Vietnam Airlines
SẢI CÁNH VƯƠN CAO

Safety 1st

KHÓA HỌC 2021 - 2022

QUẢN LÝ SỰ THAY ĐỔI

CHANGE MANAGEMENT

Giảng viên: Pierre Alba

Ngày 1-2/12/2021

ĐẠT
VHAT
CẤP CHỦ ĐỘNG
4.0

WORK TIMETABLE *(UTC +7)*

- 09H00 - 10H30 : Session
- ***10H30 - 10H45 : Break***
- 10H45 - 12H15 : Session
- ***12H15 - 13H15 : Lunch***
- 13H15 - 14h45 : Session
- ***14H45 - 15H00 : Break***
- 15H00 - 16H00 : Session

A QUICK ROUND TABLE

- Where are you coming from ?
- What is your current job ?
- What are you expecting from this course ?

Active participation is requested

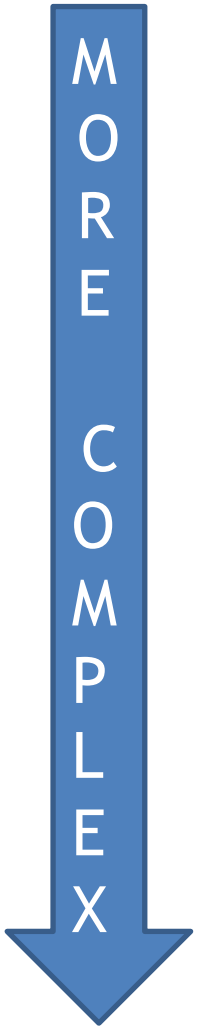
COURSE OUTLINE…

- Day 1 :
  - Some reminders on
    - AO
    - SMS
    - Hazards/Threats/Risks
  - Management of change (theoretical approach)

- Day 2 :
  - Quiz wrap up
  - Practical exercises

WHAT CAN IT APPLY AT ?

- Modification of a current process, procedure, regulation,…
- Introduction of a new process, procedure, regulation,…
- New equipment *(ROPS, AP/TCAS, AUTO EMER DESC,…)*
- New operational environment *(NAT HLA, Polar route,…)*
- New organization, new subcontractors,…
- Company merge
- ….



I HAVE BEEN REQUESTED TO LOOK AT :

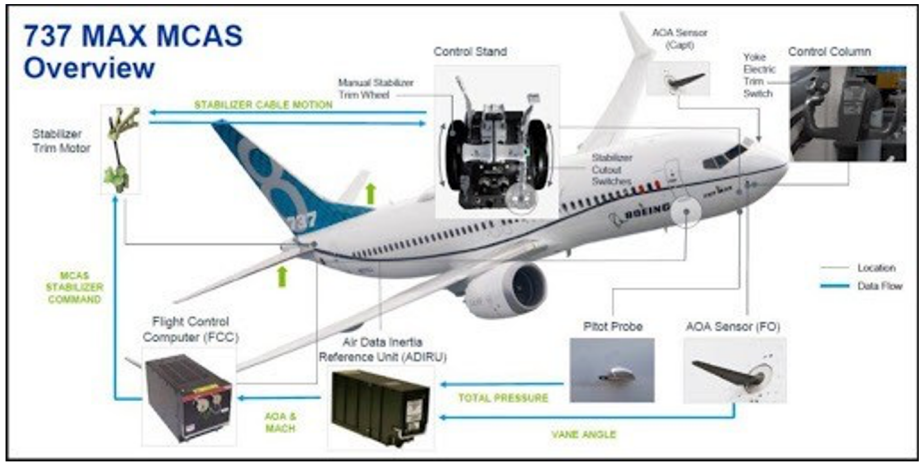
- Changing in workforces
- Layoff staffs
- Strict flight regulation
- Health and safety
- …..

- First, need to :
  - Clarify the framework,
  - The interested parties,
  - …

THE LESSONS OF A SYSTEMIC ACCIDENT

B737-MAX

The initial MCAS *(Maneuvering Characteristics Augmentation System)* design in a few propositions:



- **Questionable design**, with no redundancy on a key flight control system (Technical),
- **No certification oversight** of a flight control new system,
- **Poor reliability and maintenance** of a key safety equipment,
- **No information of the new system given to the pilots** in the Flight Crew Operating Manual,
- **No specific training** for the pilots,
- **No realistic training device**: in the B737 simulators as regard to the “manual stabilizer trim wheel” to a real “off-trim” situation,
- **Poor reporting system:** left stick-shaker activation not being reported in the technical log by the preceding crew in the Lion Air crash.
- …

CORNERSTONE OF THE PROCESS

- Analyse a change and do it or cancel/amend it according to the conclusions of your safety analysis

Not

- Make a change and prove via a safety analysis that the change itself is safe

Ensure safety risk is considered before change is implemented

STATE OF YOUR SMS KNOWLEDGES *(HOW DO YOU ANALYSE THIS EVENT ?)*

- The airplane was climbing, cleared to FL 330
- Reaching the assigned flight level the onboard TCAS system triggered an alarm requesting the crew to descend.
- Unfortunately, due to startle effect, the crew reacted on the wrong side.
- The separation between both aircraft has been estimated at 100 feet.

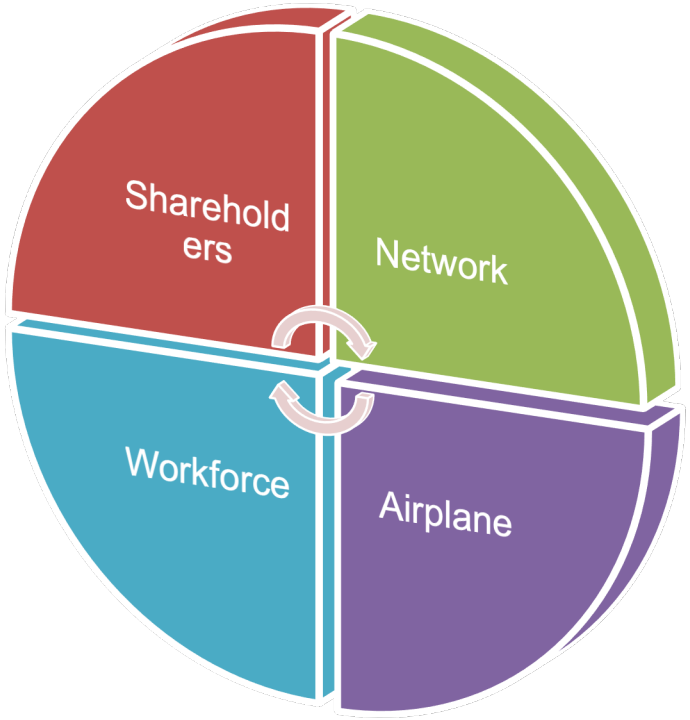
COURSE OBJECTIVE

At the end of this module you will be able to :

- Understand the main principles in Change Management
- Define a Change Management process
- Be able to lead Change Management

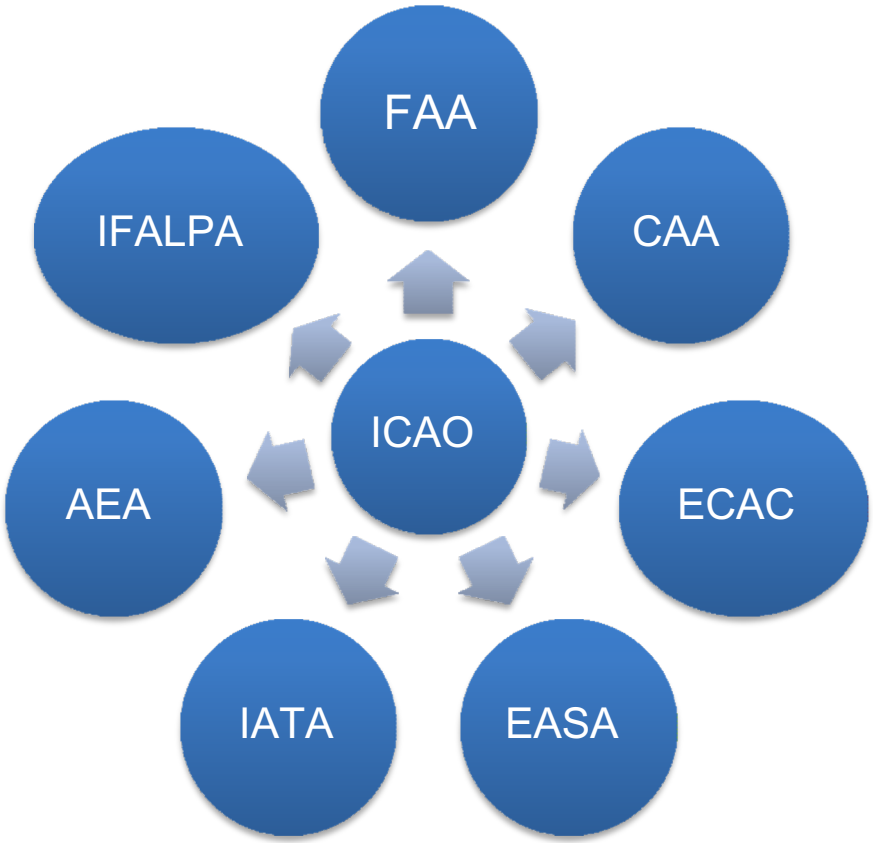
- Day 1 :
  - Some reminders on
    - AO

AIRLINE COMPONENTS

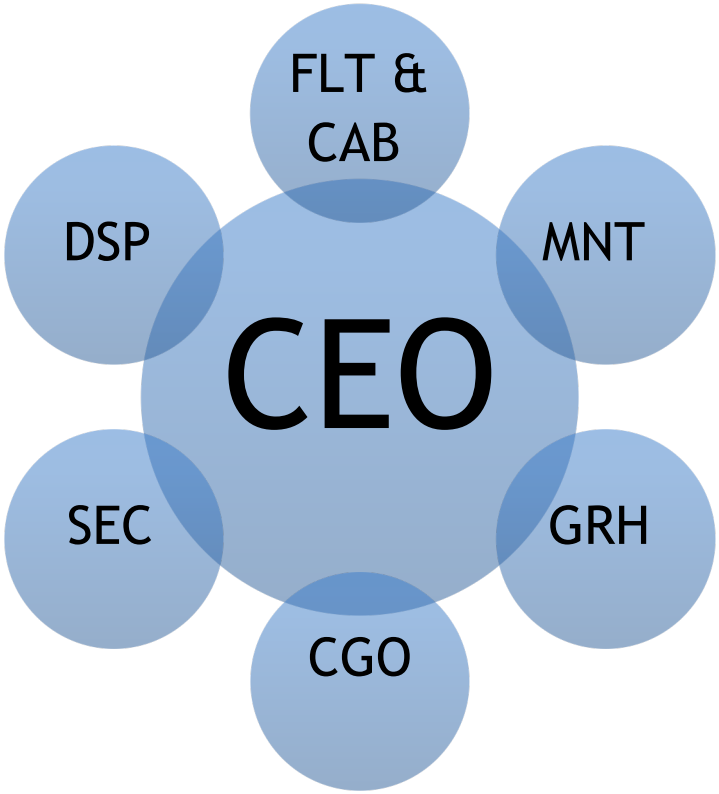


AN AIRLINE IN A COMPLEX WORLD

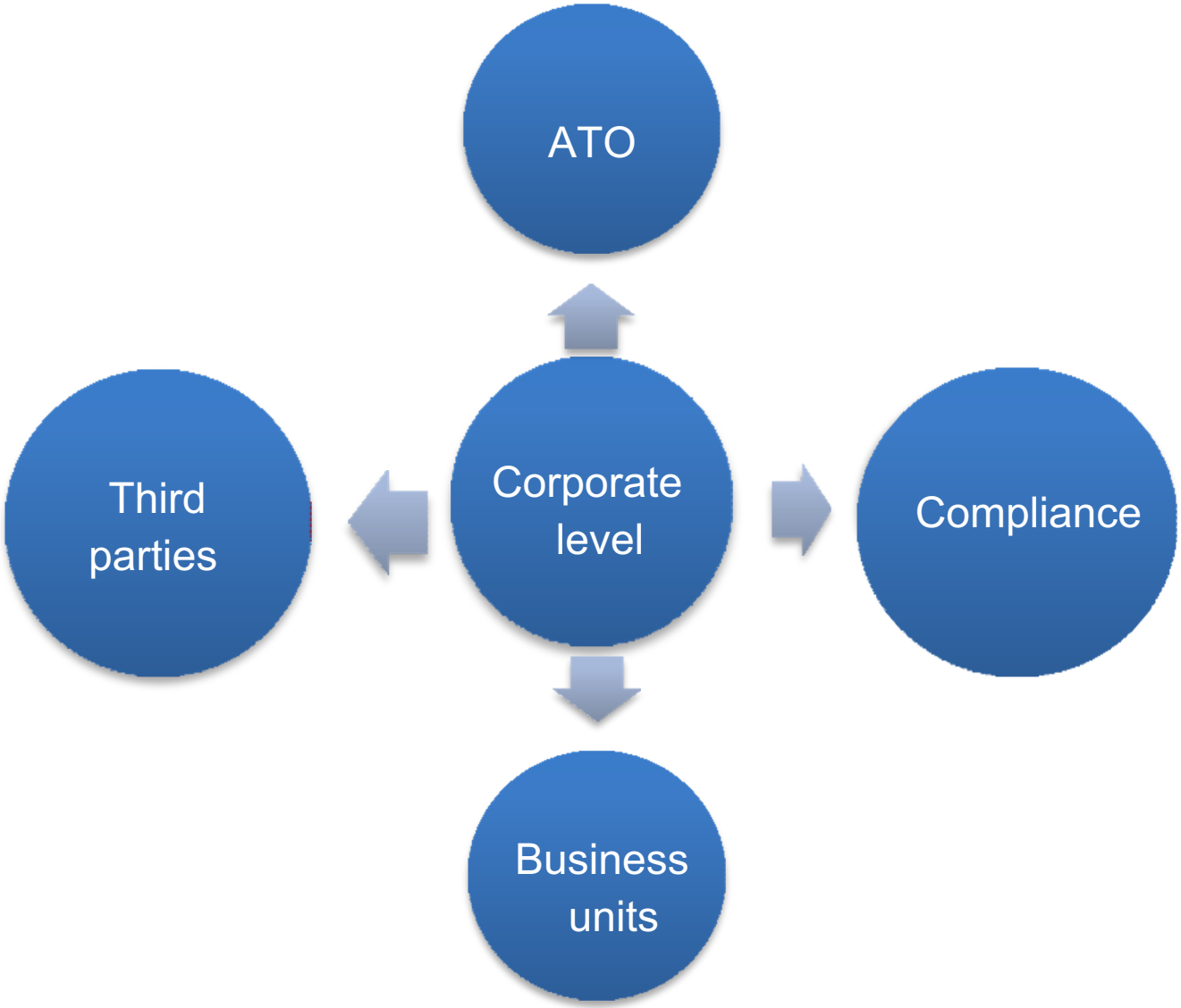
WITH MULTIPLE ORGANIZATIONS



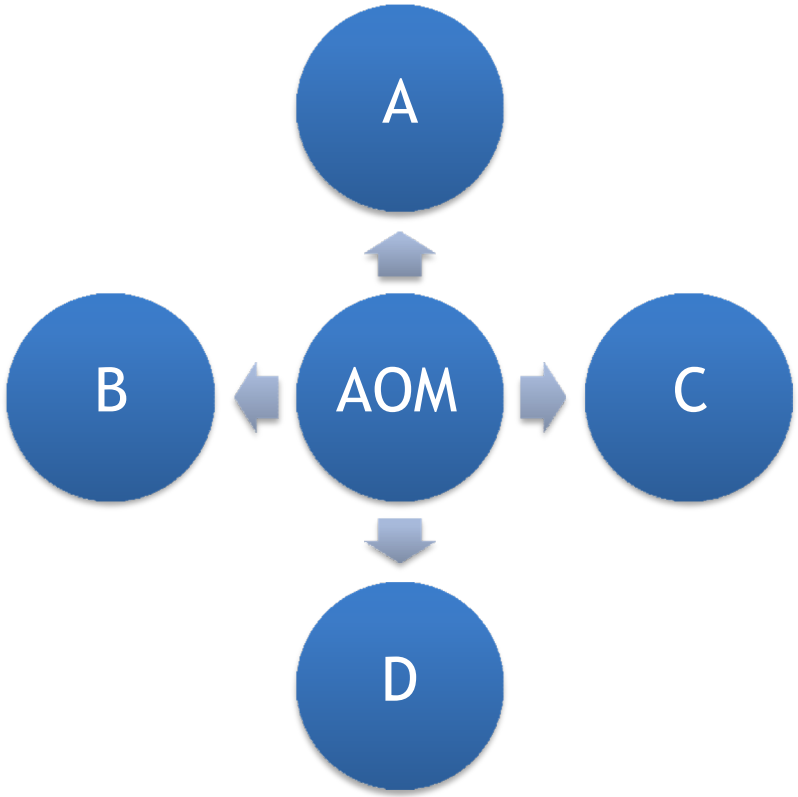
AO STRUCTURE *(MAIN COMPONENTS)*



SMS COORDINATION THROUGHOUT AN AO



DOCUMENTED IN



SMS GOVERNANCE BODIES

- Some events require swift or immediate action whereas other require long-term attention
- Moreover to check its performance and to be efficient the SMS requires indicators (leading and lagging)
- Accordingly, it is necessary to organize the safety management through governing bodies acting :
  - For immediate consultation (short loop)
  - Long term analysis (long loop) *(including e.g. safety analysis, management of change)*

In your organization

WHO *(INDIVIDUAL AND/OR BU)* WILL BE IN CHARGE OF THE MANAGEMENT OF CHANGE STUDY ?

- *WHICH DOCUMENTION DO YOU USE ?*
- *WHICH TOOLS ?*
- *ANY EXAMPLE ?*

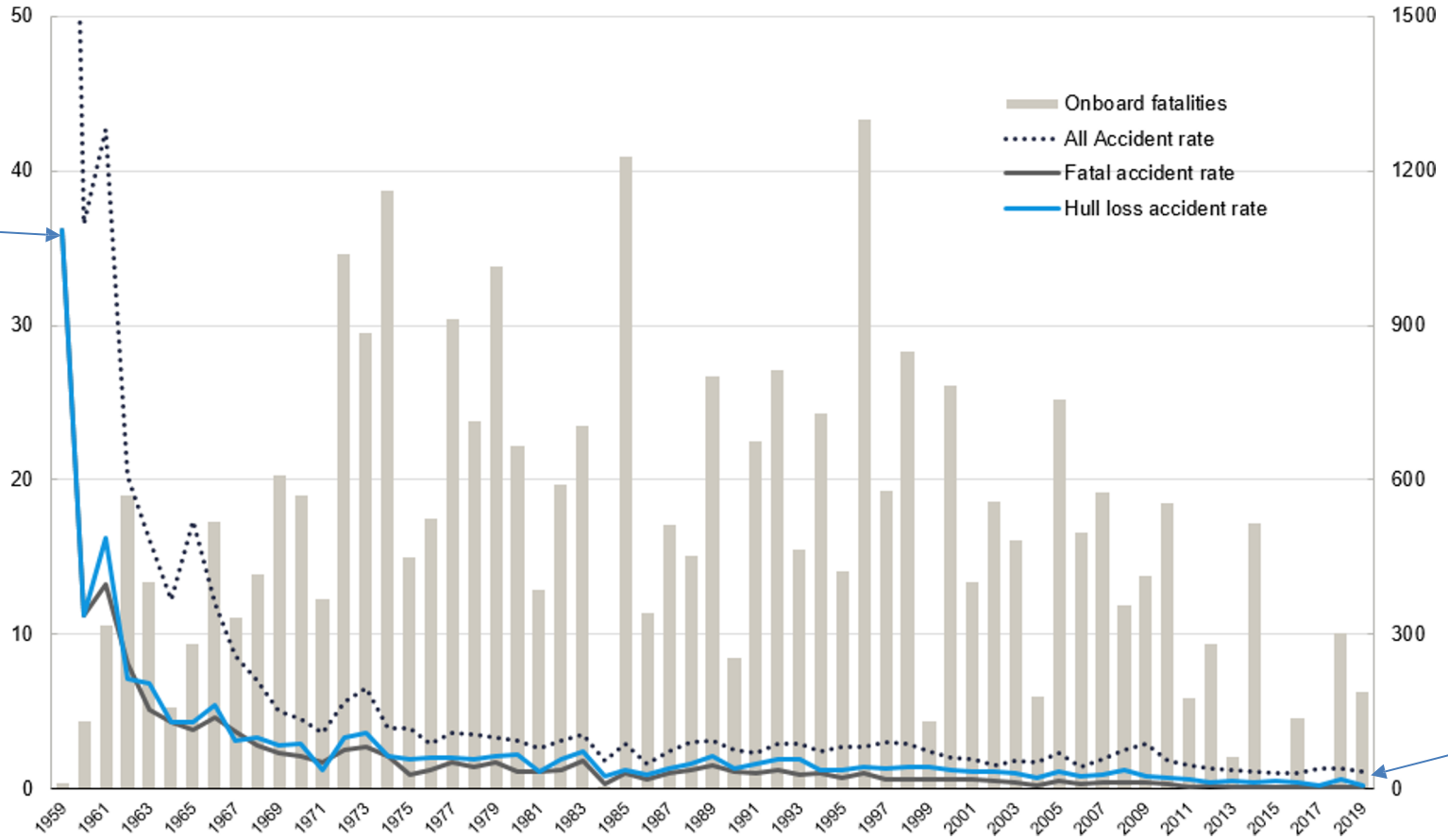
- Day 1 :
  - Some reminders on
    - SMS

HISTORICAL BACKGROUND OF FLIGHT SAFETY

Accident Rates and Onboard Fatalities per One Million Departures (1959-2019)

Annual Accident Rate (per One Million Departures)

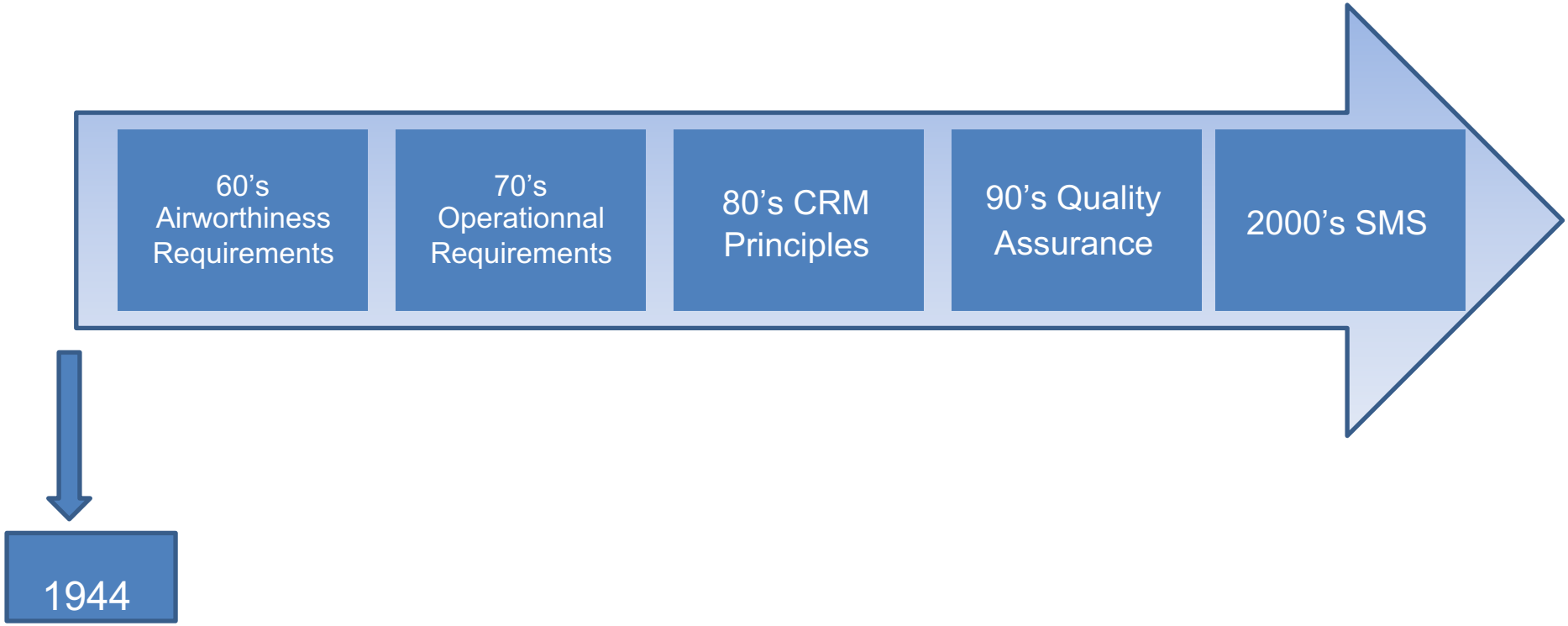
3 7



Annual Onboard Fatalities

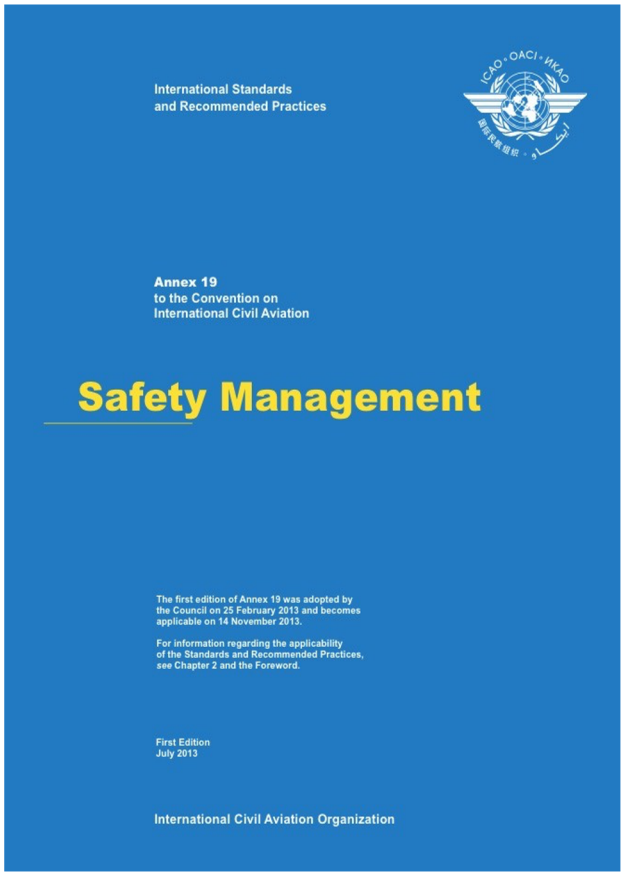
0,2

A RACE TO SAFETY IMPROVEMENT



SMS FEATURES

- A systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures
- Providers are responsible for establishing an SMS
- States are responsible of the acceptance and oversight for providers SMS



SMS FRAMEWORK

Safety Policy and Objectives

1. – Management commitment and responsibility
2. – Safety accountabilities
3. – Appointment of key safety personnel
4. – Coordination of emergency response planning
5. – SMS documentation

Safety Risk Management

1. – Hazard identification
2. – Risk assessment and mitigation

Safety Assurance

1. – Safety performance monitoring and measurement
2. – The management of change
3. – Continuous improvement of the SMS

Safety Promotion

1. – Training and education
2. – Safety communication

REQUIREMENT

SMS regulation require organisations to have a Management of Change process to document and assess the impact any organisational or operational change has on safety

WORDING

This change documentation may come under different titles depending on the organisation and the regulatory requirements but commonly these may be called safety cases, safety risk assessments or aeronautical studies.

- Day 1 :
  - Some reminders on
    - Hazards/Threats/Risks

METHODOLOGY FOR RISK ANALYSIS

- **From accident mapping**

- **Identify**
  - The ”Unwanted events”
  - The ”Unsafe conditions” and related defences

- **Assess and grade the risks…**

- **Prevent**
  - Identify levers of action Airline prevention plan
  - Set up an action plan for each “domain”

Understanding Hazards and Risks

HAZARD

RISK

IN THE REAL LIFE : HAZARD/RISK/THREAT ?

- 30 kt cross-wind at landing
- Slippery runway
- Incomplete flight file
- Incomplete aircraft deicing
- Wrong signage on an airport
- An aircraft flying in icing condition w/o operating anti ice system
- An aircraft flying thru its cleared altitude
- A mid air collision
- A CFIT
- Runway incursions
- Clear Air Turbulence
- Smoke
- Smell of smoke
- Fuel contamination
- A ground personal killed while loading and unloading cargo from a B777
- Canadian gooses
- Engine failure
- Air Conditioning system failure
- Daily check forgot by maintenance staff
- Harsh accent (ATC)

HAZARDS MAPPING METHODOLOGY

- It is recommended to start with the list of generic hazards and to check each one to identify specific hazards and hazardous items to which the system is exposed. *(e.g. W/S, Sand, …relevant for FLT, MNT, GRH ???)*

- The identification of specific hazards and then hazardous elements or events can be based on feedback from experience, but also brainstorming sessions allowing for being more proactive in the anticipation of possible hazardous elements or events. *(e.g. Volcanic ash in Europe vs US)*

- Only the hazards and the hazardous events/elements to which the system is truly exposed have to be kept by the working group. It allows to keep the analysis realistic and not to unnecessarily increase the analysis size.

NEED TO STANDARDIZE THE WORDING

- To speak the same language throughout the AO, and stakeholders

- To build a comprehensive SMS from the hazards identification standpoint.

- To share relevant data

SMS DEFINITIONS*(ICAO)*

Hazard ~ *Condition or object with the potential of causing injuries to personnel, damage to equipment or structures, loss of material, or reduction of ability to perform a prescribed function*

Risk ~ *The assessment, expressed in terms of predicted degree of probability and severity, of the consequence(s) of a hazard, taking as reference the worst foreseeable situation*

DEFINITIONS

- **Threat:** potential for damage or harm to individuals, goods or the environment.
  A threat can be considered as the trigger of an accident scenario in the presence of a **hazard**. It also affects the reliability of our safety principles.

  A threat can be considered as an unsafe condition (or unsafe state).

- **Safety principle**: A safety measure forming part of operations on which the Man/Machine system, in its broad sense, relies and which plays a part either in the prevention of or recovery from an Undesirable Event, or in mitigating the consequences of an accident. It is defined as a hypothesis/assumption that some factor (technology, procedures, training, behaviour, organisation, etc.) contributes to the safety of a system.

DEFINITIONS

Incident: an unforeseen event during the operation of a system or the performance of an activity, the consequences of which are a system malfunction, disruption to the activity or the occurrence of mild material damage.

Regardless of the circumstances, the consequences of an incident are no more serious than minor malfunctions or equipment damage.

PROBABILITY

- Questions for assessing the probability of an occurrence :
  - Is there a history of occurrences like the one being assessed, or is it an isolated event ?
  - What other equipment, or similar type of components, might have similar defects ?
  - What number of front-line actors must follow the procedure(s) in question ?
  - How frequently is the equipment or procedure under assessment used ?

MEANING OF LIKELIHOOD

Likelihood	Meaning	Value
Frequent	Likely to occur many times (has occurred frequently)	5
Occasional	Likely to occur sometimes (has occurred infrequently)	4
Remote	Unlikely to occur, but possible (has occurred rarely)	3
Improbable	Very unlikely to occur (not known to have occurred)	2
Extremely Improbable	Almost inconceivable that the event will occur	1

SEVERITY

Questions for assessing the severity of an occurrence :

- How many lives are at risk?
  - Employees
  - Passengers
  - Bystanders/Passerby's
  - General public
- What is the **environmental impact?**
  - Fuel spillage, radio-active substances,….
  - Physical disruption of natural habitat

....

- What is the severity of the property or financial damage ?
  - Direct operator property loss
  - Damage to aviation infrastructure
  - Third party damage
  - Financial or economic impact for the State
- Are there organizational, management or regulatory implications that might generate larger threats to public safety ?
- What are the likely political implications and/or media interest ?

MEANING OF SEVERITY *(OF CONSEQUENCES)*

Severity	Meaning	Value
Catastrophic	• Equipment destroyed • Multiple deaths	A
Hazardous	Large reduction is safety margins • Serious injury • Major equipment damage	B
Major	Significant reduction is safety margins • Injury to persons • Serious incident	C
Minor	• Nuisance • Operating limitations • Use of emergency procedures • Minor incident	D
Negligible	• Little consequence	E

RISK ASSESSMENT

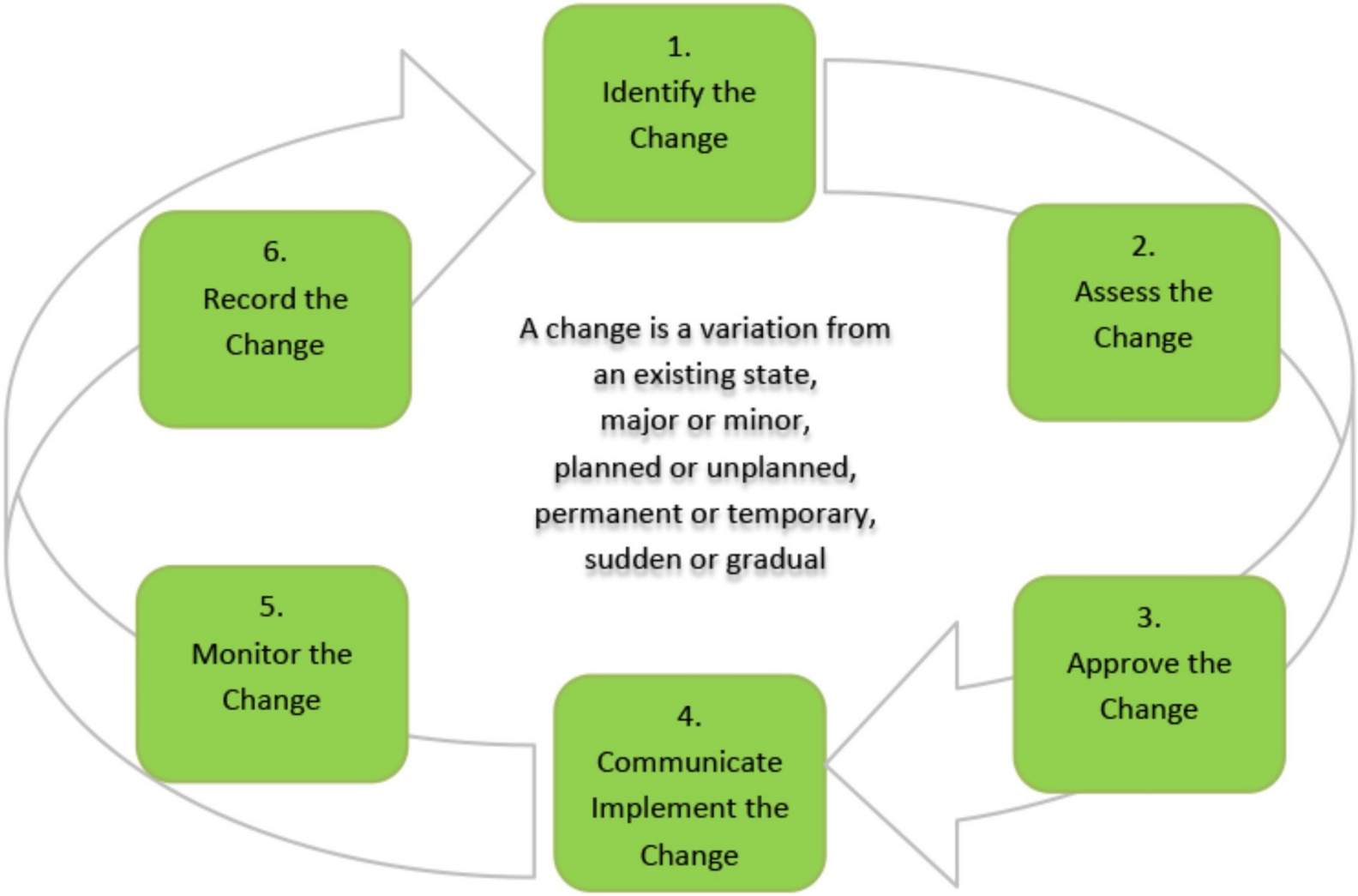
Probability and Severity combined to calculate the risk index

Probability		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

- Day 1 :

  – Management of change (theoretical approach)

WHAT DO WE CONSIDER AS A CHANGE ?



CHANGE MANAGEMENT

ENCOMPASSES VARIOUS DOMAINS SUCH AS :

- Organization *(who is in charge of what from kickoff to the follow up)*
- Hazards identification *(for each discipline)*
- Accident scenario identification
- Risk analysis *(at Corporate level)*
- …..

According to the tools and processes describe in the Corporate documentation

CHANGE MANAGEMENT

- Changes within an organization can create hazards which can affect the safety of its operations.

- Changes can be initiated to meet business demands, structural or operational changes:
  - New regulations
  - Airlines merges
  - New buildings
  - New staff
  - New subcontractors
  - Fleet changes (planes phase in/out)
  - …

OVERVIEW OF CHANGE

Change can:

- Create “new” hazards/threats
- Invariably create the potential for unintended consequences
- Impact effectiveness of current barriers
- Impact reporting system, procedures, policies
- Impact some performance indicators
- …….

CHANGE MANAGEMENT

Must be a **documented process** that will:

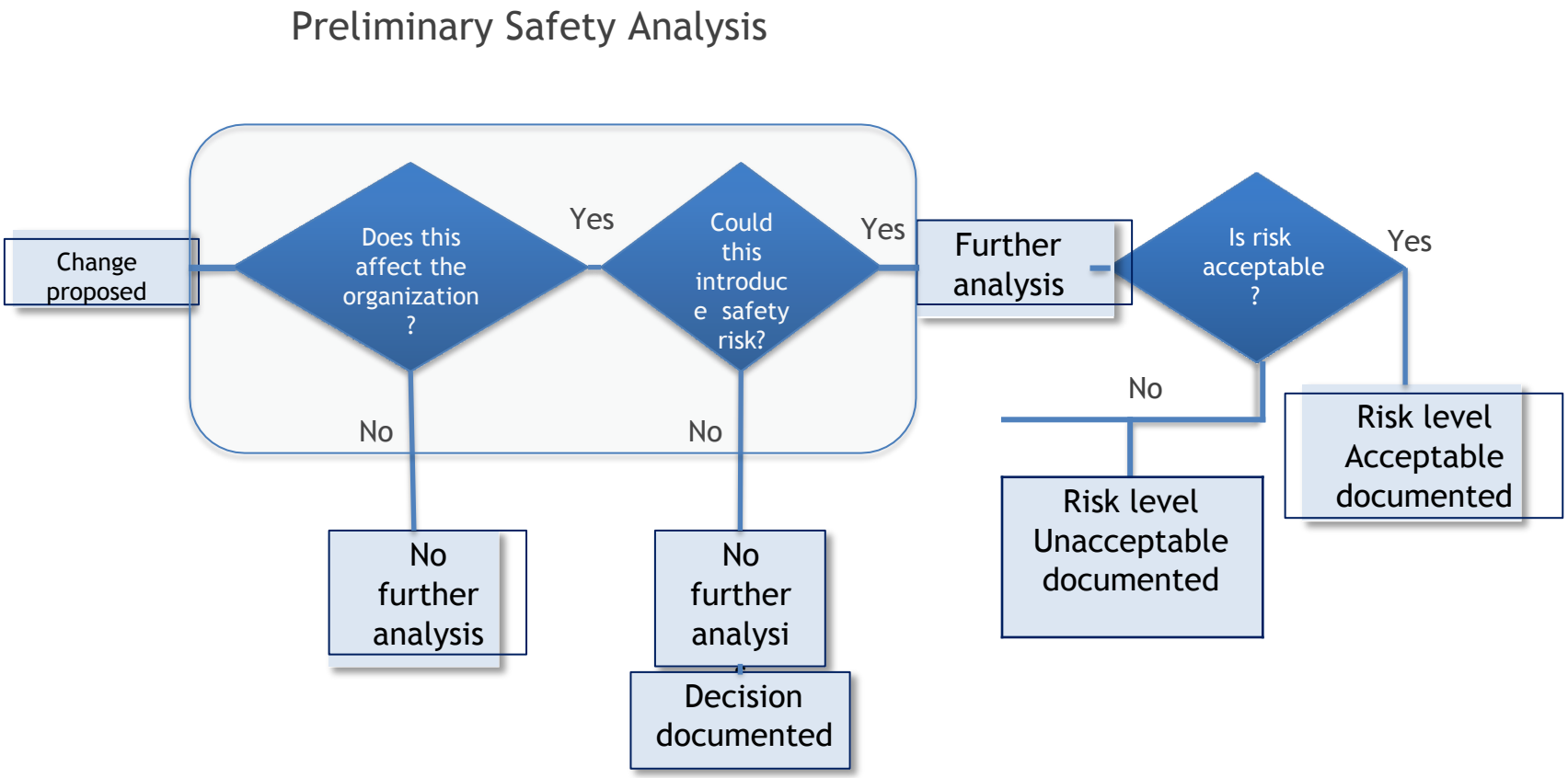
- Proactively identify associated safety risks in all areas (operational, technical, resources, organizational,…),
- According to your own SMS documentation : accident mapping, hazards log, risk matrix,….

LEVEL OF CHANGE

Two levels should be considered:

- Incremental changes : *Focused on identifying and fixing weaknesses*
- Deep changes

INCREMENTAL CHANGE: EXAMPLE OF STRUCTURE



DEEP CHANGE

- Focus is on major change
- New ways of thinking and behaving
- May be required for airline survival
- May need external input

MANAGING RESISTANCE TO CHANGE

- Identify individuals
- Identify reasons for resistance
- Plan options to address issues identified
- Develop scenarios
- Discuss principles and give options for feedback

MANAGING RESISTANCE TO CHANGE

- Create ‘necessity’ for change
- Take opinions into account
- Explain plan, reasoning and rationale
- Explain benefits versus cost
- Allow for adaptations/ customization

CHANGE MANAGEMENT

STEP BY STEP

STEP 1: DEVELOP THE CASE

Key activities

1. Establish the background and context that frame the case.
2. Develop the case for change.
3. Define the statement of need.
4. Determine the scope of change and the boundaries of the project .

STEP 2: CONDUCT RISK AND OPPORTUNITY PLANNING

Key activities

1. **Team make up** to conduct the risk planning.
2. Develop your **Risk Management Plan** (RMP).
3. Present the RMP to the decision maker for approval.
4. Extract the risk treatment strategies and insert these as tasks into the project plan.
5. **Re-evaluate** your proposed risk treatment strategies to identify any new risks introduced as a result.

STEP 3: PREPARE THE PROJECT PLAN

Key activities

1. Appoint a **project director** to be accountable for overseeing and monitoring progress.
2. Appoint a **project manager** to be responsible for implementing the project plan.
3. Develop the **project plan**, including by calculating the resources needed to implement the plan. Seek confirmatory approval if the scope or context has changed from Step 2.
4. Consider the 'people' aspect of change, the current culture and internal barriers to change.

STEP 4: IMPLEMENT THE CHANGE

Key activities

1. Undertake the tasks and activities in the project plan.
2. **Report progress** to the project director.
3. Continually **communicate with staff** and other stakeholders.
4. Review progress and performance, ensuring that the risk treatments listed in the RMP (Step 2) have been implemented and are complete.

STEP 5: ONGOING MONITORING AND REVIEW

Key activities

1. **Check regularly** to ensure the ongoing deliverables are clear and understood.
2. Establish a means of **receiving feedback**, based on constant communication.
3. **Monitor feedback** and determine actions to continuously improve the project.
4. **Measure the success** of any actions taken.

SAFETY STUDY

- Safety Studies are guidelines for change management
- Safety studies must evaluate acceptable risk and the need to implement new risk control strategy

All that stuff has to be done and documented in accordance with policies, processes and tools already used in the organization

HOW TO REALIZE A SAFETY STUDY (ANALYSIS)

Follow a plan…	**…To ask the relevant questions**
• Study framework	What are the disciplines, processes, individuals, tasks impacted?
• Stakeholders	Who are the relevant people for the working group ?
• Data	What kind of data or REX have we to gather?
• Benchmark	What about the same subject in others airline ?
• Gap analysis Scenario	To look for accident scenario, threats,… ?
• Risk evaluation	Likelihood and Severity? ?
• Action Plan	In order to allocate the resources and to manage the follow up

SAFETY STUDY

1. SMS manager should be responsible for **safety study production**

1. SMS manager should be responsible for the **adequate training** for the personnel in charge of Safety Studies

SAFETY STUDY

STEP BY STEP

STEP 1 : ENVIRONMENT EVALUATION

Evaluate the need for a safety study :

1. New technology, new facilities, …
2. New procedures
3. KPI's trend

STEP 2 : NOTIFICATION

SMS Manager to decide to launch a Safety Study :

1. Notification to all parties
2. Scope definition
3. Output expected
4. Follow up process

STEP 3 : SAFETY STUDY SCOPE

Risk Management as baseline :

1. Is this the first occurrence of such a change?
2. Does that change have a direct impact on flight safety?
3. Is all the industry concerned?

STEP 4 : SAFETY STUDY ENVIRONMENT

Interfaces identification :

1. Common processes and procedures
2. Common personnel
3. Impacted areas

STEP 5 : ANALYSIS SHEET

Prepare a structured approach :

1. Define a preliminary questionnaire
2. Who will be involved?
3. At which level?

STEP 6 : DEFINE PRECISE INVESTIGATIONS

Structured methodology :

1. Who to consider, at what operational or none operational position?
2. Which regulatory background?
3. Where are my experts?
4. What are the supporting documents?

STEP 7 : CONSIDER THE GLOBAL ENVIRONMENT

Benchmark :

1. Internal
2. External
3. What are the assumptions or factors to consider?
4. Past related data (incidents, feedback, reports)
5. Lessons learned

STEP 8 : CONSIDER THE TIMELINE AND DEADLINES

Meet the target dates :

1. Alternative solutions or options
2. Are their other changes ongoing at the same time?
3. New opportunities

STEP 9 : ANALYSIS OF THE CHANGES

Minor or substantial amendment :

1. By nature each change will request flexibility and adaptability
2. Gap analysis
3. Barriers to change identification

STEP 10 : TARGET ANALYSIS

The target of the change must de evaluated : Added value of the change vs new risk level

STEP 11 : TRANSITION ANALYSIS

The best way to new situation :

1. Technological options
2. Human Factor
3. Procedures, training, promotion

STEP 12 : RISK ASSESSMENT

Risk must be accepted in the new situation :

1. Bow tie
2. Data analysis
3. Risk assessment
4. Mitigation …

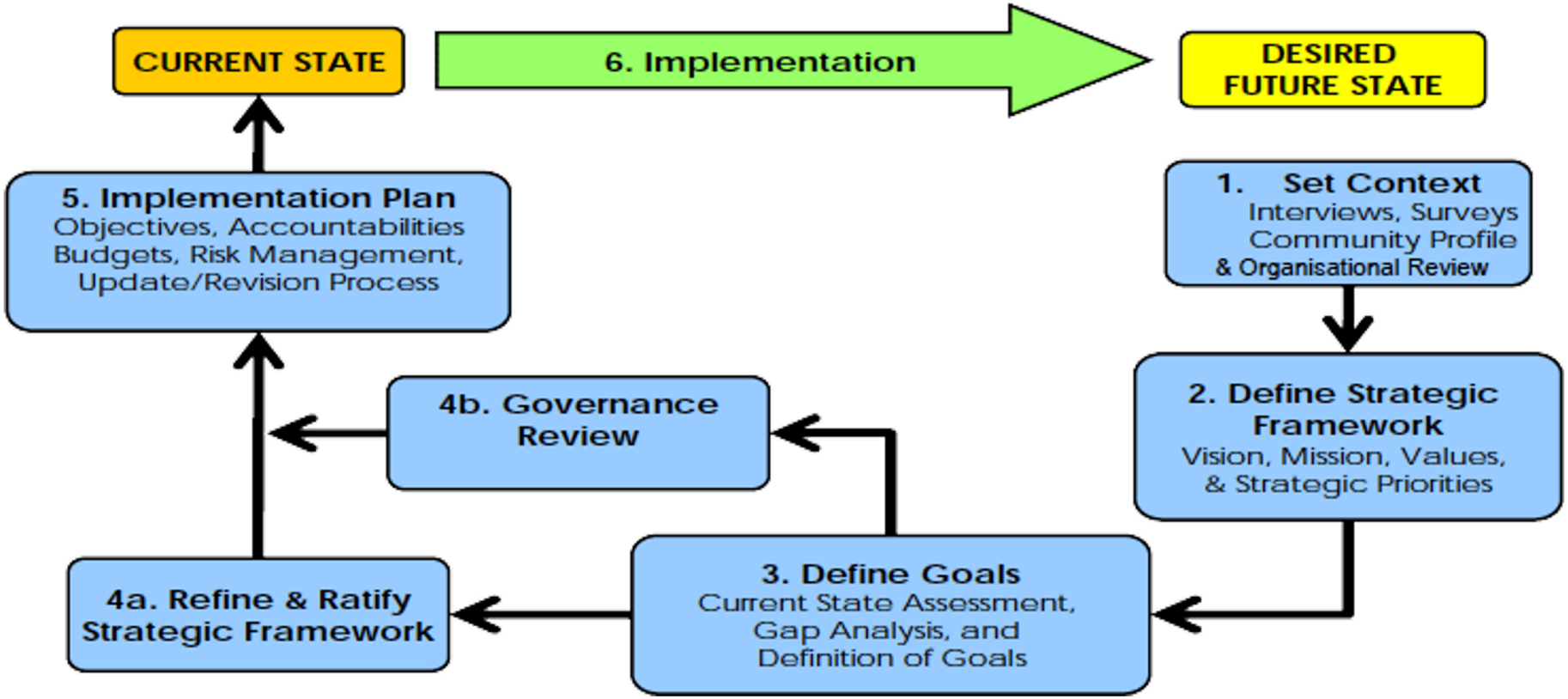
STEP 13 : CONCLUSION

Change management outcomes must be validated by SMS Manager :

1. Validation
2. Action plan
3. Follow up
4. Communication

TO WRAP UP

In a nutshell



CHANGE MANAGEMENT

For Day 2, make up small groups and work on the following Case studies to propose and justify safety recommendations:

- Implementing pushback operations
- Incoming aircraft with APU failure
- Co-activity during a schedule turnaround (catering & jetway positioning)
- Operations in adverse weather (sand)
- Runway extension with continuous aerodrome operations

COURSE OUTLINE…

- *Day 1 :*
  - *Some reminders on*
    - *AO*
    - *SMS*
    - *Hazards/Threats/Risks*
  - *Management of change (theoretical approach)*

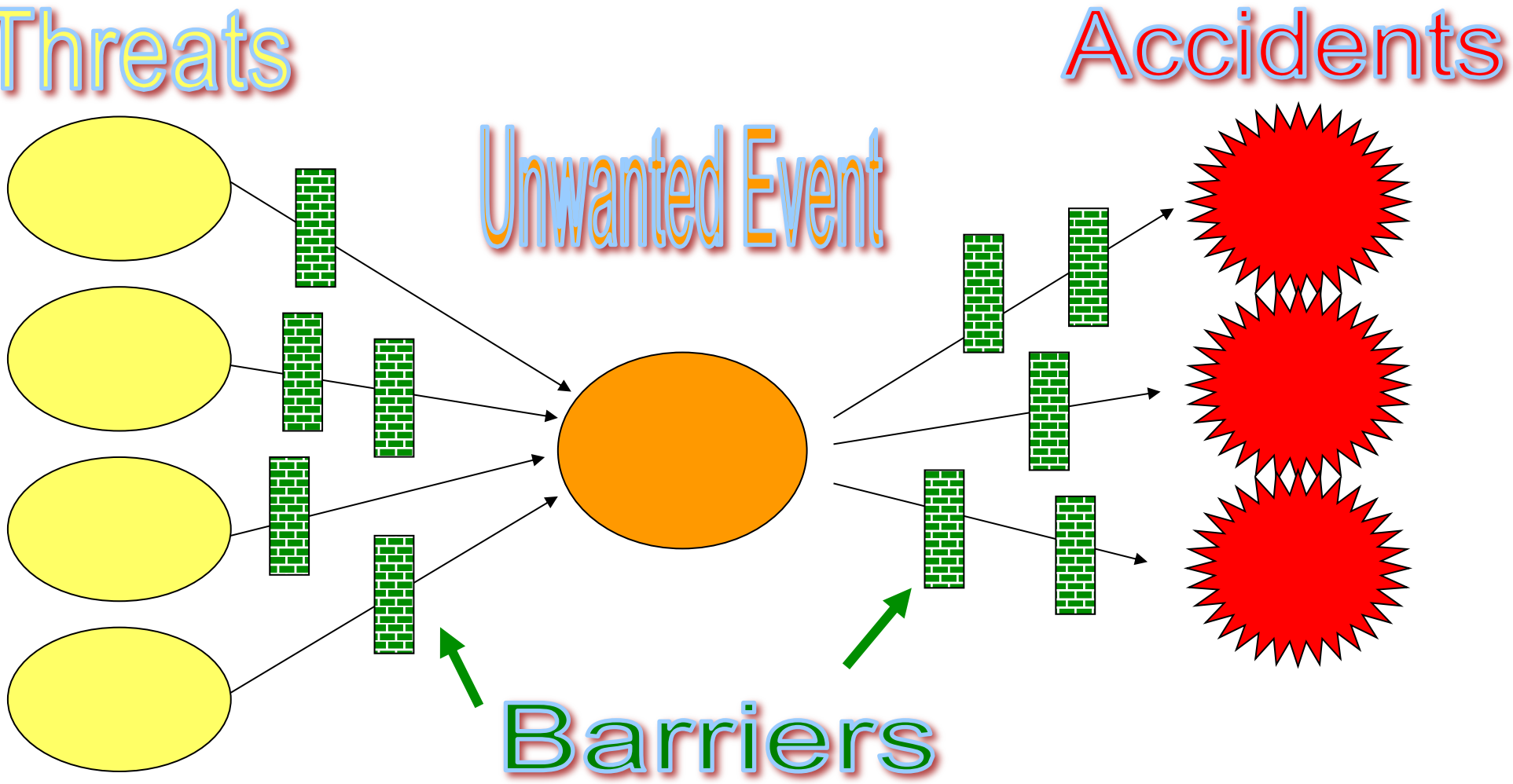
- **Day 2 :**
  - **Quiz wrap up**
  - **Practical exercises**

Feedback Day 1 : MOC (Shareholders)

- MOC is part of SMS which is related to **SAFETY**
- This issue is more politics than safety
- Difficulties to limit the scope of the study
- Difficulties to analyze the potential accident scenario : bankruptcy ? Unrelevant requests ?
- Currently how do you consider a shareholder is robust enough ? (Money only ?)

Objective ? : define the criteria to choose a (new) shareholder

Bow-Tie model



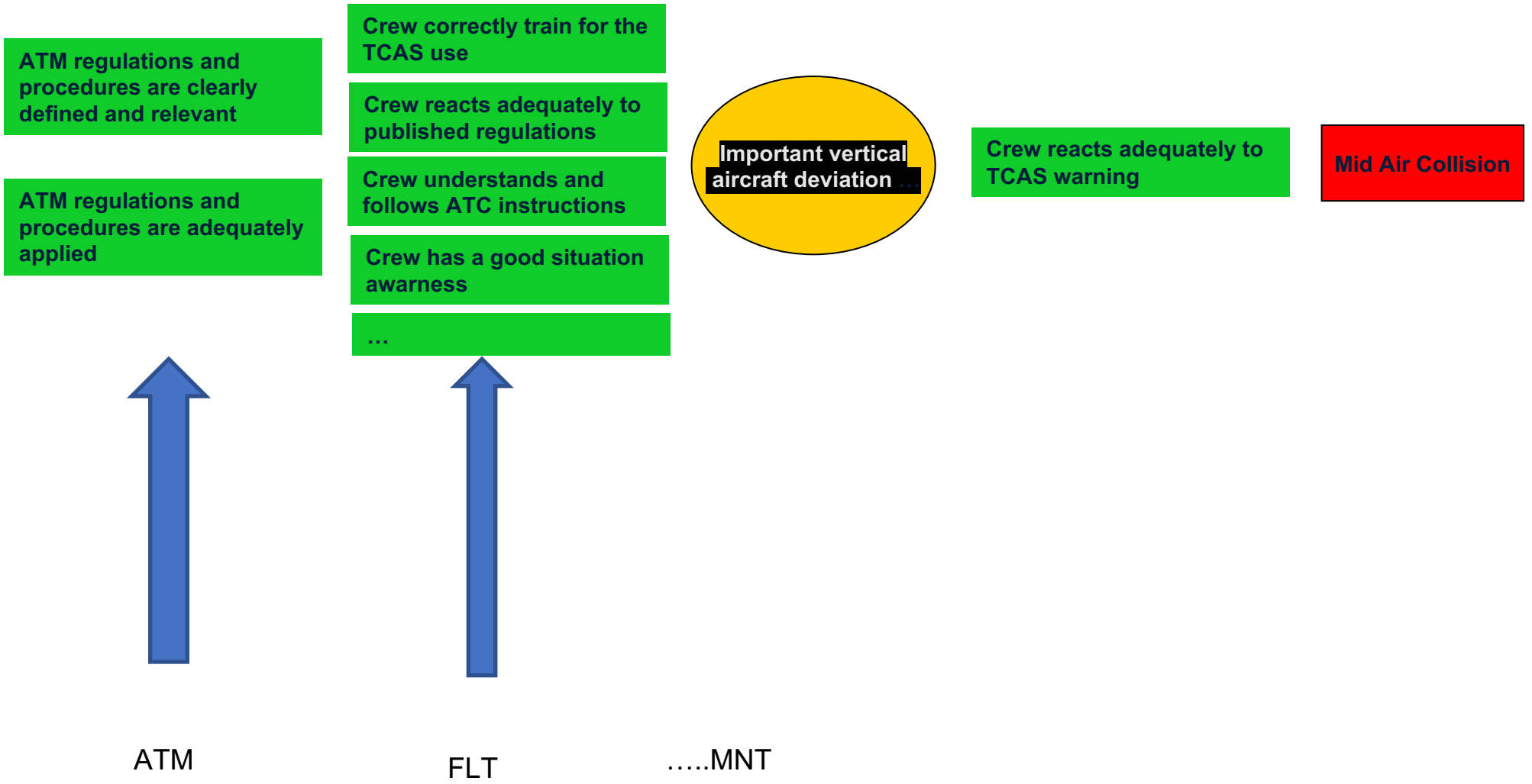
CHANGE MANAGEMENT SHOULD FOCUS ON

- Developing the case
- Conducting risk and opportunity planning
- Preparing a project plan
- Implementing the change
- Monitoring and following up

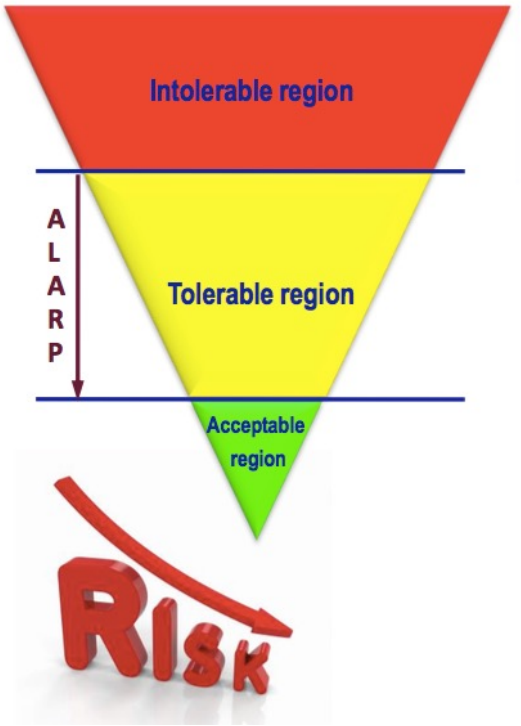
DEMO : To Operate some A/C without TCAS

- Study frame : which fleet, how long (on which time period), network ?
- People involve : MNT/FLT
- Benchmark
- Data collection : ATC or Pilots reports
- KPI’s : number of MAC (today) and objective during operation
- Accident scenario/UE/Barriers

UNWANTED EVENT *(EXAMPLE)*

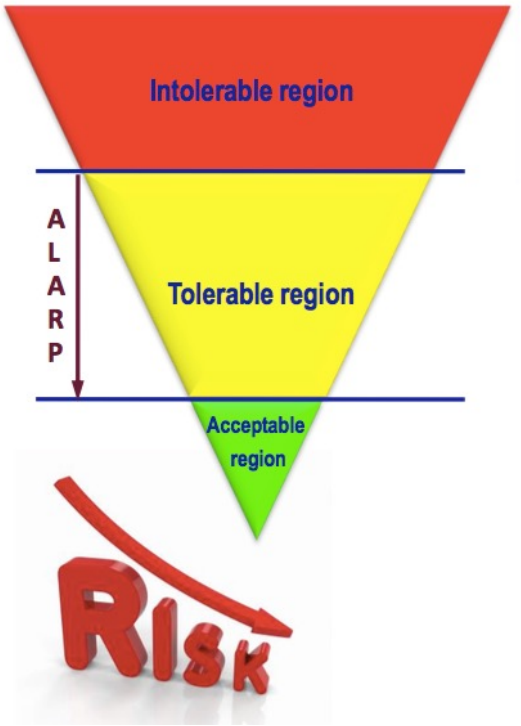


SAFETY RISK TOLERABILITY *(CURRENT OPS)*



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

SAFETY RISK TOLERABILITY *(DURING THE CHANGE)*



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Improbable	2	2A	2B	2C	2D	2E
Extremely improbable	1	1A	1B	1C	1D	1E

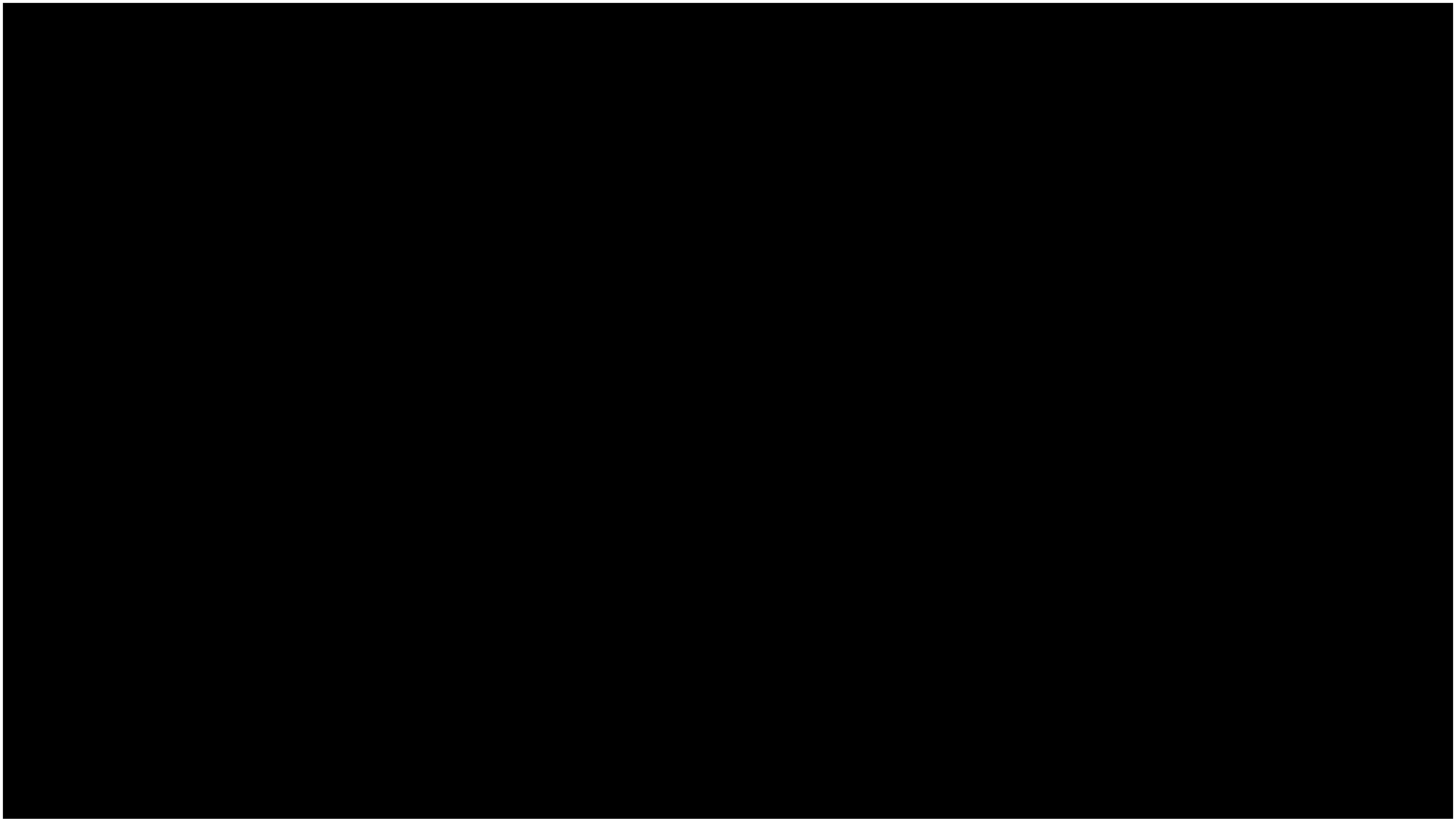
WE MOVE FROM YELLOW TO RED ZONE

- Action plan :
  - Cancel operations,
  - Limit the number of A/C,
  - Only for flights with instructor,
  - Only on some specific route
  - ……..

  And : evaluation after few flights, weeks,….

Exercice 1

Implement Pushback Operations



DEVELOP THE CASE

- New operations will be introduced at only home base station as well as some out stations.
- To introduce Pushback Operation in Ground Operation must be considered as a **deep change** as Pushback operations have never been performed previously.
- First, we must appoint the **responsible for this safety study** (the SMS manager) and evaluate the need for a safety study. Who will be involved, ground operators, pilots, maintenance, GSE maintenance, training)
- Comparison must be conducted between previous and new situation, including identification of all the interfaces between actors involved and/or impacted by the new procedure.
- Personnel concerned will be:
  - ➢ Pilots
  - ➢ Maintenance
  - ➢ Ground staff at concerned stations
  - ➢ GSE maintenance staff

CONDUCT RISK AND OPPORTUNITY PLANNING

- Risk management as a baseline, using guidance (CAA, ICAO, etc..) and using previous risk assessment that have been done by other Airlines. Pushback Operation is a common operation and plenty of studies have been done on this topic, the idea here is to use risk assessment and adapt it to our airline and our boundaries and intrinsic risks.
- Risk assessment must be global and consider : safety issues (ground collision, jet blast), maintenance issues (nose landing gear damage), injuries, surface conditions difficulties, …
- The mitigation measure has still to take into account interfaces to ensure not creating new risks. Then Key Performance Indicators must be put in place to follow with those changes and mitigation measures, using predictive and proactive KPIs in addition to the reactive ones.

PREPARE A PROJECT PLAN

- Type of equipment selection and acquisition,
- Team familiarization with new equipment, including maintenance, GSE maintenance teams,
- Training program definition.

IMPLEMENT THE CHANGE

Training of the crew, the Safety Department and every personnel involved in this new activity is an important part of the strategy. Finally, the communication will allow personnel to understand the reason of all these changes and avoid reluctance to change.

- Ground staff communication (push back responsibilities, wing walkers, tractor driver),
- Pilots communication,
- Try and test operations to validate the risk mitigation,
- Backing procedures

MONITORING AND REVIEW

- KPI’s identification
- Audit and inspection program
- Review meetings
- Risk assessment follow-up

Exercice 2

Incoming aircraft with an APU failure

(During the next half year period, you dispatch a B737 with that technical deviation)

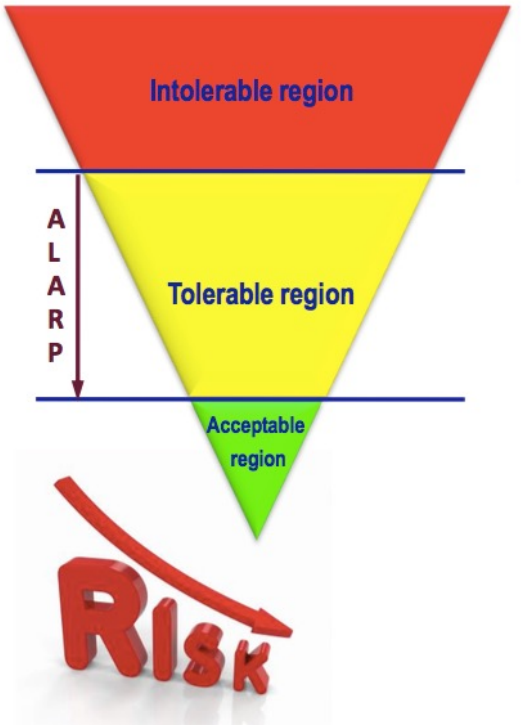
OBJECTIVE

- Determine the accident scenario
- Assess the likelihood and severity of this scenario
- Describe the Unwanted Event (what we want to avoid) related to this scenario
- Draw an actions plan

SAFETY ISSUE

- Accident scenario : Personnel ingested into engine .
- Unwanted Event : arrival of engines running aircraft with “Obstacle” in the Equipment Restraint Area (ERA)
- Risk assessment :
  - Severity : Catastrophic
  - Likelihood : every flight

SAFETY RISK TOLERABILITY



Risk probability		Risk severity				
		[illegible]	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

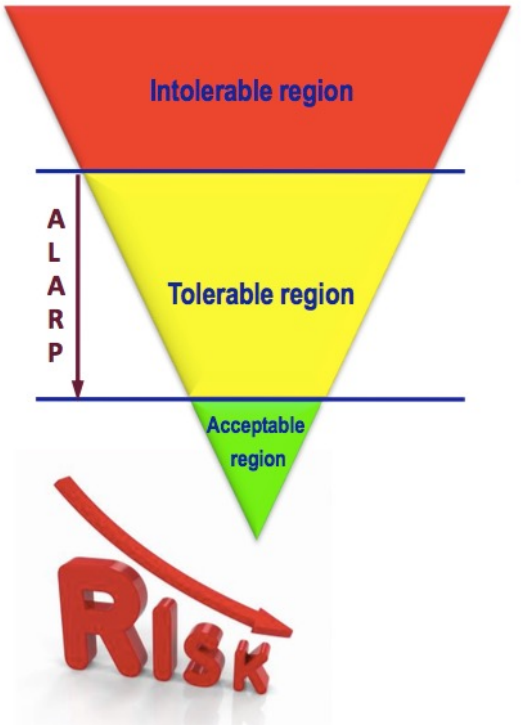
TO CLARIFY OR IMPROVE

- Procedures to keep all personnel/objects away from aircraft until the GPU has been plugged and all the engines have been shutdown.

- Need to know what the aircraft procedure is. Which engine will still be operating – will it always be this one? How will this be assured – verification check, communication procedure/phraseology.

- GPU procedure must fit with aircraft operation – Personnel has to approach aircraft from side with no engine running.

SAFETY RISK TOLERABILITY



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FOLLOW UP

- Still a risk but reduced probability due to “robust” procedure : 2A.

- Acceptable with management decision. Needs close monitoring and vigilance! *(Review after 1 week and thereafter monthly for instance)*

Exercice 3

Co-activity during a schedule turnaround

Safety Issue : Ground movements vehicles

- Analyze and list :
  - Risks
  - Undesirable Events
  - Hazards
- Propose actions :
  - Prevention measures

PREVENTION MEASURES

- Keeping apart the flows of vehicles and pedestrians,
- One-way traffic lanes,
- Restricting the number of vehicles,
- Coordinating all actors,
- Work organization taking into account foreseeable travel times,
- Supervision of reverse movements by a person on the ground,
- Speed limiter, driving-aid-devices (for example a video camera for moving backwards),
- Filter catalytic converters,
- Closed driving cabin,
- Maintenance of vehicles, regular checks.
- High-visibility-jackets,
- *Safety shoes,*
- *Ear protectors,*
- *Safety belt of the vehicle*

Exercice 3 bis

Co-activity during a schedule turnaround

Docking of catering truck (door 1R)
after connection of the jetway (door 1L)

WHAT TO DO

- Select stakeholders, experts,….
- Select SOP’s and processes involved
- Benchmark
- Collect data : PIREP, Audits, Surveys, Observations,…
- Analyze the threats associated to the change

THREATS AND ***CONSEQUENCES***

1. Exits 1L et 1R blocked ***Impossible to evacuate via the front doors***
2. Cabin Crew managing the disembarkation via door 1L ***Front cabin crew unavailable for Safety tasks***
3. Trolleys movements in the front galley during disembarkation ***Pax or crew injuries***

THEN

- Risk analysis
- Action plan
- KPI
- Effectiveness

EXERCICE 4

Operations in adverse weather conditions : sand

(CAI, BEY, NIM, NKC, PEK,…)

DETAILLED DECRIPTION OF THE ISSUE

-What is the **hazard/threat**
-Identify le **scope**
-Gather the relevant **procedures** if any

=> Question : what are the flight safety impact ?

- Sharp description of phenomenon
- Relevant Operations (GRD et FLT)
-Stopovers (CAI, BEY, NIM…) et relevant airplane
-Documentation (FLT, MNT, DSP, GRH,…)

WHO ARE THE STAKEHOLDERS

- *FLT: Pilots/FSO/Training*
- *ATO*
- *CAB*
- *DSP*
- *MNT*
- *GRH*

COLLECT DATA

Feedback on this issue or a similar one (volcanic ash):

-ASR

-Audits

-Lessons learned (benchmark)

BENCHMARK

How do the others proceed

-Avoid to reinvent the wheel

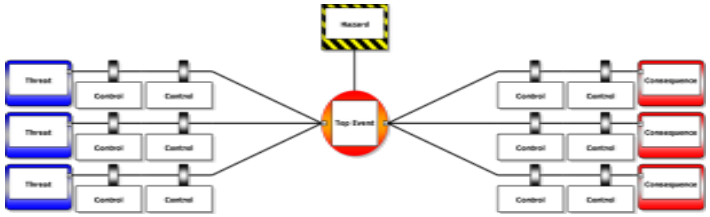
-Go straight to relevant procedures

Middle East airlines :

-Emirates : no specific requirements

-Etihad : sand storms have to be avoided.

WORST CASES AND THREATS LIST



-Track relevant **bowties**

-Identify critical **scenarii**

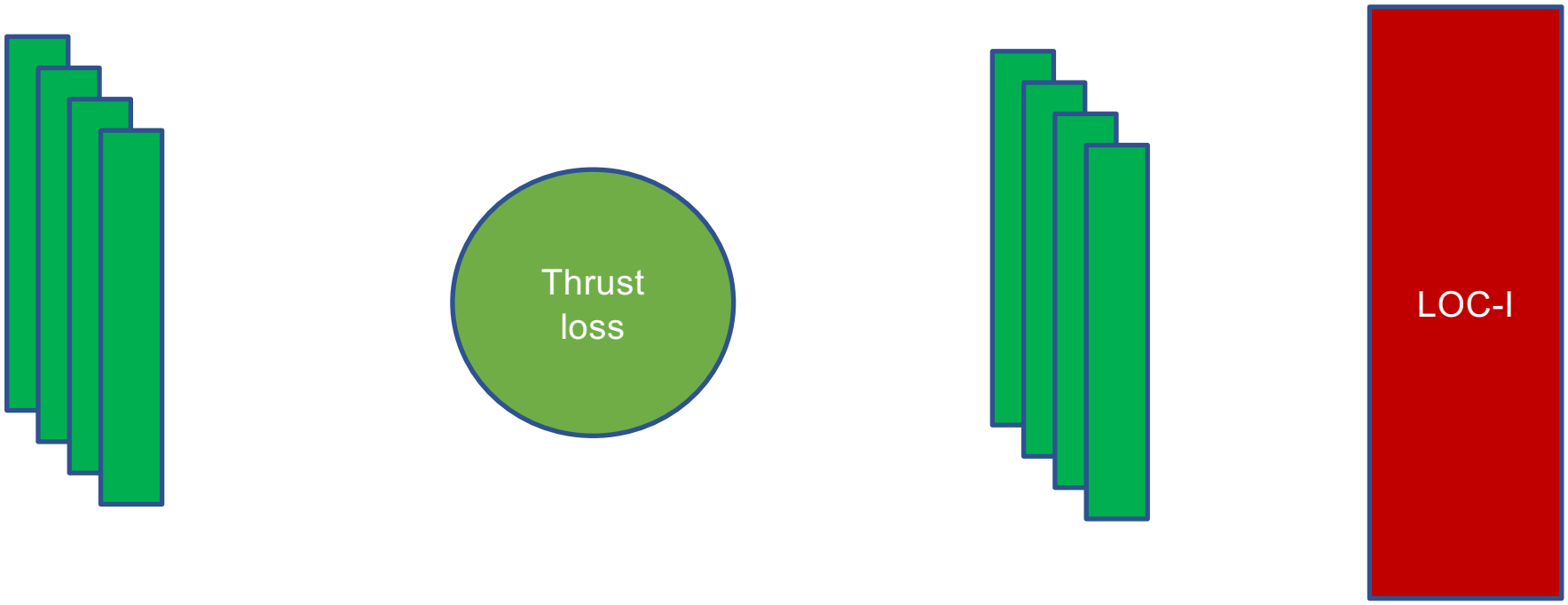
-Look for **hazards/weaknesses** in each scenario

-Analyse the potential **consequences** possible for each scénario

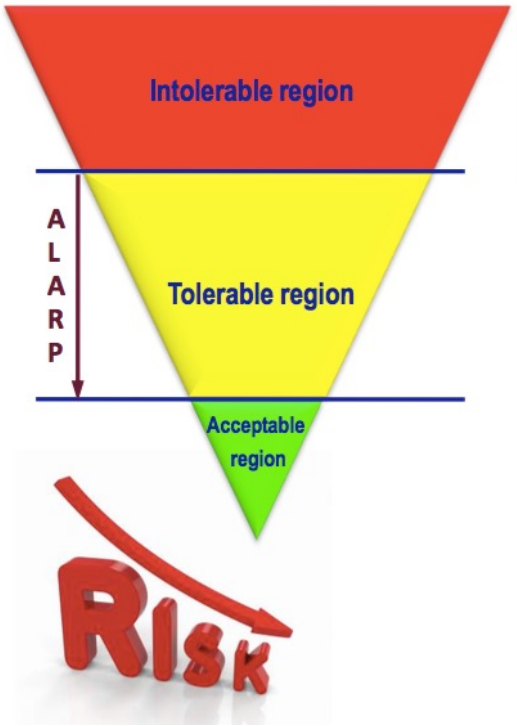
CRITICAL SCENARIO AND THREATS ANALYSIS

Threats	Worse case
High sand concentration in FLT with impact on **ENG/APU**	Multiple IFSD **(LOC-I)**
High sand concentration in FLT with impact on **flight instruments** (Pitot/Static probes)	Loss of flight parameters. **(LOC-I)**
High sand concentration during APP/LDG with impact on **windshield or landing performances**	Loss of external references /braking. **(RWE)**
Sand accumulation during stopover	Flights cancellation

BOWTIE



RISK ASSESSMENT



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RISK ASSESSMENT

Accident scenario	Risk Level
None known event leading to IFSD. Most probable scenario : ENG/APU **major damages but extremely improbable**.	**2A**
…	
…	

ACTIONS PLAN

<u>Avoid</u> the more severe foreseen phenomena's :
- Flight preparation : APT not accessible
- In FLT : diversion requires
- …

<u>Limitation of consequences</u> in case of unforseen phenomena's :

- *SOP's : no reverse, no APU,…..*
- *Conservative landing performance calculation (contaminated RWY)*
- *Fly away kit (ENG and Probes)*
- *Enhanced walkaround before the next flight*
- *…*

FOLLOW UP

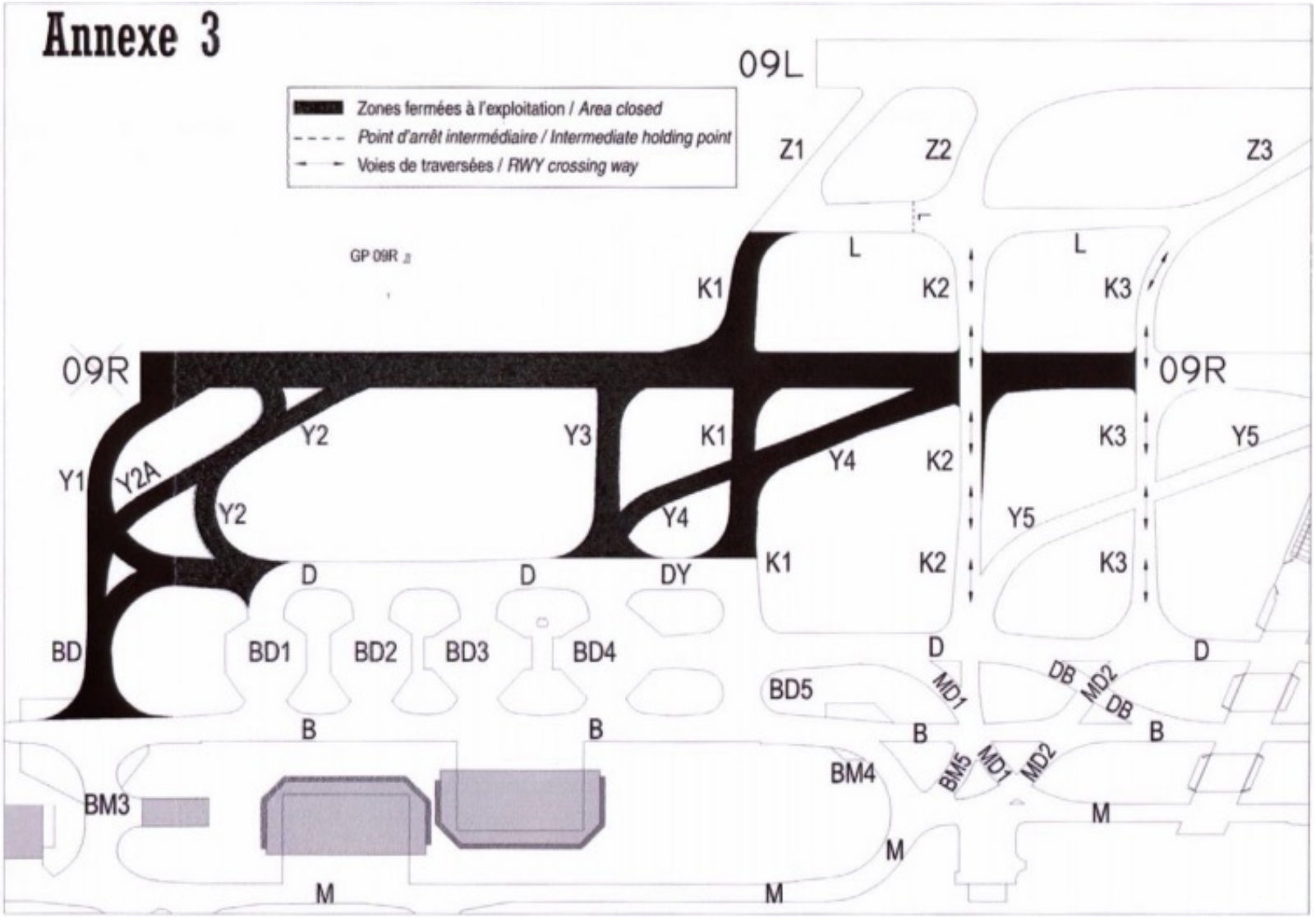
- Each action has to be :
  - Assigned to an individual
  - Within a timeframe

- The effectiveness has to be checked few months later via some relevant KPI, audit, survey, observation,….

EXERCICE 5

Runway extension with continuous aerodrome operations

WORKS LAYOUT



SORT RISK EVENTS/ACCIDENT SCENARII

- From airport standpoint
- From ATC standpoint
- From AO standpoint

RISK EVENTS (AIRPORT)

- Incursion onto runway in use by a third party
- Incursion onto a taxiway by a third party vehicle
- Incursion onto the radio utilities by an ADP vehicle or third party
- Incursion by work site personnel onto the runway or taxiway utilities
- Difficulties for RFFS to access the neighboring aerodrome zone for an intervention to the northwest of the airport. Blockage of the route by moving or broken down vehicles
- Temporary obstacle (crane) set up in within service area without authorization
- Obstacle obstructing the take off funnel
- Final approach 09R, while the runway is close to landing

RISK EVENTS ATC

- Runway 09L/27R incursion by a works vehicle
- Aborted take off
- Line-up on 27L/09R centerline
- Clearing runway 27R via taxiway Z1
- Change of procedure in poor visibility

SOME TIPS ON WHAT METHODOLOGY WOULD BE MORE EFFICIENT FOR RISK MANAGEMENT

Accident scenario's *(what we want to avoid)* :

- Runway excursion
- Collision on ground
- CFIT

Unwanted events (Runway Excursion)

Takeoff with inappropriate performance data or configuration

Vacating the runway via a close taxiway

Malfunction of guidance system affecting aircraft ground control (on board or ground based equipment)

Unwanted events (Collision on ground)

Following ATC clearance likely to interfere with aircraft or vehicle ground path

Non conscious” ground path (taxi, takeoff, landing likely to interfere with aircraft or vehicle

Malfunction of guidance system affecting aircraft ground control
(on board or ground based equipment)

Unforeseen vehicle, aircraft, person, animal within “ground facilities area” likely to interfere with ground path

Unwanted events (CFIT)

Temporary obstacle set up in within service area without authorization

Obstacle obstructing the take off funnel

TO CONTINUE THE RISK ANALYSIS :

List the safety barriers to :

- control, and
- recover from

each Unwanted Event