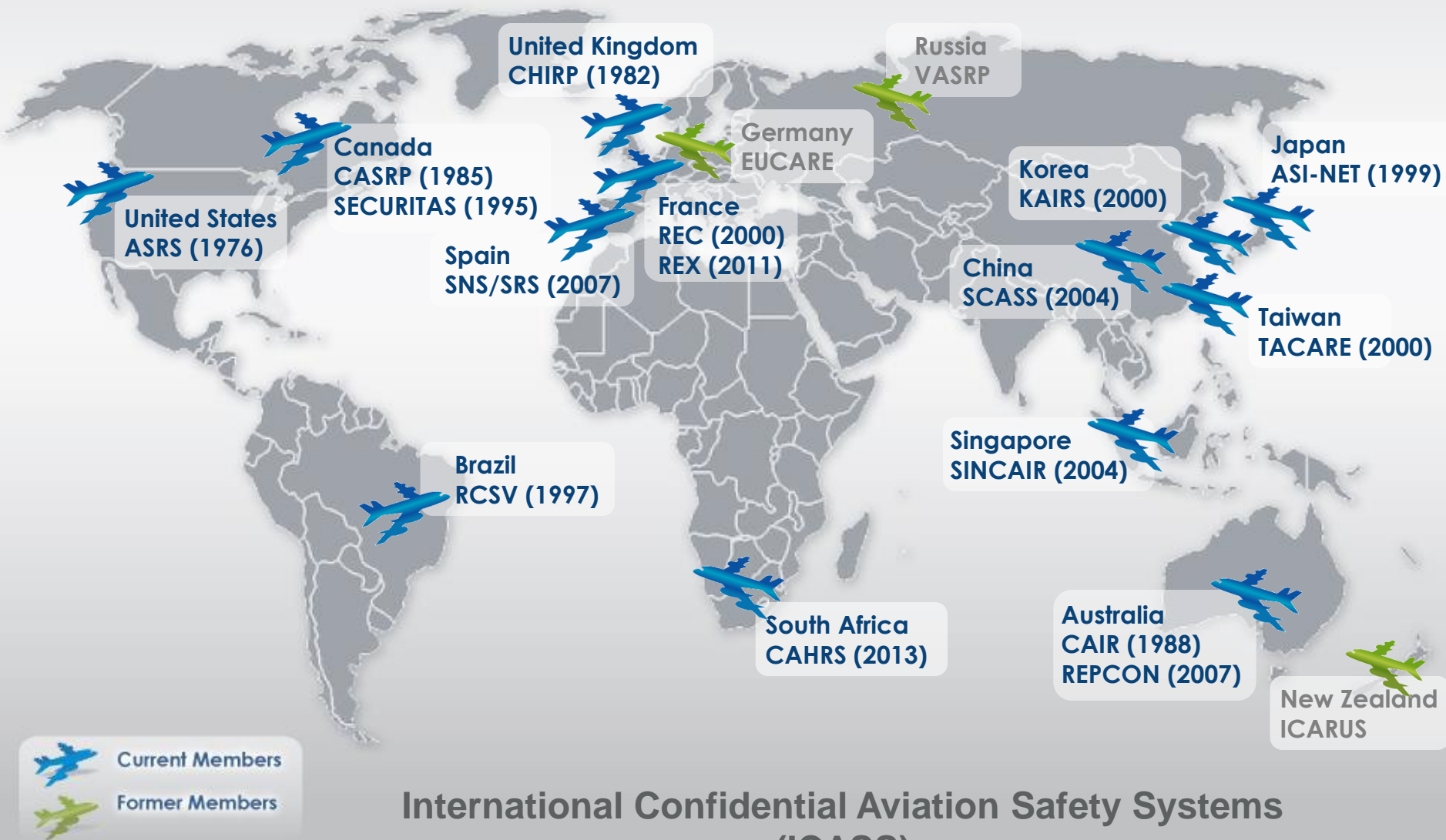




INTERNATIONAL CONFIDENTIAL
AVIATION SAFETY SYSTEMS

ICASS 2015 Membership



International Confidential Aviation Safety Systems
(ICASS)

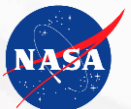
ICASS Meeting – London 1997

Established Consensus on Name and Purpose

The International Confidential Aviation Safety Systems (ICASS) group promotes confidential reporting systems as an effective method of enhancing flight safety in commercial air transport and general aviation operations.

The principal objectives of the ICASS group are:

- To provide advice and assistance in the start up and operation of a confidential reporting process
- To facilitate the exchange of safety related information between independent confidential aviation reporting systems
- To identify solutions to common problems in the operation of such systems



PROCESSING AND ANALYSIS OF THE DATA

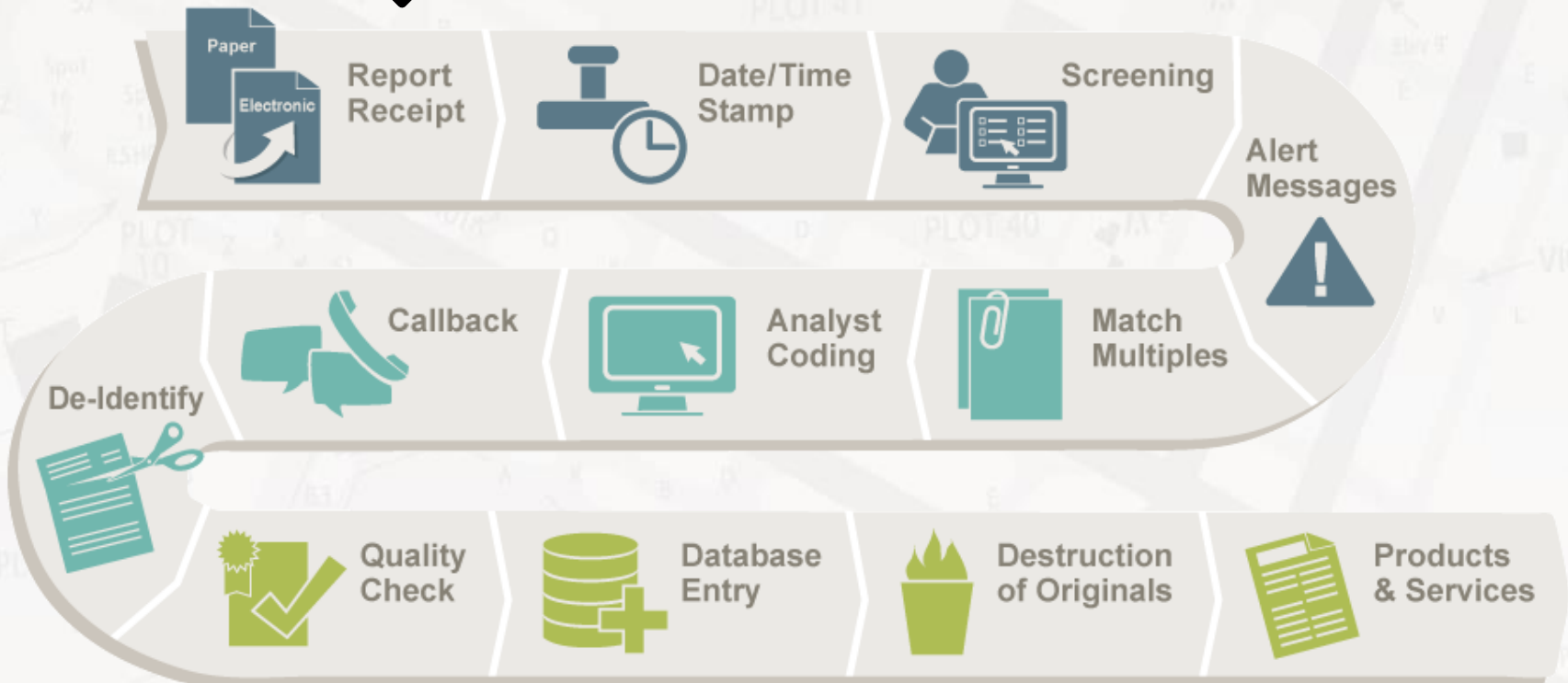


Aviation Safety Reporting System



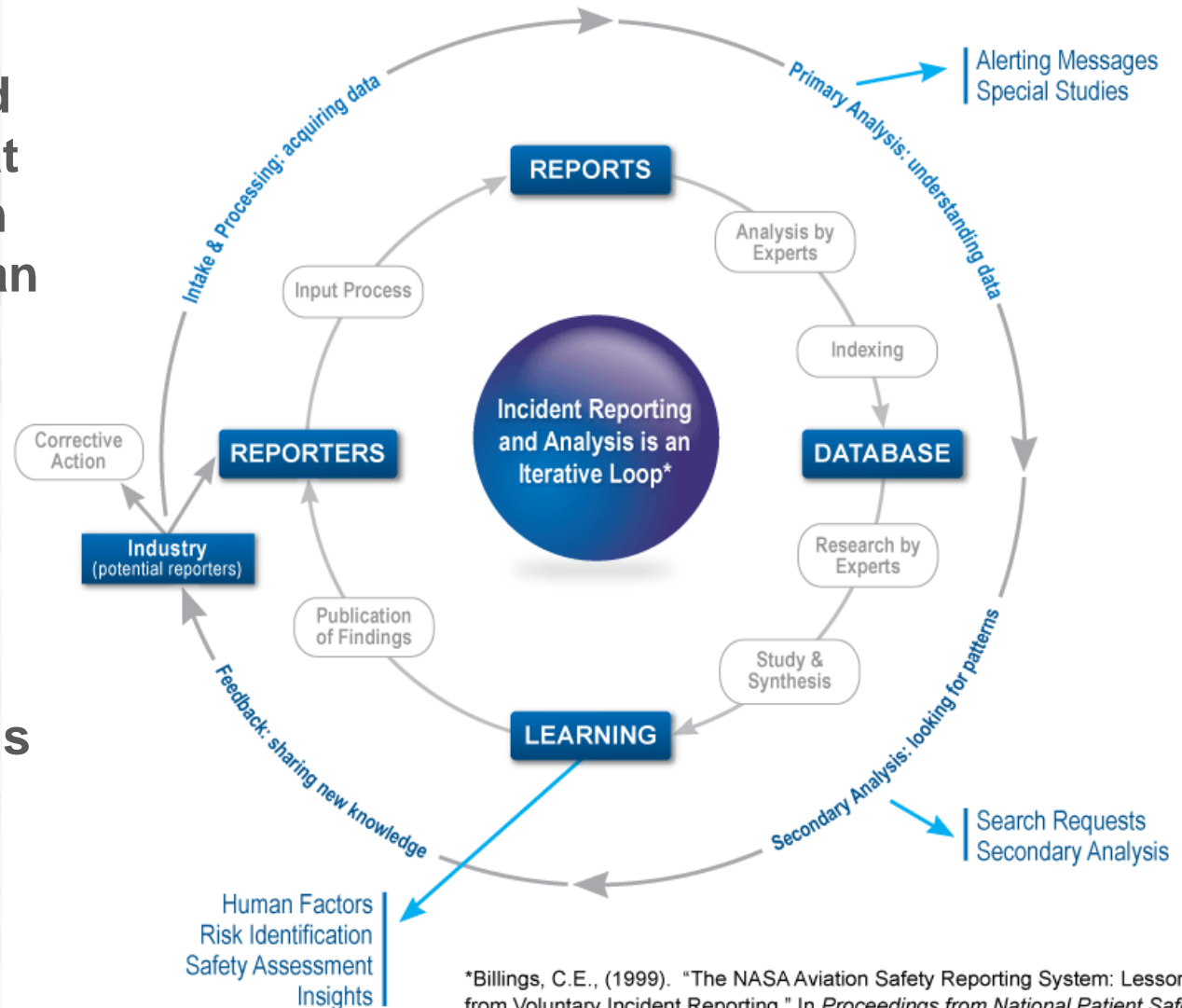
Report Processing Flow

 **Airline Safety Action Program (ASAP) and Air Traffic Safety Action Program (ATSAP) reports**



Incident Reporting Model

- ASRS is a closed loop process that supports System Safety and Human Factor insights
- Government / Industry are provides information that may result in corrective actions



*Billings, C.E., (1999). "The NASA Aviation Safety Reporting System: Lessons Learned from Voluntary Incident Reporting." In *Proceedings from National Patient Safety Foundation Conference Enhancing Patient Safety and Reducing Errors in Health Care*.



ASRS Model Described

- Dr Charles Billings handout excerpts:
 - “It has become [clear] that getting data is not the primary objective of this effort; using those data to synthesize new knowledge is the principal objective, and this requires human intelligence and expertise.”
 - “These counts are too often used to infer the magnitude of system problems. But voluntary reporting of incidents involves the assumption that they are a representative sample of the population of such events, and this assumption is rarely tested and is usually not tenable.”
 - “The population from which the sample of incidents comes is rarely known or quantified.”
 - “The usefulness of incident reporting lies in the insights that can be gained from careful study of the narratives submitted, in all their contextual richness, not in quantitative knowledge one can gain from counting adverse events.”



Data Typology

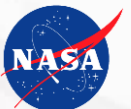
■ Qualitative

- Describes the “why” of events
- Takes advantage of diverse responses
- Uses narratives and storytelling
- Categorizes patterns, observations, environmental context, etc.
- Holistic and contextual
- Exploratory (i.e., hypothesis generation)

■ Quantitative

- Describes the “what” of events
- Rigid categorization for measurement
- Reductionist and isolationist
- Hypotheses driven
- Focused measurement tools and applied mathematics

Voluntary data are most appropriate for qualitative analyses, but the volume of data can still have a quantitative impact depending on number of reports.



Descriptive Statistics Use in Qualitative Data Analyses

- DESCRIPTIVE STATISTICS

- Summarizes the data by describing what was observed in the sample numerically or graphically.
- Numerical descriptors include frequency and percentage that are more useful in terms of describing categorical data.

Statistical Nature of Voluntary Subjective Data

- This data is not a random sample from the population of all events
- Qualitative analyses are appropriate, if properly constructed
- Hypothesis generation possible for future research
- Traditional quantitative statistics not appropriate (significance results, trending, correlation, etc)

Voluntary Subjective Reporting Data and Information

- Reports received through voluntary safety reporting programs are subjective recollections of events experienced or witnessed by professionals operating in their specific domain.
- As a data source, these reports can be characterized as qualitative and provide insights into the “why” of events from those people participating and performing in the system.
- As a data source, the reporting system has flexibility and depth to compliment other sources of a more quantitative nature describing the “what” in the system.
- The reports offer operational validity describing real world events from the perspective of the people providing the reports.
- These unique types of systems provide for the capture of candid disclosures of the human factor contribution to safety events.

Perilog – Text Mining Relevance Ranking

OPERATIONAL SAFETY ANALYSIS

Queries

Perilog

**Keyterm-in-Context
Search**

**Flexible Phrase
Search**

**Search by
Example**

**Phrase
Generation**

**Contextual
Analysis**

**Contextual
Modeling**

**Relevance
Ranking**

**Phrase
Discovery**

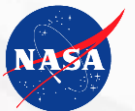
INCIDENT NARRATIVES



(Created and patented by NASA Ames researcher, Dr. Michael McGreevy)

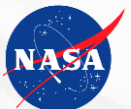


CONFIDENTIALITY AND PROTECTION OF INDIVIDUALS AND INFORMATION



Documents Governing ASRS Immunity & Confidentiality

- Federal Register Notice, 1975 & 1976
- Federal Aviation Regulations Part 91.25 (14 CFR 91.25)
- FAA Advisory Circular 00-46E
- FAA policy concerning Air Traffic Controllers regarding ASRS reporting, FAA Order JO 7200.20



What is Data Protection?

- Promises of “confidentiality” are taken seriously in the reporting system
- Protections need to manage access to identified data
- All identity removed after full processing, evaluation, coding, and callbacks completed.
 - No identity remains

U.S. Code of Federal Regulation

Prohibition Against Use of Report for Enforcement Purposes

“The Administrator of the FAA will not use reports submitted to the National Aeronautics and Space Administration under the Aviation Safety Reporting Program (or information derived therefrom) in any enforcement action, except information concerning accidents or criminal offenses which are wholly excluded from the Program.” (14 CFR 91.25)



Aviation Safety Reporting System

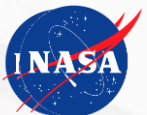


Federal Government and NASA Confidentiality Statutes

Personally Identified Information (PII) Not Available for Release Under Penalty of Law

- Privacy Act (PA), 5 USC 552a
- NASA Human Experimental and Research Data and System of Records (NASA 10HERD and SORN)
- As required by law, NASA must respond to the Freedom of Information Act (FOIA), 5 USC 552,
 - **UNLESS** the data falls within one or more of nine exemptions. Exemption 6, the privacy exemption, would cover the data on individuals. Exemption 5 can apply in which court cases have supported using while the data can be considered “draft” data.
 - Other exemptions can be considered in relation to each specific request.

No Breach of Confidentiality has occurred in history of ASRS due to NASA processing and de-identification policies & protections



THE PRIVACY ACT OF 1974

5 U.S.C. § 552a

(i)(1) **Criminal penalties**

Any officer or employee of an agency, who by virtue of his employment or official position, has possession of, or access to, agency **records which contain individually identifiable information the disclosure of which is prohibited** by this section or by rules or regulations established thereunder, and who knowing that disclosure of the specific material is so prohibited, willfully discloses the material in any manner to any person or agency not entitled to receive it, **shall be guilty of a misdemeanor and fined**

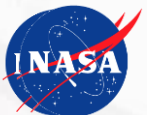
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De-Identification Protections

De-identification Occurs Rapidly to Protect Data

- All reports read and reviewed by rail expert analyst(s).
- Reports de-identified for direct and indirect information related to person who submitted report
- Reports de-identified concerning third-party references (e.g. company, names, numbers etc.)
- De-identified reports are captured in on-site, restricted database
- De-identified reports are shared with company PRT's following telephone callback by C³RS Analyst or time limit for return phone call expires



Physical Protections

- NASA ASRS office is located in a secure, coded-access facility
- All electronic reports are encrypted and received through secure IT processes
- All paper reports stored in locked file cabinets with strict access procedures enforced
- Original reports are not retained after safety information has been captured
- All staff work under signed Non-Disclosure Agreements



INTERACTIONS WITH REGULATOR

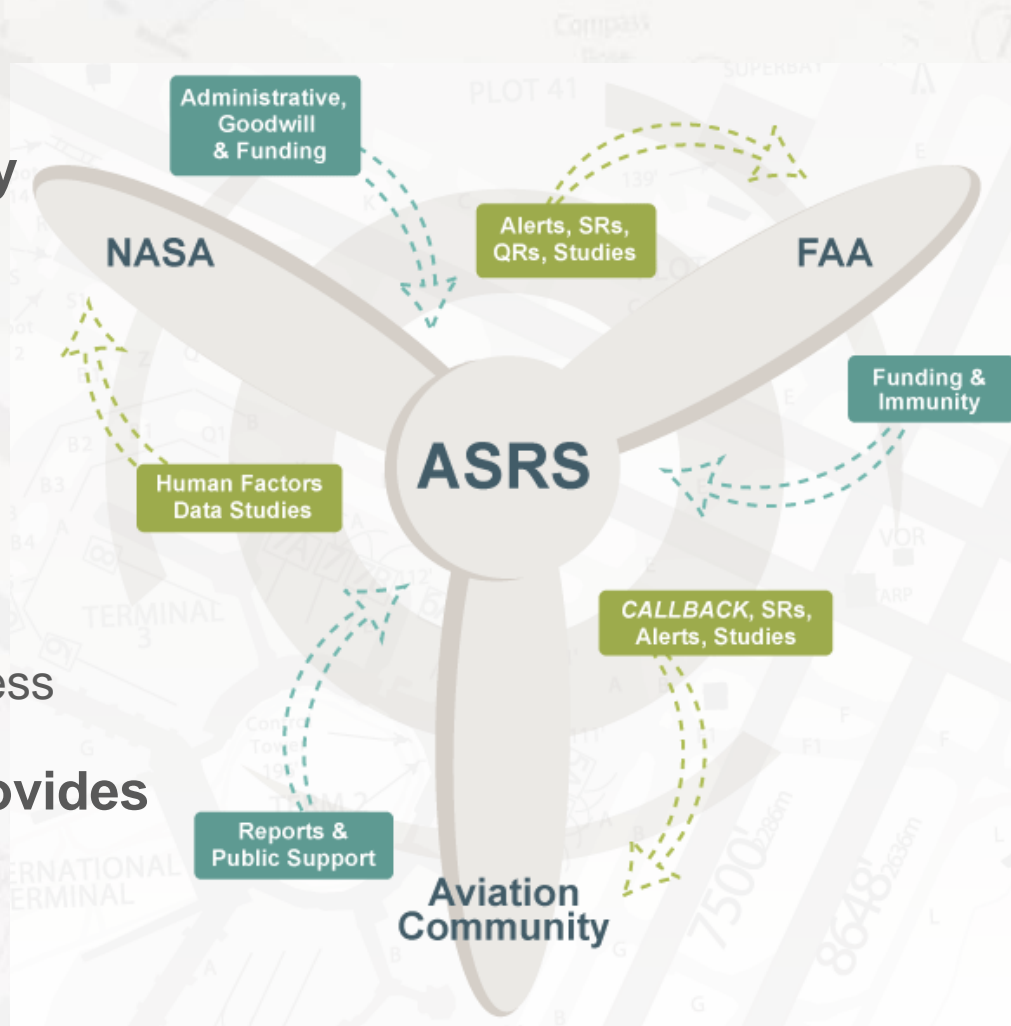


Aviation Safety Reporting System



ASRS Gov't/Industry Stakeholders

- **FAA provides reimbursable funding to NASA for ASRS support through Interagency Agreement**
- **NASA provides funding for Director to provide overall management**
 - Assures independence and confidentiality
 - Reinforces role of trust in success
- **The Aviation Community provides support through aviation community advocacy for reporting, feedback, and communications**



FAA Advisory Circular – Limited Immunity



U.S. Department
of Transportation
Federal Aviation
Administration

Advisory Circular

Subject: Aviation Safety Reporting Program

Date: 12/16/11

AC No: 00-46E

Initiated by: AFS-200

Change:

- c. Enforcement Restrictions.** The FAA considers the filing of a report with NASA concerning an incident or occurrence involving a violation of 49 U.S.C. subtitle VII or the 14 CFR to be indicative of a constructive attitude. Such an attitude will tend to prevent future violations. Accordingly, although a finding of violation may be made, neither a civil penalty nor certificate suspension will be imposed if:
- (1) The violation was inadvertent and not deliberate;
 - (2) The violation did not involve a criminal offense, accident, or action under 49 U.S.C. § 44709, which discloses a lack of qualification or competency, which is wholly excluded from this policy;
 - (3) The person has not been found in any prior FAA enforcement action to have committed a violation of 49 U.S.C. subtitle VII, or any regulation promulgated there for a period of 5 years prior to the date of occurrence; and
 - (4) The person proves that, within 10 days after the violation, or date when the person became aware or should have been aware of the violation, he or she completed and delivered or mailed a written report of the incident or occurrence to NASA.

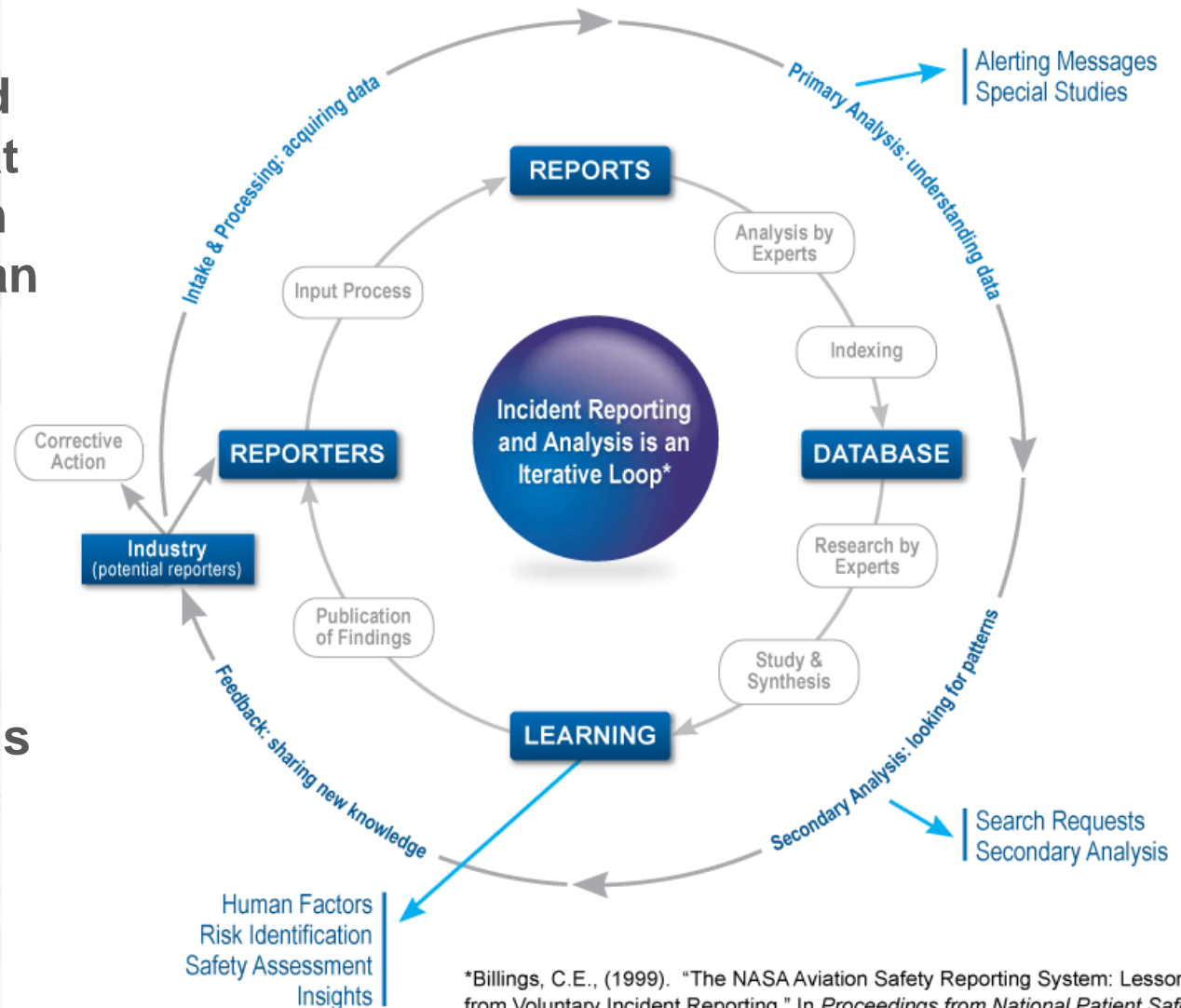


Aviation Safety Reporting System



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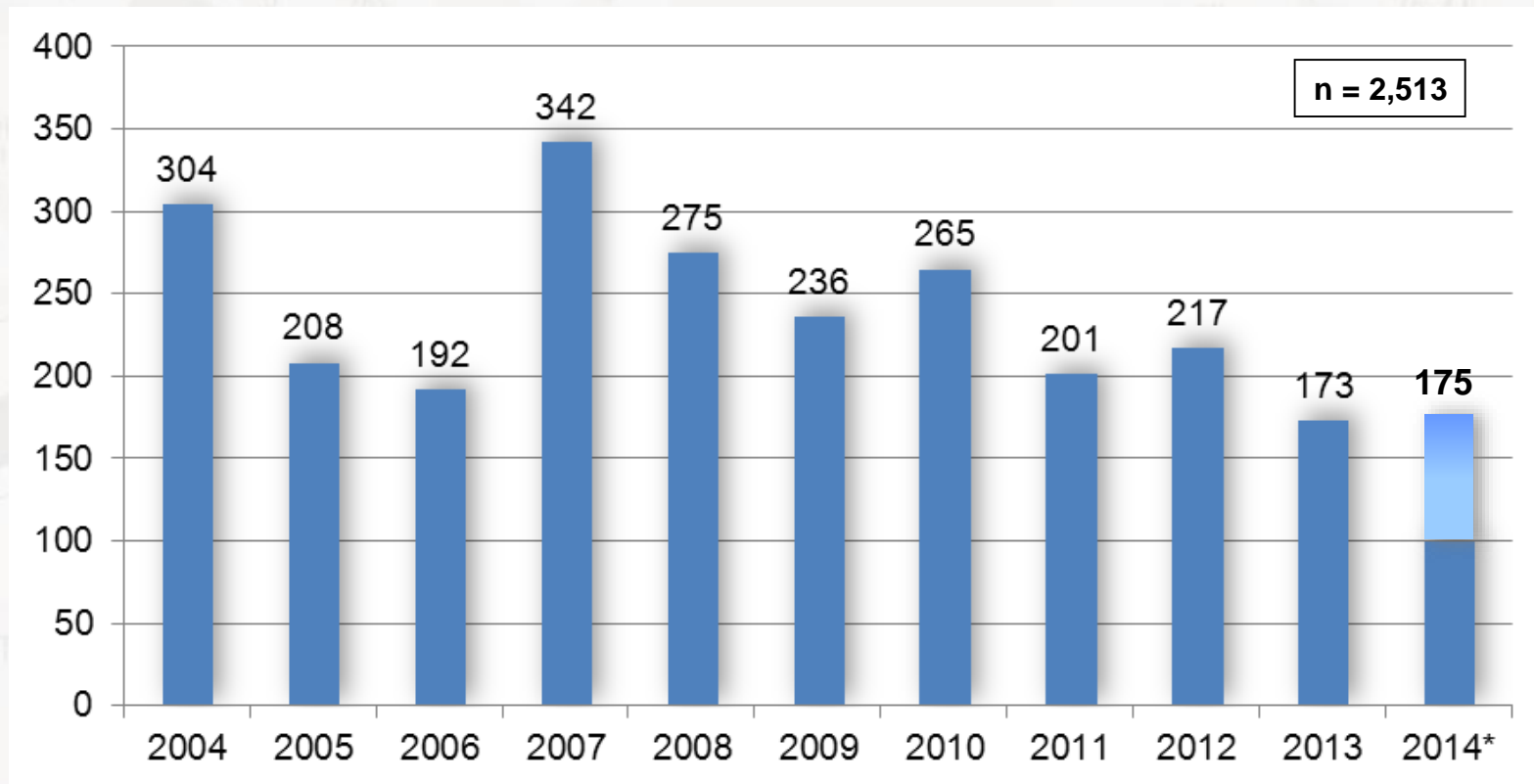


Alert Bulletins, FYI Notices, Telecons and Database



Safety Alerts

Messages Issued 2004 – Present

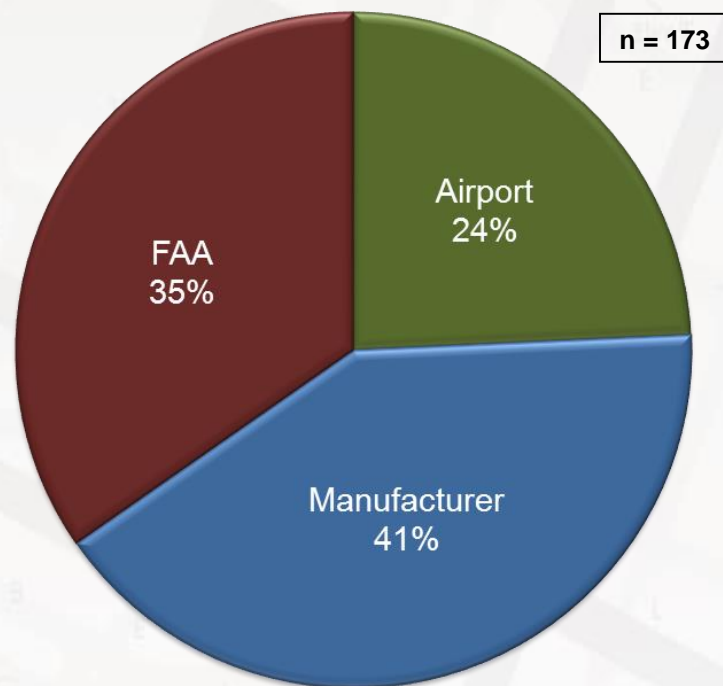


*2014 data is projected based on alerts issued and currently under process through September 25th.



ASRS Alert Message Recipients

- Alerts generate responses from one or more of the recipients
- Alerts often identify an anomaly that was not detected by other means
- FAA AFS and AVP receive every Safety Alert



ASRS Alert Messages – Early Warning

- The following are examples of ASRS' role in identifying deficiencies and discrepancies in the National Airspace System that have or could result in an accident
 - E170 Engine Fire Bottle Installation
 - Significant potential for improper installation of engine fire extinguishing agent plumbing system
 - Several design features appear to have been used to mitigate a possible system misconfiguration, but not solved
 - Undetected misconfiguration could result in the loss of life due to the inability to extinguish an engine fire on one or both aircraft engines
 - Solar Power Tower Array – Sun Glare
 - Many examples of heading and altitude deviations due to the distraction caused by reflective glare and the effects of after-image spotting and temporary blindness



Search Requestors by Organization

January 2005 – December 2014

Organization	Total
FAA	246
NASA	78
Air Carriers	77
NTSB	62
Media	51
Alphabet Groups	59
Miscellaneous Safety Organizations	24
Other	22
Research Organizations	17

Organization	Total
Individuals	17
Aircraft Manufacturers	17
Students	16
Law Firms	6
Miscellaneous Government	5
Military	5
Educational Institutes	5
Foreign	4
DHS	1