

**BUILDING
A FOUNDATION
FOR THE GREAT
FUTURE**

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KAIA is an affiliated organization of the Ministry of Land, Infrastructure and Transport. It conducts planning, survey, analysis, performance management and promotion of infrastructure and transportation R&D programs. It also performs evaluation, certification and management of new technology in the construction and transportation areas.

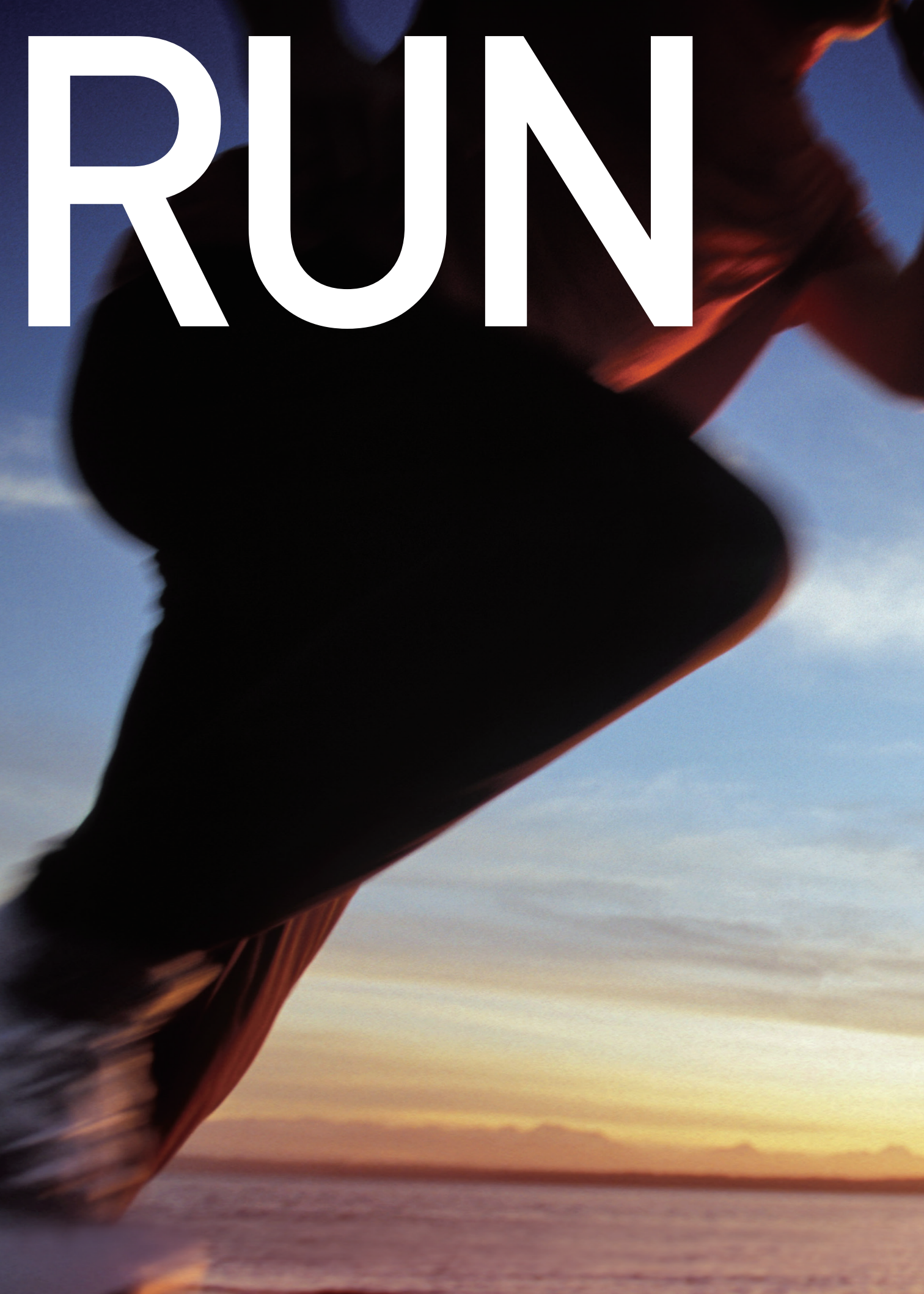
BUILDING A FOUNDATION FOR THE GREAT FUTURE

Korea Agency for Infrastructure Technology Advancement (KAIA)

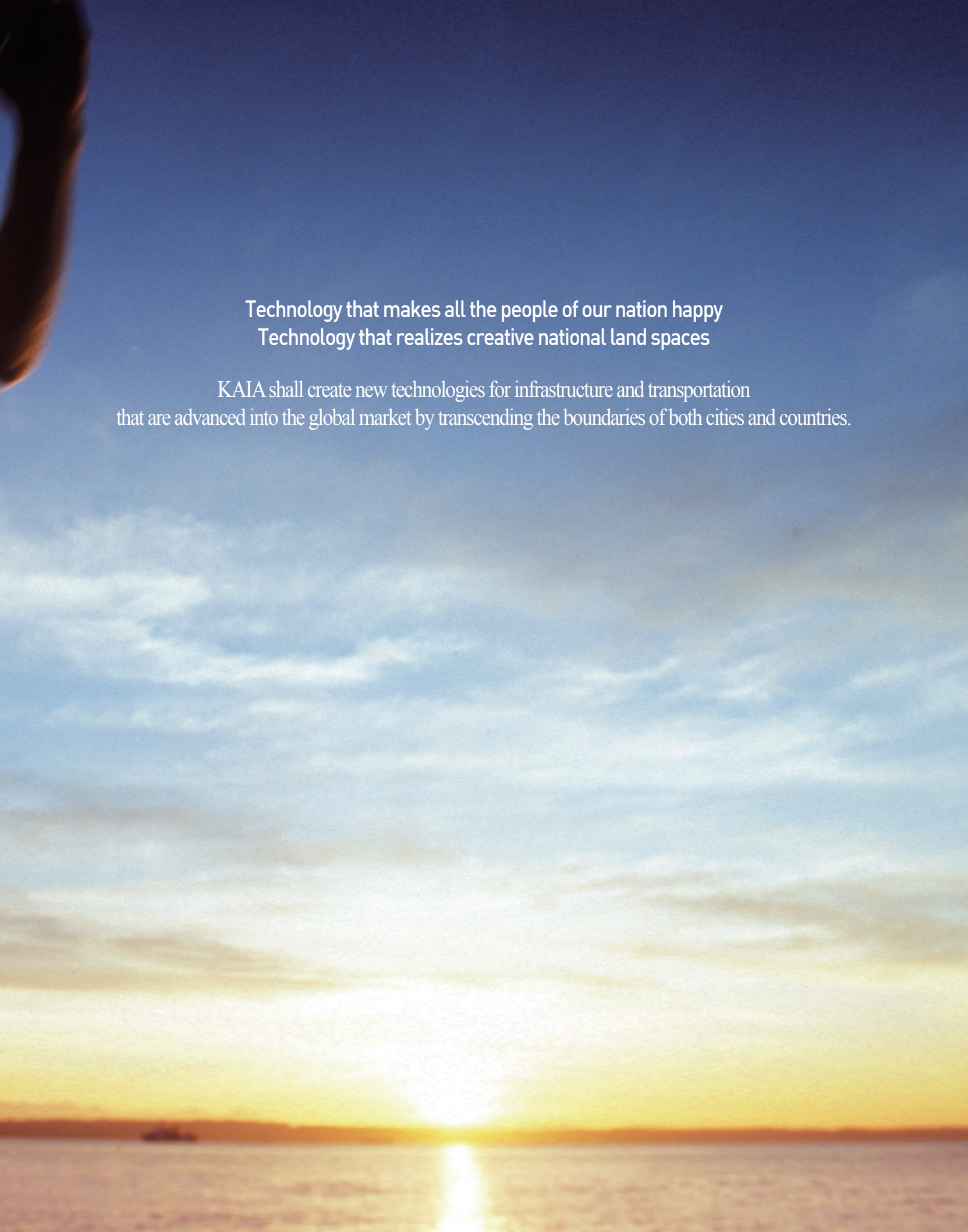
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A full-page background image of a sunset over the ocean. The sun is a bright, glowing orb on the horizon, casting a long, shimmering reflection down the center of the water. The sky transitions from a deep blue at the top to a pale yellow near the horizon, with wispy white clouds scattered across the middle. A small, dark silhouette of a ship is visible on the horizon to the left of the sun.

Make a happy world through the creation of people-centered technologies.



RUN

A full-page background image of a sunset over the ocean. The sun is low on the horizon, creating a bright, golden glow that reflects on the water. The sky is filled with soft, wispy clouds. On the far left, a portion of a person's arm and hand is visible, reaching towards the top of the frame.

Technology that makes all the people of our nation happy
Technology that realizes creative national land spaces

KAIA shall create new technologies for infrastructure and transportation
that are advanced into the global market by transcending the boundaries of both cities and countries.

Korea Agency for
Infrastructure Technology Advancement

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Korea Agency for Infrastructure Technology Advancement shall establish creative national land spaces in which all the people of Korea can enjoy a happy life through the efforts of our infrastructure and transportation R&D.

Greetings!

My name is Lee Jae-boong, the President of Korea Agency for Infrastructure Technology Advancement (KAIA).

As we are entering the 'new era of happiness and hope for the people', the values of science and technology will be the foundation needed to open the important doors for the future of our nation. Science and technology of this new era will elevate the quality of the lives of our people and are fast becoming the source of the excavation of new industries and 'creative economy' aimed at supporting the creation of new employment opportunities.

KAIA, the only organization in Korea specializing in R&D for infrastructure and transportation, executes tasks including the planning, management and evaluation of infrastructure and transportation R&D. It also works on the certification of new technologies for construction and transportation. Moreover, KAIA is putting our utmost efforts into establishing creative national land spaces in which all of our people can enjoy a happy life through infrastructure and transportation R&D that is closely associated with the daily lives of the people.

For this purpose, KAIA is concentrating on provisional support for the discovery of research tasks and development of technologies that the people and the company can understand and appreciate. KAIA will also put into effect the commercialization of the research performances through life-cycle performance management.

Moreover, the new paradigm for government operation (Government 3.0) will be founded on the basis of values of openness, sharing, communication and cooperation. It is necessary to notice that customized services for citizens are becoming more and more important. Accordingly, KAIA is continuing to create venues for communication that a wide range of interested parties can participate in through improving and planning open-type systems that allow people to share a diverse range of information.

Lastly, we look forward to your continued interest and support to create a new culture of convergence and lead the creative economy through infrastructure and transportation R&D.

Thank you very much.

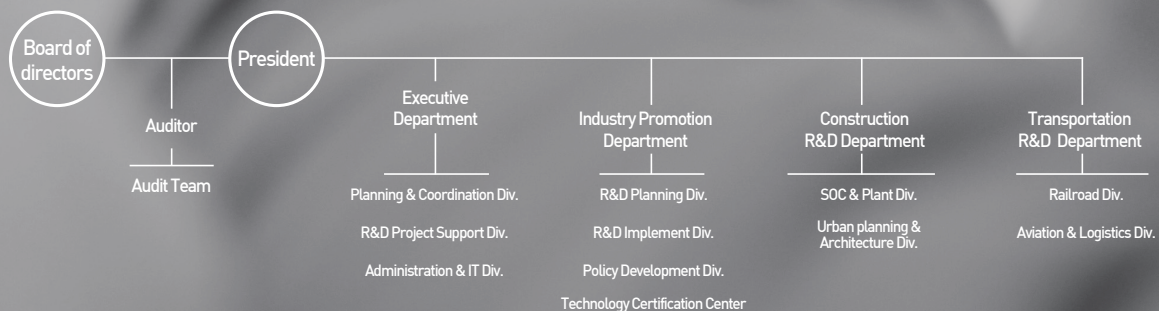
President of Korea Agency for Infrastructure Technology Advancement



TRUST

Mission & Vision
Footsteps of KAIA

ORGANIZATIONAL CHART



Mission & Vision

KAIA is putting our utmost efforts into enabling the people to strive towards a happier life through the people-centered, future creating R&D and joyous sharing management.

MISSION

Elevate the quality of life and contribute towards enhancement of national competitiveness with sustainable technologies

VISION 2023

"Make a happy world through the creation of people-centered technologies"

3 major strategic goals/10 major strategic tasks



SLOGAN *Making daily life **convenient!** Making life **more abundant!***

— Creative Dream Builder —

Footsteps of KAIA

Korea Agency for Infrastructure Technology Advancement began to make new goals in 2013, the 10th anniversary of incorporation. We shall make even greater progresses in order to achieve further growth and advancement of land and transportation R&D.

History

- Korea Institute of Construction and Transportation technology Evaluation and Planning was established as an incorporated foundation : 2002.12
- Designated as a specialized institute for national construction technology R&D : 2003.2
- Designated as a specialized institute for evaluation of new construction technologies : 2003.5
- Designated as a specialized institute for national transportation technology R&D : 2004.1
- Korea Institute of Construction and Transportation technology Evaluation and Planning was established as a legislated organization based on the article 11 in 'The Construction Technology Promotion Act' : 2005.10
- Designated as a government affiliate organization based on 'The Government Affiliate Organization Act' : 2006.2
- Designated as a quasi-government organization based on 'The Public Bodies Management and Accountability Act' : 2007. 4
- Renamed as Korea Agency for Infrastructure Technology Advancement : 2013. 4

CREATE

Scale of investment for each project & budget for 2014
Infrastructure and transportation R&D Projects



The infrastructure and transportation R&D will be further upgraded for the national land environment and life of the people through reinforcement of R&D competitiveness in small and medium enterprises, support R&D aimed at the enhancement of the safety of people, expansion of R&D for resolution of social problems and promotion of convergence and integration of ICT, science and technology, etc.

Scale of investment for each project and budget for 2014

		Scale of investment (~2013)		Budget for 2014		(Unit : billion won)	
Construction technology research	Urban architecture research	water management research	Plant research	Residential environment research*	National land space information research*	Transportation logistics research	
395.5	315.1	95.2	205.1	31.2	115.9	362.8	
48.2	33.0	30.4	22.4	12.8	9.5	42.4	
Railway technology research	Aviation safety technology research	Infrastructure and transportation technology promotion research	Support for infrastructure and transportation technology commercialization*	Regional specialization of construction and transportation technology	Planning of infrastructure and transportation research	Policy research	
762.4	238.4	102.9	19.4	47.9	7.2	18.3	
102.5	37.0	47.9	12.0	8.0	3.1	1.8	

* Additionally reorganized project in 2014

Infrastructure and transportation R&D projects

SOC



Vision
Creation of values and enhancement of safety through improvement in smart SOC construction technology capabilities

Technology area

Safe·High-Value Added·Smart·Global Mega SOC

Main goals

- Ranked in Global Top 5
- Achieve overseas market share of 10%
- Reduce the rate of safety disaster by 20%
- Reduce the cost of construction and maintenance by 30%

Urban architecture



Vision
Creation of urban spaces in which people can be happy and vivacious

Technology area

Creative·Healing·Safe·Sustainable City

Main goals

- Ranked in Global Top 5
- Reduce the damages from urban disasters by 10%
- Ranked in top 10 among OECD countries in terms of national happiness index
- Zero cost of energy use for air conditioning and heating

Water management



Vision
Advancement of water management for the generation of water welfare

Technology area

Stable·Smart Water, Safe·Sustainable River

Main goals

- Improve irrigation safety by 10%
- 90% of the level of the water supply technologies of advanced countries
- Reduce the damages caused by flooding disasters in large cities by 10%
- Ranked in the Global Top 10 in terms of management of rivers

Two. Infrastructure and transportation R&D

Plant



Vision

Secure independent technology for plant construction in order to lead the global market

Technology Area

Pioneer-Global FEED-Life-line Infra-On-demand Tech.

Main goals

- Secure more than 95% source technologies, improve the process efficiency by 10%
- Hold market share of more than 5%, use of more than 30% of the components that have been developed and manufactured in Korea
- Improve the carbon efficiency by 30%, reduce the process energy consumption by 20%
- Improve the safety by 30% and more than 75% modularization



Residential environment



Vision

Realization of residential space for the happiness of the people through development of residential technology that can be fully appreciated by the people

Technology Area

Healthy-Long-life-All-together-Safe House

Main goals

- Zero cost of use of the energy
- Reduce the cost of early stage of construction of long-lasting residence by 10%
- Ranked in the Global Top 10 in terms of residential happiness index among the OECD countries

National land space information



Vision

Creation of the space and world in which people can be happy through analysis and utilization of spatial information big data

Technology Area

Generation of employment opportunities, convenient life, absence of concerns for disasters and calamities, preparations for the future and new growth engines

Main goals

- Creation of 200,000 new employment opportunities
- Secure future market leading type space information technology

Transportation logistics



Vision

Realization of base technologies for establishment of sustainable and safe national road and transportation, and logistics system

Technology Area

Safe-Smart-Eco-Welfare-Logi Mobility

Main goals

- Achieve cost of traffic congestion at the level of 2% of the GDP
- Reduce the number of deaths from traffic accidents by 40%
- Reduce the emission of greenhouse gas (BAU) by 30%
- Achieve the cost of national logistics at the level of 8% of the GDP

Railway



Vision

Secure high value added core technology for the railway at the level of advanced countries

Technology area

Smart-Safe-Economic Railroad

Main goals

- Secure proportion of share for the advanced transportation at 24%
- Reduction of operational cost by 15% and domestication of the technology
- Reduce the energy consumption by 10% and CO
- Reduce the rate of accidents for each 100 million km by 10%

Aviation



Vision

Realization of the status of a powerful global aviation nation that leads the next-generation of aviation technologies

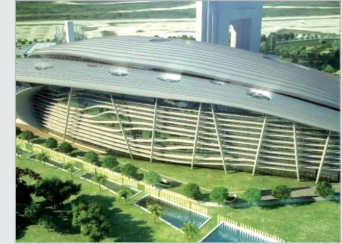
Technology area

Certification for airplanes, navigation safety and operation of airports

Main goals

- 100% independence in the source technologies for designing, manufacturing and certification of airplanes for each of the states
- Development of navigation system using satellite that satisfy the international criteria
- Reduce the time taken for entry and exit of airport by 10%, and provision of safety and convenience for the passengers at the airport

Promotion of technologies



Vision

Reinforcement of the foundation for development of global land and transportation technology in order to secure leadership in the area of land and transportation R&D

Technology area

Creative and challenging research, global technology cooperation and research equipment infrastructures

Main goals

- Secure core source technologies in the area of land and transportation
- Establish global technology competitiveness
- Establishment of foundation for reinforcement of research capabilities

Support commercialization



Vision

Cultivation of strong small and medium enterprises, generation of employment opportunities, establishment of co-existence ecology centered-around the small and medium enterprises

Technology Area

Transfer to small and medium enterprises and commercialization of the public technologies, commercialization of the technologies and ideas held by small and medium enterprises, commercialization of technologies under conditional purchase arrangement

Main goals

- Achieve 60% technology transfer rate and 50% commercialization success rate
- Achieve 60% public purchase success rate and 15% overseas market entry rate

Regional specialization



Vision

Independence of regionally specialized research infrastructure

Technology Area

Development of regionally specialized technologies, regionally based centers

Main goals

- Improve the local employment rate by 20%
- Reduce the cost of construction and maintenance by 5%
- Improve the independence of regionally specialized technology (35→50%)

Research planning



Vision

Plan future core technologies to lead the advancement of land and transportation technologies and for continuous creation of new growth engines

Technology Area

Land and space customized type, beneficiary appreciated type, social issue resolution type and new industry creation type R&D

Main goals

- Reinforcement of technological competitiveness through the development of R&D policy and planning of a promising technology for the future

ACHIEVE

Advancement of performance management

New technology designation & certification

Infrastructure and transportation R&D performances seen through numbers

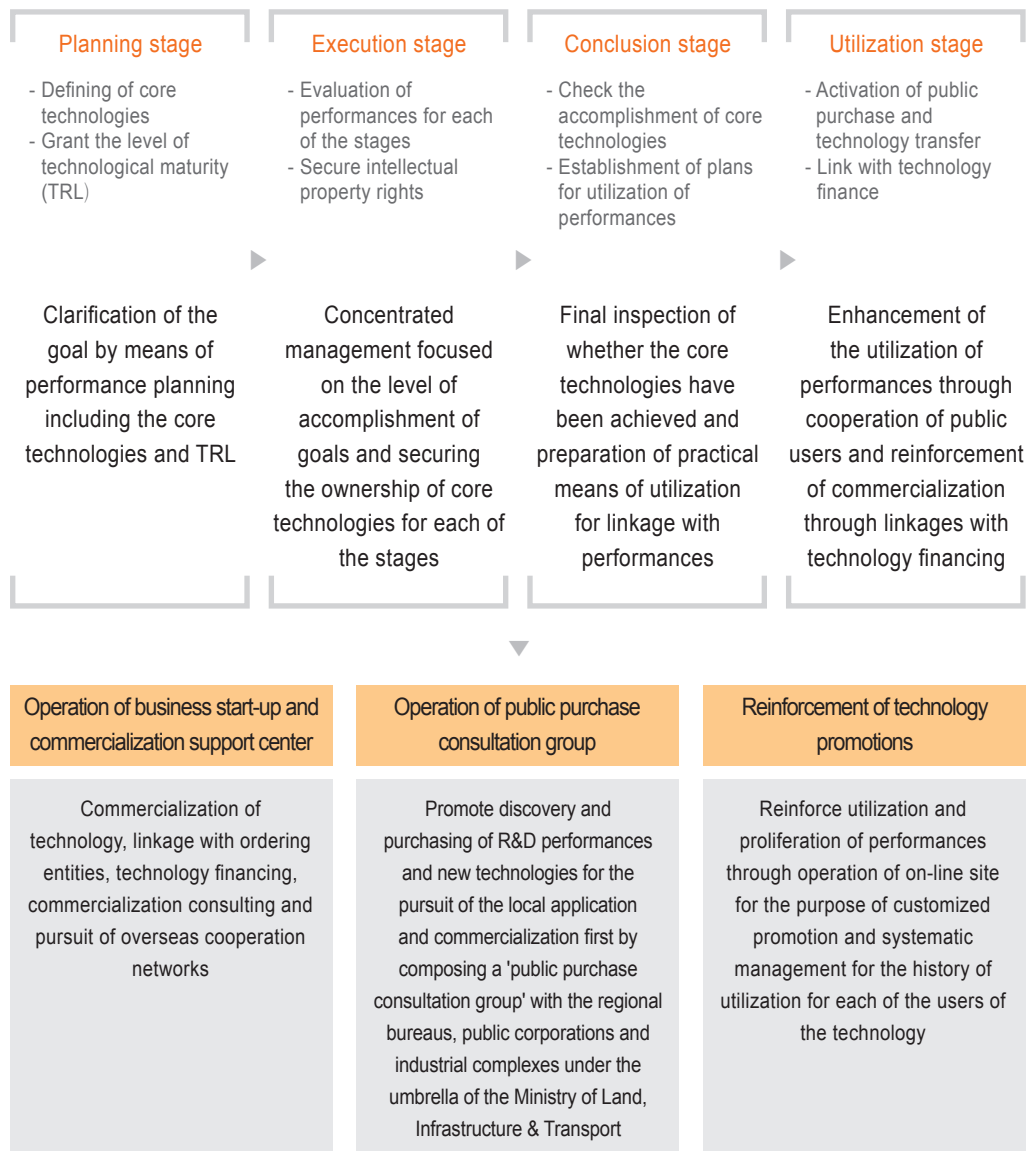
Key research performances



Advancement of performance management

KAIA is advancing the level of performance management in order to enhance the efficiency of R&D investment for all of the stages of the execution of R&D. These include planning, management and utilization stages, and the operating of public purchase consultation groups as the body to link the research performances and new technologies with the users.

Life-cycle performance management



* TRL(Technology Readiness Level) : Index for evaluation of the level of maturity of the technology at each of the stages of the research

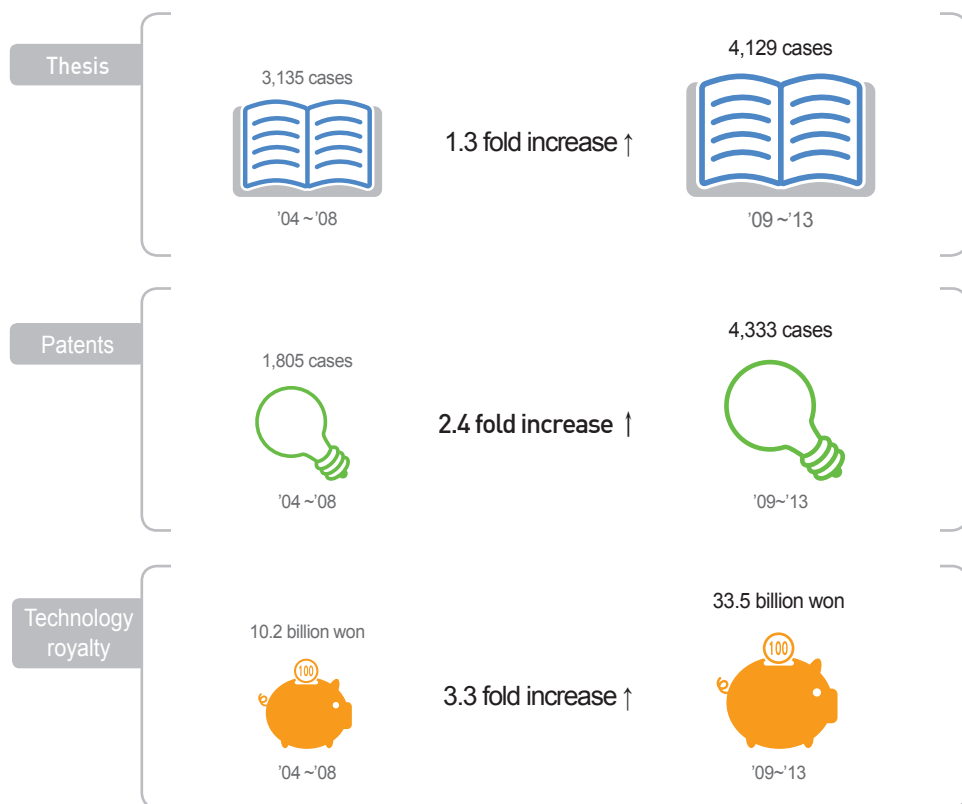
New technology designation & certification

KAIA is managing Construction and Transportation technology designation system, Green certification system and Transportation card certification system to facilitate private R&D such as promoting small and medium enterprises



Infrastructure and transportation R&D performances seen through numbers

Not only the scientific and technological performances but also the commercialization performances are increasing continuously due to a pursuit that has been centered-around the site-oriented commercialization tasks since 2007.



- **Performances of commercialization:** Generation of economic effects valued at approximately 4.4 trillion won by collecting technology royalty and reducing the cost of construction through the transfer of and local application of the results of R&D on these aforementioned technologies
 - Technology royalty : Execution of a total of 498 cases of technology execution contract and collection of technology royalties in the amount of 44.5 billion won through transfer of the developed technology to private sector
 - * 3.3-fold increase from ('04 ~'08) 10.2 billion won → ('09 ~'13) 33.5 billion won
 - Local application : Generated a reduction of the cost of construction by 1.8 trillion won and replacement of import valued at 920 billion won by applying the research performances to 895 sites
 - Commercialization : Generated revenue of approximately 1.9 trillion won through commercialization of and product manufacturing with the developed technologies
- **Scientific and technological performances:** Increase in the quantitative performances including thesis and patents
 - Thesis : 1.3-fold increase from ('04 ~'08) 3,135 cases → ('09 ~'13) 4,129 cases
 - Patents : 2.4-fold increase from ('04 ~'08) 1,805 cases → ('09 ~'13) 4,333 cases

Three. Proliferation of Research Performances



Key research performances

- Development of the best independent technology in the world for construction of the long-span cable bridge
 - Application of the cable laying equipment for suspension bridge to the Yi, Sun-shin Bridge and Jeokgeum Causeway ('13.5)
- Manufacturing of recyclable shield TBM and application of test bed with 4.4m diameter with outstanding economic value and efficiency ('13.10)
- Establishment of demonstration complex for seawater desalination plant and to achieve technology export ('13.9)
 - It is the first and the largest demonstration plant in Korea and will start to supply water for daily life (Gijang, '14.11)
 - Exported technologies such as seawater electrolysis equipment ('13.9, Chile)
- Completion of construction and trial run for LNG plant test bed Train-1 ('13.5~)
 - Test bed: Songdo LNG terminal
- Diversification of the entry into overseas countries for the design technology for ultra-high rises in Korea
 - Russia and Indonesia ('13), Middle East and Mongolia ('14)
 - Apply the optimal design technology, StrAuto-ConnAuto, and smart building solution, etc.
- Secure modern residence function - Development of Hanok at half the cost
 - Development of new distribution style Hanok with improved functions including thermal insulation and air tightness at 60% the level of the cost of constructing traditional Hanok (12 million won → 6.85 million won/3.3m²)
 - Construction of urban-type 2-story model Hanok ('13.8) : Eunpyeong-gu, Seoul



- Secured the technology for high speed train with the speed ranked at 4th in the world through success in reaching the maximum speed of 421.4km/h for the next-generation high speed train (HEMU*-430X) ('13.3)
 - * High speed Electric Multiple Unit-430km/h eXperiment
- Completion of the construction of trial run track for the 110km/h rated unmanned operation of urban maglev('12.12) and currently in progress for the comprehensive trial run
- First to secure and export the technology for the commercialization of the rope type safety door for train platforms around the world ('13.7)
 - Trial installation at the Munyang Station of the Daegu Urban Subway Line No. 2 ('13.1)
 - Installation and operation at the Tsukimino Station of the Tokyo pastoral district line in Japan ('13.7)
- Non-stop, multi-lane based smart tolling system
 - Collection of toll fees by using wireless communication (DSRC, WAVE, etc.) and smart phone
 - First to develop this technology in the world: Multi-lane + active type communication formatted smart tolling
- Commercialization of electrical bus to lead the era of environment-friendly public transportation ('13.7)
 - Completion of development and trial run for the battery replacement type electric bus operation system and wireless recharging electrical bus system (Pohang City and Gumi City)
- Development and completion of acquisition of aircraft certification for small 4-man airplane (Naraon)
 - Manufacturing ('11.1) and test flight ('12.6) of the 1st small 4-man airplane developed
 - Acquisition of aircraft certification for distribution in Korea ('13.12)

HOPE

Global cooperation
Future of the infrastructure and transportation R&D

Global cooperation

KAIA is enhancing research cooperation with reputable overseas institutions and expanding the networks in order to create a synergic effect and reinforce the technological capabilities of the infrastructure and transportation R&D.

Direction of pursuit for reinforcement of global R&D cooperation for each of the stages



Execution of MOU with 15 institutions in 6 countries



- Establishment of cooperation foundation through execution of MOU with renowned institutions in overseas countries
- Dispatchment of staff to the renowned research institutions in overseas countries for the reinforcement of global network and for the cultivation of core competent personnel
 - George Washington University, University of Maryland, Transportation Research Board, etc.
- Continuous expansion of international joint researches to enter into the international construction market
- Support commercialization through a pursuit of a domestic hub center and overseas base center
 - Domestic Hub Center: Execute the role of domestic hub platform of enhancing the overseas R&D and commercialization through linkage with an overseas base center

Future images of infrastructure and transportation

- Infrastructure and transportation technology to make people happier and catapulting into the world market: Overcome the stagnation in growth due to aging society by 2040, climate changes and international circumstances, accomplish happiness and conveniences and benefits for the people with infrastructure and transportation technology, and improve the status of the country as the most advanced country in the world through exporting of innovative technologies.
- Infrastructure and transportation technology for the purpose of overcoming crisis situations: Secure the safety of the people and the national land through big-data based urban management as well as infrastructure and transportation technology to cope with disasters and calamities. This will be done while also coping with the surrounding threats such as natural disasters. These could include climate change, earthquakes, terrorist attacks, etc.

Future of infrastructure and transportation R&D

The infrastructure and transportation R&D will establish new creation ecology through diverse areas of convergence and composition and realize social and public values of technologies.

Future technology of infrastructure and transportation to be achieved by 2023, the 'Value Creator 2.0'

- Korean satellite navigation
 - Development of radar/satellite and bi-directional precision monitoring technology for acquisition of real-time precision location information
 - Linkage of research by utilizing the SBAS advancement in the area of navigation and other LBS industrial areas
- Artificial intelligence national land space information system
 - Development of technology for the application and proliferation of Big-data on space information for the U-City
 - Linkage between space information technology and integrated automatic management technology for urban facilities (utilization of infra-sensor network, etc.)
- Dispersion-type water management
 - Establishment of large capacity water transportation systems between the cities and regions by means of a Water Grid for metropolitan cities
 - Establishment of a LID-based water circulation for urban centers such as waterside underground water and buildings that do not discharge sewage, etc.



■ Smart healing residence

- Development of technology for manufacturing of highly functional and efficient smart healing residences through grafting of assembly type residential construction technology

■ Autonomous driving road

- Network communication technology that allows interaction between the road and vehicle, technology for real time acquisition and analysis of vehicle information
- Infrastructural technology for the autonomous door-to-door driving of automobiles

■ 3060* Railway life transportation system

* 30 minutes within the city and 60 minutes between the regions

- Development of technologies allowing for the wireless control of the railway and base technology for artificial intelligence of unmanned driving systems
- Development of core technology for ultrahigh speed trains with operational speeds in excess of 500km/h

■ Personal aviation vehicles

- Development of future type door-to-door personal aircraft (PAV) for which vertical take-off and landing, and unrestricted maneuvering is possible

■ Global Top-plant construction technology

- Energy independent type, convergence and integration membrane procedure for desalination plant technology
- Technology for the construction of unmanned resource plants in extremely cold locations through modularization and automation of operation and maintenance

■ Global Top Mega Structure

- Technology for designing and construction of mega-scale structures such as deep underground multi-level tunnels, mega-scale space and ultrahigh buildings
- Technology for advanced operation and management of SOC structures using nano-sensors

■ Automatic management of the Internet of Things (IoT) Infrastructure

- BIM-based integrated maintenance technology for 3-dimensional facility
- Advancement of network monitoring-bases diagnostic equipment



PROMISE

Promises of KAIA for Government 3.0
Ethics in management
Contribution to community

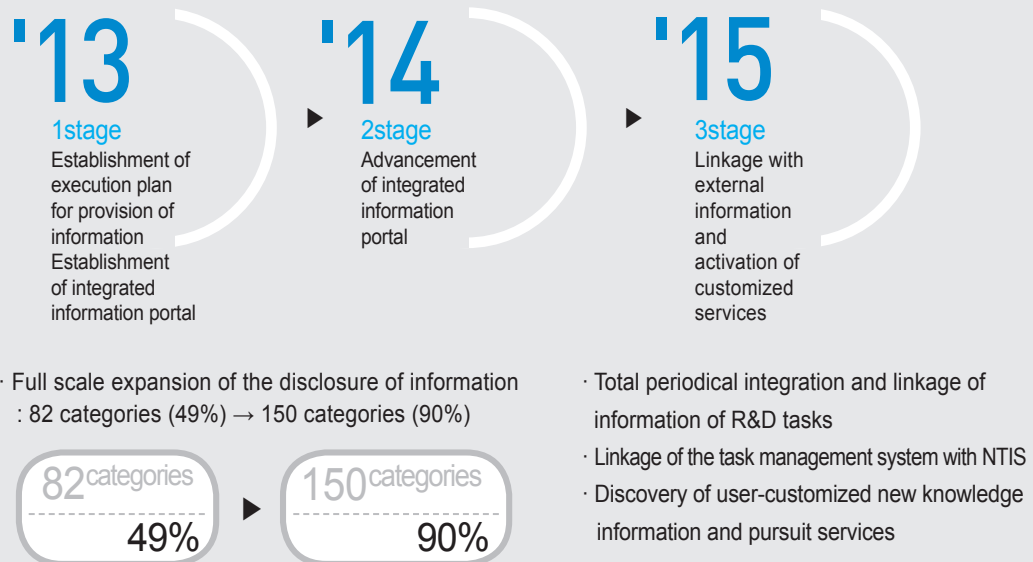
Promises of KAIA for Government 3.0

KAIA, in order to realize Government 3.0, shall sincerely execute the role of platform for provision of customized information for everyone on the basis of values that include openness, sharing, communication and cooperation.

What is Government 3.0 ?

New paradigm for the operation of the government so that it can secure motive power for pursuing major government projects and provide services customized for the people. Also, to create employment opportunities as well as support a creative economy through assertive opening and sharing of public information. Lastly, the removal of partitions which will lead to communication and cooperation between the departments.

- Establishment of strategy for the disclosing of infrastructure and transportation R&D information for the purpose of opening public data



- Establishment of creative economy R&D portal for infrastructure and transportation
- Pursue project for 'supporting of the commercialization of technology' and operation of 'support center for business start-up and commercialization' for reinforcement of One-stop support for business start-ups and business activities
- Pursue 'Open-type planning' for participation by and collection of ideas of specialists from a wide range of areas

Ethics in management

KAIA is practicing the highest level of customer satisfaction and ethical management in Korea in order to establish and operate a transparent and fair R&D support system.

Selected as the first-class institution in an evaluation of the level of integrity by the Anti-corruption and Civil Rights Commission in 2012



- Transparent research fund management system
 - Direct consultation with researchers through installation of the 'customer support center'
 - Monitoring of the research fund in real time through 'on-line system'
 - Provision of services at the door-steps of the user through operation of the 'system of assistance for management of the research fund'
 - * On-site visit and education in 2013: 149 times at 19 institutions (expected to be expanded to 32 institutions in 2014)
- Operation of integrity ombudsman system
 - Seek transparency and efficiency in the projects by discovering and improving the unfair system, customary practices and work procedures through monitoring and evaluation of various project managements
- Proliferation of a culture of integrity
 - Hold anti-corruption and integrity resolution conference for the entire staff in order to proliferate the integral climate for government workers
 - Execution of corruption effect evaluation for improvement of areas vulnerable to corruption

Contribution to community

KAIA is the leader in realization of co-existence and fair society through the practice of cultural sharing that is done with a warm heart.

- Operation of the social contribution program that reflects the characteristics of the institution
 - Operation of 'R&D Experience Class for Children' of the low-income families in the local community.
 - Execution of 'Voluntary services for improvement of the residential environment of the low-income families' with the group, 'House Repair with Love'



R&D experience classes for children



Voluntary services for improvement of residential environment for low-income families

- Support self-reliance and sustainable growth of the socially vulnerable classes of the local communities
 - 'Social contribution relay through alliance with companies in Anyang City' with 10 companies located in Anyang City
 - 'Activation of 1 company-1 village, 1 company-1 social company and 1 company-1 market interaction' for provision of support that accompanies growth as a member of local society
 - Regular visit to and sponsorship for social welfare facilities



Social contribution relay with corporations



Exchange between 1 company and 1 village

- Social service club, 'Thank You'
 - 'Meal distribution service' for offering of lunch to elderly people living alone on every Saturday
 - 'Sponsorship for overseas support projects' in countries such as India, Africa, etc.



Voluntary services for lunch box



Donate inner wears for elderly people living alone

Technology for human being



