EUROCONTROL Runway Incursion Risk Review

NTSB Safety Forum

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NM/DNOM/SAF

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Runway Incursion Operational Risk

One of EUROCONTROL Network Manager two main operational safety areas - together with mid-air collision and two of our Top 5 priorities

Top 5: ATC Identification of Occupied Runway

Top 5: Sudden High-Energy Runway Conflict (SHERC)
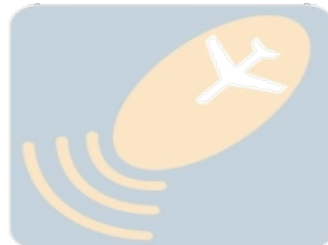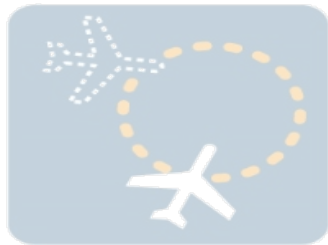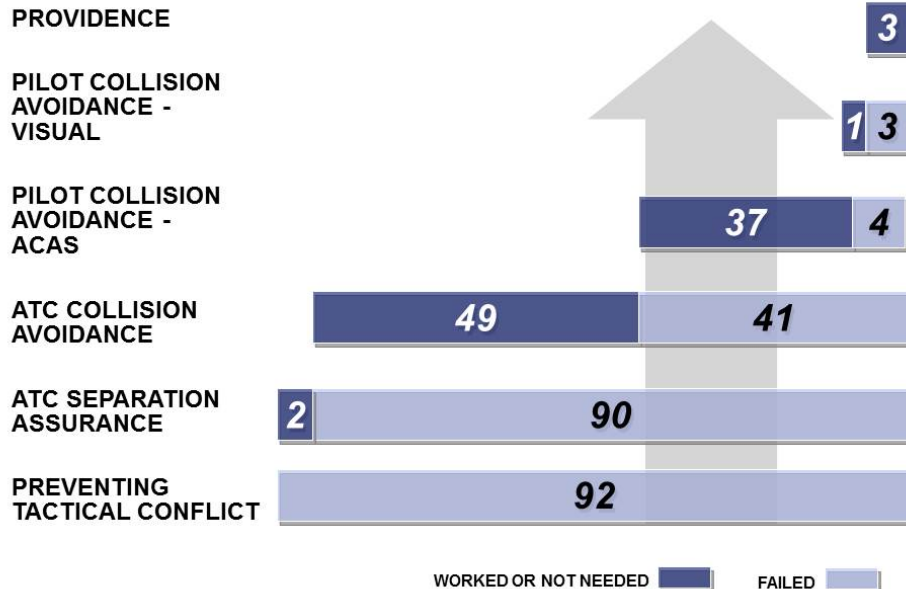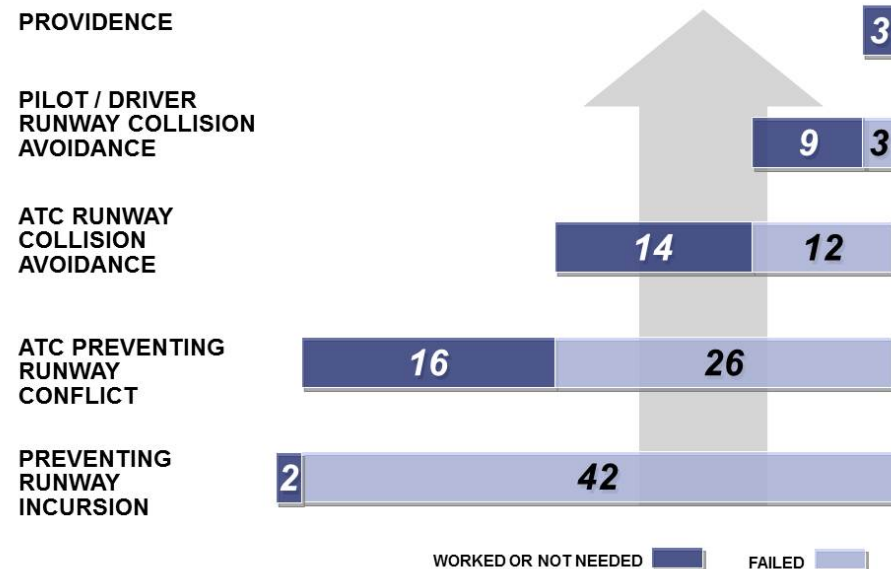
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From 2016 Top 5 Study

Where do you think we are better protected – in the air or on the ground?

Losses of separation

	WORKED OR NOT NEEDED	FAILED
PROVIDENCE		3
PILOT COLLISION AVOIDANCE - VISUAL	1	3
PILOT COLLISION AVOIDANCE - ACAS	37	4
ATC COLLISION AVOIDANCE	49	41
ATC SEPARATION ASSURANCE	2	90
PREVENTING TACTICAL CONFLICT		92

Runway Incursion

|	WORKED OR NOT NEEDED	FAILED
PROVIDENCE		3
PILOT / DRIVER RUNWAY COLLISION AVOIDANCE	9	3
ATC RUNWAY COLLISION AVOIDANCE	14	12
ATC PREVENTING RUNWAY CONFLICT	16	26
PREVENTING RUNWAY INCURSION	2	42

Two dedicated studies in 2017

As part of European Action Plan for The Prevention of Runway Incursion (EAPPRI) Review – v3.0 to be launched at ICAO GRSS in November

- ❑ **European incidents - 2013, 2014 and 2015**
- ❑ **Global events from 2006 to 2016**

Safety Functions Map (SAFMAP) Process

Barrier model and analysis of what failed (Safety I) and the resilient barriers that stopped the event (Safety II). More than 100 barriers.
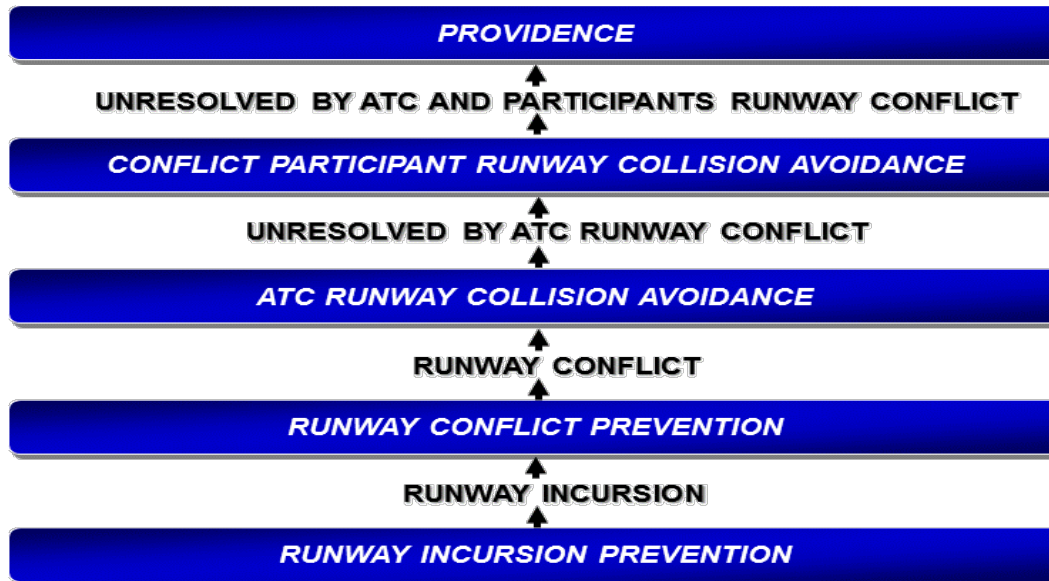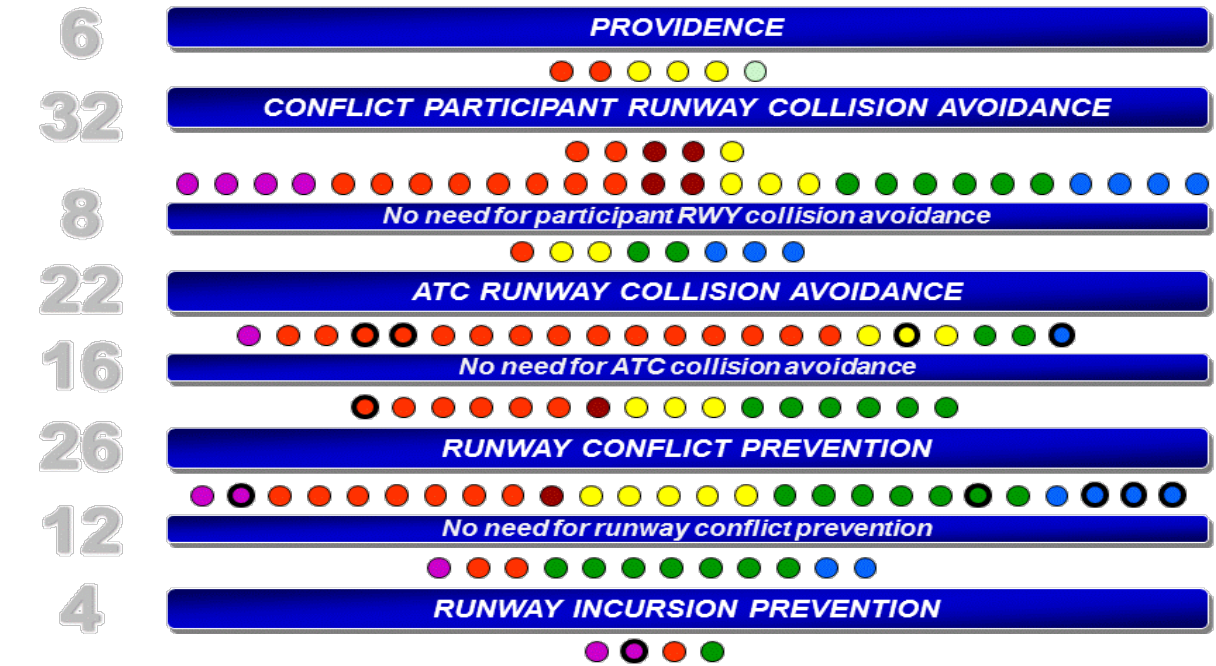
European Incidents Study

126 runway incursion incidents data sample for 2013, 2014 and 2015 - 47% from all 270 A and B severity runway incursion incidents that occurred in the period

"Taxiing mobile incorrect entry" – the most frequent initiator

European Incidents Study

Two more key findings

❑ **Out of 55 runway incursions there are 29 events where <u>stop bars</u> could have prevented the incidents**

❑ **The share of events involving use of <u>conditional clearance</u> is relatively low (8%) but the potential for a high severity outcome is considerable – 40% of the events were stopped by the last two barriers.**
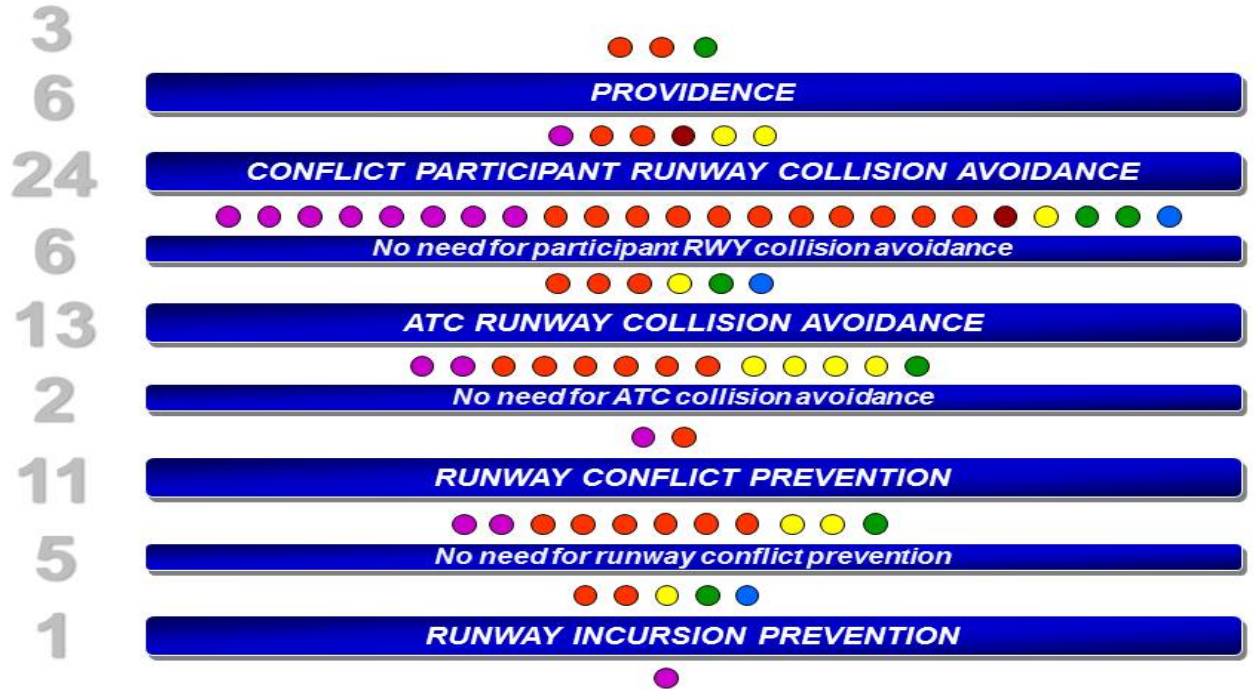
Global Events Study

71 accidents & serious incidents for 2006 - 2016

Global events

Investigated by national AIBs

Public reports

Barriers' resilience per initiator

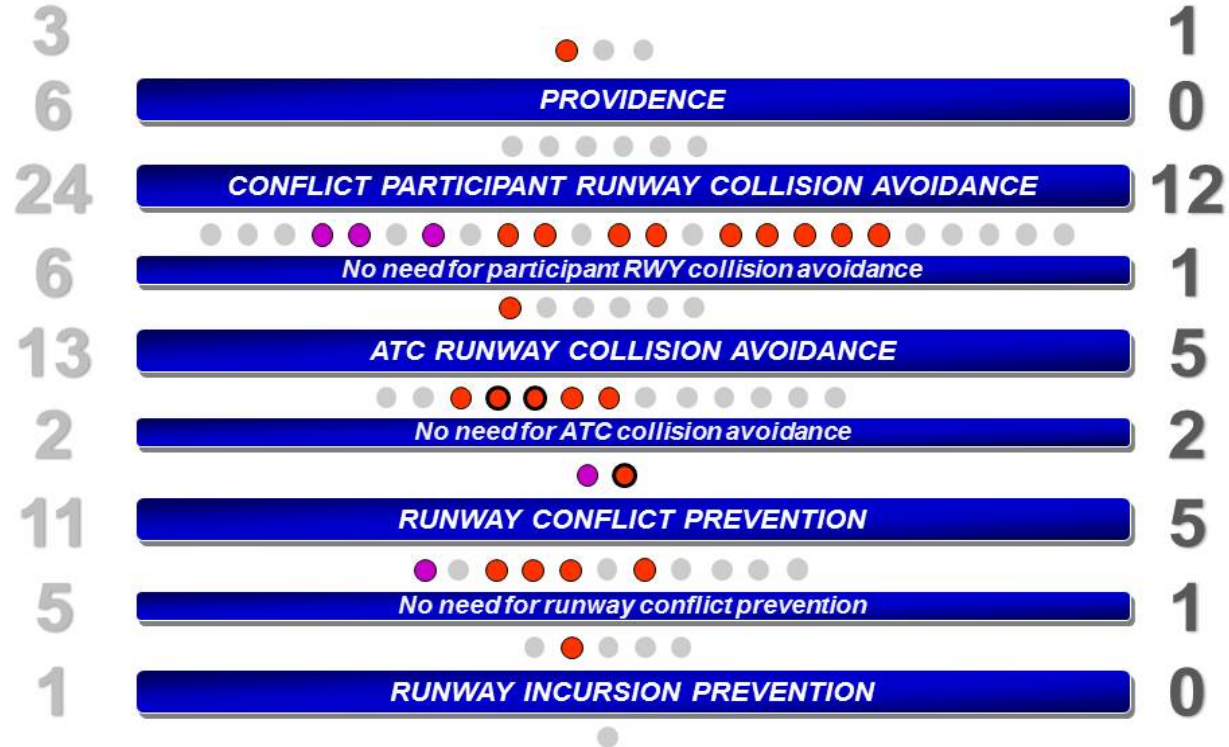# Global Events Study

❑ **Confirmed the Study 1 finding for stop bars – 27 where <u>stop bars</u> could have prevented the incidents**

❑ **Two of Top 5 reconfirmed as a global concern:**

    ❑ **"ATC not identifying occupied runway" – 28 events (39%) and two 'saved' by 'Providence'.**

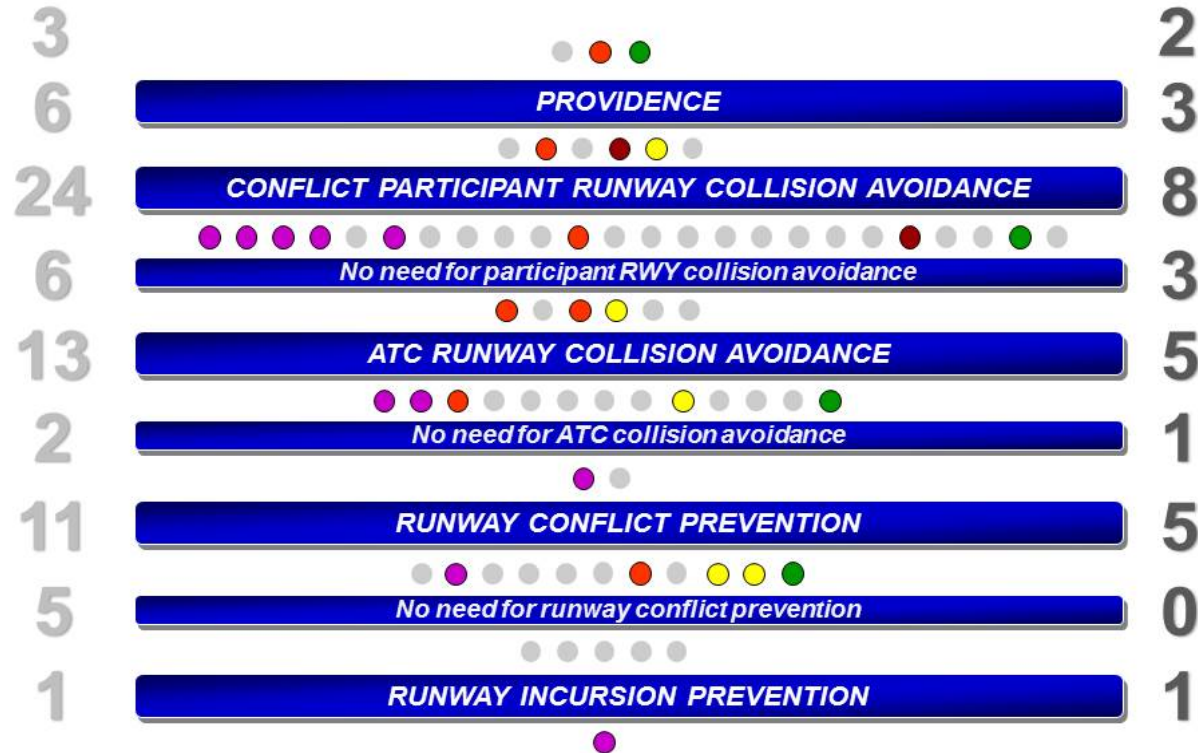   ❑ **"Sudden high- energy runway conflict" – 20 events (28%) and predominantly 'saved' by the last barriers.**

Global Events Study

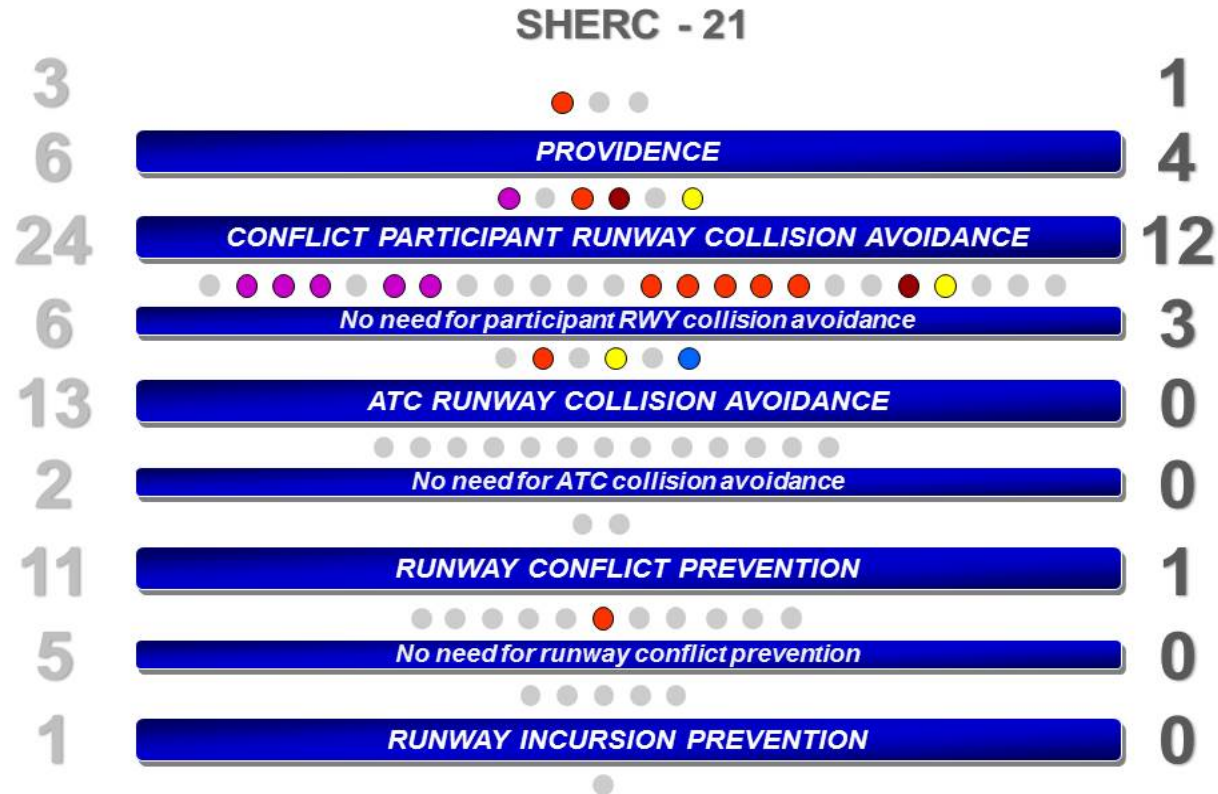Could have been prevented by stop bars - 27

Global Events Study

ATC not identifying occupied runway - 28

	PROVIDENCE	
3		2
6		3
24	CONFLICT PARTICIPANT RUNWAY COLLISION AVOIDANCE	8
6	No need for participant RWY collision avoidance	3
13	ATC RUNWAY COLLISION AVOIDANCE	5
2	No need for ATC collision avoidance	1
11	RUNWAY CONFLICT PREVENTION	5
5	No need for runway conflict prevention	0
1	RUNWAY INCURSION PREVENTION	1

Legend:
- ATC causing an incorrect entry of a taxiing mobile
- Taxiing mobile incorrect entry
- Incorrect presence of a vacating mobile
- Incorrect presence of a departing aircraft
- Incorrect presence of landing aircraft
- Landing without clearance

Global Events Study

SHERC - 21

3		1
6	PROVIDENCE	4
24	CONFLICT PARTICIPANT RUNWAY COLLISION AVOIDANCE	12
6	No need for participant RWY collision avoidance	3
13	ATC RUNWAY COLLISION AVOIDANCE	0
2	No need for ATC collision avoidance	0
11	RUNWAY CONFLICT PREVENTION	1
5	No need for runway conflict prevention	0
1	RUNWAY INCURSION PREVENTION	0

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- ● ATC causing an incorrect entry of a taxiing mobile
- ● Taxiing mobile incorrect entry
- ● Incorrect presence of a vacating mobile
- ● Incorrect presence of landing aircraft
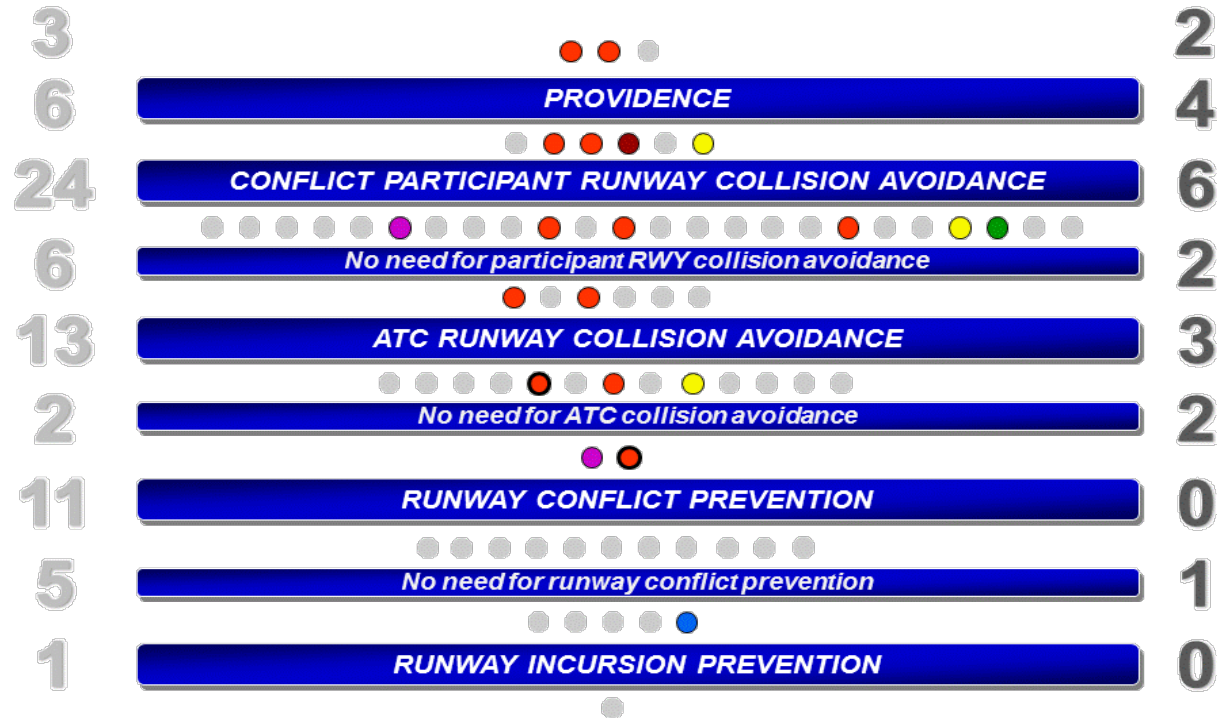- ● Incorrect presence of a departing aircraft
- ● Landing without clearance

Global Events Study

28% of the events during night time and 68% of them passed all barriers up to 'Conflict participant collision avoidance'

More safety knowledge?

The single point of reference in the network of aviation safety knowledge

SKYbrary

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