

# 3.1 ITEA programme size (status on 31 December 2021)

At the moment, five Calls from ITEA 3 and the Joint Eureka Clusters Al Call 2020 are running. Furthermore, the Joint Eureka Clusters Al Call 2021 projects have been submitted and approved and are now waiting for their official label. Finally, ITEA Call 2021, the first Call of ITEA 4, is ongoing (FPP submission deadline: 15 February 2022).

Eight projects of the ITEA 3 Programme have (recently) been completed and 44 projects are running, of which 39 are ITEA 3 projects and five are Joint Eureka Clusters Al Call 2020 projects. Seven projects are still waiting for final funding decisions, of which six are ITEA 3 projects and one is from the Joint Eureka Clusters Al Call 2020. Alongside these, 10 projects submitted to ITEA in the Joint Eureka Clusters Al Call 2021 were approved and are now waiting for their official label.

As for the funded Call sizes, ITEA 3 Call 2 reached almost €114 m, a real improvement compared to Call 1 which achieved a size of €103 m. ITEA 3 Call 3 was again a smaller Call of €106 m but the size of ITEA 3 Call 4 was back to a better level of €119 m. Due to the funding position of Germany and the delays in the funding decisions for Call 5 in general, that Call has developed towards €88 m. 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 realized was only €61 m. Although there are still quite a few pending decisions, Call 7 signals an increase in the funded Call size, which is forecasted between €65 m and €90 m. On the other hand, the funded Call size for the Joint Eureka Clusters Al Call 2020 is forecasted at around €30 m. As projects in the Joint Al Call 2021 have not officially been labelled yet, it is not possible to give a forecast for the size of this Call yet.

## Funded size (in € m)

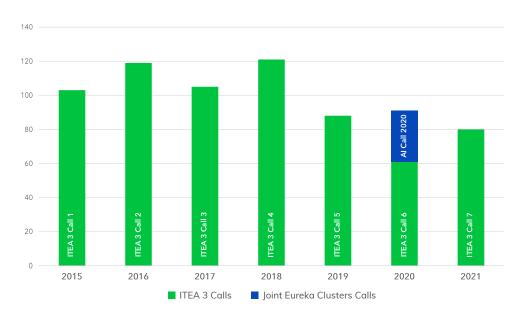


Figure 1: ITEA (estimated) funded Call size in million euros.

# 3.2 Call progress

## 3.2.1 ITEA Calls and Joint Eureka Clusters AI Call 2020 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.

## ITEA hit rate for ITEA 3 Calls 1-7 and AI Call 2020

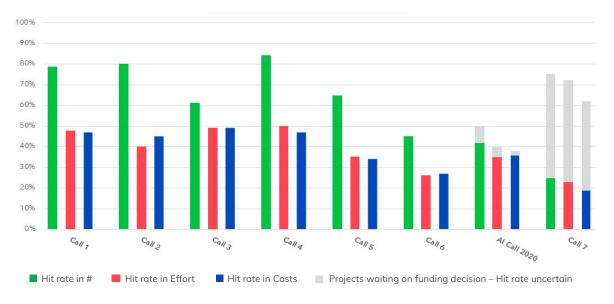


Figure 2: ITEA hit rates for ITEA 3 Calls 1 to 7 and the Al Call 2020 as of 31 December 2021. Figures based on latest FPP.

The grey areas represent the projects that are still waiting on a funding decision and can therefore still influence the hit rates. The ITEA 3 Calls 5 and 6 are also still subject to some (minor) changes as Change Requests are also possible for ongoing projects. Nevertheless, these Calls are rather stable now. All projects in ITEA 3 Call 1 and Call 2 are now complete. One project from ITEA 3 Call 3 is still running but will be completed by the end of Q2 of 2022. The Joint Eureka Clusters Al Call 2020 is rather stable now and reached a hit rate of 50%.

For ITEA 3 Call 7, there are still a lot of uncertainties. For ITEA 3 Call 7, a hit rate of 55-65% would be more realistic when we take into account everything that is currently known.

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 this KPI has not improved over the first ITEA 3 Calls, the ITEA label validity has been implemented as of ITEA 3 Call 3.

### Months between project idea and project start

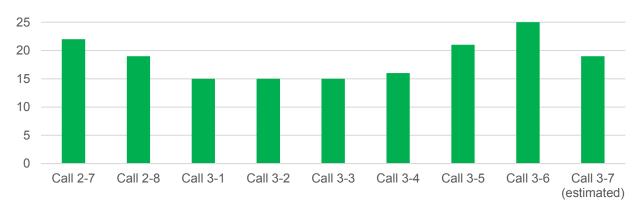


Figure 3: Time from ITEA project idea to project start (when >50% of the projects of the Call have started) from ITEA 2 Call 7 to ITEA 3 Call 7.

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 already 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 the started number of projects. The status of the last project was only clarified recently, making this the Call with the longest duration between project idea and project start. For Call 7, a shorter time-to-project is again expected when compared to Call 5 and Call 6. Nevertheless, this is still not close to the desired level of 12 months or less, so this remains one of our priorities to improve.

The current status of the ITEA projects is as follows:

		2021			2020		
	#	Effort in PY	Cost in €100 k	#	Effort in PY	Cost in €100 k	
Labelled during the year	26	3007	2789	32	3333	3596	
Running at the end of the year	41	3722	3521	36	3870	3502	
Waiting at the end of the year	19	1808	1580	24	2389	2398	
Completed during the year	8	631	649	16	1399	1376	
Cancelled during the year	17	2216	2067	10	1286	1346	

**Table 2:** Status of ITEA projects in 2021 and 2020 as of 31 December 2021 and 31 December 2020 respectively. Figures are based on labelled and latest FPPs. Note: the figures include the ITEA projects that resulted from the Joint Eureka Clusters Al Call 2020 and 2021, as projects become ITEA projects after labelling (when they have indicated 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. As Smart energy is a new challenge, introduced for ITEA 4, this challenge is not yet well reflected in figure 4.

## Challenges of ITEA 3 Call 1-7 and the AI Call 2020

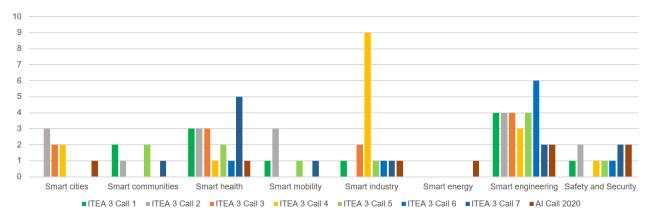


Figure 4: Number of ITEA 3 and AI Call 2020 projects per ITEA challenge.

# 3.4 New projects - ITEA 3 Call 7

The final Call of ITEA 3, ITEA 3 Call 7, delivered 23 submitted FPPs, ultimately resulting in 16 labelled ITEA projects involving 2432 PY and 21 countries. This illustrates the vitality of the ITEA Community, which has been able to deliver high-quality projects despite the absence of physical meetings, since the ITEA PO Days were held online in September 2020. As usual, there is a good balance between SMEs that have the agility to innovate, large industries that can quickly bring the outcomes of the projects to the market and research centres that provide beyond State-of-the-Art research.

As mentioned above, it is expected that the size of several Call 7 projects will be reduced due to some delays in the funding decisions. The labelled projects 3STARS, The Mechanical Web, CONTRAST and RESILIANT.ai were already cancelled during the year due to lack of funding in the main countries.

The themes arising from this Call are:

Theme	ITEA 3 Call 7 projects	
Smart engineering	SmartDelta, InnoSale	
Smart health	HeKDisco, ASSIST, VRCare, Secur-e-Health, SIGNET	
Safety and Security	NGAST, ENTA	
Smart communities	COMRADE	
Smart mobility	V-Space	
Smart industry	OMD	

A short description of each project can be found below.

### **ASSIST**

20044

Automation, Surgery Support and Intuitive 3D visualization to optimize workflow in IGT SysTems Project leader: Philips (Netherlands)



Current software image-guided therapy applications to assist the physician still require significant manual user interaction while all attention should go to the patient instead. The ASSIST project will develop technologies and solutions to get the physician back in control of the clinical procedure by assisting or automating part of the physician's tasks during image-guided therapy procedures. The aim of the project is to optimise and simplify the workflow in image-guided therapy procedures with the main goal of streamlining physicians' work, optimising imaging systems, improving patient outcomes, reducing human error and lowering costs.

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

## **COMRADE**

20008

COMmunicate and collaboRAte in extendeD rEality Project leader: TNO (Netherlands)



Traditional video conferencing tools come with limitations that prevent efficient and meaningful remote communication and interactive participation. The global pandemic and climate change urgently demand an era of eXtended Reality (XR) communication and collaboration. The aim of the COMRADE project is to specify, develop, integrate and validate end-to-end networked solutions for real-time communication and collaboration in XR. The project goal is to enable XR video conferencing and meetings, virtual travelling, expertise at a distance, virtual studio productions, virtual home improvement and shared media and entertainment.

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

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#### **ENTA**

20020

**Encrypted Network Traffic Analysis for Cyber Security** Project leader: Solana Networks (Canada)









Today, more than 80% of Internet traffic is encrypted and there is a strong need for innovative research and the development of tools that are able to provide visibility in encrypted traffic and detect cyber-attacks. The ENTA project will explore 3 solutions based on Encrypted Network Traffic Analysis (ENTA) in order to identify encrypted applications, encrypted data exfiltration and roque encrypted IoT devices. The ENTA project will deliver an encrypted traffic analysis service platform for cybersecurity that will support several basic building blocks necessary for any machine learning/ deep learning-based traffic analysis.

# https://itea4.org/project/enta.html

#### **HeKDisco**

20030

Healthcare Knowledge Discovery Project leader: Mantis (Turkey)







The main purpose of the HeKDisco project is to reduce potential human mistakes in medical care for patients. Following evidence-based medicine (EBM), HeKDisco aims to use the best (reliable) evidence in making decisions on the care of individual patients so that the clinician experience, patient values and preferences and best empirical clinical guidelines are all integrated. HeKDisco aims to transform big health data from volume-based to value-based by generating a relational knowledge base that can lead to innovative treatments, predict therapeutic outcomes and provide early diagnosis.

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

#### InnoSale

20054

Innovating Sales and Planning of Complex Industrial Products Exploiting Artificial Intelligence **Project leader:** Software AG (Germany)











InnoSale aims to innovate today's sales systems and processes for complex and variable industrial equipment, plants and services that require time-consuming back-office support. InnoSale develops methods to increase the expressiveness of validation rules and to suggest relevant purchase options (case-based reasoning). Sales engineers will be supported in finding previous customer requests & orders and other suitable solutions quickly, as well as in identifying similarities between customers (evolutional clustering). User experience will be improved and supported by combining deep learning systems with augmented reality techniques, 3D modelling and 3D printing.

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

#### **NGAST**

20013

**Next Generation Automated Security Testing** Project leader: ARD GROUP (Turkey)







Internet of Things (IoT) device manufacturers and operators face the challenge of defending a vastly larger attack surface with essentially the same resources. Methods and tools for automated security testing are needed to eliminate security weaknesses lurking in software or APIs. NGAST will tackle these challenges by creating (1) methods to automatically identify software bugs that lead to security vulnerabilities and (2) an open, extensible platform where these methods can be easily applied. NGAST's goal is to develop next-generation continuous integration/continuous delivery-capable automated security testing solutions for source code, binaries and distributed systems in the IoT domain.

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

**OMD** 

20003

Optimal Management of Demand Project leader: Experteam (Turkey)



Increasing demands and time pressures accelerated by the pandemic are causing organisations to ask for new automations to proactively manage their environments. The OMD framework produced in this project will help businesses to assign the correct agent to a specific service demand effectively and remotely. This will shorten the time and reduce the cost of operations by avoiding repetitions. The OMD framework will rapidly and effectively contribute to many sectors, using Al models to improve services as a CSM approach. By improving the overall efficiency of operations on the supply side, the project will also increase customer happiness.

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

#### Secur-e-Health

20050

Privacy preserving cross-organizational data analysis in the healthcare sector Project leader: Kelvin Zero (Canada)



Sensitive health data is often kept in silos in a way that cannot be efficiently leveraged for legitimate medical, research and data analysis purposes. The goal of the Secur-e-Health project is to integrate new approaches to digital identification technologies and privacy-preserving analysis techniques in a secure system infrastructure. The Secur-e-Health system will allow medical institutions of all types to collaborate together and leverage data analyses and insights. This is expected to have a significant impact on the quality of the medical predictive models, the efficiency of data-driven treatments, the acceleration of new clinical research and the improvement of healthcare in general.

https://itea4.org/project/secur-e-health.html

#### SIGNET

20052

Sensing and Image-Guided Neurological therapies, cardiac Electrophysiology and Tumour treatments Project leader: Philips (Netherlands)



Image-guided treatment technologies can improve the outcome of many complex medical interventions. Due to safety reasons and a lack of targeting accuracy, many complex medical treatments are currently delivered over several sessions. The overall objective of SIGNET is to develop an ecosystem of companies and institutes to deliver efficient image-guided treatment workflows for safe and efficient single-visit treatments. This will replace current complex procedures in cardiology, oncology and neurology and improve patient comfort, safety, treatment outcomes, staff availability and economic viability.

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

## **SmartDelta**

20023

Automated Quality Assurance and Optimization in Incremental Industrial Software Systems Development



Project leader: RISE (Sweden)

Too often, certain quality aspects of a system begin to deteriorate as it is built and incremented with new features. It is therefore important to be able to accurately analyse and determine the quality implications of each change and increment to a system. To address these challenges, SmartDelta will build automated solutions for the quality assessment of product deltas in a continuous engineering environment by providing smart analytics from development artifacts and system execution, offering insights into quality improvements or the degradation of different product versions and providing recommendations for the next builds.

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

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#### **VRCare**

20048

Virtual Reality Healthcare Simulations

Project leader: Lapland University of Applied Sciences (Finland)



Despite the rapid development of the eXtended Reality (XR) industry, there is a lack of high-quality, certified training and simulation for healthcare professionals. The VRCare project responds to these needs by co-creating the first XR healthcare ecosystem across Europe, which employs a holistic approach to XR healthcare simulation by combining strong technical knowledge, service design, AI & machine learning, hand tracking, natural language processing, pedagogical design, research and certification. VRCare aims to improve overall healthcare performance and make a positive impact on patients' lives by reducing the number of mistakes professionals make.

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

## V-Space

20039

Hybrid workspaces for humans and (semi-)autonomous vehicles Project leader: SparxSystems (Austria)







Autonomous vehicles (AVs) are being utilised by many industries, such as agriculture, retail, mining and manufacturing. The aim of the V-Space project is to bring a unified solution for hybrid workspaces where humans and AVs collaborate together. The project has 2 complementary use-cases focusing on ports and private spaces. Autonomous transport within ports is a key enabler of more intelligent and sustainable ports, forming the basis for predictable and costefficient operations. Similarly, there are large opportunities to be gained in smaller warehouses and other private spaces exploited by companies.

https://itea4.org/project/v-space.html

# 3.5 New projects - Joint Eureka Clusters Al Call 2021

Like in 2020, a Joint Eureka Clusters Call was organised on Artificial Intelligence (AI). The Joint Eureka Clusters AI Call 2021 again attracted a lot of interest; by the deadline on 28 June, 45 project proposals had been received, of which 24 indicated ITEA as the main Cluster and 9 had ITEA as a secondary Cluster. As 2 proposals were not eligible, 22 ITEA proposals with a total of 1357 Person Years were evaluated by the ITEA reviewers, resulting in 10 approved AI projects from 11 different countries with ITEA as the main Cluster and 4 with ITEA as a secondary Cluster. The labelled project WireSEAS was cancelled in February 2022 due to lack of funding in one of the two participating countries.

The main themes arising from the ITEA projects in this AI Call 2021 are:

Eureka Clusters AI Call 2021	ITEA projects
Al for Agriculture	Deep4sat43
Al for a Circular Economy	SAIP, FAMILIAR
Al for Climate Response	FAMILIAR
Al for eHealth	IWISH, SentioCura, AiECHOES, ReTrAln
Al for ICT and Applications	FAMILIAR
Al for Industry 4.0	EXPLAIN, FAMILIAR, TSMA, NexGenAl, Al-Power-Prod
Al for Low Carbon Energy	Al FORSchung
Al for Manufacturing	FAMILIAR, TSMA, NexGenAl, Al-Power-Prod
Al for Safety	FAMILIAR, ReTrAIn
Al for Smart Cities	Al FORSchung
Al for Smart Engineering	Al FORSchung
Al for Software Innovation	FAMILIAR, ReTrAin
Al for Transport & Smart Mobility	Al FORSchung
New Al Capabilities	ATTENTION!, AI FORSchung, FAMILIAR, AI-Power-Prod

Blue means ITEA was indicated as the secondary Cluster for this project.

A short description of each project can be found below. The first 10 projects have indicated ITEA as their main Cluster and the final 4, with green headers, have indicated ITEA as a secondary Cluster:

## AI FORSchung

AI2021-065

Al for fiber-optic remote sensing Project leader: Philips (Netherlands)



The overall objective of AI FORSchung is to accelerate innovation and the growth of fiber-optic sensing by augmenting innovations in large-scale signal and data analysis with cross-domain validated AI methods. These industrial-grade embedded AI technologies are necessary enablers of advanced, robust and widely accessible fiber-optic sensing applications in the biomedical, construction, environmental and utilities sectors. Resulting implementations will advance the adoption of fiber-optic sensing across the spectrum of applications and open up new fields through cost-effective and easy-to-use products that extract rich, important information from fiber-optic data.

https://itea4.org/project/ai-forschung.html (will be available soon)

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AiECHOES Al2021-089

Al supported Early-risk prediction and intervention of Health cOnditions with pErsonalized Sensors Project leader: VESTEL Savunma Sanayi A.Ş. (Turkey)



Every day, thousands of people need continuous monitoring of their health. AiECHOES envisions an innovative solution in the field of telemedicine which applies Early Warning Scoring & Emotional Recognition to clinical deterioration for patients beyond the hospital through a complete sensor network for remote patient monitoring and data analysis-based computing. This will prevent severe clinical deterioration for risk patients through early detection. As an added value, the healthcare system will also benefit by reducing the number of expensive intensive treatment periods, which implies huge savings.

https://itea4.org/project/aiechoes.html (will be available soon)

ATTENTION! AI2021-023

Artificial Intelligence for Trade-based Money Laundering Detection Project leader: RisikoTek Pte Ltd (Singapore)



We are facing a new type of 'pandemic' in which \$450 billion of illegally gained revenue is entering the genuine economy per year. Globally, we are lacking a science-based understanding of how illicit transactions can be detected and what patterns they follow. The ATTENTION! project will analyse the largest trade database of imports and exports available globally and will use Al/ML models to derive patterns of illicit trade activity. The ATTENTION! application will enable end-users to check transactions for potential smuggling, fraud and tax evasion.

https://itea4.org/project/attention.html (will be available soon)

## Deep4sat43

AI2021-098

Geo-Al Ecosystem for tree (43) health inspection and early warning Project leader: Spectro-AG (Netherlands)



Changes to the climate and regulations requires orchard farmers and forest managers to take actions using timely, strategic innovation tools. Conventional disease monitoring and control is often based on the human factor and is therefore limited by small spatial coverage and inevitable subjectivity. Deep4sat43 will test and utilise deep learning algorithms in scenarios with different sizes/geographic locations/soil types/plant types/access to data/legal requirements in Spain, Portugal, Turkey, the Netherlands and Denmark. As a result, we will deliver a UX-friendly SaaS service for

automatic early monitoring and early warning of crop diseases.

https://itea4.org/project/deep4sat43.html (will be available soon)

EXPLAIN AI2021-086

EXPLanatory interactive Artificial intelligence for INdustry Project leader: ABB AG Forschungszentrum Deutschland (Germany)



In industrial settings, Al holds the potential for significant improvements, such as energy-efficient operations, increasing throughput and more sustainable operations. To realise the possible benefits of Al in industrial applications, close collaboration is needed between Al use-case providers, Al providers and research actors with backgrounds in machine learning, XAI, software engineering, user experience and human factors. The EXPLAIN project seeks to realise an end-to-end ML lifecycle which is interactive and explainable for industrial domain experts and will consider a representative set of industrial Al cases to develop generally applicable solutions.

https://itea4.org/project/explain.html (will be available soon)

#### **FAMILIAR**

AI2021-112



Holistic Federated Al Development for Mixed-Reality Applications in Europe Project leader: consider it GmbH (Germany)



The term 'federated machine learning' (FedML) is popular in the context of publicly funded R&D projects. Still, it is rarely used in industry, least of all in combination with other leading technologies such as XR and AM. FAMILIAR wants to create FedML solutions using head-mounted displays (HMDs). The solution shall be embedded and tested in real-life applications, such as automotive engineering, maintenance & training, welding and human-robot collaboration. To establish the use-cases, sophisticated data mining techniques will be combined with deep learning.

https://itea4.org/project/familiar.html (will be available soon)

#### **IWISH**

AI2021-066

Intelligent Workflow optimization and Intuitive System interaction in Healthcare Project leader: Philips (Netherlands)



Clinical procedure scheduling in operating rooms and image-guided therapy in labs is challenging because these spaces are complex, dynamic and often time and resource-constrained. Their unpredictability often leads to inefficient usage of scarce healthcare resources. The IWISH project will develop new technologies and introduce novel applications to simplify workflows and predict procedure duration in such environments with the main goal of streamlining physicians' work. IWISH will focus on room and hospital level solutions, addressing data and AI-enabled solutions for clinical procedure optimisation and operational efficiency in particular.

https://itea4.org/project/iwish.html (will be available soon)

### **SAIP**

AI2021-083









Project leader: Smartmind Veri Yonetimi Teknoloji Hizmetleri Anonim Sirketi (Turkey)

A resilient supply chain is essential, especially in agrifood, and this can only be achieved with true visibility, transparency, collaboration and trust. The SAIP project helps suppliers to avoid problems by offering AI machine learning capabilities to empower them with an advanced warning infrastructure for delayed orders. In addition, the solution offers cycle time estimates that provide predictions on the probability of events that may occur. This creates a secure, shared and singular version of the truth for B2B transactions using blockchain technology.

https://itea4.org/project/saip.html (will be available soon)

### **SentioCura**

AI2021-085



Al for geriatric and pediatric users at risk of cognitive impairment and learning disability

Project leader: Symptoma (Austria)



With an ever growing world population aged 60 or above, there is a pressing need to keep the elderly mentally healthy and cognitively fit enough to participate independently in daily life. At the same time, we are obliged to ensure that children are equipped to face and solve the issues of tomorrow. SentioCura will provide an Al-powered health assistant which enables screening, early recognition and intervention, engages children and the elderly through gamified cognitive training, monitors cognitive wellbeing and provides an overview to caregivers and health professionals.

https://itea4.org/project/sentiocura.html (will be available soon)

Al-Power-Prod Al2021-055

Al Powered Production

Project leader: TeknoTAM Teknoloji ArGe Ltd. (Turkey)



Mass production is improving via machines, but industrial test machines (quality control, testing and automation systems) are at different levels of technology development. Usage of AI is limited. There is a need to collaborate by joining forces to benefit from synergies between extensive manufacturing processes and empower them with AI solutions. The AI-Power-Prod project aims to have a self-learning AI system for mass production that can detect and define production anomalies via a quality inspector AI and AI-powered production system that simultaneously reconfigures the production.

Cluster: SMART

NexGenAl Al2021-031

Next Generation AI Framework for Advanced and Digital Manufacturing Project leader: GraphicsVision.AI GmbH (Germany)



Increased market and cost pressures, rising product complexity and challenges with digital transformation are the 3 major obstacles for the massification of the digitisation of the manufacturing industry. The core mission of the NexGenAl project is to facilitate the adoption and application of Al in any manufacturing industry. The NexGenAl project will develop, assess, demonstrate and commercially exploit a lean and lightweight next-generation Al framework and platform for Smart Manufacturing at TRL7 which is specifically designed for easy adoption and operation by smaller manufacturers (typically SMEs) that are independent from the manufacturing sector.

🔀 Primary Cluster: SMART

ReTrAIn Al2021-059

Al-driven & Modular eHealth Training Platform Project leader: Linnaeus University (Sweden)



The medical sector is in great need of a connection with the population in order to distribute personalised health-related guidance and medical attention to those at risk and those that want to stay active while ageing. The ReTrAIn project aims to build a training platform which uses AI technology to model therapy training and progress review processes. The project prototype implementation will be an AI-driven platform to remotely guide the medical expert through recorded material and processed sensing information and to monitor the evolution of the adult in care.

🔀 Primary Cluster: CELTIC-NEXT

**TSMA** Al2021-029

Al Enhanced Digital Twin for Smart Manufacturing
Project leader: KTH Royal Institute of Technology (Sweden)



To improve or guarantee the performance of digital twins (DT) and improve competitiveness (particularly in critical manufacturing), the development and application of emerging DT technologies are urgently needed in European industries. The TSMA project aims to develop and implement distributed AI (e.g., edge AI), new image processing, high-performance & low-latency IoT and networking for distributed DT in several specific use-cases: sawmills, automotive and high-precision processing for display screen parts.

Cluster: SMART