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A STAR ALLIANCE MEMBER

Airlines Approach to Implementing an effective SMS

Safety Management International collaboration group

December 12, 2014

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Corporate SMS Manager
Avianca Holding

Avianca Holding Destinations and Hubs

Avianca

North America
13 destinations in Canada and the United States, linked with the rest of the continent by direct flights or through connections in San Salvador.

Central America
Nine countries, 13 destinations and a complete range of frequencies on offer to fly there!

South America
Connection Hubs in Bogota and Lima allow us to service all the capitals in the region directly.

Colombia
21 cities serviced by domestic and international flights and the Bogota Connection Hub, where almost 370 flights per day operate.

Europe
Nearly 20 frequencies per week operated by modern comfortable aircraft. Direct flights that join Bogota, Cali and Medellin, together with Madrid and Barcelona.

Avianca Holdings is composed of 9 airlines and operates from 3 Main Hubs which are used as connection centers:

- **Bogota**: El Dorado Int´l Airport
- **Salvador**: Comalapa Int´l Airport
- **Lima**: Jorge Chavez Int´l Airport

Avianca Holding in numbers

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100+ Destinations

5,500 weekly Flights

3 Hubs
Bogota, San Salvador and Lima

165 Aircraft

Average fleet age 5.3 years

	2012	2013	% Change
Passengers (mm)	23.1	24.6	6.6%
ASKs (bn)	36.5	38.8	6.1%
RPKs (bn)	29.1	31.2	7.3%
Revenues (US$bn)	$4.3	$4.6	8.0%
EBITDAR (US$mm)	$659	$828	25.8%
EBITDAR Margin	15.4%	18.0%	+260bps

AVH Aircraft

2013 – 4 families

10 A330 [1]

99 A320 [1]

12 E190 [1]

29 Turboprop [1,2]

Jet passenger operative fleet average age: *5.3 years*

Total operative fleet age (incl. turboprop aircraft)[3]: *~6.4 years*

Boeing 787

A320 Neo

ATR72

A330F

Safety is a Journey not a destination….

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SAFETY FOCUS

Based on 4 premises, safety approach needs to change:

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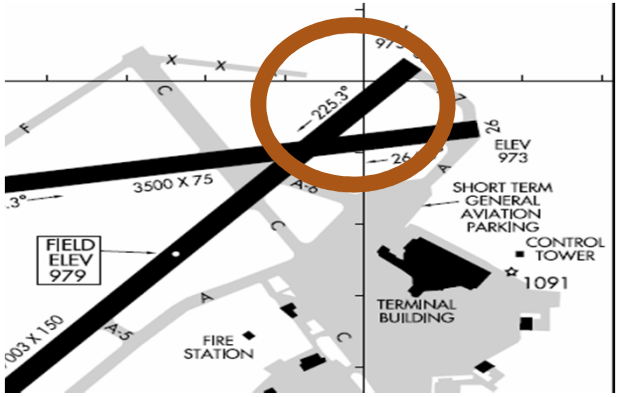
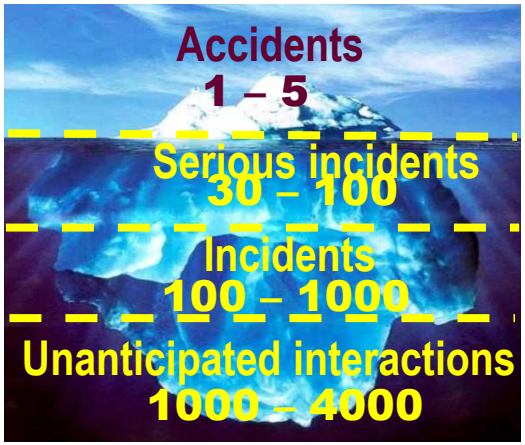
1. Legal does not [necessarily] mean safe



- Regulations encompass operational interactions anticipated during planning
- It is impossible to anticipate all possible operational interactions during planning

2. Unanticipated operational interactions with negative potential are not chance events



- Become evident after start of operations aimed at service delivery, without need of experiencing significant events (i.e., accidents)
- They are identifiable in advance and their consequences controllable

3. Data capture on unanticipated interactions is a wasted effort, if limited to the aftermath of significant/damaging events exclusively

- Not enough volume of data

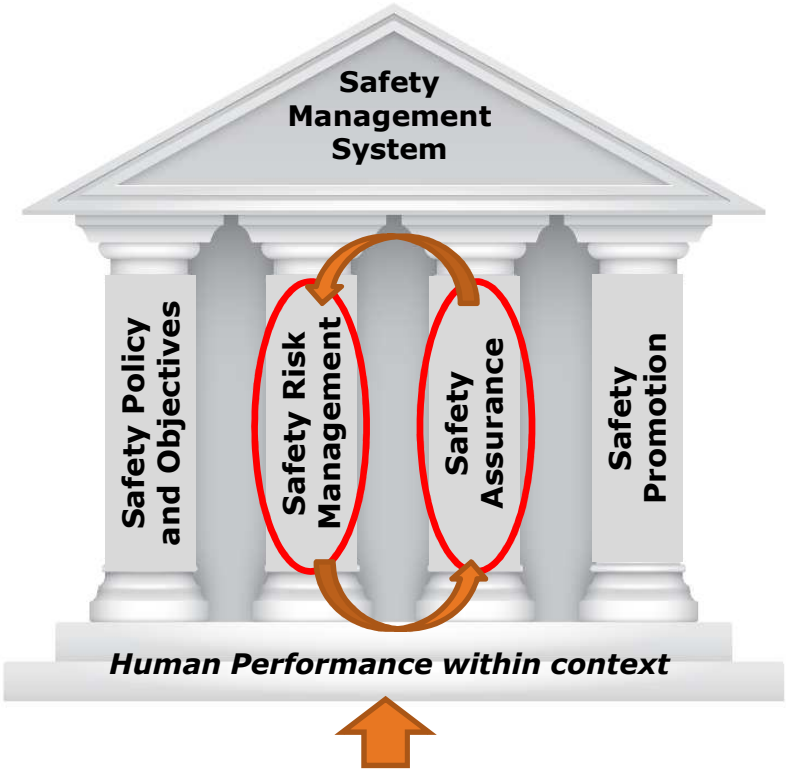
4. "You can't manage what you can't measure"

- Without data there are only opinions
- Development of a common "corporate" language

Safety Management System

Safety Management System *A systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures . (Doc 9859 OACI)*.

SMS Is founded on 4 pillars:



Safety efforts should be focused at identifying the disparities of the interactions of Humans with various elements of the system

The aim of an SMS is to generate useful, relevant and reliable data for adequate risk based decision making for resource allocation!!

SMS at a Glance:
Management systems Vs execution programs

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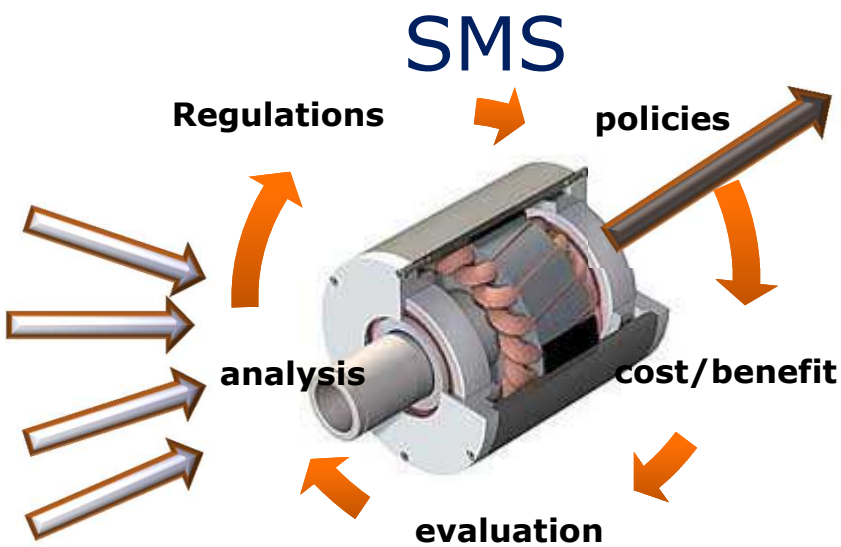
Input

Data

- Operational
- Financial
- HR
- Legal
- Quality



Output

Information for strategic decisions

Safety programs

- Bird strike
- Runway safety
- Safety reporting
- Language proficiency
- …

SOURCE: Captain Daniel Mauriño

Safety Risk Management is divided into two main activities

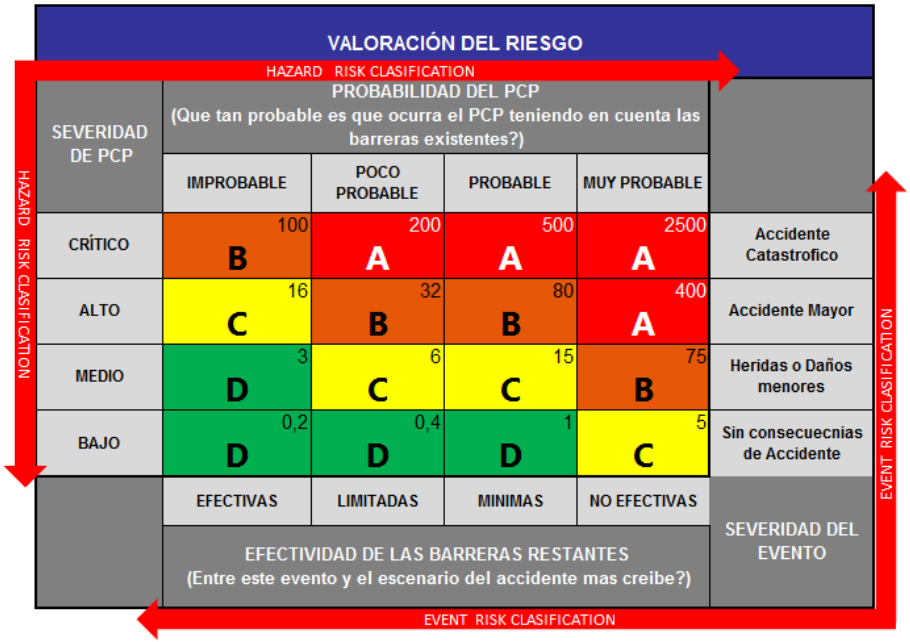
HAZARD IDENTIFICATION

REACTIVE
- Investigation of operational Events
- Investigation of Safety Reports

PROACTIVE
- Safety Audits
- Airport Inspections
- Risk Analysis (MOC)
- Surveys

PREDICTIVE
- Flight Data Analysis
- LOSA

RISK EVALUATION



All SRM processes and activities are supported by the risk matrix values. These values establish guidelines for the decision making authority level and the depth of analysis to be performed on Safety Data

Safety Database: In order to assure adequate data management it is necessary to have a Database system for data analysis and retrieval

All Safety Risk Management Activities are recorded and managed within AQD, in order to allow effective Safety Assurance Activities

SRM-SA Process: Data Management is the core element of modern safety management!!

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OPERATIONAL SAFETY DIVISION

OPERATIONAL AREA

Hazards and Occurrences

Identified through

IRO Reports

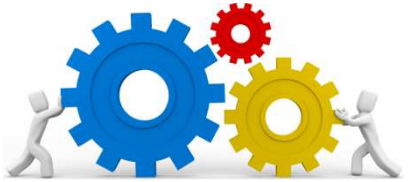
Safety Audits

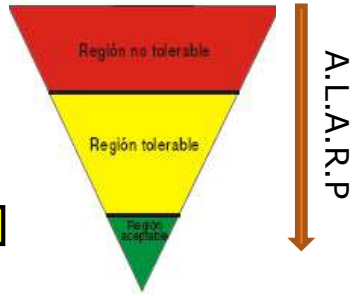
Taxonomy and Risk assignation

	IMPROBABLE	POCO PROBABLE	PROBABLE	MUY PROBABLE
CRÍTICO	100 B	200 A	500 A	2500 A
ALTO	16 C	32 B	80 B	400 A
MEDIO	3 D	6 C	15 C	75 B
BAJO	0.2 D	0.4 D	1 D	5 C

Mitigating actions

FINDINGS

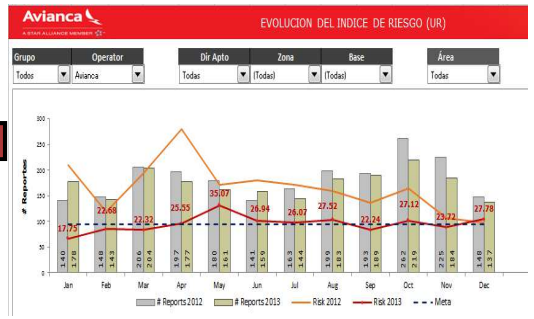




Trends and SPIs Monitoring

AV	Ene	Feb	Mar	Abr	May	Jun	Jul	Ago	Sep	Oct	Nov	Dic	Acum
CGO	1.15	6.00	23.83	16.58	46.50	46.50	0.00	52.95	9.80	257.75	0.00	5.60	45.01
FLT	27.88	39.69	24.26	35.99	92.01	22.52	41.11	31.35	24.85	23.49	31.95	34.72	34.09
ATC	27.08	32.00	29.21	27.27	33.59	36.95	32.35	24.91	21.00	26.79	39.58	125.60	33.64
DSP	15.50	0.00	22.41	32.00	32.00	0.00	15.50	42.88	31.78	25.46	23.32	17.20	27.59
GRH	26.31	22.85	23.19	34.54	29.40	35.01	25.96	31.16	23.31	12.35	15.50	20.18	25.89
AMBIENTAL	12.40	16.34	28.90	27.14	28.07	30.31	28.34	26.07	20.75	28.80	26.84	26.63	25.87
SEC	6.00	77.50	44.13	15.50	15.50	1.15	0.00	36.17	15.50	15.50	15.08	0.00	23.41
ORG	15.50	0.00	0.00	0.00	12.63	12.72	14.14	21.00	12.93	29.07	22.64	80.00	20.98
ATOS	16.50	13.92	4.74	13.29	21.99	9.30	13.13	22.00	24.43	169.05	12.85	10.88	20.87
INFRA APTO	13.04	15.13	13.97	10.56	14.24	29.14	23.75	18.01	20.50	18.49	21.58	20.16	17.05
MNT	9.21	33.36	6.91	14.45	11.91	10.24	5.95	7.55	31.30	7.98	25.43	10.21	16.39
N/A	9.10	5.60	15.48	6.71	35.77	23.56	5.97	0.00	0.00	4.22	6.00	0.00	12.65
CAB	10.75	4.38	8.33	41.67	1.15	0.00	4.38	5.96	1.15	13.13	15.50	0.00	11.58
PAX	6.00	1.15	12.33	2.77	1.15	39.33	1.15	1.15	7.66	1.15	1.15	6.24	7.00
TOTAL	17.75	22.68	22.32	25.55	35.07	26.94	26.07	27.52	22.24	27.12	23.80	27.76	25.28

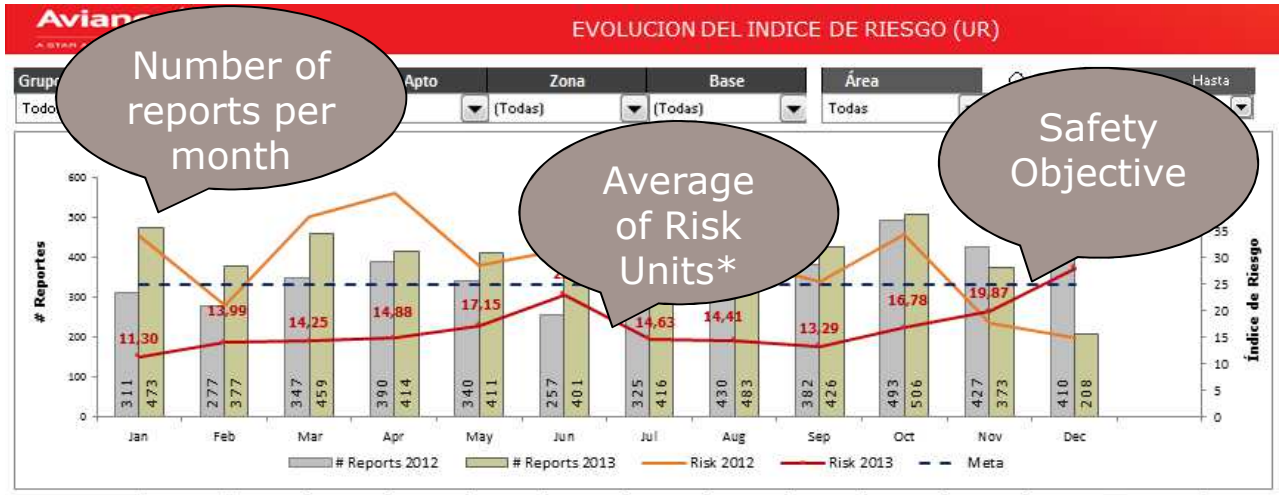
Feedback and monitoring of Operational Areas



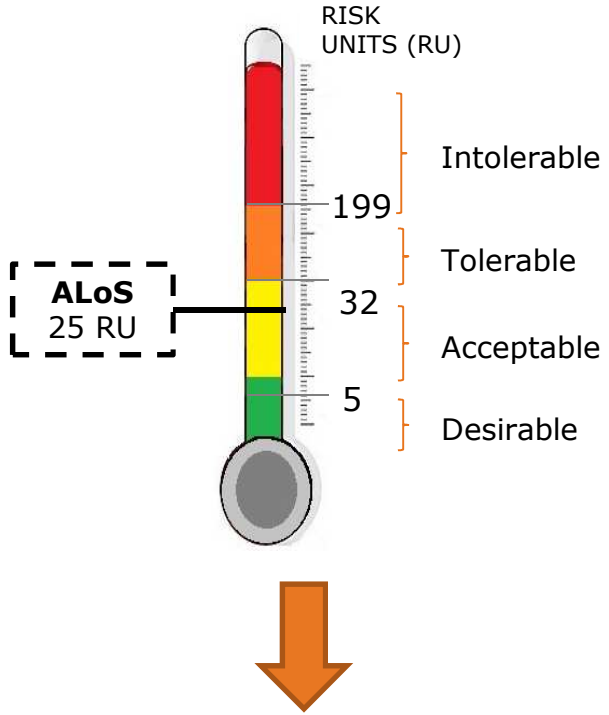
**IRO (Operational Safety Report)*

Risk Indicator: Continuous measurement of evolution of risk helps identify actual performance of the Organization

Taking into account that the aim of SRM is to maintain risk at an acceptable level within operations, we have developed Indicators based on Risk Measurement instead of repetitiveness of conditions



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	S1-2013	S2-2013
# Reports 2013	473	377	459	414	411	401	416	483	426	506	373	208	2535	2412
UR 2013	5347	5275,75	6541,75	6160,75	7049,95	9243,7	6087,8	6961,8	5659,7	8491,65	7410,3	5816,7	39618,9	40428
Risk 2013	11,30	13,99	14,25	14,88	17,15	23,05	14,63	14,41	13,29	16,78	19,87	27,96	15,63	16,76
YTD	11,30	12,50	13,11	13,54	14,23	15,63	15,49	15,34	15,11	15,30	15,66			
Meta	25	25	25	25	25	25	25	25	25	25	25	25	25	25



$$\text{Risk Index} = \frac{\sum \text{Risk Units per Month}}{\sum \text{Total reports per Month}}$$

This focus allows to allocate resources on the conditions that have the highest potential of generating higher losses

Risk Unit (RU) Calculation: The risk unit is the measure unit used to monitor Risk evolution on the Organization.

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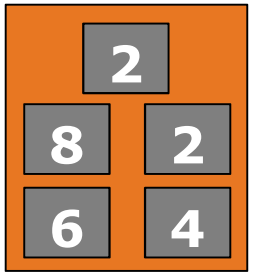
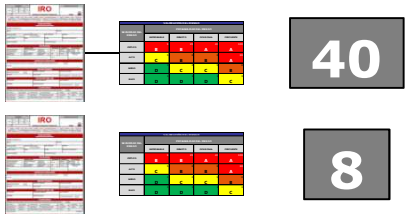
We receive a report | Risk Evaluation | RU X IRO | We define the responsible area | RU X OPERATOR

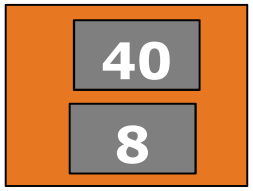
GRH



22/5
RU GRH= **4,4**

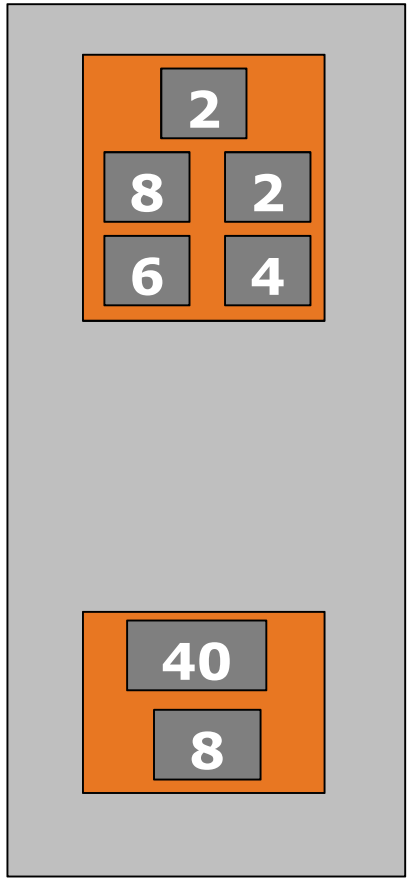


DSP



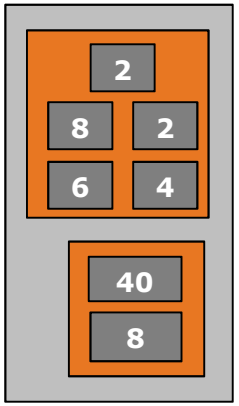
48/2
RU DSP= **24**

AV

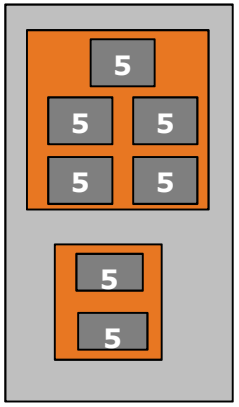


70/7
AV= **10**

AV



TA



35/7
TA= **5**

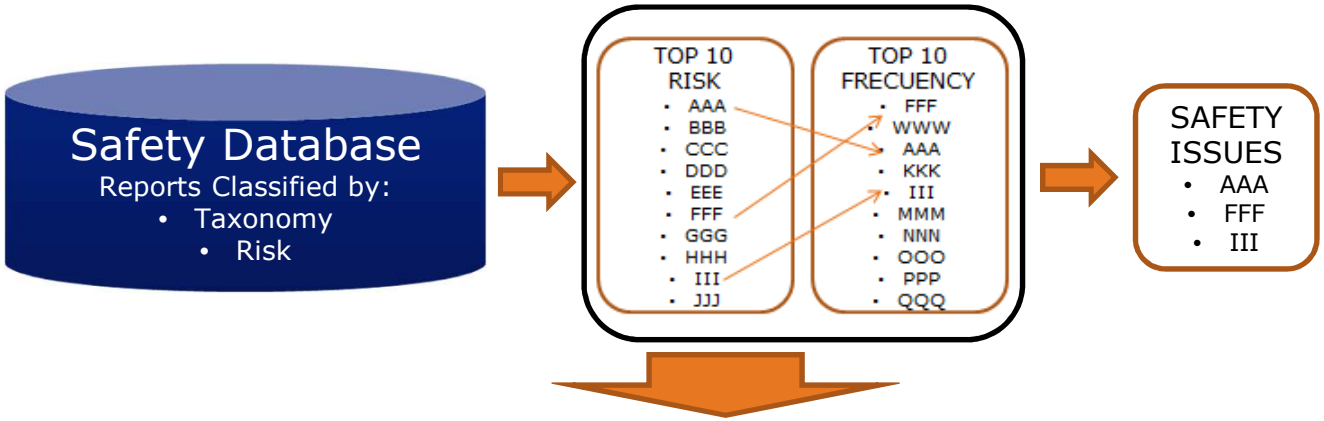
RU AVH

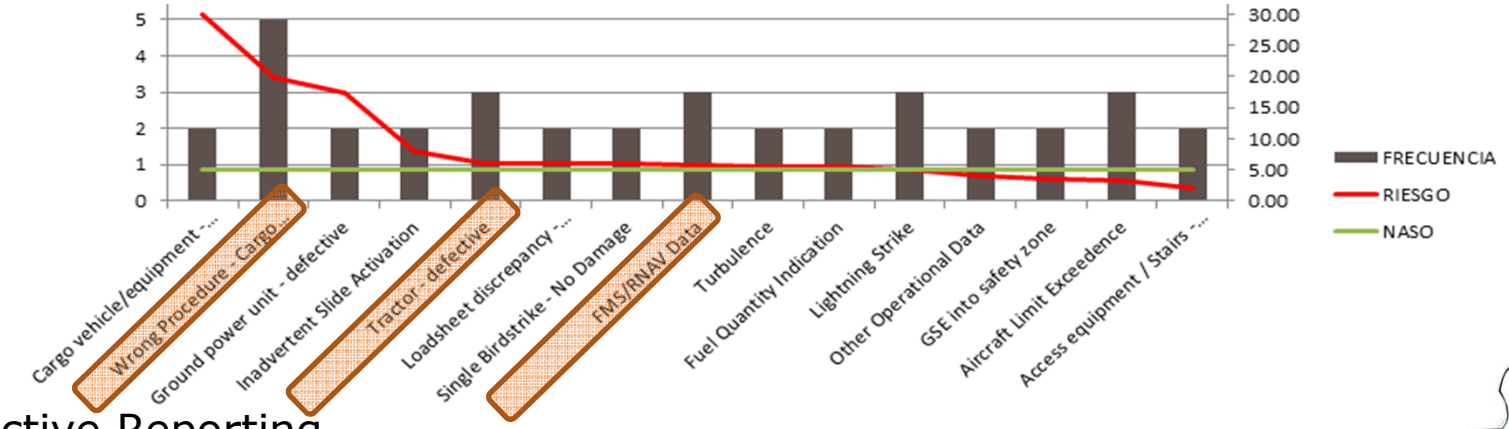
(70+35)/14
= 7,5

SDB

How can Operational Areas improve their Safety Risk Indicator?

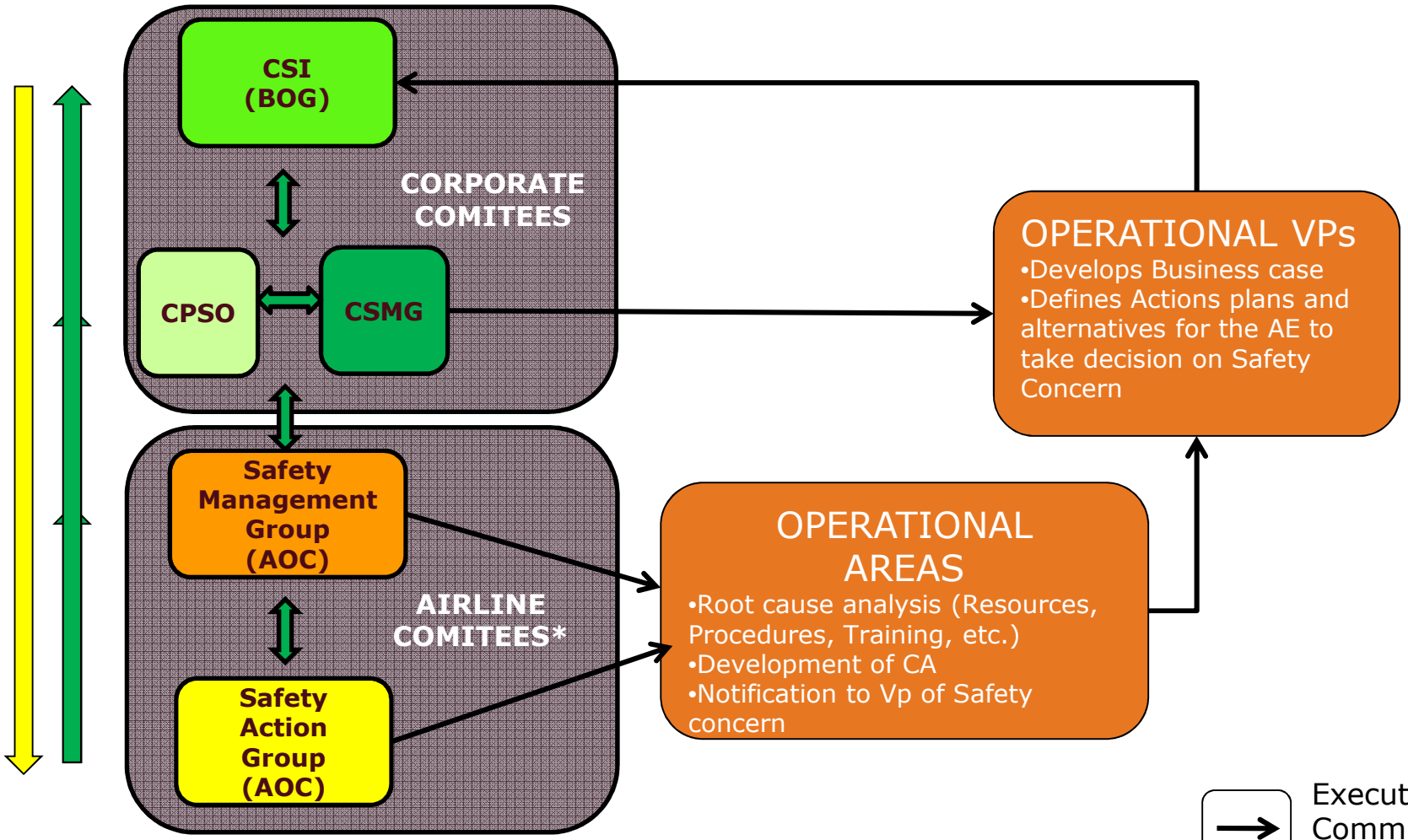
- Managing Safety Issues
  - Safety Issues are High Risk repetitive reports that are present in a given time.
  - Safety Manager puts information into context for defining SI





- Proactive Reporting
  - Operational areas should encourage reporting of hazards before they escalated into negative consequences
  - More reports with low RU should make the average risk level lower, promoting a proactive reporting culture from Top Management

Safety Comities: One of the Key elements to have for SMS implementation is to assure flow of information From bottom to top and backwards



*Airline committees are performed in each country where an AOC has been issued

Safety Promotion: The organization must have means of disseminating Safety information to all levels of Organization

Safety Committee:

Integral Safety Committee (BOG)	Primary Safety Committee (BOG)	Corp Safety Management Group (BOG)	Safety Management Group (AOC)	Safety Action Group (AOC)
• **Strategic Committee (Bi-Monthly)** • CEO -COO • **FLT-GRH-MNT-CGO y HR** VPs • Safety/Security Directors(Safety-Security) • HSEQ Manager	• **Primary Safety committee (Monthly)** • Safety Director • Safety Managers • Safety Administrators	• **Corporate Tactical Committee (Monthly)** • Safety Director, Manager & Administrators • SMS Champions **(FLT-DSP-MNT-CAB-GRH-CGO)**	• **Local Tactical committee (Monthly)** • Responsible Managers • (**FLT-DSP-MNT-CAB-GRH-CGO**) • Security • HSEQ	• **Operational Committee (Bi-weekly)** • Operational Personnel (**FLT-DSP-MNT-CAB-GRH-CGO**)

Safety Publications:

Regular Publications

Extraordinary Publications

Training Program

- Initial and recurrent training for all personnel in accordance with their organizational level and to operational service providers

What key elements have helped us for successful SMS Implementation??

- High Management commitment and support throughout the Organization, allocating adequate resources for SMS implementation
- Hiring of qualified personnel with two basic backgrounds
  Knowledge in Management Systems
  Technical expertise
- Developing the SRM/SA Activities focusing on human performance within context in order to identify Safety Deficiencies within Organizations
- Implementing a Safety Database with data management capabilities

What do we need from the industry??

- standardized guidelines and requirements required by CAAs for SMS Implementation through all Latin America (Different understandings-Different requirements)
- Develop a standardized set of taxonomy for: Safety Deficiencies, Hazards, Events, Immediate effect
- Generate means to share de identified Data based on standardized taxonomies
- Generate more specialized forums to share advanced SMS development within Organizations

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Muchas gracias!!

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