# SEVENTH FRAMEWORK PROGRAMME

## Collaborative project

**MOBINCITY**

## Smart Mobility in Smart City

FP7-314328

## D8.3 Workshops

## Technomar GmbH

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# 1 Terms and Abbreviations

| Acronym | Definition |
|---------|------------|
| EV | Electric Vehicle |
| CIPT | Charging Infrastructure Planning Tool |
| CRM | Customer Relationship Management |
| FEV | Full Electric Vehicle |
| OEM | Original Equipment Manufacturer |
| OIS | On board Information System |
| PIIS | Proactive Intelligent Information System |
| PPP | Public Private Partnership |
| WP | Work Package |

## 2   Summary

The purpose of carrying out workshops is to discuss the project results with stakeholders and experts outside the consortium to ensure that the project meets the market requirements and, if necessary, the consortium is able to make adjustments. It is believed that such workshops will anticipate on any take up issues by the participating Member States and will, therefore, facilitate the acceptance of the findings and conclusions at every level. The workshop presentations and attendance list will be soberly distributed or publicly posted on the MOBINCITY webpage.

The dissemination plan of the MOBINCITY project includes two workshops.

- The first workshop was focused on all aspects surrounding the project development.  The consortium has organised this first workshop in M24 with the preliminary results.

- The project final conference is planned for M36 and will be an open event addressed to all the targeted MOBINCITY audience to show the obtained results and the final conclusions.

This first delivery of D8.3 includes the results of the first workshop held in Munich (17/06/2014). The final delivery of D8.3 will also include the results of the final workshop (M36).

# 3 Introduction

The major target of the Smart Mobility in Smart City project (**MOBINCITY**) is to optimise autonomy of Fully Electric Vehicles (FEV) and the increase in energy efficiency thanks to the development of ICT-based system able to interact between driver, vehicle and transport and energy infrastructure taking advantage of the information provided from these sources in order to optimize energy charging and discharging processes while trip planning and routing. In addition to information on the surrounding environment e.g. energy grid, traffic information, weather and road conditions also information on public transportation will be integrated.

**MOBINCITY main tasks**

During the three years project duration the consortium will develop a platform and install a system within the vehicle to receive all needed information about to optimize trip planning and routing of FEV including the definition efficient and optimum charging strategies (including routing) adapted to the user and FEV needs and grid conditions, implement additional energy saving methods (as driving modes and In-Car Energy Management Services) within the FEV interaction with the driver. The project's results will **be disseminated and the scalability for future economic use ensured**.

**MOBINCITY use cases**

To meet market demands as well as needs of electric vehicle users the project takes into account all typical use cases for Trip Planning, On Trip Services and FEV Charging.
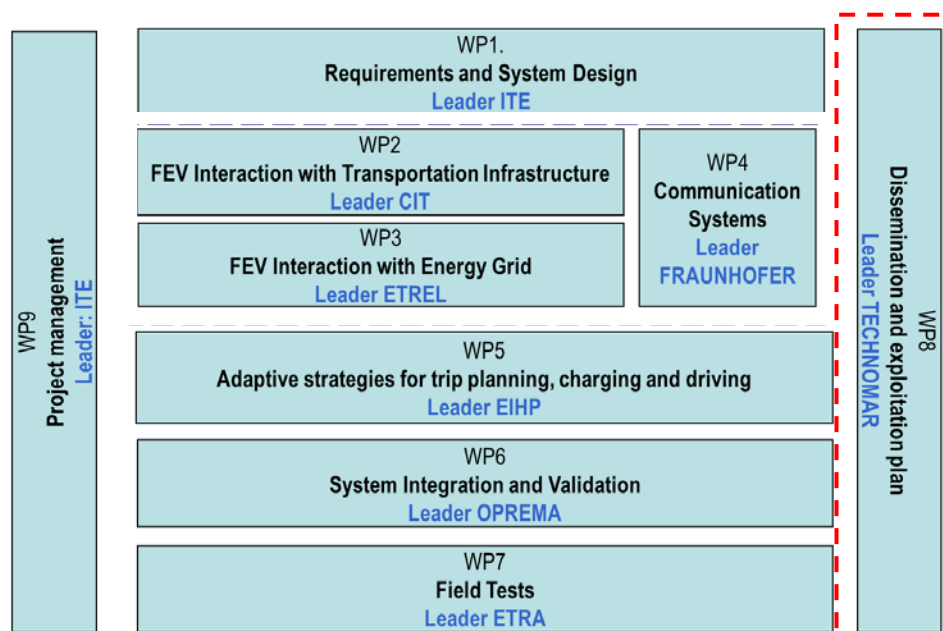


*Figure 1 Structure of MOBINCITY project*

The main objective of D8.3 as part of T8.3 *Workshops and Publications* is to create a detailed document that shows organization and results of the Workshop. This deliverable is part of *WP8 Dissemination and Exploitation plan* embedded into the project as showed in figure 1.

# 4 Intermediate Management Workshop (17/06/2014)

## 4.1 Organization and set up of the Workshop

The intermediate workshop was held on 17th of June 2014 (M24) with about 40 participants covering all relevant parties regarding mobility. In addition to car OEM like Daimler, Tier 1 companies like Denso and Continental, also municipal utilities represented by their (German) association, Spinoff companies, EV trading start-ups, established ICT companies as Quacom, scientific institutes and associations representing aspects of civil society took part at the workshop. It was not the main goal to get the maximum number of participants, but to address the right ones which allows not only a discussion of technical solutions but also the discussion of socio economic impacts of the MOBINCITY project.

As there are many competing events addressing these stakeholders it was necessary to spend big effort to identify the leading representatives of the mentioned target groups and to motivate them to participate to the workshops. For handling of the round 300 invitations a professional CRM system CAS PIA has been introduced and a data base with more than 300 interested persons/companies has been created. The addresses are mainly from contacts of various fairs, congresses and other events where the project was presented. Every Mobincity partner also sent invitations for the workshop to its own contact regarding e-mobility. This data base is also useful to generate contacts for the further development of the business plan and exploitation of project results.

The contents of the workshops were:

- General development of mobility
- The competitive situation and business models.
- The results of all development WPs.
- An outlook to the further development of MOBINCITY.
- Discussion on the potential possibilities of cooperation.
- A poster and demonstration session with presentation of MOBINCITY applications.

The mentioned contents were covered by the following workshop agenda:

| Time Slot | Activity | Speaker |
|---|---|---|
| 10:00 – 10:30 AM | **Registration** | Participants |
| 10:30 – 10:45 AM | **Welcome Remarks** | Sixto Santonja Hernández [Coordinator MOBINCITY/ ITE] |
| 10:45 – 11:00 AM | **"What makes MOBINCITY unique?"** | Zsolt Krémer [CEO TECHNOMAR] |
| 11:00 – 11:30 AM | **Keynote speech: "Mobility to go" – The future of private transport** | Robert Metzger [CEO Munich Expo, Organizer of eCarTec] |
| 11:30 – 12:30 AM | **Status of the most important work packages** | WP Leaders |
| | WP2 Interaction of Electric Vehicle with transport infrastructure (15') | [CIT] |
| | WP3 Interaction of Electric Vehicle with energy infrastructure (15') | [ETREL] |
| | WP4 Communication systems (15') | [FRAUNHOFER] |

| | | |
|---|---|---|
| | WP5 Adaptive strategies for trip planning, charging and driving (15') | [EIHP] |
| 12:30 – 1:30 PM | **Moderated discussion** | Participants, Project Team Moderator: Andreas Varesi [CEO TECHNOMAR] |
| 1:30 – 2:30 PM | Lunch | |
| 2:30 – 4:00 PM | **Exhibition** | Project Team |
| | Introduction to the exhibition part (10') | [ITE] |
| | Interaction with Transportation Infrastructure: Smart Transport Middleware (STM) & Proactive Intelligent Information System (PIIS) (20') | [CIT] |
| | User Interfaces: Smartphone App and Onboard Information System (OIS) (20') | [ITE] |
| | Trip planning (20') | [EIHP] |
| | Charging Infrastructure Planning Tool (CIPT) (20') | [ITE] |
| 4:00 – 4:15 PM | **Synergies to other projects** | Uršula Krisper [Elektro Ljubljana] |
| 4:15 – 4:45 PM | **Next steps and cooperation models** | Project Team Moderator: Zsolt Krémer [CEO TECHNOMAR] |
| 4:45 – 5:45 PM | **Deep dive discussion and potential collaborations** | Participants, Project Team Moderator: Andreas Varesi [CEO TECHNOMAR] |
| 5:45 – 6:00 PM | **Future outlook and closing speech** | Sixto Santonja Hernández [Coordinator MOBINCITY/ ITE] |

Table 1: Intermediate Management Workshop Agenda

As the key note speaker gave a notice about his absence caused by illness less than 12 hours before the event, Technomar created a presentation held by Andreas Varesi as compensation. All presentations are enclosed as attachments to this deliverable.

Following the agenda the sequence of the workshop was divided up into three modules:

- Presentations
- Discussions
- Poster exhibition

Beginning with the introduction about positioning of MOBINCITY project and a general outlook about future private transportations, the actual results of the WP2-WP5 have been presented. Goal of the presentations was, to give an overview to the participants about the different work packages and establish an understanding of the whole project.

*Figure 2 Presentation of WPs Workshop Munich*

The exhibition gave the opportunity for deeper discussion of specific questions in smaller groups or in bilateral conversations.



*Figure 3 Poster Exhibition Workshop Munich*

## 4.2 Summary of Workshop results

### 4.2.1 General remarks

A workshop is always an enriching experience for the partners involved in a research and development project. In this kind of forums the researchers have the opportunity to analyze and evaluate the "degree of reality" of the project and the feasibility of the developed solution to be implemented in the real world. The opinions, suggestions and feedback of the companies that are currently working in e-mobility have been the input for a self-criticism process for the Mobincity consortium.

The potential user of the Mobincity system was one of the main characters of the workshop. E-mobility was analyzed from the point of view of the user trying to gather its needs while using an e-mobility system and matching these needs with the Mobincity design requirements.

But the workshop went a step further considering the user: the Generation Y was identified as the potential users of e-mobility systems as Mobincity in the near future. Taking this into account, the abilities of these users due to their tight relation with technology were analyzed to meet its expectations for the e-mobility of the future. Also, the mentality change of the Generation Y compared to previous generations regarding mobility patterns was analyzed.

Another valuable topic in the Workshop was the study of the features that make the Mobincity system unique. Among other aspects, it was highlighted the interaction of the system with the electric infrastructure. This interaction and the ITC approach of Mobincity give to the grid operators (also users of an e-mobility system after all) the opportunity to participate and interact with the final user and to better manage the charging infrastructure and the electrical grid that will host these new devices too.

Maybe the most interesting part of the Workshop for the Mobincity partners was listening to the opinions of the e-mobility companies and answering their questions. The attendees warned the consortium about the difficulties to access to the on-board systems of the electric vehicle manufacturers when they understand that the success of the Mobincity system required the interaction with the car main control system.

A lot of attendees seemed also very interested in all the information that the Mobincity system gathers from the environment: traffic, weather, public transportation, vehicle sharing (bikes and cars) and parking information. Even some of them proposed to include more information to promote and facilitate co-modality in the trip planning, like sharing a car between users if they are requesting for the same route.

The environmental and economical feasibility of the Mobincity system was also discussed in the Workshop. The attendees asked for the contribution of the developed system to solve the environmental problem of traffic. They also highlighted that the charging infrastructure still has to be developed and they will be very expensive to do it.

During the exhibition part the attendees and the Mobincity partners had the opportunity to chat in small groups about the system functionalities. The Mobincity consortium also performed several presentations to explain the developed system to the e-mobility companies regarding its interaction with the energy and transport infrastructure, the communications of the system and the strategies for trip planning, charging and driving. At the end of the exhibition part some of the components developed in the scope of the Mobincity project during the first period were presented to the attendees: Smart Transport Middleware (STM), Proactive Intelligent Information System (PIIS), Smartphone App, Onboard Information System (OIS) and the Charging Infrastructure Planning Tool (CIPT).

### 4.2.2 Discussion regarding development of mobility and socio economic impact

The necessity for mobility platforms as Moovel [1] or even MOBINCITY will increase in the future. This development is expected for different reasons:

- **Mind change of new generations such as *sharing economy* and *Generation Y***

*Generation Y and Sharing Economy* interpret mobility to come from point A to B, somehow, as comfortable as possible, as cheap as possible. They see an investment in a car not as necessary, not the owning but the using of a car is in the focus. A car is seen as *one alternative* to other transportation options as e-bike, pedelec or public transportation. Relevant is the *access* to mobility. Also ecological aspects plays an important role, if there is an option for environmental friendly solutions, this target group would prefer those.

A participant pointed out in that context, that these theses can be verified by statistics through the ratio of cars by households. The number of households is growing as a matter of fact of growing number of singles. In parallel the share of households without a car is growing too. In German urban areas, especially in medium sized cities, the share of carless households increased from 22 % in 2000 to 30 % in 2013. As this trend is ongoing, it seems to be not an effect of economic crisis, as especially the last years German economy has been growing. On the other hand, sharing economy generation is reaching the age of 18+ and is becoming more and more relevance as potential customers for cars – or alternative mobility options.

- **Integration of EVs into global mobility systems**

The ongoing urbanization brings also challenges for traffic. The traffic in urban areas is still increasing. Municipal utilities are confronted with various situations: On one hand they have to adapt traffic, road and construction infrastructure but also with other divisions responsible for grid distribution. Many utilities would like to invest in smart solution covering energy and mobility aspects, but finance situation does not allow it. Projects like MOBINCITY maybe a good opportunity for public private partnership models. Utilities could provide traffic and public transportation data, support the setting of infrastructure embed electro mobility into the grid.

- **Increasing of car sharing**

In the last years there was a concentration of car sharing provider. Meanwhile the OEM and even car rental companies see car sharing as a growing market. Smaller car sharing companies with clever business models or special services could benefit from a platform like MOBINCITY as the complete handling of charging and billing could be solved. This could be an advantage especially for smaller manufacturer of EVs or smaller service provider who cannot afford an own development of such a system. This is not only the case for EVs, but also for e-bikes and pedelecs. Low priced solutions would help to move sharing models from backyards to point of sale in cities and to bring that business model to the rural areas.

### 4.2.3 Discussion about development and impact on mobility market

- **Rapid changes of players**

As ICT becomes more and more access to automotive industries, the relevance of players will change. Even if the self-driving car of Google actually is seen as science fiction, the direction is clear. Not only car manufacturer are working on an intelligent car, but also Tier 1 companies as Continental. The car

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[1] https://www.moovel.com/en/DE/

will become part of the internet. The dominance will happen by companies will data access, the originally functions of a car will be only an add-on. This leads to a medium term competition between classical car industry and the data processing giants like Google or Facebook which have a clear advantage regarding access to needed data. In that sense, connecting cars to other mobility options is the logic consequence. Daimler, Volvo and Ferrari are cooperating with Apple, Audi, Honda, GM have Google in their on-board systems. The question is: "Whose customer is a person if he is sitting in a car from Audi, but Google has the data about routes, driving mode, location etc. of that customer".

- **Cost competitive alternative**

There is a need for cost competitive alternative mobility concepts, not only for inner cities but also for the connection of rural areas to urban cities. The combination of mobility concepts is essential for the success of such concepts. Especially commuter is a targeted group, which could benefit of such solutions. Cost competitiveness of a mobility system depends not only on energy prices like for fuel, electricity or public transport, but should also take into account quality of travel (e.g. spent time, how travel time can be used, flexibility, etc.). A high acceptance of the majority of user can only be reached, if all mentioned aspects are covered and attractive price can be offered. To realize such a concept, a close cooperation between the provider of the various mobility systems like car sharing, public transportation etc. and service provider is necessary. As long as mobility is as cheap as it is today, it will be difficult to realize mobility models. Many car sharing companies are loss-making, even the big ones like *Drive Now*[2] *(SIXT and BMW)* with hundred thousands of members are reaching break-even slowly.

- **OEM are reluctant to open data**

The mentioned situation leads also to reluctance to open data e.g. about battery to other partner. Even Tier 1 companies do hard to get access to relevant on-board information as charging status what makes the integration to platform like MOBINCITY difficult. One option would be to access the back-end system instead of the on-board system. Another option could be to use information, which is sent to the car user (of course with his authorization) and process those data. That means the integration of EVs into a platform like MOBINCITY is not a technical issue but mainly a strategic decision. On the other hand Tier 1 will not go into competition to their customers and will not stress this issue more than necessary.

- **OEM are cost oriented**

Actually majority of OEMs are focussed to keep cost for a (conventional) EV car low to be cost competitive and accept (at least subjective) disadvantages as low rage. From point of view of the *sharing economy*, financial aspects were discussed from another perspective. Investment into a conventional or EV car is seen in general as not necessary if car sharing is available. Potential customers of conventional cars compare buying prices and running costs. EVs have to be also price competitive in that case (based on an average range of 12.000Km p.a.).

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[2] http://promotions.drive-now.com/muenchen1930.html?prc=OSB-1930

### 4.2.4    Comments regarding MOBINCITY

- **How to develop MOBINCITY**

Stakeholders refer to link the project with other activities, covering similar or complementary subjects. Therefore the project activities in networking should be extended. In Bavaria there exist some initiatives and clusters with connecting points. In further cooperation with e.g. *Bayern Innovativ* [3] and *Future City Factory*[4] the most relevant projects, which can profit from MOBINCITY results and vice versa will be screened.

- **Platform for private car sharing**

One of the newest "business models" after *couch surfing* is to share cars between private users. May be that this is today only a local or regional phenomenon but it is seen a likely that this could increase in a fast way. Open systems as MOBINCITY could be used as a platform for such activities. Charging infra-structure

- **Inductive charging**

Availability of public charging stations in inner cities is seen as a main problem. Especially in downtown areas no garages or even parking places are available. As a consequence, majority of cars are parking at the street. A high number of charging stations would be needed, but e.g. optical reasons makes it unlikely that this will happen. On the other hand, public transportation (busses) have also a problem to be charged at charging stations because even with fast charging the time  slots at terminal stops are too short. Inductive charging would be an alternative. Inductive charging could be integrated to MOBINCITY the same way (e.g. charging station finder, route planning) as conventional charging stations are. Many standards regarding communication are in place for inductive charging. Even if inductive charging is not an issue in this project it should be taken into considered in the MOBINCITY architecture.

- **Impact of MOBINCITY**

The importance of apps and platforms like MOOVEL or MOBINCITY is growing. A significant relevance of those platforms for traffic (e.g. to avoid traffic jams) is expected more medium term, not within the next 5 years.  However it is necessary to develop project like MOBINCITY now to have the right solution in time. From technical point of view, the biggest impact is seen in the communication between grid, charging station and car as well as the smartness of charging. This smartness can be a contribution to avoid an overload of grid. A bi-directional connection of EVs to the grid is seen not as relevant for the near future, as the number of cars has to increase significantly to the dimension of some million cars to have a remarkable effect. This seems actually more unlikely up to 2020. Other use cases as trip plan-ning or reservation of charging lots are helpful to fasten the acceptance of EVs and provide additional advantages of using EV.

## 4.1   Participation list

Table 2 comprises the list of attendees to the Intermediate Mobincity Workshop.

| Last name | First Name | Company |
|-----------|-----------|---------|
| Aguado | Irene | ITE Energy Technology Institute |

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[3] www.bayerninnovativ.de

[4] http://future-city-factory.de/

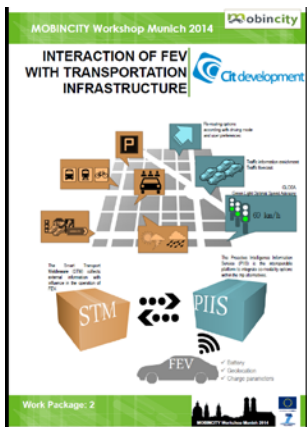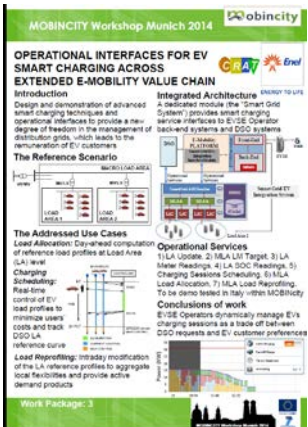| | | |
|---|---|---|
| Barkow | Axel | Forschungsgesellschaft Kraftfahrwesen Aachen mbH |
| Baumann | Albrecht | Daimler AG; Mercedes Benz PKW |
| Caldevilla | Dr. Andreas | Denso Automotive Deutschland GmbH |
| Dudiak | Viktorija | EIHP - Energy Institute Hrvoje Požar |
| García Mozo | Natalia | Bayerische Forschungsallianz (BayFOR) GmbH |
| Gotschol | Catrin | Facit Research |
| Grabner | Dejan | Oprema Ravne d.o.o. |
| Halamek | Herbert | Continental AG |
| Hermenau | Dr.-Ing. Udo | e-hoch-3 eco efficient engeneering |
| Hiemer | Manfred | e-mocom electric-mobility company |
| Hoever | Friedhelm | TECHNOMAR GmbH |
| Hoffmann | Julia-Franziska | hubject GmbH |
| Horvath | Jürgen | Urban Land Instutite |
| Isenberg | Dr.Gerhard | Vorsitzender des Kuratoriums Die Umwelt-Akademie e.V. |
| Janssen | Ingrid | TECHNOMAR GmbH |
| Kastner | Stefan | bsm (Bundesverband Solare Mobilität e.V.) |
| Keko | Hrvoje | EIHP - Energy Institute Hrvoje Požar |
| Körber | Thomas | ESG Elektroniksystem und Logistik-GmbH |
| Korten | Achim | WP Korten |
| Krémer | Zsolt | TECHNOMAR GmbH |
| Krisper | Ursula | Elektro Ljubljana |
| Lorenci | Matej | Oprema Ravne d.o.o. |
| Mallwitz | Alexander | Auronik GmbH |
| Mendoza | Enrique | ZABALA |
| Metzger | Robert | Munich Expo GmbH |
| Nindl | Thomas | Qualcomm Technologies Inc (QTI) |
| Novosel | Dino | Hrvatskki telekom d.d. |
| Ognjanovic | Goran | Oprema Ravne d.o.o. |
| Pannkoke | Dr. Kord | Bayern Innovativ Gesellschaft für Innovation und Wissenstransfer mbH |
| Ratej | Jure | ETREL |

| Santonja Hernández | Sixto | ITE Energy Technology Institute |
|---|---|---|
| Schmidt | Patrick | Ludwig-Bölkow-Systemtechnik GmbH |
| Seydel | Dominique | Fraunhofer ESK |
| Steiner | Torsten | Fraunhofer ESK |
| Varesi | Andreas | TECHNOMAR GmbH |
| Wintermeyer | Jana | Verband kommunaler Unternehmen |

Table 2: Participation list.

## 4.2  Presentations, flip charts and pictures

The slides and flip charts that were presented at the workshop can be downloaded at the following link: http://www.mobincity.eu/node/151.

There are three files available in this link to the Mobincity web page. The first one contains the flip charts that were exposed during the workshop. They have been also included in Table 3.

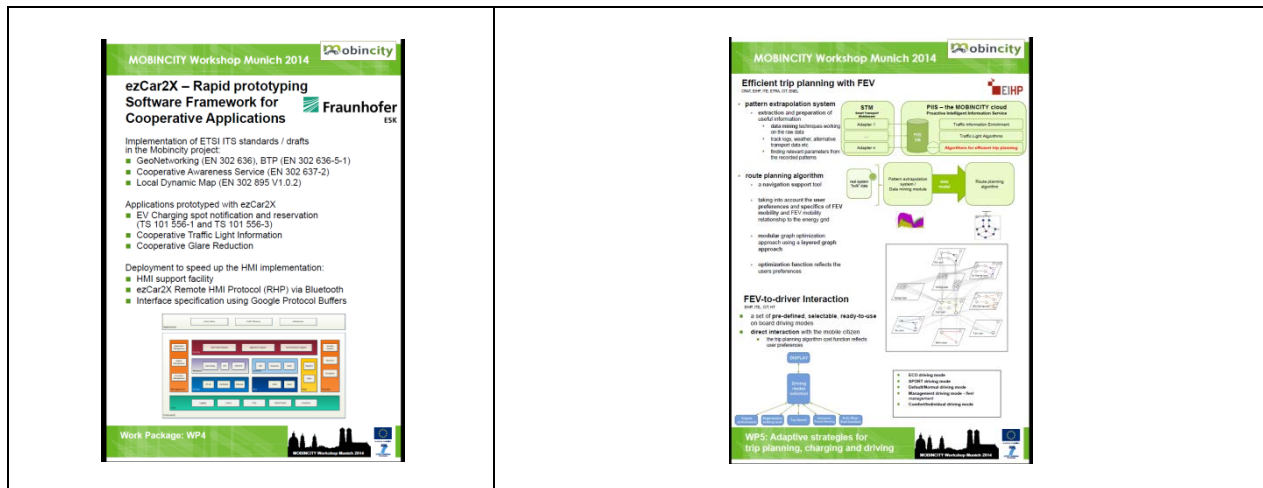| FLIP CHART WP2 | FLIP CHARTS WP3 | |
|---|---|---|
|  |  |  |
| **FLIP CHART WP4** | **FLIP CHART WP5** | |

Table 3: Summary of the flip charts for the Intermediate Management Workshop.

The second file includes some pictures of the workshop. The last file includes the presentations that were performed by the Mobincity partners, specifically:

- What makes Mobincity unique? (TECHNOMAR).
- Mobility to go (TECHNOMAR).
- WP2 status: Interaction of Electric Vehicle with transport infrastructure (CIT).
- WP3 status: Interaction of Electric Vehicle with energy infrastructure (ETREL).
- WP4 status: Communication systems (FRAUNHOFER).
- WP5 status: Adaptive strategies for trip planning, charging and driving (EIHP).
- Exhibition: User interfaces: Onboard Information System (OIS) and Smartphone App (ITE).
- Exhibition: Charging Infrastructure Planning Tool (ITE).

## 5   Project Final Workshop

*After the Project Final Workshop (M36) this section will be completed with its main results and conclu-sions.*

# 6   Conclusions

The Intermediate Management Workshop showed, that MOBINCITY is seen as an interesting project which can be helpful for connectivity of mobility systems. It could be integrated into other activities on this field, e.g to the project *PiVo "net-Optimized Charging in the smarter Grid"*[5] as a complete app or parts of the project.

Main interest was on communication between grid, car, charging station and as well the smartness of charging.  PPP is seen as one additional option to phase in the project results. In that sense, the results of the workshop will be taken into account for the further impact assessment.

The dissemination and exploitation will be adjusted and intensify contacts to utilities and a deeper assessment of PPP opportunities.

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[5] http://piv-o.de/en/

## 7   References

1) https://www.moovel.com/en/DE/

2) http://promotions.drive-now.com/muenchen1930.html?prc=OSB-1930

3) www.bayerninnovativ.de

4) http://future-city-factory.de/

5) http://piv-o.de/en/

## 8   Glossary

The glossary of terms used in this deliverable can be found in the public document Glossary_Terms.doc, also available at http://www.mobincity.eu.