

Best Practices: Portugal's Way of Driving Electric Mobility — The MOBI.E Project

IDC Energy Insights: European Utility IT Strategies

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BEST PRACTICES

#EIRS03T

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IDC ENERGY INSIGHTS OPINION

e-Mobility represents an opportunity to consolidate the Portuguese renewable energies policy, opening the way for the development of an additional element of the smart grid vision. Hence, the creation of the national Electric Mobility Network managed by the MOBI.E consortium. Portugal's decision to take a national approach to the deployment of an electric mobility infrastructure is unique in its kind. The MOBI.E Consortium is made up of players from various sectors, including INTELI, EDP Inovação, Novabase, Critical Software, Siemens, Efacec, CEIIA-CE, Magnum Cap, and Brandia Central. Additionally, 25 municipalities were involved through RENER Living Lab and a strong partnership was established with Oracle.

- MOBI.E is going to have about 1,300 normal public charging stations deployed and 50 fast-charging stations throughout the country.
- The national electric mobility management authority (SGORME) is the heart of the model. It ensures the functioning of the entire system. It integrates all electric mobility electricity retailers (EMERs) and charging point operators into a single system, guaranteeing interoperability and technical compatibility. PEV users can select their electric mobility electricity retailer (CEME) of choice and, with the card provided, charge anywhere in the MOBI.E charging network in the country. SGORME is then in charge of managing all transactions and acts as a clearing house for the entire system.
- The technology and ICT platform, developed by the above mentioned players for the MOBI.E project, is multilayered, variegated, complex, and real-time. The MOBI.E system offers Web-based multiplatform access (PC, PDA, and cell phones). It includes integrated invoicing with complimentary services, such as parking. It is also enabled for roaming between the various electric mobility electricity retailers. The MOBI.E system allows for real-time visualization of charging points (including charging status and vacancy information), as well as remote monitoring of the charging process. Finally, it includes the CRM platform, which enables management of all the stakeholders.

TABLE OF CONTENTS

	P
In This Study	1
IDC Energy Insights' Case Study Series.....	1
Why This Case Study?	1
Situation Overview	1
Business Needs.....	1
Management Challenges.....	3
The Best Practices	4
Background and Objectives.....	4
MOBI.E: Make it Happen.....	5
How Does it Work?.....	8
A Closer Look at the ICT Enabling MOBI.E Operations.....	10
Business Value.....	12
Lessons Learned.....	13
Future Outlook	14
Next Steps.....	14
Essential Guidance	14
Project Impact Assessment.....	14
Actions to Consider.....	15
Learn More	16
References.....	16
Related Research.....	16

LIST OF FIGURES

	P
1 Extended Electricity Supply Value Chain	4
2 The Model for Stakeholder Integration	6
3 MOBI.E Intelligence Center	6
4 MOBI.E ICT Platform	11
5 MOBI.E Project Impact Assessment	15

IN THIS STUDY

This study provides an in-depth look at the Portuguese electric mobility network MOBI.E. The network is an intelligent charging network catering to electric mobility. It is accessible to all plug-in electric vehicle (PEV) users, throughout all of Portugal. The MOBI.E network will enable an optimal integration of renewable energy and exploitation of the electric grid, by allowing grid managers to control the PEV charging process, as well as allowing electricity stored in the PEV batteries to provide services to the grid. The MOBI.E network goes way beyond a network of charging stations: it is also a network of information gathered and shared by the relevant stakeholders as well as the PEV users.

IDC Energy Insights' Case Study Series

IDC Energy Insights' case study series provides utilities with a fact-based, comparable, consistent, and independent view of projects implemented across geographies. The focus is on information technology (IT) and operational technology (OT), or more broadly on energy technologies implemented in the energy industry. Collaborating with utility company and IT vendor personnel directly involved in the projects, IDC Energy Insights is able to gather all the relevant information, analyze the approach, and assess the solutions aimed at meeting organizations' goals. Case studies are assessed on four criteria, which IDC Energy Insights believes are critical to generate additional value: the contribution to operational effectiveness, the degree of technological innovation, the transformational impact on the company's businesses, and, more broadly, on the utilities industry value chain.

Why This Case Study?

This case study was selected as a demonstration of a best practices approach mainly in the areas of innovation and business industry transformation. Portugal's decision to take a nationwide approach to sustainable mobility with the creation of an independent entity responsible for it is unique. The project was holistically organized and conducted, from business model definition, to charging infrastructure implementation, to ICT platform delivery.

The other interesting aspect of the case study is related to the creation of a comprehensive group of partners covering all aspects of the implementation.

SITUATION OVERVIEW

Business Needs

In 2009, Portugal made the strategic decision to officially invest in electric mobility and develop new energy models as a consequence. Portugal's decision to have a national approach to deployment of an electric mobility infrastructure is the first of its kind. There are myriad drivers behind Portugal's decision, including the worldwide growing demand for energy and the huge environmental impact of the use of fossil fuels globally.

On top of these two worldwide drivers, which the EU's Energy Policy is also trying to mitigate, Portugal also has the third most ambitious renewable energy share goal among EU countries — 43% of gross electricity generation. Portugal is already on the right track for renewable energy development, especially wind and solar, wind having expanded sixfold over the last six years. Portugal has the largest wind farm in Europe, with 120 turbines: the Alto Minho Wind Farm has 240MW of installed capacity and is expected to produce 530GWh annually, enough electricity to supply 160,000 homes.

Portugal also has one of the largest solar energy power stations, Amareleja, which produces about 93,000MWh per year, enough energy to meet the power requirements of 30,000 families. The power station also prevents the emission of over 89,000 tons of CO₂ into the atmosphere per year.

Additionally, Portugal has a very ambitious national plan for hydroelectric dams. By 2020, Portugal plans to have implemented an additional 2,000MW of hydroelectric power, reaching a total of 7,000MW.

Besides its renewable energy implementation plans, Portugal also has a national plan for energy efficiency — reducing energy consumption 10% by 2015. The strategy involves different business sectors, with the state taking a leading role, committing to a reduction of 12% until 2015.

With all this renewable energy coming on board, Portugal needed a way to store it effectively otherwise it would simply go to waste. By using plug-in electric vehicles (PEVs), citizens can charge them at night, when energy consumption is lower, and use them during the day without adding to peak demand, also reducing the dependency on fossil fuels.

The renewable energy capacity being brought onto the Portuguese grid, the energy efficiency, and CO₂ reduction requirements pushed Portugal to develop a national approach for the integration of electric mobility, securing energy storage capacity for the future. Hence, the creation of the national Electric Mobility Network managed by the MOBI.E consortium.

e-Mobility Incentives

In order for its electric mobility ambitions to succeed, the Portuguese government defined a set of benefits and incentives for the acquisition of electric vehicles. The country has several different types of incentives. For instance, to incentivize quick uptake of electric vehicles, in DL 39/2010 (April 26 2010), the government will finance the purchase of the first 5,000 PEVs (specified models only), at €5,000. This incentive is directly deducted by electric vehicle sellers without requiring any involvement by the end customer. The following PEVs are included in the incentivization scheme: Renault (Fluence and Kangoo), Mitsubishi (I-Miev), Nissan (Leaf), Citroen (C-Zero), and Peugeot (Ion). Additionally, the Portuguese government offers a scrappage incentive, up to €6,500, to customers handing in their end-of-life vehicle when buying a PEV.

Portuguese PEV owners are also exempt from certain taxes, for example the vehicle tax (ISV) and the single circulation tax (IUC) [Law No. 22-A of 2007]. Also, individuals and companies that purchase a PEV get a tax break in their income taxes or in their corporation tax respectively.

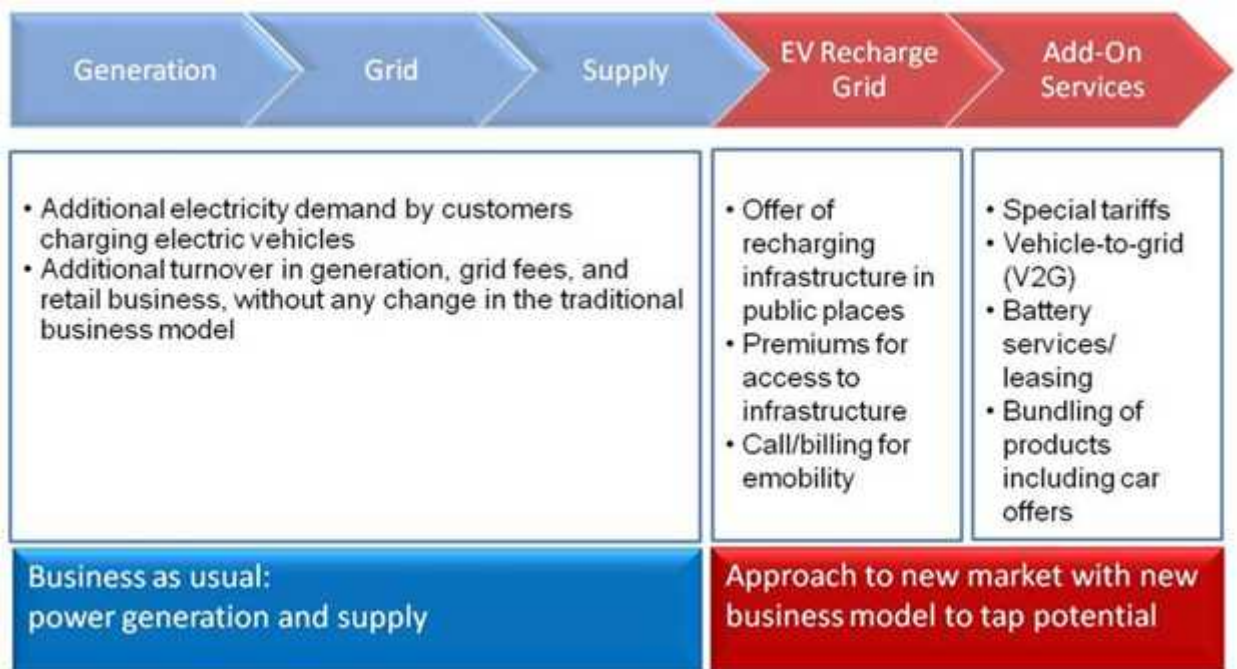
Management Challenges

One of the first challenges was to define the business model to adopt for e-mobility, which translates into the impact that the creation of a national electric mobility network could have on the Portuguese electricity supply value chain.

The Portuguese utilities supply value chain could have been extended to include enablement of transportation services. Beyond core businesses such as generation, grid and retail activities, utilities would also include recharge grid activities as well as add-on services (in red in Figure 1). The decision taken was to create a separate entity, responsible for the development and management of a countrywide infrastructure able to grant universal access, and open to every manufacturer, utility, and private operator.

FIGURE 1

Extended Electricity Supply Value Chain



Source: Oracle, redrawn by IDC Energy Insights, 2011

THE BEST PRACTICES

Background and Objectives

Fundamentally driven by the need to reduce transport dependence on fossil fuel, better leverage the renewable energy produced in the country, increase energy efficiency, protect the environment, and improve quality of life in cities, Portugal decided to invest in new energy models for mobility. This has led to the creation of an Electric Mobility Network managed by MOBI.E.

The network is an intelligent charging network catering to electric mobility, and is designed to be accessible to all PEV users, throughout all of Portugal. A MOBI.E card is required to access the network.

As it is "intelligent," in future the network will enable optimal exploitation of the electric grid, by allowing grid managers to control the PEV charging process, transferring consumption from peak to low demand periods, as well as allowing electricity stored in the PEVs to re-enter the grid and provide ancillary services.

The MOBI.E network vision goes way beyond a network of charging stations. It is also a network of information gathered and shared by the relevant stakeholders as well as with the PEV users. The technology for the payment system developed for the MOBI.E project allows users to identify and select charging locations, plan routes, and know the charge level of their vehicles. At any time, through their personal computers or mobile phones, users will be able to select the most appropriate operation and analyze their own mobility bill in order to optimize consumption.

MOBI.E: Make it Happen

Reference Business Model

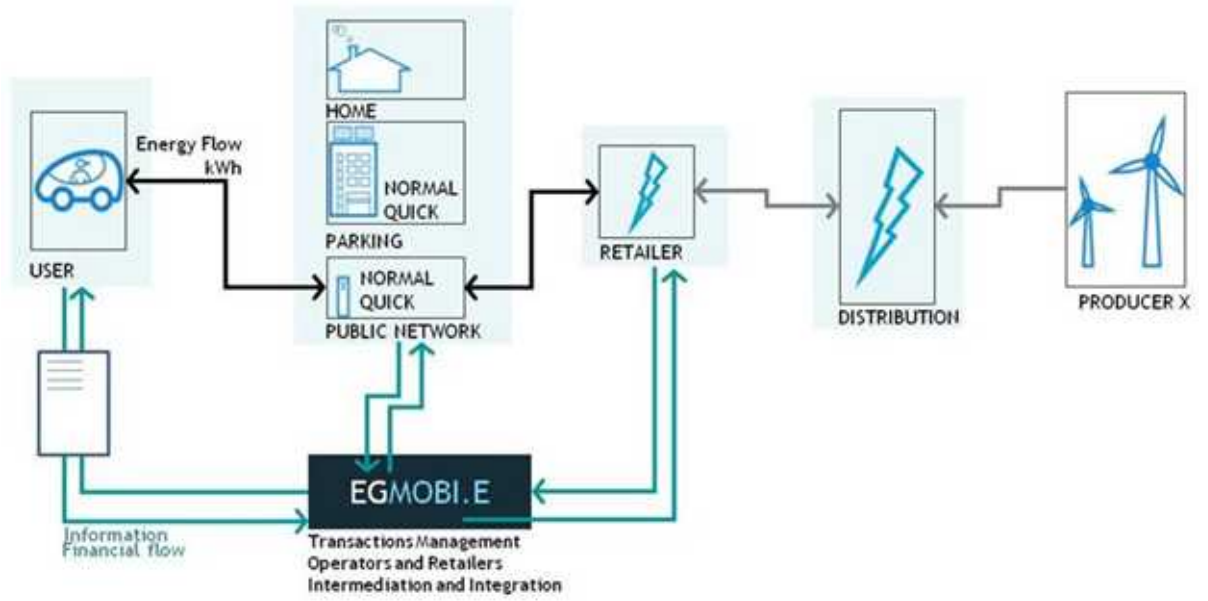
Of the possible business models to adopt to facilitate the rollout of e-mobility, Portugal opted for the creation of an entity responsible for managing EVs' charging infrastructure countrywide. The model was designed by INTELI, the Portuguese innovation think tank, and includes entities with different roles:

- Electric mobility electricity retailer: sells the electricity for EV vehicle charging
- Charging network operator: operates charging network access points, making the charging service available to users through electric mobility retailers
- Managing authority: ensures integration between all stakeholders as well as the integrated management of information and energy flows within the electric mobility framework
- Services operator: supplies additional services such as parking, which can be integrated into a single invoice
- Electricity distribution network: distributes and supplies the electricity sold by the electric mobility retailer
- Users: citizens or organizations driving the cars

The MOBI.E management authority (SGORME) is the heart of the model, ensuring the functioning of the entire system. SGORME integrates all electric mobility electricity retailers (EMERs) and charging point operators into a single system, guaranteeing interoperability and technical compatibility. PEV users can select their electric mobility electricity retailer (CEMEs) of choice and, with the card provided, charge anywhere in the country in the MOBI.E charging network. SGORME is then in charge of managing all transactions and acts as a clearing house for the entire system.

FIGURE 2

The Model for Stakeholder Integration



Source: MOBI.E, INTELI, 2011

FIGURE 3

MOBI.E Intelligence Center



Source: Oracle, 2011

Entities and Stakeholders Involved

The MOBI.E consortium brought in national and international players from various industries, establishing technology partnerships for both the design and the production of the system components. Major stakeholders include:

- Research and innovation:
 - INTELI — Designed and developed the MOBI.E electric mobility model. Also designed, implemented, and supported the coordination of the Portuguese government's Electric Mobility Program.
 - RENER Living Lab — 25 pilot cities that provide space for demonstration of technology solutions developed for the MOBI.E system.
 - CEIIA-CE — Product design, development, and prototyping for electric mobility solutions: charging points, light electric vehicles.
 - REMOBI — R&D network for scientific and technological support to sustainable mobility activities.
- Energy:
 - EDP INOVAÇÃO — Supported the design and development of the MOBI.E electric mobility model, and implementation of the pilot network.
- Technology:
 - NOVABASE — Systems architecture and development of the business management system, integrated high-level management platform (i.e., user interface, billing, CRM).
 - Critical Software — Developed platform for charging point integration and communication.
 - Oracle — Provided software solutions (CRM, rating/billing, charging network management, energy management), communication middleware, and database.
 - EFACEC — Smart grid development, as well as full charging infrastructure development from user to vehicle interfaces, normal and fast charging points, and electrical network management systems.
 - Magnum Cap — Fast-charging solutions development.
 - Siemens — Developed "home charging" solutions and supported the internationalization of the MOBI.E Electric Mobility model.

- Marketing and communication:
 - BRANDIA CENTRAL — Communication strategy management. Customer experience definition and creation of the MOBI.E brand.

How Does it Work?

The MOBI.E Network Infrastructure

The MOBI.E network deployment was started in June 2010, with the first electric vehicle recharging station deployed in Lisbon. There are two types of EV charging spots: normal and fast charging. Normal charging, typically AC 230V/16A, is the preferred choice both available at home and at the public MOBI.E network. Normal charging of a full battery takes between 6 and 8 hours, and this is ideal for everyday night-charging, maximizing the efficiency of the electric grid. Fast charging, usually involving power levels of up to 50kW, will be mostly used for longer journeys, or for convenience or emergency charging, in strategic locations such as service areas. Fast charging of a full battery can take 20–30 minutes.

MOBI.E is going to have 1,300 normal public charging stations deployed and 50 fast-charging stations throughout the country. At the end of July 2011, there were around 850 charging stations deployed.

The normal-charging stations are installed in public parking locations in the streets of the following municipalities: Almada, Aveiro, Beja, Braga, Bragança, Cascais, Castelo Branco, Coimbra, Évora, Faro, Guarda, Guimarães, Leiria, Lisboa, Loures, Portalegre, Porto, Santarém, Setúbal, Sintra, Torres Vedras, Viana do Castelo, Vila Nova de Gaia, Vila Real, and Viseu. Private operators will also install public access charging stations fully integrated into the MOBI.E system in locations such as parking garages, shopping centers, hotels, airports, and service areas, thereby increasing the scope and scale of the network.

The 50 public fast-charging stations will be installed in primary roads and highways connecting the mentioned municipalities, which will enable users to travel between them, and in strategic areas to guarantee emergency charges.

MOBI.E Card and Charging

To access the entire MOBI.E charging network, users need to get a MOBI.E card (and corresponding PIN) from the electric mobility electricity retailer of their choice. There will be three types of MOBI.E card: anonymous prepaid cards, nominative prepaid cards, and postpaid cards. During the pilot phase, only the nominative prepaid cards are available.

The MOBI.E card allows users to track all their movements in the "reserved area" of the MOBI.E Web site. The MOBI.E card is personal and not transferable.

MOBI.E customers can access information about charging station locations from their smartphones or PEV navigation systems. In future, it will also be possible to reserve charging periods at specific charging stations.

As mentioned, during the pilot phase, only the nominative prepaid cards are available. After this phase, each electric mobility electricity retailer will be able to put on the market the types of MOBI.E cards that better fit with its own commercial policy. Users will then be able to compare the various offers in the market and choose the one that best suits their needs.

Between July 2011 and the end of the pilot phase (envisaged for the end of 2012), each electric mobility electricity retailer may charge for electricity at its market price. At present the use of the MOBI.E network is free of charge, but private locations available to the public may charge a fee for infrastructure access, which will have to comply with a ceiling defined annually by the regulator.

During charging, users can access their online MOBI.E account and monitor the charging process in real-time and configure a wide range of automatic reports and status alerts (i.e., end of charge). When the charging process is complete, the user is notified (by SMS or email) and his/her user account is automatically updated, including electricity cost and charging service.

Full information on historical MOBI.E activities and recent transactions is provided online. From July 2011, all costs incurred within the MOBI.E network will be fully integrated into a single (monthly) invoice for user convenience.

Domestic Charging

Parking areas in new or rebuilt buildings are now required by law to have a charging point or a power outlet for charging electric vehicle batteries (Decree-Law 39/2010 of April 26, Art. 28). However, there are private parking areas in most buildings built before the publication of this decree-law.

For existing buildings, parking areas with physical access to electrical sockets (which are connected exclusively to the main building unit) may, in principle, be adapted to charge electric vehicles. However, owners must check the electrical system compliance to technical and legal requirements for safety and quality of service.

Users may also request the installation of the MOBI.E system in their place of residence. The MOBI.E consortium will be announcing conditions for installation.

A Closer Look at the ICT Enabling MOBI.E Operations

As stated above, the technology, IT, and communication partners involved in the MOBI.E project include Oracle, Novabase, Critical Software, Siemens, Efacec, and Magnum Cap.

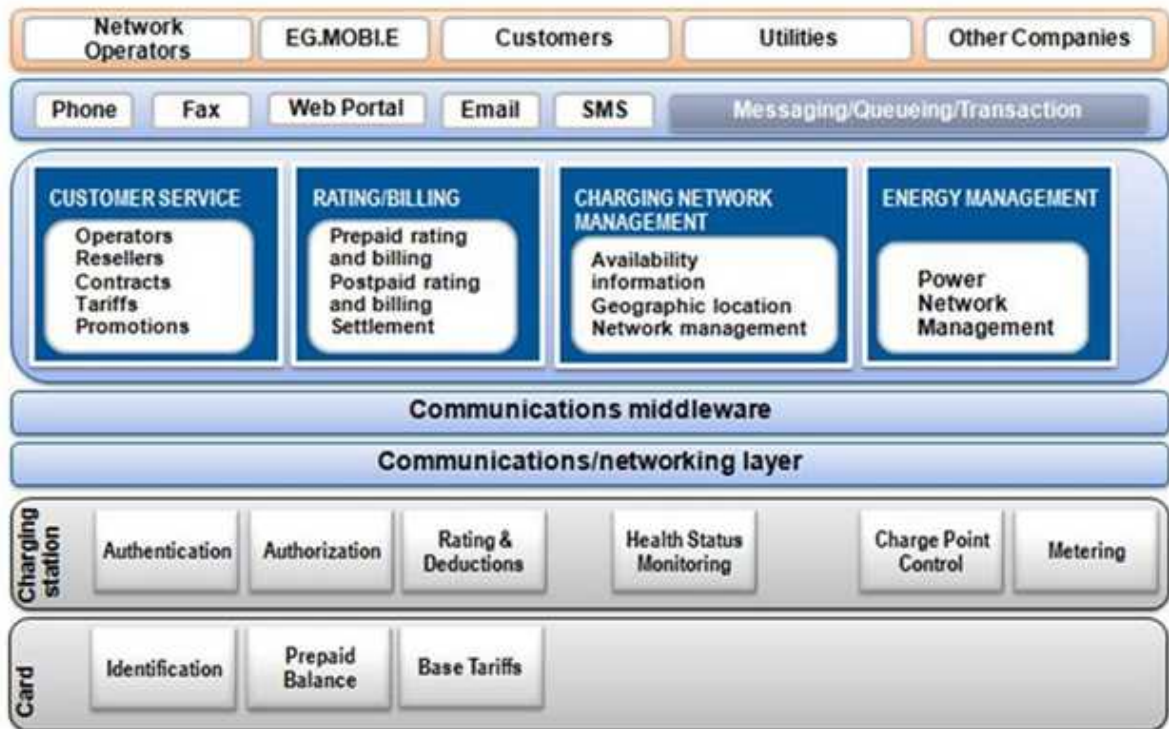
Figure 4 shows the overall ICT infrastructure. The technology platform, developed by the above mentioned players for the MOBI.E project, is multilayered, variegated, and complex. The MOBI.E system offers Web-based multiplatform access (PC, PDA, and cell phones), and includes integrated invoicing with complimentary services (parking, public transport, domestic electricity, and creation of personal/business accounts). It is also enabled for roaming between the various electric mobility electricity retailers. The MOBI.E system allows for real-time visualization of charging points (including charging status and vacancy information), as well as remote monitoring of the charging process. It also includes the CRM platform, which enables the management of all the stakeholders.

Several Oracle products have been selected and implemented to create the MOBI.E platform, from database to middleware, to business applications and analytics:

- Oracle Database 11g
- Oracle SOA Suite 11g
- Oracle Fusion Middleware 11g
- Oracle Utilities Customer Care and Billing
- Oracle's Siebel Customer Relationship Management
- Oracle WebCenter Portal
- Oracle Business Intelligence Enterprise Edition 11g (OBIEE)

FIGURE 4

MOBI.E ICT Platform



Source: MOBI.E, INTELI, redrawn by IDC Energy Insights, 2011

The MOBI.E ICT platform provides different services for the different stakeholders involved. For instance:

- Electricity resellers:
 - Metering information
 - CRM platform (clients, contracts, tariffs, helpdesk)
 - Prepaid/postpaid billing capability
 - Loyalty programs
 - Financial compensation service for value-added services
- Charging operators:
 - Information on network status
 - Remote management of charging stations
 - Financial compensation service for value-added services (parking)

- Prepaid/postpaid billing capability for value-added services
- Integration with third-party loyalty programs (supermarket vouchers, fuel vouchers)
- PEV users:
 - Web-based multiplatform access (PC, PDA, smart, and cellular phones)
 - Charging station location and availability
 - Charging station reservations (upcoming feature)
 - Car battery status (to be implemented in the future, when the car is able to "communicate")
 - Mobility management and historical track
 - Aggregation of value-added services
 - V2G management (to be implemented in the future)

The solution can manage the roaming between electric mobility electricity retailers. It is possible to create personal and business accounts and provide integrated invoicing with other services, such as parking fees, public transport, and domestic electricity consumption.

Business Value

Portugal has been among the pioneers in the development of an innovative electric mobility model. e-Mobility represents an opportunity to consolidate the Portuguese renewable energies policy, opening the way for further development of smart grids.

MOBI.E is not a fragmented system. The project led to the creation of a best-of-breed single platform able to integrate all charging infrastructures (the MOBI.E one, as well as any additional private ones in future) and electric mobility services. The single system is open for all business agents involved in the value chain of electric mobility, and easily accessed by any user.

The project serves as a testing ground for new business models and for the integration of new and, even more importantly, commercially available technologies.

MOBI.E is a very large and comprehensive project, involving many stakeholders and significant investment. Lessons learned will provide valuable guidance to replicate part or the full initiative at an international level. All business parties involved in the project will benefit through the lessons learned from working together on the implementation of such an innovative project.

Lessons Learned

The first MOBI.E charging spot was installed in Lisbon in June 2010 and now, about a year later, the full pilot infrastructure, including the ICT solution, is ready to start the market test phase. The involvement of users will provide significant value both for fine tuning and for future development.

Even if it is probably too early to detail lessons learned, a few initial observations can be highlighted. Government sponsorship and commitment was critical for the launch of such an initiative. e-Mobility requires huge investment and a good orchestration of energy, industrial, and fiscal policies. But once the process has started private companies quickly show an interest in joining the initiative. For instance, private charging operators (additional to MOBI.E) can develop their infrastructure (for instance in private parking) and "plug" into the business model.

The Portuguese decision to go for an operator-independent approach made it easier to develop a solution which solely consider the customer perspective rather being supplier driven. Additionally, the creation of an open and flexible platform was supported by car manufacturers, as that would enable them to differentiate their product designs.

From an ICT perspective the realization of the platform was about implementing real-time capabilities and realizing the conceptualized smart grid functionalities: customers need to be authenticated in real time (when they swipe the card), the system needs to be able to immediately check services they are eligible for (for instance method of payment), the customer needs to know the price for the electricity used for the recharge, if any special discounts or flexible tariffs are available, etc. Lessons learned in terms of product capabilities and system integration can be transposed for other utilities' smart applications, for instance to run demand response, to implement strong real-time mediation platforms, for rating development, for real-time settlement, etc.

Finally, it should be mentioned that a key success factor is the comprehensive approach: from business model design to the implementation of the supporting ICT infrastructure, to marketing and communication. The mobilization of national and international industry players and the creation of consortiums and technology partnerships, for both the design and the production of the system components, were fundamental.

FUTURE OUTLOOK

Next Steps

Network installation is mostly completed, including the ICT platform, which went live in July. The solution is going to be tested on the Portuguese market for approximately one year, till the end of 2012. Based on that, appropriate plans will be defined, especially in terms of provision of services to the grid and the enablement of additional functionalities for users, such as the possibility of reserving charging periods at specific charging stations. IDC Energy Insights can foresee possibilities for MOBI.E to extend its original scope, evolving to be a platform for other mobile services.

At the end of May 2011, MOBI.E announced that Portugal intends to expand the MOBI.E program internationally in 2012. The goal is to provide the electric mobility platform as well as the electric mobility services. The governments of Portugal and Malta have already signed an agreement to promote the implementation of the MOBI.E mobility network solution in the Mediterranean archipelago. Simultaneously, MOBI.E is partnering with Norway to implement the MOBI.E system to set up the Ishavsveien network, a cross-country e-mobility system.

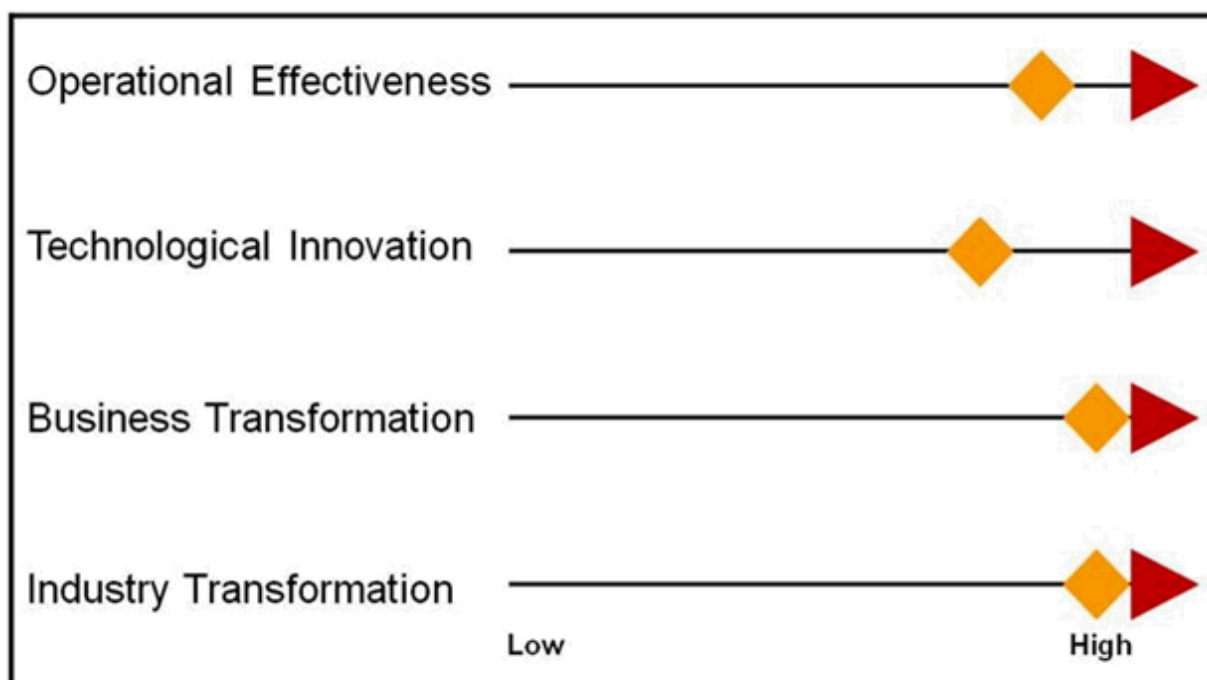
ESSENTIAL GUIDANCE

Project Impact Assessment

IDC Energy Insights believes the MOBI.E program is unique and very interesting for a number of reasons. Unlike many other current and more fragmented initiatives, the MOBI.E program approaches e-mobility as a very holistic project. It is not just testing the technology but the full business model and it created a scalable, open, and consistent platform able to integrate charging network infrastructure and the electric mobility services within one single system. There is significant technological innovation in it. Even if the key technologies and ICT solutions are commercially available, this is the first in this kind of implementation. But even more important is the impact it will have on business and, simultaneously, on the industry's business models (see Figure 5).

FIGURE 5

MOBI.E Project Impact Assessment



Source: IDC Energy Insights, 2011

Actions to Consider

Electric mobility (or electromobility) is becoming a reality and there are many similar initiatives emerging. Some of them are national or regional government driven, others are supported by EU funding, such as the Green eMotion project, while still others are private initiatives. To facilitate a more rapid deployment of PEVs across Europe, and the rest of the world, electric utilities should consider the following:

- Effectively contribute to the discussion and the definition of the business model to be adopted, involving national regulators and all possible stakeholders.
- Contribute to the standardization efforts concerning key aspects of the infrastructure, including plugs and sockets, vehicle-2-grid communication, etc. Cross-border standardization is a crucial requirement to establish electric mobility that functions smoothly, is cost-efficient, and is customer-friendly, which in turn leads to broad acceptance among customers.

- Take advantage of international projects to share experiences and learn from peers. At the same time establish an external dialogue with car manufacturers, car dealers, potential PEV owners, and other stakeholders to prepare a community approach to PEV integration onto the grid.
- Encourage internal dialogue with different divisions within the utility to holistically prepare the coming rollout of PEVs. And never forget to involve ICT resources from the beginning of any discussion and project.
- Customers are the ultimate judge. Involve them as much as possible from the outset of any trial, since their real behavior can be very different from expectations. And educate potential customers of the uniqueness of the PEV product. Explain the role they will play and the benefits that all parties will be able to gain if used in the right way.

LEARN MORE

References

- Interviews with:
 - Artur Vieira Costa, André Dias, and Luís Reis, INTELI (Inteligência em Inovação)
- MOBI.E Institutional Presentation
- *MOBI.E — The Energy That Drives Us: The National Portuguese Electric Mobility Platform*, delivered by Bastian Fischer (Oracle Utilities Global Business Unit EMEA, Vice President and General Manager) at the IDC Energy Insights Energy and Utilities Forum 2011 event in Milan on May 26, 2011.
- <http://www.mobie.pt/en/homepage>

Related Research

To learn more about electric vehicles please refer to the following IDC Energy Insights documents:

- *Deploying Plug-In Electric Vehicles in Europe: Updates From Germany* (IDC Energy Insights #EIRS57S, December 2010)
- *Perspective: The Five Enduring Myths of Electric Vehicles* (IDC Energy Insights #EI226266, December 2010)
- *First Time Electric Vehicle Snags European Car of the Year (2011) Award* (IDC Energy Insights #lcIT22590310, November 2010)

- *Business Strategy: The Coming Plug-In Electric Vehicle Rollout — Forecasting the Market* (IDC Energy Insights #EI224908, September 2010)
- *Business Strategy: The Coming Plug-In Electric Vehicle Rollout Part 2 — Challenges and Opportunities for Electric Utilities* (IDC Energy Insights #EI224910, September 2010)
- *Deploying Electric Vehicles in Europe: Updates From Italy* (IDC Energy Insights #EIRS54S, June 2010)
- *Best Practices: Enabling Electric Vehicles in Denmark — The EDISON Consortium Project* (IDC Energy Insights #EIRS02R9, September 2009)

To learn more about case studies discussing IT developments in utilities, please refer to the following IDC Energy Insights documents:

- *Best Practices: Thames Water Adopts BPMS Solution to Streamline Its Customer Services, With Wipro as Systems Integrator* (IDC Energy Insights #EIOS05T, August 2011)
- *Best Practices: Veolia Water Transforming Metering — The m2ocity Innovative Business Model and Oracle Utilities MDM Deployed by Power Reply* (IDC Energy Insights #EIOS04T, May 2011)
- *Data Privacy and Security for Smart Metering: Alliander Certification Case Study* (IDC Energy Insights #EIOS52T, March 2011)
- *Best Practices: GasTerra Flexes Up Its IT Application Portfolio by Choosing Oracle Utilities Solutions* (IDC Energy Insights #EIOS03S, May 2010)
- *Best Practices: Enel's Style Mobile Work Force Management Solution* (IDC Energy Insights #EIOS02S, February 2010)
- *Best Practices: Palm Utilities Deploys Oracle Utilities Customer Care and Billing Solution* (IDC Energy Insights #EIOS08R9, October 2009)
- *Best Practices: Bringing Stakeholders Together — The Amsterdam Smart City Project* (IDC Energy Insights #EIOS07R9, October 2009)
- *Best Practices: Pioneering Smarter Metering in Gas — The Gas Natural AMM Project Case Study* (IDC Energy Insights #EIOS06R9, September 2009)
- *Iberdrola's Control Center for Renewable Energy (CORE): A Model for Grid Integration of Renewable Energy* (IDC Energy Insights #EIRS54Q, June 2008)

- *Utility Remote Wind Power Management: EdP Bets on Logica's IT Solution* (IDC Energy Insights #EIRS53Q, April 2008)
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Synopsis

This study provides an in-depth look at the Portuguese Electric Mobility Network, MOBI.E. The MOBI.E network is an intelligent charging network catering to electric mobility. It is accessible to all PEV users, throughout all of Portugal. In future the network will enable optimal exploitation of the electric grid, by allowing grid managers to control the PEV charging process and allowing electricity stored in the PEVs to feed the grid.

"The value of the MOBI.E project goes beyond the implementation of a network of charging stations," said Roberta Bigliani, head of Europe, the Middle East, and Africa for IDC Energy Insights. "It designed a solid business model and the fundamental real-time ICT platform to manage the system and coordinate the gathering and sharing of information among all the relevant stakeholders, including the PEV users."

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