

Príloha č. 1 - Prehľad Aktivít/pracovných balíkov a Výstupov Projektu (anglická verzia)¹

Annex 1 - Overview of Project Activities/Work Packages, Milestones, Deliverables

Work packages

Work package number:	1
Work package title:	"Focusing on Research"
Start of implementation of the work package (month/year):	Oktober 2024
End of implementation of the work package (month/year):	March 2026
Research and development category under which the work package falls (industrial research/experimental development):	Industrial research
Members of the partnership involved in the implementation of the work package:	Both partners involved IMS Innovation II SAS
Description of the work package content:	WP1 is dedicated to research activities of all sub-parts of the solution. Activities and works running alongside.
Description of the work package objectives:	Objectives are: 01 Reach best technical and cost-effective method of testing. (achievement of high sensitivity and selectivity of Peak Machine) 02 Achieve novel benchmark solution for authenticity of wine. (research of sampling methods for Peak Machine and studies of AI solutions for classifications of wines and selection of the suitable solution) 04 Create awareness and method & tool to discipline the market via control system.
Description of the activities the implementation of which is the subject matter of the work package, specifying the members of the partnership to carry out each activity:	There are two main activities, divided in several Tasks (see below) – device(s)- Peak Machine related activity (Activity 1_D) and digital solution activities (Activity 1_DS). Activity 1_D: it is carried out by Applicant – IMS Innovation and main focus is given to Peak Machines (various tasks are planned related to research phase). Research activities regarding sensor optimisation and

¹ Pozn. Prehľad aktivít, pracovných balíkov a výstupov projektu tvoria nasledovné časti Opisu projektu, ktorý sme predkladali v anglickom jazyku ako "Annex 1 to the application – Project description"

	<p>achievement of the requested parameters, development of the sampling methods for detectors and generation of training data sets</p> <p>Activity 1_DS: It is carried out by Project partner - II SAS and focus is given to IA, Machine learning, cloud-based database. Research regarding Cloud solution for data storage and studies of suitable AI methods for classification of wines</p>
<p>Description of the tasks to be accomplished through the implementation of the work package:</p>	<p>Task 1.1 Research on sampling part of FULL-SIZE MACHINE</p> <ul style="list-style-type: none"> - Optimization of sample treatment methodology. In this part we will focus to find optimal sample amount (0.5-2mL) to reach most appropriate spectral data set for classification. - We will also validate the phase of the sample that will be most appropriate for analysis. - We considering two phases. Liquid phase and solid phase. In solids phase the water and alcohols will be evaporate from the vine sample. In liquid phase the vine without any special preparation will be analyzed. - The headspace sampling in various temperature ranges as well like Solid phase micro extraction (SPME) will be compared. In general, the SPME technique is more sensitive but more expensive as SPME require a special fibre that will need to be change. We will compare the results from spectrometer and validate it for requirements of classification model. <p>TASK 1.2 Research of the MINI SIZE PEAK MACHINE</p> <ul style="list-style-type: none"> - As the mini-IMS have worst resolving power like standard IMS instrument we need create the firmware that will compensate the resolving power. The research in this point will be focused on creation of Hadamard transform pulsing what should improve the selectivity but also the sensitivity of the instrument. Main focus will be on creation of firmware for the Shield Buddy that will use Hadamard transformation pulsing and control all required accessories like high voltage modules, heaters and amplifier. <p>Task 1.3 Research on sampling part of MINI SIZE PEAK MACHINE</p> <ul style="list-style-type: none"> - As the goal of mini size peak machine is to be used for field validation the sampling technique as well like sampling method must be as simple as possible. Due to this reason we propose to use high temperature plate where the operator will place the droplet of the vine sample. The droplet volume will be controlled by pipetting. Evaporated vine samples will be injected to IMS for spectrometric analysis and classification. The research in this point will be focused on study of optimal amount of sample and optimal temperature of the plate. These two parameters will be synchronically interconnected with reached spectrometric out used for AI classification. <p>Task 1.4: Research on AI neural networks for multispectral data analysis in determining wine origin and variety (Duration 12 months)</p> <p>Multispectral data analysis offers insights into various parameters of wine production, including grape variety, growing conditions (such as soil composition and climate) and potential adulteration. AI methodologies provide robust tools for accurately determining wine origin, identifying grape varieties, and swiftly detecting wines originating from regions where they are not expected. This process can be conducted rapidly and with</p>

	<p>very high precision. AI methodologies mainly use of neural networks fits this task due to 3D nature of the spectral data.</p> <p>Research Activities:</p> <p>Artificial intelligence techniques: In this phase, various artificial intelligence techniques will be explored, mainly neural network models and also machine learning algorithms to enhance data analysis capabilities and accuracy of classification. These algorithms will be trained to recognize specific markers indicative of wine origin within spectral data. The training process will leverage a reference database containing spectral data from various wines, which will be stored in a cloud-based infrastructure. To further improve the classification precision of the final model's various data pre-processing methods, dimensionality reduction techniques and hyperparameter optimization methods for models will be explored.</p> <p>Data Analysis and Origin Prediction: Upon uploading a new spectral fingerprint obtained from a wine sample to the cloud-hosted server, which will pre-process acquired data and conduct in-depth analysis using artificial intelligence model and predict the wine's origin. This prediction will be based on the similarity of the spectral fingerprint to existing entries within the cloud-hosted reference database.</p> <p>Results and Visualization: The outcomes of the analysis, including the predicted origin and associated confidence scores, will be relayed to users via a responsive web application or mobile application from cloud-hosted server immediately after the analysis. Furthermore, visualization tools will be integrated to present the data in a comprehensible manner for facilitating interpretation.</p> <p>Task 1.5 Research in cloud-based database for multispectral analysis in wine origin determination</p> <p>Duration 12 months</p> <p>Cloud computing presents a promising way of enhancing the efficiency and accessibility of multispectral analysis for the determination of wine origin. By capitalizing the strengths of the cloud computing, which are scalability, security, and collaborative functionalities, a robust system for ensuring the authenticity and quality of wines can be developed, which would bring added value to multiple sectors. The primary challenge in this endeavour is the establishment of a comprehensive reference database of wine spectral fingerprints encompassing diverse grape varieties, geographical regions, and vintages. Other challenges in this area would include interoperability of the various systems and streamlining of the processes. Research in this area will have to be conducted for most effective implementation of this technology.</p> <p>Activities:</p> <ol style="list-style-type: none"> 1. Data Acquisition: Wineries will utilize portable or in-situ multispectral analysers to capture spectral data from wine samples across varied environmental conditions, sorts, vintages. 2. Data Preprocessing: Raw spectral data will undergo preprocessing procedures, including noise reduction, baseline correction and other required by the trained artificial intelligence model, to ensure data consistency and integrity. These processes will be executed following data upload to cloud-based platforms. 3. Data Storage: Data storage will be split into two separate cloud-hosted databases: Spectral wine fingerprint database and user database. <p>3.1 User database will be used for collecting spectral data from users and will be used for archiving. Data stored in this database will be raw spectral</p>
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	<p>data, pre-processed spectral data, and results from the analysis. This data will be securely stored within cloud storage services such as Google Cloud Storage, Amazon S3 or Microsoft Azure, enabling centralized access, on demand scalability, and data redundancy ensuring constant availability of the service and safety.</p> <p>3.2 Spectral wine fingerprint database will be used as reference database for training, testing and validating AI models. The curated dataset will serve as the foundation for training and evaluating AI models, facilitating their proficiency in predicting wine origin based on spectral characteristics. Dataset will be composed of reference spectral fingerprints pertaining to diverse grape varieties, geographical regions, and vintages. Continuous updates and maintenance will be essential to uphold the accuracy and currency of this database. This database will also be cloud-hosted on one of the afore mentioned cloud storage services due to benefits the bring.</p> <p>4. Data Enhancement: Due to potential constraints in data availability during project execution, efforts will be directed toward curating a comprehensive and reliable dataset sourced from authentic wine samples and creation of the pipeline that would allow for fast training, testing and validation of AI model which could respond to updates of the reference dataset.</p> <p>5. Data classification: AI Model that was trained on reference spectral wine fingerprint will be located on cloud-based server hosted by one provider such as Amazon or Microsoft Azure, this will allow for scalability, redundancy and will ensure processing power and accessibility of the service.</p>
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Work package number:	2
Work package title:	"Focusing on Development"
Start of implementation of the work package (month/year):	October 2024
End of implementation of the work package (month/year):	March 2026
Research and development category under which the work package falls (industrial research/experimental development):	experimental development
Members of the partnership involved in the implementation of the work package:	Both partners involved - IMS Innovation II SAS
Description of the work package content:	The WP2 is dedicated to Construction of the Mini and Full Peak Machines, including the final design and prototyping. Testing of the instruments and validation experiments. Final design of the IT solution for classification of wines and for the cloud solution for data storage.

<p>Description of the work package objectives:</p>	<p>Objectives:</p> <p>01 Reach best technical and cost-effective method of testing (development of final design for Full and Mini Peak Machine and prototype of Mini Peak Machine)</p> <p>02 Achieve novel benchmark solution for authenticity of wine</p> <p>03 Develop model and unique cloud library with thousands of wine-fingerprints (development of backend IT solutions and applications for data storage)</p> <p>04 Create awareness and method & tool to discipline the market via control system</p>
<p>Description of the activities the implementation of which is the subject matter of the work package, specifying the members of the partnership to carry out each activity:</p>	<p>There are two main activities, divided in several Tasks (see below) – device(s)- Peak Machine related activity (Activity2_D) and digital solution activities (Activity 2_DS).</p> <p>Activity 2_D: it is carried out by Applicant –IMS Innovation and main focus is given to Peak Machines (final development of Full size machine with customization of the sampling part incl. validation; and final development of Mini size Peak Machine into Semi prototype phase)</p> <p>Activity 2_DS: It is carried out by Project partner - II SAS and main focus is given to development of database and application as such</p>
<p>Description of the tasks to be accomplished through the implementation of the work package:</p>	<p>Task 2.1 Final development of the FULL SIZE MACHINE</p> <ul style="list-style-type: none"> - This task will be focused on software improvements in order to reach higher user-friendly stage. - Optimization of IMS parameters to reach best results for analysed vine samples. Here we will focus on IMS drift tube temperature, optimal drift gas flow, optimal resolving power (note the high resolving power do not have to be optimal especially in case if AI classification issued). <p>Task 2.2 Customization of the Sampling part of the FULL SIZE MACHINE</p> <ul style="list-style-type: none"> - The most appropriate results that will come from Task 1.1 will be used and validated in this task - We will focus on fine tuning of sampling method and development of sampling methodology that will be used for sampling of vine. The development of appropriate methodology is required in order to reach most reproducible results what is also required for development of AI model. <p>Task 2.3 Validation of the FULL SIZE MACHINE w. wine samples</p> <ul style="list-style-type: none"> - In this task we will use real sample vines for creation of spectrometric fingerprint that will be used for AI model. - The wines of various parameters will be tested where the spectrometric fingerprints will be recorded and used for creation of library required AI classification <p>Task 2.4 Final development of the MINI SIZE PEAK MACHINE</p> <ul style="list-style-type: none"> - We will integrate and assembly the mini IMS drift tube to control board based on Shield Buddy. - We will test the firmware that will come from task 1.2 - We will assembly and test the sampling unit that will come from task 1.3 - We will test the mini size IMS system for vine analysis - We will use the output results for AI classification

Task 2.5 Development of frontend and backend customer application for analysis

Development of user-friendly application is one of the main goals of this project. Application for analysis of spectral wine data needs to be composed of frontend and backend parts which work together to bring all the needed functionalities. Various stakeholders have different requirements for the application which must be collected and then incorporated into the application. Application also must be available on different platforms for different use cases.

Activities:

1. Defining Application Requirements:

Identification of Target Users: Stakeholders including wineries, quality control management, and regulatory inspectors have specific requirements for functionalities and specific solutions will have to be tailored according to their needs.

Core Functionality Specification: Essential functionalities encompass authentication and authorization mechanisms, data upload capabilities for analysis, spectral fingerprint visualization, spectral fingerprint classification, classification model training, data history tracking, and report generation.

Additional Requirements Assessment: Emphasis on performance optimization, high security, data isolation, scalability measures, and user-centric design principles to enhance usability and experience.

2. Platform Selection:

Web Application: Leveraging technologies such as HTML5, CSS3, and JavaScript for web development offers accessibility across devices, thereby extending the application's flexibility and reach. Nowadays web applications are on par with desktop applications providing same capabilities.

Mobile Application: Tailored for field users, particularly wineries, native development for iOS and Android or cross-platform frameworks like React Native or Flutter are viable options, ensuring seamless on-the-go access.

Desktop Application: While potentially giving a richer user experience, due to better performance than web applications may be constrained by device specific requirements. However, most of the languages as Node.JS, Java and Python provide frameworks which allow for creation of desktop applications which are usable on different operating systems.

3. Development of Application:

User Interface (UI) Design: Employing mock-ups and prototypes facilitates the delineation of application layout, user journey mapping, and interactive component specification, thereby optimizing user experience. Further user testing can also provide insights into stakeholders needs for user interface.

Backend Integration: Establishment of secure Application Programming Interfaces (APIs) enables seamless integration between frontend applications and backend analyser services, ensuring efficient data exchange and retrieval of analysis outcomes.

Data Management: Implementation of robust mechanisms for data upload, storage, and retrieval, with a focus on cloud storage solutions to enhance scalability, accessibility, and redundancy as per user requirements.

Security Implementation: Integration of robust authentication, authorization, and data encryption protocols safeguard user privacy and data integrity, ensuring compliance with regulatory standards.

Testing and Deployment: Testing encompassing functional, security, load and performance tests is essential prior to

	<p>deployment in a production environment, guaranteeing reliability and optimal performance post-launch.</p> <p>Task 2.6 Development of cloud library</p> <p>The utilization of cloud computing infrastructure offers substantial capabilities in managing extensive data storage and executing complex computational tasks, making it an optimal solution for conducting large-scale analyses of spectral fingerprint data. The accessibility of cloud-based systems via the internet allows access for wineries located over the globe.</p> <p>Cloud architecture allows centralized management of critical components, including the reference spectral fingerprint database, AI models and software applications. This centralized approach ensures uniformity across the system and streamlines the implementation of updates, thus enhancing operational efficiency. Moreover, the cloud can facilitate collaboration among various stakeholders engaged in wine origin determination, including researchers, wineries, and regulatory bodies. This collaborative environment promotes knowledge exchange and supports research progress.</p> <p>Activities:</p> <p>1.Selection of Cloud Platform: An informed decision regarding the cloud service provider must be made. Providers include Amazon Web Services (AWS), Microsoft Azure, or Google Cloud Platform (GCP). This process involves evaluation of platform offerings, encompassing services and tools which meet specific project needs.</p> <p>2.Implementation of Microservices: Using a microservices architecture enables the decomposition of systems into modular, independently deployable units, allowing for scalability and agility in application development.</p> <p>3.Integration of Application Programming Interfaces (APIs): Integration of APIs enables interoperability between diverse components of the system, allowing for efficient data exchange and communication between different services.</p> <p>4.Security and Privacy Measures: Prioritization of security protocols, including authentication mechanisms, data encryption, and access control mechanisms, safeguards sensitive information, ensuring compliance with regulatory standards and user privacy.</p> <p>5.Effective Data Management: Implementation of robust data management strategies, including data storage, retrieval, and governance mechanisms, ensures data integrity, availability, and scalability, thus optimizing system performance and reliability.</p> <p>Overall, usage of cloud-based application development methodologies offers a scalable, cost-effective, and agile approach to software development. By harnessing the inherent advantages of cloud platforms and leveraging appropriate tools and technologies, organizations can develop modern and resilient applications which keep with the evolving demands of the digital space.</p>
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Milestones

Milestone number:	1
Milestone title:	Full size Peak Device ready for final testing

The date when the milestone will be achieved (month/year) and its relevance to this date:	1/26
Number and title of the work package under which the milestone is to be achieved and its relevance to the given work package:	WP 1 Focusing on Research– Task 1.1 WP 2 Focusing on Development– Task 2.1 and 2.2
Members of the partnership who will be involved in achieving the milestone and a description of their contribution to achieving it:	IMS Innovation + II SAS
A description of the activities necessary to achieve the milestone:	<p>Steps to be taken for successful meeting of milestone are described within particular Tasks.</p> <p>On the very beginning of the process, there is research focusing on optimization of sample treatment methodology with the aim to reach most appropriate spectral data set for classification.</p> <p>In parallel, software improvements in order to reach higher user-friendly stage will be realized and optimization of IMS parameters in order to reach best results for analyzed vine samples.</p> <p>(=Prototype of Full Peak Machine is available, the research will focused on testing, development of the sampling methods and procedures and final design of the instrument including. Important part of the project implementation, as the analyser design and its performance plays an important role for the development of whole application)</p> <p>Progress will be monitored and reported to the Steering Committee.</p>
The importance of the milestone and milestone achievement for the implementation of the project:	Key element of project. Peak Machine with sampling part is of results of the project. Its Readiness for testing is vital for finalisation device as such (successful testing) and other sub-parts of project (Cloud Solution, customer application but also for further development of Mini size Peak Machine) as well.
The probability that the milestone will be achieved and the factors that may slow down/jeopardise achieving it:	<p>High Probability</p> <p>Serious Problems in the process of adjustments are not foreseen. However readiness to come up with possible solution (capable and excellent experts involved) & close monitoring foreseen.</p>

Milestone number:	2
Milestone title:	Full size Peak Machine ready to be used
The date when the milestone will be achieved (month/year) and its relevance to this date:	3/26
Number and title of the work package under which the milestone is to be achieved and its relevance to the given work package:	WP 2 Focusing on Development– Task 2.3
Members of the partnership who will be involved in achieving the	IMS Innovation + II SAS

milestone and a description of their contribution to achieving it:	
A description of the activities necessary to achieve the milestone:	<p>Steps to be taken for successful meeting of milestone are described within particular Task.</p> <p>The wines of various parameters will be tested where the spectrometric fingerprints will be recorded and used for creation of library required AI classification. Once the pilot testing is accomplished and validation based on real wine samples is completed, product (device) can be considered as Ready.</p> <p>The result of tests will be reported to the Steering Committee.</p>
The importance of the milestone and milestone achievement for the implementation of the project:	Key element of project. Peak Machine with sampling part is of results of the project. Its Readiness for usage is one of success criteria defined on project level.
The probability that the milestone will be achieved and the factors that may slow down/jeopardise achieving it:	<p>High Probability</p> <p>Serious Problems in the process of adjustments are not foreseen. However, readiness to come up with possible solution (capable and excellent experts involved) & close monitoring foreseen.</p>

Milestone number:	3
Milestone title:	Semi prototype finalization of mini size machine
The date when the milestone will be achieved (month/year) and its relevance to this date:	3/26
Number and title of the work package under which the milestone is to be achieved and its relevance to the given work package:	<p>WP 1 Focusing on Research – Task 1.2, 1.3</p> <p>WP 2 Focusing on Development– Task 2.4</p>
Members of the partnership who will be involved in achieving the milestone and a description of their contribution to achieving it:	IMS Innovation
A description of the activities necessary to achieve the milestone:	<p>Steps to be taken for successful meeting of milestone are described within particular Tasks.</p> <p>The focus is primary given on research part -on creation of Hadarman transform pulsing what should improve the selectivity but also the sensitivity of the instrument. Main focus will be on creation of firmware for the ShieldBuddy that will use Hadarman transformation pulsing and control all required accessories like high voltage modules, heaters and amplifier. Besides, the research in this point will be focused on study of optimal amount of sample and optimal temperature of the plate. These two parameters will be synchronically interconnected with reached spectrometric out used for AI classification.</p> <p>It is not expected to delivered Device ready for usage within the project, but the goal is to prepare prototype. Testing phase is in plan after project closure.</p>

	Even this milestone is not seen as key factor of success, its future deployment is foreseen, therefore also progress will be subject of monitoring.
The importance of the milestone and milestone achievement for the implementation of the project:	From project perspective is importance rather lower, on not vital in terms of success of project (The full size Machine with digital element are considered as essential parts). However, from long time perspective, and next steps regarding building an digital library of wine fingerprints, finalisation of prototype into "ready to use" phase is vital. There for, the milestone was set, so the importance is clearly stated.
The probability that the milestone will be achieved and the factors that may slow down/jeopardise achieving it:	Medium Probability Serious Problems in the process of adjustments are not foreseen, however some difficulties are expected (adjustment of sampling part, data transition. However, readiness to come up with possible solution (capable and excellent experts involved) & close monitoring foreseen.

Milestone number:	4
Milestone title:	Software development - neural network
The date when the milestone will be achieved (month/year) and its relevance to this date:	1/26
Number and title of the work package under which the milestone is to be achieved and its relevance to the given work package:	WP 1 Focusing on Research – Task 1.4 WP 2 Focusing on Development– Task 2.5
Members of the partnership who will be involved in achieving the milestone and a description of their contribution to achieving it:	IMS Innovation + II SAS
A description of the activities necessary to achieve the milestone:	<p>Steps to be taken for successful meeting of milestone are described within Tasks.</p> <p>The outcome of research activities is to create an idea of how this model should be structured followed by teaching and optimizing process of the model. This part is crucial for the success of the implementation as it is the frontend element seen by users (data visualisation and data uploading).</p> <p>Functional and user-friendly design with all necessary integration shall be as result of activities (Testing plans, data diagrams/models validation, mock-up interface).</p> <p>The result of tests will be reported to the Steering Committee.</p>
The importance of the milestone and milestone achievement for the implementation of the project:	Key element of project. Trained AI Model is considered as one of most valid and unique results of the project. (The experience of the research team in the field of AI in different fields of applications is a guarantee for high success rate of this development, The researcher may build on some earlier research available in the literature and also early studies of AI application in IMS field)
The probability that the milestone will be achieved and the factors that	Scientific paper is expected to be elaborated. High Probability

may slow down/jeopardise achieving it:	Serious Problems in the process of adjustments are not foreseen. However, readiness to come up with possible solution (capable and excellent experts involved) & close monitoring foreseen.
Milestone number:	5
Milestone title:	Cloud Library with application ready for testing
The date when the milestone will be achieved (month/year) and its relevance to this date:	1/26
Number and title of the work package under which the milestone is to be achieved and its relevance to the given work package:	WP 1 Focusing on Research – Task 1.5 WP 2 Focusing on Development– Task 2.6
Members of the partnership who will be involved in achieving the milestone and a description of their contribution to achieving it:	IMS Innovation + II SAS
A description of the activities necessary to achieve the milestone:	<p>Steps to be taken for successful meeting of milestone are described within particular Tasks.</p> <p>There is focus given on data storage and processing in the form of the cloud. First of all, data Acquisition is needed: Wineries will utilize portable or in-situ multispectral analysers to capture spectral data from wine samples across varied environmental conditions, sorts, vintages. Secondly Data Preprocessing is to be realised. Raw spectral data will undergo preprocessing procedures, including noise reduction, baseline correction and other required by the trained artificial intelligence model, to ensure data consistency and integrity. These processes will be executed following data upload to cloud-based platforms. Storage will be split into two separate cloud-hosted databases: Spectral wine fingerprint database and user database.</p> <p>In development part, the platform will be selected, Microservices will be implemented, APIs Integration realised, and Security and Privacy Measures set. The goal is to interconnect all individual parts.</p> <p>It is expected to deliver several progress reports.</p> <p>Functional and user friendly design with all necessary integration shall be as result of activities (Testing plans, data diagrams/models validation, mock-up interface).</p>
The importance of the milestone and milestone achievement for the implementation of the project:	Key element of project. Cloud library with application for users is considered as one of most valid and unique results of the project.
The probability that the milestone will be achieved and the factors that may slow down/jeopardise achieving it:	<p>High Probability</p> <p>Serious Problems in the process of adjustments are not foreseen. However, readiness to come up with pragmatic and also progressive and creative solutions are must& close monitoring foreseen.</p>

Deliverables

Deliverable number:	1
Name and type/kind of deliverable:	Report on sampling methods for Mini and Full size Machine (Analytical report)
The date when the deliverable will be achieved (month/year) and its relevance to this date:	03/2026
Number and title of the work package under which the deliverable is to be achieved and its relevance to the given work package:	WP 1 - "focusing on Research" Tasks under this WP1, which will the deliverable Nr.1 achieved: 1.1 Research on sampling part of FULL SIZE MACHINE 1.3 Research on sampling part of MINI SIZE PEAK MACHINE
Members of the partnership who will be involved in achieving the deliverable and a description of their contribution to achieving it:	IMS Innovation : testing different sampling methods for Full size and Mini size analyser, development and modification of the sampling methods Spectrometer – evaluation of the sampling methods
A description of the activities necessary to achieve the deliverable:	Selection and application of different sampling methods for wine for IMS instruments, Comparison of achieved sensitivities, speed of the sampling, costs of the sampling methods
The importance of the deliverable and deliverable achievement for the implementation of the project:	High important task, sampling efficiency crucial for success of the methods, as it substantially influence the performance of the analyser, especially its sensitivity
The likelihood that the deliverable will be achieved and the factors that may slow down/jeopardise achieving it:	High success rate, preliminary experience with headspace methods exists, this method is applicable, looking for different methods, which can outperform headspace (e.g. SPME, tennax...)

Deliverable number:	2
Name and type/kind of deliverable:	Prototype of Full size Peak Machine (Prototype of Full Size Peak Machine Documentation)
The date when the deliverable will be achieved (month/year) and its relevance to this date:	3/26
Number and title of the work package under which the deliverable is to be achieved and its relevance to the given work package:	WP 1 -"focusing on Research" Tasks under this WP1, which will the deliverable Nr.2 achieved: 1.1 Research on sampling part of FULL SIZE MACHINE WP 2 -"focusing on Development" Tasks under this WP2 which will the deliverable Nr.3 achieved: 2.1 Final development of the FULL-SIZE MACHINE 2.2 Customization of the Sampling part of the FULL-SIZE MACHINE 2.3 Validation of the FULL SIZE MACHINE w. wine samples
Members of the partnership who will be involved in achieving the deliverable and a description of their contribution to achieving it:	IMS Innovation: preparation of the plans for final design of the Full Peak Machine
A description of the activities necessary to achieve the deliverable:	Final design of the Full Peak Machine will be prepared in the form of documentation (drawings, electrical schemes, final design of the instrument).

The importance of the deliverable and deliverable achievement for the implementation of the project:	High importance, the documentation will be basis for industrial production of the analyser
The likelihood that the deliverable will be achieved and the factors that may slow down/jeopardise achieving it:	High, the experience the project teams in finalisation of the final design of the IMS detectors

Deliverable number:	3
Name and type/kind of deliverable:	Customer Application (Application)
The date when the deliverable will be achieved (month/year) and its relevance to this date:	3/26
Number and title of the work package under which the deliverable is to be achieved and its relevance to the given work package:	<p>WP 1 - "focusing on Research"</p> <p>Tasks under this WP1, which will the deliverable Nr.3 achieved:</p> <p>1.4 Research on AI neural networks for multispectral data analysis</p> <p>1.5 Research of the structure of Cloud Library</p> <p>WP 2 - "focusing on Development"</p> <p>Tasks under this WP2 which will the deliverable Nr.3 achieved</p> <p>2.5 Development of customer application for backend analyser</p> <p>2.6 Development of Cloud Library</p>
Members of the partnership who will be involved in achieving the deliverable and a description of their contribution to achieving it:	IMS Innovation // SAS
A description of the activities necessary to achieve the deliverable:	Development of the application for the Peak Machine,
The importance of the deliverable and deliverable achievement for the implementation of the project:	High importance, the application is an important part of the analyser, responsible for the control and data acquisition, data storage, graphical output and interface as well as communication with the cloud, AI classification of the wine samples
The likelihood that the deliverable will be achieved and the factors that may slow down/jeopardise achieving it:	High, the experience the project teams in finalization of the final design of the IMS detectors

Deliverable number:	4
Name and type/kind of deliverable:	Database containing 500 samples (fingerprints) (Database)
The date when the deliverable will be achieved (month/year) and its relevance to this date:	3/26
Number and title of the work package under which the deliverable is to be achieved and its	<p>WP 2 - "focusing on Development".</p> <p>Tasks under this WP2 which will the deliverable Nr.4 achieved</p>

relevance to the given work package:	2.3 Validation of the FULL SIZE MACHINE w. wine samples
Members of the partnership who will be involved in achieving the deliverable and a description of their contribution to achieving it:	IMS Innovation
A description of the activities necessary to achieve the deliverable:	Necessity to ensure samples for running the test in confidential interval min. 95. Control check, whether data transfer and data interpretational are adequate, functional and reliable.
The importance of the deliverable and deliverable achievement for the implementation of the project:	High importance, the database is a key factor of success
The likelihood that the deliverable will be achieved and the factors that may slow down/jeopardise achieving it:	High, adequate number of samples needed, therefore proactive communication with stakeholders (esp. small winers and associates vital)

Distribution of roles and responsibilities

applicant	Identified work packages	Identified project milestones	Identified project deliverable	Additional information
Applicant's roles	Work Package 1 +2	<p>Full Size Peak Devise ready for final testing</p> <p>Full Size Peak Machine ready to be used</p> <p>Semi prototype of Mini Size Peak Machine</p> <p>Software development – Neural Network</p> <p>Cloud Library with Application ready for testing</p>	<p>Report of sampling methods of Mini and Full Size Machine</p> <p>Prototype of Full Size Machine</p> <p>Customer Application</p> <p>Database containing 500 samples (finger print)</p>	The Volume of the work and financial expenditures is divided between Applicant and Partner 50:50 therefore all tasks of the WP 1+2 with all identified deliverables and milestones will be achieved jointly. That means the Applicant will execute the same tasks as the Partner .
Applicant's responsibilities	To executive the role of Guarantor of WP 1 and Co-Guarantor 2	<p>Full Size Peak Devise ready for final testing</p> <p>Full Size Peak Machine ready to be used</p> <p>Semi prototype of Mini Size Peak Machine</p>	<p>Report of sampling methods of Mini and Full Size Machine</p> <p>Prototype of Full Size Machine</p> <p>Customer Application</p>	

		Software development – Neural Network Cloud Library with Application ready for testing	Database containing 500 samples (finger print)	
Partner	Identified work packages	Identified project milestones	Identified project deliverable	Additional information
Roles of partner	Work Package 1 +2	Full Size Peak Devise ready for final testing Full Size Peak Machine ready to be used Semi prototype of Mini Size Peak Machine Software development – Neural Network Cloud Library with Application ready for testing	Report of sampling methods of Mini and Full Size Machine Prototype of Full Size Machine Customer Application Database containing 500 samples (finger print)	The Volume of the work and financial expenditures is divided between Applicant and Partner 50:50 therefore all tasks of the WP 1+2 with all identified deliverables and milestones will be achieved jointly. That means the Applicant will execute the same tasks as the Partner .
Responsibilities of partner	To executive the role of Co-Guarantor of WP 2	Full Size Peak Devise ready for final testing Full Size Peak Machine ready to be used Semi prototype of Mini Size Peak Machine Software development – Neural Network Cloud Library with Application ready for testing	Report of sampling methods of Mini and Full Size Machine Prototype of Full Size Machine Customer Application Database containing 500 samples (finger print)	