

# airBaltic and SMS



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10 April, 2013

Lauris Mikelsons

VP Quality Assurance

BT & RIX development

Quality & Safety management

Summary & Way forward

# airBaltic & RIX Development



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# Recent highlights

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**The Airline  
Pacesetter Award**  
airBaltic 2010



**airline of  
the year 2009/10**  
an era:gold award



**ATW'S 36TH ANNUAL  
AIRLINE INDUSTRY  
ACHIEVEMENT AWARDS**  
**Phoenix Award**

- 17 new routes in 2009;
- 27 new routes in S2010;
- Airline of Year 2009/10 in Europe by ERA;
- ATW Phoenix Award 2010
- 2010 in figures (3.2million pax, 69% LF,+16% growth)



# Direct flights from Riga in 1990

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# Direct flights from Riga in 2002

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# airBaltic flights from Riga 2011

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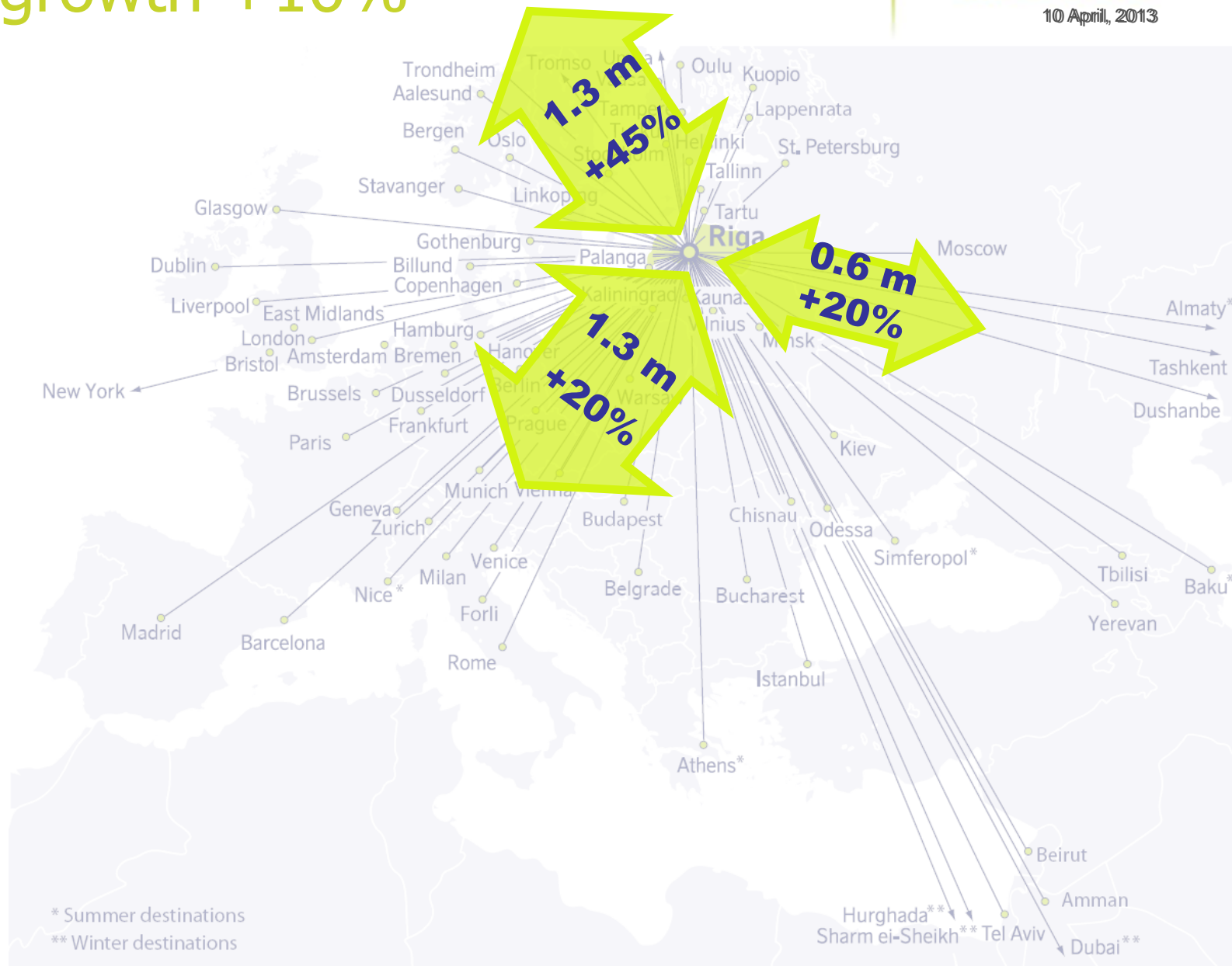
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# airBaltic passenger flows 2010, total growth +16%

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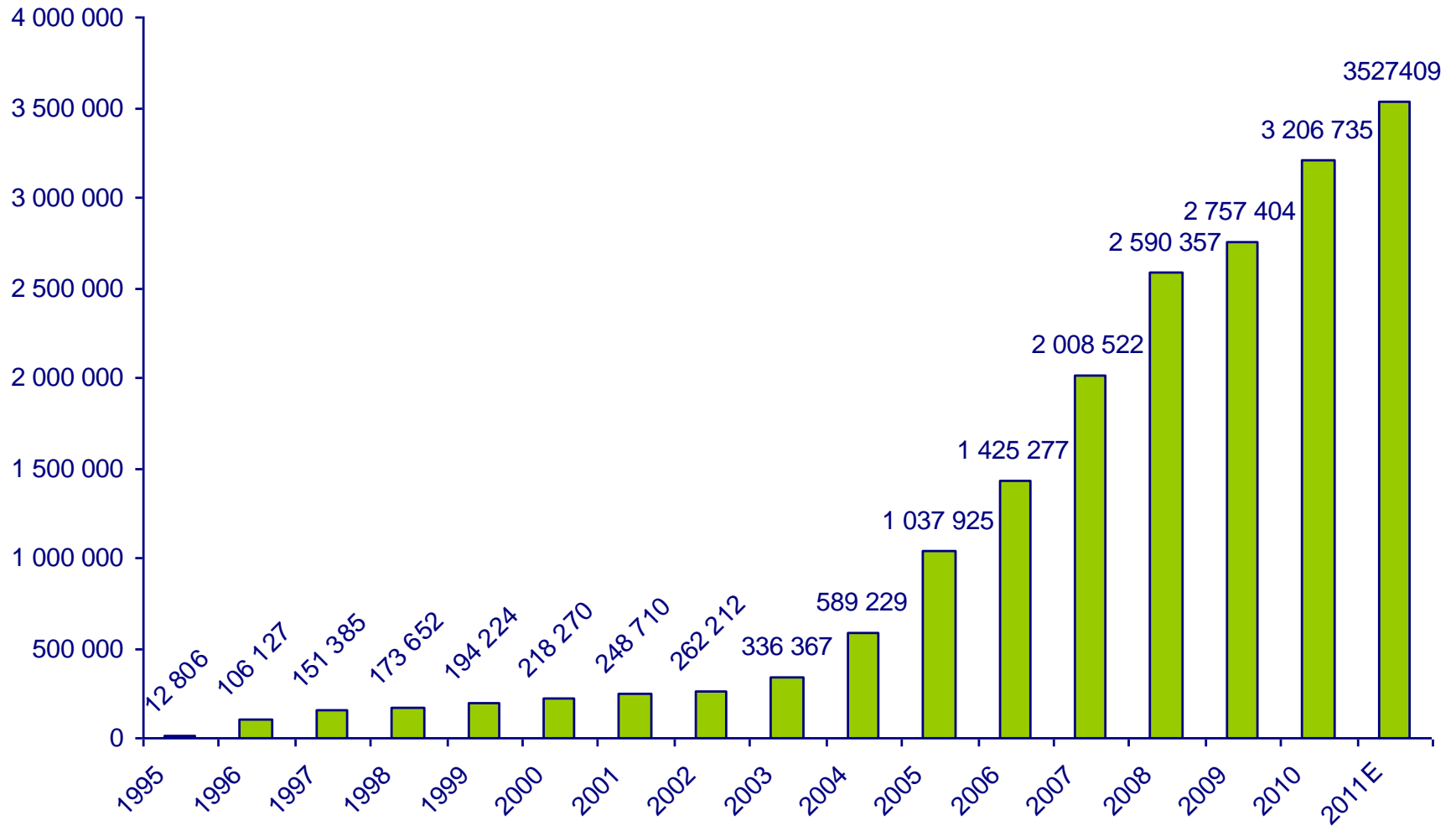




# airBaltic passenger growth

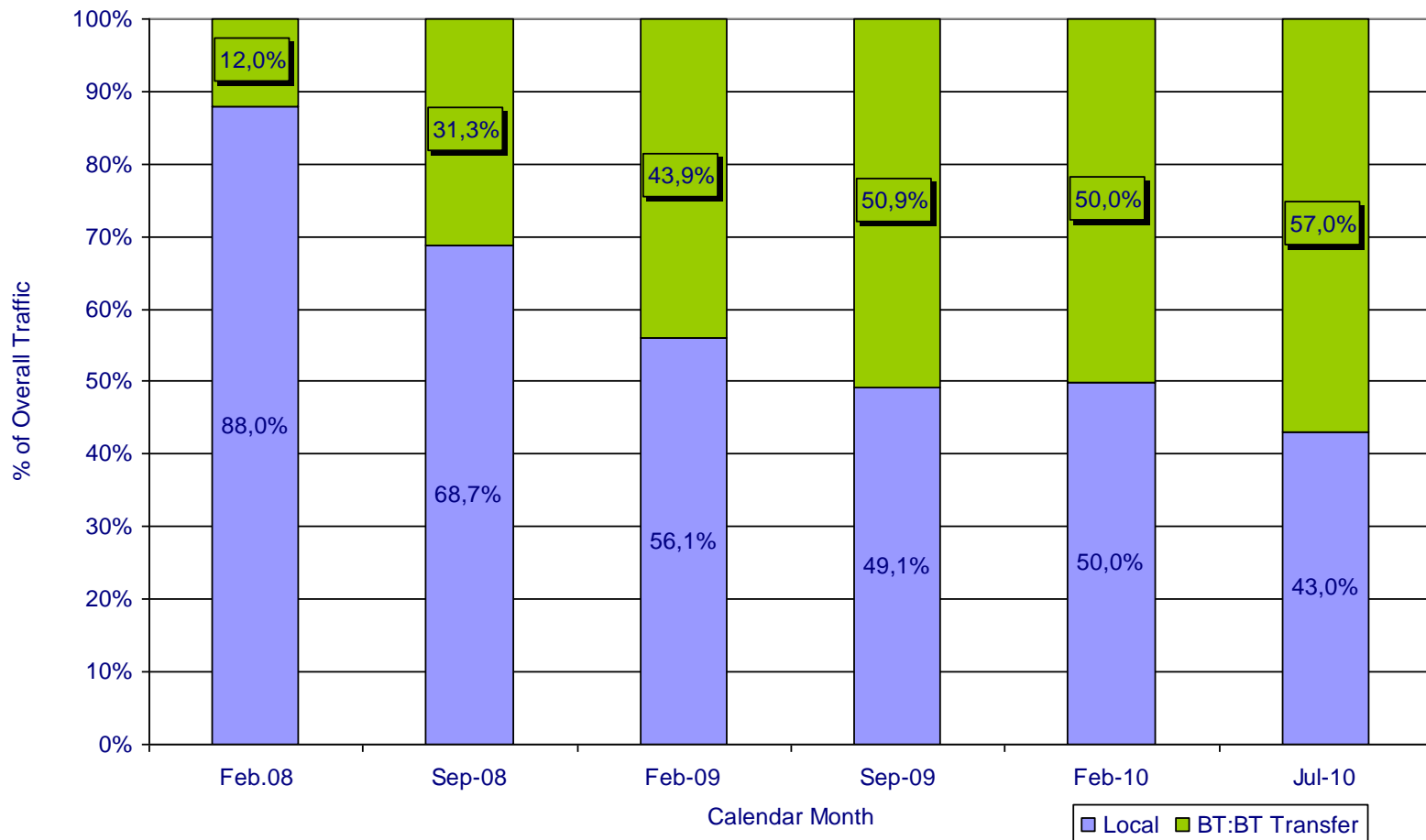
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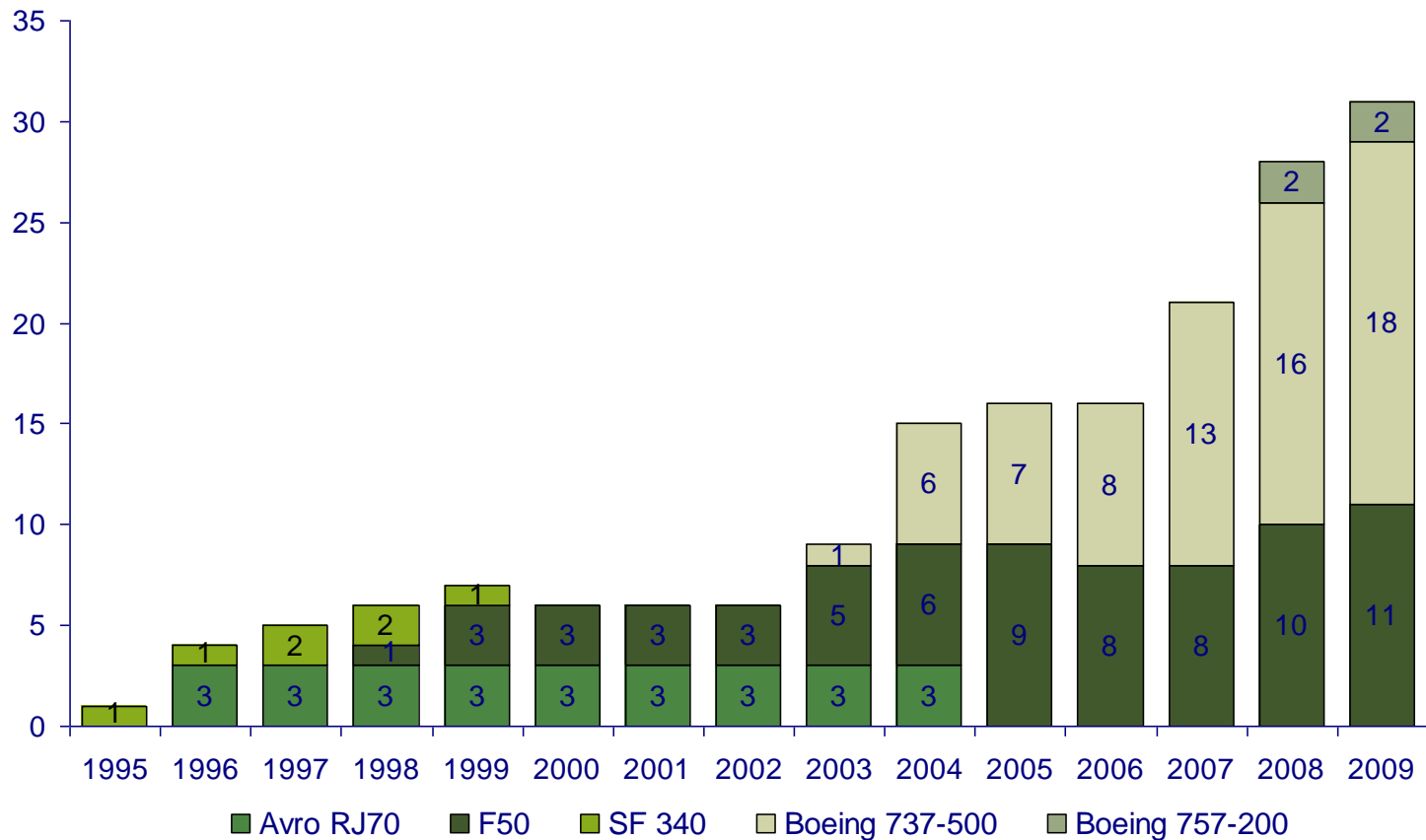


# airBaltic transfer share Riga

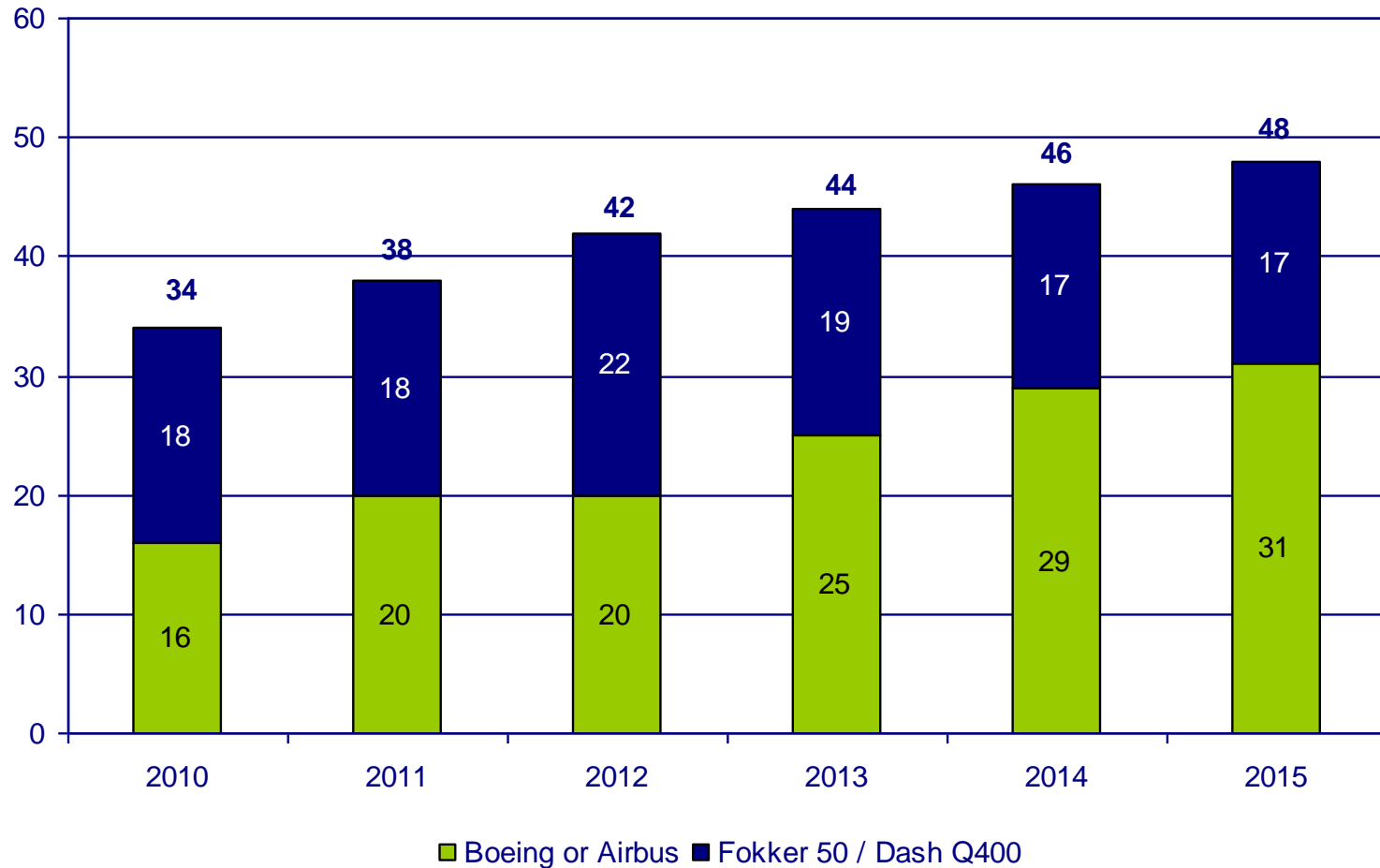
## Changes in BT's Traffic Mix at RIX



# airBaltic fleet 1995-2009



# airBaltic fleet forward 2010-2015



# Quality & Safety Management



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# My background

## Education:

**Riga Aviation University, (93-98)**

B.Sc.Ing. Aircraft and Power plant Mechanics

**UNO Aviation Institute, NE, USA (94-95; 2001)**

General aviation studies & GA maintenance internship

**Cranfield University, UK (03-04)**

M.Sc. Air Transport Management

## Experience:

**CAA of Latvia, Airworthiness inspector (95-98)**

### **airBaltic airline**

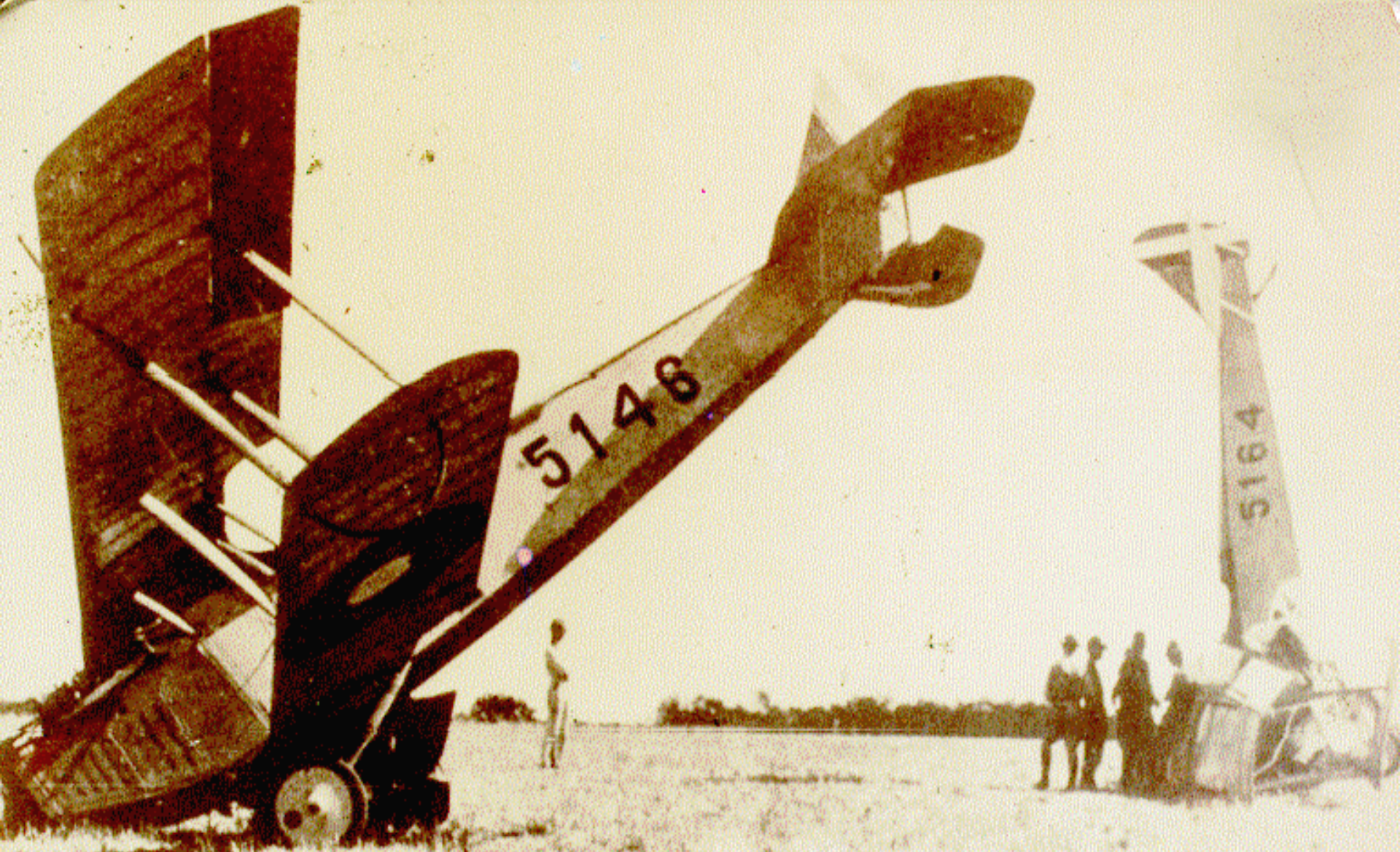
Flight Standards admin, auditor (98-03)

Engineering Manager, auditor (04-05)

Quality Manager, auditor (07- present)

### **easyJet airline**

Engineering Quality & Safety Manager, auditor (05–07)

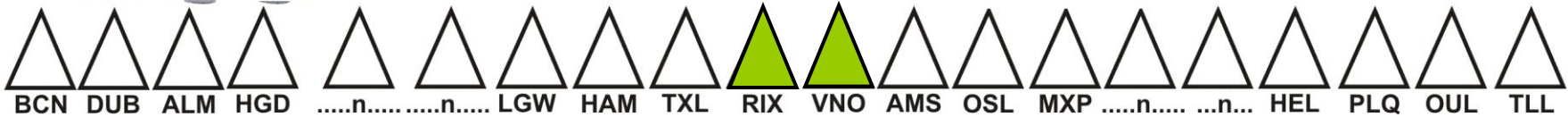
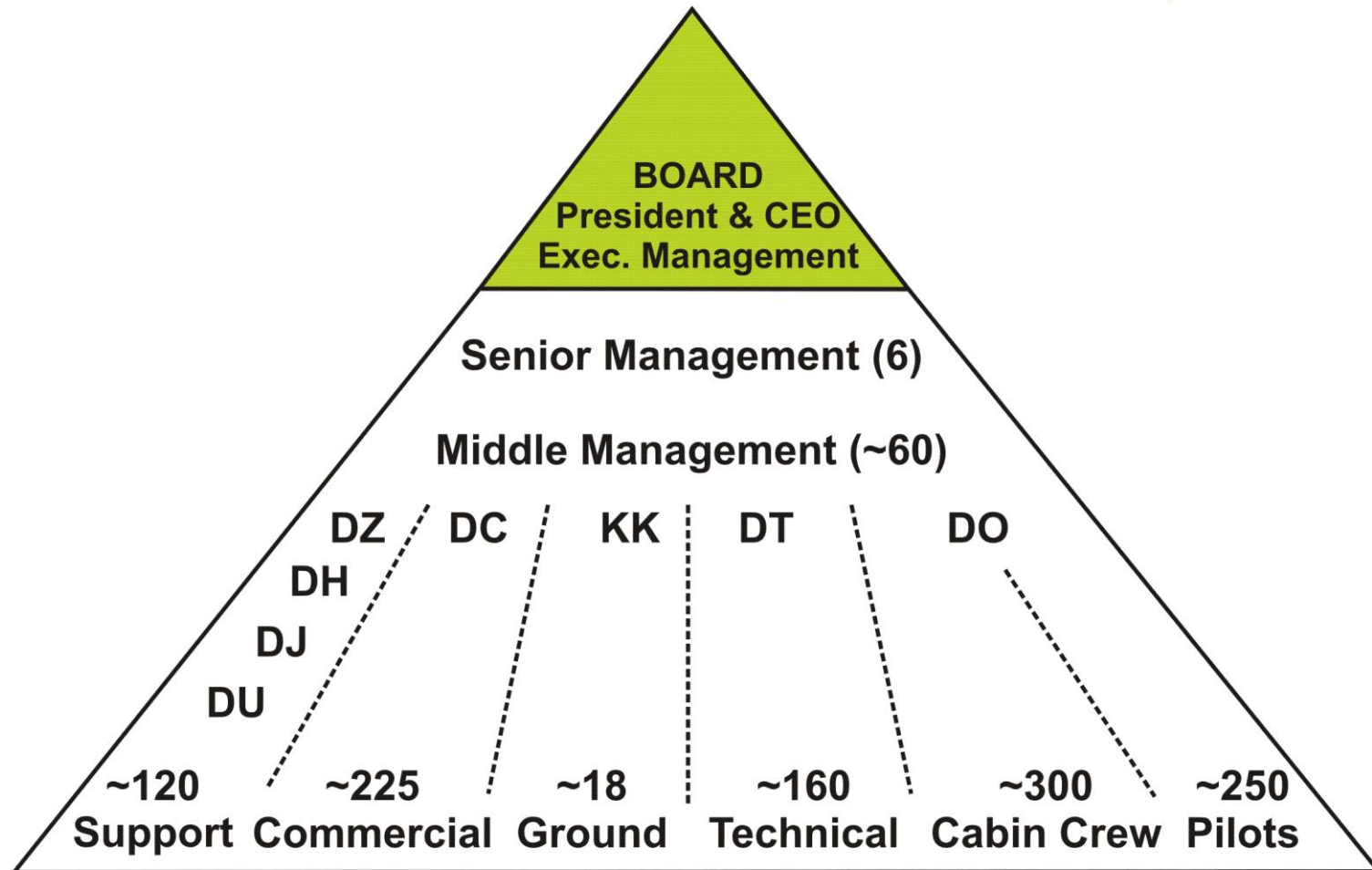


**“Human beings by their very nature make mistakes; therefore, it is unreasonable to expect error-free human performance.” Shappell & Wiegmann, 1997**

# Our Business = People & Aircraft

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# Operational considerations

- Most of Equipment is very mature and reliable;
- Human behind ~ 95% of causal factors in all occurrences;
- Incidents and Accidents are rare and unpredictable with little learning for daily routines;
- Ground incidents / damages are frequent front-line indicators of airline organisational incidents;
- Errors and slips are evident in most regulated processes;
- Need to separate the *Ants* from *Elephants*...  
.... to maintain the control & develop safely.

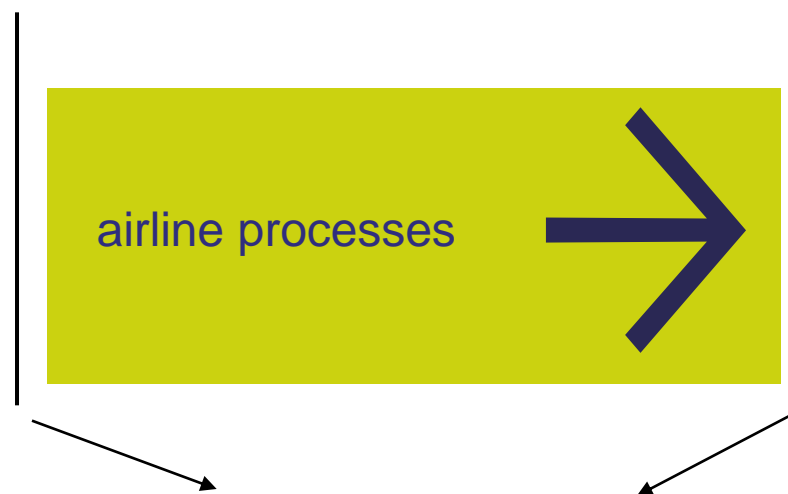
# Quality & Safety roles

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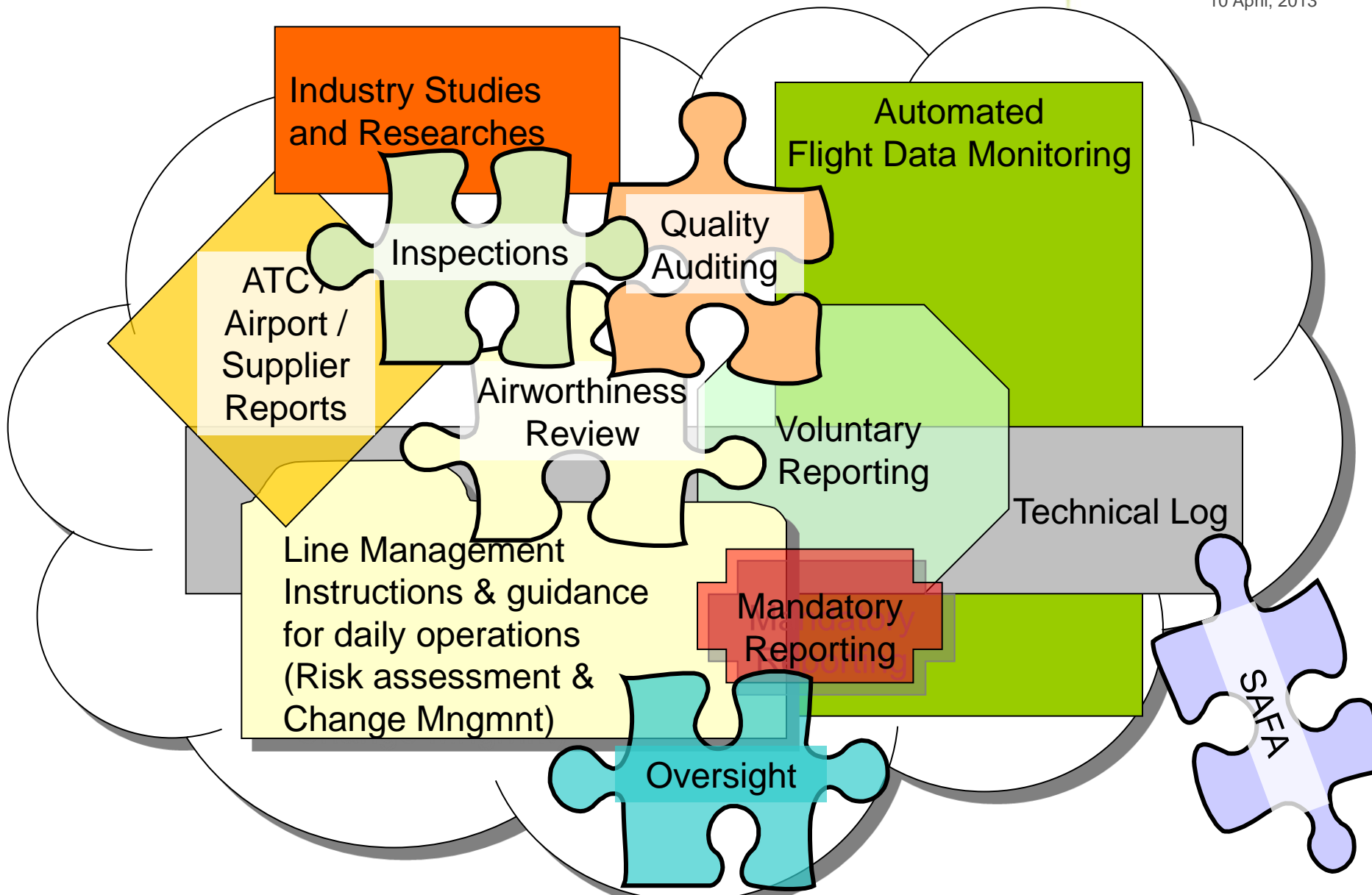
Quality monitoring of  
0.1-100% of system inputs

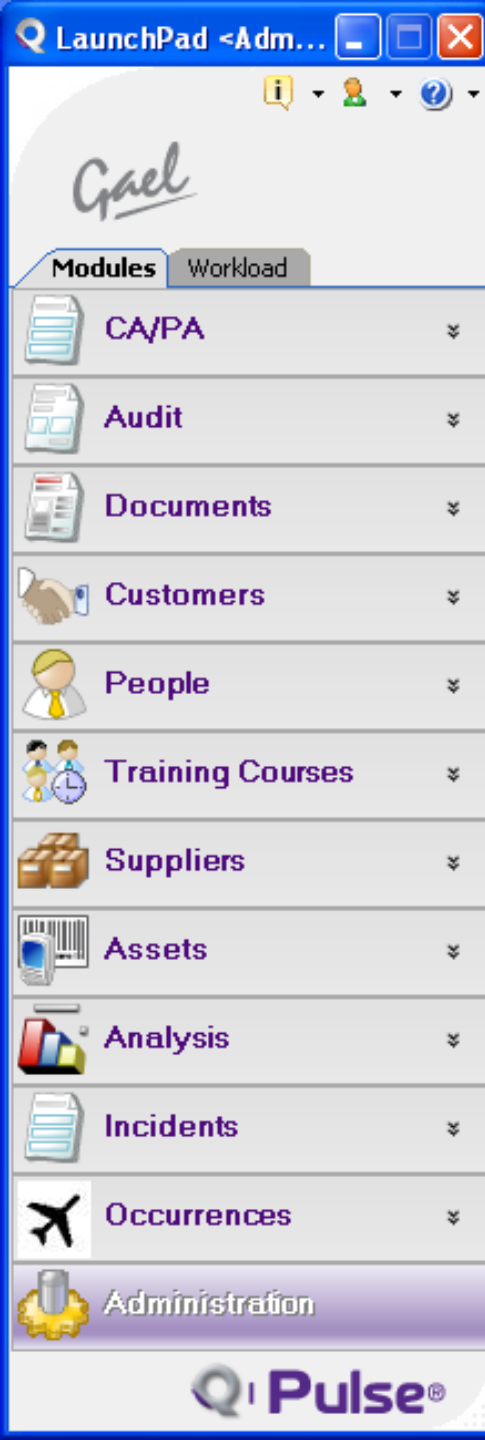
Safety monitoring of  
100% system output



Cooperate on evolution of audit methodology and scope;  
sharing the workload of investigations

# Safety Information Sources





## Results and Trends

Convenient management of:

- All incoming reports
- Audit schedule and follow-up
- Review of timely responses
- Various data analysis

ISO 9000 compliant Quality Management System

# Reporting

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Number	Details	Status	Overall Tar...	Severity
FSR30	BT693/18APR/YL-BBI: FO was PF. During approach in	Closed	2008.05.19.	Level 3
FSR31	BT652/21apr/YLBDC:After being cleared by Riga Control	Open	2008.05.22.	Level 2
FSR32	YL-BBQ/24apr/BT222/MUC:We depart fro	Closed	2008.05.22.	Level 3
FSR33	YL-BBI/BT158/25apr/OSL:During descent	Closed	2008.05.22.	Level 3
FSR34	LYBAV/26apr/BT111/WNO:Stuck flap handle during	Closed	2008.05.26.	Level 3
FSR35	YLBAT/27apr/BT301/RIX:During cruise flight, left side	Closed	2008.05.27.	Level 3
FSR36	A/C was grounded by decision of technical department	Open	2008.05.09.	Level 2
FSR37	YLBBF/10may/BT711:After departure in R	Closed	2008.05.12.	Level 3
FSR38	BT694/26may/YL-BBI/CDG:During t/o roll	Closed	2008.05.27.	Level 3
FSR39	YL-BAT/30.05.08:During approach in HEL for ILS RWY	Open	2008.06.30.	Level 3
FSR40	YL-BBL/06.06.2008:We were cleared to taxi Z, B, hold	Open	2008.07.06.	Level 3
FSR41	YL-BBY/06.06.2008./BT-602:During descend to FL150	Closed	2008.07.11.	Level 3
FSR42	YL-BBL/BT-622/08.06.2008.: We were pu	Closed	2008.07.11.	Level 3
FSR43	YL-BAS/BT019/17.06.2008.: During flight, we	Closed	2008.07.25.	Level 3
FSR44	YL-BAW/BT316/17.06.2008: During t/o was unusual	Open	2008.07.25.	Level 3
FSR45	YL-BAW/BT401/17.06.2008: During cruise flight, AP ALT	Closed	2008.07.25.	Observation
FSR46	YL-BDB/20JUN/BT7717/RIX:After gear-up	Open	2008.07.21.	Observation
FSR47	Flight BT002/ LPX-RIX/11.03.08 operated	Open	2008.07.25.	Level 3
FSR48	BT655/27JUN/YLBBI:We have noticed converging	Open	2008.07.25.	Level 3
FSR49	BT214/30JUN/YLBBI:Unstabilized approach reported by	Open	2008.07.30.	Level 2

→ Flight Safety reports

→ Cabin Safety reports

→ Voyage reports

→ Technical reports & investigations

→ Employee feedback

→ Suppliers / Oversight

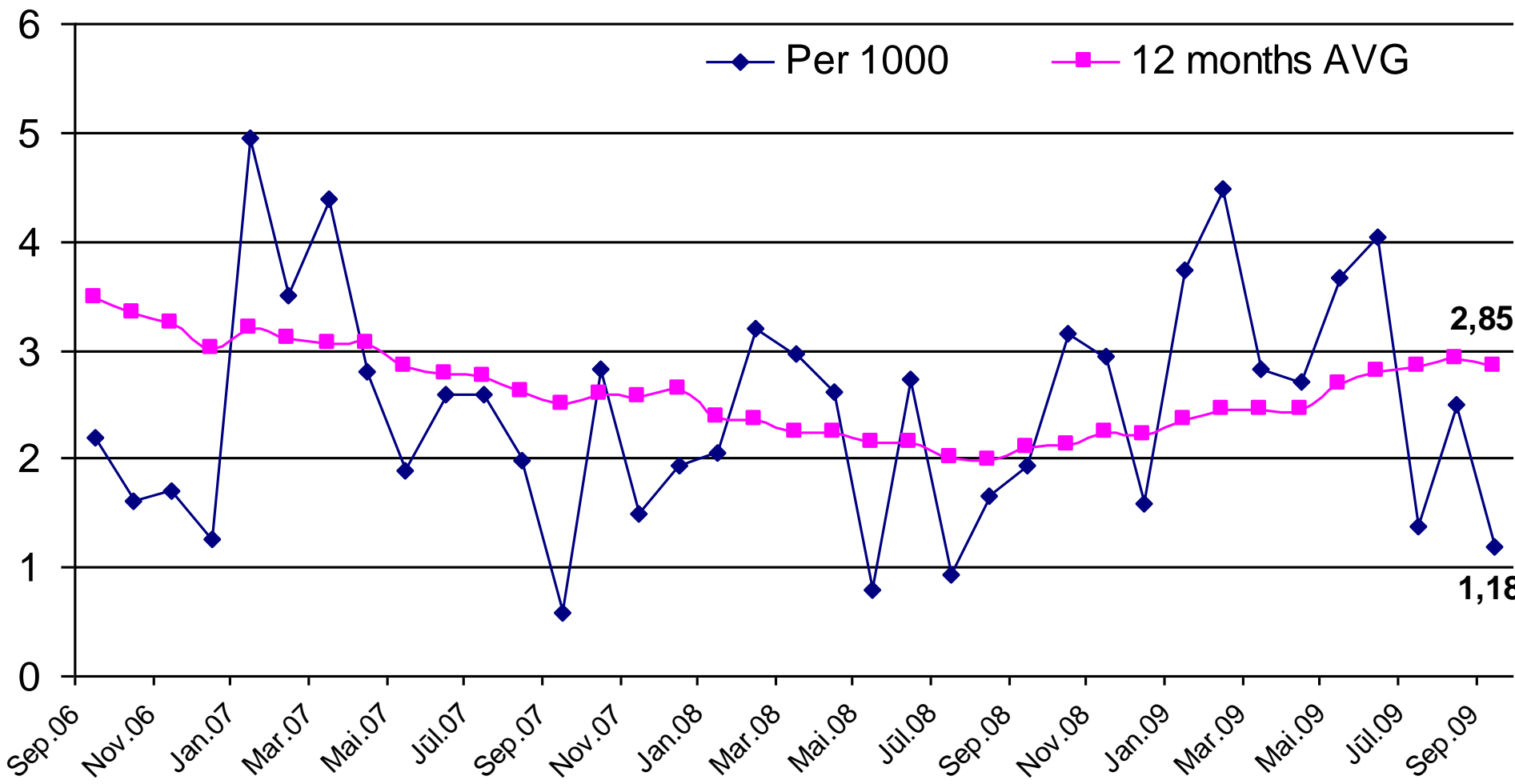
→ Customer complaints

# Statistical Monitoring of Safety Events

(reportable events equalized per 1000 sectors flown)



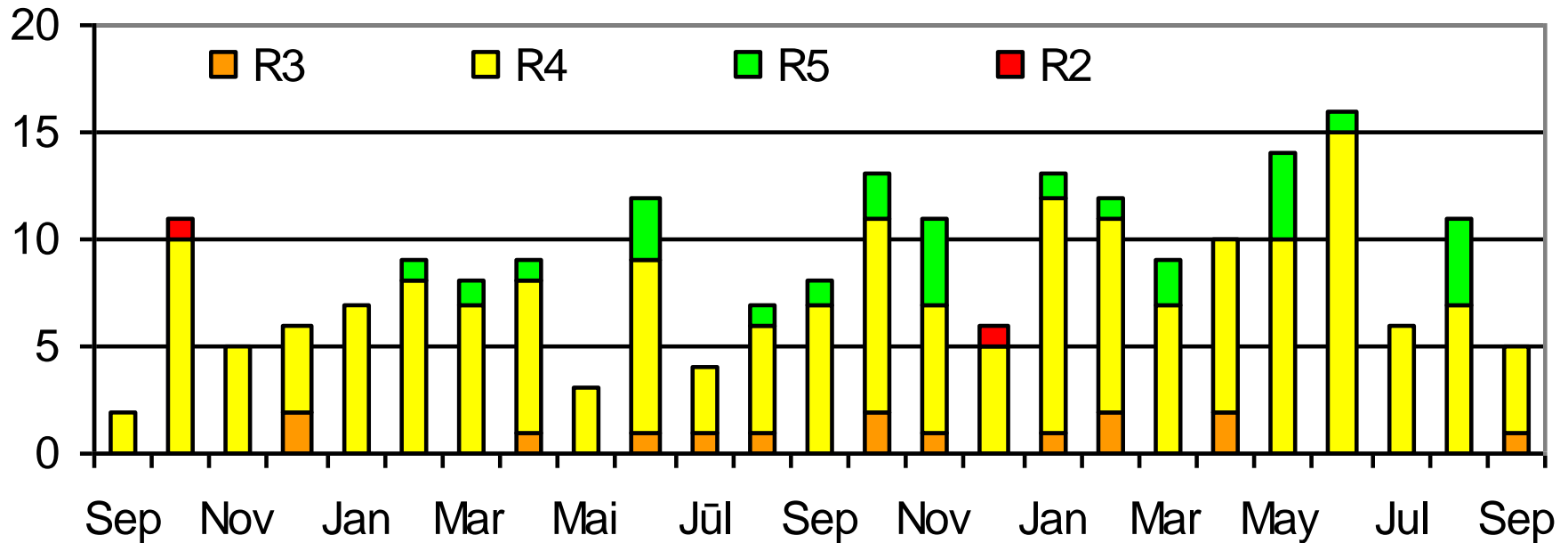
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# Risk Categories

Category	If the event should recur, the probability of a major accident is...
R1	high
R2	increased under any circumstances
R3	increased under adverse circumstances that occasionally prevail
R4	not increased or increased only under extreme circumstances
R5	not increased as the occurrence is not related to flight safety

# Categories of Reported events



Assessment of events carried out by Flight Safety Office and Post Holder of the respective Operating department.

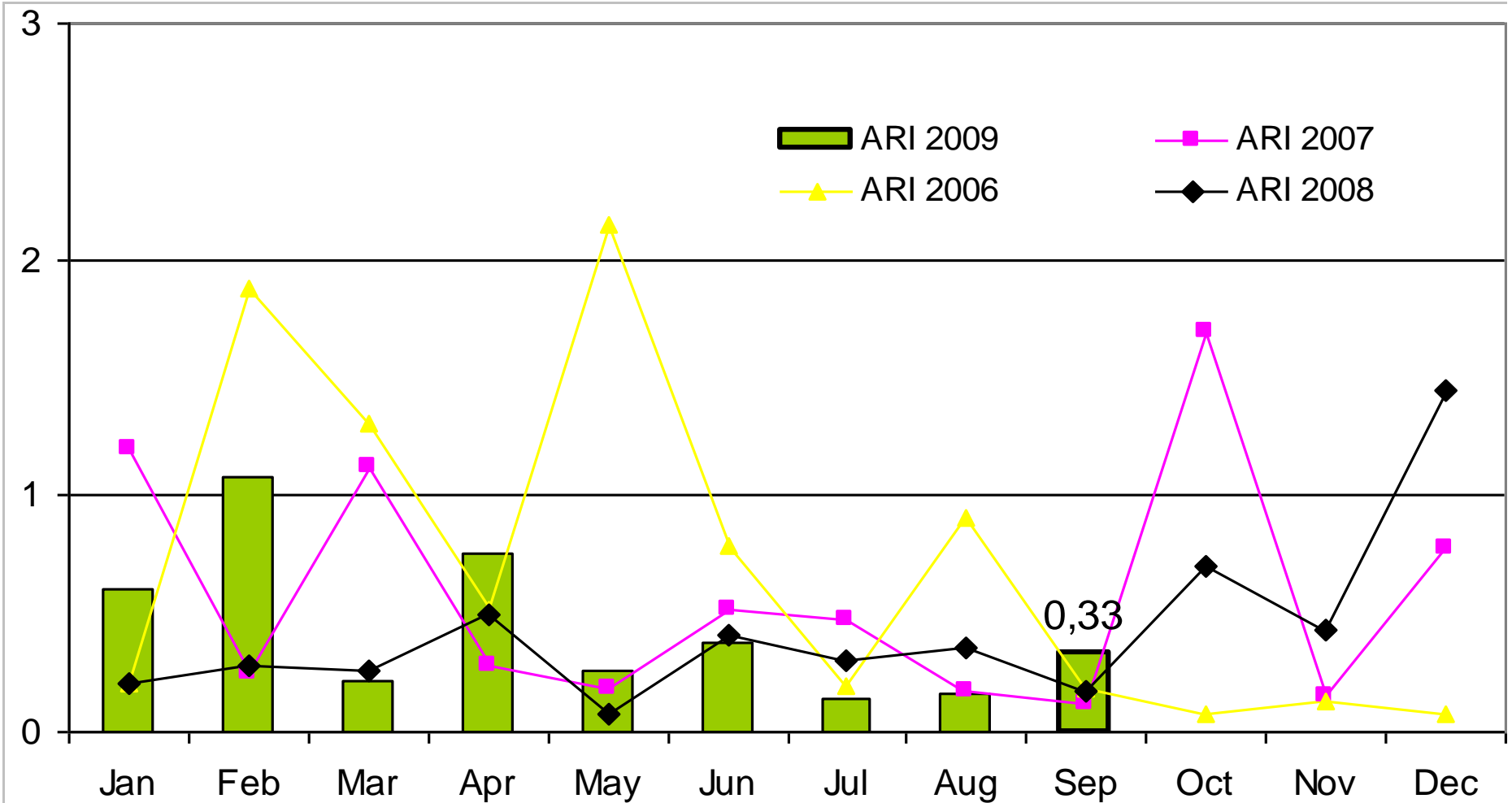
All events reported to the State Aviation Authority and investigated.



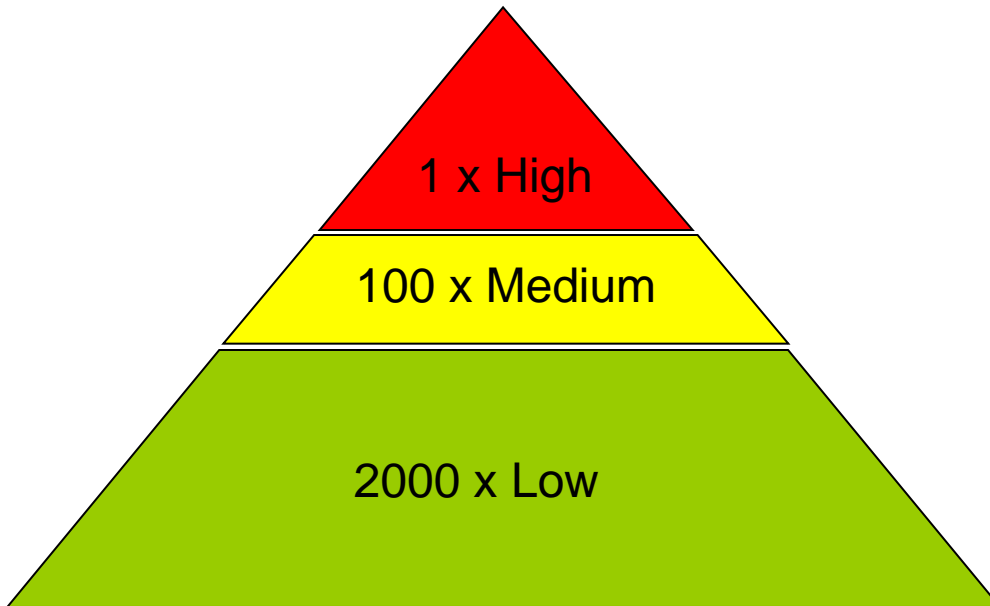
# Airline Risk Index

(reportable events x severity, equalized per 1000 sectors)

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# So What?



Not all threat combinations are visible, tangible, nor predictable

Staff on duty shall have clear understanding of potential risks and safety impact of own activities

Safety monitoring & evidence recording shall become part of daily routines and decision-making

# Sample of Self-Monitoring

## 100h/28d FDT & Minimum Rest time monitoring (1 calendar month)

### 100 flight hours exceeded in 28 day period

	<b>High</b> (more than 10 cases per 1000 cycles)	<b>Medium</b> (2-10 cases per 1000 cycles)	<b>Low</b> (less than 1 case per 1000 cycles)
<b>High</b> (more than 3 flight hours exceeded)			0.05 (pilots) 0.79 (cabin crew)
<b>Medium</b> (1-3 flight hours exceeded)			0.35 (pilots) 0.89 (cabin crew)
<b>Low</b> (less than 1 flight hour exceeded)		1.14 (cabin crew)	0.35 (pilots)

### Minimum Rest Time reduced

	<b>High</b> (more than 10 cases per 1000 cycles)	<b>Medium</b> (2-10 cases per 1000 cycles)	<b>Low</b> (less than 1 case per 1000 cycles)
<b>High</b> (more than 45min. short to minimum rest period)			0.2 (pilots) 0.45 (cabin crew)
<b>Medium</b> (15 till 45 min. short to minimum rest period)			0.2 (pilots) 0.35 (cabin crew)
<b>Low</b> (less than 15 min short to minimum rest period)			

# Sample of Self-Monitoring

## DOW&DOI accuracy assessment (1 calendar month)

### Dry Operating Weight discrepancies

	<b>Often</b> (More than 1% of flights) (More than 10 cases out of 1000 flights)	<b>Occasionally</b> (Up to 1% of flights) (Up to 10 cases out of 1000 flights)	<b>Seldom</b> (Less than 0,1% of flights) (Less than 1 case on 1000 flights)
<b>Significant</b> (0,5% MLW exceeded)		9 cases out of 2420 flights (0,37% of flights)	
<b>Medium</b> (0,05% MLW exceeded)		7 cases out of 2420 flights (0,29% of flights)	
<b>Negligible</b> (less than 0,05% MLW exceeded)		11 cases out of 2420 flights (0,45% of flights)	

### Dry Operating Index discrepancies

	<b>Often</b> (More than 1% of flights) (More than 10 cases out of 1000 flights)	<b>Occasionally</b> (Up to 1% of flights) (Up to 10 cases out of 1000 flights)	<b>Seldom</b> (Less than 0,1% of flights) (Less than 1 case on 1000 flights)
<b>Significant</b> (0,5% of C.G.%MAC exceeded)		11 cases out of 2420 flights (0,45% of flights)	
<b>Medium</b> (0,5 [Index Units] exceeded)		20 cases out of 2040 flights (0,83% of flights)	
<b>Negligible</b> (less than 0,5 [Index Units] exceeded)	472 cases out of 2040 flights (19,50% of flights)		

# Potential Benefits

Providing clear safety margins to the individuals will contribute towards improved safety & business integrity, by:

- Creating risk-controlled operating environment
- Identifying areas for continuous safety improvement
- Reducing occurrence numbers & severity
- Improving a/c availability
- Streamlining interfaces amongst operating units
- Becoming management tool for balanced decision making

# Change Management – Formalised Risk assessment & Mitigation

(Sample B3 Aerodrome assessment)



Flight Safety Assessment	
Unique Threats	Additional Defences
<b>Crew experience</b>	For first two months operations line captains (LCP) and experienced FO (over X00h on type) authorized to operate. After gaining operational experience, Captains with no LCP can operate to XXX following familiarization flight. Captains and FO with experience less than X00h on type not authorized to operate. Ground School Familiarization required before flight to XXX. Familiarization valid for 6 months.
<b>High terrain</b> , Some obstacles not equipped with obstacle lights	EGPWS data base shall be maintained updated. On approach Terrain mode selected on ND.
<b>Non-standard glide path</b> angle – 4 degrees	Flaps 40 before entering GS, No Autoland. 3 degree PAPI visual GS.
<b>Remote Alternates</b> (closer aerodromes are either complicated, requiring special permits, or closed during airBaltic night-stop flights)	ALT1, ALT2, ALT3 designated as alternates, requires consideration for extra alternate fuel
<b>Frequent turbulence &amp; severe icing</b>	Engine Anti/Ice On, when in clouds. Additional crosswind limits set (reduced by 5 kts compared to OM B 1.3.1)
Relatively <b>Short RWY &amp; LDA</b> – 2000 m, landing performance limitations likely	Flaps 40 landing, Low Friction or Contaminated RWY Landing Field Limit Weight for $\leq FC0.4$ to be checked (OMB 4.A4) Autobrake MAX, after landing apply MAX manual brakes (allows to benefit from reverse thrust).

<span style="color: red;">■</span> Intolerable	<span style="color: yellow;">■</span> Tolerable	<span style="color: green;">■</span> Acceptable
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# Interaction with the CAA

## Cooperation through regulatory evolution:

- Timely notification of safety related occurrences
- References to the list of reportable occurrences
- Details of preliminary risk assessment
- Automated notification on the investigation closure
- Support with cross-border investigations and resolution of SAFA disputes

# Summary of SMS implementation

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## Investment:

- Committed staff with suitable tools, training & procedures
- Slight increase in formalising investigations, recommendations and management decisions

## Benefits to the Airline:

- Increased safety awareness & participation
- Transparent safety risks & safeguards towards management, CAA and public benefit



**Thank you!**

**Your Questions & Comments**