

# 1 Problem

<b>What</b>	Problem(s)	Plane shot down, crash, fatalities
<b>When</b>	Date	July 17, 2014
	Time	14:15 UTC
	Different, unusual, unique	Flying over conflict area/ restricted airspace
<b>Where</b>	Facility, site	Hrabove, Ukraine
	Unit, area, equipment	Malaysian Airlines flight 17
	Task being performed	Flying above restricted airspace (~33,000')

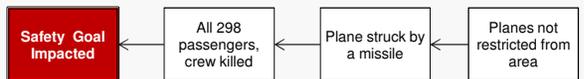
## Impact to the Goals

<b>Safety</b>	All 298 passengers & crew killed
<b>Environmental</b>	?
<b>Customer Service</b>	Plane struck by missile
<b>Regulatory</b>	?
<b>Production/ Schedule</b>	?
<b>Property/ Equipment</b>	Loss of plane
<b>Labor/ Time</b>	Investigation

Frequency: 70 commercial plane crashes so far in 2014

# 2 Analysis

**Basic Level Cause Map** - Start with simple Why questions.



# 3 Solutions

Regulatory bodies, including the International Civil Aviation Organization (ICAO, the air-safety arm of the United Nations), are now looking at "the respective roles of states, airlines and international organizations for assessing the risk of airspace affected by armed conflict." Currently each government determines the risk and whether airspace should be restricted. Air-safety experts say Ukraine's restrictions weren't unusual. Says air-safety consultant John Cox, "There has never been an airliner shot down from a surface-to-air missile at this kind of altitude. The threat has always been a shoulder-fired missile from insurgents."

Individual airlines are also considering what they can do to reduce their risk. Some airlines are even considering antimissile devices, which use laser beams to draw heat-seeking missiles away from the plane itself. However, these are only effective against shoulder-fired heat-seeking missiles, not the type of missile that brought down flight 17. While many countries use these types of protection for their military planes, only Israel has required their use on commercial airliners.

For individual passengers who are concerned about the route their plane may be taking, flight-tracking services will allow them to see the flight paths of the most recent flights. However, because of gaps in coverage, flight paths over certain areas (such as over North Korea) may not be accurate. Airlines are being pressured to release their typical flight paths.

# LOSS OF FLIGHT 17 OVER UKRAINE

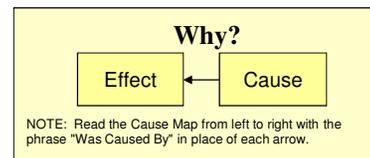
Cause Map

## How to protect commercial airliners from ground conflict

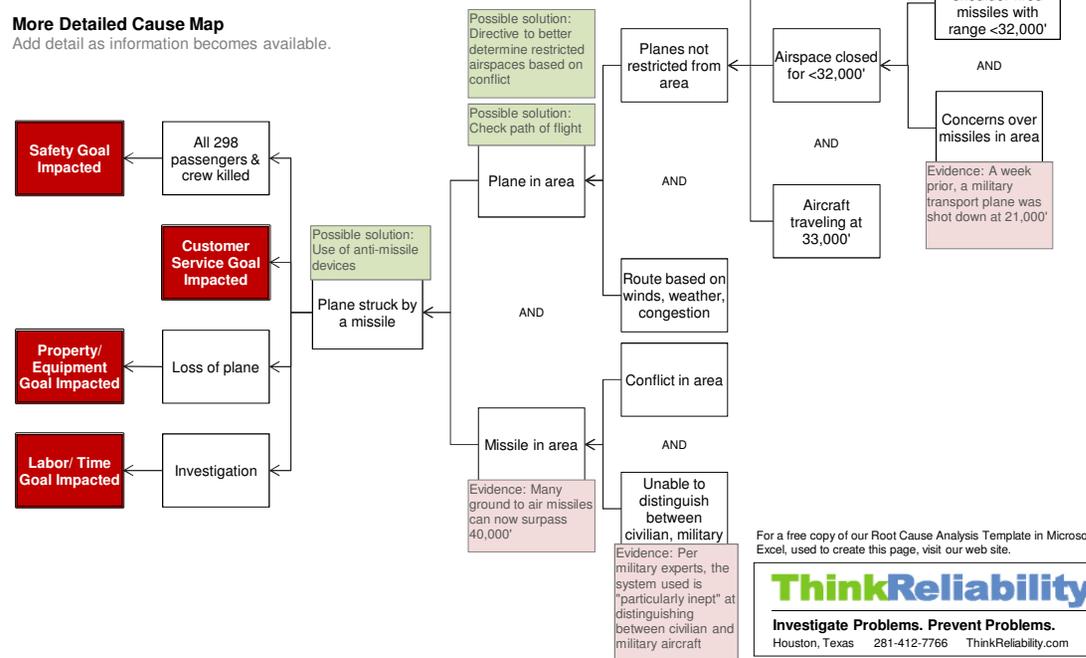
On July 17, 2014, Malaysian Airlines flight 17 was shot down 33,000' above Ukraine by a surface-to-air missile. Just a week prior a military transport plane was shot down at 21,000'. The restricted airspace over the area ended at 32,000'.

"I'm hoping in the next few weeks in the aftermath of this tragedy that we can get around the table and at least start having some brainstorming sessions to see what can be improved."

- Tim Clark, president of Dubai's Emirates, regarding an international conference of carriers to respond to the disaster



**More Detailed Cause Map**  
Add detail as information becomes available.



For a free copy of our Root Cause Analysis Template in Microsoft Excel, used to create this page, visit our web site.

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