NK315 EKSPOATACJA STATKÓW LATAJĄCYCH

Bezpieczeństwo lotów

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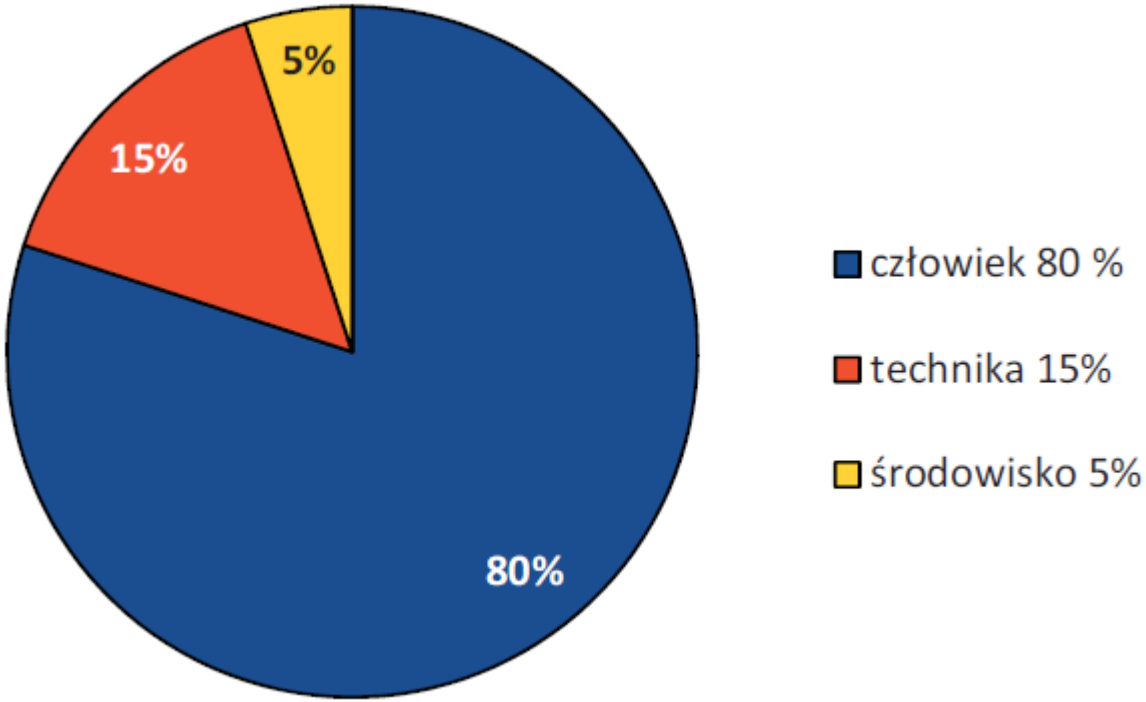
PRZYCZYNY WYPADKÓW LOTNICZYCH



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Latest Published Statistical Summaries

ICAO 2015 Safety Review:
http://www.icao.int/safety/Documents/ICAO_Safety_Report_2015_Web.pdf

Annual Safety Review – EASA 2014: https://www.easa.europa.eu/document-library/general-publications?search&publication_date[value][year]=&publication_type[0]=144

Boeing: Statistical Summary of Commercial Jet Airplane Accidents 1959-2014:
http://www.boeing.com/resources/boeingdotcom/company/about_bca/pdf/statsum.pdf

UK CAA: CAP1036 "Global Fatal Accident Review 2002-2011:
https://publicapps.caa.co.uk/docs/33/CAP%201036%20Global%20Fatal%20Accident%20Review%202002%20to%202011.pdf

Air Transport News Safety Survey 2015: http://www.atn.aero/

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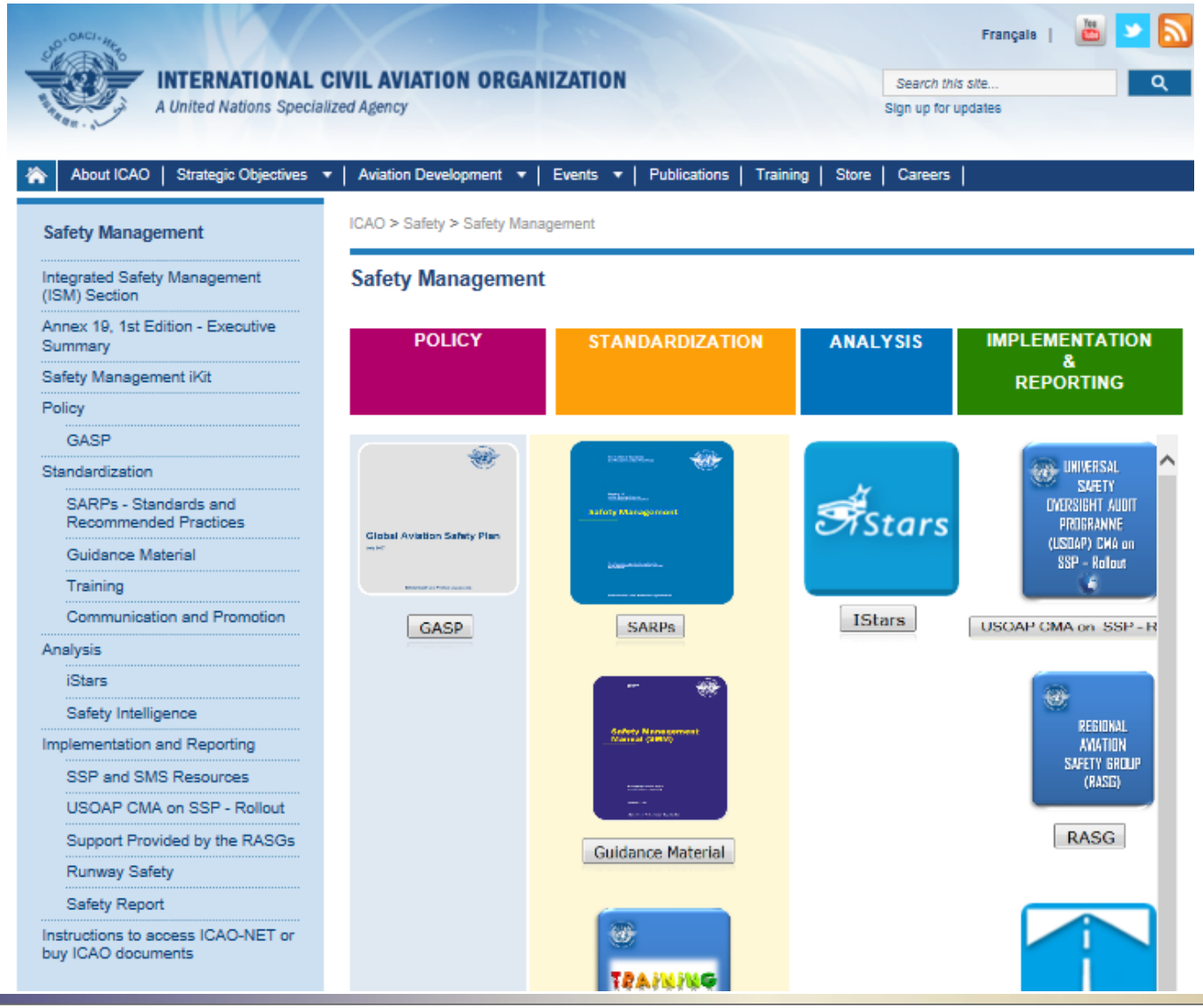

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http://www.icao.int/safety/SafetyManagement/Pages/default.aspx

Bezpieczeństwo systemu lotniczego to wypadkowa istotnych podstawowych elementów: stanu technicznego statku powietrznego, sprawności funkcjonowania systemów łączności, nawigacji i dozorowania, sprawności służb zarządzania przestrzenią powietrzną, naziemnego i latającego personelu oraz oddziaływania środowiska

Z tego wynika, że bezpieczeństwo to zależy od trzech zasadniczych czynników:
! ludzkiego (człowieka) – Humans Factor;
! technicznego
! środowiska

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Aviation Safety Triangle

Źródło: /www.skybrary.aero

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Źródło: www.faa.gov

crew resource management (CRM)
maintenance resource management (*MRM*)

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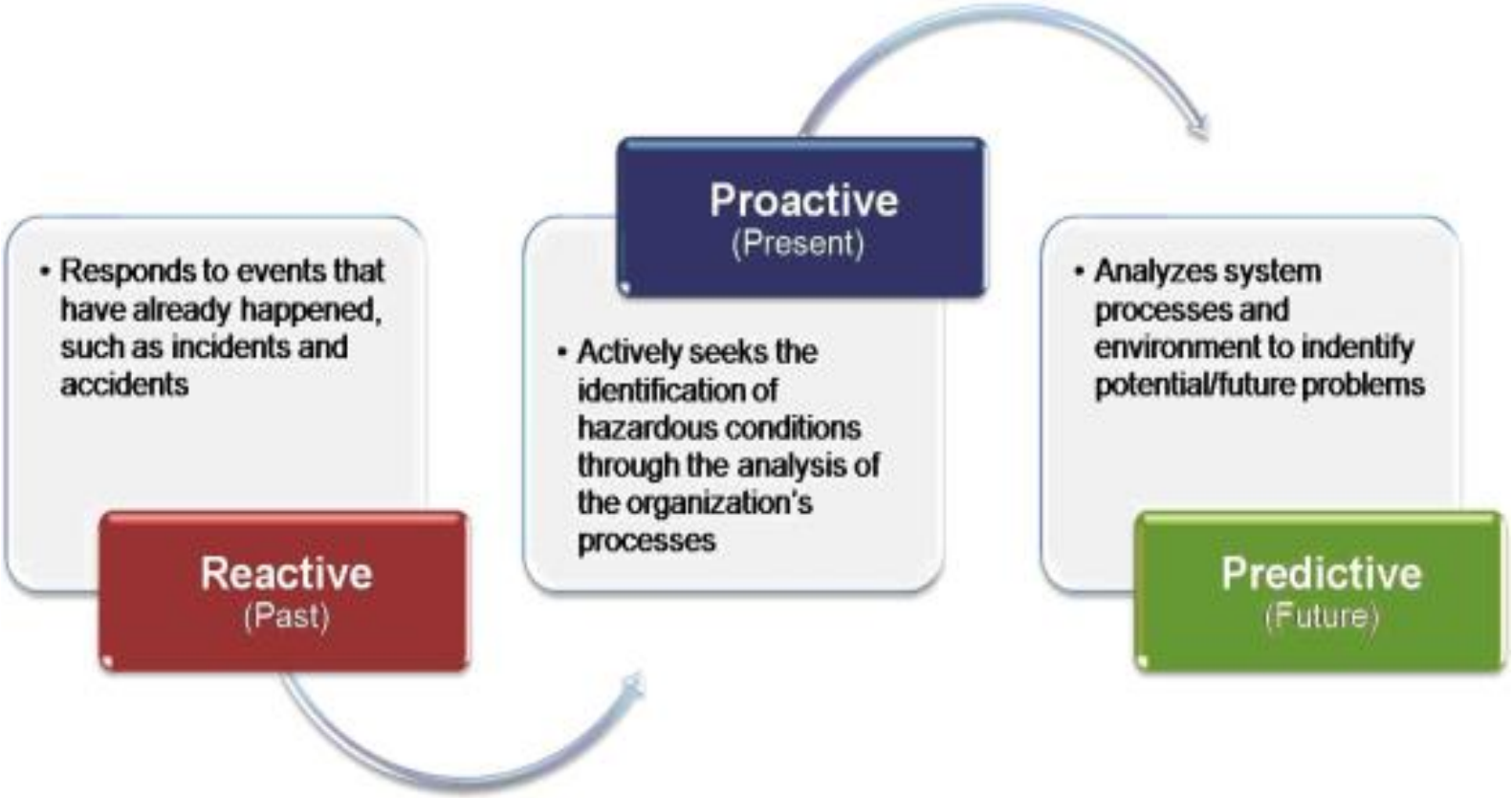
Źródło: www.faa.gov

How Safety Management System Addresses the Organization's Role in Safety



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Airworthiness Risk Indicator

AS/NZS 4360:1999 : *"Risk - the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood"*

AS/NZS 4360:1999 Risk Management analysis matrix

AS/NZ	Catastrophic	Major	Moderate	Minor	Insignificant
Almost certain	Extreme	Extreme	Extreme	High	High
Likely	Extreme	Extreme	High	High	Moderate
Moderate	Extreme	Extreme	High	Moderate	Low
Unlikely	Extreme	High	Moderate	Low	Low
Rare	High	High	Moderate	Low	Low

There is a need for a quantitative measurement of risk

Quantitative Hazard Probability

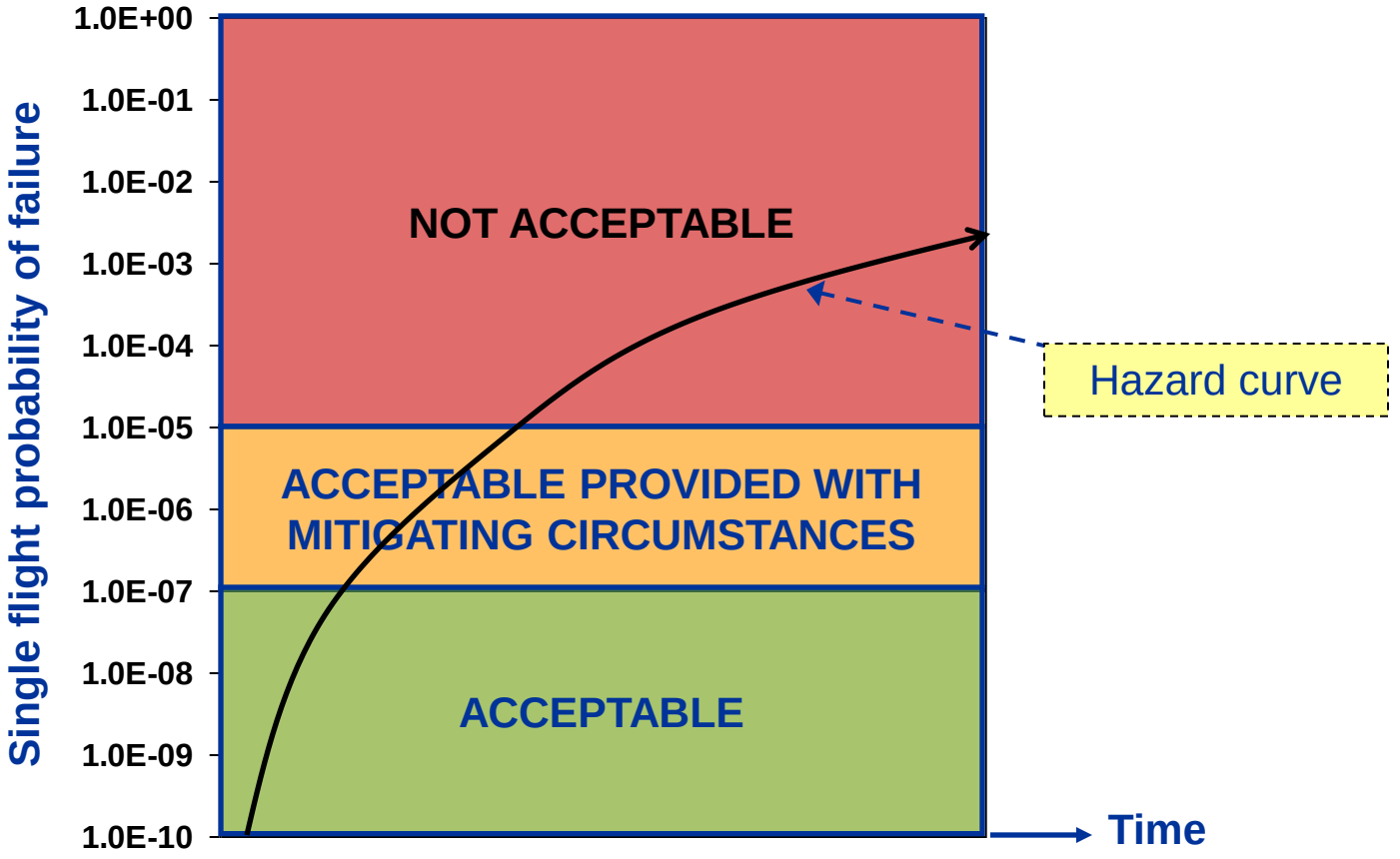
Hazard Probability Level	Hazard Probability Threshold (Per Flight Hour)			
	DND Passenger Carrying Aircraft	Military Aircraft		
		Military Aircraft	Military Aircraft – Ejection seat Equipped	Unmanned Aerial Vehicles (UAVs) Above 150 kg
Frequent	> $1x10^{-3}$	> $1x10^{-3}$	> $1x10^{-3}$	> $1x10^{-2}$
Reasonably Probable	< $1x10^{-3}$	< $1x10^{-3}$	< $1x10^{-3}$	< $1x10^{-2}$
Remote	< $1x10^{-5}$	< $1x10^{-5}$	< $1x10^{-4}$	< $1x10^{-3}$
Extremely Remote	< $1x10^{-7}$	< $1x10^{-6}$	< $1x10^{-5}$	< $1x10^{-5}$
Extremely Improbable	< $1x10^{-9}$	< $1x10^{-8}$	< $1x10^{-7}$	< $1x10^{-6}$

Source: Liao, Bombardier and Renaud (2009), National Research Council Canada

Probabilistic Risk Analysis provides a quantitative measure for the specific hazard level

Quantitative Hazard Probability

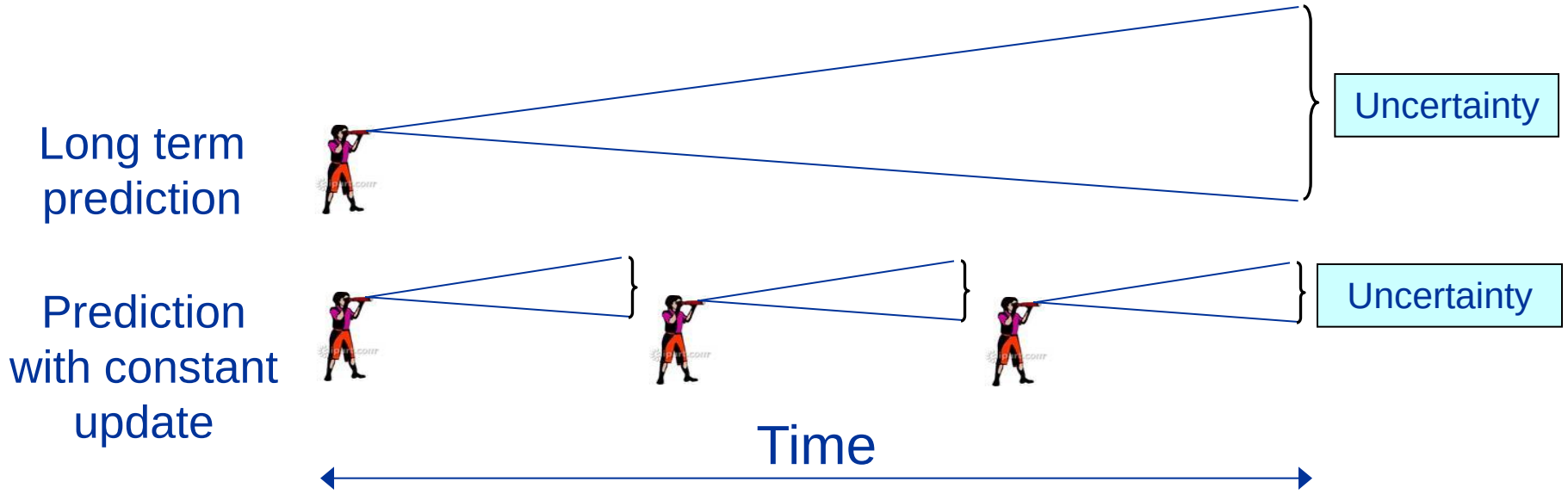
MIL-STD 1530C :



Probabilistic Risk Analysis provides a quantitative measure for the specific hazard level

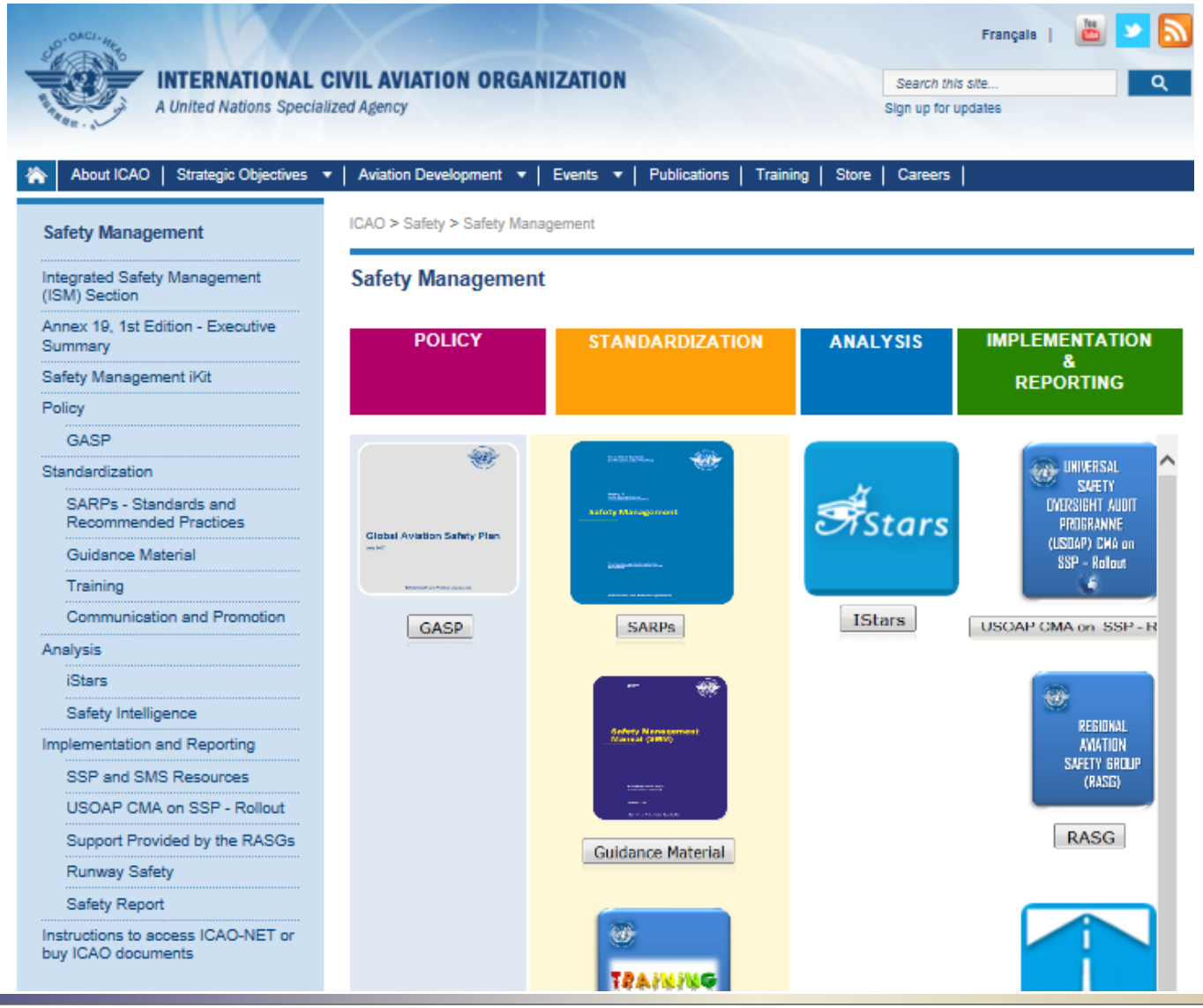
Zmiany probabilistycznym podejściu do analizy ryzykaa

- Predicting too far ahead increases uncertainty



by Bayesian approach

Incorporating new observation into the data improves prediction



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INTERNATIONAL CIVIL AVIATION ORGANIZATION
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Safety Management

- Integrated Safety Management (ISM) Section
- **Annex 19, 1st Edition - Executive Summary**
- Safety Management iKit
- Policy
  - GASP
- Standardization
  - SARPs - Standards and Recommended Practices
  - Guidance Material
  - Training
  - Communication and Promotion
- Analysis
  - iStars
  - Safety Intelligence
- Implementation and Reporting
  - SSP and SMS Resources
  - USOAP CMA on SSP - Rollout
  - Support Provided by the RASGs
  - Runway Safety
  - Safety Report
- Instructions to access ICAO-NET or buy ICAO documents

ICAO > Safety > Safety Management > Annex 19, 1st Edition - Executive summary

Annex 19, 1st Edition - Executive summary

(Note: This executive summary can be downloaded here in PDF format)

Executive Summary of Annex 19, 1st Edition

WHY A NEW ANNEX?

The ICAO High-level Safety Conference 2010 recommendation 2/5 proposed the development of an Annex dedicated to Safety Management. The benefits identified of this approach included:

- Address safety risks proactively;
- Manage and support strategic regulatory and infrastructure developments;
- Re-enforce the role played by the State in managing safety at the State level, in coordination with service providers;
- Stress the concept of overall safety performance in all domains.

WHAT IS NEW AND WHAT IS NOT?

All of the safety management provisions in Annex 19, 1st edition, were transferred* or duplicated from safety management provisions previously contained in 6 different Annexes, with the exception of:

1.The Safety Management System (SMS) framework now applies to organizations responsible for the type design and manufacture of aircraft;

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