



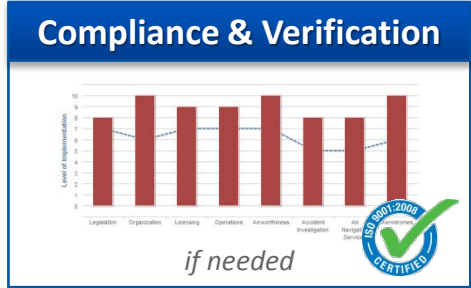
Studies of Global Aviation Performance

Richard Macfarlane

Deputy Director, Air Navigation Capacity and Efficiency

Air Navigation Bureau, ICAO

*Workshop: Global Challenges to Improve Air Navigation Performance
11 – 13 February 2015*

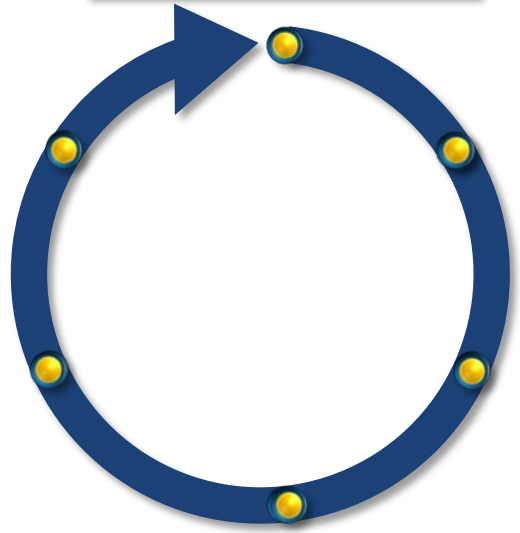


Needs Analysis / Validation

Global Plans

Global & Regional

Assess & Measure



Implementation Planning

Training & Guidance

SARPs & PANS



2014 – 2016 Global Aviation Safety Plan (GASP)

Objectives and Priorities

Near-term

2017

- All States establish **effective safety oversight systems**
- States with effective safety oversight (over 60% EI) **fully implement SSP**
- States / Stakeholders support RASGs with the **sharing of safety information**

Mid-term

2022

- All Member States **fully implement the ICAO SSP Framework**
- RASGs incorporate **regional monitoring and safety management** programmes

Long-term

2027

- Member States implement **safety capabilities** as necessary to support future Air Navigation Systems

PRIORITIES

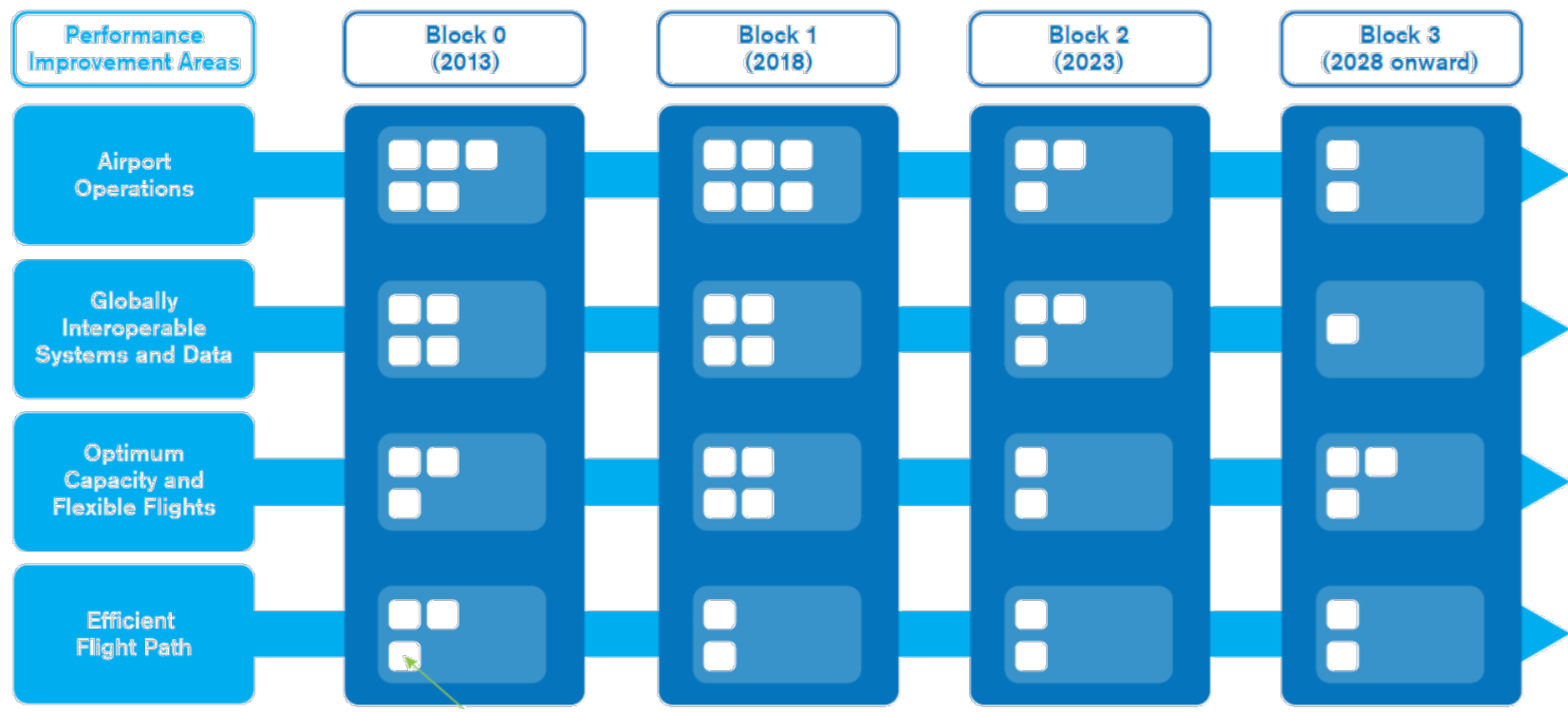
RUNWAY SAFETY

CONTROLLED FLIGHT INTO TERRAIN (CFIT)

LOSS OF CONTROL IN-FLIGHT (LOC-I)



2014 – 2016 Global Air Navigation Plan (GANP) *Objectives and Priorities*



PRIORITIES

- PERFORMANCE BASED NAVIGATION (PBN)
- CONTINUOUS DESCENT AND CLIMB OPERATIONS (CDO/CCO)
- COLLABORATIVE DECISION-MAKING (CDM & A-CDM) & ATFM



Historical Adoption of Regional Targets

AIR NAV. REGION	REGIONAL OFFICE	SAFETY	AIR NAVIGATION
AFI	<u>ESAF</u>	<u>Aviation Safety Targets for Africa</u> (Abuja Ministerial – July 2012) ✓	<u>ANS Performance Indicators for Africa</u> (APIRG/19 – October 2013) ✓
	<u>WACAF</u>		
MID	<u>MID</u>	<u>MID Region Safety Strategy</u> (DGCA-MID/2 May 2013) (Review – 27-29 April 2014) ✓	<u>MID Region Air Navigation Strategy</u> (MSG/4 – November 2014) ✓
ASIA/PAC	<u>APAC</u>	<u>RASG-APAC Priorities and Targets</u> (RASG-APAC/4 – November 2014) ✓	<u>APANPIRG Priorities and Targets</u> (APANPIRG/25 – September 2014) ✓
NAM	<u>NACC</u>	<u>Port-of-Spain Declaration</u> (NACC/DCA/5 – April 2014) ✓	<u>Port-of-Spain Declaration</u> (NACC/DCA/5 – April 2014) ✓
CAR			
SAM	<u>SAM</u>	<u>Bogota Declaration</u> (RAAC/13 - December 2013) ✓	<u>Bogota Declaration</u> (RAAC/13 - December 2013) ✓
EUR	<u>EUR/NAT</u>	<u>Priority Safety Targets for the EUR Region</u> (RASG-EUR/03 - February 2014) ✓	<u>EUR ASBU Implementation Plan</u> (EANPG/55 - November 2013) ✓
NAT		<u>NAT Safety KPIs</u> (NAT-SPG/50 – June 2014) ✓	<u>NAT Service Development Roadmap</u> (NAT-SPG/49 – June 2013) ✓

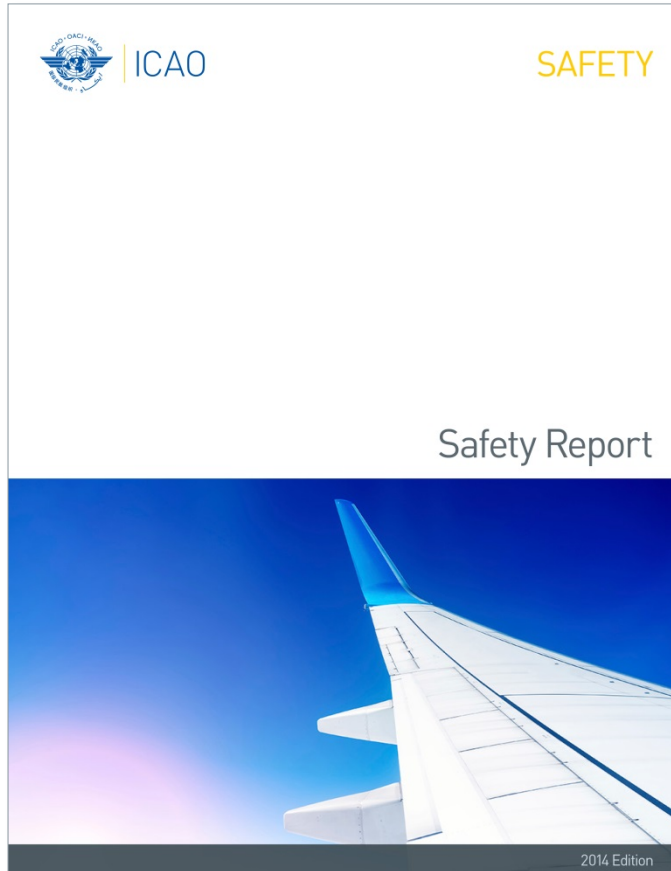


Global and Regional Reporting

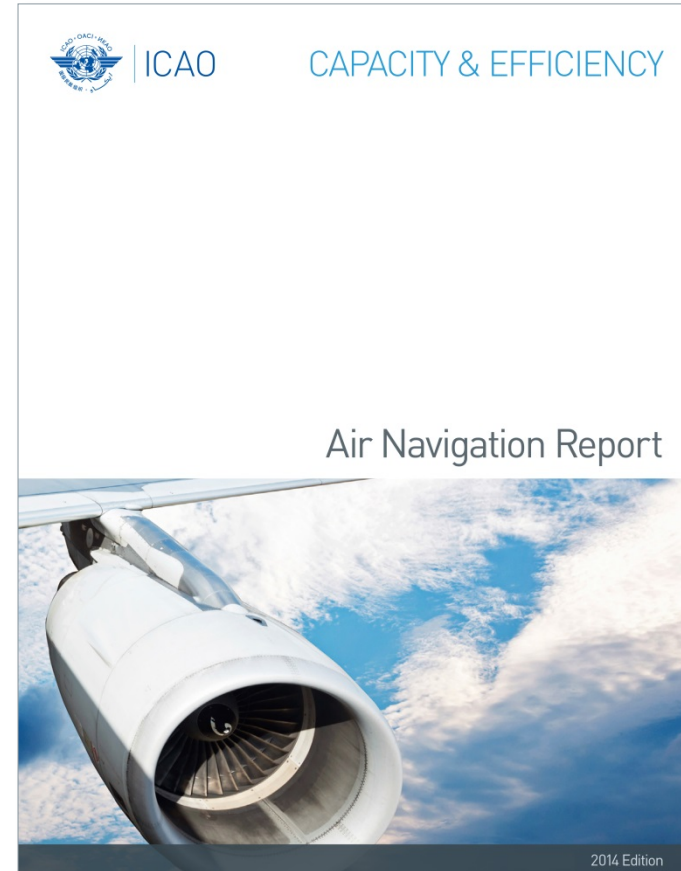




Annual Reports



2015 Edition: March



2015 Edition: April



Regional Dashboards

NOW AVAILABLE

- Objective: Measure against the Global Plans through regional indicators
 - **Launched on 5 May 2014:**
www.icao.int/safety/pages/regional-targets.aspx
 - Show the progress of regionally-agreed indicators and targets
 - Show the results of States by regional grouping - by UN Region, ICAO accreditation, PIRG, RASG, COSCAP, RSOO, etc.
 - Drill-down on each indicator to see specific details on metric, source, and data used



Current Developments

- CAEP ASBU Block 0 Implementation Questionnaire (AN 1/17 – 14/56)**

- Sent out on Sep 2014, for completion by 31 Dec 2014
- Building on the high-level analysis of potential environmental benefits done in 2013
- Questionnaire divided into different ASBU performance improvement area, for possible fuel savings for each module
- Received replies from 47 States so far, with many more pending

ATTACHMENT to State letter AN 1/17 - 14/56

Name:
State/Organization:
Email Address:

Performance Improvement Area 1: Airport Operations				
B0-APTA	B0-WAKE	B0-RSEQ	B0-SURF	B0-ACDM

Block 0-APTA: Optimization of Approach Procedures including vertical guidance

Operational Improvements:

- Performance-based navigation (PBN) approaches: Radius to fix
- Reduced missed approaches and diversions due to lowered approach minima

Questions

		Current	2018 (additional)
1	List of airports* with implementation of radius to fix final approach.		
2	What percentage of operations in your State/region fly this procedure?		
3	List of airports* in your State/region with PBN final approaches implementation in order to provide improved access through improved minima (leading to a reduction in missed approaches/diversions).		
4	What percentage of operations benefit from a reduction in missed approaches at the aerodromes identified in question 3?		
5	How many commercial service airports in your State/Region do not have at least one Instrument Landing System (ILS) installed?		
6	What percentage of commercial operations in your State/region occur at the airports included in your response to question 5?		

*Please list international aerodromes published in the ICAO regional air navigation plans using their ICAO code.



Future Developments

- **ASBU Performance Indicators**
 - ASBUs are focused on **performance**
 - A performance analysis should be **well-defined** from the beginning to succeed
- **Some Ideas**
 - An interactive tool to assess **expected operational benefits** using influence diagrams



Future Developments

**COST-EFFECTIVE
INVESTMENT OF
THE AVAILABLE
RESOURCES**

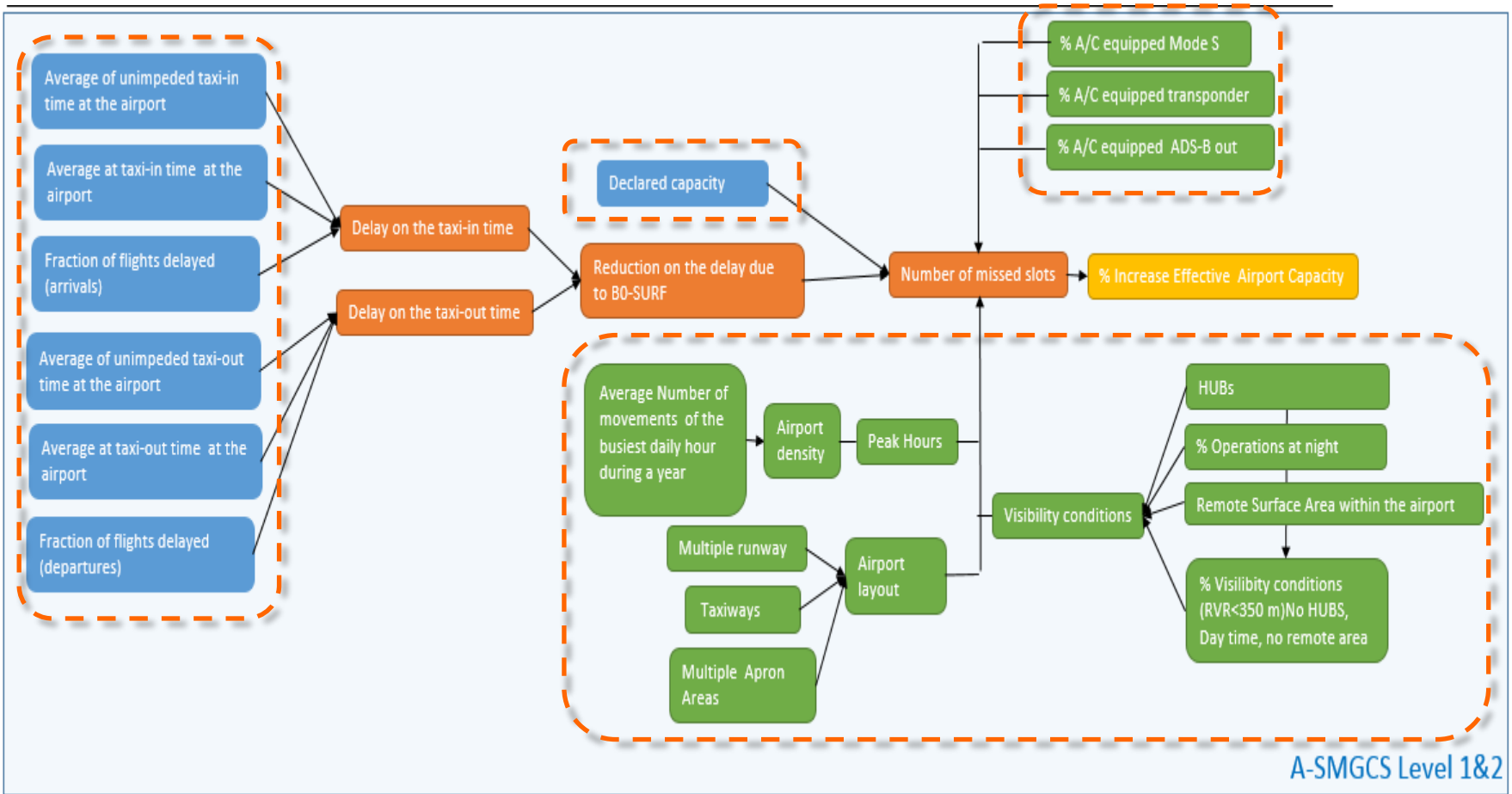


Practical Example 1 – B0 SURF

- **B0 SURF: Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)**
- **Summary:**
 - Provides surveillance and alerting of movements of both aircraft and vehicles on the aerodrome
- **Applicability:**
 - To any aerodrome and all classes of aircraft/vehicles
 - Implementation is to be based on requirements stemming from individual aerodrome operational and cost-benefit assessments.



B0 SURF Influence Diagram in Effective Airport Capacity

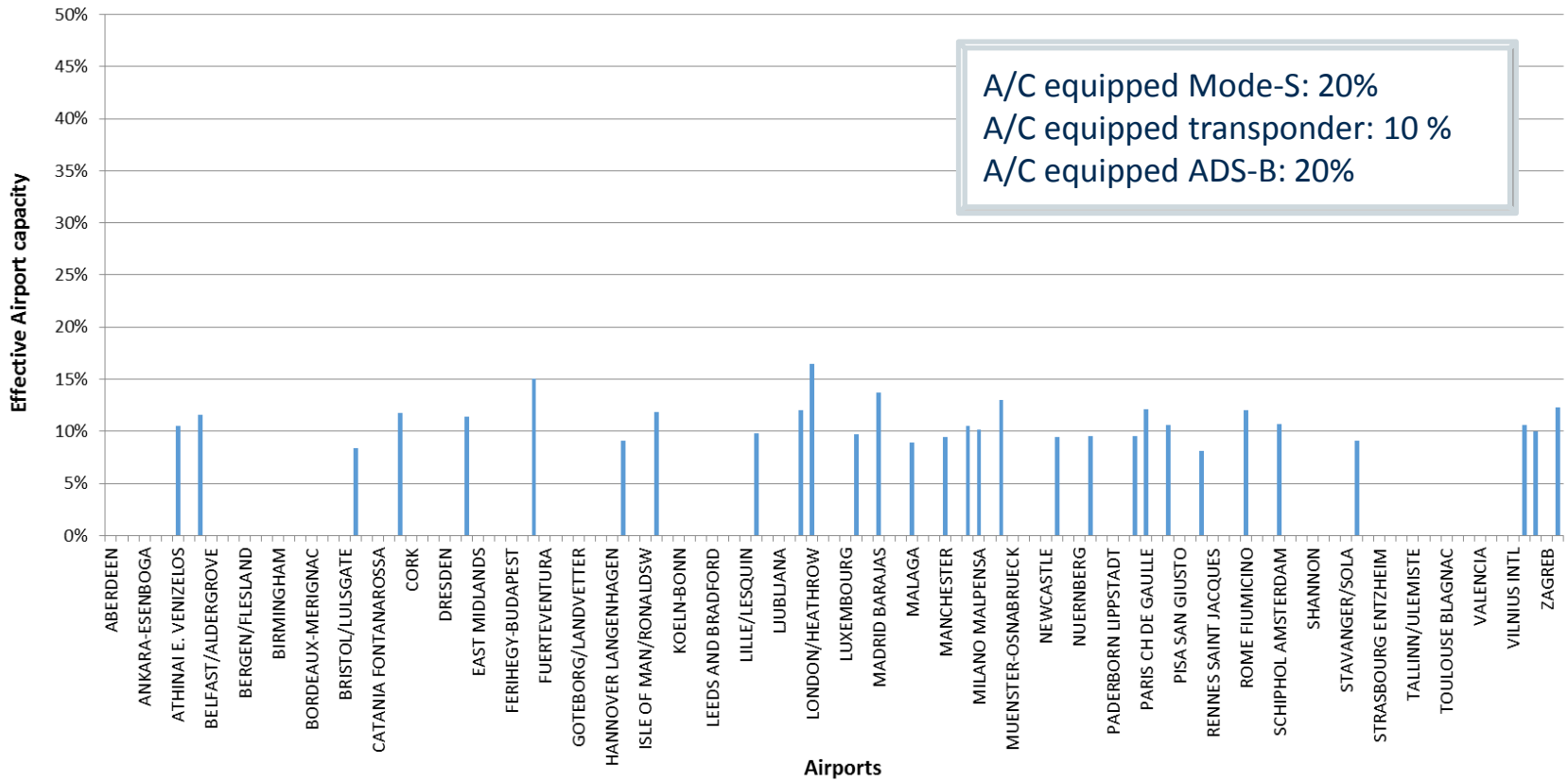


A-SMGCS Level 1&2



B0 SURF Effective Airport Capacity Impact

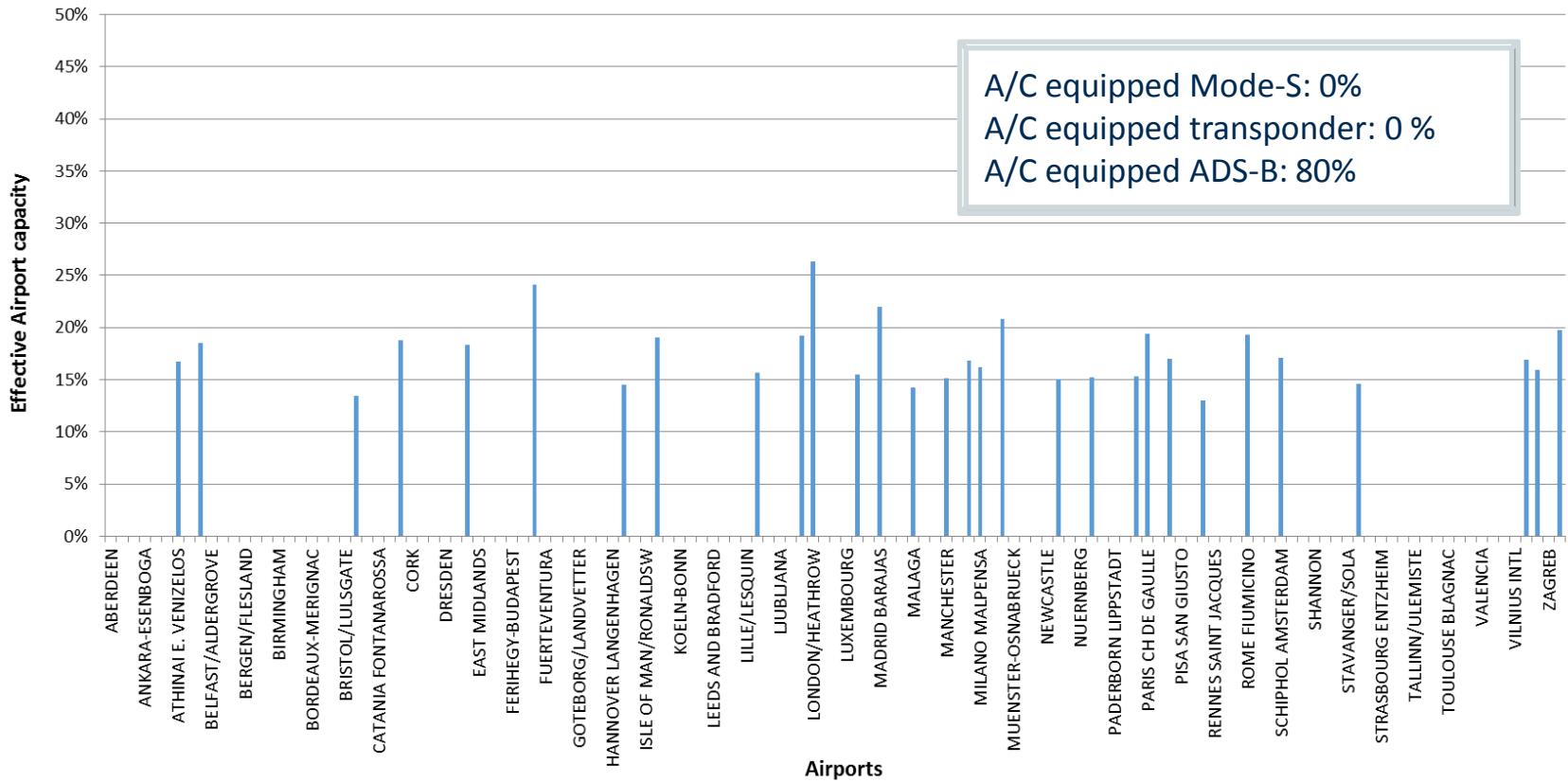
Increase in Effective Airport Capacity due to B0 SURF





B0 SURF Effective Airport Capacity Impact

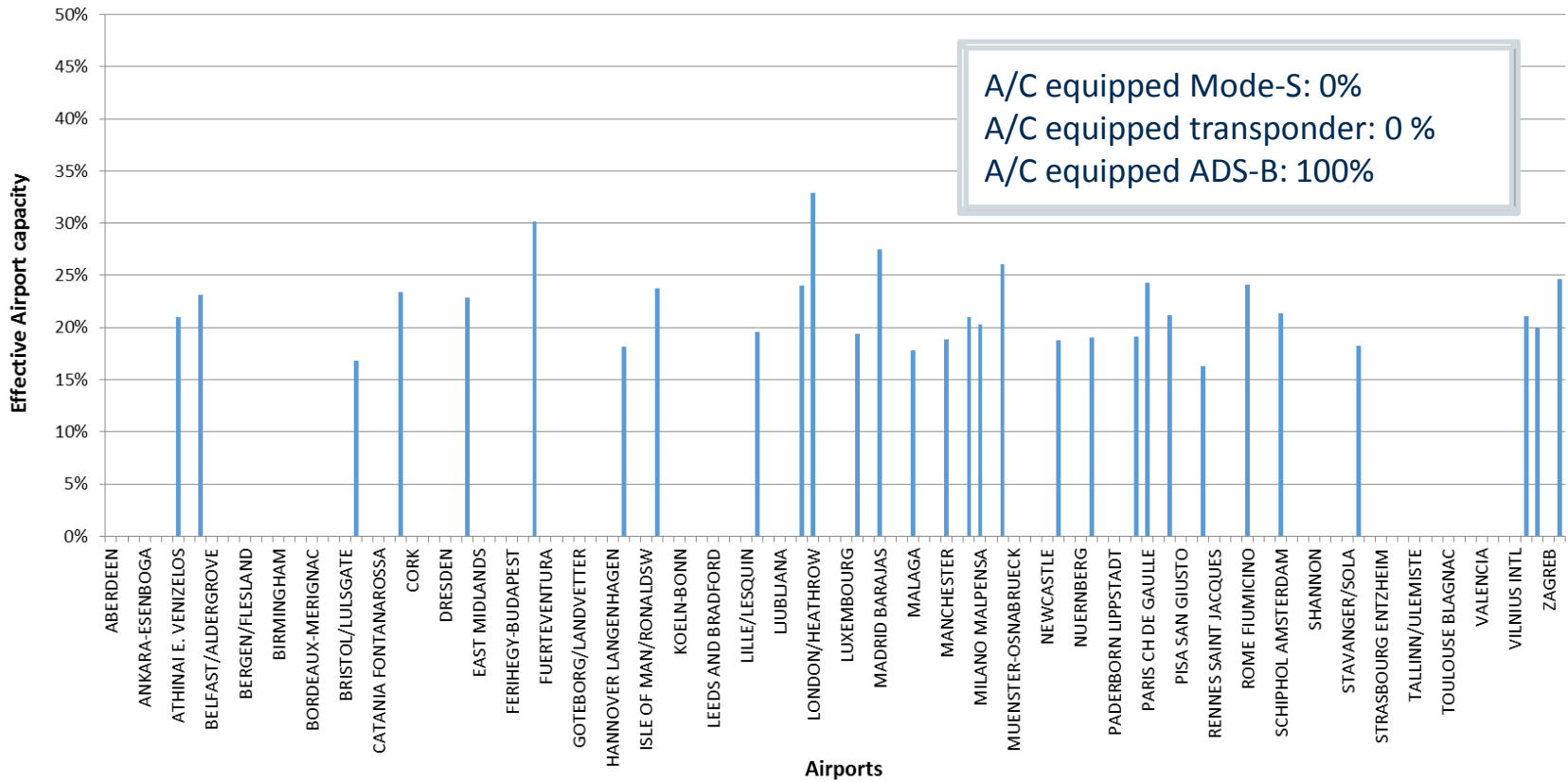
Increase in Effective Airport Capacity due to B0 SURF





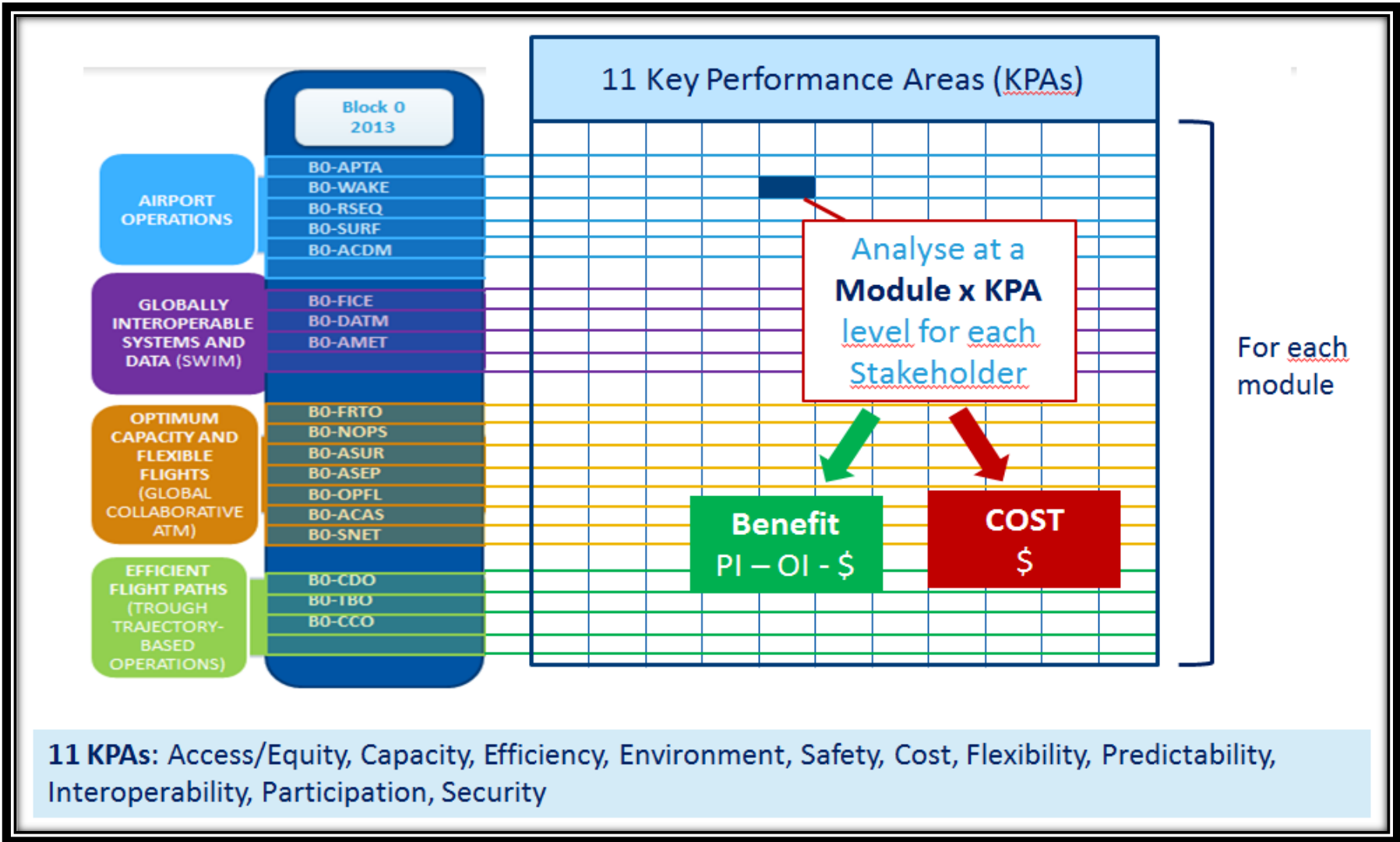
B0 SURF Effective Airport Capacity Impact

Increase in Effective Airport Capacity due to B0 SURF





Next steps





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



BACKUP SLIDES



Measuring Global Air Navigation

Proposed Core Key Performance Indicators

Capacity throughput KPIs

- Peak Arrival Capacity
- Peak Arrival Throughput

Customer-focused KPIs : On-Time Punctuality / Schedule Delay

- Actual off-block time against scheduled departure time
- Actual on-block time against scheduled arrival time

Flight efficiency KPIs

- Taxi-Out Additional Time
- Taxi-In Additional Time

Delay KPIs (if ATFM exists)

- En-Route ATFM Delay
- Airport/Terminal ATFM Delay

