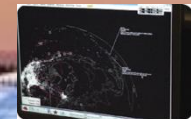


ROK's CNS Policy

June. 2019



Contents

- I. General Overview
- II. CNS Implementation
- III. CNS Managements
- IV. Future Plan

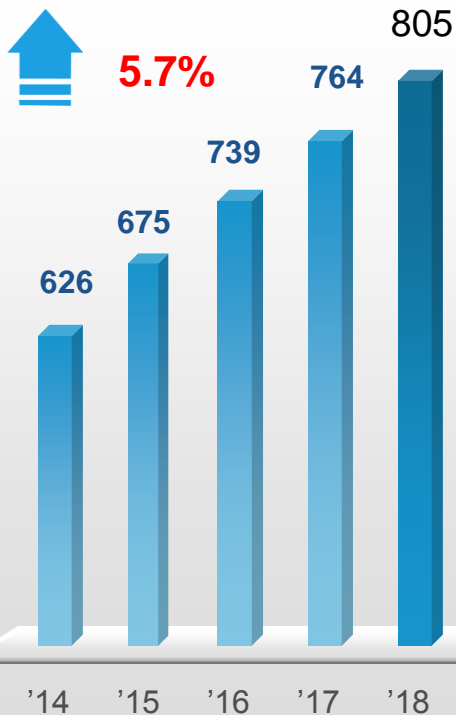
I. General Overview



Air Traffic for Incheon FIR

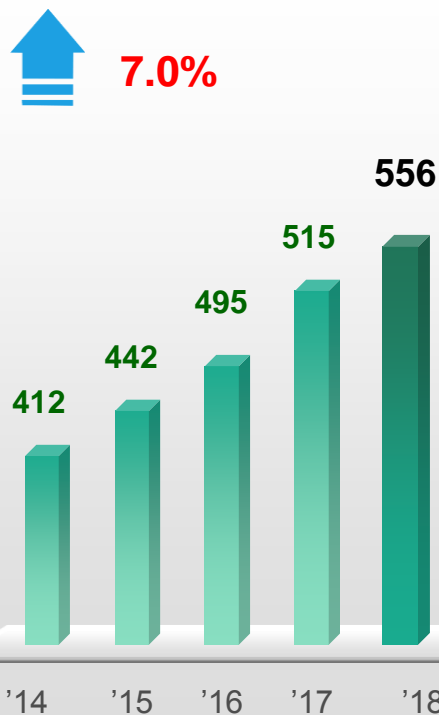
En-route

in thousand



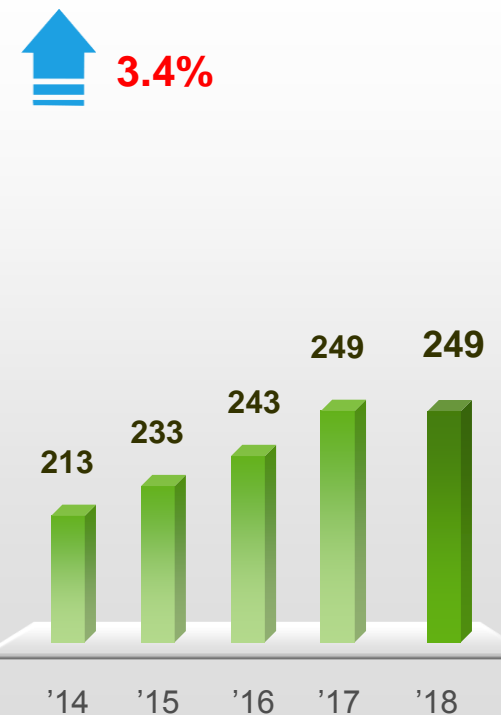
International

in thousand



Domestic

in thousand





World Record for Incheon Airport

1st
12 Year

Airport Quality



Int'l Cargo

3rd
2018



5th
2018

Int'l Passenger



CNS Service

17 Year
Non Stop
Service



General Overview



Organization

 **MOLIT**
(Minister)

KOCA
(Deputy Minister of Civil Aviation)

Aviation Policy Bureau

Aviation Safety Policy Bureau

Airport & ANF Bureau

Airport Policy Division

New Airport Planning Division

Airport Safety & Environment Division

ANF(CNS) Division

Seoul Regional Office of Aviation
(Northern Part of ROK)

Busan Regional Office of Aviation
(Southern Part of ROK)

Jeju Regional Office of Aviation
(Jeju Island)

Air Traffic Management Office
Incheon ATC
Daegu ATC & CC

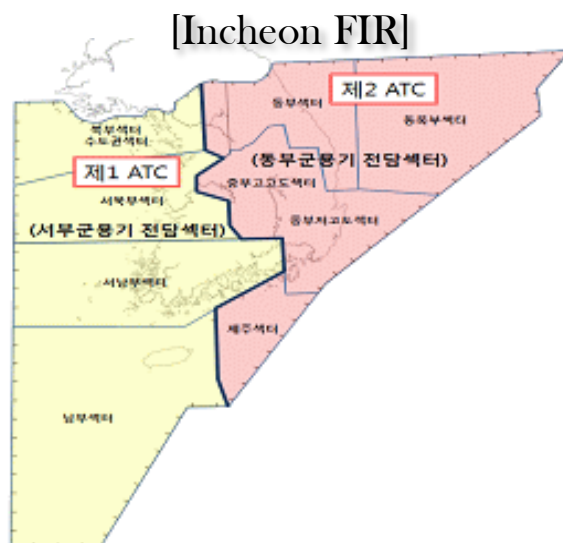
  Incheon Airport
한국공항공사 인천국제공항공사

II. CNS Implementation



❖ En-Route for Incheon FIR_(43,000km²)

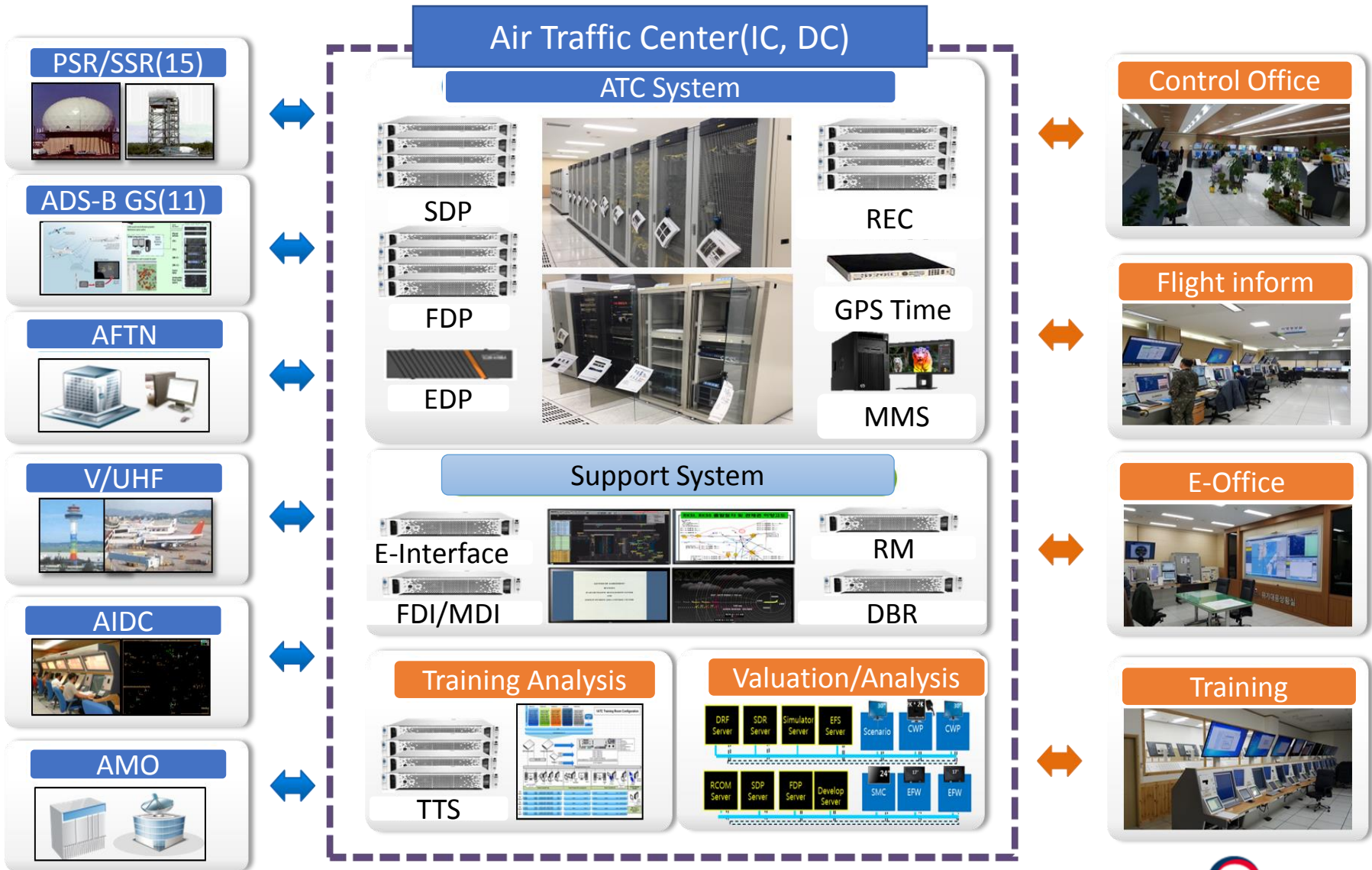
- 2 ATC(Daegu, Incheon, 2018), Dual System
 - ✓ 15 RADAR(PSR/SSR)
 - ✓ 11 ADS-B GS for 1090ES(2019), 1 UAT GS
 - ✓ UHF 66/VHF 49 Ch(10 VOR/TACAN Site)
 - ✓ 1 GPS RAIM(5 Receivers)



[En-Route ATC]

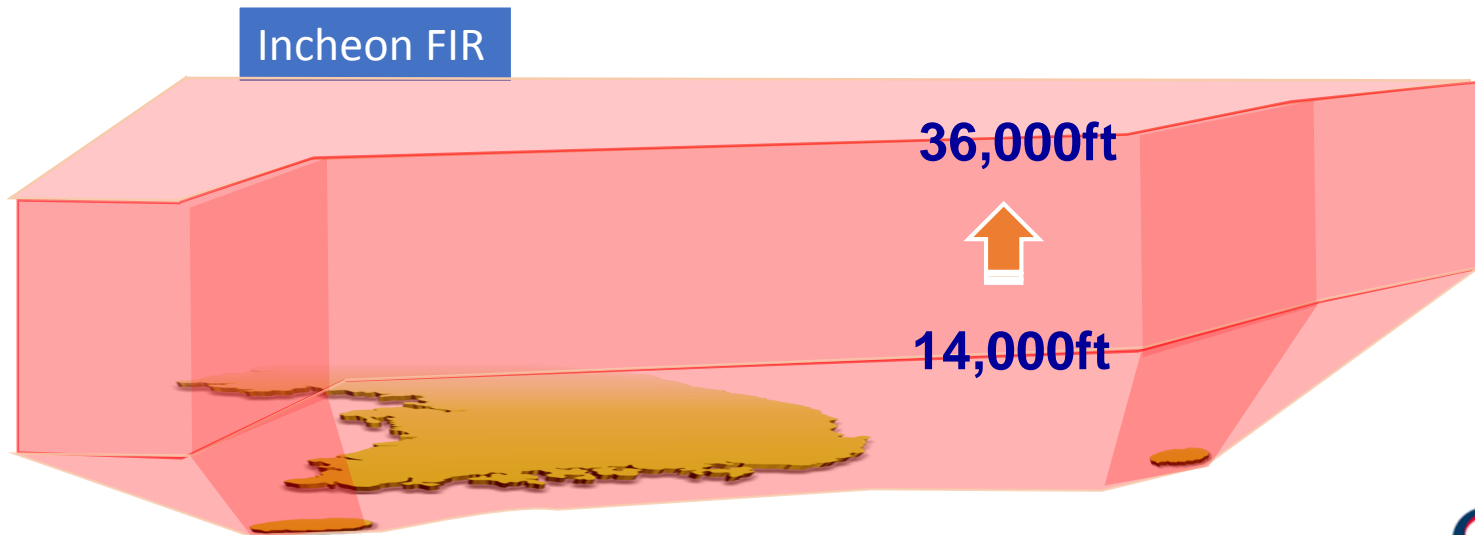
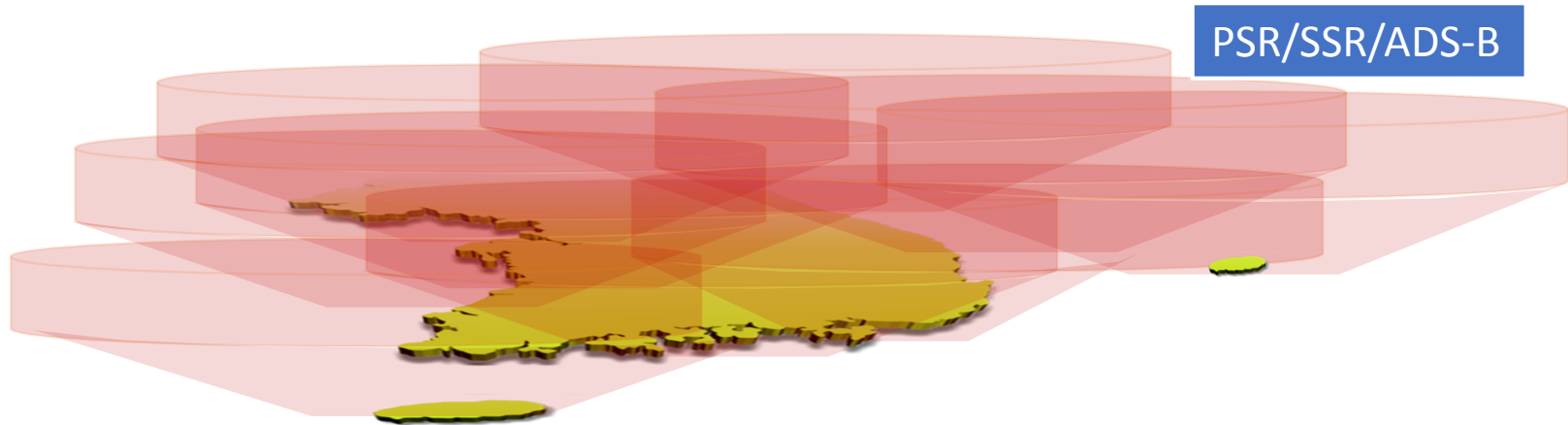


II. CNS Implementation





❖ En-Route Surveillance sensor coverage





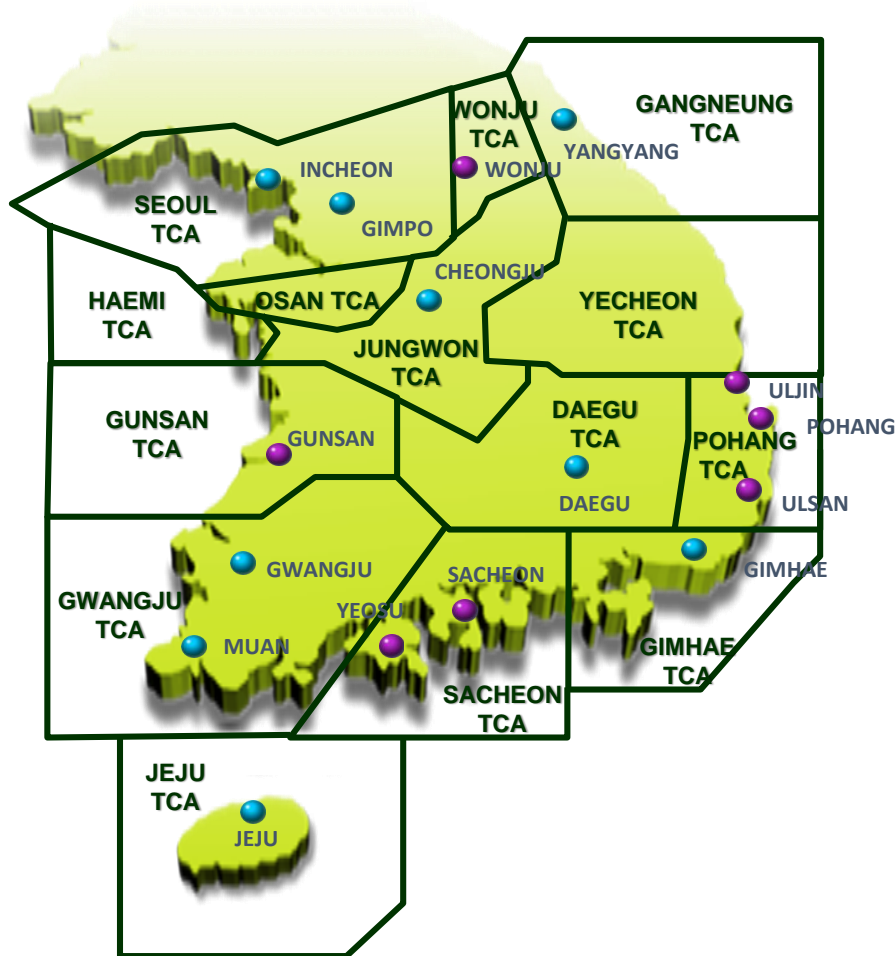
❖ TCA(Terminal Control Area)

- 14 TCA(2 Civil, 9 Military, Joint 3)
 - ✓ 17 RADAR(PSR/SSR)
 - ✓ 1 ADS-B(Seoul TCA)
 - ✓ UHF 153/VHF 110Ch(Include 15 Tower)
- 1 ETCAS(Emergency TCA System) (Chungju)
 - ✓ 6 RADAR(PSR/SSR)
 - ✓ 11 ADS-B(GS)
 - ✓ U/VHF 12Ch





❖ Terminal Control Areas

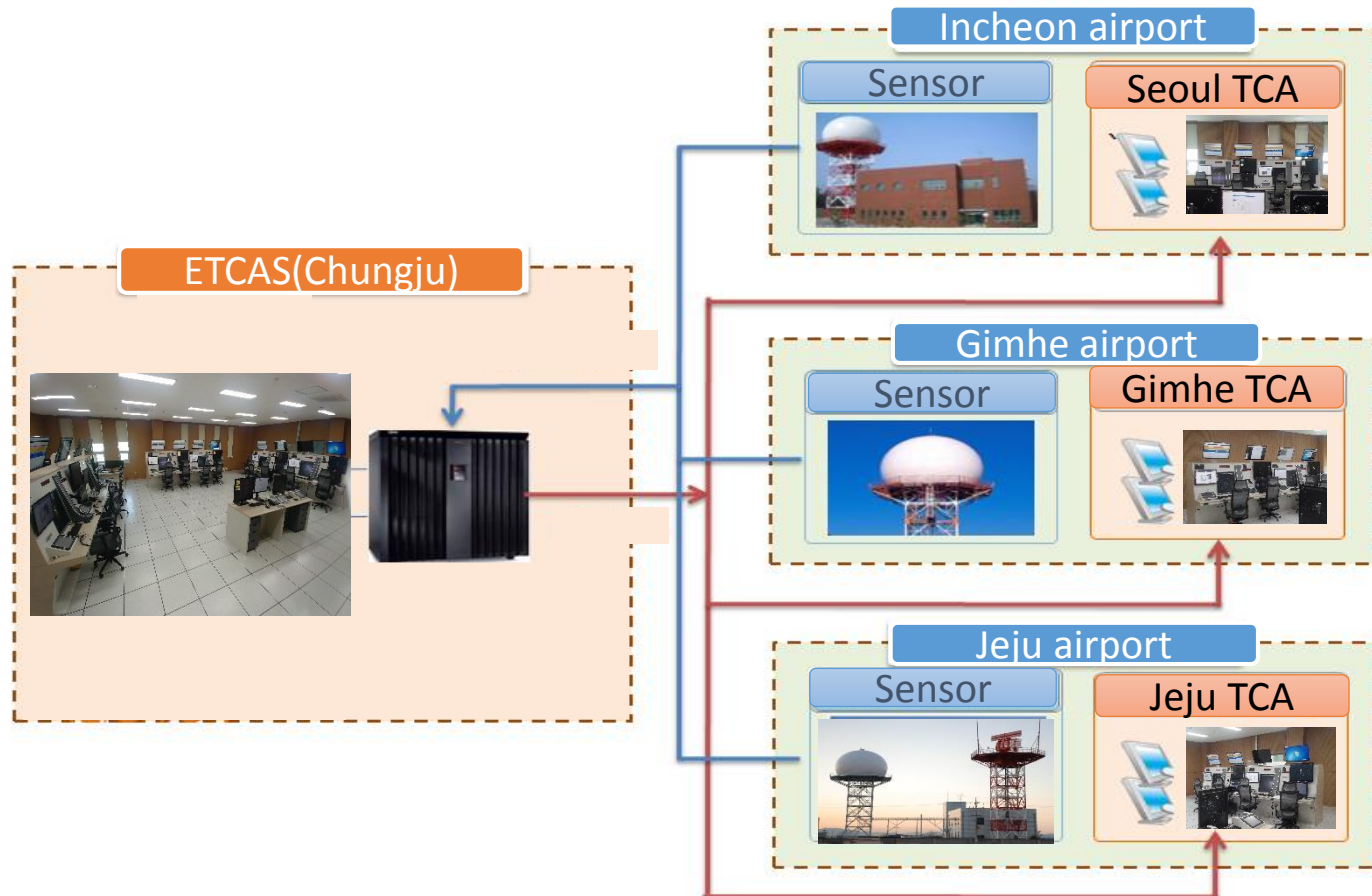


Organization	Name of CTA
CIVIL (2)	SEOUL, JEJU
JOINT CIVIL & MIL (3)	GIMHAE, POHANG, SACHEON
MILITARY (9)	GANGNEUNG, GWANGJU, HAEMI, WONJU, YECHEON, DAEGU, POHANG, OSAN, GUNSAN



❖ ETCAS

- Emergency Terminal Control Area System(2019)





❖ Airports

- 15 Airport
- CATegory Status & Up-grade
 - ✓ 7 RW CAT-IIIb(Incheon, Gimpo)
 - ✓ 2 RW CAT-II(CAT-I → CAT-II, Gimhae/Jeju)
 - ✓ 15 RW CAT-I, 3 RW PAR
 - ✓ 15 Airport completed PBN
(RNAV SID/RNAV STAR, LNAV/VNAV)

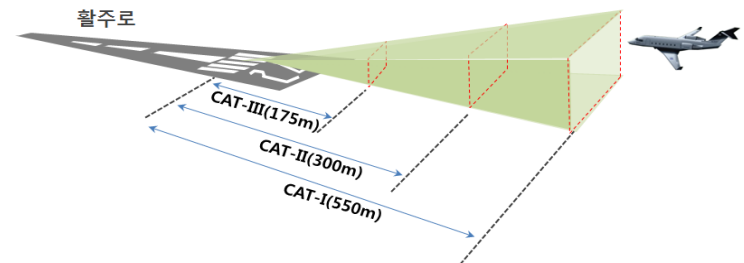
- GBAS system

- ✓ 1 GBAS Test bed(Passed CAT-I Flight Inspection, 2014)

14 Control TWRs
(Airport)



- 8 Civil
- 7 Civil & Military
(US AF Not included)





❖ GBAS(Test bed system)

- Gimpo airport(Oct.2014)
 - ✓ 4 RSMU(Reference Receivers system)
 - ✓ 1 VDB(VHF Data Broadcast)
 - ✓ 32R Runway Passed CAT-I Flight Inspection(Aug.2014)





❖ Airports

■ Communication

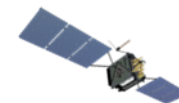
- ✓ 2 AFTN/AMHS(Gimpo), 92 Clients locations
- ✓ 11 PDC/D-ATIS , 13 ATIS
- ✓ 11 VDL

■ Surface Movement

- ✓ 4 ASDE & MLAT/ADS-B(Incheon, Gimpo, Gimhae, Jeju)
- ✓ 2 MLAT(Yangyang, Pohang)



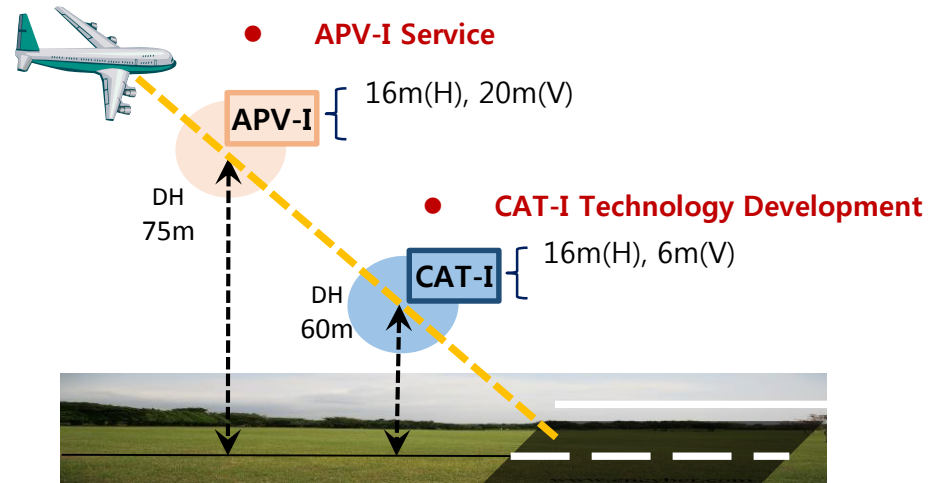
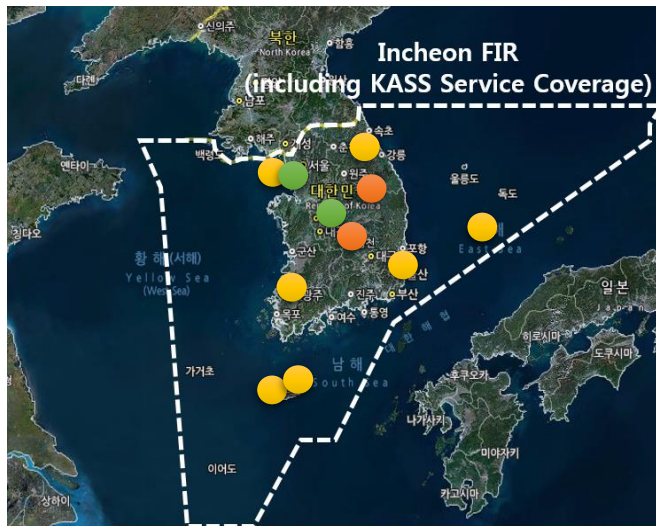
❖ SBAS(KASS) Development





❖ SBAS(KASS) Development

- 7 Reference
- 2 Navigation Up-Link Station(Yeongju, Geumsan)
- 2 Central Processing Center(Cheongju, Incheon)

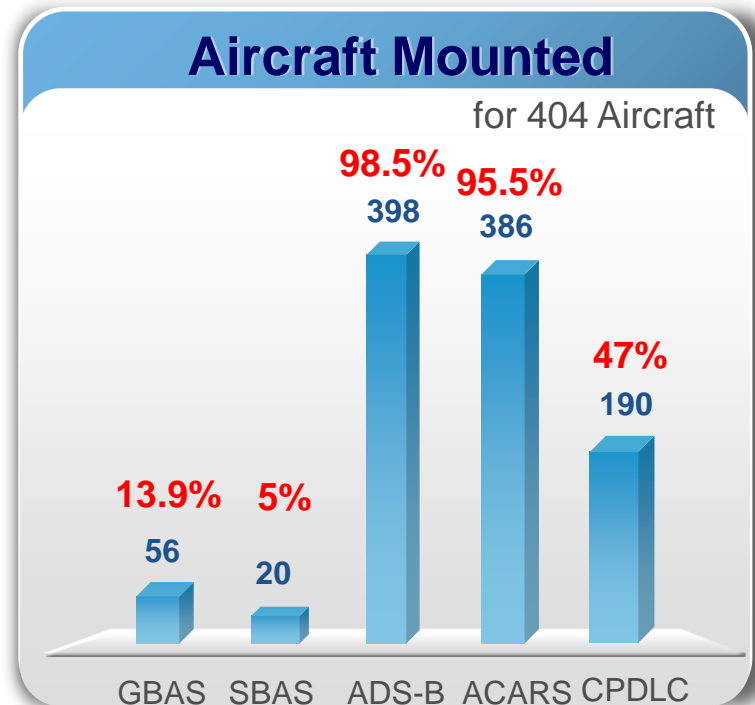


※ APV(APproach with Vertical guidance), DH(Decision Height)



❖ National Transportation Aircraft

- 56 GBAS(GLS), 13.9%(2019, for 404 Aircraft)
- 20 SBAS Receiver, 5%
- 398 ADS-B(OUT), 98.5%
- 386 ACARS, 95.5%
- 190 CPDLC, 47%



III. CNS Managements



❖ Flight Inspection

- ✓ 2 Aircraft, 2 AFIS(Automatic Flight Inspection System)
- ✓ 3 Flight Inspector, 4 Pilot

2 Aircraft



- challenger-601(8 per)
- H자-750(6 per)

2 AFIS



- AD-AFIS-355(SBAS, GLS)



❖ CNS Facility Inspection

- ✓ 3 FICS(Facility Inspect Car System)
- ✓ 17 CNS Facility Inspector
- * Inspect Key parameters one or more times year

Facility Inspect Car System



- CNS FICS Car 3
(Seoul, Busan, Incheon)

Mounted Receiver



- Digital Receiver System

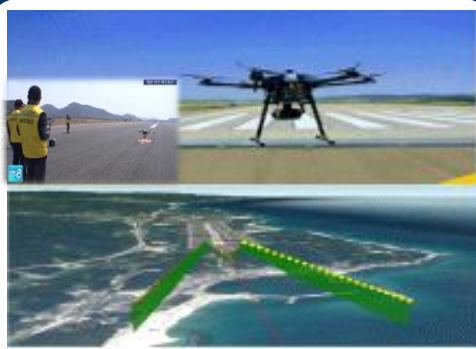


❖ Drone Flight Check

- ✓ 9 Drone Flight Check Systems
 - * Compactness of ILS/VOR Receiver
- ✓ 4 Drone Pilot(license)



ILS Flight Check



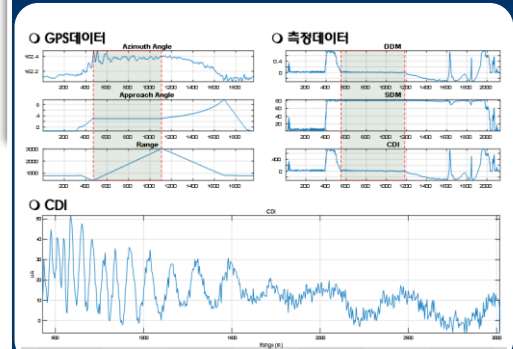
- ILS Radio wave check

VOR Site Check



- Use for VOR site simulation

Radio Wave Analysis



- Use for VOR/ILS Failure Recovery

IV. Future Plan



2013 Master plan for CNS, the 3rd Amendment

Strategies	Key Focusing Areas	'19	'20	'21	'22	'23	'24	'25
I. Airport Infra.	ASDE-X(MLAT/ADS-B/A-SMGCS) Management							
	Aero-MACS, Data-Link Communication(AVS > VDL)							
	GNSS(S/GBAS) Air Navigation Infra							
II. Air Traffic Man.	A/DMAN Management							
	Enhanced GNSS-based Approach Procedure							
	SWIM, Aeronautical Data Exchange & Sharing							
III. Enhanced Aviation Infra.	ADS-B, Use to SBAS- based location							
	Enhanced Surveillance Sensor System							
	Enhanced Meteorological Info Management							

SBAS(KASS) Implementation





Thank You