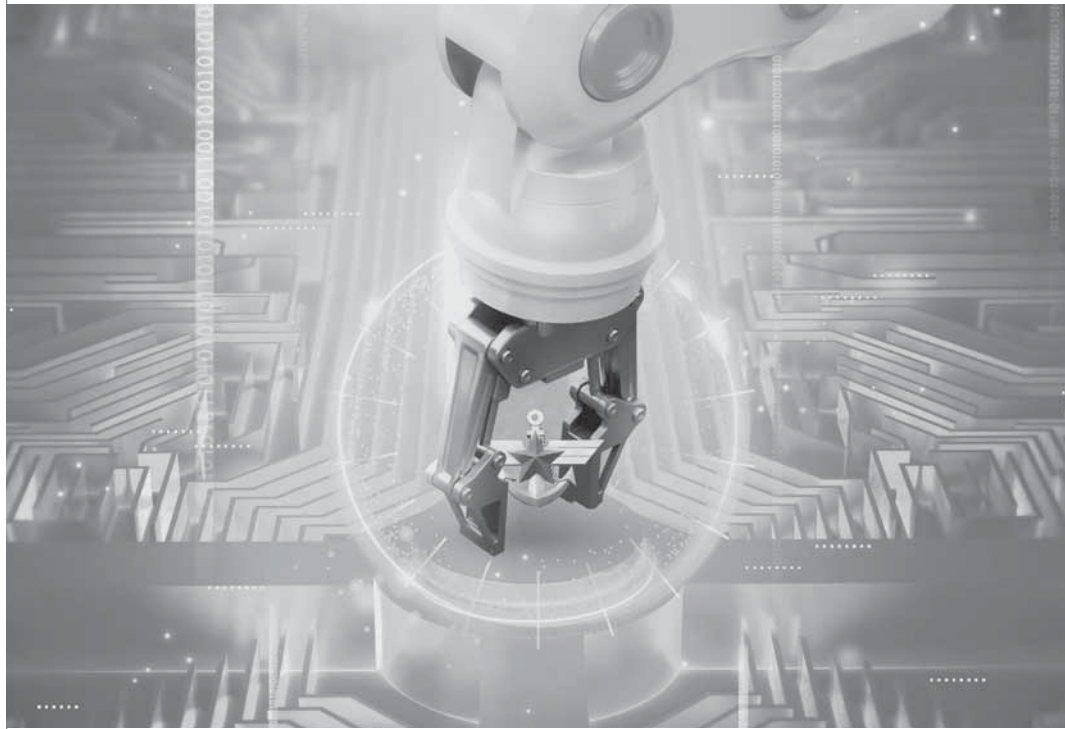


Defense Innovation 4.0



Ministry of National Defense
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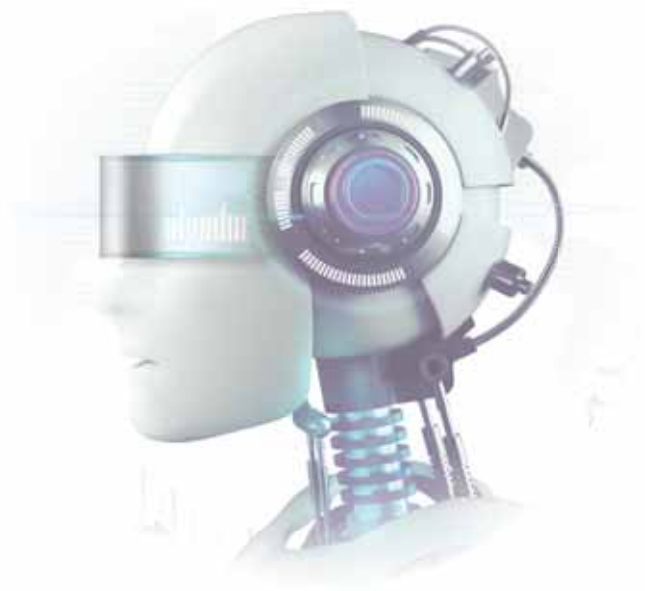
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Defense **4.0**
Innovation

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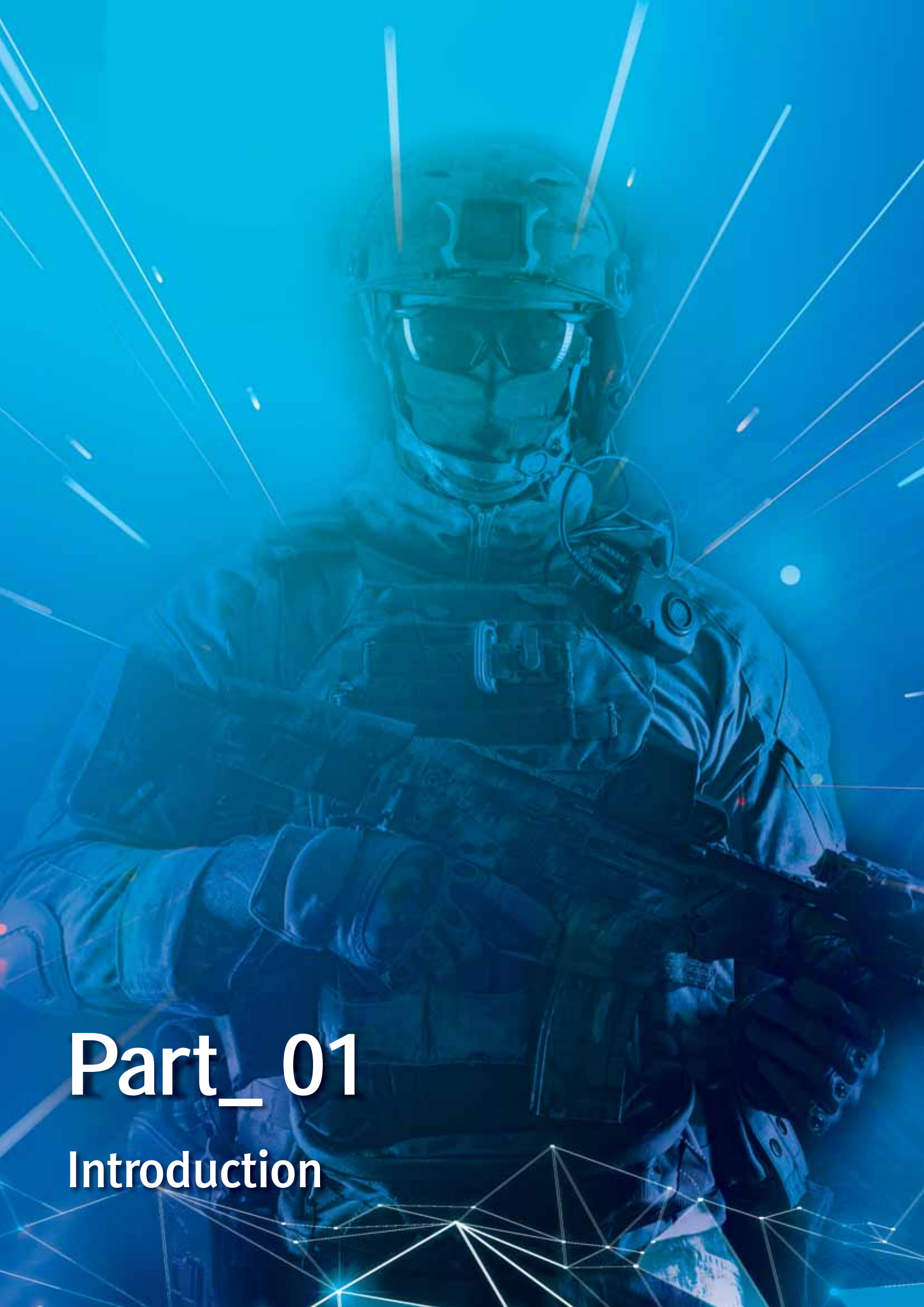
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Part_01

Introduction



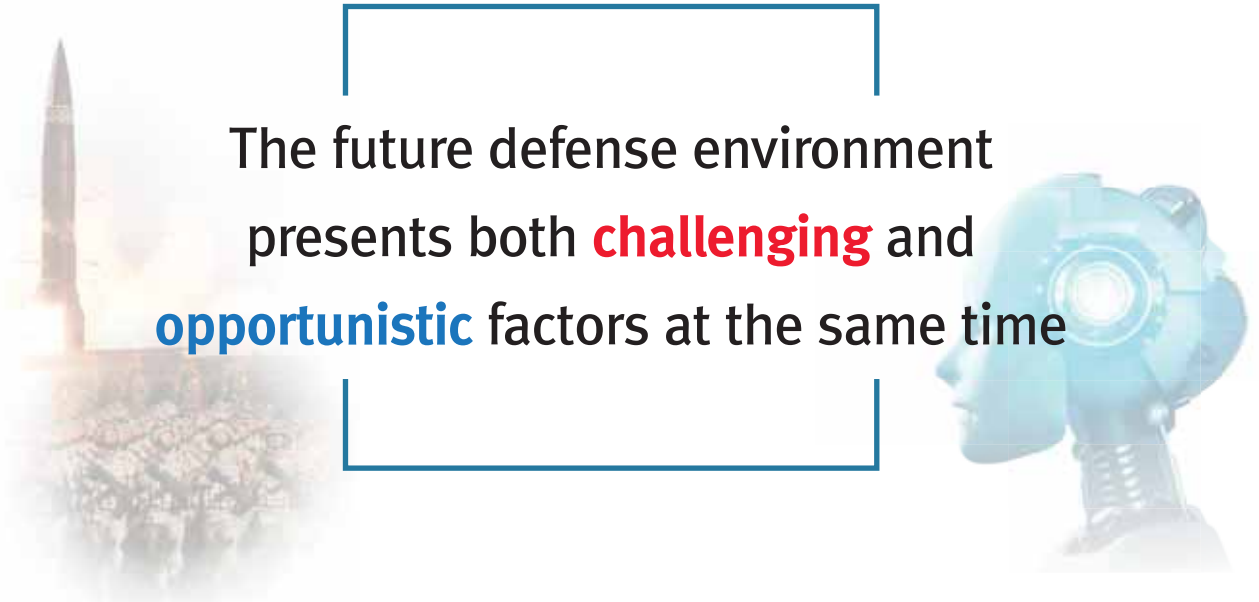
- ❖ The Defense Innovation 4.0, why?
- ❖ Concept of the Defense Innovation 4.0
- ❖ Areas of focus and key tasks



❖ The Defense Innovation 4.0, why?

- ✓ It is expected that our national defense will confront unprecedented challenges
- ✓ Innovative transformation in national defense is required, and ROK military must start preparing now to face the future challenges.

The future defense environment presents both **challenging** and **opportunistic** factors at the same time



Challenging Factors



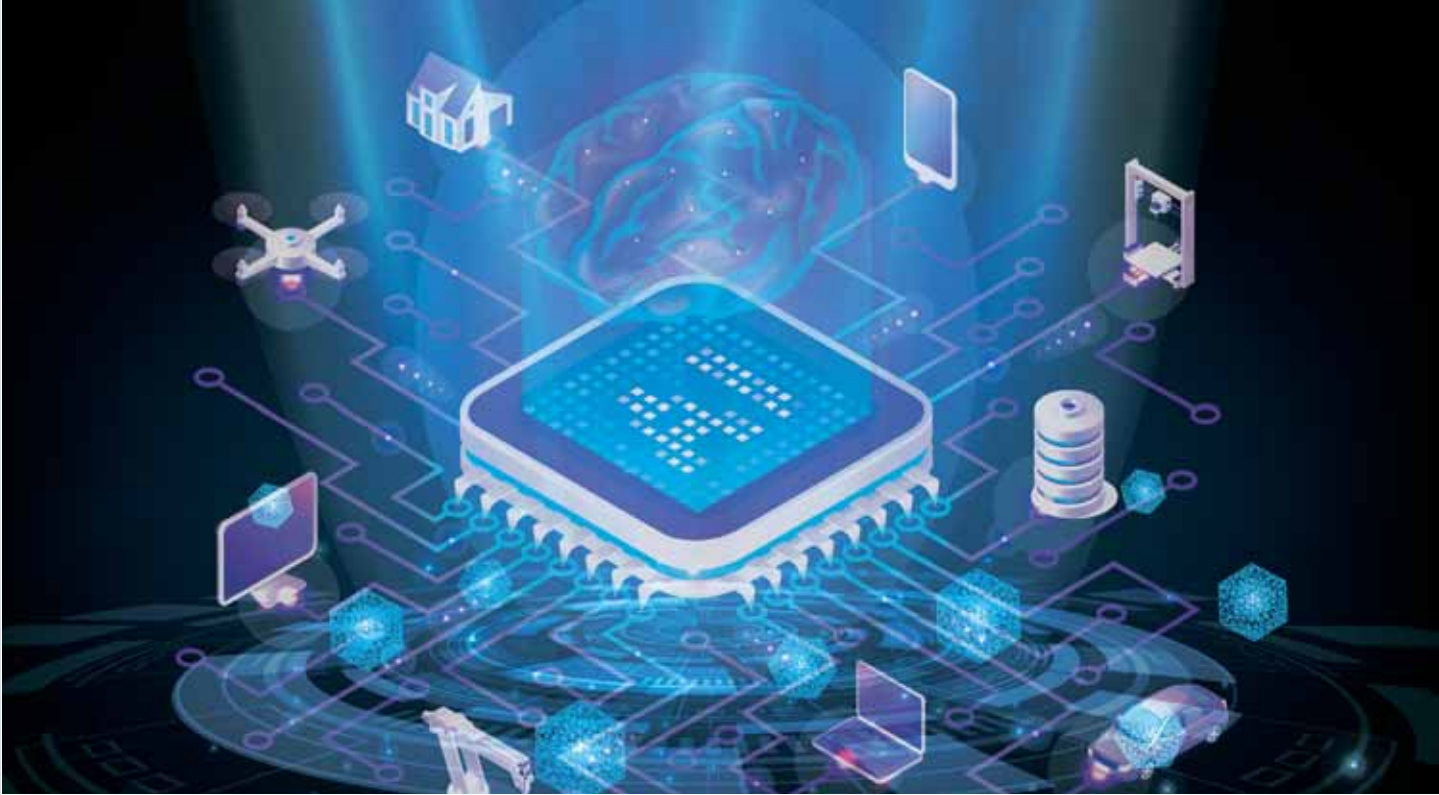
Opportunity Factors

✓ Our strength "Develop cutting-edge science & technology"

- National science and technology level (2020), **80.1%** compared to US,
- AI technology level : **87.8%** compared to the US, 4th followed by US, China, and Europe.
- Defense science and technology level (2021)
South Korea **9th** (relatively high in artillery, command and control domain)



The 「Defense Innovation 4.0」 pursues **innovative changes** by utilizing our strength "Cutting-edge Science & Technology" as an opportunity to foster a strong military that can overcome future defense challenges and win battles

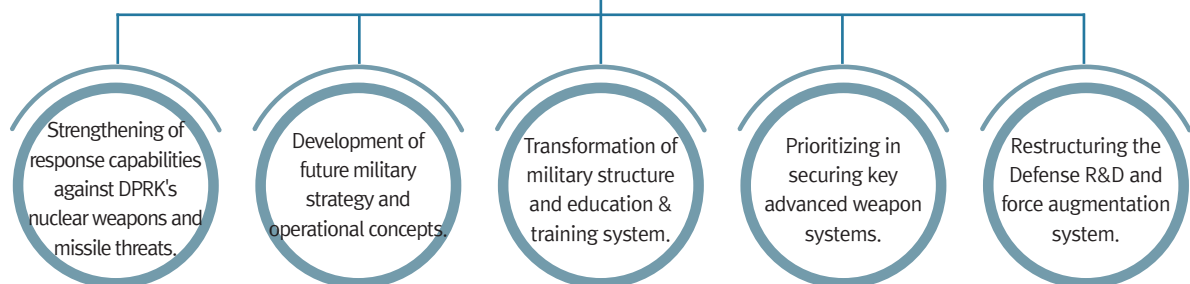


❖ Concept of the 「Defense Innovation 4.0」

Objective

Foster a Robust Armed Forces of AI Science and Technology

Implementation focuses



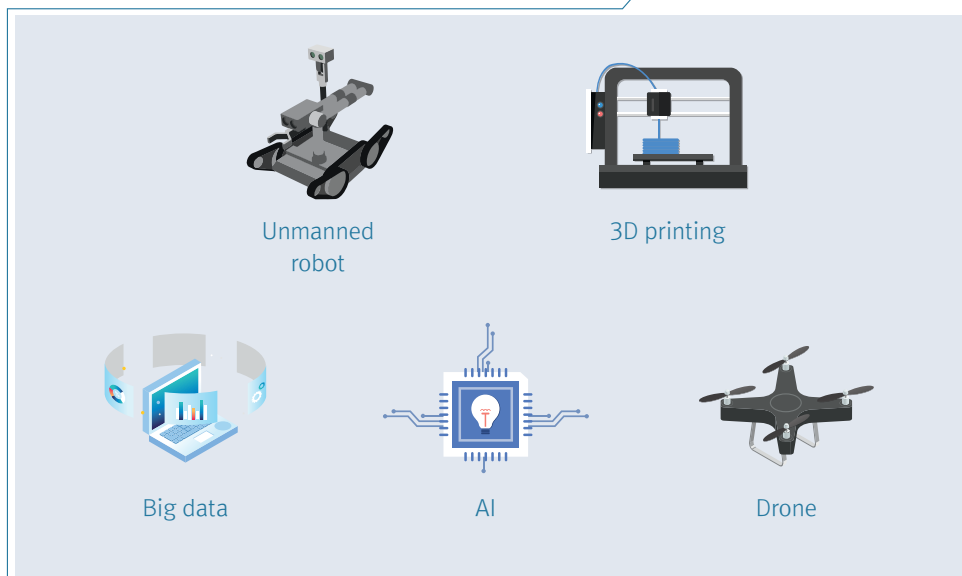
- Achieving deterrence against North Korea by vastly strengthening response capabilities against their nuclear weapons and missile threats
- Fulfilling operational execution capabilities with competitive advantage based on cutting-edge science & technology, e.g. AI, unmanned, and robot, etc.

— The meaning of the Defense Innovation 4.0 is —

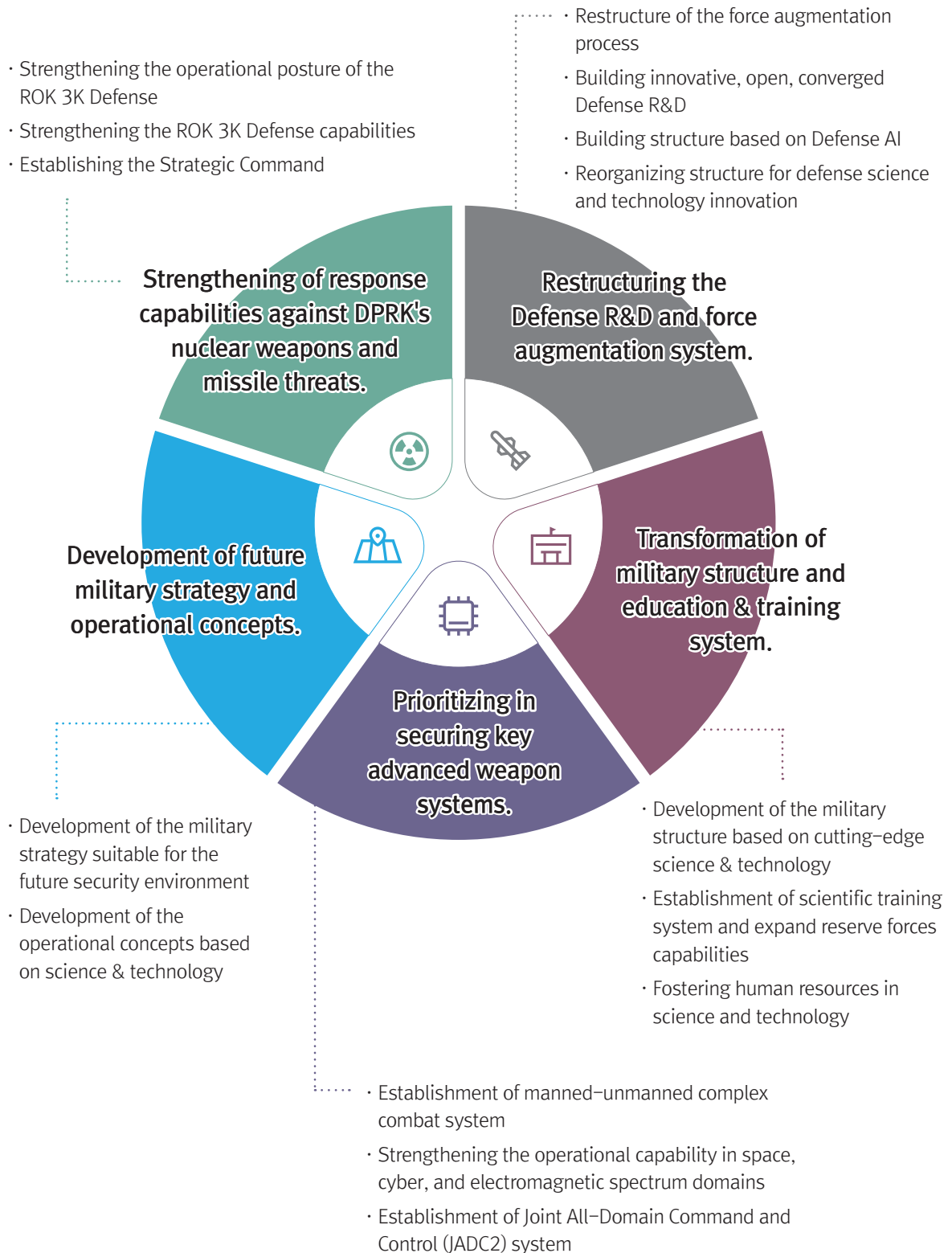
to foster the ROK military as a **Competitive Science and Technology Forces** compared to the opponents **by innovating** military strategy and operational concepts, North Korea's WMD response capabilities, high-tech weapon systems, military structure and education & training


4.0 is » The 4th plan with landmark transformation in national defense and symbolic representation of the 4th Industrial Revolution cutting-edge science & technology application

· The cutting-edge science & technology



❖ Areas of focus and key tasks






Defense Innovation 4.0



Part_ 02

Strengthening of response capabilities against DPRK's nuclear weapons and missile threats



What to do

Advancement of DPRK's nuclear weapons and missile capabilities are the most serious and real threats. Therefore, securing a solid deterrence and response capability is a top priority.

- ❖ Strengthening the operational concept of the ROK 3K Defense
- ❖ Strengthening the ROK 3K Defense capability
- ❖ Establishment of the Strategic Command

❖ Strengthening the operational concept of the ROK 3K Defense

- ✓ Development of operational concepts and mission execution system
 - » Development of operational concepts and mission execution system of the ROK 3K Defense based on the concept of Kill web
- ✓ Strengthening exercise & training and fostering military expertise in these fields
 - » Strengthening ROK-U.S. combined exercise·training in response to DPRK's nuclear weapons and missile
 - » Fostering professional Subject-Matter Expertise (SME) in field such as space, cyber, and electromagnetic spectrum, etc



❖ Strengthening the ROK 3K Defense capability

- ✓ **Infrastructure**  Reinforcement of Intelligence, Surveillance and Reconnaissance (ISR) capacity
- ✓ **Kill Chain**  Securing advanced lethal and non-lethal strike capabilities
- ✓ **KAMD**  Enhancement of missile detection capability, establish complex and multi-layered missile defense system
- ✓ **KMPR**  Strengthening massive punishment and retaliation capability

※ To resolve DPRK's nuclear weapons and missile threats, being equipped with response capabilities should be top priority

❖ Establishment of the Strategic Command

※ The task of the Strategic Command is to develop the concept of responding to North Korea's WMD threat at a joint level to integrate and operate strategic assets



Part_03

Development of future military
strategy and operational concepts

◦ What to do ◦

Development of the military strategy and how to fight suitable for the future security environment, and of the operational concepts for the new system

❖ Development of the military strategy and operational concepts

❖ Development of the military strategy and operational concepts

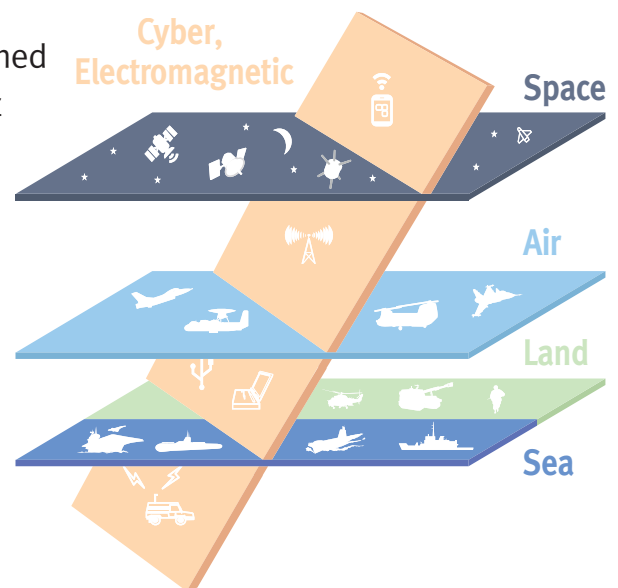
✓ Military Strategy :

Development of a strategic concept capable of active & integrative preparation and response to all-encompassing complex security threats and changes in the future battlefield environment

✓ Joint Operation Concept :

‘All-Domain Integrated Operations’ based on cutting-edge science & technology

- » Employment of manned-unmanned combat system and new concept weapon systems



✓ Security Operation

- » GP/GOP security
Line concept → Zone concept
- » Coastal, Maritime, Base security
Transition to manned-unmanned complex security system using AI capabilities

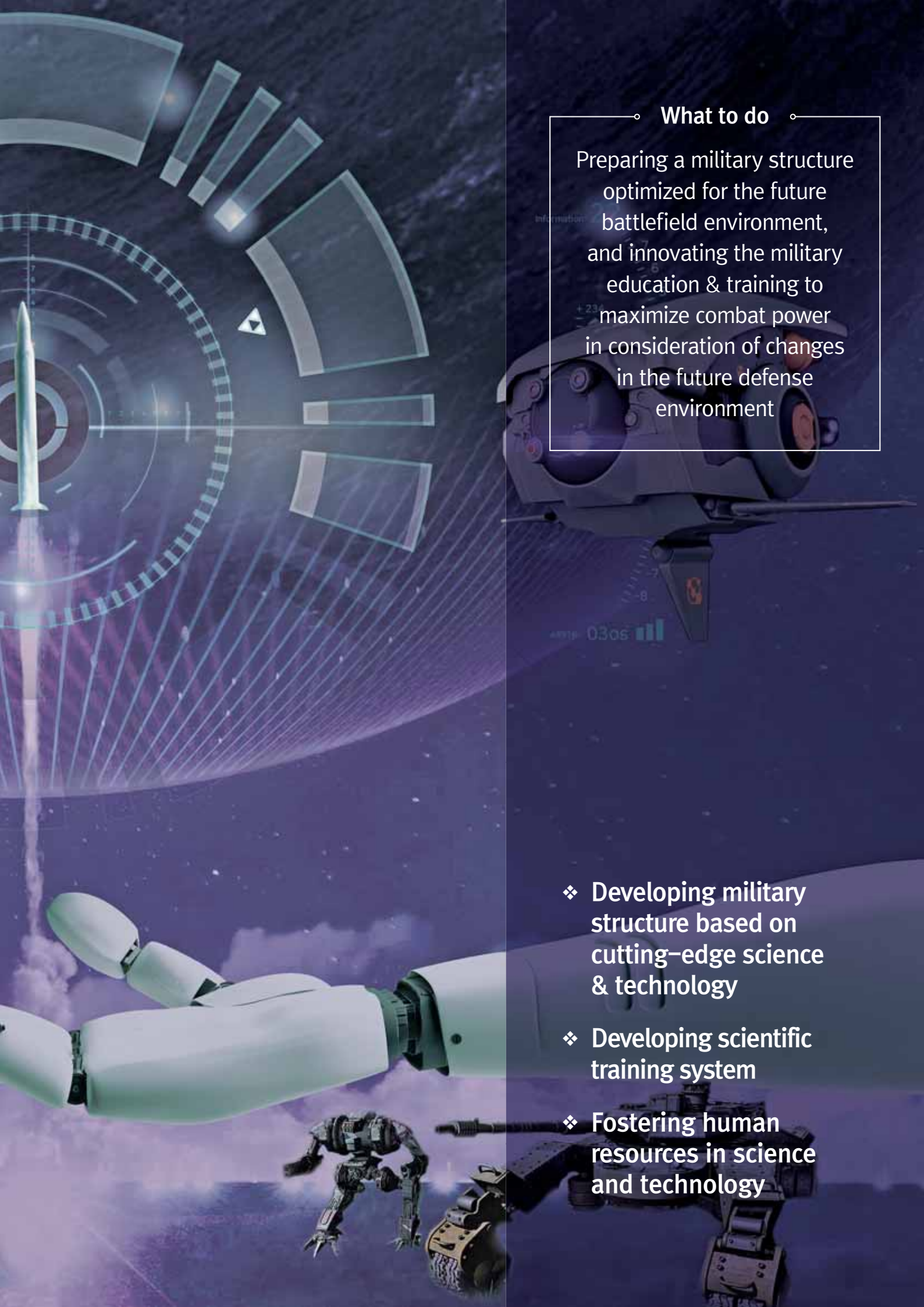


Defense Innovation 4.0



Part_04

Transformation of military structure
and education & training system



What to do

Preparing a military structure optimized for the future battlefield environment, and innovating the military education & training to maximize combat power in consideration of changes in the future defense environment

- ❖ Developing military structure based on cutting-edge science & technology
- ❖ Developing scientific training system
- ❖ Fostering human resources in science and technology

❖ **Developing military structure based on cutting-edge science & technology**

- ✓ Development of command structure considering future combined defense and joint all-domain operations
- ✓ Development of unit structure centered on manned-unmanned complex system
- ✓ Development of appropriate size of standing forces and defense manpower structure in the future

❖ **Developing scientific training system**

- ✓ Establishment of scientific training system
- ✓ Establishment of ‘virtual simulation training system’ for training of tactics and techniques and mastery of equipment skill
 - » Expanded introduction of ‘MILES (Multiple Integrated Laser Engagement System) equipment’
 - » Establishment of ‘Defense education and training management system’ for standardized education & training management for the whole military

❖ Fostering human resources in science and technology

✓ Fostering and developing science and technology professionals

- » Establishment of fostering and management system (career management model, etc.) of professional manpower and supplementation · development of system

✓ Strengthening soldier's science and technology capabilities

- » Improvement of military education to expand the operation capability of future key weapon system
- » Promotion of customized education to enhance the Defense AI capabilities
- » Identification of additional training requirements and expanding education for all soldiers



A futuristic, metallic robot head in profile, facing left, against a dark blue background with glowing lines and squares. The robot's head is silver and has a circular, mechanical-looking structure on the back. The background features a large, glowing, curved line and several small, glowing squares connected by thin lines, suggesting a network or data flow.

Part_05

Prioritizing in securing key advanced
weapon systems



What to do

Field cutting-edge weapon systems to realize future joint operation concept

- ❖ Establishment of the manned-unmanned complex combat system
- ❖ Strengthening the operational capability in space, cyber, and electromagnetic spectrum domains
- ❖ Establishment of the Joint All-Domain Command and Control (JADC2) system

❖ Establishment of the manned-unmanned complex combat system

✓ Establishment of manned-unmanned complex combat system in stages



Remote control level



Semi-autonomous level experiment

* Designate and employ semi-autonomous demonstration units per Services



Transition to autonomous level

✓ Establishment of a multi-dimensional security system, e.g. AI, drone·robot utilization, etc

» Improving security system to reinforcement via linking the current security system with robots and drones



✓ Building the foundational infrastructure for efficient field deployment of unmanned system

» Network, security·cryptographic system, frequency, drone monitoring system

❖ Strengthening the operational capability in space, cyber, and electromagnetic spectrum domains

- ✓ Development of defense space force based on jointness
 - » Based on jointness, promotion of securing mid-to-long term space force
 - » Development of space organization based on joint space operation
- ✓ Strengthening cyber operational capabilities
- ✓ Developing electromagnetic spectrum operational concept and weapon systems

❖ Establishment of the Joint All-Domain Command and Control (JADC2) system


Joint All-Domain Command and Control

- ✓ Development of AI-based C4I system
 - » Development of AI technology, concept of intelligent command and control system, next command and control system



Part_06

Restructuring the Defense R&D and
force augmentation system



What to do

Restructuring the Defense R&D system to incorporate civil cutting-edge technology into the national defense

- ❖ Restructuring the defense acquisition system
- ❖ Building innovative, open, converged Defense R&D system
- ❖ Building infrastructure for the Defense AI

❖ Restructuring the defense acquisition system

- ✓ **Improvement to a rapid and efficient defense acquisition system**
 - » Improvement of the project feasibility study investigation
 - » Enhancement of system through the test and evaluation
- ✓ **Laying the foundation for rapid introduction of civilian technology and strengthening the role of R&D on each military**
 - » Establishment of ROK DIU(Defense Innovation Unit) to strengthen the role of bridge between civil and military technologies
 - » Establishment of Fast-Track for the rapid adoption of civilian innovative technologies to the military (tentative name: rapid requirements)

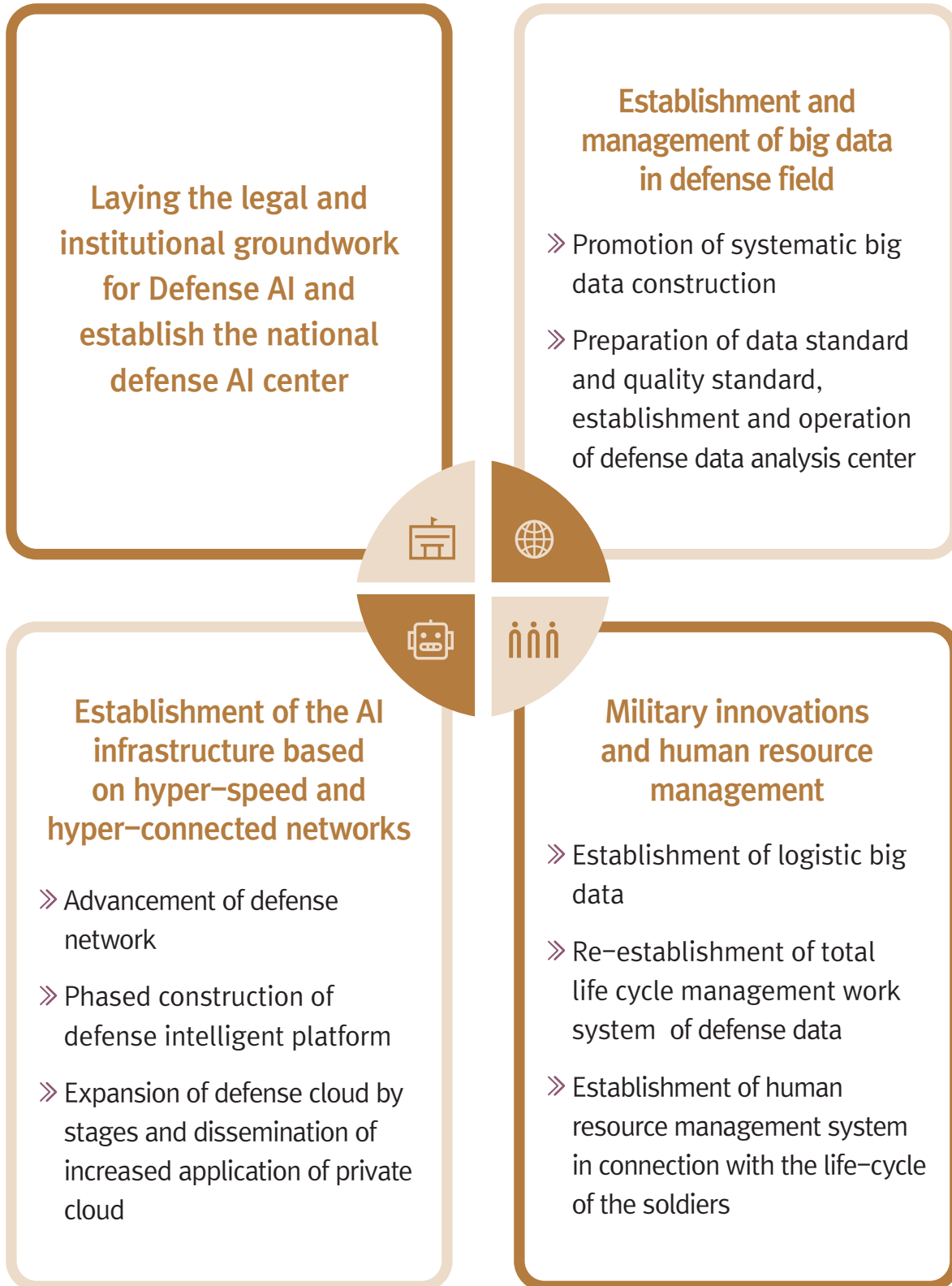
❖ Building innovative, open, converged Defense R&D system

- ✓ **Establishment of Defense R&D system of Innovation, openness, convergence**
 - » Strengthening efforts for the convergence of military, industry, academia, and research institutes
 - » Selection and investment in defense strategic technology focus area
 - * 30 defense strategic technologies in 10 areas



- ✓ **Expansion of R&D budget to more than 10% of national defense budget**
 - » Continuous expansion of Defense R&D budget and intensive investment in securing defense science and technology

❖ Building infrastructure for the Defense AI





Part_07

Practical and systematic completion
of the Defense Innovation 4.0 with
the Korean people



- ❖ Execution strategies of the Defense Innovation 4.0
- ❖ Expected Effect of the Defense Innovation 4.0

❖ Execution strategies of the Defense Innovation 4.0



Focusing on key areas that require fundamental change

- Securing capabilities to respond to DPRK's nuclear weapons & missile threats is a top priority
- Concentration on cutting-edge combat system and a supporting infrastructure to supports it



Pursuing developmental change that can actually be felt in the field units

- Concentration in areas where change can be diffused throughout the military
ex) GP/GOP and coastal security system, etc.
- Field-oriented military power reinforcement that guarantees combat capability through combat experiments based on scientific data



Driving performance creation and acceleration by innovating laws (institutions) and organizations in parallel



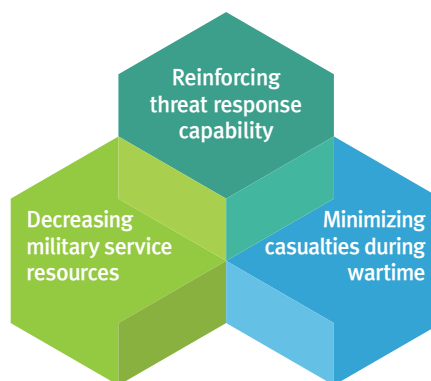
Pursuing of the Defense Innovation 4.0 step by step

- Step1 Building innovation groundworks,
Step2 visualizing innovation outcome,
Step3 accelerating innovation outcome

❖ Expected Effect of the Defense Innovation 4.0

National defense level

- ✓ (Threat response) Reinforcing the ability to respond and deter DPRK's nuclear weapons and missile threats and the ability to carry out operation in future battlefield
- ✓ (Military service resources) Resolving the problem of decreasing military service resources by transforming to a force structure centered on the manned-unmanned complex combat system based on cutting-edge science & technology
- ✓ (Operation efficiency) Unmanned and robot combat systems maximize combat power but minimize casualties during wartime



National level

- ✓ (National human resource) Defense science and technology experts are returned to society to enhance private science and technology capabilities
- ✓ (National industry) Expanding defense science and technology into a new national industrial growth-engine





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