ICAO UNITING AVIATION

Aviation Infrastructure for Africa Gap Analysis

Priority Evaluation Items for Air Navigation Services (ANS)

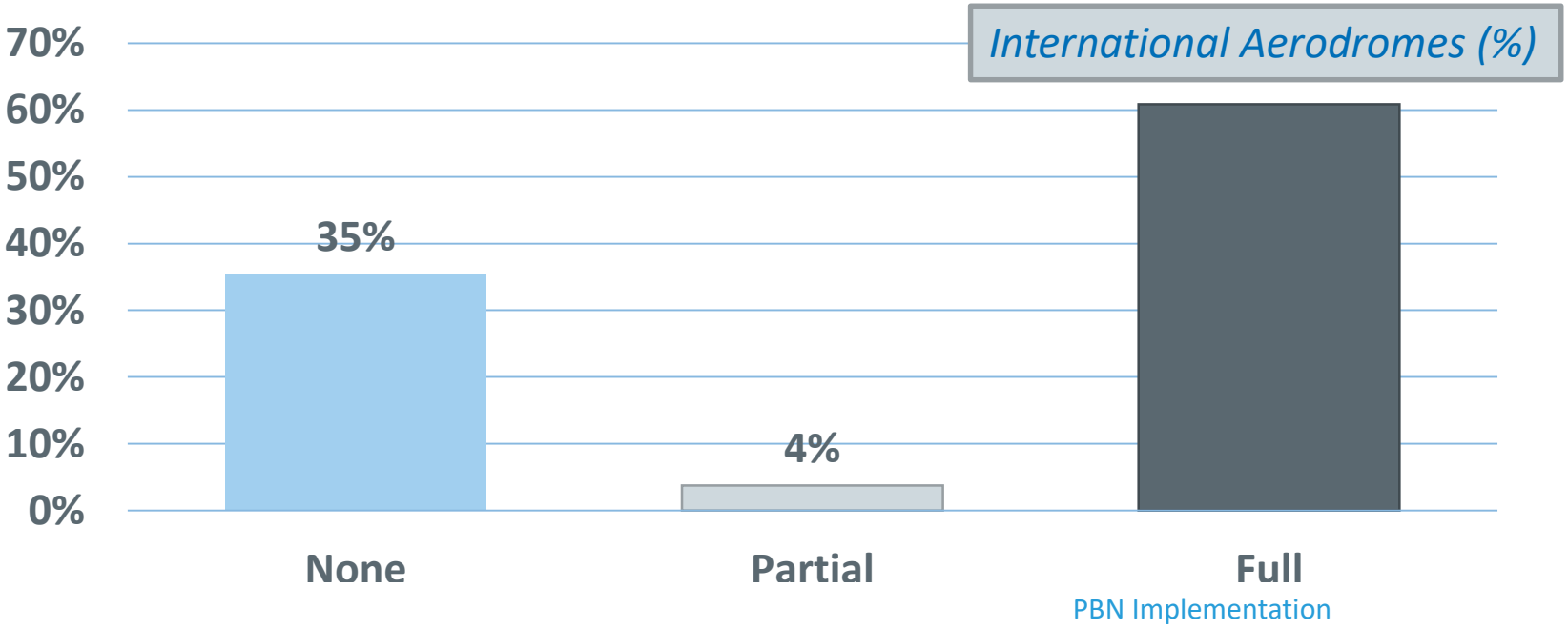
Presented by Prosper Zo'o Minto'o
Deputy Regional Director, ICAO, Western and Central African Office
March 2019

Structure of preliminary analysis

- Gap Area 1: Air Traffic Management (ATM)
- Gap Area 2: Communications, Navigation & Surveillance (CNS)
- Gap Area 3: Aeronautical Information Management (AIM)
- Gap Area 4: Aeronautical Meteorology (MET)
- Gap Area 5: Search and Rescue (SAR)

Gap Area 1: ATM

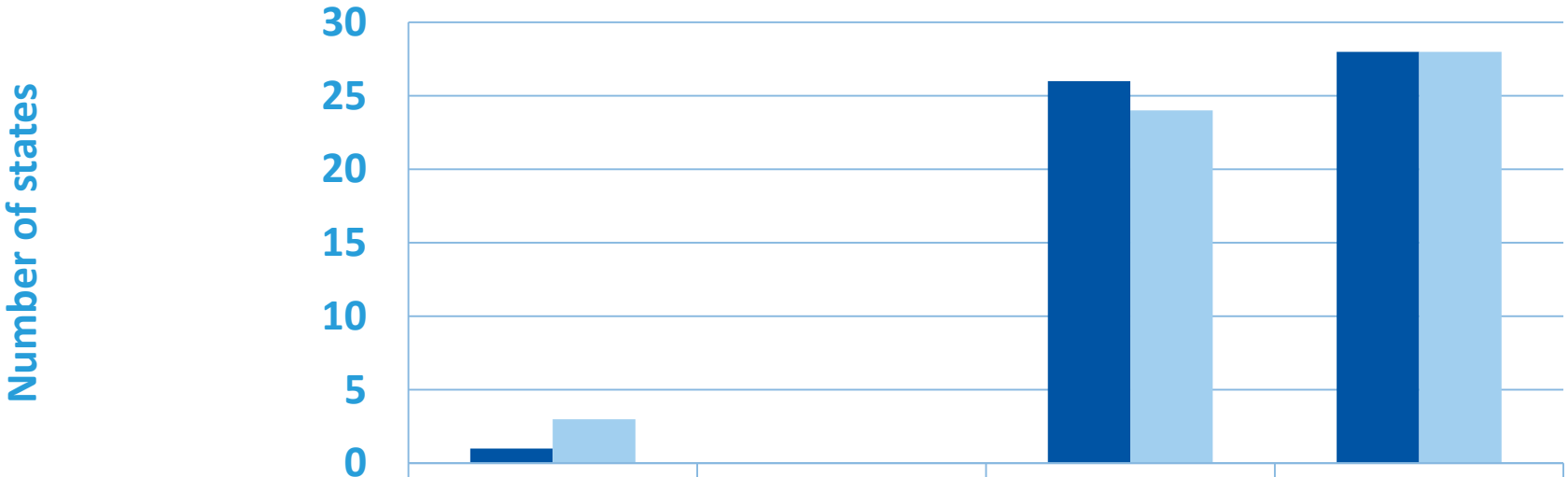
Implementation Gap-ATM
PBN Implementation



Implementation Gap-ATM
PBN Implementation

- 35% of int. aerodromes have no performance based navigation (PBN) approaches
- 61% of the int. aerodromes have PBN on all instr. runway ends
- 11% of int. aerodromes with visual approach procedures only

Implementation Gap- ATM

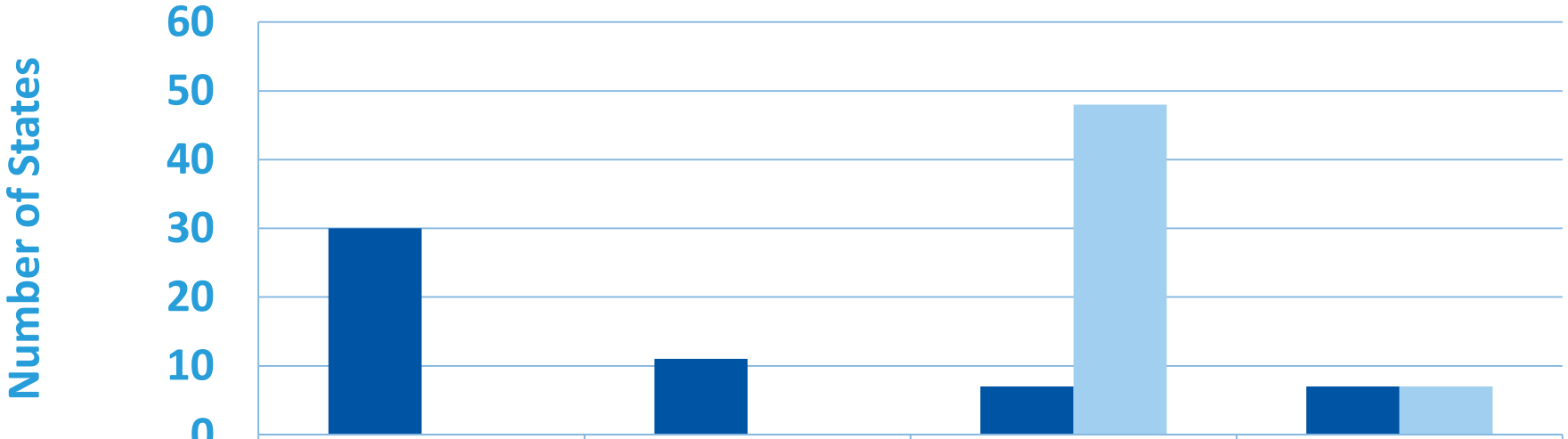


	Full	Partial	None	No Data
ATS Units Capacity	1	0	26	28
ATM Master Plan	3	0	24	28

Implementation Gap- ATM

- Low ATS Units Capacity in terms of across the Region
- Low pace of development and implementation of ATM Master Plan

Implementation Gap – ATM (cont.)



	Full	Partial	None	No Data
PBN Impl.	30	11	7	7
CCO/CDO	0	0	48	7

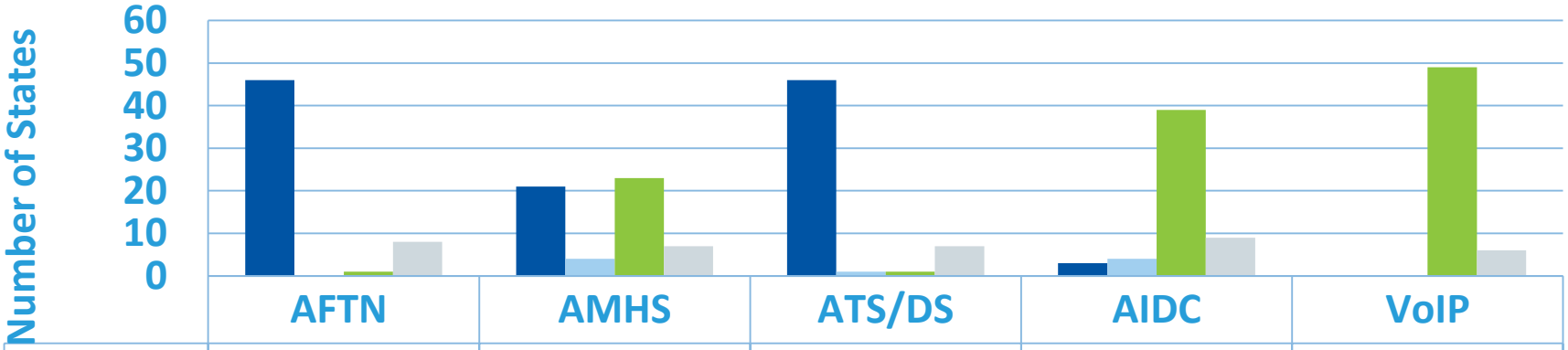
Implementation Gap – ATM (cont.)

- PBN Implementation as per Assembly Resolution A37-11 is relatively high but needs to be completed

- CCO/CDO implementation has not started to take full advantage of PBN approach procedures

Gap Area 2: CNS

Infrastructure Implementation Gap – Ground/Ground Communications

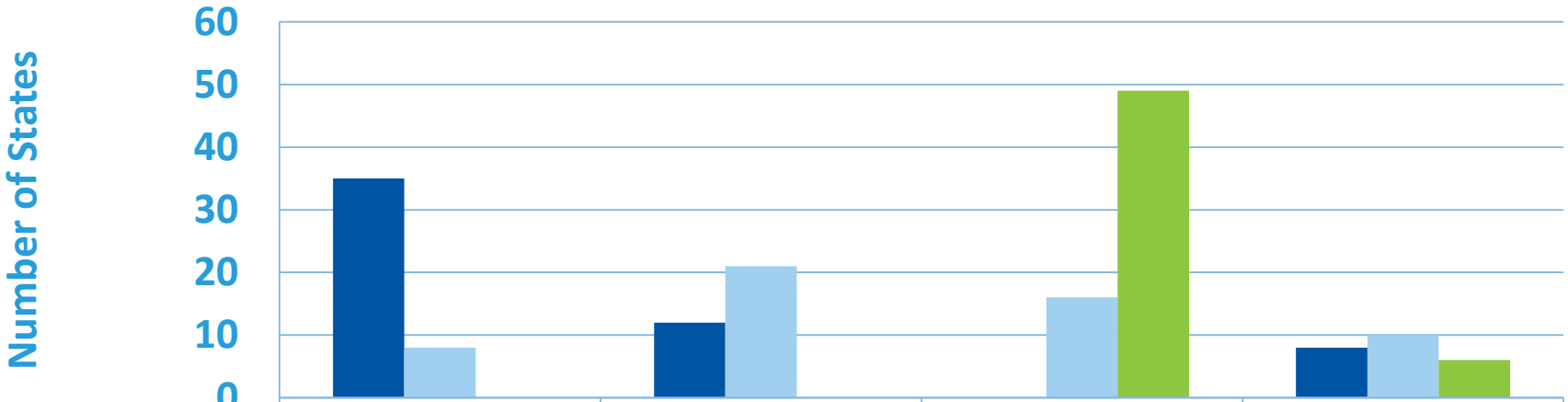


	AFTN	AMHS	ATS/DS	AIDC	VoIP
Full	46	21	46	3	0
Partial	0	4	1	4	0
None	1	23	1	39	49
No Data	8	7	7	9	6

Infrastructure Implementation Gap – Ground/Ground Communications

- High rate of implementation of the AFI AFTN Plan
- Relatively low progress in implementing AMHS circuits and low interconnection of existing AMHS systems
- Very low progress in implementing AIDC (OLDI) circuits interconnection between ATM systems
- Implementation and interconnection of VoIP not started although planned by APIRG

Infrastructure Implementation Gap – Air/Ground Communications

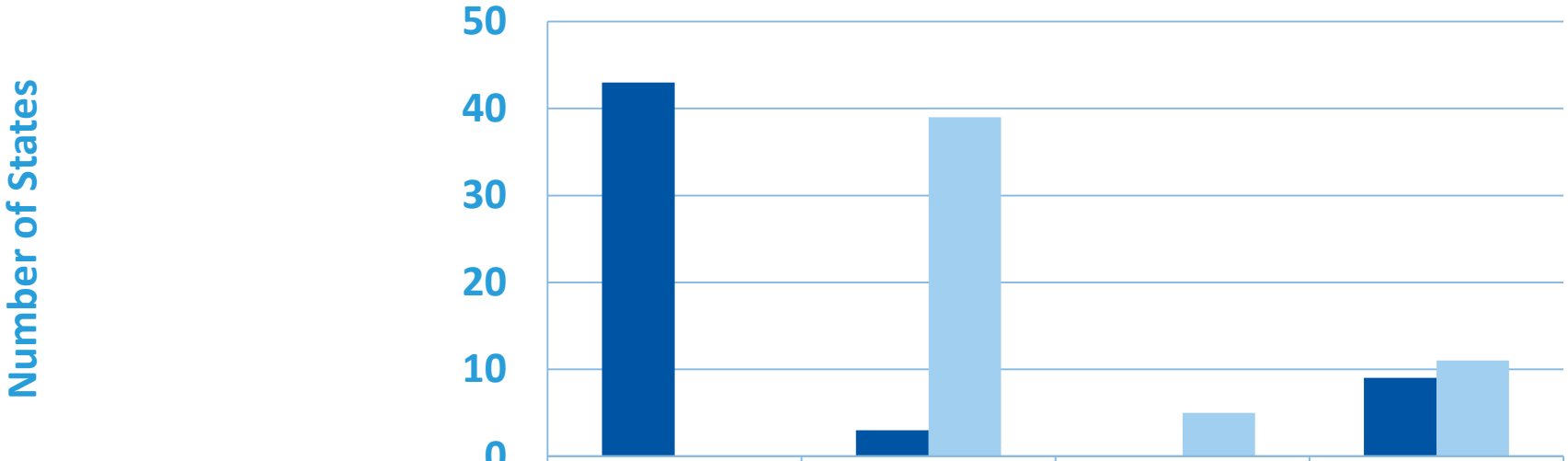


	Full	Partial	None	No Data
VHF & HF	35	12	0	8
CPDLC	8	21	16	10
VDL & HFDL	0	0	49	6

Infrastructure Implementation Gap – Air/Ground Communications

- Good VHF & HF coverage of the airspace along the routes with some casual shortage of availability and quality
- Progress in implementing CPDLC across Flight Information Regions
- Implementation and interconnection of VDL & HF DL not started although planned by APIRG

Infrastructure Implementation Gap – Navigation

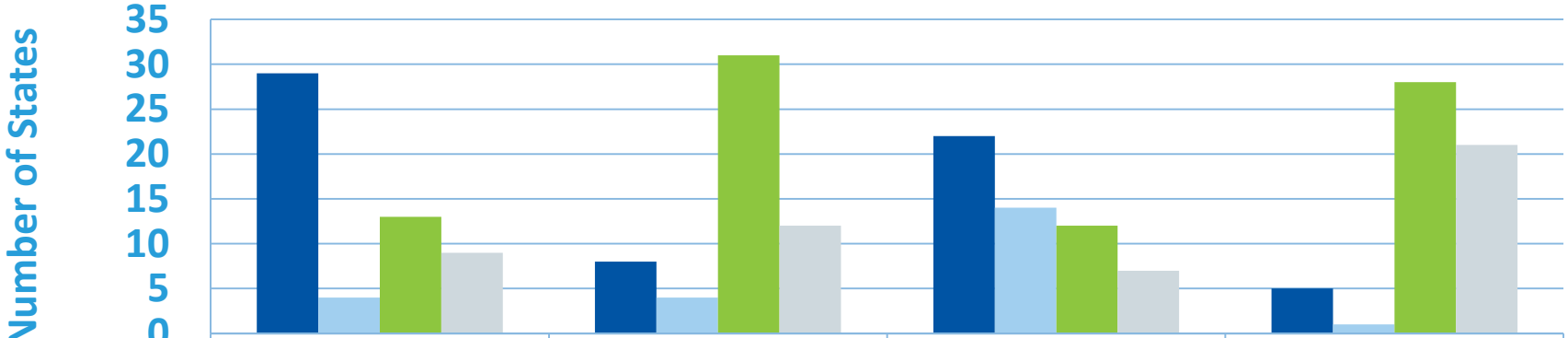


	Full	Partial	None	No Data
Conventional Nav'Aids	43	3	0	9
GNSS (Core & Augmented)	0	39	5	11

Infrastructure Implementation Gap – Navigation

- Good pace of implementation conventional Navaids (VOR, DME, ILS)
- GNSS core constellations highly used although outstanding lack of approval.
- Low pace of implementation of SBAS as compared to ABAS (SBAS subjected to impact analysis according to APIRG GNSS strategy)

Implementation Gap – Surveillance

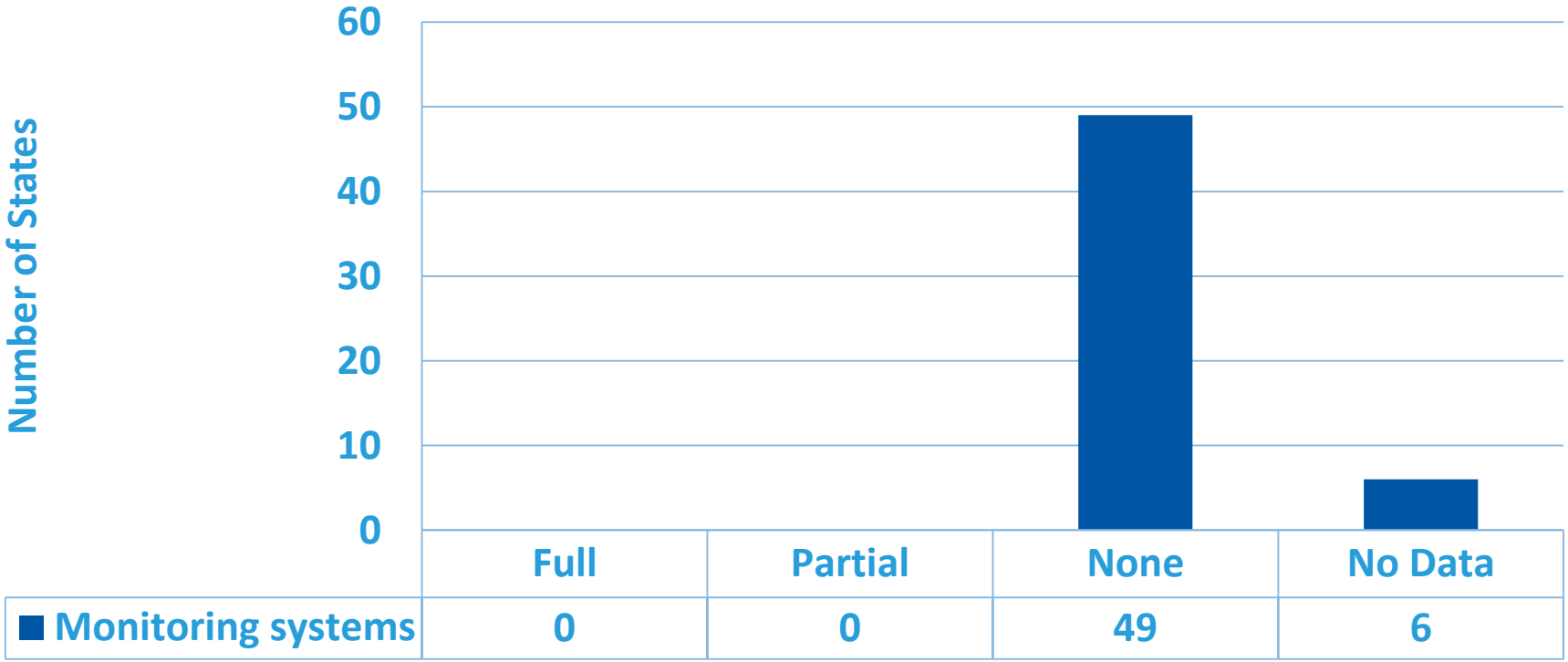


	SSR MS	ADS-B	ADS-C	MLAT
Full	29	8	22	5
Partial	4	4	14	1
None	13	31	12	28
No Data	9	12	7	21

Implementation Gap – Surveillance

- Progress in implementing Secondary Surveillance Radar (SSR) Mode S
- Low pace of implementation of ADS-B stations
- Progress in implementing ADS-C across Flight Information Regions
- Low level of implementation and operation of MLAT stations

Implementation Gap – Spectrum

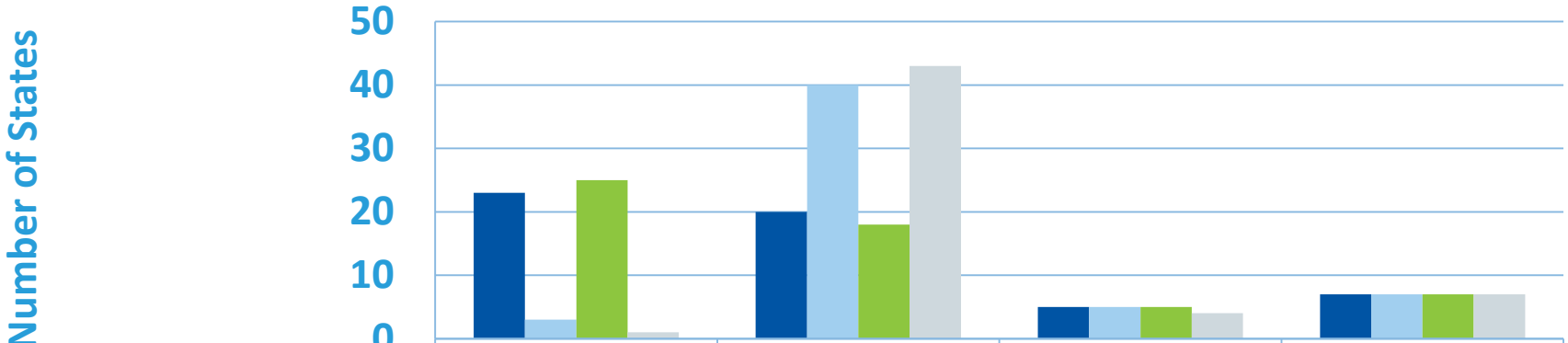


Implementation Gap – Spectrum

- No implementation of spectrum monitoring and reporting systems although increasing number of interference occurrences.
- Reports on such occurrences are requested by ITU to address cases of harmful interferences to aviation.

Gap Area 3: AIM

Implementation Gap – AIM



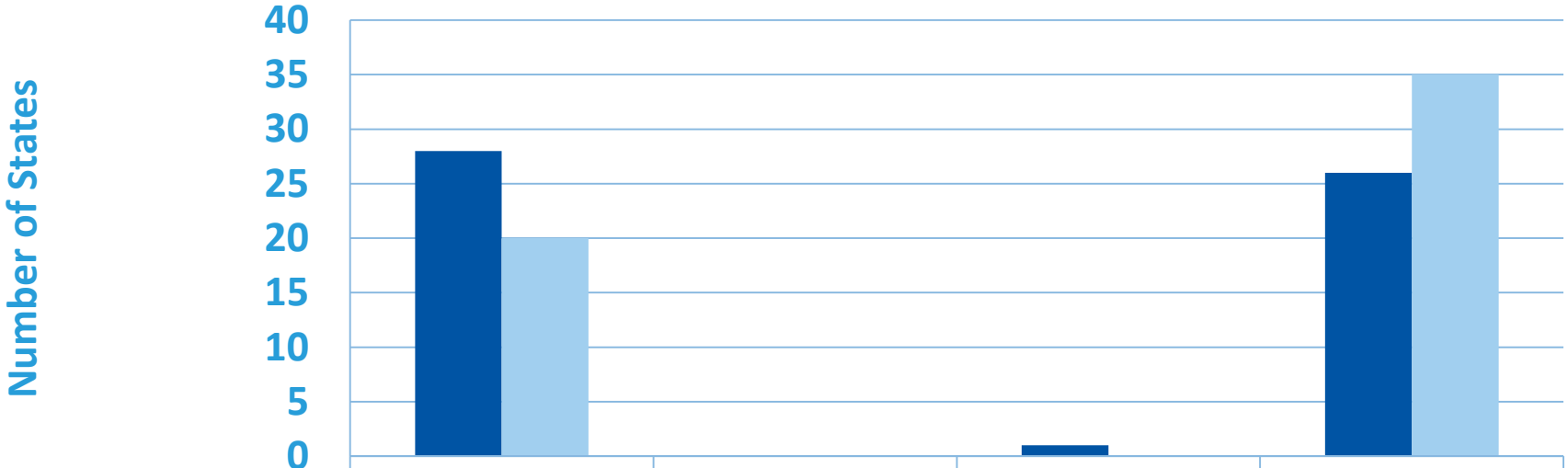
	Full	Partial	None	No Data
AIXM Based e-AIP	23	20	5	7
e-TOD	3	40	5	7
QMS	25	18	5	7
AIS/AIM Action Plan	1	43	4	7

Implementation Gap – AIM

- Progress made of AIXM Based e-AIP implementation
- Progress made in implementation of e-TOD
- AIS/AIM Transition Plans developed

Gap Area 4: MET

Implementation Gap – MET



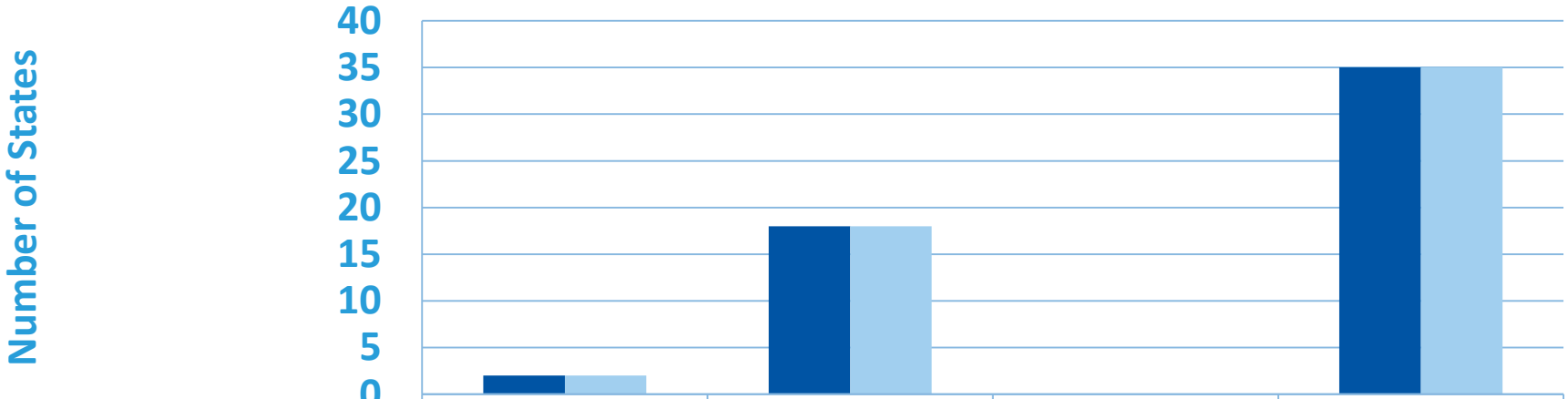
	Full	Partial	None	No Data
OPMETs	28	0	1	26
Volcanic Ash CP	20	0	0	35

Implementation Gap – MET

- Increased availability rate of OPMETs
- Low pace of implementation of Volcanic Ash contingency procedures

Gap Area 5: SAR

Implementation Gap – Search and Rescue

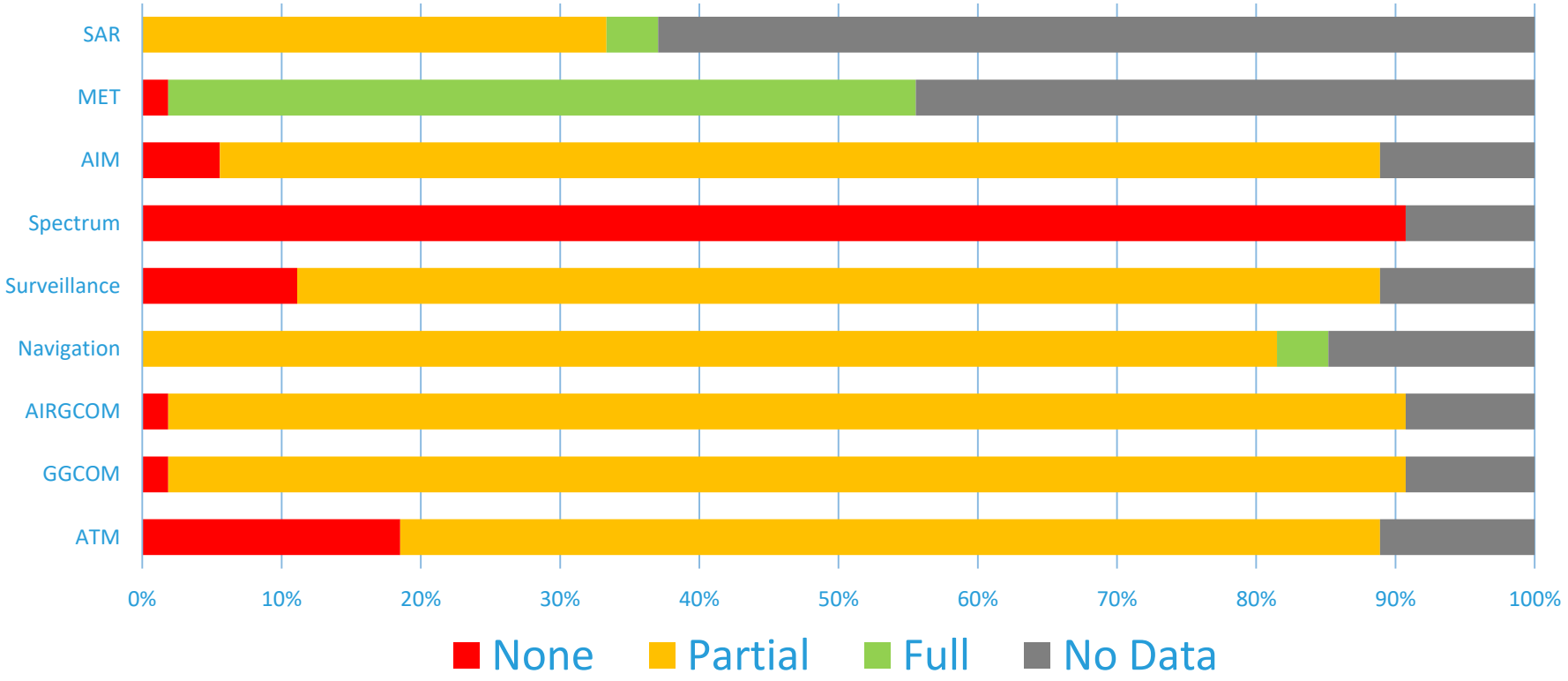


	Full	Partial	None	No Data
RCCs/RSCs effective operation	2	18	0	35
SAR Agreements	2	18	0	35

Implementation Gap – Search and Rescue

- SAR Operation: Low pace of establishment of effective RCCs/RSCs
- SAR Agreements: Low pace of signature of effective SAR Agreements as per An12 provisions.

Aggregated Implementation Gaps - ANS



ICAO

North American Central American and Caribbean (NACC) Office
Mexico City
South American (SAM) Office
Lima
ICAO Headquarters
Montréal
Western and Central African (WACAF) Office
Dakar
European and North Atlantic (EUR/NAT) Office
Paris
Middle East (MID) Office
Cairo
Eastern and Southern African (ESAF) Office
Nairobi
Asia and Pacific (APAC) Sub-office
Beijing
Asia and Pacific (APAC) Office
Bangkok
THANK YOU