

CONNECT TO THE FUTURE

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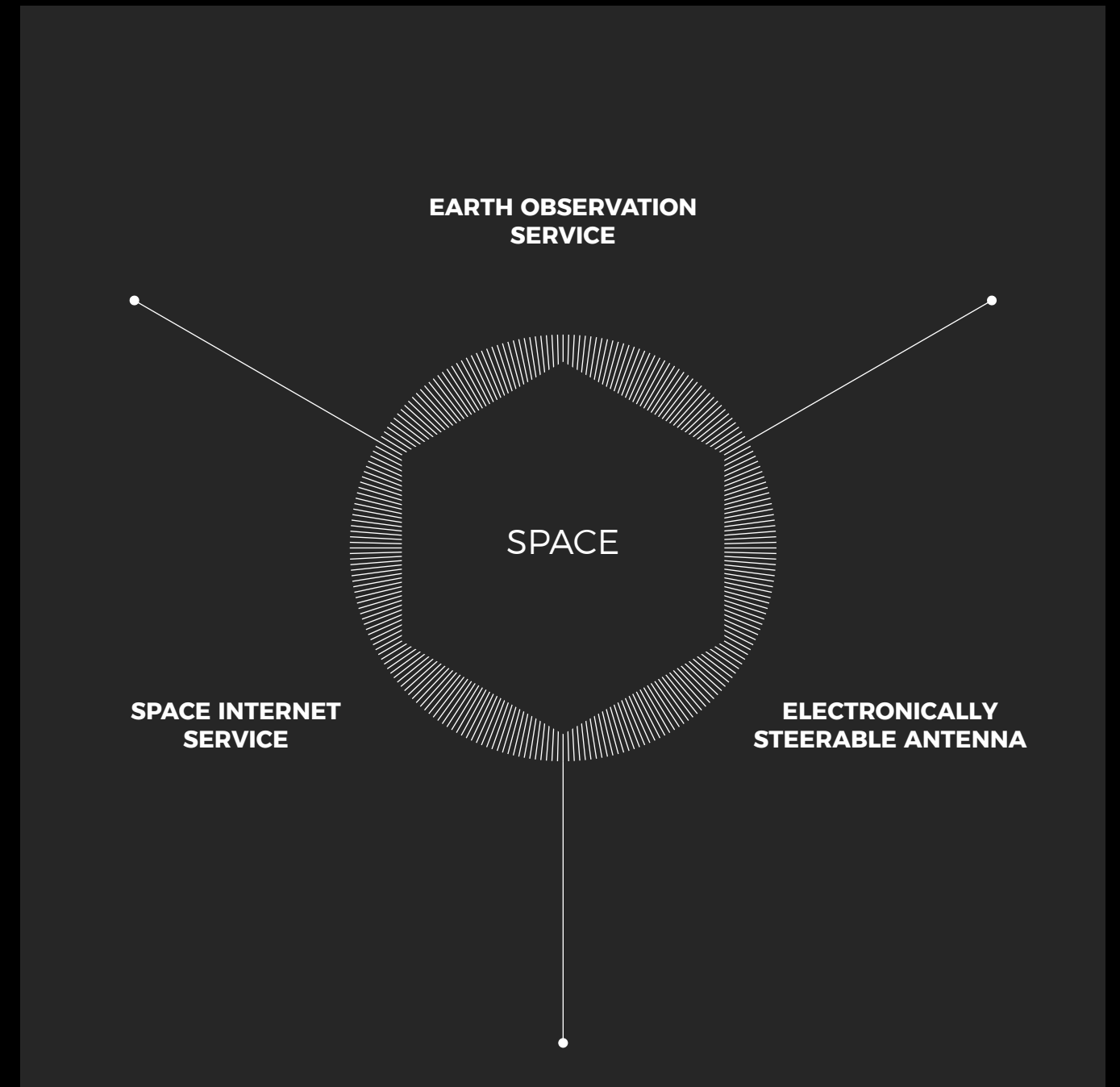
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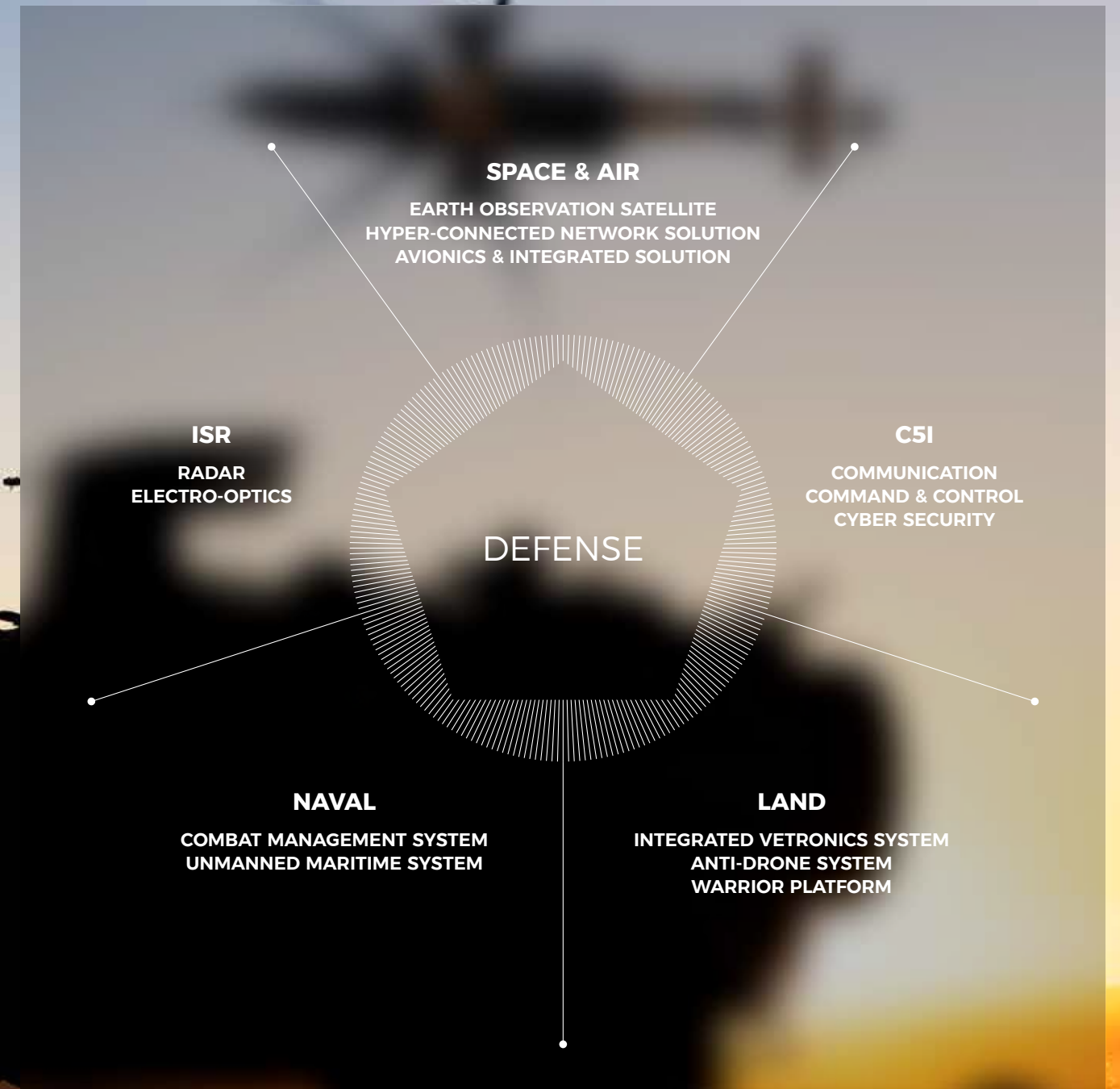
BEYOND AIR · SPACE

BRING THE NEXT HYPER-CONNECTED
TECHNOLOGY TO EVERY CORNER OF LIFE



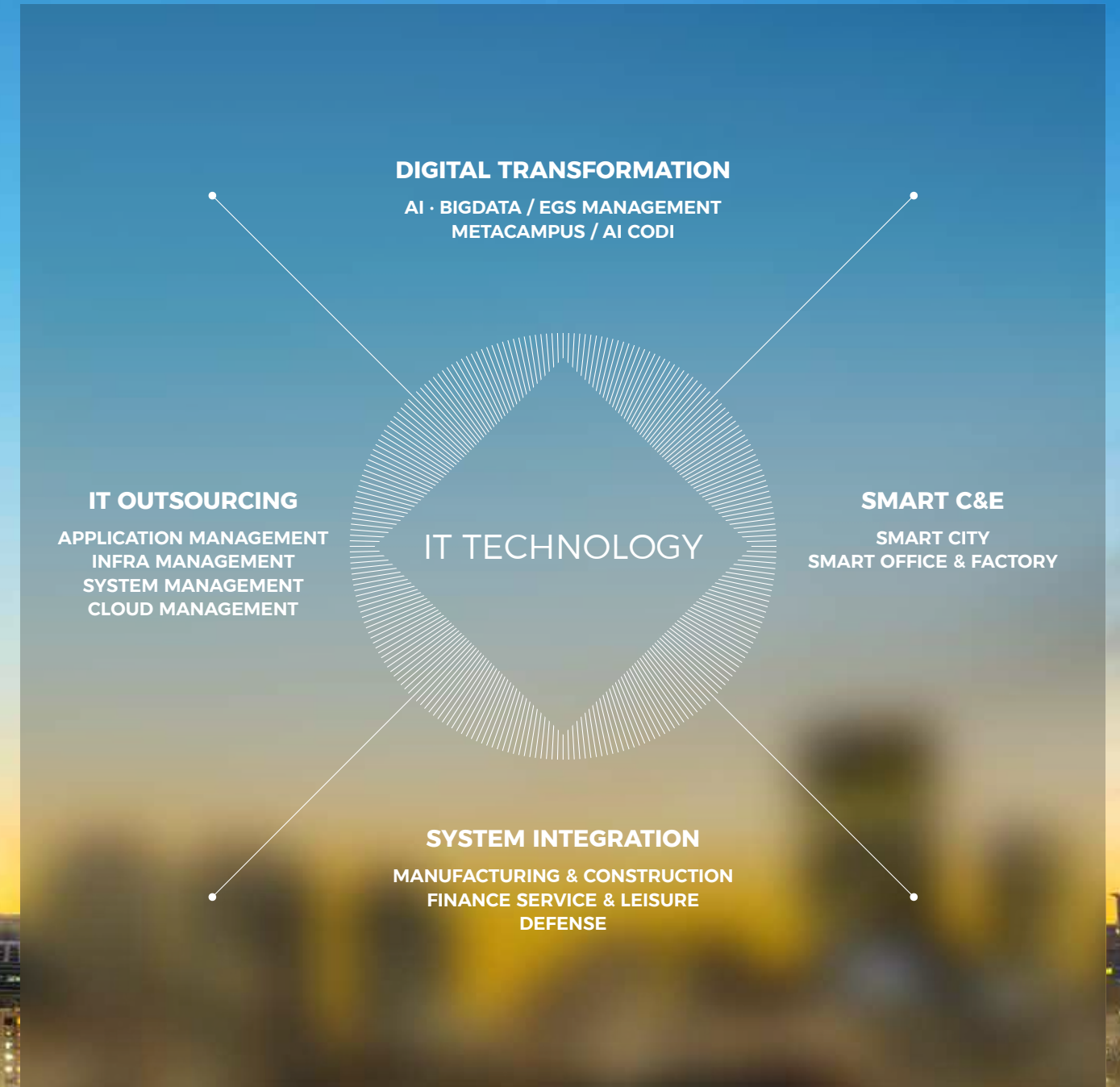
BEYOND BOUNDARIES

INTEGRATED DEFENSE SOLUTIONS



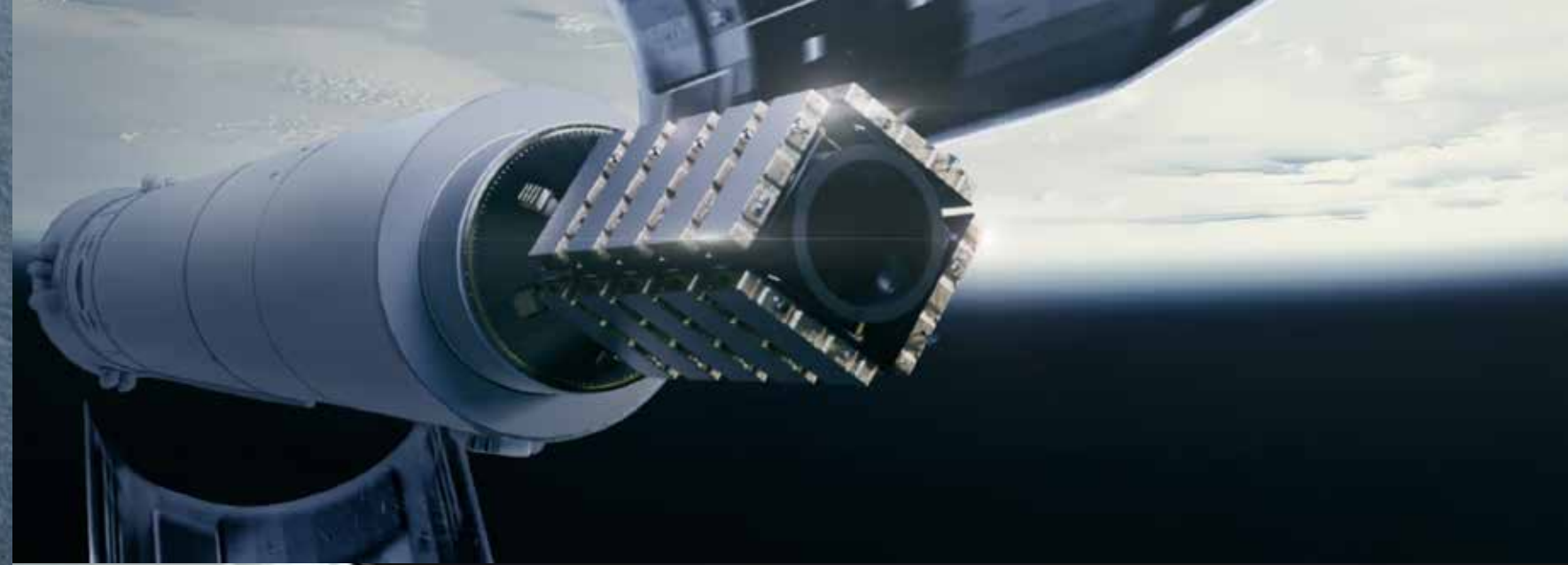
BEYOND TOMORROW

HYPER-CONVERSION FOR THE FUTURE



STEP INTO A NEW SPACE ERA

FOR A BETTER AND SAFER WORLD



Hanwha Systems Launched
Small Synthetic Aperture Radar (SAR) Satellite
(December 4, 2023)
Image provided by the Ministry of National Defense

Actual Satellite Separation
Captured in Space
Image provided by
the Ministry of National Defense

Hanwha

Bold and Relentless Innovation in Pursuit of Sustainability

At Hanwha, we have grown into a global company that represents South Korea by contributing to the development of the national economy and the improvement of people's lives. As always, we will innovate without boundaries, create opportunities by challenging without limits and pioneer the future as we establish a new history.

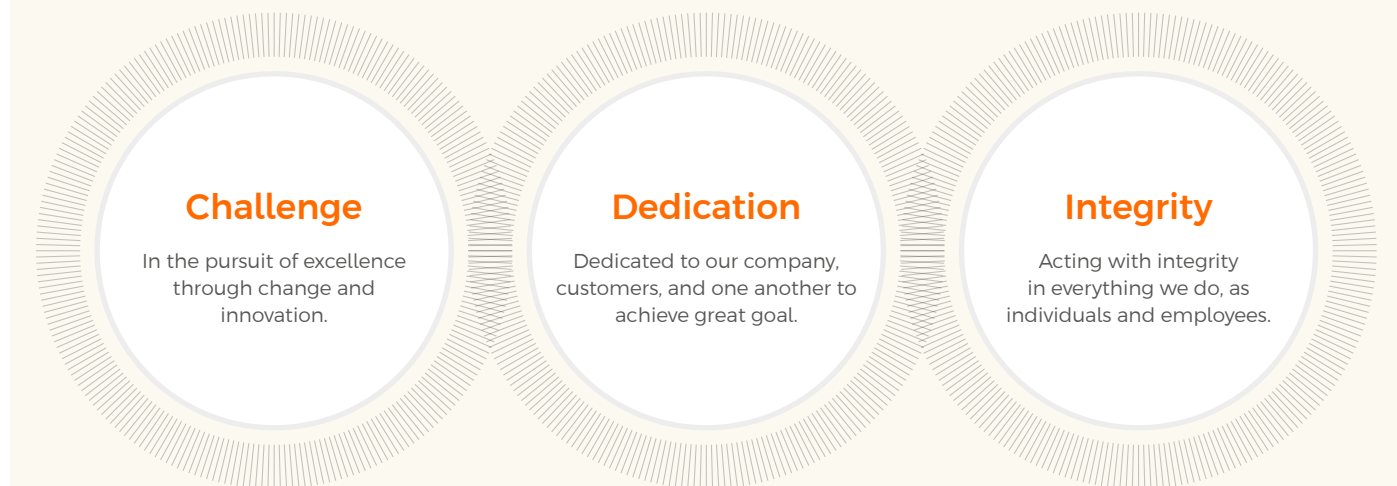
Hanwha's Spirit and Core Values

At Hanwha, we operate with the spirit of trust and loyalty above all else. That is reflected in our core values and serves to guide us in how we do business and why we innovate.

TODAY



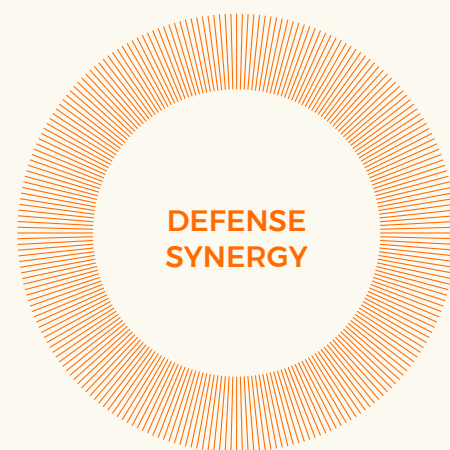
CORE VALUES



We create a better and safer world with hyper-connected, hyper-intelligent, hyper convergent technology

Hanwha continues to grow by quickly anticipating and responding to rapidly changing business environments with a balanced business portfolio that includes aerospace and defense. Hanwha Systems plays a pivotal role in the domestic aerospace, ocean & defense industry along with Hanwha Aerospace and Hanwha Ocean, which are affiliates of Hanwha Group in the aviation and defense sector.

SYNERGY



Hanwha Aerospace



Defense: Firepower systems, Land platforms, anti-aircraft systems, unmanned systems, ammunition, guided weapons systems, navigation, lasers

Space: Space launch vehicle engines and system integration

Marine: Submarine/ship lithium battery systems (ESS), ship engines/generators

Aviation: Castorbean engines, aircraft parts

Hanwha Systems



Space: Earth observation satellite, LEO satellite based communication solution

Aviation: Avionics, Unmanned aerial systems integration

ISR: Radar, Electro-Optics

CSI: Command, Control, Communication, Computer, Cyber and Intelligence

LAND: Integrated Vetrronics System, Anti-drone system

NAVAL: Naval combat system, Naval unmanned system

Hanwha Ocean



Specialty Ships: Destroyers, Frigates, Submarines

Ships: LNG carriers, tankers, container ships

Offshore plant: Drilling facility, production facility, Offshore wind turbine installation vessels

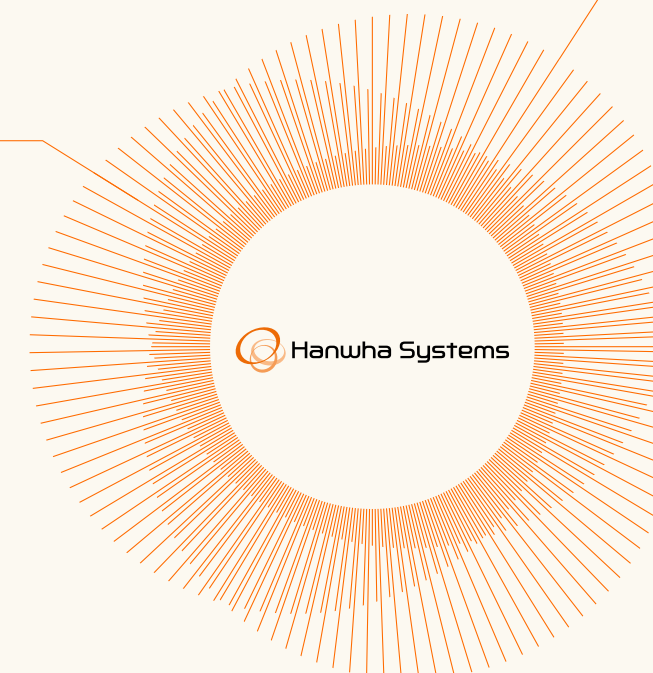
Platform value-up & business leading solution provider

Hanwha Systems is a global total solutions company offering world's top class defense electronics products. Now Hanwha Systems is expanding and strengthening SI business capabilities for public infrastructure and private security business areas. Our ultimate goal is to provide hyper-intelligence, hyper-connectivity, and hyper-convergence technologies that can safely and seamlessly connect the mankind without any boundaries not only in the physical space world but also in the digital space.

GLOBAL DEFENSE ELECTRONICS AND ICT SMART SOLUTION PROVIDER

Defense

- SPACE & AIR
- ISR
- CSI
- NAVAL
- LAND



ICT

- Digital Transformation
- System Integration
- IT Outsourcing
- Smart C&E

New business

- Electronically Steerable Antenna

HISTORY & MILESTONE

1977
Founded
Samsung Aerospace

- 1986 · Manufactured fire control systems for Korean tanks and naval vessels
- 1989 · Signed contract for the prototype development of short-range surface-to-air guided weapons radar
- 1990 · Signed contract for next-generation tactical communication system prototype

1991
Transferred a defense
business to Samsung
Electronics

- 1992 · Produced tactical electronic switchboards
- 1997 · Started IFF Mode-4 performance improvement
- 1999 · Signed a JV contract between Thomson CSF and Samsung Electronics
- Completed development of radar for short-range surface-to-air guided weapons
- Acquired Defense Quality Management System certification
- 2000 · Completed IFF Mode 4 performance improvement project

2001
Changed name to
Samsung Thales

- 2002 · Delivered the first prototype radar for short-range surface-to-air guided weapons
- 2003 · Launched development of large landing ship combat system
- 2006 · Started development of next-generation frigate (FFX-I) combat system
- Started test development of short-range tracking radar for warships
- 2008 · Completed Yongin Research Center Construction
- 2009 · Acquired the first CMMI Level 5 (v1.2) in Korea
- 2010 · Launched the development of Hybrid Bi-Ho(fire control system)
- Started development of military tactical information and communication system (TICN)

2011
Completed the field deployment of radars for short-range surface-to-air guided weapons

2015
Renamed as
Hanwha Thales

- 2011 · Completed the field deployment of radars for short-range surface-to-air guided weapons
- Acquired KOLAS(Korea Laboratory Accreditation Scheme) accreditation
- Acquired CMMI Level 5 (v1.3)
- 2016 · Changed name to Hanwha Systems
- 2017 · Completed development of air defense C2A(Command, Control, and Alert) system
- Exported the first combat system overseas for a Philippine frigate

Based on 40 years of accumulated technology, we have grown into a global defense electronics and ICT smart solution

By fully utilizing the synergy of advanced digital defense technology and future ICT technology, our audacious challenges toward a smart tomorrow will continue.

DEFENSE

1977 - 1990
Inauguration as an
Advanced Defense
Company

1990 - 2000
Growth through Cutting-
edge Technology

2001 - 2010
Scale up by attracting
foreign investment

2011 - 2017
New Challenges

2018 - 2019
A new start for the future

2020 - 2021
Discovering new growth engines

2022 - 2023
New Journey
into the New Space Era

ICT

- 1992 · Established Hanwha Information Team
- Integration of Hanwha Group's IT personnel and communication network
- 1997 · Separated as Hanwha Information Division
- 1998 · Launched Oracle ERP business
- Established international Internet fax network (USA)
- Registered as Special Category Telecommunication Type 1 Business
- Established Hanwha IT R&D Center

- 2001 · Founded Hanwha S&C
- Registered as Special Category Telecommunication Type 2 Business, started KT Innertel business
- Acquired ISO 9001 (quality management) certification
- 2002 · Acquired BS 7799 (information protection) certification
- 2003 · Launched HDES, a digital content copyright protection solution
- Launched Premium ERP-SFAR development
- 2004 · Signed a joint development agreement with Ministry of Trade, Industry and Energy Digital Home National Project to develop HISP and IHAS
- 2006 · Launched Eagle MES, a production integration solution
- Acquired ISO 20000 (BS 15000) certification
- 2007 · Acquired ISO 27001 certification

- 2011 · Acquired CMMI Level5 certification
- Opened the Hanwha Group Integrated Data Center
- 2015 · Conducted a smart pilot project utilizing big data led by NIA under the Ministry of Science, ICT and Future Planning
- 2016 · Established a JV with Chinese fintech company Dianrongsa to enter the fintech business in earnest
- 2017 · Completed next-generation integrated information system implementation for Yongpyong Resort

- 2018 · Launched the integrated corporation of Hanwha Systems
- Established the Defense Artificial Intelligence Convergence Center jointly with KAIST
- Won a KRW 80 billion project to improve the performance of the Military Information Integrated Processing System (MIMS)
- MoU with BHGE on digital transformation technologies and business cooperation

- 2019 · Listed on the Korea Stock Exchange
- Won a 600 billion won aviation IFF Mode 5 performance improvement project.
- Won the second contract worth 130 billion won for K-SAM detection and tracking device

- 2020 · Started satellite business
- Acquired a British satellite communication antenna company and established Hanwha Phasor
- Invested in Kymeta, a U.S. satellite communication antenna company
- Won KDDX combat systems and multifunctional radar programs
- Launched AI brand 'HAIQV' and accelerated digital transformation business

- 2021 · Successfully completed paid-in capital increase of KRW 1.2 trillion
- Invested in and joined the board of directors of UK space internet company OneWeb
- Signed a contract for mass production of 'Military Satellite Communication System-II' network control system
- Launched 'W1NE', a next-generation insurance core solution brand

- 2022 · Exported M-SAM II MFR to UAE
- Exported Korea's naval CMS for the Philippine patrol vessels.
- Cooperation with Italian company LEONARDO to export KF-21 AESA radar
- 2023 · Successfully launched a small SAR satellite
- Signed MOU to promote the commercial space industry on Jeju Island
- Contracted to develop a small satellite system
- Business agreement for military communication system based on commercial low earth orbit satellites
- Completed registration as facilities-based communications provider
- Contract to export K2 fire control systems to Poland
- Contract for performance improvement of public announcement radios
- Exported OPV combat system to the Philippines
- Contract for the development of UAM for shipboard/northwest islands
- Contract for C-130H survivability system performance improvement project

GLOBAL CAPABILITIES

Exporting high-quality solutions and investing in the future technology

Hanwha Systems has strengthened its reputation in the global market by utilizing its excellent technology and consistent product quality. In addition, we are expanding our business to the space industry by investing in foreign technology for electronically steerable antennas.



INVESTMENTS & CO-WORK

Communication Satellite Business



Acquisition of satellite communication antenna company Phasor Solutions and establishment of Hanwha Phasor
2020 UK



Invested in space internet company Eutelsat OneWeb
2021 UK

Contract for distribution and supply of low-orbit satellite communication services
2023 UK



Invested in Kymeta, a satellite communication antenna company
2020 U.S.

Urban Air Mobility Business



Joint development of air taxi with Overair
2019 U.S.

EXPORTS

U.S.

2021 Avionics for F-15EX

Saudi Arabia

2012 Avionics for F-15SA
2024 Middle-range MFR

Malaysia

2011 Training Ship Combat System

UK

2012 Panop-HH

Qatar

2018 Avionics for F-15QA

Indonesia

2008 T-50i KT-1B Avionics
2010 VHF Radio
2013 Submarine Combat System
Panop-LR

Germany

2010 Submarine Satcom

UAE

2022 Middle-range MFR

The Philippines

2017 Frigate Combat System
2019 Delfila-class Frigate Combat System
2022 Patrol Boat Combat System

Iraq

2009 Tactical Communications System
2013 T-50

India

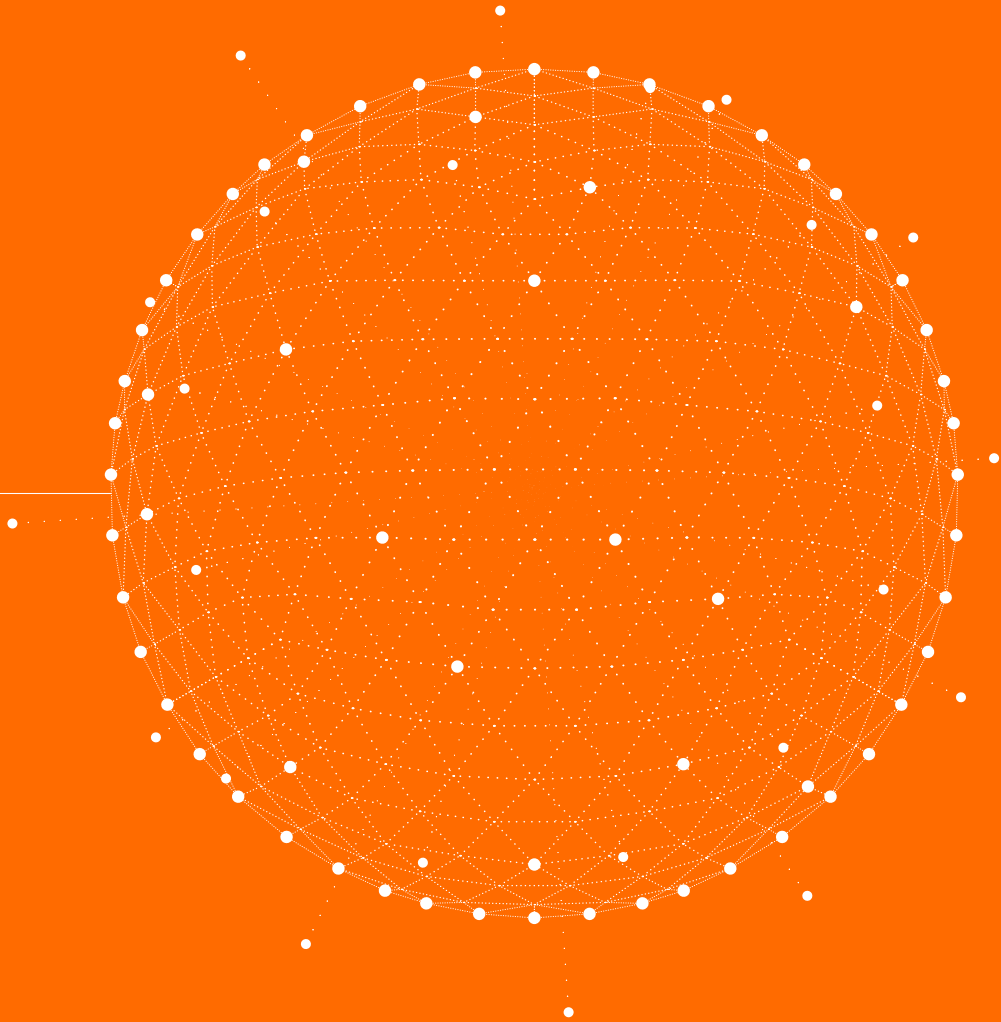
2017 K9 Self-propelled Artillery Computer

Japan

2021 Avionics for F-15JSI

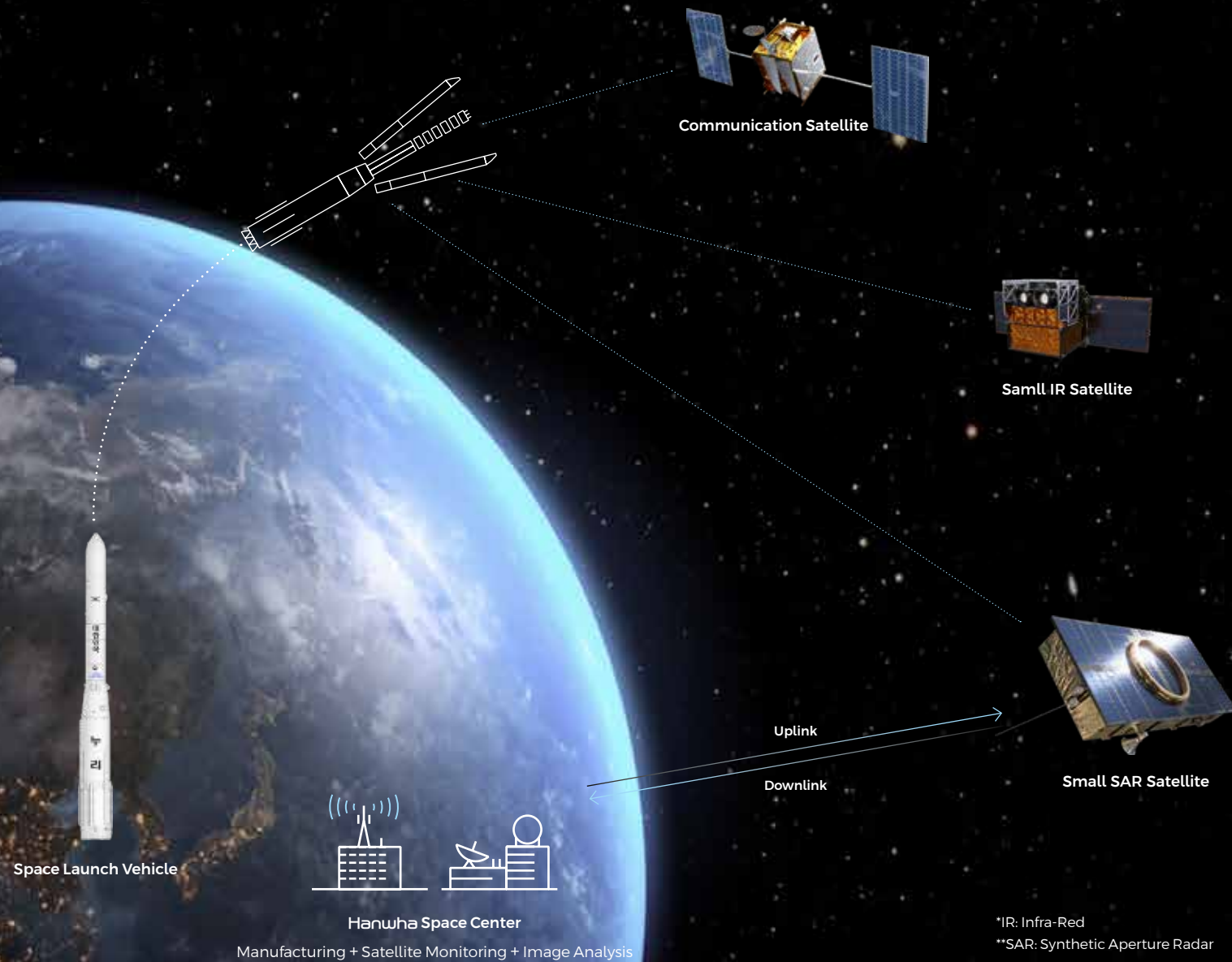
DEFENSE BUSINESS

- SPACE
- AIR
- RADAR
- CSI
- NAVAL
- LAND
- MRO+



Advancing the space age everyone dreams of

We are advancing the long-awaited era of space. Hanwha, which has grown through continuous innovation, is now heading towards the new frontier of space. We aim to provide advanced solutions ranging from space launch vehicles, satellites, space resource exploration to Earth observation. Hanwha's efforts for the development of the New Space era and industrial ecosystem will serve as a compass opening the way for solving global issues and creating a sustainable future.



*IR: Infra-Red
**SAR: Synthetic Aperture Radar

Space Internet Services

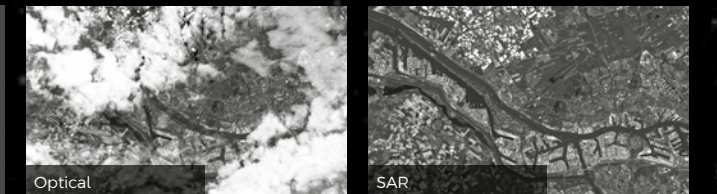
Utilizing Eutelsat OneWeb's satellite network, Hanwha Systems will provide 24-hour stable space internet services from low-orbit satellites by installing 'satellite communication antennas' in remote areas where it is difficult to access the internet, at sea, and in the air, to ensure smooth communication in emergency situations such as disasters and geopolitical crises in islands and mountainous areas with poor service infrastructure.

Earth Observation Service

Hanwha Systems aims to provide essential insights for the Earth and humanity across a wide range of fields such as national defense, weather, disasters, land, and oceans by integrating image data acquired through observation satellites with artificial intelligence (AI) technology.

Synthetic aperture radar (SAR) can collect imagery day and night and in any weather. Only small, agile SAR satellites can revisit the same location in space every day, enabling a level of change detection never before possible.

Get Daily Truth Data-powered by SAR

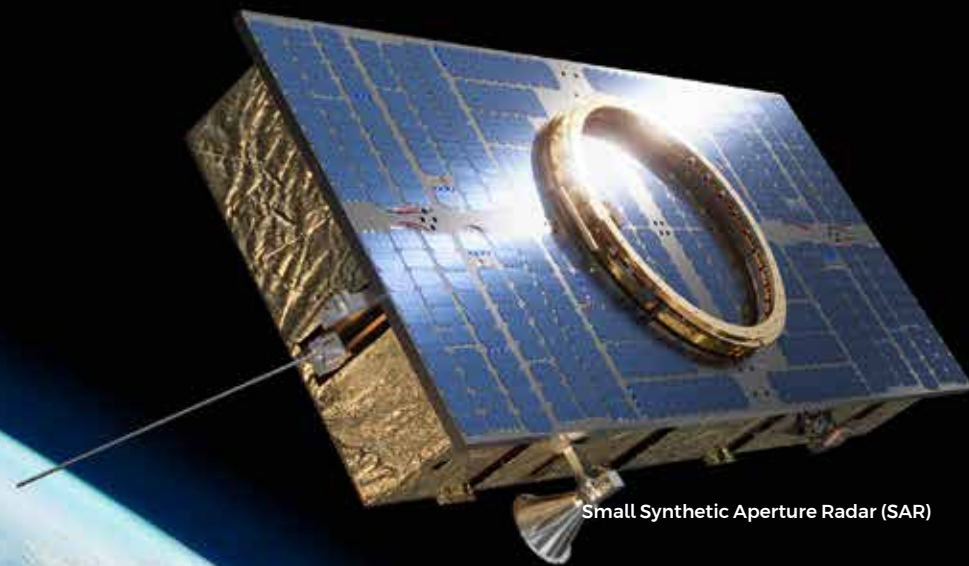


Application



KEY SOLUTION

- Global level of small satellite technology
- Integrated Solutions from Satellite Monitoring to Image Analysis
- High-resolution electro-optical payloads for mid-to-large sized satellites

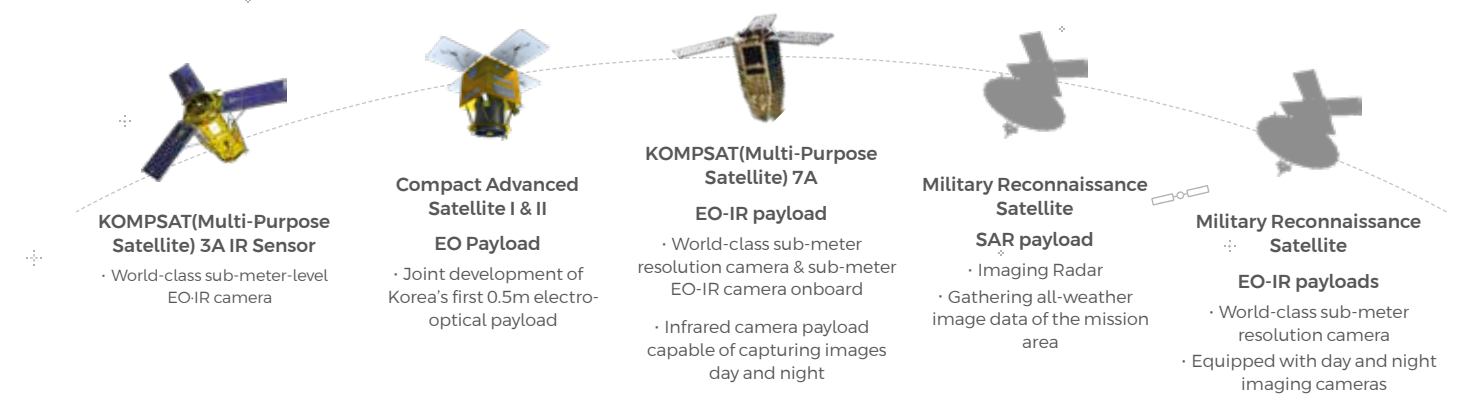


Small Synthetic Aperture Radar (SAR)

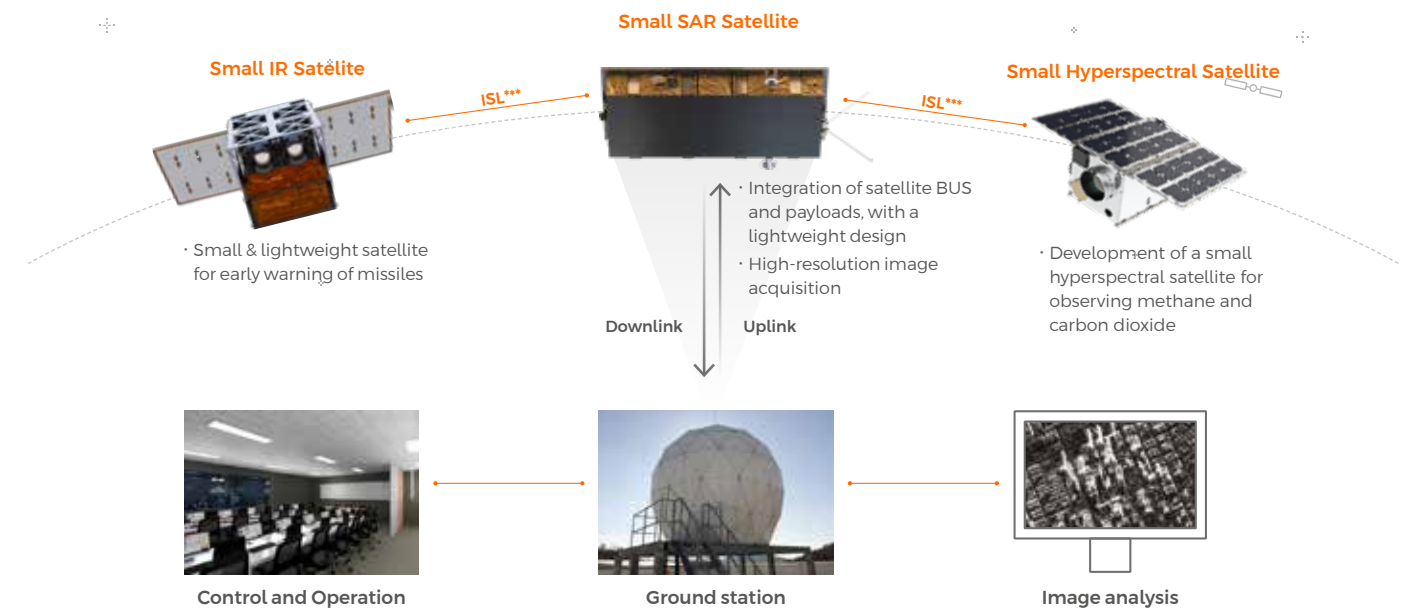
End-to-end solution covering satellite development, space monitoring, and image analysis

Hanwha Systems is the only enterprise in South Korea that simultaneously holds the comprehensive capabilities of developing a small earth observation satellite system and an Electro-Optical(EO-IR^{*})/Synthetic Aperture Radar (SAR^{**}) payload for satellites. Hanwha Systems is preparing a business not only for the satellites, which are the core element of the New Space paradigm, but also for satellite controls, ground station operations and satellite photo image analyses & distribution.

^{*}EO-IR: Electro-Optical Infra-Red
^{**}SAR: Synthetic Aperture Radar
^{***}ISL: Inter Satellite Link



End-to-End Total Solution



AIR

KEY SOLUTION

- Integrated solutions for aircraft performance improvement and unmanned aerial system
- Development of core aviation components
- Open international standard avionics integration platforms



DIRCM
Directional Infrared Counter Measures

MWR
Missile Warning Receiver

EWC
Electronic Warfare Computer Measures

CMDS
Countermeasures Dispenser Systems

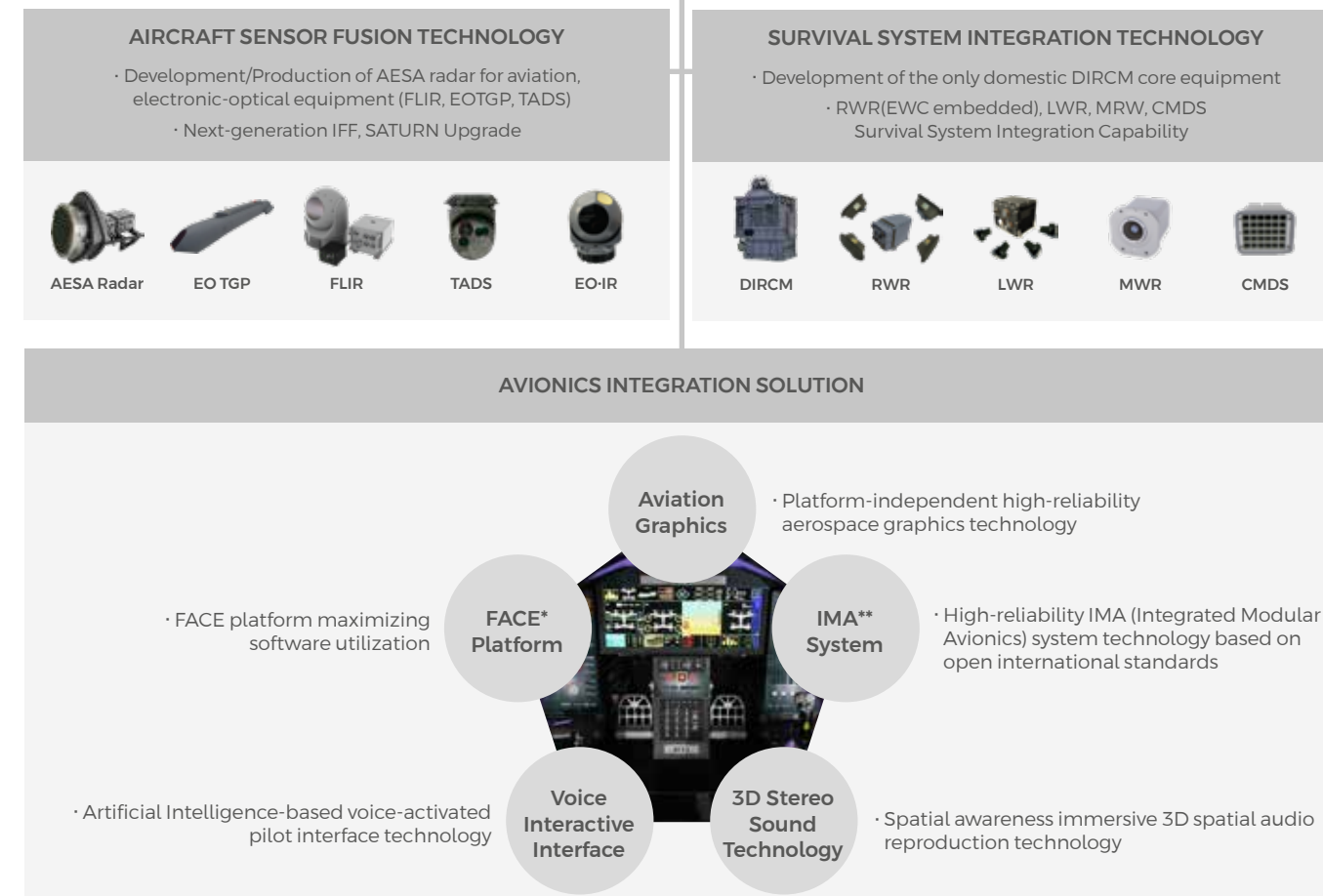
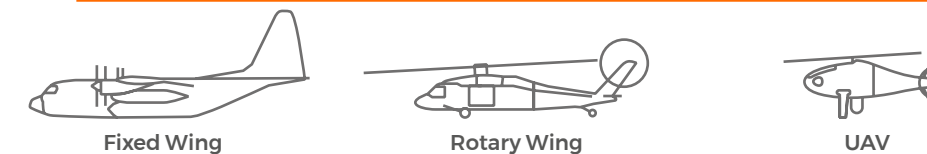
Integrated solution

Integrated airborne solution to optimize aircraft missions and aircraft performance improvement

Hanwha Systems has a core technology to provide integrated solutions for each system and particularly for the mission and survival system sensors. Moreover, we are developing super-connected technologies for controlling unmanned aerial vehicle or Manned-Unmanned multifunctional aerial vehicles (MUM-T: Manned-Unmanned Teaming)

*FACE : Future Airborne Capability Environment
**IMA : Integrated Modular Avionics

Integrated package solutions for aircraft performance improvement and unmanned aerial system



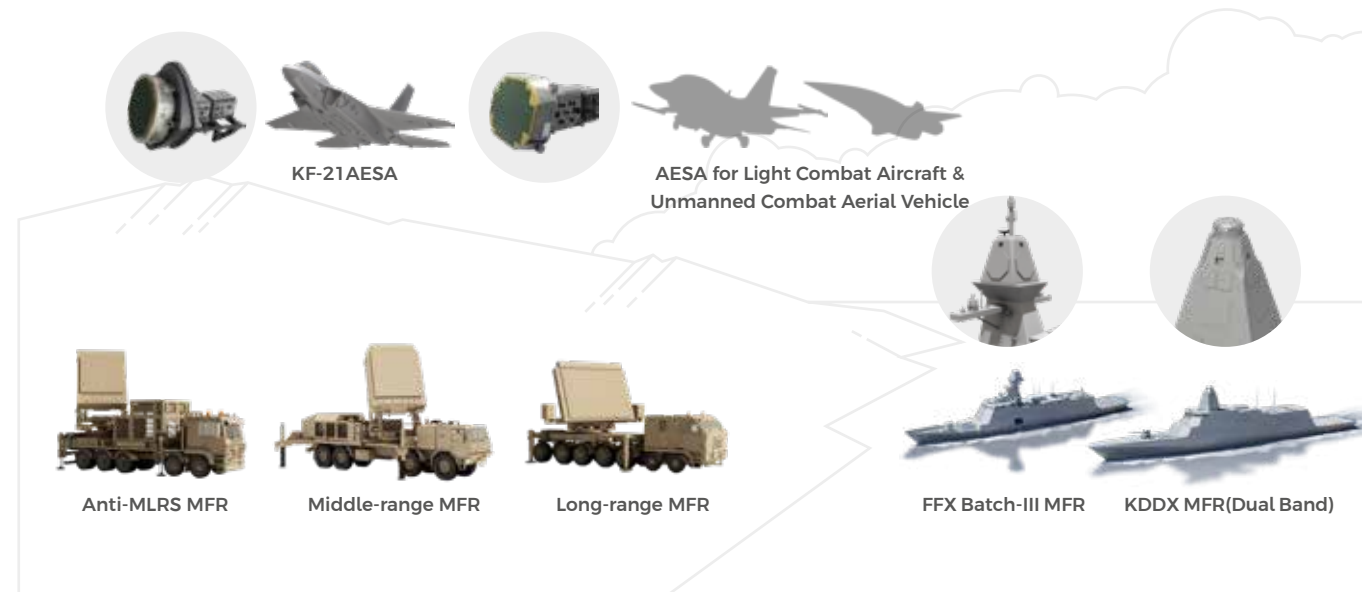
Radar superiority across all domains

Hanwha Systems possesses cutting-edge Active Electronically Scanned Array (AESA*) and Multi-Function Radar (MFR**) technologies, deployed on ground, naval, and aircraft defense systems. The company is currently advancing its digital radar technologies, aiming to integrate them into the next-generation weapons systems of the ROK by leveraging its distinctive radar development capabilities.

* AESA: Active Electronically Scanned Array
 ** MFR: Multi Function Radar

Multi-Function Radar

Multifunction Radar (MFR) is an advanced radar system equipped with functions such as detection, tracking, electronic warfare, and guided missile guidance. It has the capability to simultaneously perform multiple missions, making it a state-of-the-art radar system.



Search & Track Radar

Detection and tracking radar is a radar system designed to effectively detect and track targets that appear in the monitored airspace.



RADAR

KEY SOLUTION

- Korea's first AESA radar for fighter aircraft
- MFR technology to land, naval, and air defense systems
- Most sophisticated digital radar slated for deployment in future weapon systems



C5I

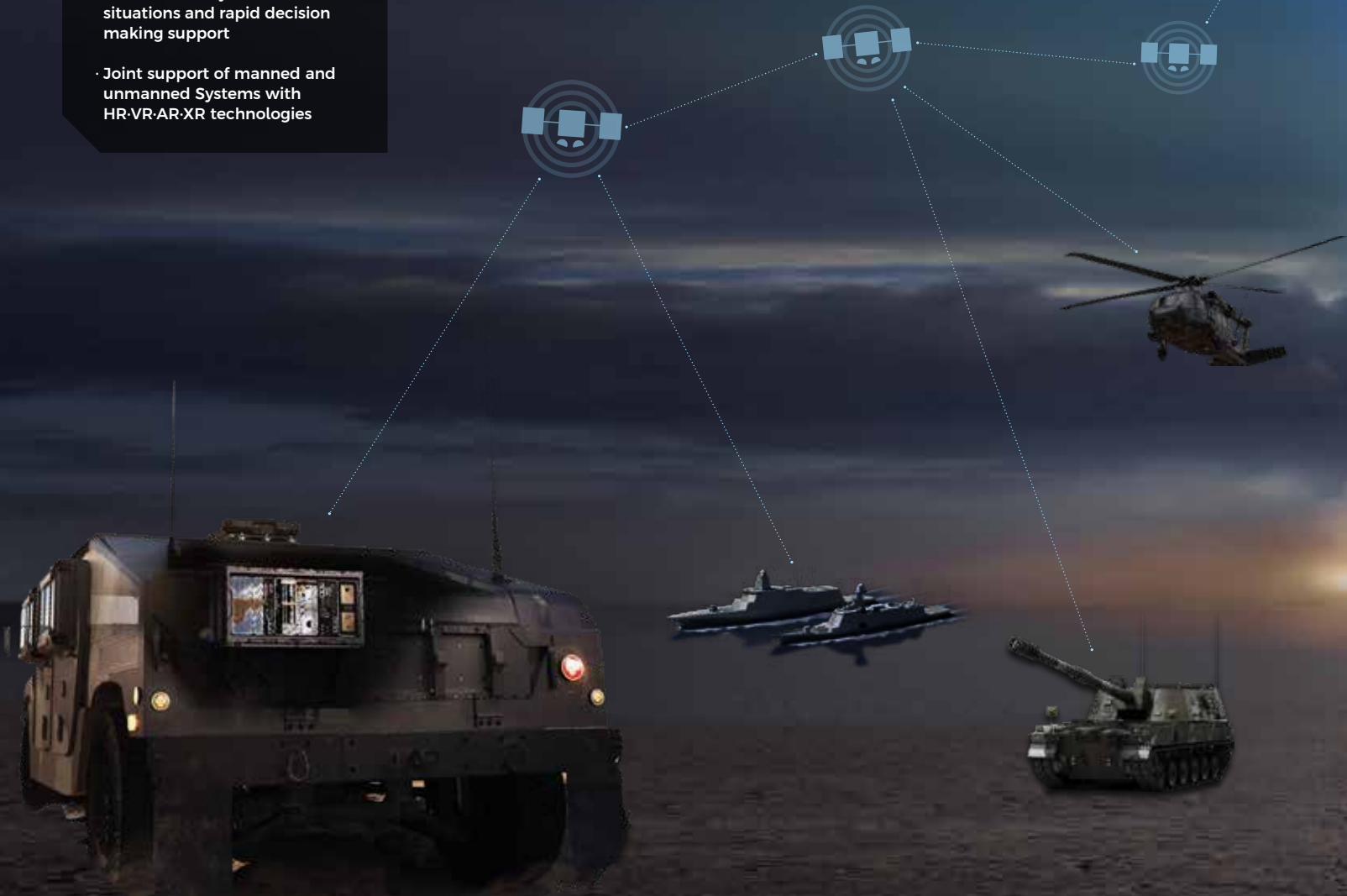
COMMAND, CONTROL,
COMMUNICATION, COMPUTER,
CYBER & INTELLIGENCE

KEY SOLUTION

- Connected between land, sea, air & space with LEO, 5G, Datalink Technology
- Real-time analysis of battlefield situations and rapid decision making support
- Joint support of manned and unmanned Systems with HR-VR-AR-XR technologies

Hyper-connected and intelligent C5I solution

C5I is the weapon system that plays the role of brain and mouth at the battlefield. ROK Forces are building hyper-connected networks which link all ISR devices at land, sea, air, space and cyber battlefields as well as surgical strike systems. By using the network, ROK Forces can quickly share battlefield situation and other information and undertake real-time integrated operations.



Hyper-Connected, Multi-Layered Communication System

It is a communication system that integrates all devices in the multi-layer battlefield space into one network for seamless distribution of command, control, surveillance, and reconnaissance information between all platforms in space, air, and ground, and enables real-time information sharing without space and time constraints.

LEO Satcom Core Components

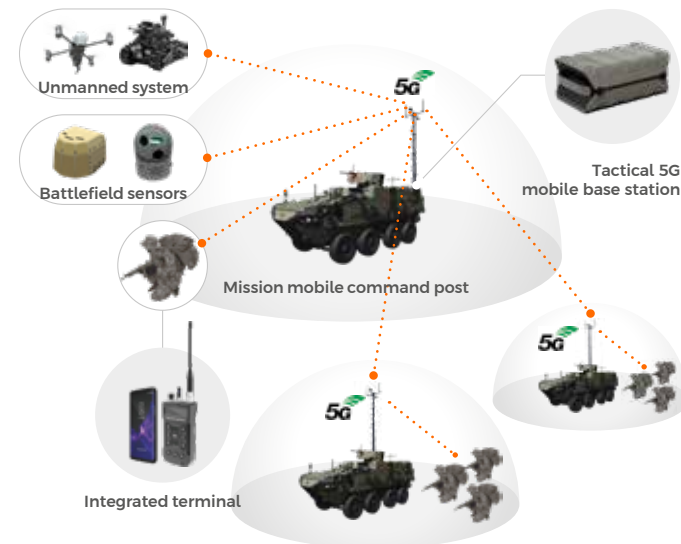
- Core components OBP, ESA, ISL
- Commercial/military low-orbit satellite-based terminals
- Multi-layer communication solutions for ground/air/space



LEO Terminal

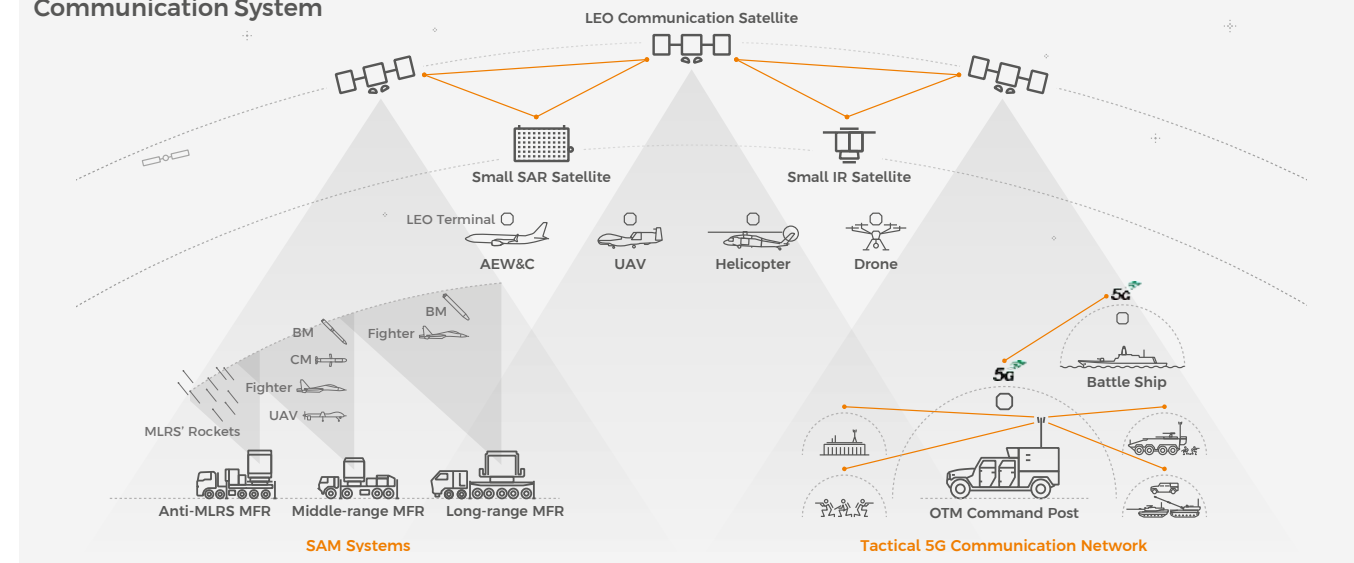


Tactical 5G Communication Network



LEO Constellation Satellite-based Hyper-Connected, Multi-Layered Communication System

As a technical partner of OneWeb, Hanwha Systems is providing low-orbit communication services to the Korean/Asian region and is promoting the supply of next-generation low-orbit satellite solutions.



Global Defense Solution

We aim to provide a comprehensive integrated air defense solution on the ground by combining command and control capabilities with engagement control capabilities.

Command & Control

Real-time sharing of battlefield situation awareness and command & control information and support for rapid command decisions.

Battle Management Systems (BMS)

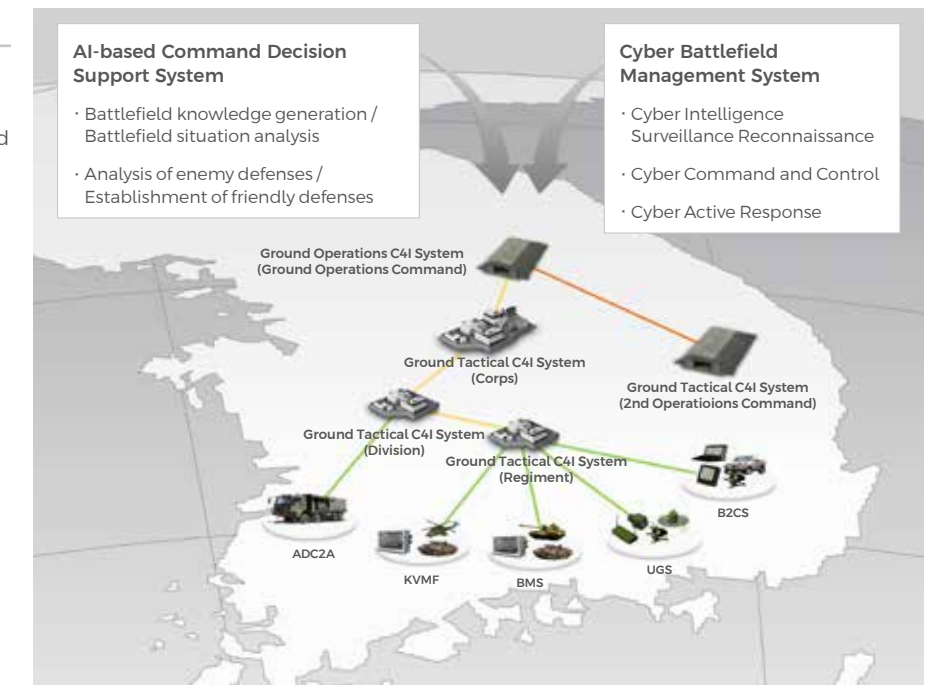
Real-time battlefield situation recognition and command & control information sharing based on ground tactical data link, KVMF

Army Tactical Command Information System (ATCIS)

Execution of rear area operations and joint operations through wartime and peacetime command and control and sharing of near real-time battlefield conditions of tactical units under the 2nd Operations Command

Battalion Battle Command System (B2CS)

Battalion-level and below battlefield situation identification and command and control information sharing



Engagement Control

Integration of major military detection assets and advanced attack assets to process tracking information for long-range artillery, ballistic missiles, and aircraft.

Korea Theater Missile Operation Cell (KTMO-Cell)

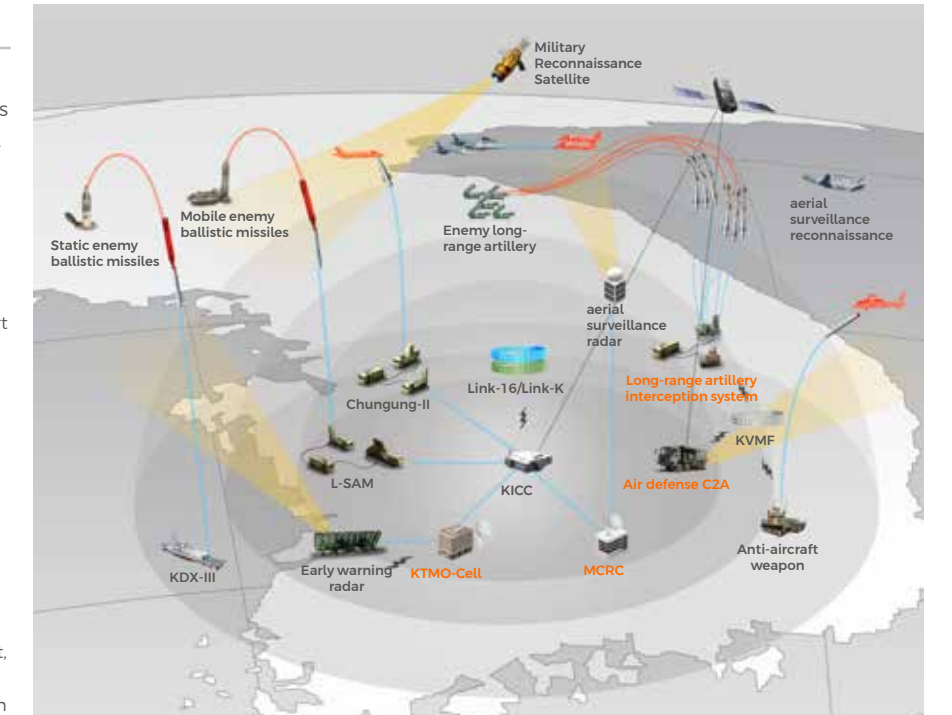
A mission-oriented ballistic missile defense operation system that integrates monitoring and intercepting assets for ballistic missiles and support for attack operations based on launch location information

Air Defense Command Control and Alert (ADC2A)

Sharing the battlefield situation such as tracking, air defense warning, air defense control for local air defense operations

MCRC Performance Improvement System for Central Air Defense Control Center

Air defense operation system that performs air surveillance, track identification, threat assessment, armament assignment, intercept control, navigation assistance, and air situation propagation functions



NAVAL

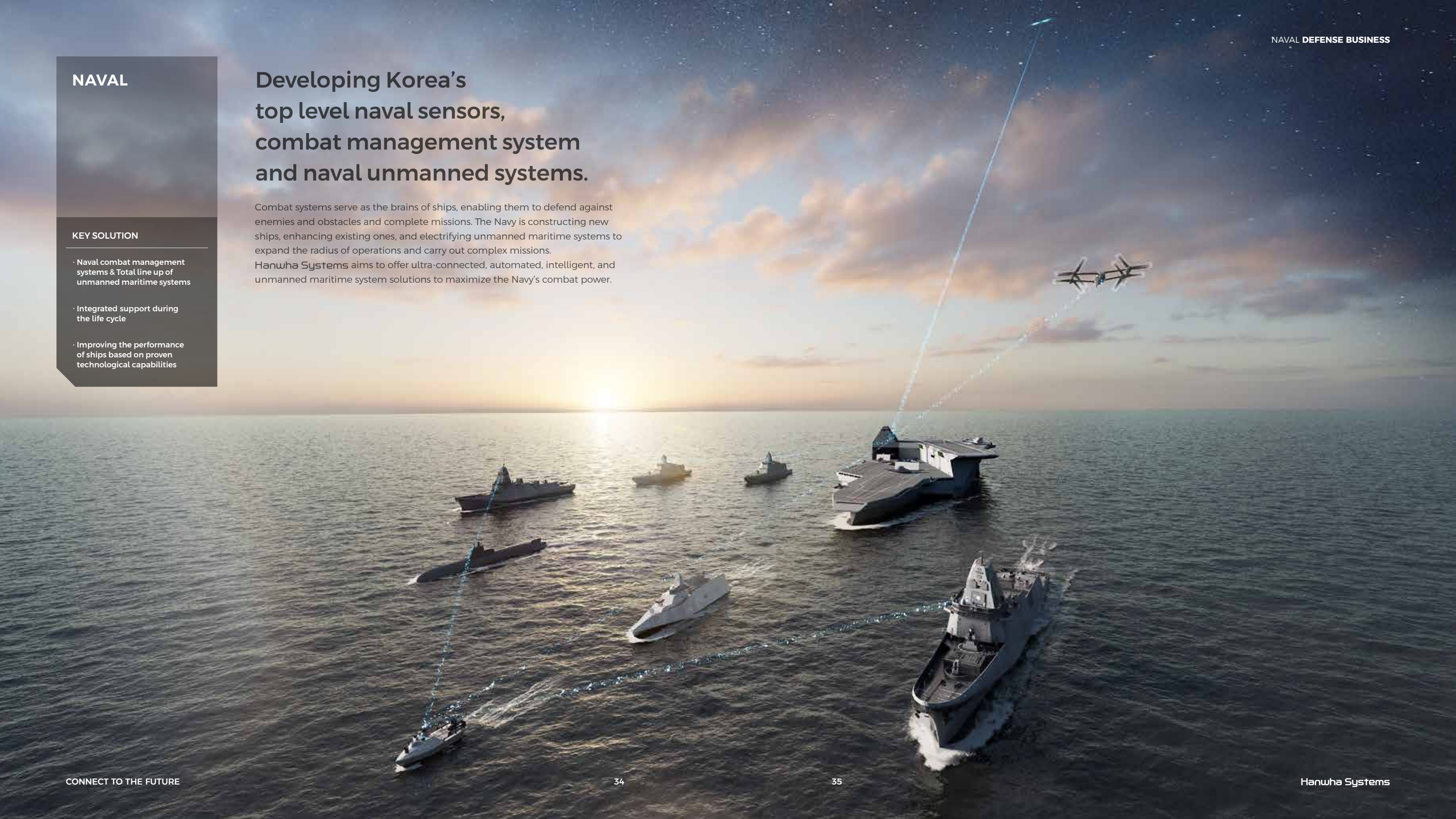
Developing Korea's top level naval sensors, combat management system and naval unmanned systems.

Combat systems serve as the brains of ships, enabling them to defend against enemies and obstacles and complete missions. The Navy is constructing new ships, enhancing existing ones, and electrifying unmanned maritime systems to expand the radius of operations and carry out complex missions.

Hanwha Systems aims to offer ultra-connected, automated, intelligent, and unmanned maritime system solutions to maximize the Navy's combat power.

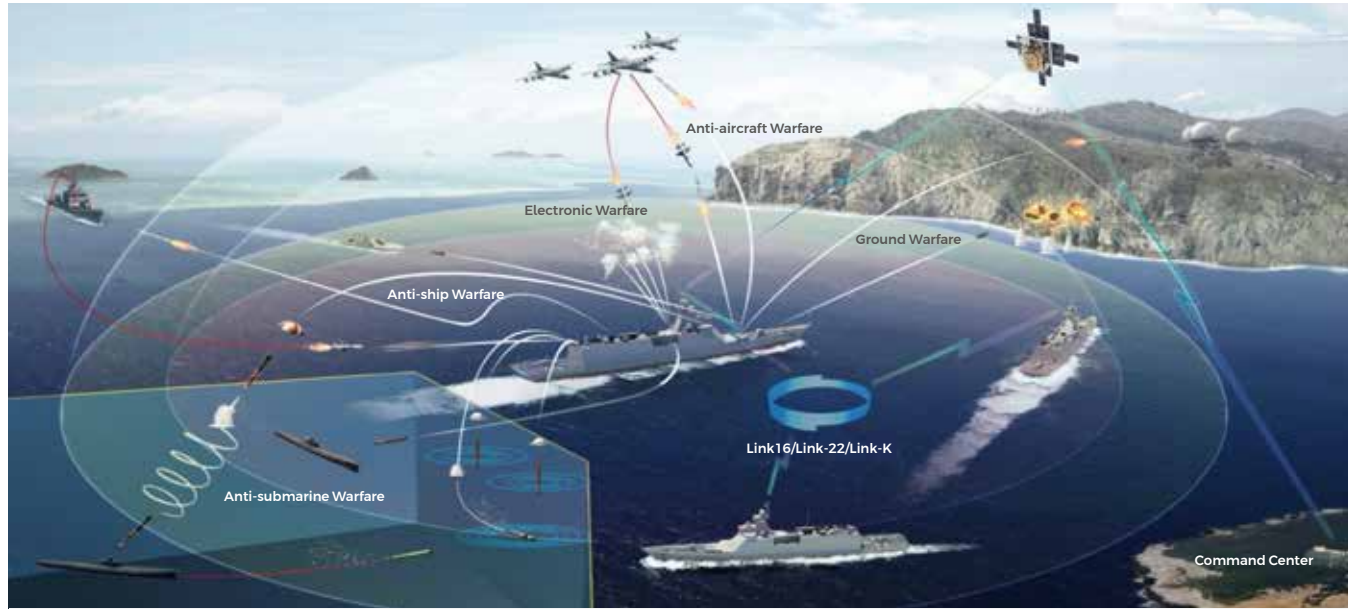
KEY SOLUTION

- Naval combat management systems & Total line up of unmanned maritime systems
- Integrated support during the life cycle
- Improving the performance of ships based on proven technological capabilities



Naval Combat Systems

As the central nerve system of naval vessels, combat system detects incoming threats approaching simultaneously by using on-board sensors, performs analysis and gives commands to weapons systems like naval guns in order to remove the threats.



1985	2000	2005	2010	2015	2020
WSA423	LPH #1	FFX B1	MLS-II	ATX	FFX B3
KDX-I	KDX-III B1	LST-II	FFX B2	MY-TRV	Indonesian209
KDX-II	PKX-A	KSS-III B1	PKX-B	KDX-I PIP	PN-FFG
					KDX-III B2
					KDDX
					PN-Corvette
					LPH #1 PIP
					KSS-III B2

TSCE Total Ship Computing Environment

Integration of ship operations to minimize operating personnel. System integration through modularization and common design based on open structure

Intelligent Ship Combat System

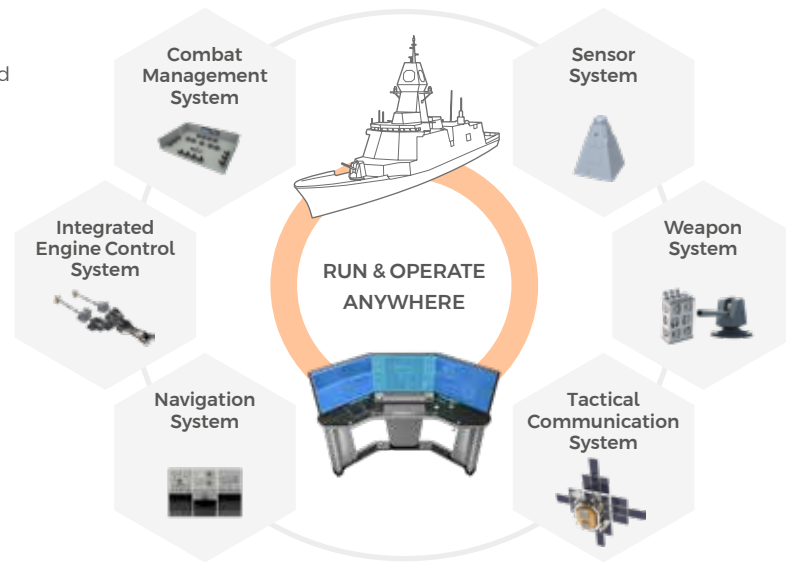
We are implementing Smart Navy to maximize ship operation efficiency and combat performance by advanced ICT to integrate shipboard systems, rapidly recognize battlefield situations based on AI, and support command decisions.

Cyber Resilience

Ensuring cyber survival through real-time cyber solutions for trap combat systems and maritime unmanned systems.

ECS Engineering Control System

ECS is a crucial device that ensures the efficient control and monitoring of various systems within a trap, including the propulsion system, power system, damage control system, and surveillance system.



Unmanned Maritime System

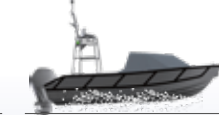
With the advanced technology, it is possible to perform combined military and private missions such as coastal and underwater surveillance, search, and marine environment survey. We are also upgrading our performance by adding autonomous control technology, swarm control technology, naval attack/ recovery technology, and standard architecture-based development technology.

Unmanned Surface Vehicle



Multi-Mission Unmanned Surface Vehicle

- 2015-2019
- Maximum speed : 35kts
- Operating time : 12 hours@20kts
- Underwater search, water surveillance and reconnaissance mission functions
- Mission device modularization design



Open Architecture Based Unmanned Surface Vehicle

- 2018-2019
- Maximum speed : 34kts
- Operating time : 10 hours@15kts
- Applying USV open architecture
- Equipped with learning-based path-following algorithm



Unmanned Surface Vehicle for search & reconnaissance

- 2019~2024
- Maximum speed : 20kts
- Support up to 10 units of swarm operation
- Swarm wireless communication network operation
- Equipped with swarm mission planning and autonomous navigation algorithms



Unmanned Surface Vehicle for search & reconnaissance

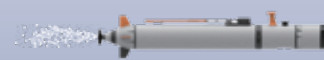
- 2021~2025
- Maximum speed : 40kts
- Support up to 10 units of swarm operation
- Operation time : 12 hours@20kts
- SS4 sea state operation
- Collaborative operation with autonomous docking, AUV, and UAV

Autonomous Underwater Vehicle



Autonomous Underwater Vehicle for Surveillance

- 2011~2014
- Maximum speed : 7kts
- Operating time : 3 hours@7kts, 20 hours@3kts
- Korea's first AUV to prove military practicality



Docking Autonomous Underwater Vehicle

- 2017~2021
- Maximum speed : 7kts
- Equipped with sensors and algorithms for underwater docking



Remotely Operated Underwater Vehicle

- 2021~2025
- Maximum speed : 5kts
- High-precision interferometric sonar installed to provide 3D image information
- Swarm control of 5 or more unmanned submersibles is possible

Unmanned Underwater Vehicle



Anti-Submarine Warfare Unmanned Underwater Vehicle

- 2017-2022
- Maximum speed : 10kts
- Operating time : 30 days
- Equipped with fuel cells and anti-submarine sensors



Multi-purpose Recon-figurible eXtra-Large UUV

- 2023-2027
- Operating time : 30 days
- Anti-submarine and mine warfare through sensors and armament

Mine Disposal Vehicle



Mine Killer Robot

- 2010-2011
- Maximum speed : 7kts
- Application of high-power thrusters capable of overcoming currents and underwater hovering



Mine Disposal ROV

- 2013-2017
- Maximum speed: 7kts
- Equipped with molded charge ammunition
- Korea's first expendable marine unmanned system



Next-generation Mine Killer Robot

- 2022-2024
- Maximum speed : 7kts
- Equipped with molded charge ammunition
- Automatically guided to the vicinity of mines by applying autonomous navigation technology

LAND

State-of-the-art ground combat systems

Hanwha Systems aims to provide interconnected, automated, intelligent, and unmanned ground system solutions to enhance the combat capabilities of the Army. To maximize combat effectiveness on the ground, we supply Integrated Vetronics System that serves as the brain for various mobile, firepower, and air defense weapon systems and warrior platforms that enhance mission capabilities by incorporating advanced technology.

KEY SOLUTION

- Real-time collaborative combat execution through the synergy of manned and unmanned systems
- Maximize combat power through integrated vetronics systems
- Multi-layered composite protection and anti-drone solutions.

- Sights
- Tracking sensor & Active Protection
- MFD
- Situation Awareness Camera
- Central Data Processing Computer
- Video Streaming Device
- HUMS

Next-generation Operational Control System
MUM-T Ground Kit

Integrated Vetronics Systems
SENSOR + COMMUNICATION + APS + HUMS + MRO

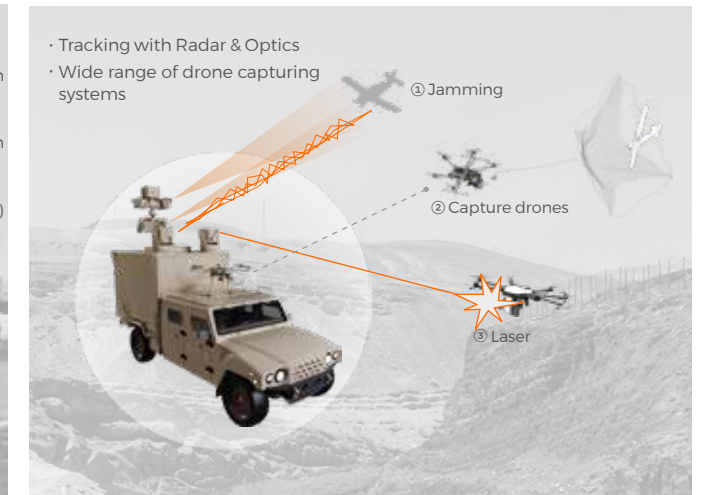
Anti-drone Systems

We are developing a comprehensive multi-layered protection (Soft-Kill, Hard-Kill) Total Solution capable of neutralizing enemy unmanned aerial vehicles (UAVs) and drone clusters from long-range to short-range.

On the Roof of Buildings



Vehicle Mounted



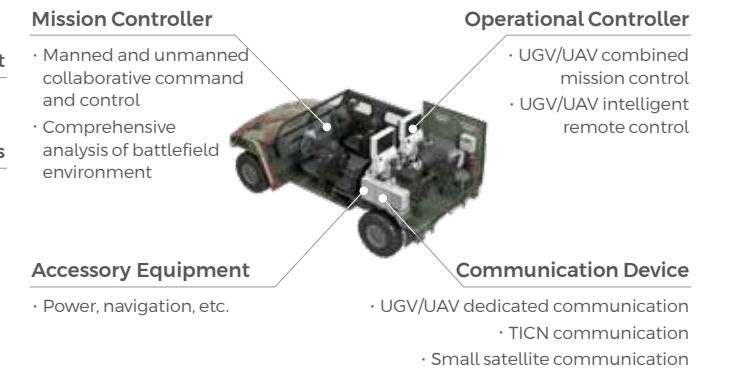
Warrior Platform

Maximizing the survivability, mobility, mission sustainment, lethality, and command, control, and situational awareness of the individual warfighter.



Unmanned and Manned System

Starting with the development of defense robot system, we have developed light combat multirole robots, and unmanned search vehicles.



MRO+

MAINTENANCE, REPAIR,
OVERHAUL AND UPGRADE

We provide advanced MRO services

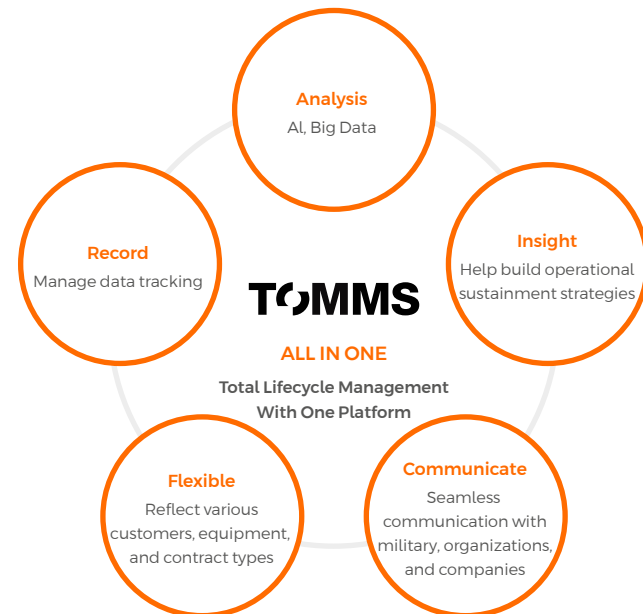
Provide optimal integrated support solutions across the entire lifecycle to maximize weapon system utilization and optimize O&M costs

MRO Platform (TOMMS)

Our TOMMS provides a total one-stop service for operation and maintenance in a way to offer diversified MRO services and provide customized integrated solutions.

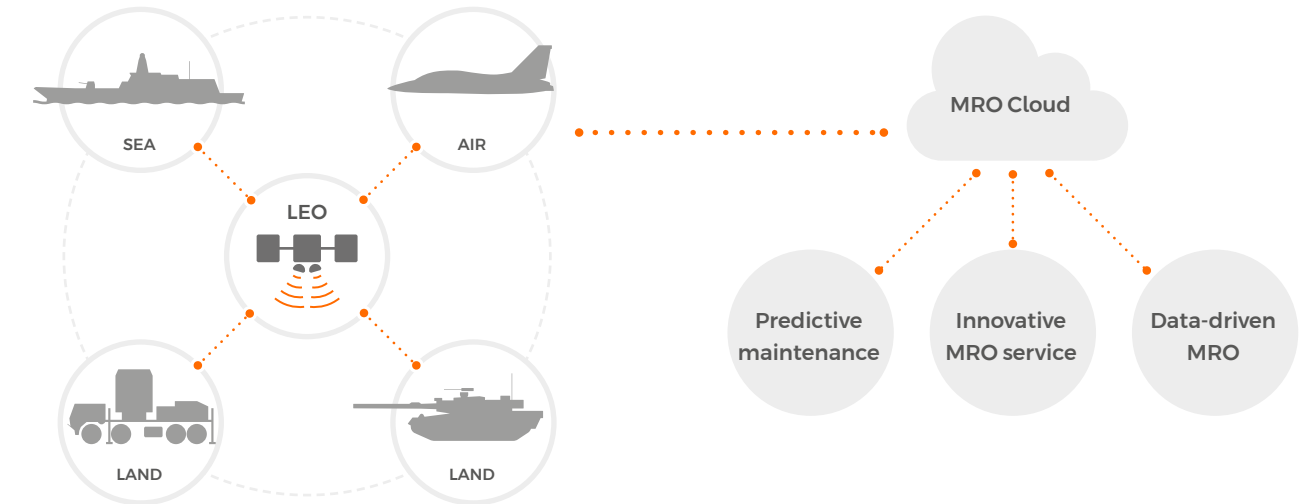


Total Operation & Maintenance Management System (TOMM) refers to Hanwha Systems' MRO platform for ensuring equipment uptime and optimizing operational maintenance costs through total one-stop services.







Data-driven Total MRO Solution

Operation and maintenance costs account for the largest portion of the total life cycle cost of equipment. In order to minimize the cost, a paradigm shift from the classical maintenance concept of preventive maintenance* to predictive maintenance** is required. Accordingly, Hanwha Systems is developing a predictive maintenance solution based in real time big data collection and analysis.



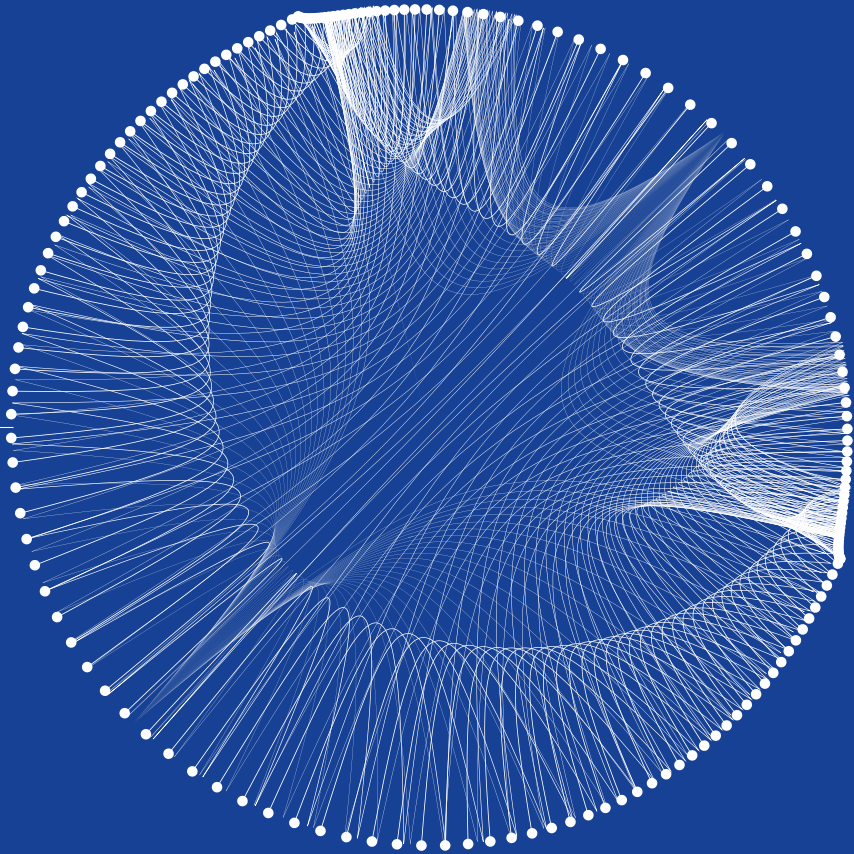
We are always ready for your mission



 <p>Real-time monitoring Equipment and operating environments</p>	 <p>Core functions Repair, facility maintenance and technical support</p>	 <p>Utilizing AI & CBM+ Predictive maintenance and minimizing downtime</p>	 <p>RAM-C analysis Enhancing operational availability and cost optimization</p>
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NEW BUSINESS

ELECTRONICALLY STEERABLE ANTENNA

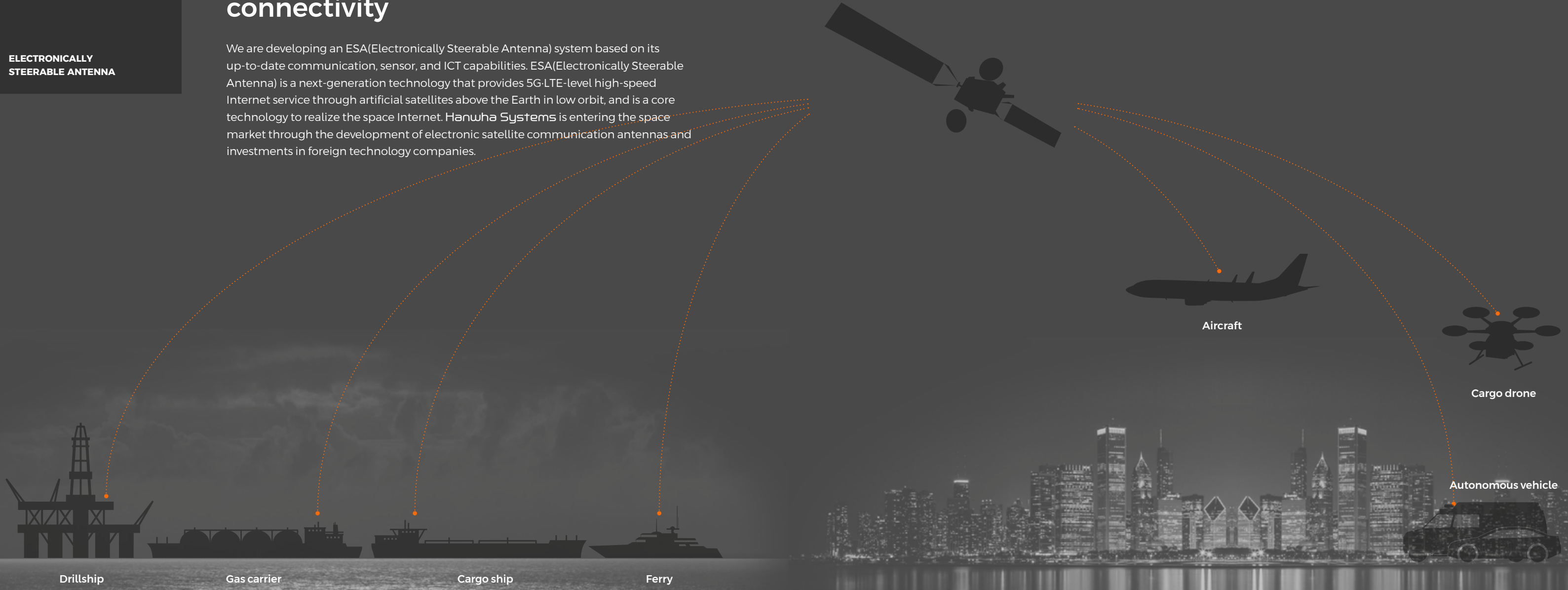


ESA

ELECTRONICALLY
STEERABLE ANTENNA

Super-speed space internet technology will provide fast global connectivity

We are developing an ESA(Electronically Steerable Antenna) system based on its up-to-date communication, sensor, and ICT capabilities. ESA(Electronically Steerable Antenna) is a next-generation technology that provides 5G-LTE-level high-speed Internet service through artificial satellites above the Earth in low orbit, and is a core technology to realize the space Internet. Hanwha Systems is entering the space market through the development of electronic satellite communication antennas and investments in foreign technology companies.



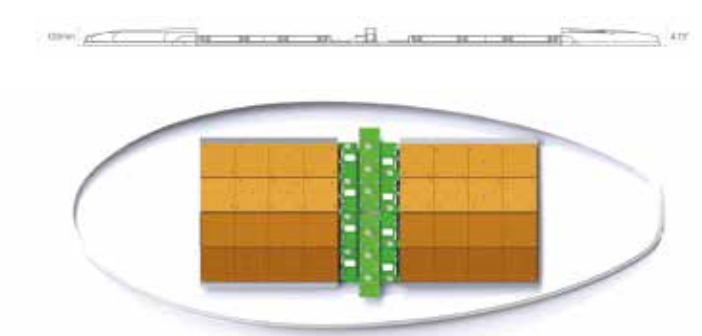
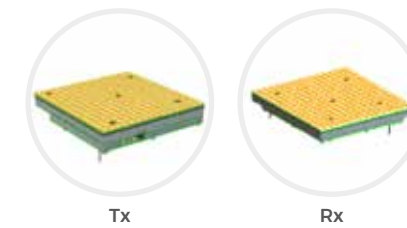
Ultra-low profile active electronically steered array for satellite communications on the move



Hanwha Phasor is the original disruptor in ultra-low profile, high performance phased array antennas for satellite communications on the move - in flight, on land, at sea. Marking a radical departure from traditional parabolic reflectors, its solid-state flat-panel technology will occupy a powerful position in the evolving satcom terminal ecosystem, particularly in the race for low-Earth orbit connectivity.

Key Technology

HIGH-PERFORMANCE
ULTRA-LOW PROFILE



Hanwha Phasor has re-engineered AESAs (active electronically-steered arrays) to provide mobile satcom in a single 7 cm (2.8 inch) deep package - radome, antenna and the entire RF chain included - at a fraction of the cost of existing AESAs.

This enterprise-grade technology will connect to any orbit in space from almost any environment on Earth - with no compromise on performance. It includes the agile multi-beam capability needed to enable seamless make-before-break service from the new low- to medium-Earth-orbiting satellites.

Meet The Family

Hanwha Phasor's initial build-standard product will be available for flight trials at the end of 2024. Sales should commence in 2025. The design will be configurable to meet customer link budgets precisely across GEO, LEO and MEO orbits for aero and land applications.



Land | Manpack



Phasor T3300

4 Tx tiles
4 Rx tiles
400W



Land | Mobile

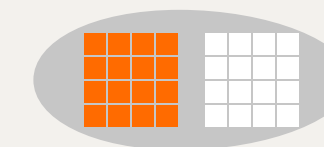


Phasor L5500

9 Tx tiles
9 Rx tiles
900W



Aerospace | Aircraft



Phasor A7700

16 Tx tiles
16 Rx tiles
1,600W



Maritime | Vessel

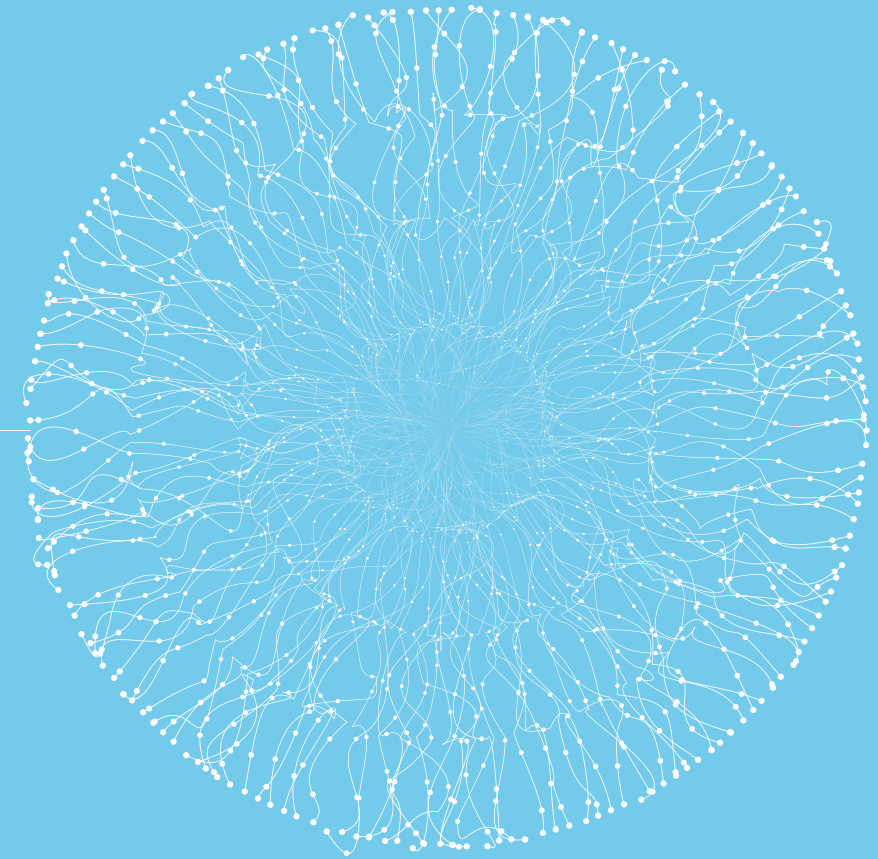


Phasor M3300

4 Tx tiles
4 Rx tiles
400W

ICT BUSINESS

DIGITAL TRANSFORMATION
SYSTEM INTEGRATION
IT OUTSOURCING
SMART C&E



**DIGITAL
TRANS-
FORMATION**

**In the 4th Industrial Revolution Era,
Hanwha Systems leads the new
future paradigms based on its key
technological prowess**

Expectations for new IT services using next-generation technologies are growing in various industrial fields. Accordingly, Hanwha Systems is actively fostering new digital technologies such as blockchain, AI/Bigdata, cloud, and smart factory, thereby creating new customer values.

AI · Big Data

We provide digital innovation and new value to our customers' businesses based on AI/Big data.

EGS Management

Through ESG digital transformation, we provide services to support ESG risk management and disclosure as well as to respond to supply chain ESG regulations

**DIGITAL
TRANSFORMATION**

Meta Campus

We provide educational metaverse services for elementary and secondary school students by combining our own technologies of artificial intelligence (HAIQV) and blockchain (H-Chain) with expanded virtual reality (VR).

ai-CODI

The ai-CODI solution utilizes Hanwha Systems' AI technology to provide customized recommendation services for college students throughout their college years.

AI · BIGDATA

Along with our own AI/Bigdata Platform, we have AI solutions such as OCR, AIR, and IR specialized in Vision AI, Language AI, and Data Science, all of which are integrated and managed under one brand, HAIQV. Based on the business domain experience accumulated for many years through internal and external projects, we can quickly process AI/Bigdata tasks that customers want, and optimize them to meet customer needs.



HAIQV is AI brand launched by Hanwha Systems, short for Hanwha Ai Quality & Value.

HAIQV- OCR

Optical Character Recognition :
Technology with which a machine recognizes the text of an optical document

It supports the entire OCR process, from optical document classification to image enhancement, error correction, and document understanding.

- Specialized OCR in financial information (medical receipts, payment confirmations, 3 types of medical bills, etc.)
- GEOINT (imagery, image analysis, and spatial information) specialized OCR

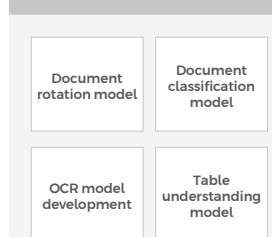
Medical / insurance specialization



- Mass AI learning of medical terminology and insurance terminology
- Specialized in actual loss insurance claim documents

Roadmap

AI OCR development & project application



AI modeled whole process



- Pre-processing - AI OCR - Post-processing AI model application

Enhance performance & add documentation

- Improvement of processing speed & accuracy
- Advanced Application & Serving Architecture
- Development of additional claim document recognition processing

Excellent performance



- High data recognition rate
- Increase in work processing speed & improvement of screening accuracy

Business area expansion & technology development

- Expansion of business area such as manufacturing, defense, and distribution industries other than insurance
- Expansion of video OCR field through lightweight technology

HAIQV-AIR

AI Image Restoration :
Technology to improve low-quality video and images to high quality ones based on the solution that blends multiple optimal models

Differentiated quality



- Excellence of providing the solution
- Experience of winning the first place in the global challenge

High versatility



- Wide range of industries available for entry

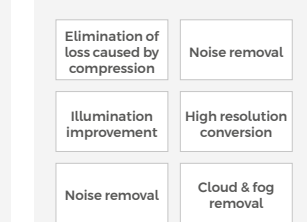
Patent ownership



- Technology related patent (Multi-domain image restoration system and method)

Roadmap

Launching of core restoration model service



Air/satellite, smart tolling-based service application

- **Defense business**
- Reading and analyzing aerial/satellite images
- **Expansion of application field**
- Highway CCTV image analysis

Application expansion and start On-Device service

- **Improvement of convenience by applying On-Device**
- **Expansion of application field**
- Surveillance and reconnaissance: TOD/CCTV identification rate
- Media: Improvement of movie/drama quality

HAIQV-IR

Information Retrieval :
Technology with which a machine recommends meaningful information

Semantic-based search



- PLM* based learning capability to search for similar contents, even for questions not previously defined

Efficient solution management



- Use of light algorithm model, but no use of separate meta data
- Less resource utilization/fast recommendation speed

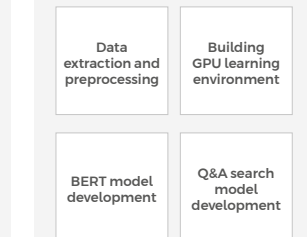
Efficient solution management



- Automated provision of expert knowledge/advisory services
- Improvement of work speed through AI matching

Roadmap

Securing a natural language model & applying the project



Advanced information matching performance & added functionality

- Improvement of language model learning method
- Extension and development of models applicable to long & short sentences
- Serving module design and advancement for real-time service
- **One-stop AI information matching service**

Adding NLP algorithm & expanding business area

- Expansion of legal/ medical / insurance businesses through domain extension of natural language model application
- Addition of NLP algorithm and function
- Addition of algorithms such as Entity Name Recognition (NER), document classification, and MRC

*PLM : Pre-Trained Language Model

ESG Management

Through ESG ON solutions, Hanwha Systems can support corporate customers' ESG digital transformation. By collecting and analyzing ESG data scattered inside and outside the company on a single platform, you can proactively manage ESG risks and effectively respond to future ESG disclosures. In addition, you can respond to increasingly stringent supply chain ESG regulations.

We also offer supply chain ESG diagnostics and due diligence services to meet increasingly stringent supply chain ESG regulations.



ESG Assessment/
Disclosure



Response
Supply Chain ESG
Management

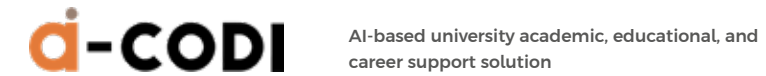


Risk
Management

Scalability / Flexibility	Integration / Convenience	Proactive Risk Management
<ul style="list-style-type: none"> Utilize various industries/ customers and partners Manage ever-changing ESG indicators 	<ul style="list-style-type: none"> Manage internal and external data integration Meet the needs of various stakeholders 	<ul style="list-style-type: none"> Provide visibility into ESG management status Risk/vulnerability management
<ul style="list-style-type: none"> Customizable organizational boundaries and flexible indicator management capabilities Support for applying client's brand identity Ability to connect with various legacy and 3rd party solutions 	<ul style="list-style-type: none"> Manage linkage and integration of company indicators and rating/disclosure agency indicators Manage supply chain ESG data integration User-friendly and intuitive UI/UX 	<ul style="list-style-type: none"> Periodic (quarterly/annual) self-diagnosis and simulation-based vulnerability management Proactive risk management through supply chain self-diagnosis and rating agency due diligence

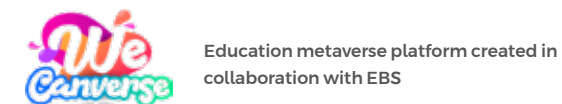
ai-CODI

As an AI-based academic affairs/employment recommendation solution for colleges, Hanwha Systems has developed a customized recommendation algorithm using its own AI/Big data platform and experts based on its rich education business experience, and provides core functions as a solution.



Education metaverse

Hanwha Systems developed a metaverse platform by integrating its own technologies of artificial intelligence, HAIQV, and blockchain, H-Chain, in the expanded virtual reality and provides educational metaverse services for elementary and middle school students. Based on this, we plan to build a platform, enterprise metaverse, and provide various content services.



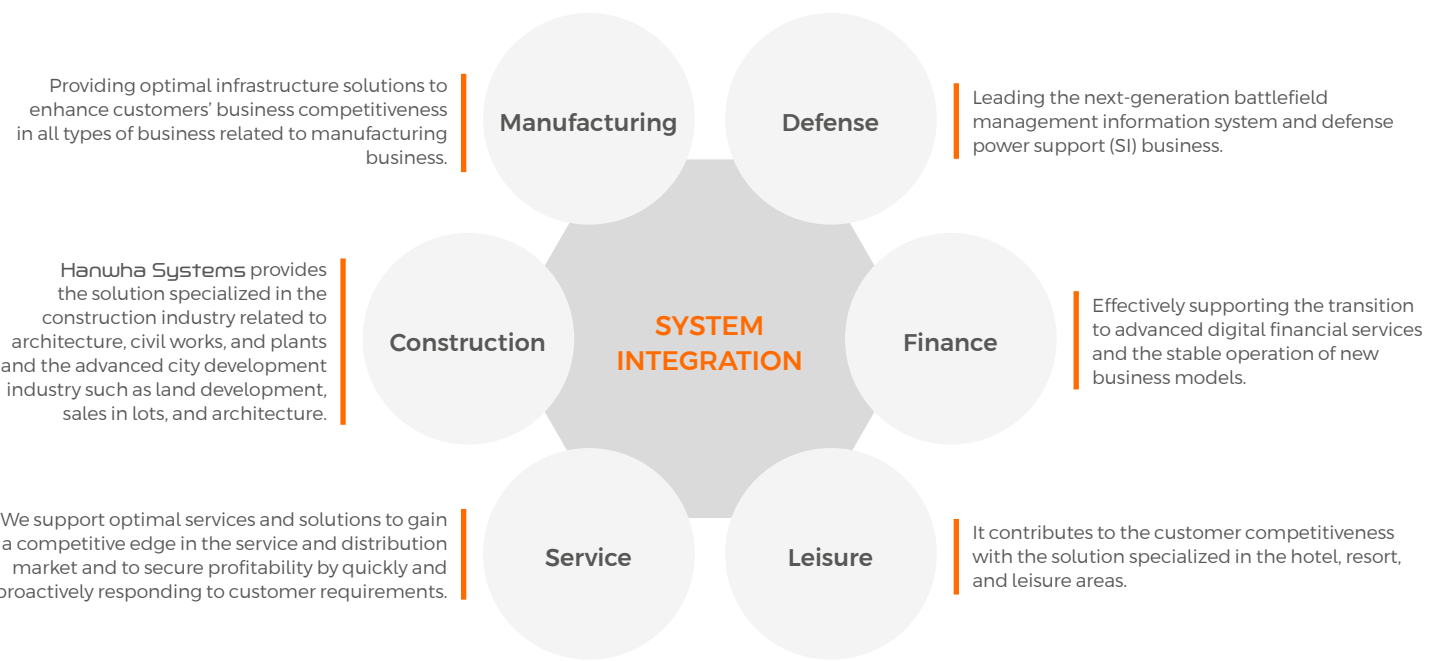
Launched the first 3D-based Metaverse	Providing customized content service	Developing advanced Metaverse platform
<p>Hanwha Systems' metaverse platform is the first 3D-based metaverse with LMS in Korea, and it is the only metaverse in Korea that has been officially opened to four OS (Window, iOS, Android, Chrome) simultaneously after completing field demonstrations and beta tests.</p>	<p>WeCanvas not only provides students with lively learning opportunities in the real world, such as school classes, English conversation, SW coding, independent reading, and EBS contents (more than 80,000), but also allows users to create their own contents.</p>	<p>It is a metaverse platform that combines core systems (mission/learning/growth/reward) based on EduTech know-how accumulated over 20 years, and advanced IT technologies such as speech recognition and analysis and generative AI.</p>

SYSTEM INTEGRATION



Advanced & integrated industrial infrastructure solutions

We focus on innovation, performance, and higher value of IT solutions based on the latest IT technologies, systematic marketing, customer management, information management, etc. based on our expertise in manufacturing (powder, defense, chemical, oil, energy, machinery, solar, etc.) and construction.



Manufacturing & Construction



Hanwha Systems provides the state-of-the-art IT solution combining the IT system with the traditional manufacturing and construction industries. Besides finance, accounting, sales, production, and purchasing, we implement an integrated information system that connects various additional solutions such as advanced Human Resources (HR) management, electronic purchase IPS, knowledge management (KM), Group Ware (GW), Electronic Document Management System (EDMS), and Customer Resource Management (CRM) system.

- Integrated information system
- Supply chain management
- Product life cycle management
- Process innovation · Strategic plan for informatization

Finance



The financial industry is the area where the trend of the digital innovation generated from the IT technology occurs most actively. Hanwha Systems develops the business model customized to the fast changing financial environment and the new service on the basis of the various know-hows accumulated in the financial area and the advanced IT technological prowess.

We have successfully completed the construction of next-generation systems for major companies such as Hyundai Marine & Fire Insurance, Dongbu Insurance, National Credit Union Federation of Korea, and AIG Insurance. Also, our self-developed business solution brand for insurance business, W1NE, has made it possible to implement fast deployment transitions as the latest next-generation system incorporates DT technology and reflects financial regulations/regulations.

- Next-generation system
- Retirement pension system
- Mobile · Cyber Marketing
- Comprehensive financial planning system



Service & Leisure



In order to lead the service and leisure industry which are emerging as future growth industries, we provide tailored and specialized services for the customers. The competitiveness of the service and leisure industries can be enhanced by providing the various solutions with the various IT service experiences based on the MACS (Mobile, Analytics, Cloud, and Security) including the marketing, customer management, and information management in the service and leisure industries.

- Resort · Hotel integrated management system
- Service · Distribution Sales Management System
- Customer relationship management

**IT
OUTSOURCING**

**Customized & specialized to
the customers with the best IT
capabilities and know-how**

We provide state-of-the-art application operation services to secure global competitiveness and optimal infrastructure solution services to respond to diverse IT environments. We will increase the business efficiency and productivity of our customers with professional operating services.

SMART C&E

**Professional IT solutions
for rapidly changing market**

Application Management



Hanwha Systems helps the customer to have the process of the global advanced company level by providing the customer with the service needed for customer to have the global corporate competitiveness.

Infra Management Service



Hanwha Systems provides the global network service environment suitable to the various industries on the basis of the international standard models such as the IT service control international standard of ISO 20000 and the information protection international standard of ISO 27001.

System Management Service



It has the best IT infra management service suitable to the customer requests from the server resource calculation to hardware and software installation, maintenance, upgrade, patch, backup, and recovery and is fully prepared to enable the customer to always maintain the best work condition.

Cloud Management Service



Hanwha Number ONE Cloud Solution has gotten certified ISO 27017, an international certification regarding cloud security, and its technology has been internationally recognized. You can use HONE Cloud for only the services you require, at any time when you need them.

IT OUTSOURCING

Smart Tolling

- Non-stop toll payment system through high-pass and image recognition
- Provision of an optimal storage system for various road environments

Smart Security & Control

- Provision of an integrated security platform with integrated intelligent monitoring and analysis technology
- Video monitoring and analysis · communication and control · infrastructure



Smart Building & Home

- Smart building operation and building operation cost reduction
- Increased work efficiency by creating a high-speed network environment

Smart Factory

- Implementation of factories with predictable efficiencies based on data
- Provision of AI/Cloud-based facility predictive maintenance solution



Smart Office

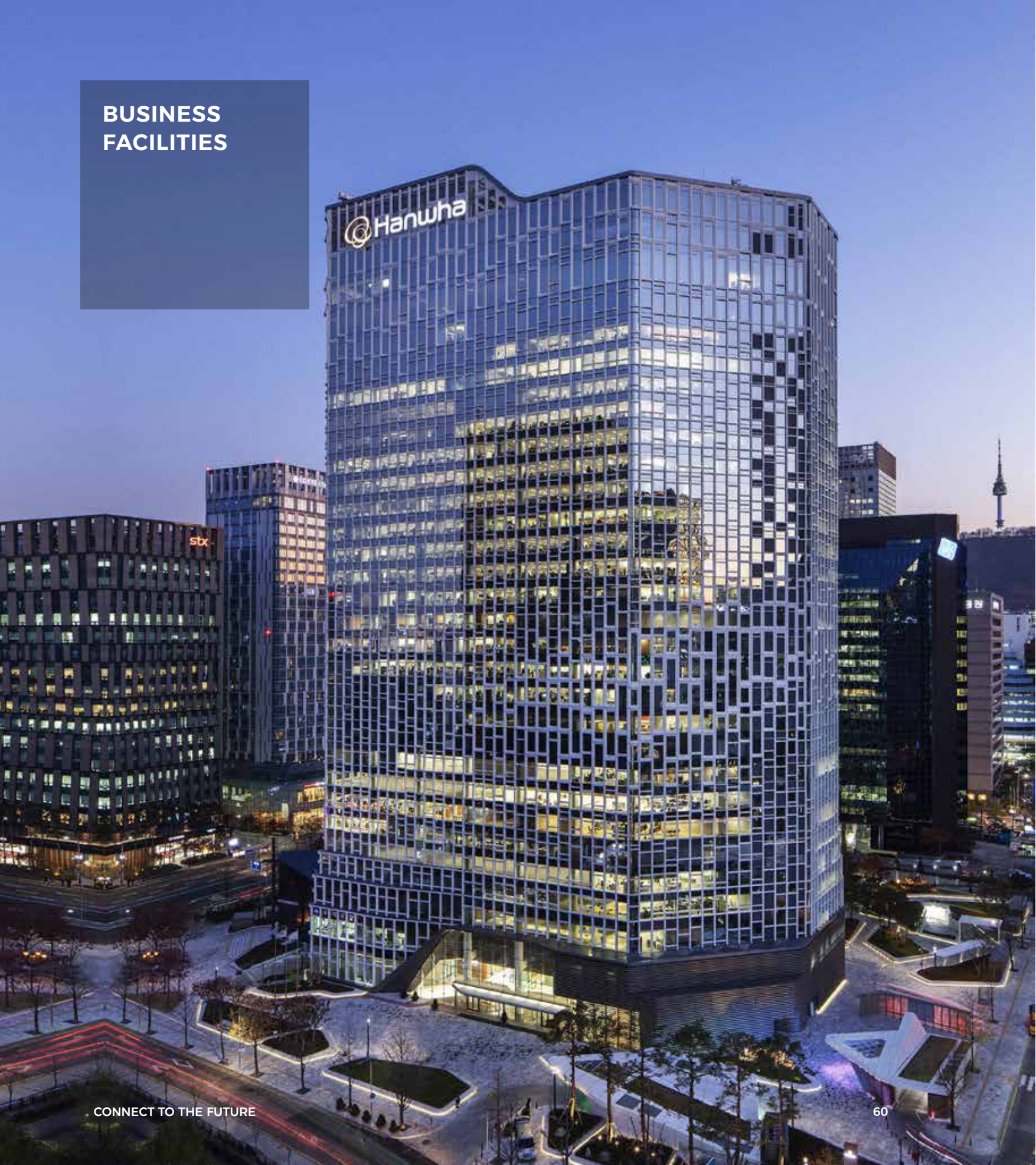
- Provision of a smart learning platform for corporate human resource development
- Provision of AI-based ai-CODI solution for college students' academic affairs, education, and employment support

Smart Work

- Establishment of systematic security and efficient wireless environment
- Environment that enables real-time communication without time and space constraints

SMART C&E

BUSINESS FACILITIES



Defense



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 Management support / AIR SPACE
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 Cheonggyecheon-ro, Jung-gu,
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 82.2.729.3030



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 Seongnam-si, Gyeonggi-do, 2F-9F
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Yongin (R&D)
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Gumi (R&D-Manufacturing-MRO)
 Naval R&D Center / Quality /
 Production technology / MRO
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Seohyeon (R&D-Sales)
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 Yuseong-gu, Daejeon
 82.42.824.3529

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 Gyeonggi-do
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Gumi Center

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 Gyeongsangbuk-do
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Chuncheon Center

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Donghae Center

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Pyeongtaek Center

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