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Qualifying and **I**mplementing a user-centric designed and **E**fficient **T** electric vehicle

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Publishable Executive Summary

This deliverable (Exploitation strategy) aims at providing a quantitative and detailed strategic plan for the exploitation of the QUIET project results and the road to the market. Therefore, this plan is geared towards the global market scenario for electrified vehicles. It addresses the potential market growth and the exploitation of the QUIET results and the road to the market (focussing on the European Union).

The project exploitation phase runs through the entire project, whereas all project partners oversee the exploitation of the QUIET project results - either jointly or separately. Innovations that are developed by the project partners will be secured by patents and information that is important to the public will be disseminated. The exploitation strategy is developed by considering the consortium findings about the user preferences and the details of the proposed QUIET innovations and solutions. Technological results will be exploited by protection and subsequent licensing or via sales of components and systems developed in the project. Other results and solutions will be exploited through consulting contracts and research and development collaborations with third parties.

This deliverable begins with the elaboration of an initial market analysis based on marketing reports. It continues with the definition and coordination of a business plan to support and guide the exploitation of research deliverables including the vehicle platform validator and to promote higher academics with science, technology, engineering and mathematics subjects. Given the high industrial interest in the project scope of QUIET a focus will be on ensuring, that results and solutions are easily accessible for the automotive industry in a format that is straightforwardly manageable for engineers to apply results and solutions in their day-to-day work.

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Abbreviations and Nomenclature

Table 1: List of Abbreviations and Nomenclature.

Symbol or Shortname	Description
EC	European Commission
PO	Project Officer
PC	Project Coordinator
GA	General Assembly
CA	Consortium Agreement
WP	Work Package
DL	Dissemination Level
RTD	Research and Technology Development
OEM	Original Equipment Manufacturer
SWOT	Strength Weaknesses Opportunities Threats
BP	Business Plan
BM	Business Model
SME	Small and Medium-sized Enterprise
EV	Electric Vehicle
BEV	Battery Electric Vehicle
PEV	Plug-In Electric Vehicle
PHEV	Plug-In Hybrid Electric Vehicle
ER	Exploitable Results

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1. Introduction

The project exploitation phase runs through the entire project, hence the associated T6.3 (Exploitation) is active through the entire QUIET project duration. The task is allocated on one hand for the definition of the QUIET exploitation strategy (as documented in this deliverable) and on the other hand for the completion of the final exploitation plan. The exploitation plan will be realized and documented in D6.5 (Final exploitation plan) at the end of the QUIET project. The plan will be generated and managed by the T6.3 leader (AIT) with the involvement and support of the full consortium.

The primary strategic route for exploitation of the results achieved in QUIET is through direct sales of the Honda Fit EV by the OEM Honda, with the enhanced features developed in QUIET, possibly landing on the market in the years 2021/22. The close collaboration between the OEM and the SME partners in this project enhances the likelihood for integrating parts of suppliers from the EU (project partners) into the Honda Fit EV and to increase their sales volumes in general. The secondary strategic route is through the licensing of QUIET intellectual property rights to third parties. For research partners, the main exploitation scenario will be consultancy- and research contracts actions. Here the research partners undertake to exploit and commercialise the results in conformity with the interests of the public, to freely grant licenses and user rights among themselves to carry out the project and subsequent exploitation and commercialisation and to grant licenses and user rights to others needing access to the results in specified circumstances.

Innovations that are developed by the project partners and which might give an EU competitive advantage will be secured by patents, whereby patenting costs and maintenance fees will be shared by the partners having the main interest in the patent. The use of pre-existing patents, belonging to a project partner, will be secured by the other partners within the Consortium Agreement (CA). Agreements concerning the rights of protection will be made among the partners with mutual interests and licensing of technology to third parties will be considered case by case. The commercialisation of the results according to potential market values and growth (i.e. road to the market) will be performed by each partner under the regulations of a contract to be negotiated in the CA.

This deliverable (Exploitation strategy) is broadly divided into three parts representing also the measures for the exploitation to be implemented during and beyond the project term:

- Elaboration of an initial market analysis based on marketing reports which contributes to the business plan;
- Definition and coordination of a business plan (agreed by all QUIET partners) which supports the exploitation of results towards the European automotive industry;
- Definition and coordination of the strategic exploitation plan, with special attention to the exploitation by SMEs and exploitation of research deliverables.

2. Initial Market analysis

2.1. Potential market value and growth

European automotive industry investments in low-carbon vehicles are increasing in response to the growing interest from the public and to the deployment of more stringent environmental regulations for mitigating the effects of transport on climate change. The 2020s are recognised as the decade that will see the uptake of the first mass-market generation of electric vehicles, with sales projections that envisage a significant growth of fully electric vehicles in the A and B-segments, and PHEVs in the C and D-segments.

According to the website ev-volumes.com, global PEVs populations surpassed the 2 million units in 2016, accounting for 850 thousand units sold in last year, i.e. approximately 1 % of the global vehicle market, see Figure 1. Annual sales are expected to achieve the 1 million vehicles/year milestone [1] during the years 2017 and 2018, and approach 1.5 million vehicles/year beyond 2020. This is estimated based on sources available in the QUIET consortium, and confirmed by the Global EV Outlook 2016 of the International Energy Agency [2], with more than 20 million new EVs marketed in the next 10 years (see Table 2). This will generate a forecasted vehicle market value of 48 billion € in 2022 and 70 billion € in 2025 (estimation from QUIET consortium).

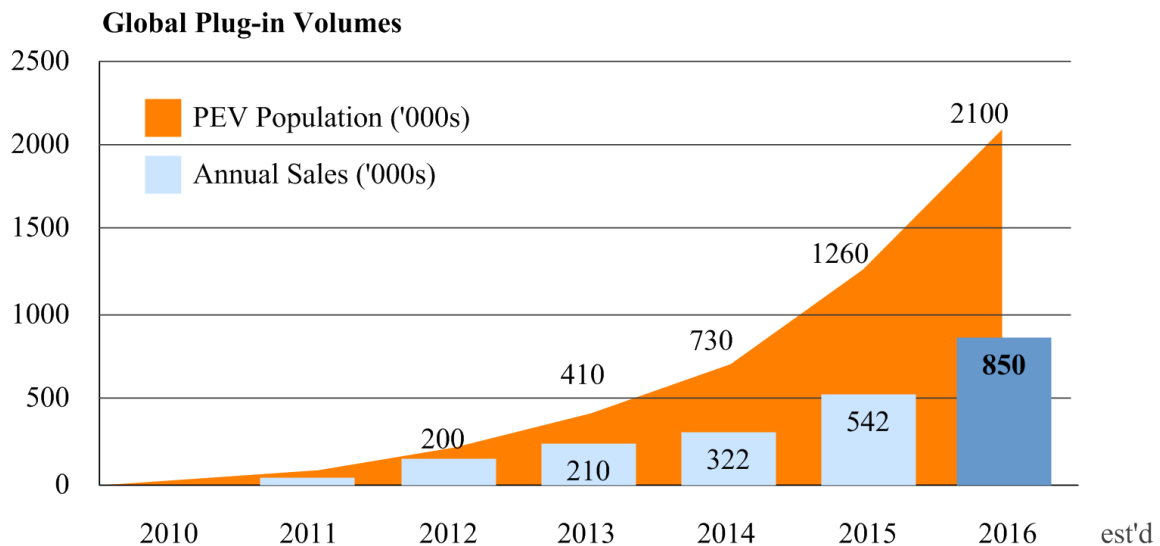


Figure 1: Evolution of sales of BEV's & PHEV's [3]

Table 2: Total EV sales market forecast in the next 10 years (source QUIET Consortium)

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Sold vehicles (1000 units)	1,000	1,100	1,200	1,350	1,500	1,600	1,800	2,000	2,350	2,700	3,000
Sales volume vehicles (Bn€)	30.0	33.0	36.0	40.5	45.0	48.0	54.0	60.0	70.5	81.0	90.0

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This trend is also confirmed by McKinsey & Company, which highlights that there is a gradually increasing momentum behind EV adoption - both from the side of the consumer and the automotive industry - suggesting that the next years, and especially after 2020, e-vehicles will have an important share in the vehicle market [4]. The European electricity industry, represented by EURELECTRIC [5], shows the same opinion: the full EV market (including plug-in hybrids) is set to grow exponentially over the next 20 years. Depending on scenarios, in 2030 the market share of EVs is expected to be about 15 % of the total European car market, reaching approximately 22 % of market share by 2035.

In Europe, OEM Project Partner Honda announced its “Electric Vision” to support this transition of the automobile business environment. By 2025, two-thirds of its European sales shall come from vehicles with electrified powertrains. As an initial step, Honda’s hybrid technology will be rolled out across the model range [6]. While Europe will have a leading role in this change for Honda, the company will follow this trend on a global scale, until the same goal is supposed to be achieved around 2030 [7].

In this context, the different upcoming QUIET technologies to be developed (i.e. user-centric designed technical solutions for an efficient B-segment EV) will open opportunities of an exploitation beyond the automotive market itself, enabling also the technology transfer to other transport business fields, for example electric rail vehicles or aviation. By ensuring the replicability of the QUIET solutions also for A, C and D-segment vehicles, the impact of the results will be maximised across the entire spectrum of passenger cars.

2.2. Exploitation of the QUIET project results and road to the market

Exploitation is a key aspect of QUIET. This will be based on leveraging the strengths of the consortium and by exploiting the business opportunities offered by the technologies developed besides mitigating risks and deriving threats, as per Strength Weaknesses Opportunities Threats (SWOT) analysis reported in Table 3.

Table 3: SWOT analysis to evaluate QUIET potential risks

Strengths	Weaknesses
<ul style="list-style-type: none"> • Combination of novel technologies for performance and system level efficiency, well addressed by collaborative research oriented on key European automotive competences; • Complementary project consortium, layering whole development and supply chain; • User centric design will improve acceptance of energy efficient EV. 	<ul style="list-style-type: none"> • Challenging project goals require a very high level of integration among the partners; • Building prototypes with diverse technologies; • Proof of cost effectiveness; • Unknown certification requirements; • High effort for subjective comfort evaluation (Gender, local preferences, etc.).
Opportunities	Threats
<ul style="list-style-type: none"> • High costs of fuel and batteries; • High importance of sustainable transport; • Importance of EV to avoid fuel consumption penalties; • Growing electric vehicle market. 	<ul style="list-style-type: none"> • Legislative changes; • Infrastructure weaknesses; • Slower electric vehicle sales development than expected.

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A possibly landing of the enhanced features developed in QUIET on the market can be envisaged for the years 2021/22 primarily through direct sales of the Honda Fit EV by the OEM Honda. Concerning the exploitation of research results, consultancy- and research contracts actions (e.g. licensing of QUIET intellectual property rights to third parties) will be carried out.

The road to the market of the results generated in QUIET are outlined in Figure 2.

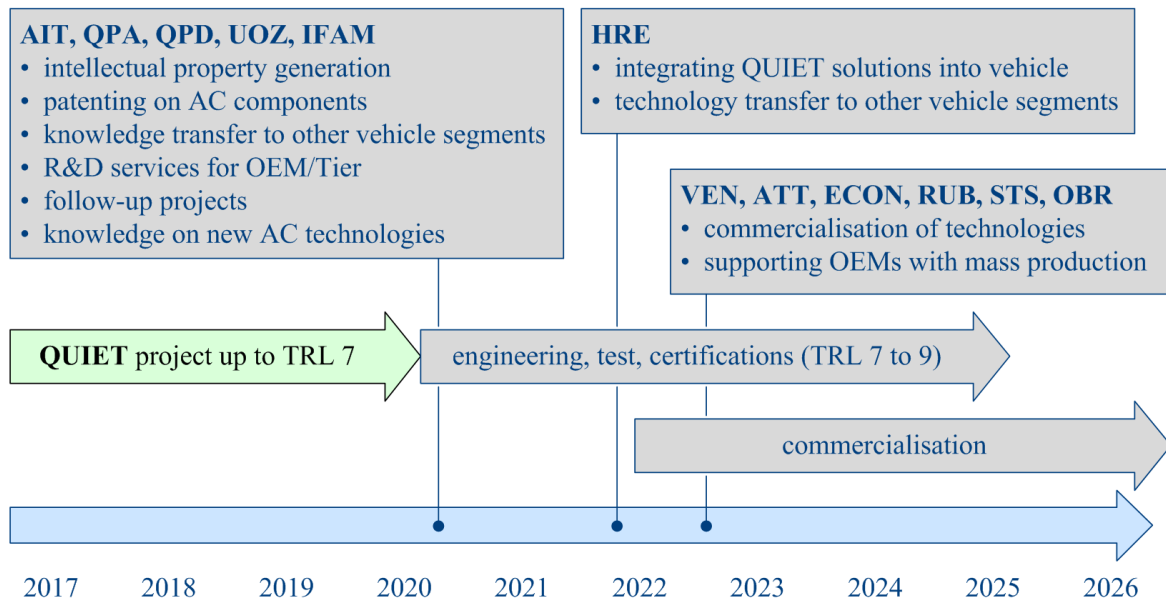


Figure 2: Road to market of QUIET

3. Business Plan Compilation

3.1. Brief Overview

A business plan (BP) is a tool which is used by entrepreneurs, by a company or by a project consortium to synthesise and rationalize an idea for developing a business in a formal document. It sets clear commercial strategies and defines the path to track for the following three to five years. During its implementation, the BP can be used as a reference document to keep the company's performance under control over time.

The main components of a BP may concern:

- A quick overview of the business idea;
- Information about e.g. the company, its structure, personnel, products/services, supply chain
- Analyses of industry, competitors., customers and main marketing (i.e. marketing plan);
- The formulation of strategic key marketing objectives and the description of the strategies to reach the goals;
- The evaluation of available resources (human, material, financial) and plan of business goals, main activities and milestones.
- The economic-financial forecasts including estimates of costs and finances.

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3.2. Business Model

In general, a BP describes the business goals resp. corresponding marketing objectives and how to achieve them. Key components/elements of the BP are business models (BM) required to describe and to execute the commercial strategy successfully over time. There are many existing definitions of BMs available. For QUIET the BM Canvas-template for developing new or documenting existing business models is chosen, since BM Canvas offers a wide and flexible range to describe the key components / elements of the BP (building blocks). The BM Canvas was proposed by A. Osterwalder [8] in 2004. In the meantime, the methodology has been in the market for some years and there is a set of free online resources available [9].

Figure 3 depicts a BM canvas to illustrate how the methodology can be applied for the QUIET project. The building blocks of the BM canvas consist of the following topics: 1. Customer Segment, 2. Value Propositions, 3. Channels, 4. Customer Relationship, 5. Key Activities, 6. Key Resources, 7. Key Partners, 8. Revenue Stream, 9. Cost Structure.

8: Key Partners	7: Key Activities	2: Value Propositions	4: Customer Relationship	1: Customer Segment
<ul style="list-style-type: none"> Who are our Key Partners? Who are our Key Suppliers? Which Key Resources are we acquiring from partners? Which Key Activities do partners perform? 	<ul style="list-style-type: none"> What Key Activities do our Value Propositions require? Our Distribution Channels? Customer Relationships? Revenue streams? 	<ul style="list-style-type: none"> What value do we deliver to the customer? Which one of our customer's problems are we helping to solve? Which bundles of products and services are we offering to each Customer Segment? Which customer needs are we satisfying? 	<ul style="list-style-type: none"> What type of relationships do our Customer Segments expect us to establish? Which ones have we established? How costly are they? 	<ul style="list-style-type: none"> For whom are we creating value? Who are our most important customers
	6: Key Resources		3: Channels	
	<ul style="list-style-type: none"> What Key Resources do our Value Propositions require? Our Distribution Channels? Customer Relationships? Revenue Streams? 		<ul style="list-style-type: none"> Through which Channels do our Customer Segments want to be reached? Which ones work best? Which ones are most cost-efficient? How are we integrating them with customer routines? 	
9: Cost Structure		5: Revenue Streams		
<ul style="list-style-type: none"> What are the important costs inherent in our business model? Which Key Resources are most expensive? Which Key Activities are most expensive? 		<ul style="list-style-type: none"> What value are our customers willing to pay for? For what do they currently pay? How much does each Revenue Stream contribute to overall revenues? 		

Figure 3: BM canvas, example template [10]

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The exploitation strategy carried out at the early stage of QUIET is oriented on BP based on the compiled BM canvas for the QUIET innovation, outlined in Figure 4. The provided BM canvas focuses on the primary route for the OEM (HRE).

BM Canvas for QUIET (focusing on primary route, OEM)				
8: Key Partners	7: Key Activities	2: Value Propositions	4: Customer Relationship	1: Customer Segments
<ul style="list-style-type: none"> OEMs Tier 1 (module/systems supplier) Tier 2 (component supplier) Knowledge transfer to other vehicle segments Supporting OEMs with mass production 	<ul style="list-style-type: none"> Creating better products with higher market acceptance 	<ul style="list-style-type: none"> Reduced energy consumption of electric vehicle under real-driving conditions Energy efficiency increase for heating/cooling; Improved thermal comfort behaviour Higher user acceptability of the final product Increased customer satisfaction Improved vehicle handling due to reduced weight; Competitive production costs Compact design Smart/intelligent Reduced climate impact due to usage of refrigerant with low GWP Intuitive vehicle operation Vehicle can satisfy diverse customer needs 	<ul style="list-style-type: none"> Test drives Customer care by OEM dealer Purchasing advice at OEM dealer Web Service Mobile support 	<ul style="list-style-type: none"> Vehicle customers <ul style="list-style-type: none"> Private customer of second family car for urban & sub-urban area with following use case Regular commuting Short and medium distance trips (see also deliverable D2.1) Cruising Customer characteristics <ul style="list-style-type: none"> Environmentally aware EV as prestige Car sharing operators Technology/IP purchasers Vehicle OEM Tier 1 / System suppliers
	6: Key Resources <ul style="list-style-type: none"> Increased access to a source of market and competitor information 		3: Channels <ul style="list-style-type: none"> OEM dealer, direct distribution Showrooms Internet presence Car sharing operators 	
9: Cost Structure		5: Revenue Streams		
<ul style="list-style-type: none"> Employees Fixed costs (salaries, rent, equipment) Variable costs Cost savings through by high volume (e.g. purchasing, production) Cost savings by synergy effects 		<ul style="list-style-type: none"> Vehicle sales (commercialisation of QUIET technologies) Enhanced cost-competitiveness (improved internal business case) Rental / Leasing Intellectual property generation (e.g. knowledge on new AC technologies) Licenses (e.g. patenting on AC components) Advertising R&D services for OEM/Tier Follow-up R&D projects 		

Figure 4: BM Canvas for QUIET

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3.3. QUIET OEM partner (Honda HRE) – Company Profile

Honda R&D Europe, with locations in Germany, Italy and England, is an integral part of the Honda organisation in Europe. As part of its independent organisational structure, Honda R&D Europe cooperates with Honda's distribution centres and production facilities for the automotive and motorcycles product lines in an equal partnership. The European Honda network unites a common goal: tailor-made products for the benefit of European customers. At Honda R&D Europe, predominantly European employees develop mobility concepts for the regional markets. Conception and design of new models as well as extensive driving tests on European roads produce products with independent appearance and advanced technology.

The German division of Honda R&D Europe, located in Offenbach, researches and develops technologies for cars, motorcycles, and outboard motors on a worldwide basis. It has been established in 1984 as the central R&D facility for the Honda Divisions Automobile, Motorcycle, Power Products and the Honda Research Institute. The focus of activities is collaborative research with European institutes and universities. The target of the research is to mature advanced technologies for application in products. For the European market, HRE has several prototype workshops and test facilities, for example material test laboratories, a design studio, a robotic laboratory and two emission test cells with climatic simulation between -25 °C and +35 °C as well as full real-world driving emission testing capability.

For the automotive business, HRE's activities are product planning, technology scouting, pre development and prototype testing. These activities lie in the areas of autonomous driving, vehicle dynamics as well as conventional and alternative power trains. It's the companies target to identify, investigate and evaluate new European trends. Finally, HRE brings these technologies into the conceptual design of new Honda vehicles, which is taking place at the parent company in Japan.

4. Exploitation Strategy

The exploitation strategy for QUIET turns gained know-how, scientific results and its demonstrator into a user optimised EV, which is ready for serial production for mass market. This will be achieved by highlighting attributes like: 'novelty', 'user-centrally designed', 'highly efficient HVAC system inside' or 'guaranteed driving range extension'. To ensure this, all activities during the project should be aware of possible exploitation channels (e.g. website, other OEMs incl. SMEs, scientific communication, project reporting and promoting of the QUIET vehicle validation platform, etc.) following defined exploitation routes.

SMEs will expand their existing portfolio for new customer projects and will offer new technologies regarding efficient heating and cooling concepts developed and demonstrated on subsystem and vehicle level in this project.

Air conditioning suppliers will use their gained know-how to enhance the development of cooling circuits, compressors and valves using the novel refrigerant propane and broaden their customer base and number of projects together with OEMs and Tier 1 industry. There is going to be a gain of testing experience of pure electric vehicles under real world driving conditions. As a result, the developed concept is going to be integrated and tested in a final demonstrator vehicle (Honda Fit EV). The demonstrator is going to be used as a show car promoting the QUIET concept vehicle and results are going to be presented in scientific communication channels and on the website.

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A huge benefit for SMEs is that within this project the know-how of all partners is focused in the development of a system and the tasks are distributed to several parties and their experts. Therefore, and in combination with the funding of the project, the impact of the results and the significance of new ideas are much higher compared to company internal R&D projects. Also, the chance to validate the system finally in a vehicle gives all participants much better possibilities for exploitation. The attention of possible customers is much higher if you present a running system integrated in a vehicle than just a presentation of simulation results or a rapid prototype of a component with its specification.

The involved OEM Honda will expand its pool of known technologies. After initial evaluation during the project QUIET, these technologies are ready for further maturation or direct introduction into the development of new products.

4.1. Reporting of Exploitation

Each partner must report exploitable knowledge and must take care about protection measures such as patents. For this purpose, reporting templates will be created which will be available on QUIET share point OneDrive. These reporting templates will be maintained continuously.

Different means of marketing will be used to distribute the gain knowledge:

- Technical congresses (e.g. VDI thermal management congress)
- Fairs/exhibitions
- Internet presentations (company website)
- Technical magazines and professional literature (e.g. ATZ)
- Presentation of the results at customers (OEM, Tier1, ...)
- Internal distribution for achievements and experiences within global Honda R&D organisation by HRE
- Provision of QUIET demonstrator vehicle (based on Honda Fit EV) for exploitation events of QUIET project partners

With the chance to present a vehicle with all the modifications integrated each participating partner will get a perfect discussion platform at technical congresses or at exhibitions. As a speaker a consortium partner can present the results of his component running in a complete system. In discussions with potential customers, new applications can be found, beside the ones showed on the vehicle demonstrator.

4.2. Intellectual Property Rights

The QUIET consortium expects, that intellectual property rights (to be established in form of patents) arise during the project. Patent applications will be published according the instructions on intellectual property rights which are available in the QUIET Grant Agreement No. 769826.

With the combination of an (for automotive application up to now) unusual refrigerant, a heat pump system, the integration of heat accumulation, infrared heating and other details, the chance is very high to develop new ideas that are worth to be patented. Moreover, the evaluation to reach the same subjective comfort with different systems may lead to interesting regulation and control strategies to help reduce the total power demand of automotive systems.

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4.3. QUIET partners exploitable results (ER) and anticipated exploitable routes

Consortium partners have various interests in exploiting (e.g. intellectual property rights, gained know-how, etc.). Possible following partner-related benefits gained from the execution/exploitation of QUIET are outlined as follows:

- AIT will disseminate the results of this project in continuative customer and research projects. Scientific publications will increase the visibility of AIT and helps to raise the attractiveness of AIT as research partner in the field of electric mobility.
- UOZ will increase their reputation as a high-quality university dealing with the optimization of energy management strategies in electric vehicles. Further research projects and scientific publications will strengthen the scientific excellence of UOZ.
- HRE will use the results of this project to further enhance their knowledge in the field of energy efficient heating and air condition system. In their role as European R&D division, HRE will spread the demonstrated European technologies into the global Honda R&D organisation. The gained hands-on experience will be a valuable European input for the development of future global and European Honda models. The demonstrated performance improvements shall be used to improve the customer acceptance of future Honda EV, especially for the European market.
- ATT will improve its knowledge regarding their electrically conductive coating on surfaces therefore being more competitive on the market. QUIET will provide a platform to show the benefits of infrared radiation heating for thermal comfort in a B-segment vehicle.
- STS will be able to adapt their technologies and production regarding lightweight seats with improved thermal and user-centric properties.
- QPA/QPD will expand the existing AVL qpunkt technology portfolio for new customer projects and will offer new technologies regarding efficient air conditioning developed and demonstrated on subsystem and vehicle level in this project.
- RUB will further develop their knowledge about PCM which will help them to extend their field of customers and get a PCM hot/cold storage market ready for EVs together with the project partners.
- OBR and VEN will use their gained know-how to enhance the development of cooling circuits, compressors and valves using the novel refrigerant propane and broaden their customer base and number of projects together with OEMs and Tier 1 industry.
- ECON will profit from an increase of knowledge about thermal and safety aspects in EVs and will do follow-up projects together with industry partners
- IFAM will exploit the results on the optimized insulation and lightweight materials and their application in specific parts of electric cars. IFAM has continuous co-operations with various OEMs. Two car manufacturers (Daimler and Borgward) plan to build electric vehicles in Bremen, so a good regional cooperation basis is given. IFAM is furthermore active in an advisory board for the German Federal Ministry of Transport and Digital Infrastructure.
- JRC will gain experience in testing of pure electric vehicles under real-world driving conditions. This will have a significant impact on future developments regarding new test procedures and -standards, especially related to the vehicle driving range in cold and hot ambient conditions. Thus, the QUIET project will help to improve currently existing regulations (e.g. MAC [11] and VDA220 [12]).

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4.4. Exploitation of Results

In the above-mentioned paragraphs, the potential exploitable results (ER) of QUIET have been laid out. Each ER has its individual appropriate audience and is backed-up by the expertise of certain project partners of QUIET. To convey the innovations of QUIET in an efficient way, a dedicated exploitation path has been allocated to each key ER.

Exploitable Results (Perspective)

Table 4 reports a summary of the QUIET exploitable results and exploitable routes (i.e. exploitation plan).

Table 4: QUIET exploitable results (ER) and anticipated exploitable routes

Key exploitable results	Applicator / end-user	Impact: benefit for end-user	Route for exploitation & Partners
Multi-physical modelling and simulation for efficient vehicle concepts development.	OEMs, Tier 1 and Tier 2	-Reduced development time; -Increased efficiency of components; -Fast investigation of different technologies;	-Follow-up projects with industry by AIT; -Applicable in automotive engineering solutions; -Scientific publications by AIT;
Development of an intuitive HMI for the thermal management of an electric vehicle.	OEMs, Tier 1 and Tier 2	-Increased thermal comfort for passenger; -Reduced energy consumption of electric vehicle;	-Follow-up projects with industry by AIT;
Method for the application of lightweight materials in vehicle seats.	OEMs, Tier 1 and Tier 2	-Higher user acceptability of the final product;	-Follow-up projects with industry by AIT;
Complex FEM modelling of composite panels and virtual testing process of doors, engine hood and luggage rack.	OEMs, Tier 1 and Tier 2	-Reduced weight; -Increased thermal insulation; -Competitive production costs;	-Follow-up projects from industry for ECON; -Know-how potential and publications at ECON; -Multiphase applications for industry and scientific partners;
Composite material made of fibre reinforced materials and a hybrid foam with reduced weight and improved thermal insulation.	OEMs, Tier 1 and Tier 2	-Access to new markets; -New customers; -Reduced weight; -Increased thermal insulation;	Follow-up projects with industry by IFAM; -Applicable in all transportation industry (not only automotive); -Scientific publications by IFAM;

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D6.3: Exploitation strategy (PU)

PCM devices with improved heating power.	OEMs, Tier 1 and Tier 2	-Leadership in the business field; -Improved thermal energy storage capability;	-Follow-up projects with industry by IFAM; -Scientific publications by IFAM and RUB;
Smart Valve Technology for a new, energy-efficient AC cycle, bi-directional and OBD capable.	OEMs & Tier 1	-Compact design; -Smart/intelligent; -Energy efficient; -OBD capable;	-Follow-up projects/business with OEM and Tier 1 by VEN;
PCM storages as part of heating/cooling system.	Tier 1 and Tier 2	-Energy efficiency increase for heating/cooling;	-Get a PCM hot/cold storage market ready for EVs together with project partners; -Scientific publications by RUB;
Stabilizing temperatures of electric components.	Tier 1 and Tier 2	-Increased lifetime and reduced failure rates of electric components;	-Generalize concept of thermal equilibration with PCM and develop tailored solutions for EVs and other applications; -Scientific publications by RUB;
Coupled (1D, 3D and control) modelling of the A/C circuit with integrated PCM and heat pump operation.	OEMs, Tier 1 and Tier 2	-Build-up of complete vehicle thermal management system for future applications of alternative climate-friendly refrigerants;	-Expansion of the existing AVL qpunkt technology portfolio for new customer projects; -Offering new technologies developed in the project; QPA, QPD;
Highly efficient new air conditioning and heating system for electric vehicles.	OEMs, Tier 1 and Tier 2	-Increased energy efficiency and improved thermal comfort of passengers;	-Technology demonstration on vehicle and subsystem level; QPA, QPD, ATT, VEN, OBR, RUB;
System integration into the vehicle; instrumentation; evaluation of systems on vehicle level	OEMs, Tier 1 And Tier 2	Build up and testing of vehicle to validate systems and simulation models	Technology demonstration on vehicle level; QPA, QPD;

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D6.3: Exploitation strategy (PU)

5. Conclusions

This deliverable (Exploitation strategy) deals with the elaboration of an initial market analysis based on marketing reports and with the definition and coordination of a business plan to support and guide the exploitation of the QUIET research results. The exploitation strategy describes the activities to be undertaken by the QUIET consortium to ensure the exploitation beyond the project itself and to increase the impact of the proposed QUIET solutions for the electric vehicle market to fully achieve the expected market success. This will be achieved by highlighting attributes like: ‘novelty’, ‘user-centrally designed’, ‘highly efficient HVAC system inside’ or ‘guaranteed driving range extension’.

The primary strategic route for exploitation of the results achieved in QUIET is through direct sales of the Honda Fit EV by the OEM Honda (landing on the market in the years 2021/22 possibly). As the SMEs from the EU in this project collaborate closely with the OEM, the likelihood for being a future supplier for their respective components for the Honda Fit EV or other electric vehicles is pushed further. Additional exploitation strategies for all project partners have been elaborated in section 4.3.

The secondary strategic route is through the licensing of QUIET intellectual property rights to third parties. Hence all QUIET partners are interested in the results exploitation in different manners: while research partners are oriented to transfer knowledge and technology to interested stakeholders, the OEM is focused on the potential market growth respectively the industrialization and future commercialization of the research results whereas the SMEs will expand their existing portfolio for new customer projects and will offer new technologies.

The exploitation strategy for QUIET turns gained know-how, scientific results and its demonstrator into a user optimised EV and will be continually monitored and updated. The QUIET vehicle platform validator is going to be used as a show car promoting the QUIET concept vehicle and to promote higher academies with science, technology and engineering. The results are going to be presented in scientific communication channels and on the QUIET website.

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Project Partners:

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2	HRE-G	Honda R&D Europe (Deutschland) GmbH	Germany
3	QPA	AVL qpunkt GmbH	Austria
4	QPD	AVL qpunkt Deutschland GmbH	Germany
5	VEN	VENTREX Automotive GmbH	Austria
6	UOZ	University of Zagreb	Croatia
7	IFAM	Fraunhofer Institute for Manufacturing Technologies and Advanced Materials IFAM	Germany
8	ATT	ATT advanced thermal technologies GmbH	Austria
9	ECON	eCon Engineering Kft.	Hungary
10	RUB	Rubitherm Technologies GmbH	Germany
11	STS	SeatTec Sitztechnik GmbH	Germany
12	OBR	Obrist Engineering GmbH	Austria
13	JRC	Joint Research Centre - European Commission	Italy

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