

**NAOMS  
CONCEPT, RATIONALE  
and FIELD TRIAL  
DEVELOPMENT**

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# NAOMS Goals

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**Create a new capability that will:**

- 1) Track aviation safety trends
- 2) Monitor the impacts of technological and procedural changes to the aviation system



# NAOMS: Filling Important Data Gaps

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- **NAOMS will not replace or duplicate current data collection efforts**
- **Designed to supplement current and future aviation safety data collection and analysis programs**
- **Will obtain accurate information from operational personnel**
  - Includes groups who traditionally have not been active sources of safety information



# NAOMS Approach

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- **Regularly survey pilots, controllers, mechanics, flight attendants and others who operate the national aviation system (NAS)**
  - View the national aviation system through their eyes
  - Includes all types of operations (air carrier, regional, corporate, general aviation, military)
- **Achieve scientific integrity by using well crafted survey instruments and carefully designed statistical sampling methods**



# NAOMS Will Generate . . .

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**Statistically valid estimates of the actual rates of safety events and related experiences occurring in the NAS**



# NAOMS Data Use

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- **Used to track event trends**
  - Will identify incident trends
  - May not fully explain trends or causal factors
  - Additional investigation may be needed
  - NAOMS will complement, not replace existing data resources
- **Can provide detailed insight into topics of special interest**
  - Added to the questionnaire as needed
  - Can be accomplished relatively quickly

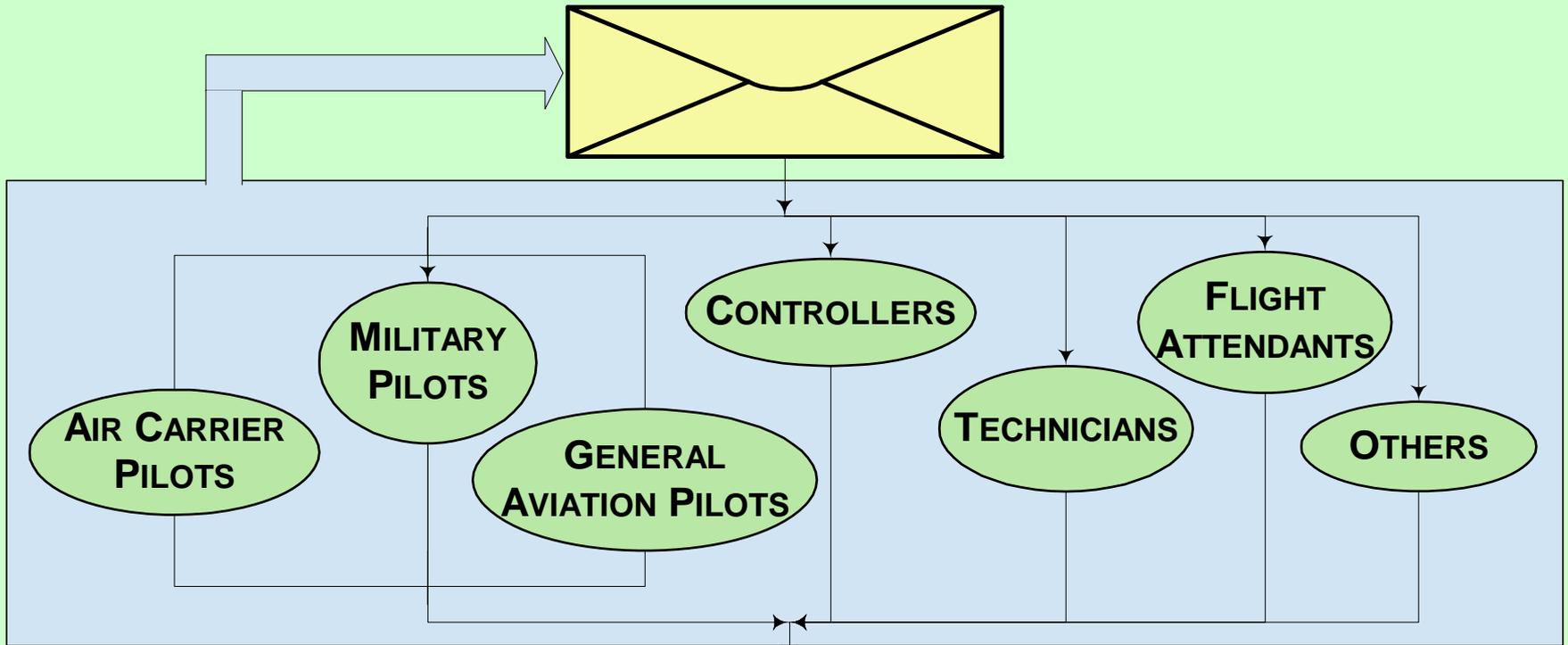


# Why NAOMS Chose the Survey Method

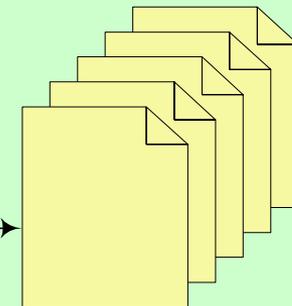
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- **Proven in other venues**
  - Public health
  - Public policy
  - Market research
- **Scientific and representative**
- **Capable of addressing human performance issues**
- **Timely data collection**
- **Well-developed methodologies**

SURVEY FORM, PHONE CALL, OR FACE-TO-FACE INTERVIEW QUESTIONS  
DEVELOPED BY NASA IN CONSULTATION WITH AVIATION COMMUNITY



**NASA / NAOMS**



**NAOMS  
PROCESS**

**RESEARCH PRODUCTS**



# Participant Confidentiality is Assured

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- We will have no means of tracing a survey response to the individual who provided it
- All tracking information is kept separate and destroyed after use
- No information is collected on operator name or airport name
- Reports and data sets will have no information that can be used to identify reporters



# NAOMS Will Collect Data on

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## *Participant Experiences involving . . .*

### ★ **Aviation Operations (exposure)**

- Flight hours / legs
- Time on control position
- Other pertinent measures

### 🕒 **Safety Events**

- A standard set of benchmark incidents

### 🕒 **New Technologies and Procedures**

- First-hand experiences
- Continuously refocused in response to changing needs



# NAOMS Products

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## ■ EXPECTED OUTPUTS

- Summarized aviation operational experience data
- Statistically reliable estimates of incident rates
- Near real-time feedback on impacts of new technology and procedures

## ■ PRODUCT CONSUMERS

- Decision makers (government and industry)
- Safety professionals and research organizations



# NAOMS: Field Trial Goals

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- **Determine Feasibility of Concept**
  - Can survey research techniques provide meaningful levels of reporting on safety events from the aviation community?
  - If so, is this level of reporting sufficient for trending?
- **Thorough and comprehensive evaluation of survey methodology**
  - Based on solid science and the best knowledge on survey methodology
    - Mode, recall period, etc
    - Sample size requirements and costs



# Field Trial Focus

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Methodology:  
**NOT EVENTS**

No event information will be presented or published from the field trial.



# Activities to Date

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## ■ Feasibility Assessment

- Background Research
  - Literature review
  - Participant group profiles
- Field Research
  - Conducted multiple focus groups with pilots
    - Obtained extensive listing of safety experiences
    - Solicited input on their likely response to a NAOMS survey
  - Conducted individual evaluation of pilot respondents
    - Ability to recall events
    - Method of categorizing events
- Briefed Government and Industry Organizations



# Activities to Date (cont'd)

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## ■ **NASA Workshops**

- November 97 and May 1999
- Government, Industry and Academia

## ■ **Survey Instrument Development**

- Drafts Developed, Extensive Review
  - Focus groups
  - ASRS analysts
  - Workshop comments



# Field Trial Survey Instrument Structure

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- **Section A: Operational Exposure**
- **Section B: Safety Event Experiences**
- **Section C: Focus Topics**
- **Section D: Participant Feedback**



# Field Trial Approach

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- **Assessment of the survey instrument and procedures**
  - Limited to air carrier pilots
  - Various versions were tested
  - Last section of survey asked participants for feedback on survey and process
  
- **Variations**
  - Mode (telephone, mail, face-to-face)
  - Recall period
  - Section order
  - Topical foci



# NAOMS Field Trial Products

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- **Response rates, quality and completeness by**
  - Mode
  - Recall period
  - Question order
- **Feedback on survey from respondents**
- **Dimensions of a fully operational system**
  - Sample size requirements
  - Mode
  - Recall period
  - Cost



# How Was the Field Test Instrument Administered?

- **Mailed, Self-Administered:** May send postcard back indicating questionnaire returned, but no identifiers on returned questionnaire
- **Telephone, Scheduled:** Interviewer marked pilot/ATCs electronic record as completed, but questionnaire not linked to anyone
- **In-Person, Scheduled:** Interviewer had pilot/ATC place unmarked completed interview into postage-paid envelope for respondent to mail

**All recorded responses held in strict confidence**



# BASIC FINDINGS

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- **NAOMS is a very viable method to collect aviation safety data**
- **Response to survey very positive**
  - Very high response rates
- **The results indicate the most effective and efficient way to apply the survey is via telephone interviewing**
  - 10 to 20% more expensive than mail but roughly comp....;
    - better response rate
    - better accuracy
    - better question completion
  - Most common method for other surveys