Title
Social Car - carpooling initiative

Short description
SocialCar is a research and innovation project that seeks to incorporate carpooling into existing mobility systems by using powerful planning algorithms and big data integration from public transport, carpooling systems, and crowdsourcing. SocialCar's approach is based on a holistic vision of shared mobility in an urban and extra-urban environment, taking care of the needs and requirements of local players. Citizens can gain access to a unique service that optimizes the use of all available mobility resources in the sharing economy. This project changes the practice of using single car, thereby reducing travel times and costs, increasing convenience and contributing to a better environmental performance of urban transport networks. It was initiated by the citizens of the City of Skopje, supported by the City of Skopje authorities, and involves Public enterprises, Chamber of Commerce, Academia, SMEs, NGOs.

SocialCar is expecting to achieve positive significant behavioural change of the involved citizens within the project life-time. Improvements will be quantified in the 10 European SocialCar test sites. Some of the changes that will be promoted in urban areas will include organized carpooling, alongside the public transportation and bike sharing system.

The Project will have a direct impact on the air quality by lowering the emissions of CO_2, decreasing the traffic congestions, energy saving, noise, and other factors influencing air quality. There is also a social component to the project – meeting new people, sharing ideas inside the community of users. A social aspects of the project might have a positive effects on their wellbeing as well, through establishment of new relations among users built up on trust.

Topic
Moving – Active mobility

Characteristics (type, level)
Local (the City of Skopje), EU level (EU Project of 10 European cities)

Country/Countries of implementation
Republic of Macedonia

Aims and Objectives
SocialCar is a research and innovation project that seeks to incorporate carpooling into existing mobility systems; by means of powerful planning algorithms and big data integration from public transport, carpooling systems, and crowd sourcing.
The service goal of SocialCar is to exploit smart mobility approaches to carpooling in a practical, social and viral way, adding the possibility to link the carpooling service with existing collective transport services and other mobility options, enhancing the co-modality capability of the integrated city mobility service. SocialCar's approach is based on a holistic vision of shared mobility in an urban and extra-urban environment, taking care of the needs and requirements of local players, and fully exploiting their specific social leverages to make the service highly effective.

The project unites ITS developers, social and economic scientists, transport engineers, carpoolers and public authorities from Italy, Greece, United Kingdom, Luxembourg, Poland, Switzerland, the Former Yugoslav Republic of Macedonia, Croatia, Slovenia, the Netherlands, Hungary, Spain and Belgium. Their mission is to design, develop, test and roll out a service that simplifies the travel experience of citizens in urban and periurban areas. SocialCar will define data processing flows and design algorithms to match travel requests with the integrated public-private transport supply, complemented by a reputation-based mechanism. The partnership will, furthermore, design the architectural and logical framework of the service by using open source software under the GNU General Public License. With all software modules integrated, SocialCar will be tested in 10 European sites.

SocialCar's General Objectives (GO) are set as follows:

GO1: To contribute to reducing road congestion by improving and maximising connectivity and information sharing between carpooling and other transport systems, through: supporting cross-system interoperability, fostering open data policies, defining and monitoring data quality, and considering data security and integrity related challenges to enable mobility and carpooling as a service.

GO2: To provide solutions for real-time information exchange, forecasting models to deliver high quality travel and carpooling related information, enhancing innovation and generating growth thanks to an innovative integrated platform and the use of Big Data.

GO3: To validate green driving support systems, active management based on European GNSS location data and solutions for integrated, customised and accessible mobility services targeted to various end-users with predictive analytics capabilities and ways to utilise solutions to induce behavioural changes in favour of more eco-friendly choices and carpooling in particular.

The SocialCar's Specific Objectives (SO) are:

SO1: To develop a new carpooling model, targeted to optimize the inter-modality of carpooling with existing transport and mobility data and services within EU cities. The project will advance from existing predictive models to newly developed real-time models for transport planning integrated with public transport services.

SO2: To enhance carpooling diffusion relying on widely used, easy to interact with communication channels, such as social networks and crowd-sourcing systems, providing a reliable and responsible system exploiting the capabilities of latest generation smartphones.

SO3: To aggregate individual and spot mobility initiatives within an integrated multilingual citizen platform, exploiting the viral concept behind social networks. SocialCar's viral concept will exploit synergies with existing carpooling services, integrating and expanding their offerings, and providing a reliable and sustainable solution aligned with emerging individual needs, enhancing the value of personal networks.

SO4: To identify suitable big data management architecture for integrating existing public transport data, managed by city authorities and operators, with real-time information from travelers' web communities (crowd sourcing), producing a city-based open integrated mobility repository of public transport and traffic city- based data.

SO5: To maximize the availability of mobility data from different data sources, first public transport and rail, then public and crowd sourced data, harmonizing them through the extension of standard open protocols for new transport approaches, such as car and bike sharing.

SO6: To exploit potentials of the GNSS European technology by promoting the use of Galileo services in vehicles used for carpooling and on the apps used for ride matching and travel planning.

Target Group
General Public, Citizens of the City of Skopje with a special focus on youth population (students).

Status
Ongoing

Start and Completion dates
2015 – Today (the duration of the Project – 36 months)

Lifestyle and Behavior Change
SocialCar enhances the public transport network by a wider variety of services including carpooling/sharing, bike sharing, taxi and other on-demand services. Citizens can gain access to a unique service that optimizes the use of all available mobility resources in the sharing economy. SocialCar Project tends to change the practice of using single car, reduces travel times and costs, increases comport and convenience and contributes to a better environmental performance of urban transport networks. SocialCar is expecting to achieve measurable positive and significant behavioural change of the involved citizens (end users), within the project life-time. It will be measured in higher car-occupancy rates (growing from the actual European average 1.5 to the SocialCar project target of 2.5). Improvements will be quantified in the 10 European SocialCar test sites.

Effects on:

Health and Wellbeing	Within an urban environment, short and medium journeys are the first cause of traffic and pollution; their reduction and clever management are the key issues to be solved to achieve an optimised and smart mobility system. The Project Social cars tends to change the practice of using single car, to save on travel time and travel costs and improve the environment (reducing traffic congestion and improving air quality). There is a **social component** of the project - meeting new people, sharing ideas, building up trust inside the community of users. An important challenge of ridesharing sites who match strangers, is to build up trust inside their community of users. This is the possibility for network members to rate one another. The ratings given by members after sharing a ride together significantly increase the level of trust within the community and the credibility of the service. Ratings allow

	others to know that a member has used the service and that this member is recommended to others. They are ratings about people, from people, expressing trust. Being a role model and sharing your personal experience via social networks (one of the option of this application), leads to increased public awareness as well.
Vulnerable populations	Within the project, there is two possibilities for the cities to choose themselves between the system that will be free of charge (for the part sharing of private vehicles) in the section of the route, and a system in which you pay a certain amount based on the direct contract between the driver and client. The first option will lead to reduced travel costs that will have a positive impact on socially deprived or vulnerable groups of citizens. A social aspects of the project might have a positive effects on their wellbeing as well, trough establishment of new relations among users built up on trust.
Environment	Direct impact on the air quality - lowering the emissions of CO_2, decreasing the traffic congestions especially in the city center, energy saving, noise etc.

Initiated and/or implemented by

Citizens of the City of Skopje
In the heavy transport we have in the capital city, among others current journey planning tools do not provide information for multi-modal journeys connecting individual and collective transport services. Often, the proposed options require multiple public transport interchanges and result in long and convoluted multi-leg journeys. According to a travel survey performed in 2014, the main traffic challenge for Skopje is an insufficient public transport service. SocialCar shall serve as a feeder to public transport stops and relieve the bus network by better utilizing private car occupancy.

Stakeholders and sectors involved

Public enterprise, Chamber of commerce, Academia, SMEs, NGOS

Financial support

Project SocialCar and City of Skopje

Evidence-base

SocialCar Project is based upon the findings from the several existing researches addressing the features of the different carpooling modalities (ADEME project, France; Study about carpooling and road safety, carried out by TNS Sofres for BlaBlaCar in 10 countries; third study that analyses the trust perceptions in rideshare programs is the final output of a thesis submitted to the Faculty of the Virginia Polytechnic Institute and State University on "Understanding and Designing for Perceptions of Trust in Rideshare Programs" by Vineeta Chaube in 2010 etc.).

There is some European Projects on ride-sharing and carpooling as well (Mobile Together; Spree Project - 7th Framework Program-project. Servicing Policy for Ressource Efficient Energy ended in June 2015; NweRIDE - a European INTERREG IVB NWE-project; Changing Habits for Urban Mobility Solutions (CHUMS) Project etc.).
More details: SocialCar arena.pdf; p. 33-58. Available at: http://socialcarproject. eu/socialcar-news/30/. Assessed on: 1.12.2016

Main activities

At the moment the Project is in the phase of data collecting that will be added to the app which will be tested. Expected outcome, Application that will include organized carpooling as one of the travel models in urban areas that will work along the public transport and bike renting system in Skopje.

Following activities have been implemented so far:

- Review of existing public transports and carpooling services exploiting Social Media will include the availability of comparative grids defined in terms of technological features (i.e. platform, on/off line fruition...), availability (free/payment access, geographical coverage...), end users' satisfaction (number of subscribers, number of access, etc.);
- Draft version of Comprehensive software requirements and communication specifications of the general architecture was produced, including the data structure of the social transport graph;
- Each site collected the most relevant local transport data covering at least the informative set of data for the three stakeholder groups: PA, PTO, Carpooler, Parking etc.
- Signed stakeholder agreements on a common vision for SocialCar in the test site.

Evaluation

Evaluation is planned in month 22.
The evaluation is related to the site-level experiments and will cover both the Process and Impact evaluation procedures. Within the test plan UNIBDN will define the list of data and information each site should collect for feeding:

- *The Before scenario*, developing the business as usual situation in each site.
- *The During scenario*, allowing each partner to collect all information required to perform the impact and process monitoring of the three tests,
- *The After scenario* by collecting information produced during the tests, developing the final test results and related recommendations.

For the second test, the evaluation of the SocialCar impacts by using macro-simulation tools, the project will use the Technology Acceptance Model for quantifying the change of

behaviour of citizens, estimating the change of transport mode from private car usage to car-pooling services usage. The results of the change of behaviour simulations will feed the macro-models, allowing a qualitative and quantitative impact evaluation of the SocialCar usage into the project sites. The Technology Acceptance Model (TAM) is a standard technique used to predict the acceptance of a technology by different groups of users according to a set of predictors. In this way, once the specific model is defined and validated, it is possible to estimate the acceptance of the technology on a wide group of users by only checking their predisposition to use it. The model is computed on the inputs acquired by means of the administration of a questionnaire based on closed questions (Likert scale) to selected groups of users. A tailored version of the TAM questionnaire will be designed for assessing SocialCar acceptance by selected groups of potential users and suitable hypotheses for the model will be put in place.

Main results
N/A
At the moment the Project is in the phase of data collecting that will be added to the app which will be tested. Expected outcome, Application that will include organized carpooling as one of the travel models in urban areas that will work along the public transport and bike renting system in Skopje.

Skopje does not have any car-pooling service. According to the survey performed in 2014, the main traffic issue is the weak PT services which do not properly cover the city network. SocialCar will contribute to cover these gaps, by introducing a car-pooling system seen as comodal service to PT, largely reducing the actual long-time routes, connecting it with the PT stops ehich are actually far away from citizens needs and reducing the bus occupacy (which is actually over the maximum expected rate).

SocialCar is expecting to achieve the following results:

- set the scene to identify barriers and areas for improvements and define market potential for an intelligent transport system based on car-pooling and public transport integration;
- develop, starting from existing good practices, an integrated communication network architecture for urban smart mobility, including: public transport data (provided by city authorities), private transport data (provided by car-poolers) and real-time traffic information (generated by web communities of travelers), exploiting, through specific services, existing social data network to link information and alerts;
- unlock the potential of and manage big transport data (i.e. open data, real time data, static data, proprietary data, crowd source data) coming from different sources (private,/public/open);
- develop real-time algorithms for: i) GPS and GNSS data management and matching; ii) Traffic analysis; iii) Event planning; iv) Mobility services management;
- validate innovative real-time route planning and ride matching services by integrating different information on the trip, ranging from timely user locations, specific travel needs, current traffic status, user profiles, sponsor offers and locations, etc.;
- exploit new pervasive and user-friendly interfaces allowing fast and easy exploitation of the service in any place and at any time;
- test, in real-life conditions, novel green driving support systems, including an

- innovative and user oriented multi-platform carpooling service (demand management), by exploiting all suitable ICT based devices (laptop, tablet, car-navigators, smart phones) and services ranging from social web features to navigator and smart phone localization to interfacing capabilities. In terms of user appreciation the following results will be pursued:
    - Customized collection of user needs;
    - Integration of carpooling services with existing real-data transport information and citybased travel services;
    - Evidence-based positive behavioral changes in citizens opting for more eco-friendly choices, alleviating congestion;
    - Careful analysis of ethical/security implications;
    - Economic investigation of by-product services and market analysis;
    - Maximization of societal spinoffs in terms of advantages for any class of citizens, including people with special needs.

SocialCar is expecting to achieve measurable positive and significant behavioural change of the involved citizens (end users), within the project life-time. It will be measured in higher car-occupancy rates (growing from the actual European average 1.5 to the SocialCar project target of 2.5) for example.

Key success factors and barriers

SocialCar is a step a change in paradigm for management and optimisation of urban mobility systems evolving old fashion origin to destination car-pooling to an integrated system enabling to empower available Public transport services. SocialCar will group passengers from low demand area driving them into the most convenient public transport stop reducing the use of private cars by undertaking the last mile connection from low demand areas to the city centre by means of Public transport facilities. In this way SocialCar will also contribute to the reduction of CO_2 emissions and help to the modal shift from private to public transport (co-modality). In order to achieve the above mentioned ambitious objectives SocialCar considers the integrated communication network architectures for public transport data (provided by city authorities), private transport data (provided by car-poolers) and real-time traffic information (generated by web communities of travellers) as primary marks for effective customized solutions for urban smart and intelligent mobility. So far, the following key barriers have been identified: data collection and mindset of people (strong will of car ownership and lack of will for shearing own cars, mistrust in unknown people).

INHERIT Perspective

Although the status of the project is ongoing, things that make the project eligible for inclusion are its potential to contribute to improvement of the state of the environment locally, and its potential global impact on the ecosystem (proximal and distal impact). The project tends to change people's behavior (change the practice of using single car, shift from private car usage to car-pooling services). It might have a positive effects on the people wellbeing, through establishment of new relations among users built up on trust. Meeting new people, sharing ideas inside the community of users, lead to enhanced social cohesion in the community.

More information

More details: http://socialcar-project.eu/about-project

SocialCar arena.pdf;
Available at: http://socialcar-project.eu/socialcar-news/30/. Assessed on: 1.12.2016

Contact

City of Skopje, Mr. Mario Ringov
+389 2 3297 286 | mario.ringov@skopje.gov.mk