SAFETY II CHALLENGES FOR THE SAFETY OVERSIGHT BODY IN THE AVIATION DOMAIN

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SAFETY SCIENCES
BANKABLE SAFETY

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ABOUT THE SPEAKER

- Representing myself only
  - Humans factors in aviation
  - User Experience for airline IT & travel industry
  - User researcher, Service Designer, Design thinking facilitator

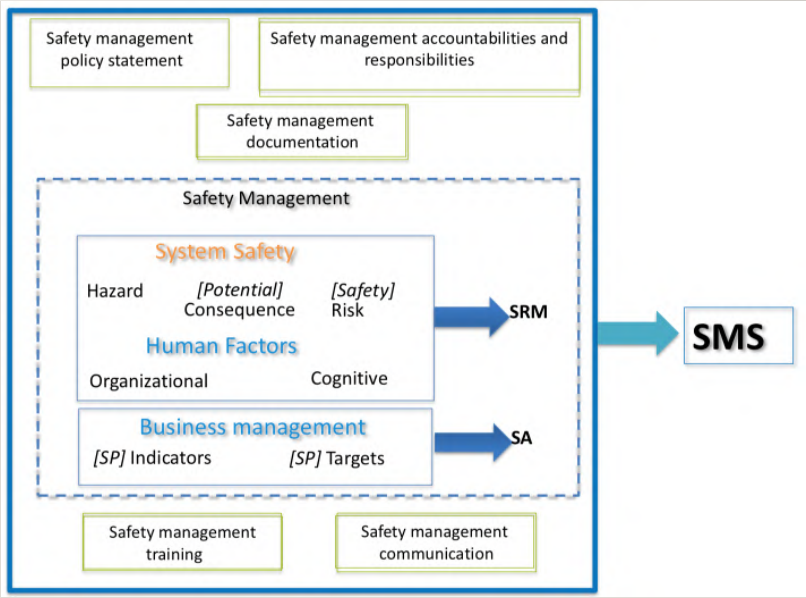
- Thanks to Ivan Pastorelli and Safety Sciences (http://safety-sciences.fr/)

OUTLINE

- Project context:
  - SMS types
  - Oversight authority
  - RBO for a better surveillance
- Question: Does it make sense to expand the SMS maturity assessment tool to cover the 4 resilience potentials?
- Challenges
  - Input
  - Ressources
  - Time
  - Control
  - Output
- Conclusion

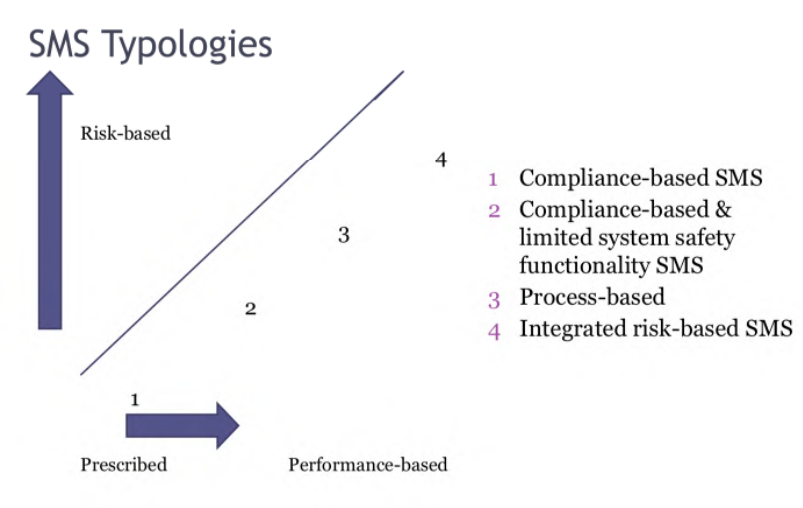
SMS DEFINITIONS AND VISION

- A suite of systematic, explicit and comprehensive **processes** for managing safety risks. (OCDE report 2017)
- A systematic **approach** to managing safety, including the necessary organizational structures, accountabilities, policies and procedures. (ICAO SMM 2013)
- A **management tool** allowing to set strategic goals, priorities and allocated ressources
- To avoid the empty shell, the SMS « generator » (FTA) needs to be fed, activated, own and integrated



From (Maurino, 2017)

AFTER INTEGRATED SAFETY MANAGEMENT SYSTEM COMES SAFETY II?

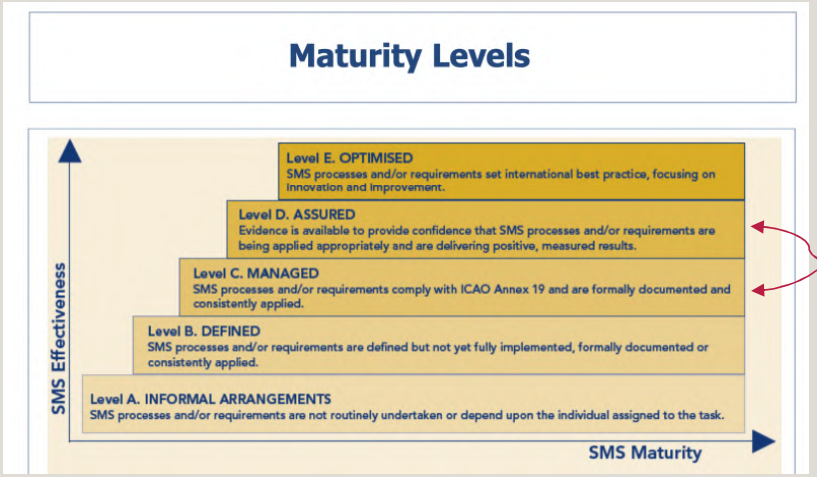


SMS Typologies

	Compliance -based	Compliance & system safety	Process -based	Integrated performance
Accident causation model	n/a	Reliability model	Reliable mgmnt of tech + ops systems	Organisational model & performance
SMS integrated with regulations	Stand-alone SMS	Limited - varies by jurisdiction	Generally – varies by jurisdiction	Completely: SMS is regulatory 'umbrella'
SMS integrated with company mgmnt systems	n/a	At best, restricted to technical aspect	Limited – varies by jurisdiction	Completely: strategic safety goal aligned with enterprise management
Focus of SMS	Regulated requirements	Technical and operations	Tech, operational & SMS processes	Corporate safety performance
Proactive ID of hazards	n/a	Prescribed HAs of technical systems	HAs; RAs; hazard reports; limited HF	HAs & RAs; ID SSDs using multiple sources
Measurement of SMS	Components documented	SMS Components documented/used	Audit of SMS processes	Evaluation tools that measure company-wide safety management
Miscellaneous		QA; 'engineered' HF; investigate for tech & HF 'failure'	Voluntary reports; SMS Office; process improvements.	SRM advice to executives; change management; human factors

From (Kelly, 2017)

MATURITY SCALES CANSO AND EASA: LEVEL OF CONTROL OF THE SAFETY PROCESSES



https://www.canso.org/sites/default/files/Safety%20Management%20Maturity%20Workshop.pdf

Present: There is evidence that the feature is documented within the organisation's Management system/SMS Documentation.

Suitable: The feature is suitable based on the size, nature, complexity of the organisation and the inherent risk in the activity.

Operating: There is evidence that the feature is in use and an output is being produced.

Effective: There is evidence that the feature is achieving the desired outcome and has a positive safety impact.

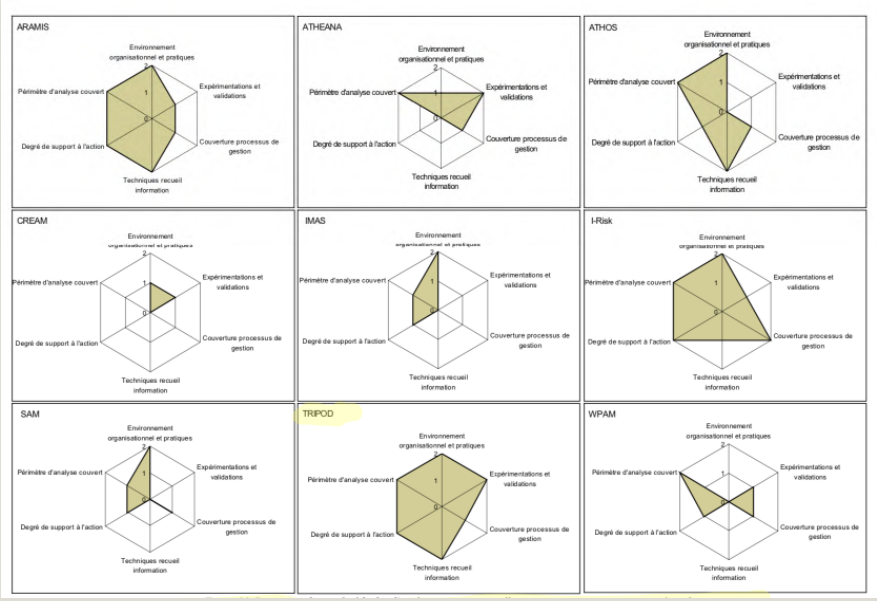
https://www.easa.europa.eu/sites/default/files/dfu/214081_EASA_MANAGEMENT_SYSTEM_ASSESSMENT_TOOL.pdf

EASA SMS ASSESSMENT TOOL STRUCTURE : EXTERNAL ASSESSMENT

Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Aditionnal Items
• Management commitment • Safety accountabilities and responsibilities • Apointment of key personnel • Emergency Response Plan • SMS documentation	• Hazard Identification • Risk Assessment and mitigation	• Safety performance monitoring and measurement • The management of change • Conitunous improvment of the SMS	• Training and education • Safety Communication	• Interface management • Responsibilities for compliance and compliance monitoring function

Based on ICAO 4 safety pillars - The « rigourously protected functional silos » (T Kelly, 2017)

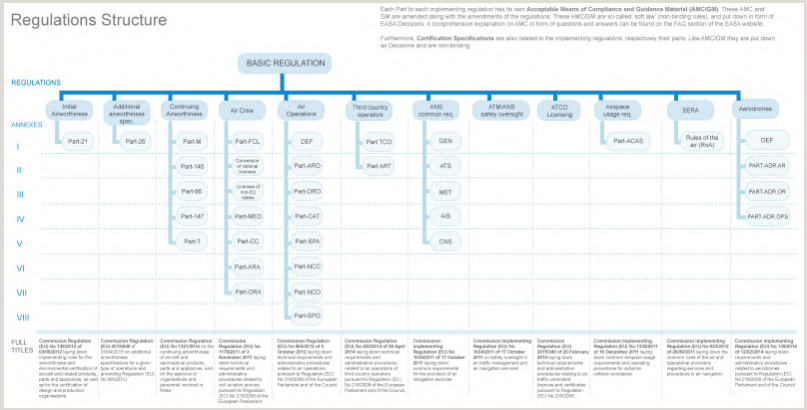
ASESSMENT OF THE SMS LEVEL OF OWNERSHIP (MATURITY): IN CASE OF INTERNAL ASSESSMENT



From (Cambon, 2007)

REGULATORY FRAMEWORK

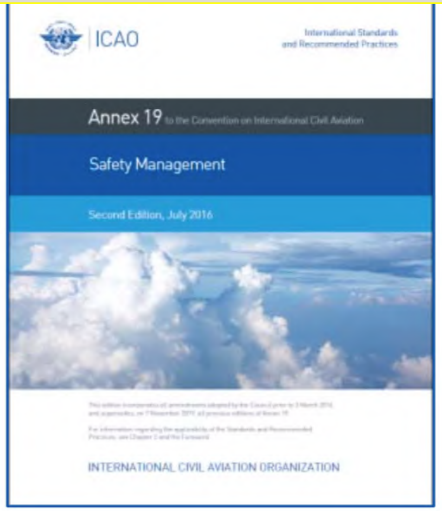
- ICAO
- EASA European authority
  - « top down » classic regulation, Implementing Rules
  - AMC, altMOC can be submitted by an organisation (« bottom up »)
- National authority
  - Regulation And Enforcement



OVERSIGHT VS. SURVEILLANCE

Safety oversight. A function performed by a State to ensure that individuals and organizations performing an aviation activity comply with safety-related national laws and regulations.

Surveillance. The State activities through which the State proactively verifies through inspections and audits that aviation licence, certificate, authorization or approval holders continue to meet the established requirements and function at the level of competency and safety required by the State.



SAFETY RESPONSABILITY AND ACCOUNTABILITY

- Safety responsability: Shift from regulator to operator
- Within the operating cie : Accountable manager vs all employee responsible for safety
- Safety Oversight body: accountable for regulation compliance oversight and surveillance

- Regulation trad. role
  - Help organisations to handle complexity (by reducing variability and often being prescriptive)
  - Stop the pirates

ENFORCEMENT AUTHORITY: DEGREES OF LIBERTY

Polical	Normal distribution or at least a range of safety performance org.
Social	Accountable to the public
Economical	Csq of certificate suspension or Findings with huge cost (or no idea on how to close)
Legal	Third party private cie : CEO is liable in penal law
Prof culture	Technocentric, hands on
Competence and skills	Lack of understanding of Risk assessment, Human and Org Factors, Safety II Lack of interviewing and observation skills Cognitive lock up
Main operator and constructor relationship	Official talks vs off the records Special treatment
Historical legacy	Risk aversion. Rating consistency (loosing face). Bureaucratic inertia

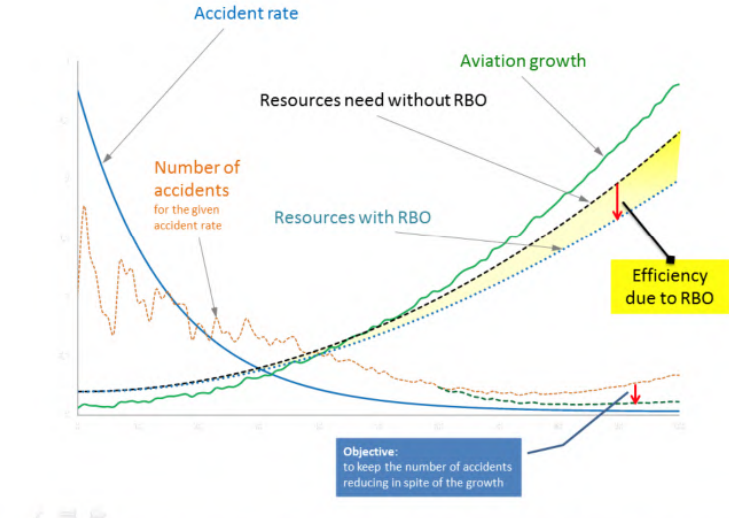
THE SAFETY OVERSIGHT AUTHORITY AS EXPECTED BY THE AUDITED ORGANISATION

- Does not make the regulation
- *influence & power issue*
- Must use the regulation
- Evidence based
- *hierarchical relation & guidance*
- « Tell us what to do so that we can do it and return to business » attitude

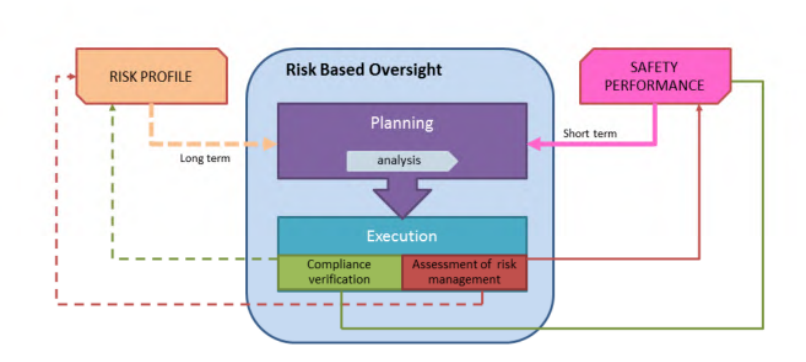
- Be fair
- Be pragmatic
- Be consistent (intra and inter consistency)
- Be flexible (safety perf monitoring)
- … yet enforces

- PB: Objectivity myth
- Subjective decision vs arbitrary decision

RBO (FROM EASA PRACTICES FOR RISK BASED OVERSIGHT)



State Safety Programme (SSP) and European Plan for Aviation Safety (EPAS) 2016 – 2020, previously the European Aviation Safety Plan (EASp) 2014 - 2017.



1. Risk profile (performance, complexity)
2. Compliance
3. Safety Performance

ABOUT THE PROJECT : « HACKING » THE EASA TOOL AND CHANGING THE ENFORCEMENT CULTURE

- CAMO
- RBO: financial incentive, adaptation of the oversight cycle (frequency, scope and level)
- Maturity of the safety management « system » as an input in the risk profile
- Opportunity to go beyond compliance and safety I.
- From in-house tool to extended EASA tool
- Agility
- Data science

SMS MATURITY ASSESSMENT

Regular assessment

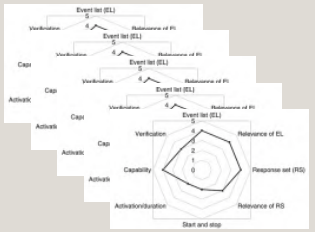
Instanciated EASA tool

Preliminary questionnaire

Work as done info.

Work as prescribed info.

To assess SMS maturity level



+ narratives & thick data

1 radar snapshot per pillar (PSOE scale)

Surveillance plan

External auditors (surveillance inspectors)
Safety manager

SMS MATURITY ASSESSMENT PROCESS

« preparatory survey » (new): non binding answers

Main Data gathering

- documentation sampling,
- in situ observation,
- interviews,
- Contextual/co-operative inquiry (new)
- Appreciative inquiry (new)

Data analysis

- « Sensor » + « analyser »
- Sensor + involved personnel/safety manager

EASA TOOL STRUCTURE

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Based on ICAO 4 safety pillars - The « rigourously protected functional silos » (T Kelly, 2017)

EXAMPLE OF OBSERVATION POINTS IN EASA TOOL

Annex 19 reference & text

3.1.2 The service provider's safety performance shall be verified in reference to the safety performance indicators and safety performance targets of the SMS in support of the organization's safety objectives.

PRESENT	SUITABLE	OPERATIONAL	EFFECTIVE
There is a process in place on how the safety performance of the organisation will be measured including safety performance indicators and targets linked to the organisation's safety objectives.		The safety performance of the organisation is being measured and the SPIs are being continuously monitored and analysed for trends.	SPIs are demonstrating the safety performance of the organisation and the effectiveness of risk controls based on reliable data. SPIs are reviewed and regularly updated to ensure they remain relevant. Where the SPIs indicate a risk control not being effective appropriate action is taken.

What to look for

- Evidence that SPIs are based on reliable sources of data.
- Evidence of when Safety performance indicators were last reviewed.
- The defined SPIs and targets are appropriate to the organisation's activities, risks and safety objectives.
- SPIs are focused on what is important rather than what is easy to measure.
- Consideration of any State SPIs.
- Review whether any action has been taken when an SPI is indicating a negative trend (reflecting a risk control or an inappropriate SPI).
- Evidence that results of safety performance monitoring are discussed at senior management level.
- Evidence of feedback provided to the accountable manager.

Corresponding EU/EASA Requirements

ENTRANCE POINTS TO ASSESS THE RESPOND, MONITOR, ANTICIPATE, & LEARN POTENTIALS

Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Aditionnal Items
• Management commitment • Safety accountabilities and responsabilities • Apointment of key personnel • Emergency Response Plan • SMS documentation	• Hazard Identification • Risk Assessment and mitigation Events list (expected risk) Responses set Acceptability of uncertainty	• Safety performance monitoring and measurement • The management of change • Continuous improvement of the SMS Global performance indicator	• Training and education • Safety Communication Lessons learned	• Interface management • Responsabilities for compliance and compliance monitoring function

Activation, response capability, verification

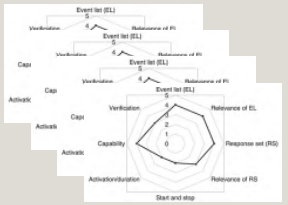
RESILIENCE ASSESSMENT (WITH THE RAG)

Regular assessment

Instantiated (yet CAMO generic) RAG

Work as done info

To assess resilience potentials



+ narratives & thick data

1 radar snapshot per potential (Lickert scale)
Or a single radar showing all 4 potentials

Internal practitioners

INPUT CHALLENGES

1. ETTO while using the assessment tool
    1. 40 questions for the RAG, really?
    2. Breadth first + input from last snapshot
2. Evidence vs weak signal or cluster of clues –> new data gathering scheme
3. How to integrate internal audit?
4. Inter-Inspector variability (observations and interviews)
    - Role perception (bad cop/good cop)
    - Technical vs quality background (detailled facts, vs holistic process view)
    - Percieved legitimity and Personal network
5. Is there a minimum level of maturity/performance/distance to the front line for assessing the resilience potential with the RAG?
6. The RAG mentions common artifacts (ex list of disturbances): how to consider official vs bottom-up artefact usage?

RESSOURCES CHALLENGES: OPPORTUNITIES FOR CHANGE

- « inspectors » Selection – role playing
  - Open mindedness, active listening skills, teamwork
- « inspectors » Training – experiential learning
  - Systemic view, co-inquiry techniques, common vocabulary
- « inspectors » Collaboration
  - Double blind assessment? 5?
  - Spliting the assessment? 2 potentials? Sensor vs analyst?
  - Co working with the org rep (still the safety manager?)

TIME CHALLENGES

Frequency (snapshot sampling) : oversight cycle and rules vs RAG best practices

Duration (to establish snapshot): x hours

CONTROL CHALLENGES

- Hybrid tool: resilience « plugged-in » but adapted and mediated (validity?)
- Customized vs generic : How to select amongst the generic set of potential « indicators »?
- Orthogonal approaches of safety performance (potentials vs. Icao framework elements)
- Tool complexity
- Benchmark needed for answer qualification
- Usage of the RAG extension:
  - How many people vs safety manager
  - Self assessment vs external assessment: external auditors
  - Historical trends vs group comparison

OUTPUT CHALLENGES

- Be able to use the output
  - Connection to regulation
  - Connection to a resilience model
  - Seen as one of the performance element in the RBO approach?
- Not loosing data
  - Harmonisation and coding of the qualitative output
- Foster good practices
  - Self esteem reinforcement vs make him/her a hero
  - Positive findings taxonomy
  - Bonus point in the evaluation form?
  - altMOC or new reg tool?
- Identify new audit outcomes
  - Fines or oversight cycle extension?
  - Self improvement : a free gift to create awareness?
  - Insurance discount?

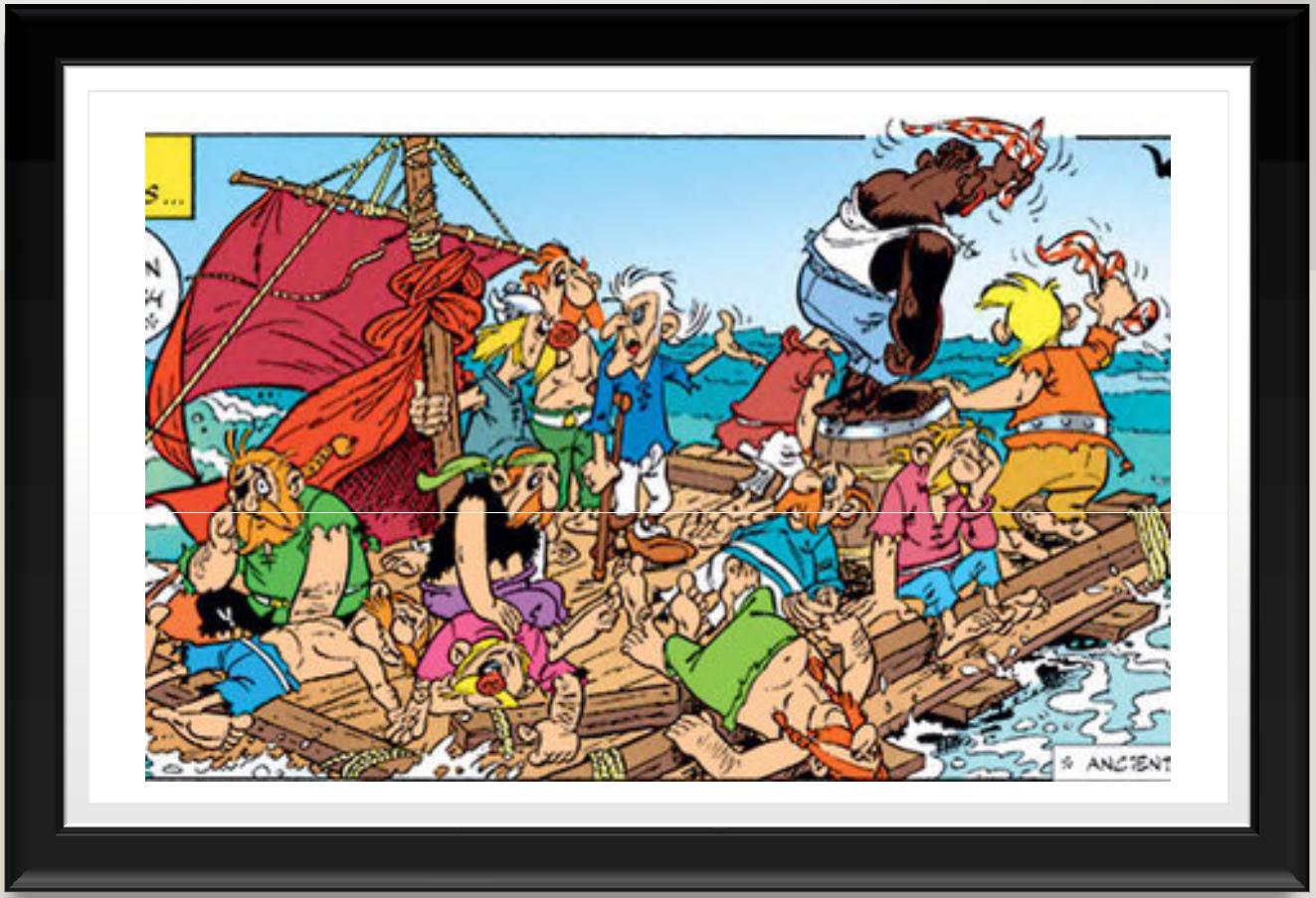
RESILIENCE MANAGEMENT ASSESSMENT

- Can we rule organisational resilience? No, by definition resilience is not normative
- Should oversight body assess org. resilience or rather assess resilience management (the resilience of the strategy put into place to manage the 4 potentials?)
- Niche market : explicit management of the 4 potentials

- « good » resilience potentials management -> synesis state?
- « bad » resilience potentials management -> unacceptable outcomes?

- Resilience potentials management effective practices, maturity scale?

THANK YOU



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