EUROPEAN AVIATION SAFETY AGENCY
AGENCE EUROPÉENNE DE LA SÉCURITÉ AÉRIENNE
EUROPÄISCHE AGENTUR FUR FLUGSICHERHEIT

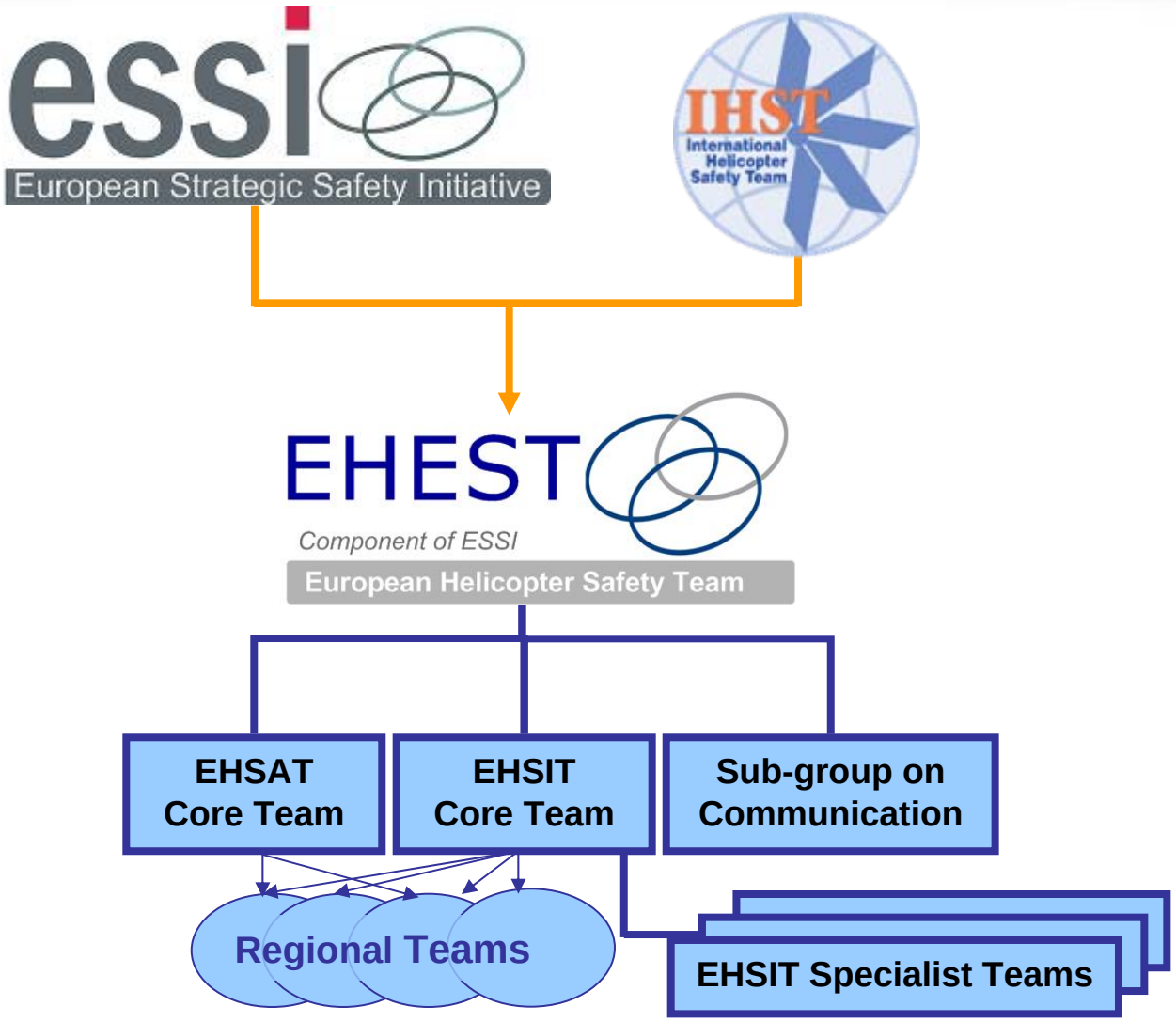
EHEST
Component of ESSI
European Helicopter Safety Team

GCC Helicopter Safety Team Meeting
11 Jan 2011
Sharjah Department of Civil Aviation
United Arab Emirates

The European Helicopter Safety Team (EHEST): Organisation and current achievements

Michel Masson, PhD, EASA
EHEST Secretary and EHSAT co-Chair

Your safety is our mission.


essi
European Strategic Safety Initiative
IHST
International Helicopter Safety Team
EHEST
Component of ESSI
European Helicopter Safety Team
EHSAT Core Team
EHSIT Core Team
Sub-group on Communication
Regional Teams
EHSIT Specialist Teams

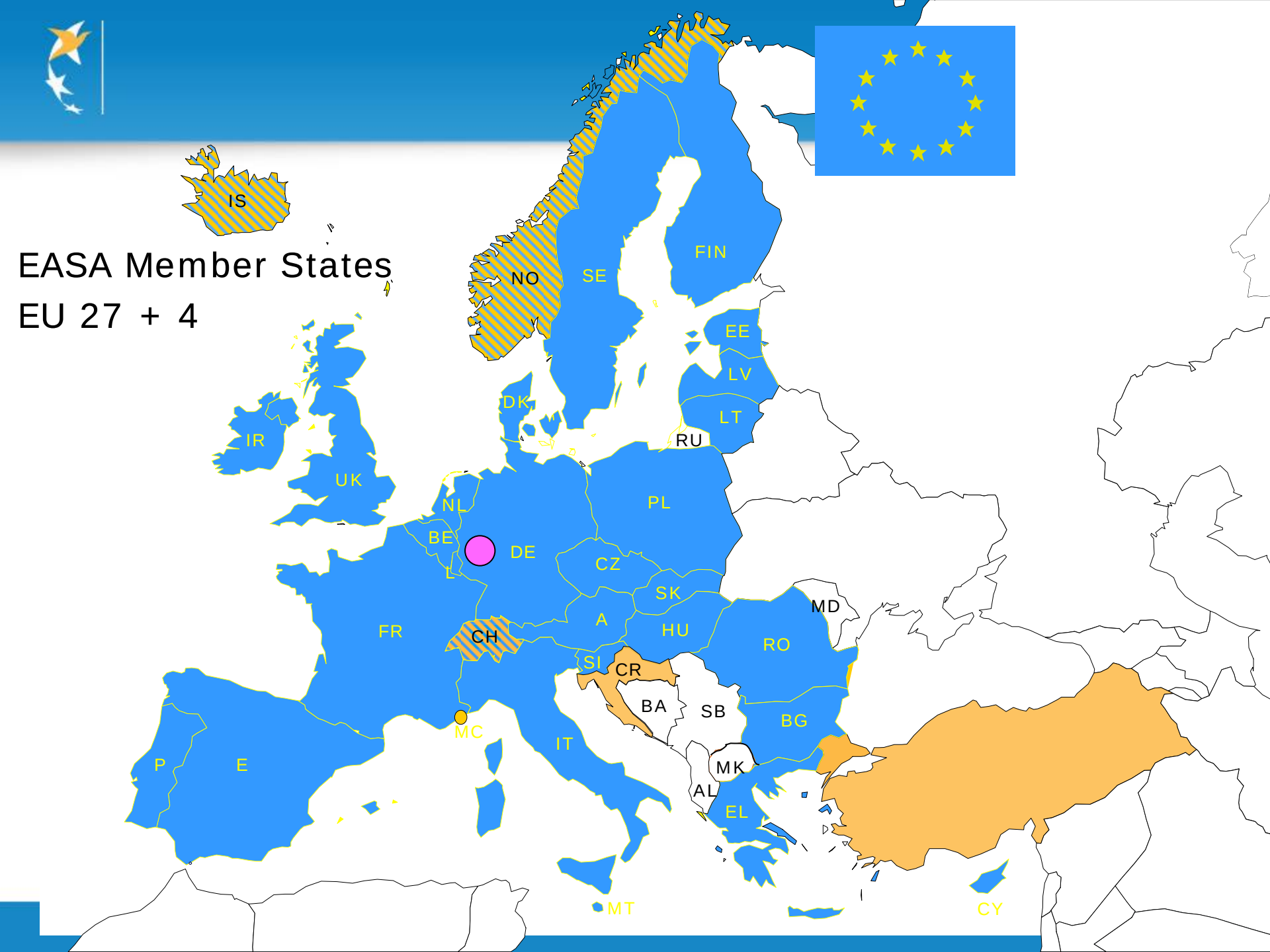
The European Strategic Safety Initiative ESSI

- **10 year programme (2006-2016) aimed at improving aviation safety in Europe, and for the European citizen worldwide**
- **Partnership, with more than 150 organisations**
- **Facilitated by EASA and powered by industry**

www.easa.europa.eu/essi

EASA in Cologne, Germany since 2004

- **Independent legal status**
- **Operational since 28 September 2003**
- **Offices in Cologne since 1st November 2004**


EASA Member States
EU 27 + 4
IS
NO
SE
FIN
EE
LV
LT
RU
DK
IR
UK
NL
BE
L
DE
PL
CZ
SK
A
HU
MD
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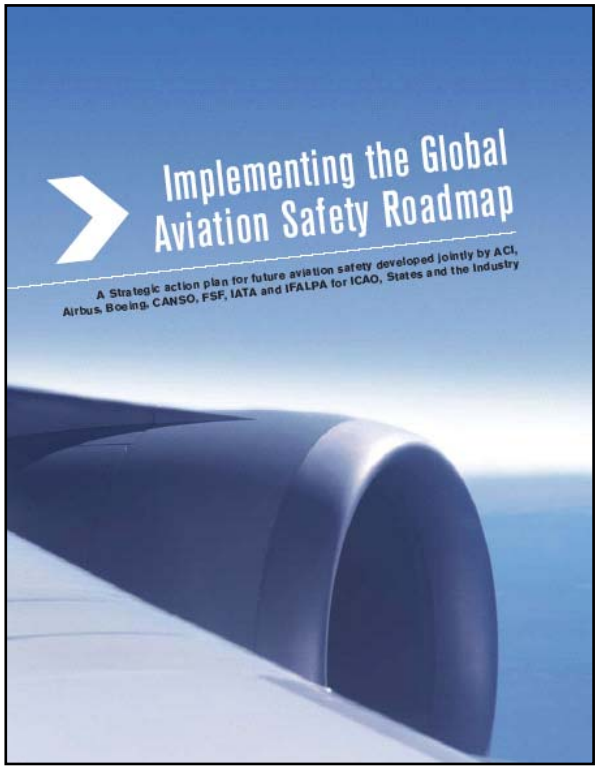
EASA Mission

- Centrepiece of the EU strategy for aviation safety
- Mission is to promote highest standards of safety and environmental protection in civil aviation
- Rulemaking, Certification, Approval and Standardisation
- 1st remit extension (2008): Operations, FCL, third country operators
- 2nd remit extension (2009): Aerodromes, ATM and ANS

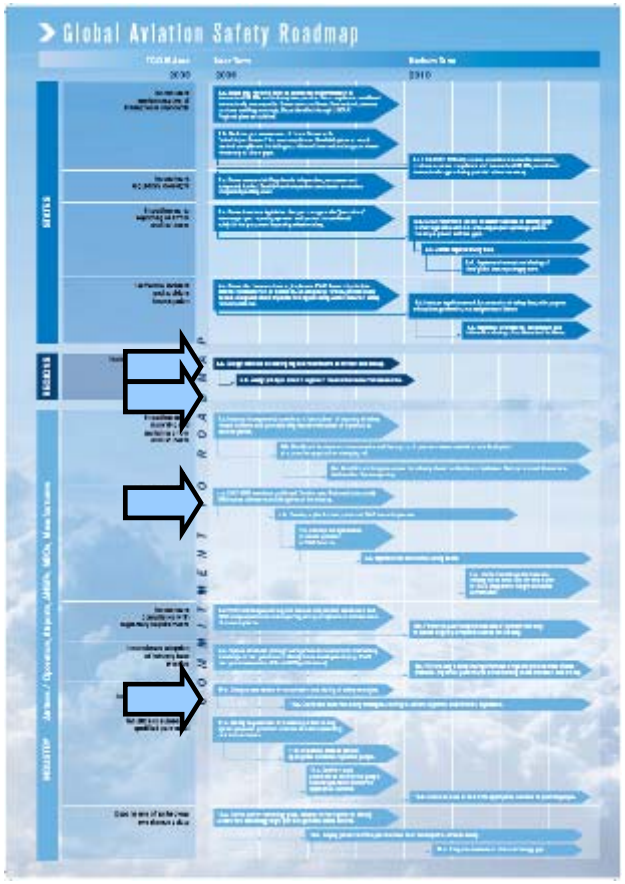
ESSI
One of the Major Safety Teams worldwide

ESSI in line with the ICAO Global Aviation Safety Roadmap



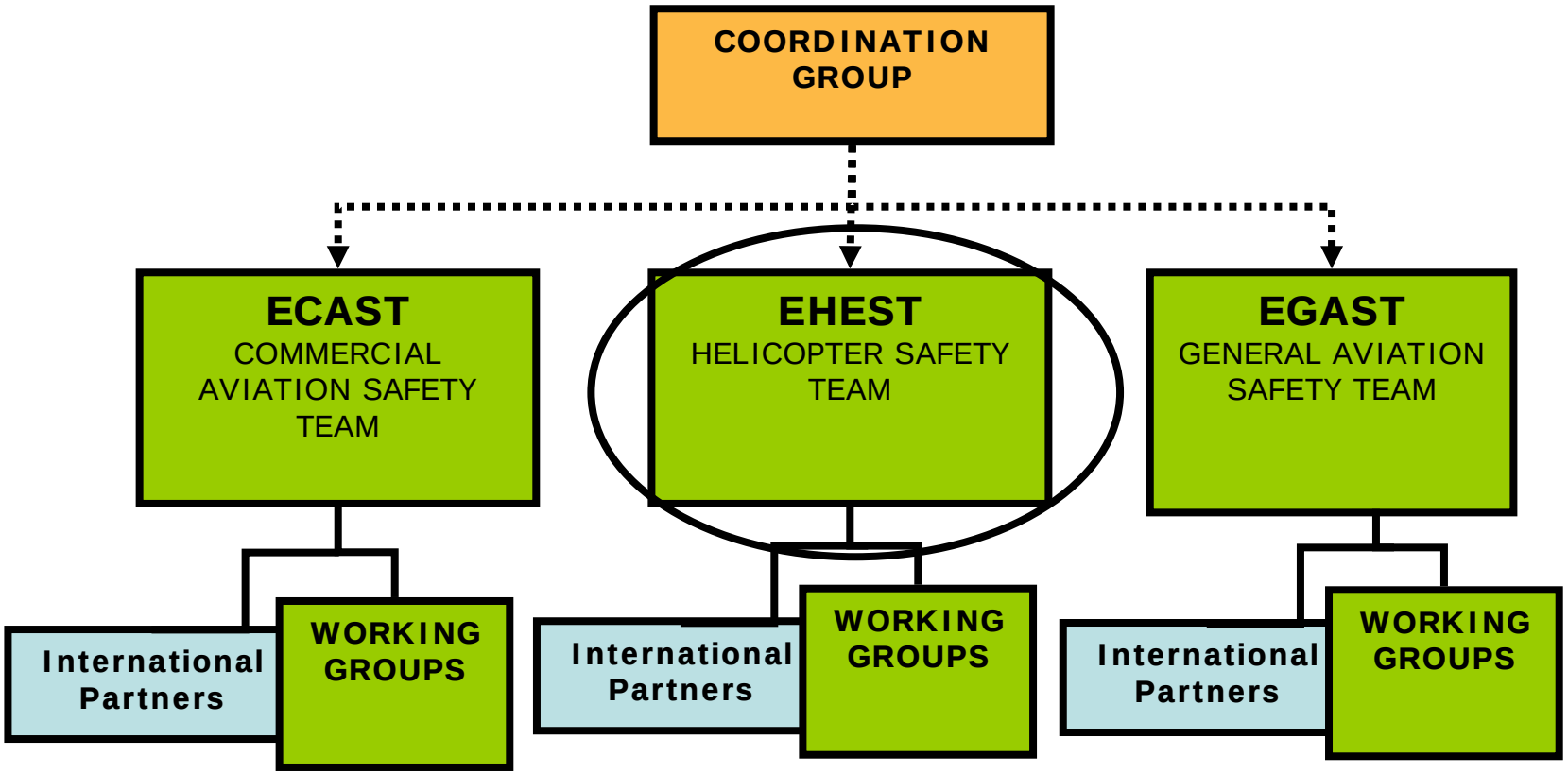
- **ICAO GASRM - 2006**
  - Frame of reference for stakeholders, including States, regulators, airline operators, airports, aircraft manufacturers, pilot associations, safety organisations and air traffic service providers
  - To improve coordination and sharing
  - To minimise duplication

ESSI in line with the ICAO Global Aviation Safety Roadmap



- ICAO Focus area 5a:
  - Design and build on existing regional mechanisms in order to foster consistency
- ICAO Focus area 5b:
  - Assign priority of action to regions in need on the basis of risk assessment
- ICAO Focus area 7a:
  - ICAO SMS standard published. Confirm need for formal (mandate) SMS across all sectors and disciplines of the industry
- ICAO Focus area 10b
  - Coordinate and share safety strategies, seeking to achieve alignment and minimize duplication

essi
European Strategic Safety Initiative



The International Helicopter Safety Team IHST

IHST

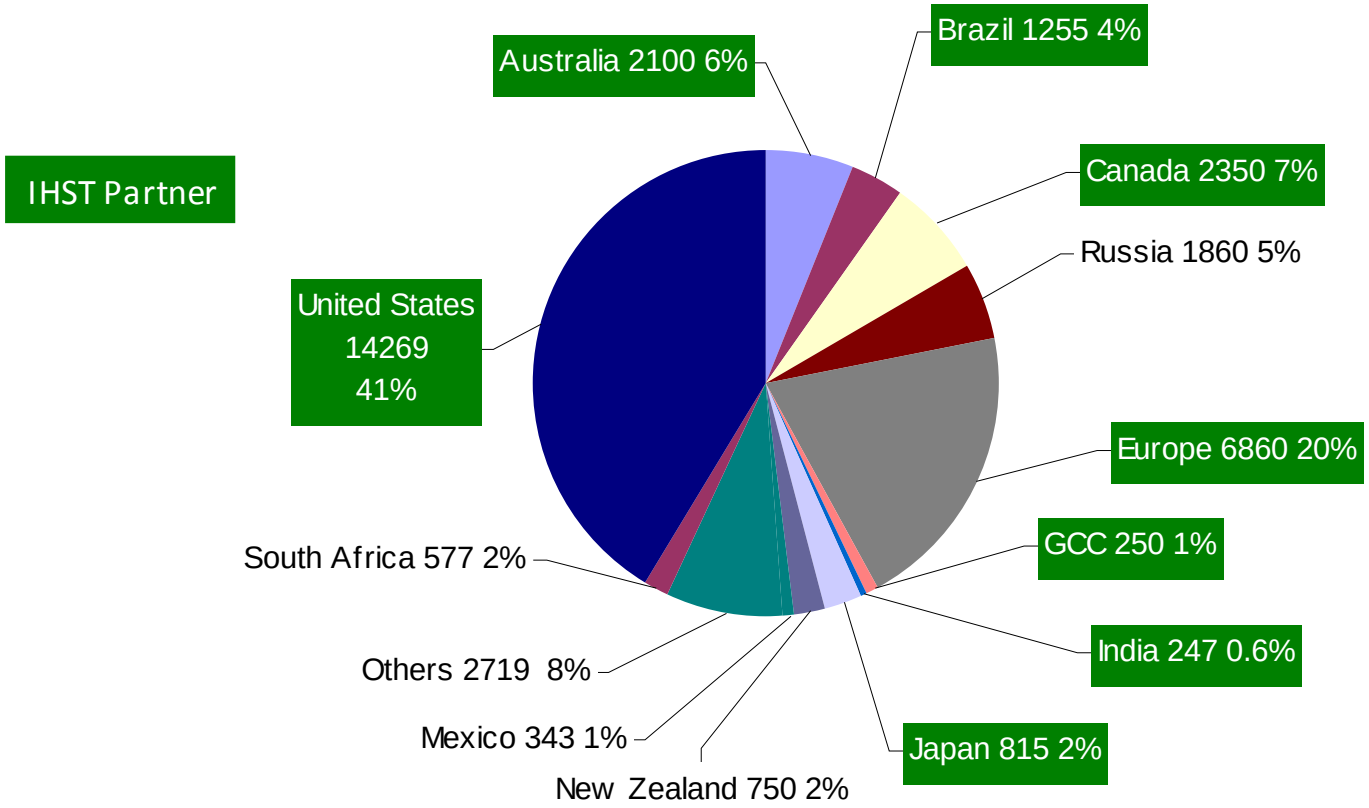
IHST GOAL:

To reduce the helicopter accident rate by 80% by 2016.

- **Formed after the International Helicopter Safety Symposium, held in Montreal in 2005**
- **Followed the success of the Commercial Aircraft Safety Team Cast (CAST)**
  - **Launched in 1998**
  - **After a decade of operation, CAST has almost achieved the goal of achieving an 80% reduction in accident rate**

Worldwide Civil Helicopter Fleet Distribution

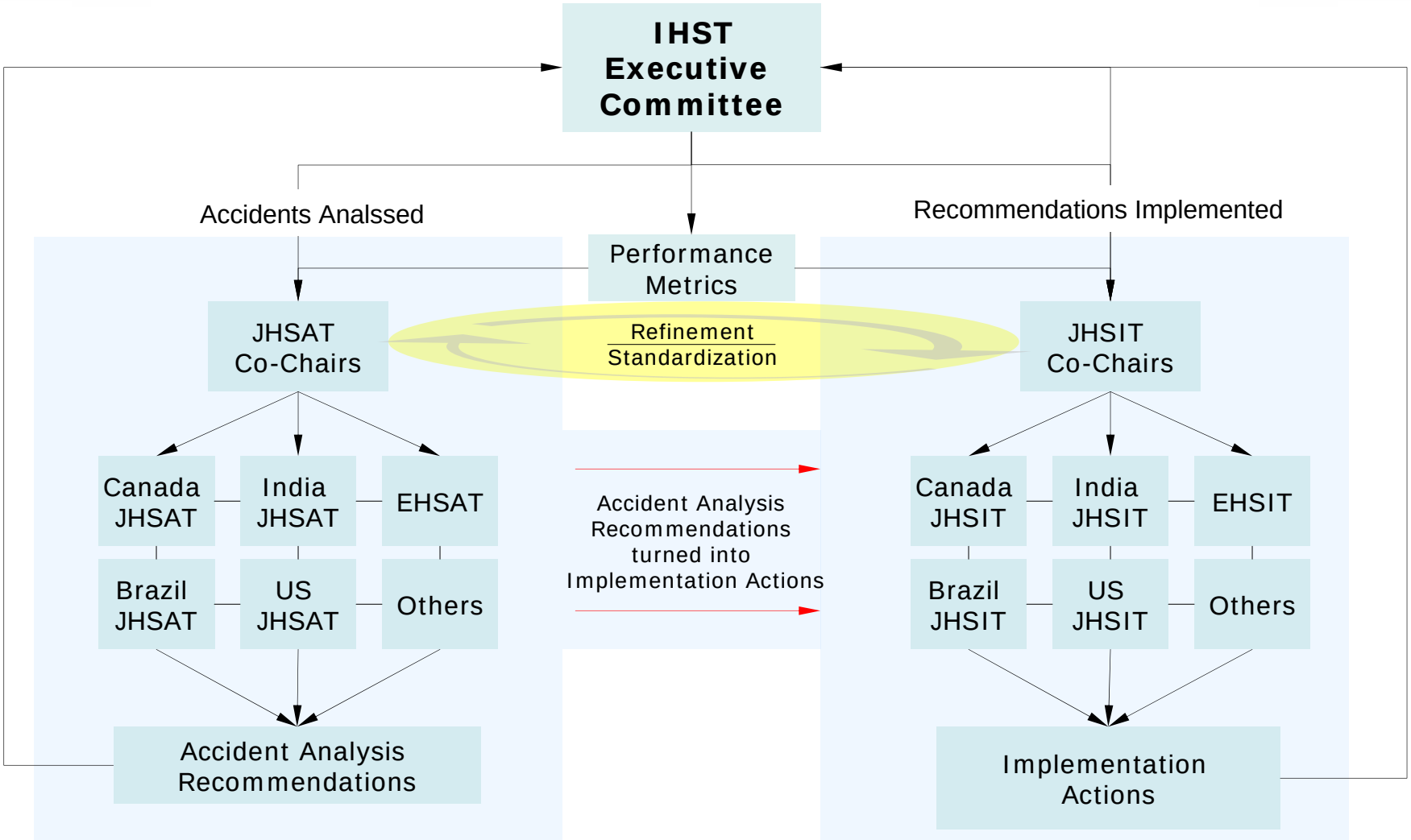
34395 rotorcraft



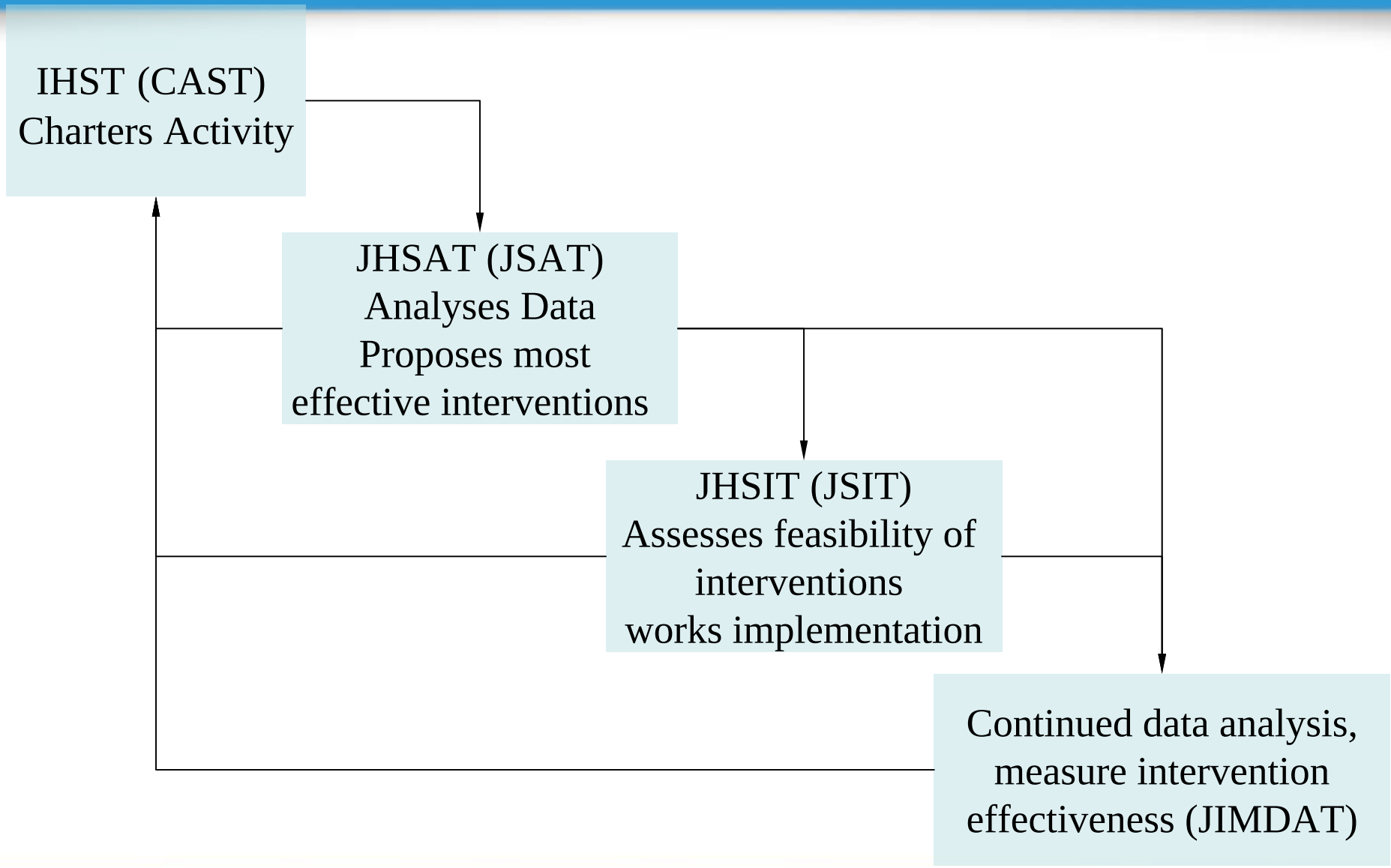
Source : IHST– Dec 2009

Worldwide participation is key to success

IHST Safety Initiative
Analysis, Implementation and Metrics



IHST is following the proven CAST model



This is a worldwide effort

A disciplined approach will be used to manage the analytical and implementation work sponsored by the IHST. Voluntary, currently being worked by 200 people.

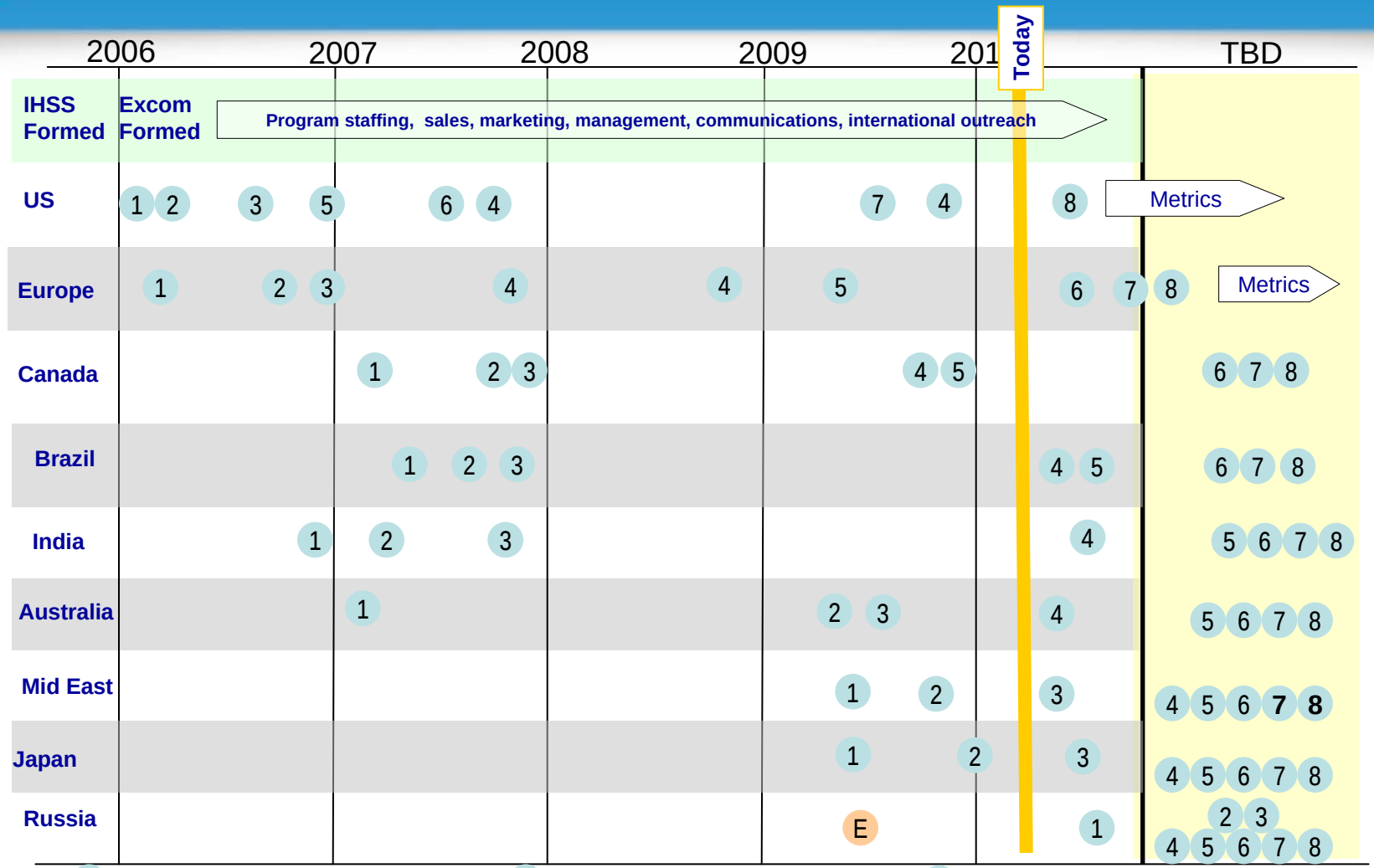
Key attributes:

All recommendations will be data driven

Regional ownership - Data is owned and analyzed by those most familiar with it. Safety recommendations will be implemented by teams most familiar with local needs.

The safety recommendations and implementation actions will be measured for effectiveness.

IHST Program - Regional Process Tracking (Jan 2011)



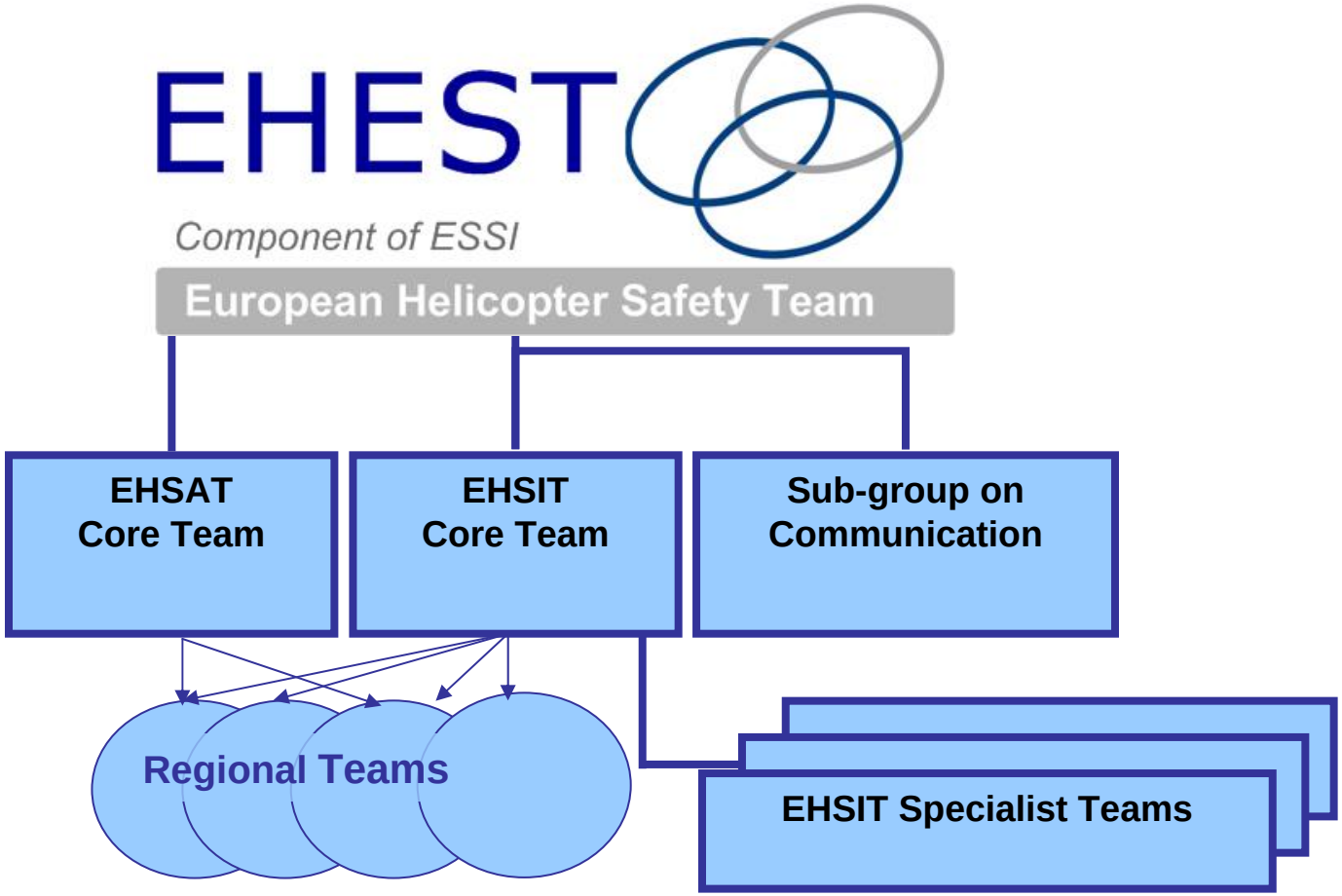
Key:
1 Regional Kickoff Meeting
2 JHSAT Team Formed
3 Accident Dataset Established
4 JHSAT Report Issued
5 JHSIT Formed
6 JHSIT Process Refined
7 JHSIT SEs complete
8 JHSIT DIPs complete
E Regional "exploratory" mtg

European Helicopter Safety Team (EHEST)

The EHEST

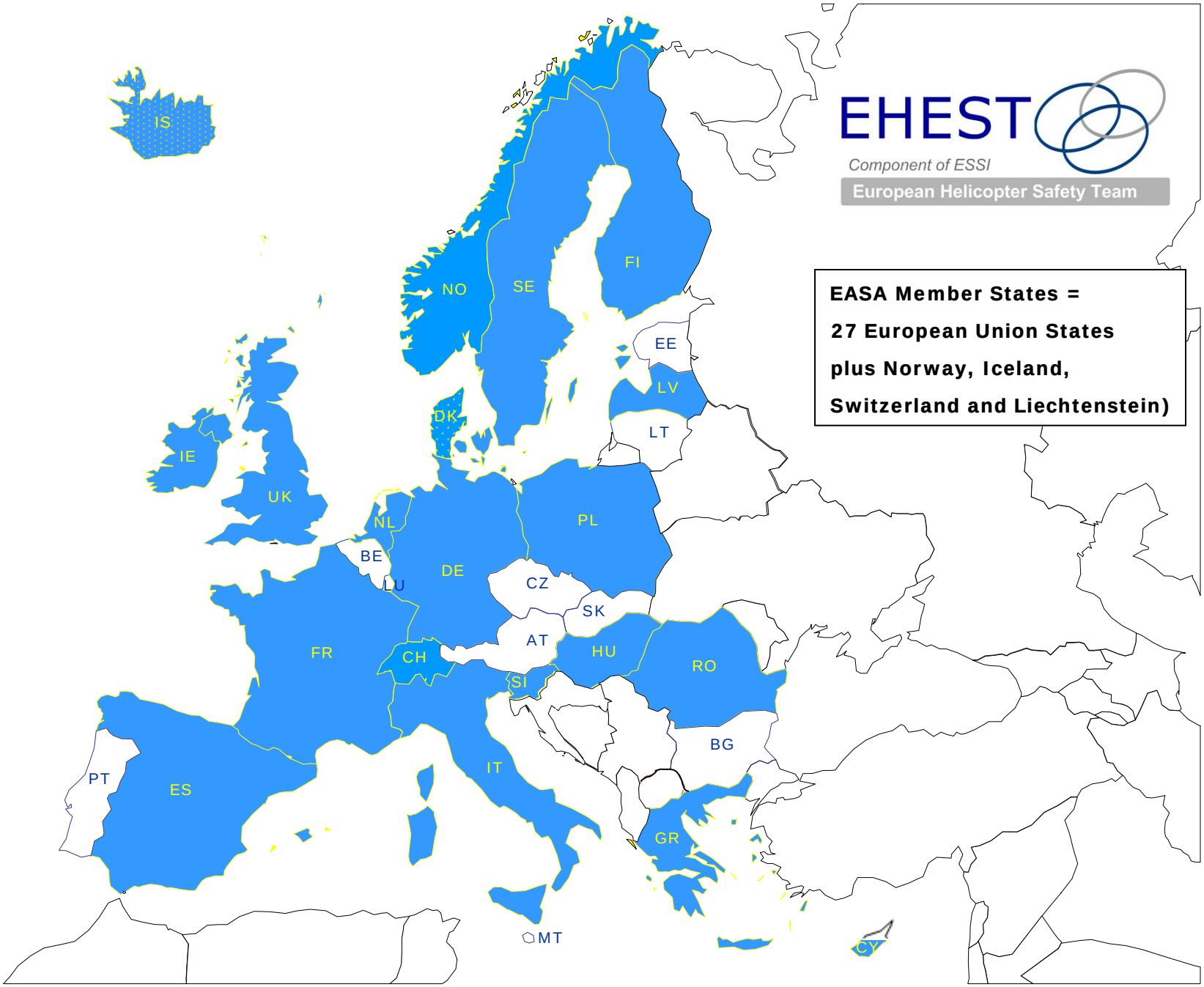
- Partnership with more than 75 organisations
- Representatives from EASA, National Aviation Authorities, helicopter OEMs, civil operators, Accident Investigation Bureaus, Research Institutes and helicopter interest groups, from across Europe
- Mixed governance
  - Co-Chairs: J. Vincent, EASA, J. Black, EHOC, and D. Huntzinger, Eurocopter
  - Secretariat: M. Masson, EASA

Organisation



Coordinated regional efforts

- Regional Teams have been established to:
  - Perform analysis of local accident data
  - Support local implementation of safety enhancements
- Advantages:
  - Maximises usage resources
  - Relations between partners already established
  - Team is aware of local context
  - Implementations/action plans also have to be implemented on regional level
  - Language used for accident investigation reports
- Regional Analysis Teams cover more than 90% of European civil helicopter fleet


EHEST
Component of ESSI
European Helicopter Safety Team
EASA Member States =
27 European Union States
plus Norway, Iceland,
Switzerland and Liechtenstein)
IS
NO
SE
FI
EE
LV
LT
DK
IE
UK
NL
BE
LU
DE
PL
CZ
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European Helicopter Safety Analysis Team (EHSAT)

Photo Vasco Morao

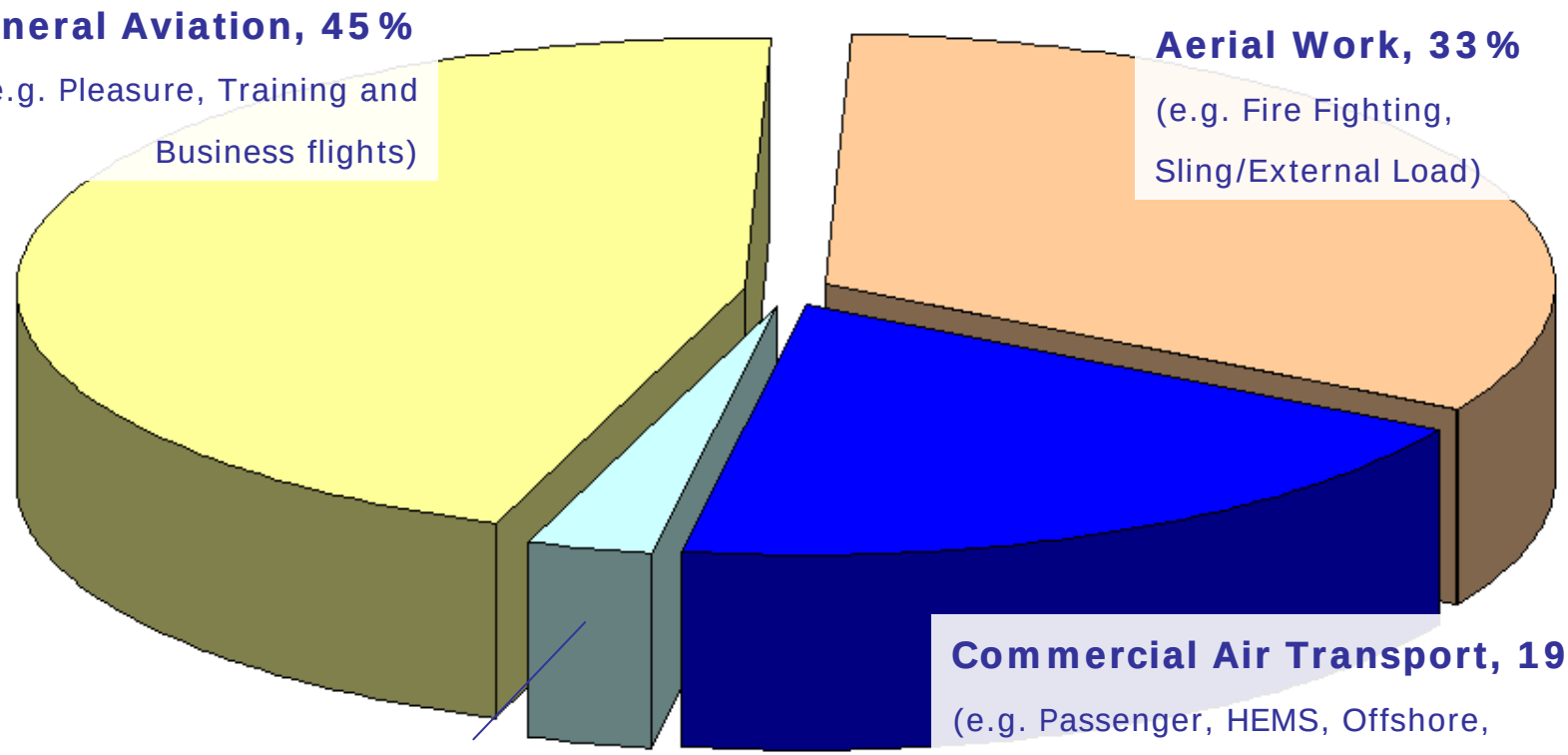
Helicopter Safety in Europe

- Safety data from the EASA Annual Safety Review
  - Approximately 100-120 civil helicopter accidents a year in Europe
  - Average 16 fatal accidents per year reported for 2006-2009
- Background data
  - Approximately 6800 helicopters registered in Europe
  - Work continues to establish reliable flight hour data

Scope of analysis

- Data driven approach
  - Accidents (definition ICAO Annex 13)
  - Date of occurrence year 2000 - 2005
  - State of occurrence located in EASA MS
  - Final report from AIB available
- Final report published in 2010
  - 311 accidents

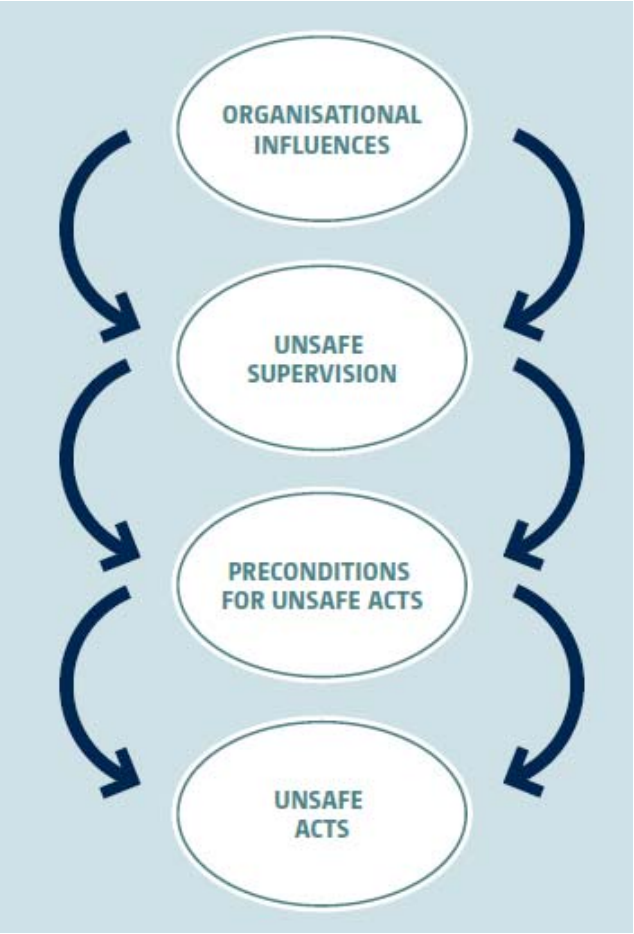
Distribution of type of operation in the EHSAT accident dataset 2000-2005



Models for identification of factors

- Standard Problem Statements,
  - From the original US team's JHSAT methodology
  - 1836 factor counts recorded
- HFACS by Wiegmann and Shappell,
  - Added by the European team for a complementary analysis of Human Factors
  - 754 factor counts recorded

http://hfacs.com/



An example CAT/HEMS scenario

- During a HEMS mission after the patient had been loaded the helicopter crew decided to continue the mission in deteriorating weather conditions.
- The decision to continue was taken because an ambulance was waiting to transfer the patient to hospital.
- During the take-off in poor visibility and falling snow the right front skid of the helicopter struck the surface and as a result it nosed over uncontrollably and impacted the ground.

An example CAT/HEMS scenario

- During a HEMS mission after the patient had been loaded the helicopter crew decided to continue the mission in deteriorating weather conditions.

Loss of Visual Reference

- The decision to continue was taken because an ambulance was waiting to transfer the patient to hospital.

Inadequate decisions

- During the take-off in poor visibility and falling snow the right front skid of the helicopter struck the surface and as a result it nosed over uncontrollably and impacted the ground.

Pilot felt pressure

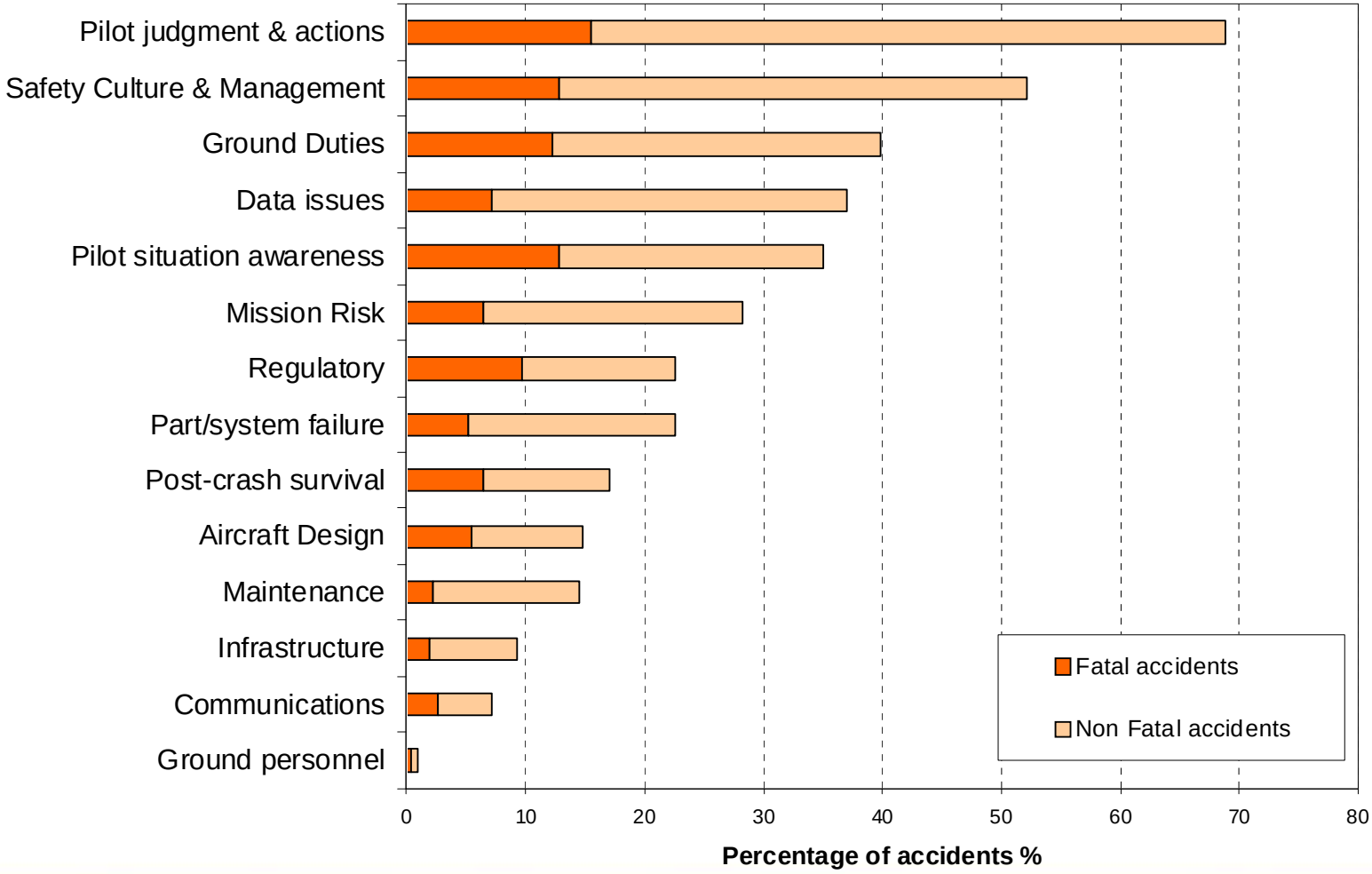
Some of SPS and HFACS factors involved

SPS	HFACS
Pilot decision making	Decision Making - Operation
Self induced pressure	Risk assessment – Operation
Inadequate oversight	Skill-based errors
Failed to follow procedures	Whiteout/Vision restricted
Selection of inappropriate landing site	Channelised attention
Reduced visibility	Communication critical information/Planning
Flight profile unsafe	Pressing
Management – Failure to enforce company SOPs	Procedural Guidelines/Publications

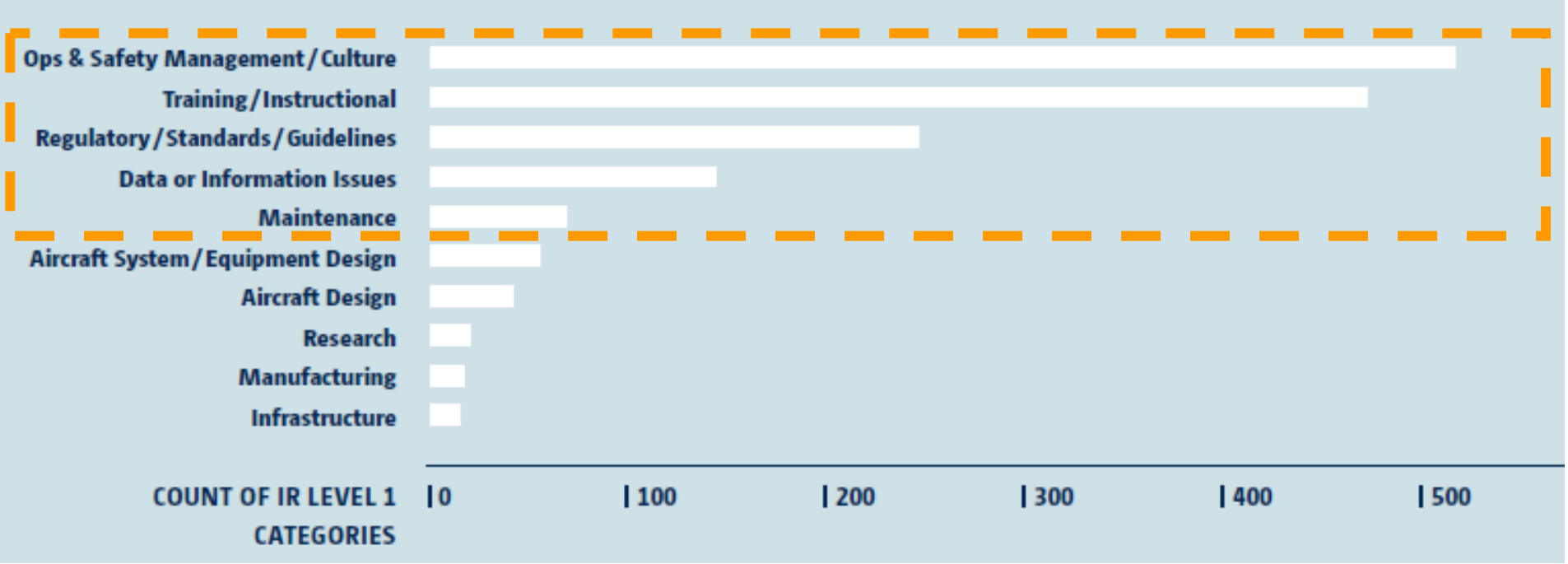
SPS analysis results

% of Accidents where SPS level 1 has been identified at least once

EHSAT accident dataset 2000-2005



Intervention Recommendations



European Helicopter Safety Implementation Team (EHSIT)

EHSIT Specialist Teams

- EHSIT Specialist Teams established
  - Operations and SMS (Feb 2009)
  - Training (Feb 2009)
  - Regulation (Dec 2009)
  - Maintenance (Apr 2010)

EHSIT Specialist Team Ops & SMS

Products and Plan

- **Best practice material on Operator's Safety Management System (SMS)**
  - Risk assessment
  - Standard Operating Procedures (SOP's)
  - Operational Risk Management
  - Safety Culture

Working to make this landing the safest landing ever...


Photo Stefano Burigana

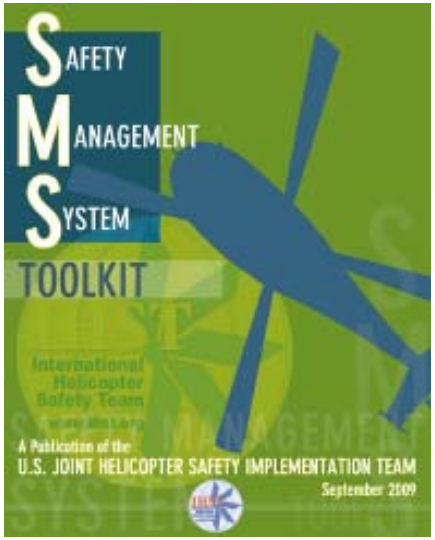
Pre-flight Risk Assessment Checklist Tool

- Free tool for operators
- Promotes pilot and technician risk assessment
- Highly adaptable by operators

PRE-FLIGHT RISK MANAGEMENT CHECKLIST							
MULTI CREW		0 1 2	Initial Score			0 1 2	Final Score
CAPTAIN				MITIGATION			
PERSONAL CONDITIONS							
Physical	No problems. Physically in shape.	X	0			X	0
	Nuisance, not completely in shape.						
	Headache, cold, fever, toothache.						
Medication	No medications in the last 24 hours.		1				1
	Over the counter medication.	X				X	
	Prescription medication. Attention and driving impairing medication.						
Sleep	Well slept.		2	Tool a nap		X	1
	Moderate sleep or no sleep in the last 13 hours.						
	Poor sleep.	X					
Fatigue	No fatigue.	X	0			X	0
	Moderate fatigue.						
	Mentally or phisically fatigued.						
Food & drink	Adequately nourished and hydrated.		2	Eat a snack		X	1
	Flight conducted during breakfast, lunch or dinner time. 4 to 6 hours without eating. 2 to 4 hours without drinking.						
	More than 6 hour from last meal. More than 4 hours without drinking. Hot weather and no drinking water on board.	X					
Physiologic	Physiologically relieved.	X	0			X	0
	Medium mission duration with no rest facilities available.						
	Long mission duration with no rest facilities available.						
Emotion	Not emotionally involved.	X	0			X	0
	Emotionally involved. Little private problems.						
	Emotionally stressed. Legal, financial or family problems.						

SMS and Accreditation scheme

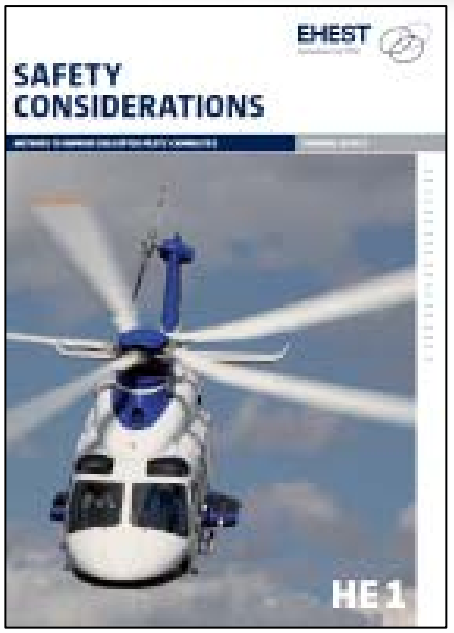
- EHEST participating in the development of IS-BAO (HE)
  - Accreditation scheme
  - European CEN Standard
- And promoting the IHST SMS Toolkit V2



EHSIT Specialist Team Training

Products and Plan

- Helicopter Safety Leaflets
  - Safety considerations
    - Degraded Visual Environment (DVE)
    - Vortex Ring State
    - Loss of Tail rotor Effectiveness (LTE)
    - Static and dynamic rollover
- Helicopter Safety Videos
  - Degraded Visual Environment (DVE)



Planned products for 2011

- Safety Leaflets - Helico
  - Helicopter airmanship (UK SSL17b)
  - Planning/Decision making (UK SSL 23)
  - Off Airfield Landing Sites
  - Flight Instructor risk analysis
  - Managing rotor RPM
  - LTE based on Eurocopter safety leaflet
  - DVE based on UK AIC
- Safety Leaflets – Helico and Fixed Wings (with EGAST, tbc)
  - SSL 2B Care of passengers
  - SSL 3C Winter flying/ops (presently limited to aeroplanes)
  - SSL 5D VFR navigation
  - SSL 14B Piston engine icing
  - SSL 15D Wake vortex
  - SSL 23 Pilot decision making
  - SSL 24 Pilot health
  - SSL 25 Use of GPS
- An Instructor Training Manual

EHSIT Specialist Team Regulation

Top subjects identified

1. Data recording
2. Inadvertent entry into IMC/DVE
3. Flotation, markings and exits
4. Authority oversight
5. Seat and harness design
6. Safety equipment requirements
7. Requirements for aircraft stability
8. ELT
9. Carriage of condition monitoring equipment by public transport helicopters
10. Airworthiness
11. Training syllabus for aerial work
12. Wire strike protection
13. Collective lever

Products and Plan

- May take the form of:
  - Proposals for future rulemaking tasks (using standard processes)
    - NAA, EASA, or ICAO, depending on applicability
  - AMC/GM
  - Safety Information Bulletins
  - Recommendations for best practices (voluntary adoption)

EHSIT Specialist Team Maintenance


Photo Eurocopter

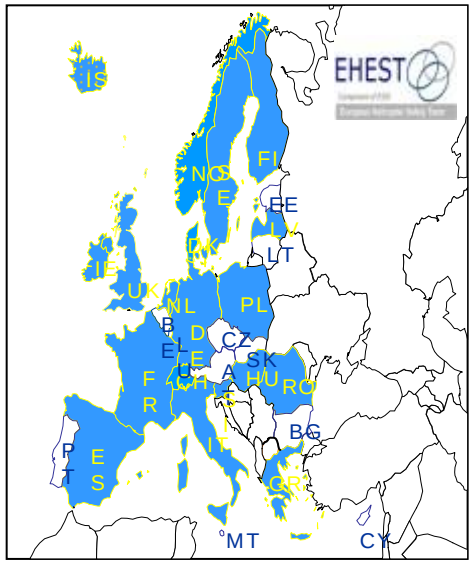
Maintenance Toolkit

- A Maintenance Toolkit will address
  - Comprehensive guidelines for cost-effective maintenance
  - Self-assessment guideline
- Scalable for all sizes and types of helicopter operators
- Expected publication date – 1st Quarter 2011
- On the IHST and EHEST websites

EHEST Communication Sub-Group

EHEST Communication SG

- **The task:**
  - Define a process to efficiently communicate with the Helicopter community, in particular small operators and General Aviation



The challenges:

- Connecting with the smaller operators

- 19 languages

- Resources

EHEST Communication SG

- **Communication Strategy**
- **Communication Network**

- **Communication means**
  - HE portal on SKYbrary
  - Road show events
  - Manufacturer and Operator forums
  - Publications

Way forward and Concluding remarks

Way forward

- Trend monitoring (accidents, utilisation data, effect of IRs)
- Assess the impact of new technology, positive or negative
- Increase co-operation with other regions and organisations
- Get the message out there! Target GA community, training organisations and small operators
  - Create a European ‘Road Show’
  - Create a core presentation and modular add-ons
    - **Regional basis - use regional data and cater for cultural differences**

Way forward (Cont'd)

- Operational Basis to include activities such as:
  - Aerial Work e.g. Fire Fighting; Sling Loads; etc
  - HEMS
  - Offshore
  - Leisure Flying
- Actively seek Feedback from the Helicopter Community
- Open Invitation for participation in Specialist Teams from the Helicopter Community

Thank you for your attention

Questions?

Mailbox: ehest@easa.europa.eu