REDAC / NAS Operations

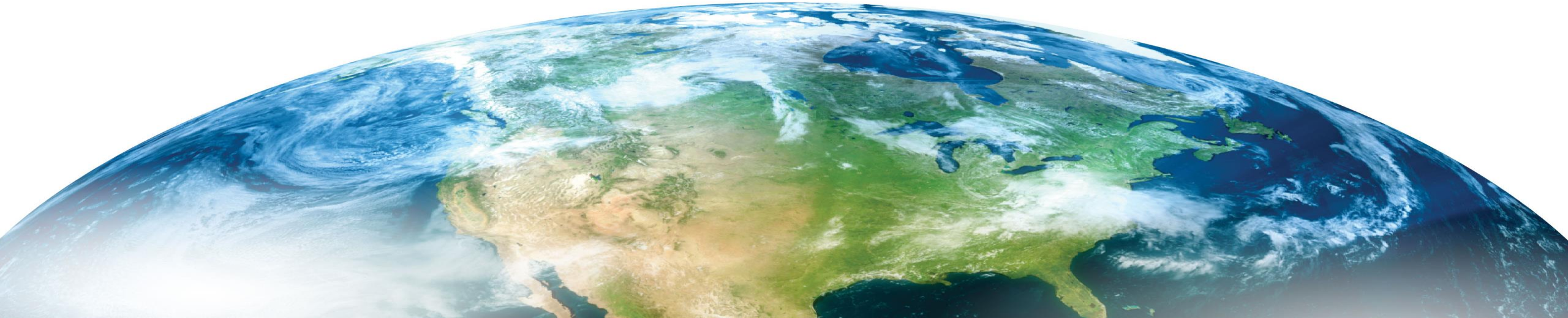
Runway Incursion Reduction Program (RIRP)

S09.02-00

Giovanni Dipierro, AJI-14
Todd Lewis, ANG-C51

Date: Mar 16, 2021

Review of FY 2021 - 2023 Proposed Portfolio



Runway Incursion Reduction Program (RIRP) Overview

- The objective of the Runway Incursion Reduction Program (RIRP) is to reduce the risk to people and property caused by collisions in the runway environment. The RIRP is focused on providing SAFETY benefits for the FAA.
- The program will research technologies, develop and evaluate prototype systems that can be used to detect the presence of hazards in the Runway Safety Area, and provide alerts to the individual(s) who can take corrective action.
- RIRP success is measured by the completion of the goals identified in the Research Management Plan (RMP) for each prototype activity. Initiatives that successfully complete all the RMP Goals identified are then presented as candidates for acquisition, or presented for AIP-funding eligibility.

Runway Incursion Reduction Program (RIRP) Program Support

Staff:

- Sponsor: Giovanni Dipierro, AJI-14 (A)
- Program Manager: Todd Lewis, ANG-C51
- Support Contractors: GEMS Inc., Level Strategy, DOT Volpe Center

Laboratories:

- MIT/LL:
  - Safety Logic and Technology Development
  - System Requirements Development
  - Technical Transfer Package Development
- MITRE:
  - Benefit Estimation Methodology
  - Research / Data Mining
  - Human Factors

Current FY21 Accomplishments

- **Small Airport Surveillance Sensor (SASS)**
  - Prepared final System Design Document (SDD) and Doxygen code documentation package for Technical Transfer
  - Conducted virtual Industry Day on February 4, 2021 which was attended by over 100 participants from industry, FAA, other government agencies and research labs
- **Runway Incursion Prevention through Situational Awareness (RIPSA)**
  - Pursuing final legal approval of Screening Information Request (SIR) and Acquisition Package for RIPSA Technical Solicitation
- **Surface Taxi Conformance Monitoring (STCM)**
  - Conducted three workshops with ATC SMEs to assess and refine STCM tower research prototype
  - Conducted Technical Interchange Meeting with FD CDM (Flight Deck Collaborative Decision Making) project for future collaboration

Anticipated Research in FY22

- **Small Airport Surveillance Sensor (SASS)**
  - Activities: Following Industry Day, possible technology transfer to industry for further development
  - Products: Final Technical Transfer package and possible research and/or development agreement with interested industry partners
- **Runway Incursion Prevention through Situational Awareness (RIPSA)**
  - Activities: Conduct vendor site surveys and initiate installation of procured RIPSA technologies at test site(s)
  - Products: Contract Award(s) for system hardware and vendor engineering support, Site survey report(s), First Article System(s)
- **Surface Taxi Conformance Monitoring (STCM)**
  - Activities: Conduct testing of the combined flight deck and tower prototypes; Technology Transfer of STCM prototypes
  - Products: Technology transfer documentation and prototype software

Emerging FY23 Focal Areas

- Incorporation of Speech Recognition capability and cooperative surveillance into RIPSA technologies for surface safety.

- Wrong Surface Landing Prevention: Using air traffic and cockpit technologies to allow ATC and pilots to detect alignment problems that could result in Wrong Surface Landing (WSL) incidents

Runway Incursion Reduction Program (RIRP)

Research Requirements

- Develop Program Requirements, prototype, test and evaluate potential technologies at candidate airports as identified in the RIPSA report.
- Develop low-cost surface surveillance sensor
- Refine concept and develop tools for tower-based and cockpit-based taxi conformance monitoring
- Sponsor: Runway Safety Group (AJI-14)
  POC: Giovanni Dipierro, Manager(A), AJI-14

Outputs/Outcomes

Products:

- Localized surveillance and annunciation technology test systems at RIPSA candidate airports
- STCM technology prototype for cockpit and tower
- RIPSA operational evaluation reports and system requirements

FY 2023 Planned Research

- Technology Feasibility Assessment for Wrong Surface Landing Prevention
- Market Survey of Speech Recognition capability and cooperative surveillance for integration with RIPSA technologies for surface safety

Out Year Funding Requirements

	FY21	FY22	FY23	FY24	FY25	FY26
F&E	$ 3M	$ 3.1M	$ 3.5M	$ 3.5M	$ 3.5M	$5M