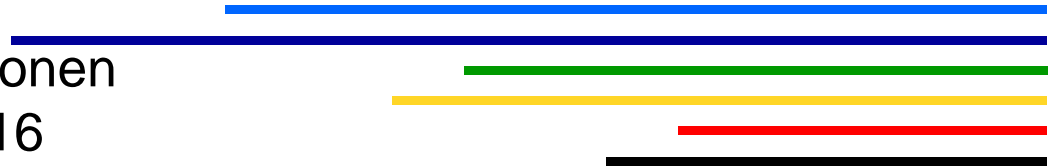




Use of analysis methods at Safety Investigation Authority, Finland

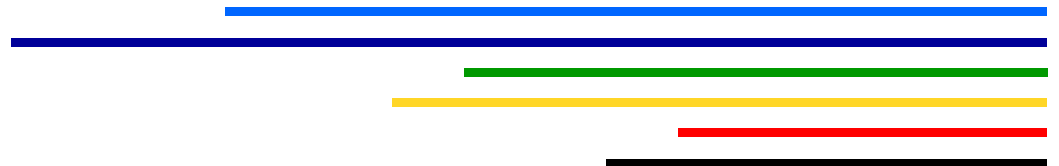
Air Safety Investigator Tii-Maria Siitonen
EASA/CASIAs meeting 12 April 2016





What is an analysis?

- Analysis is the process of breaking a complex topic or substance into smaller parts in order to gain a better understanding of it.
- The word comes from the Ancient Greek ἀνάλυσις (analysis, "a breaking up", from ana- "up, throughout" and lysis "a loosening").



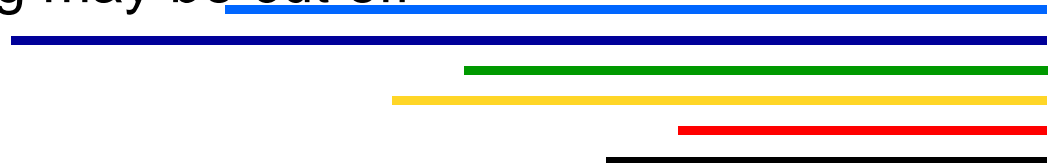


The purpose of using analysis methods

- The investigation team will form a common understanding of the accident/incident and its origins
- The weightings are balanced (= essential stands out)
- The analysis withstands criticism and scrutiny

Conclusions and recommendations

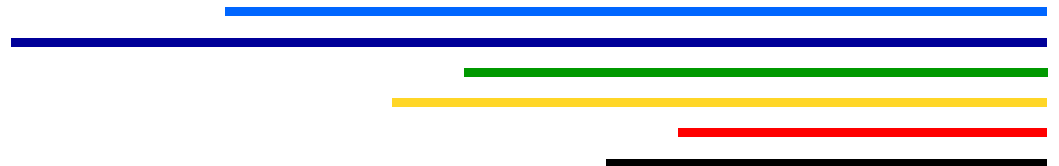
- Are influential
- Are based on the accident and its investigation (= are not favorite children or agenda)
- Are as objective as possible
- New discoveries may not found, but the findings are reorganized and something may be cut off





Accimap Approach

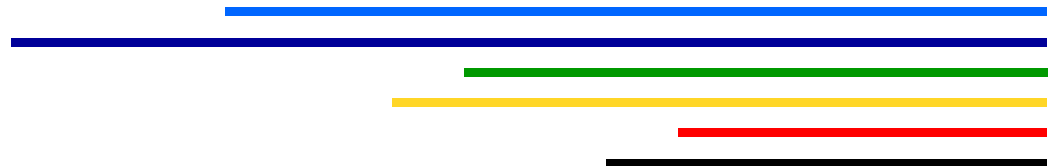
- Was originally developed as part of a proactive risk management strategy, but its primary application has been as an accident analysis tool.
- Factors are arranged into a logical diagram that illustrates how they combined to result in that event.
- Helps to avoid blaming frontline individuals.
- The approach has the capacity to capture and address high-level contributing factors.

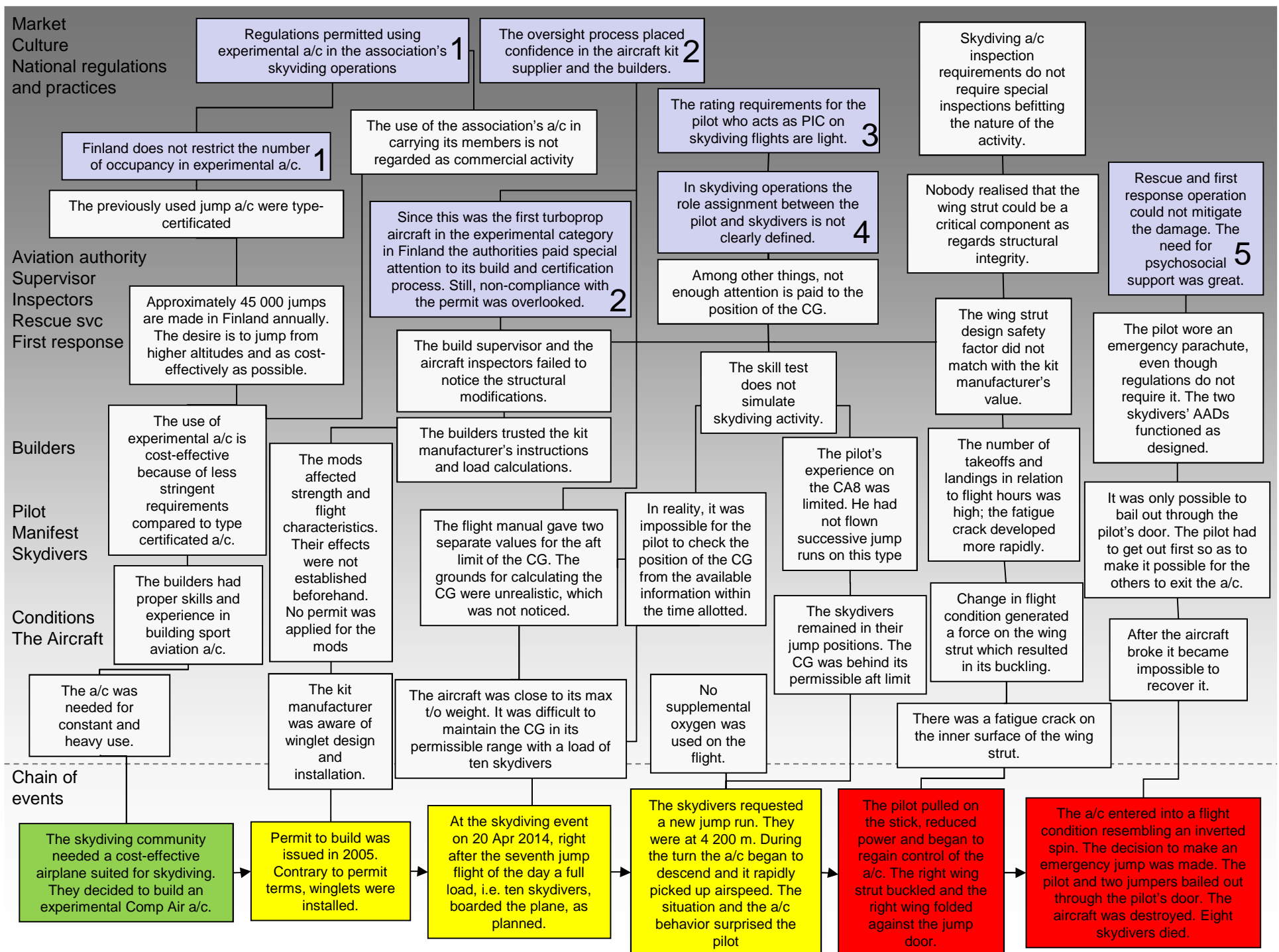




The analysis session

1. All the necessary facts should have been gathered before session, however, there should be an option for additional investigation.
2. All investigation team members and IIC should be present. The leader of session is from the permanent staff of SIA (not IIC!).
3. The graph is reviewed after the session. The investigation group should now have a consistent view of the events, the background for and the relationships between them.
4. The **written analysis** will be based on the graph and session. Headlines from the sequence of events are also headlines of the text. Individual boxes are “opened” to the text. The sequence of text follows the order of the lowest boxes.
5. The recommendations are usually based on the conclusions which are on the top of Accimap-graph.





Recommendations

1. CAA Finland: when required, limit the number of occupants in experimental aircraft and their use in skydiving operations based on risk considerations. [FI.SIA-2015-0009]
2. CAA Finland: ensure that the experience and training of persons that supervise and inspect experimental aircraft meet the requirements of construction and modification control. [FI.SIA-2015-0010]
3. EASA: prepare specified theoretical knowledge and flight training requirements for PIC in skydiving operations. A pilot must have to complete a separate type-specific skill test in order to obtain a jump pilot rating. [FI.SIA-2015-0011]
4. CAA Finland: in conjunction with the recreational aviation safety project, ensure that the Finnish Aeronautical Association prepares generic guidelines for skydiving operations. [FI.SIA-2015-0012]
5. The Ministry of Social Affairs and Health: ensure that the plans, resources, responsibilities, and competent leadership for the provision of psychosocial support in major crises are available for. [FI.SIA-2015-0013]



Examples of other analysis methods used by SIA, Finland

SHELL (Software, Human, Environment, Liveware)

- **S2/2007M** Fire extinguishing on ship's car deck and development of accident investigation
- **S1/2009L** Ultralight Aviation Safety and its Improvement through Accident Investigation
- **M2013-03** M/V EGON W, death of a seaman in consequence of falling into water in the port of Vuoksi of 26 November 2013

Reason model

- **B1/2001M** Passenger-car ferry MS ISABELLA, grounding near Staholm in Åland archipelago on December 20, 2001
- **B2/2003M** Tugboat Pegasos, capsizing and sinking off Helsinki on 13 November 2003
- **B3/2008L** In-flight structural failure at Taipalsaari on 15 August 2008

HTA (Hierarchical Task Analysis)

- **B4/2009L** Hard landing for helicopter in Porvoo on 7 May 2009

Bow-tie

- **L2012-08** Airliner Veering Off the Runway during the Landing Roll at Helsinki-Vantaa Airport on 19 August 2012
- **Y2012-01** Accident at an excavation site in Espoo on 3 July 2012
- **R2012-S1** Safety Study on Level Crossing Accidents 2012
- **L2013-01** Helicopter accident on a heli-sawing flight near the city of Tampere on 10 January 2013
- **L2013-04** Seaplane accident at Vehmersalmi near Kuopio on 29 June 2013

