



**Workshop to Generate Guidelines For the
Implementation of: 1 - Step 1 of State Safety Program
(SSP) and 2 - Phases 1 & 2 of ICAO SMS**

SMS – “Peligrando”, “Arriesgando” y “Midiendo”

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Santiago, Chile, 10 Abril 2008



SMS – “Peligrando”, “Arriesgando”, “Performando” y “Midiendo”

Introduction

**SMS - “Peligrando”, “Arriesgando”,
“Performando” y “Midiendo”**

Summary



SMS – “Peligrando”, “Arriesgando”, “Performando” y “Midiendo”

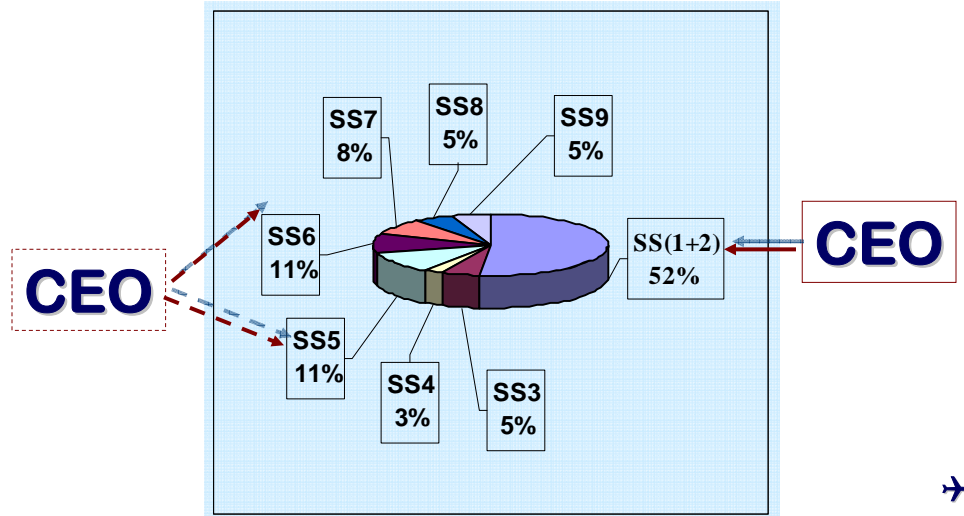
Introduction

**What you see
may not be what
you think you
see!!!**



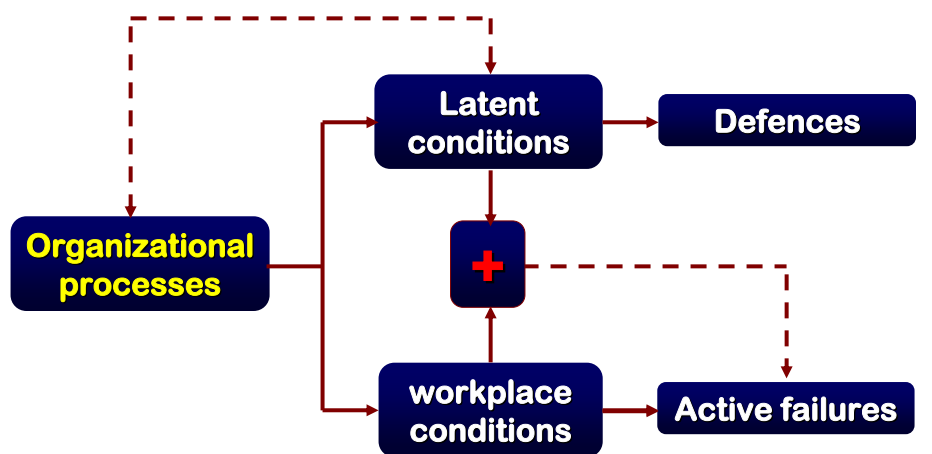
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Introduction



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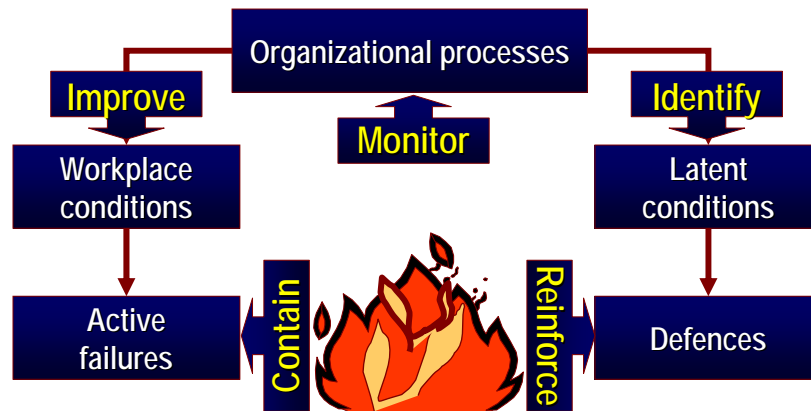
Introduction



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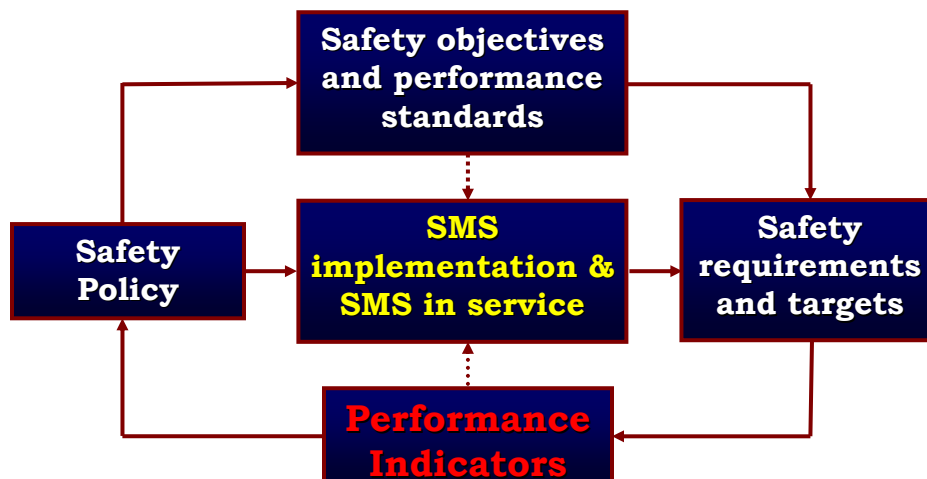
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“Peligrando”/“Arriesgando”

Probability of occurrence		
Qualitative definition	Meaning	Value
Frequent	<i>Likely to occur many times (has occurred frequently)</i>	5
Occasional	<i>Likely to occur some times (has occurred infrequently)</i>	4
Remote	<i>Unlikely, but possible to occur (has occurred rarely)</i>	3
Improbable	<i>Very unlikely to occur (not known to have occurred)</i>	2
Extremely improbable	<i>Almost inconceivable that the event will occur</i>	1

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Severity of Occurrences		
Definition	Meaning	Value
Catastrophic	Multiple deaths Equipment destroyed	A
Hazardous	Large reduction in safety margins, physical distress/workload (operators cannot perform their tasks accurately/completely). Major equipment damage Serious injury.	B
Major	Significant reduction in safety margins, reduction in the ability of the operators to cope with adverse operating conditions as a result of increase in workload or conditions impairing their efficiency. Serious incident. Injury to persons.	C
Minor	Nuisance. Operating limitations. Use of emergency procedures. Minor incident.	D
Negligible	Little consequences	E

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“Peligrando”/“Arriesgando”

Risk probability	Risk severity				
	Catastrophic A	Hazardous B	Major C	Minor D	Negligible E
Frequent 5	5A	5B	5C	5D	5E
Occasional 4	4A	4B	4C	4D	4E
Remote 3	3A	3B	3C	3D	3E
Improbable 2	2A	2B	2C	2D	2E
Extremely improbable 1	1A	1B	1C	1D	1E



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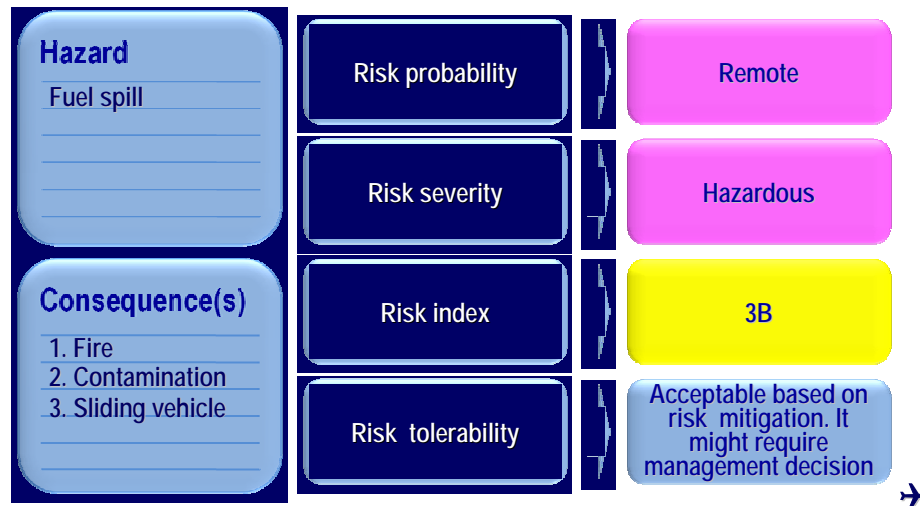
SMS - “Arriesgando”

Risk management	Assessment risk index	Suggested criteria
Intolerable region	5A, 5B, 5C, 4A, 4B, 3A	Unacceptable under the existing circumstances
Tolerable region	5D, 5E, 4C, 4D, 4E, 3B, 3C, 3D, 2A, 2B, 2C	Acceptable based on risk mitigation. It might require management decision
Acceptable region	3E, 2D, 2E, 1A, 1B, 1C, 1D, 1E	Acceptable



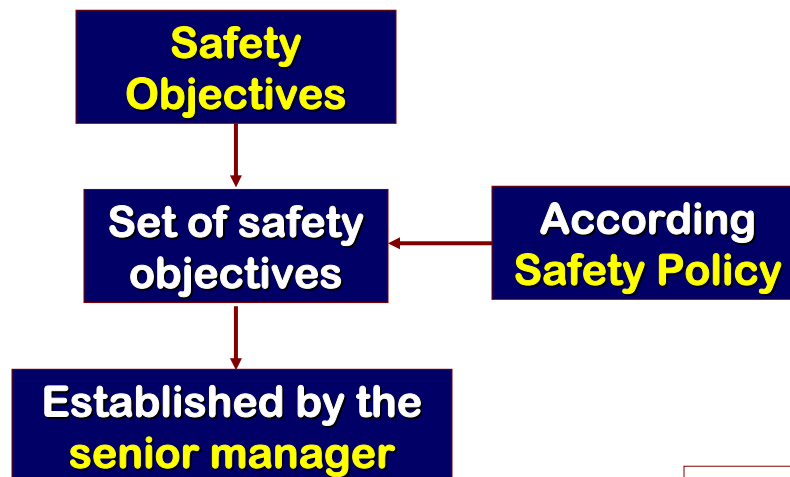
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SMS - “Peligrando”, “Arriesgando”



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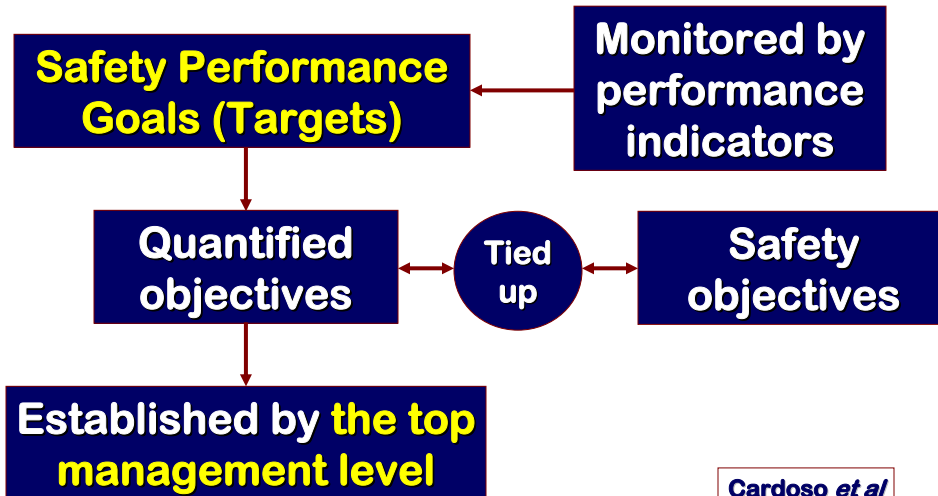


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SMS – “Peligrando”, “Arriesgando”, “Performando” y “Midiendo”

SMS - “Performando”



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Performance
Indicators

Parameters that reflect the
measurement of the safety performance

Of any business at
a particular time

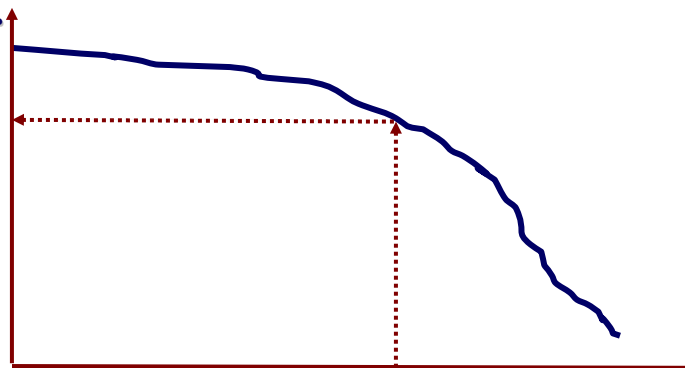
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Performance
Indicator



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Aviation accidents are rare events

P.I. vs. active failure

NO

P.I. vs. near-miss events/latent conditions

YES

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What to consider?

IPIs

OPI

IPIs

Latent conditions

Near-miss events

OPI

f(IPIs)

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IPI And OPI Application

Thirty IPIs for airports (10 groups)

Adjustment 10,000 operations/year

Decreasing weights from 10 to 1

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30 IPIs (10 groups)

Group	IPI	Weight
1	# of runway incursions # of aircraft/bird wildlife strikes # of incidents on each runway # of FOD ingestions	10
...
...
10	# of reports on surface distresses on each taxiway # of reports on surface distresses on each apron	1

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Evaluating an OPI

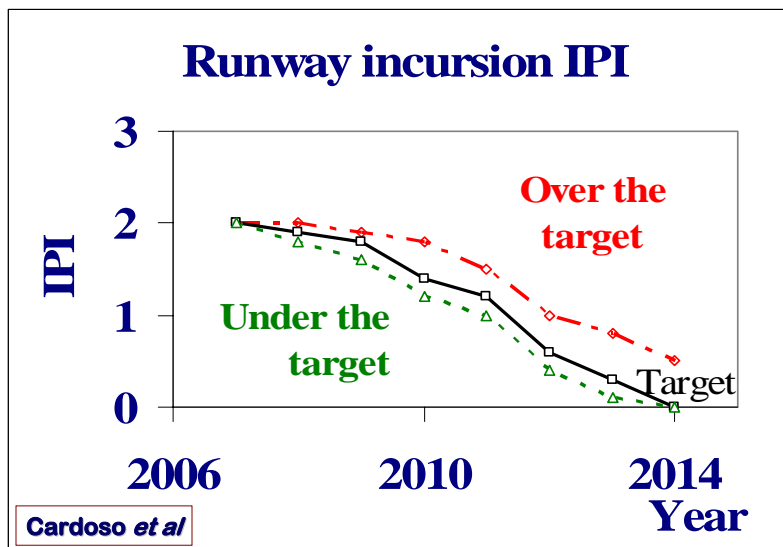
$$OPI_{year} = 10^{-2} \left[\sum_{i=1}^n W_i (IPIvalue)_i \right]$$

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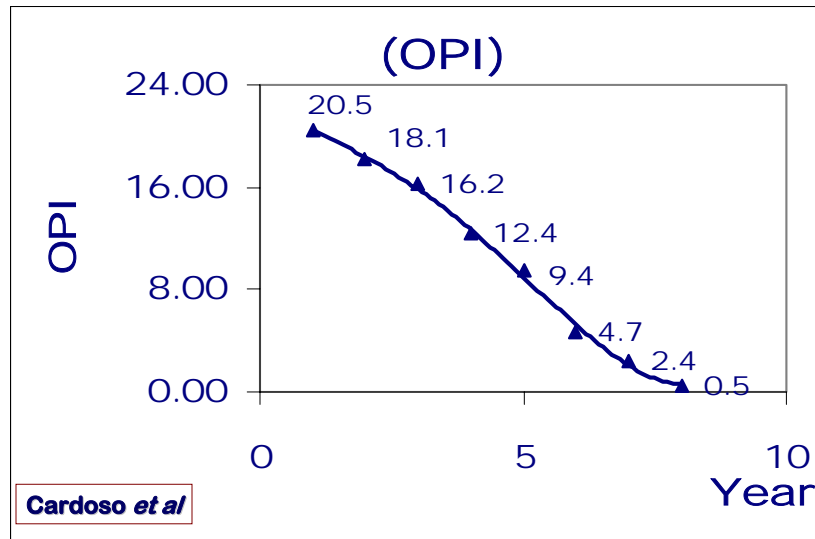
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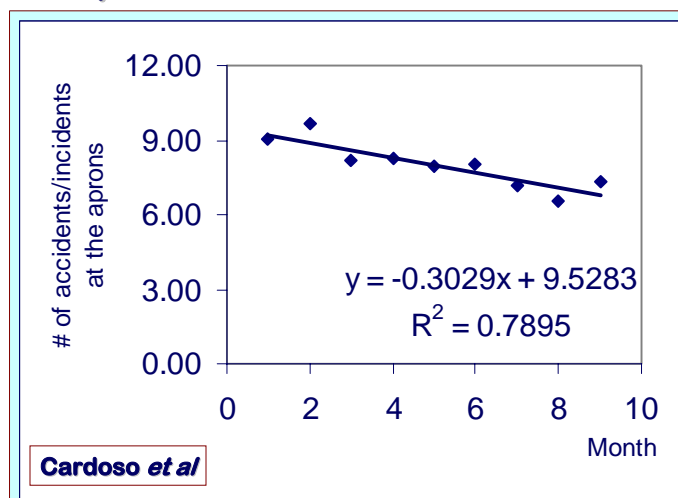
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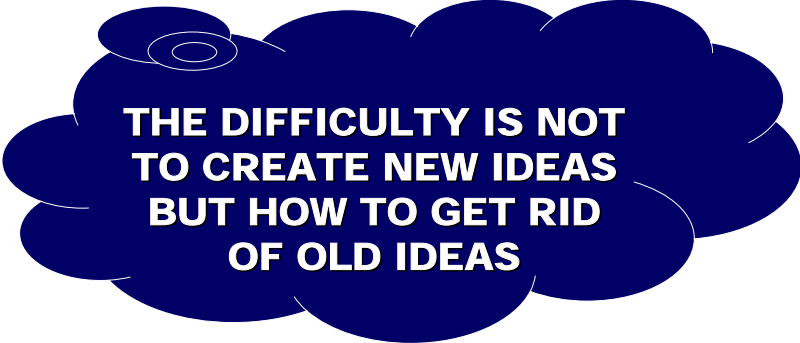
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Real Example



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Think About!!!



THE DIFFICULTY IS NOT
TO CREATE NEW IDEAS
BUT HOW TO GET RID
OF OLD IDEAS

**MAYNARD KEYNES
(ECONOMIST)**

