

# Company Profile

“Global Defense Company”

Insopack Co., LTD.



# 1. Introduction

*'Special Purpose Product' lineup ready for all purpose*

- ✓ From military armored vehicle radio to civilian digital radio, **Full line-up ready!**
- ✓ **Global level technology acquired and commercialized special purpose radio**
- ✓ Possess products that are **supplied to or planned for** weapon systems



ACRO-PRR2V  
(차량용무전기)



ACRO-ANC2



ACRO-S2



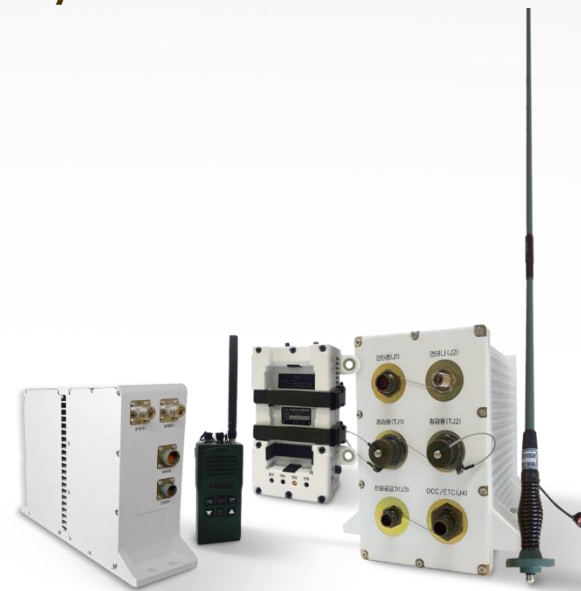
ACRO-PRR2



ACRO-WING



ACRO-V/AI  
(in development)



High Speed Radio  
System

## Outline

# Civilian and Military Field History

May 2000 **Electronics and Telecommunications Research Institute(ETRI) Venture Company**  
 Sep. 2000 Insopack Co., LTD. Attached Research Facility  
 Nov. 2000 Small and Medium Business Administration venture company  
 Mar. 2001 Ministry of SME ERP designated company  
 Apr. 2001 Designated as Specialized research agent military service exempt company  
 Aug. 2001 Ministry of SME, INNO-BIZ company  
 Sep. 2001 ISO 9001 : 2001 certified  
 Feb. 2002 Dusan Group Pakalive Callcenter '2001 Korea Web Award' Excellence Award  
 Mar. 2002 **Designated as MOD K2 high speed wireless communication device prototype company**  
 Jan. 2003 Designated as excellent company by KIBO  
 Jan. 2004 Designated as a defense company  
 Dec. 2005 Samsung Electronics GSM H/W development excellent partner  
 Jun. 2006 KIBO A+ Member  
 Dec. 2006 Samsung Electronics GSM H/W development excellent partner  
 Nov. 2007 Certified as a management innovating small/medium company  
 Dec. 2007 New technology (NET) and GS(Good Software) certified  
 Jan. 2008 **Selected as future solidier developer company**  
 Mar. 2009 Military Spectrum management system contraction business verification and evaluation company  
 May 2009 Gimpo Airport wireless network and developed a GIS engine (AFSIS-6 developed and subcontracted)  
 Jul. 2009 Military frequency management and analysis system building concept study company  
 Oct. 2011 Developed Defense Science Research Institute Legged robot wireless LAN  
 Dec. 2011 Ministry of Knowledge Economy next generation platform development business prototype company  
 Dec 2011 **Supplied Army Education Command small troops radio**  
 Sep. 2012 **7th corps small troop commanding sensor network builder company**  
 Oct. 2012 Overseas distribution network expansion business agency by ministry of SME  
 Dec. 2012 **Selected as outstanding security company by the Military Security Office**  
 Jan. 2013 ISO 9001:2008 certified

One of 90  
Defense  
Companies

Jan. 2013 Mass produced mobile auxiliary battery (Energy Bank)  
 Feb. 2013 **Mass produced two way communication terminal (ACRO-S)**  
 Apr. 2013 New technology (NET) certified  
 Jun. 2013 **Army Information School outdoor tactical training control device builder company**  
 Jun. 2013 promising small and medium-sized export companies and agreement of the **Daejeon Defense Venture Center of the Korea Institute of Technology**  
 Jun. 2013 United States of America/Defense Supply vender, NATO procurement vender, UN procurement vender, United States Forces Korea procurement vender  
 Nov. 2013 First vender for large scale distribution network in the United States  
 Dec. 2013 1 million dollar export tower and Minister award from the minister of Ministry of Trade, Industry, and Energy awarded  
 Jul. 2014 **Small Global Defense Company upbringing business**  
 Oct. 2014 Two way radio designated as an excellent product by the Public Procurement Service  
 Dec. 2014 **Supplied the 5th division with a two way radio (ACRO-SM)**  
 Apr. 2015 **Supplied the Army Education Command with location based digital radio (ACRO-P)**  
 Jul. 2015 Supplied the Central National Agricultural Cooperative Federation with Unmanned helicopter use two way radio  
 Nov. 2015 Supplied 6 navy fleets with radio selected as the best commercial goods by the Ministry of Defense  
 Jun. 2016 3D carbon mash mat released  
 Apr. 2017 Mass produced headset type full duplex radio (ACRO-ANC)  
 May 2017 VAR(Video Assistant Referee) communication system for the Korea Football Association  
 Jun. 2017 Supplied an Uninterrupted Wireless Emergency Broadcasting Device (Subway 5th line)  
 Aug. 2017 Supplied Spain Madrid Football Federation with two way radio  
 Jan. 2018 **Supplied ACRO-PRR2 to the Korean Special Forces**  
 Jul. 2021 **Selected as the 2nd purchase project for fighter radios**  
 Nov. 2021 **Completion of the 1st electrification of special operation**  
 Dec. 2021 Designated as 1000 National Representatives of Innovative Companies  
 Jan. 2022 Designated as a promising small and medium export enterprise  
 Apr. 2022 **Completion of 1st electrification of special operation radio (Marine Corps)**  
 Aug. 2022 **Concluded a contract for the 2nd purchase of fighter radios**  
 Aug. 2022 **Selected for the 2nd procurement of radios for special operations**  
 Jan. 2023 **Combat radio 3rd project in progress**

Korean  
military  
monopoly

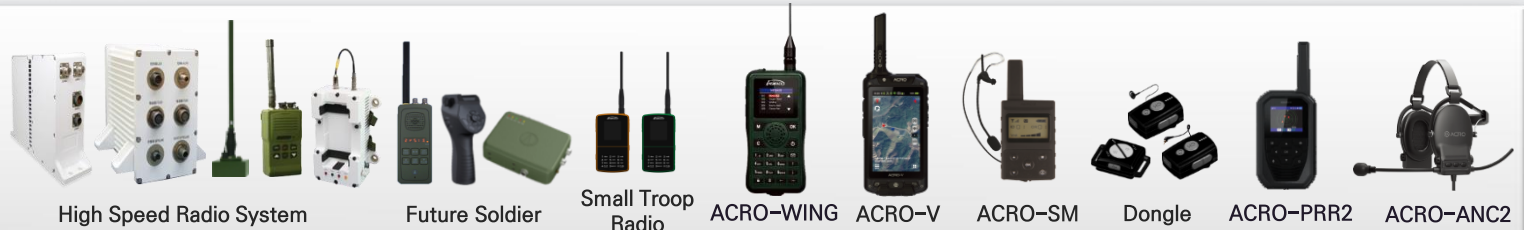


## Outline

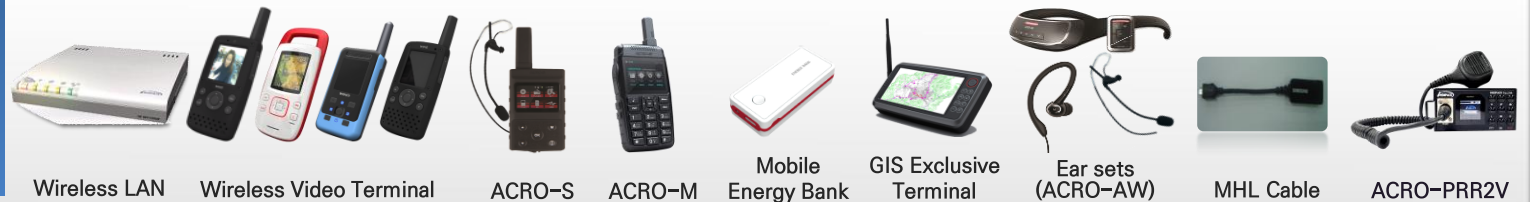
# Main Product Introduction

*'World best turnkey developed product' with both core military technology and commercial technology combined*

### Military Communication Device



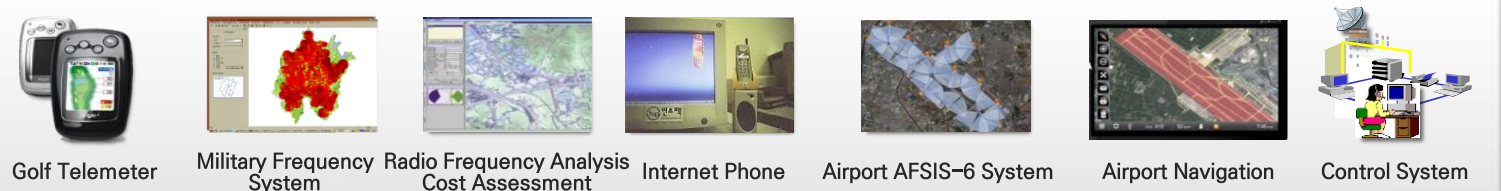
### Special Communication Device



### Cellphone like Radio Samsung GSM Cellphone



### Wireless System GIS/GPS Related Device



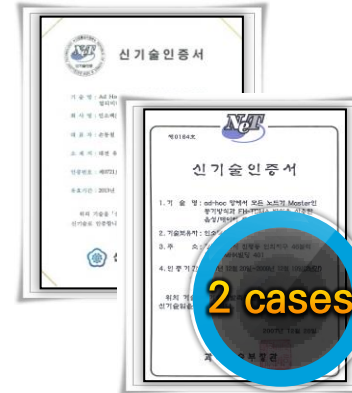
*Possesses both technology for product development and production management*

## Patent



- Transmission Relay method between terminals for group networks
- Asynchronous MAC protocol based sensor node and sensor node executed data transmission method

## NET Authentication



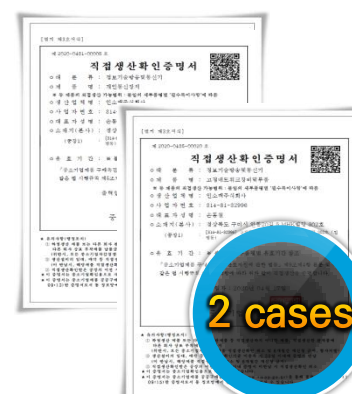
- 'Unique Technology' Synchronization method where all nodes in an Ad-Hoc network are masters (New Technology NET 2007, 2013 acquired, new technology idea, MOD applied technology, non-world standard, Insopack only technology)

## Program Registration Certificate



- Multi relay algorithm program
- Syncing algorithm for Different model terminals
- Data basing program for GPS Tracking data
- Multi-hop relay program for long range communication
- Security key management program
- Password initialization program

## Direct Production Confirmation



- Personal communication device (Wireless Transmitter-Receiver)
- Fixed Network Device and Components (Wireless Communication Device)

## Outline

# Acquired Certificates

*Acquired variety of certificates for Product Quality, Business Contracts, Production Management, Foreign Exports*

### Certified Ability

#### 방위 산업 체 지정서

주 소 : 경북 구미시 진평동 인의구획정리지구  
46블럭1롯트 MHK빌딩 401호

기업체명 : 인소팩(주)

대표자명 : 손동철

주민등록번호 : [REDACTED]

귀 업체를 방위산업에관한특별조치법 제4조  
및 동법시행령 제5조의 규정에 의거 동법 제  
4조의2의 규정에 의하여 지정된 방산물자중  
귀 업체에서 담당하는 품목에 대한 방산업체로  
지정합니다.

2005년 7월 19일  
(최초발급일자 : 2004. 01. 30)

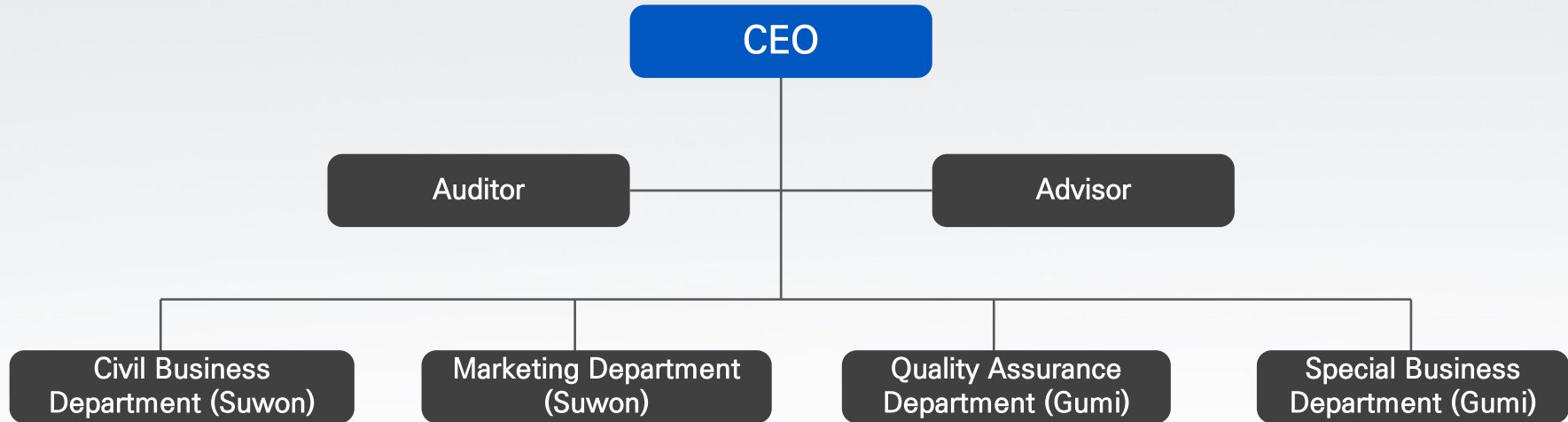
산업자원부장관

**First  
Designation**  
For venture company

Category	Acquired Certificate	Agency
Certification and Approval	Attached Company Research Institute Approval	Korea Industrial Technology Association
	Venture Company Certificate	Korea Technology Finance Corporation
	Innovative Technology Small/Medium Business(INNO-BIZ) Certificate	Small and Medium Business Venture Department
	Defense Company Designation Approval	Ministry of Trade, Industry and Energy
	Innovative Management Small/Medium sized Business Certificate	Daegu-Gyeongbuk Regional Small and Medium Business Administration
	Small and Medium Sized Business Approval	Small and Medium Business Venture Department
	New Technology Authentication Certificate	Ministry of Trade, Industry and Energy
	Designated as Promising Small/Medium Sized Business for Exports	Daegu-Gyeongbuk Regional Small and Medium Business Administration
	Excellent Technology Grade Certificate	Korea Technology Finance Corporation
	Excellent Product Designation	Public Procurement Service
	Software Quality Certificate (Good Software)	Telecommunication Technology Association
	Certificate of Selection for Global Leader Procurement Company	P300 Project Management Committee
	Quality Management System Certificate	ICR
	Direct Production Confirmation Certificate	Korea Federation of Small and Medium Business
	CE	Korea Industrial Technology Association
Awards	KC	Seongnam-Si
	FCC Certificate	Timco Engineering
	Certificate of Export Business for Defense material	Defense Acquisition Program Administration
	Citation	Defense Acquisition Program Administration
	Citation	Korea Defense Security Command
	Citation	Daejeon Regional Employment and Labor Administration
	Citation	Ministry of Trade, Industry and Energy
	Citation	Ministry of Trade, Industry and Energy
	1 Million Dollar Export Tower	Korea International Trade Association

## Outline

# Company Structure



Gumi headquarters and mass production line

Suwon branch and assembly line



## 2. Outline for Applied Technologies

# “Ad-hoc Implementation”

*(Technology Strength) ‘Unique Technology’ Synchronization method  
where all nodes in an Ad-Hoc network are masters*

(New Technology NET 2007, 2013 acquired, new technology idea, MOD applied technology, non-world standard, Insopack only technology)

## Intellectual Property Rights in Korea (Patent etc.)

**Korea** Publicized Patent 2002-063698

**Korea** Publicized Patent 2007-031323

- Mode change is made for communication if a communication request is made from a different node while communicating with a Master
- Not all nodes are designated as Master

## Intellectual Property Rights Outside Korea (Patent etc.)

**USA** Publicized Patent 2002-031100

- Each node can be temporally switched to a master node o avoid desynchronization
- Converts into a Master then converts back to a slave when interference packet is detected

**Japan** Publicized Patent 2004-236017

- Role of a master node in a standard Ad-hoc
- Not all nodes are designated as Master

## Certificates

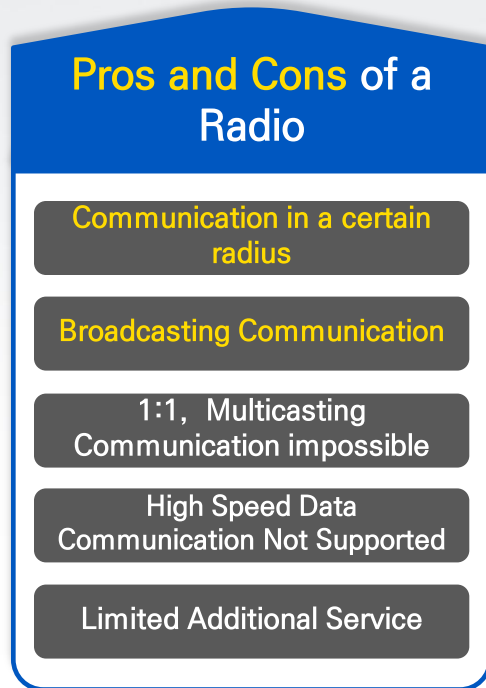
Unique  
Communication  
Technology for  
Ad-hoc



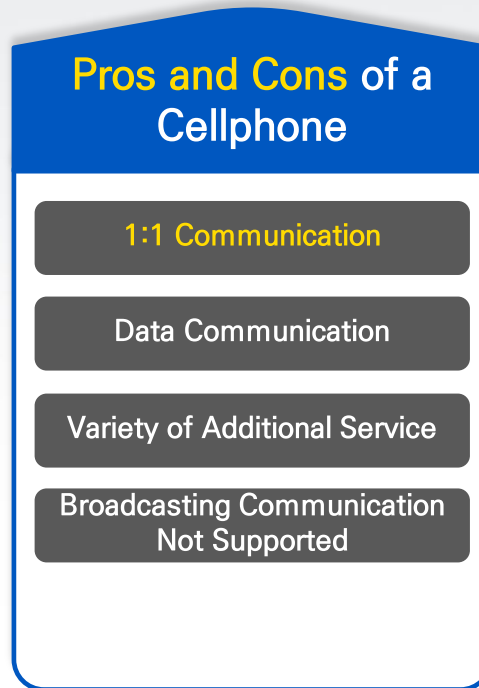
Category	Supported Service	Communication Method	Station	Ad-hoc / Mesh	Fee
Cellphone	Voice/Text/Video/GPS/GIS	full-duplex	Required	Not Supported	Required
TRS	Voice/Text	half-duplex	Required	Not Supported	Required
Wireless LAN	Voice/Text/Video/GPS/GIS	full-duplex	Required	Not Supported	Partially Required
Bluetooth	Voice/Text/Video	full-duplex	Required	Not Supported	Not Required
Military Radio	Voice	half-duplex	Not Required	Not Supported	Not Required
Insopack Radio	Voice/Text/Video/GPS/GIS	full-duplex / half-duplex	Not Required	Supported	Not Required



# Technology “Cellphone like Radio”



+



**Combines the strengths of both Radio and Cellphone to a certain degree**  
→ Voice, Text, Still Image/Video, GPS/GIS, Bluetooth, Voice recording, WiFi (Wireless LAN)

## SYSTEM

# Squad / Platoon Level Communication

- On top of voice, GPS, Text, Image transmission may be utilized in squad / platoon level communication



# SYSTEM

## Special Forces

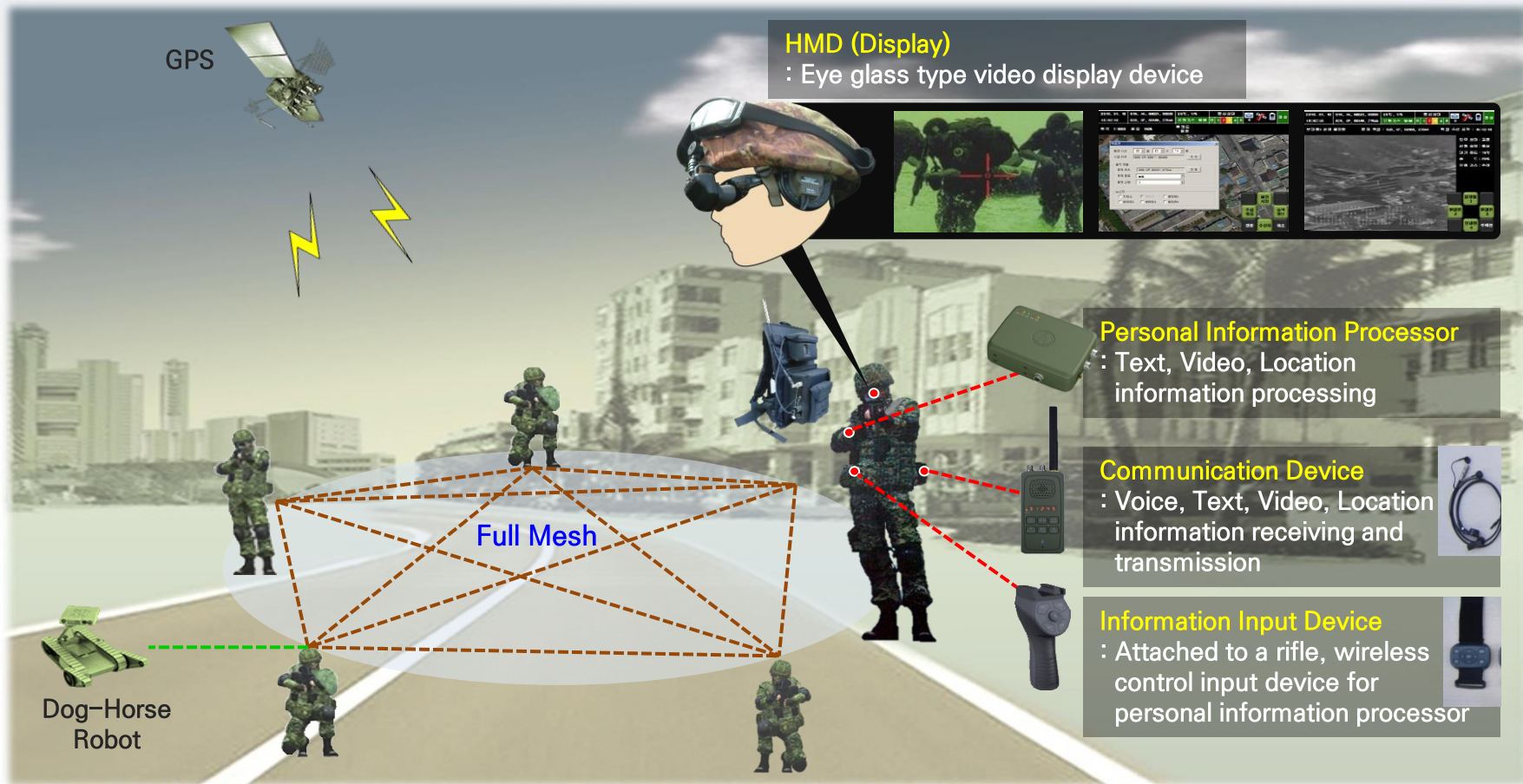
### ■ Team communication for Special Forces





## ■ Distinguishing Features and Usage

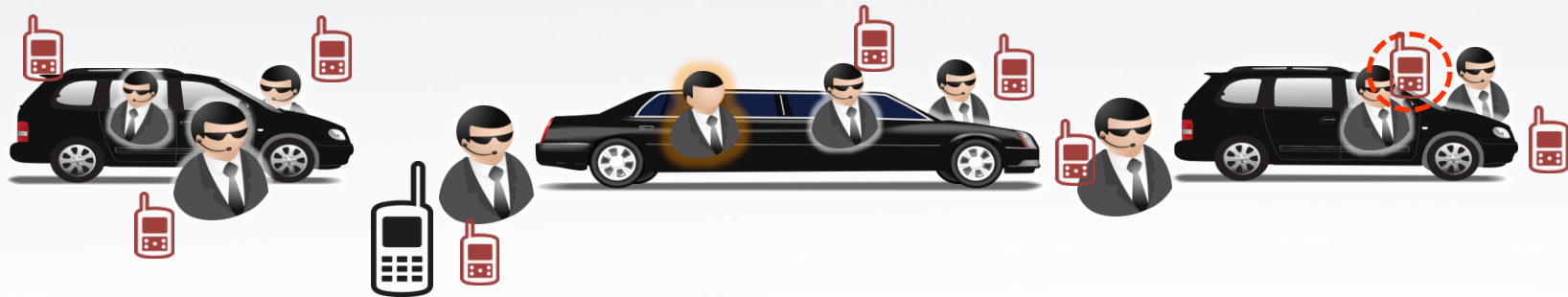
- ✓ Forms a multilateral Ad-hoc network, allows the sharing of real time battlefield situation data such as video, voice, and other data
- ✓ Accurate battlefield situation may be identified with the usage of a control system. Allowing the user to make appropriate mission command



## SYSTEM

# Close Quarters Guard and Security

- Small sized full-duplex communication device, suitable for close range guard duty



## ■ AFSIS-6(Airport Facilities Safety Integrated Management System)

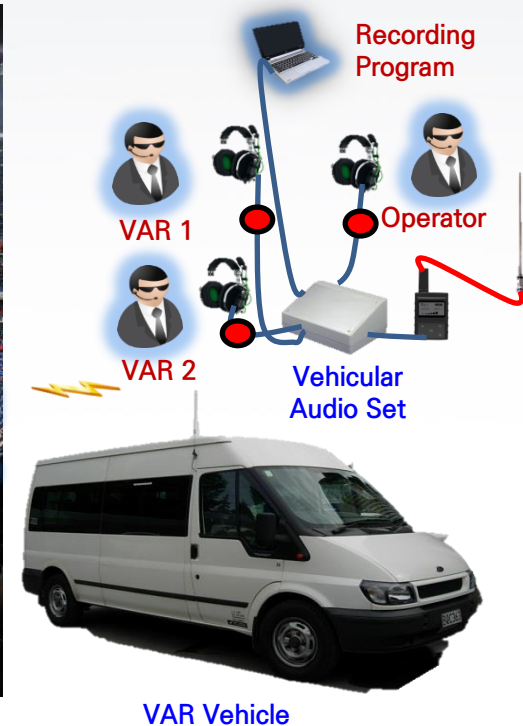




## SYSTEM

# VAR System

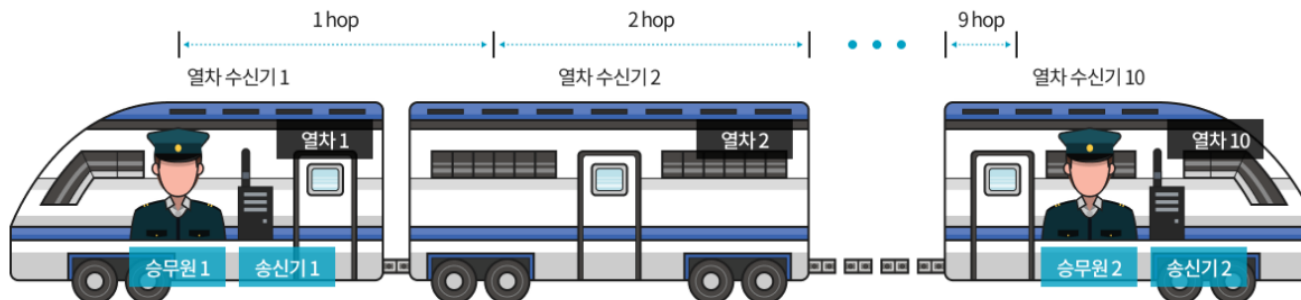
- ACRO-SM900 applied VAR system is currently being used in the Korea Professional Football League. During a match the Main Referee and Assistant Referees may call with full-duplex communication, while the Stand-by Referee out side the stadium, VAR 1-2, and the Stadium Operator may communicate using a half-duplex (communication available only when PTT is held) system.



# SYSTEM

## Subway Emergency Broadcasting Communication System

- For sharing emergency situation of a train. Supports voice communication between crew members and passengers, relaying at each train car, allowing voice broadcasting to be done to the entire passenger train
- System Composition
  - Receiver(Fixed terminal inside a train) + Crew Transmitter + Charger
    - Receiver: Receive voice signals (Outputs to the speaker) and acts as a relay
    - Crew Transmitter: Voice Transmitting/receiving and relaying
- System Distinguishing Features
  - Noise cancelling support
  - Encryption support(AES-256)
  - Automatic relay support
  - All Master sync method support





## SYSTEM

# Tunnel Construction Site 'Foreign Use'

- Used in Abu Dhabi, UAE underground sewer system construction site. The multi-hop auto relay system of ACRO-S allows a clear communication without audio delay in 10km distance.



## SYSTEM

# Tunnel Construction Site 'Domestic Use'

- Used in special construction site of 10km underground tunnel site near Inje-gun, Gangwon-do for safety control and communication





## SYSTEM

# Unmanned Helicopter User Communication

- Used for communicating with unmanned helicopter pesticide sprayer pilots in farm and forest areas



# Thank You





# Personal Role Radio: ACRO-PRR2

## ■ Key Features and Applications

- [Selectable communication methods](#)
  - Full-Duplex mode : 3 ~ 12 full-duplex(simultaneous) Communication (No PTT (Push-to-Talk) Button)
  - Half-Duplex mode : Up to 999 Users of Half-Duplex Communication
- 3 Times the Communication Distance ([Auto relay function of 3 Hops](#))
- [Text Messaging Using Built-In Messages](#)
- [GPS/GIS \(Radar Style GIS\) Supported to Share Location Information in Real Time](#)
- Recommended for soldier, special forces, maintenance team, police, fireman, security, etc.
- High level security algorithm (AES-256 or KCMVP)
- Use with the built in SPK or with an earset
- Water and Dust Proof: IP67



Frequency	3xx / 4xx / 5xx MHz(UHF)	Relay Hops	3 hops
Communication Range	Full duplex : 1 ~ 1.5 km(@LOS, 1:1), Full duplex : 3 ~ 4.5 km(@LOS with relay) Half duplex : 3 ~ 3.5 km(@LOS, 1:1), Half duplex : 9 ~ 10.5 km(@LOS with relay)	Dimensions (W * D * H)	70 * 36 * 135 mm
RF Power Output	1 ~ 4 W	Weight	270 g
Operating Hours	More than 12 Hours	Battery Size	7.4 VDC / 3,000 mAh Li-Pol
Operating Temperature	-20 ~ 60 °C	LCD	TFT 1.77"

# Full-Duplex Digital Radio System: ACRO-S2

## ■ Key Features and Applications

- Full-duplex and Hands-free (No Push-To-Talk (PTT) Button) Communication
- Simultaneous Group Talk up to 8Users
- Increase Communication Distance With Ad-hoc Function (3 Hops)
- High Level Encryption Algorithm (AES-256) Applied
- Ultra Slim & Light(Size : business card)
- Water and Dust Proof: IP54
- Recommended for Soldiers, Police, Fire Department and Security



Frequency	8xx/9xx MHz(UHF)	Battery	3.7 VDC / 1,000 mAh Li-ion
Communication Range	0.5 ~ 0.8 km(@LOS, 1:1) 1.5 ~ 2.4km(@LOS with relay)	Weight	90 g
RF Power Output	10 mW	Operating Temperature	-20 ~ 60 °C
Operating Hours	7 ~ 12 Hours	Dimensions (W * D * H)	50 * 20 * 80 (mm)

# Full-Duplex Digital Radio System: ACRO-PRR2V

## ■ Key Features and Applications

ACRO-PRR2V is a digital vehicle radio that can be installed in a military, police, and fire fighting vehicles. While supporting both half-duplex and full-duplex communication, ACRO-PRR2V also provides twice the communication range of a handheld radio.



## SPECIFICATIONS ◆

Frequency	4XX ~ 5XX MHz
RF Output Power	1 ~ 50 W
Relay Hops	2~3 Hops
Communication Range	2 ~ 4 km(@LOS, 1:1) 6~ 12km(@LOS with relay)

Communication Method	Full Duplex(Hybrid), Half Duplex
Dimensions(W×D×H)	160 × 180 × 58 mm
Operating Temperature	-20 ~ 60℃
Weight	< 1.1 kg
LCD	TFT 1.77"

# Full-Duplex Digital Radio System: ACRO-PRR2V

## ■ Various usage plans by Vehicle or Man Pack

### Digital Radio Systems



- 01 In-vehicle radios can be mounted on a vehicle or moved with a man pack to extend the communication distance in mountainous or jungle areas where vehicles are difficult to move..
- 02 When used as a vehicle or Man Pack, the existing radio 1:1 call distance increases from 4Km to more than 10Km. With 3Hop function, communication distance of more than 30Km is possible
- 03 In addition, the vehicle radio installed in the vehicle and the vehicle radio in the man pack or the radio used by soldiers can all communicate with each other through the mesh network.

### Equipment



ACRO-PRR2V



Antenna  
(military, commercial)



Mobile Man Pack Relay

# Half-Duplex Digital Radio: ACRO-WING

## ■ Key Features and Applications

- 3 Times the Communication Distance ([Automatic Repeater Function of 3 Hops](#))
- [Sends Texts Using Built-In Messages or By Typing New Messages Depending On Situations](#)
- [Check Team Locations with GPS/GIS \(Radar\)](#)
- Takes and Sends Photos Directly From a [Built-In Camera](#)
- Includes [Two Separate PPT Buttons for Two Different Communication Channels](#)
- High Level [Encryption Algorithm \(AES-256\)](#) Applied
- SPK and Earset Mode Supported
- Water and Dust Proof: IP54
- Recommended for Commanders/Soldiers, Police & Fire Department, Special Forces, etc.



Frequency	4xx MHz(UHF)	Relay Hops	3 hops
Communication Range	3 ~ 4km(@LOS), 9 ~ 12km(@LOS with relay)	Dimensions (W * D * H)	68 * 30 * 136 mm
RF Power Output	4 W	Weight	300 g
Operating Hours	Over 12 Hours	Operating Temperature	-20 ~ 60 °C

# Smart Radio: ACRO-V

## ■ Key Features and Applications

- Increase Tactical Command Control Through Field Visualization (Displays User Location)
- Based on Android OS
- 3 Times Longer Communication Distance with Ad-hoc Function (3 Hops)
- Transmits Voice, Images, and Text Messages Simultaneously
- 13 Mega Pixel Camera
- 5 Inch Color TFT-LCD and Touch Screen
- Supports GPS/GIS
- Various Built-in Sensors (Altitude, Temperature, Geomagnetic)
- Interface: Wi-Fi, Bluetooth, USB, Ear jack
- Dust and Water Proof: IP67
- Can be Used in Subways, Long Tunnels, Wide Industrial Sites, Deserts, Mountainous Terrain
- Suitable for Soldiers, Police, Firefighters, Construction Workers, and Bodyguards
- Even When the Master is Destroyed, the Communication is Not Interrupted
- LTE(Optional and Prototype)



Frequency	4xx MHz (UHF)	Operating Hours	Over 12 Hours
Communication Range	3 ~ 4km (@LOS) 9 ~ 12km (@LOS with relay)	Dimensions (W * D * H)	86 * 31 * 250 mm
RF Power Output	4 W	Weight	470 g
LCD Display Resolution	1280 * 720	Operating Temperature	-20 ~ 50 °C



# Wireless Full-Duplex Headset: ACRO-ANC2

## ■ Key Features and Applications

- Full-Duplex and Hands-Free (No Push-To-Talk (PTT) Button) Communication
- 3 times longer distance (automatic repeater function)
- Up to 12 simultaneous two-way voice communication
- Microphone also has noise cancellation feature (smooth even sound in noisy environments)
- Protection barrier from extremely large sounds
- Noise cancellation
- Encrypted with high-level security, AES-256 algorithm
- Helmets friendly design
- Dust/Water proof : IP67
- Bluetooth supported (for connection with other radio)
- Even When the Master is Destroyed, The Communication is Not Interrupted
- Can connection other radio with PTT cable (Available as a headset on a radio)
- Recommended For : Flight Training for Air Forces, as well as Operations for Mechanized and Artillery Units

Loud Workshops and In Noisy Environments, Such As Construction Site

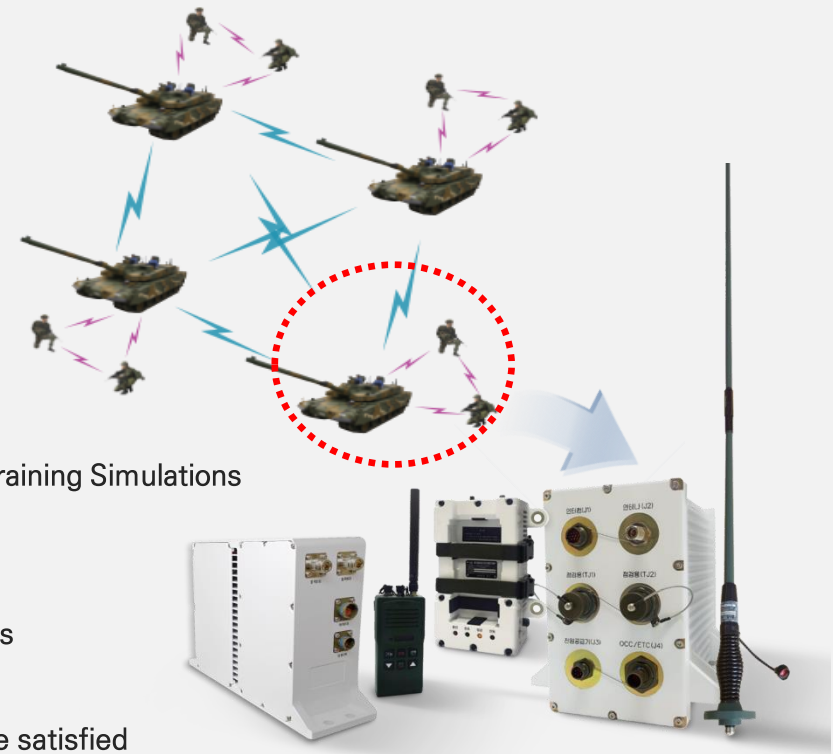


Frequency	9xx MHz(UHF)	Operating Hours	> 12 Hours
Communication Range	150 ~ 200 m(@LOS), 450 ~ 600 km(@LOS with relay)	Relay Hops	3 Hops
Communication Method	Full-Duplex	Operating Temperature	-20 ~ 60 °C
RF Power Output	50 mW	Weight	< 500 g (with wired PTT)

# K2 Tank High-Speed Wireless Communication Device

## ■ Key Features and Applications

- First Digital Communication Device for Military Sector
- **High Speed Wireless Communication Device** that can Transmit and Receive Simultaneous Audio and Texts
- Supports Rapid Network Configuration and **Auto Relay** Through Our Own Ad-hoc Network
- Can Share All Vehicle **Location and Threat Information** in One Second
- Provides Wireless Communication Infrastructure Network for Tactical Training Simulations
- **Full Duplex(Simultaneous Two-Way)** Communication Support
- Supports Portable Terminal Operation Mode
- Conditions for **MIL-STD-810**, Environmental Engineering Considerations and Laboratory Test are satisfied
- Conditions for **MIL-STD-461**, Test for Electromagnetic Compatibility are satisfied



BASE STATION RADIO		PORTABLE RADIO	
Frequency	4xx MHz(UHF)	Frequency	4xx MHz(UHF)
Comm. Range	1.5 km(@LOS, 4W) / 4.5km(@LOS with relay 4W), 5 km(@LOS, 50W) / 15km(@LOS with relay 50W)	Comm. Range	1.5 km(@LOS)
RF Power Output	4 W, 50 W	RF Power Output	4 W
Environmental Spec	MIL-STD-810	Environmental Spec	MIL-STD-810

# RF Module

## ■ Key Features

- Small & light [data transmission module](#)
- [Simultaneous voice, control data transmission](#)
- Supports [multi radio](#) communication
- [Customized production](#) (option-upon request)
- EMI shield
- Supports external antenna  
(Increase communication distance)
- Supports internal antenna  
(can be installed inside the equipment)
- Supports [Ad-hoc network](#)
- Transmits images/control data
- Four legged robots, small weapon, UAV, small robots, etc.



Frequency Range	4xx/24xx MHz	Input Voltage	5 VDC
Communication Distance	0.3 ~ 2 km (@LOS)	Consumption Current	0.3 Ah
Data Rate	50 Kbps ~ 54 Mbps	Operating Temperature	-33 ~ 63 °C
RF Output power	4 W	Weight	40 g