



Needs, wants and behaviour of “Drivers” and automated vehicles users today and into the future

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D8.9: Revision of D8.4 Exploitation Plans

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Abbreviations List

Abbreviation	Definition
AR	Augmented Reality
AV	Autonomous Vehicle
B2B	Business-to-Business
B2C	Business-to-Consumer
CAGR	Compound Annual Growth Rate
HMI	Human Machine Interface
ITS	Intelligent Transportation Systems
OEM	Original Equipment Manufacturers
PT	Public Transport
R&D	Research and Development ¹
SME	Small and Medium-Sized Enterprise
SORA	Specific Operations Risk Assessment
S/W	Software
TMC	Traffic Management Centre
UAS	Unmanned Aerial System
VR	Virtual Reality
WP	Work Package
WTP	Willingness To Pay

1. Introduction

1.1. Purpose of this document

Drive2theFuture project aims at both enhancing drivers' and commuters' acceptance, and promoting the use of connected, cooperative and automated transport modes, while assisting the automotive and communication industry to address people's needs and priorities. In order to achieve these results, a series of initiatives, technologies and training programmes have been defined, developed and tested. In this document, a business framework is being proposed for the commercial exploitation of the Drive2theFuture products. The exploitable outcomes consist of both training programmes and software tools, since the target audience comprises of professional drivers (taxi and truck), users of public transport, driving instructors, rail, automated ship and drone operators and typical drivers and road users. Upon the initial issuing of the exploitation plans in D8.4 (on M18), updated plans are presented in the current Deliverable.

1.2. Intended audience

This Deliverable is public; thus, it addresses, apart from the Drive2theFuture Consortium members and Commission services, all interested stakeholders and the general public. It provides information to all interested parties on the exploitable products of the project and the plans for their subsequent commercialisation after the project finalisation.

1.3. Interrelations

As the Drive2theFuture exploitable results derive from different project Activities, the work of A8.4 – thus also the contents of this Deliverable, relate to several other Activities, such as A2.3: Simulation platform suite creation and scenarios realization, A2.4: Behavioural models, A2.5: Sentiment analysis on social media, A3.6: HMI development , A4.2: VR/AR and multimedia training and awareness tools, A4.3: Training programmes per user cluster and sentiment analysis.

2. Exploitation plans of Drive2theFuture project

2.1. Exploitation strategy

A preliminary list of the exploitable products of the project has been constructed already in the proposal phase. This has been further defined in D8.4 (M18) and updated in the current version. The final table with the exploitation outcomes of the project can be found below (Table 1). The number of exploitable products remains the same, however one of the original ones “AV driver behavioural model” has been removed as it is not going to be an exploitable product as such, but rather open to public, accessible at no cost. At the same time, an additional product has emerged through the project work, “HMI development and test for Advanced Riding Assistance Systems”, which is included and described in the current deliverable.

Table 1: Drive2theFuture Exploitation outcomes

No	Exploitation Outcome	Type	Exploitation type	Relevant Deliverable	Lead/Involved Partners	Time to market after project end
1	AV acceptance simulation platform and tools	S/W platform & tools	PI/B2B	D2.1/ D2.4	NTUA	Immediately after
2	Sentiment analysis and social media	S/W tool	B2B	D2.2	INF	12 months
3	HMI development toolkit for AVs	S/W platform & tools	B2B	D3.2	FhG/IAO	6 months
4	Traffic management services	Services know how	B2B	D6.2	SWM	24 months
5	Multimedia training s/w for AVs	S/W for PC environment	B2B/B2C	D4.1 (part) D4.2 (part)	CERTH/HIT - VTI	12 months
6	AV Training programme for PT professionals	Training package of services	B2C	D4.2 (part)	UITP	6 months
7	AV Training programme for truck and taxi drivers	Training package of services	B2B	D4.2 (part)	IRU	6 months
8	AV Training programme for driving instructors	Training package of services	B2B/B2C	D4.2 (part)	IAM	3 months
9	AV Training programme for rail operators and signallers	Training package of services	B2B	D4.2 (part)	VTI, EURNEX, TUB	3 months
10	AV Training programme for automated ship operators	Training package of services	B2B/B2C	D4.2 (part)	TUCO	Immediately after

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No	Exploitation Outcome	Type	Exploitation type	Relevant Deliverable	Lead/Involved Partners	Time to market after project end
11	AV Training programme for drone operators	Training package of services	B2B	D4.2 (part)	DBL	Immediately after
12	HMI development and test for Advanced Riding Assistance Systems	Training package of services	B2B	D4.2 (part)	PIAGGIO & C. SpA	Less than 1 year

The platforms and training programmes developed during the project, aiming at familiarizing users with AVs and AV functions. This framed into four exploitation schemes, as they were described and used at the SKILLFUL¹ project deliverable D6.4 “Dissemination activities and Exploitation Plans” (Table 2).

Table 2: Exploitation schemes

Exploitation Scheme	Description
I. Public (P)	Public courses that are open to the public (and free).
II. Private Internal (PI)	Courses for training the personnel of the Organisation that developed the course.
III. Private – Sales B2C	<ul style="list-style-type: none"> The developer of the course will sell training hours of vocational training. The training will be provided by members of the owner organisation (course developer).
IV. Private – Sales B2B	The developer of the course will sell the content of its course to other centres/organisations/Universities or offer it with some fee for specific period of time (i.e. per year).

The exploitation plan consists of the business model, the business cases, and the market study (market potential and risks). A relevant template has been designed and distributed to the related partners, in order to collect specific information on each of the exploitable products.

The template includes the following sections:

- WP/Activity/Pilot: Indication of the WP, the Activity(-ies) and/or Pilots to which this product is linked or derives from
- Partner: the name of the Beneficiary(-ies) involved in the development and/or exploitation of each product
- Exploitable outcome: the name of the product
- Type of product: indication of the nature of the product, (i.e., whether it is a software or a service, if its and new product or an extension of an existing one, etc.)
- Short description of the product: A brief, textual description (approx. 2 paragraphs) of the product, highlighting its main features.
- Background as know-how: Indication of the background of the developer, the existing know-how and previous relevant products
- Estimated price (€): An estimation of the expected market price of the product
- Estimated time to market: An estimation of the time (after the project end) when the product is

¹ <https://skillfulproject.eu/>

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expected to be available in the market

- Type of exploitation (only for training services): According to table 2 exploitation schemes
- Exploitation route: Description of foreseen cooperation and/or partnerships, either with Consortium members or beyond regarding the production/development and/or selling of the product/service
- Business proposition: Indication of the industry in which the product will be used and how it will be integrated in it
- Market Potential: Description of the existing market addressed by the product, indication of the need that the product is expected to cover and description of the competition in the area
- Market Risks: Indication of the possible obstacles to be confronted and the issues that could negatively affect the implementation and introduction of the product.

This Template can be found in Annex I. Overall, the exploitation outcomes have been initially refined by each corresponding partner in D8.4, and updated in the current Deliverable, upon the finalization of the project work. The descriptions of these products are included in the following section.

2.2. Description of exploitable products

2.2.1. AV acceptance simulation platform and tools

2.2.1.1. Introduction – Description of the product

The Department of Transportation Planning and Engineering of the School of Civil Engineers of NTUA, is one of the leading institutions in Greece conducting transportation research with emphasis on traffic & safety analysis and forecasting, ITS, socio-economic impacts. Within Activity A2.3, a detailed stepwise methodology was created to model the acceptance of autonomous vehicles driving and assess its impacts which will be leveraged by stakeholders or researchers to study and evaluate the new technology and its components and systems. This methodological framework consists of six sequential steps: conceptual design, data collection, data processing and mining, data driven modelling, traffic simulation and impact assessment. This methodology is inclusive and flexible as it can be used for addressing any research question and deal with any data type requirements.

Based on the proposed methodology a generic and conceptual simulation platform was integrated as a UML Class Diagram, within Activity A2.3, consisting of 5 main components described below. All these components and their individual features are explained while their interrelations are also illustrated and described.

1. Data collection: includes all the possible sources and ways (vehicle sensors, questionnaires, surveys, social media, etc.) data is collected concerning autonomous vehicles, their behaviour and reaction as well as public acceptance and people's perception towards automation services and functions with or without having an experience with such an intelligent vehicle.
2. Use cases: various use cases are formulated for all transportation sectors, pilots and road users (drivers/riders, passengers, vulnerable road users) for identifying factors increasing public acceptance under different (non) emergency situations, interaction with other road users and for different types of developed HMIs.
3. Data driven models: data collected from automated vehicles (real or in VR) have been analysed using data driven algorithms in order to train and validate the microscopic model that governed the behaviour of the automated vehicles in the simulation. Within Activity A2.3 two microscopic models were developed and tested. The first one deals with the interaction between the vehicle and its surrounding traffic using real human driving data. For the second model data from the RO2 pilot was used for modelling the interaction between an automated vehicle and a pedestrian standing on the curb aiming to cross the road.
4. Simulation platform: the simulation platform includes the scenario generation tool and the simulation software and analysis. The scenario generation tool is basically a combination of vehicle types, penetration rates of automated vehicles in the simulated network, the driving styles (aggressive,

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normal, conservative, etc.) and the respective driving model parameters. The simulation software and analysis can be distinguished into 4 different categories: macroscopic, mesoscopic, microscopic and agent-based. Within the framework, SUMO simulation tool was proposed, an open source tool, with various and advanced features and capabilities.

5. Impact assessment: impact of automated vehicles on various critical areas, i.e. safety, personal mobility, vehicle operations, public transportation, traffic efficiency and environment, is estimated. The magnitude of the impact is estimated through the values the Key Performance Indicators take, once the simulation is executed. A wide range of KPIs have been proposed within Activity A2.3

The simulation platform and the tools are a new service, NTUA will offer, since the tools that were used so far ignored human and vehicle behaviours.

2.2.1.2. *Estimated price and time to the market*

The simulation platform cannot have a price, since it will not be sold directly, but it will be used to provide services to the Industry. Its exploitation may start immediately after the end of the project and be used by the market industry and the scientific community.

1.1.1.1. *Type of exploitation – exploitation route*

Based on what has been stated in the previous paragraph and according to Table 2, the type of exploitation for NTUA's service is primarily *Private Internal*. However, NTUA has heavily cooperated with Consortium partners for the development of the simulation platform and its tools. FZI assisted in the data collection and processing from its pilot and provided NTUA with the relevant data for the training and validation of the model for describing the behaviour of an automated vehicle and a pedestrian. TUM, due to its expertise, provided NTUA with all the necessary information about the scenario generation tool. Additionally, the simulation platform and its components were presented by NTUA at various European and international conferences, in order to invite more potential users and therefore enabling future project synergies with other academic and research organizations as well as industries. This research synergies will support the further development of the simulation platform and its components after the project end. The proposed integrated simulation platform as a UML Class Diagram depicts the whole process from data collection to data driven modelling and impact assessment, includes all the necessary steps and described their individual components and their interrelations and paths from one step to the other. It can be adopted to any research purpose, transportation mode and simulation tools available. NTUA will continue carrying research especially on enhancing the modelling part and develop improved and more advanced data driven models describing the behaviour of an automated/ autonomous vehicle. These models will be integrated in the SUMO simulation tool for impact assessment. This continuous and advanced research will lead to PhD and Post-doctoral theses, as well as to many and high-quality scientific publications and presentations in journals and conferences for presenting the importance of such a tool and its reinforced capabilities. All these aspects will increase the scientific impact and contribution towards the modelling and impact assessment of automated vehicles and enable knowledge transferability within the scientific community and the industry. Finally, consultation services will be built in a B2B manner, based upon this s/w platform. Their price will depend upon the extent of its relevant "turnkey" project.

1.1.1.1. *Business proposition and Market potential*

The platform and the tools that have been developed as a service, will be used within project synergies between NTUA and the industry. The existing market has place for new solutions concerning the acceptance of AVs by the users, while research organisations and industry need a platform to test these new solutions. Moreover, there is also a need to integrate similar platforms to traffic management solutions. The global traffic management market size is expected to grow from 26.29 bn € in 2019 to 49.74bn € by 2024, at a Compound Annual Growth Rate (CAGR) of 13.6%². The possible market risks concern platform's lack of extensive tests in various settings and recurrent conditions. For a market implementation, an extensive sensitivity analysis and evaluation would be required.

² <https://www.marketsandmarkets.com/Market-Reports/traffic-management-market-1036.html>

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1.1.2. Sentiment analysis and social media

1.1.2.1. Introduction – Description of the product

INFILI will use their software for sentiment analysis over social media to estimate the acceptance of autonomous mobility solutions. INFILI is a research-intensive SME. The company's main competences are focused on machine learning algorithms. As a company they have developed in the past similar deep learning algorithms and have worked extensively in the digestion of information from data intensive applications in order to extract additional semantic information. Their system is composed by scrapers of social media channels, mechanisms for collecting and pre-processing the mined textual information, as well as sentiment analysis tools over text. The system is able to run continuously, mine relevant social media content, analyse it and identify patterns, fears, and overarching sentiments relevant to the acceptance of autonomous mobility solutions.

1.1.2.2. Estimated price and time to the market

The price cannot be estimated yet; The time to market is expected to be around 12 months after the project finalisation.

1.1.2.3. Type of exploitation – exploitation route

The exploitation of the software will be Private – Sales B2B, since INFILI plans to offer use of the tool with a fee. The software can provide insight for all relevant stakeholders. They aim at relying on the consortium's networking capabilities to identify potential clients.

1.1.2.4. Business proposition and Market potential

The Sentiment Analysis tools and software are addressed to all relevant stakeholders, from OEMs, to public authorities and academia. Although the actual need for the product is not easily calculated, the tool can provide significant assistance to policy makers as well as to the transportation industry, by assessing the acceptability of solutions and adapt their marketing campaigns. Possible risks that could halt the development of autonomous solutions will negatively affect this product as well.

1.1.3. HMI development toolkit for AVs

1.1.3.1. Introduction – Description of the product

FhG/IAO will develop a software platform for HMI development and training, providing end users with the possibility to experience human-machine interaction with automated vehicles and, at the same time, providing researchers with a holistic platform for testing tools used in HMI development. FhG/IAO Fraunhofer Gesellschaft is the leading organization of applied research institutes in Europe, undertaking contract research on behalf of industry, the service sector and governmental institutions, while IAO, the Fraunhofer-Institute for Industrial Engineering, is a leading institution in the fields of technology management and industrial engineering.

The HMI development toolkit is a comprehensive software platform to prototype and test HMI concepts for user acceptance, considering the needs and characteristics of different users, modes and automation levels.

The toolkit consists of different components: A menu interface (editor) where different parameters for the scenario (e.g. user, vehicle and environment) can be chosen and a simulation environment (Virtual Reality (VR) or interactive 2D), which starts as configured in the editor. There is a library with optimized HMI elements for different target vehicles available, allowing for HMI interaction per mode, user cluster and automation level. The software also contains HMI personalisation strategies and rules per user cluster that can be directly applied in the HMI configuration process.

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The HMI development toolkit provides developers with tools to develop affective and persuasive HMI for AV functions, taking into account also conspicuity and interaction with other traffic participants.

In light of dissemination, the HMI toolkit contributes in raising public acceptance and create an educated expectation of AV's HMI.

1.1.3.2. Estimated price and time to the market

The software is offered as part of research services by Fraunhofer IAO. The use of the software makes evaluation studies of automated functions,

- better, so Fraunhofer expects 2 new projects/year of 100k€
- faster and hence cheaper – so Fraunhofer clients can save around 20k€/study
- easier to use – so Fraunhofer plans to sell licenses of the software for 5k€/year.

The estimated time to market is 6-8 months after end of the project.

1.1.3.3. Type of exploitation – exploitation route

The exploitation will be Private – Sales B2B according to Table 2, since IAO plans to offer the software under a certain fee.

During the development of the product, input from partners in WP3 and the pilot sites were involved in HMI development and was collected regarding the elements for the library and the use cases. Furthermore, different industry partners outside of the consortium were involved during the development process by giving feedback on the toolkit in order to improve content and structure and its application scenarios.

1.1.3.4. Business proposition and Market potential

The product will be mainly used in automotive and transport-related industries, where new HMI concepts are developed, tested and optimized. With this software, concepts can be made accessible for testing user acceptance in very early stages of the development cycle. Also, the product can be used for awareness creation in the public, e.g., at conferences, expo days and fairs.

Tools for prototyping in VR for the automotive domain already exist, focusing on the user group of drivers. However, they are not dedicated tools for comprehensive HMI development over different modes and for different user clusters. Additionally, existing software does not aim at end users. Existing tools, such as VREXPERIENCE by the company Ansys or cARVR by Athena, aim rather at expert-users. The HMI development toolkit developed in Drive2theFuture is interactive and easy to use in order to raise acceptance for new HMI solutions among end-users.

Business Models Analysis for the Exploitation Outcomes

Potential/specific customers for the exploitable outcome

- End Users (VRUs)
- Drivers
- Developers of applications
- Car engineers
- AVs Companies
- Ship operators
- Drone operators

Key Resources

- Computer
- Virtual reality glasses
- Screens

Potential revenue sources (even in the future)

- Online learning model (with instructor)

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- Mobile Applications learning model
- Conferences
- Offering pre-recorded videos

Companies that could use the results/services of the exploitable outcome (even in the future)

- Autonomous Vehicles/Shuttles companies (Manufacturers)
- Public Transportation companies
- Developers
- Drone operators
- Ship operators

Exploitation example at Fraunhofer IAO:

Since the finalization of the first version of the HMI development toolkit (July 2022), the toolkit has already been used in one industry cooperation and one project acquisition with two different OEMs from the automotive industry. In the first case, the software was used for prototyping a new HMI concept for an automated Level 3 car and to evaluate the concept with users in the lab with VR goggles. Hereby, also the HMI benchmarking results and best practices recognition performed in A3.1 in WP3 were presented and used to develop the HMI concept with the OEM. In the second project acquisition, the HMI development toolkit shall be used to generate video material of different HMI concepts for a large-scale online study, to be performed in spring 2023, which aims to evaluate different HMI concepts in different traffic situations between an automated car and non-automated traffic participants. For this purpose, the available use cases and traffic scenarios will be adapted and extended for the needs of the OEM. This is possible given the flexible backend architecture of the HMI development toolkit, which was developed to be constantly extended with new concepts and use cases.

Market risks

Given that VR system availability on the consumer market, in companies and at end users' homes is still limited, using the software platform with VR might at the moment still be bound to the lab with a dedicated setup, e.g. specific input devices and VR sensors. However, until launch of the product, availability of consumer VR devices might be more widely spread. We also mitigated this risk by including two interaction options in the HMI development toolkit, one with VR equipment and the second one with mouse and keyboard. Apart from that, motion sickness is still a problem that many users experience when they use VR goggles, which is a general issue inherent to interactive simulations.

1.1.4. Traffic management services

1.1.4.1. Introduction – Description of the product

Swarco points to traffic management services for infrastructure evolution towards autonomous driving. So, SWARCO Italia addressed the deployment of a real-life environment of traffic management services preparing the infrastructure towards autonomous driving and relative trainings of TMC operators. This resulting on two lines of exploitation.

In a short term, through Drive2TheFuture Project to contribute to the specification of ITS infrastructure evolution towards autonomous driving, serving as a basis for the improvements of the internal R&D developments of SWARCO Italia systems. Which led to define technical aspects in relation to road infrastructure, and expectations of TMC operators in terms of automated transport. This based on the following premises:

- The evaluation of the operation capacity of TMC operators towards autonomous vehicles and mixed flows
- The analysis of alternative autonomous bus operation principles
- The assessment of the acceptance of the evolution of the monitoring and control solutions
- The needs of TMC operators towards autonomous vehicles, C-ITS services, and automation-related functions through trainings

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In a long term, address the ITS products evolution in a cost-efficient manner by using the feedback received throughout the project life in terms of urban traffic control, acceptance of TMC operators and the extension of traffic management offer.

1.1.4.2. Estimated price and time to the market

The estimated price depends on the services, software and/or components required by the customer, in a B2B fashion. The estimated time to market though, is two years after the project end.

1.1.4.3. Type of exploitation – exploitation route

The traffic management service for infrastructure evolution towards autonomous driving service is entirely developed by Swarco. However, TMC operators contribute to the deployment of the real tests and advising about potential adaptations of the road infrastructure to control automated transport systems.

1.1.4.4. Business proposition and Market potential

Swarco Italia operates in the market offering of ITS integrated systems and services for traffic monitoring and control in the urban areas and public transport management to the customer and supplying software and components to companies of the SWARCO group and international OEMs. Based on the services created through Drive2TheFuture project, the exploitable outcome can be addressed to solutions towards:

- Connected Driving: Road Works Warning, C-ITS/V2X Prioritization, C-ITS Ready Hardware, Intelligent Road Markings
- Traffic management: Urban traffic management, highway and tunnel, bicycle solutions, port solutions
- Public Transport: Fleet management, terminal management, real time passenger information, automated fare collection, efficient & safe driving, public transport priority, security & surveillance
- Street Lighting: State-of-the-art LED technology

Market viability highly dependent on the evolution of the Autonomous Vehicles. There is a market potential especially for small installations and Proof of Concept.

Business Models Analysis for the Exploitation Outcomes

Potential/specific customers for the exploitable outcome

- Traffic Management Centres

Key Resources

- Special structures and materials

Companies that could use the results/services of the exploitable outcome (even in the future)

- Autonomous Vehicles/Shuttles companies (Manufacturers)
- Public Transportation companies
- Companies that develop applications of Mobility Services
- Road Operators
- Public Authorities
- Logistics Companies
- Bike Sharing Companies

1.1.5. Multimedia training s/w for AVs

1.1.5.1. Introduction – Description of the product

VTI proceeds to establishing a VR based training for AV and Pedestrian interaction at bus stops and during operation. VTI is the Swedish National Road and Transport Research Institute, conducting research for all modes of transport, with special laboratories for safety testing, including advanced simulators for road and rail drivers. The specific software VTI will be developing, includes two level of AV solutions; automated docking at bus stop and shuttle service operation. The aim is to make the driver and pedestrian/cyclist aware of the status of the AV in order to increase acceptance and trust. The AV docking at a bus stop is a low TRL solutions, where the bus

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drivers' perspective is looked at before; however, the knowledge of the forthcoming passengers' needs are not explored. As far as AV shuttles are concerned, according to relevant research that has been done, a solution for improved awareness for cyclists and pedestrians did not appear. CERTH/HIT, which is one of the leading institutions in Greece conducting road safety research and evaluation and impact assessment studies for ITS innovation, on the same time, has been developed a multimedia e-learning based training tool as a software platform that entails content required for the operation of AVs (of all modes), covering the needs of the industry, the users, AV drivers, etc. The platform is also compatible with the needs of training during the COVID-19 crisis as it provides remote training in a healthy, secure and accessible way. Similar multimedia trainings already exist for transportation, such as for dangerous goods transportation. A multimedia educational platform has also been developed by CERTH/HIT on traffic education and road safety for the Greek Ministry of Transport and Infrastructure, called e-Drive academy (<http://edrive.yme.gov.gr/>).

1.1.5.2. Estimated price and time to the market

VTI proposed a price of 100€, for B2C use, while it is expected that the time to market will be less than a year after the project's end. For the e-learning platform CERTH/HIT will provide it to any training provider for free (open source) to maximise the dissemination of training. CERTH/HIT will maintain the platform with own resources for at least the next 3 years.

1.1.5.3. Type of exploitation – exploitation route

The type of exploitation for the multimedia training is characterized both public and private internal, according to Table 2, while the exploitation of the e-learning platform will be Private – Sales B2C or B2B (through collaborating training centres).

1.1.5.4. Business proposition and Market potential

VTI suggests that public transport and landowners will benefit from using the AV bus stop and shuttle services accordingly. However, the market potential is roughly in need of such a service, thus the market risks are narrowed to none, with investment cost being low. CERTH/HIT focuses the business proposition on AV/PT fleet operators and trainers of drivers/operators, without excluding anyone else. Also, within the project aggregated data have been collected on user acceptance, behaviour, accident/incident types and other estimated risks that also lead to the identification of the users training needs. The effort that is mainly undertaken focuses on training programmes and protocol guidelines that could be used by advanced driver-assistance system trainers, in order to optimize driving safety. However, the Drive2theFuture multimedia e-learning includes training for operators of all modes, tailored –modes for their needs, as they have been also defined with the project. The main barrier towards the exploitation and market penetration of this multimedia e-learning platform deals with the fact that automation products are mostly still in experimental phases, so their training cannot be mature either. This may lead to dynamic changes after the end of the project, while differences are expected among different automation levers. Additionally, due to the fact that this training can be considered to deal with long-term problems, this could affect the interest of the relevant stakeholders. Another project to bridge this “valley of death” could be useful.

1.1.6. AV training programme for PT drivers'

1.1.6.1. Introduction – Description of the product

UITP will enrich the existing training modules on automated systems for Public Transport professionals UITP is active in all aspects of public transport and mobility at urban and regional level, promoting public transport worldwide. In particular, selected training material developed within WP4 (T4.2 and T4.3) will be used to enrich the training modules offered by the UITP Academy on automated mobility in PT. Tools developed in the frame of the same WP (e.g. videos, VR/AG equipment and scenarios) will be considered to complement the traditional trainings (mainly based on paper material and slides presentation) and review the methodology applied today by the Academy. The UITP Academy delivers a wide range of training programmes for all public transport and urban mobility stakeholders worldwide. More than 60 urban mobility topics are covered by the current portfolio. The training programmes are exclusively based on international expertise and practice.

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Participants from more 1.000 companies have already joined a UITP training programme. Trainings are organised in the form of classroom, digital and in-house courses.

The Academy has already experience in trainings on Automated Mobility and Automated Metros, the latter one being regularly organised. These trainings are designed to broaden the attendees' knowledge and perspective on the current situation and future trends in Public Transport automation, discuss the different possible use cases of automated vehicles becoming reality in cities and more particularly in public transport, learn from the industry and operators on the technology and the integration with public transport and, in the case of automated metro, learn from the experience on how to convert a traditional metro line into an automated one.

1.1.6.2. Estimated price and time to the market

The training material and tools developed in the Drive2theFuture project will serve as an extension of the existing trainings modules, mostly for the aspects related to users' perspective, needs and acceptability. The commercialisation of the product is still under discussion. An estimated price set would be, depending on the format of the training, about ,1.000-2,000 euro for in-person training and 400-800 euro for an on-line training. The time to market can be roughly set for six months after the project concludes.

1.1.6.3. Type of exploitation – exploitation route

The exploitation will be Private – Sales B2C, meaning the developer will sell the training hours of vocational training, according to Table 2.. The exploitation route suggests members of the consortium, both involved in the execution of the pilots or in the training-related activities, to be involved as trainers to share their knowledge and experience. Many of them are already UITP members and they are aware of the training activities delivered by the academy. The possibility to develop collaborations between some of them and the UITP Academy will be explored, also for what concern the possibility to organise technical visits to showcase some of the equipment (e.g. HMI) investigated within Drive2theFuture.

1.1.6.4. Business proposition and Market potential

Business proposition focuses on the PT sector. The target audience will consist of professionals involved in automation projects, public transport operators and authorities which run, build or plan to build autonomous PT services, staff from the industry involved in the design, manufacturing and market uptake of infrastructures, vehicles and technologies. The interest for the topic is considered very high in the PT sector. A proof is the involvement of UITP in many activities and research initiatives (funded by third parties or UITP projects) on connected and autonomous vehicles.

1.1.7. AV training programme for truck and taxi drivers

1.1.7.1. Introduction – Description of the product

Apart from PT drivers' training, IRU will develop an AV training programme for truck and taxi drivers by collecting existing AV training programmes applicable for those drivers. IRU Projects is a Belgian not-for-profit legal entity established to support the road transport industry to reach the goals of sustainable road transport, increased road safety and security. They will start by listing existing AV training programmes for truck and taxi drivers. Then, these will be served as inspiration for relevant transport companies to train or retrain their drivers to use automated functions in the vehicle. In some cases, some AV training programmes that already exist from the pilot sites will be modified to consider the objectives of the project. More specifically, the AV training programmes will look out for the acceptance and awareness of the different target groups.

1.1.7.2. Estimated price and time to the market

The estimated price will be estimated through stakeholder WTP studies during project Pilots. Time to market is set to 6 months after project end.

1.1.7.3. Type of exploitation – exploitation route

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The type of exploitation is yet to be finalised, while IRU is working together with partners in the Consortium that are in A4.3 AV training programmes and in WP5. Pilot site leaders are also providing material of existing training programmes that are publicly available. The exploitation type will be B2B, to the relevant operator companies.

1.1.7.4. Business proposition and Market potential

The commercial road transport sector is expected to benefit from these training programmes since they will provide insight on how trainings can be organized and which entity to contact to be trained accordingly. There is a profound need for AV training programmes since technology is rapidly evolving and becoming an integral part of vehicles. Several OEMs have their own training programmes which are usually confidential. This makes it difficult to collaborate and increases competition. There are risks that AV training programmes will not result as being useful for the commercial road transport sector. This is because the technology is still not mature and there is a very low penetration currently on the market. There is also a risk that companies will not see the added value of this technology and the clear benefits for their operations.

1.1.8. AV training programme for driving instructors

1.1.8.1. Introduction – Description of the product

IAM RoadSmart has developed an AV Training programme for driving instructors, which consists of a new software based on an existing service. IAM aims at improving driver and rider skills through coaching and education. They provide a range of risk management and training services, including e-learning, on-road coaching and seminars. In the context of Drive2theFuture, training products for those involved in the driver training industry have been developed, to raise awareness of autonomous vehicles and prepare drivers to use them safely in the future. IAM RoadSmart produced a multilingual questionnaire designed to map out the state of knowledge of autonomy among those active in the driver training industry in Europe. This has been used to identify potential exploitation opportunities for common learning products. The survey also asked for which format driving instructors in each country would like to use to disseminate information about autonomous vehicles. The basic standards for driver training are set at EU level to allow harmonization of driving licenses but actual practice varies from country to country. This project also looked into the potential to provide common materials or to highlight content that needs to be included in future national programmes.

1.1.8.2. Estimated price and time to the market

The price will be estimated through WTP stakeholder surveys during project Pilots. Estimated time to market is set to 3 months after project end.

1.1.8.3. Type of exploitation – exploitation route

The exploitation type will be Private, both for Sales B2C and B2B, according to Table 2. A data file of national driver training organisations has been identified, as well as members of the Drive2TheFuture consortium have agreed to disseminate the programme to their own or other driver training organisations in their countries. These links will be captured and used for future exploitation plans and communication of findings. A speaking engagement has been secured in May 2021 at the CIECA Congress in Porto. CIECA is the European level body representational body for driver training and the event will allow the Drive2theFuture project to be disseminated to CIECA members across Europe.

The COVID pandemic has continued to affect the driver training market across Europe. Demand for driving test and novice driver training remains high with new measures in place in many countries to deal with backlogs. Allied to the cost of living crisis this has inserted a high degree of volatility into the industry.

IAM RoadSmart have been working with Southampton University to create a framework for driver training with increasing levels of automation and autonomy. This project is due to be published in November 2022 having been delayed due to the pandemic reducing the use of a driving simulator. Once it has been published IAM RoadSmart will be able to assess its full potential for conversion into a product for the driving instructor market.

The survey of driving schools across Europe outlined in Section 2.2.9.1 above showed that many were interested

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in autonomous vehicles. 55% felt that it should be a government role to teach them about the training needs linked to autonomous vehicles. There was no clear preference for the format (app, on line, print) of any training materials provided to driving instructors. In informal discussions with driving instructors in the UK IAM RoadSmart has found that most favour signposting to materials they can share with their pupils rather than bespoke materials just for instructors. To this end we intend to share the final output from the University of Southampton with a sample of UK driving instructors to get their comments on how best to present the work. We will also highlight links to educational materials developed in other Drive2theFuturework streams.

1.1.8.4. Business proposition and Market potential

The delivered product aims to the Driver Training industry, both for novice drivers and refresher course for qualified drivers. There may also be potential for links to car manufacturers to encourage them to deliver training on autonomous features. A perception of the market around this product is expected to come from the survey and further investigations. The survey will identify if an app, printed materials or on-line learning are the preferred modes of training in each country. Figures for tests are hard to find for all EU countries but in the UK alone 1.5 million driving tests are conducted every year. The market potential at a European level runs into several million tests per year so the market potential is substantial. There are no EU wide rules on driver training, driving schools or driving instructors. There are, however, minimum EU standards for:

- the driving test: the examinee needs to pass both a practical test and a theory test;
- the driving examiners: they must successfully complete a training program and be subject to periodic quality assurance and training.

This means that market conditions will vary from country to country. In addition, many countries have applied controls to in car training due to the ongoing Covid-19 restrictions. Car makers may decide to improve their own awareness programmes for the purchasers of their vehicles. Consumers may believe that such short handover programmes are sufficient to enhance their knowledge of autonomous features.

1.1.9. AV Training programme for rail operators and signallers

1.1.9.1. Introduction – Description of the product

This product is an outcome of the cooperation of three different Drive2theFuture partners: EURNEX, TUB and VTI. EURNEX is the European rail Research Network of Excellence, comprising over 40 scientific institutions of the transport and mobility sector from all over Europe. EURNEX is the first research cluster of excellence to support the European Research Area in the rail and air transport sectors. TUB is participating with its railway sector, which teaches and researches in the three fields of Track (track life cycle costs, superstructure dynamics including noise abatement and maintenance optimization), Operation (resource conservation and the application of new technologies) and Strategy (sustainable forms of offer and production in passenger and freight transport), and VTI as mentioned before, is the Swedish National Road and Transport Research Institute. EURNEX has developed a course in form of a new Power Point presentation called “Introduction to Rail Automation” to be used as introduction to the two focussed presentations prepared by TUB and VTI for supporting the pilots RA-1 and RA-2. They have previous experience from their participation in the H2020 project SKILLFUL, where some training programmes for specific needs of the rail sector were developed. TUB developed a prototypical HMI providing an example for the development of future automation systems and providing researchers a testing and training tool for use in the areas of rail human factors and railway operation, since RA-2 pilot examines the possibility of using a simplified HMI for remote train driving as a fallback system for highly automated train operation. The tool includes haptic and tactile control devices and information interfaces. The goal of the pilot was to investigate the needs and preferences of future operators and to increase the acceptance amongst users via a training programme. TUB contacts research and training activities in human factors and railway operation area involving rail traffic controllers and train drivers with simulators and a railway operation laboratory. VTI developed a video-based training tool for rail transportation, by extending an existing one. The video-based training aims at the cooperation between train drivers and dispatchers providing improved interaction based on understanding of each other roles.

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1.1.9.2. *Estimated price and time to the market*

The presentation developed by EURNEX will not be marketed in the near future but its price, based on the time needed for its preparation and its multi-customer nature can be estimated in 600€ if it is taught by EURNEX staff and 150€ as separate material. The estimated time to market though, is planned immediately after the project's end, or, if an adaptation of the material is needed, 2-3 months after the end of the project. The prototypical product or the training service will not be marketed, therefore a price cannot be estimated., while the estimated price of the video-based training tool is 1000€.

1.1.9.3. *Type of exploitation – exploitation route*

The exploitation will follow both B2C and B2B routes (for courses and HMI respectively).. The HMI will be used for training of the personnel of the organisation, thus belongs to Private Internal exploitation type. TUB cooperates with project partners for the development and dissemination of the product. The iterative user testing will involve students, train drivers and dispatchers. The HMI and the strategy will be demonstrated in workshops or related events. Additionally, the project and the pilot will be presented in several national and international conferences enabling future research efforts and project cooperation.

1.1.9.4. *Business proposition and Market potential*

The training programme is educational oriented. The tendency towards an increase of automation seems clear so it is expected that the demand for this type of services rises. The main competition comes from rail operators which have implemented some type of automation in the operation of lines (typically underground lines) or from industry which have developed this kind of technology for the rail operators. However, these materials are usually hard to reach for the public not directly involved in the rail operation. A more interesting field of development would be the development of material for universities instead of vocational training, whose goal is more focused on offering a high-level picture. The main obstacles may be related to the specific needs of each automation system that may affect the usefulness of the material developed. Meanwhile, the HMI developed will be used within the research domain. The developed product can be used within the research & development domain. The pilot product finds itself in an emerging R&D area with a need for a technological and a human centric solution, therefore the market size cannot be easily quantified.

Business Models Analysis for the Exploitation Outcomes

Potential/specific customers for the exploitable outcome

- Public Authorities
- Traffic Management Centres
- AVs Companies

Key Resources

- Computer
- Self-learning tools
- Screens
- Special structures and materials

Potential revenue sources (even in the future)

- Online learning model (No instructor)
- Online learning model (with instructor)
- In-person trainings on company headquarters
- Offering pre-recorded videos

Companies that could use the results/services of the exploitable outcome (even in the future)

- Autonomous Vehicles/Shuttles companies (Manufacturers)
- Public Transportation companies
- Public Authorities
- Logistics companies

Market Risks The pilot test focuses on several use cases and will not be conducted for various settings and

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situations. The prototypical HMI needs to be further improved technically for the market adaptation. Additionally, field tests and extensive analysis are needed.

1.1.10. AV Training programme for automated ship operators

1.1.10.1. Introduction – Description of the product

TUCO sells fast professional boats, and our aim is to deliver boats with autonomous features, that improve decision making and safety for passengers and crew under operation. As a part of these autonomous features, we will, as a service, deliver training programs for automated ship operators.

Improved decision making in regards of operation, is a highly sought for ability, as the optimal decisions reduce cost and improves quality of the work carried out at sea. This will greatly improve autonomous maritime transport, and hence open the door for on-demand transport in smaller ferries across harbors and other short distance sailing.

Tuco Yacht has great experience in delivering fast lightweight boats for professional users. We deliver boats to mainly 3 segments: Offshore boats, Workboats, and defense boats. However, our ProZero platform is highly modular, and it can be custom constructed in many ways, so it basically meets the needs of all customers.

1.1.10.2. Estimated price and time to the market

The go to market point is depending on maturity of the technology, the user acceptance, the development of the legislation and industrial standards and the customer's needs.

The pilot showed a matured technology as users find the system reliable, usable, and risk decreasing. The pilot also showed acceptance of the system as users had a positive view on automated vessels, they are used to automated systems, and find the system effective and supporting.

The customers wish for Fuel efficiency, transport flexibility and a limited number of operators enhance the request for autonomous vessels.

In regards of customer needs, we expect that users will experience an immediate improvement in their operation by using autonomous boats.

The current legislation and industrial standards are not preventing the market penetration.

Hence, we estimate the time to market as immediately for the first iterations as. And we estimate it will take up to 5 years after the project is finished for the 2. Gen iterations.

A high estimate has now been established at 100,000 euros.

1.1.10.3. Type of exploitation – exploitation route

The exploitation will be Private, both for Sales B2C and B2B. To begin with, TUCO will need assistance in the fields of software development and legislation and certification services, while other issues may arise during the project in different scientific areas.

We will need cooperation within the following fields.

- Software industry on issues of: Cyber security
- Legislation on issues of political intentions and certification requirements
- Operators' education organizations, on issues of training content
- Operator industry and research institutions on issues of clarifying needs and modelling of operators HMI

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- Developers of automation solutions on issues of information to operators when operating the vessel

Other areas might come in to play, as our knowledge increases.

1.1.10.4. Business proposition and Market potential

The product will be used on the following, but not limited too, as the technology and acceptance grow:

- Professional workboats
- Professional survey boats
- Improved decision making for all maritime operations
- Improved Passenger transport
- On-demand call for maritime transport and services

As of today, the first and foremost immediate demand is seen in survey operations, as these often cannot perform surveys in long distances at a time, because they have to carry crew. Further down the line, it is expected that the market potential for autonomy will increase drastically, for decision supporting purposes. Perhaps even using a combination of AI and machine learning.

Business Models Analysis for the Exploitation Outcomes

Potential/specific customers for the exploitable outcome

- Developers of applications
- Public Authorities
- Traffic Management Centers
- AVs Companies
- Ship operators

Potential revenue sources (even in the future)

- Online learning model (with instructor)
- Shared knowledge access platform
- In-person trainings on company headquarters
- Offering professional certificates

Companies that could use the results/services of the exploitable outcome (even in the future)

- Autonomous Vehicles/Shuttles companies (Manufacturers)
- Developers
- Public Authorities
- Travel companies
- Ship operators

Market Risks

- Legislation
- Infrastructure support
- Price
- Technology acceptance

1.1.11. AV Training programme for drone operators

1.1.11.1. Introduction – Description of the product

Another exploitation outcome comes from Deep Blue. The training programme they developed consists of some new training modules and the enhancement of an existing one, Deep Blue already provides. DBL - Deep Blue is an Italian research and consultancy SME specialised in safety, human factors, security and validation. The company operates in the domain of Transportation dealing with the design, analysis and evaluation of interactive systems, especially in Aviation, UAS/Drones and Air Traffic Control. The AV training programme for

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drone operators they developed within A4.3 product, consists of 3 modules, focusing respectively on:

- current drones' regulation, with a specific focus on the authorization processes associated to the different categories of drones (open, specific, certified)
- the SORA Methodology for safety assessment of drones' operations, explaining in detail all the steps of the methodology and the authorization process deriving from the calculated risk.
- the operator supporting tool developed in the framework of Drive2the future to smooth the authorization and safety assessment process of drones' operations.

So far, separate modules on drones; regulation and SORA methodology are not integrated into a unique programme.

1.1.11.2. Estimated price and time to the market

The price is expected to be defined through stakeholder WTP assessment during project Pilots; yet the time to market is expected immediately after the end of the project.

1.1.11.3. Type of exploitation – exploitation route

The type of exploitation is both for training of the personnel of the organization, and for selling to other organisations/universities (Private Internal and Private – Sales B2B according to Table 2). The training programme is developed by Deep Blue in the framework of A4.3..

1.1.11.4. Business proposition and Market potential

The training programme is directed to the aeronautical business, with a particular focus on drone operators. An idea for the market around this product has come up from the research conducted in Drive2theFuture. There seems to be a big need for a tool to simplify the authorization process of drone operations. The training programme is expected to raise the interest of the market, intended as the drone operators. There is no awareness about possible competing initiative which may be currently ongoing. The training programme will be subject to periodic updates in order to present a trustworthy and complete picture of drones' regulation. Possible changes in the SORA methodology and improvements in the operator tools must be reflected in the training programme.

1.1.12. HMI development and test for Advanced Riding Assistance Systems

1.1.12.1. Introduction – Description of the product

BLIND SPOT INFORMATION SYSTEM (BLIS) warns of the presence of other vehicles moving in your same direction, driving on multiple lane roads, located in your "blind spot."

The radar (which can be deactivated) constantly monitors the rear space and detects target vehicles on the sides or behind it.

The presence of vehicles to the side, in the blind spot of the rear-view mirrors, is indicated by a triangular side strip illuminated on the TFT screen, on the side of the warning, which may flash if, with the direction indicators switched on, the system assesses it to be a potential impact situation.

BLIS function is part of the ARAS Advanced Rider Assistance System of new Piaggio three wheelers MP3 530 cc Exclusive. Such a system is made of a radar and a platform based on Imaging Radar 4D technology, developed by Piaggio Fast Forward the specialized robotics Boston company founded by Piaggio Group in 2015. This technology implements BLIS (blind spot information system) and lane change assist functions. The rear radar combines the two functions for realizing a full LCDAS (lane change decision assist system) able to warn the rider in all conditions detecting as well fast approaching vehicles from long distance.

1.1.12.2. Estimated price and time to the market

No estimated price as yet, but the product could be available in less than a year.

1.1.12.3. Type of exploitation – exploitation route

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Within Drive2theFuture the HMI concept of BLIS function for motorcycles was proposed and tested on motorcycle riding simulator in the pilot conducted by Gustave Eiffel University.

User feedback of tests done on BLIS HMI confirmed the assumptions of rider warning strategy that will be implemented in new Piaggio products.

1.1.12.4. Business proposition and Market potential

BLIS and LCDAS are proposed for the first time on premium scooter.

There is a great market potential. ARAS functions initially developed for high-end motorcycles are becoming available in premium scooters (over 500 cc). Such functions will likely be widespread in few years in the scooter mid-displacement segment (125-300 cc) that represents the most relevant part of Powered-two wheelers in urban areas.

Business Models Analysis for the Exploitation Outcomes

Potential/specific customers for the exploitable outcome

- Drivers
- Developers of applications
- Car engineers
- Public transportation drivers

Key resources

- Computer
- Autonomous vehicle
- Self-learning tools
-

Potential revenue sources (even in the future)

- Online learning model (no instructor)

Companies that could use the results/services of the exploitable outcome (even in the future)

- Developers

Market Risks

The reliability of ARAS systems as well as the trust of the users are the key factor to face with, in terms of technology costs and effective warning strategy. The more reliable they will the more they will spread.

1.2. Next steps

The geographical scope of the business and exploitation plan is worldwide. Thus, the commercialization potentials for the Drive2theFuture products has been set, according to the European and worldwide market trends throughout the project duration. A Business Model Canvas has been formed with the final outcomes.

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The Business Model Canvas		Designed for:	Designed by:	Date:	Version:																								
<p>Key Partners </p> <p>Who are our Key Partners? Who are our key suppliers? Which key Resources are we acquiring from partners? Which key Activities do partners perform?</p> <p>RELATIONS FOR PARTNERSHIP Specialization and economies Reduction of risk and uncertainty Acquisition of particular resources and activities</p>	<p>Key Activities </p> <p>What Key Activities do our Value Propositions require? Our Distribution Channels? Customer Relationships? Revenue Streams?</p> <p>CATEGORIES Production Problem Solving Performance</p>	<p>Value Propositions </p> <p>What value do we deliver to the customer? Which one of our customer's problems are we helping to solve? What bundles of products and services are we offering to each Customer Segment? Which customer needs are we satisfying?</p> <p>CHARACTERISTICS Newness Performance Customization "Getting the Job Done" Design Price/Performance Risk Our Reduction Risk Reduction Accessibility Complementarity</p>	<p>Customer Relationships </p> <p>What type of relationship does each of our Customer Segments expect us to establish and maintain with them? Which ones have we established? How are they integrated with the rest of our business model? How costly are they?</p> <p>CHANNELS Personal assistance Customer Personal assistance Self Service Automated Services Communities Co-creation</p>	<p>Customer Segments </p> <p>For whom are we creating value? Who are our most important customers?</p> <p>Mass Market Niche Market Segmented Diversified Multi-sided Platform</p>	<p>Key Resources </p> <p>What Key Resources do our Value Propositions require? Our Distribution Channels? Customer Relationships? Revenue Streams?</p> <p>TYPES OF RESOURCES Physical Intellectual (brand, patents, copyrights, data) Human Financial</p>	<p>Channels </p> <p>Through which Channels do our Customer Segments want to be reached? How are we reaching them now? How are our Channels integrated? Which ones work best? Which ones are most cost-efficient? How are we integrating them with customer routines?</p> <p>CHANNEL MODELS 1. Company How do we make awareness about our company's products and services? 2. Partner How do we find customers evaluate our organization's Value Proposition? 3. Reseller How do we find customers to purchase specific products and services? 4. Delivery How do we deliver a value proposition to customers? 5. After sales How do we provide post-purchase Customer support?</p>																							
<p>Cost Structure </p> <p>What are the most important costs inherent in our business model? Which key Resources are most expensive? Which key Activities are most expensive?</p> <p>BY HOW RESOURCES ARE USED Cost Structure based on cost structure, low price value proposition, maximum automation, extensive outsourcing Value Stream based on value streams, premium value proposition</p> <p>SCALE CHARACTERISTICS Fixed Costs (salaries, rents, utilities) Variable Costs Economies of scale Economies of scope</p>		<p>Revenue Streams </p> <p>For what value are our customers really willing to pay? For what do they currently pay? How do they currently compare? How would they prefer to pay?</p> <p>How much does each Revenue Stream contribute to overall revenues?</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">PRICE</td> <td style="width: 33%;">UNIT MODEL</td> <td style="width: 33%;">PERIOD MODEL</td> </tr> <tr> <td>Asset use</td> <td>Unit price</td> <td>Repetition (subscriptions)</td> </tr> <tr> <td>Usage fee</td> <td>Product/feature dependent</td> <td>Time dependent</td> </tr> <tr> <td>Subscription Fee</td> <td>Customer segment dependent</td> <td>Step (one dollar)</td> </tr> <tr> <td>Lending/leasing/leasing</td> <td>Volume dependent</td> <td></td> </tr> <tr> <td>Licensing</td> <td></td> <td></td> </tr> <tr> <td>Franchise fees</td> <td></td> <td></td> </tr> <tr> <td>Advertising</td> <td></td> <td></td> </tr> </table>				PRICE	UNIT MODEL	PERIOD MODEL	Asset use	Unit price	Repetition (subscriptions)	Usage fee	Product/feature dependent	Time dependent	Subscription Fee	Customer segment dependent	Step (one dollar)	Lending/leasing/leasing	Volume dependent		Licensing			Franchise fees			Advertising		
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Franchise fees																													
Advertising																													

Figure 1: Business Model Canvas

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2. Conclusions

Twelve exploitation outcomes are presented in this deliverable. Their development stage varies, since some of them are services that were further developed over existing ones, while the rest are new services/software that have been developed during the Drive2theFuture progress. Hence, their readiness pertaining their price or time to market varies.

As per the content, half of the products are training programmes, referring to all driver's type, particularly PT drivers, professional drivers and also driving instructors, as well as rail, automated ship and drone operators. All training programmes are part of A4.3 "Training programmes per user cluster and sentiment analysis". Apart from the training programmes, other software tools and platforms have been developed, pertaining to AV technologies, AV acceptance and modelling of drivers' behaviour. These products are included on WP2, and particularly in Activities A2.3: Simulation platform suite creation and scenarios realization, A2.4: Behavioural models, A2.5: Sentiment analysis on social media, but also in A3.6: HMI development, A4.2: VR/AR and multimedia training and awareness tools.

The market around AVs and their applications is competitive, while at the same time there are a lot to be researched and tested before establishing AVs. Drive2theFuture exploitable outcomes address all transport modes, and thus are challenged by a variety of markets.

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Annex I: Drive2theFuture Exploitation Plan template

WP/Activity/Pilot	
Partner	
Exploitable outcome	
Type of product <i>(software/service – new/extension of existing, choose from drop down menu)</i>	<input type="checkbox"/> Software Choose an item. <input type="checkbox"/> Service Choose an item. <input type="checkbox"/> Other (please specify): Choose an item.
Short description of the product <i>(approx. 2 paragraphs)</i>	
Background as know-how <i>(What were you doing/selling before?)</i>	
Estimated price (€)	
Estimated time to market <i>(after the project end)</i>	

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WP/Activity/Pilot	
Type of exploitation (only for training services)	<input type="checkbox"/> Public (<i>open to the public and free</i>) <input type="checkbox"/> Private Internal (<i>for training of the personnel of the organization that developed the course</i>) <input type="checkbox"/> Private – Sales B2C (<i>developer to sell training hours of vocational training or training to be provided by members of the owner organization</i>) <input type="checkbox"/> Private – Sales B2B (<i>developer to sell the content of the course to other organization/universities or offer it with a fee for a specific time</i>)
Exploitation route <i>(Describe cooperation/partnerships with members of the Consortium and/or outside the Consortium regarding the production/development and/or selling of the product/service)</i>	
Business proposition <i>(In which industry will the product/ service be used? How?)</i>	
Market Potential <i>(How is the market formed around this product? How big of a need is there for the product? Description of competition?)</i>	
Market Risks <i>(What are the possible obstacles? What could negatively affect the implementation and introduction of the product?)</i>	