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.

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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

- MITRE:
    - Benefit Estimation Methodology
    - Research / Data Mining
    - Human Factors

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Current FY22 Accomplishments

- Runway Incursion Prevention through Situational Awareness (RIPSA)
  - RIPSA contract was awarded to SAAB, Inc. to install and test its proposed technical solution (i.e., First Article system) at San Antonio International Airport (SAT) and Daytona Beach International Airport (DAB) – June 2022
  - Held Post-Award Conference and Technical Interchange Meetings with SAAB – July/August 2022
  - Conducted RIPSA Project Stakeholder Kickoff Meeting and Preliminary Site Survey at SAT – August 2022

- Surface Taxi Conformance Monitoring (STCM)
  - Conducted in-person ATC Human-in-the-Loop (HITL) testing at MITRE CAASD with NATCA assistance to evaluate simultaneous use of STCM tower and flight deck prototypes. Long Beach International Airport (LGB) was used as the candidate test airport for the simulation – April-May 2022
  - Held STCM Workshop to preview a 'first look' summary of the HITL study results – June 2022
  - Final report due September 2022

- Small Airport Surveillance Sensor (SASS)
  - SASS technology was transferred from ANG to ATO and has been identified by AJV-S as a potential alternative to the Surface Situational Awareness ONA. RIRP continues to engage in discussions with AJV-S21 and AJM about SASS for future surveillance solution development

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Anticipated Research in FY23

- Runway Incursion Prevention through Situational Awareness (RIPSA)

  - Activities:

    - Initiate installation of RIPSA system at San Antonio International Airport (SAT)

    - Prepare for system operational test & evaluation (OT&E)

  - Products:

    - First Article System(s) delivery at SAT

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Anticipated Research in FY24

- ## Runway Incursion Prevention through Situational Awareness (RIPSA)

  - ### Activities:

    - Initiate installation of procured RIPSA technologies at Daytona Beach International Airport (DAB)

    - Initiate system operational test & evaluation (OT&E) at SAT

  - ### Products:

    - First Article System(s) delivery at DAB

    - SMS artifacts for SAT RIPSA system

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Emerging FY25 Focal Areas

- Incorporation of Speech Recognition capability 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

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Runway Incursion Reduction Program (RIRP)

Research Requirements

- Develop Program Requirements, prototype, test and evaluate potential RIPSA technologies at 2 candidate airports, SAT and DAB
- 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 for integration with RIPSA technologies for surface safety

Out Year Funding Requirements

F&E (CIP)	FY22	FY23	FY24	FY25	FY26	FY27 & Beyond
	$ 3.1M	$ 3.0M	$ 3.5M	$ 3.5M	$ 5M	$ 20M

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