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# Network Manager View on dealing with Operational Safety from a 'Systems' Perspective

ANSP CEOs' Safety Conference  
Split ,11 June 2015

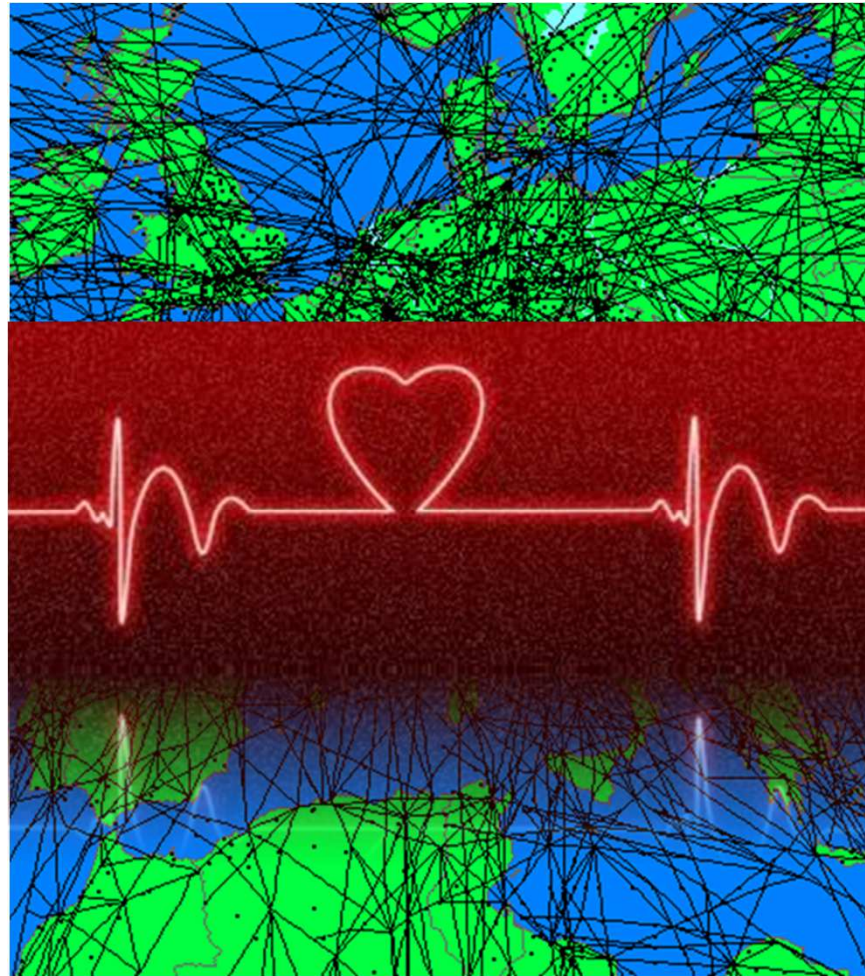
Joe Sultana  
EUROCONTROL Director Network Manager



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## NM 'heartbeat' of the European ATM 'system'





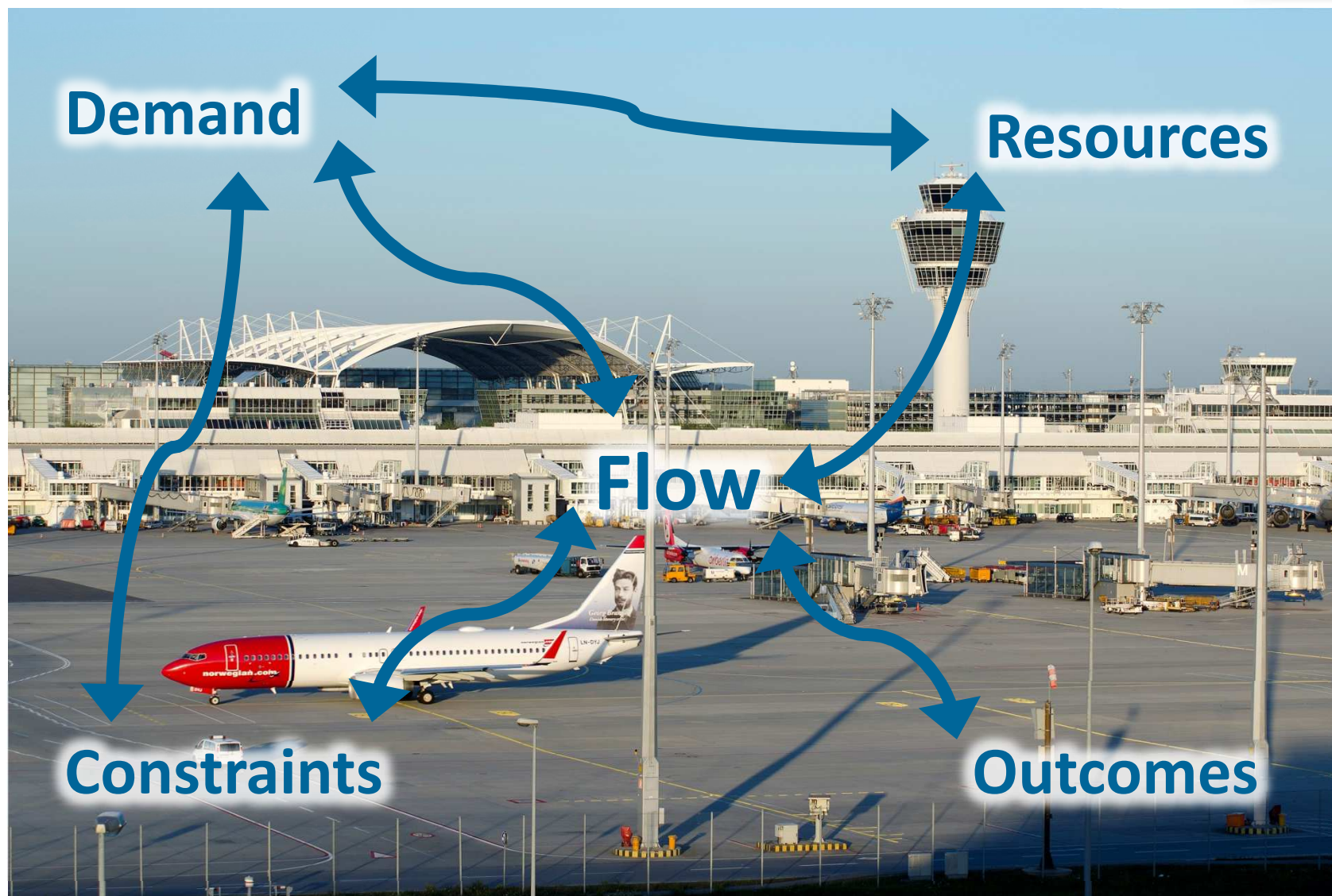
## Network Manager Functions (EU Reg 677/2011)

- Design European Route Network.
- Provide ATFCM.
- Coordinate scarce resources: radio frequencies and SSR transponder codes.

Also scope in the legislation to add further requirements – addressed later.



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## Five Fundamental Questions

- Is the Network safe?
- Where are the safety threats in the Network?
- Where are the safety opportunities?
- What should be done to keep the Network safe and improve?
- Who do we tell to make it effective?.





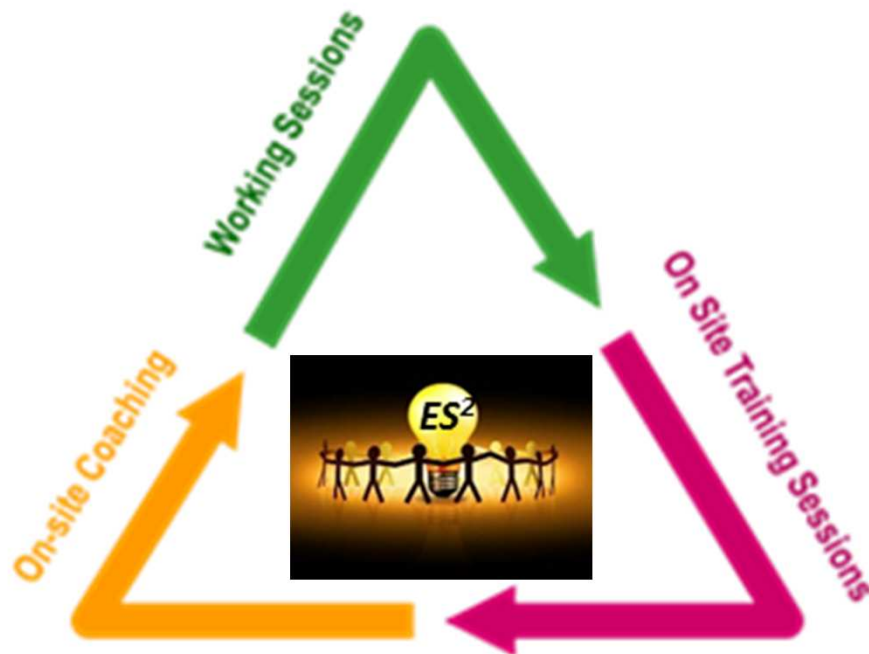


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ES<sup>2</sup>

## 2014 -2015 Programme



- FAB Safety
- Safety Human Performance
- Just Culture
- Safety Tools
- Strategic Safety (CEO Conference)
- Systems Thinking



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# NM 'Top 5' Operational Safety Issues (EU Reg 970/2014)





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## Top 5 ATM Operational Safety Priorities for 2013

### Our Mission

Contributing to safety management and operational safety across the Network, the Network Manager identifies Network safety issues to enable aviation stakeholders to mitigate existing hazards and anticipate new operational risks. Our ultimate goal is to keep the Network safe and able to increase its capacity and efficiency.

The EUROCONTROL Safety Improvement Sub-Group (SISG), reporting to the EUROCONTROL Safety Team, was tasked to identify the Top 5 ATM Operational Safety Priorities. In 2012, the SISG followed a structured process of operational safety prioritisation. After further analysis, the Safety Team agreed the following Top 5 ATM Operational Safety Priorities for 2013.

### TOP 5 ATM OPERATIONAL SAFETY PRIORITIES FOR 2013:

- 1. RISK OF OPERATIONS WITHOUT TRANSPONDER OR WITH A DYSFUNCTIONAL ONE**  
Operations without transponder or with a dysfunctional one constitute a single threat with a potential of "passing" through all the existing safety barriers up to "see and avoid".
- 2. LANDING WITHOUT CLEARANCE**  
For various reasons, aircraft sometimes land without ATC clearance resulting in Runway Incursions that are often only resolved by providence.
- 3. DETECTION OF OCCUPIED RUNWAY**  
Some Runway Incursion Incidents could have been prevented if controllers had had better means to detect that the runway was occupied at the time of issuing clearance to the next aircraft to use the runway.
- 4. "BLIND SPOT" – INEFFICIENT CONFLICT DETECTION WITH THE CLOSEST AIRCRAFT**  
Loss of separation "Blind Spot" events are typically characterised by the controller not detecting a conflict with the closest aircraft. They usually occur after a descent clearance and in the context of a rapidly developing situation – often when the conflicting aircraft are 1000ft and 15 nm apart.
- 5. CONFLICT DETECTION WITH ADJACENT SECTORS**  
Losses of Separation in the En-Route environment sometimes involve "inadequate coordination" of clearance with an adjacent sector. These typically involve either an early (premature) transfer of control to or from the neighbouring sector.

### Our Process

The "Top 5" were identified after a detailed review of two high priority risk areas: "Runway Incursion" and "Loss of Separation En-Route". The review was performed during summer 2012 and involved a series of dedicated workshops with 6 ANSPs, serving a large part of European air traffic. Comprehensive barrier models – Safety Functions Maps (SAFMAPs) – were developed and populated with representative data from the participating ANSPs. The incident data was for high severity (classified as 'A' and 'B') occurrences that had been thoroughly investigated. The data is highly informative because the incident scenarios "test" the majority of the available safety barriers. The validity of the results was assessed by a careful, joint analysis of the investigation reports with the respective ANSPs. The analysed data forms a significant overall sample of European A and B incidents: 4.43% of all Runway Incursion and 77% of all Losses of Separation En-route reported during 2011.

### → What will the Network Manager do and deliver?

Each Top 5 priority will be subject of a dedicated Operational Safety Study during 2013 that will aim to:

- Provide additional insight on causal/contributory factors.
- Suggest actions to reduce or eliminate risk factors.
- Identify industry "best practice" and lessons learned for sharing amongst affected stakeholder groups.
- Inform development of SKYbrary materials (to further all of the above).

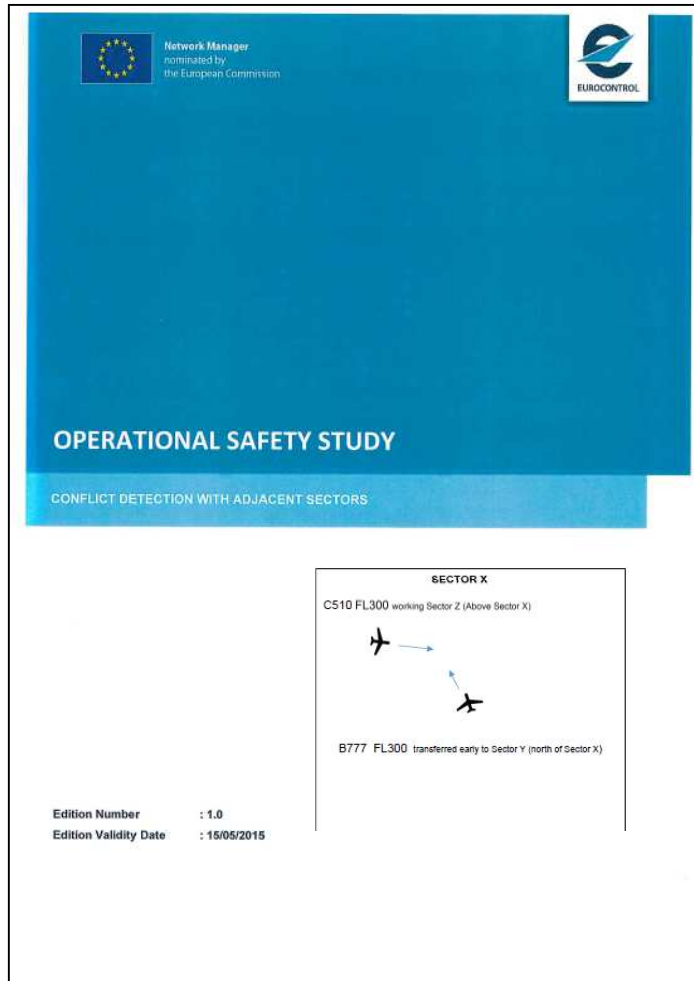
For more information, please contact: [tzvetomir.blajev@eurocontrol.int](mailto:tzvetomir.blajev@eurocontrol.int)



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## NM Top 5 – Conflict Detection with Adjacent Sectors High Severity Events



- Hazards often are generated by “interfaces”.
- Some STCA algorithms are suppressed for the neighbouring airspace – to avoid non-RVSM alerts.
- HMI may not be supportive for conflict detection – color and intensity of the track labels not under control
- Very topical subject for the Free Route Environment





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# NSP, NPP, KPIs/Targets, SAF Work Programme

## The cascade from top objectives to activities





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# Supporting implementation of safety plans

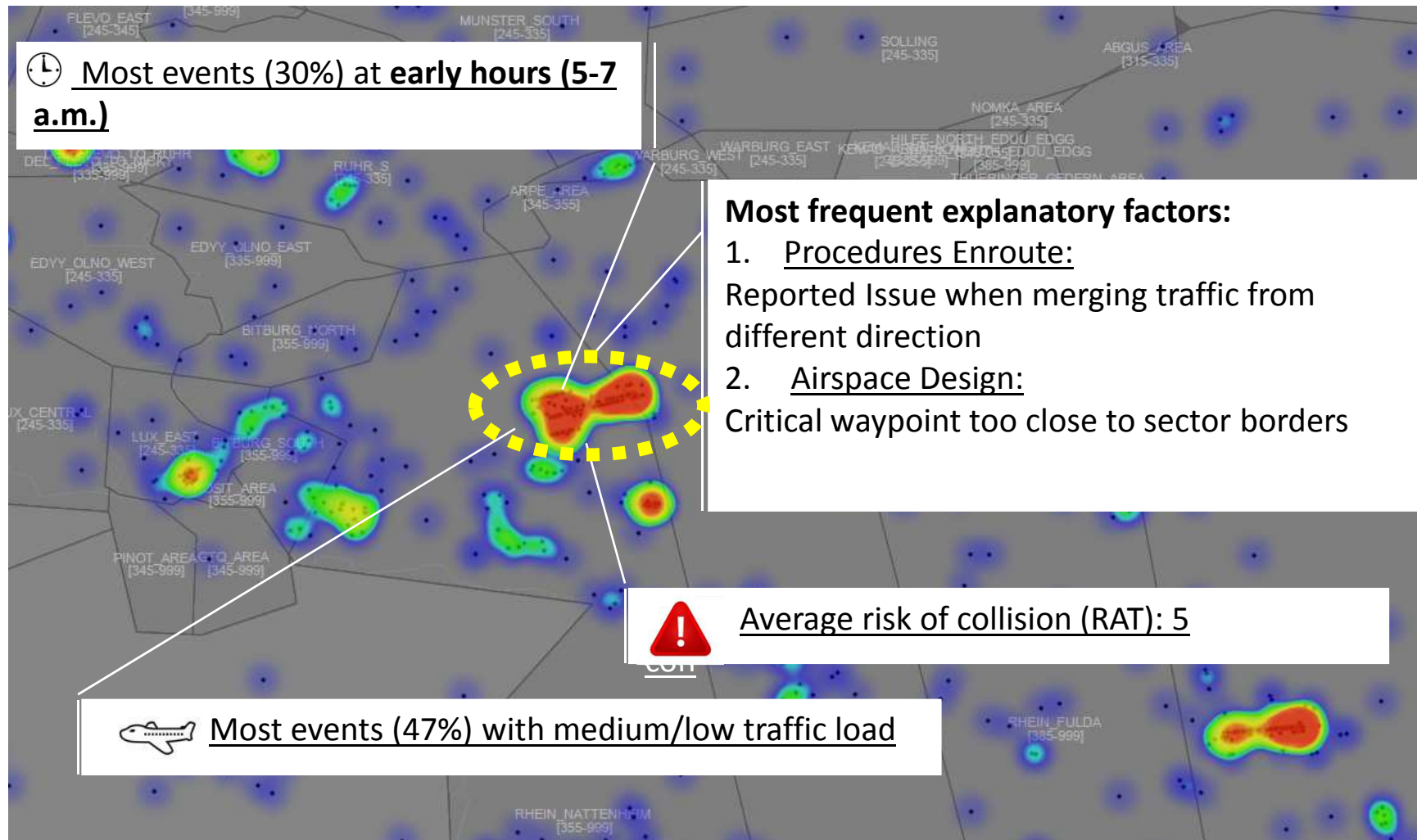




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## Safety Tools Implementation – ASMT





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# Safety Tools Implementation

**Risk Analysis Tool**

Home Import Load Result Statistics Admin

**Risk Matrix**

Reliable Severity Scoring

	A1	B1	C1	E1	D1
A2		B2	C2	E2	D2
A3		B3	C3	E3	D3
A4		B4	C4	E4	D4
A5		B5	C5	E5	D5

Risk ATM: A2  
Risk ATM Ground: A2

**Reliability Factors**

Overall: 100%  
Severity: 100%  
Repeatability: 100%

Ground: 100%

**Aircraft-aircraft-tower**

Save Save As ... Save to XML

**Description**

**Severity**

Risk of collision

ATM Ground ATM Airborne

Separation: Safety margin infringed critical 10

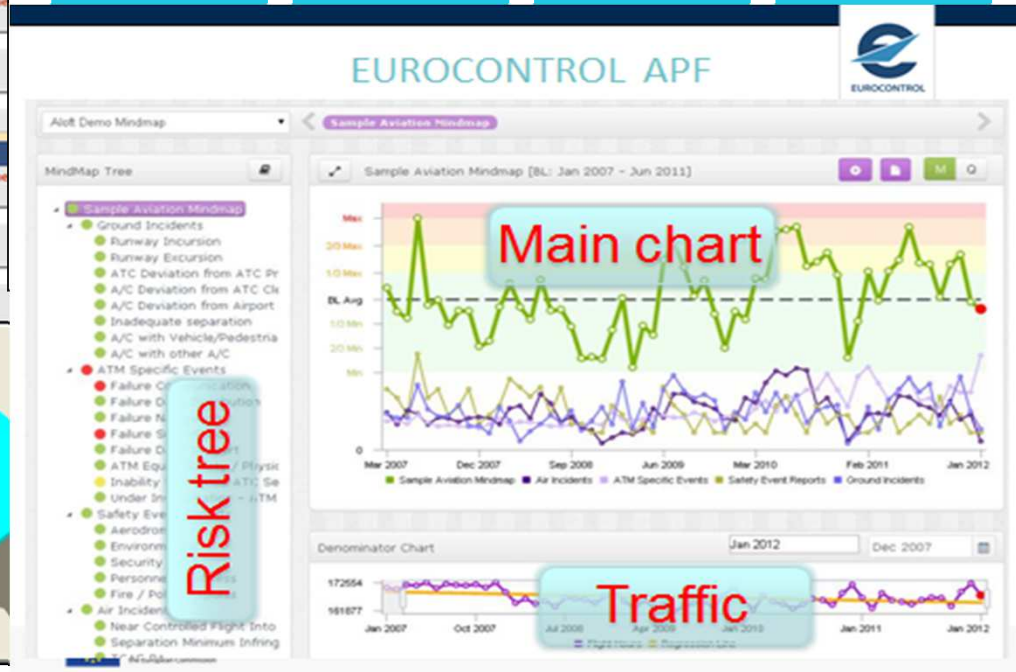
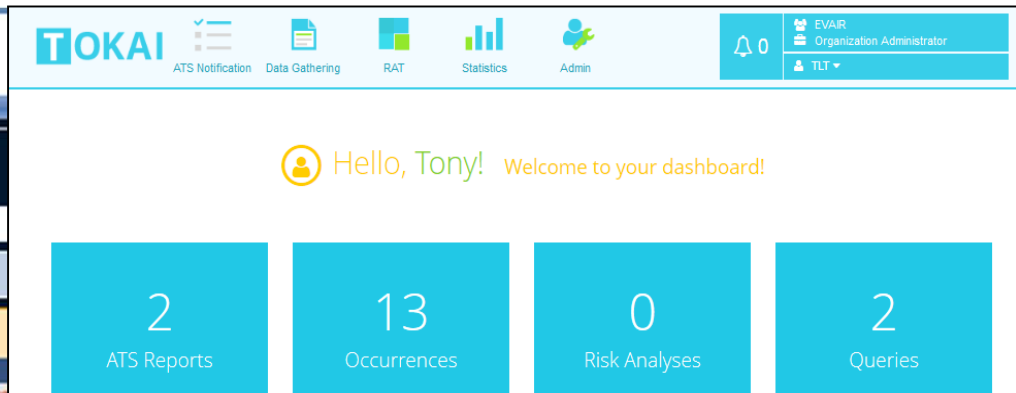
Rate of Closure: Rate of closure HIGH (>100 and <=250) 4

**Controllability**

ATM Ground ATM Airborne

Conflict Detection: Conflict detected 0

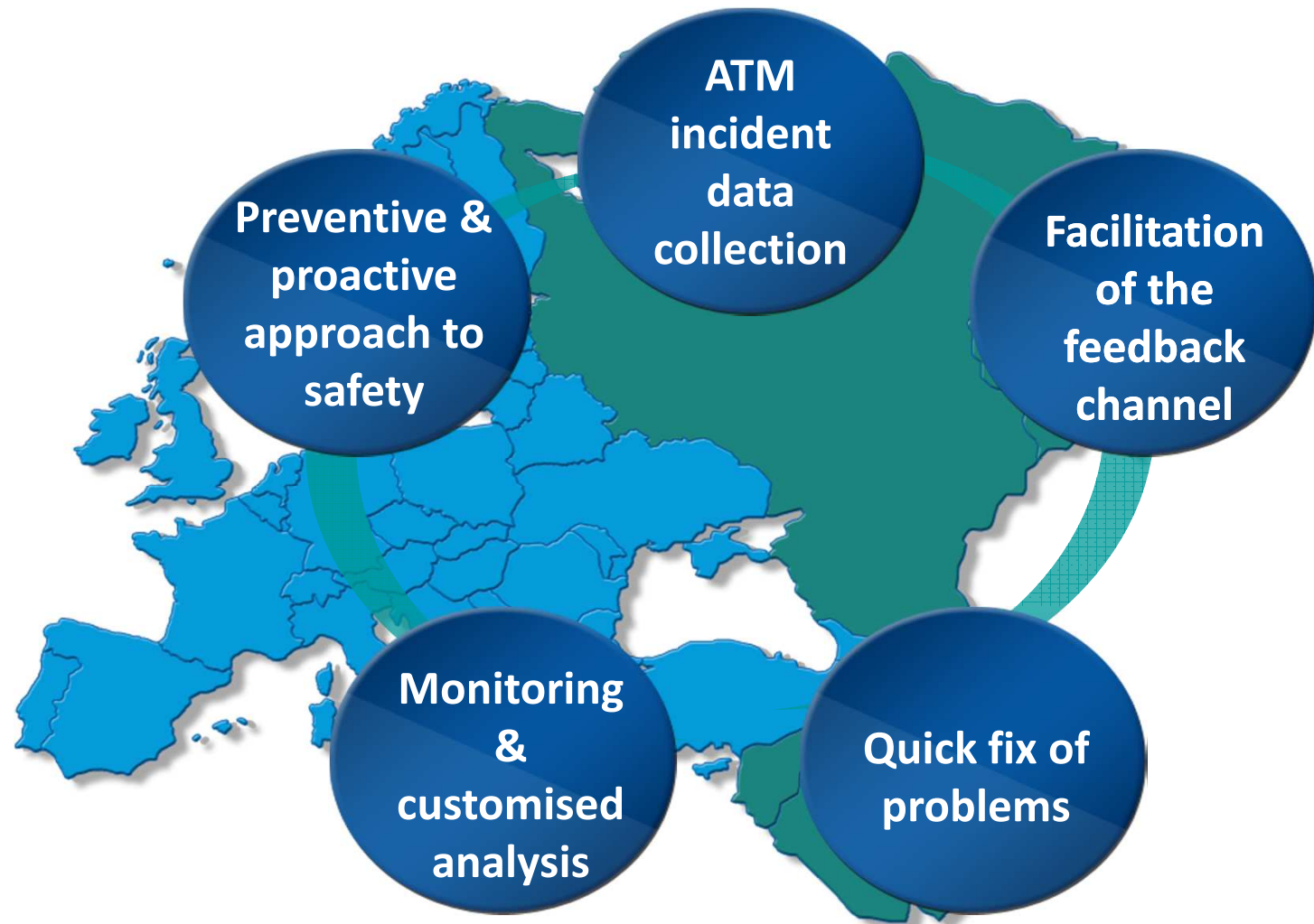
Plan: Plan CORRECT 0







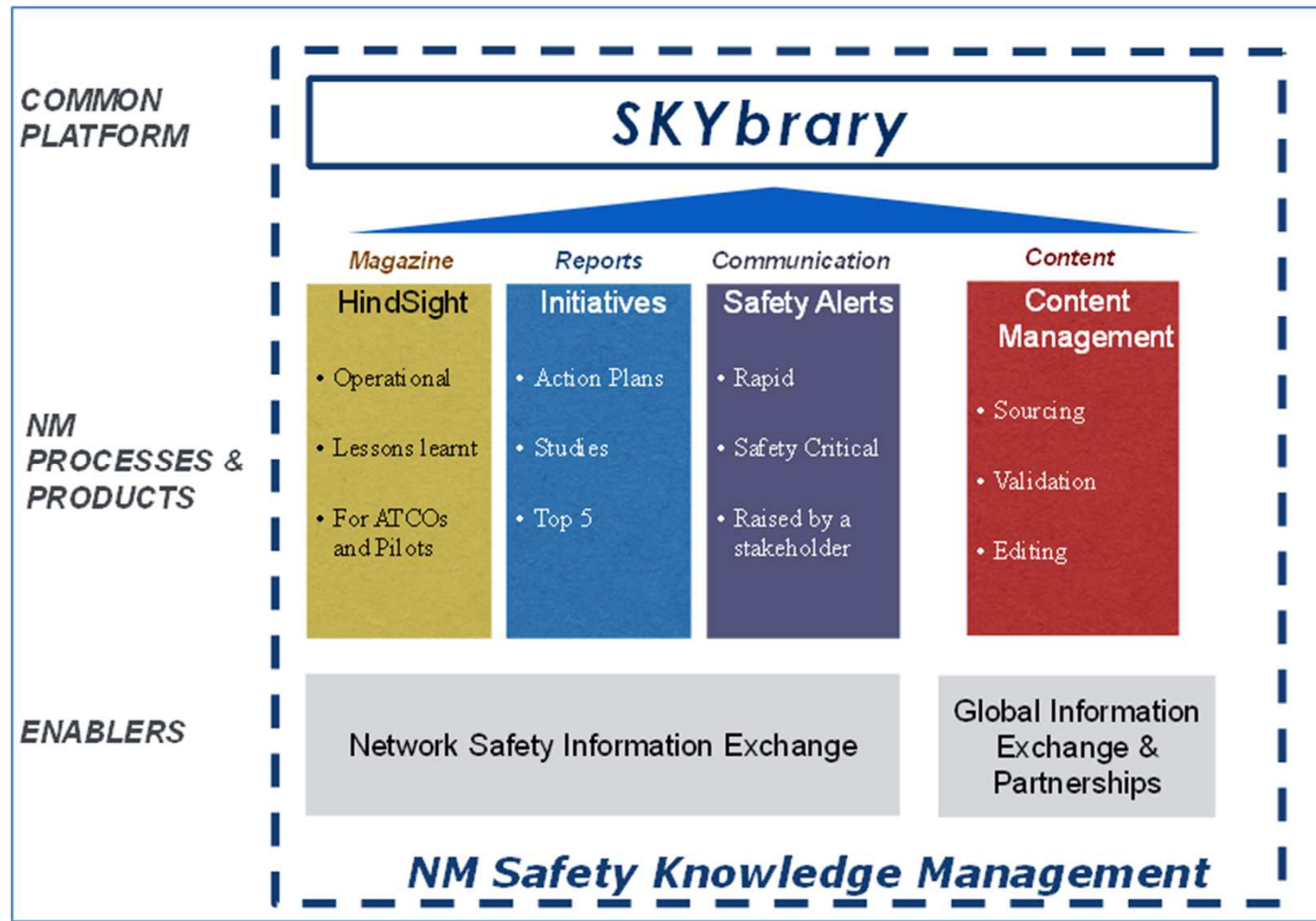
## EVAIR – “Taking the Pulse” of Network Safety







# NM Safety Knowledge Management Landscape





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# Sharing Safety Knowledge

## SKYbrary - The Global Aviation Safety Encyclopedia

The screenshot shows the SKYbrary website interface. At the top, there is a navigation bar with the user's name 'Alexander Krastev' and links for 'my talk', 'admin links', 'my preferences', 'my watchlist', 'my contributions', and 'log out'. Below this is a search bar with the text 'Google Custom Search' and a 'Search' button. The main header features the 'SKYbrary' logo and the tagline 'The single point reference for aviation safety knowledge'. On the left side, there is a 'navigation' menu with links to 'Home page', 'Operational issues', 'Human performance', 'Enhancing safety', 'Safety regulations', 'Accidents and incidents', 'Aircraft Types', 'Airport Directory', 'Toolkits', 'General Aviation', 'Organisations', 'Bookshelf', 'Publications', and 'ICAO FSIX'. Below this is a 'work in progress' section with links to 'Draft articles' and 'Request an article'. At the bottom left, there is an 'information' section with links to 'About SKYbrary' and 'Contact us'. The main content area is divided into four columns: 'Operational Issues', 'Human Performance', 'Enhancing Safety', and 'Safety Regulations'. Each column contains several icons representing different topics: 'Air Ground Communication', 'Airspace Infringement', 'Bird Strike', 'Controlled Flight Into Terrain', 'Fire Smoke & Fumes', 'Ground Operations', 'Airworthiness', 'Level Bust', 'Loss of Control', and 'Loss of Separation'. On the right side, there is a 'Highlighted Article' section titled 'Wake Turbulence Hazard - A Pilot Check List', posted on 17 September 2012. Below this is a 'Safety Alert' section titled 'Lessons Learned from a Power Outage Incident', posted on 18 July 2012. At the bottom right, there are social media icons for email, Facebook, LinkedIn, RSS, and Twitter.



## 2014 SKYbrary Statistics and Growth

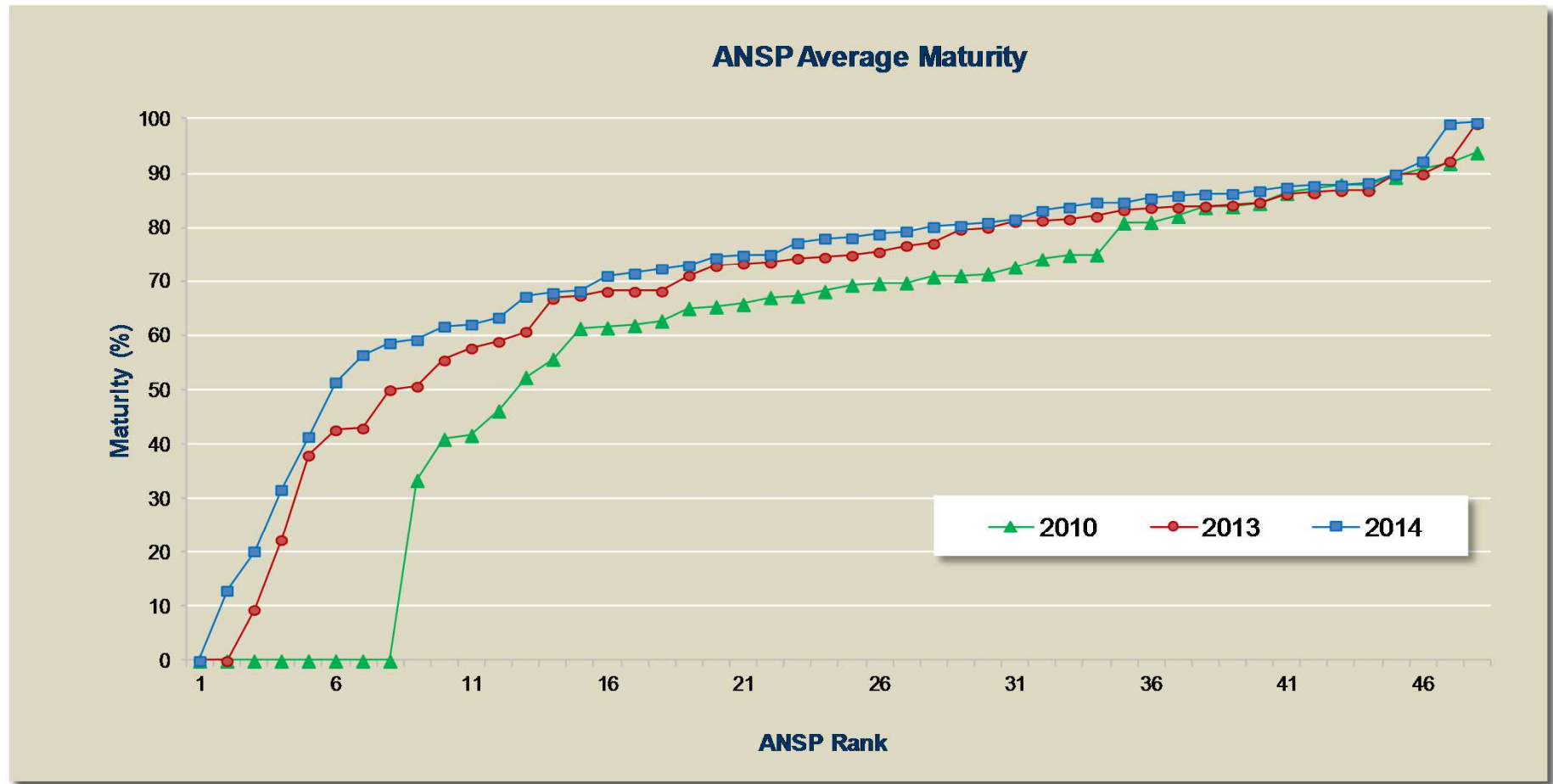
- ❑ 21.070 registered aviation safety professionals (2 %)
  - ❑ On average 5.252 visits\* per day (22 %)
  - ❑ More than 159.750 visits\* per month (23 %)
  - ❑ 1.231.480\* unique visitors (25 %)
  - ❑ 1.917.075 visits\* to SKYbrary (excluding bookshelf) (22 %)
  - ❑ 1.696.135 visits to SKYbrary bookshelf \*\* (PDFs)
  - ❑ More than 5.500 content pages
  - ❑ More than 4.539.084 page views\* (16 %)
  - ❑ 1.306.634\* visits originated from search engines (30 %)
  - ❑ 165.733\* visits originated from mail campaigns (-2 %)
  - ❑ 6.756\* visits originated from Facebook (-33 %)
- \* source Google Analytics
  - \*\* source Awstats (not measured by Google Analytics)



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# ANSP Safety Management Maturity (Measuring Standard of Excellence) in support of RP2 Safety Target

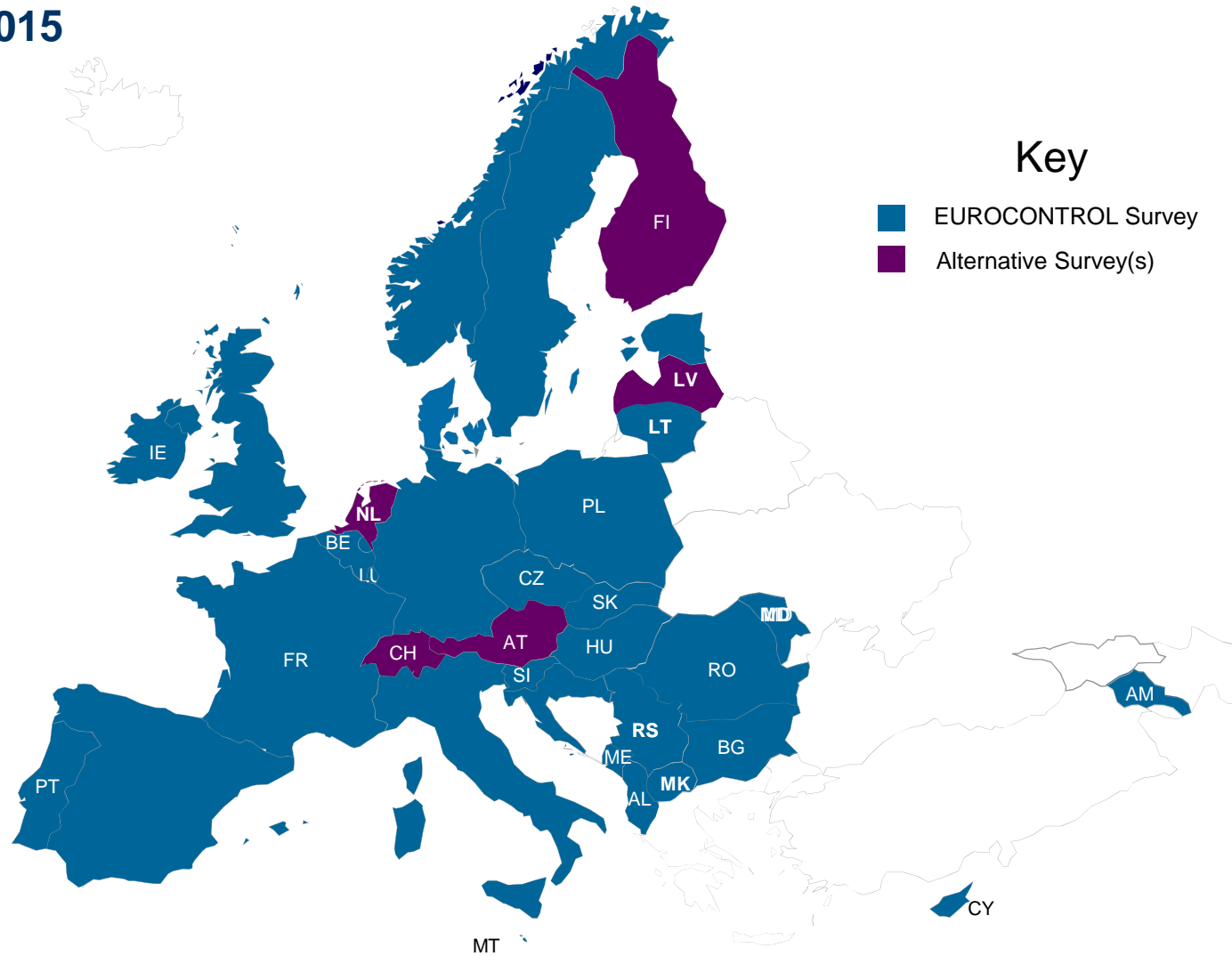




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# The EUROCONTROL Safety Culture programme 2003-2015









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## Safety I & Safety II




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From Safety-I to Safety-II:  
A White Paper

DNM Safety




[www.bitly.com/SAFETY-II](http://www.bitly.com/SAFETY-II)

## Systems Thinking for Safety



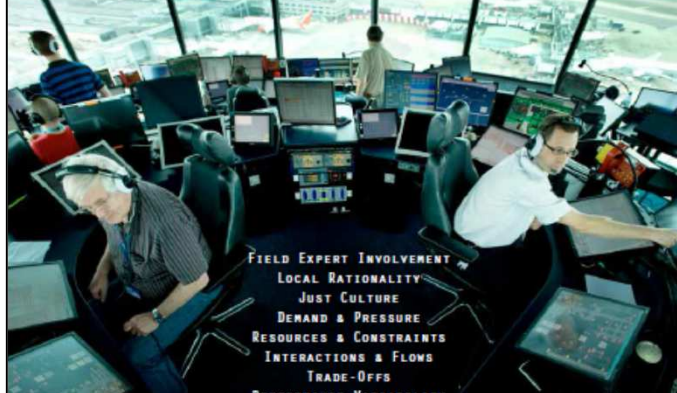
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Systems Thinking for Safety: Ten Principles  
A White Paper  
Moving towards Safety-II

DNM Safety



[www.bitly.com/ST4SAFETY](http://www.bitly.com/ST4SAFETY)



## Key Takeaways

- The ATM Network is a complex system. So **we have to think systemically** in all that we do, including safety.
- **We work better together** than in isolation; **building and sustaining partnerships** enables a systems approach.
- We must **balance competing priorities without compromising the safety** of the whole ATM Network. But safety should be the first item on our agenda.
- **We are here to support you** and help you reach your safety goals at European and local level.



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