

New Paradigm & Strategies on Aviation Safety

08 / 05 / 2013



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Contents



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1. Civil Aviation System in the ROK

Korean Air

- No 1. Air Cargo Carrier (2004~2009)
- Air Cargo Excellence, ACW (2009)
- Most Innovative Airline, WTA (2011)
- A330 Ops. Excellence, Airbus (2012)

Asiana Airlines

- Airline of the Year, ATW (2009)
- Airline of the Year, Skytrax (2010)
- Best Onboard Service, Global Traveler (2004~2011)
- Ad Award, ATW (2012), etc.

First Class Services By Korea

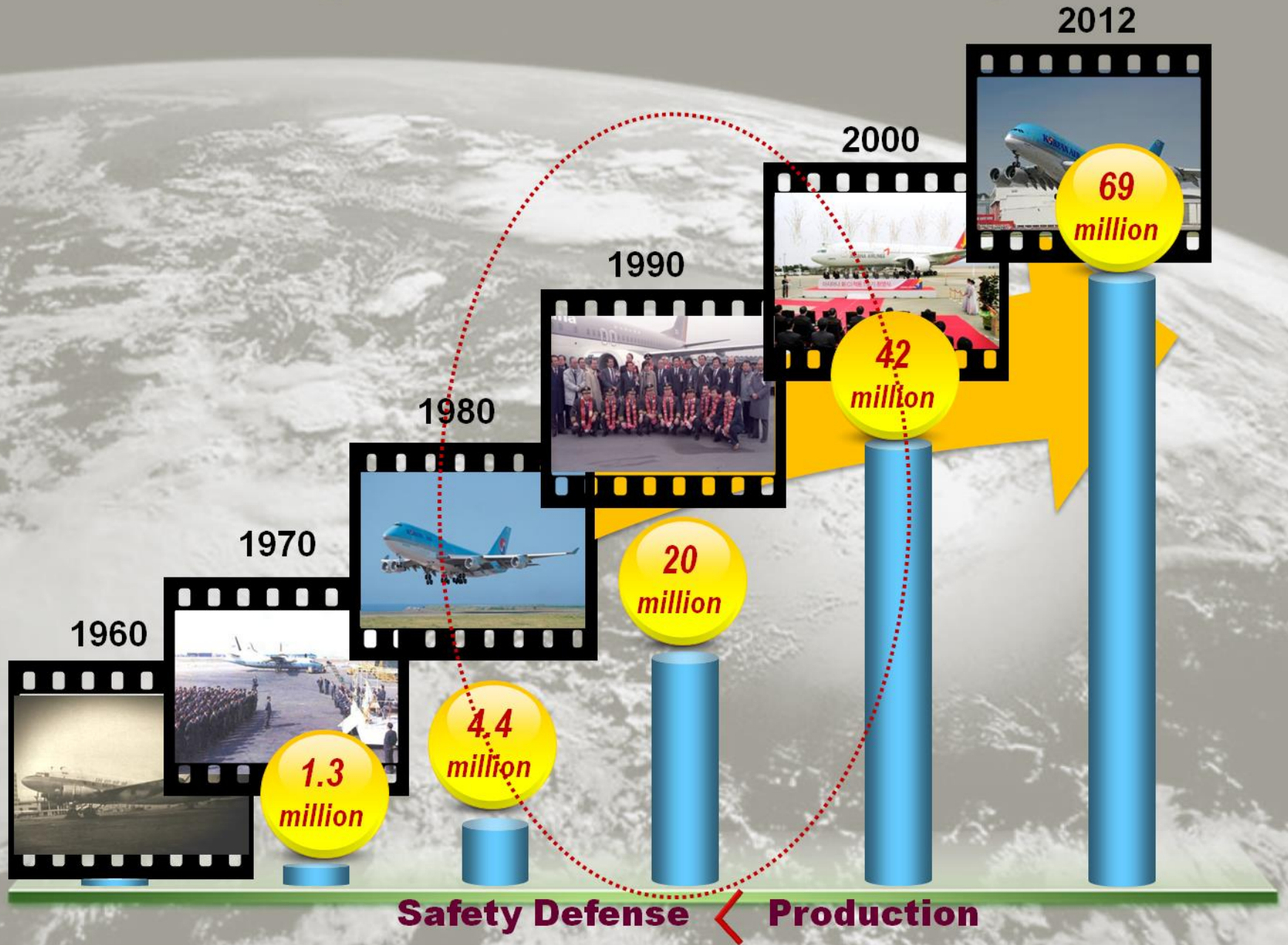
Gimpo Int'l Airport

- Best Airport by Size (15-25 million),
ACI (2011)
- ICAO Regional Aviation Security Training
Center operated by KAC (2011~)

Incheon Int'l Airport

- World Best Airport, ACI (2004~2011)
- Best Cargo Airport in Asia, ACW (2011)
- Best Airport in Asia-Pacific, ACI (2011)
- World's best Airport, Skytrax (2012)
- ICAO Trainair Plus Center (2011)

Growing Korean Air Transport



Civil Aviation Activities



TRAFFIC VOLUME

- 6th in the world
- * 13th in Passenger
- * 3rd in Freight
- Traffic volume: 328,000 in 2011
- * Annual growth: 3.5%(Pax.), 5.4%(Cargo)
- Passengers carried: 63.6million
- Freight carried: 3,520,000 tonnes

AIR OPERATORS

- International and Domestic: 8 AOCs
- *Korean Air/Asiana Airlines/Jin Air/Jeju Air/Air Busan/Eastar/T' way /Air Incheon
- Small Operator: 7 AOCs
- Aerial Work: 44
- ATOs: 10

MANUFACTURE

- Aircraft Manufacturer:
- 1 (Complete A/C)
- 50(Airframe/Eng./Avionics)
- AMOs: 27
- 12th in terms of sales

AIRPORT

- 15 Airports for civil operation
- *84 Intl. airlines, 176 cities of 55 States
- *ICN Airport: World Best Airport Winner for 8 years
- *GMP Airport: World Best Mid-sized Airport Winner for 3 years

AIRCRAFT

- 590 Civil aircraft
- *Commercial: 289
- *Aerial work: 143
- *GA: 158

SAFETY

- USOAP Result: 98.89%
- * Global average: 59.8%
- * USAP Result: 98.57%

Regional Aviation Administration

Seoul Regional
Aviation Administration
(6 Airports)



Busan Regional
Aviation Administration
(9 Airports)

Staff & Budget

Staff : 885

Total		885
Headquarters (Office of Civil Aviation)		173
Regional Administration	Seoul	294
	Busan	242
Air Traffic Center		176

Aviation & Rail Accident Investigation Board: 23

Ministry of Land, Transport and Maritime Affairs



Budget : US\$ 105 million

Training, Int' Cooperation	US\$ 5million
Noise Abatement	US\$ 16 million
Standardization, Certification, Surveillance	US\$ 7.5 million
NAVAID, Airport facilities	US\$ 34 million
Research & Development, IT	US\$ 43 million

* Administrative and Personnel expenditure is excluded in the budget

Legislation System

Constitution

Acts/Laws

Presidential Decree
(Enforcement Decree)

Ministerial Regulations
(Enforcement Regulation)

Deliberated by Ministries
Approved by National Assembly
Promulgated by President

Approved and
Promulgated by President

Approved and Promulgated
by Ministers

Rules/Standards

Orders

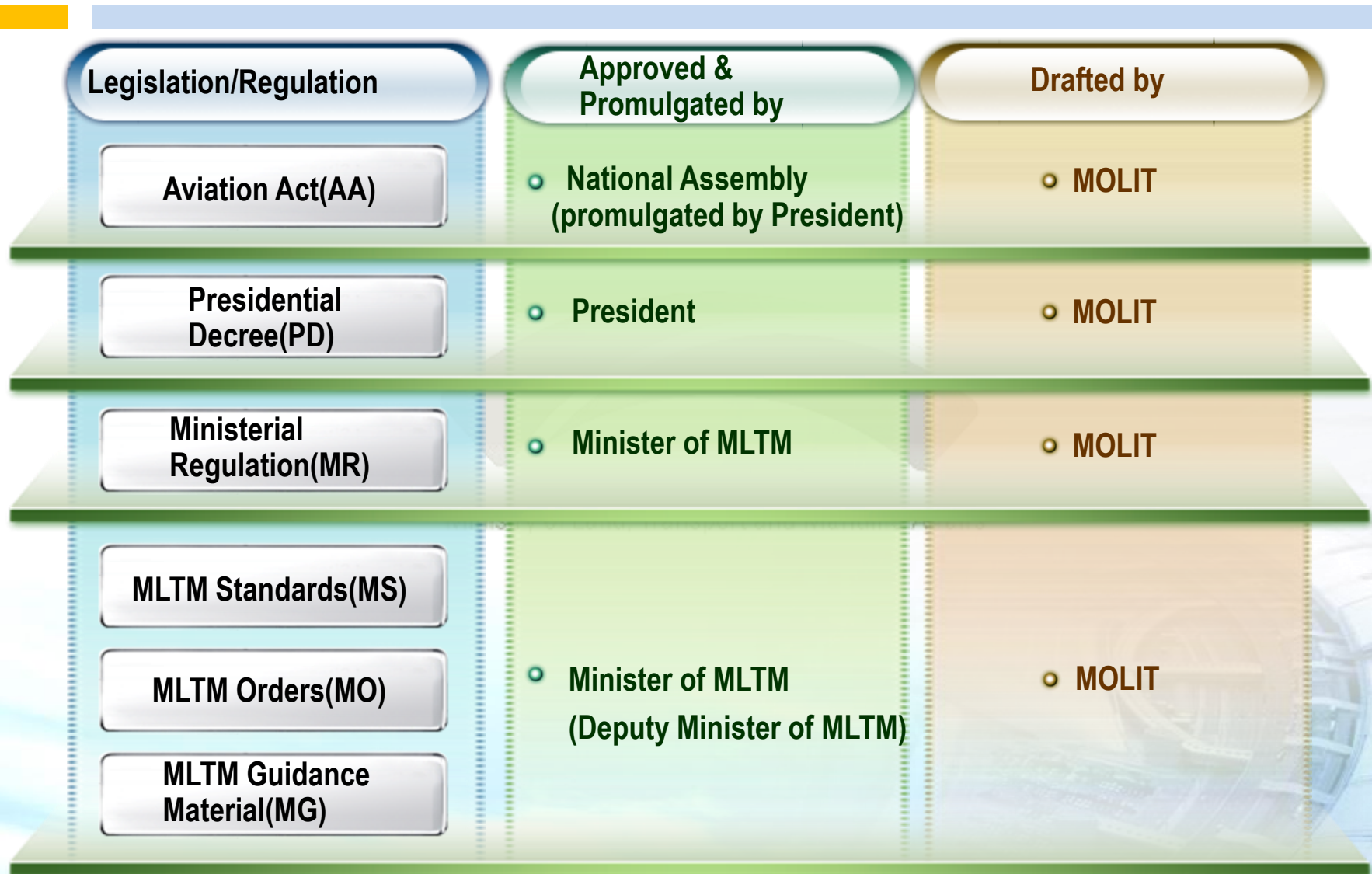
Guidance Material

Approved and Promulgated
by the head of each organizations

To the Public

- Official Gazette
- Ministry of Government Legislation Website
- Competent Ministries' Website
- Publicity

Legislation Procedure



Outline of Regulatory Documents



Signed CC
(1952.11)



Acts

- Aviation Act
- Aviation Safety & Security Act
- Aviation & Rail Accident Investigation Act
- Meteorological Act
- Basic Law on Disaster & Safety Management ACT
- Maritime SAR Act
- Korea Airports Corporation Act
- Incheon International Airport Corporation Act
- Government Organization Act
- Administrative Procedures Act

Decree & REGs

Decree

- PD of Aviation Act
- PD of Aviation Safety & Security Act
- PD of Meteorological Act ...

REGs

- MR of Aviation Act
- MR of Aviation Safety & Security Act
- MR of Meteorological Act ...

Standards

Standards

- Flight Safety Regulations
- Korea Airworthiness Standards ...
- Airport Operations Standards ...

Orders

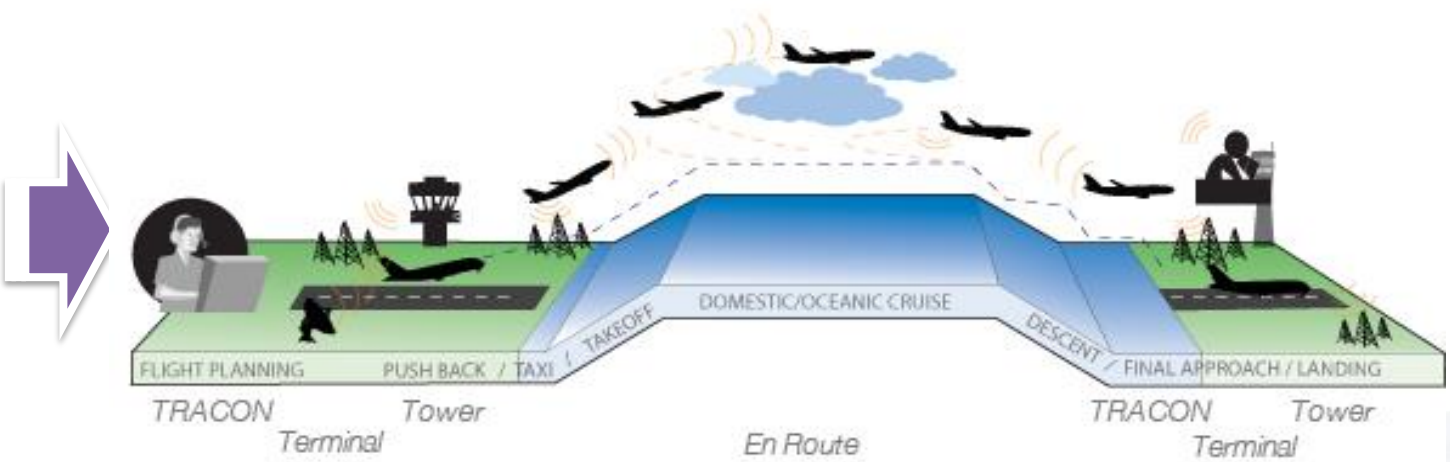
- Enforcement Procedures
- Provisions on Aviation Safety Inspection
- ANS Safety Inspectors Manual ...



2. Safety Oversight System

Aviation Safety Oversight System

OPERATION



OVERSIGHT

Personnel Licensing

 Pilot
 ATC
 Maint.
 Airport

Airworthiness Certificate

 Airworthiness Cert.
 Type Cert.
 Design Cert.

Air Operator Certificate

Airport Operation Cert.

ANS Inspection

Continuous Surveillance on Each Civil Aviation Sector

Dishonored times – In 1980s to 1990s

- 7 major air carriers' accidents with 465 fatalities in 1980s
- 9 major air carriers' accidents with 307 fatalities in 1990s
- ICAO Effective Implementation of USOAP by CSA Protocols in 2000 (79.79%)
- FAA International Aviation Safety Assessment in 2001 (Category 2)
- Significant damage to national flag carriers with loss of direct/indirect business opportunities
- Distrust of the CAA by the general public

Broad-scale Reinforcement of Safety Oversight System

“Strategic Plan to Improve Safety”

National safety objectives

Transport Safety Plan (every 5 years)
(Transport Safety Act Article 15)
 * All modes of transportation

Vision: First Class Aviation Safety

- Enhanced System Safety
- Modernization of Infrastructure
- Aeronautical Technology
- Increased Capacity and Efficiency
- Transparency
- Responding to Emerging Threats
- Development of Human Resources
- Global Cooperation

Aviation safety strategy & action plans

Strategic Aviation Safety Plan(2010-2014)
(Aviation Act Article 2-5)

Korea Aviation Safety Program
(Aviation Act Article 49)

✓ Safety Oversight System(8 critical elements)

Implementation

Disaster & Emergency Response Plan
(Disaster & Emerg. Act)
Maritime SAR Act
(Maritime SAR Act)

Accident/Incident Investigation by KRAIB
(Accident Investigation Act)



Improved Safety Oversight System

* *KOCA Organization: 716 ('99) → 885 ('12) with 581 tech. staff*

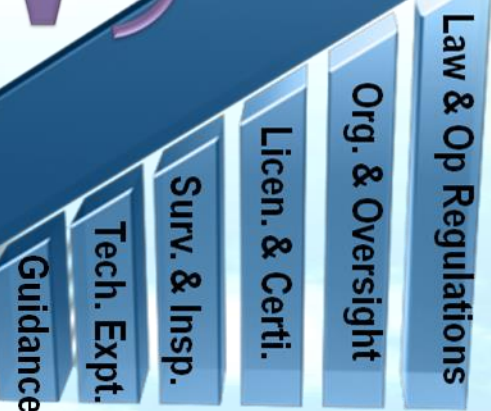
* *KAL/AAR invested more than 435mil.USD (2000 to 2005) to: Safety Consultations, Flight OPS, Cabin, Maintenance, Training, Security, etc*



KOCA + KARAIB



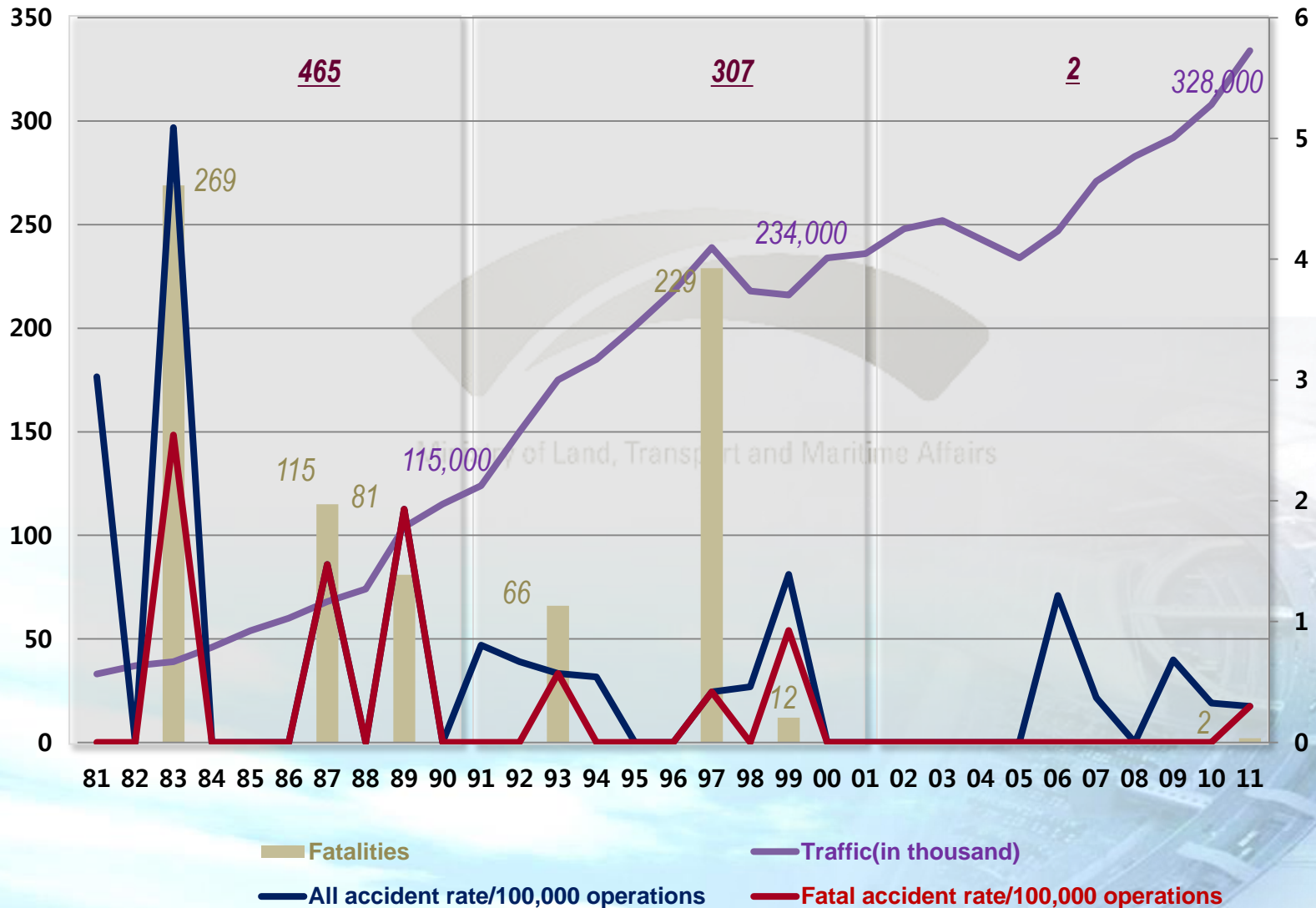
KCAB



*KOCA strengthened entire SO function: LEG, ORG, PEL, OPS, ANS, AIR, AGA, AIG

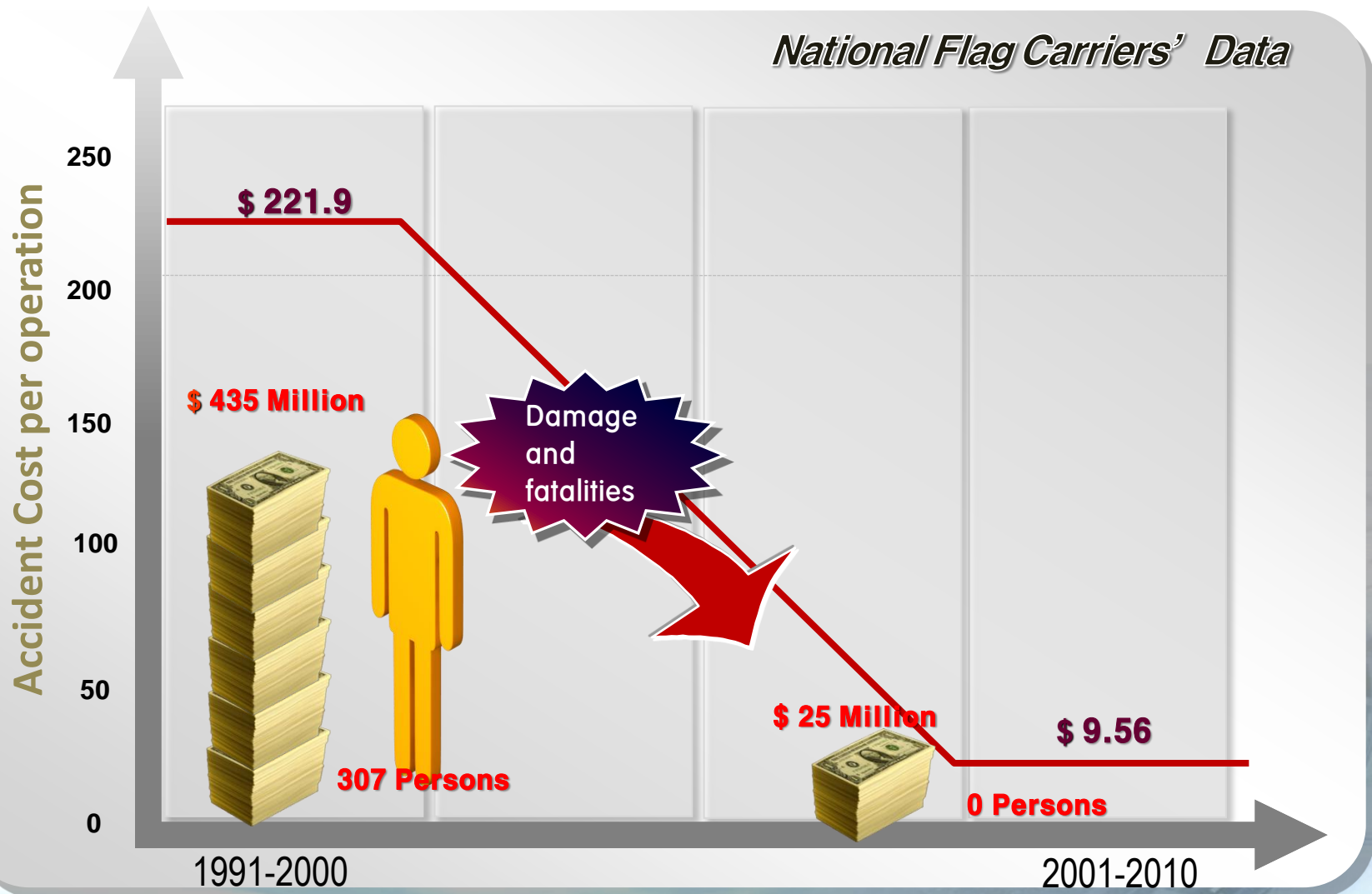
Traffic and Accidents(1981-2011)

National Flag Carriers' Data



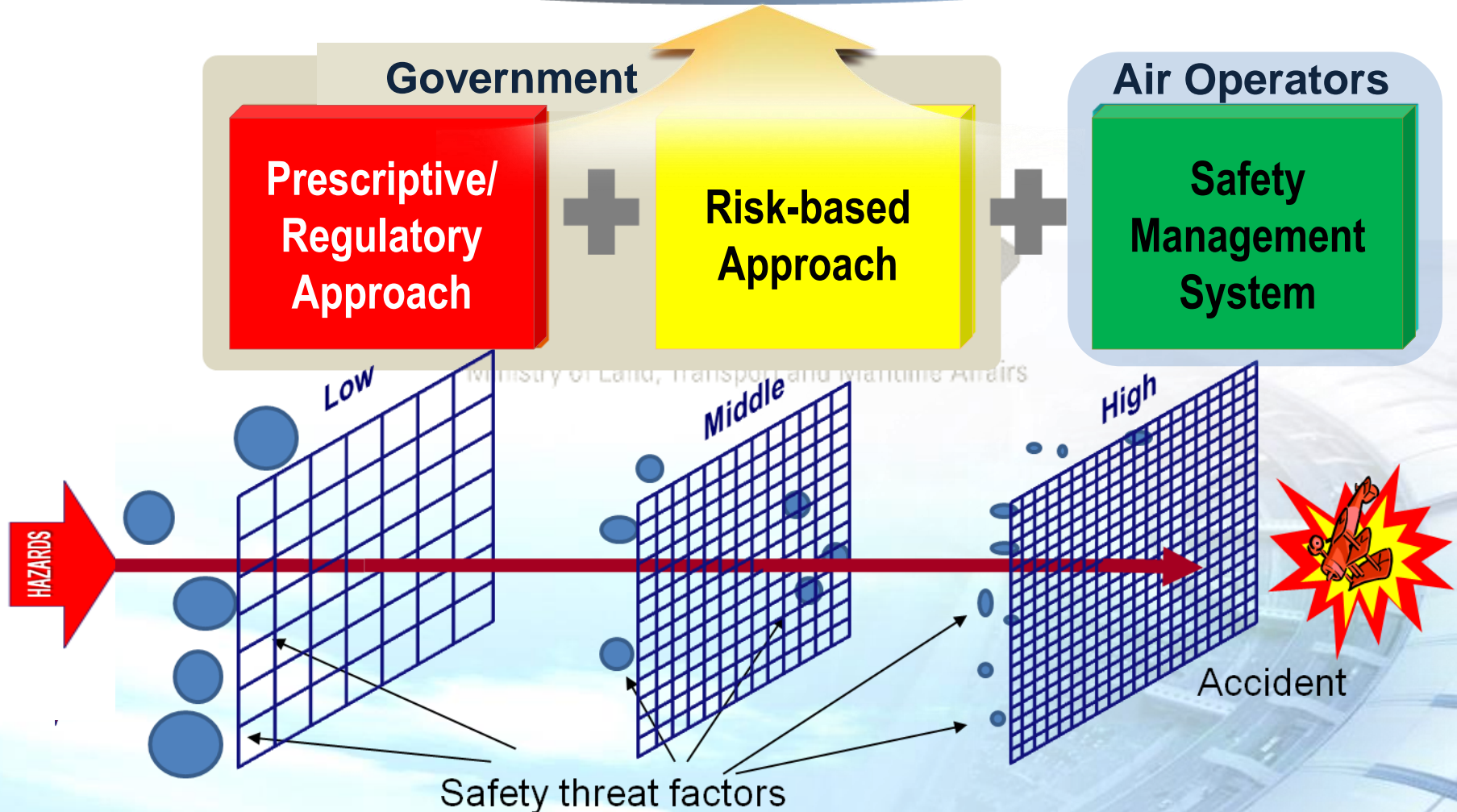
Accident Cost(1991-2010)

National Flag Carriers' Data



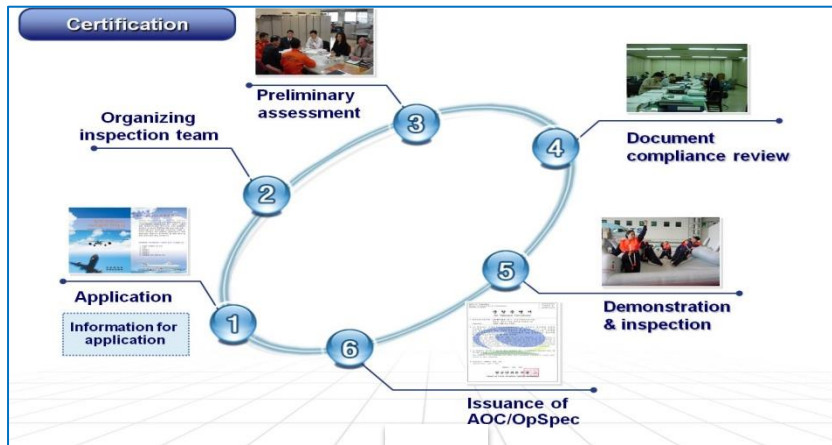
National Safety Management Concept

Improving Aviation Safety



KOCA's Efforts on Flight Safety

Certification & Surveillance



Surveillance



Safety Assurance & Promotion

RISK-BASED SURVEILLANCE

SURVEILLANCE ON LCCs

RISK MANAGEMENT

SAFETY PROMOTION

Operator's Efforts on Flight Safety

Aircraft Operations

Aircraft Maintenance

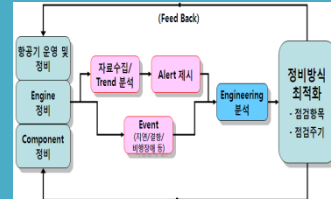
CREW TRAINING



QUALITY MANAGEMENT



MAINTENANCE PROGRAM



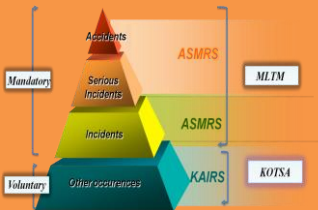
PERFORMANCE MONITORING



FATIGUE RISK MANAGEMENT



SAFETY REPORTING



TRAINING



FACILITY





3. National Strategies on Safety

National Strategies

Core Elements of the Strategies

Maintenance of **Effective Safety Oversight System**

** Sustained reinforcement of oversight capabilities*

Establishment of Continuous Monitoring Program (CMP)

** Self management for USOAP-CMA*

Continuous Development of **Electronic Safety Tools** for effective SARPs implementation

Maturation of Proactive Safety Management

** SSP/SMS, Risk-based/ Performance-based*

Address Accident/ Incident Contributing Factors and Emerging Safety Threats

Training Aviation Experts and Airport/Air Navigation Facility Improvement

Enhanced **Aeronautical Technology** as a Design /Manufacturing State and R&D

Expansion of **Safety Information Sharing**

International Collaboration

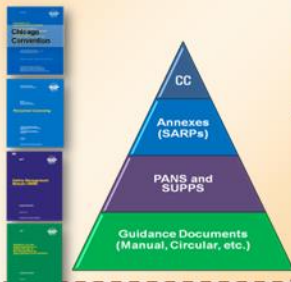
** DGCA-APAC, RASG, COSCAP, Recognized Org. & Other CAAs*

KOREA'S SAFETY STRATEGY

ICAO GLOBAL SAFETY STRATEGY

SARPs

16 safety-related Annexes with 10,091 provisions



NATIONAL SAFETY LEGISLATION

SMIS (SARPs Management & Implementation System)



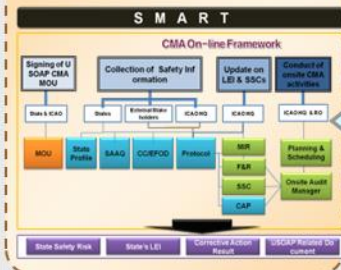
Effective Implementation of SARPs

Effective Implementation of Safety Oversight Sys.

Proactive Safety Management

USOAP CMA

CMA Database



NATIONAL CONTINUOUS MONITORING PROGRAM

Good Partnership among all stakeholders



Best Practice of SARPs Implementation & Global Collaboration

First Class Aviation Safety

Industry Safety Performance

Smart National Safety Oversight management

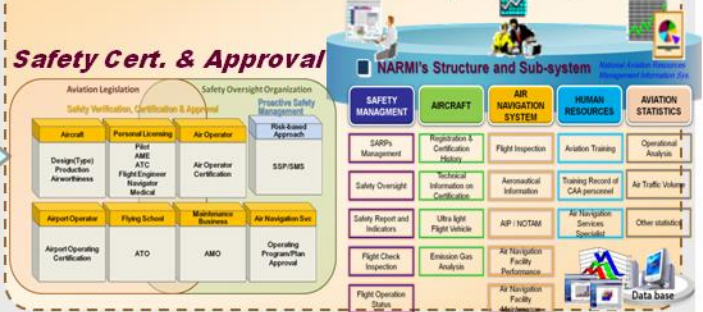
SAFETY OVERSIGHT

8 CEs / 8 Audit Areas



SAFETY OVERSIGHT

Electronic Safety Oversight Tools



Clear Performance Management



Sound Safety Oversight System

Safety oversight is a function by which States ensure the effective implementation of:

ICAO Standards and Recommended Practices (SARPs)

The critical elements of a safety oversight system

Relevant safety practices and procedures

Safety Oversight is a State's responsibility



Doc 9734

ICAO Resolution A 35-7:

To ensure the safety of international civil aviation “worldwide”, Member States have this responsibility “both collectively and individually”.

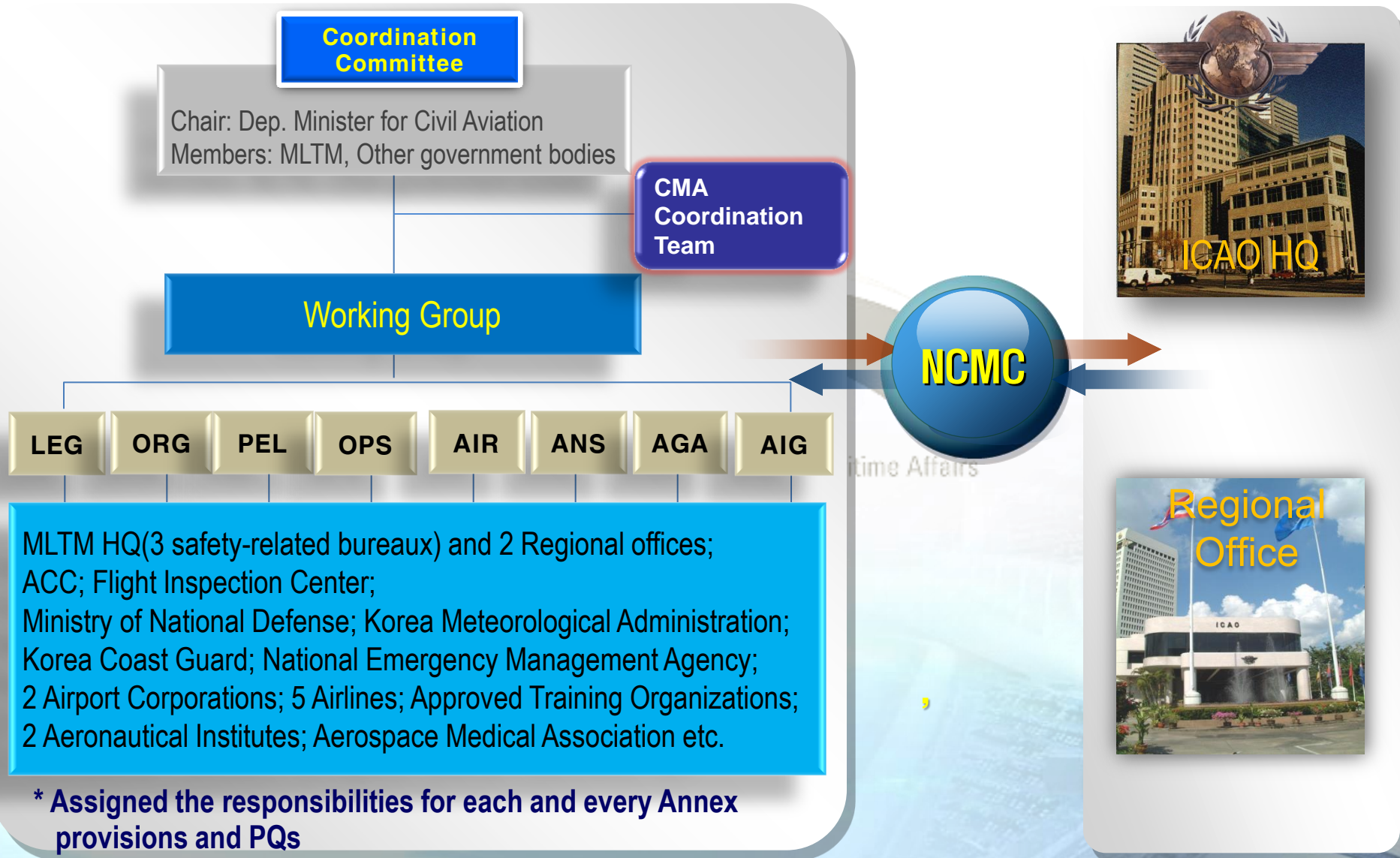
Continuous Monitoring Program

For continuous and systematic management of SARPs implementation and effective safety oversight system, **KOCA established CMP** as of '12.2.23 and it prescribes:

- **Accountability/Responsibility** for **SARPs Implementation**
- **Procedure** on preparation and continuous management for **CMA data such as CCs, PQs, MIR, CAPs, SAAQ, etc.**
- Effective management of **CMA on-line framework**
- **Quality assurance** including **internal/external audit/assessment**
- **Coordination Committee/WG** among the related government agencies
- **Timely taking required actions** for **ICAO State Letters**
- **Timely legislation/rule making** in accordance with Amendment to Annexes



CMA Coordination Committee



CMP Action Plan for 2013

Compliance Check

- Best practices worldwide on implementing ICAO SARPs
 - Continuous check/monitoring of compliance with SARPs
 - Working Group/Steering Committee Meeting
 - Review of Difference and notify to ICAO in a timely manner

Internal Assessment

- Periodic Internal Audit/Assessment and Improvement
 - To put Internal expert and external expert (ICAO, COSCAP etc.) with PQs
 - Periodic monitoring global safety information including national flag carriers and airports.

CMA data Update

- Update all CMA data through ICAO CMA on-line framework
 - SAAQ, CCs, Differences, PQ self check data, etc.
 - Monitoring of State risk profiling affecting audit result

Continuous Coordination

- Maintain systematic implementation between all related agencies
 - Workshop participated by all related agencies/industry stake holders
 - Coordination and implementation under the MOU.

Electronic Safety Tools

- ▶ For efficient and consistent implementation of safety oversight system, KOCA is utilizing diverse electronic tools processing substantial safety data from all safety-related areas.
- ▶ Electronic tools are one of key enablers for improving safety oversight performance and systematic collection and analysis of comprehensive safety data and sharing of them.

Accountability & Responsibility

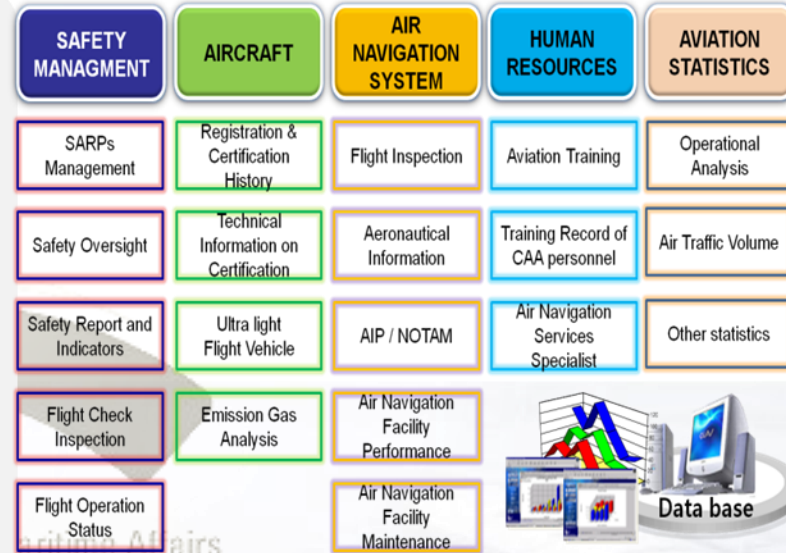
Efficiency
(Paperless, time saving, Record keeping)

Transparency & Info. sharing

Timeliness & Traceability

Clear Performance Management

NARMI's Structure and Sub-system National Aviation Resources Management Information Sys.



SSP/SMS Regulatory Framework (1)

- As of June 22, 2008, Korea has implemented an SSP/SMS regulatory framework

ICAO Definition

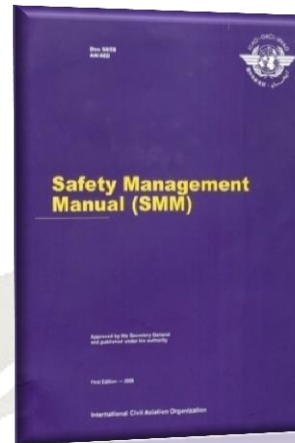
An integrated set of regulations and activities aimed at improving safety.

A management system for management of safety by the State

Includes SMS requirements for aviation service providers

Doc 9859

- 1st edition in 2006
 - 2nd edition in 2009
 - 3rd edition(draft) in 2012
- Annex 19 Safety Manage.



Civil Aviation Act, Article 49

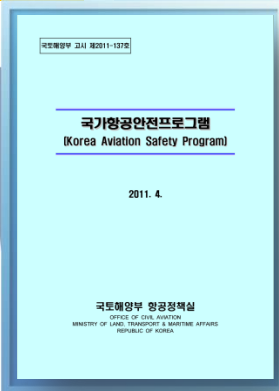
Ministerial Regulations, Article 143-4~7

Korea Aviation Safety Program (MOLIT Standards)
- 2nd edition As of April 2011

MOLIT shall establish and publish a National Aviation Safety Program and is responsible for the acceptance and oversight of service providers' SMS.

Service Providers shall establish an SMS acceptable to MOLIT

SSP/SMS Regulatory Framework (2)



Korea Aviation Safety Program

(ALOS, Acceptable Level of Safety)

Safety Performance of the SMS

- Flight Operation SSP
- Maintenance SSP
- Air Traffic SSP
- Airports SSP
- Air Navigation Facility SSP

Government

MOLIT's SSP

- State Safety Policy and Objective
- State Safety Risk Management
- State Safety Assurance
- State Safety Promotion

Close the gap

Support National ALoS

Risk monitoring

Confidence

Facilitation

SP's SMS

- Org. Safety Policy and Objective
- Org. Safety Risk Management
- Org. Safety Assurance
- Org. Safety Promotion

Service Providers

- Air Operators (14)
- Maintenance Companies (12)
- Air Traffic Services (1)
- Airport Operators (2)
- NAVAID Operators (2)

Training Next Generation Aviation Expert

**Proactively response to
the aviation personnel shortage**

**Fostering
Aviation Personnel**

Ministry of Land, Transport and Maritime Affairs

**Pilot
Nurturing
project**

**Aviation
Internship
Program**

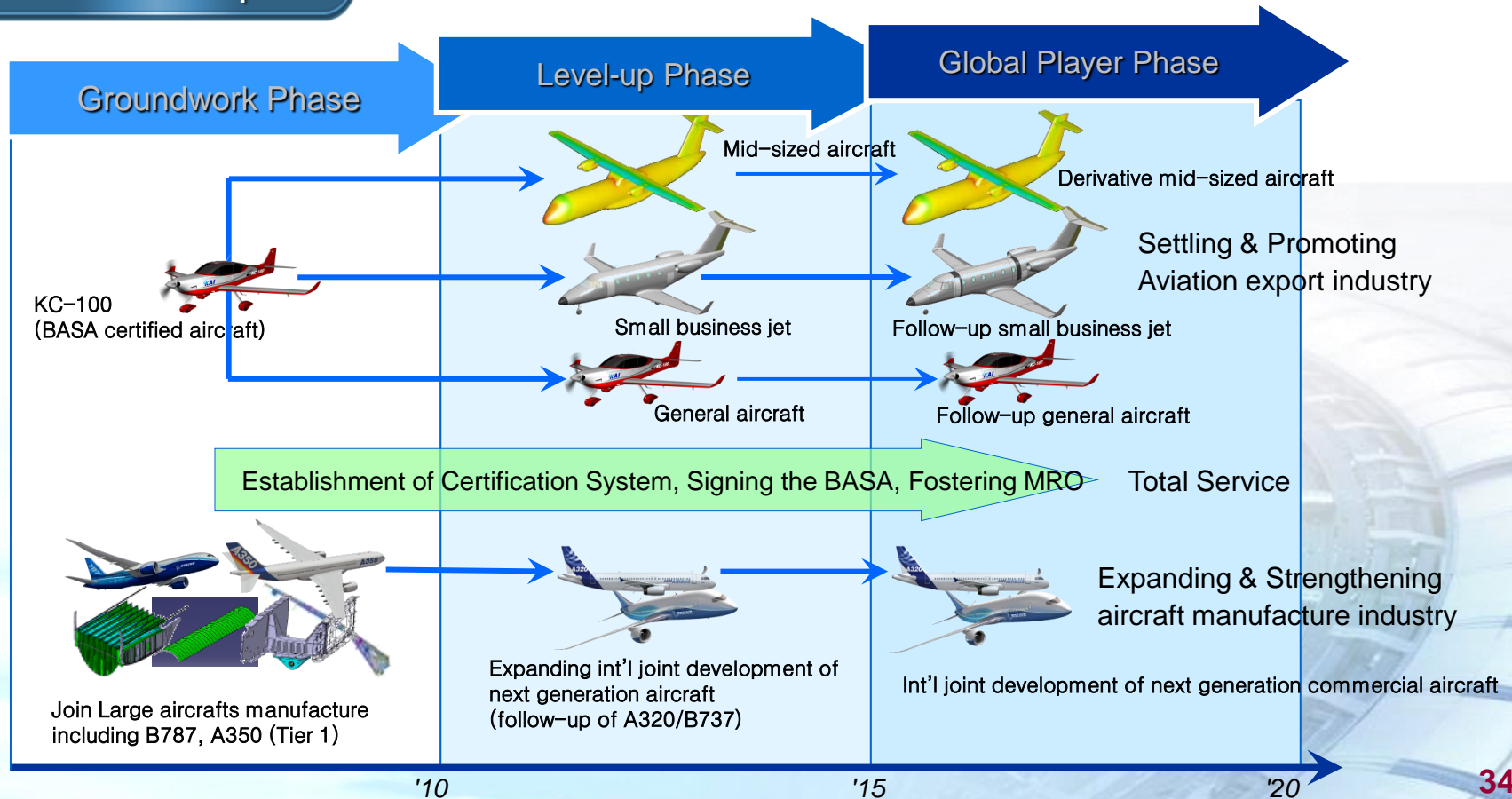
**Aviation
Specialized
Universities**

**Aviation
Specialized
High School**

Enhancement of Aeronautical Technology(1)

Phased-in development for aircraft manufacture industry

Roadmap

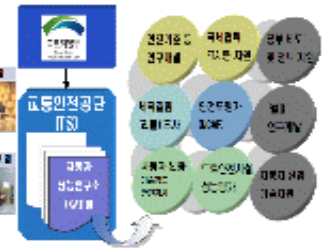
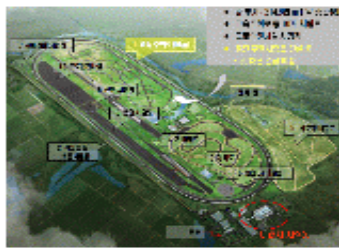


Enhancement of Aeronautical Technology(2)

Aviation Safety Technology Center for Aircraft Certification

- Certify and inspect safety and performance of aircraft, parts and software
- To be equivalent of other globally recognized certification systems in Korea

Korea
Automobile
Testing
& Research
Institute



Ministry of Land, Transport and Maritime Affairs

Korea
Register
of Shipping



Korea
Railroad
Research
Institute



Distribution of Electronic Tools

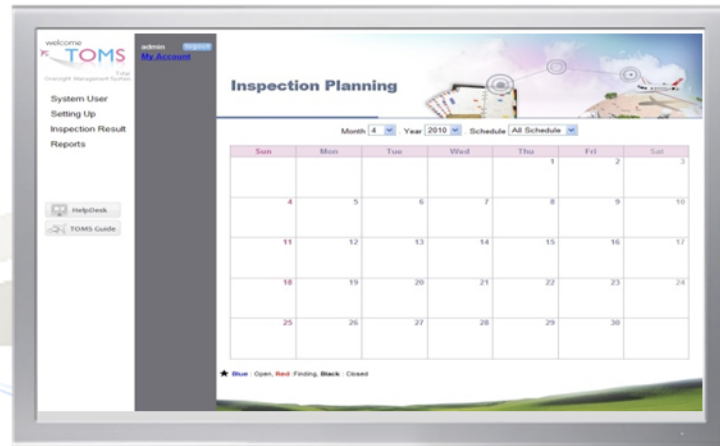
SMIS version 3.5



(SARPs Management and Implementation System)

- Sustainable management of over 10,000 C.Cs and their corresponding national regulations
- Timely processing more than 200 ICAO State letters per year
- Systematic preparation for USOAP based on SAAQ and Protocols management
- Continuous tracking of amendment history and follow-up actions

SOMS version 1.5



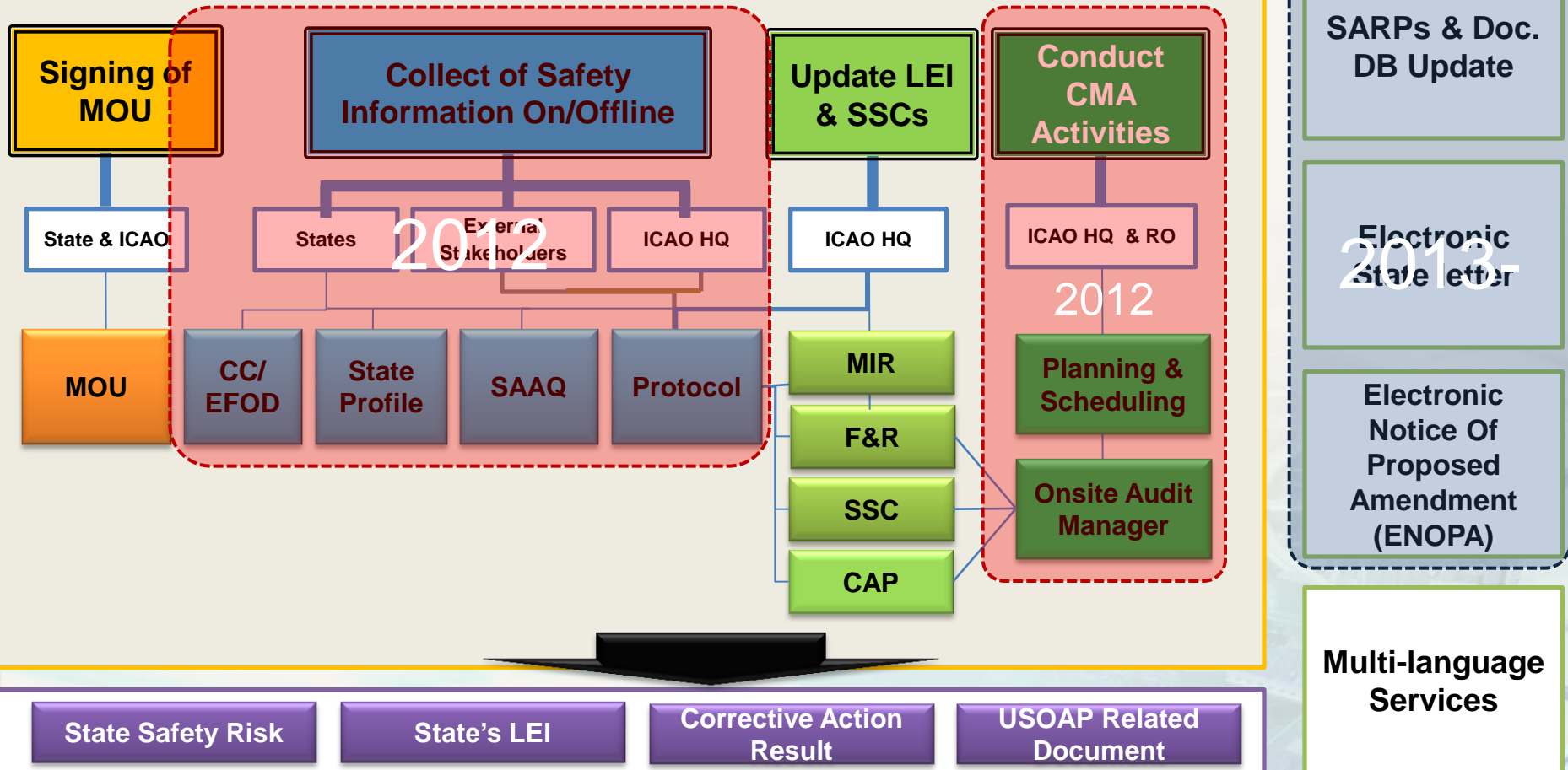
(Safety Oversight Management System)

- Inspection planning at daily/monthly/yearly basis
- Managing inspection target & type, checklist, corrective action
- Identifying the aviation safety concerns

Co-develop ICAO Online CMA Framework

S M A R T

Online CMA Framework



Co-development of FAOSD

**ICAO FAOSD Training
(Bangkok, September 2012)**

* DB Operation Program errors
are detected by trainees



**Korean IT specialist performed technical
survey/analysis upon ICAO request**

* Program errors and malfunction identified

(Proposal 1) Correction and Upgrade

(Proposal 2) Re-development of new program

Re-development of new program (Proposal 2) is selected by ICAO.

▶ It takes around 6 months

Fellowship Training Programme



International
Civil Aviation
Organization

Organisation
de l'aviation civile
internationale

Organización
de Aviación Civil
Internacional

Международная
организация
гражданской
авиации

منظمة الطيران
المدني الدولي

国际民用
航空组织

Tel: +1 (514) 954-8219

Ref: TC/23.38 (12/801) - 12/16

24 February 2012

Subject: ICAO-Republic of Korea Developing Countries Training Programme 2012

Action required: To note information and, if interested, complete on-line Fellowship Nomination Form

Sir/Madam,

I have the honour to refer to the jointly established ICAO-Republic of Korea Developing Countries Training Programme, which is sponsored by the Office of Civil Aviation, Ministry of Land, Transport and Maritime Affairs (MLTM) and administered by ICAO's Technical Co-operation Bureau.

I am pleased to announce that in 2012, under the above Programme, training will be offered to 210 participants from developing States in twelve areas. Details on the courses offered as well as the terms and conditions applied for these fellowships are explained in Attachments A and B. It is important to note, however, that course content and course delivery are outside the Organization's purview and hence the sole responsibility of the MLTM. Applicants are required to complete the on-line Fellowship Nomination Form at www.korea-ftp.org, user ID: KOREA_FTP and password: 2012_FTP. Kindly note that States having submitted applications will be informed of the result of the selection at least four weeks prior to the commencement of the course.

Accept, Sir/Madam, the assurances of my highest consideration.


Raymond Benjamin
Secretary General

Enclosures:

- A - Information on ICAO-Republic of Korea, Developing Countries Training Programme (2012)
- B - Course Details
- C - Participant's Flight Itinerary Form

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ees from



Technical Dialogue with Other CAAs



Technical Dialogue Meeting with Mongolia, Gimpo, Dec. 2009



Technical Dialogue Meeting with Myanmar/Laos, Myanmar/Laos, Jun. 2009



Technical Dialogue Meeting with Saudi Arabia, Incheon, Jan. 2013



4. Conclusions

Conclusions

For successful shift of safety paradigm and smooth launch of new international safety strategies:

- ▶ **Solid safety oversight system should be maintained under 8 CEs;**
- ▶ **Proactive safety management environment should be established:**
 - 1. SSP/SMS should be matured; and**
 - 2. Safety culture should be promoted.**
- ▶ **Information sharing should be strengthened under stakeholders' consensus; and**
- ▶ **International co-operation should be expanded for improving global aviation safety.**

Thank You

