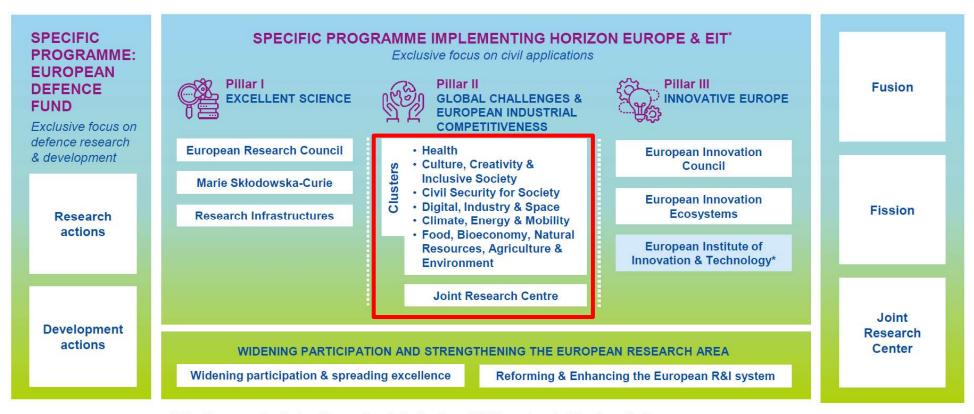
Horizon Europe Pillar 2 (AI-PRISM)

윤대섭 실장 모빌리티UX연구실 한국전자통신연구원

세부 내용

- 프로젝트 개요
- 참여배경 및 과정
- 제안서 기획, 제출, 평가
- IPR협의, 연구비신청, 연구수행,
- 파트너 발굴 노하우
- 참여시 이점/주의사항

Horizon Europe



^{*} The European Institute of Innovation & Technology (EIT) is not part of the Specific Programme

Project Invitation

HORIZON-CL4-2021-TWIN-TRANSITION-01-01: AI enhanced robotics systems for smart manufacturing (AI, Data and Robotics - Made in Europe Partnerships) (IA)

Specific condition	s ·				
Expected EU contribution per project	The Commission estimates that an EU contribution of between EUR 8.00 and 10.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.				
Indicative budget The total indicative budget for the topic is EUR 28.00 million.					
Type of Action	Innovation Actions				
Technology Activities are expected to start at TRL 5 and achieve TRL 7 by the of the project – see General Annex B.					

Dear ETRI Team,

As you know, ETRI and TEKNOPAR work for the MACHINAIDE Project. In a brokerage event about Horizon Europe projects, we learned about a project idea to which we think ETRI may contribute as a technology provider or as a use case provider.

The call topic "HORIZON-CL4-2021-TWIN-TRANSITION-01-01: All enhanced robotics systems for smart manufacturing (Al, Data and Robotics - Made in Europe Partnerships)" can be found on pages 26-28 of the pdf file on the <u>link</u>.

제안서 기획

Use Case Description

AI-PRISM

Al Powered human-centred Robot Interactions for Smart Manufacturing

1. Cal

HORIZON-CL4-2021-TWIN TRANSITION-01-01 - AI enhanced robotics system for smart manufacturina

2. Pilot requirements

Project results should be demonstrated in an **operational environment** complying with the following aspects:

- Large-scale industrial use-case from north, central or east Europe (preferably SMEs)
- Targeting sectors demonstrating complexity activities in automation and with tasks typically difficult to automate.
- Avoid sectors with highly automated tasks such as the automotive industry.
- Manufacturing processes of complex tasks with high variability and where the type of product often changes and therefore fast repurposing and reconfiguration is required.
- Human-Robot Collaboration at the core of the demonstration (close human-robot interaction).
 - The robot acquires new manipulation skills <u>learning from human demonstrations</u>.
 Humans always in control and in charge of the final decisions

3. Pilot preliminary description

Location
SILVERLINE ENDÜSTRÎ VE TİCARET A.Ş. factory (MERZİFON, TÜRKİYE)
Industrial domain / sector
BUILT-IN APPLIANCES MANUFACTURING COMPANY
Company description
Briefly describe the company providing the pilot demonstration
[Max Length: 3-4 lines]
Established in 1984 Turkey, SUKRUNEs is one of the world's largest brands in the production and sale of built-in kitchen products SUKRENUEs in one of Europe's top 5 and the world's top 10 bood manufactures (Reference?). With over 1700 employees, it develops innovative and highly designed consumer and environmentally friendly products. The company has representatives in Germany and taky and apports to more than 70 countries.
Short description of the use case
Short description of the use case Bridly describe the use case and how it is going to be implemented. Make use to comply with the plot requirements (see section 2) Make use to highly the involution of the Cas and now the progress will be achieved.
Briefly describe the use case and how it is going to be implemented. Make sure to comply with the pilot requirements (see section 2)

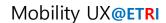
SILVERLINE all operations performed on the control station are performed by manpower, resulting in the following problems

1. Increased ergonomic and health problems (both physical and mental)

Increased working accident risk
 Increased stress of the human operators

6. S	afety problems					
lu	tion					
on	into an intelligent and	icial intelligence technologie adaptable control station wit control workstation consists	h the coop	eration of hu	mans and robots (Cobo	at technology). Proces
e st ded ena	teps are to be perform between robots and h ble the steps to be take	ne control station, and the relead by human only, and oth uman operators. A learning : en faster, safer, cheaper, hea e final control and packaging	ers are by r adaptable s Ithier, more	obots only. I ystem solution	For each step in the pr	rocess, a collaboration
- ·	Steps	Photos	Robot	Human	Reason	To Do
1	Sticking Label	. 1.000	,	×	Higher accuracy, the error rate is minimized.	
2	Visual Control		x	,	Sensitive sensors are needed to control this part. As a result, the cost of control will increase. Increasing control time	It is checked whether there are
3	Cable Packing Before Packing		x	1	High manpower flexibility	The cable is packed before the packaging process is done.
4	Grounding Test		,	x	Prevents Leakage Current Robots are made up of metals that make them the best choice when it comes to a serious job responsibility. They can work in hazardous environment anytime.	Control
5	Function test		~	x	Measure's engine values	T KG 023 Electrical Final Control Instruction
6	sticking blue color label on the lateral side of the product		~	x	Avoid repetitive work	Sticking blue color label on the both side of the product
7	Filter Assembling		v	VI	The robots work according to planned tasks and predetermined processes. Therefore, they are not adapted to unexpected conditions.	3420 60 RLL filter is attached to the body without anodizing

11	Sticking blue on the produ			,	x		on the product The hood is packed with 50
12	Bagging the p	product		x	1	77	nylon bags 0.050kg ver.2
	uction of total pro		ne ersonnel movement,				
	by using collabo						
	ease of resource	efficiency					
	On Efficiency						
	On Efficiency	oduction Ca	apacity for tailor-made products				
6 redu	On Efficiency On Increase Pro On Cognitive Ca action of product	oduction Ca apacity of t	spacity for tailor-made products the Operators				
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6 redu	On Efficiency On Increase Pro On Cognitive Ca uction of product With increase of With Work Powe se cases could	oduction Ca apacity of the tion costs of the production of the production be added	apacity for tailor-made products ne Operators ction capacity n if needed.		xpected contri	ibution to the Us-	s Gase
6 redu	On Efficiency On Increase Pro On Cognitive Ca On Cognitive Ca uction of product With increase of With Work Powe se cases could I involved / requ r Rol	apacity of the production costs of the production costs be added to th	specify for tallor-made products tellor products tellor capacity in til needed. e use case and rele	E) SI SI, P)	LVERLINE br apport and g roject from a	ings in its exper uide the concep practical, in-hou	c Case It is as an end user that we to a service of the control o
6 redu	On Efficiency On Increase Pro- On Cognitive Ca- On Cognitive Ca- used on of product With increase of With Work Power se cases could involved / requ r Roi INE DEF	oduction Cr apacity of the tion costs of the production be added be added	specify for tallor-made products tellor products tellor capacity in til needed. e use case and rele	ES SI SI SI SI SI SI SI SI SI SI SI SI SI	LVERLINE br upport and g roject from a LVERLINE als TEKNOP sion for Visual	ings in its exper juide the concep practical, in-hou to contributes with AR will bring its ex Control of defects	tise as an end user that v tion and development of t se-deployment point-of-vie
6 redu	On Efficiency On Increase Pro- On Cognitive Ca On Cognitive Ca within increase of With Work Powe se cases could involved / requ r Rol INE DEF	oduction Cr apacity of the tion costs of the production be added be added	pacity for tailor-made production to Operators ction capacity in if needed. e use case and role	SI SI SI SI PP SI	LVERLINE br upport and g roject from a LVERLINE als TEKNOP sion for Visual the collaborat sing Optical O	ings in its exper quide the concep practical, in-hou to contributes with AR will bring its ex Control of defects tive control station Character Recognit	tise as an end user that vition and development of tise-deployment point-of-vieth an application (or more) pertise and solutions in computant execution of tasks performant (OCR), labels sticked to to
6 redu	On Efficiency On Increase Pro- On Cognitive Ca On Cognitive Ca within increase of With Work Powe se cases could involved / requ r Rol INE DEF	oduction Cr apacity of the tion costs of the production be added be added	pacity for tailor-made production to Operators ction capacity in if needed. e use case and role	SSI SSI SSI SSI SSI SSI SSI SSI SSI SSI	LVERLINE br upport and g roject from a LVERLINE als TEKNOP sion for Visual the collaborat the collaborat sing Optical (coducts can be bject detection arious attribute	ings in its exper- juide the concept practical, in-hou to contributes with AR will bring its ex- Control of defects tive control station theracter Recognized is a algorithms will be so of the product. E	tise as an end user that vition and development of the seedeployment point-of-vite an application (or more) perise and solutions in computed and solutions in computed and execution of tasks perform on (OCFR), labels sticked to and checkted. developed and applied to det seemal points such as productions and applied to detect the control of the contr
6 redu	On Efficiency On Increase Pro- On Cognitive Ca On Cognitive Ca within increase of With Work Powe se cases could involved / requ r Rol INE DEF	oduction Cr apacity of the tion costs of the production be added be added	pacity for tailor-made production to Operators ction capacity in if needed. e use case and role	SI SI SI SI SI SI SI SI SI SI SI SI SI S	LVERLINE br upport and g roject from a LVERLINE als TEKNOF sion for Visual the collaborat sing Optical Co oducts can be beteletetor arious attribute dge locations, effects could by gorithms using	ings in its exper rulide the concep practical, in-hou to contributes with AR will bring its ex Control of defects ive control station character Recognili read, recognized a al algorithms will be so of the product. E label location, exist of deceded, jocated pre trained deep in	tise as an end user that value as an end user that value as edeployment point-of-viet han application (or more) perise and solutions in computed execution of tasks perform (OCR), labels sticked to and checked. developed and applied to det



연구 내용 도출

- Work Package
- WP leaders
- Work description
- Tasks
- Task leaders
- Deliverables
- Milestones
- Cost and Efforts

기획 회의

AI-PRISM

TWIN TRANSITION 01-01 proposal

Telco meeting
July 30, 2021 - 11:00 to 12:00 CET

Participants: Ana María Arias (ITI), Cristóbal Costa (ITI), Miguel Sanchis (ITI) Raúl Poler (UPV), Francisco Fraile (UPV), Andrea Micheli (FBK), Carlos Calleja (IKERLAN), Michele Putero (COMAU), Alfio Minissale (COMAU), Jose Gonzalez (AUS), Saigopal Vasudevan (TAU), Panagiotis Vlacheas (WINGS), Nikolaos Koufokotsios (AB), Özlem Aglamaz (Teknopar), Sarah Fletcher (CRAN), Özge Aglamaz, Perin Ünal (TEK), Pawel Solzcnski (VIGO), Agnieszka Spronska, Tomasz Kolcon (PIAP), Engin Talas, Grzegorz Kowalski (PIAP), Wilm Decré (KUL), Cristian Vergara (KUL), Daesub Yoon (ETRI), Alexandro Difava (ROB), Stefano Mantino, Suat Cetin.

Agenda

1. WP structure and task efforts	ITI / ALL
2. Building blocks (SoA topics) and KERs	UPV
3. Technical Annex writing	ITI / ALL
4. Pilots' descriptions	PIAP/VIGO; TEK/SIL; WINGS/ABF
5. Consortium and partners data	ALL
6. Next actions and AOB	ITI

제안서 제출

제안서 PartA

Call: HORIZON-CL4-2021-TWIN-TRANSITION-01

(TWIN GREEN AND DIGITAL TRANSITION 2021)

Topic: HORIZON-CL4-2021-TWIN-TRANSITION-01-01

Type of Action: HORIZON-IA

Proposal number: 101058589

Proposal acronym: AI-PRISM

Type of Model Grant Agreement: HORIZON Action Grant Budget-Based

Table of contents

Title	Action
General information	
Participants	
Budget	
Ethics and security	
	General information Participants Budget

제안서 PartB



AI Powered human-centred Robot Interactions for Smart Manufacturing

 $\label{lem:proposal} \textit{Part B} \\ \textit{TWIN-TRANSITION-01-01: AI enhanced robotics system for smart manufacturing}$

ID	Participant organisation name	Participant short name	Country	Туре	Main role
1	Everis Spain, SLU	EVR	ES	IND	Project coordinator, innovation, and exploitation management
2	Everis Italia Spa	EVRI	IT	IND	Affiliated entity. Human Safety Management
3	Universitat Politècnica de València	UPV	ES	EDU	Technical coordinator, R&D
4	Ikerlan S.Coop	IKER	ES	RTO	R&D, Technology provider
5	Fondazione Bruno Kessler	FBK	IT	RTO	R&D, Technology provider
6	Katholieke Universiteit Leuven	KUL	BE	EDU	R&D, Technology provider
7	Instituto Tecnológico de Informática	ITI	ES	RTO	R&D, Technology provider
8	Tampere University	TAU	FIN	EDU	R&D, Open Access pilots
9	Cranfield University	CRAN	UK	EDU	R&D, SSH, ethics
10	Robotnik Automation SLL	ROB	ES	SME	Robots' manufacturer
11	COMAU SPA	COMAU	IT	IND	Robots' manufacturer, integrator
12	AUSTRALO Alpha Lab MTÜ	AUS	EE	SME	Comm & Dissemination
13	Teknopar Industrial Automation	TEK	TR	SME	Technology provider
14	Silverline	SIL	TR	IND	Pilot owner (built-in appliances)
15	Sieć Badawcza Łukasiewicz - Przemysłowy Instytut Automatyki i Pomiarów PIAP	PIAP	PL	RTO	R&D, Technology provider, Integrator
16	Vigo Systems	VIGO	PL	SME	Pilot owner (electronics)
17	WINGS ICT Solutions	WINGS	GR	SME	Technology provider, R&D
18	Athenian Brewery factory	AB	GR	IND	Pilot owner (Beverage industry)
19	Profactor GMBH	PROF	AT	RTO	Technology provider, R&D
20	Keba AG	KEBA	AT	IND	Industrial Automation Provider Pilot owner (manufacturing)
21	Asociación Española de Normalización	UNE	ES	NPO	Standardisation
22	NTT DATA Romania SA	NTTD	RO	IND	IT services provider
23	Andreu World SA	AW	ES	SME	Pilot owner (furniture)
24	Asociatia Transilvania IT	TDIH	RO	OTHER	Dissemination and exploitation
25	Electronics and Telecommunications Research Institute	ETRI	KR	RTO	R&D, Human factors
26	A&G Technology Co. Ltd.	A&G	KR	IND	R&D, Quality control in collaborative stations

제안서 평가

Proposal Evaluation

Evaluation Summary Report

Evaluation Result

Total score: 14.50 (Threshold: 10)

Criterion 1 - Excellence

Score: 5.00 (Threshold: 3/5.00, Weight: -)

The following aspects will be taken into account, to the extent that the proposed work corresponds to the description in the work

programme:

- Clarity and pertinence of the project's objectives, and the extent to which the proposed work is ambitious and goes beyond the state of the art.
- Soundness of the proposed methodology, including the underlying concepts, models, assumptions, inter-disciplinary approaches, appropriate consideration of the gender dimension in research and innovation content, and the quality of open science practices, including sharing and management of research outputs and engagement of citizens, civil society and end users where appropriate.

Proposal Evaluation Form EUROPEAN COMMISSION Horizon Europe Framework Programme (HORIZON) Evaluation Summary Report Innovation actions

ype of action: HORIZON-IA
roposal number: 01058589
roposal acronym: AI-PRISM
uration (months): 36
roposal title: AI Powered human-centred Robot Intel
APPROVED THE PROPERTY OF

N.	Proposer name	Country	Total Cost	%	Grant Requested	%
1	EVERIS SPAIN SL	ES	399,591	3.19%	279,714	2.82%
2	everis Italia Spa	IT	125,000	1.00%	87,500	0.88%
3	UNIVERSITAT POLITECNICA DE VALENCIA	ES	761,655	6.08%	761,655	7.67%
4	IKERLAN S. COOP	ES	541,975	4.32%	541,975	5,45%
5	FONDAZIONE BRUNO KESSLER	IT	600,775	4.79%	600,775	6.05%
6	KATHOLIEKE UNIVERSITEIT LEUVEN	BE	634,400	5.06%	634,400	6.39%
7	INSTITUTO TECNOLOGICO DE INFORMATICA	ES	409,000	3.26%	409,000	4.12%
9	TAMPEREEN KORKEAKOULUSAATIO SR	FI	772,097	6.16%		7.77%
	CRANFIELD UNIVERSITY	UK	600,170	4.79%		6.04%
10	ROBOTNIK AUTOMATION SLL	ES	364,750	2.91%		2.57%
11	COMAU SPA	IT	433,822	3.46%		3.06%
12	AUSTRALO Alpha Lab MT?	EE	423,950	3.38%	423,950	4.27%
13	TEKNOPAR ENDUSTRIYEL OTOMASYON SANAYI VE TICARET ANONIM SIRKETI	TR	513,796	4.10%	359,657	3.62%
14	SILVERLINE ENDUSTRI VE TICARET A.S.	TR	450,995	3.60%	315,697	3,18%
15	SIEC BADAWCZA LUKASIEWICZ - PRZEMYSLOWY INSTYTUT AUTOMATYKI I POMIAROW PIAP	PL	520,200	4.15%	520,200	5.24%
16	VIGO SYSTEM S.A.	PL	239,700	1.91%	167,790	1.69%
17	WINGS ICT SOLUTIONS INFORMATION & COMMUNICATION TECHNOLOGIES IKE	EL	684,325	5.46%	479,028	4.82%
18	ATHINAIIKI ZYTHOPIIA ANONYMOS ETAIRIA	EL	257,995	2.06%	180,597	1.82%
19	PROFACTOR GMBH	AT	730,517	5.83%	730,517	7.35%
20	KEBA AG	AT	623,725	4.98%	436,608	4.39%
21	ASOCIACION ESPANOLA DE NORMALIZACION	ES	108,137	0.86%	108,137	1.09%
22	NTT DATA ROMANIA SA	RO	453,200	3.62%	317,240	3.19%
23	ANDREU WORLD SA	ES	424,956	3.39%	297,469	2.99%
24	ASOCIATIA TRANSILVANIA IT	RO	352,575	2.81%	352,575	3.55%
25	ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE	KR	885,350	7.06%	0	0.00%
26	Jinsang Kim	KR	221,340	1.77%	0	0.00%
	Teach		40 F22 006		0.005.754	

Criterion 2 - Impact

Score: 5.00 (Threshold: 3/5.00, Weight: -)

The following aspects will be taken into account, to the extent that the proposed work corresponds to the description in the work programme:

- Credibility of the pathways to achieve the expected outcomes and impacts specified in the work programme, and the likely scale and significance of the contributions from the project.
- Suitability and quality of the measures to maximise expected outcomes and impacts, as set out in the dissemination and exploitation plan, including communication activities.

Criterion 3 - Quality and efficiency of the implementation

Score: 4.50 (Threshold: 3/5.00 , Weight: -)

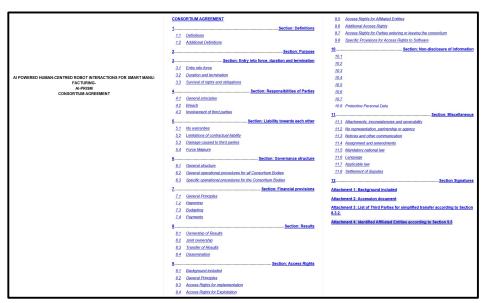
The following aspects will be taken into account, to the extent that the proposed work corresponds to the description in the work programme:

- Quality and effectiveness of the work plan, assessment of risks, and appropriateness of the effort assigned to work packages, and the resources overall.
- Capacity and role of each participant, and the extent to which the consortium as a whole brings together the necessary expertise.

IPR 협의

Consortium Agreement

- Definitions
- Purpose and Scope of the Cooperation
- Confidentiality
- Dissemination, Publicity and Press Releases
- Ownership of Foreground Information
- Access Rights
- Open Source Software



연구비 신청

HE 연구비 지원 기관

- **2024**
 - KIAT
 - IITP
 - 연구재단
- **2025**
 - EU

연구수행

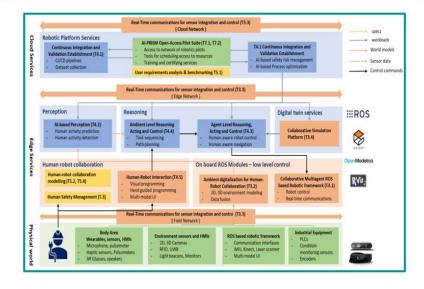
AI-PRISM





Al-Powered Human-centred Robot Interactions for Smart Manufacturing

Develop human-centric smart manufacturing solutions that improve human-robot collaboration by enhancing robots' ability to reason, perceive, and coordinate interactions with humans, products, and the environment.



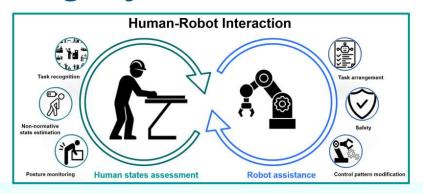


25 partners, 12 countries

Main challenge

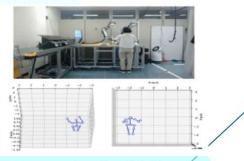
Main challenge of the Korean Consortium











Testbed

Human monitoring system (HMS)

3D pose estimation (Multi-camera)

Management

Consortium management

Management tools and meetings support





➤ Management Tools:

AI-PRISM Project Management Handbook (D9.1)

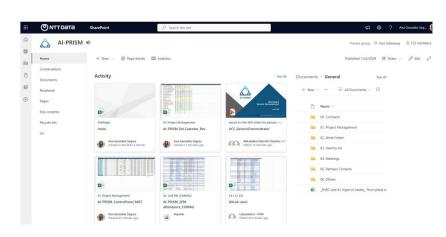
Project Repository



≻Communications:

Microsoft Teams

Mailing lists (general, WPs, WPL, TSC)



- Project meetings:
 - KOM (Valencia, Spain, Oct 2022)
 - 1st PM (Arrasate, Spain, May 2023)
 - 2nd PM (Turin, Italy, Jan 2024)
- Technical meetings (monthy)
- WPL meetings (monthly)
- WP meetings (usually monthly)
- Coordination meetings (weekly)
- Consortium Follow up (6 weeks)
- Data Management (bi-monthly)



Meeting agendas, presentations and minutes available in AI-PRISM Repository

Kick-off



Kick-off Meeting, 04-10-22

Agenda

- Get to know the consortium partners
- Alignment and common understanding of the AI-PRISM project and activities
- Overview of the GA and clarify any ambiguity identified
- Plan work ahead
- Start working and collaborating in most imminent tasks





Face-to-face meeting



Face-to-face meeting, 30-01-24

Agenda

- Rehearsal the next project review meeting with the EC.
- Status update Align us and share relevant information among the consortium.
- Advance in the different on-going activities and plan the next months.





Dissemination

RI-PRISM

LinkedIn





A heartfelt thank you to the Electronics and Telecommunications Research Institute (ETRI) from South Korea for their invaluable visit during the AI-PRISM General Assembly!

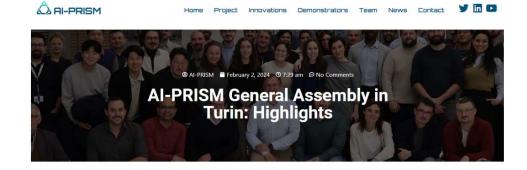
The exchange of ideas and collaboration with ETRI enriches the global AI landscape. Together, we're shaping the future of technology through innovation, research, and a shared commitment to excellence. \bigcirc \bigcirc

Sa we continue this journey of innovation and knowledge exchange, let's look forward to more collaborations that push the boundaries of technology. Together, we're creating a future where advancements know no bounds! FETRI #AI_PRISM #GlobalCollaboration #Innovation #TechnologyPartnership NTT DATA Business Solutions Spain Universitat Politècnica de València (UPV)

Project Website

aiprism.eu





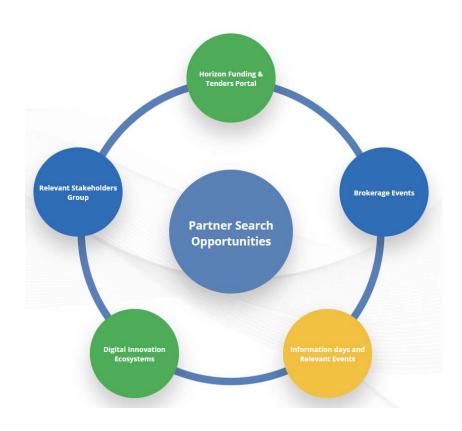
The General Assembly of the AI-PRISM Project in Turin was marked by a comprehensive exploration of both user and technical perspectives, showcasing the project's vision and objectives. The meeting delved into various work packages, featuring insights from industrial scenarios to technical foundations, and even a guided tour of COMAU facilities.



국제 협력 파트너 발굴 노하우

파트너 발굴

- Ideal-ist: Europe NCP (https://www.ideal-ist.eu/)
- Partner search tool in EU Funding & Tenders Portal
- Research and Innovation Week
- Google & Networking
- Email
- Video Meeting
- Introduction
 - LinkedIn
 - 연구실 웹사이트
 - 관련 논문
 - 유튜브
- Contribution
- Benefit



참여시 이점

- Share technology trends
- Share market information
- Share knowhow of project skill
- Collaboration for solving research problem
- Develop next project
- Information for different project
- Exploitation & dissemination
- Learn different cultures
- Airplane mileage

참여시 주의사항

- Different time zone
- Too many meetings
 - Use case scenarios
 - Requirement analysis
 - Work package
 - Covid 19 situation
- Different vacation style

