

DEMOCRITOS

DEveloping the MObility CRedits Integrated platform enabling travellers

TO improve urban transport Sustainability

DEL 07B

1ST PROJECT ANNUAL REPORT

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Scientific representative of the project's coordinator : Roberto Ionna, Planning Division - Mobility
Department - Genoa Municipality

Tel: 010 5577412

Fax: 0105577852

E-mail: rionna@comune.genova.it

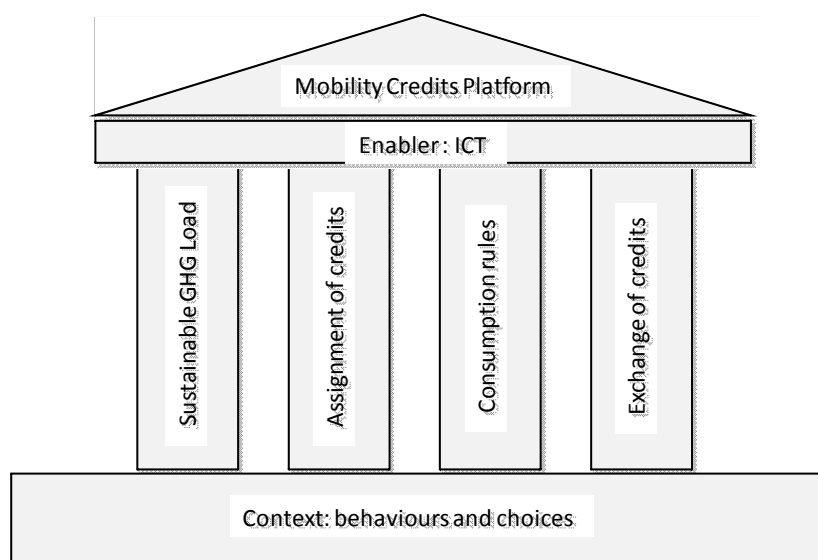
Project website address: <http://www.democritos.ipacv.ro/>

Author	Claudia Podestà
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1. Publishable summary

The DEMOCRITOS project introduces the “Mobility Credits Model” as a transport specific platform that will enable travelers, mobility providers, technology providers and transport planners to understand the implications of climate policy and increasing prices for greenhouse gas emissions and to identify new opportunities in urban mobility first and in extra-urban mobility later.

The rationale of the Mobility Credits Model is based on setting as quantitative target the “sustainable load of GHG (Greenhouse Gases)” of the study area. Subsequently the GHG load is converted into a “total amount of mobility credits” distributed to all the travellers of the area. Based on their mobility behaviours, individuals “consume” their initial endowment of mobility credits. In addition, depending on their mobility habits, people could have needs higher or lower than the mobility budget assigned: as a reaction, exchange mechanisms develop in the system, regulated through a sort of bank where credits are bought by the individuals or returned with monetary benefit in case they have been unused.



Capturing the requirements of the topic “to enable travellers to understand and reduce greenhouse emissions related to mobility and consumption choices”, we notice that providing information is not enough. That would leave travellers without a compelling proposition to adjust their behaviours and choices. That could may be enough to “understand” but surely not to “reduce”. On the contrary, we believe it is necessary to create a behavioural context where the travellers can experience the effects of changing attitudes and choices in mobility.

The “Mobility Credits Model” allows to create this context within a range of possible implementations, from a “pedagogic tool” to a “mandatory demand management scheme”.

The mechanism of this context is to set a quantitative target (e.g. an allowable threshold of CO₂ production), to make the approach path to the target measurable (how much CO₂ is not produced on account of a different mobility behaviour) and to apply a driving force (incentive or obligation) from the current status to the target.

Project objectives

The goal of the DEMOCRITOS Project is to establish an exhaustive framework of the Mobility Credits Model aiming at:

- Enhancing the theoretical framework addressing medium and long term effects (re-location of industrial, commercial and residential activities, inflation in prices of goods and services, local competitiveness, effect on tourism, ...);
- Exploring different ways to implement the basic pillars of the model: theoretical schemes to define the charge area and to measure “the sustainable load”; load-credits ratio; alternative policies to an even distribution of credits; rules; exchange models;
- Exploring how the model could spur innovation in individual transport means through a positive selective pressure to induce the use of low-polluting, low consumption and small vehicles;
- Assessing the implications of different technology scenarios (automotive, other transport means, electronics, sensors, and mobile communications) and how they can fit into the model;
- Assessing the social awareness and concerns in applying such pervasive monitoring.

Expected final results

At the end of the project, the following results will be obtained:

- Municipalities and regional authorities of the consortium will have a sound basis to decide upon the adoption of the Mobility Credits Platform as a mean to influence the travellers’ choices in order to reduce greenhouse gases;
- Consultancies will have a clear understanding of the concept and of the associated technologies to assist public administrators, municipalities, enterprises, interest groups, communities and citizens in Europe and outside Europe to implement the platform.

The Mobility Credits Model will provide a paradigm change in transport, addressing impact on climate change and energy dependency, through the following mechanisms:

- It applies a pull mechanism to the supply chain of the transportation industry, instead of the push on some rings of the chain (e.g. carmakers to meet unlikely targets in CO₂ production), starting from the citizens, their choices and their behaviours. In this case the carmakers will have to supply products allowing the citizen to cope with the rules in a truly competitive market where size and off-design performances in actual conditions will make the difference. The externality meter shifts emphasis from specifying the products to governing the actual final effects, whatever the product. In principle, this would allow to extend the Kyoto protocol on CO₂ to transportation.
- It applies a constant pressure to deliver efficiency and cleanness acting upon the “sustainable load of externalities” which can be progressively decreased in order to achieve specific moving targets.
- It applies to all modes of transport, each considered for its contribution to the generation of externalities with particular emphasis on greenhouse gases.
- It allows to constantly assess the effects of the different policies and to fine tune the rules even through self-adaptive mechanisms.
- It recognizes that in large metropolitan areas it is necessary to take into account externalities generated in wide areas, not only in the central areas and that cordon crossing is just the entry level of charging (change from access charge to use charge);
- It can be easily extended to the whole territory including extra-urban routes and enabling a new taxation scheme based on externalities to parallel current taxation based only on income.

The multiple possible schemes imply that several aspects of mobility, society, demography,

politics, economy and laws will be addressed.

Potential impact and use

Working on the two dimensions of “scope” and “adoption” we can easily identify at least four base application contexts of the Mobility Credits Model:

1. A demand management policy would result from a wide scope (e.g. the population of a metropolitan area or a region) and a mandatory action requiring each citizen to be involved;
2. An information platform in a wide area (wide scope, spontaneous adoption) where citizens have incentives to “play the credit game” on a voluntary adoption base (e.g. sponsored by public transport companies or as a way to promote the use of Location Based Services);
3. A social network (narrow scope, spontaneous adoption) involving a community with self – defined targets with schemes ranging from an internet game to a lottery converting GHG reduction into tradable certificates;
4. An enterprise (narrow scope, mandatory adoption) where the mobility manager introduces the MCM as a way to plan actions to reduce transport impacts.

This multiplicity of possible implementation schemes has some common key features:

- Electronic GHG wallet – The GHG production (and possibly the other externalities related to mobility of persons and goods) are translated into “credits”, that will become the common “currency” to be spent within the assigned budget limits;
- Traveller’s awareness – Due to the fact that travellers will not have an unlimited number of credits, they are requested to optimize their consumptions modifying their mobility profile;
- Integration – The MCM is an umbrella concept allowing each community (municipality, social network, enterprise, etc.) to leverage the available degrees of freedom to tailor different policies both on the supply side and on the demand side, taking into account the specific constraints of each case. For instance, it allows to make visible and understandable currently overlooked alternatives like car/van sharing and park&ride options.

The need to have an electronic wallet brings from the “Mobility Credits Model” (“MCM”) to the “Mobility Credits Platform” (“MCP”), that is the technical implementation of the model requiring the use of current and future ICT.

Work performed since the beginning of the project and main results achieved

In the first project year, the following main activities have been carried out:

- a complete definition of the theoretical framework of the Mobility Credit Model, taking into account ontology, taxonomy and the basic “four pillars” of the model: defining the charge area and quantifying its “sustainable GHG load”, assigning credits to “sustainable load” and distributing credits, rules of consumption, exchange mechanism and price law for extra-credits;
- mobility credits platform definition in a modular architecture, allowing different schemes to be implemented;
- assessment of the long term effects on local system and climate changes: analysis of impacts on Greenhouse Gas Emissions and analysis of all types of effects that might concern policy makers when considering the application of mobility credits system, including local pollution

and congestion;

- setting up, through the coordination of WP5, a first version of the MCP tool in all the four cities, paving the way for the test case to simulate the effects of a large scale application of the MCP in the four cities (WPs 6-7-8-9);
- setting up of the website for social networking, which allows internet users to simulate the application of a mobility credits policy in the four test case cities;
- publication of project web-site, newsletters and other dissemination tools; presentation of the project in different occasions.