

JOURNAL

PROJECT

TMaaS - Traffic
Management as a
Service (Closed)

📍 Ghent, Belgium

TOPIC

Urban mobility

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The TMaaS Project Journal No 4

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website



The present fourth edition of the TMaaS Journal aims to provide interested readers with information concerning the project's final achievements and results, the lessons learnt as well as the possibilities of continuation of the provision of services related to the innovative technologies developed during the lifetime of the TMaaS project.

1. Executive Summary

During the last and final period of the TMaaS project from September 2020 until January 2021, the TMaaS project partnership has successfully dealt with all planned project activities.

The present fourth edition of the TMaaS Journal aims to provide interested readers with information concerning the project's final achievements and results, the lessons learnt as well as the possibilities of continuation of the provision of services related to the innovative technologies developed during the lifetime of the TMaaS project.

During the final project period covered by the current 4th edition of the TMaaS Journal, the project partners have managed to achieve significant accomplishments in the following:

Updates of LINK.Gent

LINK.Gent, the innovative TMaaS mobility platform for multimodal traffic monitoring and management has been extended with a new functionality, concerning the provision of notifications to travelers.

Finalization of the TMaaS Replicator City Program

The TMaaS Replicator City Program, which aimed to transfer the developed solutions to cities beyond the project consortium, has been successfully finalized, with the participation of the cities of Southwark (London, United Kingdom), Antwerp (Belgium) and Duran (Ecuador).

TMaaS Final Conference

The Final Conference of TMaaS took place online on January 2nd 2021, marking the end of the project. Under the theme “A story of innovating mobility together” the TMaaS Final Conference brought together partners from the project, Replicator Cities, other UIA mobility projects and representatives of industry, academia and public authorities to discuss the major challenges and learnings related to Traffic Management as a Service.

Successfully meeting key challenges

Concerning the eight key challenges of the project, TMaaS has again managed to perform exceptionally well in all of them. The related progress is included in the respective section of this journal.

Lessons learnt and sharing of key experiences

As TMaaS reaches its completion, the partners have accumulated a wealth of experiences and knowledge, the value of which is multiplied when shared with interested readers beyond the consortium. The main lessons learnt and experiences of value are presented herein.

TMaaS continuation after the end of the project

As the TMaaS project comes to its end, the partners are investigating the opportunities for the continuation of the TMaaS solutions both in the City of Ghent and beyond.

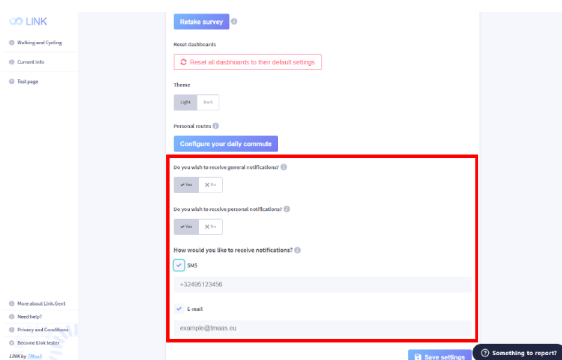
2. Progress to date

2.1. Updates of LINK.Gent

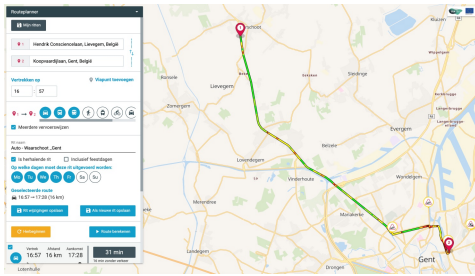
During this last period of the project, the TMaaS partners worked on the finalization of **LINK.Gent**, the innovative TMaaS mobility platform for multimodal traffic monitoring and management. LINK.gent was launched on April 1st, 2020 to an “inner circle” of City of Ghent teams and from the other project partners. The main additional functionality implemented during this period was that of the Notifications, which complemented the ones already developed during the previous periods.

The Notifications functionality extends the use of the TMaaS services through a web browser, providing the ability to receive such notifications at any type of device that has a web-browser (smartphone, tablet, laptop, workstation). TMaaS had already provided the possibility to receive such notifications through SMS or emails. However, this new functionality is practically translated into the ability to receive notifications related to TMaaS services either at home while working on a laptop, workstation or on the go with a tablet or smartphone, through the use of a web-browser.

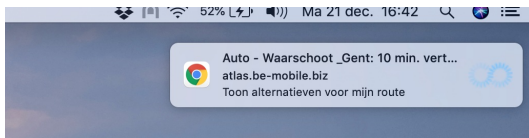
The use of web-browser notifications for the TMaaS services is as follows: A registered user of TMaaS, <https://link.tmaas.eu>, can choose to receive such notifications via the settings menu of the TMaaS Dashboard, also with the ability to select the types of notifications to be received.



For example, a user of TMaaS can select a typical route, that she/he is using on a frequent basis (e.g. daily home-to-work trip).



As soon as the user saves this daily used route under her/his profile, then this will be continuously monitored by the TMaaS Dashboard. 15 minutes prior to the user selected departure time, TMaaS will send notifications to the user via the web-browser that include the current travel time for the selected route, indicating clearly possible delays (if any). For the case of delays, TMaaS proposes also alternative routes, to reach the set destination faster.



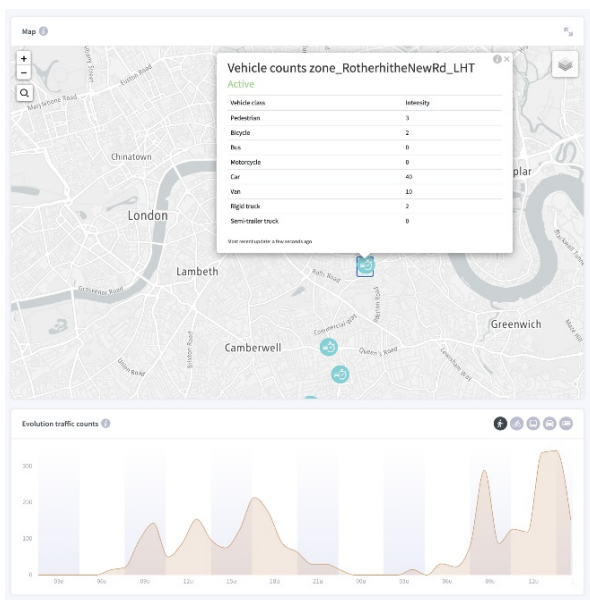
Further information about the user's route is displayed on a map, when the user clicks on the displayed notification.

2.2. Finalization of the TMaaS Replicator City Program

The transferability and potentials for replication of the developed TMaaS solutions comprise a cornerstone of the project's objectives and activities. The **TMaaS Replicator City Program** is a project activity, which aims to assist project-external cities in adopting the TMaaS solutions, coupled with knowledge and experiences sharing provided by the TMaaS project partners. Following a successful launch of an Open Call to any interested cities worldwide during February 2019 and the subsequent promotion of the TMaaS Replicator City Program by the partnership through a dedicated online webinar, social media advertisements and related news on the project's website, six applications were received from an equal number of cities. The three cities that were finally selected to work hands-on with the TMaaS team and the developed solutions are Southwark (London, United Kingdom), Antwerp (Belgium) and Duran (Ecuador).

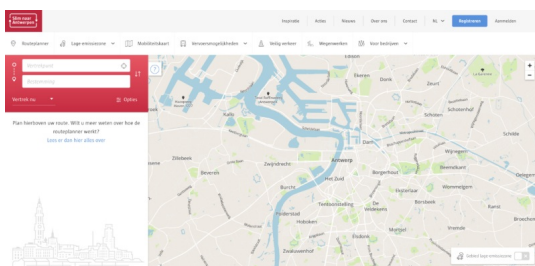
Southwark: TMaaS Dashboard for traffic managers

The TMaaS replication activities in the London Borough of Southwark, United Kingdom, focus on TMaaS solutions that provide traffic managers with the ability to exploit multi-source data for real-time traffic monitoring and management purposes. The TMaaS dashboard is deployed for this reason, as well as for mapping the alternative transport options and modes in the selected part of the Borough.



Antwerp: Connecting Slim naar Antwerpen to TMaaS

The TMaaS replication activities in the city of Antwerp, Belgium, focus on the creation of integrated interfaces between Antwerp's existing routeplanning service, the Slim Naar Antwerpen routeplanner, with the TMaaS alternative routes calculator.



Duran: Improved public transport fleet management with TMaaS

The TMaaS replication activities in the city of Duran, Ecuador, focus on improved monitoring of the newly designed public transportation system of the city, by utilizing GPS technologies for tracking vehicles of the public transport bus fleet. The real-time location of public transport buses is visualized on a map of TMaaS, assisting thus the city towards the optimization of the public transport system's operations.



2.3. TMaaS Final Conference

The Final Conference of TMaaS took place online on January 2nd 2021, marking the end of the project. Under the theme “A story of innovating mobility together” the TMaaS Final Conference brought together partners from the project, Replicator Cities, other UIA mobility projects and representatives of industry, academia and public authorities to discuss the major challenges and learnings related to Traffic Management as a Service. Due to the current health situation, the event followed a virtual format, without however any compromises on the content and interactivity with the audience. Following a welcome by the city authority alderman of Mobility and Public Works Filip Watteeuw, insights on the project activities and results were presented by partners and Replicator cities. Private companies were given the opportunity to present their solutions at a virtual stand, while two other related UIA projects, SASMob and CitiCap, also participated and presented their progress and results. Interactivity was promoted through virtual lobbies, where participants were able to discuss and exchange opinions, as well as via opinion polls, where participants were asked to express their views on questions set by the project team. A short documentary about TMaaS was also presented to the participants.

Further to the Final TMaaS Conference, the results of the project have been disseminated at other related events that took place in the last period as well.

September 2020 – Virtual ITS Belgium Conference: An online presentation of the TMaaS project was held during the ITS Belgium Conference 2020 during a session dedicated to multimodal mobility management. Participants were informed about the TMaaS concept and the benefits of using the TMaaS Dashboard.

June 2020 - PerCom Conference

TMaaS was presented during the prestigious PerCom 2020 conference, which was held this year online. This was an opportunity for the project work to be disseminated to an international audience related to new technologies and to establish contacts. The presentation included the TMaaS concept, followed by a short demo.

3. Key challenges

TMaaS has successfully worked on the progress of the project's eight implementation challenges. Following the related progress reported in the previous three journals of TMaaS, the status for each one of the implementation challenges is re-visited and the progress made during the last and final project period is reported hereafter. The objective of this progress reporting against the key implementation challenges is to assist other or future UIA projects that face similar challenges on the way followed by TMaaS to face and overcome the mentioned challenges. The following table provides the updated status for each one of the project's eight implementation challenges at the end of the TMaaS project lifetime.

Key implementation challenges tracker for the TMaaS project (status as of January 2021)

Challenge	Status	Notes
Leadership for implementation	Low	TMaaS has successfully managed to maintain high levels of political support, as in the previous years of the project's implementation. The City of Ghent has kept on showing exceptional commitment and continuous support to the TMaaS project, even during the recent challenging period of the Covid-19 pandemic. The developed technological solutions are adopted and operationally used by the Traffic Management Centre of the City of Ghent, while further efforts are put in place in order to continue the operation of the developed solutions after the end of the project. The positive attitudes of travelers concerning the TMaaS Dashboard, highlights its usefulness for citizens, which further strengthens the commitment of the city for the continuation of the developed services.
Public procurement	Low	Public procurement related issues have not affected the TMaaS project implementation at any stage, despite the innovative nature of the project itself.
Integrated cross-departmental work	Low	Cross-departmental work has been successfully achieved, through the close collaboration of and focused liaison with related departments of the City of Ghent for the development and testing of Link.Ghent. Related departments have been engaged, to support the project's activities and execution in a harmonized way with the TMaaS partnership.
Participative approach	Low	Despite the recent pandemic related challenges that significantly affected work and daily activities, the strong focus of the TMaaS project on adopting and maintaining a participative approach has further continued with success. TMaaS has utilized all available electronic means for maintaining the engagement of citizens, cities and stakeholders. The participative approach of TMaaS has included activities at the level of the City of Ghent, as well as at the level of cities that have been participating in the TMaaS Replicator City Program. Following the successful participatory approach followed at the design stages of the project, TMaaS has engaged citizens and cities in understanding the use and benefits of the developed solutions and services, as well as in exploring new innovative ways for their integration in the future, sustainable urban mobility of the city.
Monitoring & Evaluation	High	Monitoring and evaluation comprise key challenges for most projects that aim to deploy innovative technology-based solutions under real-life conditions. The importance as well as the challenges associated with monitoring and reliable estimation of the impacts of the TMaaS project have been recognized by the partnership early on. For this reason, categories of impacts have been defined, which are associated with Key Performance Indicators as well as concrete ways for their quantification wherever possible. The impact categories will cover aspects related to the digitalization of traffic management, data and information exchange, awareness of mobility options, open data and outreach to the public/citizens. Various means for collecting the necessary data have been defined, including purely data-based analyses, surveys and qualitative methods. The approach provided a clear and valid picture of the achieved impacts by the end of the TMaaS project, compared to the situation before the implementation of the project's solutions.

Financial sustainability	High	Financial sustainability is directly translated and related to the potential uptake of the project's final achievements and solutions into the daily operations and business of both the public and private sector partners of TMaaS. Despite the recent challenges associated with pandemic related travel restrictions, reduced demand and adapted supply for transportation, coupled with the need for new collaborative business models that capture the needs and benefits of all related stakeholders from an eco-systemic point of view, the overall TMaaS approach for direct engagement of the necessary public and private sector partners into the project proves to be the correct way to move forward. Collaboration between public sector entities as well as private sector companies will increase the financial sustainability of the developed solutions, ensuring the continuity of the developed solutions after the end of the project.
Communication	Medium	TMaaS has placed efforts in developing clear communication messages to citizens and cities, concerning the project's activities and the benefits that will arise from the operational implementation of the TMaaS solutions. A balanced mix of clear and targeted contents together with contemporary aesthetics is used, in order to capture the interest and the attention of the targeted audience, as well as to ensure that the perceived quality of the achieved project results is indeed at the required levels for both traveling citizens as well as public city authorities. Communications management, branding and technical excellence have been combined, in order to communicate trustworthy and high-quality contents and information associated with the various activities of the project. It is worth mentioning that the TMaaS partnership has managed to execute most communication activities as planned, despite the pandemic related challenges faced during the last year, utilizing all electronic means available. This applies also to the highly successful Final TMaaS Conference, which was held online during January 2021.
Upscaling	High	In previous journals of the TMaaS project the importance of risks associated with vendor lock-in and interoperability as well as the direct association between upscaling of the project's solutions with financial sustainability and communication have been captured and highlighted. The final developed business models assess and define the optimal scenarios for the upscaling of the final developed solutions, as well as the levels of openness and extent to which other service and data providers can couple their solutions with TMaaS. The objective is to create solutions that will be able to be replicated easily by other cities, beyond those that participate in the TMaaS Replicator City Program. As urban mobility is a topic of continuous and growing interest, targeting to tackle daily challenges of cities worldwide, it is the intention of TMaaS to be able to provide its developed solutions for the benefit of all interested parties.

4. Lessons learnt and sharing of key experiences

As TMaaS reaches its completion, the partners have accumulated a wealth of experiences and knowledge, the value of which is multiplied when shared with interested readers beyond the consortium. The main lessons learnt can be grouped in four main categories: Stakeholders and User aspects, Technical aspects, Governance and business aspect and project related aspects. The main lessons learnt, key experiences and take-aways from the TMaaS project per category follow below.

Stakeholders and Users

- Accommodate user needs for the (different) targeted user groups early on
- Include users in the identification of requirements and the definition of use cases
- Define use cases and functionalities based on users' needs and not on own technical capabilities and preferences
- Define early on data quality requirements for the various types of data that will be used
- Define early on the information provision channels
- Develop intuitive interfaces if the application is targeted to the general public

- Identify early on variations of main use cases and requirements in case of developing solutions that will be transferable and deployed in different contexts, cities or countries
- Adopt the use of standards as much as possible, in order to have widely applicable and transferable solution

Technical aspects

- Define concrete functional requirements
- Define a clear system architecture
- Define a clear software development management plan
- Allocate the role of the leader to a qualified neutral partner, in case of a consortium/team comprised of different entities (e.g., public and private)
- Pay attention to data related aspects, such as availability, ownership, quality (including accuracy, reliability, timeliness, granularity in time/space, completeness), format
- Evaluate dependencies on external data sources
- Define realistic expectations, accepted by all partners

Governance and business aspects

- Account for increasing needs to have integrated data management platforms in cities
- Have a clear overview of data acquisition costs early on
- Define a path for the use of readily available commercial data provision platforms, including the possibilities for local data provision to such platforms
- Define business models that account for public authorities' constraints, e.g., by considering the participation of networks of cities
- In cases of multi-stakeholder engagement, define a neutral leading organization
- In cases of multiple private sector stakeholders' engagement, define clearly the integration of different services
- Define early on communication means to reach potentially interested cities outside of Europe
- Identify the right persons to contact within urban authorities

Project Aspects

- Common understanding of project objectives is necessary from the beginning among different partners
- Maintain a balance between practical results and innovation
- Adopt a flexible project management approach to accommodate easily possible changes and barriers faced during the project
- The project leader should maintain a neutral role that partners will trust
- Define a clear communication strategy for the targeted audiences
- Create the project brand
- Create efficient project internal communication channels, accommodating the needs of different types of partners
- A clear project implementation methodology is necessary, accounting for available resources and time
- Pay attention to activities that may impact the project time plan, e.g., tenders, project reporting
- Plan in advance for project implementation accounting for COVID-19 restrictions

5. TMaaS continuation after the end of the project

As the TMaaS project reaches its completion, partners' efforts will concentrate on increasing the possibilities of the developed project solutions being operationally maintained and used after the end of the project in the City of Ghent, as well as in Replicator cities.

This entails the execution of the necessary preparatory activities that are needed for an operational deployment of the developed solutions outside the framework of the UIA funded activities. Such necessary activities towards the operationalization of the developed solutions, both for the City of Ghent as well as for Replicator cities and other cities interested to adopt the developed solutions include:

financial sustainability assessment of the developed solutions

- Assessment of costs and benefits for the necessary investments
- Definition of mutually beneficial multi-stakeholder business models and cooperation agreements for the entire ecosystem, comprised by public and private sector actors
- Monitoring of external developments and necessary adaptations related to, among others, connected and automated mobility systems

Urban mobility

See on UIA website

