Horizon 2020 - The EU Framework Programme for Research and Innovation
Project Co-funded by the European Commission
Grant Agreement Number 952119 — KITT4SME
platform-enabled KITs of arTificial intelligence FOR an easy uptake by SMEs

Guideline for Applicants for the Open Calls (Type-B)

Submissions start	:	10th of June 2022	00:00 CEST
Submissions end	:	12th of August. 2022	17:00 CEST
Document version	:	1.0	

Contents

Version History 4
1. Introduction 5
2. The KITT4SME project 6
2.1. The main application areas targeted by KITT4SME 6
2.2. The main objectives of KITT4SME 7
2.3. Overview of the KITT4SME technical infrastructure 8
2.4. AI components integrated to the KITT4SME platform 8
2.4.1. Fatigue Monitoring System (FaMS) 9
2.4.2. AI for Quality Systems (AIQuS) 9
2.5. Overview of RAMP 9
2.6. KITT4SME pilot experiments 10
2.6.1. GHEPI (IT) - Use Case: Injection moulding sector 10
2.6.2. I TEK (IT) - Use Case: High precision hand tools manufacturing sector 10
2.6.3. WAM (PL) - Use Case: Electrical equipment sector 11
2.6.4. DIMAC (IT) - Use Case: Quality system and equipment sector 11
3. KITT4SME Type-B Open Call 12
3.1. Scope and description 12
3.2. Challenges to be addressed 13
3.2.1. Use Cases 13
3.2.2. Technology of the proposed solutions 13
3.2.3. The Team 13
3.2.4. Creation of a new 'AI-package' 14
3.3. Implementation and expected activities 14
3.3.1. Definition of the Use Case 15
3.3.2. Integration into the KITT4SME platform 15
3.3.3. Functionality testing 16
3.3.4. Demonstration process 16
3.4. Duration of the action 16
3.5. Eligibility criteria 16
3.5.1. Conditions for application 16
3.5.2. Eligible countries 17
3.5.3. Multiple submissions 17
3.5.4. Language 18
3.6. Proposal submission 18

3.6.1. Systems to be used 18
3.6.2. Preparation of proposals 19
3.6.3. Overview of the evaluation and notification process 20
3.6.4. Mentor assignment 20
3.6.5. Complaint due to error in the KITT4SME Proposal Submission System 20
3.6.6. Confidentiality 21
3.6.7. Deadline 21
3.6.8. Conflict of interest 21
3.6.9. Scientific Misconduct and Research Integrity 21
3.7. Proposal Evaluation Process 21
3.7.1. Evaluation Criteria 21
3.7.2. Scoring 23
3.7.3. Individual Evaluation Report (IER) and evaluation panel meeting 23
3.7.4. Selection and the announcement of the awarded proposals 24
3.7.5. Appeal procedure 24
3.7.6. The negotiation process 24
3.8. Action Monitoring 25
3.8.1. Expected outcomes & deliverables 25
3.9. Financial support 26
3.9.1. Origin of the funds 26
3.9.2. Eligibility of costs 26
3.9.3. Funding rate 27
3.9.4. Indicative distribution of funds 27
3.10. Intellectual Property Rights (IPR) 27
3.10.1. IPR – ownership of the sub-granted actions 27
3.10.2. Communication obligations 27
3.10.3. Dissemination through the project means 28
3.11. Support for the applicants 28

Version History

Version	Issue Date	Content & Changes
1.0	09.06.2022	First public release

1. Introduction

KITT4SME is an EU-funded project which provides the IT-infrastructure and core AI-based software modules to support the production by SMEs and mid-caps from the manufacturing world. **Type-B Open Call** invites small teams composed of solution providers and manufacturing end users to conduct pilot experiments.

This document is about KITT4SME Type-B Open Call.

Submissions start	:	10th of June 2022, 00:00 CEST
Submissions end	:	12th of August 2022, 17:00 CEST
Available budget		The total budget for Type-B open call is EUR 1.5 million.
Funding	:	Up-to: EUR 200,000/team
Scope	:	Create **industrial demonstrators and disseminate the acquired success stories** from the use of the KITT4SME platform. **Enhance KITT4SME's portfolio of AI-solutions** that add value to the production systems of manufacturing SMEs, with an **emphasis on the reuse of existing solutions** (create packages that use one or more solutions in the KITT4SME platform) and benefiting of the KITT4SME platform.
Eligibility	:	Submission is only open to **teams** that include **at least one solution provider** and **at least one manufacturing end user**. Individual entities should be either SMEs or mid-caps and established in: EU-Member States, OCTs, UK, H2020 Associated Countries (H2020 eligible countries)[1].
Total number of funded projects	:	7-8 (up to EUR 1.5 million in total)
Project (Action) duration	:	Project expected start date: 1st of February 2023 (common date for all) Project expected end date: 31st of January 2024 (common date for all)

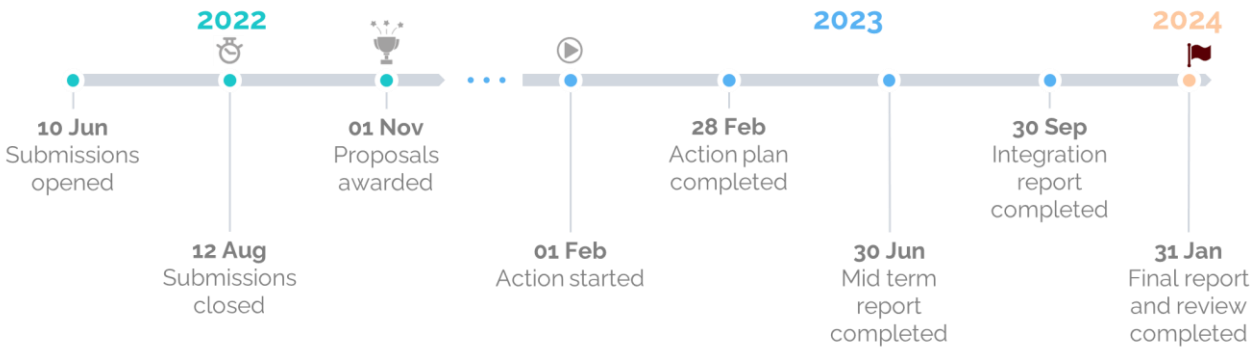

Figure 1. Timeline of Type-B Open Calls

[1] https://ec.europa.eu/info/research-and-innovation/statistics/framework-programme-facts-and-figures/horizon-2020-country-profiles_en

2. The KITT4SME project

This section gives brief information about the three main axes and the main objectives of the project, the technical infrastructure and the AI tools that are already foreseen in the KITT4SME platform, a quick overview of RAMP (Robotics and Automation Marketplace) and the pilot experiments and the experimental infrastructure of the KITT4SME project.

KITT4SME specifically targets European SMEs and mid-caps, with a role in the manufacturing environment, to introduce artificial intelligence (AI) seamlessly in their production systems. Leveraging the network of Digital Innovation Hubs (DIH), the project ensures that results are scope-tailored, industry-ready and delivered as a modular customizable digital platform.

Seamless adoption of the customized kits is made possible by a Powered by FIWARE infrastructure that flawlessly combines factory systems (such as MES and ERP), Internet of Things (IoT) sensors and wearable devices, robots, collaborative robots and other factory data sources with functional modules capable to trigger data-driven value creation.

2.1. The main application areas targeted by KITT4SME

KITT4SME has prioritised the following three application areas as game changers for the target experiments:

- **Artificial Intelligence** for **Quality Control** that aims in early and automatic error-detection and better run time decisions
- **Artificial Intelligence** for **Reconfiguration or product personalization** – on both levels of production optimization and of optimization of scheduling, and
- **Artificial Intelligence** for **Human-Machine Interaction.**

The **first** one is *Artificial Intelligence for Quality* aimed at creating a significant competitive advantage by allowing a company to deliver quality products to market faster than its competitors. In today's rapidly evolving markets, a quality issue results in reworking costs, customer assistance costs or even recalls of entire production lots depending on how fast it is detected. By leveraging on the increased capability to process huge volumes of data, the AI-based KITT4SME delivers better run-time decisions, and thus early detections, while allowing quality assurance engineers to focus on investigating functions that are most likely malicious or even anticipate quality issues as AI agents learn and develop themselves throughout the testing process.

The **second** value-creation axis copes with the increased complexity of production processes that a growing surge of product personalisation has dictated over the last decades. *Artificial Intelligence for Reconfiguration* works both at the level of production settings optimization and of scheduling and planning dealing with a complex mix of objectives and constraints of different nature. A step is thus required beyond standard approaches based on linear optimisation that focus on availability of raw materials, production capacity and demand. Processes leaning to mass customisation are often complex, made-up of multiple steps and parameters. Raw material quality, pressure settings, external factors, or output quality thus come into the scene. By applying AI on top of this information, KITT4SME uncovers correlations and optimal variable mixes that would be impossible for a human alone to find. Ramp-up times and time-to-market are thus dramatically abated making lot-size-one production finally viable.

Artificial Intelligence for *Human-Machine Interaction* acts as the **third** axis by recognising that production systems are human-governed environments and that only a symbiotic coexistence of the human and artificial dimensions can make AI eventually succeed. By providing the means for real-time monitoring of workers psychophysical conditions, activation of fatigue and stress-relieving interventions as well as for the characterisation and evolution of workforce competences, KITT4SME

solves short-term issues in the shop floor. At the same time, it promotes the long-term convergence of factory design and related demand with workforce skills and peculiar characteristics. The worker is thus placed at the centre of the workplace, and the production system at large, that becomes a flexible extension of its physical, cognitive and capability reach towards unprecedented levels of human well-being and production system performance.

2.2. The main objectives of KITT4SME

The project supports SMEs and mid-caps in growing along one or more of the above-mentioned value-creation axes pursuing the following high-level objectives:

1. **To make available ready-to-use easily configurable AI-digital packages for SMEs:** The envisioned platform infrastructure and its deployment processes are devised for application in brownfield as SMEs cannot afford to discard already working systems or platforms they have adopted. At the same time, existing data sources and already established data flows (e.g., from in-line sensors, camera systems, MES, ERP) can often constitute a basis large enough to extract value through machine learning and other AI techniques.
2. **To use artificial intelligence for shop floor orchestration:** Human decision-makers, along with their unreplaceable expertise, are not cut off from the process but are rather empowered by a data-driven digital factory environment. There they can identify urgent issues regarding quality, shop floor setup and workers' conditions and can collaborate with the underlying artificial intelligence towards a fused human-machine system coordination. Additionally, KITT4SME makes use of eXplainable AI (XAI) to provide information to humans about why systems have arrived at a particular decision (whenever possible).
3. **To build a competence development centre that advances European workforce**: KITT4SME responds to this dramatic need for more human-aware production systems by putting the worker at the centre of data-driven personalised training paths meant to realign skills offer and demand while promoting career development and job satisfaction. Formalisation of worker skills, experiences and working preferences as well as physical, intellectual, and sensorial capabilities constitute the first step to make explicit the potential residing in the workforce.
4. **To extend the offer of local ecosystem**: KITT4SME recognises that the value of a digital platform does not reside in the offered services per se but it is promoted and multiplied by the size of the ecosystem of players that adopts it. The project leverages digital innovation hubs and regional innovation ecosystems to create a cross-sectorial and multi-stakeholder community of actors whose business gravitates around and is extended by the platform through its multi-sided business model. IoT providers, big data analysts and AI developers, competence development organisations, platform customers all together interact and are supported in data exchange.
5. **To support standardisation in the fields of sovereign data economy and characterisation of workers skills and training experiences:** To this end the project pursues a twofold strategy: on the one hand, it considers and employs already existing European reference architectures and standards both concerning Business-to-Business (B2B) digital industrial platforms and characterisation of workers competences; on the other hand, it participates to pre-normative standardisation initiatives with the aim to provide further feedback concerning infrastructural and data semantic aspects as well as for expanding current standards (e.g. ESCO, O*NET) in the field of skills and training characterisation.

More information on the project's objectives can be found on the official website of the project: https://kitt4sme.eu/

2.3. Overview of the KITT4SME technical infrastructure

The conceptual diagram of the KITT4SME platform shown in Figure 2 demonstrates that the platform is composed of a number of tools that collect data from the lower levels (factory shop floor) and make them available to higher levels, which correspond to units of more advanced processing (AI). The platform intends to provide a transparent way for applications to access data from the shop floor, supporting different communication protocols, persistence tools, etc. orchestrated by a FIWARE context broker. Additional third-party tools are invited to become residents of the RAMP Marketplace[2] [3] (shown on the left of Figure 2).

From a more technical view the KITT4SME platform follows a micro-services model managed as a Kubernetes cluster. The individual services will come in the form of Docker containers. Service-to-service authentication and service monitoring will be implemented with a Service mesh (Istio), which will be configured by the technical partners of KITT4SME to protect the resources deployed inside the cluster. The platform will also support a Continuous Development scheme (ArgoCD), which can be used by the third-party development teams after coordination with the technical partners of the project.

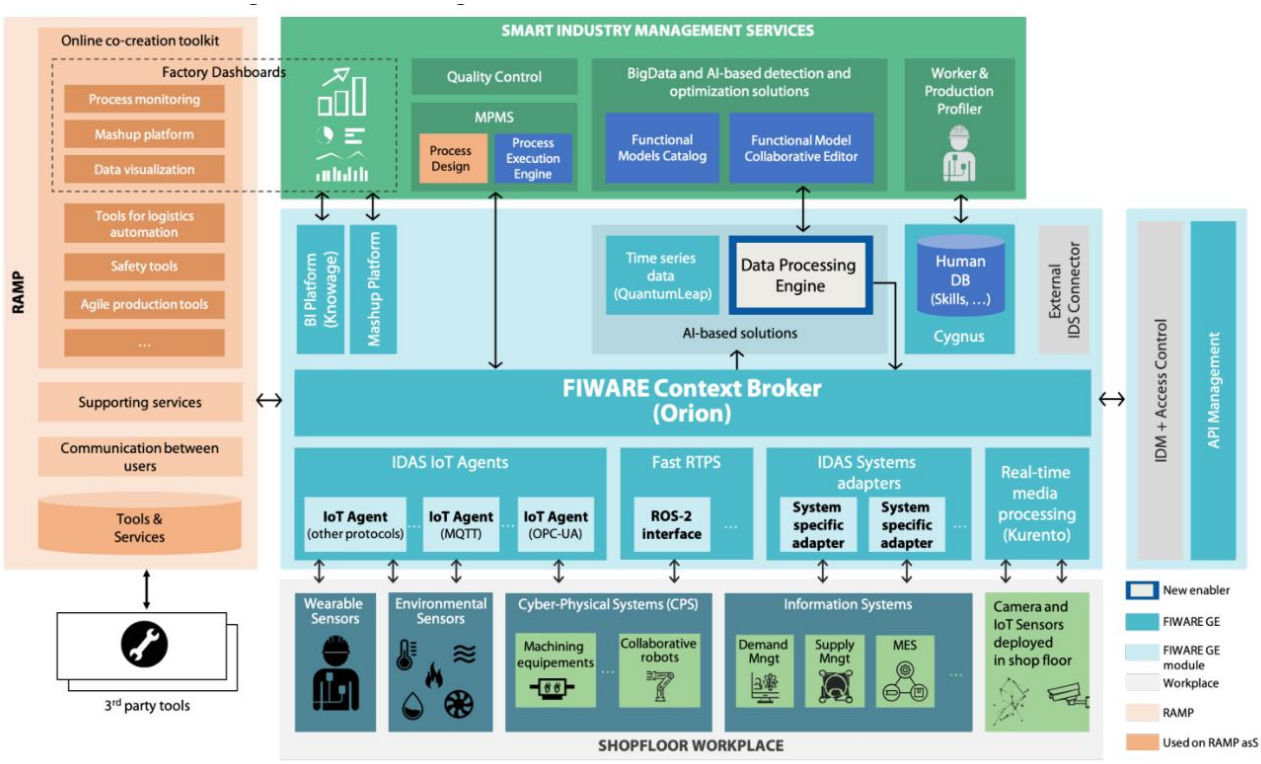

Figure 2. Conceptual architecture of the KITT4SME platform (source: KITT4SME DoA)

2.4. AI components integrated to the KITT4SME platform

The AI components described in § 2.4.1 and § 2.4.2 are software modules which comply fully with the KITT4SME architecture and have implemented the data transfer mechanisms of the platform. Applicants to the KITT4SME Type-B Open Calls may consider using these components in combination with their (newly introduced to KITT4SME) AI component to create a new service (an AI kit). This new service will be formed from the interaction of the new component (introduced by the applicant) with one of the components described in this section (see also § 3.2.4). The KITT4SME project develops additional AI-

[2] https://www.ramp.eu/

[3] Residents of RAMP have the option to leave/withdraw their solution at any time and remove all personal information in accordance with GDPR

components, a description of which is available on the project's website (https://kitt4sme.eu/components/).

2.4.1. Fatigue Monitoring System (FaMS)

FaMS is a reasoning engine which uses an artificial intelligence model which estimates exertion level of subjects based on static data (e.g., age, weight, etc.) and dynamic data (e.g., heart rate, electrodermal activity, skin temperature, etc.). It uses workers' physiological data from wearable devices on workers; static data collected through questionnaire (e.g., age, needs, expectations, experience, etc.)" as inputs and gives "worker fatigue level" as an output which is to be used by "decision maker" modules to make human-aware decisions.

Adopted technologies and methods: Apache Spark ML framework; Scala; Apache Avro; Docker; Random Forest Classifier.

Input: Workers physiological data from wearable devices on workers (e.g., heart rate, heart rate recovery, etc.); static data collected through questionnaire (e.g., age, needs, expectations, experience, etc.).

Output: Worker fatigue level to be used by "decision maker" modules to make human aware decisions.

2.4.2. AI for Quality Systems (AIQuS)

AIQuS uses Data Augmentation techniques in order generate new images, so this new data can be used to: 1) have balanced data for the training AI algorithms, specifically for new products that don't have enough 'Not-OK' data; 2) to be used to compare different AI algorithms and select the best parametrization; 3) enable operators of machine vision-based systems (see DIMAC-Pilot in §. 2.6) to do a continuous evaluation, fine tuning and re-configuration of the quality control systems once new defects are detected.

Adopted technologies and tools: TensorFlow

Input: Images (w/ and w/o defects); Product measures and tolerances; annotated data

Output: Synthetic images

2.5. Overview of RAMP

RAMP (Robotics and Automation Marketplace) is an online marketplace intended to create a bridge between the manufacturing end users and the solution providers. RAMP makes more effective the artificial intelligence and automation value chain for the manufacturing industry. It provides an open platform for manufacturing end users and solutions' providers, thus promoting dynamic networking and interactions between the users. KITT4SME is one of the components of the RAMP and the solutions of the granted open call applicants will be offered through RAMP.

RAMP helps cutting costs and reducing the knowledge and access gap between the manufacturing end users of AI and robotics & automation in multiple ways. Among others, it consolidates all value chain actors in one place, allowing them to find faster the best solution. Having the needed relevant information of the providers easily accessible, and by reading their previous customers' comments and feedback, it is easier to compare different offers and providers. Additional online tools facilitate online co-creation of solutions, further cutting the initial phase costs and reducing the planning time.

On the other hand, solution providers gain access to a new international market and business opportunities. Manufacturing end users can now find them faster, while it is easier to communicate with more potential customers and gain insight on their needs. Lastly, RAMP collects open digitisation platforms and community support to allow more solution providers to offer low-cost solutions avoiding vendor dependence and lock-in.

RAMP offers online access to a number of services that are either provided by the platform itself or by the network of DIHs already collaborating with it. These services include:

- Finding with actors in the robotics and automation value chain (including manufacturing end users and solution providers like robotics integrators, Competence Centres, Digital Innovation Hubs, individual experts etc.).
- Receiving and sending messages to other RAMP users.
- Support in finding funding experts, funding sources and investors.
- Access to digitisation platforms for manufacturing, more specifically for agile production and for logistics.
- Online community of Questions-Answers around robotics and automation in manufacturing, deployment, and configuration of the relevant digitisation platforms, and in support of the relevant Open Calls.
- Rating and feedback between users, after a cooperation or service exchange between them.

Many services are available for all users, however, to take advantage of all the benefits that are offered by RAMP, the user must be registered.

2.6. KITT4SME pilot experiments

In KITT4SME, 4 pilot experiments are being realised to validate KITT4SME solutions. A summary of the pilots is given in this section. More information about the pilot experiments can be found on the project's website (kitt4sme.eu/pilot). Details about KPIs and the processes can be found in *D1.3 Pilots Design* also available through the project's website (kitt4sme.eu/deliverables).

2.6.1. GHEPI (IT) - Use Case: Injection moulding sector

Goal: The Pilot demonstration targets a work cell equipped with a 500-tons injection moulding press to produce heavy plastic components through a multi-step production process involving two operators. KITT4SME dynamically assigns tasks to human operators, a cobot or a Cartesian robot. The goal is to demonstrate that an effective solution of human-machine mutualism and dynamic intrinsic job rotation is feasible through easy uptake of an AI-based kit in an industrial context where operators and workers operate on the same production line. The AI-component is going to assess the mental and physical stress levels of humans through wearable devices and support the decision making, that relates to the assignment of the 'next task' – to human or machine.

Data Sources: The pilot will produce data from the following sources:

- Wearable devices (Empatica watches), type: timeseries,
- Positions, velocities from robots, type: timeseries
- Digital I/O from sensors in the field (strain gauges, proximity sensors), type: timeseries (numeric/Boolean),
- Cameras, type: images

KITT4SME modules:

- (AI) **Fatigue Monitoring System** (FaMS): assessment of mental and physical state of human workers
- (non-AI) production line reconfiguration:
  - **IM:** decision making for job assignment
  - **MPMS:** process modelling and process orchestration

2.6.2. I TEK (IT) - Use Case: High precision hand tools manufacturing sector

Goal: The pilot is based on I- TEK's tweezers manufacturing line. Various production activities are used to create these commodities. Finishing is the final step before packing, and it is a time-consuming

procedure that has a considerable impact on both manufacturing costs and product quality. By implementing AI-based digital quality control in the finishing step and building a process to identify and characterize "process best practices" using multiple data sources, the KITT4SME platform assists I-TEK in overcoming both difficulties. The Vision for Quality Excellence (VIQE) module by ROVI, and the Shop-Floor Anomaly Detection System (SADS) module by GINKGO are the KITT4SME tools that are used to achieve these objectives. VIQE is an AI module to be deployed within a KITT4SME kit and deployed on the edge, providing deep learning and computer vision algorithms for quality excellence.

Data Sources: The pilot will produce data from the following sources: Cameras, 3D sensors for discrete measurements, and 2D sensors for flaw detection (precision of 0.05 mm), as well as HMI devices (PC, tablet, smartphone, or screens)

KITT4SME modules:

- (AI) Vision for Quality Excellence (VIQE): computer vision for defect detection in images
- (AI) Shop-Floor Anomaly Detection System (SADS): anomaly detection from sensorial data

2.6.3. WAM (PL) - Use Case: Electrical equipment sector

Goal: WAM produces customized powering systems that rely on Li-Ion batteries. The pilot focuses on a workstation, which comprises of a welding machine in which battery cells are welded into sets (target holders). The welding machine has a built-in data acquisition system which generates a file containing a project ID, a time stamp, and the parameters (settings and measured values) with which a single spot weld was made as part of the manufactured set. The anomaly detection activity, which is the focus of this pilot, is carried out via the analysis of the collected parameters (physical quantities which describe the welding conditions) to: (a) evaluate the quality of the welding point/seam and (b) correlation of detected anomalies with the spatial information from the battery pack (location of anomaly).

Data Sources: The pilot will use data coming mainly from the sensors installed on the welding machine. These sensors provide timeseries (numerical data) of the physical quantities monitored, such as energy spent for welding, voltage applied, forces/pressure values of contact of electrodes, etc.

KITT4SME modules:

- (AI) Shop-Floor Anomaly Detection System (SADS): anomaly detection from sensorial data

2.6.4. DIMAC (IT) - Use Case: Quality system and equipment sector

Goal: DIMAC produces quality control systems for the automatic selection of fasteners and other small components for the automotive and aerospace sectors. The challenge in this industry sector is to combine high accuracy results with the ability to verify the quality for a large variety of products. This pilot will focus on quality assessment through machine vision and Continuously Learning Systems/Continual AI techniques.

Data Sources: The pilot will use images collected from the production systems (retrieved from persistence).

KITT4SME modules:

- (AI) AI for Quality Systems (AIQuS): Data pre-processing and data augmentation

3. KITT4SME Type-B Open Call

3.1. Scope and description

The goal of the KITT4SME Type B Open Call is to provide financial support to third parties (in the Type-B open call, "teams") to develop **pilot experiments** that validate the technical and business value of the KITT4SME platform for the manufacturing end users to adopt AI solutions in the prioritised key areas. The KITT4SME project will fund **teams** of legal entities (at least 2, maximum 3 entities) that include *at least one Solution Provider and at least one Manufacturing end user, both SMEs or Mid-Caps*. The team will select one entity as the Lead Partner of the Action[4], which will be responsible for the entire team, submitting the proposal, signing the contract with KITT4SME, and managing the experiment. The pilot experiments are expected to be structured around specific Use Cases, which will be formulated from real-life problems/situations faced by the participating end users, but indicating the generic wider challenge that manufacturing SMEs face. The aim is to build and demonstrate added-valued AI solutions deployed in the specific factory floor, but which have a clearly evidenced market potential for other manufacturing end users. These manufacturing end users should be reached by the solution providers, where necessary, to commercialise their technical solution.

The scope of Type-B Open Call is to validate the value proposition of the KITT4SME platform, and the tools made towards the manufacturing SME industry.

The main ***objectives*** of this Open Call for KITT4SME are:

- to validate the ability of the KITT4SME platform to scale-up and enhance its portfolio of integrated 'industry-ready' AI solutions offered to the SMEs in the manufacturing community;
- to validate the business objective to create a link between (technical) solution providers and (manufacturing) end users;
- to test and validate the ability of the Marketplace to host new solutions (even beyond the duration of the project) in an 'easy to integrate' fashion.
- to assess the value of the 'KITT4SME approach' (platform and technical tools) towards the digitization and use of AI-services for SME manufacturing entities and if possible, increase the number of 'success stories' beyond the ones expected from the project's own pilot experiments
- to assess the ability of software developers to reuse and expand existing solutions of the platform (with the support of the primary developer of the 'existing' solution)
- to demonstrate a variety of pilots that adopt KITT4SME platform and AI solutions, to solve manufacturing SME challenges, collect lessons learnt and promote it to wider manufacturing industry with the ambition to attract further interest, opening up business for RAMP, KITT4SME and the solution providers involved.

The main ***benefits*** of Type-B Open Call ***for the applicants*** are expected to be:

- to receive financing to develop and integrate the proposed solution in the platform and for validating novel AI components in the shop floor, gathering experience, and evidence for improving the shop floor performance;
- to get technical support for interfacing AI solutions with FIWARE based platforms and introduce their solution to the KITT4SME architecture and ecosystem;
- to gain visibility through the project's testing and dissemination activities, through RAMP (if they choose to keep their solution in RAMP) and in the wider I4MS ecosystem;
- to create new success-stories from the application of new solutions to real-life Use Cases;

[4] 'Action' is the activities that has been selected for funding under the KITT4SME Type-B Open Call (following the completion of the contractual phase)

- to solve real-life problems of manufacturing SMEs and open new business opportunities.

3.2. Challenges to be addressed

3.2.1. Use Cases

The Use Cases considered in this (Type-B) round, should be on the area of ***discrete manufacturing*** and should only cover problems found in the ***production processes*** therein. Examples of the relevant Use Cases covered by the KITT4SME's own pilots can be found in § 2.6. The experiments need to identify a manufacturing challenge which is faced widely by the manufacturing SMEs, around the three prioritised application areas (§ 2.1). This challenge should be specified and elaborated in a detailed use case of the specific manufacturing SME where the experiment will be demonstrated.

The use of similar (to the KITT4SME pilots) Use Cases is discouraged. In cases where proposals describe scenarios similar to the ones considered by the KITT4SME pilots, the Applicants should describe how the Use Cases considered by their team *extends* or *is differentiated from* the KITT4SME pilots, for example on focusing on a different problem within the same application, the use of alternative AI methods/tools to address the problem or the use of different technologies (equipment, sensors, etc.), or the value added of combining a new AI solution with the existing one.

3.2.2. Technology of the proposed solutions

The following points have to be additionally taken into consideration:

- the main technology underlying the solution has to be AI;
- the main technologies used (AI) should have a high maturity level (from TRL5 and above);
- the focus of the solution should be placed on one of the three project's axes (see § 2.1); however, proposals addressing other manufacturing challenges can be accepted provided that their value to the KITT4SME platform is clearly pointed out (KITT4SME objectives and business sustainability of the solution);
- the AI-solutions that add value and intelligence to the functions of already available KITT4SME ones (see § 2.4) are welcome.

3.2.3. The Team

The team members with technical capacity are expected to deploy the proposed solution at the manufacturing end users' demonstration area and be responsible to install and integrate the necessary technologies to bring their data from the shop floor to the KITT4SME platform and to the AI solution.

The team is expected to have the capacity needed to perform the following activities and should be credibly presented in the proposal.

- Solution Provider/Technical member:
    - to introduce a new AI-based solution from the broader spectrum of the topic 'AI for manufacturing' (must relate to discrete manufacturing and production process);
    - Integrate the solution (or package – see below) to the KITT4SME platform
    - to gather real-life data coming from the manufacturing shop floor to the KITT4SME platform and connect it to the new solution;
    - to deploy the platform on premises (technical support by the KITT4SME Consortium will be given with respect to the platform);
    - to define with manufacturing end user KPIs which illustrate the achievement of the planned objectives and improvements of the factory performance;
    - to document the lessons learnt and define the market potential, and short business plan about how this AI solution can be further commercialised.
- Manufacturing End User:

- to define a Use Case and provide a list of business requirements and business KPIs (must relate to discrete manufacturing and production process);
- to provide the infrastructure for the execution of the Pilot (for example according to the use case it may be necessary to connect a conveyor belt, or production machine to capture real-life data);
- to evaluate the results of the experiment according to the provided KPIs and provide feedback about the improvements;
- to define a roadmap towards the adoption of the demonstrator in the shop floor.

3.2.4. Creation of a new 'AI-package'

The KITT4SME project encourages the development of re-usable solutions, that have been demonstrated/ validated in a real-life environment (demonstrators). Such solutions will become part of its proposition, as "industry-ready" packages of solutions ('kits') composed of components from its existing pool of services. These packages ('kits') could be created by feeding the output of one service to another, this way creating a new service – a 'more complete' – proposition towards a manufacturing SME. Although it is expected that these 'kits' will need to be reconfigured to serve another use case of another manufacturing SME, the concept and main technological blocks should be stable. This will facilitate the commercialisation of the solution by the solution provider and thus, reduce time and costs for reuse.

In practical terms, the creation of a new AI-package can be the result of the integration of a new AI solution, brought by the Action, and an AI solution that is already present in the KITT4SME platform, that is developed by a KITT4SME partner (see §. 2.4 for a description of existing and available solutions). The owners, or the primary technical team behind the corresponding service will provide support for the integration of the new AI solution (brought by the Action), during the integration phase of the Action. The creation of a new 'AI-package' will be **awarded with an extra ½ point** during evaluation (see § 3.7.1.4).

The activity of creating a new 'AI-package' is in the direction of the KITT4SME objectives and is encouraged. However, each AI module (software solution) proposed by Applicants for the Type-B Open Call shall be able to deliver its full functionality without making assumptions on expected functionality delivered by a KITT4SME solution (shall be able to 'stand on its own'). The interaction with a KITT4SME solution shall extend this functionality or shall bring some additional value for the new 'AI package'.

3.3. Implementation and expected activities

The applicants are expected to test the AI components in their solution in the KITT4SME platform in terms of:

- integration: established communication with the KITT4SME platform and ability to receive input (data from the shop floor) and deliver the expected results; the integration considers the communication with both the sensors and actuators placed on the shop floor as well as the AI solution delivered by the team/Action,
- functionality: demonstrate the claimed added value for the manufacturing industry, high TRL, high maturity is therefore sought for,
- performance: ability to perform, within the manufacturing end user shop floor, according to technical and business KPIs identified by the applicants contributing to the achievement of the KITT4SME project's objectives.

For the implementation of any proposal, the work plan has to cover the following activities:

- definition of a use case scenario;
- integration into the KITT4SME platform;
- functionality testing;

- demonstration (description of the pilot/experiment settings, manufacturing end user's expectations/business requirements and definition of success criteria);
- commercialisation scenarios and potential.

The description of these activities will be used for the phase of the proposal evaluation and for the phase of testing/validation of the selected Actions.

3.3.1. Definition of the Use Case

The Use Case describes the challenges faced by the manufacturing SMEs in general and how these challenges are handled in the specific context of the manufacturing end user. The description shall include also where the proposed solution will be implemented, the agents/technologies involved in the shop floor, the needed data sets, required technologies (sensors and actuators) and the expected benefits it brings, by identifying the main KPIs which show the improvement of the production performance.

3.3.2. Integration into the KITT4SME platform

The AI component will be integrated in the KITT4SME platform in cooperation with the allocated mentor (see § 3.6.4) and following the KITT4SME integration guidelines.

The integration will entail the following activities:

- Adaptation to KITT4SME interfaces: the data necessary to test and validate the component will be defined in detail. The relevant interfaces will be specified for both input and output and the technologies (sensors, actuators) that will be used during the pilot experiment will be explained.
- Preparation of the technical specifications of the AI-component including functionalities and interfaces.
- [optional: composition of a new AI-package] Connection to the relevant AI-service
- Registration of the component to the RAMP Marketplace (the owners of the component can withdraw the component from the Marketplace at any time they wish after the end of their action).
- Technical testing execution: it is mandatory to ensure the correct communication of input and output data.

The proposal has to describe clearly how the proposed solution & data (input and output) will be integrated into the KITT4SME platform.

3.3.2.1. Requirements for technical integration

Applicants should demonstrate that their solution can be easily integrated into the KITT4SME platform. Ideally the solution should comprise RESTful services which are made available through Docker images and can be deployed to the KITT4SME service mesh by means of Kubernetes resource descriptors. Where applicable, it should be possible to secure services through modern, standard Web security protocols such as OAuth2 and OpenID Connect. In particular, Web user interfaces should support Single Sign-On through OpenID Connect. Services needing to source data from shop floor devices (KITT4SME Sense workflow step) should be able to do so by interacting with existing platform services through the NGSI protocols. Likewise, services should actuate devices by issuing commands to the NGSI Context Broker.

It should be noted that the technical restrictions discussed above are meant to outline the features of components for which a straightforward integration path exists within the KITT4SME platform and therefore, solutions featuring services with the aforementioned characteristics will be preferred. However, solutions grounded on different technical choices may be considered, depending on required integration effort and demonstrable value added by their inclusion in the platform. In cases where the business requirements (as derived from the relevant Use Case) necessitate the use of different

technologies (for example due to safety or real-time requirements), these must be clearly identified in the proposal. A high-level architecture diagram (component) should be used to identify the modules that are envisioned as part of the KITT4SME platform and the integration with the shop floor components and agents. Open-source solutions are preferred to proprietary software although the latter will be considered where licensing schemes exist that are compatible with the KITT4SME project guidelines.

Presently, the KITT4SME platform makes the FIWARE Cosmos framework available for machine learning and data analytics tasks but it does not offer other popular machine learning stacks as managed services (this may change in the future.) Therefore, applicants wanting to e.g., train AI models on TensorFlow or PyTorch will have to make provisions for deploying these frameworks as services in the KITT4SME cloud. However, exploratory data analysis through e.g. Jupyter notebooks can be arranged on request.

3.3.3. Functionality testing

In order to demonstrate that the proposed solution brings the claimed expected value, first the AI-component has to be demonstrated with 'dummy' data (curated data developed either from simulation of mathematical models or from past experiments) provided by the applicants themselves. At the same time, the performance of the component will be measured against the identified KPIs.

3.3.4. Demonstration process

All solutions will have to be deployed and demonstrated in the real-life use case selected in § 3.3.1. The demonstration process must be carried out using the resources available through the team's participants and be carried out in the industrial shop floor of the manufacturing end users participating to the action's team. No theoretical or laboratory deployments will be considered valid for the demonstration of the solution proposed in the action.

The deployed components will be evaluated against their functionalities (added value) and performance (selected KPIs), as described in the beginning of § 3.3.

3.4. Duration of the action

The duration of the action is fixed for all Actions. It is set to 12 months (Feb 2023 – Jan 2024).

3.5. Eligibility criteria

All applicants will have to abide to all general requirements described in this section to be considered eligible for the open calls funding scheme of KITT4SME.

All third parties (individual legal entities – not teams) have a maximum limit of EUR 100'000,00 to be received as Financial Support to Third Parties (FSTP) in Smart Anything Everywhere (SAE) and ICT innovation for Manufacturing SMEs (I4MS) initiatives.

3.5.1. Conditions for application

This Open Call is open only to small teams (at least 2, maximum 3 entities) that are composed of:

- SMEs[5] and mid-caps that develop software applications with a background in Artificial Intelligence (at least one entity as member of the team) **and**
- SMEs and mid-caps that are members of the manufacturing industry **and** involved in discrete manufacturing, as defined by the NACE Codes C14-C16 and C25-C32 under

[5] see definition of SME according to the Commission Recommendation 2003/361/EC

https://ati.ec.europa.eu/sectors/discrete-manufacturing [6] (at least one entity as member of the team).

- In situations where the Use Case is still believed by an applicant to be relevant to discrete manufacturing but does not fall under the NACE Codes defined above, the applicants are required to obtain a pre-approval from the KITT4SME project. This Pre-approval, that the Use Case proposed by the Applicant is within the KITT4SME Type-B scope, can be obtained by submitting a description of the overall idea and the Use Case either through the Abstract Submission System or by sending an e-mail to the Open Call address: opencall@kitt4sme.eu , **by July 27th of 2022**. Requests to obtain Pre-approval after this date will not be considered by the Open Call Team and the corresponding Applications will be evaluated without a Pre-approval. This Pre-approval, that is the communication sent by a member of the KITT4SME Open Call Team through the Abstract Submission System or the opencall@kitt4sme.eu e-mail account, as a reply to a potential application, will be used to assess the eligibility of the Application during the evaluation, for applications with Use Cases that cannot be clearly classified as one of the above mentioned NACE codes. The pre-approval of the Use Case cannot be understood as a grant decision of the proposal.

In addition, the following conditions apply:

- the participating organisations should not have been declared bankrupt or have initiated bankruptcy procedures.
- the organisations (legal representatives) applying should not have convictions for fraudulent behaviour, other financial irregularities, and unethical or illegal business practices.

3.5.2. Eligible countries

Only Applicants legally established/resident in any of the following countries (hereafter collectively identified as the "Eligible Countries") are eligible:

- The Member States (MS) of the European Union (EU), including their outermost regions;
- The Overseas Countries and Territories (OCT) linked to the Member States[7];
- H2020 associated countries (those which signed an agreement with the Union as identified in Article 7 of the Horizon 2020 Regulation): according to the updated list published by the EC[8];
- UK applicants are eligible under the conditions set by the EC for H2020 participation.

3.5.3. Multiple submissions

This call is competitive and **only one proposal per applicant** (meant as one per team and one per individual entity) is allowed.

In the event of multiple submissions from a team, only the latest one received (timestamp of the system) will enter the evaluation process. Any other proposal submitted by the same team will be declared non-eligible and will not be evaluated in any case. In the event where one legal entity is a member of different teams only the proposal from the last submitting team will be considered eligible and the rest of the proposals (& teams) will be considered non-eligible.

[6] NACE codes between C14-C16 and C25-C32 see: https://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.PDF

[7] Entities from Overseas Countries and Territories (OCT) are eligible for funding under the same conditions as entities from the Member States to which the OCT in question is linked

[8] http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/3cpart/h2020-hi-list-ac_en.pdf

3.5.4. Language

English is the official language for KITT4SME open calls. Submissions done in any other language will be disregarded and will not be evaluated.

English is also the only official language during the whole execution of the KITT4SME programme. This means that any requested submission of deliverables will be done in English in order to be acceptable.

3.6. Proposal submission

3.6.1. Systems to be used

All information related to the open calls and the links for submitting proposals are available on the open call page of KITT4SME: https://kitt4sme.eu/open-call. Besides this Guideline for Applicants and the Proposal Template, the open call page includes links to the **Matchmaking channels, Abstract Submission System,** and to the **Proposal Submission System**.

3.6.1.1. Matchmaking channels (optional)

Participation to Type-B Open Calls is only possible via teams of legal entities. Submissions by individual legal entities are not accepted. The KITT4SME project will provide two channels to help potential applicants form new teams. It is noted though, that the KITT4SME project is not responsible to create or suggest such partnerships. It is the responsibility of interested parties to find one another, communicate and establish partnerships. The KITT4SME project will provide:

- **Matchmaking platform**, dedicated to the KITT4SME Type-B Open Call, that enables individual parties to describe their profile (including contact details) and activities. These profiles will be publicly visible on the same platform. Individual entities that are interested to establish such partnerships, are invited to go through the list of registered profiles and create a new profile. It is noted that the project does not mediate in the formation of new teams/partnerships. It provides solely the online space and the functionality to create and publish profiles. Note that this matchmaking service is part of the communities under the Funding Box Platform and in order to visit or create a new profile to the KITT4SME matchmaking board, a user must first register to the Funding Box platform.
- **Online event(s)** in the form of webinars, as part of the dissemination activities for the Type-B Open Call. During some of these events, individual entities will have the chance to participate in 'social activities', that is get in touch with other participants in the event and engage in one-on-one discussions.

The links to the matchmaking platforms can be found on the open call page of the project website (kitt4sme.eu/open-call).

3.6.1.2. Abstract Submission System (optional)

Abstract Submission System aims to provide feedback to the potential applicants about their solutions before applying to the Type-B open call. Potential applicants may submit information about the solutions & Use Cases they plan to formulate a proposal around and receive feedback from the open call organizers whether their ideas are relevant for the KITT4SME Type-B open call.

It should be kept in mind that this is an OPTIONAL step, and it is NOT a prerequisite for applying to the KITT4SME Type-B open call. **Only the applications made via the Proposal Submission System will be considered in the funding allocation**.

The Abstract Submission System can be accessed from open call page of the project website (kitt4sme.eu/open-call).

3.6.1.3. Proposal Submission System

Proposals must be submitted electronically, using the Proposal Submission System which is also available on the open calls page of KITT4SME. Proposals submitted by any other means will not be evaluated. Only the documentation included in the application will be considered by evaluators. It will be composed of a form with administrative questions to be completed directly in the platform and the proposal description attached in PDF format.

The Proposal Submission System can be accessed from open call page of the project website (kitt4sme.eu/open-call).

3.6.2. Preparation of proposals

The information that must be submitted through the Proposal Submission System are:

- **Application form**: it includes administrative questions to be completed directly in the Proposal Submission System. In addition, applicants have to complete some fields for statistical purposes and provide consent (via ticking check boxes) confirming they have read and agree with the conditions defined in this document. The Lead Partner of the Action is responsible to submit the proposal on behalf of the entire team. The Lead Partner is responsible to reply truthfully (via ticking check boxes where relevant), with respect to the Eligibility Conditions mentioned in § 3.5, on behalf of the other team members. The other team participants shall not participate in the proposal submission process.
- **Proposal description:** the proposal document in PDF format containing the description of the action. The document structure must strictly adhere to the proposal template provided by the KITT4SME Consortium via open call page of the project website (kitt4sme.eu/open-call).
  The main sections of the template are:
  - (1) Summary of the Action;
  - (2) Background of the Applicants;
  - (3) Detailed proposal description.

The information provided should be actual, true, and complete and should allow the assessment of the proposal. Each Action shall require the active participation of all partners of the Action. This should be clearly reflected and identified in the Proposal. To this end, all Proposals must include a description of:

a. the responsibilities of each partner of the Action; these responsibilities shall be linked to specific dates referring to the workplan, and
b. the distribution of the budget among the partners of the Action (each entity must respect the maximum limit of funding from all I4MS initiatives of EUR 100’000).

The applicants have to consider also the following elements:

- the preparation and submission of the proposal and other activities that follow this procedure (such as withdrawal) fall under the final responsibility of the Lead Partner;
- participants are requested to carefully read and follow the instructions in the form and in the template. Evaluators will be instructed not to consider extra material in the evaluation. Information not included in the proposal will not be taken into account;
- it is strongly recommended not to wait until the last minute to submit the proposal. Failure of the proposal to arrive in time for any reason, including communication delays, automatically leads to rejection of the submission. The time of receipt of the message as recorded by the submission system will be definitive;
- KITT4SME offers a dedicated support channel to applicants at opencall@kitt4sme.eu for requests or inquiries about the submission system or the call itself;
- the submitted file as to be readable, accessible, and printable.

3.6.3. Overview of the evaluation and notification process

After the submission deadline (**12th of August 2022, 17:00 CEST**) expires, the evaluation process will begin (as described in detail in § 3.7 of this Guide). Experts, called evaluators in the context of this process, will evaluate proposals, and score them adequately according to the quality of the content presented. The goal of the process is to select up to 8 proposals and invite them to join the KITT4SME project. The exact number of selected proposals is subject to change depending on the quality of the proposals and the total amount of funding for which the accepted proposals are eligible (until the allocated budget of EUR 1.5 million is exhausted).

After the final ranking of the proposals has been completed, the list of selected proposals will be sent to the Project Officer for approval by the EU. The list received as a reply by the Project Officer will become the final list of successful proposals.

When the evaluation process is complete, all applicants will receive a notification letter informing about the success or the failure of their proposal. Successful proposals will receive an invitation letter to join the cascade funding of the KITT4SME project and to proceed with the administrative process, that is: (a) sign the contract and (b) fulfil the requested actions to get the first payment.

3.6.4. Mentor assignment

One representative (person) from the KITT4SME project will be assigned as 'mentor' for each selected action. This person will act as the first point of contact between the Team executing the action and KITT4SME and will be responsible to:

- coordinate with the team representative of the action and communicate any information to the project management bodies as needed;
- facilitate the interaction between the action's team and the project–related activities, like for example the organization of the validation phase and the integration to the KITT4SME platform;
- request, collect and evaluate the quality of the expected deliverables.

3.6.5. Complaint due to error in the KITT4SME Proposal Submission System

If you experience any problem with the Proposal Submission System prior to the deadline of the Type-B open call, you should reach the project representatives by e-mail through opencall@kitt4sme.eu and explain your situation.

If you believe that the submission of your proposal was not entirely successful due to a technical error on the side of the KITT4SME Proposal Submission System, you may lodge a complaint by email through the same e-mail address and explain your situation. For the complaint to be admissible it must be filed within 5 calendar days following the day of the call closure. You will receive an acknowledgement of receipt, the same or the next working day. You should additionally secure a PDF version of all the documents of your proposal holding a time stamp (file attributes listing the date and time of creation and last modification) that is prior to the call deadline, as well as any proof of the alleged failure (e.g., screen shots). Later in the procedure you may be requested by the KITT4SME Open Call Team to provide these items.

For your complaint to be upheld, the IT audit trail (application log files and access log files of KITT4SME Proposal Submission System) must show that there was indeed a technical problem at the KITT4SME Consortium side which prevented you from submitting your proposal using the electronic submission system. Applicants will be notified about the outcome of their complaint within the time indicated in the acknowledgment of receipt. If a complaint is upheld, the secured files (provided to the Open Call Team) for which the investigation has demonstrated that technical problems at the KITT4SME Consortium side prevented submission will be used as a reference for accepting the proposal for evaluation.

3.6.6. Confidentiality

Any information regarding the proposal will be treated in a strictly confidential manner.

3.6.7. Deadline

Only proposals submitted before the deadline will be accepted. After the call closure, no additions, or changes to received proposals will be taken into account. Proposals must be **submitted before 12th of August 2022, 17:00 CEST**. To avoid missing the deadline, you are encouraged to submit your proposal as soon as possible.

3.6.8. Conflict of interest

Applicants shall not have any actual and/or potential conflict of interest with the KITT4SME selection process and during the whole programme. Possible conflicts of interest will be assessed case by case. In particular, Applicants cannot be KITT4SME Consortium's partners, participants of the Actions selected from the Type-A Open Calls nor affiliated entities.

If a conflict of interest is discovered and confirmed at the time of the evaluation process, the proposal will be considered as non-eligible and will not be evaluated.

3.6.9. Scientific Misconduct and Research Integrity

Issues of scientific misconduct and research integrity are taken very seriously. In line with the Horizon 2020 Rules for Participation, appropriate action such as termination of the Grant Agreement Preparation phase or, if the Grant Agreement has been signed, the implementation of liquidated damages and financial penalties, suspension of payments, recoveries, and termination of the Grant Agreement, will be taken against any applicants/third parties found to have misrepresented, fabricated or plagiarised any part of their proposal.

3.7. Proposal Evaluation Process

The proposals will be evaluated solely based on the criteria mentioned below.

KITT4SME Consortium staff ensures that the process is fair and in line with the principles contained in the European Commission's rules on Proposal submission and evaluation.

Evaluators assess the proposals on a personal basis, not as representatives of their employer, their country, or any other entity. They are required to be independent, impartial, and objective, and to behave throughout in a professional manner.

Under no circumstance may a proposal evaluator attempt to contact an applicant on his/her own account, during the evaluation process. Confidentiality rules must be adhered to at all times before, during and after the evaluation.

3.7.1. Evaluation Criteria

Each proposal will be evaluated by 2 external and 1 internal evaluator according to the following criteria.

3.7.1.1. Excellence and relevance to KITT4SME objectives (40% weight)

Technical Innovation in AI domain: extent to which the proposed work is beyond the state of the art and demonstrates innovation potential (e.g., ground-breaking objectives, novel concepts and approaches, new products, services or business and organisational models). Evaluate the degree of novelty and complementarity in terms of the existing AI-solutions in the KITT4SME portfolio (see § 2.4). The use of AI has to be central to the proposal.

Relevance to problems and challenges in manufacturing: capability of the solution in addressing a problem and/or a challenge related with the 3 axes of the KITT4SME project (see § 2.1) or, more in

general, with the manufacturing industry (discrete manufacturing) and in scope of Type-B Open Calls, as defined under § 3.2. The following aspects will be considered in the assessment: what is the problem/challenge? to which extent is it relevant for the manufacturing SMEs in general and solves existing challenges of other manufacturing SMEs beyond the specific one where it will be demonstrated? what is the innovation potential of the proposed solution compared to existent ones?

Demonstration settings: relevance of the proposed demonstration scenario to the solution both at technical and business level.

Evidence of maturity: maturity measured according to the EU H2020 TRL scale. The description of the existing status of the solution and evidence to justify it, will be assessed against the claimed TRL.

3.7.1.2. Impact and business opportunity (30% weight)

Market opportunity: this criterion assesses to which extent the solution is attractive for Manufacturing End Users and how it can support a manufacturing company in tackling a specific challenge. Assessment of the generated impact (economic and on other performance) is expected.

Commercial strategy and scalability: approach that the applicant follows to commercialise the solution and to target its reusability beyond just solving a user-specific problem. This criterion considers the business potential and capability of the team to commercialise the service, the market evaluation used to define the commercial strategy, including also the use of KITT4SME marketplace, and the evidence on how well the solution scales and the access to the market and the commitment to commercialise the service.

Product lifecycle cost (the accumulation of a product's costs over its whole life for the user): this criterion considers the costs for the user to maintain the solution. Applicants must provide an estimation of the technical requirements to maintain the solution (for example dependency from specific sensors, assumptions on statistical properties of data/noise, known sensitivity to parameters).

3.7.1.3. Implementation (30% weight)

Clarity and completeness of the workplan: Proposals must contain the specified sections included in the template. In particular, the workplan has to cover the following aspects: (i) delivery of final action workplan, (ii) integration to platform (& interoperability), (iii) results of technical solution testing, (iv) validation of results.

Risks: effectiveness and completeness of the risks analysis and mitigation strategy. This criterion assesses if all the risks related to the proposal have been identified and if proper mitigation actions have been defined.

Team composition: experience, competences, expertise and interdisciplinarity of the team. This criterion considers how well the team presented in the proposal fits with the proposal itself and with the KITT4SME project. The budget distribution among the partners should be balanced and reflect the actual effort allocated inside the team.

Integration approach to the KITT4SME platform: compliance with the requirements for technical integration. This criterion assesses if the solution follows the requirements stated in § 3.3.2.1 and if the technical specifications are compliant with the KITT4SME platform: dependencies, runtime requirements or restrictions for the operation of the solution (use of third-party proprietary tools, etc.).

3.7.1.4. Bonus: Value and technical viability of the new AI-package

This criterion evaluates whether the proposed AI-package produces a new service from two technically compatible services (new AI-service brought by the Applicant and AI-service selected from the KITT4SME portfolio) and awards proposals with an **additional ½ point on top of the total score** obtained from the previous three criteria (Excellence, Impact & Implementation). This ½ point is awarded or not (it is a binary decision) to proposals which demonstrate that the AI-package is a 'viable

service', that is a service formed by compatible AI-components. The 'compatibility' is to be assessed in terms of integration effort needed, matching of inputs and outputs between the services, compatibility of the frameworks used by the two services and in overall, whether the 'new package' creates a new service for the end-user by the seamless cooperation of the underlying - integrated services. The assessment will be based on the information provided in the proposal about the AI-service of the Action and the integration steps/ requirements towards the relevant (explicitly identified) service from the project.

3.7.2. Scoring

The evaluators will score each award criterion (excellence-impact-implementation) on a scale from 0 to 5 (half point scores may be given):

- 0=Proposal fails to address the criterion or cannot be assessed due to missing or incomplete information.
- 1=**Poor**, criterion is inadequately addressed or there are serious inherent weaknesses
- 2=**Fair**, the proposal broadly addresses the criterion, but there are significant weaknesses
- 3=**Good**, the proposal addresses the criterion well, but some shortcomings are present
- 4=**Very good**, the proposal addresses the criterion very well, but a small number of shortcomings are present
- 5=**Excellent**, the proposal addresses the criterion very well, no shortcomings are present

For each criterion (#1-#3), the minimum threshold is 3 out of 5 points. The maximum total score awarded per proposal is 15 (after the evaluators' consensus meeting.).

An additional-bonus of 0.5 point (above the total score of 15) can be awarded (or not) for applications that propose AI-packages that can be viable solutions.

The final score will be calculated using the formula below.

$$s_f = 3 \cdot (s_{e\&r} \cdot w_{e\&r} + s_{i\&bo} \cdot w_{i\&bo} + s_i \cdot w_i) + b$$

Where
s_f is the "final score",
$s_{e\&r}$ is the "score for criterion 1" (excellence and relevance),
$w_{e\&r}$ is the "weight of the criterion 1" (excellence and relevance),
$s_{i\&bo}$ is the "score for criterion 2" (impact and business opportunity),
$w_{i\&bo}$ is the "weight of the criterion 2" (impact and business opportunity),
s_i is the "score for criterion 3" (implementation),
w_i is the "weight of the criterion 3" (implementation), and
b is the bonus criterion of 0.5 points.

3.7.3. Individual Evaluation Report (IER) and evaluation panel meeting

Each evaluator produces an Individual Evaluation Report (IER).

Following the individual evaluations by the three evaluators, a consensus meeting is organised between the three evaluators to find a consensus among them on the quality of the proposal based on the three evaluation reports. Comments and scores per criterion are validated by the three evaluators in a consolidated evaluation report. The result of this phase leads to a ranking list that are then considered by the evaluation panel including evaluators and KITT4SME staff members during an evaluation panel meeting.

During the evaluation panel meeting, when necessary, an additional review of the proposals for which there was a lack of consensus in terms of scoring by individual evaluators or for which additional clarifications are required is undertaken.

One final rank list will be discussed based on the quality of the proposals and agreed by the evaluation panel.

3.7.4. Selection and the announcement of the awarded proposals

The KITT4SME Consortium then formally approves a list of proposals within the limits of the available funding. It is estimated that up to 8 proposals shall be selected. The exact number of selected proposals is subject to change depending on the quality of the proposals and the total amount of funding for which the accepted proposals are eligible (until the allocated budget of EUR 1.5 million is exhausted). The list of selected proposals is then submitted to the European Commission for final screening.

Regarding the communication of the results, each applicant will receive via e-mail a letter informing of the decision with a rejection decision or an invitation to negotiation and following steps.

3.7.5. Appeal procedure

If you believe that your proposal rejection was based on a flaw in the selection procedure, you can submit a complaint. Complaints must be related to the evaluation process or admissibility/eligibility check. Your complaint must demonstrate a procedural irregularity, factual error, manifest error of assessment or misuse of powers. Mere repetitions of your application or mere disagreement with the result or the reasoning of the evaluation will NOT be considered.

A complaint should be drawn up in English and submitted by email to opencall@kitt4sme.eu.

Any complaint should include:

- contact details;
- the subject of the complaint;
- information and evidence regarding the alleged breach.

Anonymous complaints or those not providing the required information will not be considered.

Complaints should also be made within 10 calendar days following the announcement of the evaluation results to the applicants.

As a rule, the KITT4SME Consortium will investigate the complaints with a view to arriving at a decision to issue a formal notice or to close the case within no more than 20 days from the date of reception of the complaint, provided that all the required information has been submitted by the complainant. Whenever this time limit is exceeded, the KITT4SME Consortium will inform the complainant by email of the reasons for the unforeseen delay and the subsequent steps.

3.7.6. The negotiation process

The objective of the negotiation is to fulfil the legal requirements between the KITT4SME Consortium and each selected Action. It covers essentially the status information of the third parties involved in the Actions. The legal requirements are provided in the table hereafter and apply to all members of each team.

For third parties
Proof of legal existence: Company Register, Official Journal and so forth, showing the name of the organization, the legal address and registration number and, if applicable, a copy of a document proving VAT registration (in case the VAT number does not show on the registration extract or its equivalent)
Proof of the SME condition:

1. If the applicant has been fully validated as an SME on the Beneficiary Register of the H2020 Participant Portal, the PIC number must be provided.
2. If the applicant has not been fully validated as an SME on the H2020 Participant Portal, the following documents will be required to prove the status as an SME: documentation proving (i) staff headcount, (ii) annual turnover, (iii) annual balance sheet total and, in the case of non-autonomous companies, the same documentation for upstream and downstream of any linked or partner companies.

More information about whether a company is considered a SME or not can be found in the User Guide to the SME Definition.

The KITT4SME project will invite one legal entity (the Lead Partner defined by the team) from each Action to sign the contract, which describes the responsibilities, deadlines, and budget distribution among the members of the Action. The contract will additionally include Accession Forms, that will need to be signed by each member of the Action.

Each Action is expected to prepare and sign a Consortium Agreement, which specifies the rights and obligations of the project partners. For example, it contains provisions about internal organisation and decision-making, financial questions, and the handling of intellectual property rights.

The request for information and actions to be taken (e.g., sign and return the contract) by the KITT4SME Consortium will include deadlines; failing to meet these deadlines will immediately end the negotiation process.

3.8. Action Monitoring

If a proposal is funded, the Team working on the action will be requested to provide evidence that the action is progressing as expected by producing the deliverables described in § 3.8.1.

The Actions will have regular meetings with the assigned mentor, who will be the first point of contact between the Team and KITT4SME. The Actions are expected to coordinate with the mentor and provide replies to communication initiated by the mentor within a reasonable amount of time.

The Actions will be represented by the Lead Partner of the Action, but participation of all entities in the team in the periodic meetings with the mentor is strongly advised. Representatives of the entities from the entire team shall be present in plenary meetings, as requested by the KITT4SME project.

3.8.1. Expected outcomes & deliverables

The following reports (deliverables) are expected to be produced by the Action and submitted to the KITT4SME Consortium as part of the activities pertaining to the execution of their actions:

Action plan: a detailed action plan (timeline and description of the foreseen actions with clear milestones at specific dates) for the entire duration of the action. The action plan is expected to describe the activities needed for the adaptation of the Team's solution in view of its integration to the RAMP platform and the technical testing or validation for the opt-in cases. This will serve as the basis for the communication with the mentor (representative of KITT4SME). The action plan will also finalize the KPIs (Key Performance Indicators), and the metrics used to record the performance of the solution.

Mid-term report: teams will provide a description of the work done, the results achieved, and any risks identified during the first phase of the adaptation of their solution. Comparison against the action plan will indicate the need for possible corrective actions.

Integration report: technical results about the activities pertaining to the integration of the solution to the Marketplace: corrective actions needed, dependencies, etc.

Final report: a description of the work actually done throughout the action and of the realised demonstrator, the achieved performance against the KPIs (established by the mentor and the team during the proposal application) and whether the Milestones (see also Timeline in Figure 1) have been reached on time. The final report will also include: (i) prospective exploitation potential and economic evaluation including indicative applications, value proposition, outlook and short sustainability report; (ii) documentation of the solution (functionalities, technical requirements, dependencies from external libraries and tools); (iii) a professional[9] video (demonstrating the operation of the solution) and (iv) an IPR management plan (including a licensing option). A decision about whether the solution developers want to make their solution available through the RAMP Marketplace (after the end of the action) will also be mentioned in the Final report.

Final review: an event, either in person at the manufacturing end user or online from its premises, in which the final results of the actions will be demonstrated in the shop floor and checked against the action's stated objectives.

This reporting effort is required for all actions.

3.9. Financial support

3.9.1. Origin of the funds

The maximum amount of funding per Action for the Type-B open call is EUR 200'000.00. KITT4SME Open Calls are providing funding through the cascade funding mechanism (Financial Support to third Parties – FSTP) of the European Union H2020 projects.

All selected Actions will sign a dedicated Sub-Grantee Funding Agreement with the KITT4SME project Coordinator (on behalf of the KITT4SME Consortium), as described in § 3.7.6. The funds attached to the Sub-Grantee Funding Agreement come directly from the funds of the European Project KITT4SME, and the KITT4SME Consortium is managing the funds according to the Grant Agreement Number 952119 signed with the European Commission.

As will be indicated in the Sub-Grantee Funding Agreement, this relation between the sub-grantees and the European Commission through the KITT4SME Consortium carries a set of obligations to the sub-grantees with the European Commission. It is the duty of the sub-grantees to accomplish them, and of the KITT4SME Coordinator, on behalf of the Consortium partners, to inform about them.

3.9.2. Eligibility of costs

In the Type-B open call, the same criteria for the eligibility of the costs for the H2020 projects will apply.

According to the Financial Guidelines for Applicants[10], the funding mainly addresses;

a. Staff costs,
b. Travel, accommodation and subsistence allowances,
c. Costs of services,
d. Administration costs (Depreciation for purchase of equipment).

The general criteria for the eligibility of costs, as outlined in § 4.2 of the abovementioned Financial Guidelines are:

a. be incurred by the third party (in this case, the Team) during the duration of the action, with the exception of costs relating to final reports and audit certificates;
b. be indicated in the estimated overall budget of the action attached to the grant agreement;

[9] High quality video (quality to be agreed in collaboration with the mentor)

[10] Financial Guidelines for Applicants Action Grants, https://ec.europa.eu/social/BlobServlet?docId=20893&langId=en, April 2019

c. be necessary for the implementation of the action which is the subject of the grant;
d. be identifiable and verifiable, in particular being recorded in the accounting records of the third party and determined according to the applicable accounting standards of the country where the third party is/are established and according to the usual cost-accounting practices of the third party;
e. comply with the requirements of applicable tax and social legislation;
f. be reasonable, justified and comply with the principle of sound financial management, in particular regarding economy and efficiency.

The successful applicants must take care to avoid any unnecessary or unnecessarily high expenditure.

The third parties' internal accounting and auditing procedures must permit a direct reconciliation of the costs and revenue declared in respect of the action with the corresponding accounting statements and supporting documents.

Documentation justifying costs must be kept by the third party for five years following the Commission's final payment.

The grants are given in the form of lump-sum that represent an approximation of the beneficiary's underlying actual costs. In this way, a shift from focus on financial management and checking costs to focus on scientific and technical content of the projects is enabled.

The EU Authorities may audit the third parties in the future. Checks, reviews, and audits will focus on the technical implementation of the action.

3.9.3. Funding rate

According to the H2020 regulations for the Innovation Actions (IA), costs of SMEs and mid-caps funded are covered at a 70% rate and the same rules will apply for the framework of KITT4SME Open Calls. This means that the remaining 30% of the budget of the actions has to be co-funded by the third parties.

3.9.4. Indicative distribution of funds

The funding will be given in the form of lump-sum payments in three instalments:

- 30% of the budget for which each Action is eligible will be given as pre-financing at the start of the Action (after the finalization of the contractual process);
- 30% of the budget will be given after successful approval of the Mid-Term report;
- 40% of the budget will be given to the Action[11] after the finalization of the Action, that is after the submission of the Final Report and subject to the approval of the Final Report by the KITT4SME Consortium.

3.10. Intellectual Property Rights (IPR)

3.10.1. IPR – ownership of the sub-granted actions

The ownership of all IPR created by the third parties, via the KITT4SME funding, will remain with them. Results are owned by the Party that generates them. The Sub-Grant Agreement will introduce provisions concerning joint ownership of the results of the sub-granted actions. This will be assessed and negotiated on a case-by-case basis.

3.10.2. Communication obligations

There are no IPR obligations towards the KITT4SME Consortium. However, any communication or publication of the third parties shall indicate that the action has received funding from the European Commission via the KITT4SME project, therefore displaying the EU and project logo as well as the

[11] As represented by the Lead Partner

KITT4SME grant number on all printed and digital material, including websites and press releases. Moreover, third parties must agree that certain information regarding the selected actions can be used by KITT4SME Consortium for communication purposes.

3.10.3. Dissemination through the project means

The AI-components and Use Cases proposed by each proposal that have been selected by this Type-B Open Call will be presented on the project website in a relevant description format, following a template provided by the KITT4SME project. Demonstration material and videos will be created to communicate the service and its added value.

3.11. Support for the applicants

For more information about the KITT4SME Open Calls, please check the Frequently Asked Questions (FAQs) section included at https://kitt4sme.eu/faq/.

For further information on the Open Call, in case of any doubt regarding the eligibility rules, the information that is to be provided in the Application Form, or if you encountered technical issues or problems with the Application Form, please contact KITT4SME Open Call Team via opencall@kitt4sme.eu.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement № 952119. The herewith information reflects only the author's view. The European Commission is not responsible for any use that may be made of the information herewith included.

KITT4SME