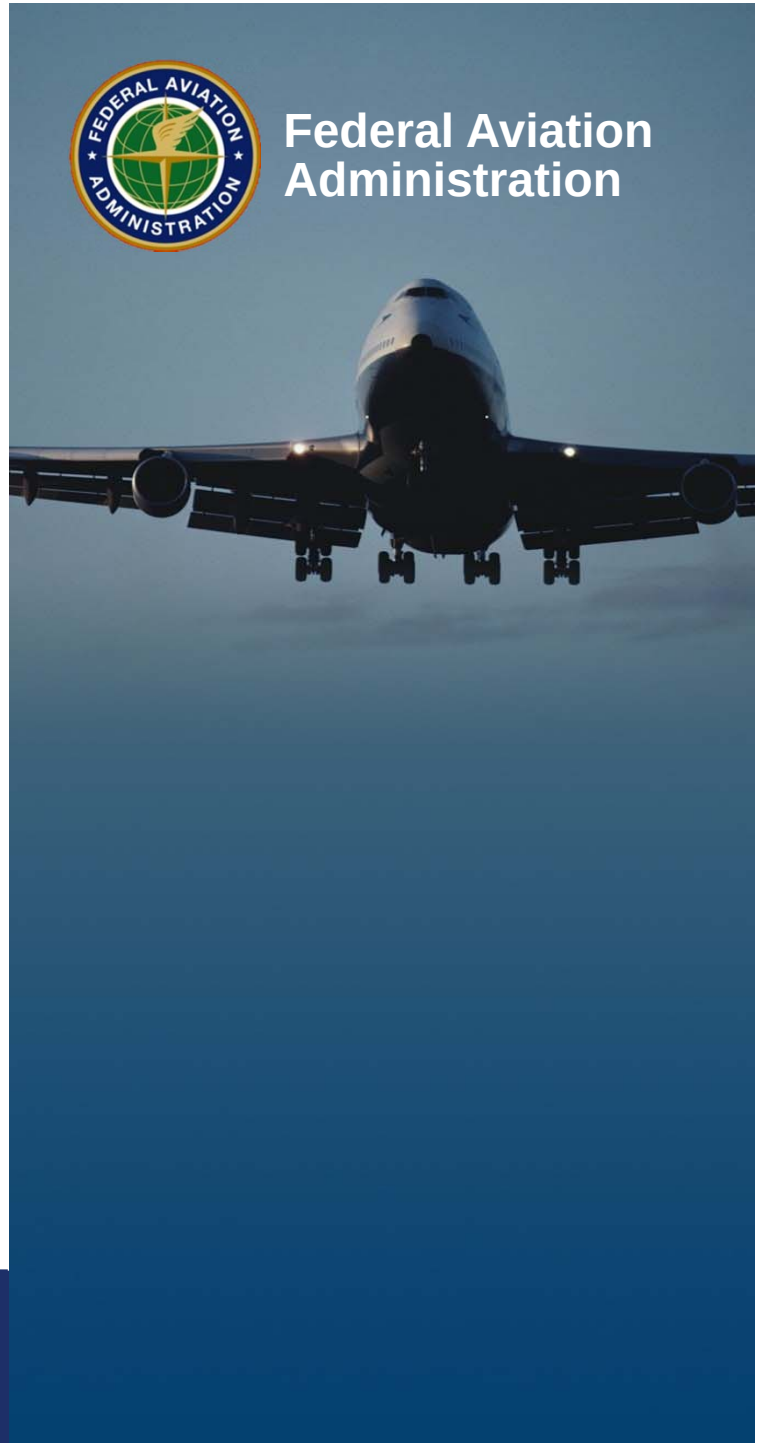
# Illuminating Engineering Society (IES) Government Contacts Sub-Committee Meeting




***Donald Lampkins and Renee Williams***

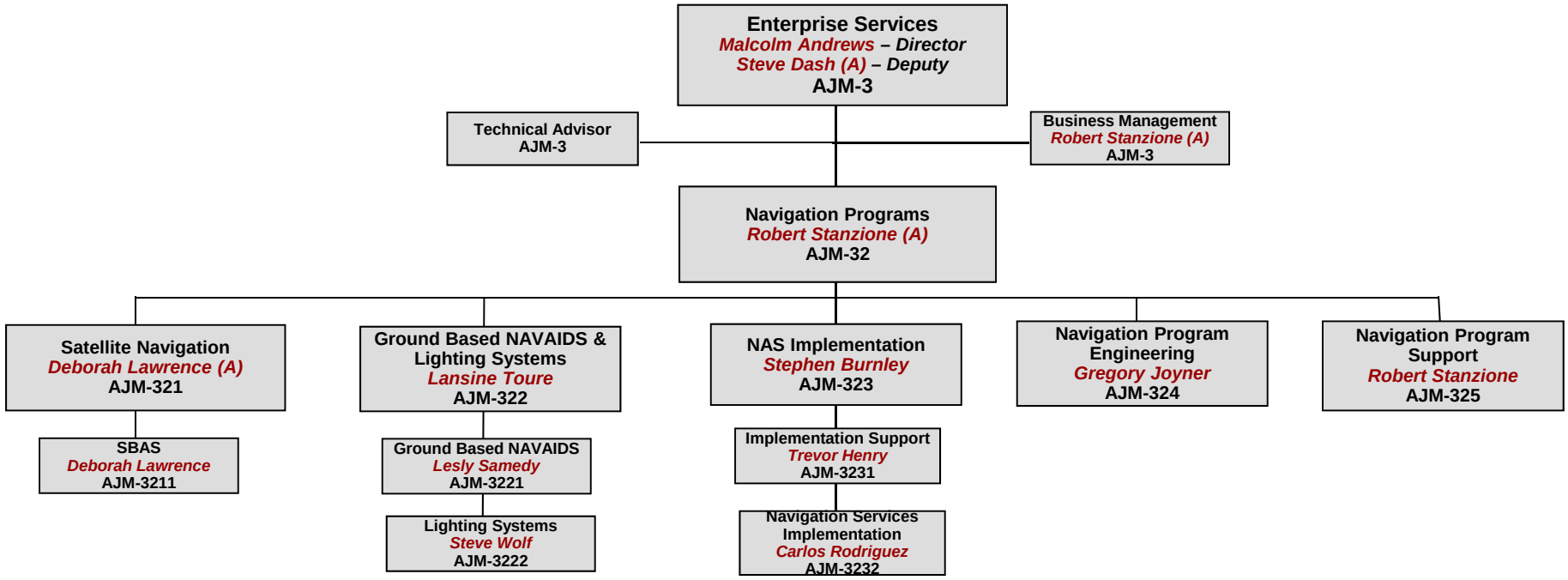
***Navigation Program,***
***Lighting Systems Sub-Team***
***AJM-3222***

**October 15, 2012**

# Overview

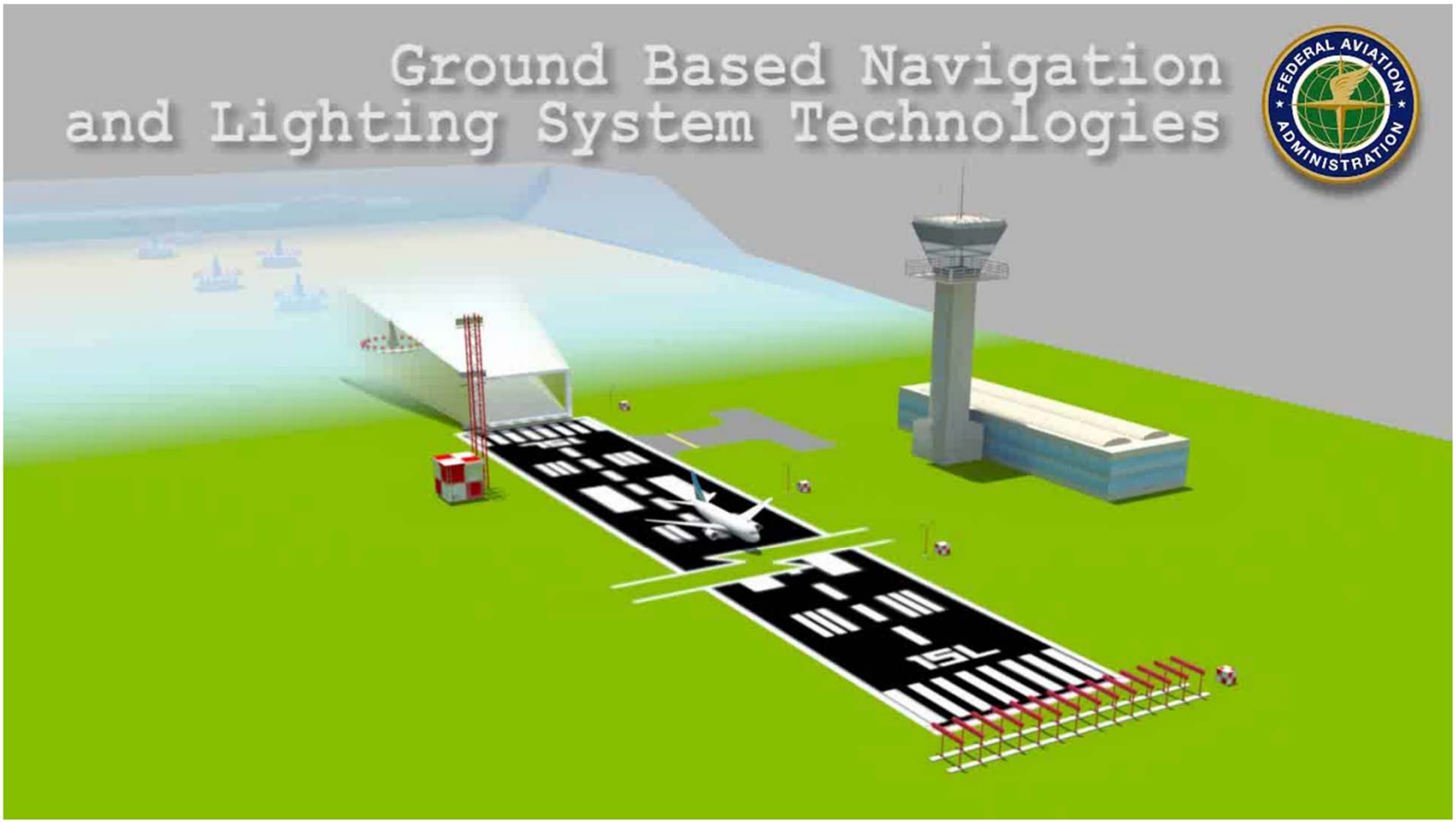
- Organizational Structure
- Navigation Programs
- Acquisition Management Systems
- Lighting Systems Sub-Team Initiatives
- Specifications
- Procurement Opportunities
- Lighting Systems Sub-Team

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



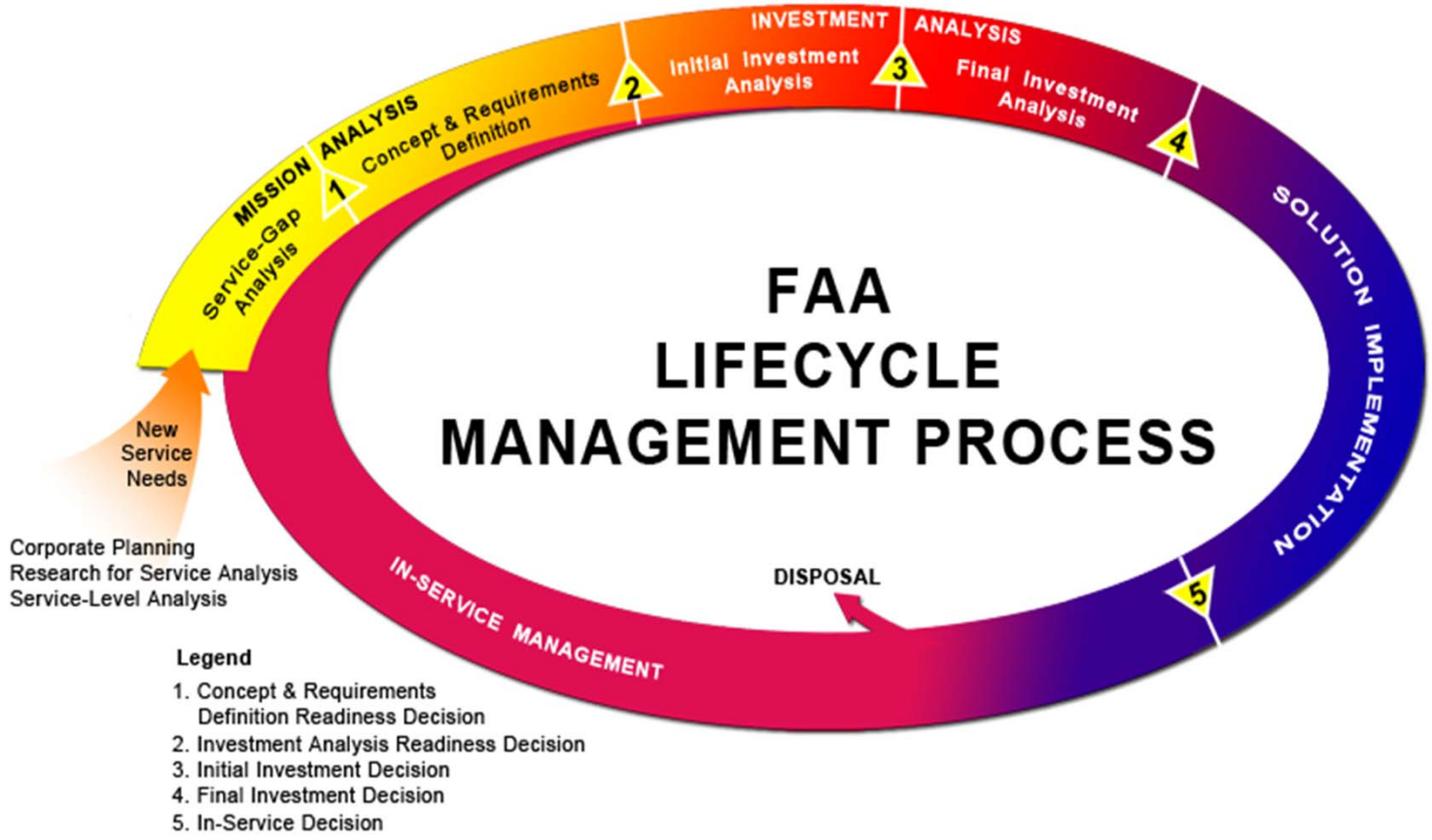
# Navigation Programs

- **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
FEDERAL AVIATION ADMINISTRATION

# 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

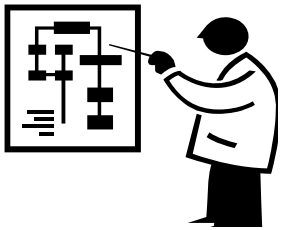
- Investigate the feasibility of reducing the current ALS Footprints (medium and high intensity) and provide proposed reduced footprints and/or light patterns while still maintaining the same level of effectiveness to support Categories I, II and III Instrument approach procedures.

- 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

| | | |
|---|---|---|
| Steve Wolf | Team Lead | (202) 493-4752 |
| Renee Williams | LED Initiatives, LIR, Baffle Projects, RVR | (202) 493-5488 |
| John Varas | ALSF-2, REIL, LED PAPI, RRCS | (202) 493-4760 |
| Ndubuisi Nnorom | Semiflush Flashers, Footprint Reduction | (202) 493-4661 |
| Donald Lampkins | MALSR, PAPI, LED Initiatives | (202) 267-7332 |

# 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?