KETI Korea Electronics Technology Institute

Design Tomorrow Lead Technology



Table of Content

06 President's Message

07 Vision, Organization and History

08 Achievements

10 Introduction of Research Divisions

10 Materials & Components Research Division

12 Semiconductor Research Division

14 Smart Energy Research Division

16 Contents & Media Research Division

18 AX Research Division

20 AI Research Division

22 Southwest Regional Branch

23 Jeonbuk Regional Branch

24 Southeast Regional Branch

25 Business Cooperation Platform

28 Global Network

30 Contacts

A research institution that
pushes technological boundaries,
breaks down industry walls,
and transcends national borders.

KETI is leaping forward as Korea's representative
technological innovation platform,
designing the tomorrow of humanity
beyond the future of the nation.

KETI
embedded



Connecting imagination to the real world



Design Tomorrow, Lead Technology



Welcome to Korea Electronics Technology Institute!

Today, the world is facing an era of grand transformation where the industrial order is shifting rapidly. As hegemony competition over technology intensifies and the global industrial landscape is reshuffled, we find ourselves standing at a critical crossroads of monumental change.

Since our establishment in 1991 as a specialized production research institute under the Ministry of Trade, Industry and Energy, KETI has led the advancement of Korea's electronics and IT industries for the past 35 years. We have firmly established ourselves at the center of national industrial development by enhancing the technological competitiveness of small and medium-sized enterprises (SMEs) and mid-sized companies, while creating future growth engines in national strategic technology sectors such as semiconductors and artificial intelligence.

Now, building upon the capabilities and experience we have accumulated over the years, KETI aims to become a "National Representative Technological Innovation Platform," advancing into a global technology hub that designs the future of humanity.

We will expand our research and development focusing on large-scale and demonstration-oriented innovative projects, and strengthen technological cooperation with SMEs and mid-sized companies to establish a virtuous cycle of R&D achievements.

Furthermore, we will leap forward as a world-class research institution that addresses national challenges through technological innovation and drives sustainable national growth.

We invite your continued interest and support in KETI's journey as we design the tomorrow of Korea's electronics and IT industries, and beyond that, the tomorrow of humanity.

Thank you.

President of KETI

Roh, Keonki

Vision

Design Tomorrow, Lead Technology

Mission

Lead technological Innovation and commercialization of SMEs

Develop advanced core technologies and create new industries

Organization

Board of Directors

President

Executive Vice President

Technology Policy Department

Materials, Components & Energy R&D Laboratory
Materials & Components Research Division
Semiconductor Research Division
Smart Energy Research Division

AI Convergence R&D Laboratory
Contents & Media Research Division
AX Research Division
AI Research Division

Southwest Regional Branch
Jeonbuk Regional Branch
Southeast Regional Branch

Strategic Planning Division
Operations Management Division
Technology Commercialization Division

History

1990's

1991.08
Established Korea Electronics Technology Laboratory

1995.03
Established Reliability and failure analysis Center

1997.08
Designated as a testing institution of Korea Laboratory Accreditation Scheme (KOLAS)

1999.08
Changed Name to KETI (Korea Electronics Technology Institute)

2000's

2005.04
Established Gwangju Regional Branch

2006.12
Established Jeonbuk Regional Branch

2008.05
Established Sangam Branch at DMC in Seoul (Specialized in communication & media R&D)

2010's

2012.07
Established Pangyo Branch in Seongnam (Specialized in system IC R&D)

2018.03
Established Air Consumer Electronics Innovation Support Center

2019.10
Established Southeast Regional Branch (Changwon)

2020.07
Renamed its official Korean name

2024.12
Established the 2nd Campus (Pangyo GBiz) in Seongnam

As a global R&D institute, KETI creates enterprise value

1990's











1991~2011
Fundamental technology for electronic components
Technology innovation for SMEs specializing in electronic components

1993~1998
GSM(Global System for Mobile Communications) mobile telecommunication devices
Export item initiative of GSM mobile phone



1994~1998
Interactive CATV systems
Localization of CATV systems

1995~2000
Application Specific Integrated Circuit(ASIC)
Driving force for the domestic HDTV industry

1995~2002
Micro Electro Mechanical Systems (MEMS) technologies
Base technology for the convergence industry

2000's



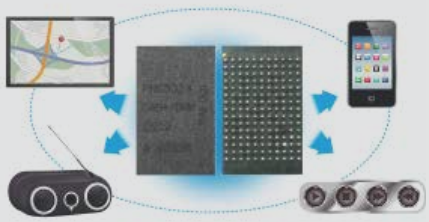
1997~2000
Small precision motors for home appliances and multimedia devices
Core components technology for digital home appliances

1999~2009
Next-generation large capacity storage devices
Base for commercializing large capacity storage devices

2001~2007
Development of Promising Next-generation Electronic Components
Development of core components such as micro motor and flexible devices

2003~2008
Next-generation DAB·DRM receiver technologies
Core technologies for next-generation digital mobile TV/Radio

2004~2009
Next-generation Batteries Project
Development of Components & Materials of Secondary Batteries



2020's

2016~2020

Optical Engine Technology for Scanning Lidar

Multi-channel scanning lidar technology for ADAS and self-driving vehicles

2018~2020

AI Companion Technology

AI-based sign language recognition technology

2019~2021

Development of ultra-high frequency chip for 5G FR2 band wireless communication

Localization of 5G communication components suitable for high-speed transmission

2019~2026

Development of a High-Voltage Battery System for Electric Vehicles with Ultra-Fast Charging Capability within One Minute

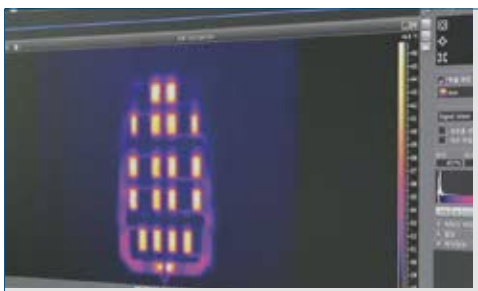
Development of core and application technologies for ultra-fast charging

Development of manufacturing process technology for all-solid state battery with large size format

2024~2027

Development of Core Technology for Deepfake Detection

Deepfake Video and Audio Detection Technology for Digital Forensic Science







2010's

2009~2020

Vehicle Safety Service Techonologies for Connected Vehicle

Next generation ITS & V2X wireless communication technologies for autonomous vehicle

2011~2018

Development of Key Technologies to Create Global IoT Ecosystem

Core technologies for open IoT platform(Mobius) and global interworking

2013~2018

Nano-Carbon Film Heater

Flexible high-temperature film heater for EVs and home appliances





Materials & Components Research Division

The key to global technology competitiveness is shifting to materials and components with global standardization of assembling·processing technology of end products. The Materials & Components Research Division is developing core technologies required in whole industries including electronics, telecommunications, energy, and display as the advanced materials and components technology that enables to respond to future industry demand in the 4th industrial revolution era. We have been especially dedicated to research and develop the flexible electronic components, RFIC, system packages, next-generation displays along with nano converging technology and convergence·complex technologies for electronic material. As a designated testing institution by Korea Laboratory Accreditation Scheme(KOLAS), we are also developing reliable techniques to improve reliability and quality of electronic components, providing systematic support for the testing, evaluation and improvement of product durability produced by SMEs and business ventures. We promise to create a new market through materials & components development that responds to industry demand.



ICT Device Solution Research Center

- GaN/InP device, modeling, components
- RFIC for communications/radar
- Wireless/Satellite communication and radio application components(Antenna, RF filter, Beamformer, FEM, RF modules, Meta-surface, etc.)
- 5G/6G RF components and O-RU technology
- Low loss packaging materials for mmWave and high speed application
- mmWave and 2.5D fanout packaging
- Quasi-, Interposer-MMIC power amplifier technology
- Package signal and power integrity analysis
- 4D-image and synthetic aperture radar components AiP(Antenna-in-Packaging) / AoP(Antenna-on-Packaging) technology
- System-in-Packaging/System-on-Packaging/ System-on-Module technology

Display Research Center

- Organic/Inorganic Light Emitting Display (OLED, QD EL, Inorganic EL, micro & nano LED)
- Reflection type display (electronic paper)
- Driving Circuit and devices : Oxide TFT active matrix, Passive matrix
- Free Shape Display (Flexible, Stretchable, Rollable) and simulation, evaluation tool system
- Holographic Display devices (Laser holographic LCoS) and AR/VR view angle equipment
- Nano-photonic Crystal, Quantum-dot, Nano Imprint Optical Polymer and Film
- 2D Digital Sensor Array and Image Diagnosis Device
- Large Area Functional Polymer and Device of Heat Dissipation, Shielding, Self-Heating
- Transparent Solar Cell, Sensor and Module for Smart Window
- High precision sub-micron patterning KrF and Maskless lithography
- ACF or package evaluation platform with Test DDI and substrate



NanoConvergence Materials Research Center

- CNT materials and functional composite
- Graphene materials, devices, processes and applications
- Silver nanowire flexible electronics and applications
- Conductive ink/paste materials for electrode applications
- Printed electronics and additive manufacturing
- Heating materials, TIM, thermal managing materials and components
- Organic/inorganic hybrid chip bonding materials for semiconductor
- Nanohybrid materials and environmental applications
- Highly functional thin film coating
- Optical device & laser application
- MEMS sensors and actuators
- Sensor ROIC & High Voltage driver IC
- Advanced manufacturing and process monitoring

Reliability Research Center

- Thermal solution (test/measurement/analysis)
- RF/EMC solution (test/measurement/analysis)
- Power semiconductor lifetime evaluation
- Power semiconductor solution (test/measurement/analysis)
- Reliability evaluation of electronic components in Aerospace
- Computer aided engineering (Thermal/stress/EMC)
- Reliability prediction (MIL 217+)
- Reliability testing (KS, MIL, AEC-Q)
- Accelerated life testing (ALT, HALT)
- Failure analysis and materials reverse engineering
- Integrated electron microscopy analysis
- Material analysis under extreme condition
- PHM (Prognosis & health monitoring)

Advanced Batteries Research Center

- High-capacity/high-output lithium-ion battery cathode materials for EVs
- Solid electrolytes and all-solid-state batteries
- Lithium metal-based high-energy-density next-generation batteries
- Redox Flow Batteries for energy storage systems
- Secondary batteries based on SO2 inorganic electrolytes
- Materials for lithium-ion capacitors
- Advanced analytical technologies for secondary battery materials and components
- Reuse, repurposing, and recycling technologies for spent secondary batteries
- Water electrolysis materials and cells
- Technologies for securing long-term stability of water electrolysis stacks
- Silicon/perovskite solar cell module technologies
- Solar cell module technologies for carbon emission reduction

The Materials & Components Research Division is developing core technologies that are required in all industries including telecommunications, semiconductor, electronics, aerospace, energy, military defense and automobile as the advanced materials and components technology that enables to respond to future industry demand in the 4th industrial revolution era.

Semiconductor Research Division

In the era of the Fourth Industrial Revolution and the evolving landscape of global supply chains, semiconductor and display technologies are the most critical technologies. Leveraging semiconductor technology to sense and make intelligent judgments about the real world, digitize information, and display processed data on screens plays a pivotal role in enabling innovative services such as autonomous vehicles, smart devices, and foldable displays. The Semiconductor Research Division is concentrated on next-generation semiconductor technology, including artificial intelligence, general-purpose&specialized SoC platform technology covering all fields of ICT and automotive, XR and flexible next-generation display technology. And we also focus on RF transceiver for Beyond 5G, high-speed physical layer interface for next-generation memory, and smart sensor technology. We will actively support domestic fabless, sensor, foundry, and display companies, which are at a new turning point by securing advanced semiconductor and display technologies, to improve their competitiveness.

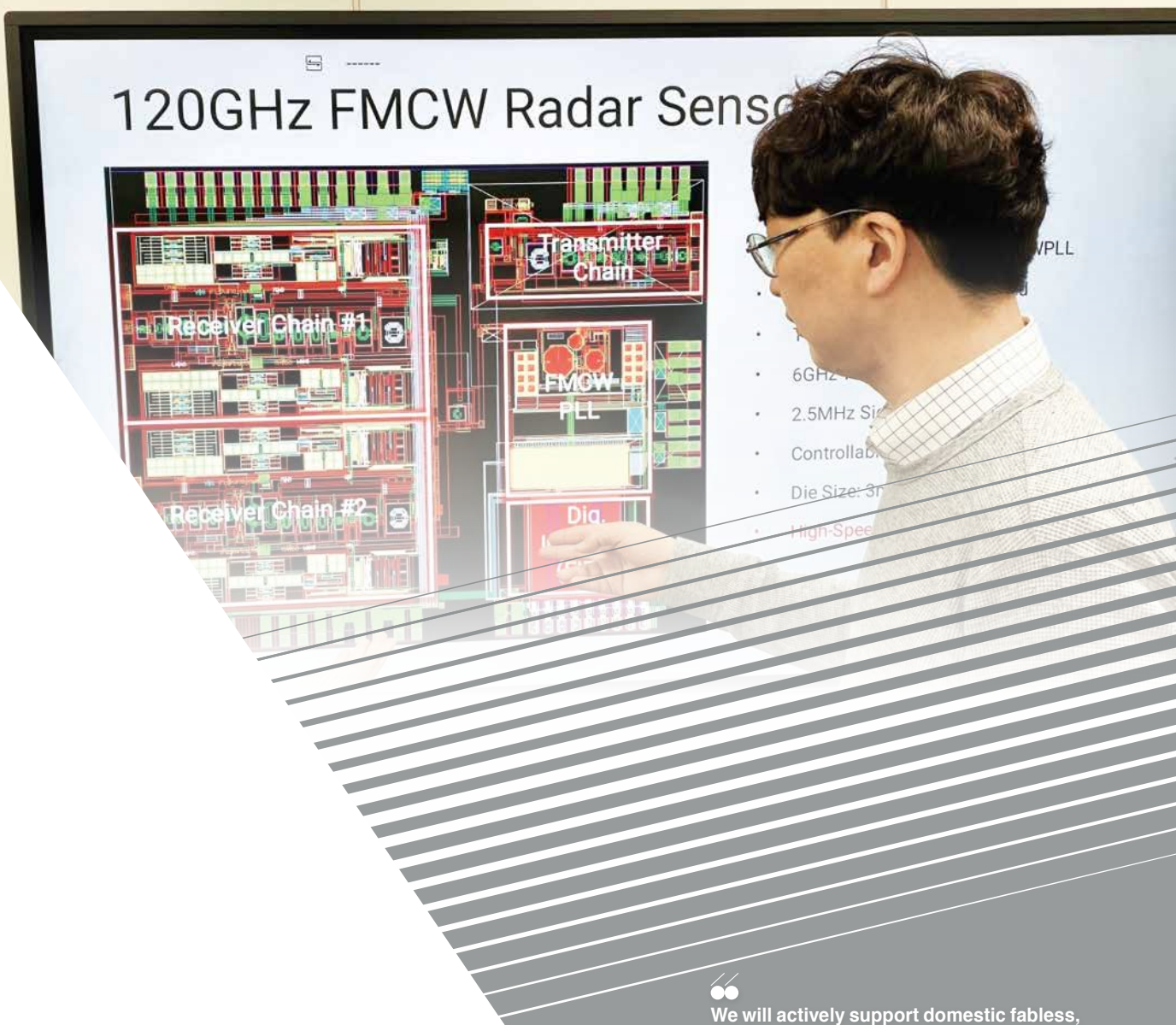


System Semiconductor Research Center

- NPU architecture and Intelligent SoC technology
- HW/SW Platform technology for PIM (processing in memory)
- HW/SW Platform technology for quantum computing simulation(Quantum computer algorithm, hardware acceleration, and framework)
- Signal processing for multi-modal sensor for automotive semiconductor
- Hardware-aware LLM integration technology
- MLOPS SW Platform Technology
- AI benchmark performance evaluation and profiling technology
- High-Speed Interface PHY IP technology
- Optic-SoC technology (Operation Organization)
- Verification Support & Certificate Center for Semiconductors and Products

Integrated Circuits & System Research Center

- RF/Analog/Mixed-signal IC Design and Signal Processing Technology
- Wireless Communication RF Transceiver Design Technology
- Wireline or Wireless Sensor Interface(ROIC) Circuit Design Technology
- Intelligent Radar Sensor and Signal Processing SoC Technology
- Next-generation Data/Memory Serial Interface(SERDES) Design Technology
- High-efficiency PMIC(Power Management IC) Design Technology
- Artificial Intelligence Analog Computing Technology



> **We will actively support domestic fabless, sensor, foundry, and display companies, which are at a new turning point by securing advanced semiconductor and display technologies, to improve their competitiveness.**

Semiconductor Device & Process Research Center

- Nano/MEMS-based smart sensors and components(temperature-humidity / pressure / accelerometer / magnetic / flow / IR / ultrasonic / sound / THz sensors, etc.)
- Next-generation input devices and NUI/UX(touch, Virtual sensor, wearable, etc.)
- Integrated optics sensors and devices (evanescent field-based sensors, laser applications, etc.)
- Environment/Bio sensors and devices(Gas Sensor, Lab-on-a-Chip, waveguide-based sensors, etc.)
- Self-powered IoT devices and wearable sensor technology(Energy Harvesting and wireless power transmission)
- Smart Sensor Application System

Intelligent Semiconductor Research Center

- On-device AI meta-learning technology and training processor design
- Application-specific lightweight multimodal AI model and system design(smart home/autonomous vehicle/ robot/manufacturing, etc.)
- Low-power AI inference processors/compiler design for edge and mobile devices
- LiDAR/radar point cloud-based 2D/3D fusion AI spatial computing processor/system design
- Cloud/device federated learning and lossless AI model compression technology
- AI model Lightweighting(NPU/PIM-Aware) and lightweight neural network automatic exploration/ generation technology
- Large-scale AI model multiple/heterogeneous computing resources distributed inference technology

Smart Energy Research Division

The Smart Energy Research Division is dedicated to securing core technologies that accelerate the era of carbon neutrality by building optimal eco-friendly energy systems powered by intelligent AI technology. A key feature of our division is the organic collaboration among four specialized research centers, seamlessly connecting the entire energy lifecycle from generation, transmission, and safety to big data and consumption.

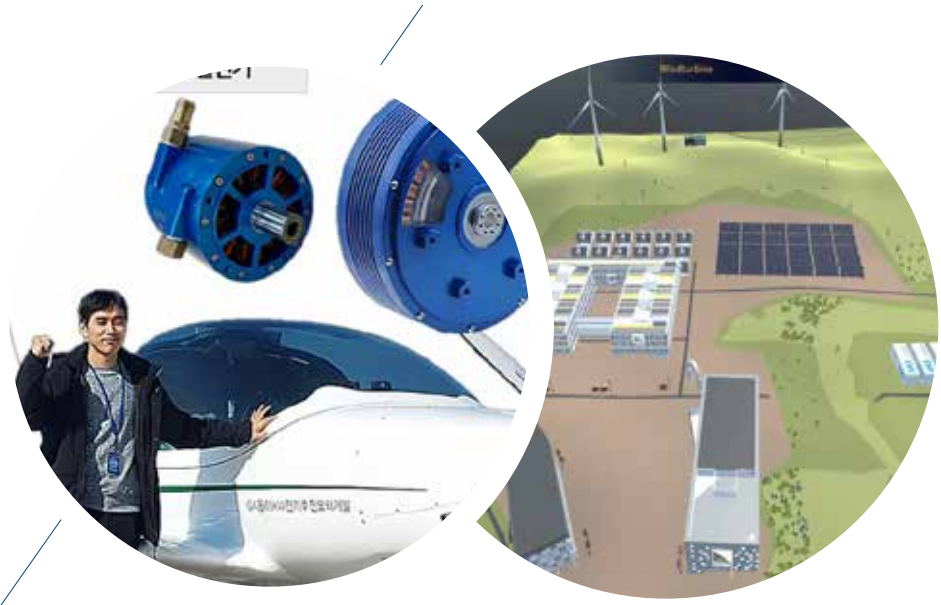
In the field of energy generation, the Renewable Energy & Hydrogen Research Center develops high-efficiency solar modules and water electrolysis-based green hydrogen technologies, while the Energy AI Research Center establishes efficient management frameworks through Virtual Power Plants (VPP) and sector-coupling optimal operation platforms.

For energy transmission, the Power Electronics Research Center leads key technologies for grid stabilization—such as grid-forming, next-generation DC transmission, and high-capacity power stacks for offshore wind power—ensuring the safe and reliable flow of energy.

In the areas of safety and big data, we are fostering a trustworthy energy environment by advancing liquid hydrogen digital twins, electrical fire diagnostics, and hyper scale AI models dedicated to power generation facilities.

In the energy consumption sector, efficiency is maximized through a combined approach: the Advanced Electrification System Research Center provides high-output motors for mobility and data center cooling solutions; the Power Electronics Research Center delivers vehicle power conversion and ultra-fast charging technologies; and the Energy AI Research Center integrates intelligent building and factory energy management systems (xEMS).

Leveraging these comprehensive and integrated capabilities, the Smart Energy Research Division will continue to drive innovation across the national energy ecosystem.



Energy AI Research Center

- IoT-based industrial energy management
- Integrated demand response system technology for load resources
- Artificial intelligence systems for EMS
- Cluster-based energy time-series big data platform technology
- Interoperable Web of Things (WoT) international standard-based xEMS
- Virtual power plant (VPP) operating system technology
- Digital twin system-based renewable energy (solar, wind) power forecasting and control technology
- Energy management systems for distributed grid-forming resources

Power Electronics Research Center

- High-capacity/high-output lithium-ion battery cathode and anode materials for EVs
- Solid electrolytes and all-solid-state batteries
- Lithium metal-based high-energy-density next-generation batteries
- Redox Flow Batteries for energy storage systems
- Secondary batteries based on SO2 inorganic electrolytes
- Materials for lithium-ion capacitors
- Advanced analytical technologies for secondary battery materials and components
- Reuse, repurposing, and recycling technologies for spent secondary batteries
- Water electrolysis materials and cells
- Technologies for securing long-term stability of water electrolysis stacks
- Solar cell module technologies for satellites
- Silicon/perovskite solar cell module technologies
- Solar cell module technologies for carbon emission reduction

Advanced Electrification System Research Center

- High-output technology for electric propulsion systems for future mobility
- High-efficiency, high-precision design technology for industrial electrical equipment
- Advanced design technology for electrification-based power transmission modules
- Electromagnetic-structural-thermal coupled analysis and design technology
- Multiphysics-based thermal management technology for electric power systems
- Analysis and design technology for smart fluid machinery
- Operation and control technology for flow systems linked to energy, environment, and safety

Renewable Energy & Hydrogen Research Center

- Module materials and modularization technology for next-generation perovskite/tandem solar cells
- Module materials and modularization technology for space solar power
- Diversified application solar modules (floating, marine, building-integrated, and vehicle-mounted)
- Solar power safety, diagnostics, and operation technology
- Recycling technology for end-of-life solar modules
- Large-scale and low-cost technology for low-temperature water electrolysis components (PTL, MEA, bipolar plates, etc.)
- Large-scale and low-cost technology for high-temperature water electrolysis components (PTL, MEA, bipolar plates, etc.)
- Lifecycle operation technology for hydrogen (production, storage, and utilization)

Smart Energy Research Division is developing key technologies for high-efficiency and low-carbon energy systems that respond to climate change and create new energy industries



Contents & Media Research Division

Culture is a core asset that determines national competitiveness, and K-culture is rapidly expanding beyond mere content into a future industry integrated with technology. In response to this shift, the Contents & Media Research Division is creating new value and industries across the entire content and media lifecycle, driven by advanced artificial intelligence technology.

Our division focuses on core technologies such as AI, XR (Extended Reality), holograms, and next-generation networks to innovate the overall creation, production, distribution, and service of content. We aim to secure next-generation content and media technologies based on Hyper-Creative, Hyper-Immersive, and Hyper-Connected(3H) principles. Through these efforts, we realize intelligent content production, hyper-realistic media experiences, and hyper-connected service environments, while providing the technological backbone for the global expansion of K-culture.

In particular, by securing key proprietary technologies—such as Creative AI-driven content creation and production AX (AI Transformation), XR-based spatial computing and digital twins, hologram-based hyper-realistic 3D imaging, and 6G and AI-RAN-based ultra-low latency, hyper-connected network technologies—we are establishing a competitive technological edge that scales beyond culture into various industrial sectors, including manufacturing, mobility, and defense.



Contents Convergence Research Center

- Virtual Convergence Technology (Industrial applications in manufacturing, mobility, robotics, defense, culture, etc.)
- Generative AI-based content creation technology
- Hyper-realistic/intelligent XR content technology
- Hyper-sensory digital human technology
- User-centric interaction technology
- Metaverse service technology
- Content copyright protection and management technology
- Blockchain application technology

XR Convergence Platform Research Center

- Industrial education and virtual training software & system
- Virtual reality device and software & system
- Augmented reality device and software & system
- Five senses & emotion devices, system and services
- Hyper-reality interaction technology
- 5G based cloud VR/AR services
- Knowledge based VR/AR application services

Smart Network Research Center

- Low power short-range wireless communication
- (B-CDMA, SWIPT, Batteryless communication)
- Universal (land/sea/underwater/space) data communications
- Intelligent real-time wired and wireless networking technology
- Wireless power transfer
- (EV wireless charging, RF wireless charging)
- Energy harvesting
- Intelligent NPU(Neural Processing Unit) and high-speed interface PHY technology
- Digital transformation technology for oceans and fisheries

Hologram Research Center

- Deep-learning based real-time hologram streaming on 5G network
- HOE design tool and digital HOE printing technology
- Copyright technology for smart glass (MR/XR)
- S/W for low vision and visually impaired
- In-Camera VFX-Based Realistic 3D Representation Technology
- Holography-based XR display technology
- Photo-realistic metaverse character & motion AI generation technology
- AI-based digital asset creation technology
- Speech-based character animation creation technology
- Object recognition technology for VFX
- Mobility Holographic HUD
- 4D Volumetric Content
- XR Contents Streaming Technology

“The division is developing next-generation core communication technology including short-distance wireless communication, wireless power transfer, VR/AR, and digital holography, and focusing research on next-generation ICT services such as smart home, next-generation broadcasting, digital contents, smart media, and virtual training system, etc.”



AX Research Division

In the era of the great AI transformation (AX), the core of change lies in the utilization of artificial intelligence. The AX Research Division is focused on securing "Full-Stack AX technology" that realizes intelligence across all industries through the organic combination of IoT, data, and AI technologies.

In this era of AI transformation, we are dedicated to realizing a data-driven autonomous intelligent society based on the convergence of demand domain knowledge and artificial intelligence. Along with autonomous IoT and data hub technologies where objects make judgments and collaborate on their own, we are concentrating our capabilities on developing proprietary technologies for Physical AI, which understands and directly executes actions within complex physical environments.

Furthermore, to realize future medical innovation, we are researching AI-based digital healthcare solutions such as medical AI agents and intelligent medical device systems. We are also taking the lead in establishing AXOps (AIOps) and computing system software technology frameworks for the efficient operation of high-performance AI models.

In addition, we are pooling our core capabilities for the autonomous operation of unmanned vehicles, including mobility platforms for autonomous driving cars, intelligent robotics that control the intelligent perception and behavior of robots, and AX technologies for the defense sector. In particular, autonomous manufacturing (autonomous factory) technology and industrial AI platforms based on Manufacturing Foundation Models (MFM) to strengthen the competitiveness of Korea's manufacturing industry are key research agendas treated with the highest priority by the AX Research Division.

As we welcome the AX era, we will become a dependable partner doing our utmost—from technology development to demonstration infrastructure support—to accelerate industrial AX for companies seeking new growth engines in various demand domains, such as manufacturing, healthcare, automotive, robotics, and defense.



Autonomous IoT Research Center

- IoT platform and data hub
- IoT communication and network
- Autonomous IoT technology
- Digital twin technology
- Spatiotemporal data analysis technology
- Edge IoT technology
- Distributed IoT collaborative intelligence technology
- Unmanned vehicle technology (autonomous driving/flight, spatial recognition, GCS)
- AI-based IoT infrastructure management technology
- IoT convergence technology such as smart city, digital quarantine, forest disaster, digital shipbuilding, smart port, etc.

Medical IT Convergence Research Center

- AI-based Digital Healthcare
- Cloud Native
- Intelligent Edge Computing
- Digital therapeutics
- Medical Digital Twin
- Energy-based Treatment Devices
- Electronic Medicine and Bioelectronic Devices
- Bio Sensors and Bioprocessing Equipment
- Smart Beauty Devices and Personalized Treatment System Cloud technology for microservices

The AX Research Division delivers full-stack AX technologies through the organic integration of IoT, data, and AI technologies.



Mobility Platform Research Center

- Autonomous mobility platform and service technology
- Recognition·tracking·prediction and planning·control technology for Autonomous mobility.
- Data collection·analysis and conversion technology for A.I training and verification
- Game engine-based virtual verification/ validation solution, development technology
- Deep learning model compression technology for autonomous mobility embedded system
- Autonomous mobility certification/security technology
- Autonomous mobility sensing signal processing technology
- High-speed V2X communication technology for connected and autonomous mobility

Intelligent Robotics Research Center

- Robotics based service technology
- Industrial and service robot system technology
- Robotic application evaluation and technical support
- Intrinsic robot technology such as mobility, manipulation and teleoperation
- Advanced robot intelligence technology including perception, decision, action and HRI
- Cloud Robotics and RIoT (Robot IoT) technology
- Robot motion and process control technology
- Robot actuator, sensor, control module technology
- Precision mechanical parts technology such as robot reducer
- Robot convergence components evaluation and technical support

Autonomous Manufacturing Research Center

- Manufacturing-specific AI Service
- MaaS(Manufacturing as a Service) Platform
- Industry 5G
- Digital Twin Framework and Edge Computing
- Improvement and support for safety and know-how
- Infrastructure-Establishment for digital transformation and education support
- Testing and Certification of Industrial Standard Communication (OPC UA) Interoperability
- Korea-Germany Demo Factory Collaboration

AI
Research Division

The AI Research Division aims for next-generation AI innovation that integrates the entire lifecycle of data, models, systems, and applications, centering on multimodal-based Foundation Models. Through self-supervised learning and lightweight optimization technologies, we implement scalable intelligence from on-device to cloud environments and secure advanced reasoning capabilities that understand human behavior, intent, and context. Furthermore, we create new user experiences that connect reality and virtuality by combining generative AI, digital humans, and 3D/media generation technologies.
In the industrial sector, we build intelligent operating frameworks through autonomous agents, digital twins, and process automation. On the data front, we complete a trustworthy AI ecosystem based on AI-Ready data, privacy preservation, and security technologies. Through these initiatives, our division aims to simultaneously realize industrial innovation and social value with AI that is explainable, safe, and continuously evolving.



Multi-Modal Intelligence Research Center

- Deep learning based video recognition & tracking technology (object, facial expression, gesture, human emotion, pedestrian, scene, video form-factor conversion, etc)
- Video-based 3D objects(human) generation & deformation technology
- Image-based motion capture and transfer technology
- Large model-based style transfer, image composition, & neural rendering technology
- Video based context understanding technology (image captioning, highlight generation, etc)
- UHD/3D video codec technology
- Video quality enhancement technology (SR, HFR, form-factor conversion, underwater video, satellite/aerospace video, etc)
- Deep learning optimization technology for Mobile/Edge devices
- Image processing acceleration HW IP design technology
- NPU HW IP design technology for Mobile/Edge devices
- Self directed visual intelligence technology based on self-supervised learning methods
- Audio preprocessing, STT & TTS technology

Autonomous Intelligence Research Center

- Industrial data signal processing and machine learning technology
- Multimodal data fusion technology
- Spatiotemporal data analysis technology
- User understanding and interaction technology
- Real space-virtual space convergence technology
- Digital twin technology
- Autonomous decision-making and collaboration technology
- Technology for enhancing practical application of autonomous intelligence (Practical AI)
- Domain-converged artificial intelligence (AI+X) technology
- Industrial intelligence convergence application technologies for forest disasters, shipbuilding/maritime, ports, and public safety

AI Data & Security Research Center

- AI-Ready data configuration and privacy preservation technology
- Data validity and valid data linkage analysis technology
- Time-series data preprocessing and intelligence generation platform technology
- Data-driven public safety and industrial decision support technology
- Intelligent physical security data analysis and system integration technology
- Intelligence-based media analysis, generation, and production technology
- Media-converged intelligent data service technology
- Defense data analysis and AI model orchestration technology

Intelligence Integrated Software Research Center

- Industry data platform & Industry AI software
- Industrial operating software level virtualization and orchestration software
- Industry big data convergence for AI to digital transformation(DX)
- Battery performance analytics technology of EV data
- Data analysis and control system based on wearable devices
- Intelligent control and optimization with digital twin of 3D printing design and manufacturing process
- 3D Printing build strategy, processor, and simulation software for additive manufacturing
- Component-based graphics & enhanced video rendering framework solution

AI Foundation Model Research Center

- Understanding human behavior and intents
- Situational, and context understanding, and multimodal reasoning
- Natural language understanding and representation
- Understanding, explaining, and analyzing contents
- Continual understanding based human interaction, decision, and modeling
- Core research on artificial intelligence
- Multi-modal reasoning
- Commonsense reasoning

Through key technologies such as artificial intelligence, intelligent convergence software, and intelligent services, which are the future core technologies of the national future strategy industry, we aim to lead the future era in collaboration with innovative companies.



Southwest Regional Branch

KETI Southwest Regional Branch has contributed to strengthening the technological capabilities of small and medium-sized enterprises and developing local industries with the goal of leading the region's cutting-edge technology and strategic industries.

We research on AI home appliances including Air appliances, which is a regional branch business, and are contributing to the development of the metaverse industry through sensor fusion using LiDAR source technology, multidimensional spatial recognition and signal processing, intelligent immersive interaction technology, and XR human computing.

In addition, we will do our best for higher value added local industries and serve as a global outpost through intelligent energy management systems through direct current transmission and distribution and microgrids, and energy efficiency and performance advancement of eco-friendly transportation machinery and mobility systems.



Distributed Energy Research Center

- LVDC, MVDC, HVDC and micro-grid core technology
- Power conversion technology for renewable energy and energy storage system
- Intelligent energy management system
- Power analysis & evaluation technology of grid

Spatial Intelligence Research Center

- High resolution and multi-channel LiDAR
- SIL/HIL/VIL System for Automotive Sensor
- AI based 3D multiple object detection & spatial recognition
- XR human computing technology

Smart Electrics Research Center

- Distributed Control and Operation Technology
- Mobility System AI-based Diagnostic and Prediction Technology
- Electric Drive and Power Conversion Technology for Mobility
- Power Architecture Redundancy and WBG Semiconductor Driving Technology
- Electric Battery Operation and Charging/Discharging Technology
- Redundancy Drive Technology & Motor and Actuator Optimum Design
- Design Technology of Electromagnetic Sensor and Passive Device

AI Convergence Appliance Research Center

- Life tracking-based health management service tailored for the elderly
- Contactless biometric signal-based active sleep care service for users
- IAQ(Indoor Air Quality) filtration technology(E-HEPA, Virus sampling, Low-level CO2 capture)
- Infrastructure Technology and Standardization of AI/Air home appliances
- Operation of domestic and international standard testing institutes (KOLAS, etc.)
- Support for Product advancement and commercialization of smart appliances industry

Jeonbuk Regional Branch

As a leading ICT convergence R&BD organization in Jeonbuk, we will continue to do our best as an open partner to discover new industries such as D.N.A. convergence economy, smart agriculture and life, renewable energy, digital culture and tourism content, autonomous driving and mobility, and digital twin.



Smart Electronics Research Center

- Technical support for display and flexible devices
- Next generation display devices and nanomaterials
- Wearable devices integrated with sensors
- Power control system for hybrid energy storage devices

IT Application Research Center

- Intelligent control technology for mobility and robots
- Precision agriculture and ICT convergence agricultural bio-convergence technology
- Automotive electronic components and electromagnetic compatibility related applications
- IT Applications with next generation Energy harvesting & storage components and materials
- IT Applications with 3D printing & Nano Carbon components and materials

Digital Innovation Support Center

- Data and AI modeling technology for local industrial digital transformation
- Cultivating next-generation display and D.N.A technology convergence digital experts
- Electronic component reliability/measurement analysis equipment service support
- Support for technological advancement and commercialization of SMEs and Startups

Southeast Regional Branch

Southeast branch is responsible for improvement in corporate productivity and creation of highly-added value by linking capabilities of KETI, the leading research institute in smart manufacturing, with key industries in the region. We are also focusing on fostering ICT talent and companies by utilizing our DNA (Data, AI, Network) capabilities and creating new growth models for new industries such as robots and defense.



ICT Convergence Research Center

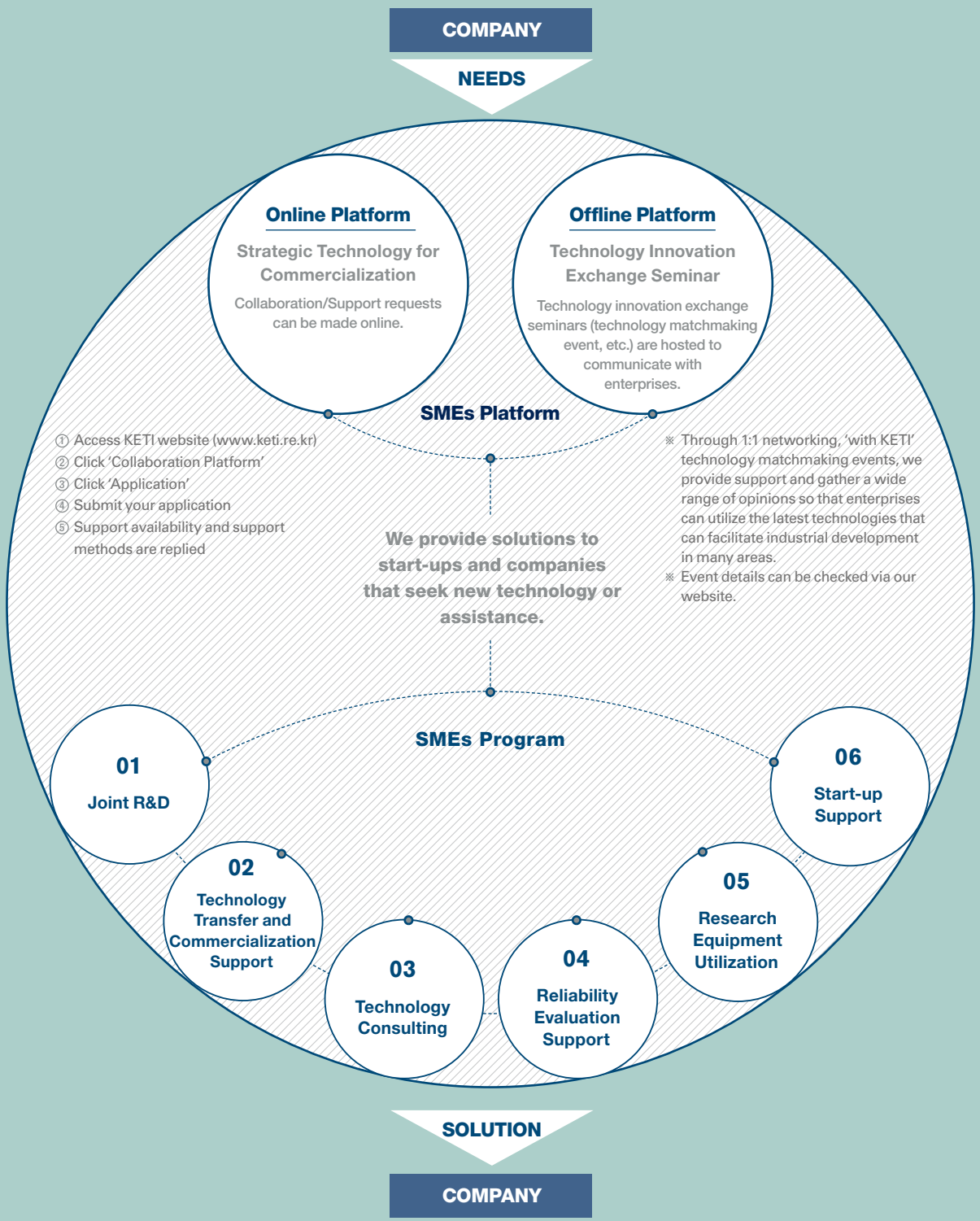
- ICT technology for the precision machine in the defense/aviation domain
- Digital factory ICT convergence technology
- Industrial Robot-based automation process improvement technology
- Ultra-precision industrial process and equipment improvement and ICT convergence technology
- Smart factory advancement consulting and education

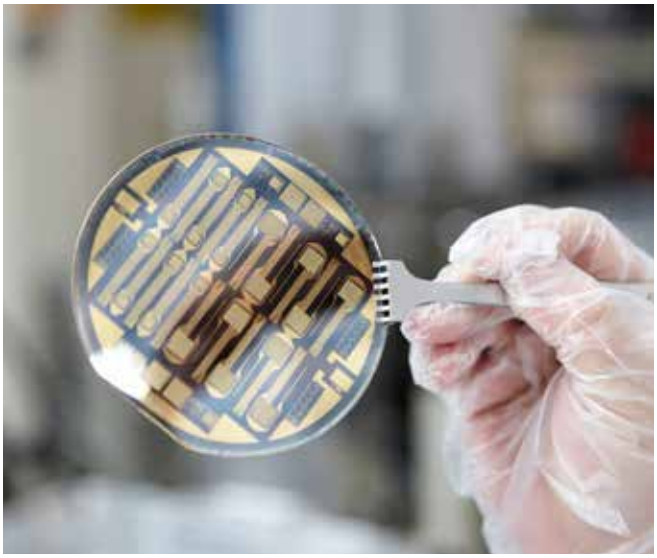
Industrial Big Data Convergence Research Center

- Intelligent components and sensor technology for industrial data generation
- Industrial data analysis and control technology
- Industrial data convergence artificial intelligence S/W technology
- Industrial digital transformation enterprise support
- Aerospace and Defense industry technology advancement support

Business Cooperation Platform

KETI – SME collaboration platform, where ‘needs’ create ‘solutions’







01

Joint R&D

KETI is a leader in the field of advanced electronics & IT technologies. Companies can join in joint R&D projects with KETI.

02

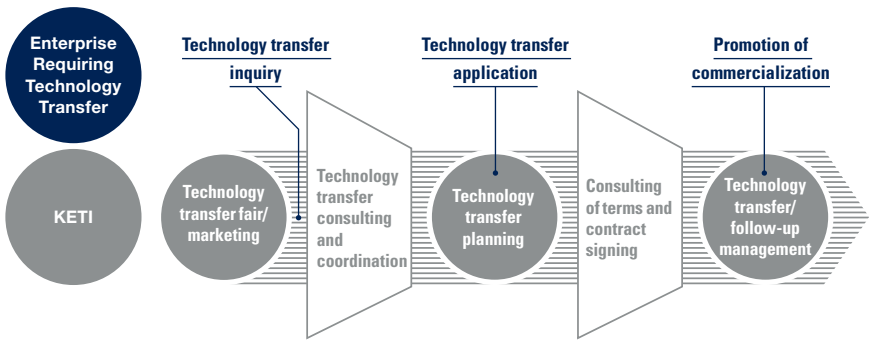
Technology Transfer and Commercialization Support

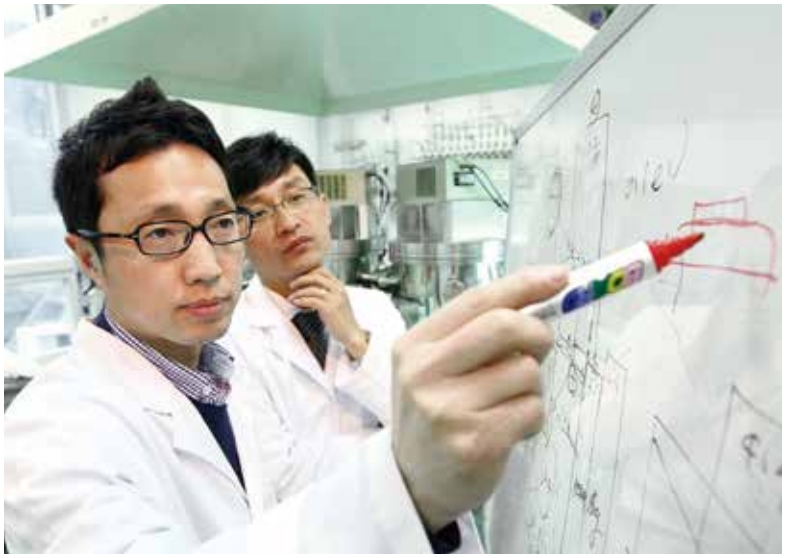
KETI has know-how to transfer our core technologies and patents, and helps the SMEs achieve commercialization successes.

- **Technology Transfer Information**

  After accessing KETI website (www.keti.re.kr), then click 'Collaboration Platform'

- **Technology Transfer Process**







03
Technology Consulting

We provide technology solutions for enterprises through expert matching, customized technology guidance and consulting.

04
Reliability Testing/Analysis

As an international accredited reliability testing agency (KOLAS), KETI provides reliability test, evaluation, analysis and solutions concerning developed and manufactured products. We are ready for diverse reliability tests and analysis requests such as failure analysis, heat reliability, reliability prediction, automotive application product reliability testing (AEC-Q), EMC analysis/solution and accelerated-life testing (ALT).

05
Research Equipment Utilization

You can utilize a variety of research equipment at KETI. KETI supports the use of over 400 high-tech R&D machines related to optical & electronic image and radio wave measuring, compound preprocessing analysis, semiconductor process & test, communication signal processing and electrical & electronic measuring, testing and analysis.

Global Network

Uniting Expertise Worldwide

United States

- Robotic Systems Capable of Seamless Human-Like Performance
  * Georgia Tech., MIT, Stanford Univ.
- Electromagnetic wave absorption, crucial for the next generation of mobility solutions
  * Purdue Univ., Drexel Univ.
- Gas sensors Combining Mid-Infrared optical devices.
  * Yale Univ., Univ. Southern California
- Joint R&D in AI and Robotics and implementation to industrial areas
  * SwRI
- Development of Verification Technology for Technology-Leading Next-Generation Interposer Strategic Technology
  * Bridge
- Research on HCI Core Technologies and XR Utilization Technologies for Realizing Physical AI
  * MIT PAIR-HCI
- Development of SDM Platform Technology for Autonomous Manufacturing Operations
  * Purdue Univ.

Austria

- Development of Autonomous Task Planning Solutions Based on High-Difficulty Assembly Task Teaching and Task State Recognition
  * TU Wien

Germany

- MOU encompassing co-development in certification & post-approval services related to SDVs
  * TUV SUD
- Research exchanges in autonomous systems & digital twin technologies
  * German Research Center for AI, DFKI
- Co-development in AI-based mobile dual-arm robots
  * Schaeffler Group
- Focus on material & process technologies for eco-friendly solutions, specialized in smart battery foundry industries
  * Fraunhofer IKTS, IWS, IPT

Switzerland

- Development of Implantable Wirelessly Driven BMI and Its Application Technologies for Body Function Restoration and Autonomous Driving
  * ETH Zurich

for Breakthrough Research **Opportunities**

UK

- Joint development of core AI technologies & future mobility solutions
  * University of Birmingham
- Development of Harmonic-Space Configuration and Operation Technology Based on Seamless Information Sharing for Ultra-Large-Scale Unmanned Vehicles
  * Oxford Univ.

Czech

- Joint research in cutting-edge fields: AI, autonomous driving, digital twins. Energy efficiency and robotics
  * Czech Technical University in Prague, CTU
- Promotion of Joint R&D, Demonstration, and Human Resource Exchange in Next-Generation Batteries Through the Establishment of the Korea-Czech Battery Cooperation Center
  * Czech Battery Cluster (CBC) & Brno University of Technology (BUT)

Norway

- Development of a Universal Degradation Model and Integrated Safety System Based on Various LiB-ESS Demonstration Data
  * DNV

Japan

- Development of High-Efficiency, High-Density EV Inverter Technology Based on GaN Power Modules
  * Tokyo Metropolitan University
- Development of Core Heat-Dissipating, Low-Alpha Spherical Alumina Material for High-Bandwidth Memory (HBM) NCF and Support for Product Application
  * Resonac Corporation

Singapore

- Development of High-Efficiency Smart Power Conversion Systems Utilizing AI Platform-Based Technologies
  * IHPC under A*STAR
- Development and Demonstration of a Common AI Platform Technology for EV Component Manufacturing
  * Nanyang Technological University
- Development of AI-RAN Convergence Digital Twin-Based Subway Station Passenger Flow Simulation and Safety Optimization Technology
  * NeuroRan

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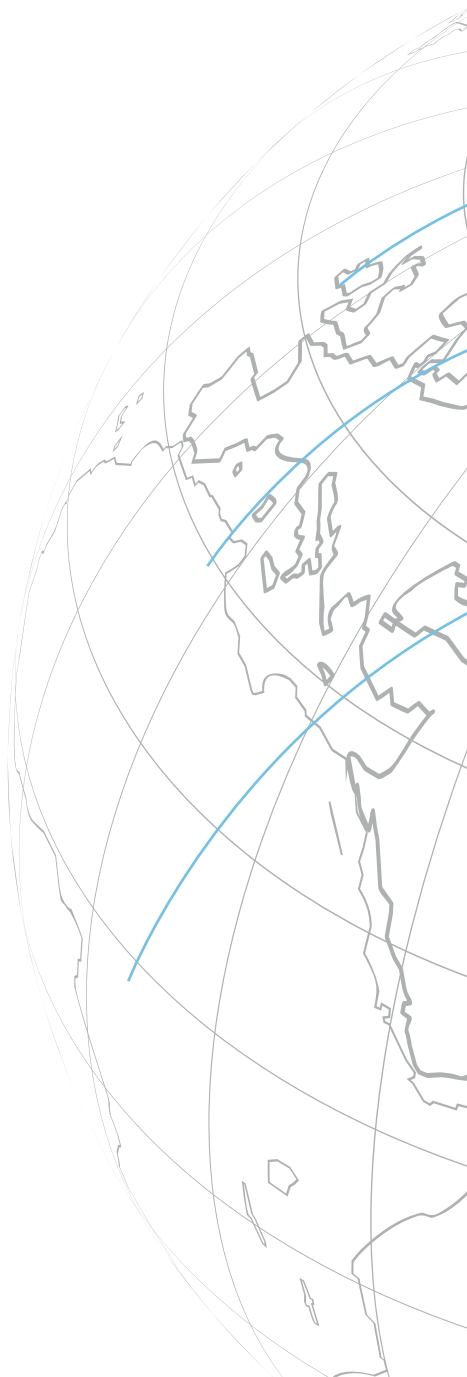
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Design your innovation
with KETI





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