

Introduction to Risk Management Aspects

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Your safety is our mission.

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Connecting the Security and Safety approaches



The boundary is blurring

“Today’s security threats, including cybersecurity, blur the traditional divide between the two approaches.”

Why?

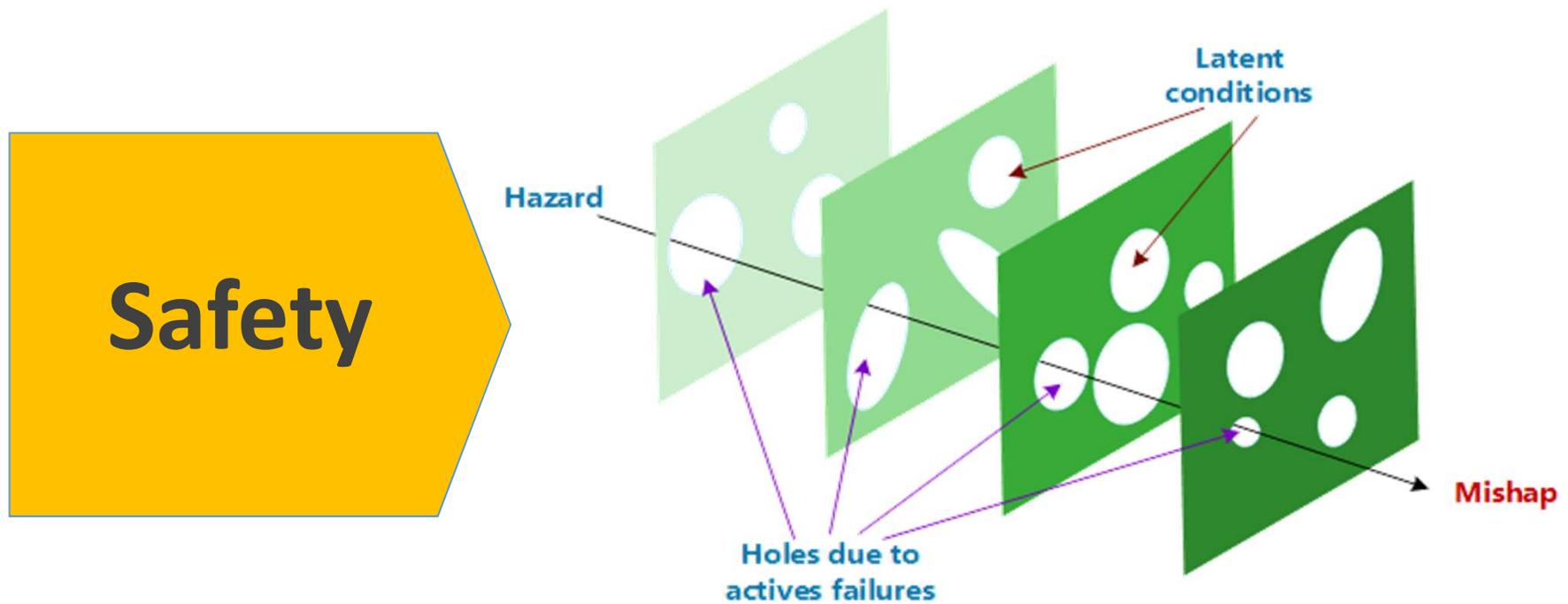
Cyber Threat Actors have no physical borders

Cybersecurity attacks per year is a six figures number...

Threat Actors have an easy access to resources + costs decrease

The reduction of the causes alone is not the best option

The Swiss Cheese Model

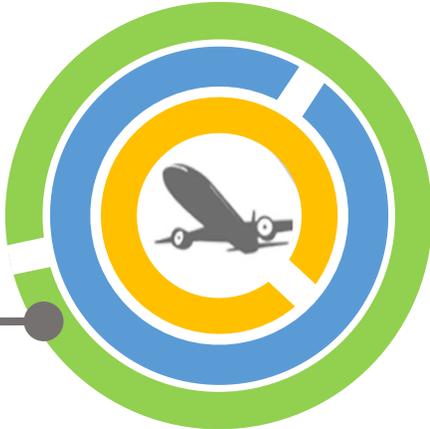


Comparing Safety and Security

SAFETY

SECURITY

“Swiss Cheese Model”
representation

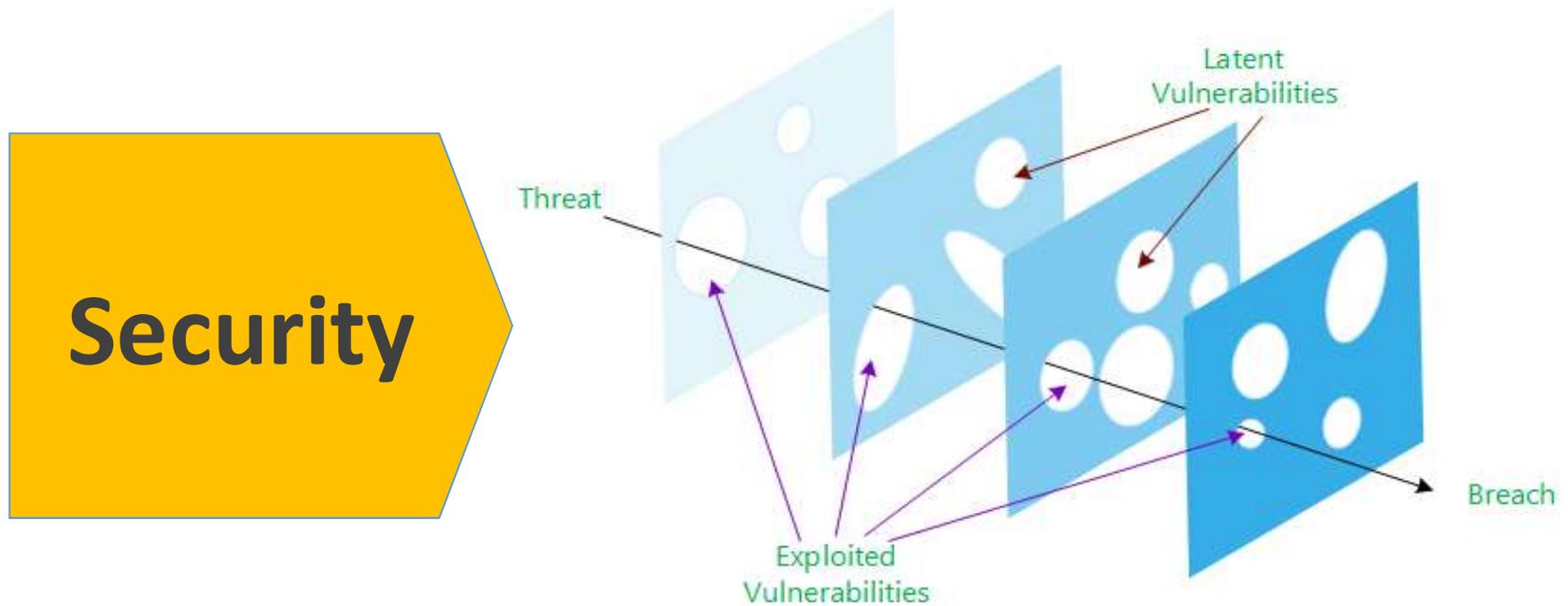


VS

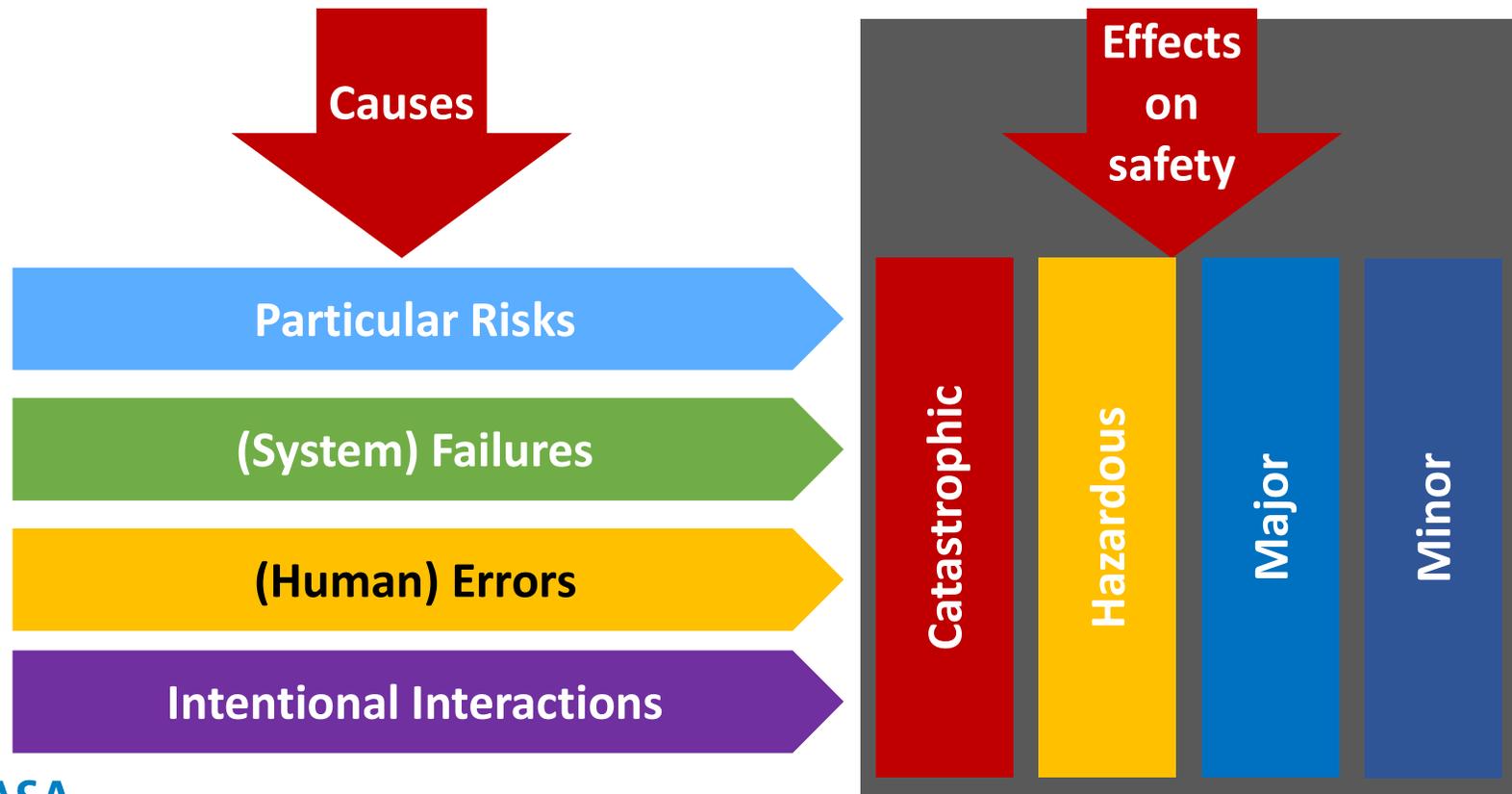


The notion of
INTENT

The Swiss Cheese Model



Relationship between Causes & Effects



Security Risk Assessment

How to

Purpose is to evaluate the **security risk** on an aircraft or system facing **unauthorized interaction**, having a **safety impact**

Risk Assessment



Security for safety

Security vs Safety Risk Assessment

Similar approaches. Safety RA is based on statistical analysis, whereas Security RA is based on a **qualitative analysis** of the threats.

“Likelihood” becomes “Level of the Threat” which gives an idea of the “Difficulty of Attack”.

Main
Elements

- Preparation Means
- Window of opportunity
- Execution Means

Background - Safety Risk Acceptability Matrix

Let's start with the **Safety Risk** assessment matrix

Risk Level	SEVERITY				
LIKELIHOOD	No Effect	Minor	Major	Hazardous	Catastrophic
Frequent	Acceptable	Unacceptable			
Probable					
Remote					
Extremely Remote					
Extremely Improbable (10 ⁻⁹)					

Security Risk Acceptability Matrix

What about the severity of the effect 

Risk Level	Threat Condition			Severity of Effect	
Level of Threat	No Effect	Minor	Major	Hazardous	Catastrophic
Very High	Acceptable		Unacceptable		
High					
Moderate					
Low					
Extremely Low					Acceptable*



Overall effectiveness of Security Measures must be increased...

...and so does the difficulty

Security Risk Acceptability Matrix

What about the severity of the effect 

Risk Level	Threat Condition Severity of Effect					
Level of Threat	No Effect	Minor	Major	Hazardous	Catastrophic	
Very High	Acceptable		Unacceptable	<div data-bbox="1417 803 1816 1063"> <p>To work on this dimension the aircraft architecture shall be modified....</p> </div>		
High						
Moderate						
Low	<div data-bbox="546 1071 1617 1258"> <p>...so, the earlier the Security Assessment is carried out the better it is, as some mitigations can be introduced in the design phase with less effort</p> </div>					
Extremely Low					Acceptable*	

Security Risk Assessment is not Stable

Knowledge Equipment	None/Public Information and no preparation time	Uncontrolled Information and no significant preparation time	Insider Knowledge or Significant preparation time
None/Standard	0	2	6
Special COTS	0	2	6
Special	n/a	5	6
Bespoke	n/a	5	6

Special equipment which requires a substantial amount of resources to assemble (time above half a year or money above \$100.000).

The fabulous case of the IMSI Catcher



Before 2013
Around 100K€

2016
20.000€



2020
500€ on Alibaba
DIY for 10€

Thank you for your attention!

Questions?

easa.europa.eu/connect



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