REDAC / NAS Operations

Review of FY 2021 - 2024 Proposed Portfolio

Runway Incursion Reduction Program (RIRP)

S09.02-00

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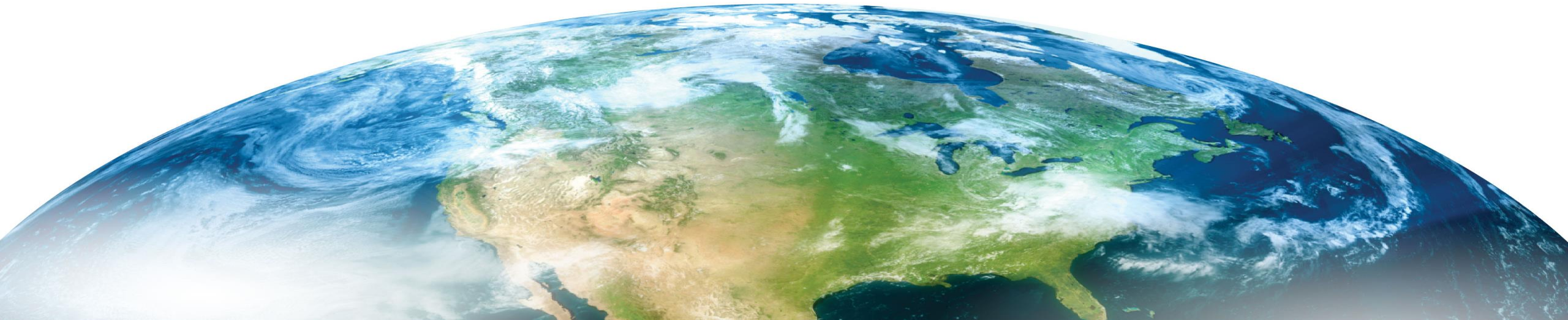
Runway Incursion Reduction Program (RIRP) Overview

- 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: Robert Higginbotham, ANG-C52
- Subject Matter Experts: GEMS Inc., Level Strategy, RWSL Informatics, 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)

    - Held a virtual Industry Day on Feb 4, 2021 which was attended by over 100 participants from industry, FAA, other government agencies and research labs

    - Coordinated Letters of Interest from industry vendors that expressed an interest in partnering with the FAA to further the development of SASS as an outcome of Industry Day

    - Generated final Technical Transfer Package (TTP) #5 that can be used for future SASS development

    - Participated as a key stakeholder in the development of the FAA's Surface Situational Awareness Operational Needs Assessment (ONA) draft recommendation to support the viability of using SASS in the NAS, and to facilitate Tech Transfer in the future

    - SASS Proof-of-concept related activities will conclude at the end of FY21; the testbed at Hanscom AFB has been dismantled

- Runway Incursion Prevention through Situational Awareness (RIPSA)

    - Solicited vendor proposals by issuing a Screening Information Request (SIR) for RIPSA Technologies for 3 candidate test sites, viz. Daytona Beach International Airport (DAB), San Antonio International Airport (SAT) and Tucson International Airport (TUS)

    - Performed evaluations of the vendor responses received in response to the SIR; contract award to vendors expected by end of FY21

- Surface Taxi Conformance Monitoring (STCM)

    - Conducted multiple (7) HITL workshops with ATC SMEs to assess and refine STCM tower prototype

    - Conducted Technical Interchange Meeting with Flight Deck Collaborative Decision Making (FD CDM) project for future collaboration

    - Conducted Field testing of STCM cockpit prototype at Leesburg Executive Airport (JYO), and HITL testing of the STCM cockpit prototype at the MITRE simulation lab

Anticipated Research in FY22

- 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) delivery

- 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

Anticipated Research in FY23

- Runway Incursion Prevention through Situational Awareness (RIPSA)

    - Activities: Complete installation of procured RIPSA technologies at test sites, undertake SMS activities to facilitate shadow testing; prepare for system operational test & evaluation

    - Products: Installed First Article System(s), Shadow evaluation report, Safety Management System artifacts, Safety Risk Management Document, and Test NAS Change Proposal

Emerging FY24 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 2024 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

F&E

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