



Autonomous self-adaptive services for TRansformational personalized inclUsivenesS and resilience in mobiliTy

D6.2 Exploitation, innovation and standardization activities.v1

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Contents

List of acronyms and abbreviations	7
List of figures	9
List of tables	9
Executive summary	10
1. Introduction	11
1.1. Purpose of the Deliverable	11
1.2. Structure of the Document	12
1.3. Relation to Tasks, WPs and Other Deliverables	13
2. Exploitation Activities	16
2.1. Overview of Exploitation Strategy	16
2.2. Identification of Key Results	17
2.2.1. Key Exploitable Results (KERs)	18
2.3. Exploitation Plans by Consortium Members	20
2.4. Exploitation Risks and Mitigation Strategies	23
2.5. Timeline for Exploitation Activities / Commercial Roadmap	24
3. Innovation Management	26
3.1. Innovation Management Approach	26
3.2. Innovation Monitoring and KPIs	27
4. Standardization Activities	30
4.1. Overview of Standardization in the Project	30
4.2. Relevant Standards and Standardization Bodies	31
4.3. Contributions to Standardization	36
4.4. Standardization Strategy and Impact	38
5. Market Analysis and Business Modelling	41
5.1. Market Analysis and Market Problem Identification	41
5.1.1. Current Market Landscape	41
5.2. Target Markets and Segments	43

5.3.	Competitor Analysis	44
5.4.	Key Trends, Opportunities, and Challenges	45
5.4.1.	Key Trends in the Autonomous Driving Market	45
5.4.2.	Opportunities for AutoTRUST	46
5.4.3.	Challenges Facing the AutoTRUST Project.....	46
5.5.	Go-to-Market Strategy	47
5.5.1.	Commercialization Strategy.....	47
5.6.	Business Models and Revenue Streams.....	49
5.6.1.	Economic potential – Revenue streams	49
5.6.2.	Economic potential – Business models.....	49
6.	Intellectual Property (IP) Management	50
6.1.	Overview of IP Strategy.....	50
6.2.	IP Ownership and Protection	51
6.3.	Exploitation of IP	52
6.3.1.	Protection of results	53
7.	Conclusion.....	57
Annexes.....		58
Annex A	Partner contribution to standardisation activities	58
A.1.	Introduction	58
A.2.	Siemens AG.....	58
A.3.	UNIGE.....	60
Annex B	Standards	61

List of acronyms and abbreviations

Abbreviation	Description
AI	Artificial Intelligence
ASF	Apache Software Foundation
BM	Business Model
CA	Consortium Agreement
CCAM	Connected, Cooperative & Automated Mobility
CDM	Communication & Dissemination Manager
CEN	European Committee for Standardization
CENELEC	European Committee for Electrotechnical Standardization
CIAG	Commercial Interest Advisory Group
DIS	Draft International Standard
EC	European Commission
EFFRA	European Factories of the Future Research Association
EFTA	European Free Trade Association
EIMB	Exploitation and Innovation Management Board
EM	Exploitation Manager
EPC	European Patent Convention
EPO	European Patent Office
ETSI	European Telecommunications Standards Institute
EU	European Union
FDIS	Final Draft International Standard
FOSS	Free and Open Source Software
FSF	Free Software Foundation
GA	Grant Agreement
GDPR	General Data Protection Regulation
GNU GPL	GNU General Public License
GTM	Go-to-Market
HE	Horizon Europe
HMI	Human-Machine Interface
ICT	Information and Communication Technology
IEEE	Institute of Electrical and Electronics Engineers
IEC	International Electrotechnical Commission
IPR	Intellectual Property Rights
ISO	International Organization for Standardization
ITS	Intelligent Transportation Systems
KER	Key Exploitable Results

Abbreviation	Description
KIAT	Korea Institute for Advancement of Technology
KPIs	Key Performance Indicators
MIT	Massachusetts Institute of Technology
NSB	National Standardisation Body
NWIP	New Work Item Proposal
OEM	Original Equipment Manufacturer
OO	Operational Objectives
PCT	Patent Cooperation Treaty
RIA	Research Innovation Action
SAAM	Swiss Association for Automated Mobility
SC	subcommittee
SEFRI	The State Secretariat for Education, Research and Innovation (Swiss)
SME	Small & medium enterprise
SSH	Social Sciences and Humanities
SWOT	Strengths Weakness Opportunities Threats
TC	Technical Committee
TBT	Technical Barriers to Trade
TRL	Technology Readiness Level
UI	User Interface
WP	Work Package
WTO	World Trade Organization

List of figures

Figure 1 Illustration of the interconnection of the KERs to the Project's WPs and SOs.....	20
Figure 2 Geographic distribution of ISO Members	32
Figure 3 ISO Development Process	37

List of tables

Table 1: Key Exploitable Results and owners	18
Table 2 Strategic Impact and Innovation Assessment.....	21
Table 3 Barriers and Mitigation Measures	23
Table 4 European and International Standardization Bodies.....	31
Table 5 List of main Standardization Bodies for the member countries involved in AutoTRUST project.....	32
Table 6 World trade associations	34
Table 7 Standards relevant to AutoTRUST.....	36
Table 8 Possible subject matters for protection within the project.....	56

Executive summary

For the AutoTRUST deliverable entitled "Exploitation, Innovation, and Standardization Activities," related to tasks T6.2 (M3), T6.3 (M3), and T6.4 (M1), this report must cover key aspects of market analysis, business modeling, intellectual property (IP) management, innovation management, and standardization. It outlines the activities, plans, and actions concerning the project's exploitation within the first six months (M6).

The report presents the strategy for showcasing exploitation plans, including those of individual partners, collaborative efforts between two or more partners, and the consortium as a whole. Specifically, it highlights the actions required for exploiting the project's various tools and key results, reflecting the current status of technological developments. Several viable tools, methodologies, and products have been identified for exploitation.

The deliverable also emphasizes critical factors for exploiting the project's outcomes, such as developing strategies for individual and collective result exploitation, business model (BM) creation, identifying key exploitation results (KERs), conducting SWOT and gap analysis, managing intellectual property rights (IPRs), and performing market research.

The current exploitation process includes market analysis, customer segmentation, value propositions, revenue streams, and key customers, as reflected in the business models. Additionally, it illustrates how the KERs align with the project's individual operational objectives (OOs).

1. Introduction

1.1. Purpose of the Deliverable

This deliverable “Exploitation, Innovation, and Standardization Activities.v1” is part of the task 6.2 (T6.2) “Market Analysis, Business Modelling and Commercial Roadmap”, under the WP6 Dissemination of Results, Exploitation & Standardization. Led by the Waveye, T6.2 will (a) identify the research problem that the market analysis is trying to solve to guide the market research; (b) determine the specific target market for the new business models; (c) gather relevant data on the target market, including market size, growth trends, customer needs and preferences (T2.2), competition, and regulatory base (T1.4/T3.4); (d) identify key trends, opportunities, and challenges in the target market linking to the development of new business models; (e) define new business models; and (f) preliminary define go-to-market strategy outlining how the new business models will be launched and promoted in the target market. Market Analysis will be performed to determine the commercial possibilities of the products produced by the project, and a Business Plan will specify the targets to be reached, will define the required actions to achieve the targets, and will assign responsible partner(s) for each action in a time plan, extending after the completion of the project and proposing funding sources like use of accelerator or Venture Capital funding, so as to increase the Technology Readiness Level (TRL) of the project outcomes beyond TRL 5.

The aim of this deliverable is to present the project’s product concept, along with the preliminary exploitation plan, market analysis, and the innovation management strategy within the consortium. The following sections provide an overview of the exploitation team and activities, a market analysis in terms of the project’s commercial and economic potential, and the product concept and exploitation plan, including business modeling.

The purpose of this deliverable is to design an initial strategy for exploiting the project’s results, linking it to the relevant tasks of WP6, namely T6.2 – Market Analysis, Business Modelling and Commercial Roadmap, T6.3 – IPR & Innovation Management, and T6.4 – Standardization and Concertation Activities. It outlines how the AutoTRUST tasks and activities support the strategic management of exploitation, innovation, and standardization.

By the end of the project, we aim to have addressed the following important questions to ensure we have conducted a successful Exploitation Plan for the AutoTRUST project:

- What kind of needs does the project respond to?
- What kind of challenges is AutoTRUST looking at and what are the proposing solutions?
- What new knowledge (results) will the project generate (assessment of the state of art)?

- Who will use those results?
- What benefits will provide?
- How will end-users be informed about the generated results?

1.2. Structure of the Document

The document's structure, describing each section's focus, with reference to tasks such as market analysis (T6.2), innovation and IPR management (T6.3), and standardization (T6.4) is introduced. The structure of D6.2 is presented in this section as follows:

Section 1: Introduction presents the objectives and the purpose of this deliverable, the structure of the document and its relationship to other deliverables and work packages of the project.

Initially in the upcoming **Section 2: Exploitation Activities**, we present the exploitation strategy and the process that is being enforced during AutoTRUST project. We highlight the project's main goals and objectives, introduce the KERs identified by AutoTRUST partners, present the next steps that we will follow to showcasing the exploitation plans developed by different partners and elaborate the exploitation process. Upcoming editions of this deliverable will detail the different exploitation activities undertaken or planned during the lifespan of the AutoTRUST project.

Section 3: Innovation Management outlines the project's strategy for managing and tracking innovations. An Exploitation and Innovation Management Board has been established, consisting of an Innovation Manager and members from industrial and research partners. The project monitors innovation progress through Key Performance Indicators (KPIs), ensuring alignment with project goals and incorporating feedback from pilot activities and societal impacts.

Section 4: Standardization Activities examines the notion of standards, detailing the primary standardization organizations operating both globally and nationally, and outlines the steps involved in creating a new standard, with a particular focus on the process for launching a new standard through the International Organization for Standardization (ISO). This section also describes a preliminary list of relevant standards together with the internally shared approach to consider standardization during technical development and plan dissemination toward standardization bodies.

Section 5: Market Analysis and Business Modelling elaborates the initial BMs, developed by the Consortium partners, including the description of the importance of business models for the success of a business entity – whether research institute or commercial organization. It also includes a market analysis for the solutions of the project.

Section 6: Intellectual Property (IP) Management discusses the management of research knowledge and its accompanying data along with the IPR of the existing and work-in-progress tools/algorithms/services.

Finally, **Section 7: Conclusion** concludes this report by summarizing the activities described within this report and by indicating the future steps planned.

1.3. Intended Audience

The AutoTRUST “Exploitation, Innovation, and Standardization Activities.v1” is devised for the internal use of the AutoTRUST consortium, comprising members, project partners, and affiliated stakeholders. This document mainly focuses on the key aspects of market analysis, business modeling, intellectual property (IP) management, innovation management, and standardization, thereby serving as a referential tool throughout the project's lifespan.

This document is restricted exclusively to the collective entities within the consortium and to representatives of the European Commission, containing sensitive context. Also, the document highlights the strategic blueprint and collective vision of the project, ensuring that all collaborative efforts are harmonized and directed toward the fulfilment of the project's ambitions.

Dissemination or disclosure of the contents herein is limited to the internal circles of the AutoTRUST consortium and European Commission to maintain confidentiality and project integrity.

1.4. Relation to Tasks, WPs and Other Deliverables

The AutoTRUST consortium integrates a multidisciplinary spectrum of competencies and resources from academia, industry, and research sectors, focusing on novel AI-leveraged self-adaptive framework for transformational personalized inclusiveness and resilience in CCAM. The project integrates a collaboration of sixteen partners from ten EU member states and associated countries (Switzerland, United States, Korea and Japan), ensuring a broad representation for addressing security, privacy, well-being, health, and assistance, leading to enhanced inclusiveness, trust, and safety in the interaction between users and automated vehicles.

AutoTRUST is categorized as a "Research Innovation Action - RIA" project and is methodically segmented into 6 WPs, further subdivided into tasks. With partners contributing to multiple

activities across various WPs, the structure ensures clarity in responsibilities and optimizes communication amongst the consortium's partners, boards, and committees. The interrelation framework within AutoTRUST offers smooth operation and collaborative innovation across the consortium, ensuring the interconnection of the diverse expertise from the various entities (i.e., Research Institutes, Universities, SMEs, and Large industries).

This deliverable is connected to Task T6.2, "Market Analysis, Business Modelling, and Commercial Roadmap," which begins in Month 3; Task T6.3, "IPR & Innovation Management," starting in Month 3, and Task T6.4, "Standardisation and Concertation Activities," which begins in Month 1.

Deliverable D6.2 is a living document that will be updated as the project progresses, with revised and final versions delivered in Months 18 and 36. Specifically, D6.5, "Exploitation, Innovation, and Standardization Activities.v2," will be the updated version of D6.3 for Month 18, and D6.6, "Exploitation, Innovation, and Standardization Activities.v3," will serve as the final version of D6.2 for Month 36. Relation with other WPs:

Work Package (WP)	Task (T)	Deliverable (D)	Relation
WP1 – Project Management	T1.4 – Data Management, Research Ethics and Legal Compliance	D1.2 – Data Management Plan.v1	A living document defining how the various kinds of data collected and generated in the project will be handled and stored. It sets the requirements for the data store in terms of data security and privacy protection.
WP2 – Requirements, UCD Methodology & Architecture Definition	T2.2 – User's technical & ethical requirements, Use-Cases, UCD methodology and SSH analysis	D2.1 – Best practices, users' requirements and UCD methodology.v1	Documentation of the requirements and UCD methodology providing also the used validation methods.
WP3 – Advanced Monitoring system (AMS) and Data Processing	T3.4 – Security, privacy and data trustworthiness	D3.2 – Advanced internal and external sensing system.v1	Initial release of the algorithms for the internal, external analysis and data management.
		D3.4 – Advanced internal and external sensing system.v2	Final release the algorithms for the internal, external analysis and data management.

Work Package (WP)	Task (T)	Deliverable (D)	Relation
WP4 - Intelligent Personalization, Adaptation and Virtual Assistant System (VAS)	T4.3 - Virtual assistant framework and XAI content T4.4 - HMI, user apps and interfaces for personalized interactions	D4.2 - Virtual assistant system and personalized interactions.v1	Initial release of algorithms, modules and tools related to virtual assistant system, HMI, user apps and web services.
		D4.4 - Virtual assistant system and personalized interactions.v2	Final release of the research results related to human factors and adaptation and personalization methods.

2. Exploitation Activities

2.1. Overview of Exploitation Strategy

This section outlines the overarching exploitation strategy for project results, including the roadmap for commercial use. It discusses the connection to Task 6.3 and the identification of research problems to guide market analysis. The main objective is to approach the project's exploitation by presenting an initial strategy that is implemented during the project's lifetime.

The AutoTRUST exploitation plan details the anticipated outcomes of the project and establishes optimal strategies for their utilization. It highlights collaborative efforts among strategic partners and identifies potential strategic alliances. The plan includes the identification of the project's target audience and strategic goals, along with detailed implementation, exploitation, and sustainability activities and objectives at both the project and partner levels.

The strategy and plan set out below defines the successful exploitation of the project results. The overall strategy focuses on defining:

1. The results that can be exploited.
2. Target users (including secondary implementers and front running partners).
3. Exploitation activities.
4. Preliminary business plans or BMs (Section 5).
5. Knowledge, data and IPR management policies (Section 6).

Aiming to extend the impact of AutoTRUST, this deliverable intends to ensure high visibility of project results among target groups and stakeholders, raising general awareness and use of project results. In summary, the exploitation goals are to:

- Engage different target groups with information adjusted to their needs.
- Maximise the project's impact on stakeholders.
- Raise interest among academic and research institutions to delineate their research based on AutoTRUST results.
- Engage with policymakers and practitioners in the transportation and automotive industry.
- Identify complementary models/tools and ensure all stakeholder groups have a chance to participate in the development of the technologies and applications similar to AutoTRUST results.
- Explore options for synergies, cooperation or merging.

The exploitation objectives of AutoTRUST are the following:

- Identification of target groups and stakeholders.
- Spreading, as effectively as possible, the project's results among relevant stakeholders on a timely basis.
- Establishing and maintaining mechanisms for effective exploitation of the project results.

To achieve and ensure maximum impact and high visibility of the project results, we perform the following activities at different stages of the project life-cycle:

- Before the project starts:
 - Drafting the exploitation plan.
 - Defining the expected impact.
 - Consideration of target groups and stakeholders.
- During the project:
 - Updating the exploitation plan.
 - Assessing the impact on target groups and stakeholders and their needs.
- After the end of the funding period:
 - Continuing further exploitation of the project results.
 - Developing ideas for future cooperation.
 - Evaluating achievements and impact.

The expectation is that the exploitation of the AutoTRUST results will continue beyond the funding period. As outlined in the project's Grant Agreement, by the end of the project, the developed technologies are expected to reach TRL 4 to 5, indicating validation in relevant environments. Consequently, it is anticipated that further research and software development will continue to advance the AutoTRUST tools, ensuring they can operate under the expected conditions and are ready for full exploitation. Therefore, the consortium is committed to exploring additional funding opportunities and researching alternatives that may aid in finalizing the AutoTRUST tools.

2.2. Identification of Key Results

Extensive exploitation will be ensured through the sustainable integration of project results, allowing them to be customized to third-party requirements and needs, and to remain viable beyond the funding period. It is crucial that these results are accessible, well-documented, benefit-focused, and transparent. Additionally, the exploitation of project results should be

facilitated through workshops, online seminars, discussions with target groups and stakeholders, and face-to-face exchanges.

To achieve the desired impact on stakeholders and target groups, and to establish a foundation for the effective use of the project outcomes, AutoTRUST partners will develop an exploitation strategy for each result. This strategy involves brainstorming on the use of project results, characterizing them, identifying risks and potential obstacles to exploitation, and analyzing how to address these challenges.

2.2.1. Key Exploitable Results (KERs)

The consortium partners will work together to identify and finalize the KERs. An initial and partial **KERs table** is presented below (Table 1) and will be revised and enriched during the project. All KERs and, as relevant, datasets, services, and tools will be submitted in the EC Digital Single Market “Innovation Radar”.

Identifying the KERs by consortium partners, by working together, offers several benefits. It enables the strategic alignment of project outcomes with market needs, facilitating the translation of research into commercially viable products and services. This identification also promotes targeted dissemination and exploitation efforts, maximizing the impact and sustainability of the project's innovations. Furthermore, it strengthens collaboration among partners by clearly defining shared objectives and responsibilities, enhancing the overall efficiency and success of the project.

Table 1: Key Exploitable Results and owners

KER#	Key Exploitable Result (KER)	Type of Result	Owner (s)	Clients, Users	Sales Channels	Means of Exploitation
KER1 (main)	AutoTRUST Solution (a set of an AI-leveraged tools for facilitating passengers experience in CCAM)	SW	CERTH	ALKE, NPT, TPG	Autonomous vehicles manufacturers, OEMs, Transport Authorities, etc.	Licensed standalone solution

KER#	Key Exploitable Result (KER)	Type of Result	Owner (s)	Clients, Users	Sales Channels	Means of Exploitation
KER2	Advanced monitoring system (AMS) and data processing	SW	AviSense .AI	CERTH, Waveye GmbH		Licensed standalone solution
KER3	Virtual assistant framework and XAI content	SW	ALKE	CERTH, SIEMENS sdtech Inc		Licensed standalone solution
KER4	Human-Machine Interfaces (HMI) for personalized interactions	SW	sdtech Inc	NPT, TPG		Licensed standalone solution
KER5	In-cabin monitoring system	SW	CERTH	ALKE, NPT, TPG	Autonomous vehicles manufacturers and OEMs	Licensed standalone solution
KER6	Electromagnetic activity sensing module	HW + SW	Waveye GmbH	CERTH, SIEMENS sdtech Inc		Licensed standalone solution
KER7	Simulation data environment	SW	KATECH	ALKE, MORAI		Licensed standalone solution
KER8	AI-powered framework for cooperative awareness	SW	ALKE	CERTH, Waveye GmbH		Licensed standalone solution

The AutoTRUST consortium has developed a set of Operational Objectives (OO), which are vital to reach to accomplish the planned outcome of the project; the OOs are as below:

- **OO1:** Advanced internal and external monitoring system, multimodal data acquisition and intelligent processing (AMS) (Addressed in WP3 - T3.1, T3.2, T3.3, T3.4).
- **OO2:** Adaptation, in cabin adaptive environment and personalization (Addressed in WP4 - T4.1, T4.2).

- **OO3:** Personalized Virtual Assistant System (VAS) and interactions. (Addressed in WP4 - T4.3, T4.4).
- **OO4:** Iterative User-Centered Design (UCD) process for adaptation and personalization based on users' and group of users' characteristics (Addressed in WP1 – T1.3, WP2 - T2.2, WP4 - T4.1, WP5 – T5.1, T5.2, T5.3).
- **OO5:** Evaluate socio-economic impact and benefit of deployment of user-centric vehicle technologies. Showcase AutoTRUST in four pilots, strategically selected to cover rapidly advancing sectors (Addressed in WP2 – T2.3, WP5 – T5.1, T5.2, T5.3, T5.4).
- **OO6:** Develop strong liaison with standardization and exploitation activities. Boost dissemination and exploitation to enhance sustainability and uptake of the results. Promote concertation activities with other complementary EU projects. Sharing of communicable results and synergy building (Addressed in WP6 – T6.1, T6.2).

Below, an illustration of the interconnections of the KERs, WPs and OOs are depicted, in Figure 1, which provides an overall understanding of how the KERs would address the OOs of the project.

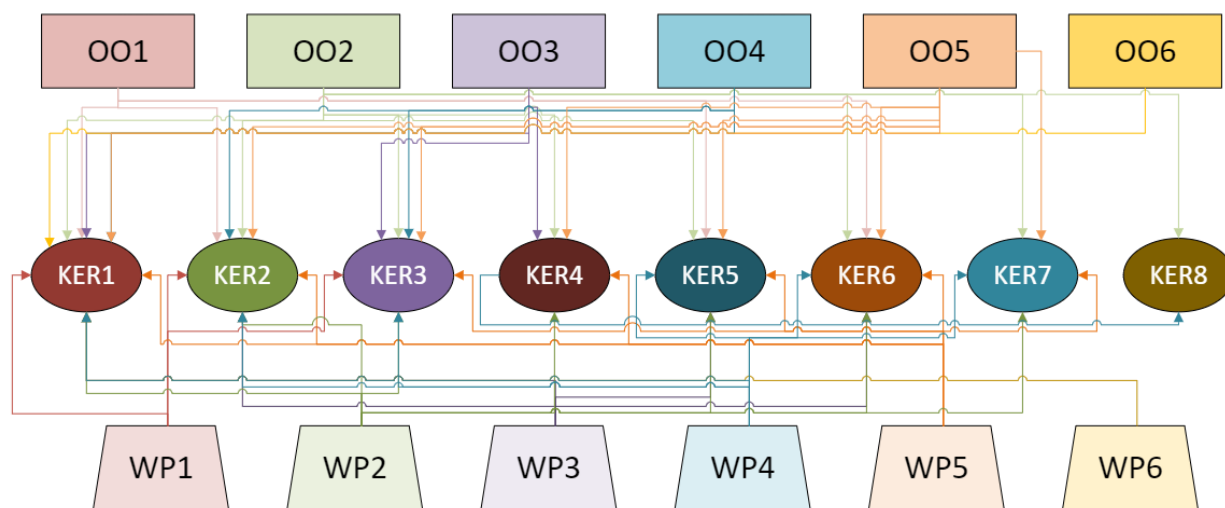


Figure 1 Illustration of the interconnection of the KERs to the Project's WPs and OOs

2.3. Exploitation Plans by Consortium Members

Each consortium partner will outline their individual exploitation plans for the project results, detailing commercialization pathways, internal process applications, or collaborations with external stakeholders. These plans will include specific contributions from participants in T6.2

and T6.3, discussing the commercialization potential and market entry strategies for each partner.

The exploitation plans are designed to demonstrate how the innovations and outcomes generated during the project will be utilized, commercialized, or otherwise leveraged for maximum impact. These plans are essential to ensure that the project's results are effectively transferred to the market or relevant stakeholders, thereby increasing their practical value and application. Developing comprehensive exploitation strategies is critical to achieving the project's objectives, as it aligns all partners toward common goals, guarantees the sustainability of the project's innovations, and promotes the successful dissemination and adoption of new technologies and methodologies. By clearly defining these strategies, the consortium can optimize resource allocation, strengthen collaboration, and drive the project towards tangible and impactful results. To support this, partners were provided with a template for the exploitation plan, which consists of three chapters, as outlined below:

- Chapter 1: Strategic Impact and Innovation Assessment** - This chapter evaluates the strategic impact and innovation brought by each partner's organization within the AutoTRUST project. Partners should outline their expected outcomes, describe the value their solution brings, specify the nature of their innovation (product, service, process, etc.), detail their deployment approach (new solution or retrofit), define their target market segments, compare their solution to existing technologies, address barriers to deployment and user adoption, and analyze relevant market trends and key stakeholders. An example is presented in Table 2.

Table 2 Strategic Impact and Innovation Assessment

Name of organization/Partner :	
Criteria	Description
AutoTRUST's Individual Exploitable result	What result do you expect to exploit through the AutoTRUST project?
Utility	What is the benefit your solution offers?
Characterize the type of your innovation	Product, service, process, etc.
Way of deployment	New solution or retrofit.
Target market	To which market segment the potential deployed solution will/could be applied?
Competing technologies	Comparison with similar solutions that exist in the market.

Barriers to innovation	• Deployment barriers: barriers that may hamper our solution from fully being deployed and penetrating the market. • Adoption barriers: barriers that may hamper our end-users from adopting our solutions and penetrating the market.
Market trends	Relevant trends and drivers that will act in favor of AutoTRUST creating significant opportunities.
Stakeholders	A range of actors and networks are closely intertwined for your AutoTRUST exploitation

- **Chapter 2: Individual Exploitation Plans** - in this chapter, each partner will outline their individual exploitation plans for the identified assets. They should specify the name of the asset, define their exploitation goals, identify the impact area, explain how their solution addresses societal needs, identify potential users, and provide examples of typical use cases. This section's aim is to align the partners' objectives with the market context and demonstrate how their assets create value.
 - **Asset name:** name of the asset identified.
 - **Exploitation goal(s):** an exploitation goal refers to a specific objective or outcome that each partner seeks to achieve through the process of exploiting a particular resource or opportunity.
 - **Area in which impact is expected:** sector, field or industry on which the exploitation goal is expected to have an impact.
 - **The needs that are solved:** taken from the section Societal needs and trends.
 - **Potential users:** who they are and how will be reached
 - **Typical uses:** scenarios that demonstrate the use of the asset in real business case, scope, prerequisites, expected results.
- **Chapter 3: Societal Needs and Trends Analysis** - this chapter focuses on societal needs and trends related to the AutoTRUST project. Partners should identify specific problems or lacks in society that the project aims to address. They should also analyze corresponding needs or trends in society, which creates an opportunity for innovative and profitable solutions. This section's aim is to highlight the relevance of the partners' solutions in meeting societal demands and adapting to changing preferences.
 - **Problem:** detection of a problem or lack in society, within the framework of AutoTRUST

- **Need/trend:** detection of demands or changes in society preferences regarding the identified problem, in order to adapt and offer products or services that satisfy that need/trend.
- **Exploitation opportunity:** for each identified need/trend, an exploitation opportunity opens up on that unsatisfied demand and, therefore, an innovative and profitable solution.

2.4. Exploitation Risks and Mitigation Strategies

In this sub-section, the potential risks related to the exploitation of results, such as market barriers, competition, or regulatory hurdles, are discussed, and strategies for mitigating these risks are provided. The table below (Table 3) presents the political (P), economic (E), social (S), technological (T), legal (L) and environmental (E) factors that can have a hindering impact on AutoTRUST.

Table 3 Barriers and Mitigation Measures

	Requirements / Barriers	Mitigation Measures
P	• Limited global protectionism to increase through tariffs, quotas or subsidies • High probability of deteriorating political stability with events such as terrorist attacks, regional conflict, and war • Competition among cities, city branding, image making	• Convergence through EU policy instruments • An analysis of existing regulations and policies will take place in order to avoid any conflict in development and integration of the AutoTRUST Solution
E	• The trend of global investments, exports and growth in GDP to shift to emerging economies • Private investments challenging • High labour costs • Lack of qualified workers • Public finance accounting rules	• Novel Green and Cost-Effectiveness Business Models • Collaborative partnerships as a way of cutting Costs • Reduce costs through digital tools integration in automotive and transport network
S	• Labour quality and availability in the market is essential to the automotive industry • Reluctance of users, organisations and relevant parties to utilize the project solutions due to lack of trust/confidence.	• Effective scenario-planning of how different technologies could affect in the short/medium/long term the automotive and transport domain and the local area.

T	• Insufficient engagement of all relevant stakeholders • Reluctance of end-users to adopt AutoTRUST solutions • Unforeseen technical difficulties including inferior performance of technologies/modules	• Highly experienced and skilled consortium and multidisciplinary approach • Well-structured wide stakeholder outreach strategy • 2-3 iterations for development, testing, integration and validation
L	• Concerns regarding security and privacy of data • Country or sector-specific framework conditions including regulations that can obstruct the development, integration and validation of AutoTRUST	• Convergence through EU policy instruments • Harmonization procedures and guidelines to be assessed to align national and EU policies
E	• Extremely high CO2 and pollutant emissions • Further financial incentives must be developed	• Efficient waste streams exploitation and better recycling processes for transport domain

2.5. Timeline for Exploitation Activities / Commercial Roadmap

AutoTRUST exploitation will include community exploitation of open-source software through various channels, commercial exploitation of technological solutions and services, and science and technology exploitation to prepare for future technological challenges by enhancing knowledge and skillsets. The exploitation strategy begins with identifying a list of Key Exploitable Results (KERs), followed by determining the most appropriate exploitation plan for each result, considering the exploiting partners and the target community. These plans will then be consolidated into an overall exploitation plan.

The overall or joint exploitation plans will be developed after resolving any conflicts or inconsistencies between partners to ensure that all contribute to the overall objective of sustainably maximizing benefits for all stakeholders. The AutoTRUST Exploitation Plan (D6.2, M6, updated at D6.4 M18 & D6.5 M36) will be deployed in three consecutive steps:

1. Identification of KERs.
2. Exploration of different routes to exploitation and market analysis.
3. Development of individual partners' exploitation strategies, a joint exploitation plan, and a go-to-market strategy.
4. Design of novel business models to support the widespread adoption of AutoTRUST.

An initial analysis of these steps follows and will be updated and expanded as necessary during the project. A timeline for the exploitation activities will specify key milestones for commercialization, market entry, or further development of project results. It includes a preliminary business plan, which defines targets, required actions, responsible partners, and funding sources.

Exploitation-related activities in the first six months of the AutoTRUST project focused on defining the project product concept and preparing the exploitation framework as a basis for future product exploitation activities. The following tasks were performed:

- Market analysis, including the analysis of market potential and the project's economic potential.
- Identification of potential target end users.
- Identification of potential competitors.
- Definition of the innovation management process and appointment of the Exploitation and Innovation Management Board.
- Identification of project products/components with the highest exploitability potential.
- Development of business model canvases for project products/components with the highest exploitability potential.

The results of these activities will be referred to and reported in the following parts of this report. Another step towards effective project results exploitation involves dissemination activities. Well-targeted dissemination activities allow for reaching potential end users with information about the project products. Dissemination activities include preparing and publishing research papers, conference presentations, web presence (website and social media), and white papers. Detailed information about dissemination activities is reported in the dedicated deliverable D6.1 (M3).

3. Innovation Management

3.1. Innovation Management Approach

To ensure the successful exploitation of the project's innovations, an Exploitation and Innovation Management Board (EIMB) has been established. This board consists of an Innovation Manager and members representing both industrial and research partners. The board's primary role is to oversee and guide the project's innovation activities, ensuring that new ideas are effectively nurtured, managed, and aligned with the project's exploitation goals. By leveraging the diverse expertise of its members, the board facilitates a comprehensive approach to innovation management, fostering collaboration and maximizing the commercial and societal impact of project outcomes.

Dr. Aristeidis Lalos (AviSense.AI) will be responsible for coordinating the innovation management policy. Dr. Niels Nijdam (UNIGE) will be the Communication & Dissemination Manager (CDM) responsible for the effective implementation of the project's Dissemination and Communication activities. Dr. Narek Rostomyan (WAVEYE) will be the Exploitation Manager (EM) who, together with CDM, will be responsible for maximizing the project's impact. Whilst the CDM will manage the outreach of the project results to a wide audience, the EM will focus on business and market aspects associated with AutoTRUST results, to ensure the continuity beyond the project completion without the need for external public funding.

The key goal of the AutoTRUST innovation management process is to monitor the outcomes of technical processes and align them with business opportunities in the market. The concept of AutoTRUST innovation management is based on the following pillars:

- Supporting innovation capacity and integration of new knowledge to exploitable results: Project partners implement a wide range of measures to foster idea generation, based on inputs from both inside and outside the project.
- Bridging the gap between research and business: This involves activities aimed at reducing time-to-market, meeting end-user needs, and creating added value for both partners and society.

Specific activities of the AutoTRUST EIMB include a wide range of tasks focused on exploiting project results and strengthening networking potential and inter-project cooperation:

- **Monitoring technology trends in relevant domains:** Each EIMB partner informs the Innovation Manager and the consortium about technology trends.

- **Participating in related events:** This includes webinars, expert peer assist workshops, conferences (including paper submissions), seminars, workshops, and discussion groups.
- **Identifying relevant stakeholders interested in the AutoTRUST solution:** This group comprises software vendors, automotive OEMs involved in automotive use cases, service providers, and government authorities who might be key decision-makers in implementing such changes.
- **Seeking appropriate tools and platforms for matchmaking:** Provided by the EU, these tools match project innovations with potential industry stakeholders, considering the EU paradox problem.
- **Following related market trends and acting accordingly.**
- **Networking and clustering with other relevant H2020 projects and EU-wide associations and initiatives.**
- **Identifying relevant initiatives at the partner country level:** This strengthens networking potential with national stakeholders.

3.2. Innovation Monitoring and KPIs

This section outlines the methodologies used to monitor and track innovation progress throughout the project. A system of Key Performance Indicators (KPIs) is implemented to measure the success of innovation activities, providing a structured approach for evaluating both technological advancements and the outcomes of exploitation efforts. Innovation is tracked at multiple levels, incorporating insights from pilot activities, societal impacts, and feedback loops from Task 6.3. The monitoring framework ensures that innovations are aligned with project objectives and continuously evaluated to maximize their impact and relevance to the market and stakeholders. The effectiveness of the Exploitation Strategy will be measured using the success metrics of EO1-EO3, referring to Significance (Si) and Scalability (Sc).

EO#1: Advanced vehicle technologies and solutions which optimize usability, perception and experience onboard, and when boarding/off-boarding, in terms of security, privacy, well-being, health and assistance.

- KPI-1.1: Data Processing Speed: Rate of data processing for real-time decision-making as well as the time required to train and update AI models (Sc)
- KPI-1.2: Accuracy of AI Predictions: >80% accuracy of AI-based predictions for navigation (Sc)
- KPI-1.3: Driving Efficiency: >85% (Sc)

- KPI-1.4: User Interface (UI) Responsiveness: > 90% of end-users reporting high satisfaction with the vehicle's usability and XAI-based HMI interface (Si)
- KPI-1.5: Compliance with privacy/security regulations (e.g., General Data Protection Regulation (GDPR)) related to vehicle data (Sc)
- KPI-1.6: Each year, 1.35 million people are killed on roadways around the world. AutoTRUST Advanced internal and external monitoring system provides information to transport network to reduce serious injuries and fatalities in road crashes and minimize the unexpected events up to 50% (Si)
- KPI-1.7: Satisfaction ratings from passengers with diverse needs: users will be satisfied >80% (Si)
- KPI-1.8: Percentage increase in accessibility for individuals with disabilities (e.g., wheelchair users, visually impaired passengers): 4 pilot testing activities with different end-users' groups that will be satisfied with AutoTRUST (~20% of targeted end-users in pilots will be people with disabilities) (Si)
- KPI-1.9: Increase Quality of Life: >15% (Sc)
- KPI-1.10: Financial benefits due to safer and more efficient transportation of goods (Sc)
- KPI-1.11: Reduction of insurance costs for Transport Authorities which participate in pilot sites: 5% (Si)

EO#2: Enhanced inclusiveness and trust in the interaction between users and new automated modes of road transport and mobility services in the transition from human-driven to automated vehicles.

- KPI-2.1: Inclusiveness Impact: Surveys for evaluation of how effectively the user-centered design methodology ensures inclusiveness for users of diverse backgrounds, abilities, and needs (Sc)
- KPI-2.2: Questionnaires for assessment of how well the virtual assistant's explanations and suggestions are understood and appreciated by users (n>300 end-users from pilot activities and workshops) (Sc)
- KPI-2.3: Accessibility Compliance: Evaluation of how well the HMI interface complies with accessibility standards and regulations (Sc)
- KPI-2.4: Evaluation of the impact of technology on the smart cities community, including reductions in accidents and increased trust in automated transport (Si)
- KPI-2.5: Accessibility Compliance Savings: Evaluation of cost savings achieved by ensuring accessibility compliance from the outset, avoiding costly penalties (Si)

EO#3: Safety and security of vehicle occupants in all circumstances even when the vehicle is driverless by helping to prevent dangerous and inconvenient situations, also when boarding/off-boarding.

- KPI-3.1: User Satisfaction with Safety: Passenger satisfaction ratings (n=300 passengers from pilot demo sites) regarding the safety measures and overall safety experience during the journey (Si)
- KPI-3.2: Response Time to Critical Situations: 20% reduction the time it takes for the vehicle to recognize a critical situation and respond appropriately (e.g., braking, evasive maneuvers) (Si)
- KPI-3.3: KPI-2.3: Reported near Real-Time Prediction Accuracy: Measurement of how accurately the system predicts road conditions, events, and potential hazards in real-time (Sc)
- KPI-3.4: Regulatory Compliance: Evaluation of the system's compliance with safety regulations and standards set by relevant authorities (Sc)
- KPI-3.5: Reduction of the number of critical situation (e.g. potential traffic accident, cycle failure of traffic signals) on an average day: 10-20% (Sc)
- KPI-3.6: Reduction of the number of accidents (classified based on the injuries severity and cost): 10% on average (Sc)
- KPI-3.7: Cost Savings from Accident Reduction: Calculation of cost savings resulting from a reduced number of accidents and their associated costs (e.g., medical expenses, vehicle repair, legal fees) (Si)
- KPI-3.8: Reduce the penalties from Information Commissioner's Office based on GDPR compliances (Sc)

4. Standardization Activities

4.1. Overview of Standardization in the Project

This section provides an overview of standardization activities, introducing the role of standardization in the project and highlighting its importance in ensuring interoperability, compliance, and market adoption. It describes how standardization aligns project innovations with industry standards and references Task 6.4 and the project's contributions to relevant standardization bodies. Given the relevance of international standards to the AutoTRUST project's use cases, particularly those related to safety and security, the project aims to:

- Perform a deeper analysis of existing standards related to the use cases.
- Analyze the cross-relevance between technical developments, existing standards, and technical committees.
- Plan actions for disseminating developed content that might be relevant to standard developments.

In line with these objectives, this document outlines the methodologies and strategies the consortium plans to follow during the project to align the developed content with the standardization world. Deliverable D6.2 identifies and introduces the fundamental characteristics of a standard, the standardization bodies that regulate their application, and details the fundamental steps leading to the publication of a new standard at the international level. After this descriptive phase, the deliverable provides a preliminary list of relevant standards and the internal approach to considering standardization during technical development and planning dissemination to standardization bodies.

This document has dual target:

- To monitor the existing standardization landscape and receive updates on standards related to the project.
- To organize the approaches followed by the project to communicate any results produced by AutoTRUST that might affect the current standardization landscape to the standardization bodies.

In order to achieve the objectives above, the tasks have been set as follows:

1. Preparation of a list with the already existing standards, that are related to the innovation field of AutoTRUST.
2. Highlight the development in the project, which might affect the standard in the existing standardization landscape.

3. Investigating the possibility that the partner communicates directly or indirectly with the standardization bodies.
4. All the dissemination actions, undertaken by the partnership, towards the standardization bodies are evident and defined in order to support the achievement of the above point 2.

4.2. Relevant Standards and Standardization Bodies

The first part of the Table 4 represents the main European Standardization Bodies (CEN and CENELEC) while the second part represents the main World level Standardization bodies (ISO and IEC), which are connected locally to National Standardization Bodies.

Table 4 European and International Standardization Bodies

 European Committee for Standardization (CEN) - European Committee for Electrotechnical Standardization (CENELEC) www.cencenelec.eu	CEN and CENELEC are business catalysts in Europe, removing trade barriers for European industry and consumers. Their mission is to foster the European economy in global trading, the welfare of European citizens and the environment. Through their services they provide platforms for the development of European Standards and other technical specs.
 International Organization for Standardization (ISO) www.iso.org/home.html	ISO is an independent, non-governmental international organization with a membership of 165 national standards bodies. Through its members, it brings together experts to share knowledge and develop voluntary, consensus-based, market relevant International Standards that support innovation and provide solutions to global challenges.
 International Electrotechnical Commission (IEC) www.iec.ch/homepage	Founded in 1906, the IEC (International Electrotechnical Commission) is the world's leading organization for the preparation and publication of international standards for all electrical, electronic and related technologies. These are known collectively as "electrotechnology". The IEC is a global, not-for-profit membership organization that brings together more than 170 countries and coordinates the work of 20 000 experts globally

The complete list of Standardization Bodies counts 192 organizations from 154 countries (Figure 2). In the Table 5, only those corresponding to the member countries of which the partners of the AutoTRUST project are part have been collected, including key details such as country, acronym, name, type of standardizing body, and the year of acceptance of the WTO TBT Code.

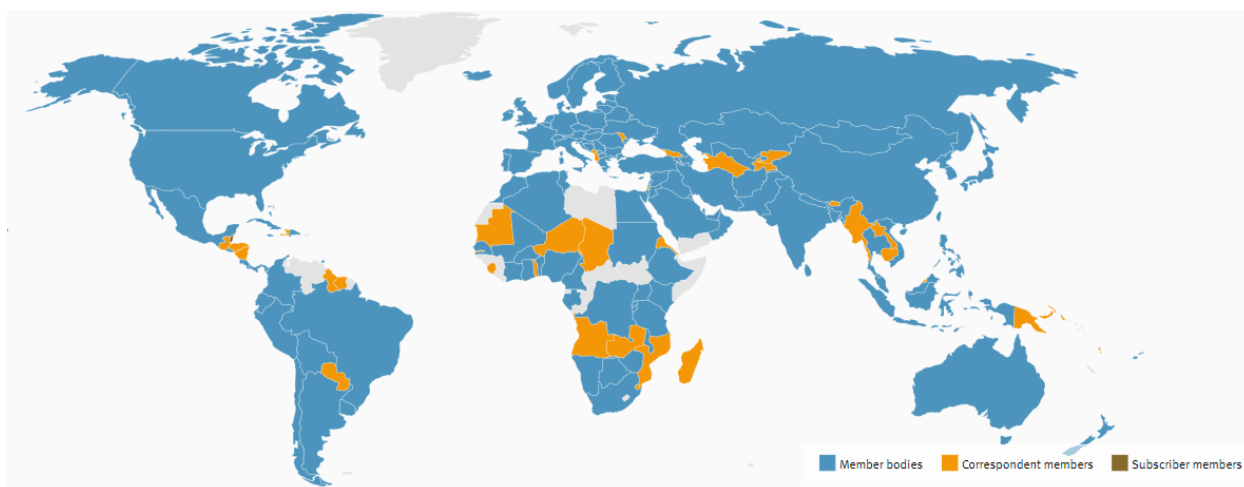


Figure 2 Geographic distribution of ISO Members¹

Table 5 List of main Standardization Bodies for the member countries involved in AutoTRUST project

COUNTRY/ TERRITORY	ACRONYM	TITLE	TYPE	YEAR
Cyprus	CYS	Cyprus Organization for Standardization	National	2009
France	AFNOR	Association Française de Normalisation	National	1995
Germany	DIN	Deutsches Institut für Normung e.V.	National	1995
Germany	DKE	Deutsche Kommission Elektrotechnik Elektronik und Informationstechnik in DIN und VDE	Non-governmental	2018

¹ <https://www.iso.org/members.html>

COUNTRY/ TERRITORY	ACRONYM	TITLE	TYPE	YEAR
Greece	ELOT	Hellenic Organization for Standardization	National	1997
Italy	CEI	Italian Electrotechnical Committee	Non-governmental	1995
Italy	UNI	Italian National Unification Body	National	1995
Norway	SN	Standards Norway (Standard Norge)	National	1995
Portugal	IPQ	Portuguese Institute for Quality	National	1995
Switzerland	SNV	Swiss Association for Standardization	National	1996
Switzerland	CES	Electrosuisse	Non-governmental	1995
USA	ANSI	American National Standards Institute	National	1995
Korea	KATS	Korean Agency for Technology and Standards	National	1997
Japan	JISC	Japanese Industrial Standards Committee	National	1995

Each EU member state follows the WTO Technical Barriers to Trade (TBT) Agreement, and the year of acceptance marks their formal adoption. These national bodies are responsible for developing, coordinating, and implementing national standards in alignment with international standards.

Another important aspect to consider is the role of World Trade Associations. While they do not play an institutional role, they collaborate closely with the standardization bodies listed in tables Table 4 and Table 5.

Table 6 World trade associations

BODIES	DETAILS
 5GAA (5G Automobile Association) https://5gaa.org/	5GAA is a global, cross-industry organization consisted from companies along the automotive, technology, and telecommunications industries, working together to develop end-to-end solutions for future mobility and transportation services. Created in September 2016, 5GAA a large member base, including 8 founding members: AUDI AG, BMW Group, Daimler AG, Ericsson, Huawei, Intel, Nokia, and Qualcomm Incorporated. Since its inception, 5GAA has rapidly expanded to include key players with a global footprint in the automotive, technology and telecommunications industries including automotive manufacturers, tier-1 suppliers, chipset/communication system providers, mobile operators and infrastructure vendors.
 AUTOSAR https://www.autosar.org/	AUTOSAR (AUTomotive Open System ARchitecture) is a worldwide development partnership of vehicle manufacturers, suppliers, service providers and companies from the automotive electronics, semiconductor and software industry and aims to develop the standardized software framework for intelligent mobility.
 OCA (Open Charge Alliance)	The Open Charge Alliance (OCA) is a global consortium of public and private electric vehicle infrastructure leaders that have come together to promote open standards through the adoption of the Open Charge Point Protocol (OCPP) and the Open Smart Charging Protocol (OSCP).
 ERTICO https://ertico.com/	ERTICO – ITS Europe is a public-private partnership of 120 companies and organisations representing service providers, suppliers, traffic and transport industry, research, public authorities, user organisations, mobile network operators, and vehicle manufacturers. Their work focuses on Connected & Automated Driving, Urban Mobility, Clean Mobility, and Transport & Logistics.
 ACEA Association of European Automotive Manufacturers	ACEA represents Europe's car, van, truck and bus manufacturers, and works with a variety of institutional, non-governmental, research and civil society partners - as well as with a number of industry associations to ensure the economic environmental and social sustainability of the automobile industry. https://pr.euractiv.com/company/acea-europeanautomobilemanufacturersassociation-9872

BODIES	DETAILS
 Euro NCAP	Euro NCAP has created the five-star safety rating system to help consumers, their families and businesses compare vehicles more easily and to help them identify the safest choice for their needs. The safety rating is determined from a series of vehicle tests, designed and carried out by Euro NCAP. https://www.euroncap.com/en
 European Road Transport Research Advisory Council (ERTRAC) https://www.ertrac.org/	ERTRAC is the European Road Transport Research Advisory Council. It is the European technology platform which brings together road transport stakeholders to develop a common vision for road transport research in Europe. Their mission is to provide a framework for coordinated efforts of research activities on development of sustainable, integrated transport solutions. The ERTRAC Strategic Research Agenda is implemented through research roadmaps, which presents topics for research, development, and the deployment of innovation. Organization Participants: R&D, EUCAR OEM's, Automotive suppliers, Energy and Fuel suppliers, Road Infrastructures, Public Authorities, Users, Service Providers, ITS.
 https://www.etsi.org/	ETSI is a European Standards Organization (ESO). It is the recognized regional standards body dealing with telecommunications, broadcasting and other electronic communications networks and services. It supports European regulations and legislation through the creation of Harmonised European Standards. ETSI hosts a Technical Committee for Intelligent Transport Systems (TC ITS) that creates and maintains standards and specifications for the use of information and communications technologies in transport systems.
 EUCAR https://www.eucar.be	EUCAR is the European Council for Automotive R&D of the major European passenger car and commercial vehicle manufacturers. The European automobile manufacturers are the largest private investors in R&D in Europe with over €60.9 billion investment per annum. EUCAR members are BMW Group, CNH Industrial, DAF Trucks, FIAT Chrysler Automobiles, Ford of Europe, Honda R&D Europe, Hyundai Motor Europe, Jaguar Land Rover, PSA Group, Renault Group, Toyota Motor Europe, Volkswagen Group, Volvo Cars and Volvo Group. EUCAR is legally part of ACEA with independent decision-making for R&D.

4.3. Contributions to Standardization

The consortium will adhere to existing standards and potentially contribute to emerging standards in IEC & ISO committees. A thorough analysis of relevant standards will be performed in WP6. The following standards (Table 7) relevant to AutoTRUST have been identified at this stage.

Table 7 Standards relevant to AutoTRUST

Standard ID	Description	Domain
UL 4600	A safety standard governing self-driving cars	Safety
ISO 34502:2022	Guidelines for a scenario-based safety evaluation framework for automated driving systems (ADSs)	Testing & Validation
PAS 1880:2020	Guidelines for developing and assessing control systems for automated vehicles	Privacy & Security
ITS-G5	Road safety and traffic flow through instant short-range communication between vehicles, vehicles and the infrastructure and public transport	Connectivity
SAE J3197	Automated Driving System Data Logger	In-Vehicle, Data
ISO/TR 21959-2:2020	Human performance and state in the context of automated driving — Part 2: Considerations in designing experiments to investigate transition processes	Human Interaction
CEN/TC 226 'Road equipment'	Smart community road equipment	Map & positioning

The consortium will organize a public workshop, between the consortium partners and standardization bodies, in order to ensure that the standardization recommendations are investigated and together with their consultation a CEN-CENELEC Workshop Agreement on monitoring and processing system for autonomous vehicles will be submitted.

The development process of standards is well defined (e.g. ISO/IEC Directive – Part 12 and Part 23, CEN Regulations Part 24 and Part 35). The development process of standard usually follows six-steps, shown in Figure 3.



Figure 3 ISO Development Process⁶

- 1. Proposal Stage:** The first step in developing a standard is to confirm the need for it. A New Work Item Proposal (NWIP) is submitted for a vote by the members of the relevant Technical Committee (TC) or subcommittee (SC) to determine whether to include the work item in the program of work. At this stage, a project leader responsible for the work item is usually appointed.
- 2. Preparatory Stage:** Typically, a working group of experts, chaired by the project leader (convener), is established by the TC/SC to prepare a working draft. Successive drafts may be reviewed until the working group is satisfied with the technical solution. The draft is

² ISO/IEC Directive – Part 1 Procedures for the technical work

³ ISO/IEC Directive – Part 2 Principles and rules for structure and drafting of ISO and OEC documents

⁴ CEN/CENELEC Regulation – Part 2: Common Rules for Standards Work

⁵ CEN/CENELEC Regulation – Part 3: Principles and rules for the structure and drafting of CEN and CENELEC documents

⁶ <https://www.standards.org.au/>

then forwarded to the working group's parent committee for the consensus-building phase.

3. **Committee Stage:** Once the first committee draft is available, it is registered by the secretariat and distributed for comments. Successive drafts may be reviewed until consensus on the technical content is reached. Once consensus is achieved, the text is finalized for submission as a Draft International Standard (DIS).
4. **Enquiry Stage:** The DIS is circulated to all member bodies by the secretariat for voting and comments. If the approval criteria are not met, the text is returned to the originating TC/SC for further study and revision, and then recirculated for voting and comments.
5. **Approval Stage:** The final draft standard (FDIS) is circulated to all member bodies by the secretariat for a final vote. Technical comments received during this period are not considered at this stage but are registered for future revisions. If the approval criteria are not met, the standard is referred back to the originating TC/SC for reconsideration based on the technical reasons supporting the negative votes.
6. **Publication Stage:** Once the final draft of the standard is approved, only minor editorial changes, if necessary, are made to the final text. The final text is then sent to the secretariat for publication. The need for a new standard may arise from the lack of regulation for a new technology or when an existing technology is applied in a different field with unique requirements not covered by existing standards.

4.4. Standardization Strategy and Impact

The objective of the standardization strategy is to:

- Outline the approach for advancing the standardization of the project's innovations, including plans for engaging with standardization bodies and promoting the adoption of new standards.
- Discuss how standardization activities will impact the commercialization of project results and facilitate market adoption by ensuring compliance with industry standards.
- Provide a detailed strategy for future standardization activities, ensuring that innovations developed are in line with or help shape emerging standards. The impact on market adoption is also discussed, drawing on Task 6.4.

Standards are documents that set technical specifications for various products, materials, services, and processes. A standard is a document, established by consensus and approved by a recognized body, which provides common rules, guidelines, or characteristics for activities or

their results, aiming to achieve an optimal degree of order in a given context⁷. In this definition, a “recognized body” refers to the official National Standardization Body (NSB) of a country. The European standardization organizations are a group of NSBs, including the European Union member states and other countries that are part of the European single market. European standards are developed by teams of experts who possess specific knowledge of the sector or topic being addressed.

The work is developed in TCs. The experts who develop standards in these TCs are nominated by the NSBs and they represent their country at European level. NSBs are obliged to adopt European standards as national standards and to make them available in their country. They also have to withdraw any existing national standard that conflicts with the new European standard. Therefore, a given European standard becomes a national standard in all 34 member states (EU member states, European Free Trade Association (EFTA) countries, and future EU or EFTA countries). The main goal of the European standardization system is to unify all standards that apply within Europe⁸.

International standardization organizations also function as umbrella organizations. Each member is the foremost standards organization in its country, with only one member per country. The adoption of international standards at the national level by NSBs is voluntary, except when an international standard is adopted as a European standard, in which case it must also be adopted as a national standard. Additionally, a standard developed at the international level can be simultaneously adopted as a European standard through parallel voting procedures in accordance with the Vienna Agreement⁹. Such standards are automatically adopted by the NSBs. As with European standardization, national mirror committees decide whether to participate in international standardization work. These committees develop the national standpoint, send experts to represent this standpoint, and often lead project work by taking on the secretariat of the relevant international technical committee. The mirror committees also decide whether an international standard should be adopted as a national standard¹⁰.

There are four important aspects that cannot be overlooked when developing a new standard:

- Consensus: The standard is approved with the consensus of those who participate in the work.
- Democracy: All economic and social stakeholders may attend the meeting and make observations before approval.

⁷ EN 45020 *Standardisation and related activities - General vocabulary*

⁸ CEN/CENELEC *Internal Regulations Part 2 - Common rules for standardisation work (2017)*

⁹ *Agreement on technical co-operation between ISO and CEN (Vienna Agreement, 1991)*

¹⁰ ISO/IEC *Directives Part 1 - Procedures for the technical work (2019)*

- Transparency: The fundamental stages of the approval process are public, and the project is always available to interested parties.
- Voluntariness: Stakeholders adhere to the rule by choice, not by imposition.

A technical standard is an established norm or requirement for a repeatable technical task. It is usually a formal document that establishes uniform engineering or technical criteria, methods, processes, and practices. In contrast, a custom, convention, company product, or corporate standard that becomes generally accepted and dominant is often called a de facto standard. A technical standard may be developed privately or unilaterally, for example, by a corporation, regulatory body, or military. Standards can also be developed by groups such as trade unions and trade associations. Standards organizations often have more diverse input and usually develop voluntary standards, which might become mandatory if adopted by a government (through legislation), business contract, etc.

The standardization process may be by edict or may involve the formal consensus of technical experts. The main standardization bodies (ISO/IEC) originate from the international technical community, while the WTO ensures the adoption of ISO/IEC norms in all its member countries. Each country can adopt the standard as a technical norm or as a local law. Normally, the ratified norm can be stricter or equal to the original one. This is because if a specific country wants to make a less restrictive application of the norm, the product made according to this local law will not be accepted in other countries applying the full norm.

5. Market Analysis and Business Modelling

This section provides a comprehensive market analysis and business modelling strategy to assess the commercial potential of AutoTRUST's innovations. The analysis includes an examination of the current market landscape, identification of target markets and segments, competitor analysis, key trends, opportunities and challenges, a go-to-market strategy, and proposed business models with potential revenue streams.

5.1. Market Analysis and Market Problem Identification

5.1.1. Current Market Landscape

5.1.1.1. Market Size and Growth Projections

The market for Level 4 and Level 5 autonomous vehicles is poised for significant growth, driven by technological advancements, regulatory support, and increasing investments from automotive and technology companies. As of 2023, the global market for Level 4 and Level 5 autonomous vehicles is estimated to be in the nascent stage, with a market value of approximately \$2 billion¹¹. This includes revenues from vehicle sales, software, and services related to high and full automation.

Industry analysts project the market to reach \$14B by 2030, with a Compound Annual Growth Rate (CAGR) of 32% from 2023 to 2030. Some optimistic forecasts suggest the market could exceed \$60 billion if technological and regulatory hurdles are addressed effectively. North America is expected to lead the market due to significant R&D investments, early adoption of technology, and supportive regulatory frameworks. Europe is projected to have substantial growth, following a more evolutionary approach of introduction of vehicles with gradually increasing automation levels. Asia-Pacific countries like China, Japan, and South Korea are investing heavily in autonomous technologies, anticipating large-scale adoption, with China being the largest and fastest moving market in the region.

In terms of market segmentation, passenger vehicles constitute a significant share, especially with ride-sharing companies investing in autonomous fleets. On the other hand, the automated commercial vehicles market is growing due to the introduction of logistics and delivery services, where autonomous trucks and delivery bots are gaining traction.

¹¹ *Autonomous Vehicle Market Size, Share & COVID-19 Impact Analysis, By Level (L1, L2, & L3 and L4 & L5), By Vehicle Type (Passenger Cars and Commercial Vehicles), and Regional Forecast, 2023-2030*

Key factors contributing to this growth include:

- **Technological Advancements:** Improvements in machine learning algorithms, sensor accuracy, and data processing capabilities.
- **Regulatory Support:** Governments worldwide are developing regulations and frameworks to facilitate the deployment of AVs.
- **Consumer Demand:** Increasing consumer interest in safety, convenience, and mobility solutions.

Despite this growth, several challenges hinder the widespread adoption of autonomous driving technologies:

- **Safety and Reliability:** Ensuring the safety of autonomous vehicles in complex environments remains a significant hurdle.
- **Ethical and Legal Issues:** Liability in the event of accidents and ethical decision-making algorithms are ongoing concerns.
- **Regulatory Heterogeneity:** Differing regulations across countries and even states/provinces create complexities for deployment.

5.1.1.2. Objectives in Solving the Research Problem

With respect to the challenges of the widespread adoption of automated driving, the AutoTRUST project aims to:

1. **Enhance Inclusiveness:** Develop technologies that make autonomous mobility accessible to all user groups, particularly those with special mobility needs.
2. **Improve Personalization:** Create self-adaptive services that offer personalized experiences, increasing user satisfaction and acceptance.
3. **Ensure Safety and Resilience:** Implement robust safety frameworks and resilience mechanisms to build trust and comply with regulatory standards.
4. **Promote Standardization:** Contribute to the development of industry standards to facilitate interoperability and widespread adoption.

Solving the identified research problem is instrumental in shaping the overall business modeling process in the following ways:

1) Defining Clear Value Propositions

- **Inclusiveness as a Differentiator:** By focusing on underserved market segments, the project can position its offerings uniquely in the market.

- **Personalization and Adaptability:** Providing adaptive services enhances user engagement and loyalty, serving as a key selling point.

2) Target Market Segmentation

- **Underserved User Groups:** Identifying and targeting segments like the older adults and persons with disabilities opens new market opportunities.
- **Geographical Focus:** Tailoring solutions to regions with supportive regulatory environments maximizes market penetration.

3) Product Development Strategies

- **User-Centric Design:** Incorporating feedback from diverse user groups ensures that products meet actual needs.
- **Modular Components:** Developing standalone components allows for flexibility and scalability in deployment.

4) Revenue Model Innovation

- **Diverse Revenue Streams:** Combining licensing, subscription, and service-based models to cater to different customer preferences and enhance revenue potential.
- **Long-Term Partnerships:** Establishing relationships with OEMs, platform and service providers to ensure market access.

5) Market Positioning

- **Social Responsibility Messaging:** Highlighting the project's commitment to inclusiveness and safety resonates with socially conscious consumers.
- **Industry Consortia Participation:** Engaging in standardization efforts and industry groups fosters credibility and influence.

5.2. Target Markets and Segments

The project targets markets and segments where its innovative autonomous driving solutions can be effectively exploited. These markets are identified based on geographical regions, industry sectors, and customer demographics that align with the project's focus on safety, inclusiveness, and personalized mobility.

Geographically, the focus market for the project is Europe. To find a market entry, the developed solutions will be deployed in the use cases of the involved partners and the demonstrators will be used to attract customers in Switzerland, Germany, Greece, France, and Cyprus, etc.

Main customer base to target are:

- Automotive Manufacturers (OEMs), especially the manufacturers of autonomous shuttles and busses. The systems developed by OEMs can be enhanced by the developed technologies of individual partners or the overall system developed by AutoTRUST.
- Mobility Service Providers: Companies offering ride-sharing, car-sharing, and Mobility-as-a-Service (MaaS) can reduce operational costs and improve efficiency. Requirement: Reliable and adaptive autonomous systems that can cater to diverse user needs.
- Public Transportation Agencies: Municipalities and governments are interested in autonomous solutions to enhance public transportation, reduce congestion, and improve accessibility. AutoTRUST technologies can offer inclusive mobility options that serve all community members, including those with special needs.
- Logistics and Delivery Companies: Offering safe and reliable autonomous technologies for last-mile delivery. The goal is to offer safe and reliable autonomous systems that can operate in various environments.

5.3. Competitor Analysis

During the course of the project, a deep competitor analysis will be performed to understand the market needs, gaps and opportunities for the AutoTRUST offerings. An initial competitor analysis is provided below.

Since the AutoTRUST project is focusing on Europe, the current competitor analysis does not include deeper consideration of leading autonomous vehicle technology providers from the United States of America (USA) such as Waymo, Tesla, or Cruise or other competitors from Asia-Pacific region.

Main types of competitors are Automotive OEMs (e.g. Tesla, BMW, Mercedes, etc), Technology Companies (Bosch, Mobley, etc.), and AV startups (EasyMile, Navya, 2getthere).

Key Competitors in Europe:

- **NAVYA:** A French company specializing in autonomous shuttles and cabs for urban and private sites. Offers NAVYA Autonom Shuttle, designed for up to 15 passengers, suitable for urban and private site transportation and NAVYA Drive Kit, an autonomous driving system that can be integrated into other vehicles. One of the pioneers in deploying autonomous shuttles. Over 200 shuttles deployed in 25 countries with more than 500,000 passengers transported. The technology comprises proprietary software and hardware tailored for shuttle operations. The maturity of the technology is limited to pilot programs to mass deployment.

- **EasyMile:** A French company offering autonomous vehicle technology and smart mobility solutions. Products include EZ10 Shuttle: an electric, driverless shuttle capable of carrying up to 15 passengers. Over 300 vehicles are deployed in more than 30 countries. Focuses on safety with over 800,000 km driven without major incidents has collaborations with OEMs and technology companies like Continental. However, the deployment is limited to predefined routes and controlled environments. Less emphasis on personalization and adaptive services.
- **2getthere (ZF Group):** A Dutch company specializing in autonomous transport systems, part of ZF Group. Product is the Automated People Mover (APM), a driverless vehicle for urban environments and private sites, as well as Group Rapid Transit (GRT), an Autonomous shuttle with higher capacity for public transportation. Main expertise is in advanced navigation and control systems. Main limitation is the infrastructure requirements: Often requires dedicated lanes or tracks.

The identified competitors focus on different aspects of autonomous mobility and specific use cases. The overall technological maturity is still on a level of local deployments for pilot projects and dedicated sites. The AutoTRUST project can develop a competitive advantage by focusing on providing autonomous vehicle services tailored to different user groups and personalizing the mobility offerings to customer needs and specific application requirements.

5.4. Key Trends, Opportunities, and Challenges

5.4.1. Key Trends in the Autonomous Driving Market

1. **Advancements in Artificial Intelligence and Machine Learning:** Rapid developments in AI and machine learning algorithms are improving the ability of autonomous vehicles (AVs) to perceive their environment and make complex decisions in real-time. The integration of AI enables vehicles to learn from experiences and adapt to new situations, aligning with the AutoTRUST project's focus on self-adaptive services.
2. **5G Connectivity:** The rollout of 5G networks provides the high-speed, low-latency communication necessary for real-time data exchange in autonomous systems.
3. **Emphasis on Safety and Regulatory Compliance:** Regulatory bodies are enforcing strict safety requirements for AVs, prompting manufacturers to prioritize safety in design and operation.
4. **Focus on Inclusiveness and Accessibility:** Aging populations in Europe and other regions are increasing the demand for mobility solutions that cater to the older adults. Laws like

the European Accessibility Act mandate that products and services be accessible to people with disabilities.

5. **Public Transportation Integration:** Autonomous shuttles and buses are being incorporated into public transit systems as last-mile solutions.
6. **Standardization Efforts:** Organizations are working towards common standards to ensure interoperability and safety across different systems.

5.4.2. Opportunities for AutoTRUST

1. **Targeting Underserved Demographics:** By focusing on the mobility needs of older adults and persons with disabilities, AutoTRUST can tap into a market segment that is often overlooked by competitors.
2. **Complying with Accessibility Regulations:** Offering solutions that meet or exceed legal accessibility requirements provides a competitive edge and opens up opportunities for government contracts.
3. **Improving robustness and availability:** by including superior surround sensors and advanced AI-driven perception systems.
4. **Policy Alignment:** Being proactive in meeting regulatory standards facilitates smoother market entry and builds credibility with stakeholders.
5. **Strategic Alliances:** Partnering with local governments and transportation agencies can facilitate pilot projects and deployments.
6. **Industry Consortia Participation:** Joining industry groups can enhance visibility and influence in shaping future regulations and standards.
7. **Global Expansion:** While focusing on Europe initially, there is potential to expand into other regions with similar needs and regulatory environments.

5.4.3. Challenges Facing the AutoTRUST Project

1. **Technological Complexity:** Achieving reliability in a complex technology like automated driving and ensuring that self-adaptive autonomous systems operate reliably in diverse and unpredictable environments is technically challenging.
2. **Integration Difficulties:** Combining multiple advanced technologies (AI, sensors, connectivity) requires significant expertise and resources.
3. **Cross-Border Differences:** Variations in regulations across European countries complicate market entry strategies.

4. **Competitive Pressure:** Competing with well-funded and recognized companies that may quickly adopt similar features.
5. **User Acceptance:** Convincing users to trust and adopt autonomous technologies requires addressing psychological barriers.

5.5. Go-to-Market Strategy

The Go-to-Market (GTM) strategy for the AutoTRUST project outlines the plan for bringing the project's autonomous driving solutions to the market effectively. This strategy encompasses product positioning, pricing, distribution channels, partnerships, and promotional activities to gain traction in the targeted markets and segments.

5.5.1. Commercialization Strategy

5.5.1.1. *Product positioning and brand messaging:*

- **Inclusiveness and Accessibility:** Positioning AutoTRUST's solutions as the premier choice for inclusive and accessible autonomous driving technologies that cater to the needs of the older adults, persons with disabilities, and the general population seeking personalized mobility.
- **Safety and Trustworthiness:** Emphasizing the advanced safety features and compliance with stringent European regulations to build consumer trust.
- **Personalization and Adaptability:** Highlighting the self-adaptive services that offer personalized experiences, setting AutoTRUST apart from competitors.
- **Social Responsibility:** Communicating the project's commitment to enhancing societal well-being through accessible transportation.

5.5.1.2. *Pricing Strategy*

- **Value-Based Pricing:** Setting prices based on the unique value provided by the inclusiveness and personalization features, justifying a premium over standard autonomous solutions.
- **Licensing Fees:** Charging OEMs and partners for integrating AutoTRUST components into their vehicles.
- **Subscription Models:** Offering software-as-a-service (SaaS) options for continuous updates and support.

- Per-Use Fees: Implementing usage-based pricing for services like autonomous shuttles, making it affordable and scalable.

5.5.1.3. Distribution Channels

- Partnerships and Alliances: Collaborating with vehicle manufacturers to integrate AutoTRUST technologies into new models, especially for the OEMs targeting the public transport market segment.
- Directly selling to automotive manufacturers, mobility service providers, and public transportation agencies.
- System Integrators: Working with technology integrators who can incorporate AutoTRUST components into existing systems.
- Municipal Partnerships: Working with city governments to pilot and deploy autonomous shuttles and other services in urban environments.

5.5.1.4. Initial Launch and Promotion Strategy

- Pilot Projects: Demonstrate the feasibility and benefits of AutoTRUST solutions in real-world settings. Implement pilot programs in select European cities with supportive regulatory environments, focusing on autonomous shuttles and adaptive services. Involve local communities, authorities, and media to build awareness and gather feedback.
- Scaling Operations: Gradually extend services to additional cities and regions based on pilot success. Adapt solutions to meet local regulations, cultural preferences, and infrastructure conditions.
- Exhibitions: Participate in automotive and technology trade shows to showcase products and network with potential clients. Present at conferences on topics related to autonomous driving, inclusiveness, and smart mobility.

5.5.1.5. Sales Strategy

- Targeted Outreach: Identify and approach potential clients in prioritized segments, such as OEMs and public transportation agencies
- Focus on solving specific problems for clients, highlighting ROI and long-term benefits. Analyze pilot results and refine offerings based on feedback.
- Case Studies and Testimonials: Use success stories from pilot projects to demonstrate effectiveness and build trust.

5.5.1.6. *Monitoring and Evaluation*

- Key Performance Indicators (KPIs): Track the adoption of AutoTRUST solutions in target markets. Monitor financial performance against projections. Use surveys and feedback to assess satisfaction levels. Evaluate the success of collaborations and their contributions to objectives.
- Quarterly Assessments: Review progress and adjust strategies as necessary.
- Annual Strategy Updates: Revisit the GTM strategy annually to align with market changes and organizational goals.

5.6. Business Models and Revenue Streams

Proposes business models for the commercial exploitation of project results, describing potential revenue streams and profitability projections. Details the business models designed for the project's key results. Each model links to the target market segments identified, focusing on value propositions, customer segments, and revenue streams.

5.6.1. Economic potential – Revenue streams

AutoTRUST project exploitation strategy includes market possibilities analysis and target end users' identification as well as business models development for to-be-commercialized project outcomes covering potential revenue streams identification.

5.6.2. Economic potential – Business models

AutoTRUST project relies on a complex product concept, and within each of its parts a series of components is developed. For the purpose of project product exploitation, the components can be viewed as separate products. AutoTRUST exploitation planning and business models follow this approach thus referencing to each of the components developed as a separate standalone product.

6. Intellectual Property (IP) Management

This section focuses on defining the measures and methodologies for the management of the Intellectual Property Rights (IPR), to ensure the adequate exploitation of project outcomes. Additionally, AutoTRUST will establish a Commercial Interest Advisory Group (CIAG), which includes stakeholders who will advise the consortium on commercial initiatives. A dedicated webinar with CIAG members will be organized to provide the AutoTRUST consortium partners with valuable feedback. For the protection of results, AutoTRUST recognizes the most common routes, including trademarks, patents, copyrights, licenses, and confidential information. It also maintains a living IPR repository to track the results and their corresponding owners. Regarding the IPR management process, this document presents the identification of background, side ground, and foreground (results), along with the corresponding licenses for each developed component.

6.1. Overview of IP Strategy

To execute the project tasks, partners plan to develop and share know-how and innovations in various forms, including methodologies, algorithms, software, prototypes, guidelines, and experiences. In certain cases, background knowledge will also be utilized. It is crucial to note that partners have agreed on principles for managing intellectual property to ensure that measures adopted to maximize impact are not hindered by any party.

The AutoTRUST project is committed to providing open access to new research data resulting from the project, addressing one of H2020's main objectives. The consortium follows the open access publication model and uses open access repositories connected to the tools suggested by the EU Commission. The intention is to provide open access to data generated by the project following the FAIR (Findable, Accessible, Interoperable, Reusable) principle.

Therefore, the AutoTRUST Consortium will openly make available the content and data produced within the project where possible, according to the provisions of Article 29.1 of the Grant Agreement. All partners are encouraged to share their knowledge to improve the quality of AutoTRUST work. Most of this sharing will be unproblematic, but sometimes the knowledge may represent significant value for the owner, and in these cases, IP ownership issues need to be considered. Ownership can be established as one of the following types:

- **Background knowledge:** Brought into the project from other activities and already registered in the Consortium Agreement (CA). The owners of the IP are registered along with the IP. It is advisable to register background knowledge before disclosing it to anyone

in the project. Registration can be denied if ownership is unclear or if the knowledge is not necessary for the project. Background knowledge that is already part of the public domain should not be registered.

- **Results (or foreground):** Produced in the project, either alone or in cooperation with other partners. Generally, partners who contributed to the development will have joint ownership of the IP.

6.2. IP Ownership and Protection

With potential commercialization as one of the goals, the consortium plans to take special care regarding IPR, confidentiality requirements, and other legitimate interests of the partners, third parties, and associates or clients. Consequently, anyone promoting dissemination or exploitation activities will proactively assess whether these actions might jeopardize the integrity of any of these aspects.

The consortium plans to regulate the obligations and rights of the participants through the Grant Agreement (GA), explicitly addressing important administrative points. These include decision-making procedures within the project, risk management strategies, legal aspects concerning the algorithms/software used or produced in the project, and the trademarks, patents, or rights of each partner in the exploitation of results. Furthermore, the GA outlines all administrative procedures, establishing access rights to pre-existing know-how, knowledge, dissemination rules, and IPR. Legally binding documents, including the GA and agreed-upon plans for knowledge use and exploitation, will reduce the potential for conflict within the consortium and will be tailored to the specific needs of the participating entities.

The development of new software suites, protocols, or methodologies may necessitate the use of pre-existing knowledge, software modules, or resources (background). These assets will remain the property of the respective participant both during and after the project's execution. When dealing with sensitive information related to participants or their connections, the consortium will aim to include it only in an aggregated, generalized, and abstracted form that respects the needs of participants and clients.

The purpose of the CIAG group is to add value to the AutoTRUST project. The CIAG only advises and has no authority in the final decisions of the AutoTRUST project. The purpose of the CIAG can be summarized as follows:

- **Advice:** The CIAG assesses specific areas of the AutoTRUST project, such as guiding the commercial proposition and properly positioning the AutoTRUST solution in the market.

- **Review:** The CIAG reviews the provided documents for the commercial exploitation of AutoTRUST.
- **Assist:** The CIAG provides expert assistance to AutoTRUST's members at different stages of the project, such as in prototyping or commercial issues.
- **Advocate:** The CIAG contributes to the promotion of AutoTRUST's solutions by providing industrial insights.
- **Dissemination:** The CIAG provides an effective channel for relevant information and networks.

6.3. Exploitation of IP

When foreground is suitable for industrial or commercial application, as anticipated by the exploitation strategy (even if it requires further research, development, and/or private investment), it will be protected appropriately and effectively in accordance with relevant legal provisions. This protection will consider the legitimate interests of all participants, particularly their commercial interests.

The development of various tools and technologies within the AutoTRUST project necessitates collaboration among partners for defining requirements, development, testing, validation, pilot phases, exploitation phases, and dissemination to external parties. Given that the creation of these tools and technologies requires active collaboration among multiple partners, the consortium plans to hold discussions whenever issues regarding the ownership of project products arise.

The licensing considerations mainly focus on open-source licenses. A key aspect of components developed within AutoTRUST is their easy integration into existing solutions already used by the targeted end users, making permissive open-source licenses a suitable model.

Partners might decide on various licensing models within their revenue streams. Listed below are some interesting examples identified during the analysis of possible licensing models for AutoTRUST components:

- **Apache 2.0:** The Apache License is a permissive free software license written by the Apache Software Foundation (ASF). It allows users to use the software for any purpose, distribute it, modify it, and distribute modified versions of the software under the terms of the license, without concern for royalties.
- **MIT:** The Massachusetts Institute of Technology (MIT) License is a permissive free software license originating at MIT. It imposes very limited restrictions on reuse and has high license compatibility. The MIT License is compatible with many copyleft licenses,

such as the GNU General Public License (GNU GPL). Any software licensed under the terms of the MIT License can be integrated with software licensed under the terms of the GNU GPL. It also permits reuse within proprietary software, provided that all copies of the software or its substantial portions include a copy of the terms of the MIT License and a copyright notice.

- **GNU GPL 3.0:** The GNU General Public License (GNU GPL or simply GPL) is a series of widely used free software licenses that guarantee end users the freedom to run, study, share, and modify the software. It was originally written by the founder of the Free Software Foundation (FSF). The license grants the recipients of a computer program the rights defined by the Free Software Definition.

All the above-mentioned licensing models are open-source licenses enabling broad use of licensed products. Nonetheless, some partners might also want to consider proprietary licenses.

6.3.1. Protection of results

There are a number of routes available to AutoTRUST partners to protect the Intellectual Property they have generated on the project. The most relevant to AutoTRUST are trademark, patent, copyright, license and confidential information.

Trade Mark: A trade mark is an exclusive right over the use of a sign in relation to the goods and services for which it is registered. Trade marks consist of signs capable of distinguishing the products (either goods or services) of a trader from those of others. Such signs include: words, personal names, logos, letters, numbers, colours, shapes/packaging, sounds. The main function of a trade mark is to identify the commercial origin of a product. Trade marks also convey a message about the quality of a product, therefore facilitating consumers' choice. Furthermore, they are used for advertisement purposes and can function as an investment instrument (e.g., they can be assigned, licensed, etc.). Trade mark registration can be performed at three different levels - national, regional and international. The best route usually depends on the applicant's target markets, business and financial capabilities, as well as commercial expectations. The exclusive right conferred by a trade mark allows its owner to prevent others from using the same or similar signs for identical or related goods and/or services as those protected by the trade mark in the course of trade, without the owner's prior permission. EUIPO¹² is the European Union Intellectual Property Office responsible for managing the EU trade mark and the registered Community design.

¹² <https://euipo.europa.eu/ohimportal/en/home>

Patent: A patent is an exclusive right granted for the protection of inventions (products or processes) offering a new technical solution or facilitating a new way of doing something. The patent holder enjoys the exclusive right to prevent third parties from commercially exploiting their invention for a limited period of time. In return, the patent holder must disclose the invention to the public in the patent application. Patent registration can be performed at three different levels: national, regional, and international (through the Patent Cooperation Treaty (PCT) System¹³). The best route usually depends on the territories where a company intends to exploit the patent. A European patent can be obtained for all the European Patent Convention (EPC) contracting states by filing a single application, under a single set of fees with the European Patent Office (EPO)¹⁴. The exclusive right conferred by a patent allows its owner to prevent others from making, using, offering for sale, selling or importing a product or a process based on the patented invention, without the owner's prior permission.

Copyright: Copyright (or author's right) is the term used to describe the rights that creators have over their literary, scientific, and artistic works. There is not an exhaustive list containing the works that can be protected by copyright. However, there is a number of works usually covered by copyright at international level (the examples most relevant to AutoTRUST are highlighted in bold):

- literary works such as novels, poems, plays, newspaper articles;
- computer programs, databases;
- films, musical compositions, and choreographies;
- artistic works such as paintings, drawings, photographs,
- and sculptures;
- architecture;
- advertisements, maps, and technical drawings.

In the EU, copyright protection is obtained automatically from the moment when the work is created and no registration or other formality is required. However, some countries allow for the voluntary registration/deposit of works protected by copyright. Therefore, registration is not constitutive of the right but can be useful in some situations (e.g., to solve disputes over ownership or creation, to facilitate financial transactions).

License: For a license to be valid it must be granted by the owner of the work's IPR. Under the policies of most research institutions and commercial companies, developers who have created a piece of software are unlikely to own full rights to their works. Instead, the organization

¹³ <https://www.wipo.int/pct/en/faqs/faqs.html>

¹⁴ <https://www.epo.org/>

generally holds or shares legal right to developed software. Policies on IPR ownership vary, but in most cases the organization will be the legal rights owner and will be the entity that grants the license chosen for the produced software. Colloquially speaking, the spectrum of software licensing strategies can be divided into three categories: "free and open source", "proprietary" or a hybrid of the two.

- Free and Open Source Software (FOSS) Licensing: FOSS represents a fundamentally different approach from the proprietary software licensing. The primary intent of FOSS is to give the licensor the ability to maximize the output of their software by breaching barriers to software use, dissemination, and follow-on innovation. There is a variety of FOSS license types with small but significant changes, but all grant free (as in freedom), open, and non- discriminatory access and rights to modify licensed software and associated source code. A common misconception is that FOSS is synonymous with "non-commercial." In fact, as described by the two most influential definitions of FOSS, "non-discriminatory" means that no category of user or distributor can be prohibited, including for-profit commercial entities. Due to this, FOSS-licensed software can be, and often is commercially exploited. Due to the simplicity of the FOSS licenses and their non-discriminatory nature, they offer continued development and collaboration when researchers switch organizations, and when they collaborate across organizations. FOSS can also help to extend the useful lifetime of a piece of software beyond the direct involvement of the creators.
- Proprietary Licensing: The main purpose of proprietary software licensing is to limit the use of software. As a result, proprietary licenses are often very restrictive for end-users because they are in line with the software owners' business strategy. They typically allow the user to interact with most of the software but in a restrictive manner. Other aspects of a proprietary license are to only allow use on a single computer, to forbid users from copying, redistributing, or altering the work, and specifically to prohibit the creation of derivatives using parts of the work. Importantly, programs under proprietary licenses are typically distributed only in binary form and forbid examination of the program code or reverse engineering of any part of the program.
- Hybrid Software Licensing: Some software developers find that their needs are not well met by using either proprietary or FOSS licensing models. In these cases, hybrid approaches-combining a FOSS license with a proprietary "closed" license-are sometimes used. Under this strategy, the rights owner chooses which license to apply on a case-by-case basis. When ownership and licensing rights are clear, these licensing schemes can maintain some of the benefits of FOSS while also permitting creators to employ multiple business models. The downside can be a significant added burden for the rights owner in

applying, administering, and enforcing multiple licenses. This has generally limited the adoption of hybrid license models to large and very specific software development initiatives.

Confidential Information: Confidentiality is an extremely important issue for participants in Horizon 2020 projects, from the setting-up (even during earliest discussions on the assessment of participation) to the implementation and exploitation phases. Exchanging valuable information with other partners is a necessity that regularly occurs in collaborative undertakings. However, it is worth noting that written or oral information given to a person who is not bound by secrecy or confidentiality obligations constitutes a disclosure. In such cases, disclosures could be detrimental to future filings for protection of project results. Thereafter, it is vital to keep information confidential, mainly with regard to those project results for which registration has not been done or decided yet. Moreover, secrecy may be key not to jeopardize the highly competitive value characterizing some information assets. Accordingly, confidentiality issues and measures should be seriously taken into consideration by AutoTRUST Consortium in order to safely exchange information, facilitating the project development and ensuring the non-disclosure of sensitive technology, business or commercial confidential information. In the following table (Table 8) we identify possible subject matters for protection within the project.

Table 8 Possible subject matters for protection within the project

Subject Matter	Trademark	Patent	Copyright	License	Confidential
Invention (e.g., device, process, method)		X			X
Software			X	X	X
Scientific article			X		
Design of product	X		X		
Name of a technology/product	X				
Know How		X			X
Website			X		

7. Conclusion

This Initial Exploitation Plan presents the initial activities performed for achieving successful exploitation of the project's results. It also analyzed the KERs, identified by the Consortium partners, the initial exploitation plan, and the initial business models developed in cooperation with the project partners.

The tools and technologies within the scope of different WPs and Tasks are still under development. Therefore, research and development work toward achieving the objectives/goals of the project are constantly evolving and taking good shape as the project activities move forward. Since AutoTRUST is in M6, factors such as the final version of the BMs, refined KERs, refined Exploitation plans, and the IPR management are still a work in progress, and are expected to be updated by M18 and completed by M36, which is when the project ends.

The goal is to take into account the feedback and information collected during events with stakeholders across several sectors and used them to finalize the development of final versions of BMs and Exploitation plans. Moreover, we also plan to develop a general Business Plan focusing on the following:

A comprehensive business strategy:

- A timely operation plan
- A well-organized action plan to be implemented by the project
- An estimation of time to market

The final report for the exploitation, innovation and standardization activities, that is D6.5, will be delivered by the end of the project. The goal is to have a comprehensive overview of the exploitation strategy to be enforced by that time and the next steps required after the finalization of AutoTRUST for the commercialization of its results.

Annexes

Annex A Partner contribution to standardisation activities

A.1. Introduction

The following clauses describe which project partners are active in which existing standardisation committees responsible for the development or maintenance of AutoTRUST relevant standards. In principle standardisation work can be divided into technical norms relevant for the AutoTRUST technologies and ergonomic related norms providing user requirements in the field of safety, User Experience and Accessibility.

A.2. Siemens AG

The Siemens Accessibility Competence Center (namely Klaus-Peter Wegge) is very active in the following standardisation committees since many years.

A.2.1. Germany DIN

A.2.1.1. DIN standardisation group NA023-00-02GA "Principles of accessible Design"

Chairman. Mirroring European and international accessibility related standards

A.2.1.2. DIN standardisation Group NA 176-06-03 AA "Communication and orientation aids for blind and visually impaired persons"

- revision of the German norm DIN 32974 "Acoustic signals in public areas - Requirements".
- DIN 13278:2022 "Smart mobility for persons with reduced mobility - Functional approaches"

A.2.2. Europe, CEN CENELEC ETSI

A.2.2.1. CEN/CLC/ETSI JTB eAcc "e-Accessibility"

Revision of EN 301 549 "Accessibility requirements for ICT products and services"

A.2.2.2. CEN/CLC/ETSI JTB eAcc "e-Accessibility" WG 1

- Revision CEN/CLC/ETSI TR 101 551 "Guidelines on the use of accessibility award criteria suitable for public procurement of ICT products and services in Europe"

- Revision CEN/CLC/ETSI TR 101 552 "Guidance for the application of conformity assessment to accessibility requirements for public procurement of ICT products and services in Europe"

A.2.2.3. CEN/CLC JTB 11 "Accessibility in the Built Environment"

Revision EN 17210 "Accessibility and usability of the built environment - Functional requirements"

A.2.2.4. CEN/CLC JTB 12 "Design for All" / WG1 "Revision of EN17161"

Revision of EN 17161:2019 "Design for All - Accessibility following a Design for All approach in products, goods and services - Extending the range of users"

A.2.2.5. CEN/CLC/JTB 12 "Design for All" / Ad hoc Group

- New European Norm "Requirements on the accessibility of non-digital information related to products"
- New European Norm "Accessibility of support services related to products and services" (help desks, call centres, technical support, relay services and training services for relay services)

A.2.2.6. CEN/TC 293/WG 12 "Accessibility"

EN 17999 "Accessible systems for living independently - Guidelines and Requirements"

A.2.2.7. CEN/BT/WG 213 "Strategic Advisory Group on Accessibility" (SAGA)

The mission of the SAGA is to explore the need for European standardization on accessibility and recommend ways to address these needs.

A.2.3. International

A.2.3.1. ISO/TC 159/WG 2 "Ergonomics for People with Special Requirements"

Development of ISO/TR 22411-2 "Guidance for use in the application of ISO/IEC Guide 71:2014 - Part 2: Ergonomic design considerations for Accessibility"

A.2.3.2. ISO/TC 159/SC 4/WG 5 "Interaction and presentation of information"

Revision of ISO 9241-171:2008 "Ergonomics of human-system interaction - Part 171: Guidance on software accessibility"

A.2.3.3. ISO/IEC JTC 1/SC 35/WG 6 "User interface accessibility"

ISO/IEC 20071-5:2022 "Information technology - User interface component accessibility - Accessible user interface for accessibility settings on information devices"

A.2.3.4. ISO/TC 173/SC 7 / WG 7 "User needs survey of assistive products for persons with impaired sensory functions"

ISO 6273 "Accessibility guidelines and requirements to survey the needs of persons with sensory disabilities for assistive products and services"

A.2.3.5. IEC/TC 59/WG 11 "Accessibility and usability of electrical and similar household appliances"

Revision of IEC 63008 "Household and similar electrical appliances - Accessibility of control elements, doors, lids, drawers and handles"

A.3. UNIGE

A.3.1. *Schweizerische Normen-Vereinigung and Organization for Standardisation*

UNIGE is tracking closely the evolving regulations and standards and is part of the International Organization for Standardisation working groups (ISO/TC22/SC32 and ISO/TC204) who are focusing on elaborating vehicular cybersecurity standards.

This is facilitated through the national standardisation body who is the Schweizerische Normen-Vereinigung (SNV) - <https://www.snv.ch/de/>.

A.3.2. *Swiss Association for Autonomous Mobility and Federal Roads Office (FEDRO)*

Through the Swiss Association for Autonomous Mobility (SAAM) - <https://www.saam.swiss/> - UNIGE participates in several working groups (notably the Ordinance-WG), acting as advisory for national initiatives in deploying CAVs in Switzerland. This further allows us to monitor the activities with the Federal Roads Office (FEDRO) and have direct interactions with key stakeholders.

Annex B Standards

Name	Organization	ID standardization group	Name standardization group	Type standard	ID Standard	Title	Remarks
Klaus Wegge	Siemens	DIN NA023-00-02GA	Principles of accessible Design	Accessibility	Chairman	Mirroring European and international accessibility related standards	Ongoing
Klaus Wegge	Siemens	DIN NA176-06-03AA	Communication and orientation aids for blind and visually impaired persons	Mobility	DIN 32974	Acoustic signals in public areas - Requirements	under revision
Klaus Wegge	Siemens	DIN NA176-06-03AA	Communication and orientation aids for blind and visually impaired persons	Mobility	DIN 13278:2020	Smart mobility for persons with reduced mobility - Functional approaches	under revision
Klaus Wegge	Siemens	CEN/CLC/ETSI JTB eAcc	e-Accessibility	ICT Accessibility	EN 301 549:2021	Accessibility requirements for ICT products and services	under revision
Klaus Wegge	Siemens	CEN/CLC/ETSI JTB eAcc	e-Accessibility WG1	Public procurement	TR 101 551:2014	Guidelines on the use of accessibility award criteria	under revision

Name	Organization	ID standardization group	Name standardization group	Type standard	ID Standard	Title	Remarks
						suitable for public procurement of ICT products and services in Europe	
Klaus Wegge	Siemens	CEN/CLC/ETSI JTB eAcc	e-Accessibility WG1	Conformity assessment	TR 101 552:2014	Guidance for the application of conformity assessment to accessibility requirements for public procurement of ICT products and services in Europe	under revision
Klaus Wegge	Siemens	CEN/CLC JTB 11	Accessibility in the Built Environment	Built environment	EN 17210	Accessibility and usability of the built environment - Functional requirements	under revision
Klaus Wegge	Siemens	CEN/CLC JTB 12	Design for All / WG1 (Revision of EN17161)	Design process for Accessibility	EN 17161:2019	Design for All - Accessibility following a Design for All	under revision

Name	Organization	ID standardization group	Name standardization group	Type standard	ID Standard	Title	Remarks
						approach in products, goods and services - Extending the range of users	
Klaus Wegge Klaus Wegge	Siemens	CEN/CLC JTB 12	Design for All / Ad hoc Group	Accessibility	EN.xxx	Requirements on the accessibility of non-digital information related to products	new work item
Klaus Wegge	Siemens	CEN/CLC JTB 12	Design for All / Ad hoc Group	Accessibility	EN.xxx	Accessibility of support services related to products and services (help desks, call centres, technical support, relay services and training services for relay services)	new work item
Klaus Wegge	Siemens	CEN/TC 293/WG 12	Accessibility	Accessibility	EN 17999:2024	Accessible systems for living independently -	under support

Name	Organization	ID standardization group	Name standardization group	Type standard	ID Standard	Title	Remarks
						Guidelines and Requirements	
Klaus Wegge	Siemens	CEN/BT/WG 213	Strategic Advisory Group on Accessibility (SAGA)	Strategy		Overall Accessibility Support for European standardisation organisations	accessibility strategy
Klaus Wegge	Siemens	ISO/TC 159/WG 2	Ergonomics for People with Special Requirements	Accessibility design consideration	ISO/TR 22411-2	Guidance for use in the application of ISO/IEC Guide 71:2014 - Part 2: Ergonomic design considerations for Accessibility	under revision
Klaus Wegge	Siemens	ISO/TC 159/SC 4/WG 5	Interaction and presentation of information	ICT Accessibility	ISO 9241-171:2008	Ergonomics of human-system interaction - Part 171: Guidance on software accessibility	under revision
Klaus Wegge	Siemens	ISO/IEC JTC 1/SC 35/WG 6	User interface accessibility	ICT Accessibility	ISO/IEC 20071-5:2022	Information technology - User interface component accessibility -	under support

Name	Organization	ID standardization group	Name standardization group	Type standard	ID Standard	Title	Remarks
						Accessible user interface for accessibility settings on information devices	
Klaus Wegge	Siemens	ISO/TC 173/SC 7/WG 7	User needs survey of assistive products for persons with impaired sensory functions	User research	ISO 6273:2024	Accessibility guidelines and requirements to survey the needs of persons with sensory disabilities for assistive products and services	under support
Klaus Wegge	Siemens	IEC/TC 59/WG 11	Accessibility and usability of electrical and similar household appliances	HW accessibility	IEC 63008:2018	Household and similar electrical appliances - Accessibility of control elements, doors, lids, drawers and handles	under revision