3/ Calls overview

3.1 **ITEA programme size** (status on 31 December 2022)

At the moment, three Calls from ITEA 3, one Call from ITEA 4 and the three Joint Eureka Clusters Calls: AI Call 2020, AI Call 2021 and Sustainability Call 2022 (where the projects received their label on 18 November 2022) are all running. Furthermore, projects for ITEA Call 2022, the second Call of ITEA 4, have recently submitted their Project Outlines. In total, 32 projects submitted a Project Outline (PO) and, after evaluation, 24 projects were invited to submit their Full Project Proposals (FPP). The submission deadline for the FPPs is 13 February 2023.

In total, 55 projects of the ITEA 3 Programme have been completed, of which 14 projects ended in the past year. Currently, 42 projects are running (27 projects from ITEA 3, three projects from ITEA 4 and 12 projects from the Joint Eureka Clusters Calls). 20 projects are still waiting for their final funding decisions (13 projects from ITEA 3 and 4 and seven projects from the Joint Eureka Clusters' Calls AI Call 2021 and Sustainability Call 2022 with ITEA as the main Cluster).

All projects from ITEA 3 Calls 1 to 4 have now been completed with funded Call sizes of €103 M, €119 M, €104 M and €120 M respectively. Call 5 developed toward €93 M and, due to a lack of funding and delays in funding decisions in Call 6, only nine out of 20 projects started and the funded Call size realised will only be around €60 M. Although there are still quite a few pending decisions, Call 7 signals a slight increase in the funded Call size, which is forecasted between €65 M and €70 M. On the other hand, the funded Call size for the Joint Eureka Clusters AI Call 2020, which is running in parallel to ITEA Call 6, will reach a size of around €32 M. With some projects still facing pending funding decisions, Joint AI Call 2021, running in parallel to ITEA Call 7, is forecasted to reach a Call size of around €25-28 M. Finally, the projects from the Joint Eureka Clusters Sustainability Call 2022 only received their label on 18 November. While there are no funding decisions yet, the funded Call size for the projects of this Call with ITEA as the main Cluster is forecasted to be between €6 M and €10 M.

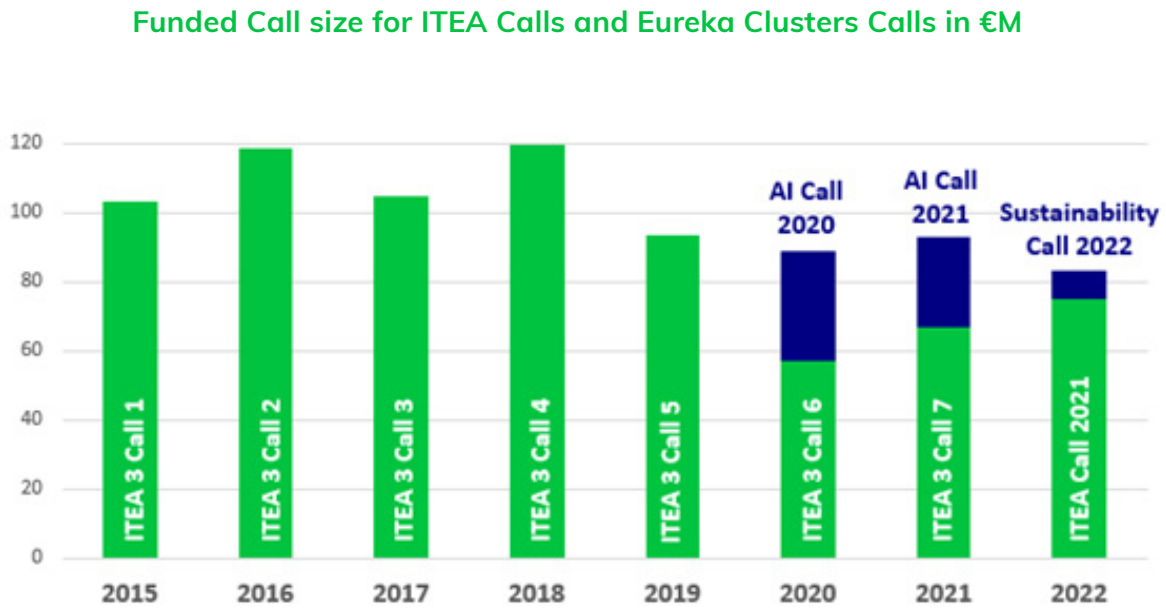

Figure 1: ITEA (estimated) funded Call size in million euros.

3.2 Calls progress

3.2.1 ITEA Calls and Joint Eureka Clusters Calls progress

In the following graph, the progress of the ITEA Calls is represented by several hit rates. These hit rates show the percentage of the projects, efforts and costs actually accomplished or actually running in the ITEA programme compared to the projects, efforts and costs initially labelled.

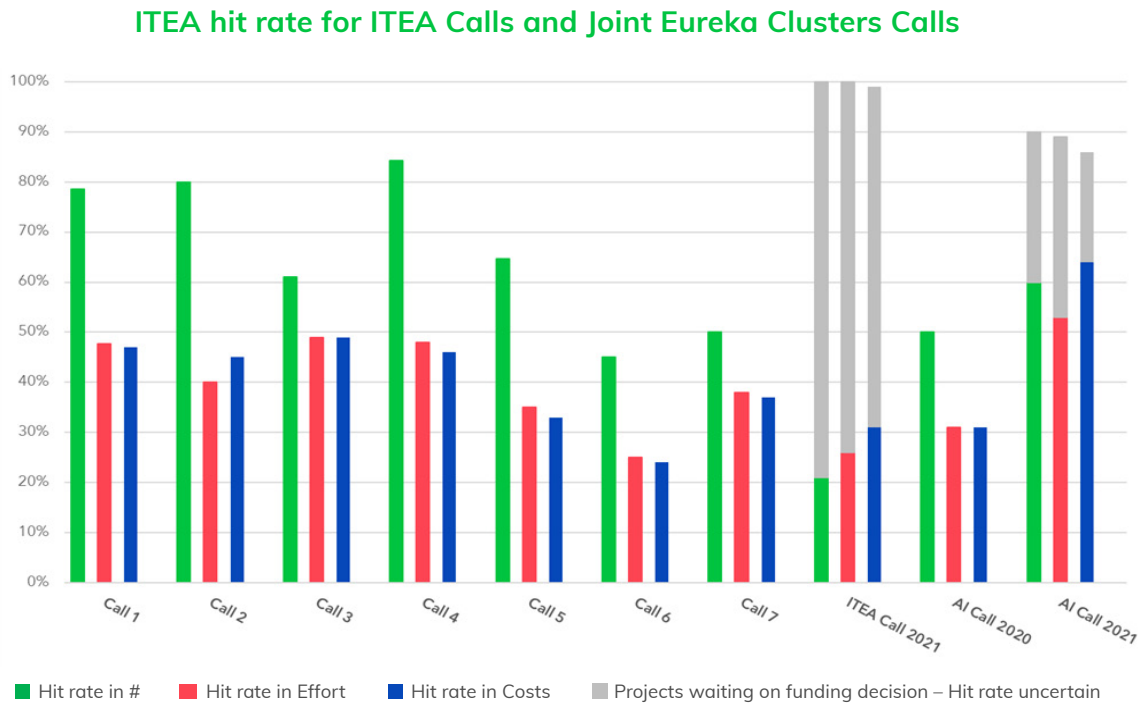

Figure 2: ITEA hit rates for ITEA 3 Calls 1 to 7, ITEA Call 2021, the Joint Eureka Clusters AI Call 2020 and AI Call 2022 as of 31 December 2022. Figures based on latest FPP.

All projects in ITEA 3 Call 1, Call 2, Call 3 and Call 4 have now been completed. ITEA 3 Call 5, Call 6 and Call 7 are still subject to some (minor) changes as Change Requests are also possible for ongoing projects. Nevertheless, these Calls are rather stable now. The same goes for the Eureka Clusters AI Call 2020, which reached a hit rate of 50% in terms of number of projects; the same as the hit rate for ITEA 3 Call 7, although that Call shows a higher hit rate in terms of costs and effort.

After very low hit rates for Call 6, there has been an improvement for ITEA 3 Call 7 and this improvement can also be expected for ITEA Call 2021 and AI Call 2021. However, for ITEA Call 2021 and AI Call 2021, there are still a lot of uncertainties, making it hard to give a good estimate of the final hit rates for these Calls.
As the Eureka Clusters Sustainability Call projects were only recently labelled, this Call has not been taken into account in these hit rate figures.

A quick start to a project can have a positive impact on maintaining its original size as partners remain involved and the topic remains relevant, as is also visible in Figure 2. The time from project idea to project start has therefore been a high-level KPI in ITEA for a few years now. As the result of the fact that this KPI did not improve over the first ITEA 3 Calls, the ITEA label validity deadline was implemented as of ITEA 3 Call 3.

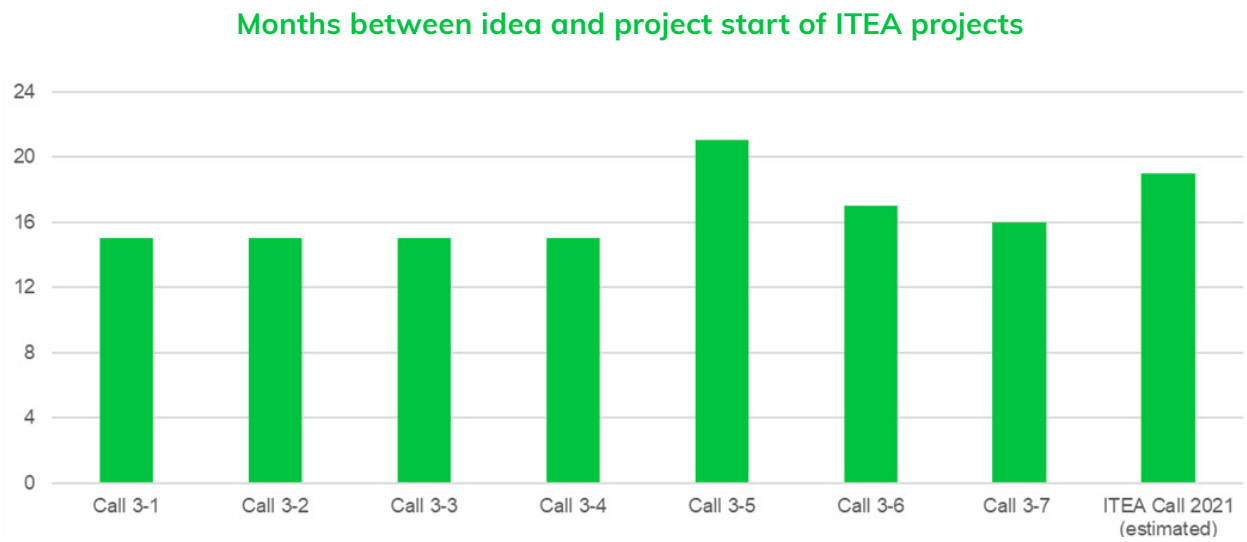

Figure 3: Time from ITEA project idea to project start (when >50% of the projects of the Call have started) from ITEA 3 Call 1-7 and ITEA Call 2021.

Due to several circumstances and the changing environment, however, the label validity deadline has not yet resulted in a reduction of the time-to-project. Regarding ITEA 3 Call 5, the time-to-project for this Call was even more than the previous Calls due to funding decisions in Germany and the changed situation in France. Call 6 was a special case as it never reached the hit rate threshold of 50% of projects started as only nine out of 20 projects started. For Call 7, a shorter time from idea to project was reached with 16 months, which is an improvement compared to Call 5 and Call 6. Nevertheless, it is expected that ITEA Call 2021 will hit the threshold of 50% in 19 months, which is again longer than ITEA 3 Call 7, and this is still not close to the desired level of 12 months or less, so this remains one of our improvement priorities.

The current status of the ITEA projects is as follows:

	2022			2021		
	#	Effort in PY	Cost in €M	#	Effort in PY	Cost in €M
Labelled during the year	18	2417	194	26	3007	279
Running at the end of the year	43	3752	351	41	3722	352
Waiting at the end of the year	17	1877	135	20	1928	164
Completed during the year	14	1361	119	8	631	65
Cancelled during the year	5	512	48	17	2216	207

Table 2: Status of ITEA projects in 2022 and 2021 as of 31 December 2022 and 31 December 2021 respectively. Figures are based on labelled and latest FPPs. Note: the figures include the ITEA projects that resulted from the Joint Eureka Clusters Calls as projects become ITEA projects after labelling (in case they indicate ITEA as the main Cluster).

3.3 Project landscape

To create innovation-driven growth, ITEA needs to focus on future markets and the challenges posed by a fast-changing world in which 'smart' is the key concept. At present, there are eight main societal challenges that the ITEA Community addresses. The figure below shows the distribution per Call of the ITEA projects across these challenges, except for the Smart energy challenge that was introduced only in 2021. Over time, the strongest contribution has been in the field of Smart engineering, with a very good coverage of the Smart health, Safety and Security and Smart industry challenges as well. As Joint Eureka Clusters Calls do not use the same main societal challenges, figures from these Calls are not represented in this graph.

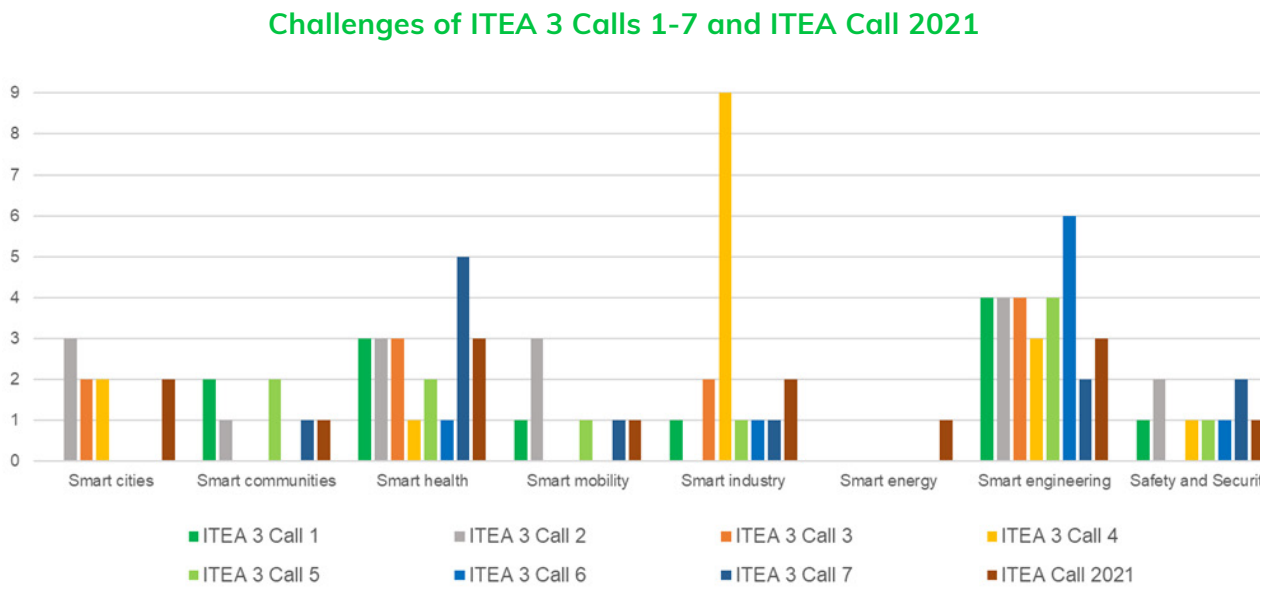

Figure 4: Number of ITEA 3 and ITEA 4 projects per ITEA challenge

3.4 New projects - ITEA Call 2021

The first Call of ITEA 4, ITEA Call 2021, delivered 15 submitted FPPs, ultimately resulting in 14 labelled ITEA projects involving 2205 PY and 14 countries. This Call has generated projects for all of the eight ITEA smart challenges, showing the relevance of the bottom-up approach. We again have a strong participation of SMEs, which represent almost half of the total effort of the labelled projects. The SMEs are complemented by many large industrial players (around 30% of the total effort) and high-level academic partners (around 20% of the effort). It is interesting to note that we have a healthy rate of newcomers as more than 50% of the project partners have not been involved in ITEA projects during the past five years.

As mentioned above, it is expected that the size of several ITEA Call 2021 projects will be reduced due to some (delays in the) funding decisions. In February 2023, LimitLess was cancelled. Due to lack of funding in the main countries, some additional projects might be cancelled in the coming months.

The themes arising from this Call are:

Theme	ITEA Call 2021 projects
Smart engineering	GenerIoT, ZEE
Smart health	DAIsy, RM4HEALTH, SYMPHONY
Safety and Security	VESTA
Smart communities	EARS
Smart mobility	TAPCOP
Smart industry	EXPAI SmartIndustry, TiDiT
Smart energy	BENTRADE
Smart cities	AIMOB SmartCity, SOCFAI

A short description of each project can be found below.

AIMOB SmartCity

21029

Modelling and optimization of biofuel production and advanced monitoring systems for Smart Cities

Project leader: Inovasyon Muhendislik (Türkiye)

Renewable energy (bioenergy) is one of the key factors for ensuring the sustainable development of smart cities and beyond. The aim of AIMOB SmartCity is to produce biofuels from microalgal biomass by using artificial intelligence (AI) in modelling and optimisation and developing an advanced monitoring system for Smart Cities. Simulation-based production planning of biofuel from microalgal biomass gives rise to a reduction in operational costs and makes biofuel competitive with fossil fuels. The model developed will enable new services for local trading (Energy-as-a-Service).

https://itea4.org/project/aimob-smartcity.html

BENTRADE

21003

Blockchain Based Energy Trading Platform

Project leader: KoçSistem (Türkiye)

Demand for electricity is set to grow and cost-effective solutions are emerging to optimise and effectively manage the transitioning electrical grid. BENTRADE aims to provide an innovative software platform with services and tools for the rapid development and deployment of Demand-Side Flexibility Management (DSFM) and energy trading solutions. The BENTRADE platform will help to overcome some of the key challenges in the energy sector - most notably intermittency, sectoral silos, balancing distribution-connected generation, managing consumer self-generation, aging grids, and coping with increasing system complexity.

https://itea4.org/project/bentrade.html

DAIsy

21016

Developing AI ecosystems improving diagnosis and care of mental diseases

Project leader: ARD GROUP (Türkiye)

Major depressive disorder (MDD) is a common psychiatric disorder, ranking as the second leading contributor of years lived with disability. Finding the right approach for individual patients remains challenging. DAIsy will develop and bring to the market AI-supported solutions for improved diagnosis, treatment selection, diet monitoring, activity tracking, support in behaviour adjustments, and treatment response assessment. Novel AI techniques will be jointly developed to advance the AI applicability for these fragile patients by advancing techniques for large data points/patient ratios, improving explainability and uncertainty quantification.

https://itea4.org/project/daisy.html

EARS

21017

Environment Adaptive Recommendation System

Project leader: ARD GROUP (Türkiye)

The main problem of many domains is a lack of information and guidance, as potential customers cannot be reached because there is not enough information and guidance towards the right products. The EARS project aims to bring together all parties in the value chain, creating an ecosystem, providing a new platform that fits the purposes of all parties and enabling them to collaborate. Entities such as businesses, algorithm developers, solution providers, service providers and recommendation systems are brought together to enhance their capabilities or those of others, monetising the artefacts by utilising them as a service.

https://itea4.org/project/ears.html

EXPAI SmartIndustry

21028

Integrating AI into smart control systems and increasing productivity for industrial areas

Project leader: Acd Bilgi Islem ltd.sti. (Türkiye)

Smart technologies are gaining higher importance while supporting Artificial Intelligence technologies that we use in our lives. The main goal of this project is to provide a flexible, controllable digital environment supported by an Explainable Artificial Intelligence digital smart platform that will collect and analyse sensor data from various resources for different domains. These will be combined in a common framework in industrial areas and the retail market. The project will present novel methods and solutions for the industrial market and real-life use-cases for exploitable solutions.

https://itea4.org/project/expai-smartindustry.html

GenerIoT

21014

Generating and Deploying Lightweight, Secure and Zero-overhead Software for Multipurpose IoT Devices

Project leader: Infineon Technologies (Germany)

Distributed hardware/software systems (often interconnected via the internet) which gather information via sensors and influence the environment via actors must be up to date, especially with regard to security. Additionally, connectivity offers the opportunity to adjust in-field systems to user needs. This requires an efficient development flow enabling short development cycles. GenerIoT will provide new technologies and processing steps in order to simplify and speed up the handling of IoT software over the complete DevOps cycle. The approach proposed by GenerIoT will open new business opportunities: IoT apps.

https://itea4.org/project/generiot.html

RM4HEALTH

21022

Remote Monitoring in Health and sports

Project leader: Philips (Netherlands)

Wearable health monitoring systems provide a big promise of allowing individuals to closely monitor changes in their vital signs and provide feedback to regain or maintain an optimal health status. The RM4Health project will accelerate innovation in electronic wearable devices. RM4HEALTH will focus on the development of open technology platforms for vital sign monitoring for these emerging fields to help them bridge 'the Valley of Death' in a shorter time and at a lower cost. RM4HEALTH aims to stimulate innovation in continuous monitoring in healthcare and sports.

https://itea4.org/project/rm4health.html

SOCFAI

21020

Secure Open Collaboration Framework powered by Artificial Intelligence

Project leader: TAV Technologies (Türkiye)

The SOCFAI project focuses on airports and addresses the problems caused by the collaborative and multi-stakeholder nature of their operations. This is providing new ways to manage the operations cycle, enable real-time common situational awareness of all aspects of airport operations, optimise different core processes, enable predictive and fully integrated operations management and facilitate customer service management and orientation, all while trying to improve overall customer satisfaction levels by introducing an open-source framework equipped with technologies such as AI, Computer Vision, VR, IoT, LIDAR, etc.

https://itea4.org/project/socfai.html

SYMPHONY

21026

Eco-system for disease specific clinical workflow and data integration

Project leader: Philips (Netherlands)

Healthcare today faces many challenges like improving patient outcome, working cost-effectively while finding a balance with growing demand, declining staff capacity and new clinical/technological developments. COVID has clearly shown the urgency for healthcare IT to ensure efficient decision-making and co-operation and a reduction of strain on the sector. The most effective way to achieve this is to unlock the full potential of the knowledge hidden within the enormous amounts of medical data generated. The objective of SYMPHONY is to create an open healthcare IT ecosystem, providing care professionals with real-time, comprehensive insights into a patient's status and integrating all relevant information for diagnosis, treatment selection and follow-up.

https://itea4.org/project/symphony.html

TAPCOP

21032

Traffic AI Prediction of Common Operational Picture

Project leader: To be defined. Change Request is in preparation.

Authorities continuously struggle with managing and controlling traffic and crowds to prevent safety incidents and discomfort. They lack efficient solutions to prevent these problems. TAPCOP realises situational awareness and data-driven management of visitor flows, provides AI-based sensors and aggregates multiple data sources using AI to create a more reliable and complete view of the situation and predict overcrowding. TAPCOP offers a one-stop solution for multi-modal mobility management and prevention of overcrowding by personally advising visitors pre-trip, on-trip and on-site via social media, navigation systems and other mobile phone apps.

https://itea4.org/project/tapcop.html

TiDiT

21023

Timeline-Driven Digital Twin

Project leader: BITES (Türkiye)

The current digital twin services on the market do not completely fulfil customer needs and are unable to prevent unexpected breakdowns and provide cost-effective models. Moreover, end-users have to set up every simulation using different software, which results in high costs, time and effort. By bringing together different software capabilities while fulfilling customer needs with the implementation of innovative technologies, the TiDiT project aims to create an 'as a service' model timeline-driven digital twin platform to enable a better decision-making process and increase situational awareness.

https://itea4.org/project/tidit.html

VESTA

21011

Proactive protection against phishing-based ransomware

Project leader: VisionWare - Sistemas de Informação, S.A. (Portugal)

Every year, millions of users fall victim to malware threats in various ways. The VESTA project aims to develop a European cybersecurity system to proactively protect systems against ransomware attacks. It combines multiple techniques such as AI/ML, data & knowledge extraction, anti-phishing, human behaviour analysis and sandboxing to build a multilayer ransomware attack mitigation platform capable of preventing, defending and remediating such attacks. Moreover, VESTA may also tackle the challenges related to the multi-language nature of phishing emails via collaboration between partners from different countries.

https://itea4.org/project/vesta.html

ZEE

21015

Zero-Data Exchange for Engineering

Project leader: SETLabs Research GmbH (Germany)

There is a high need to process privacy and intellectual property-related digital artefacts, such as datasets, models or algorithms. The vision of ZEE is that no copies must be created for the processing of these artefacts. Technical issues of security and privacy can be addressed with novel approaches. However, current IT infrastructures represent major barriers. Much sought-after applications like controlled data sharing, distributed computing or distributed toolchains are effectively prevented. The ZEE project aims to exploit edge/network/cloud computing-based mechanisms to circumvent these issues in order to enable new business opportunities through a more generous attitude towards sharing in industry.

https://itea4.org/project/zee.html

3.5 New projects - Eureka Clusters Sustainability Call 2022

The Eureka Clusters Sustainability Call 2022 delivered 15 submitted FPPs, ultimately resulting in 11 labelled projects involving 482 PY and 68 partners from 14 countries. The most represented countries are Türkiye (nine projects), Portugal (six projects) and Belgium (four projects). ITEA is the primary Cluster for four projects and a secondary Cluster for four additional ones. With a representation of 65% of the total effort, SMEs are the main contributors to this Call. Large industry covers 16% of the effort, followed by universities with 11%.

The main themes arising from the labelled projects in this Sustainability Call 2022 are:

Theme	Eureka Clusters Sustainability Call 2022 – projects
Circular economy	AgAPP-e, NRPCES, RETAILL
Sustainable logistics and supply chain management	Resource2Tab, RETAILL
Green ICT	DefectFree, iDT4GDC
Sustainable manufacturing	DefectFree, SMCMSSPPA
Renewable energy	ONE, Valkyrie
Distributed intelligence and low data transmission	RETAILL
Earth, Ocean, Space observation systems and exploitation	UAV-GG
Power electronics and management	ONE
Other	SmartAgroInsurance

A short description of the projects related to ITEA can be found hereafter. The first four projects, with green titles, have indicated ITEA as their main Cluster and the last four projects, with blue titles, have indicated ITEA as secondary Cluster:

AgAPP-e

SUS2022-020

Agriculture's digital Analyser of Production for Phosphorus efficiency

Project leader: Experteam (Türkiye)

For improved production and environmental protection, fertiliser management needs to be local or site-specific; depending on the regional metabolism, agricultural efficiency can be increased even fourfold if the flows and stocks are well-observed. Digital solutions will greatly improve the management of such essential resources, but these are currently missing, leaving the farmer without simple tools capable of providing targeted diagnoses for targeted treatments. AgAPP-e aims to automate fertiliser recommendations and thereby improve accuracy and increase the phosphorus efficiencies of a nation.

https://itea4.org/project/agapp-e.html

RETAILL

SUS2022-071

REtail using Technology based on Artificial InteLLigence

Project leader: Polytechnic Institute of Porto (Portugal)

Food waste is one of the main problems in the current food supply chain. According to the UN Sustainable Development Goals, food losses along production and supply chains must be halved by 2030. In view of this, RETAILL aims to develop an IoT and AI-powered platform that will be adaptable to most countries' food supply chains. This system will improve the food lifecycle, ensure that food waste is valued and make logistics more efficient, thereby reducing the use of resources and increasing the profits of all actors in the value chain.

https://itea4.org/project/retaill.html

SmartAgroInsurance

SUS2022-036

Agro Insurance Data Management Platform with API Services

Project leader: SFS Danışmanlık Bilgi İşlem San. ve Dış Tic. A.Ş (Türkiye)

Agricultural insurance is a global, fast-growing billion-dollar industry and, due to the effects of climate change, it is becoming more important every day. Effective insurance policies stabilise farm income, reduce poverty and ensure a climate safety net for food producers. SmartAgroInsurance aims to develop a Smart Agriculture Insurance Data Management Platform to provide, analyse and integrate agricultural data from different sources with insurance industry know-how so that insurance companies can achieve better premium calculations, claim automation and fraud prevention and provide supportive, damage-preventing advice to the farmer.

https://itea4.org/project/smartagroinsurance.html

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iDT4GDC

SUS2022-042

Intelligent Digital Twin Platform for Climate-Neutral Data Centres

Project leader: Red Dot Analytics Pte Ltd (Singapore)

Data centres are estimated to consume approximately 1% of global electricity use and contribute to 0.3% of all global CO2 emissions. Climate-neutral data centres have therefore become an important challenge. iDT4GDC aims to develop Artificial Intelligence and Digital Twin technologies into a cloud AI platform to digitalise, optimise and automate data centre operations for sustainability purposes. iDT4GDC will guide data centre operations and management towards a sustainable future along the five pillars of power, carbon, water, circular economy and governance.

https://itea4.org/project/idt4gdc.html

DefectFree

SUS2022-048

Machine learning and artificial vision for 0% waste in textile production

Project leader: Smartex (Portugal)

With the aim of reducing defective textiles to close to 0%, this proposal intends to develop a new system based on artificial intelligence, machine learning, and computer vision that, when installed into circular knitting machines, can detect defects in complex fabrics in real-time during production. The economic and environmental benefits of this proposal are evident given that the textile industry is one of the largest in the world, as well as one of the most polluting.

Primary Cluster: SMART

Resource2Tap

SUS2022-066

Integrated Resource Management Platform for Water Distribution System

Project leader: Reengen (Türkiye)

An integrated monitoring system will be developed to prevent water losses and indirect energy losses in urban water distribution systems and to optimise the energy consumption of the distribution system. The water leakage prevention system will offer hardware and software solutions to be developed for the detection of technical losses in the water distribution network and an end-to-end monitoring system. Resource2Tap will develop a product with high commercialisation potential that will prevent technical losses with an IoT-based endpoint monitoring system and conventional neural network-based data analysis software.

Primary Cluster: EUROGIA

SMCMSSPPA

SUS2022-031

Saw Machine that Can Make Smart and Sustainable Production with Prediction Algorithms

Project leader: Beka-Mak Makina Sanayi ve Ticaret A.Ş. (Türkiye)

Sawing machines, used to bring raw material to the desired dimensions in industrial production companies, are of great importance since they are at the beginning of the production line and have a great effect on production efficiency. In this framework, the aim is to manufacture sawing machines with smart and sustainable production techniques which automatically optimise the cutting parameters (cutting speed, surface quality, etc.) with the data to be collected from the field and provide error and lifecycle estimation for machine equipment.

Primary Cluster: SMART

UAV-GG

SUS2022-085

Monitoring Greenhouse Gases with Long-Range Unmanned Aerial Vehicles and Novel Spectroscopic Sensors

Project leader: Romaeris Corporation (Canada)

The project will use novel, long-range, large payload Unmanned Aerial Vehicles (UAVs) to carry innovative spectroscopic sensors to monitor multiple greenhouse gases (GHGs) over large geographic areas, locate emissions sources, take action and vastly improve our understanding of GHG emissions. A data portal will be created to make such GHG information available to governments and industry worldwide and the data will be made compatible with other sources of information, such as satellites, so that comprehensive and accurate GHG reporting is possible at last.

Primary Cluster: EUROGIA