Data, Baseline and Predictability supporting the Runway Safety Team

ICAO Middle East Regional Runway Safety Seminar - Dubai

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Scary!
ATC is

“an unpredictable yet safe aircraft separation system”
Thinking about Runway Safety Teams …I will talk to …

European strategic approach: top down meets bottom up!

Data Driven – finding and mitigating issues, setting targets.

Baseline the Concept of Operation – do what you said you would do!

ATC Safety Nets - a bottom up example of human system integration

Summary
European strategic approach – top down meets bottom up!

1460 Runway Safety Incidents in 2012. Europe 80 considered serious!

ICAO Global Runway Safety Symposium 2011 “rate of runway incursions has not decreased in more than 20 years!”

Two runway incursions every day in the European Region!
European strategic approach – top down meets bottom up!

EUROCONTROL Strategic Approach

High Level Dash Board: 5 Safety Issues
“Occupied Runway “ “Landing without a clearance”

Safety issues lead to focused Action Plans and Local Mitigation

We model safety with IRIS – Incident, Risk Assessment Model
- Supports safety design
- Helps develop Target Levels of Safety
- Valid for Current Operations, and Deploying change

FAA – Integrated Safety Assessment Model (ISAM)
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EUROCONTROL runway safety site

http://www.eurocontrol.int/articles/runway-safety

EUROCONTROL Plan for the prevention of runway incursions


EUROCONTROL Plan for the prevention of runway excursions


http://www.eurocontrol.int/training
European strategic approach – top down meets bottom up!

Future Integrated Capability

Integrated Risk Model - IRIS

Integrated Safety Assessment Model (ISAM)

Resource

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Data Driven – finding and mitigating issues

Do you know your runway(s)?

Data mining and big data techniques
- Key attributes, event paths and trend prediction

Prepare a baseline for:
- Safety issue detection
- Monitoring
- Change safety case and benefit assessment

Set and monitor safety targets
Baseline the Concept of Operation –
do what you said you would do!

Controller Hand Book or Local Manual of ATS
- Is it up to date? Do you do what you say you do?
- Baseline against the data!

Basis for safety assessment and deploying change

Opportunity to develop further to support safety arguments and change
- Use cases, Scenarios
- Models

Don’t deploy change without validating what is happening today.

**RST responsibility: safety continuity and early detection of deviation**
ATC Safety Nets - building in Predictability
ATC Safety Nets - building in Predictability

Top down meets bottom up

Our Runway Safety Issues:
- “Landing without a Clearance”
- “Detection of Occupied Runway”

Closer analysis of the safety data shows different aspects to runway safety
ATC Safety Nets - building in Predictability

“Landing without a Clearance” and “Detection of Occupied Runway

Traditional mitigation
- Training
- Education
- Procedures

System support mitigation:
- Safety Nets
  - Dependent on A-SMGCS Surveillance
  - Routing and Planning
  - Electronic strip systems
- Conformance Monitoring for Controllers - Alerts and Alarms
ATC Safety Nets - building in Predictability

SESAR ATC Safety Nets - targeting 24 Airports

Conformance Monitoring for Controllers - Alerts and Alarms

- Compares planned/cleared to actual
- Identifies unauthorised movement or errors
- Brings predictability to operations
- Is validated through human in the loop real time simulation
- Is safety assessed by IRIS
- Will go to live trials in 2015
- Deployment through to 2023
### ATC Safety Nets - building in Predictability

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<th><strong>A-SMGCS RIMS</strong></th>
<th><strong>CMAC: Alerts</strong></th>
<th><strong>CMAC: Alarms</strong></th>
<th><strong>CATC – Alerts</strong></th>
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<td>RWY INCURSION</td>
<td>TOF/LUP</td>
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#### Different Safety Nets Available

- CONFLICT
- CROSS/TOF
- ENTER/LND
- TOF/LND
- LUP/LND
- LND/LND
ATC Safety Nets - building in Predictability

No Landing Clearance (Alarm)
ATC Safety Nets - building in Predictability

Runway Incursion (Alarm)
ATC Safety Nets - building in Predictability

RED Stop Bar Crossed (Alarm)
An integrated approach to safety:

- Top down strategic goals (our issue) and State Targets
- Integrates system capability and the controller
- An “airport by airport” basis – tuning, reflects local concept
- Requires a change to traditional operations – concept & culture change
- Validated through scenarios, update of concept of operation
- Can be measured so is subject to Target Levels of Safety
- TLS feed back to the airport and the strategic goals

**Runway Change should be owned by the Runway Safety Team**
ATC Safety Nets - building in Predictability

ATC Safety Nets

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SESAR Joint Undertaking

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Summary

My Aim was to “provide a European view of an integrated top down, bottom up approach to runway safety, owned by the Runway Safety Team.”
Summary

- EUROCONTROL strategic approach – monitoring and capturing top safety issues;
- development of action plans and local mitigation, resources available on the web to the RST;
- do you know your runway – need for data assessment and introduced IRIS, a resource also available to the RST;
- pleaded that you ensure you have an up to date concept and that you do what you said you would do;
- suggested that you baseline your concept and data to support safety targets and operational change;
- provided an example of an integrated system controller change.
Summary

observed that “safety is part of our business, it has a value and investment in safety will bring a return on investment.”

consider that …. for an individual airline:

… average cost of a go-around is between 1000 and 1500 Euros

… 1 minute of delay costs in the region of 90 to 113 Euros

Having a motivated multi-disciplined Runway Safety Team pays!!
Thank you.