



KOREA-EU Horizon Europe Researchers Consulting Forum on Cluster 4

15 -16 September, 2026

KOREA-EU Horizon Europe Researchers Consulting Forum

	Tuesday 15 September	Wednesday 16 September
9:00		Open Consulting Session (9:00-10:30)
9:30		
10:00		
10:30		Break (10:30-11:00)
11:00		Consortium Session 2 (11:00-12:30)
11:30	Registration & Lunch (11:30-13:00)	
12:00		
12:30		Closing (13:00)
13:00	Opening Plenary Session & Policy Session (13:00-14:30)	Networking Lunch (13:00-14:00)
13:30		
14:00		Individual Consulting Session (14:00-15:00)
14:30	Break (14:30-15:00)	
15:00	Pitch Session (15:00-16:30)	
15:30		
16:00		
16:30	Break (16:30-17:00)	
17:00	Consortium Session 1 (17:00-18:30)	
17:30		
18:00		
18:30	Networking Dinner (18:30-21:00)	
19:00		
19:30		
20:00		

KOREA-EU Horizon Europe
Researchers Consulting Forum

Horizon Europe Consultants



Korea-EU Horizon Europe Researchers Consulting Forum 2026 on Cluster 4

Cluster 4: Digital, Industry and Space

Consultants

Dr Monique Calisti

CEO, Martel Innovate / President, Digital for Planet

Dr Monique Calisti has over 30 years of experience in research and innovation funding, strategic consulting, and sustainable, human-centric digital technologies. She has extensive expertise in European digital policies and Horizon Europe initiatives, particularly in Next Generation Internet, Cloud-Edge-IoT, Artificial Intelligence, and international research collaboration.

She is actively involved in international digital partnerships between Europe and the Indo-Pacific region, including through Horizon Europe projects such as INPACE and NexusForum, which promote strategic technology cooperation with Asian partners, including South Korea.

Dr Calisti holds Ph.D.s in Artificial Intelligence from EPFL and Telecommunications Engineering from the University of Bologna.

Role at the Forum: Master of Ceremonies and consultant, supporting high-level dialogue, matchmaking, consortium building, and proposal development across Horizon Europe Cluster 4.

Dr Lamprini Kolovou

Head of Consulting, Martel Innovate

Dr Lamprini Kolovou has over 20 years of experience in the design, coordination, and management of European and nationally co-funded ICT research and innovation projects. At Martel Innovate, she leads proposal development, grant engineering, and strategic consulting for European R&I projects.

Her expertise includes Horizon Europe project coordination, Lump Sum budget modelling, Cascade Funding (FSTP), Impact and Exploitation strategies, as well as projects in eHealth, eLearning, eGovernment, Smart Cities, and Industry 4.0.

She holds a B.Sc. in Electrical and Computer Engineering and a Ph.D. in Health Informatics and Telematics from the University of Patras.

Role at the Forum: Consultant providing guidance on consortium development, proposal structuring, budgeting, impact, and translating technical concepts into competitive Horizon Europe proposals.

Leonardo Tonetto

Technical Project Manager, Martel Innovate

Leonardo Tonetto specializes in the management, technical delivery, and architectural design of advanced ICT research and innovation projects under Horizon Europe. His technical expertise includes wireless networking, mobile sensing, deep learning, data visualization, and complex digital platforms.

Prior to joining Martel Innovate, he worked as a researcher at the Technical University of Munich (TUM), focusing on mobile edge computing, user modelling, and crowd-sensing architectures. At Martel, he supports international consortia through technical project management, milestone tracking, and EC reporting.

Role at the Forum: Technical consultant supporting research teams in translating complex digital, AI, and data-driven concepts into structured, impact-oriented Horizon Europe Cluster 4 proposal work packages.

KOREA-EU Horizon Europe
Researchers Consulting Forum

Invited Participants

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Your Target Call

HORIZON-CL4-2027-01-MAT-PROD-06

Circular innovative advanced materials: facilitating the transition from design to markets (RIA) (Innovative Advanced Materials for the EU and Made in Europe partnerships)

HORIZON-CL4-2027-01-MAT-PROD-22

Innovative advanced materials and new production processes – reducing dependencies on Critical and Strategic Raw Materials (IA) (Innovative Advanced Materials for the EU and Processes4Planet partnerships)

HORIZON-CL4-2027-01-MAT-PROD-61

Fast Track to Research and Innovation for breakthroughs in industrial technologies (Research and Innovation Action)

HORIZON-CL4-2027-04-DATA-09

Energy efficiency and sustainability of AI data processing in Data Centres (IA)

Your Expected Contribution to the Project / Consortium

Ultra High Power Density/Efficiency Motors

- a) Reducing Rare Earth Magnet Usage per Unit Output to 1/4.đ
- b) Boosting Output and Efficiency Using Recycled Rare Earth Magnet.
- c) Achieving Superior Output and Efficiency Using Rare Earth-Free MnBi or Fe16N2 Magnets Compared to Conventional Rare Earth Motors

Biography

- 1) Do-hyun Kang with Dr.-Ing degree Technical Uni. Braunschweig Germany
- 2) Venture Company founded (VAM)
Ultra High Power Density/Efficiency Motors by
Principal Researcher Dr. Kang in Korea Electrotechnology Research Institute(KERI)
- 3) Grants by Korean Ministry of Defense in E-Ship “2024 Future Challenge Defense Technology Project”
- 4) Supporting by AVL start-up program

Research Areas / Expertise

1. VAM Inc. (Value Added Mechatronics) is a pioneering deep-tech enterprise from South Korea, specializing in the design and development of next-generation Ultra-High Power Density and Ultra-High Efficiency Electric Motors and Generators. Founded as an official spin-off from the Korea Electrotechnology Research Institute (KERI) by Dr.-Ing. Dohyun Kang (TU Braunschweig alumnus), VAM Inc. delivers disruptive electric machine topologies.
2. VAM developed ultra high power density/ultra high efficiency motors with more than 3.7 times more output than the same permanent magnet motors. It is also a world-class patented(14 patents in Korea, EU, USA, China) technology that can save electrical energy because it can be expected to improve the efficiency by more than 9%.
3. Our core innovation lies in our Dual-Airgap Vernier Motor technology, which offers distinct breakthroughs directly aligned with the EU's strategic objectives:
 - a) Revolutionary Rare-Earth Reduction
Under identical conditions (size and magnet type), our design increases output power by nearly 4 times compared to conventional motors. In terms of rare-earth usage per unit output, if a conventional motor is 100, ours is only 25—slashing NdFeB consumption to 1/4 (25%).
 - b) Unlocking the Potential of MnBi Magnets(or Fe16N2)
Newly developed MnBi magnets have a remanence flux ($B_r = 0.6\text{ T}$) about half that of NdFeB ($B_r = 1.2\text{ T}$). While applying MnBi to conventional motors drops output by 50% and efficiency by 5%, applying them to our dual-airgap vernier motor still achieves 2.2 times higher output and a 5% efficiency increase compared to standard NdFeB motors. This makes our technology a game-changer for adopting MnBi magnets.
 - c) Overwhelming Cost & Supply Advantages
While Mn and Bi are on the EU CRM/SRM lists, they carry significantly lower geopolitical risk and raw material costs (tens of times cheaper) compared to rare earths.

Motivation, Expectation and Plan

VAM Inc. is actively seeking to connect with global partners

- 1) Experienced coordinator for EU Horizon
- 2) Automotive OEMs & Tier-1 Suppliers:co-developing lightweight, rare-earth-free electric powertrain components.
- 3) Companies Utilizing High-Power/Efficiency Motors & Generator as Core Components
- 4) Magnet Manufacturers:seeking to validate sustainable magnet materials in high-demand motor topologies.

Full Name Julia Sepulveda Diaz

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Your Target Call

HORIZON-CL4-2027-01-MAT-PROD-06 Circular innovative advanced materials: facilitating the transition from design to markets (RIA). Also interested in HORIZON-CL4-2027-01-MAT-PROD-22 on reducing dependencies on critical and strategic raw materials, and HORIZON-CL4-2027-01-MAT-PROD-61, Fast Track to Research and Innovation for breakthroughs in industrial technologies.

Your Expected Contribution to the Project / Consortium

Partner, not coordinator. MIC builds the fluidic layer of a process: flow control, inline and offline measurement of flow, pressure, temperature and viscosity, automated platforms, and chips and cartridges made in-house in PMMA, PEEK, fluoropolymers and PDMS. In a circular materials project this covers continuous-flow modules for liquid-liquid extraction and separation, screening of solvents and extractants at microlitre scale, synthesis of particles and nanoparticles in continuous flow, and measurement of the process while it runs. We use our own instruments where they bring something the market does not, and instruments from the market where they fit better. We also take exploitation and valorisation tasks: user need analysis, business modelling, market alignment, IP route and exploitation plans. Ten spin-off companies have come out of that work. We have been a partner in more than fifty European projects, so we can also help a team that is new to Horizon Europe with the parts that are not written in the call text.

Biography

Julia Sepulveda Diaz is CEO of the Microfluidics Innovation Center (MIC), a deeptech SME in Paris working on microfluidic instrumentation, flow control and inline measurement. She trained as a chemical engineer at ITESO in Guadalajara, took a master in biochemistry at CINVESTAV in Mexico, and holds a PhD in cell biology from Université Paris-Est Créteil, on glycobiology and neurodegenerative diseases. She then worked as a technology transfer engineer at the same university and spent two years as a postdoctoral fellow at the Brain and Spine Institute in Paris, on cell-based models for drug screening. She joined the Elvsys group in 2018 as collaborative research and innovation manager, became International Partnership Leader in 2019, and has led MIC since it became an independent company in 2024. Her work sits between microfluidic technology and European research funding. With a team of researchers and engineers, she turns needs expressed by research consortia into instruments that other laboratories can run: pressure-driven flow controllers, the patented Galileo inline flow sensor, viscosity measurement, automated perfusion and screening platforms, and microfluidic chips made in-house. She has also managed doctoral candidates and postdoctoral fellows within Marie Skłodowska-Curie projects. MIC has taken part

in more than fifty European projects over more than ten years, almost always as the microfluidics and instrumentation partner. They include the EIC Transition project GALILEO, the EIC Pathfinder projects THOR and ERMES, the Cluster 4 project BioProS, the Horizon Europe projects NAP4DIVE and EDAPHOS, the Horizon 2020 project LIFESAVER, and the metrology partnership MFMET II, where MIC sits on the advisory board. Ten spin-off companies have been created from technologies matured in these collaborations.

Research Areas / Expertise

Microfluidic instrumentation and flow control: pressure-driven flow controllers, including an autonomous controller that needs no compressed air source and a gas-tight controller with gas mixture management; the Galileo inline flow sensor, developed within European projects and patented (granted in the United States, France and Europe: US12270691B2, FR3126773B1, EP4399493B1), 20 nL/min to 10 mL/min, 2% accuracy, 20 ms response, with clogging and fouling detection; viscosity measurement inline or offline; thermal control for live imaging. Platforms: continuous flow and multiphase systems, droplet generation and encapsulation, liquid-liquid extraction and membrane separation with independently controlled loops, nanoparticle synthesis in flow, small volume screening, perfusion and organ-on-chip culture, with integrated software and data logging. Microfabrication: PDMS soft lithography, PMMA hot embossing, PEEK and fluoropolymer machining, mechanoelastic PMMA and Flexdym chips, and a thermoplastic chip process that needs no cleanroom. Technology transfer: from a user need to a prototype to a product, ten spin-off companies, exploitation and business model work in European consortia, and metrology and standardisation of microfluidic devices (MFMET II, 24NRM03). Selected projects: GALILEO (EIC Transition, GA 101113098), BioProS (Horizon Europe Cluster 4, GA 101070120), THOR (EIC Pathfinder, GA 101099719), ERMES (EIC Pathfinder), NAP4DIVE (GA 101155875), EDAPHOS (GA 101112768), LIFESAVER (GA 101036702), VOXWRITE (ANR and SNF, 4D printing), ThermaSMART (two-phase cooling of microprocessors), BIOALL (CO₂ and biomass valorisation).

Motivation, Expectation and Plan

MIC joins Horizon Europe consortia as the partner that turns a research need into an instrument, and then into something that survives after the grant ends. MAT-PROD-06 is about exactly that step, from the design of circular advanced materials to their uptake, and we want to apply our microfluidic engineering to a field that is new for us. At the forum I want to work with VAM on where fluidic modules, extraction and synthesis platforms and inline measurement fit their magnet recycling and rare earth free magnet objectives, and to meet the other teams targeting MAT-PROD-06, MAT-PROD-22 and MAT-PROD-61. I am also looking for experienced coordinators, since we do not coordinate ourselves. Follow-up: a call with the coordinator within four weeks of the forum to define our tasks, a one page contribution note, a letter of intent by December 2026, and participation in the proposal for the 2 February 2027 deadline as technical and exploitation partner.

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Your Target Call

HORIZON-CL4-2027-01-MAT-PROD-22: Innovative advanced materials and new production processes - reducing dependencies on Critical and Strategic Raw Materials (Innovation Action; Innovative Advanced Materials for the EU and Processes4Planet partnerships)

Your Expected Contribution to the Project / Consortium

I would contribute as a scientific partner, Task Leader, or Work Package Co-leader for materials and interface de-risking. My group can combine first-principles DFT and AI-assisted screening with advanced characterization to identify material and process solutions that reduce the use of Critical and Strategic Raw Materials, improve material efficiency, and clarify performance, durability, and degradation mechanisms.

According to the consortium's selected industrial use case, we can screen candidate two-dimensional materials, MXenes, oxides, van der Waals heterostructures, and functional interfacial or coating layers. Indicatively, we could screen 20–50 material combinations and shortlist 5–10 candidates for experimental validation by consortium partners.

Specific contributions include calculations of stability, defects, band alignment, charge transfer, and ion/electron transport; interpretation of impedance/Cole-Cole, Raman/PL, XPS/XRD, ellipsometry, and electrical data from partner samples; and development of evidence-based material, interface, and process- design rules.

Our resources include materials-simulation workstations and software such as VASP, CASTEP together with electrical, impedance, optical, and ellipsometric characterization capabilities and access to institutional structural and surface-analysis facilities such as SEM, TEM, NMR, ESR, Raman, PL, etc.

Expected outputs include a candidate database, screening and mechanism reports, interface-design rules, validation priorities, and a joint technical evidence package supporting Safe and Sustainable by Design, industrial scale-up, and TRL progression.

Biography

Prof. Se-Hun Kim is Professor of Physics Education in the Faculty of Science Education at Jeju National University, Republic of Korea. He received his B.S. in Physics (1995) and M.S. in Solid-state Physics (1997) from Hanyang University, and his Ph.D. in Solid-state Physics from Korea University (2006). After serving as a postdoctoral fellow at

Korea University, he joined Jeju National University in 2007 and has been a full professor since 2017.

His research connects first-principles materials modelling, advanced characterization, and functional- device analysis. His core interests include advanced energy and semiconductor materials, two- dimensional materials and MXenes, van der Waals heterostructures, graphene, quantum and topological materials, hydrogen-bonded systems, sensors, photodetectors, and battery diagnostics. His methods include DFT, Monte Carlo and quantum-potential models, together with impedance/Cole-Cole analysis, Raman, photoluminescence, optical absorption, ellipsometry, NMR, ESR, XRD, XPS, AFM, FESEM/TEM, and electrical-transport analysis.

Representative achievements include studies of proton dynamics in KDP and Nafion, hydrogen-plasma- modified ZnO, high-permittivity TiOx nanocomposites, lithium-ion battery equivalent-circuit models, strain in epitaxial graphene, ultra-low-power graphene photodetectors, and wide-range, fast-response graphene humidity sensors. He has also led and hosted NRF Brain Pool research on MXene-based optoelectronic and energy materials and maintains international collaborations in computational and quantum materials. He is currently developing partnerships for Horizon Europe Cluster 4 and Cluster 5 proposals. This would be his first formal Horizon Europe consortium participation, with a prospective role in DFT/AI-assisted materials screening, interface analysis, characterization support, and scientific task leadership.

Research Areas / Expertise

- Computational materials design: First-principles DFT, electronic structure, optical and thermoelectric properties, defect energetics, band alignment, charge transfer, ion/electron transport, Monte Carlo and quantum-potential modelling, and AI-assisted candidate down-selection.
- Functional-material platforms: Two-dimensional materials, MXenes, van der Waals heterostructures, graphene, oxides, thin films, semiconductor materials, quantum and topological materials, hydrogen- bonded systems, and advanced energy materials.
- Characterization and mechanism analysis: Impedance spectroscopy and Cole-Cole analysis; Raman, photoluminescence, absorption, and ellipsometry; NMR and ESR interpretation; XRD, XPS, AFM, FESEM/TEM; and electrical-transport and device-response analysis.
- Applications: Battery diagnostics, fuel-cell membrane dynamics, photocatalytic and photovoltaic materials, semiconductor and gas/humidity sensors, photodetectors, dielectric materials, and functional interfaces.

Representative outcomes include atomic-level analysis of proton dynamics in KDP and Nafion; demonstration of an approximately 100-fold conductivity increase in hydrogen-plasma-treated ZnO; lithium-ion battery equivalent-circuit validation; ultra-low-power graphene photodetection; and a graphene- based humidity sensor operating over 4–96% RH with rapid response and recovery.

Relevant project experience includes NRF Brain Pool research on MXene-based optoelectronic and energy materials, MXene/van der Waals heterostructures for clean-energy applications, and international collaborations in computational and quantum materials.

Motivation, Expectation and Plan

- identify an experienced European coordinator and complementary industrial and research partners;
- select a clear industrial product, material, or process dependency related to Critical and Strategic Raw Materials;
- define a concrete Task or Work Package that Jeju National University could lead or co-lead;
- determine appropriate technical, sustainability, CRM-reduction, and scale-up KPIs; and
- establish a realistic proposal-development timetable.

I particularly hope to deepen discussions with the matched European researcher from IMNR, Romania, while meeting additional partners in advanced-material production, pilot demonstration, industrial end use, CRM substitution and recycling, and Safe and Sustainable by Design/LCA/TEA.

Following the forum, I plan to circulate a concise joint concept note within two weeks, organize an online consortium meeting within one month, prepare a partner-gap and Work Package map, and agree on responsibilities, data

exchange, budget principles, and proposal milestones. The ultimate objective is to contribute to a competitive joint proposal for the 2 February 2027 deadline.

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Your Target Call

HORIZON-CL4-2027-01-MAT-PROD-22 : Innovative advanced materials and new production processes – reducing dependencies on Critical and Strategic Raw Materials (IA) (Innovative Advanced Materials for the EU and Processes4Planet partnerships)

Your Expected Contribution to the Project / Consortium

Work package and task leader: materials synthesis & characterization; ensures alignment with the EU safe and sustainable by design (SSbD) framework; management & exploitation support.

Biography

Core research expertise integrates functional materials chemistry, advanced ceramic synthesis, high-entropy alloys, high-temperature processing, and comprehensive structural, thermal, and electrochemical characterization. Key research achievements include the development of functional oxides, high-entropy alloy systems, catalysts, and tailored material architectures for sustainable energy conversion, storage, and industrial applications. The scientific approach combines experimental synthesis and in-situ testing with data-driven methods to accelerate materials optimization and process efficiency.

Research Areas / Expertise

Advanced functional materials: synthesis, structural design, and property optimization of inorganic materials, including advanced ceramics, functional oxides, high-entropy alloys (HEAs) and glass/vitreous matrix systems for energy and industrial applications. Redesign of materials and chemical processes to minimize or substitute critical and strategic raw materials (CRMs/SRMs), enhancing resource efficiency and supply chain security. Key methodologies: in-situ & multi-parametric characterization.

Motivation, Expectation and Plan

Drive bilateral research collaboration between European and Korean partners under Horizon Europe Cluster 4 (2027 calls), leveraging joint expertise in advanced materials, Critical Raw Material (CRM) substitution, and fast industrial processing. Expectations & goals: to secure a work package lead or key partner role.

Full Name Myung Ja KIM

Position Founding Director

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<https://www.airstas.com/03/02.php>
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<https://sunwayuniversity.edu.my/sunway-business-school/staff-profiles/kim-myung-ja>

Your Target Call

1. HORIZON-CL4-2027-04-HUMAN-01 (5.60 million Euro): Advanced and Innovative hardware components for Virtual Worlds (RIA, Virtual Worlds Partnership) ← primary target
2. HORIZON-CL4-2027-02-DIGITAL-EMERGING-52-two-stage (6.00 million Euro): New approaches for Human/AI collaboration for the workforce of the future (RIA) (under secondary consideration)
3. HORIZON-CL4-2027-04-DATA-03 (17.50 million Euro): New approaches for decentralized, federated and sustainable AI data processing (RIA) (considered as a participant, not coordinator)

Your Expected Contribution to the Project / Consortium

AirStas (the first incorporated association under the Korea AeroSpace Administration, KASA) aims to serve as Coordinator for HORIZON-CL4-2027-04-HUMAN-01, adjustable to Work Package Leader depending on the recruitment of European hardware partners. My contributions include: (1) providing "space tourism" as an extreme-environment scenario that serves as the ultimate validation testbed for European XR and deep-tech hardware, directly addressing the illustrative societal/industrial scenario requirement of HUMAN-01; (2) EEG/BCI-based cognitive and affective validation, empirical testing of non-invasive BCI hardware for cognitive load, presence, and safety using a 32-channel EEG infrastructure, with a cross-cultural design spanning Korea and Türkiye; (3) an AI-as-Actor framework and XR scenario design modelling AI agent-human interaction within virtual worlds; (4) design and leadership of the SSH, ESG, and sustainability work package, covering ethics, user acceptance, social impact assessment, and ESG indicators; (5) user requirements definition, validation, and exploitation/dissemination; and (6) Asia-Europe collaboration channels linking Korea (AirStas/KASA), Malaysia (Sunway University), Thailand (Prince of Songkla University), and Macau (MUST). A consortium is already under formation with Süleyman Demirel University (Türkiye, Associated Country), and we seek European XR hardware developers (HMDs, haptics, displays) and AI institutions as partners.

Biography

Myung Ja Kim (MJ), Ph.D., is Founding Director and Chairperson of AirStas, the AI Research Center for Space Tourism and Sustainability and the first incorporated association under the Korea AeroSpace Administration (KASA). She is Distinguished Professor at Sunway Business School, Sunway University (Malaysia) and Sejong University (Korea), Adjunct Professor at Prince of Songkla University and Taylor's University, and Visiting Professor at Hanyang University

and Macau University of Science and Technology. She previously served as a professor at Kyung Hee University, where she remains a Kyung Hee Fellow Professor.

Her research focuses on space tourism and space business, digitalization (XR, VR, metaverse), AI and data analytics, sustainability, and the climate crisis. She has published over 100 articles in SSCI-indexed journals, many selected as most downloaded, read, and cited by top journals, and has been consistently ranked among Stanford University's Top 2% most-cited scientists (2021–2025). She has secured research grants exceeding USD 8 million in total, including a National Research Foundation of Korea (NRF) grant as Principal Investigator on "Risk and Commercial Human Presence in Space: Focusing on Space Tourism." She serves as Associate Editor of the Journal of Hospitality and Tourism Management (SSCI, IF 10.1, Q1) and on the editorial boards of ten international journals.

Regarding EU collaboration, she is currently advancing the MEDUSA-BioSpace Horizon Europe consortium proposal with DLR (Germany), CNES/CADMOS (France), and Helogen (UK); leading the NEURO-SPAXR project with Süleyman Demirel University (Türkiye) under the TÜBİTAK–NRF 2026 Mobility Call; and has prepared a Korea–EU Cooperation Promotion Program proposal (CosmoAIverse) aligned with the Horizon Europe Virtual Worlds Partnership.

Research Areas / Expertise

Main research areas: space tourism and commercial human spaceflight; AI and data analytics (deep learning, NLP); digitalization of tourism and services (XR, VR, AR, metaverse); sustainability, ESG, SDGs, and climate-crisis response; and consumer behavior in technology-mediated environments. Methodological expertise spans advanced quantitative approaches including PLS-SEM, fsQCA, and machine/deep learning.

Distinctive specialisations: human-centred validation of immersive technologies, including EEG/BCI-based measurement of cognitive load, presence, and safety in extreme (space) environments; AI-as-Actor modelling of AI agent–human interaction in virtual worlds; and ESG/social impact assessment frameworks for emerging space and tourism industries.

Key outcomes: 100+ SSCI publications (predominantly Q1), with multiple papers ranked most cited/downloaded by leading journals; Stanford Top 2% Most-Cited Scientist (2021–2025); PI of the NRF-funded project "Risk and Commercial Human Presence in Space" (KRW 813M, 2024–2027); participant in the Brain Korea 21 Stage 4 Sustainable Smart Tourism Hospitality Education Platform (KRW 7B); and ongoing international projects including MEDUSA-BioSpace (Horizon Europe proposal) and NEURO-SPAXR (TÜBİTAK–NRF Mobility Call).

Motivation, Expectation and Plan

My main motivation is to complete the consortium for HORIZON-CL4-2027-04-HUMAN-01 (Advanced and Innovative Hardware Components for Virtual Worlds, RIA, Virtual Worlds Partnership), for which AirStas aims to act as Coordinator. Our current team — AirStas (Korea, under KASA), Süleyman Demirel University (Türkiye, Associated Country: XR/service design, EEG/BCI with a 32-channel testbed), Sejong University (Korea), and Sunway University (Malaysia) — is strong in human-centred validation, user research, and application scenarios, but we still need EU Member State partners to secure the technical backbone of the proposal.

Specific goals for this event: (1) identify and meet XR hardware developers (HMDs, haptics, displays, sensing, wearables) and AI research institutes or companies based in Member States such as Germany, France, and Italy, ideally through dedicated 1:1 matchmaking sessions; (2) confirm the coordinator/WP structure with prospective partners and verify EU eligibility requirements; and (3) obtain expert consulting on positioning our space-tourism-as-extreme-environment-testbed concept within the Virtual Worlds Partnership priorities.

Concrete follow-up plans: immediately after the forum, we will hold online consortium meetings with the partners identified in Brussels, sign MoUs or letters of intent, finalise the work package structure and budget allocation by late 2026, and jointly submit the full proposal to the HORIZON-CL4-2027-04 call. In parallel, we are advancing the MEDUSA-BioSpace consortium (DLR, CNES/CADMOS, Helogen UK) and will explore cross-linkages between the two initiatives.

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<https://scholar.google.com/citations?user=WV6MRBQAAAAJ&hl=tr>

Your Target Call

HORIZON-CL4-2027-04-HUMAN-01 —

Advanced and Innovative Hardware Components for Virtual Worlds (RIA)

Your Expected Contribution to the Project / Consortium

I expect to lead a work package on Behavioral Requirements and Validation within a Korea-led consortium. My contribution addresses a gap that hardware-focused consortia often leave open: translating an identified XR technology gap into behavioral KPIs and acceptance criteria that a hardware partner can design against, and then validating whether the resulting technology meets them.

Concretely, I bring four capabilities. First, gamified elicitation protocol design — test scenarios built on goal, feedback and challenge loops that generate richer and more reproducible behavioral signal than passive-exposure protocols. Second, a framework for modelling the AI element of an immersive system as a social actor rather than background software, allowing trust, acceptance and human–AI interaction dynamics to be measured. Third, the definition of acceptance criteria and performance targets that connect user-side requirements to hardware development decisions. Fourth, cross-cultural validation capacity, with active research ties in Türkiye, Korea and the United States.

Neuro-measurement in my work serves validation and requirement definition. The hardware innovation itself — non-invasive BCI, haptics, advanced optics — is a technology partner's contribution; my role is to specify what it must achieve and to test whether it does. Institutionally, I can commit the infrastructure of LEARC and its Space and Aviation Lab at Süleyman Demirel University to this work.

Biography

Osman Seraceddin Sesliokuyucu is an Assistant Professor in the Department of Aviation Management, School of Civil Aviation, Süleyman Demirel University, Türkiye, and Director of LEARC, the university's Leadership and Entrepreneurship Application and Research Centre. He completed his PhD at Gaziantep University in 2018 with research on global value chain upgrading, and has seventeen years of teaching experience across aviation management and related fields.

He spent three years as a visiting researcher at the Muma College of Business, University of South Florida, supported by a TÜBİTAK international research fellowship. That period established a working relationship with USF colleagues that continues today, producing joint SSCI-indexed publications and forming the basis for collaborative project work, including Erasmus+ activity across several fields. He holds an h-index of 7.

His research examines customer and employee behaviour in relation to technology and innovation, studied through gamification, artificial intelligence, and XR/AR/VR contexts. Recurring themes include algorithmic management, human–technology interaction, AI-mediated service design, and the acceptance of immersive systems in tourism and aviation settings. His work on neurophysiological measurement is conducted interdisciplinarily: he contributes the behavioural design and interpretation, working alongside colleagues whose expertise lies in the instrumentation and signal side.

He leads the Turkish side of NEURO-SPAXR, a Türkiye–Korea bilateral project titled "AI-Aware Sustainable Service Ecosystem Design in Emerging Space Tourism," conducted with Prof. Myung Ja Kim and submitted to the TÜBİTAK–NRF programme in June 2026. Under LEARC he is establishing a Space and Aviation Lab as its institutional base.

He has coordinated EU-funded Erasmus+ projects but has not yet participated as a beneficiary in Horizon 2020 or Horizon Europe. HUMAN-01 would be his first, alongside an ERC Starting Grant proposal in preparation for 2027.

Research Areas / Expertise

Main areas: customer and employee behaviour in technology-mediated environments; gamification design and its effects on engagement, motivation and performance; artificial intelligence in service settings, including algorithmic management and human appraisal of AI systems; XR/AR/VR acceptance and experience design; tourism, aviation and space tourism management.

Distinctive specialisations: the design of gamified elicitation protocols that provoke measurable, reproducible behavioural response in immersive environments, as an alternative to passive-exposure testing; the treatment of AI agents as social actors within a scenario, enabling trust and acceptance to be modelled rather than assumed; the translation of behavioural findings into acceptance criteria usable by hardware and system developers.

Methodological base: survey and experimental designs analysed primarily through partial least squares structural equation modelling, applied to acceptance, trust, engagement and behavioural intention constructs.

Key outputs and activities: SSCI-indexed publications in tourism, hospitality and service management journals; NEURO-SPAXR, a Türkiye–Korea bilateral project on AI-aware sustainable service ecosystem design in space tourism; direction of LEARC, including its Space and Aviation Lab; an edited Turkish-language academic volume on gamification currently in preparation; ORCID 0000-0001-6539-0992.

Motivation, Expectation and Plan

My motivation is to move from a bilateral Türkiye–Korea collaboration into a European consortium setting. NEURO-SPAXR established the scientific basis and the partnership with Prof. Myung Ja Kim's team; HUMAN-01 is the natural next step, and this forum is where the missing consortium roles can realistically be filled.

My specific goal is to identify hardware partners — universities, RTOs or companies developing next-generation XR components at TRL 2–4 — whose technology development would benefit from a defined behavioural validation partner, and to identify a coordinator experienced in Cluster 4 Research and Innovation Actions. I am equally interested in speaking with other Korean-led initiatives targeting the same call, since the behavioural and SSH component is a requirement that several consortia have not yet resolved.

Concrete follow-up plans: agree during the forum on which consortium my work package fits, and confirm the role in writing within four weeks; contribute a work-package description to a joint concept note during the last quarter of 2026; participate in proposal drafting ahead of submission; and formalise institutional collaboration through an MoU between LEARC and the partner institutions where a longer-term relationship is warranted. Beyond HUMAN-01, I intend to use these contacts to build the partner base for future Cluster 4 and Erasmus+ activity involving LEARC.

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Your Target Call

HORIZON-CL4-2027-04-HUMAN-01 Advanced and Innovative hardware components for Virtual Worlds (RIA) (Virtual Worlds Partnership)

Your Expected Contribution to the Project / Consortium

1. Role: Participant
2. Expertise
 - Electrical engineering and Vision science
 - Display devices & systems
 - Low-power technologies
3. Research approach
 - System optimization based on human visual perception
4. Resources
 - Subjective experimental environment and setup using VR headset
 - Subjective experimental setup emulating AR glasses environment

Biography

1995.03-2000.02 Ph.D, Dept. of Electrical Engineering, KAIST
 2000.02-2006.06 Senior engineer, Advanced Development Team, LCD Business, Samsung Electronics
 2015.09-present Professor, Dept. of Information Display, Kyung Hee University
 2006.03-2015.08 Assistant/Associate Professor

Research Areas / Expertise

1. Main research area
 - Display electronics
 - Vision science
2. Distinctive technology
 - Power optimization of VR headset based on human visual perception

Motivation, Expectation and Plan

1. Motivation

- I wanted to extend my network into the entire Europe through the event

2. Goals

- I want to find a good consortium to get a HE programme.

3. Plans

- Once I join a consortium, I will gather more appropriate partners.

- I will actively prepare joint proposal.

Full Name Tae-Wan KIM

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Your Target Call

Primary Target Call: HORIZON-CL4-2027-04-DATA-03 — New approaches for decentralized, federated and sustainable AI data processing (RIA)

Related strategic alternatives under evaluation: HORIZON-CL4-2027-04-DIGITAL-EMERGING-11 and HORIZON-CL4-2027-04-DATA-09.

Your Expected Contribution to the Project / Consortium

Our team can contribute a cross-layer technology stack for energy-efficient long-context AI, spanning algorithms, runtime software, memory systems, and hardware validation. Our core contributions include TurboQuant-based ultra-low-bit KV-cache compression, BitNet-inspired low-bit and ternary inference, hardware-aware kernels, and memory-centric accelerator co-design. We can provide GPU reference implementations and extend validation to FPGA and ASIC/MPW-oriented prototypes, using reproducible metrics such as memory footprint, bandwidth, latency, quality retention, and tokens per watt. Within a consortium, we would be well suited to lead or co-lead tasks on model and inference efficiency, hardware– software co-design, accelerator architecture, and prototype validation. We can also contribute Korea– Europe semiconductor collaboration links and help connect research results to practical silicon and industrial deployment pathways.

Biography

Prof. Tae-Wan Kim is a Professor at Seoul National University and Founder & CEO of LLM Core AI, Inc., working at the intersection of artificial intelligence, computer architecture, and semiconductor implementation. He received his Ph.D. from Arizona State University and has professional experience spanning academia and industry. His current research focuses on energy-efficient AI systems, especially long-context large language model inference, low-bit and ternary neural networks, KV-cache compression, memory-centric computing, and hardware–software co-design.

His group is developing TURBOECS, a cross-layer approach that combines TurboQuant-based 3-bit KV- cache compression, BitNet-inspired low-bit inference, hardware-aware runtime kernels, and a GPU-to- FPGA-to-ASIC/MPW validation path. The goal is to reduce memory traffic and energy consumption while improving practical AI efficiency measured by metrics such as tokens per watt, latency, bandwidth, and quality retention.

Prof. Kim is currently building Korea–Europe R&D collaborations around Horizon Europe Cluster 4, Chips JU/Xecs, and related semiconductor and AI ecosystems. His collaboration strategy is to connect Korean strengths in

memory and semiconductor execution with European capabilities in AI/HPC systems, microelectronics, research infrastructures, and industrial validation. He is particularly interested in contributing as a technical partner or work-package leader in projects on sustainable AI processing, efficient frontier AI, and next-generation AI hardware.

Research Areas / Expertise

Energy-efficient AI and sustainable AI computing; long-context LLM inference; KV-cache compression; TurboQuant-based ultra-low-bit quantization; BitNet and ternary neural networks; low-bit inference; hardware–software co-design for AI accelerators; memory-centric and near-memory computing; processing-in-memory (PIM); GPU/FPGA/ASIC prototyping; AI semiconductor architecture; heterogeneous computing; and performance/energy benchmarking including tokens per watt, latency, bandwidth, and memory traffic.

Motivation, Expectation and Plan

My main motivation is to convert current Korea–Europe technical discussions into a focused Horizon Europe consortium for a 2027 Cluster 4 proposal. At the forum, I would like to validate the best target-call positioning, identify a credible European coordinator and complementary partners, and define clear work- package responsibilities around efficient AI processing, hardware–software co-design, prototyping, and system-level validation.

I am particularly interested in partners that can provide AI/HPC or industrial use cases, European computing and testbed infrastructure, semiconductor or FPGA/ASIC expertise, sustainability and energy measurement, and strong Horizon Europe coordination experience.

As a concrete follow-up, I propose to agree on one common proof-of-concept using public models and benchmarks, prepare a 1–2 page joint concept note and preliminary work-package map, identify the remaining partner gaps, and schedule technical and proposal-development meetings immediately after the forum. The objective is to move from networking to a technically grounded consortium and proposal plan.

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Your Target Call

HORIZON-CL4-2027-04-DIGITAL-EMERGING-10 Horizon scanning and foresight in future enabling digital technologies

HORIZON-CL4-2027-04-HUMAN-01 Advanced and Innovative hardware components for Virtual Worlds

Your Expected Contribution to the Project / Consortium

Hardware development for Memory centric computing for next generation AI

Biography

Associate Professor of Electrical Engineering at Tampere University, Finland

Research Areas / Expertise

Non-volatile Memory, In-Memory Computing, Cryogenic Electronics, Advanced Materials, CMOS back-end-of-line integration

Motivation, Expectation and Plan

Plan research proposal with Korean partners on edge AI and neuromorphic hardware

Full Name Seungho LEE

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Your Target Call

HORIZON_HORIZON-CL4-2027-04-DIGITAL-EMERGING-10
Horizon scanning and foresight in future enabling digital technologies (CSA)

Your Expected Contribution to the Project / Consortium

I bring in my experience in ethnographic research, qualitative analysis, citizen participation and participatory futuring. I can also request my past partnering organisations to join: LAB University, Demos Helsinki, Studio D Radiodurans. I have a tentative proposal concept that position Korean members participating in this call.

Biography

Seungho Park-Lee is a designer, researcher, and educator exploring how design can contribute to public services, policymaking, and sustainability transitions. He is Associate Professor of Design at UNIST in South Korea, where he directs New Design Studio, a research and design practice working with public- sector organisations and other stakeholders to develop strategic alternatives for more sustainable futures.

Seungho spent eleven years in Finland, where his work increasingly shifted from product and service design toward complex societal and policy challenges. He worked with the Finnish Innovation Fund Sitra's Helsinki Design Lab and later became an Associate of the Helsinki-based think tank Demos Helsinki. At Aalto University, he founded Design for Government, a course that brings master's students together with Finnish ministries and public organisations to address real policy challenges through systems thinking, empathic design, and experimentation.

His current research and practice examine the expanding role of design in government, public-sector innovation, sustainability transitions, participatory futures, and policy development. He has also served as Chair of the Policy Design Division of the Public Designers' Council Korea and as an expert team member for the New European Bauhaus at World Expo 2025 Osaka.

Research Areas / Expertise

Ethnographic research; qualitative analysis; citizen participation; participatory futuring

Motivation, Expectation and Plan

Emerging digital technologies are changing everyday life, public services, workplaces, and social relationships in ways that are difficult to anticipate. Their implications may first appear as small behavioural shifts, informal adaptations, or tensions between technologies and existing institutions. This creates a need to connect technological foresight with lived experience, public participation, ethical reflection, and policy discussion.

Rather than predicting a single future, this initiative would explore how different groups understand emerging changes and how diverse perspectives could help institutions prepare for uncertainty.

The initiative remains an open concept rather than a fixed project proposal. We hope to determine whether researchers, practitioners, civic organisations, technology actors, and public institutions share sufficient interest to develop it further. The technology domain, research questions, participating locations, partnership structure, and outputs would be shaped collectively.

A possible direction would connect horizon scanning, participatory futures, ethical inquiry, and policy experimentation. These are tentative starting points, and prospective partners may suggest different priorities and methods.

Initial exploratory conversations would identify complementary expertise and areas where international collaboration could add value. Interested partners could then jointly develop a preliminary concept, potentially including comparative observations, workshops, experimental activities, or policy discussions. Further development would depend on the final Horizon Europe call, an appropriate European coordinator, and the feasibility of creating a balanced consortium. No particular role, commitment, location, or organisational structure is assumed at this stage.

Our expectation is to meet potential partners and form a tentative consortium. With the consortium, we hope to create a concept/plan that can make a good use of the participation of Korean and Japanese members.

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Your Target Call

HORIZON-CL4-2027-04-DIGITAL-EMERGING-10 Horizon scanning and foresight in future enabling digital technologies

Your Expected Contribution to the Project / Consortium

KOMMA would lead the downstream end of the foresight cycle: turning early signals into civic instruments that institutions can actually act on.

Proposed methodology:

1. Work with policy owners (municipalities, public agencies) to turn signal portfolios into concrete options, decision triggers and safeguards, so an institution knows in advance which lever to reach for when a signal crosses a threshold.
2. Co-design and rehearse those responses through small real-world civic experiments, testing whether the instruments hold up in a live decision setting rather than on paper.
3. Feed the results back into the shared method and curriculum, so partners can run new cycles after the grant.

Biography

Clara Gromaches is an architect and system designer working on housing and land held in common. She co-runs KOMMA.SYSTEMS, a cooperative registered in Germany and Liechtenstein that designs the legal, financial, social and technical instruments that let communities hold housing and land off the speculative market, and runs pilot projects to test those instruments in practice. Her work sits where architecture, law and agreements, finance, place-based policy and edge technologies (Web3, distributed coordination, AI) meet.

Research Areas / Expertise

Main research fields: housing and land commons; cooperative tenure and stewardship models; place-based and anticipatory housing policy; the legal, financial and governance instruments that let communities hold land off the speculative market; and edge technologies (Web3, distributed coordination, AI) applied to civic and land coordination.

Specialisation and flagship results: my distinctive focus is the translation from foresight and policy intent into workable civic instruments, the point where most housing research stops at recommendations. Representative built and applied results include the Fortià social housing cooperative (sixteen new-build homes under a stewardship model), the La Cellera de Ter municipal-building housing co-ops, the Tourism and Housing pilot, and Enclosure, a mechanism for carving protected commons out of existing property law.

Motivation, Expectation and Plan

My motivation is the concept note "Technology Horizons, Participatory Futures", shared by Seungho Park-Lee (UNIST), which targets HORIZON-CL4-2027-04-DIGITAL-EMERGING-10. It connects horizon scanning and participatory futures with anticipatory policy, and I want to help build the downstream end of that cycle: turning foresight signals into civic instruments that institutions can act on.

My core interest is how emerging digital technology can support bottom-up,

sensed policy-making: helping communities coordinate from the ground up, and helping the civic, municipal and regional levels read and respond to that input, so policy becomes more responsive and dynamic rather than slow and top-down. I would like to explore this in the domain I know best, housing access and land and housing held in common, and how stronger civic-municipal-regional coordination could open real routes to affordable housing and land commons.

What I hope to achieve at the forum: meet potential partners for this consortium, in particular a European coordinator and RTOs with the capacity to lead a single large CSA, and test whether this domain works as a first demonstrator. I also want to understand how the Korean partners in Seoul (and possible Tokyo links) would frame reciprocal, shared-benefit fieldwork.

Concrete follow-up: continue developing the concept toward a joint proposal for the March 2027 deadline, with KOMMA taking a work-package role in anticipatory policy and civic experimentation. Practical next steps I am open to include a partner meeting after the forum, defining the demonstrator domain and division of work, and, if there is a fit, a letter of intent or MoU as the consortium takes shape.

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Your Target Call

HORIZON-CL4-2027-05-DIGITAL-EMERGING-03

Your Expected Contribution to the Project / Consortium

I will try to organize consortium for the project by contacting, communicating and collaborating with the potential participants. As an extension of my previous collaboration with partners in UK, we would like to develop the light source for the quantum optical components together with relevant quantum circuits.

Biography

Prof. Wonmin Son is currently a CTO of QE research Inc. He had been a faculty at Sogang University, a visiting Prof. at the University of Oxford (2016-2019) and a member of the Center for Quantum Technologies, NUS at Singapore (2018-2011). He completed PhD studies at Queen's University, Belfast under the British Council Chevening Scholar program. His professional training continued as a research fellow at the University of Leeds in the UK and as an Erwin Schrodinger Junior research fellow at the University of Vienna, Austria.

Research Areas / Expertise

He contributed to developing diverse topics in the field of quantum optics and quantum information science. Prof. Son has published more than 45 papers in leading refereed journals. He authored two graduate and undergraduate-level textbooks. His research papers have been cited over 3000 times. He is a member of IOP, OSA, KPS. He referees research papers for major journals such as PRL, PRA, and JOP.

Motivation, Expectation and Plan

Through this event, we would like to collect all our collaborators who we had been contacted and check their interests on the project writing. Through this opportunity, we will enhance our mutual understanding and discuss more about our strategic direction which may lead to a possible agreement for the proposal writing.

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Your Target Call

HORIZON-CL4-2027-05-DIGITAL-EMERGING-03 - Advanced integrated photonic devices for extended features and ultra-low power consumption (RIA) (Photonics Partnership).

Your Expected Contribution to the Project / Consortium

Single-photon sources, semiconductor heterostructures and device design; application-led consortium architecture and research-to-innovation translation;

Expertise in telecom-wavelength single-photon devices for fibre-optic QKD at Toshiba Research Europe, followed by Oxford research on perovskite quantum dots integrated in tunable open-access optical microcavities for single-photon generation;

Shaping a device-to-system co-development pathway for integrated photonics, spanning information processing, communications and sensing.

Biography

Professor of Physics at the University of Oxford and founding cohort of Singapore's Centre for Quantum Technologies. Research trajectory in semiconductor device physics, quantum photonics, single-photon technologies, optoelectronics and quantum materials. At Toshiba Research Europe, he developed telecom-band single-photon devices for fibre-optic quantum key distribution. At Oxford, his work has included room-temperature single-photon sources using perovskite quantum dots integrated in tunable open-access optical microcavities, producing narrow-linewidth, single-mode emission at room temperature. Previously served as Head of Innovation Services in NEOM's Education, Research & Innovation sector, leading the development of national technology roadmaps in collaboration with the World Economic Forum and advising government on technology infrastructure and innovation strategy.

Research Areas / Expertise

Quantum photonics and single-photon technologies; semiconductor devices, quantum materials and light-matter interfaces; integrated photonics for information processing, communications and sensing; time-resolved spectroscopy; application-led research and innovation translation.

Motivation, Expectation and Plan

The aim is to build an application-led translation pathway from advanced photonic devices to representative system configurations, demonstrators and prototypes, combining single-photon functionality with integrated photonics, advanced materials, heterogeneous integration and packaging for information processing, communications and sensing, and bringing together complementary Korean and European partners for system-level co-development and validation.

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Your Target Call

HORIZON-CL4-2027-04-DIGITAL-EMERGING-05 Apply AI:
AI-Driven Robotics for Industry: Enabling System Integration and Adoption

Your Expected Contribution to the Project / Consortium

Our consortium will design a Physical AI Platform to support manufacturing across various domains. The platform consists of physical platform and digital platform which are intertwined through standardized interfaces. In the project, I will lead designing the physical/digital architecture and data standards from a data processing view in collaboration with various partners, software developers, AI modelers, and manufacturers.

Biography

Dr. Kibae Kim is an Assistant Professor in the AIX School at Gwangju Institute of Science and Technology. He received his B.Sc. degree from the Physics Department of Korea Advanced Institute of Science and Technology (KAIST), South Korea, in 2003 and his Ph.D. in Engineering from the Technology Management, Economics and Policy Program (TEMEP) of Seoul National University in 2010. He was the Director of Research Division at Tmax Group, Inc. He was also a principal researcher within the Fourth Industrial Revolution Intelligence Center at KAIST and a fellow at the World Economic Forum's Centre for the Fourth Industrial Revolution. Moreover, he was a research professor at KAIST and Seoul National University, and a post-doctoral scholar at the Technical University of Braunschweig. Dr. Kim's research interest is empirical and numerical network analysis of collective intelligence in information systems such as IT services, social networks, and media services. In particular, Dr. Kim is interested in ecosystems of enterprises using AI platforms for open innovation. His research suggests strategies and policies for the efficient design of network markets.

Research Areas / Expertise

Data Analysis for Strategic Management, esp. Technology Convergence Digital Transformation, Technology-Regulation Gap, and Social Impact

Development of Digital Twins for Sustainable Development Goals, Specialized in Urban Planning, Agriculture, and Climate Change.

Motivation, Expectation and Plan

My goal is to design Physical AI's digital and physical platforms to apply Physical AI to manufacturing domains. The AI transformation will enhance the business ecosystem in the region and connect it to another business ecosystems across the world.

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Your Target Call

HORIZON-CL4-2027-04-DIGITAL-EMERGING-05 Apply AI: AI-Driven Robotics for Industry: Enabling System Integration and Adoption

Your Expected Contribution to the Project / Consortium

- Expertise in advanced manufacturing and production engineering
- Process simulation, optimization, and experimental validation
- Hydrogen and fuel-cell manufacturing, especially metallic bipolar plates
- AI/data-driven manufacturing and digital production methods
- Support for Korea–Europe R&D collaboration and technology transfer

Biography

- Senior Researcher at Fraunhofer IPT in Aachen, Germany
- Research focuses on advanced manufacturing, hydrogen and fuel-cell production, numerical simulation, and process optimization
- Metallic bipolar-plate manufacturing, forming technologies, tool-wear prediction, rapid prototyping, and AI-supported production methods
- Actively involved in international R&D cooperation, particularly between Germany and South Korea, connecting research institutions, universities, and industry partners

Research Areas / Expertise

- Advanced Manufacturing & Production Engineering
- Forming Technologies & Tool Design
- Numerical Simulation / FEM
- AI / Machine Learning for Manufacturing
- Digital Production Systems

Motivation, Expectation and Plan

- Contribute manufacturing and simulation expertise to joint R&D activities
- Exchange knowledge with international research and industry partners
- Explore follow-up opportunities such as joint projects and proposals

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Your Target Call

HORIZON-CL4-2027-02-DIGITAL-EMERGING-52-two-stage
New approaches for Human/AI collaboration for the workforce of the future (RIA, AI, Data and Robotics Partnership.
First Stage deadline 2 February 2027)

Your Expected Contribution to the Project / Consortium

I lead the SENSE layer of our consortium's Sense-Analyse-Act framework, that is, the part that reads what the worker's body is actually doing and in what state it is.

Concretely I bring:

1. Biomechanical sensing and human-intention estimation. Wearable EMG and RGB-D based estimation of joint torque, ergonomic overloading and muscular fatigue during manual work, mapped continuously into what we call a Digital Kinesiology Twin of the worker. This is the input that lets an AI decide when and how much to intervene, rather than following a fixed script.
2. Ergonomic physical human-robot interaction. Anticipatory robot assistance that prevents joint overloading before it happens, developed during my years at IIT and continued at HYU with collaborative robots and exoskeletons.
3. Proposal work. I lead the drafting of the concept note and I coordinate the Korean side of the consortium.
4. Validation outside Europe. Access to Korean manufacturing SMEs and to industrial partners for a second, independent test bed, which strengthens the generalisation claim of the framework.

Our consortium currently has seven European institutions, with the University of Twente as coordinator, and Hanyang University ERICA as the Korean partner.

Biography

Wansoo Kim is an Associate Professor in the Department of Robotics at Hanyang University ERICA, Republic of Korea, where he leads the Human-Robot Collaboration (HARCO) Laboratory. He received his

B.S. in Mechanical Engineering from Hanyang University ERICA in 2008 and his Ph.D. in Mechanical Engineering from Hanyang University in 2015, with a thesis on human synchronised gait control of a lower- limb exoskeleton based on human-robot interaction force.

From 2016 to 2021 he was a post-doctoral researcher in the Human-Robot Interfaces and Physical Interaction (HRI2) Lab of Dr. Arash Ajoudani at the Istituto Italiano di Tecnologia, Italy, where he worked on anticipatory robot assistance for the prevention of human joint overloading in human-robot collaboration, in the context of EU funded research on ergonomic physical human-robot collaboration. He joined Hanyang University ERICA in 2021.

His work spans physical human-robot interaction, ergonomic human-robot collaboration, human biomechanical modelling, shared control and powered exoskeletons. He has developed several exoskeleton systems and collaborative robot applications, and holds a US patent on a lower-limb strength assisting wearable robot. He won the KUKA Innovation Award in 2018 and the Solution Award in Robotics (Premio Innovazione Robotica) in 2019, and was a best paper award finalist at IEEE RO-MAN 2020.

He serves as Co-Chair of the IEEE RAS Technical Committee on Human-Robot Interaction, and as Associate Editor for the International Journal of Robotics Research (Human-Centered Robotics and Automation), Mechatronics, and Frontiers in Robotics and AI. He has organised seven IEEE ICRA and IROS workshops on ergonomic physical human-robot collaboration since 2018.

Research Areas / Expertise

Main research areas

- Physical human-robot interaction (pHRI) and ergonomic human-robot collaboration
- Human biomechanical modelling and intention estimation, including online estimation of joint loading and muscular fatigue
- Shared and whole-body control of collaborative robots and mobile manipulators
- Powered exoskeletons and wearable assistive robots
- Haptic and cognitive feedback interfaces for guiding a human operator

Distinctive technology

The Digital Kinesiology Twin: a musculoskeletal-dynamics model of the worker that runs online from wearable and vision sensing, and exposes otherwise hidden states such as fatigue and ergonomic risk as continuous signals a robot or an AI can act on. This is what turns generic collaboration into worker-specific assistance.

Representative outcomes

- Anticipatory assistance that reduces human joint overloading before the overload occurs, developed and validated at IIT and extended at HARCO
- Several exoskeleton systems (HEXAR series) and collaborative robot applications developed with Korean industry
- US patent 8,702,632, wearable robot for assisting muscular strength of the lower extremity
- Ongoing national project on intelligent human-robot collaboration considering ergonomic predictive behaviour (NRF, 2022 to 2027), plus industry projects with Hyundai Mobis, Neuromeka and Hexar Humancare on whole-body control and human-joint-motion based control
- Journal publications in IEEE T-RO, RA-L, T-MECH and related venues

Motivation, Expectation and Plan

Motivation

Our group and seven European partners already prepared and submitted a joint proposal, EMPOWER 5.0, to a Horizon Europe Cluster 4 call in 2025. The evaluation was strong on the scientific side but the proposal was not retained, and the reviewers pointed at the same two places we already suspected were thin: a concrete exploitation route for manufacturing SMEs, and a standardisation strategy. The consortium is intact and we are now aiming at HORIZON-CL4-2027-02-DIGITAL-EMERGING-52. I am coming to Brussels to fix those two weaknesses with people who evaluate and write these proposals for a living, rather than guessing at them from Korea.

What I hope to get out of the forum

1. Direct expert feedback on our impact and standardisation strategy, and on how much of it belongs in the first stage of a two-stage call.
2. One or two partners we are still missing, specifically an end-user or SME in manufacturing, and someone with a real track record in standardisation.

3. Face to face agreement with our coordinator on the work package structure, which is faster in a room than over email.
4. A clear answer on how a Korean partner is best positioned in a Horizon Europe consortium, in terms of both funding rules and evaluation.

Concrete follow-up

- Consortium meeting during the forum, with the coordinator present
- A concept note in English, circulated to all partners, timed against the call opening on 22 September 2026
- Letters of intent from partners, and a draft consortium agreement covering joint ownership of IP
- Joint first stage submission on 2 February 2027, second stage on 2 September 2027

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Your Target Call

HORIZON-CL4-2027-02-DIGITAL-EMERGING-52-two-stage: New approaches for Human/AI collaboration for the workforce of the future (RIA) (Made in Europe and AI, Data and Robotics partnerships)

Your Expected Contribution to the Project / Consortium

Project coordinator for resubmission of a previous proposal. Bringing expertise in mechatronics and/or energy-based methods for modelling and control.

Biography

Dr. Wesley Roozing is an assistant professor at the University of Twente, The Netherlands. He received his PhD degree from the Italian Institute of Technology (IIT) in 2018 and was a visiting student at the Australian Centre for Field Robotics (ACFR).

He was involved in more than 10 Horizon 2020 and Horizon Europe proposals, including 3 as coordinator, and participated in several national (NWO) and international (Horizon 2020) projects as local coordinator.

He is chair of the euRobotics Topic Group on Mechatronics, fostering interactions between academic, industrial, and other practitioners in the field of mechatronics. He has served on the programme committee of the European Robotics Forum since 2021. He served as Exhibition Chair for ICRA@40 in Rotterdam, the 40th Anniversary of the IEEE Conference on Robotics and Automation (ICRA), and as Exhibition Chair for ICRA 2026 in Vienna.

He teaches graduate and undergraduate courses on (energy-based) modelling and control of mechatronic systems and serves on the examination board of the Robotics MSc programme.

Research Areas / Expertise

His main research interests include co-design for mechatronic systems, (compliant) actuation and their control, motors and gearing, mechanism design, bio-inspired and biarticulated actuation, and energy-based modelling and control methods for safety in robotics.

Motivation, Expectation and Plan

My main motivation is networking and consortium building for immediate and future Horizon proposals, as well as generating a better understanding of the Korean robotics landscape.