Cross-KIC Project

End-to-end digitalised production testbeds

CALL FOR PROPOSALS

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Contents

Executive Summary

- Open call for proposals for the implementation of end-to-end digitalised production testbeds for the food sector (Cross-KIC initiative between EIT Manufacturing, EIT Food, and EIT Digital)
- Budget: Up to 2.63m EUR (including 30% co-funding) to implement 3-5 testbed environments in 2021[1]
- Dates and Deadlines:
    - Call opening: October 23, 2020
    - Application: December 7, 2020– 11 a.m. (CET)
    - Proposal selection: Q1/2021

1   Background

The implementation of digitalisation solutions poses multiple challenges for manufacturing companies, especially within the food industry. Identifying processes worth digitising, enabling data acquisition, performing analyses, and deriving measures requires expertise that is oftentimes not available to manufacturers of food items and their equipment suppliers. Furthermore, availability of infrastructure and/or human capital, needed to embrace digital transformation is limited. That is especially true for the food industry as it is mainly composed of SMEs with scarce investment capacity.

Consultation with digitalisation service providers is a helpful approach. However, it is oftentimes hindered by the generality of the providers' solutions that require elaborate adaptation to fit the specific needs of individual businesses (e. g. processing lettuce poses different challenges and features different equipment than canning tomatoes or filling soda bottles). Additionally, the manufacturers' inexperience with digitalisation technologies, further complicates communication between the parties. Even after successful digitisation of processes, this lack in experience among the manufacturers' staff poses challenges regarding application, maintenance, and potential advancement of the implemented solutions. Manufacturers, both of goods and equipment alike, are hence encouraged to add digitalisation expertise to their workforce.

To address this issue, the cross-KIC project "end-to-end digitalised production testbeds", led by EIT Manufacturing and featuring EIT Food and EIT Digital was launched. Its goal is funding the development and implementation of digitalisation testbeds that address the industry's most pressing production challenges. To ensure the testbeds meet the food sector's demands, the three KICs and a collection of partners, selected in a series of open calls, to ensure availability of expertise in the fields of food, manufacturing, and digitalisation, as well as to ensure geographical coverage, worked together. The goal was to evaluate the food sector's current state of digitalisation, to identify high potential areas for digitalisation-driven improvements, and to derive suitable use-cases.

Applicants are asked to follow the following framework when proposing testbed use cases:

> *A testbed is an instalment of hardware components (process machines, logistics equipment, etc.) that depicts (a segment of) a real-life production line, by using either a scaled-down version of a process chain or life-size equipment. Within the testbed, the effectiveness/efficiency of the depicted manufacturing processes shall be improved by applying digitalisation solutions, like* **Artificial Intelligence technologies, virtual and/or augmented reality functionality, blockchain integration, 5G connectivity, integration of additive manufacturing processes, etc.**

> *The testbed implementation activities include selection and integration of hardware components, as well as making data provided by the components or from external data sources accessible/usable. Alternatively, the creating of smart components by adding (low-cost) sensor technology can be considered. Finally, data processing and analysis, using advanced methods to support decision making processes and derive optimisation measures need to be addressed.*

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[1] The available amount of funding will depend on the business plan decision of EIT. As a consequence, the actual number of funded testbed environments and/or the budget available per environment may be subject to variations.

The need for testbed development for the food sector

Digitalisation presents all industries with immense opportunities. At the same time, unawareness of untapped potential, insecurities on how to approach the subject, and an overall lack of expertise hamper widespread adoption of digitalisation technologies in certain industries, like the food sector. To promote digitalisation activities, testbeds provide a real-life like environment and therefore reduce abstractness by enriching exchange between digitalisation experts, producers of goods, equipment suppliers, and other parties. Problems and therefore solutions become more tangible since they can be experienced first-hand in a controlled setting, that enables reliable recreation of scenarios and situations. Starting from this exchange, testbeds represent a "playground" for the development of innovative solutions on a smaller scale without affecting real-life production. This leads to decreased development cost and allows for testing and maturing, before implementing the solutions and possibly disrupting the actual production processes.

Throughout these activities, testbeds represent an ideal environment for learning, and knowledge exchange. Developers of digitalisation solutions learn about sector-specific characteristics and challenges. At the same time, producers of goods and equipment suppliers learn about the digitalisation interfaces of their processes and machinery. By fostering collaboration, the parties learn about the potential and limitations of process digitisation, and how to approach digitalisation projects. Moreover, testbeds create a unique environment for "coopetition" – collaboration between companies that are naturally competitors. Under these circumstances, companies working in the same sector can learn from each other and leverage on synergies to overcome common challenges and become more effective and competitive.

As common ground for debate, the following depiction (Figure 1) of the food system was developed and used, showcasing the complex interconnections between the primary sector, the manufacturing sector, and the consumer market. Additionally, this depiction of the food system also considers circular economy aspects, to ensure that aspects like resource efficiency and resource effectiveness are considered.

2 Strategic objectives and content

To ensure the digitalisation testbeds contribute to improving food production in a meaningful and productive way, the following three focus points for testbed development were identified by the KICs and the partners involved in the project:

- **Reduction of food waste/loss**
  Although sometimes used synonymously, the terms food waste and food loss describe different phenomena, that both take place throughout the entire supply chain and must be addressed differently. On the one hand, food waste refers to the decrease in the quantity or quality of food resulting from decisions made at retail, food service providers and consumer's level. On the other hand, food losses are related to the decrease in quantity or quality of food resulting from decisions made by different actors in the supply chain, such as leaving unharvested food in the field or discharging food scraps alongside the processing. To prevent those, the first step should be to identify the amounts lost, hotspots for the different sectors and the opportunities for action, including revalorisation of resources from the primary production.

  Given these definitions, it appears that food loss should be the focus for digitalised production testbeds. However, this approach would be short-sighted, given that overproduction due to inaccurate demand prediction highly contributes to food waste. Therefore, a holistic approach, covering both waste and loss aspects should be taken.
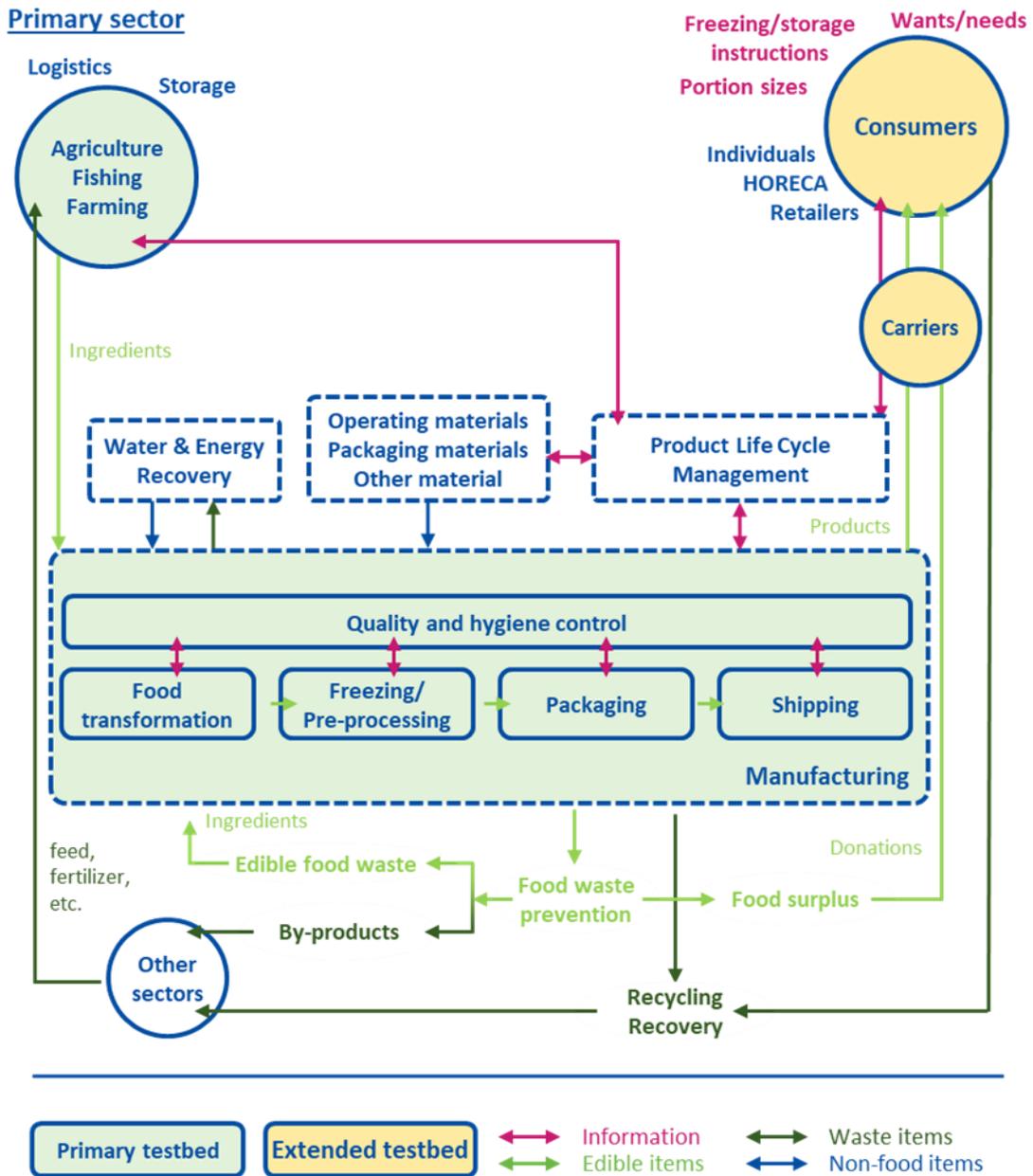
Primary sector

Logistics Storage

Agriculture
Fishing
Farming

Freezing/storage instructions
Portion sizes
Wants/needs

Consumers

Individuals
HORECA
Retailers

Carriers

Ingredients

Water & Energy
Recovery

Operating materials
Packaging materials
Other material

Product Life Cycle
Management

Products

Quality and hygiene control

Food
transformation

Freezing/
Pre-processing

Packaging

Shipping

Manufacturing

Ingredients

feed,
fertilizer,
etc.

Edible food waste

By-products

Food waste
prevention

Food surplus

Donations

Other
sectors

Recycling
Recovery

Primary testbed	Extended testbed	⟷ Information	⟷ Waste items
		⟷ Edible items	⟷ Non-food items

Figure 1: Systematic depiction of the interconnections of the food industry[2]

- Enhancement of circular economy

  By encouraging the establishment of sustainable structures, applying circular economy measures can increase long term competitiveness of companies, as it leads to preservation of (scarce) resources, to cost reduction, and to new business models, products, and services. Regarding the food sector, applying circular economy measures touches on some aspects previously discussed in the food waste/loss reduction section. However, since food waste and loss oftentimes cannot be prevented completely, it is important to find ways to reintroduce these materials into the value chain.

  Enhancing the circular economy of food production is not limited to food products and recovery of waste and by-products. Resource efficiency of manufacturing processes can be enhanced by applying circular economy measures. Energy, mainly in the form of heat, emitted by the processes can be utilised at other stages of the facilities. At the same time, otherwise unusable foot material can be used to generate energy to power the production processes.

Furthermore, food production often relies on water as ingredient, to cool processes, and to clean equipment. Considering increasing water scarcity in certain areas of the world, collection and redaction of used water is becoming increasingly important and a cornerstone of circular economy.

- **Improvement of the supply chain efficiency and effectiveness**
  Food producers, especially SMEs, face constant pressure to offer their products at competitive prices, creating high incentives to reduce production costs. One approach is to reduce material cost, which is closely related to the food waste/loss and circular economy aspects discussed above. However, increasing the efficiency and effectiveness of processes along the supply chain, provides positive effects beyond material cost. One approach to increasing process efficiency is to reduce energy consumption. In food production, heating and cooling of products and operating materials are energy-hungry processes. By implementing adaptive heating and cooling, excessive heating/cooling efforts can be prevented.

  Awareness of the current wear status of machines and equipment is also a key factor in reducing machine failure and related machine downtimes. Hence, predictive maintenance measures decrease the chance of sudden processing equipment failure, while reducing periodically occurring, scheduled downtimes. Identifying process mistakes and faulty products early in the value creation process is another factor in increasing process efficiency and effectiveness. Therefore, by enabling inline control of production processes, quality can be determined on an individual product level, dispensing the necessity of analysing, and/or disposing entire batches.

By addressing these problems, against the background of the three dimensions of sustainability (social/health, climate/environmental, and economic/business), the production testbeds will support the digitalisation of the food sector and will help provide sufficient, safe, nutritious, and affordable food for everyone.

3   Funding specifications

In this cross-KIC project, EIT Manufacturing, EIT Food, and EIT Digital plan to provide up to **2.63 EUR** (including 30% co-funding) to fund the implementation of end-to-end digitalised production testbeds for the food sector and enable **3 to 5 selected consortia** to realise their proposed testbed at various locations in Europe. The funding period runs throughout the year 2021.

Eligible costs

The funding is to be used to cover the cost of implementing the testbed and to make it operational during the year 2021. The KICs partners need to comply with EIT's cost eligibility rules. This includes (pending the final legal framework for Horizon Europe):

- personnel cost for the consortium-members' staff involved in the testbed project
- cost for hardware (machinery, equipment, operating supplies, etc.)
- software
- related services
- project-related travel activities

Additionally, a 25 % overhead over direct costs (exc. subcontracting, subgranting and in-kind contributions) will be granted as overhead expenses, if contemplated within the Horizon Europe legal framework.

For this cross-KIC initiative, a co-funding rule applies. Details will vary between the selected consortia with regards to the respective KIC involvement and the resulting KIC-individual co-funding regulation. Co-funding should be provided from other non-EIT / non-EU sources.

Pre-financing is subject to the rules, timeline, and availability of funds of the corresponding KIC. All funds awarded in this call must be fully expended by 31 December 2021. Also, all activities supported in this call must be fully completed by 31 December 2021. Finally, the selected consortia need to follow the regular business plan reporting cycle and rules.

FUNDING SPECIFICATIONS DISCLAIMER

Transition from Horizon 2020 to Horizon Europe

The EIT Manufacturing, EIT Food and EIT Digital Business Plan 2021 will be executed under the new Horizon Europe Framework Programme that will run from 2021 till 2027. The transition from the legal framework underpinning Horizon 2020 to the legal framework underpinning Horizon Europe is still under discussion and is expected to be finalized in the course of this year. This transition may have implications for the requirements on the final EIT Manufacturing, EIT Food and EIT Digital 2021 Activities. These implications will be made available to proposers as soon as they are communicated by the European Commission. While proposers can take the current legal framework underpinning Horizon 2020 as a starting point, they should be aware of the transition and its possible implications. Be informed that the EIT Grant Agreements will be derived from the overall Horizon Europe Model Grant Agreement. Once again, proposers will be informed as soon as further information becomes available.

Brexit

The Withdrawal Agreement between the EU and the UK entered into force on February 1, 2020. Such Withdrawal Agreement provides for a transition period until December 31, 2020. Therefore, for 2020, the UK contributes to and participates in the implementation of the Union budgets, which means that UK entities remain eligible for grants and procurement procedures as if the UK was a Member State (Article 137 of the Withdrawal Agreement). For the UK's participation in the current Multiannual Financial Frameworks (MFFs), such as "Horizon 2020", applicable European Union law, including the rules on financial corrections and on clearance of accounts, shall continue to apply to the UK after 31 December 2020 until the closure of those programmes and activities (Article 138 of the Withdrawal Agreement).

However, as of March 2020, the long-term relationship between the EU and the UK remains subject of negotiations yet to come. If no agreement is reached by the end of the transition period, and the transition period is not extended, a no-deal Brexit would be the default outcome in 2021. Therefore, it is currently not predictable whether the EU's future relationship with the UK will be the same as with other Associated Countries.

If the UK will be an Associated Country under Horizon Europe, the eligibility of UK Partners will continue after December 31, 2020. If the UK will not be an Associated Country under Horizon Europe, in principle, all UK entities will be ineligible for EU funding and the participation of UK entities will have to follow the Horizon Europe Regulation for the participation of entities from third countries. In this case, the EIT will have to develop strict criteria based on the European Commission guidelines.

For the above-mentioned reasons, UK Partners can apply to EIT Digital 2021, but their eligibility will need to be further assessed and verified in the course of 2020, after the transition process to a stable relationship between the EU and the UK will be complete.

4   Eligibility and consortium structure

The minimum number of partners per consortium is three. It is mandatory for each consortium to feature partners from all KICs involved in the cross-KIC activity (EIT Manufacturing, Food, and Digital). However, this call for proposals is an open call. This means that companies/organisations external to the KICs' existing network of partners and members can join consortia upon invitation by a KIC partner/member that's part of this consortium. The KICs will review the invitation and decide if the organisation is approved.

Please refer to the KICs' websites to learn about the existing partner network and to identify and contact potential organisations to form eligible consortia:

- EIT Food: www.eitfood.eu/partners/
- EIT Manufacturing: www.eitmanufacturing.eu/partners/
- EIT Digital: www.eitdigital.eu/about-us/partners/

For further support in finding eligible consortia members, please reach out to the contact persons described in section 6.

Applications need to demonstrate that expertise in the fields of food, manufacturing, and digitalisation are featured among the consortium members. There is no maximum limit to the consortium size. However, applications need to demonstrate clearly which strengths and expertise is provided by each member of the consortium, how these complement each other, and why a member's participation is vital to the project's success.

Possible members for consortia are large, and small and medium sized enterprises (SME), start-ups, as well as research institutions from academia and from research and technology organisations (RTO). The KICs aim to fund consortia that present a well-balanced composition of various organisational types. Since one focus of this project is the development of solutions addressing industrial needs and pain points, consortia featuring industry representative will be evaluated favourably. Furthermore, in line with EIT's focus on promoting the innovation capabilities of small and young enterprises and organisations, if comparably evaluated testbed proposals are encountered, consortia consisting of SME and start-ups will be favoured over consortia featuring large enterprises.

Another aspect to consider when assembling a project consortium is **European dimension**. Organisations forming a consortium need to stem from **at least two different European countries**, to be eligible to receive funding. Eligible countries are member states of the European Union, the United Kingdom, as well as countries eligible for Horizon Europe funding. Applicants are furthermore encouraged to engage with countries and regions that are part of EIT's Regional Innovation Scheme (RIS). Either by featuring organisations from these countries/regions, and/or by demonstrating how implementation of their testbed proposal benefits the food sector in RIS areas. RIS areas include:

- **EU Member States**: Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Greece, Hungary, Italy, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia, Slovenia, Spain.

- **H2020 Associated Countries:** Albania, Armenia, Bosnia and Herzegovina, Faroe Islands, Georgia, Moldova, Montenegro, Republic of North Macedonia, Serbia, Turkey, Ukraine. To promote formation of capable consortia, the KICs offer to provide support, by introducing and connecting interested parties with one another. Interested parties are invited to reach out to the contact persons of the involved KICs.

Financial sustainability

Financial sustainability is an important factor for the involved KICs. The approved proposals and therefore funded testbed environments are required to contribute to the KIC's financial sustainability in the short to midterm. Consequently, applicants are asked to develop a **commercialisation plan,** to present an adequate **revenue model** and outline how the revenues coming from the use of the testbed will contribute to the KIC's financial sustainability.

- **Commercialisation plan**
  The production testbeds are supposed to be platforms for exchange, development, and education for years to come. The plan should describe users and therefore beneficiaries of the proposed testbed environment, and their respective needs. Users can be categorised based on their products, their geographical location, their functionality, or other aspects. The application needs to show how the proposed testbed environment caters to those needs, and how and why potential users are going to use it.

  For this purpose, applicants are asked to disclose relevant information about the users (e. g. market size, number of employees) and derive the future demand for the testbed environment (if possible supported by sources, data, support from clients / users, etc.). To complete the commercialisation plan, information about potential competition to the proposed testbed environment should be provided.

- **Revenue model**
  A revenue model needs to be detailed by the applicants, describing which services or other activities will contribute to generating revenue from operating the testbed, to ensure financially sustainable testbed operation for at least five years after the initial funding period ends. Depending on the proposed testbeds' design, various potential revenue streams are conceivable.

- **Revenue sharing with the KICs**
  Goal of the commercialisation plan and the revenue model is to demonstrate that the proposed testbeds are financially sustainable and will be operational for at least five years after the initial funding period.
  The preferred approach is to determine an agreement on sharing between 15 and 20 % of revenues created through testbed related activities (e. g. workshop/training fees, rent) with the KICs. Distribution of the shared revenues among the KICs will follow the distribution key of the initial implementation cost. This agreement must be valid for at least 5 years after the initial implementation and funding peri-od ends. Variable revenue models, featuring staggered increase of the share over the years are also possible.
  Given the expected heterogeneity of testbed proposals, alternative approaches to contribute to the KICs' financial sustainability (e. g. licensing rights, participation in patents) can be proposed by the applicants.

Revenue sharing as described in the section above is only one possible model to contribute to the KICs' financial sustainability. Alternatively, fixed rate models, shareholding in spin-off enterprises, and other models can be regarded as valid options by the reviewers.

Summarized eligibility check

To summarise, applying consortia and proposals need to:

- consist of at least 3 members,

- feature at least 1 partner of each KIC (EIT Manufacturing, Food, and Digital)

- feature organisations from at least 2 eligible countries,

- feature organisations from industry **and** academia, and

- contribute to the KICs financial sustainability.

5   Evaluation criteria

Excellence and strategic fit

The strategic objectives of this cross-KIC initiative are described throughout chapter 3 of this document. Proposals will be reviewed, based on the degree to which their digitalisation use-case is able to address, individual or multiple aspects of the three identified focus points, as well as on the level of the solution's innovation and the severity of the addressed problem/challenge. Therefore it is important for applicants, to describe how their testbed proposal provides true competitive advantages for the involved parties, as well as to describe the proposal's added-value in relation to existing products, services, other solutions, and to the state-of-the-art.

Furthermore, necessary efforts to implement the digitalisation solution (monetary, expertise, space requirements, etc.) need to be put into perspective to the expected outcome and benefits for the user of the solution. The severity of the problem needs to match the applicability of the solution.

Beyond the proposed testbed's functionality and ability to improve food manufacturing processes, proposals will be evaluated regarding their fit with EIT's knowledge triangle, consisting of business, education, and innovation (see Figure 2). As described in the beginning of this document, testbeds should be designed to serve as platforms to foster exchange, development, and learning. Applications should therefore showcase, how their proposals are in line with and contribute to the knowledge triangle, and how businesses, innovation activities, and education facilities will benefit from their vision of an end-to-end digitalised production testbed for the food sector.
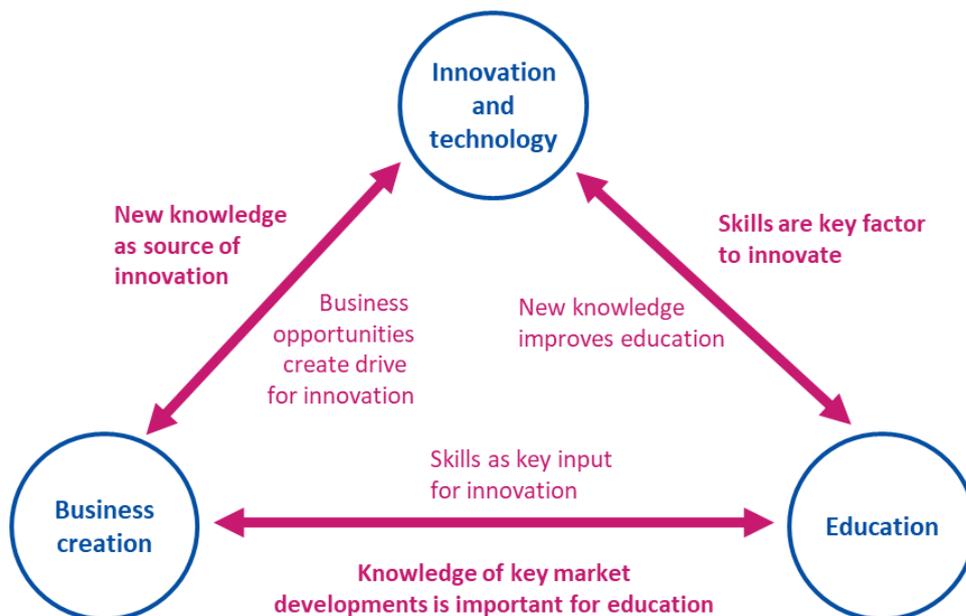

Figure 2: Components of EIT's knowledge triangle

Impact

It is important for testbed proposals to demonstrate how their testbed use-case is in line with the strategic objectives of this project. The impact of the proposals will be evaluated with respect to two viewpoints:

- **Impact of the digitalisation solution on the depicted process**
  Besides describing the direct impact that is to be expected on the processes of the involved consortium members, an outlook (based on calculations and/or estimations) of the solution's impact on a regional or over-regional level should be provided. This entails, among other things, describing the number of companies, organisations, and individuals that are likely to benefit from and to be reached by testbed related activities, both within and external to the consortium's network of partners and associates. This also entails stating existing venues that provide services comparable to the testbed proposal and therefore might be competing for users/customers.

  Furthermore, since it is this initiative's goal to implement ever-evolving, sustainable testbeds, another impact factor to consider are the testbed's connection points to future activities and projects, as well as the potential for future upgrades and extensions to the implemented infrastructure. This aspect is strongly related to the proposed business and dissemination plans.

- **Impact of the testbed with regards to KIC-specific and EIT-overall strategic objectives**
  Applications should demonstrate in which ways their testbed use-case contributes to the overall strategic objectives of the involved KICs. An overview of these strategic objectives can be found in Table 1. Regarding EIT's overall strategic objectives, applicants also need to demonstrate how their proposal contributes to strengthening RIS organisations and regions, as well as to developing, testing, and rolling out of new products and services.

Impact metrics

Cross-KIC activities are centred around a mission approach and want to encourage applicants to strive to achieve ambitious impact goals. Depending on the testbed use-case, one ore multiple of the defined strategic objectives needs to be addressed by the proposal. To ensure beneficial impact on the consortium participants, as well as a sensible cost-benefit ratio, applicants are asked to quantify how the testbed proposal will contribute to fulfilling at least one of the following impact metrics:

- **Food waste and food loss**
  - Reduction (%) of food loss during production
  - Reduction (%) of food loss in the primary sector
  - Reduction (%) of food loss during transport

- **Circular economy**
  - Increase (%) of upcycled water usage
  - Increase (%) of by-product utilisation
  - Increase (%) in the re-usability of materials
  - Reduction (%) of packaging material
  - Increase (%) the re-use of discharge material
- **Supply chain efficiency/effectiveness**
  - Reduction (%) of manufacturing lead time
  - Reduction (%) of machine downtimes
  - Reduction (%) of energy consumption
  - Reduction (%) of water consumption
  - Reduction (%) of manufacturing errors

Given the food industry's incredible heterogeneity, featuring a variety of different processes and therefore different approaches towards and applications for digitalisation, this call is open to accept additional impact metrics. These need to be presented in a convincing and comprehensive manner, to allow for an evaluation of the proposal's impact.

Table 1: Strategic objectives of EIT Manufacturing, EIT Food, and EIT Digital

EIT Manufacturing	EIT Food	EIT Digital
Development of competitive manufacturing skills and social sustainability	Support the digital transformation of the food system through demos and education	Development of entrepreneurial competencies, fostering T-shaped talent development
Creation of powerful manufacturing innovation ecosystems	Promote the investment and the adoption of digital tools and technologies by lowering the barriers for acceptance	Driving a Digital Europe
Fostering of globally competitive and resilient manufacturing structures	Develop transparent and traceable food supply chains to ensure safety of foods, through digital real-time detection solutions and technology-enabled end-to-end digital systems that ease more comprehensive data collection alongside the whole supply chain to enable the tracking of food processes or the performance of the supply chain against environmental, economic, societal and health indicators	Raise R&D investment in digital technologies, with an emphasis on software
Ensure environmentally sustainable manufacturing	Drive supply chain optimization through digital technology-enabled systems that promote value-chain linkages to reduce food waste and losses	Digital Industry is one of the 5 focus areas
Making manufacturing fit for the digital age	Create the digital solution that meet the demand for food production transparency, to reduce food fraud and boost consumer confidence	

Implementation

The final aspect of proposal evaluation is implementation. On this metric, a proposal's credibility, feasibility, and the overall quality of the proposed workplan and milestones are evaluated and reconciled with the initiative's strategic objectives. Part of the overall quality evaluation of the proposal is the degree to which the SMART[3] principles have been applied, thus, how well the outputs, deliverables, and impacts are defined.

Furthermore, qualification and expertise of the consortium members, and how well these fit with the proposed activities and challenges are evaluated. Therefore, precise descriptions of the members' backgrounds and experiences, and how these translate to the demands of the project's work packages should be provided.

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[3] https://ec.europa.eu/info/sites/info/files/file_import/better-regulation-toolbox-16_en_0.pdf

Testbed use-case

The grant applications need to demonstrate how the proposed testbed use-case is in line with at least one of the identified strategic objectives described in section 3. This entails describing the product(s) and/or process(es) to be depicted in the testbed setup, as well as the associated challenges to overcome by means of digitalisation. Furthermore, the required setup and infrastructure to depict the designated use-case as a testbed needs to be described:

- Machinery and equipment (e. g. ovens, coolers, processing machines, etc.)
- Hardware components (e. g. sensors, cameras, robots, edge computers, etc.)
- Software (e. g. control software, AI platforms, deep/machine learning software, etc.)
- Processing materials (e. g. food or beverage product/product stand-in)

Interaction of these components needs to be described, and component setup should be outlined in a schematic sketch, e. g. visualising the flow of materials and/or information. The sketch should furthermore illustrate the estimated dimensions of the finalised testbed. Also, the future location of the testbed environment should be specified in the application.

Acquisition cost of the components need to be specified in the application and must be in line with EIT's eligibility rules.

Testbed operation

The applications need to describe which activities will take place in the testbed environment once the implementation phase is finalised and the testbeds are operational. Additional to describing the use-case and the expected digitalisation-based improvements, the day-to-day operating activities should be outlined. Among other things, this may entails describing if real raw materials will be used during testbed operation, or if the properties of these materials can be emulated by substitutes. If real food products are processed in the testbed, usage of the products and by-products should be discussed (e.g. food donations[4], disposal). Additional activities to ensure reliable testbed operation (e. g. maintenance, cleaning, etc.) should also be featured in the application.

Besides physical goods and materials to be involved during testbed operation, availability of information and data is a key aspect to ensure regular and reliable testbed operation. Especially for applications involving artificial intelligence technologies, quality, and amount of available data are of great importance to sufficiently train models. Therefore, applications need to demonstrate how enough quality data will be made available to enable reliable testbed operation. Preferred source of data are real-life production facilities, for example provided by consortium members. If data generation by testbed operation is proposed, a rough estimation/calculation to demonstrate the approach's feasibility is required.

Additionally, the description of the testbed's financial sustainability aspects (business model soundness etc.) will also be considered as an evaluation criterion.

Finally, the party (or parties) responsible for operating the testbed, its location (if not a mobile solution), and possible future expansion of/extensions to the testbed environment should be described.

Timeline and challenges of testbed implementation

Proper planning of the necessary activities, their duration, and the involved members of the consortia needs to be demonstrated as part of the grant application. Timeline planning should be illustrated using Gantt charts to provide an overview of the project activities. Planning should be structured in a comprehensive manner and should feature relevant milestones that are to be accomplished at certain times throughout the project run-time. Project management activities should be handled as a stand-alone task, running in parallel to the project's activities, and should entail, among other things, planning for regularly occurring meetings of the consortium members. This timeline and activity planning should serve as basis for the personnel cost calculations.

Applicants are furthermore asked to identify and describe potential challenges during the implementation phase, as well as what impact in, in terms of time-delay, cost increase, and/or testbed functionality, etc. is to be expected. The applications should demonstrate, that the testbed implementation strikes a

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[4] Applying food safety and hygiene regulations are to be discussed and considered.

balance between not being trivial, on the one hand, and being feasible given the financial and temporal conditions, by relying on the combined knowhow of the consortium, on the other hand.

Dissemination

Contributing to the creation of innovative services and products for consortium members, is an important indicator for successful testbed implementation. To ensure that the testbeds' capabilities benefit other parties, beyond the consortia and the KIC networks, as well as to create awareness of the cross-KIC activity, applicants are asked to present a dissemination strategy as part of their proposal.

Implementation KPIs

The food industry's heterogeneity will lead to strongly heterogeneous testbed proposals that will differ in terms of focus. Applicants are therefore free to select at least two suitable KPIs from each of the following categories, to quantify and describe the respective tasks. If an applicant's testbed proposal provides opportunities that can be measured by applying KPIs different from those presented beow, applicants are encouraged to explain and define these KPIs. Suitability and acceptance of these KPIs will be evaluated by the external reviewers accordingly.

- Education/training
    - Number of educational products launched:
    - Number of hosted workshops (During implementation/During operation)
    - Number of university courses visiting the testbed
      (During implementation/During operation)
    - Number of staffers trained (During implementation/During operation)

- Innovation
    - Number of spin-offs generated
    - Number of Start-up/Scale-ups supported as part of the "Accelerate" program
    - Number of companies supported as part of the "Transformation" program
    - Number of supported Start-up/Scale-ups in RIS countries
    - Number of patents generated
    - Number of organisations renting the testbed
    - Number of processes digitalised
    - Number of follow-up innovation projects acquired

- Dissemination
    - Number of projects with other KICs
    - Number of individuals from RIS countries engaged
      (During implementation/During operation)
    - Number of visitors to the testbed (During implementation/During operation)
    - Number of talks at relevant conferences/fairs etc.
      (During implementation/During operation)
    - Number of published papers in relevant outlets
      (During implementation/During operation)
    - Number of multi-media posts in social media
      (During implementation/During operation)

Summary

The following table summarizes the selection criteria once more. Based on the evaluations and the overall available funding, the Cross-KIC Group will rank the proposals and select the winning proposals. The total maximum score for a project is 15 (3 criteria, each with a maximum score of 5).

Maximum score	Description of criteria
5	**Excellence and strategic fit** ▪ Tackling of strategic objectives ▪ Innovativeness of the idea ▪ Cost-benefit ratio of the proposal ▪ Contribution to the aspects of the knowledge triangle
5	**Impact** ▪ Expected impact measured by the defined metrics ▪ Impact on regional, cross-regional level ▪ Contact points for future activities and testbed expansions ▪ Involvement of RIS organisations and regions
5	**Implementation** ▪ Overall coherence of the proposal ▪ Description of challenges and subsequent mitigation activities ▪ Suitability of consortium members (Profiles, related previous projects, tasks) ▪ Clarity of the budget plan, timeline and milestones ▪ Coherence of the financial sustainability description

In relation to each of the criteria above, the score ranges from 0 to 5 according to the following scale:

0	Non-existent: no relevant information provided in the application file or cannot be judged because out of range/scope
1	Very poor: The criterion is addressed in a very incomplete and unsatisfactory manner
2	Poor: There are serious inherent weaknesses in relation to the criterion in question
3	Fair: The criterion is somewhat addressed, but there are significant weaknesses
4	Good: The proposal addresses the criterion well, although some improvements are possible
5	Excellent: The proposal successfully addresses all relevant aspects of the criterion in question. Any shortcomings are minor only.

6   Submission and evaluation

Proposals need to be submitted by email until December 7, 2020 – 11 a.m. (CET) by sending the proposal documents to:

digitaltestbeds@eitmanufacturing.eu

It is mandatory to include **"Cross-KIC Digitalised Production Testbeds Proposal"** in the email's subject. Proposals that are not properly identified in the title field of the email risk not being tracked and included.

Successful project proposals will be required to adhere to the participating KIC's grant specification and reporting requirements – this may require further elaboration on the project particulars such as work plans, budgets, cost descriptions, outputs and deliverables, KPIs (EIT and KIC-specific) etc.

For additional information, please contact:

- Timo Scherer (timo.scherer@eitmanufacturing.eu),
- Carmen Galindo Rodríguez (carmen.galindo@eitfood.eu), or
- Federico Menna (federico.menna@eitdigital.eu).

Proposal evaluation

EIT KICs rely on the professional expertise of independent experts to ensure that only proposals of highest quality and significance are select for funding. Evaluation is performed by independent experts, using the evaluation criteria mentioned in this document. In addition, the KICs involved in this initiative will check all proposals regarding their eligibility to Horizon Europe, and EIT criteria.

The names of the independent experts assigned to individual proposals are not made public. Any direct or indirect contact about the evaluation process between applicants (legal entity or person) and independent experts involved in the evaluation process, will be viewed as attempt to influence the evaluation process, and is strictly forbidden. Infringement of this rule can constitute an exclusion from the selection process.

Proposal evaluation will commence immediately after the December 7 deadline expires and is likely to take place throughout December and early 2021. In case of unclear proposal aspects, the KICs will approach the applicants if the reviewers deem it necessary, to enable applicants to clarify these aspects.

Feedback to applicants

Following the evaluation, the KICs will provide feedback to the activity leader submitting the proposal. The aim is to inform applicants about the result of the expert evaluation and the decision of the management teams of the involved KICs about the inclusion of proposals to the respective business plans. Feedback is to be expected in Q1 of 2021.

Appeal and redress procedure

Applicants may wish to file an appeal against a proposal's rating. The redress procedure is not meant to call into question the judgement made by the independent experts. It will consider only procedural shortcomings and factual errors. Objections may be raised in case of suspected shortcomings in the way a proposal was evaluated or assumed incorrections in the results of the eligibility checks.

Requests for redress must be made within two weeks of receipt of the evaluation feedback, and must

- address complaints against the evaluation process or the eligibility check.
- provide a clear justification for the appeal.

A reply will be provided no later than 3 weeks after the redress was received. The redress is examined by the management teams of the KICs, who will ensure a coherent interpretation of requests and equal treatment of applicants. Depending on the nature of the complaint, the management teams may review the evaluation report, the individual comments and examine the CVs of the independent experts. If there is clear evidence of a shortcoming that could affect the funding decision, it is possible that all or part of the proposal may be re-evaluated. Unless there is clear evidence of a shortcoming there will be no follow-up or re-evaluation.

7 Timeline

The following dates are to be considered by applicants. Please consider, that applications reaching the KICs after the deadline will be not processed

- Call opening: October 23, 2020
- Submission deadline: December 7, 2020 – 11 a.m. (CET)
- Announcement of selected proposals/   Q1 / 2021
  start of project activities