SAFEXPLAIN

Safe and Explainable
Critical Embedded Systems based on AI

D6.2 Exploitation Plan

Version 1.0

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Change Log

Version	Description Change
V0.1	First internal draft for review
V0.2	Second draft with review comments
V1.0	Final version for delivery

Table of Contents

Executive Summary

The Exploitation Plan is dedicated to coordinate partners' effort toward collective and individual exploitation of project's results. This first version shall be extended and updated progressively with yearly frequency.

The Exploitation Plan analyses the exploitation context and business opportunities to find out what is the actual and potential market situation. The potential target markets (and target users), as well as the early adopters and followers are identified and analysed, and competitive environment surrounding the project are assessed. Factors that may influence the exploitation of the results (such as TRL, integration, standardization, regulatory aspects, licensing, etc.) are identified and monitored. This iterative work will output business opportunities, considering both the domains and results where exploitation can start in the short term.

The Exploitation Plan defines a methodology and strategy for an appropriate management of the knowledge generated by the project (IPs) and it will monitor and iterate it towards the Exploitation Plan. To this end, this task aims to also elaborate the joint and individual exploitation plans, based on the exploitation context analysis, and the identification of the exploitable project assets and results

1. Exploitation Strategy

Exploitation from a scientific and industrial perspective is of paramount importance for SAFEXPLAIN. The SAFEXPLAIN consortium offers a well-balanced and well-complemented combination of industrial and academic partners that will act as a powerful enabler for prolific exploitation. Exploitation is also fostered by means of the virtual events and workshop bringing together other related projects, where relevant industrials will attend, hence acting as a form of ample and diverse advisory board.

SAFEXPLAIN identifies the following exploitation channels and activities to maximize exploitation opportunities:

- Identification of **project exploitable assets** as critical activity for the exploitation and the sustainability of the project. Exploitable assets include interim and final results, various evaluation activities and lessons learnt from investigations on DL specification, implementation, and FUSA-DL interaction, as well as potential business models and exploitation pathways.

- Identification of the **main exploitation routes for the consortium** as a whole, for specific groups of partners sharing similar interests / orientation as well as for each partner separately.

- The **procedures to protect IPR** issues of novel tools and technologies, as well as of the integration of preexisting individual technologies when integrated into the SAFEXPLAIN solution, with an accurate analysis on the potential conflicting among the different licenses that will coexist (e.g., open-sources vs. proprietary, among the multiple open-source licenses).

- Identification and analysis of **the target users** (early adopters and followers) that may benefit from the project findings and achievements. This will be done in collaboration with the dissemination task, that is already in charge of identifying potential target users of the project outcomes; here the accent is closer to "business development".

- Analysis of the **exploitation context and business opportunities** in application domains in order to consolidate the view on the actual market trend. Although this study will consider all potential industrial domains, special interest will be given to those in which SAFEXPLAIN industrial partners have direct business opportunities, i.e. AIKO, EXI, NAV, and IKR. The exploitation activities entail the evaluation of project achievements' acceptability by the business world, addressing: (1) IPR management, (2) open-source communities for project promotion, (3) the definition of a joint exploitation agreement, etc.

- Assessing the **competitive environment surrounding the project** such as technology readiness, integration, standardization and regulatory, and policy framework at the targeted markets as well as future trends at both social, business and policy level. In particular standardization and regulatory aspects are paramount concerns in SAFEXPLAIN and thus are explicitly addressed in the project.

- Development of a **sustainability plan of results** that will offer a path beyond the finalization of this project to exploit the results and open new ways to continue the work. The plan will address (1) IPR management, (2) open- source communities for project promotion, (3) the definition of a joint exploitation agreement, (4) strategy to influence standards, etc. Such plan will be part of the exploitation plan described next.

These activities are directly included in the *SAFEXPLAIN Exploitation Plan* (or shall be in the next versions). This document is it first release, made available at month 3 (D6.2), with the objective of allowing for fast feedback on exploitable assets and business opportunities. The exploitation plan will be updated along with the exploitation reports at months 12, 24 and 36. The plan at month 36 will examine and assess potential plan(s) for the project final results' exploitation and commercialization, taking into account latest technological evolutions and market changes during project's lifetime. It will also include relevant information from the case studies results.

The feedback gathered during consortium interaction and discussions with experts in the cross-project events, other key external stakeholders and experts, industrial actors and decision makers in the targeted markets will be crucial to address strengths (benefits), weaknesses (drawbacks and prerequisites), opportunities (existing conditions suitable to promote the wide adoption of results) and threats. This constitutes the basis for planning the successful exploitation and leads to the identification of mechanisms to achieve the actual widespread adoption of project results.

2. Exploitation Results

Partners have already made a preliminary analysis of exploitation and IPR strategy. The ***Expected Exploitable Technological Items*** table identifies SAFEXPLAIN exploitable technological items that are expected to be produced in the course of the project. For each technological item, there is an initial identification of: (1) the item; (2) the owner; (3) the license, i.e. open-source or proprietary.

Expected Exploitable Technological Items.

Item	Owner	License
FUSA-aware DL libraries and extensions	BSC, IKR, RISE	Open source (MIT, Apache)
Research prototype to support verification and validation (V&V) of safety critical CPS embedding DL-based components. Integration with open source simulators (automotive domain)	RISE	Open source (MIT)
Performance analysis tools for DL software	BSC	Open source (MIT, Apache)
Low-level library for observability and controllability of the target hardware	BSC	Proprietary
Repository of Explainable AI reference architecture and methods to used for V&V of safety critical applications.	RISE	Open source (MIT, Apache)
Integration interface of DL libraries with FUSA analyses toolset	EXI	Proprietary

In addition, the project will also produce the following exploitable results:

- **Recommendations to safely deploy DL software solutions in CAIS in automotive, railway and space domains**. Recommendations will cover: (a) Techniques to be applied in different stages of the V cycle (e.g. testing), (b) DL techniques and methods (e.g. specification) based on FUSA assessments, and (c) statistical predictability approaches, hardware observability and configuration guidelines for heterogeneous platform complexity. EXI will bring forward those recommendations in safety standard committees through its experts, and will incorporate them in their syllabi as part of the hundreds of courses EXI gives worldwide.

- **Assessment in automotive, railway and space domains**. SAFEXPLAIN will expose several technical contributions to internal experts and external certification authorities and certification experts in space and automotive. They will make an assessment of those contributions against specific safety standards (e.g. IEC 61508 / ISO 26262 / EN 5012x, ECSS standards in space). Their review will be a valuable asset providing evidence of the feasibility of the SAFEXPLAIN safety pattern approach and FUSA techniques to be used in different stages of the life-cycle. EXI will act as internal expert (EXI is at par with TÜVR, TÜVS), whereas

external experts will include certification experts (e.g., TÜVS Rheinland) for auto/rail, and ESA certification experts for space. The former will be subcontracted whereas the latter will be approached by AIKO through their regular interactions.

- **Results from case studies**. The adoption of the SAFEXPLAIN technology requires references and success stories in each CAIS application domain. SAFEXPLAIN will collect and deliver evidence from rail, space, and auto case studies to that end. Especially, the explainability, robustness and traceability properties will be evaluated against all the case studies and promoted by the respective case study partners (NAV for auto, AIKO for space, IKR for railway). Moreover, EXI has access to hundreds of key players in most industrial sectors (especially in the automotive domain) and will also promote and disseminate case study results and technologies with those players.

The project results will be exploited by each partner according to its core objectives (business, societal or academic). Also, by providing the key know-how in public deliverables and publications, and key technological items as open source, individual and joint exploitation can be carried out by interested partners without mutual dependencies that could preclude it otherwise.

3. IPR Management

SAFEXPLAIN work generates research, measurements and engineering data obtained from the system simulations, trials, prototyping and the use of testbeds and labs. SAFEXPLAIN partners are committed to making research data accessible, keeping data F.A.I.R. (Findable, Accessible, Interoperable and Re-usable).

To explain how to access the data, additional supporting documentation will be created. WP6 includes a task (T6.2) where knowledge and IPR management is generated and managed. This task guides the participants on how the results will be identified, reported, and protected from early disclosure, and will ensure that the IPR and data management strategies are well defined and coherently executed.

For this purpose, the Data Management Plan (DMP) has been defined at the beginning of the project and it will be updated as the project evolves. This is part of the Management Plan of SAFEXPLAIN.

- **Access rights to Background knowledge.** To ensure a smooth project execution, the project partners will grant each other and their affiliated companies, royalty-free access rights to their Background and Results for the execution of the project. This will allow the researchers the ability to execute the project to the best of their ability, without being hindered by administrative issues. Access rights to this knowledge will be available to all partners only if they are valuable or useful for carrying out project activities. Information may include (among others) the set of tools, hardware designs and software components integrated in the SAFEXPLAIN architecture. The CA defines further details concerning the Access Rights for Exploitation to Background and Results.

- **Foreground knowledge and IP ownership.** Results shall be owned by the project partner carrying out the work leading to such Results, independently of whether they can be protected or not. If any Results are created jointly by at least two project partners and it is not possible to distinguish between the contributions of each of the project partners, such Results, including inventions and all related patent applications and patents, will be jointly owned by the contributing project partners. Each partner may use the results and material produced within the project for project purposes provided that such use does not come into conflict with the terms of the project *Grant Agreement* or the European legislation. To enhance exploitation of the Consortium Results, each contributing party shall have full own freedom of action to exploit the joint IP as it wishes, and further the goals of the consortium. To promote this effort, the contributing party will have full own consideration regarding their use of such joint Results and will be able to exploit the joint IP without the need to account in any way to the other joint contributor(s). Further details concerning jointly owned Results, joint inventions and joint patent applications are addressed in the CA.

- **Transfer of Results.** As results are owned by the project partner carrying out the work leading to such results, each project partner shall have the right to transfer Results to their European affiliated companies without prior notification to the other project partners, while always

protecting and assuring the Access Rights of the other project partners. Such use of results will encourage competitiveness of the EU market by creating broader uses of the results and opening up the markets for the Consortium's Results.

- **Patents.** In case a partner wants to submit a patent application, it will inform the other following a process described in the CA. Any conflicts will be addressed following a conflict resolution process described in the CA. Information of patent applications will be made available to the EU through regular management reports. The costs of the patent applications will be covered by the submitters.

- **Software/hardware accessories.** The software and hardware accessories (e.g., tools, components, devices, programs) required by other partners to fulfil the project objectives shall only be used for the purpose of the project. Software products shall be made available free of charge, unless it is a commercially available product, and hardware products at base costs including handling fees and depreciation. All these items shall be deleted or returned after the end of the project. These agreements shall be extended beyond the duration of project only at the discretion of the partner owning the software and hardware accessories.

3.1 Exploitation canvas

Specific needs	Expected results	Diss/Exp/Comm measures
• FUSA-aware DL-based solutions needed for CAIS (e.g. autonomous cars) • DL-aware FUSA solutions needed to enable certification of DL-based CAIS • Explainability and traceability needed in DL to make DL FUSA compliant • DL software execution on high- performance platform must be time predictable • Industrial viability must be proven in toolsets (for automation) and case studies (for end user acceptance)	• FUSA-aware DL libraries • FUSA patterns to use DL-based solutions in CAIS • Recommendations for FUSA standards to certify DL software • Tools for DL software verification, and analysis of semantics and internals • Performance analysis tools and libraries for DL software on CAIS • Integration of DL libraries with FUSA analyses toolset • Evidence from case studies	• Proprietary commercial solutions for industry • Open-source technological items to ease contributions to increase TRL • Cross-contamination with AI, Data and Robotics projects and partnerships through frequent virtual meetings and a joint workshop • Participation in certification bodies to push SAFEXPLAIN guidelines • Scientific publications and event participation in all relevant communities (AI, FUSA, CAIS)

		• Demos based on case studies at industrial events
Target groups	**Outcomes**	**Impacts**
• End Users in CAIS, e.g. integrators and OEMs • Technology providers in CAIS, e.g. HW and SW providers, AI software companies and developers • Certification authorities and experts CAIS/AI research community Policy makers • General public	• Incorporation of SAFEXPLAIN safety guidelines into certification process • Use of SAFEXPLAIN DL • libraries, components and API to develop safety-critical software in CAIS • Higher trust on DL-based solutions for FUSA related systems • Contribute to SRIDA's "safety- by-design" approach among other SRIDA's objectives	• European industry enables fully-autonomous CAIS (e.g. cars, trains, satellites) with certified and economically viable solutions • Increased efficiency of CAIS systems due to safe DL solutions reduces CO2 emissions (up to 80% for different types of vehicles) • European CAIS benefit from DL functionalities and remain competitive in future, while still being trustable

4. Unique Selling Propositions (USPs)

With over a million copies sold, Geoffrey Moore's *Crossing the Chasm* guide to marketing and selling disruptive products to mainstream customers is still one of the must-read books for technology marketing leaders.

Crossing the Chasm: Marketing and Selling High-Tech Products to Mainstream Customers (1991, revised 1999 and 2014), is a marketing book by Geoffrey A. Moore that examines the market dynamics faced by innovative new products, with a particular focus on the "chasm" or adoption gap that lies between early and mainstream markets.

The book offers decision-making guidelines for investors, engineers, enterprise executives, marketers and managers throughout the high-tech community. Real-world examples of companies that have struggled in the chasm are also provided.

The core of the book has always been its simple but effective framework for establishing a compelling and clearly differentiated Unique Selling Propositions (USPs).

Here's Moore's original 6-step ***Unique Selling Proposition*** template:

- For (*target customer*)
- Who (*statement of need or opportunity*)
- The (*product name*) is a (*product category*)
- That (*statement of key benefit* - that is, *compelling reason to buy*)
- Unlike (*primary competitive alternative*)
- Our product (*statement of primary differentiation*).

Here's the original ***Unique Selling Proposition*** that Moore made for *Silicon Graphics Inc.*:

- For movie producers and others
- Who depend heavily on post-production special effects,
- Silicon Graphics provides computer workstations
- That integrate digital fantasies with actual film footage.
- Unlike any other vendor of computer workstations,
- SGI has made a no-compromise commitment to meeting film-makers' post-production needs.

Many of the critical elements indicated above in the Exploitation Strategy are captured in this simple, elegant, effective formula. The SAFEXPLAIN consortium has therefore decided to adopt this evergreen model to describe the Unique Selling Propositions (USPs) of its exploitable results. In this first edition of the Exploitation Plan, the consortium is already able to present **12 USPs**; all partners have created at least one USP, some of them, up to three ones.

4.1 EXI01

Item ID	EXI01
Partner	EXI
For	embedded software developers in automotive, railway and aerospace sectors,
Who	need to use advanced ML and DL techniques for highly-dependable systems,
The	**SIL-AI** is a dedicated plug-in to the SILcal tool
That	provides objective evidence for compliance to functional safety standards like ISO 26262, IEC 61508 and others.
Unlike	the traditional safety analyses tools like *APIS, Medini, SOX, Ansys* and others,
Our	SIL-AI extends SILcal with new features and techniques uniquely suitable to novel SW architecture paradigms.

Early review findings:

EXI01-F01	Is 'highly-dependable' a common-use term?
EXI01-F02	Which kind of evidence? Which standards? (*now partially addressed*)
EXI01-F03	Four alternative products already represent the result of a thorough competition analysis.
EXI01-F04	It is expected to get a hint of the new features/techniques in the next version.
EXI01-F05	Overall: very focused but somehow narrow, might evolve and expand when actual results from projects are more defined.

4.2 BSC01

Item ID	BSC01
Partner	BSC
For	embedded software developers and V&V (Verification & Validation) engineers in automotive, railway and aerospace sectors
Who	need to use configure and collect information on hardware events on the NVIDIA® Jetson Orin™
The	**Orin-PMULib** is a dedicated Performance Montoring Unit Library
That	allows to configure on target performance monitoring counters and debug devices.
Unlike	the generic and high-level performance monitoring library solutions like *perf, oprofile, perfmon2, or PAPI*
Our	Orin-PMULib is specifically adapted to the platform and providers a lightweight but accurate way to configure and retrieve precise information on traceable hardware events.

Early review findings:

BSC01-F01	Maybe 'V&V' (Verification & Validation) is better than 'verification' alone, that has a restricted meaning (*now resolved in all three BSC's USPs: BSC01, BSC02, BSC03*).
BSC01-F02	Two alternative products represent the result of a competition analysis, others would be welcome (*already extended to four*).
BSC01-F03	'Tailored' has a quite specific meaning in safety and process capability standards, maybe here what is meant is 'dedicated' or 'adapted' (*resolved*).

4.3 BSC02

Item ID	BSC02
Partner	BSC
For	embedded software developers and V&V (Verification & Validation) engineers in automotive, railway and aerospace sectors
Who	need to characterize the performance of advanced ML and DL solutions for highly-dependable systems,
The	**pWCET-AI** is a novel probabilistic timing analysis tool
That	allows to characterize the timing behaviour and to derive probabilistic Worst-Case Execution Time (pWCET) estimates of AI-based solutions.
Unlike	existing tools based on traditional deterministic timing analysis approaches, such as static timing analysis (e.g. AbsInt aIT), dynamic analysis (e.g. RapiTime, SymTA/S, AbsInt Timeweaver) or exploiting exisiting probabilistic methods, such as those based on Extreme Value Theory (e.g. MBPTA-CV, RocqStat)
Our	pWCET-AI allows to derive trustworthy and tight execution time bounds capturing the specific non-deterministic traits of ML and DL software solutions running on complex SoCs such as, for example, the NVIDIA® Jetson Orin™

Early review findings:

BSC02-F01	The UNLIKE section identifies only categories of potential competitors, with only potential 'attributes' to identify them (*now specific competitors addressed in each category*).
BSC02-F02	The OUR section is more a product description rather than a 'statement of primary differentiation'.
BSC02-F03	Is 'highly-dependable' a common-use term? (see also EXI01-F01.)

4.4 BSC03

Item ID	BSC03
Partner	BSC
For	embedded software developers and V&V (Verification & Validation) engineers in automotive, railway and aerospace sectors
Who	need to build explainable and traceable DL components to be integrated in their systems
The	**DLETlib** is a dedicated DL Explainable and Traceable library
That	allows to develop DL components following the requirements from safety standards under consideration in SAFEXPLAIN.
Unlike	traditional DL frameworks (e.g. TensorFlow, PyTorch or Caffe) that only focus on creating a DL infrastructure without supporting explainability/traceability features
Our	DLETlib provides an extension to popular AI frameworks (similar to TensorFlow-probability) to accelerate the adoption of safety standards when DL is used.

Early review findings:

BSC03-F01	The THAT section should be self-contained and not make reference to SAFEXPLAIN.
BSC03-F02	In the UNLIKE section, ' traditional DL frameworks' is very generic and could be better characterised (*now resolved*).
BSC03-F03	The OUR section should give at least a hint on what kind of 'extension' is expected (*now indirectly addressed*).

4.5 AIKO01

Item ID	AIKO01
Partner	AIKO
For	the space industry entities, both commercial companies and public agencies
Who	require and invest into AI software enabling autonomy in safety and mission critical missions
The	**SAFEXPLAIN heritage** is a set of software libraries and guidelines applicable to space use cases
That	enables verification patterns and instruments for safety and explainability of AI models.
Unlike	the current approaches to verification and validation of classical software described in standards such as ECSS ones
Our	SAFEXPLAIN provides suitable tools for addressing the assurance of data-driven, ML and DL techniques and the compliance with FUSA standards

Early review findings:

AIKO01-F01	The FOR section identifies more the sector than the actual direct beneficiaries in terms of teams.
AIKO01-F02	The THE section uses 'SAFEXPLAIN' as part of the product name, that might raise copyright/trademark issues with other consortium's partners for individual exploitation.
AIKO01-F03	"Current approaches to verification and validation of classical software" are hardly the result of a competition analysis.
AIKO01-F04	The OUR section is repeating general project's claims, does not address any 'statement of primary differentiation'; it also mentions just 'SAFEXPLAIN' and not 'SAFEXPLAIN heritage'.

4.6 AIKO02

Item ID	AIKO02
Partner	AIKO
For	the space industry companies employing assets which require navigation and control
Who	need algorithms for enabling autonomy in their missions
The	**AIKO autonomous navigation application** is an AI software implementing algorithms for navigation
That	is explainable and safety compliant, thanks to SAFEXPLAIN FUSA guidelines and DL libraries.
Unlike	other AI navigation algorithms which are neither capable of providing explanation of their functioning, nor assessing their level of safety
Our	AIKO autonomous navigation application enables space critical systems with safe and explainable AI for their navigation operations

Early review findings:

AIKO01-F01	The FOR section identifies more the sector than the actual direct beneficiaries in terms of teams.
AIKO01-F02	The THAT section should be self-contained and not make reference to SAFEXPLAIN.
AIKO01-F03	Identification of shortcomings of competition is clear but there is not even one reference to competitors.
AIKO01-F04	The OUR section is repeating general valid claims but does not address any specific 'statement of primary differentiation'.

4.7 RISE01

Item ID	RISE01
Partner	RISE
For	research communities in safe and explainable AI
Who	need to use AI techniques for safety critical systems,
The	**XAI for safety** is a research platform
That	provides knowledge base and approach of using XAI to support application of AI-based components in safety critical systems.
Unlike	the general approach of XAI
Our	XAI for safety focuses on the requirements of safety assessment processes for CPS systems that use AI-based components

Early review findings:

RISE01-F01	The FOR, THE and WHO sections are extremely concise and might need some expansion (e.g. what is meant by 'research platform').
RISE01-F02	There is actually no competition analysis, the UNLIKE section is just contrasting own result against a set of processes and methods.
RISE01-F03	Overall: even in an academic model, an USP should concentrate more on the exploitable results than on describing the positioning of the research aims.

4.8 IKR01

Item ID	IKR01
Partner	IKERLAN
For	dependable and Critical autonomous AI-Based Systems (CAIS) developers in the automotive, railway, industrial and aerospace sectors
Who	need to develop and safety certify automated, heteronomous or autonomous systems integrating DL components
The	**Safety Pattern Library (SPL)** is a basic technical reference foundation that provides a set of documented exemplary safety-case(s) and exemplary safety-concept(s), with a technical focus on safety and XAI
That	describe common safety design approaches (solutions) to common design requirements (recurrent problems).
Unlike	the current need to define system-specific designs and argumentations (from scratch) due to a lack of formalized (public) 'reference foundations' and lack of mature safety standards (e.g., ISO 5469 draft)
Our	SPL provides a basic set of documented 'FUSA patterns to use in DL-based solutions', with a subset of them assessed by internal/external experts (e.g., TÜVR) as part of the safety-case assessment(s) (e.g., railway). **SPL** is complementary to **SDSL**.

Early review findings:

IKR01-F01	The THE section is very ambitious and has with a wide-ranging scope (cases, concepts and guidelines), might need strengthened description (e.g.: is it a combo of onboard SW library/off board tool/methodological instructions? does it include/require service/training/consultancy aspects?); (*now addressed, streamlined, partially resolved*).
IKR01-F02	The UNLIKE section does not include any results from competition analysis (*now further specified but still showing only 'abstract' competition - see also IKR02-F04*).
IKR01-F03	'Reference foundation' will be more understandable once questions in IKR01-F01 are addressed (*this is now more comprehensible though still more 'technically' than 'marketing' oriented*).

4.9 IKR02

Item ID	IKR02
Partner	IKERLAN
For	dependable and Critical autonomous AI-Based Systems (CAIS) developers in the automotive, railway, industrial and aerospace sectors
Who	need to develop and certify for safety: automated, heteronomous or autonomous systems integrating DL components
The	**Safety Lifecycle for DL-software (SLDL)** development is a 'safety lifecycle' (procedures, guidelines, templates) defined in compliance with existing IA-safety drafts (e.g., ISO 5469)
That	provides the required basic procedures, guidelines and templates to support the development of DL-components for CAIS systems, with a technical focus on safety and XAI.
Unlike	the lifecycles in Functional Safety Managements (FSM) for FUSA standards, that do not explicitly consider DL-software
Our	SLDL provides a starting point for developing DL-based dependable CAIS systems, which can be integrated as an extension to traditional Functional Safety Management (FSM) (e.g., IEC 61508). **SDSL** is complementary to **SPL**.

Early review findings:

IKR02-F01	The THE section has with a wide-ranging scope (*procedures, guidelines, templates*: these are typical tools for process definition), might need strengthened description (*this is now more comprehensible at the light of the stated complementarity between SLDL and SPL*). Products based on *procedures, guidelines, templates* are notoriously difficult to protect (very easy to copy and get away), this will have to be taken in consideration.
IKR02-F02	The UNLIKE section seems to put this product in competition with ISO standards, that seems awkward and needs explanation (see also below IKR02-F04).
IKR02-F03	The OUR section seems more a redefinition of the exploitable result (i.e.: *a methodological solution?*), rather than a statement of differentiation (*this is still partly questionable from a marketing viewpoint but now the motivation for it is clear - see IKR02-F04*).
IKR02-F04	Overall: a reshuffling of content in the various section is recommended, as well as a clarification of apparent competition with international standards (that is unlikely to be meant as the real competition); (*actually, this seems really to be the case, that is to say, finding an exploitation opportunity arising from the slow progress of international standards at a critical junction*).

4.10 IKR03

Item ID	IKR03
Partner	IKERLAN
For	dependable and Critical autonomous AI-Based Systems (CAIS) developers in the automotive, railway, industrial and aerospace sectors
Who	need to develop and certify for safety automated, heteronomous or autonomous systems integrating DL components
The	**Safety YOLO** library is a basic software re-design/implementation of a subset of YOLO functions in compliance with FUSA standards (systematic errors)
That	provides a safety software implementation of a subset of YOLO functions for the safe execution of DL-models.
Unlike	software implementations of DL-libraries such as YOLO
Our	safety YOLO library provides a safety software design and implementation for the deployment of DL-components.

Early review findings:

IKR03-F01	Not entirely clear the meaning of a library that "provides a basic software re-design/implementation"; desired outcome ok but a hint on the method is advisable (*now simplified and clarified*).
IKR03-F02	The UNLIKE section seems to exclude any existing competition; in marketing terms, this is no good (no competition, no market); (*it is now clear that the competition is the YOLO library itself*).
IKR03-F03	The OUR section seems a redefinition of the exploitable result (i.e.: *an alternative implementation of DL-components?*), rather than a statement of differentiation (*now simplified and clarified, especially at the light of IKR03-F02*).

4.11 NAV01

Item ID	NAV01
Partner	NAVINFO
For	ML, DL and computer vision engineers, researchers and programmers working on the automotive use-cases
Who	plan to design special vision based models with explainability in mind
The	**NIE XADAS** is a tool comprised of set of libraries and modules for Explainable ADAS systems
That	provides tools and data manipulation tools to develop such systems.
Unlike	other software, which focusses on more PoC/experimental designs
Our	tool allows users to build production-ready optimized models that are easy to deploy and use

Early review findings:

NAV01-F01	The FOR section could make an effort to better specify which ' automotive use-cases'.
NAV01-F02	The THAT section reads 'a *tool* that... provides *tools* and data manipulation tools'... some rephrasing is recommended.
NAV01-F03	The UNLIKE section mentions 'other software' with no attempt of identifying any.
NAV01-F04	Overall: No mention at all of 'safe' or 'safety'.

4.12 NAV02

Item ID	NAV02
Partner	NAVINFO
For	ML, DL and computer vision engineers, researchers and programmers working on the automotive use-cases
Who	wish to design vision based models with explainability as a major concern
The	**NIE Catalog** is tool designed for guidance on hardware and software requirements on specified use-cases for automotive vision models
That	provides guidance and recommendation on the software and hardware requirements based on the use case provided by the user.
Unlike	the other available information/tools online that aren't backed up by extensive experience, expertise and state-of-the-art research in the autnomous domain
Our	tool allows users to specify their use case and get information and recommendations that best suit their use-case

Early review findings:

NAV02-F01	The FOR section could make an effort to better specify which ' automotive use-cases'.
NAV02-F02	The THE section is not fully clear: are we talking of a *catalogue*? a *tool*? requirements *guidelines*? Some further indication on the nature of the expected product is recommended.
NAV02-F03	The UNLIKE section mentions ' information/tools' with no attempt of identifying any.
NAV02-F04	Overall: No mention at all of 'safe' or 'safety'.

5. Beyond initial Unique Selling Propositions

In the next nine months to the second version of the Exploitation Plan, the partners will update/extend/upgrade their initial Unique Selling Propositions at the light of the first internal review, of the first EC review and of the first results of the project itself.

On the other hand, partners are aware that Moore's template is a very smart way of starting elaborating exploitation strategies but does not cover all aspects that are expected for it. The above mentioned 'exploitation canvas' is actually covering a wider spectrum of concepts.

During the KoM, besides and beyond Moore's template, a decalogue that encompasses all exploitation aspects has been presented:

#	*EXPLOITATION ASSETS*
1	**a catalogue of** (foreground/background) **Intellectual Properties** (associated with the specific exploitable IP)
2	**their origin** (developed internally, by partners, in collaborative projects, etc...)
3	**their ownership** (fully owned, jointly owned, public domain, etc…)
4	**their licensing status** (free, nominal, discounted, premium; all/some rights reserved; geographical scope, etc...)
5	**their value** (by development cost, internal estimation, external audit, price list...)
6	**their protection** (copyrights, trademarks, patents, NDAs, etc…)
7	**policy on physically** (embedded in actual physical goods) **and virtually distributed** (internet or mobile platforms) **IPs**
8	**policy on returns from products** (physical units), **services** (subscriptions, uses, resources...) and **licensing** (upfront fee, recurrent fees) **of IPs**
9	**policy on the so-called** "some rights reserved" , or "**open content**" **approach** (open software, creative commons...)
10	**policy on the so-called "freemium" biz-model (**giving away some/all of your IPs for free, to open a market and/or to build on revenue from other associated services)

While not necessarily all these assets will have to be defined in details for all the exploitable results, at least consideration to them all will be given and succinct descriptions will be collected, to complement the enhanced Unique Selling Propositions. It is also important to note that while USPs are thought of as marketing tools to be fully externally exposed and therefore highly *public*, some of these assets might well be *restricted* or *confidential*.

6. Key performance indicators (KPIs)

As well known by seasoned experts as well as by experienced practitioners, the exploitation success is extremely difficult to predict and monitor; the control is only minimally within the project and externalities are overwhelming.

The consortium proposes a set of KPI directly linked to what exposed in the Exploitation Plan, but it refrains to venture in formalizing numerical targets for them at such an early stage in the life of project. The first set of tentative metrics will be presented in the first revision at M12, and the first quantitative monitoring results will be presented at M24.

KPI Short name	KPI description	Measure
#01 Exploitable Results	identified and named exploitable results	TBD
#02 Categories of products	impacted categories of products in the market	TBD
#03 Competitive Products	primary competitive products	TBD
#04 Competitive Orgs	primary competitive organisations	TBD
#05 Target User Groups	target groups of customers/users	TBD
#06 User-case Scenarios	opportunities in user-case scenarios	TBD
#07 Proprietary Products	proprietary products announcements	TBD
#08 Open-Source Products	open-source products announcements	TBD

The above-mentioned Key Performance Indicators (KPIs) will be carefully monitored and revised yearly, as they may change or evolve based on the project's progress.

Acronyms and Abbreviations

Each term should be bulleted with a definition.
Below is an initial list that should be adapted to the given deliverable.

- CA – Consortium Agreement
- D – Deliverable
- DoA – Description of Action (Annex 1 of the Grant Agreement)
- EB – Executive Board
- EC – European Commission
- FuSa – Functional Safety
- GA – General Assembly / Grant Agreement
- HPC – High Performance Computing
- IPR – Intellectual Property Right
- KPI – Key Performance Indicator
- M – Month
- MS – Milestones
- PM – Person month / Project manager
- WP – Work Package
- WPL – Work Package Leader

7. ANNEX: A basic primer on Intellectual Property

7.1 Intellectual Property and associated Rights (IP and IPRs)

Intellectual property (IP) is a term referring to a number of distinct types of creations of the mind for which a set of exclusive rights are recognized — and the corresponding fields of law.

Under intellectual property law (internationally acknowledged but with significant national flavours), owners are granted certain exclusive rights to a variety of intangible assets. Common types of intellectual property include copyrights, patents, trademarks.

Intellectual property rights (IPRs) can be bought and sold, leased or rented, or otherwise transferred between parties in much the same way that rights to real property or other personal property can be transferred.

7.2 What are copyrights and what is granted by them?

Copyrights protect products of the mind like: writings, music, sculpture, computer software, graphs, drawings, and mask works.

For a work to be copyrightable, it must be an original work of authorship fixed in any tangible medium of expression.

"Fixed" expressions include a broad range of works, including printouts, computer code, computer chips, and photographs.

Copyrights provide exclusive rights to authors or their assignees.

A copyright is used to prevent others from reproducing, distributing, performing or displaying publicly, or preparing ***derivative works*** without permission of the author.

7.3 What is a patent and what is granted by it? What about SW?

A ***patent*** is an agreement between the government and the inventor whereby, in exchange for the inventor's complete disclosure of the invention, the government gives the inventor the right to exclude others from making, using, or selling the invention.

Can software be patented?

- it is normally protected through copyrights, which do not protect the idea, but the expression of the idea
- certain types of software can be patented (US and EU very different approaches here, UE much more restrictive), and it may be preferable in certain situations for software to receive both copyright and patent protection
- one cannot patent an algorithm to perform mathematical functions or operations in software

7.4 What are trademarks?

Trademarks are any word, name, or symbol, or any combination of these elements (including smells for perfumes, noises for engines…), that are used to identify goods.

Trademarks provide some protection to its owner from those who would attempt to trade on the goodwill and recognition established by use of the same or a similar mark.

Trademarks can be registered or not.

7.5 What is licensing?

Licensing is the act of granting somebody else (some aspects of) the use of own IPR.

All kinds of IPRs (patents, copyrights, trademarks) are subject to licensing.

IPRs are likely to be registered/formalized to be better protected against infringement.

IPRs can be costly (with up front and/or recurrent fee) but can also be free (FLOSS).

Licensing does not affect ownership of IPR.