



6.5

Products Fact Sheet

Start date of project: **1st September 2018** Duration: **36 months**

Version: **1.0**

Prepared by: **Emmanuel Dommergues, UITP**

Checked by: **Peter Jones, UCL**
Paulo Anciaes, UCL

Verified by: **MORE Steering Committee**

Status: **Final**

Dissemination level: **CO**

The sole responsibility for the content of this document lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither INEA nor the European Commission are responsible for any use that may be made of the information contained therein.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 769276

Table of Contents

1	Executive summary	4
2	Introduction	5
2.1	About MORE	5
2.2	Basis of the Products Fact Sheet	6
3	Product description	7
3.1	Gaps in the street design consultation process	7
3.2	Five main tools used to design streets and roads	7
3.3	Tools serving a whole consultation process	8
3.4	Tool 1: Road Design Option Generation tools	11
3.5	Tools 2a & 2b: Road Design Stakeholder Engagement Tools	14
3.6	Tool 3: Road Design Dynamic Simulator	18
3.7	Tool 4: Road Design Appraisal Tool.....	23
4	Conclusion	25

List of Figures

Figure 1. Procedure of the consultation process10

List of Tables

Table 1: Overview of exploitable results 8

1 Executive summary

This deliverable **D6.5** presents the Products Fact Sheet which contains a detailed analysis and presentation of the different tools that have been set up for the MORE project in order to support a whole consultation process to redesign public realm. The 5 tools that are produced by the MORE consortium and that are aimed at professional audiences.

For the final conference of MORE planned in February 2022, a short version of the fact sheet is made available.

2 Introduction

2.1 About MORE

MORE is a comprehensive study of the allocation of space to different uses in urban roads. The project is underlined by two main ideas:

1. Urban roads have a large variety of users, each with different needs, and using the road in various ways. Two functions of the road can be identified: one is almost always acknowledged (“movement”) and another tends to be forgotten (“place”). The place function includes vehicle-based activities (e.g. parking, loading) and people-based activities (e.g. waiting for buses, window shopping, sitting).
2. Road uses have positive and negative impacts, not only on their users but also on the wider economic, social, and environmental context, affecting not only the buildings and public spaces fronting the road, but also the whole city. Urban street planning, design, management and operation can play a role in contributing to most urban policy objectives.

Most of the possible interventions that are covered in this project are about **reallocating public space on TEN-T stretches, from one type of use to another, either permanently or temporarily**, depending on the time of the day, on road conditions, etc. To reach this goal, the MORE project looks at delivering a **replicable approach of a public consultation process** that should lead to an optimal allocation of multi-modal road-space on busy roads in urban areas.

More specifically, the project applies to **stretches** where severe problems of congestion, noise, air pollution, safety and security issues generate a direct negative impact on citizens’ life quality, and where building new roads is not an option. This aim is achieved, to start with, by comprehensively assessment of the needs of all road users, of those who live, work and visit the area – drawing on existing knowledge and extensive stakeholder engagement, to establish design criteria. Then comes the exploration of options for dynamic roadspace allocation solutions.

The project aims to test and develop **5 web or computer-based technical tools** to assist in the **urban road-space reallocation design process**, covering option generation, stakeholder engagement, micro-simulation of road user behaviour, and a comprehensive, multi-modal appraisal tool. The project tests these tools and procedures in 5 partner cities on different TEN-T networks, and on- and off-road trials will be carried out to test some of the components: Malmö (Sweden), London (UK), Constanta (Romania), Lisbon (Portugal) and Budapest (Hungary).

2.2 Basis of the Products Fact Sheet

The Products Fact Sheet proposes a detailed analysis and presentation of the different tools that have been set up for the MORE project in order to support a whole consultation process to redesign public realm.

The Fact Sheet presents for each of the Tools:

- Added value from the tools: that is addressed and how customers have tried to solve them so far,
- Value proposition,
- Description of functions,
- Description of applications.

3 Product description

3.1 Gaps in the street design consultation process

Looking at the process of designing street space allocation, several gaps can be identified:

- The process starts with a set of options for road designs – or even, a single option. These options are then presented to the public for consultation. However, there are often no structured methods to generate these options, or to engage stakeholders in the process. In most cases, it is not clear how the options were identified.
- Modelling only tends to focus on the movement of the different modes of transport, producing indicators of the performance of design options in terms of movement (for example speeds, travel time or delays) and sometimes, also a few local environmental impacts like air pollution. Traditional modelling tools do not encapsulate the complexity and multiplicity of street uses and public space design options. Moreover, they do not fully reflect certain aspects of street life, such as the use of the footway and the kerbside, or the variety of street activity that can enhance liveability and vitality.
- Several software tools and paper documents are used to support consultation, but there is not usually a well-developed, seamless approach to stakeholder engagement throughout the street design process. Similarly, an assessment of the performance of the street under different design options is not always carried out in a very comprehensive manner, due to a lack of support tools.
- Design option selection may be based on political priorities, the estimated performance indicators, and/or the results of the public consultation. Again, the process is often not clear or rigorous and there are few methods to assess these elements and compare the merits of the different options.

3.2 Five main tools used to design streets and roads

The MORE project addresses these gaps. And provides insights into the policy interventions that can be incorporated into road designs in order to better satisfy the needs of all users while optimising, as far as possible, the efficiency, equity, security and environmental sustainability of the street system.

One of the key outcomes from the MORE project is the development of a framework to implement a full consultation process for street design based on **5 technical web or computer-based tools**:

Nr	Tool Name	Tool Manager	Identification
1	Road Design Option Generation Tools	UCL (University College London)	Option Generation (Tool 1)
2a	Road Design Stakeholder Engagement Tools	BC (Buchanan Computing)	Traffweb (Tool 2a)
2b			LineMap (Tool 2b)
3	Road Design Dynamic Simulator	PTV	Vissim (Tool 3)
4	Road Design Appraisal Tool	UCL (University College London)	Appraisal (Tool 4)

Table 1: Overview of exploitable results

3.3 Tools serving a whole consultation process

One key outcome of MORE applies to **how these 5 tools can fit and improve the whole public consultation process applied to redesigning public realm.**

1. The process starts with **issues identified from the public consultation**, that are formalised using the first Road Design Stakeholder Engagement Tools which is **Traffweb (Tool 2a)**. Then technical analysis is launched.
2. The next step consists in generating **road design options** using the **Road Design Options Tool (Tool 1)**. This step can be conducted online.
3. The following step consists in **applying these designs to a specific street context** by using a specific tool called **LineMap (Tool 2b)** that refers to professional standards.
4. At this stage, **designs will also be simulated, assessed and evaluated.**
 - One tool is a Road Design Dynamic Micro-Simulator, **VISSIM (Tool 3)** that provides microsimulation-based evaluation of road use in a base situation and scenarios with different measures and/or design changes in individual use-cases.
 - Another tool is the **Appraisal Tool (Tool 4)** that will help to evaluate the benefits and drawbacks of road design options.
5. All these options can be published for a consultation with the public on these designs using **Traffweb (Tool 2a)** to further feed the consultation process.

In order to refine the design following contributions from the public, a retroactive loop can be triggered depending on the appreciation or reaction to the different options from the public and decision-makers taking part to the consultation process.

6. The end of the consultation process leads to a **decision made that relates to a choice of a specific option.**

The following chart presents the process which is described.

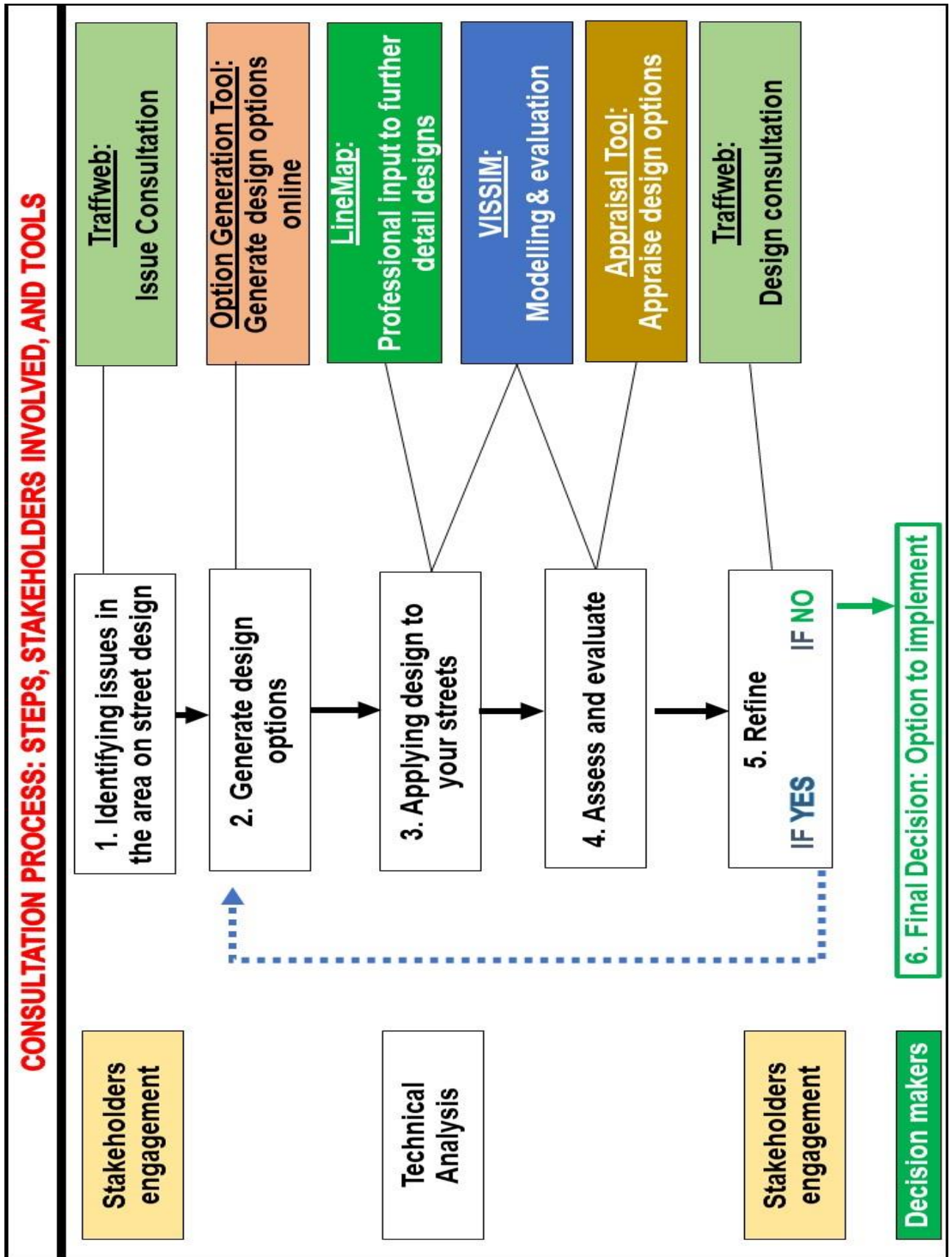


Figure 1. Procedure of the consultation process

3.4 Tool 1: Road Design Option Generation tools

Developer(s) / Owner(s)	UCL
Tool leader	Paulo Ancaes
Contact Details	p.ancaes@ucl.ac.uk

Tool description & tool added value

<p>A-Added value from the tool: that are addressed and how customers have tried to solve them so far</p>
<p>Of all the components of the roadspace allocation process, option generation is the one that has received the least attention. More generally, option generation has been a neglected component of transport policy. There are few examples of tools for option generation that are available to practitioners, particularly in relation to roadspace design. The aim of the MORE Option Generation Tool is to assist transport and urban planners to explore feasible solutions for roadspace allocation taking into account the needs of all road users and a range of policy objectives.</p>
<p>B-Value proposition</p>
<p>The MORE Option Generation Tool will assist practitioners to identify effective options that address user needs and policy objectives, while considering the local conditions and technical constraints. This will allow practitioners to present a more comprehensive and balanced set of options for public consultation and modelling, which not only increases the probability of finding more effective interventions but can also increase the political acceptability of the options that are eventually chosen.</p>
<p>C-Description of functions</p>
<p>The Policy Interventions tool generates broad options for types of policy interventions to redesign roads, providing information on how they can address the needs of the different road users and potentially meet policy objectives. The figure below shows examples of outputs of this tool</p>

POSSIBLE INTERVENTIONS

[Print to PDF](#)[Back](#)[Restart](#)[Save and Finish](#)

- Scroll to see more interventions
- Click on intervention for further information
- Click the checkboxes of the policies that are feasible in your road section

Policy Description

[+ Pedestrianisation](#)[+ Part-time pedestrianisation](#)[+ Walkways](#)[+ Greenways](#)[+ Widen footway](#)[+ Raised/kerbed footway](#)[+ Add or widen median strip](#)[+ Walkable median strip](#)[+ Pedestrian fast/slow lanes](#)[- Add or widen median strip](#)[Description](#)[Examples and evidence](#)[Effect on road uses](#)[Effect on policy objectives](#)

Source of image: MORE

Type of policy: Space allocation

Also known as central reservation. Space between traffic lanes in different directions. It can be painted, raised with kerbs, or planted. Physical barriers (e.g. guardrailings) may be added, or kept, if already existent, to separate vehicles.

If the median has no physical barriers, it allows vehicles to pass cyclists or slower vehicles; emergency vehicles to cross over into the opposite lane; and pedestrians to stop and cross in two stages (at crossing facilities or informal crossings)

If the median is raised, wide enough, and has few gaps, it also allows pedestrians to walk along the road. Alternatively, it can provide space for place activities (e.g. seating areas), car parking, bicycle parking, or street furniture (e.g. lighting).

Median strips can be green spaces (e.g. trees, swales, grassed strips). If wide, they can be used as a cycle track or as a corridor for trams, light railway systems, or buses. Underground rivers can also be restored to run at-surface along the median.

The presence of a median strip, especially if kerbed, may reduce travel speeds, as gives drivers less flexibility. Kerbed medians without ramps also become a barrier to pedestrians with impairments at informal crossings.

The **Road Designs** tool generates detailed roadspace allocation designs, in cross section, combining different design elements. The figure below shows examples of outputs of this tool

POSSIBLE ROAD DESIGNS

Back
Restart
Next

Legend

Walking			Place activities		Green area	General purpose		Bus lane		Cycling		Bus + cycle/Parking/ loading		Tram line	
2m	3m	4m	2m	3m	1.5m	3m	6m	3m	6m	2-3m	3-4.5m	4m	2.5m	3m	6m

Notes

- All designs include a 0.5m kerbside between the footway and carriageway and a 0.5m frontage zone between footway and building frontages
- The width of a single cycle lane is 2m if on the carriageway and 3m if on the footway/kerbside (cycle track)
- The width of a double cycle lane is 3m if on the carriageway, 3.5m if on the median strip, and 4.5m if on the footway/kerbside (cycle track)
- A buffer of 1m is added between cycle space and moving or parked vehicles and between parked and moving vehicles

Fill the checkboxes of all options you think are feasible in the road subsection

Left footway and kerbside Feasible	Left carriageway	Median strip	Right carriageway	Right footway and kerbside	Total road width (m)	Width of Design Elements (m)										Capacity per 75m ² of roadspace		
						Walking	Place activities	Green area	General purpose	Bus lane	Cycling	Parking/Tram loading	Movement (people)	Place activities (people)	Parking/ loading (vehicles)			
					18	6	4	0	6	0	0	0	0	0	110	45	0	
					18	6	4	0	6	0	0	0	0	0	110	45	0	
					18	6	4	0	6	0	0	0	0	0	110	45	0	
					18	6	4	0	6	0	0	0	0	0	110	45	0	
					18	4	0	0	12	0	0	0	0	0	90	0	0	
					18	4	6	0	6	0	0	0	0	0	80	65	0	
					18	4	6	0	6	0	0	0	0	0	80	65	0	

(...)

D-Description of applications

The **Option Generation Tool** were trialled by in the 'stress sections' of the case study roads in the five cities that are part of the MORE project: Budapest, London, Constanta, Lisbon, and Malmö. As an example of the results, the table below shows the inputs and a synthesis of outputs of three runs of the Road Designs Tool in Malmö.

Inputs			Outputs			
Should have at least the same space but more, if possible	Should have some space (but not more than now)]	Number of options generated	Capacity range (per 75m ²)			
			Movement	Place activities	Parking/ loading	
Space for walking; space for place activities; green area; space for parking/loading	Lanes for general traffic; space for cycling	30	155-225 people	65-80 people	0-11 vehicles	
Space for walking; space for place activities; green area; space for cycling;	Lanes for general traffic	70	175-255 people	65-80 people	0 vehicles	
Space for place activities; green area; space for cycling; space for parking/loading	Space for walking; lanes for general traffic	80	125-195 people	65-80 people	0-5 vehicles	

6.5
Copyright © 2022 by MORE

Products Fact Sheet
Version: 1.0

Page 13 of 25

3.5 Tools 2a & 2b: Road Design Stakeholder Engagement Tools

Web-based tools to assist with stakeholder engagement, both collectively during design workshops and by providing a portal for individuals to comment on design options, building on Buchanan Computing’s Traffweb product and LineMap software.

Developer(s) Owner(s)	Buchanan Computing Limited
ER leader	Simon Morgan
Contact Details	For further information on Traffweb and LineMap please contact Buchanan Computing: https://buchanancomputing.net Tel: +44 (0)20 8846 3220 admin@buchanancomputing.co.uk

Tool description & tool added value

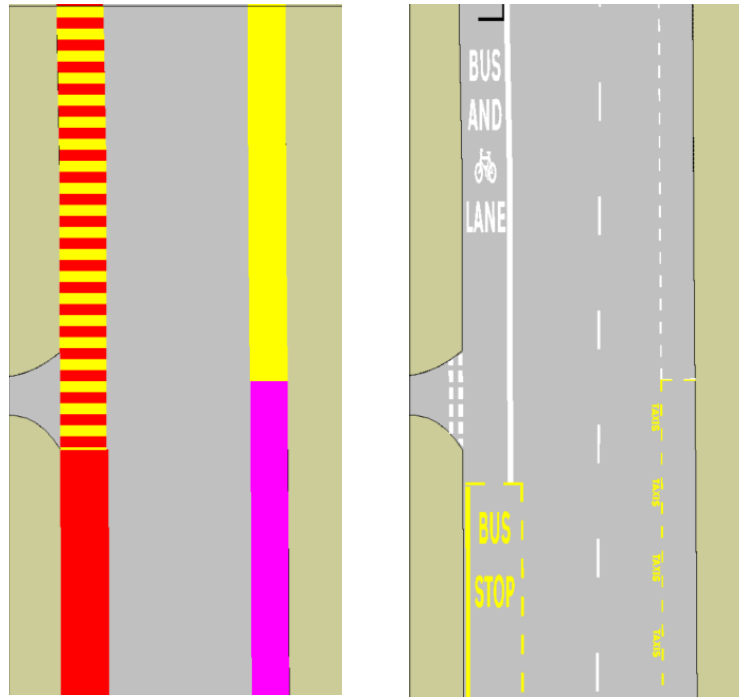
A-Added value from the tool: that are addressed and how customers have tried to solve them so far
<p>Previously consultation and scheme design would be carried out using a multiplicity of separate software tools and some use of paper documents. Problems encountered in implementing this system include the need for close co-operation with customers to ensure they supply the correct data, a fragmented approach to the design and engagement process with duplicate datasets for separate systems and the need for external expertise, for example CAD technicians.</p> <p>The problems are being addressed by using a single set of tools and dataset for designs in conjunction with universal datasets where possible – for instance Open Street Map as opposed to locally sourced mapping – as well as ensuring customers understand why we need the data we request.</p>
B-Value proposition
<p>Intuitive, easy to use design and engagement tools for transport designers and planners that seamlessly connect customers to all stakeholders. Hassle free, fully managed solution by Industry leading Transport and Highways SaaS provider Buchanan Computing.</p>
C-Description of functions
<p>Buchanan Computing (BC) has developed two applications based on enhancements of its Traffweb and LineMap software, to provide cloud and web-based engagement tools. Stakeholder engagement consists of three types of consultation:</p> <ul style="list-style-type: none"> • Issue Consultation: Collect issues, suggestions and comments regarding the current situation within the study area, using Traffweb. • Design option development: co-creation workshops, using blocks and acetates, to generate design options, for wider consultation and assessment, then plotted in LineMap, where professionals can refine designs.

- **Design and Proposal Consultation:** Feedback on the current issues, and any proposals or design(s) for the improvement of the study area, using Traffweb.

D-Description of applications

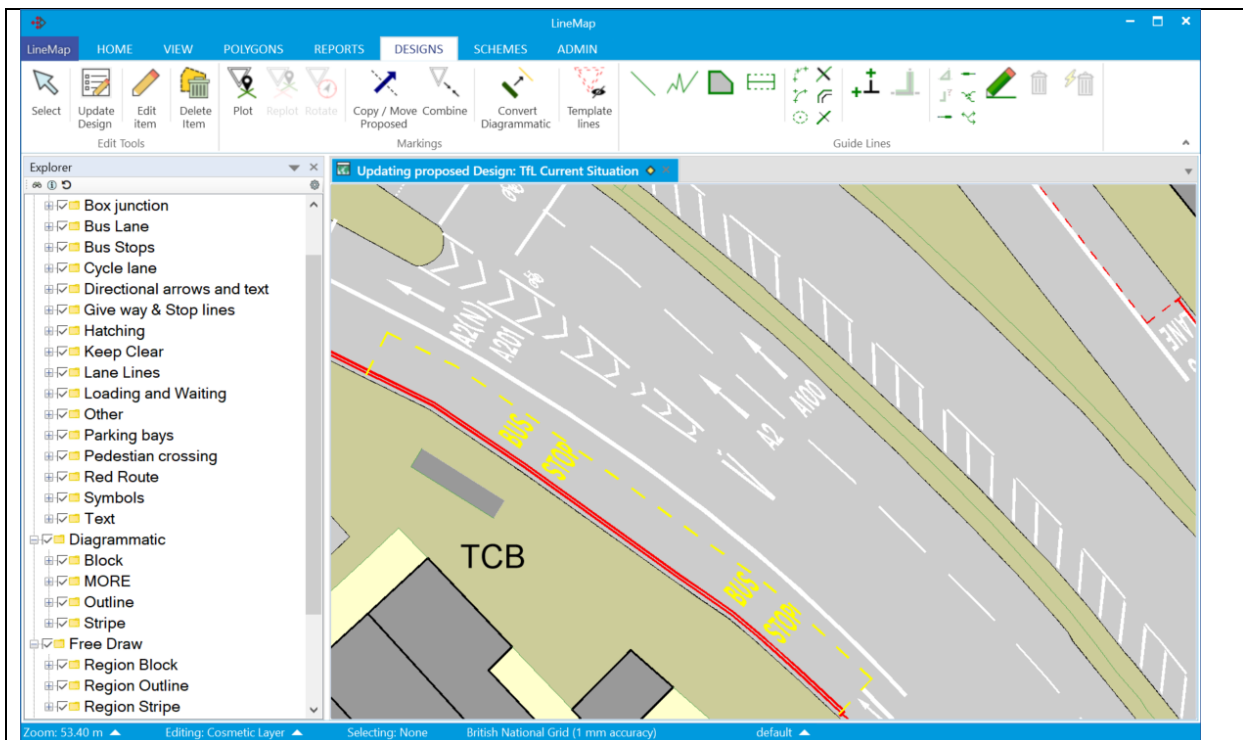
LineMap

LineMap is an application for creating and managing road marking designs. Using a library of national standard road markings LineMap can create CAD (computer aided design) level detailed representations of markings. A high level view of any design can be created using blocks of colour.



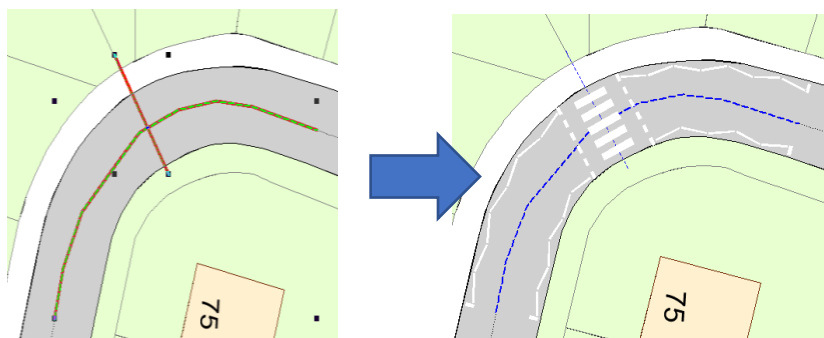
The **LineMap** application is hosted in the Buchanan Computing Cloud and provided as 'Software as a Service'. The application can be accessed via any modern browser. Once logged in all LineMap functionality is accessed via a single Ribbon and Map based interface.

An interactive map displays background maps of the streets and roads, together with a layer for each design created. The LineMap Road Marking Explorer allows designers to choose the road use block or marking to add to their design.



Designers can define an area of interest and consultation period which can be published to **Traffweb** for online Issue Consultation.

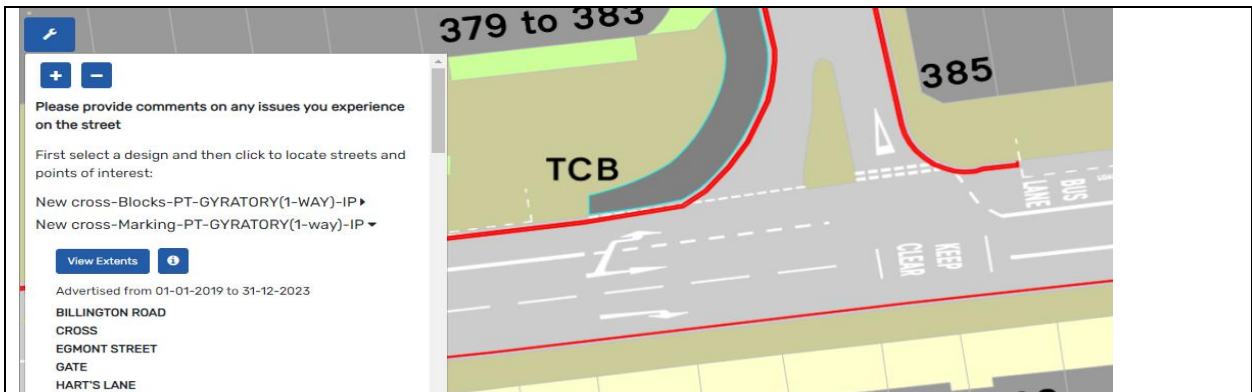
Based on the results of the Issue Consultation and inputs from other design tools designers can create digital representations of improved road space designs. Complex markings can be created with simple construction lines:



These designs can then be printed onto paper for use in Local Workshops, exported for input into modelling packages and published to **Traffweb** for online Design Consultation

Traffweb

Traffweb is a web mapping application with tools for public consultation and stakeholder engagement. It consists of a public area where stakeholders can feedback on issues within the study area, as well as comment on proposed designs. A private area of the website, accessed by designers, allows dashboard reporting on consultation feedback as well as control over the consultation period.



An interactive, navigable map is used to display the area of interest, issues and proposed designs. Tools are provided for entering issue comments or completing design surveys.

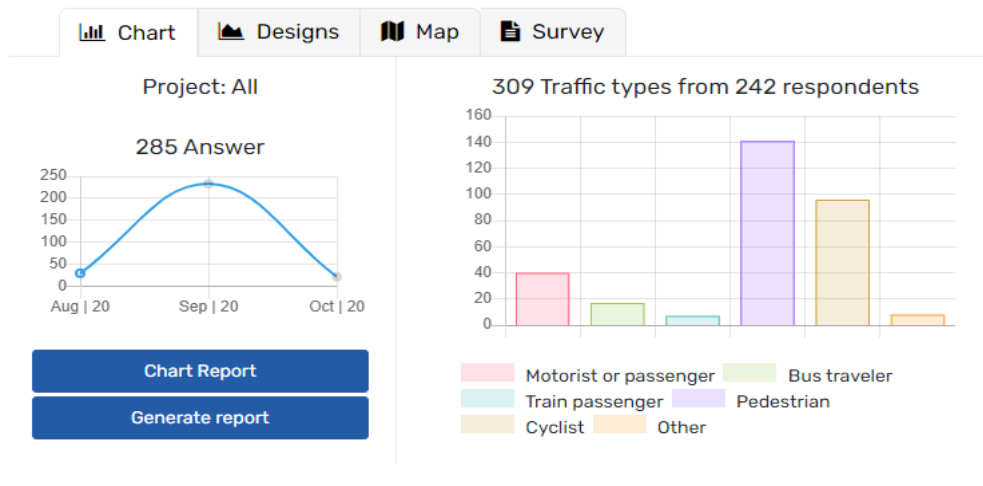
1: How do you think different street uses are affected by this option?

Pedestrians - walking	Not enough <input type="radio"/>	About right <input checked="" type="radio"/>	Too much <input type="radio"/>
Pedestrians - crossing the road	Not enough <input type="radio"/>	About right <input checked="" type="radio"/>	Too much <input type="radio"/>
Pedestrians with restricted mobility - walking	Not enough <input type="radio"/>	About right <input checked="" type="radio"/>	Too much <input type="radio"/>

Map features such as issues and road use blocks are clickable displaying a popup with further information.



A user login enables designers to access a secure dashboard of results and administration area.



3.6 Tool 3: Road Design Dynamic Simulator

A simulation tool to assess how all road-based activities perform under particular design options, building on PTV's existing [Vissim](#) software.

Developer(s) / Owner(s)	PTV AG
Tool leader	Jochen Lohmiller
Contact details	For further information on PTV Vissim please contact PTV AG: https://company.ptvgroup.com/en/ Mail: info(at)ptvgroup.com Tel: +49 721 9651-0

Tool description & tool added value

A-Added value from the tool: that are addressed and how customers have tried to solve them so far

The task of (re-)designing urban streets is highly context dependent. Therefore, there is no standard solution for a modern, sustainable street space allocation. Different design options might be considered. Before implementing costly infrastructure projects, it makes sense to test and validate the different tailored measures for the reallocation of street space in a virtual environment.

Models can help to realistically simulate and analyse a city's current and future traffic and run through different what-if scenarios.

However, several challenges can be identified. One relates to the fact that context related street design assessments should be made easier and more accessible to authorities and project managers. In addition, assessment tools have to make sure that they take into consideration the multimodal dimension of mobility. Assessments should take into consideration all public real users like pedestrians, cyclists, PT and other 2- and 4-wheel users. They represent the users behaviours in line with different street designs. Finally, the carbon footprint and evaluation of projects have become a top priority.

B-Value proposition

Simulation by microscopic simulation software PTV [Vissim](#) gives you a detailed overview about the status quo of the traffic flow and its impacts, with the possibilities to define and compare multiple scenarios. Simulations assess how all street-based activities perform under particular design options through various measures. In particular, the value proposition of PTV [Vissim](#) is a more realistic and dynamic microscopic modelling of lane driving, parking, loading and kerbside activities as well as the better simulation of the interaction of different traffic users on the street, on the kerbside and on places.

As a microscopic modelling tool, **Vissim** is a time step oriented and behaviour-based simulation tool for modelling urban and rural traffic as well as pedestrian flows. Besides private transportation, **Vissim** may also simulate rail- and road-based public transportation. **Vissim** might help to evaluate what-if scenarios of traffic performance and emissions.



Therefore, **Vissim** supports the selection of an optimal and tailor-made design solution.

C-Description of functions

In general traffic models are carried out with the purpose of predicting the operational performance of a proposed future intervention. When (re)designing streets and places, the modelling process and its evaluation helps finding the best solutions. The modelling process consists of three main stages, which are the model building process structured in replicating the current situation and designing future scenarios, and an evaluation of the demonstrating effects of the modelled measures.

1. The modelling process starts with **modelling the current traffic conditions** at a given point in time. Input data like vehicle flow and junction control information, e.g. from macroscopic traffic models, statistical data sources or data collected on site by third parties, is needed. This model represents the baseline which can be used for comparison with any other scenarios. Calibration and validation ensure the quality of the model. PTV **Vissim** offers various calibration parameters like speeds, queue lengths, travel times. The validation process compares the model outputs with real-world data.
2. Then the planned measures for redesigning the street space are modelled. The **development of future scenarios** will be built using the base model as a starting point and change only those aspects which are a direct result of the proposed design, e.g. adjacent planned measures, network changes, patterns of traffic growth or change in road user composition. Assumptions or forecast data determine the scenarios.
3. In the **evaluation process** results are produced by running several simulation runs. The compared model results should demonstrate the effect and operation of the measures or street designs on the road network and the place activities. **Vissim** consists of multiple methods of evaluation to assess operation of network. Evaluations extracted for groups of vehicles, i.e. private vehicles, public transport, cyclists or the entire fleet. The modeller can define various evaluation types,

attributes and percentiles, which will be provided additionally to common aggregated values like total, minimum, maximum, average and standard deviation. **Vissim** offers additionally writing of specific results into a csv text file or a database. 2D and 3D Simulations as well as videos help to make the effects visible.

Vissim is a microscopic, time step oriented and behaviour-based simulation tool for modelling urban and rural traffic as well as pedestrian flows. Besides private transportation, **Vissim** may also simulate rail- and road-based public transportation. The traffic flow is simulated under various constraints of lane distribution, vehicle composition, signal control and the recording of different transport modes. **Vissim** allows simulating, analysing and evaluating flows and interactions between pedestrian streams, bicycles as well as public and private transport. Wherever infrastructure and capacities are repurposed, **Vissim** might help to evaluate what-if scenarios of traffic performance and emissions. Based on data and accurate modelling techniques, **Vissim** will be able to estimate impacts - and avoid wrong solutions.



Figure 1 Exemplary simulation by PTV **Vissim**

PTV **Vissim** is a desktop application running under Microsoft Windows OS, a Linux kernel is offered as well. Advanced simulation of pedestrians is available within Viswalk add-on module for PTV **Vissim**, or as standalone version called PTV Viswalk. PTV **Vissim** and PTV Viswalk offer graphic user interfaces which are adjustable by the modeller (Figure 2).



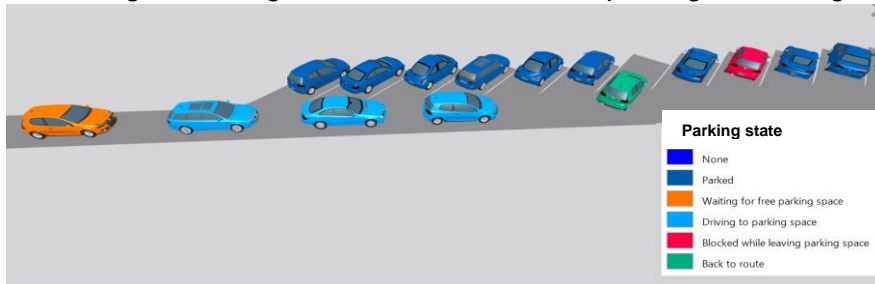
Figure 2 PTV **Vissim** user interface

D-Description of applications

The microscopic Simulation software PTV **Vissim** may be deployed to answer various issues in terms of traffic development planning, capacity analysis, traffic control systems planning as well as comparison of junction geometry, signal systems operations and re-timing studies or private traffic and public transit simulation. Within the MORE project PTV developed different applications and technical enhancements within PTV **Vissim** that help simulating and evaluating different street designs. The new features developed in the context of the MORE project offer a better and faster modelling of the complexity of the real world. Additional technical enhancements and evaluations allow a quicker evidence how specific objects are used.

A. Easier simulation of parking and loading of motorized vehicles

The new feature helps for a quick creation of parking, loading as well as pick-up and drop-off spaces with automatic resolving of vehicle-to-vehicle conflicts around the created spaces. These traffic bays can be used for any type of parking (short-term, mid-term, long-term) and loading. All activities can be modelled, where vehicles stop for a certain amount of time. Within **Vissim** users can evaluate number of parked or loaded vehicles and requests, number of entering or leaving vehicles as well as the parking or loading duration. In addition, the



utilisation rate and the blocked duration or rate while vehicles leave can be assessed. **Vissim** can eject parking fees.

B. Lane-specific driving behaviour

For each traffic lane an individual "link behaviour type" can be defined. So, vehicles can use different driving behaviour on each lane. For example, segregated lanes for automated vehicles can be modelled with a different driving behaviour or different driving restrictions.

C. Dwell time attribute for pedestrians

Dwell time as a new attribute for pedestrian modelling was developed by PTV. This contains the remaining waiting time if a pedestrian is currently waiting at the head of a queue or on an area with a waiting time distribution.

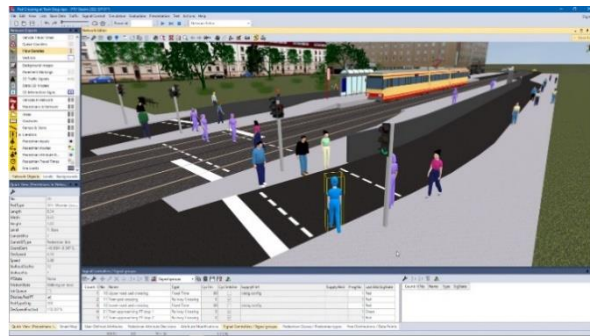
D. Passenger boarding delays

This new feature was designed to model the delays that pedestrians encounter when they board a public transportation vehicle. Such delays occur in reality because of crowded situations, passengers carrying luggage or buying tickets from the driver.



E. In-built Intelligent Transport System (ITS) tools

ITS tools are designed to allow simple and quick modelling of basic intelligent transportation systems. This new development enables the user to create simple traffic-actuated signal controls of the pedestrian crossing type or at intersections without having to script the necessary run control. **Vissim** creates automatically all necessary objects.



F. Major flow definition

User of **Vissim** can define major flow through one or several intersections in terms of higher-level and lower-level right-of-way rules. PTV **Vissim** automatically sets the status of conflict areas inside temporary or permanent nodes. It saves a lot of modelling time.

E-Tool information

General knowledge base

<https://www.ptvgroup.com/en/solutions/products/ptv-vissim/knowledge-base/>

A demo version of PTV **Vissim** software can be obtained from

<https://www.ptvgroup.com/en/solutions/products/ptv-vissim/demo-version/> .

This version offers limited functionality and specific terms of use.

Refinement of the tool is performed on continuous basis by the tool developer PTV. Each year a new version is released with new features and enhancements. PTV group webpage: <https://company.ptvgroup.com/en/mobility-software-release-2022/release-highlights#c12087>

Before modelling with PTV **Vissim** the first time, a training course is recommended. PTV offers basic 2-day trainings for PTV **Vissim** and several additional 1-day trainings for specialised topics. Besides that, a [collection of webinars](#), manual and an [online help](#) is available.

3.7 Tool 4: Road Design Appraisal Tool

Developer(s) Owner(s)	/ UCL
Tool leader	Paulo Anciaes
Contact Detail	p.anciaes@ucl.ac.uk

Tool description & tool added value

A-Added value from the tool: that are addressed and how customers have tried to solve them so far

Appraisal is the comparative assessment of the positive and negative forecasted impacts of different options for a project. Appraisal is a standard practice in the case of large projects to build new transport infrastructure (e.g. new motorways, railways, or bridges), but less common in the case of smaller projects to modify small parts of the urban transport network. There are currently no tools for the comprehensive appraisal of roadspace allocation in urban roads.

B-Value proposition

The main aim of **Appraisal Tool** is to judge the overall efficiency of an option versus another, i.e. how the positive impacts balance against the negative impacts, for each option. However, projects also have an equity dimension, because positive and negative impacts may affect different people. This is particularly important in the case of projects for roadspace reallocation because, by definition, these projects make some road users better off at the expense of other users.

C-Description of functions

The **Appraisal Tool** consists of three independent modules:

- **Module 1:** Political and Technical Assessment - Impacts are measured in terms of how they conform to political priorities, legal standards, and best practice.
- **Module 2:** Cost-Benefit Analysis - Impacts are monetised, where possible
- **Module 3:** Multi-Criteria Analysis - Different assessors assign different priorities to different impacts.

D-Description of applications

The **Appraisal Tool** was trialled by practitioners, in the 'Stress Sections' of the five cities that are part of the MORE project: Budapest, Constanta, Lisbon, London, and Malmö. The figure below shows an extract of the application of the tool in Malmö (a part of the Political

and Technical Assessment output page. The options in Malmö represented different types of visions for the stress section, emphasizing mobility or sustainability or liveability.

Synthesis of Impact Analysis

	Number of Indicators for which option is best	Number of violations
Option 0 (Do nothing)	9	0
Option1	15	1
Option2	14	0
Option3	14	2
Option4	18	1

Detailed Impact Analysis

Performance indic	Unit	Option 0 (Do nothing)	Option 1	Option 2	Option 3	Option 4
		0	CD0000	KI0000	MAL_S4_0010_2021_B_0_IMQR0000	CD0000
Implementation cost SEK			3000000	4000000	2000000	3000000
Maintenance cost p SEK		560000	620000	640000	600000	620000

Link function

Pedestrians

Space	Width available	8.0	10.0	6.0	7.0	10.0
Volume	Peak-time flow (vehicles or pedestrians per hour)					
Speed	Average speed (km/h) at network level					
Travel time	Average travel time at network level (minutes)					
Delays	Average delay (minutes/vehicle) at network level					
Reliability	Variance of travel time (network level)					

Trip quality

Cyclists

Space	Width available (dedicated space)	5.0	4.0	8.5	0.0	4.0
Volume	Peak-time flow (vehicles or pedestrians per hour)					
Speed	Average speed (km/h) at network level					
Travel time	Average travel time at network level (minutes)					
Delays	Average delay (minutes/vehicle) at network level					
Reliability	Variance of travel time (network level)					

Trip quality

Micromobility

Space	Dedicated space (yes/no)	No	No	No	No	No
Volume	Peak-time flow (vehicles or pedestrians per hour)					
Speed	Average speed (km/h) at network level					
Travel time	Average travel time at network level (minutes)					
Delays	Average delay (minutes/vehicle) at network level					
Reliability	Variance of travel time (network level)					

Trip quality

Buses

Space	Width available (dedicated space)	7.0	0.0	7.0	5.5	0.0
Volume	Peak-time flow (vehicles or pedestrians per hour)	18	19	19.0	19.0	19.0
Speed	Average speed (km/h) at network level	20.3	28.7	28.6	28.8	28.8

(...)

4 Conclusion

This Products Fact Sheet provides a presentation of the 5 main tools that have been set up or refined for the MORE projects as well as the way they can be channelled in a whole consultation process.

The content of this deliverable takes into account the latest achievements of MORE. This includes more defined results to be exploited, further meetings with professional stakeholders and monitoring of the markets where the MORE tools will find themselves.

The project coming to an end, this Products Fact Sheet will feed the Exploitation and Legacy Plan and ensure the best use and the dissemination and legacy of the knowledge achieved during the project and underlines the added value of the project, achieve legacy and boost further scientific developments beyond the project.
