive capital raises, Touring (the leading Belgian motorist club) became 50% shareholder of Be-Mobile. Soon after, they merged Touring Mobilis, the traffic information unit of Touring, with Be-Mobile.

Be-Mobile holds the exclusive licences to operate the ITIS Holdings FVD technology and traffic platform and closed an exclusive contract with Proximus, the largest Belgian mobile operator, to process Proximus network data into traffic flow information.

Be-Mobile has closed exclusive multi-year deals with VRT and RTBF (Flemish and Walloon public broadcast stations) on the usage of the Be-Mobile traffic information for radio traffic bulletins, and uses the networks of Stubru (VRT) and Classic21 (RTBF) for the broadcasting of its RDS-TMC service. As the market becomes European, Be-Mobile has started to prepare international expansion to new European countries, creating an economy of scale on its technical and commercial operations.

(source: <http://www.be-mobile.be/en/company/background>)

Further information & contacts

Further information

Description of a Traffic Management Centre (ITS Decision):

http://www.calccit.org/itsdecision/serv_and_tech/Traffic_management/TMC/tmc_summary.html

Best Practice Case Studies

SYTADIN, Paris/Ile-de-France, France
<http://www.sytadin.fr/>

Trafik Stockholm, Stockholm, Sweden:
http://www.trafikstockholm.com/docs/en/index_en.html

Traffic Wales:
<http://www.traffic-wales.com/index>

South Wales Trunk Road Agency
<http://www.swtra.co.uk/>

Mid Wales Trunk Road Agency
<http://www.midwales-tra.gov.uk/>

North Wales Trunk Road Agency
<http://www.traffic-wales.com/news/trunkroadagencies/1160>

TMC Organisational Information

National Traffic Control Centre, UK
http://www.roadtraffic-technology.com/projects/traffic_control/

VMZ, Berlin, Germany:
<http://www.urbantransport-technology.com/projects/berlin/>
http://www.vmzberlin.com/pdf/VerkehrsManagementZentrale_kl.pdf

5T, Torino, Italy:
<http://www.5t.torino.it/5t/en/home.jsp?>

Be-Mobile, Traffic and Mobility, Belgium:
<http://www.be-mobile.be/>
<http://www.itisholdings.com/downloadfile.asp?id=64>

Reports and References

"Managing Urban Traffic Congestion",
ECMT TRC Report (2007):
<http://www.internationaltransportforum.org/Pub/pdf/07Congestion.pdf>

Systems Engineering SE (ISO 15288)
http://www.iso.org/iso/iso_catalogue/catalogue_ics/catalogue_detail_ics.htm?csnumber=43564

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The mission of NICHES+ is

to build on the success of the first NICHES project by stimulating a wide debate on innovative urban transport and mobility between relevant stakeholders from different sectors and disciplines across the EU and accession countries, in order to promote the most promising new urban transport concepts, initiatives and projects and transfer them from their current "niche" position to a mainstream urban transport application.

This publication is part of a series of 13 publications presenting the NICHES+ outcomes.

NICHES+ Champion City: Cork, Ireland

Mobility Management Centre

Cork aims to address congestion in the historic city centre by creating an integrated transport system that will facilitate a reduction in car dependence and the prioritisation of public transport, cycling and pedestrian mobility. Trip-makers will enjoy increased modal choice, which it is hoped will influence changes in road user behaviour, whilst providing holistic benefits of improved environmental quality through a reduction in emissions. To achieve these aims, Cork is developing a Mobility Management Centre (MMC) with fully integrated services and functions to support the development of a more sustainable, efficient and effective transportation system. Infrastructure will be deployed to supply integrated multi-modal real-time public transport information (RTPI) to commuters. Implementation of the bus RTPI will result in an increased level of service and awareness for users throughout metropolitan Cork. The scheme will contribute to the City Council's commitment to deliver a more sustainable transport network. The long-term strategic aim is to provide 'Mobility Management on the Move' using RTPI and ITS delivered to complementary public transport modes including trains and planes.

Prepared for the European Commission by:



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Photo on title page:

Traffic Management Centre, photo: QinetiQ

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Further information on NICHES+

www.niches-transport.org
www.osmose-os.org