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## **Project Management and Aviation Safety Investigations**

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# Safety Investigation



Air Accident investigation is a process conducted for the purpose of accident prevention which includes the gathering and analysis of information, the drawing of conclusions, including the determination of causes and/or contributing factors and, when appropriate, the making of safety recommendations (ICAO, Annex 13)



# Project



A project is a temporary endeavour undertaken to create a unique product, service, or result. The temporary nature of projects indicates that a project has a definite beginning and end. The end is reached when the project's objectives have been achieved or when the project is terminated because its objectives will not or cannot be met, or when the need for the project no longer exists. (Project Management Institute)



# Aim of the research



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## Safety Investigation = Project

because: it has a scope, specific duration and associated costs

The aim of this study was to search whether safety investigations could benefit from project management principles.



1. Listing of the areas and activities mentioned in the PMBOK 5<sup>th</sup> edition (PMI, 2013).
2. Gap analysis between PM areas/activities and ICAO Annex 13, Doc 9756 (2015) and USAF AFI 91-204 (2017).
3. Grouping of the PM areas/activities into 48 items according to the extent of their reference in ICAO and USAF documentation.



4. The 48 PM areas/activities were transferred to the context of safety investigations
5. Administration of questionnaire to examine:
  - ✓ The existence of these areas/activities in civil and military aviation safety investigation standards used by participants
  - ✓ The degree the specific areas are (or could be) useful for safety investigations

# Examples



<b>PM area/activity</b>	<b>Statement</b>
Project charter	There is a document that formally initiates the investigation and authorises the investigator in charge to use the available resources to perform the investigation.
Scope management	The extent and depth of the investigation (i.e. what is included and excluded) is initially planned and updated when needed.
Cost management	The investigation costs are planned and controlled through specific units, limits, techniques etc.



Level of Education		Region of Training		Project Management Knowledge	
Professional	7	Europe	27	No	24
Bachelor	4	Non - Europe	5	Yes	8
Master	14				
Doctorate	7				

Aviation Domain		Region of Investigator		Number of Investigations	
Civil	20	Europe	26	0-10	14
Military	12	Non Europe	6	11-50	8
				>=51	10





# Investigations and Project Management



## QUANTITATIVE RESULTS



# 1<sup>st</sup> Part of Survey: most frequent areas/activities in investigation standards



**St 1.** There is a document that formally initiates an investigation and authorizes the investigator in charge to use the available resources to perform the investigation (96,9%).

**St 27.** There is a process for the submission and acceptance of the investigation report (96,8%).

**St 46.** All investigation data, files, reports, documents etc. are collected and maintained for future use (96,8%).

**St 8.** The safety of the team members during an investigation is required (90,3%).

**St 12.** The Investigator In Charge maintains and improves team cohesion, effective collaboration between members etc. (90,3%).



## 1<sup>st</sup> Part of Survey: least frequent areas/activities in investigation standards



**St 33.** Reports are submitted periodically for the schedule and cost performance of an investigation (9,7%).

**St 14.** There are rewards and recognition for investigation team members who performed beyond the defined investigation quality requirements (12,9%).

**St 24.** Each work package is monitored across all of its characteristics (e.g., scope, costs) (16,1%).

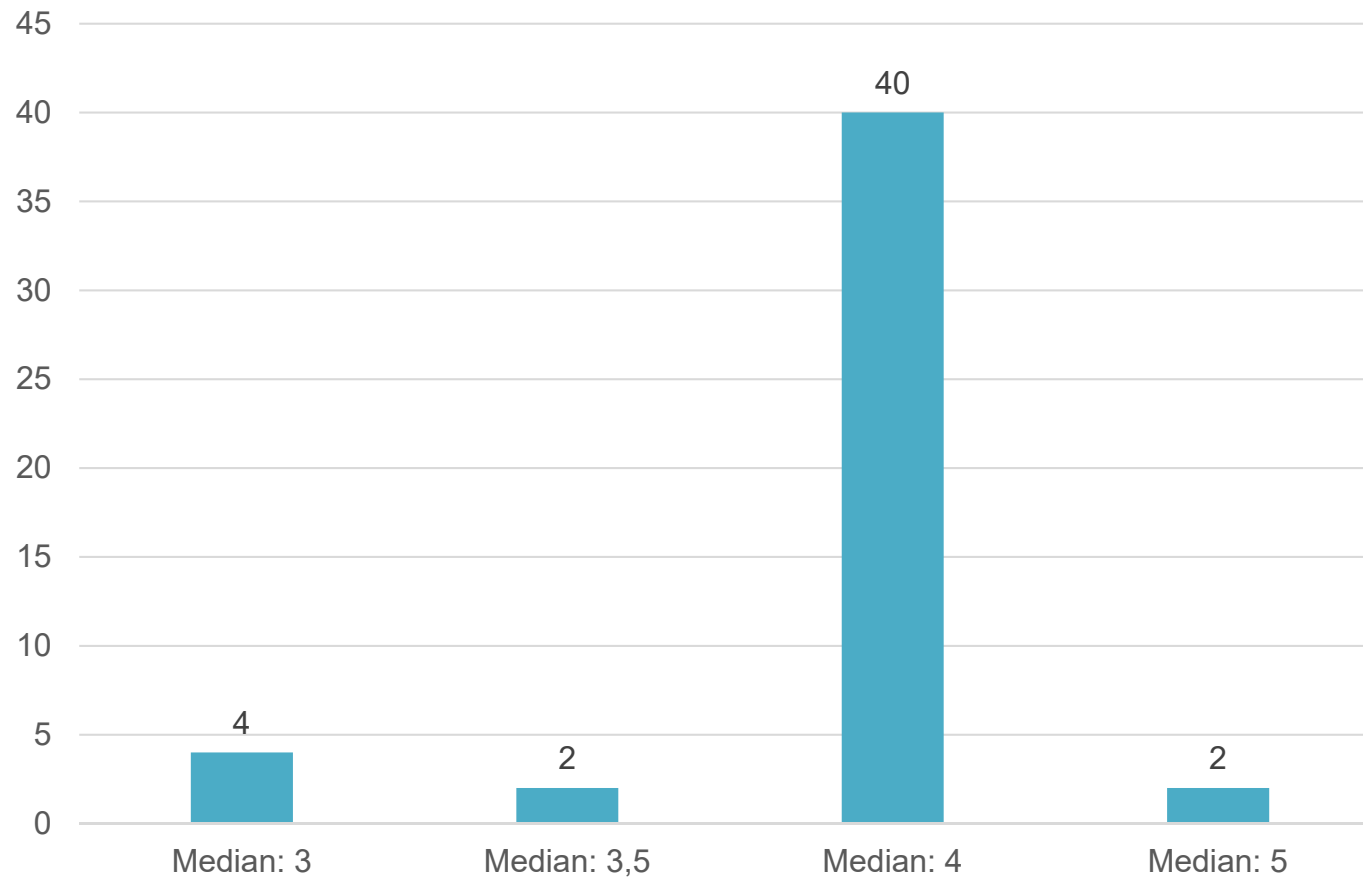
**St 16.** There is an investigation calendar that shows the planned availability of all human and technical resources (19,4%).

**St 23.** Description, assumptions, constraints, costs, dependencies, quality requirements and resources are defined for each work package. (23,6%).

## 2<sup>nd</sup> Part of Survey: Usefulness



“How useful is or could be for the investigation teams?”



## Usefulness: Moderate (Median value 3)

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**St 14.** There are rewards and recognition for investigation team members who performed beyond the defined investigation quality requirements.

**St 32.** The investigation costs are planned and controlled through specific units, limits, techniques etc.

**St 33.** Reports are submitted periodically for the schedule and cost performance of an investigation.

**St 44.** Details about approved and rejected changes are kept in a logbook.



## Usefulness: Extremely useful (Median value 5)

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**St 46.** All investigation data, files, reports, documents etc. are collected and maintained for future use.

**St 47.** All lessons learned from an investigation are collected and maintained for future use (management of the investigation scope, other problems, and causes, variances, solutions etc.).



# Investigations and Project Management



## QUALITATIVE RESULTS



- **42 out of 48 Statements were commented (87,5%)**
- **13 out of 32 participants made comments (40,6%)**
- **Small sample: no conclusive results**
- **Mostly commented statements: 2, 6, and 12**





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**St 2. There is a central document (investigation plan) that describes how the investigation will be executed, monitored, and controlled. It refers to the management of scope, schedule, cost, requirements, quality, human resources, communications, risks, procurement, and stakeholders. It is updated when required.**

- **Resistant:**
  - Little practical implementation
  - Investigation manual needs to be simple
- **Concerned/neutral:** Update depends on organizational safety culture
- **Positive:**
  - Investigation manuals could be more elaborate
  - Inclusion of quality checks are useful



# COMMENTS ON STATEMENTS



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**St 6. Indicative or suggested methods and techniques (to be) used during an investigation are documented.**

- **Resistant: Just for compliance, it will not be followed in practice**
- **Concerned/neutral:**
  - It is by experience and very subjective
  - General methods are described
  - Methods and techniques need periodical update
  - There is no need to be documented as I am currently the sole active investigator in the organization



# COMMENTS ON STATEMENTS



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**St 12. The Investigator in Charge maintains and improves team cohesion, effective collaboration between members etc.**

- Concerned/neutral:
  - It depends on who is the IIC
  - It requires negotiation through senior management
- Positive/current practice:
  - Would be useful
  - Daily briefing ensures team management
  - This works within our department



# Investigations and Project Management



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# TAKE AWAYS!

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- Safety investigations have characteristics similar to a project.
  - Project management areas/activities are not consistently mentioned in the safety investigation standards included in the research.
  - The finding above was confirmed by the responses of the survey participants: the frequencies of project management areas/activities in standards currently in use varied from about 10% to 97%.
  - The vast majority of project management areas/activities were perceived as “very useful”.



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- The areas and activities of project management can be used to support safety investigations.
  - These areas/activities must be seen as means to help investigators and not to increase bureaucracy.
  - International and regional bodies of any industry sector can perform similar gap analyses and surveys to customise the inclusion of project management areas/activities in safety investigation standards.
  - Investigation management document shall be separate from the investigation manual, but linked to it.
  - Basic project management knowledge can be included in safety investigation training, especially for persons who are appointed as Investigators in Charge

# Thank you for your attention!



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