

The Innovation Growth Engine will transform our Korea in 2022.



The Related Ministries

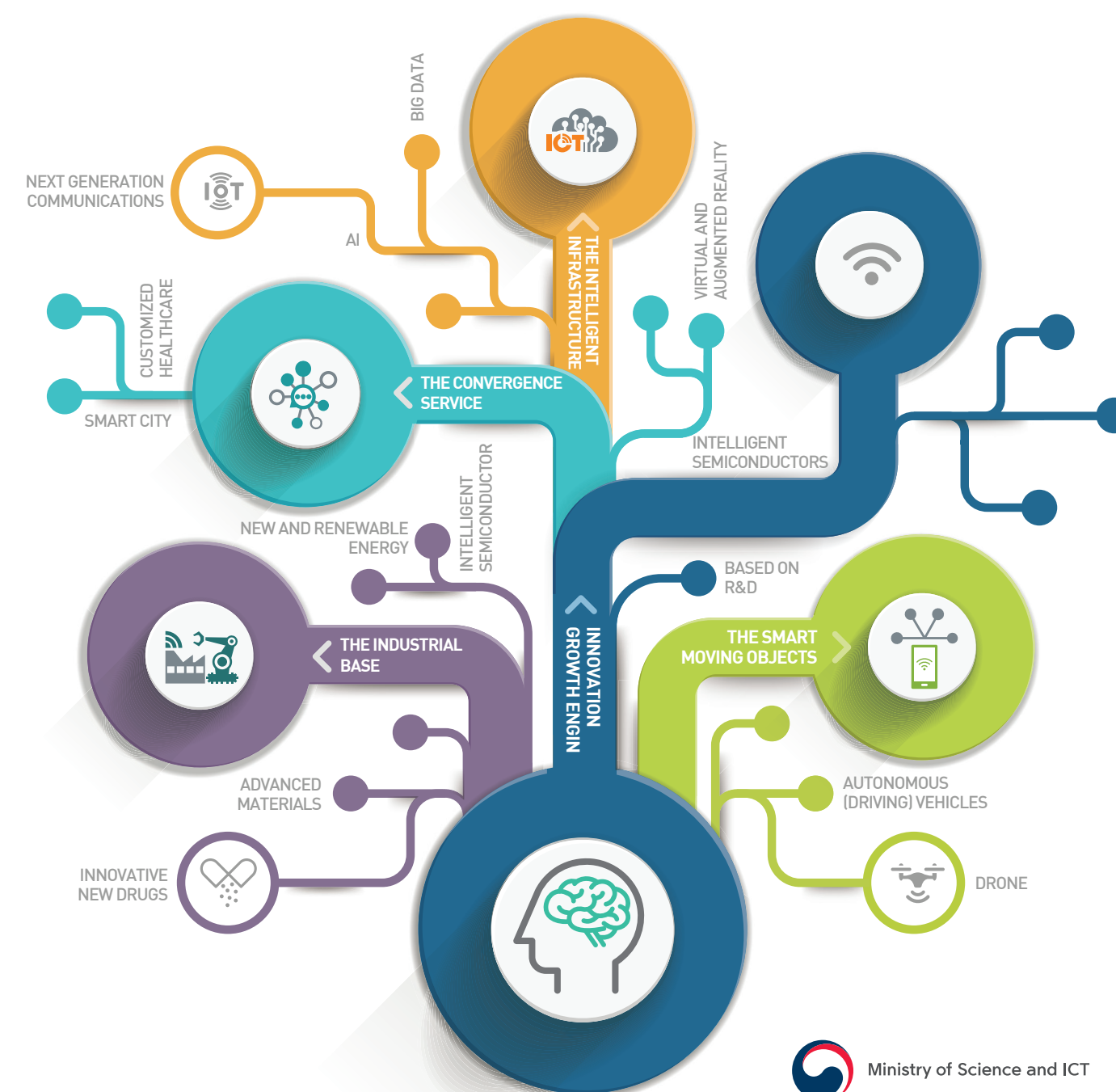
The General Division: Growth Engine Planning Division/Science, Technology and Innovation Office/Ministry of Science and ICT

Classification	Area	Ministries	Division
The Intelligent Infrastructure	Big Data	Ministry of Science and ICT	Convergence of ICT and Industry Division
	Next Generation Communications	Ministry of Science and ICT	Technology Policy Division, Network Promotion Team
	Artificial Intelligence	Ministry of Science and ICT	Intelligent Information Society Bureau
The Smart Moving Objects	Autonomous (Driving) Vehicles	Ministry of Trade, Industry and Energy	Automobile&Aerospace Industry Division
		Ministry of Land, Infrastructure and Transport	Advanced Motor Vehicles Division
		Ministry of Science and ICT	IT Strategy Planning Division
	Drone (UAV: Unmanned Aerial Vehicle)	Ministry of Land, Infrastructure, and Transport	Advanced Aviation Division
		Ministry of Trade, Industry and Energy	Automobile&Aerospace Industry Division
The Convergence Service	Customized Healthcare	Ministry of Science and ICT	Strategic Technology Policy Division
		Ministry of Health and Welfare	Division of Healthcare Information Policy
		Ministry of Trade, Industry and Energy	Bio-Nano Division
	Smart City	Ministry of Science and ICT	IT Strategy Planning Division, Software Promotion Division, Bio Science Technology Division
		Ministry of Land, Infrastructure and Transport	Urban Economy Division
	Virtual and Augmented Reality	Ministry of Science and ICT	Convergence of ICT and Industry Division
		Ministry of Science and ICT	Digital Contents Division
		Ministry of Trade, Industry and Energy	Electronics Parts and Materials Division, Electronics and Electrical Division
	Intelligent Robot	Ministry of Culture, Sports and Tourism	Cultural Industry Policy Division
		Ministry of Trade, Industry and Energy	Machinery, Robotics & Defense Industries Division
The Industrial Base	Intelligent Semiconductor	Ministry of Trade, Industry and Energy	ICT Industry Division
		Ministry of Science and ICT	Electronic Parts and Materials Division
	Advanced Materials	Ministry of Trade, Industry and Energy	Metals & Chemicals Division, Industries & Enterprises Division
		Ministry of Science and ICT	Convergence Technology Division
	Innovative New Drugs	Ministry of Science and ICT	Bio Science Technology Division
		Ministry of Health and Welfare	Division of Healthcare Technology Development
	New and Renewable Energy	Ministry of Trade, Industry and Energy	Bio-Nano Division
		Ministry of Science and ICT	New and Renewable Energy Division, Strategic Technology Policy Division

The INNOVATION GROWTH ENGINE

Leading preparations for the Fourth Industrial Revolution

To strategically nurture new industries based on R&D, the Korean government established the Innovation Growth Engine policy, which includes measures to efficiently promote growth engines and enhanced support strategies.



THE INTELLIGENT INFRASTRUCTURE

Big Data

Open and utilize big data

To improve the precision of big data predictive analytics, and establish a high quality big data database by 2022

As Is(2017)	To Be(2022)
■ Estimated Market size: 5.7 billion USD	■ Estimated Market size: 8.0 billion USD
■ Number of professional experts: 100,000	■ Number of professional experts: 150,000
■ Technology level compared to leading countries: 78.2%	■ Technology advancement compared to leading countries: 90%

Next Generation Communications

5G, IoT commercialization

Unveil and spread convergence services through commercialization of 5G and IoT hyper-connection service by 2022

As Is(2017)	To Be(2022)
■ Technology Competitiveness: 5G 91.4%, IoT 81.0%	■ Technology Competitiveness: 5G 99.7%, IoT 85.0%
■ Convergence service scenario discovery	■ Convergence service demonstration
■ Number of IoT subscriptions (connected devices): approximately 10 million	■ Number of IoT subscriptions (connected devices): approximately 30 million

Artificial Intelligence

AI Core Technology Development

Promptly overcoming the technological gap through the development and dissemination of AI core technologies, and strengthening technological competitiveness by securing the proprietary next-generation AI technologies

As Is(2017)	To Be(2022)
■ Number of AI-specialized companies: 34	■ Number of AI-specialized companies: 100
■ Technological competitiveness: 73.9% level of USA (2016)	■ Technological competitiveness: 80% level of USA

THE SMART MOVING OBJECTS

Autonomous (Driving) Vehicles

Level 3 Autonomous Driving

Actual Road Operation of Level 3* Autonomous Vehicles and Construction of Autonomous Transport Systems by 2020

*Autonomous Driving in Certain (Stable) Areas such as Highway, and Manual Driving in Unexpected (Unstable) Situations

As Is(2017)	To Be(2022)
■ Commercialization of Level 2 Autonomous Driving (Driver Assistance Functions of Lane Maintenance (Keeping), etc.)	■ Commercialization of Level 3 Autonomous Driving

Drone (UAV: Unmanned Aerial Vehicle)

Public Use and Commercial UAV Supply

Technology development and commercialization of public and industrial drones.

As Is(2017)	To Be(2022)
■ Domestic Commercial Drone Market Size: about 1.2 billion USD	■ Domestic Commercial Drone Market Size: about 14 billion USD
■ Technology Competitiveness: 7 th (2015)	■ Technology Competitiveness: 6 th
■ No. of Domestic Commercial Drones: 3,500	■ No. of Domestic Commercial Drones: 28,000



CONVERGENCE SERVICES

Smart City

Solutions to Urban Problems

By 2022, a sustainable smart city platform and innovative model with intelligent technologies will be implemented to solve various urban problems.

As Is(2017)	To Be(2022)
■ Manage urban infrastructures in each city using ICT	■ Address various urban issues by utilizing city data

Virtual and Augmented Reality

Fusion of VR and AR with various industries

Elevating core technologies of VR/AR-fused contents/services/platforms/devices and accelerating the fusion of various industries (education, manufacturing, defense, etc.)

As Is(2017)	To Be(2022)
■ 2 world-leading companies (Samsung Electronics, LG Electronics)	■ Fostering more than 100 small and strong companies with over 10 million USD/year in sales

Customized Healthcare

Personalized healthcare and precision medicine

Development and implementation of personalized healthcare and precision medicine systems, and ICT-based convergent medical devices by 2022

As Is(2017)	To Be(2022)
■ Partly data-based but mostly conventional healthcare services	■ Implement an integrated healthcare system which is customized to individual medical records
■ Seven medical devices with export sales over USD 100 million	■ Develop 30 new medical devices with export potential, and 12 medical devices with export sales over USD 100 million

Intelligent Robot

Medical · Safety Service Robot

Improving productivity and quality of life by developing and promoting intelligent manufacturing robots and medical-safety service robots by 2022.

As Is(2017)	To Be(2022)
■ Supplied in partial processes focused on industries with large devices	■ Spread and development of intelligent manufacturing robots
■ Delay in launching competitive products to lead the market	■ Support for the aged/disabled, development and commercialization of service robots, including smart medicine

THE INDUSTRIAL BASE

Innovative New Drugs

Development of 100 New Drug Candidates

Development of innovative new drugs through new drug candidate discovery and non-clinical/clinical studies

As Is(2017)	To Be(2022)
■ 85 new drug candidates	■ 129 new drug candidates
■ Biohealth industry exports \$10 Billion	■ Biohealth industry exports \$13 Billion
	■ 30% technological improvement in pharmaceutical production system

New and Renewable Energy

Increase renewable energy portion in the total amount of electricity generation

Achieving 20% of total electricity generation by 2030

As Is(2017)	To Be(2022)
■ Renewable energy 7% of gross generation (2016)	■ Renewable energy 10.5% of gross generation

Intelligent Semiconductors

Development of AI Semiconductor Devices

Acquire core technologies for AI semiconductors by 2022, including ultra low-power nano-scale devices and neuromorphic chips

As Is(2017)	To Be(2022)
■ Information society (system semiconductor)	■ Intelligent Information society (intelligent semiconductor)
■ Global market share of 3%	■ Global market share of 7%
■ Fast execution, high density, functional reliability	■ Super-intelligence, ultra-slim-low-power, super-reliable

Advanced Materials

Lightweight Materials for Aviation and Automobiles

Develop lightweight materials for the transportation equipment and localize the machining systems (including the machining tools) for the advanced materials by 2022

As Is(2017)	To Be(2022)
■ Support the development of source proprietary technology for new materials and materials processing systems	■ Secure 5 Source Patents for the new materials.
	■ Localize the manufacturing systems and machining tools for advanced materials (Localization rate will be above 50% and Global market share will be above 6%)
	※ -Secure technology independence in Titanium -Become the world's fourth largest exporter -Rank 5 th in global market share