



Federal Aviation
Administration

Illuminating Engineering Society (IES) Government Contacts Sub-Committee Meeting

John Varas

***Navigation Program,
Lighting Systems Sub-Team
AJM-3222***

April 17, 2013

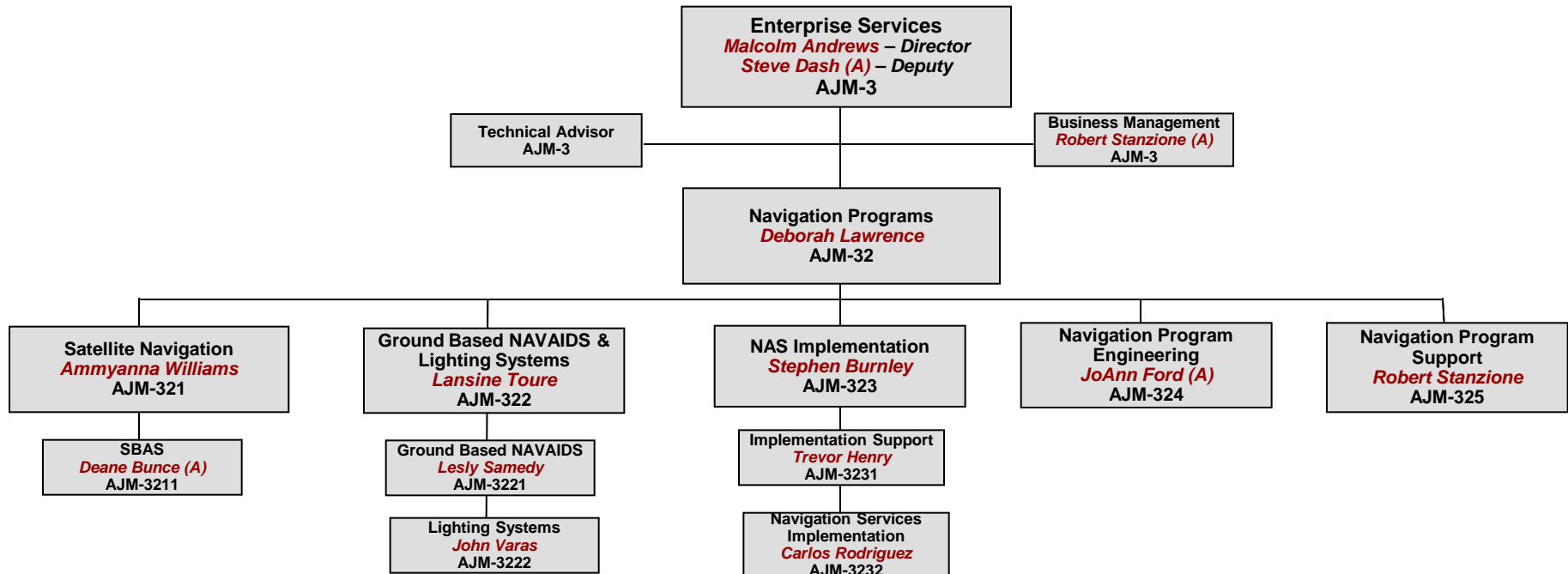


Overview

- Organizational Structure
- Navigation Programs
- Acquisition Management Systems
- Lighting Systems Sub-Team Initiatives
- Specifications
- Procurement Opportunities
- Lighting Systems Sub-Team



Enterprise Services, Navigation (Sub-Teams), AJM-32

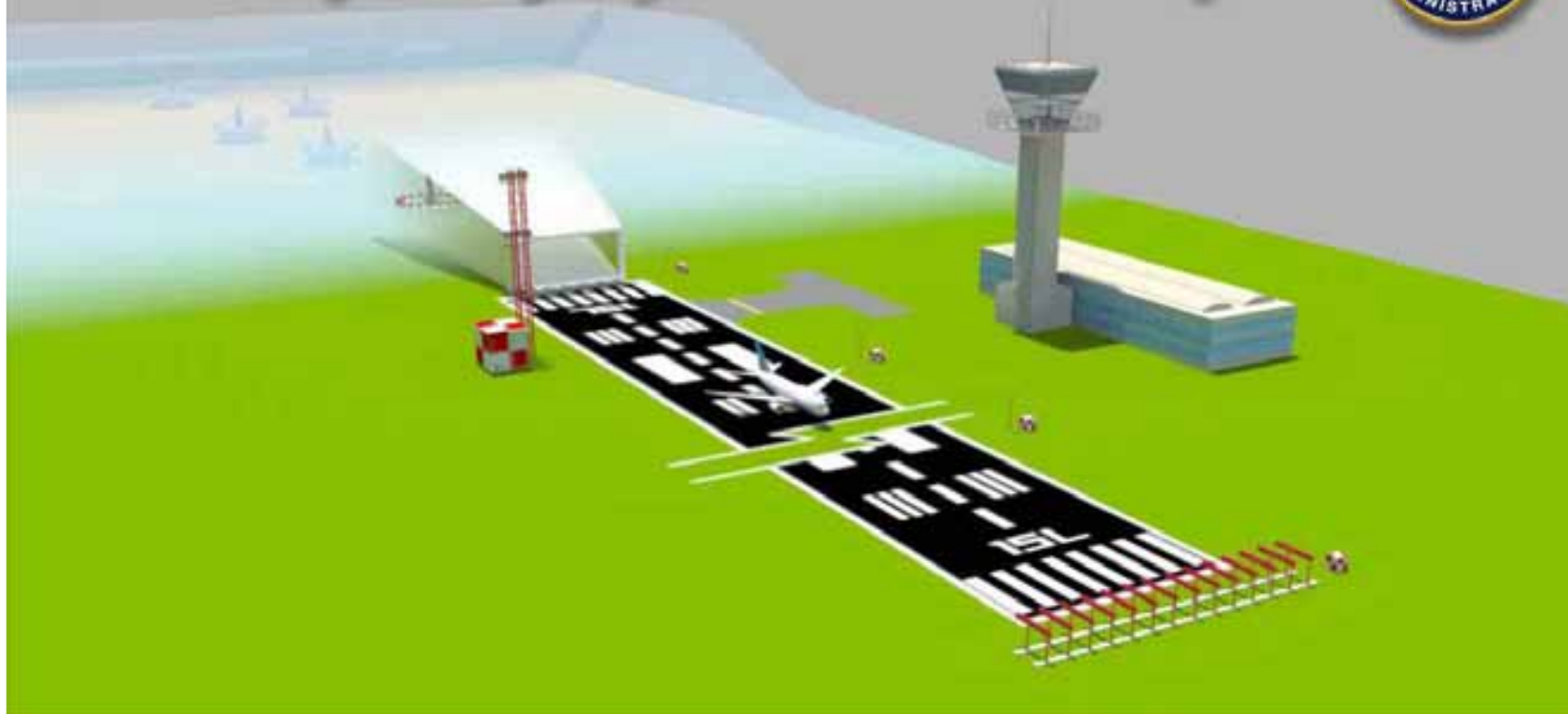


Navigation Programs

- **What we do:**
 - We offer solutions to meet or exceed customers' needs for providing safe, reliable, and cost effective Navigation Services to the National Airspace System (NAS), its customers, stakeholders, and employees.
- **Navigation Programs cover projects in the following areas:**
 - Global Navigation Satellite System
 - Ground Based NAVAIDS and Lighting
 - NAS Implementation
- **Responsibility :**
 - We define, develop, acquire, deploy, maintain, sustain, decommission, and Improve Lighting Products and services for the NAS.

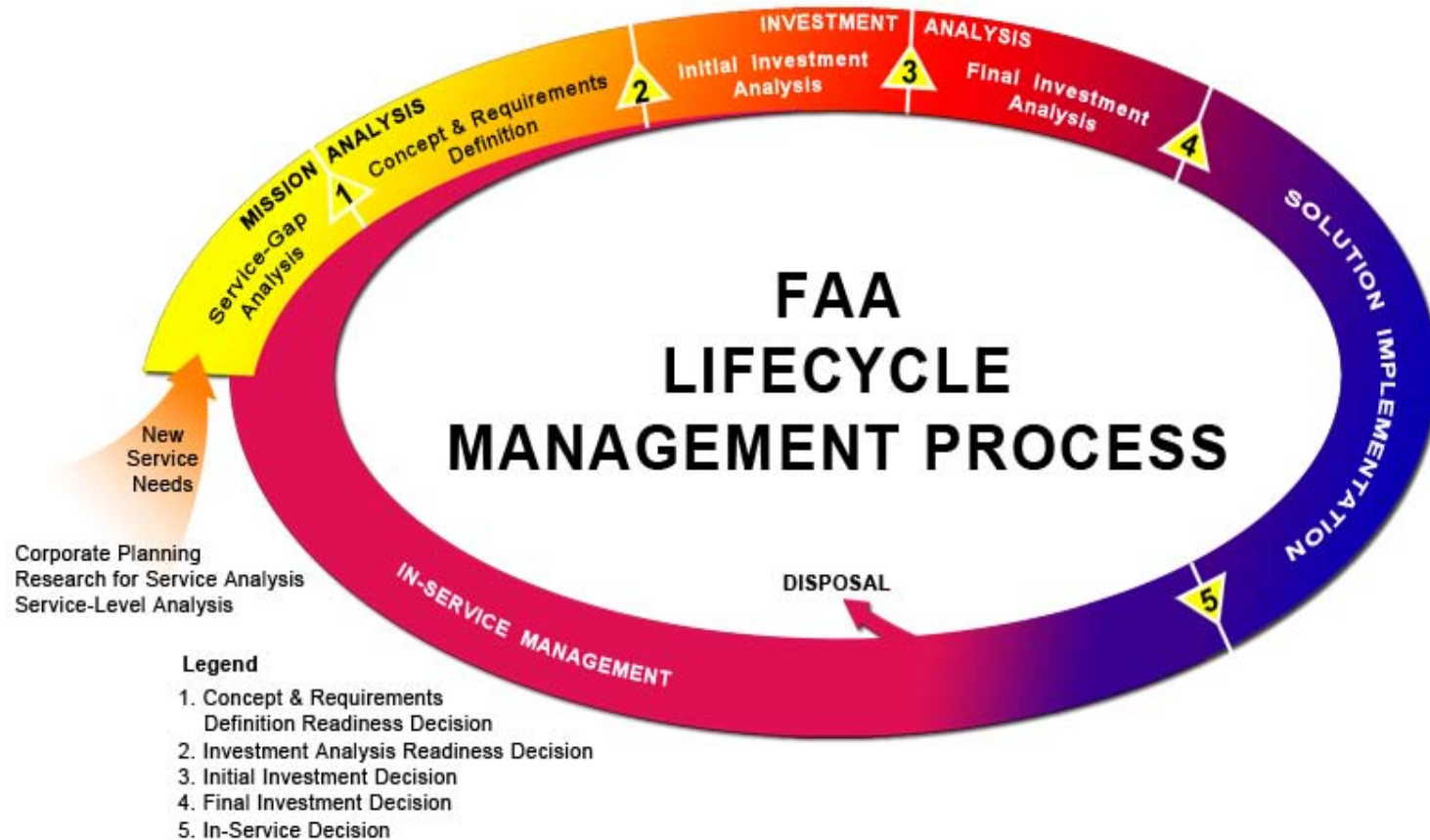


Ground Based Navigation and Lighting System Technologies



Acquisition Management Systems (AMS)

- <http://fast.faa.gov/>



Lighting Systems Team Projects

- MALSR LED Replacement Lamp Project
- PAPI LED Project
- Footprint Reduction Feasibility Project



Tactical and Strategic Challenges

- Energy efficient lights are installed on taxiways and navigation that are not visible with today's Enhanced Flight Vision Systems (EFVS)
- EFVS were designed and manufactured based on using the Infrared (IR) signatures of incandescent lights
- US statute requires the start of phasing out incandescent PAR 38 lamps by 2012
 - **(MALSR) uses PAR 38 lamps**
- Approach Lighting Systems (ALS) require large amounts of real estate be cleared and maintained and large numbers of lamps to be illuminated to provide visual cues to pilots



Desired Outcomes

- Suggest a means to harmonize visual aids with enhanced vision systems that does not impede technology improvements and moves us forward.
- Suggest a means to reduce the footprint of ALS to maintain/improve capabilities at a lower life cycle operational cost.
- Suggest a realistic program/approach to reaching the solution.
- Help us find the best path that maximizes benefits.



MALSR LED Replacement Lamp Project

- **Objective:** To determine the LED/IR requirements through a system engineering process by evaluating concepts which includes prototype tests and operational capability demonstration.
 - **Phase I:**
 - Conduct Feasibility Study to determine if integrating IR into a LED Par 38 and Par 56 fixtures is achievable. (Completed)
 - **Phase II:**
 - **Developed MALSR LED/IR prototypes and conducted Confidence Test**
 - **Procure MALSR LED/IR prototypes and conduct an Operational Capability Demonstration (OCD) with EFVS-equipped aircraft**
 - **Phase III:**
 - LED Lamp First Article development
 - Design Qualification Tests
 - FAA Operational Evaluation



MALSR Operational Capability Demonstration

- **Objective:** To evaluate the LED prototypes for operational capability in the NAS.
- **Activities:** Fly a full MALSR approach to validate requirements and use the technical information gathered to create a new MALSR performance specification.
- Normally the FAA performs the OCD at an agency test site such as:
 - William J. Hughes Technical Center at Atlantic City, New Jersey



LED PAPI Project

- **Objective:** The primary objective is to fully deploy LED PAPI by using the System Development, Deployment and Implementation phases of FAA's Acquisition Management Systems (FAMS) process.
 - **Project Activities**
 - Preliminary Design Review
 - Critical Design Review
 - Design Qualification Test
 - **Operational Test**
 - Configuration Audits
 - Product Baseline
 - In-Service Management



PAPI Operational Testing

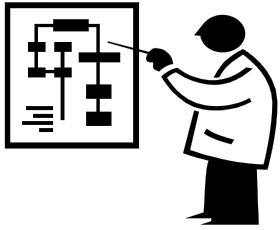
- To demonstrate that a new system is operationally effective and suitable for use in the NAS and that the NAS is ready to accept the system.
- Operational testing consist of:
 - Internal and external interfaces
 - Reliability, Maintainability and Availability (RMA)
 - Safety
 - Human factors
 - Logistics
 - Documentation
 - Maintenance handbook and certification procedures
 - Personnel
 - Training requirements.
- Testing will be conducted at Vero Beach Airport in Vero Beach, FL.



Footprint Reduction Feasibility

- Investigate the feasibility of reducing the current ALS Footprints (medium and high intensity) and provide proposed reduced footprints and/or light patterns while still maintaining the same level of effectiveness to support Categories I, II and III Instrument approach procedures.
- Establish alternative ALS footprint concepts supported by human factors and system design analyses
- Engage users, industry, academia, and lighting experts
- Assemble an FAA Technology Lighting (FTL) Team, consisting of Navigation Services, Flight Standards, Airports and Technical Center to establish metrics to be used to evaluate various approach lighting system configurations.
- Revalidate historical lighting system standards





Specifications

Approvals and Updates

Specifications

- **Semi-Flush Flasher Specification (FAA-E-2998)**
 - Approved (August 2011)
- **MALSR Specification (FAA-E-2890)**
 - Anticipated Approval (November 2013)
- **ALSF-2 Specification (FAA-E-2689)**
 - Anticipated Approval (April 2014)

Reason for Changes

- LEDs vs. Incandescent
- Color Boundaries
- Photometrics
- Design vs. Performance
- Equipment Consolidation
- Changes in Standards
- Changes in Testing Requirements
- Outdated Specifications



Procurement Opportunities

- Market Survey for Footprint Reduction Feasibility Study by end of FY13

FAA Contracting Opportunities website:

<https://faaco.faa.gov/>



Lighting Systems Sub-Team Contacts

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Vacant	ALSF-2, REIL, LED PAPI, RRCS	
Vacant	Semiflush Lights	



Conclusion

- Strong Industry and Academic Involvement is a Must for us to Improve Lighting Products
- The Lighting Systems Team Looks Forward to Working with Industry and Academia



QUESTIONS?

