



AIR NAVIGATION SERVICES DEPARTMENT



ДАРГА П. ГАНБОЛД

AGENDA



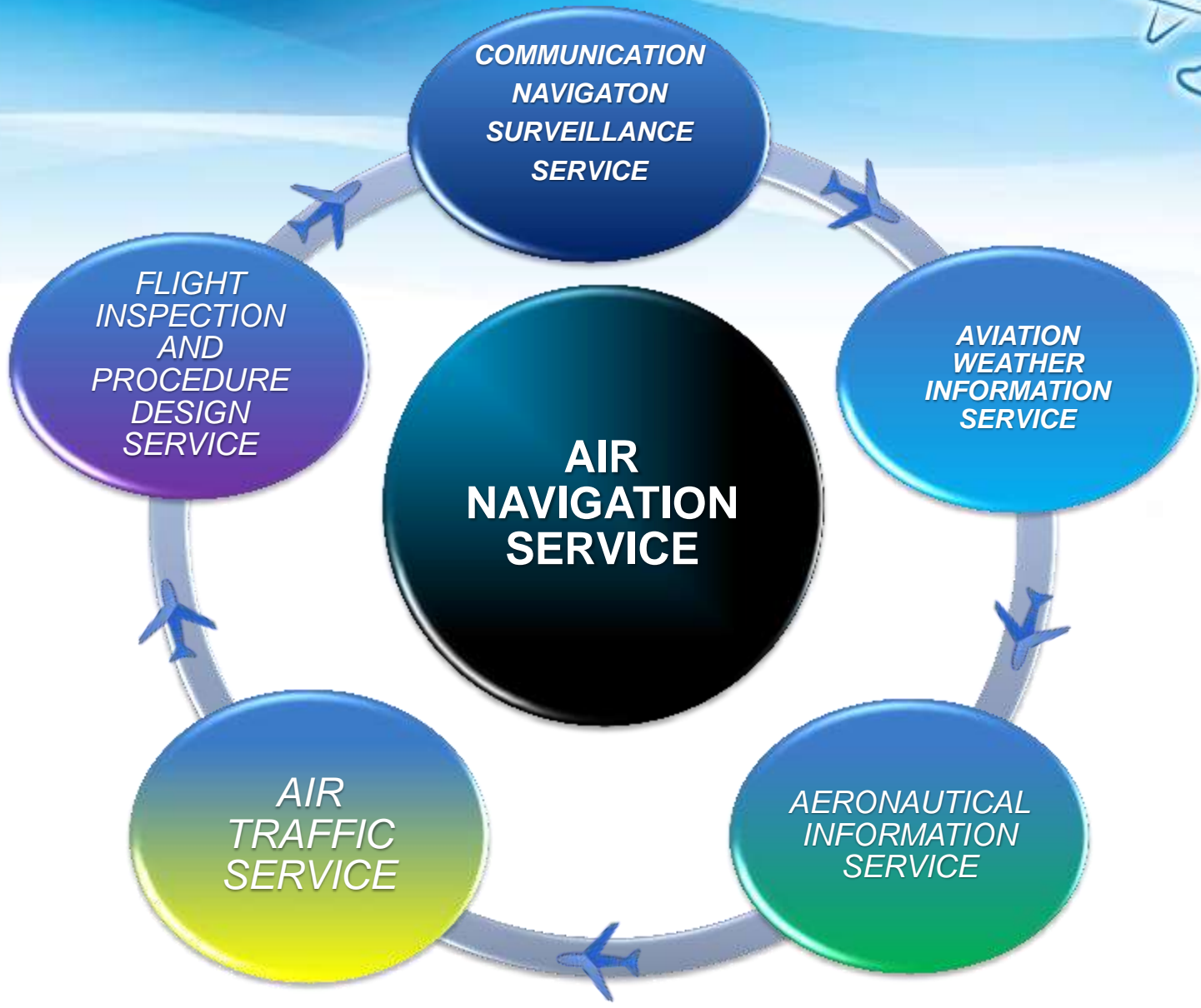
AIR NAVIGATION SERVICE DEPARTMENT STRUCTURE



CURRENT STATUS



FUTURE PLANS



MONGOLIAN STATUS OF ICAO GLOBAL PLAN INITIATIVES



- GPI-1 Flexible use of airspace
- **GPI-2 Reduced vertical separation minima**
- **GPI-3 Harmonization of level systems**
- GPI-4 Alignment of upper airspace classifications
- **GPI-5 RNAV and RNP (Performance based navigation)**
- GPI-6 Air traffic flow management
- GPI-7 Dynamic and flexible ATS route management
- GPI-8 Collaborative airspace design and management
- GPI-9 Situational awareness
- GPI-10 Terminal area design and management
- **GPI-11 RNP and RNAV SIDs and STARs**
- GPI-12 Functional integration of ground systems with airborne systems
- GPI-13 Aerodrome design and management
- GPI-14 Runway operations
- GPI-15 Match IMC and VMC operating capacity
- GPI-16 Decision support systems and alerting systems
- GPI-17 Data link applications
- **GPI-18 Aeronautical information**
- GPI-19 Meteorological systems
- **GPI-20 WGS-84 The implementation of WGS-84 by all States.**
- **GPI-21 Navigation Systems**
- **GPI-22 Communication infrastructure**
- GPI-23 Aeronautical radio spectrum

AIRSPACE MANAGEMENT



1

FLIGHT INFORMATION REGION (UB FIR)

15

ENTRY AND EXIT POINT

9

ENTRY & EXIT POINT WITH RUSSIA

6

ENTRY & EXIT POINT WITH CHINA

50

AIR ROUTES

6

AREA CONTROL CENTER SECTORS

15

AERODROME / APPROACH CONTROL SECTORS

8

AERODROME FLIGHT INFORMATION SERVICE

AIR TRAFFIC SERVICES



80

AIR TRAFFIC CONTROLLER

24

HOUR

4-5

SHIFT

300

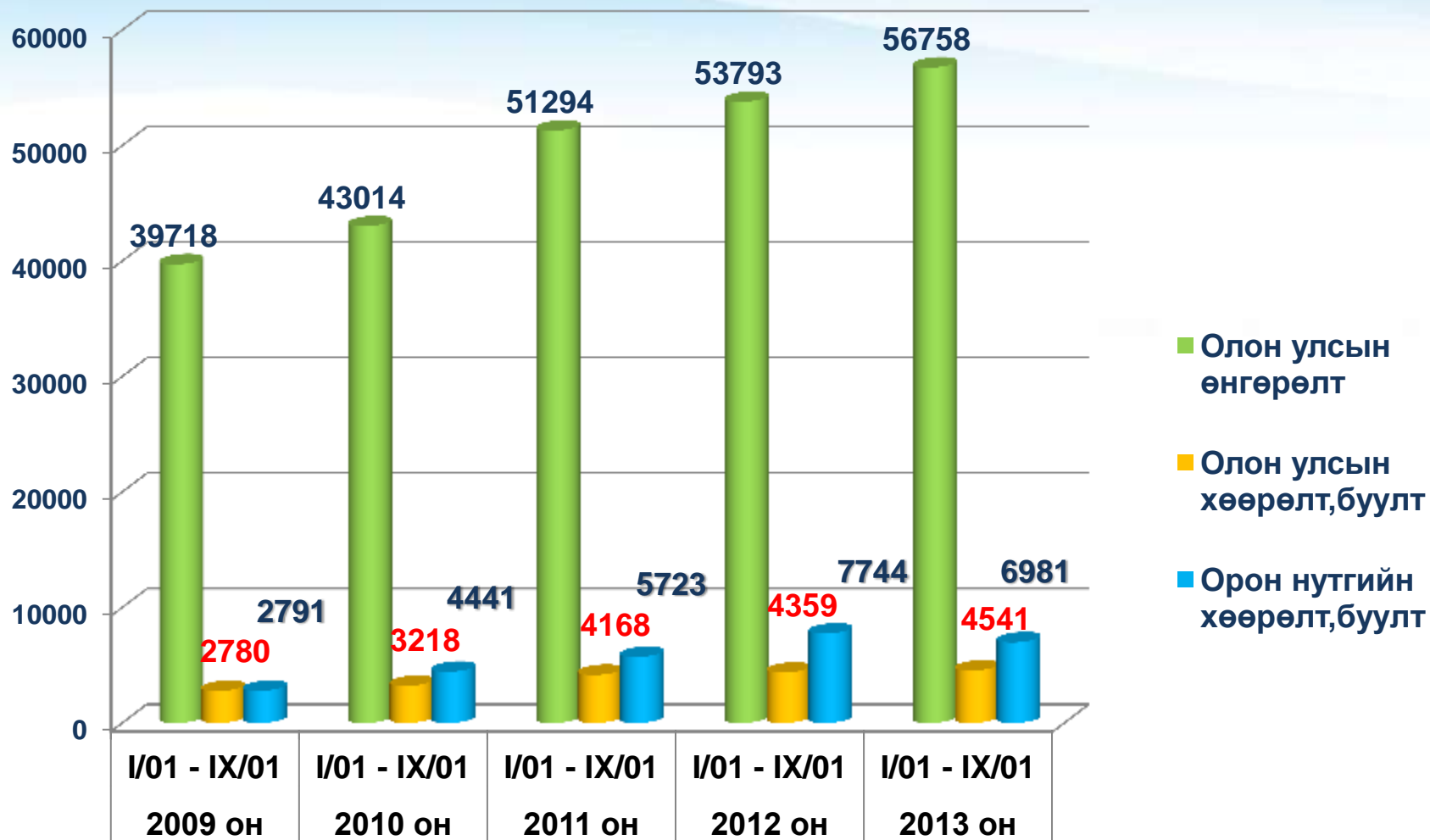
OVER FLIGHT

50

DEPARTURE AND ARRIVAL



AIR TRAFFIC FLOW



AIRNAVIGATION AIDS IMPLEMENTATION PLAN 2013



2 SSR

ATM AUTOMATION SYSTEM, VOICE COMMUNICATION

5 ADS-B

4 RUNWAY LIGHTING SYSTEM

NEW ILS / CHINGGIS KHAAN AIRPORT/

DME

AWOS

VHF RADIO STATION /AERODROM AND APPROACH AREA/

FACILITY



➤ **AIR-TO-GROUND COMMUNICATION SERVICES**

- *RCAG voice communication*
- *VHF Data-link communication (VDL mode-2)*
- *HF Voice communication*

➤ **GROUND-TO-GROUND COMMUNICATION SERVICES**

- *VSAT voice/data communication*
- *Fiber Optic network*
- *AFTN and AWOS network*

AERONAUTICAL SATELLITE COMMUNICATION. VSAT



**SINCE 1998
9 WILL BE REPLACED**

CURRENTLY 22 TerraSat 400 STATIONS

NEW INSTALLED 16 STATIONS

WILL BE REPLACED 9 STATIONS



New MASCOM VSAT network is being installed for swapping existing system.

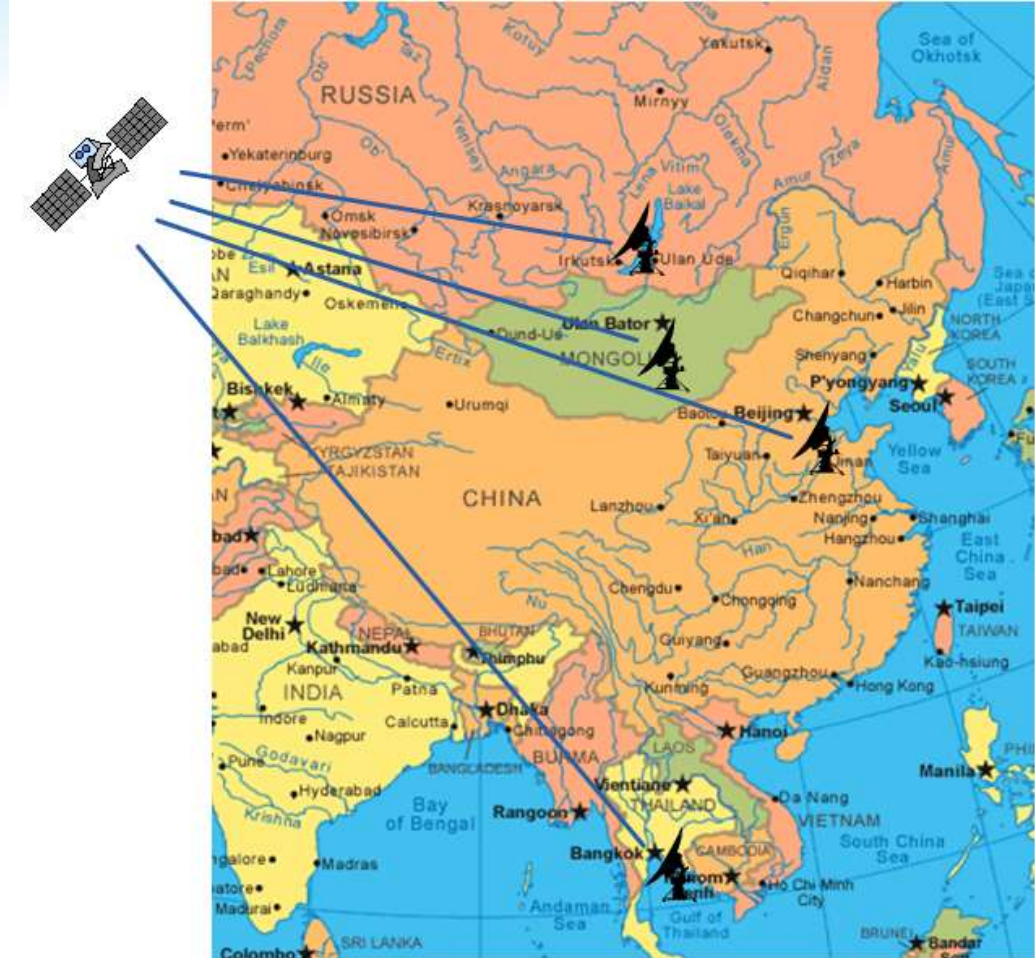
Ground-to-Ground communication

VSAT VOICE/DATA COMMUNICATION

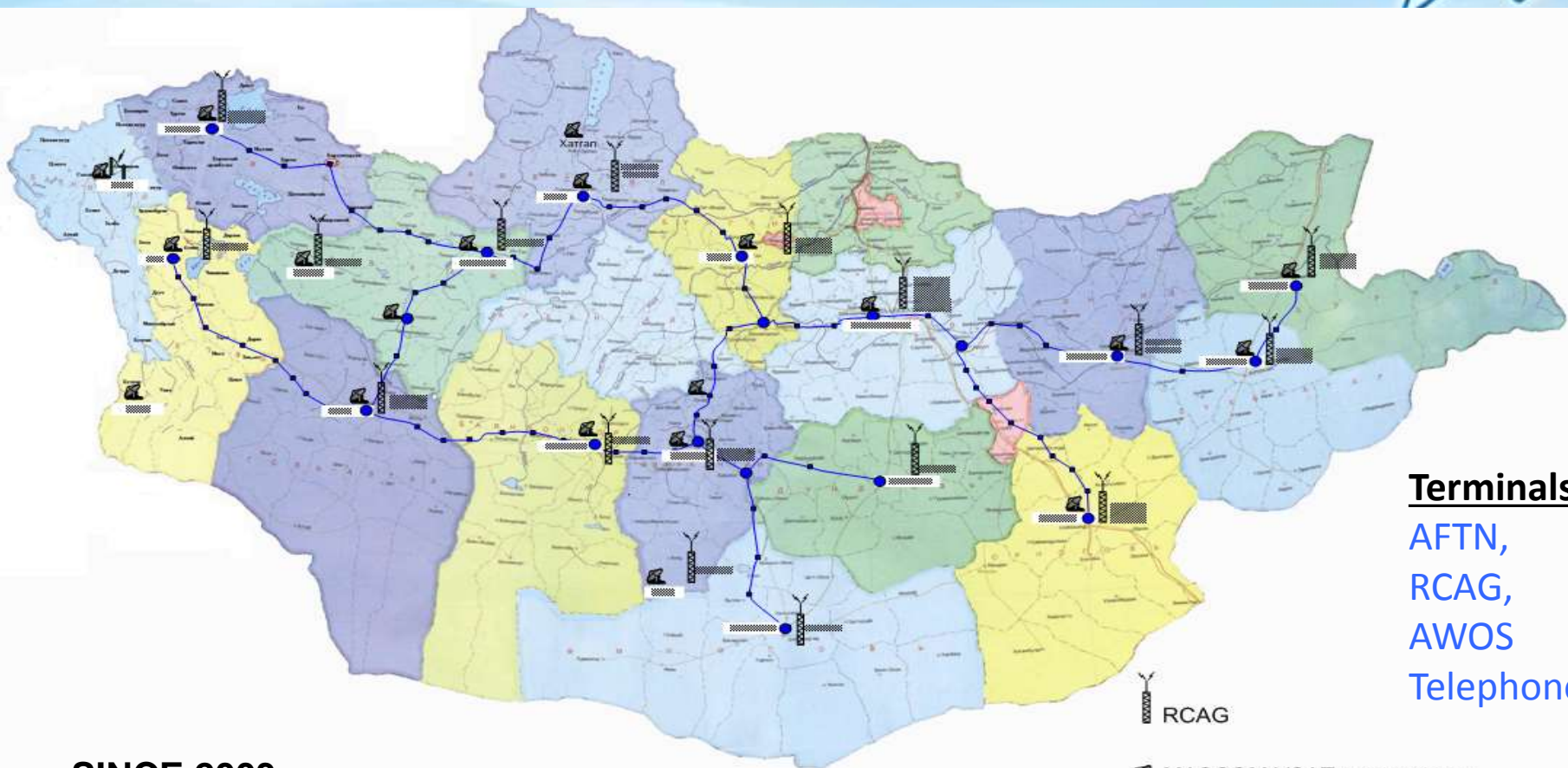


Irkutsk (Russia)
Ulaanbaatar (Mongolia)
Beijing (China)
Bangkok (Thailand)

Neighbors have been connected by VSAT and ground fiber optic links for exchanging information faster







FIBER OPTIC LINK NETWORK



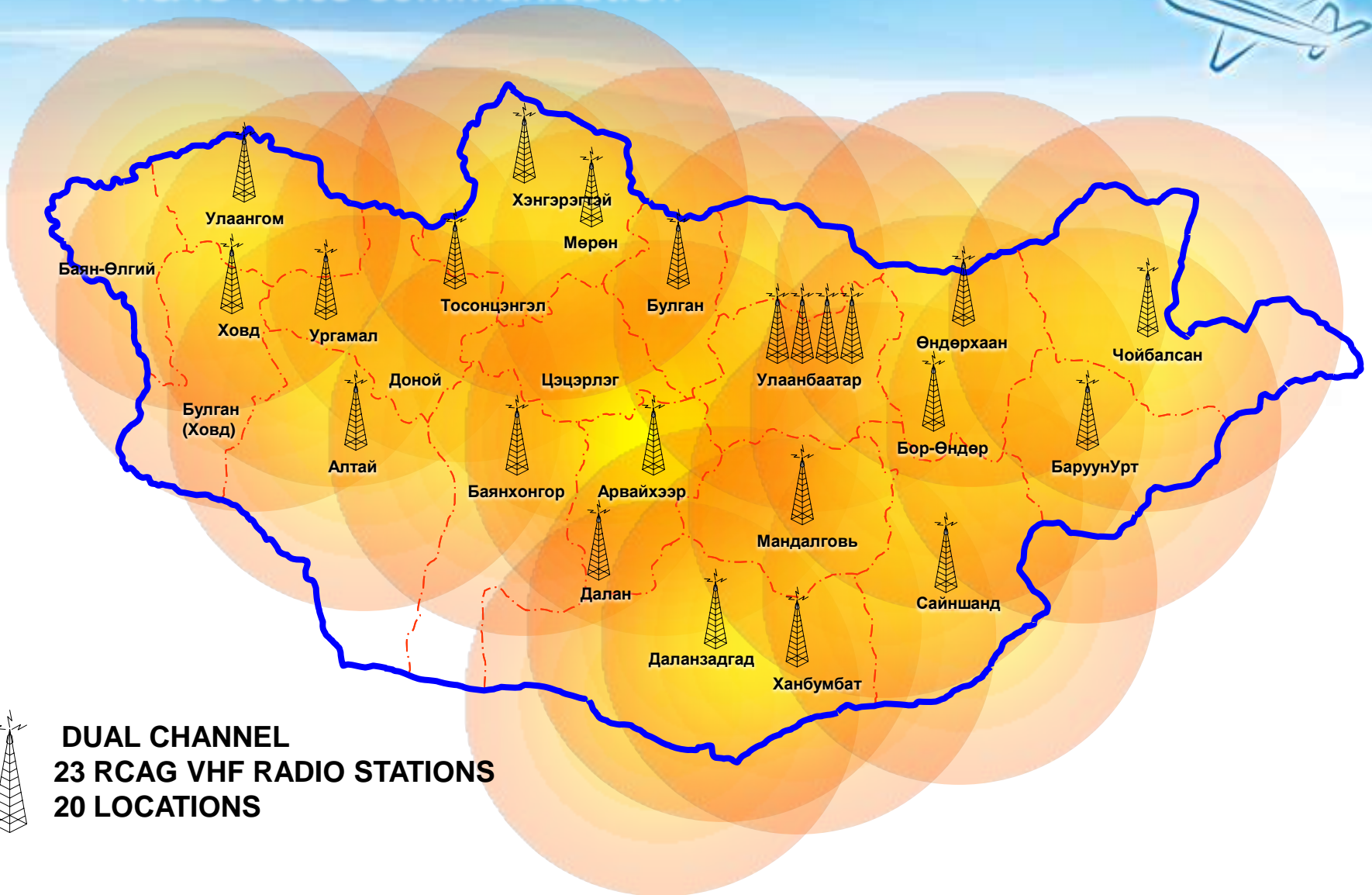
Terminals:
AFTN,
RCAG,
AWOS
Telephone

**SINCE 2003
18 LOCATIONS ARE CONNECTED
6 LOCATIONS WILL BE CONNECTED**

-  RCAG
-  MASCOM VSAT алсын станц
-  UNITELCOM шилэн кабель
-  Шилэн кабелийн зангилаа ба төгсгөл

AIR-GROUND COMMUNICATION

RCAG Voice Communication



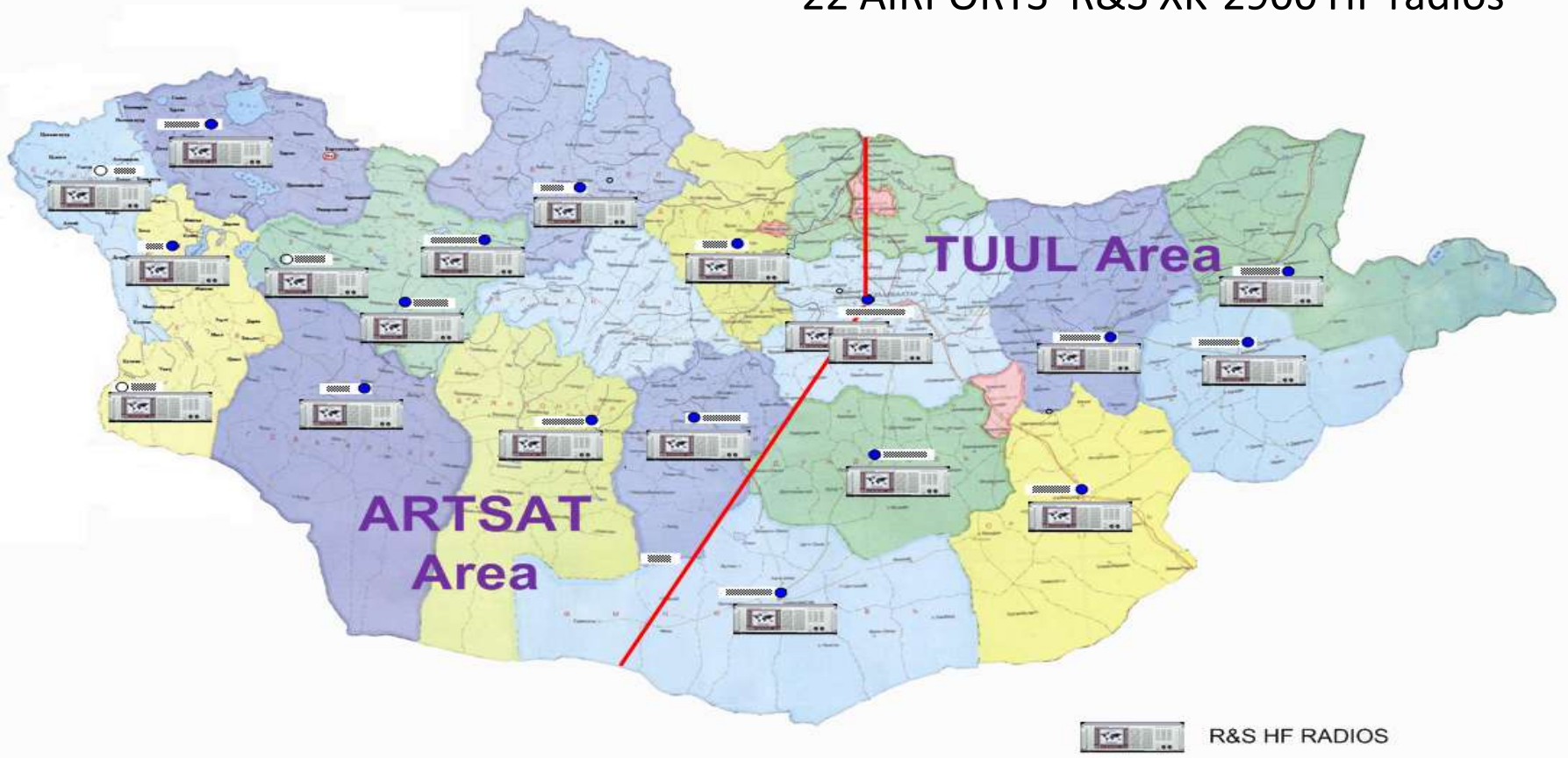
DUAL CHANNEL
23 RCAG VHF RADIO STATIONS
20 LOCATIONS

Air-to-Ground communication

HF VOICE COMMUNICATION



22 AIRPORTS R&S XK-2900 HF radios



SURVEILLANCE SYSTEM / PHASES IMPLEMENTATION SSR SYSTEM

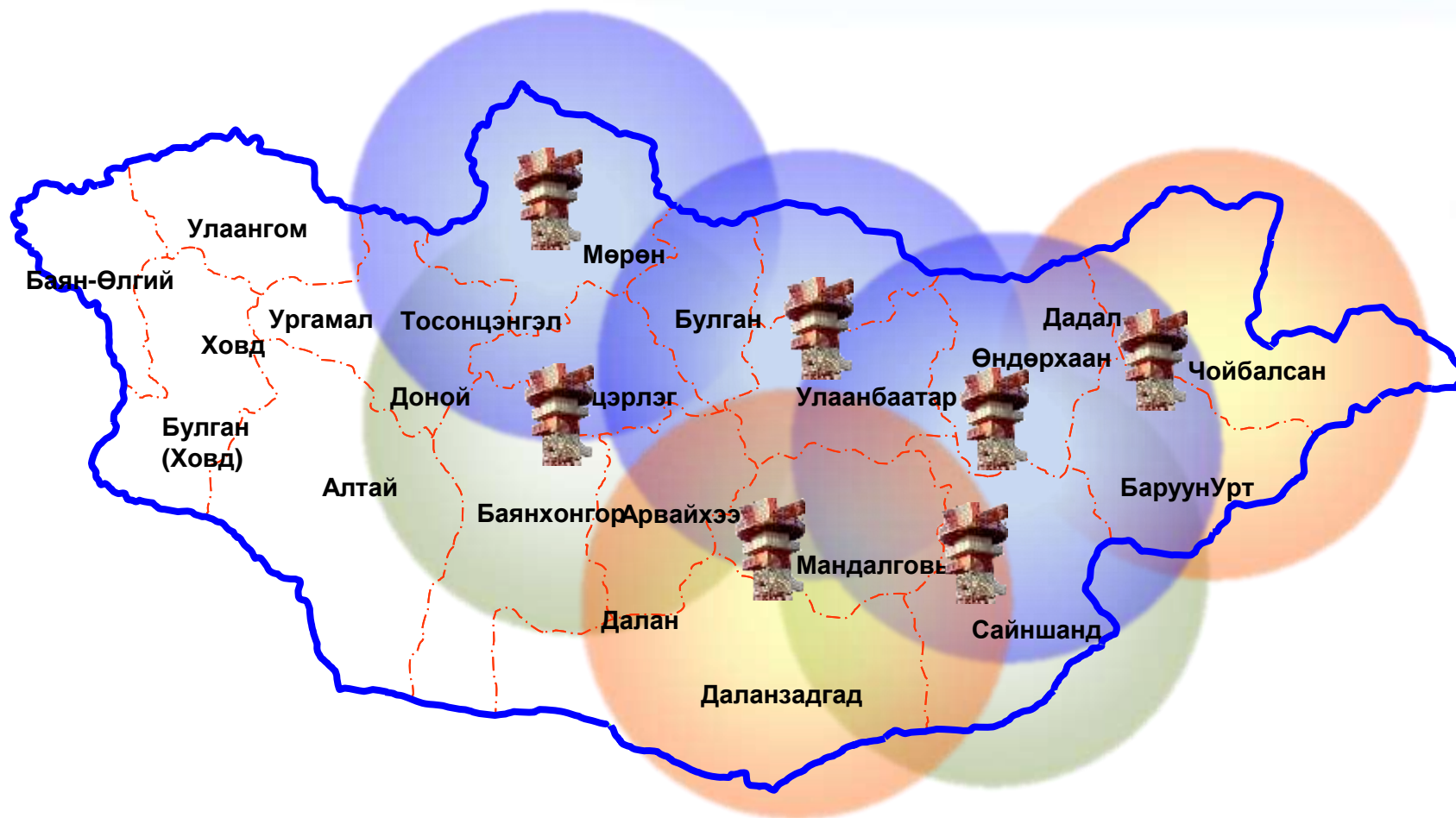


SINCE 2008

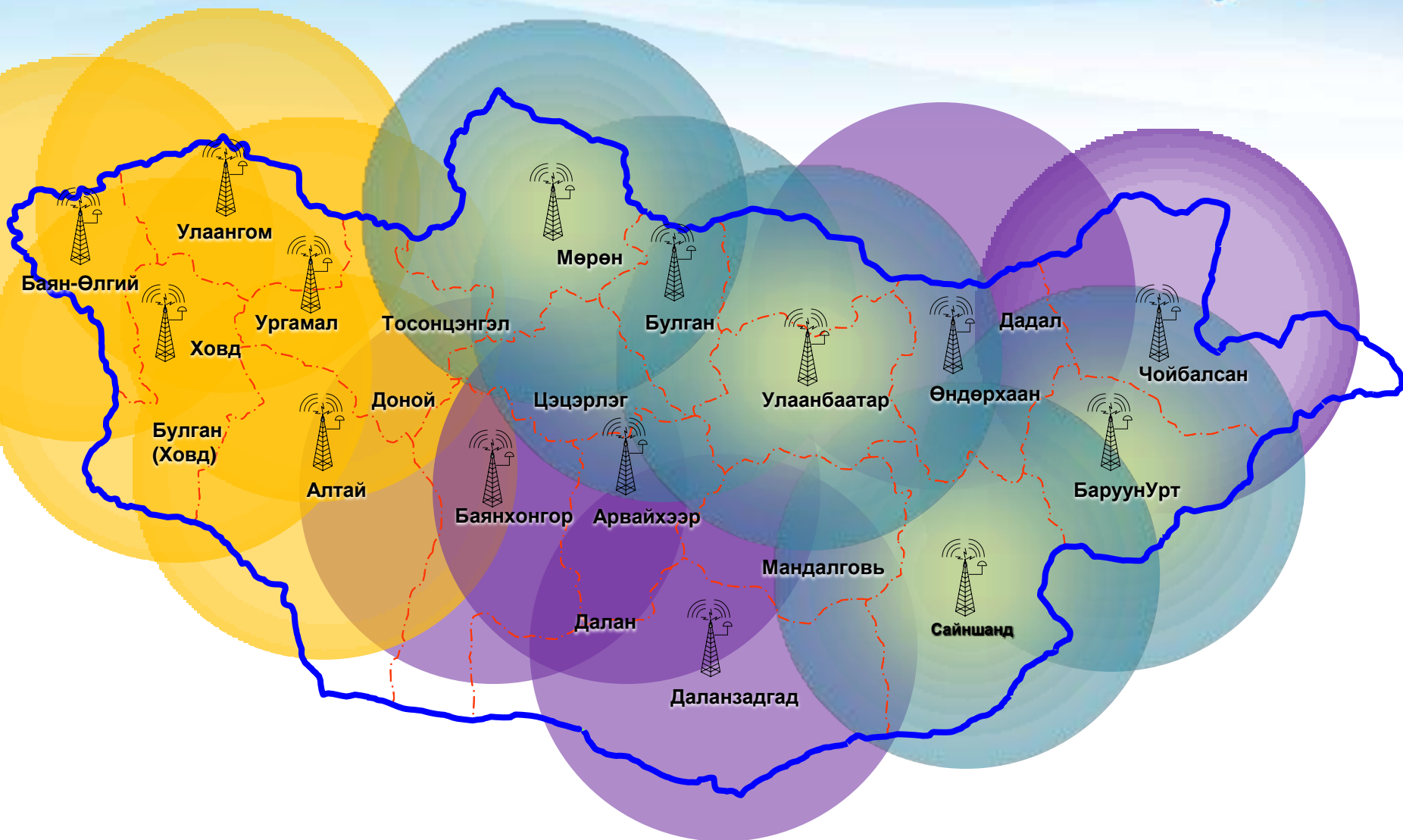
2012 3 SSR IMPLEMENTED

2013 2 SSR INSTALLED

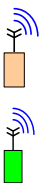
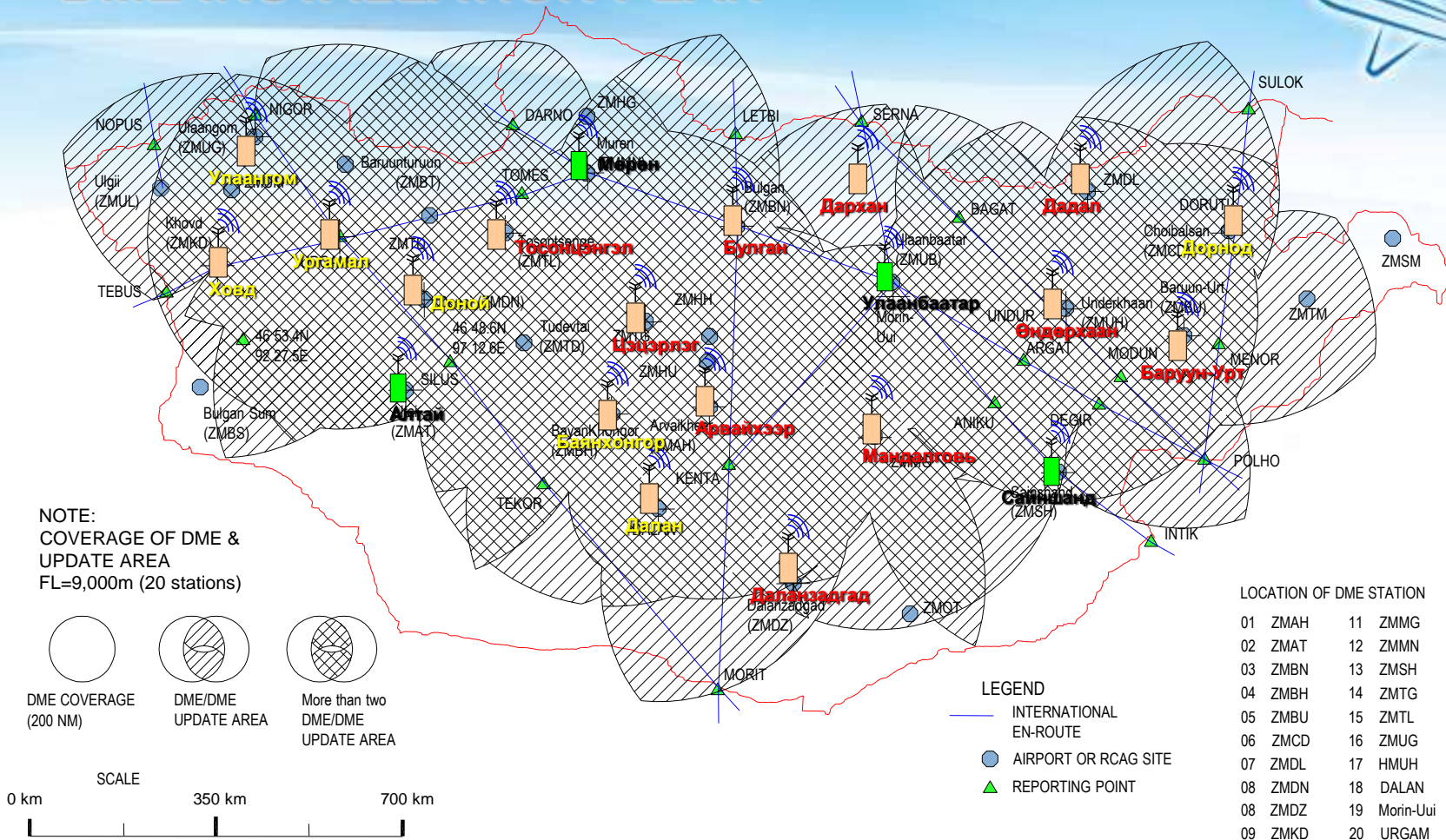
2014 2 WILL BE INSTALLED



STAGE OF ADS-B IMPLEMENTATION



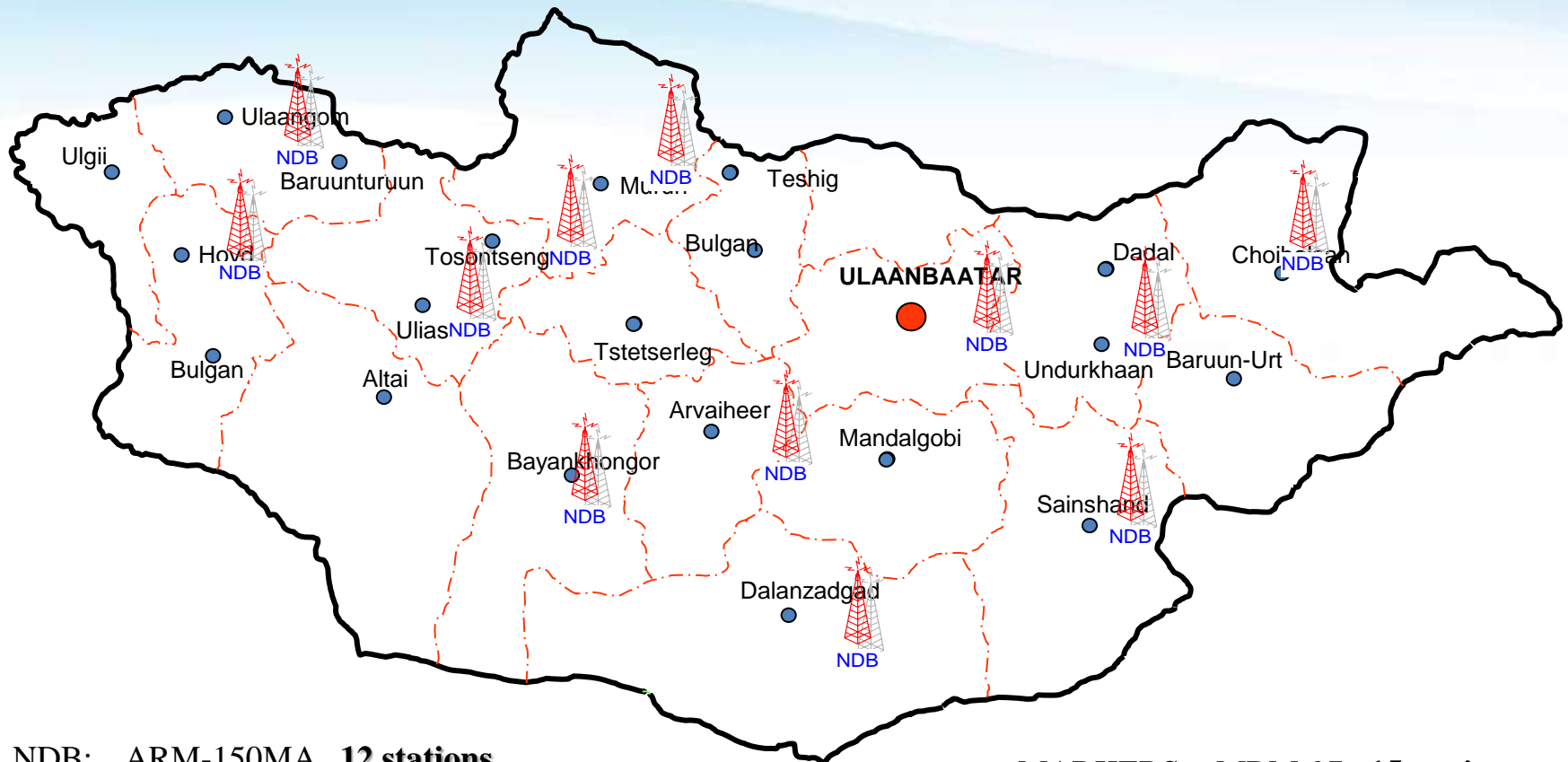
PBN IMPLEMENTATION DME INSTALLATION PLAN



PLAN TO INSTALL

CURRENT Далан, Дорнод

NON DIRECTION BEACONS (NDB) LOCATIONS

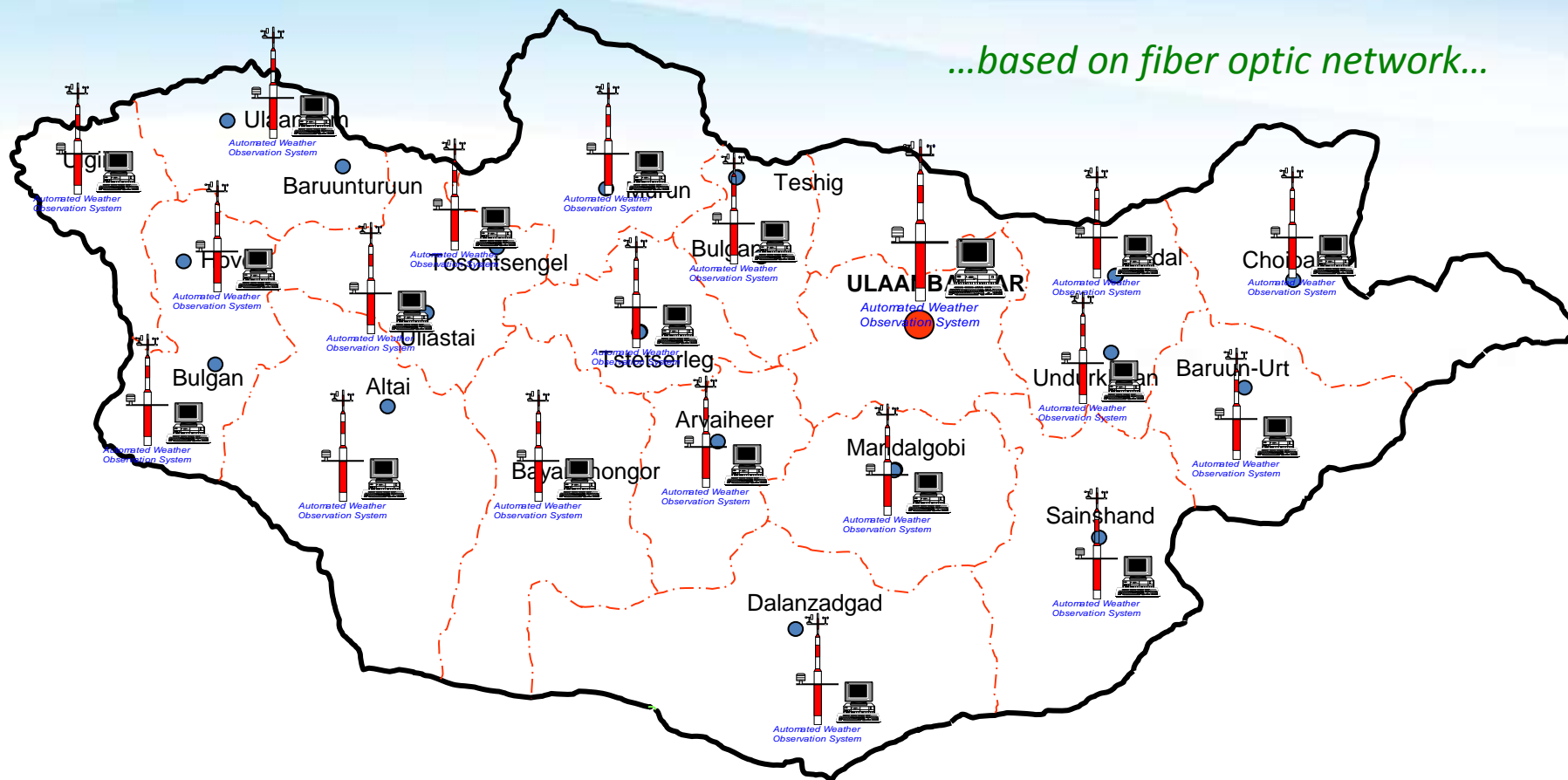


NDB: ARM-150MA **12 stations**,
PAR-10C **5 stations**

MARKERS : MRM-97 **15 stations**,
MRM-70

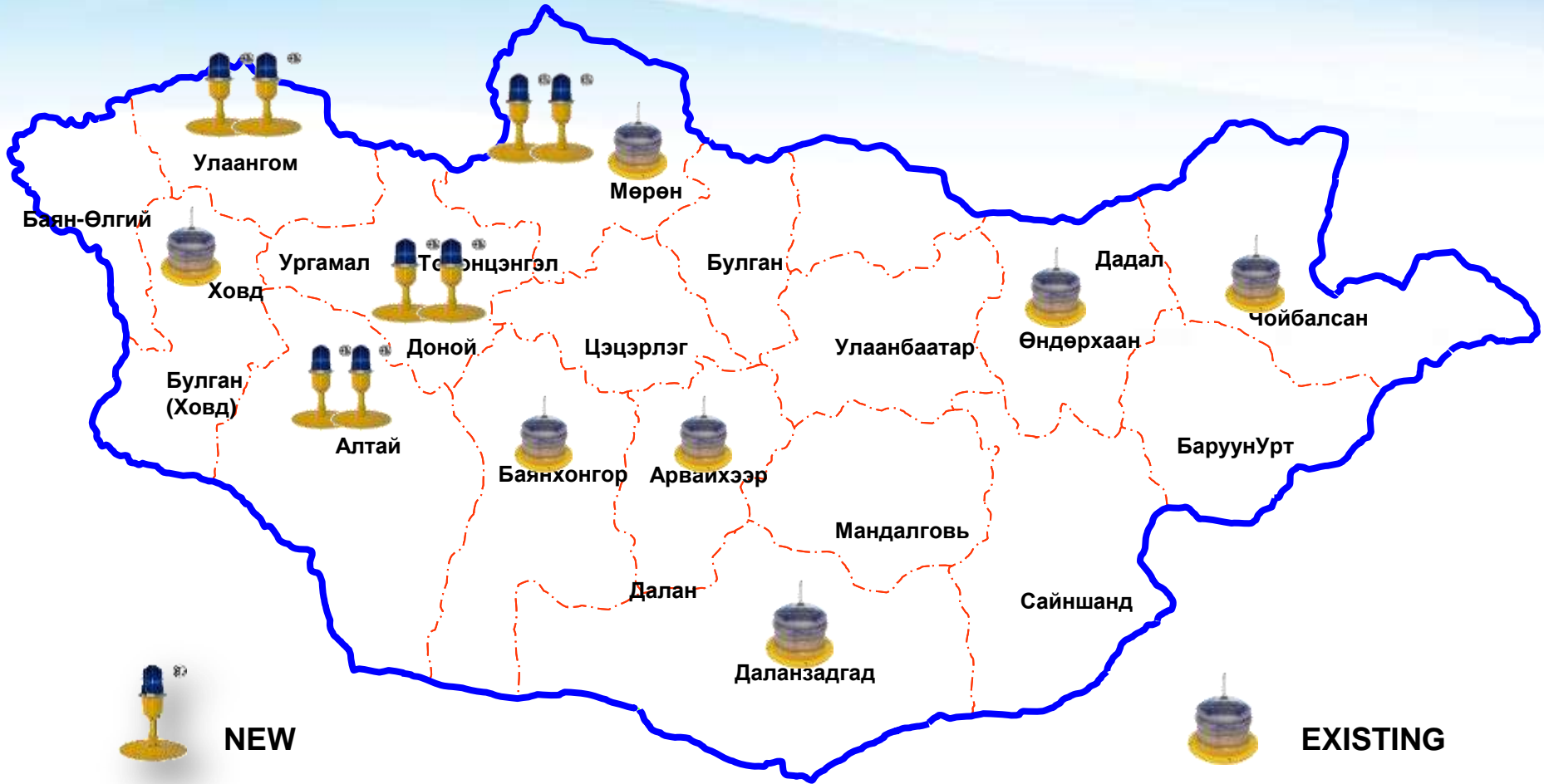
Ground-to-Ground communication

AFTN AND AWOS NETWORK

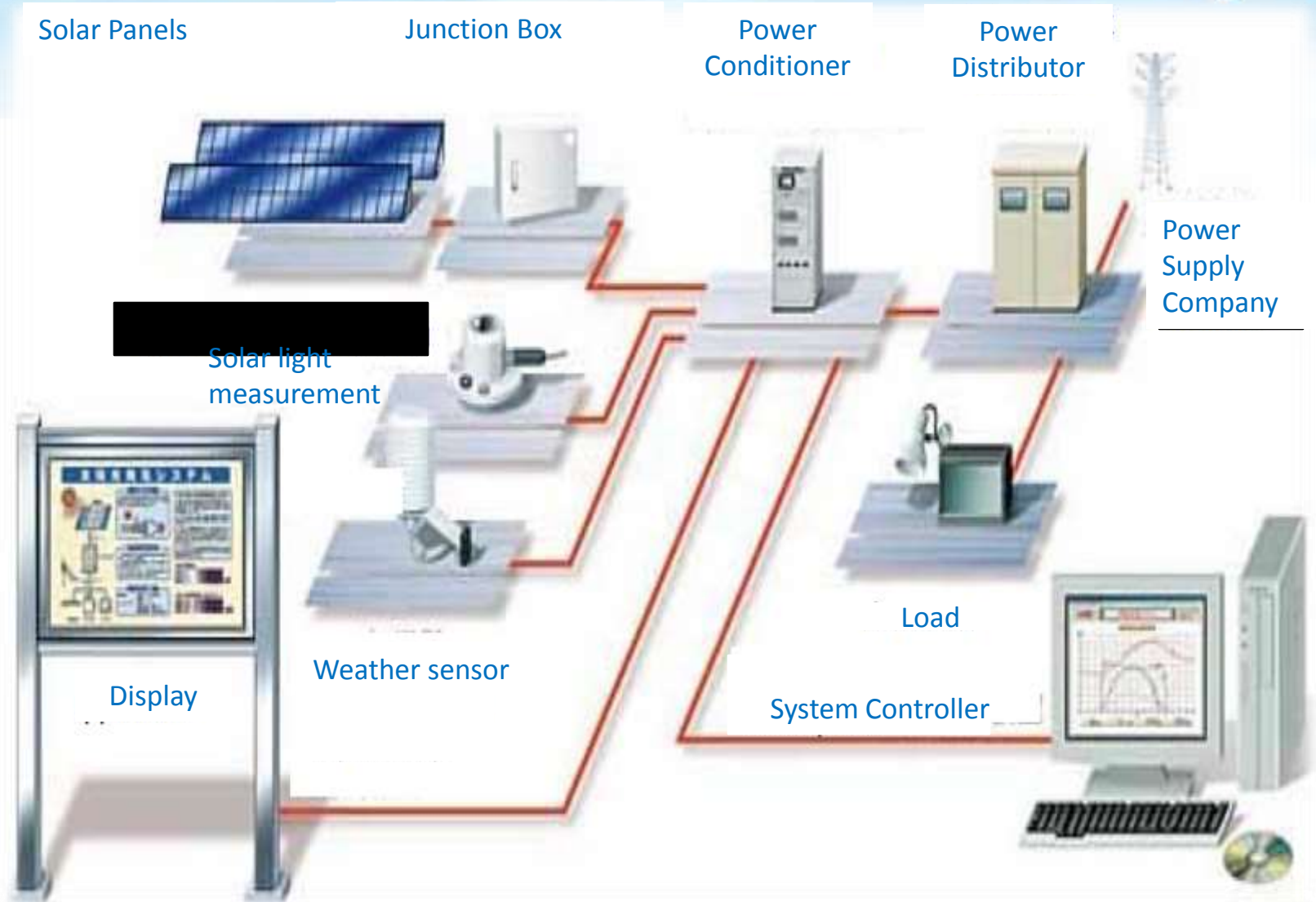


- *AFTN Aeronautical Message exchange network*
- **18** *Domestic airport Weather data collecting system*
- *Data automatically passed through AFTN X.25 Network every 30 minutes*

RUNWAY LIGHTING SYSTEM



SOLAR POWER STATION WITH 443KWATTS



МОНГОЛ УЛСЫН НИСЭХ БУУДЛУУДЫН ХЭТИЙН ТӨЛӨВ



Томъёолсон тэмдэг

Asphalt-Concrete
RW4D category

Asphalt-Concrete
RW3C category

Concrete
RW3C category

Concrete
RW4C category

Grass
RW3C category

1

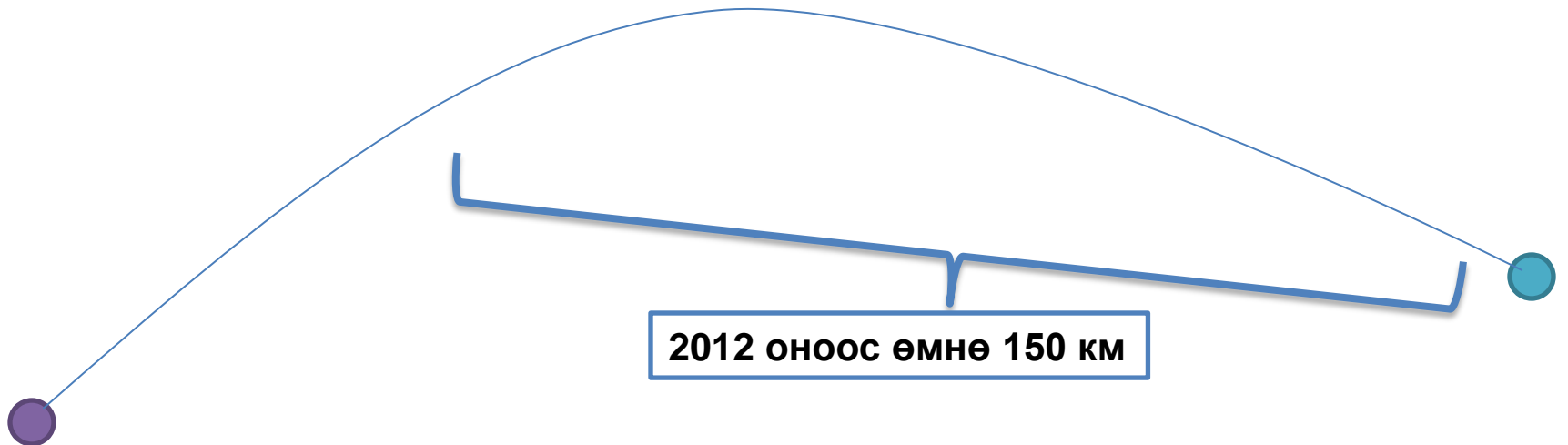
1

6

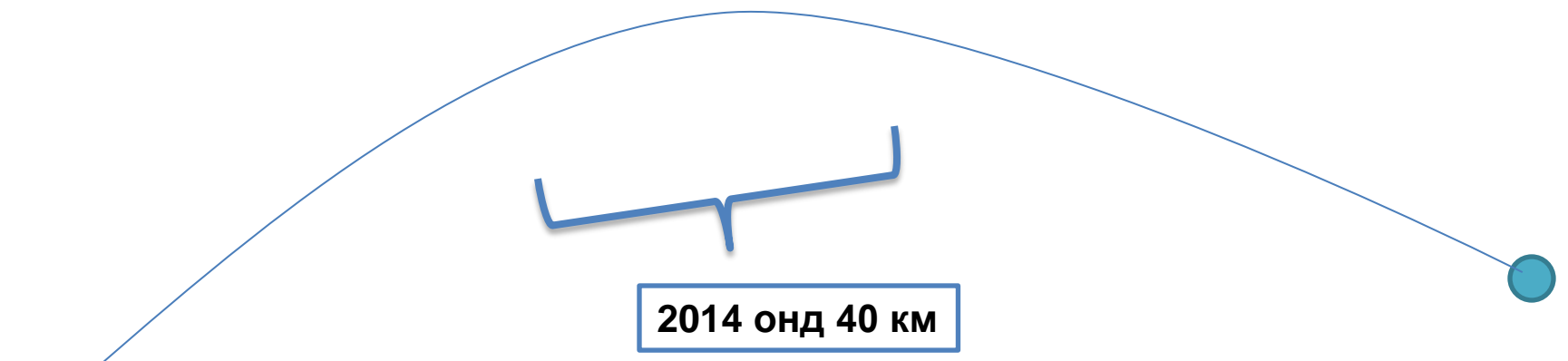
7

8

REDUCTION OF SEPARATION MINIMA



Агаарын хөлгүүдийн зайчлалын зураг



Агаарын хөлгүүдийн зайчлалыг ирээдүйд 10км болгон



АНХААРАЛ ТАВЬСАНД
БАЯРЛАЛАА