

1. Publishable summary

This periodic report describes the second year of activity in the TransTools3 project (TT3), which is developing the third upgraded version of the European transport demand and network model, TRANSTOOLS.

During the first year of TT3 it became clear that the project faced a serious challenge. The TT3 project was planned to build on data from the ETISplus project – another EU project running partly in parallel with TT3 – which finished only at the end of 2012. This was not in accordance with the implementation of the TT3 project but did not seriously affect the first year of TT3.

Work in the 2nd year of TT3 depended on the final ETISplus data. After the second year the TT3 project was delayed vis-à-vis the original time schedule. Most planned activities dependent on ETISplus data were not initiated as planned; the TT3 project progressed however, as much as possible on other activities. Immediately after the end of the reporting period, dialogue with the ETISplus consortium resulted in most data issues being clarified.

The ETISplus delay also has consequences for the TT3 project in the remaining project period.

An extension of the TT3 project with 22 months, a revised time schedule and production plan reflecting the extension as approved in an amendment of the TT3 Grant Agreement Annex I (dated 05.02.2014) allows for the successful completion of the TT3 project. Summary description of project context and objectives

The objective of the TT3 project is to upgrade and further develop the current TRANSTOOLS model (TT2) to a new and improved European transport demand and network model (TT3).

The project will improve the methodological basis of TRANSTOOLS, improve and validate its data foundation, deal with known deficiencies of the existing model, make the software faster and more efficient, and focus on the user needs, model documentation and model validation. In addition, the model will update the current TRANSTOOLS model - from 2005 as base year- to 2010 as base year based upon ETISplus data, which include transport networks (all modes), traffic counts, transport matrices (passengers, vehicles/coaches, freight in volumes and monetary values), zonal data (including socioeconomic data), and the geographical coverage of the model will be enlarged.

The level of detail with regard to the rail, maritime and air transport modules will be increased. This allows for better analysis of costs, capacity and externalities of transport. Finally, the impact assessment model will be improved.

When finalised, the TT3 project will deliver a validated, well-documented and user-friendly model that will provide policy makers with a tool for assessing and developing better transport policies. The final model of TT3 will be free, and more open than the present model (but building on ArcGIS and Windows).

The TT3 project consortium consists of 14 partners. For more information about the project, please consult the project web-site: www.transtools3.eu.

1.1 Work performed since project initiation

Within the first two years of the project, the TT3 consortium focused on:

- Establishment of project coordination structures, systems and procedures to ensure proper execution of the project;
- Development of the overall model design as well as sub-model designs;
- Preparation of data, including specification of data needs and clarification of the extent to which the TT3 project would have access to adequate data of a sufficient quality;
- Application and acquisition of national data and other non-ETISplus data for TT3 modelling;
- Initiation of data validation of preliminary data – both ETISplus and other data;
- Base software development of sub-models.

The project is organised in 12 work packages (WPs) including project management and cross-cutting activities.

WP1: Consortium Management and WP2: Cross-cutting activities: The objective of WP1 and WP2 is to ensure an effective overall management and coordination of the TT3 project that will cater for an efficient and successful implementation of the project.

In the first year of the project, project management activities were carried out as planned including the set-up of the project organisation and the implementation of management tools and procedures. Project dissemination activities were initiated, among others the set-up of a project website, and the distribution of a project leaflet and newsletters to stakeholders.

WP3: Architecture and configuration: The objective of WP3 is to design the changes necessary to the overall model structure of TT2 in order to ensure a modular and flexible model implementation.

As much work as possible has been done on the development of the software architecture and data structure; i.e. developing generic parts and now awaits input from the sub-model specific WPs. The design of the simple user interface is completed and the detailed user interface is ready for application by the sub-models.

WP4: Flexible modelling framework: WP4 deals with the linking of all sub-models developed in the project into one complete modelling system which will make it easy for users to create and run different configurations of the model framework.

Some initial design considerations have been made, a methodology for calculation of key figures has been developed and a prototype for automatic map creation has been developed and tested. The main effort, i.e. to connect the different sub-models, will take place when the sub-models have been developed.

WP5: Data collection and validation: The objective of WP5 is to validate ETISplus data, and collect and prepare data for estimation if needed.

So far, the main activities have been to coordinate and validate data deliveries from ETISplus and to update the geographical zone-system, including collection of geographical and socio-economic data from the member states and other European countries. Data collection for most countries is finalised. Work on data is on-going.

WP6: Scenario generator: The objective of WP6 is to support the development of “boundary data” to be used when using the model for forecasting. This includes population data, work force data, GDP data, car ownership, etc.

Definition of boundaries between the scenario generator and the various sub-models has been outlined across WPs and a model design note prepared laying the ground for future work in this WP. Further work awaits other WPs.

WP7: Freight models and logistics: The objective of WP7 is to develop a new freight model, based on 2010 data.

As the freight model will be a completely new model, activities were extensive in the first year of the project – both related to designing the freight models and to identifying adequate data. Activities were less extensive in the second year of the project; however, the design of the freight and logistics model is now completed and disaggregate data have been acquired. A preparatory descriptive analysis of two main disaggregate data sets (ECHO from France and the Commodity Flow Survey 2009 from Sweden) was started.

WP8: Passenger demand model: The objective of WP8 is to re-estimate the passenger demand model from TT2, update the base year of the model and take nonlinearities into account.

During the first year, focus was on identifying disaggregated sources for model estimation and meta-data from national models and national studies. During the second year, national data was collected and prepared and initial work carried out on model development. Rules for tax deduction for travel to work trips were collected for all European countries.

WP9: Traffic assignment: The objective of WP9 is to improve the route choice and traffic assignment component of TRANSTOOLS.

The main effort has been to analyse the design of the traffic assignment models in TT2, and design the traffic assignment models in TT3 from a general framework perspective as well as from each specific mode. This work is completed.

Since existing models will be used in TT3, the main effort in WP9 will be to calibrate these models and an effort will be made to speed up the calculation time with various techniques. A model design note was produced laying the ground for future work in this WP.

WP10: Project assessment model: The objective of WP10 is to develop a project assessment model that will be able to evaluate physical infrastructure as well as tax policies and combinations of these.

As this model will use input from the other TT3 sub-models (WP6-9), the main testing will await these. The methodological approaches were discussed though, and a model design note produced.

WP11: Model validation: The objective of WP11 is to undertake proper validation of the overall model in order to rule out possible errors and to establish a common consensus on the outcome of the model.

WP11 will ensure that all models in TT3 are thoroughly revised and that there will be a validation of the complete model framework and of the user interface. This WP will not start until the other WPs have delivered models that can be validated. As such, the WP is planned to run the last half year of the project.

WP12: Deployment, user guide, and maintenance: The objectives of WP12 are to provide a robust mechanism for the end user to install and uninstall TT3 and a comprehensive User Guide for TT3. Work will be carried out in parallel with WPs 3, 4 and 6-10; but the merging of all this will not take place until the final phase of the project.

1.2 Results achieved and expected results

The following formal deliverables were submitted and approved:

- (D2.1) A project web page was developed and launched at www.transtools3.eu
- (D2.2) A format for a project newsletter was developed and four newsletters published at the project website and distributed by email to relevant stakeholders. Project newsletters will be published and distributed on a regular basis throughout the project.
- (D3.1) Guideline for model configurations.
- (D5.1) Note with specifications for ETISplus.
- (D3.2) User interface design documentation.

From a project point of view, the main contributions of the project after the first 24 months were the following:

- A set of model design notes (Milestone) were produced, distributed among key partners and submitted to DG MOVE for information. These notes lay the methodological foundation for the model development in the remaining part of the TT3 project.
- The need for software development was clarified, both within WP3 and WP4 and the cross-cutting WP6, and within the specific model components: WPs 7-9 (freight, passenger and traffic assignment).
- There was an extensive dialogue with ETISplus. This included commenting on format specifications and meta-data in ETISplus.
- Alternative data sources for model estimation were identified and data access ensured; the Swedish Commodity Flow survey, French ECHO surveys as well as other national data were acquired.

1.3 Potential impacts and use of results

The project works towards producing one overall and final result: An integrated model that will cater for more informed transport policies and decisions. All WPs, tasks and activities in the project are targeted towards this end result.

It is assumed that in the course of the project, involved partners, stakeholders and people exposed to the project during conferences, workshops, discussion groups, etc. will gain a higher level of knowledge of modelling techniques and links between transport and other issues, such as economic, environmental, trade, etc. Many Consortium members are represented in national and international committees and boards. This guarantees an efficient dissemination of the ideas and activities carried out in the project to the scientific community and governmental organisations. Likewise, the TT3 website, the newsletters and

the leaflet, the last two distributed to more than one thousand people associated with the transport sector, are likely to increase the knowledge level of people exposed.

The main impacts – when the model has come into use – are expected to be as follows:

- The project will validate data on transport from ETISplus, and collect data from other sources, compile and merge them into a joint TT3 database that describes transport in Europe. This provides a general knowledge on transport in Europe. All data will be available in an accessible format, whereby it can be of use – not only to DG MOVE – but to member states, transport organisations, NGOs, etc.
- TT3 can be used for assessing impacts of overall European Transport Policy, energy and/or fiscal/economic policies with focus on the transport sector, as well as of TEN-T and other infrastructure projects.

Finally, TT3 can be used in context of national transport models – in cases/countries where no national model exist - as a base for developing national models, or in order to describe international traffic to/from and through countries, especially in countries with much international transport or in border regions.