

A tall, white air traffic control tower with a large, white, geodesic radar dome on top. The tower has several windows and a red and white checkered band around the base of the dome. The background is a dramatic sky with orange and yellow clouds, suggesting a sunset or sunrise. A small airplane is visible in the distance, flying towards the right.

FAA TFM-AID Challenge Q&A Webinar

November 15, 2022

3:00 – 4:30 PM EDT

Q&A Webinar Agenda



Introductions

Context and Background Discussion

Questions Received in Advance

On-Call Questions (Time Permitting)

Wrap-Up

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Miro Lehky
Mosaic ATM




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Context & Discussion of the FAA Traffic Flow Management – Application Integration Design (TFM-AID) Challenge Theme

Flow Management Data & Services (FMDS)

Traffic Flow Management – Application Integration Design Context

By: Matt Sanders

Date: November 15, 2022



**Federal Aviation
Administration**

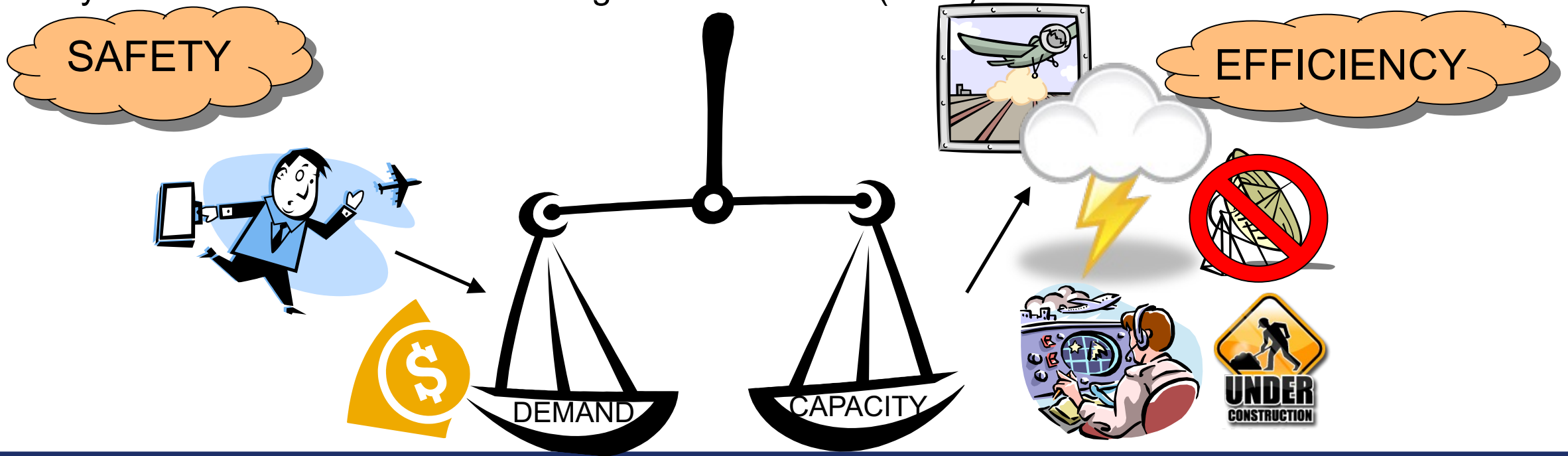
Agenda

- Intro to Traffic Flow Management (TFM)
- Current Traffic Flow Management System (TFMS) capability and shortfalls
- Future Flow Management Data & Services (FMDS)

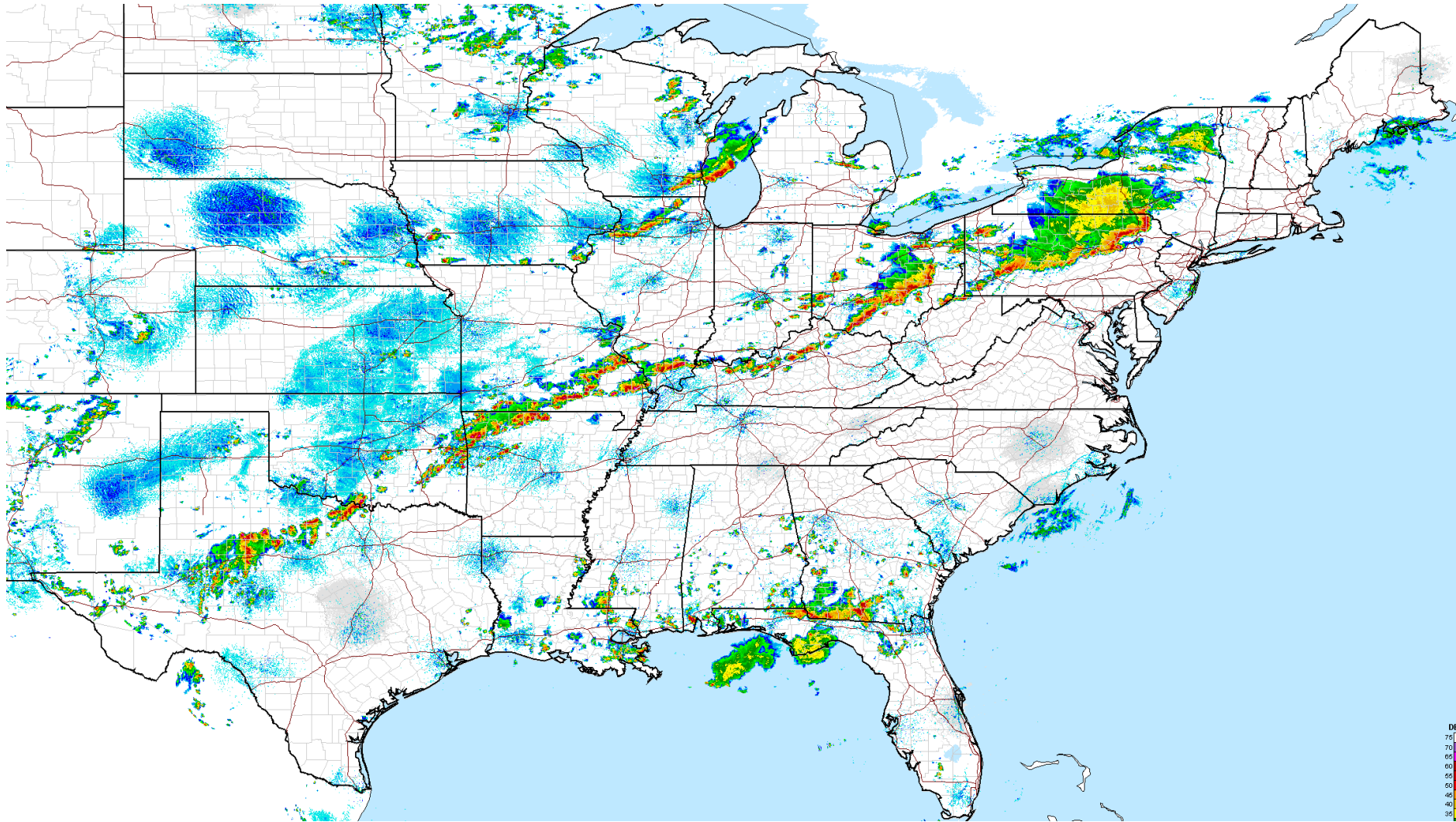


What is Traffic Flow Management (TFM)?

- Strategically manages the flow of air traffic to minimize delays and congestion in response to:
 - Variability in traffic **demand**
 - **Constraints** like changing weather, runway closures for construction
- Promotes a safe, orderly, and expeditious flow of traffic through analysis, coordination, and dynamic utilization of Traffic Management Initiatives (TMIs)



Nationwide Weather Impacts



TFMS Infrastructure



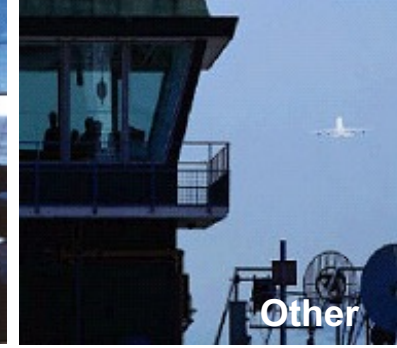
ATCSCC



ARTCC



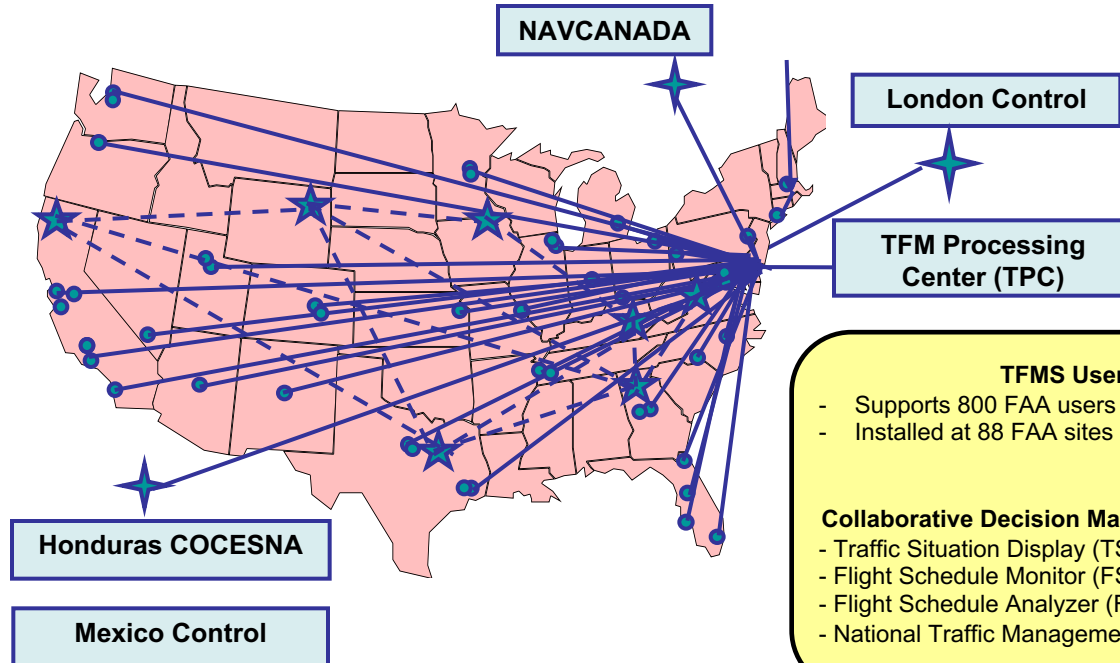
TRACON /Towers



Other

TFMS Operational Locations and Service Delivery Points

- ATCSCC – Vint Hill, VA
- TFM TPC – Technical Center – FAA
- Disaster Recovery Center (DRC)
- FAA HQ and Academy
- Contractor Sites (3)
- R&D (4)
- Traffic Management Units at:
 - ARTCCs (21)
 - TRACONs (35)
 - CERAPs (3)
 - Regional Offices (5)
 - Towers (19)
- Airlines (24) & AOCs
- Military (9)
- International Sites (17)
- U.S. Government Locations (7)



TFMS Users

- Supports 800 FAA users (200 web-based)
- Installed at 88 FAA sites and 125 total sites

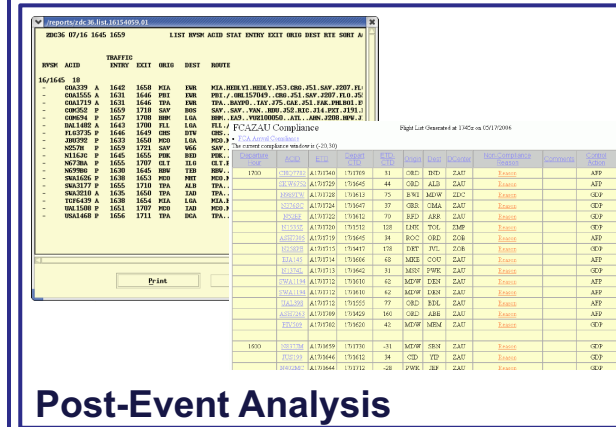
Collaborative Decision Making (CDM Tools)

- Traffic Situation Display (TSD)
- Flight Schedule Monitor (FSM)
- Flight Schedule Analyzer (FSA)
- National Traffic Management Log (NTML)

Traffic Situation Display

Playbook Advisory

Assess NAS State & Conduct TFM



Maintain Operations

57 separate applications

Why is TFMS being replaced?

TFMS Shortfalls have been well-known for years

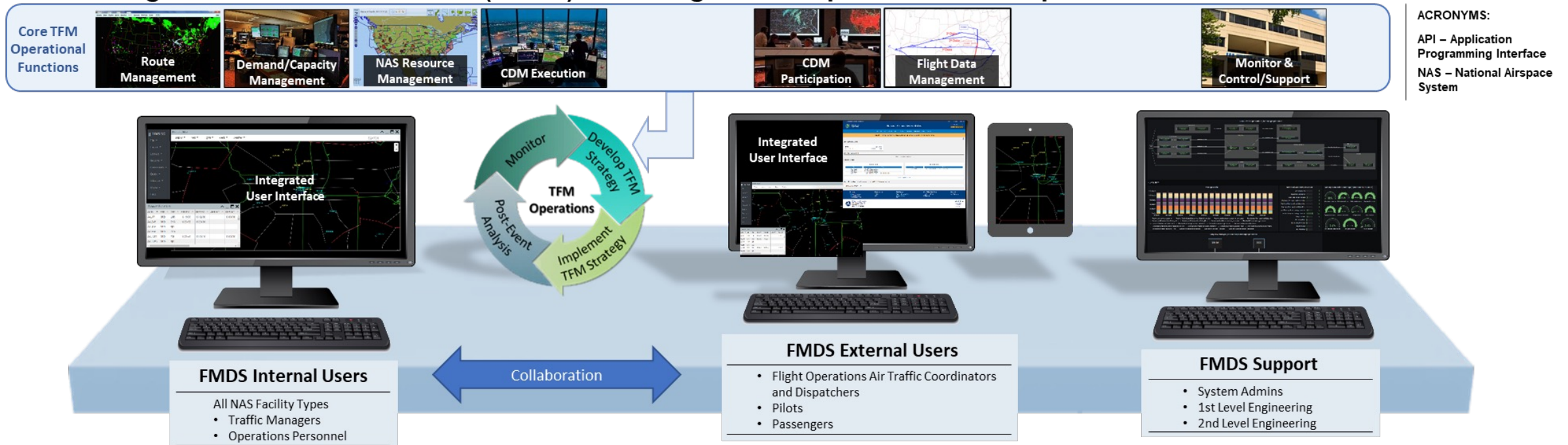
- Aging architecture and technology cannot support capabilities moving forward
- Critical inefficiencies in usability and software integration
- Legacy evolution does not meet current NAS availability and reliability targets
- Outdated architecture requires resource-intensive maintenance
- Opportunity to leverage best practices and technology

What is FMDS?

- **FMDS is a replacement and modernization of TFMS**

- FMDS will provide a reliable TFM automation system using a modernized architecture that will increase reliability and reduce response time compared to TFMS.
- TFM automation system functions will be implemented in a streamlined interface that will improve the user experience via an integrated situation awareness display application. The improved performance of FMDS in conjunction with a new, consolidated application suite will allow traffic managers to view all traffic, TMIs, and weather in one integrated application, allowing for more proactive and efficient execution of TFM actions.

Flow Management Data and Services (FMDS) To-Be High-Level Operational Concept



Conclusion and Questions



**TECHNICAL QUESTIONS
RECEIVED IN ADVANCE**

Technical Questions:

1. What is the expectation for the prototype?

Answer: The goal is an interactive simulation that will give stakeholders a taste of how the final product will both look and perform and mimics the end products. That is, the goal is not to develop a fully capable system, but to focus on the front-end user interface and user experience and workflows rather than all that happens on the back-end to provide that experience. Please take note of the Airspace Flow Program scenario provided as #4 under Resources. See also item 9 on the resources page that references tools and recommendations for a prototype.

2. What systems are currently in place that will be integrated into the new flow data management system interface?

Answer: The Challenge focuses on the TSD, FSM, and NTML applications that are part of the current Traffic Flow Management System (TFMS). See the TFM Background document under Resources on the TFM AID Challenge website.

Technical Questions Cont.

3. Can you please explain the design constraints in detail?

Answer: No specific constraints beyond what is indicated in the challenge guidelines. You can plan on more than one monitor, although we suggest you not plan on more than two. You should also consider how the traffic manager manages information spread across more than one monitor.

4. How can participants learn about what the current traffic flow management system GUI looks like?

Answer: There are several sources, all of which are available under Resources on the FAA TFM-AID Challenge Details page:

- TFM background document on the Challenge website includes screen shots of relevant portions of the existing GUI (Resource #3)
- There are some shots of TFMS screens in the System Command Center overview video (Resource #7)
- There are user guides for the TSD and FSM applications on the Collaborative Decision Making (CDM) website (Resource 8). These guides may provide a useful reference, but we do not recommend trying to read them end-to-end.

Technical Questions Cont.

5. Will we be given data to model from?

Answer: No data modeling is necessary; we recommend that teams focus on the user interaction. The kinds of information presented to users about AFPs can be seen in the AFP scenario document (Resource #4; see Figure 3 on page 4) and in the TFM Background document (Resource #3; see Figures 7 and 8 on pages 7 and 8, respectively). Information presented to users about flights can be seen in screen shots from the FMDS Concept of Operations document (Resource #5; see Figure 2-8 on page 28, Figure 2-9 on page 29, and Figure 2-14 on page 34) All of these can be found under Resources on the FAA TFM-AID Challenge Details page.

6. Can you please provide some examples of existing pain points in the traffic flow management system?

Answer: The principal pain points are:

1. The need to transition between multiple applications in order to complete a specific task
2. The need to make duplicate entries into separate applications
3. The need to manage numerous windows (death by windows), and
4. Inconsistency in presentation as user transitions from application to application.

Refer to the AFP workflow, as presented in the ConOps (Resource #5).

Technical Questions Cont.

7. What would you like to see added, removed or improved in the traffic flow data management system? If possible, can you please provide a 'wish list' of features for the new advanced flow data management system?

Answer: You should address the previously mentioned pain points, and also improve the visualization to make things easier to understand and quicker to mentally assimilate. You need to retain the ability to prioritize how data and views are displayed by providing sufficient flexibility for different roles to customize displays to their needs (keep in mind this competition focuses on the ATCSCC perspective).

8. How can participants learn about what the current traffic flow management system GUI looks like?

Answer: There are several sources, all of which are available under Resources on the FAA TFM-AID Challenge Details page. See answer to Question #4.

PROGRAMMATIC & MISCELLANEOUS QUESTIONS RECEIVED IN ADVANCE

Programmatic & Miscellaneous Q's

1. Are participants allowed to interview traffic flow managers and federal employees to learn about existing pain points in the current traffic flow management system?

Answer: Yes, for the most part. If your team has existing connections, or reaches out independently to government or industry experts, you are welcome to interview them for your project. However, neither NIA nor the FAA can provide contact info or make arrangements for a teams to conduct interviews.

However, please keep in mind that we want to see new concepts and ideas. Interviewing past controllers and traffic managers may slant your designs towards the existing system, which your design is meant to replace. Be open minded and aware that different types of facilities will give you different viewpoints than may be used at the ATCSCC.

In the interest of fairness, you may not directly contact anyone involved with the FAA TFM-AID Challenge Steering Committee. If you have questions related to the Challenge for someone on the committee, please send them to Victoria.OLeary@nianet.org at any point before the PDR submission, and the FAA TFM-AID Program Team will forward them for answers. All questions and answers received this way will be posted to the FAA TFM-AID Challenge FAQ's page, so that they are accessible to all teams.

Programmatic & Miscellaneous Q's Cont.

2. We can deliver prototypes for multiple ideas; is there a limit?

Answer: A single university may submit more than one EOI/PDR, and students/faculty may participate on more than one team. If your “multiple ideas” are integral to each other, then you would submit one EOI/PDR for the design which incorporates all of your ideas. If you have multiple varied ideas, then each unique idea should be submitted as its own full PDR responsive to the prompt.

Keep in mind that each PDR submission will take a significant amount of time, effort, and research to deliver a quality proposal. If your student group plans to submit multiple ideas, consider nominating separate Team Leads for each idea, and scheduling time with each other to work on each submission separately from the other submissions.

Questions?

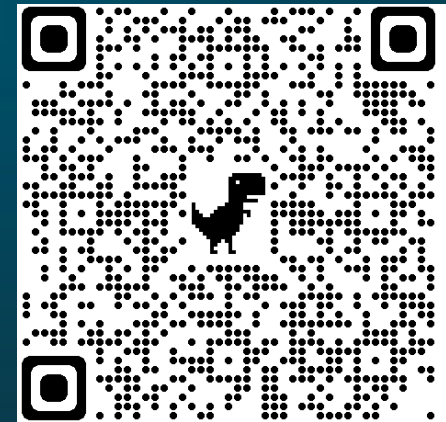
Additional Questions?

Please direct all future questions to the
FAA TFM-AID Challenge Project Lead: Victoria.OLeary@NIAnet.org.

Each question will be responded to directly as well as posted on the FAQs page for everyone to view. Questions asked during this webinar will be transcribed and posted to the FAQs page about 1 week from today.

<https://faa-tfm-aid.nianet.org/FAQs>

**View the complete
FAA TFM-AID
Challenge Guidelines**



Important Upcoming Dates

PROSPECTIVE TEAMS

March 2, 2023

Deadline to Submit
PDR Packages

March 30, 2023

Notification of
Selection Status

FINALIST TEAMS

May 17, 2023

Deadline for Online
Registration & Payment

June 7, 2023

Deadline to Submit
CDR Package

June 25, 2023

Deadline to Submit
Presentation Files



FAA TFM-AID
Challenge Forum

June 28 - 29, 2023

NEW: The Expression of Interest (EOI) Deadline has been **EXTENDED to January 30, 2023!**
Invite your friends and classmates to participate at <https://FAA-TFM-AID.nianet.org>

**Thank you, and
best of luck to teams!**