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CASE STUDY: AIRPORT THROUGHPUT PREDICTION UNIVERSITY CHALLENGE (NOIS2-179)

Client Overview

NASA Ames Research Center

NASA Ames Research Center, under the **Air Traffic Management – eXploration (ATM-X)** program, leads innovation in airspace efficiency through the **Digital Information Platform (DIP)** sub-project. The organization focuses on modernizing systems that support safer, more efficient operations across the National Airspace System (NAS).

As part of this mission, NASA partnered with CrowdPlat to engage academic talent across the U.S. in solving a critical forecasting challenge through a national competition.

The Challenge

Forecasting Airport Arrival Activity

NASA required a solution that could anticipate how many flights would arrive at a given airport 3 to 5 hours into the future. This capability would help flight planners, airport operations teams, and national airspace managers make better-informed decisions under real-time constraints.

Key challenge goals:

- Design a system using previously recorded public datasets.
- Ensure the forecasting approach mirrors real-world planning scenarios.
- Engage university students across the U.S. through a competitive format.
- Ensure all outcomes are transparent and reusable by government entities.

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The Solution

A National University Competition

CrowdPlat launched and managed a national challenge targeting students and researchers from U.S.-based universities. The competition invited participants to develop innovative forecasting approaches using historical airport and weather information. CrowdPlat and its partner Bitgrit provided a fully managed challenge platform, secure submission process, public scoreboards, and detailed documentation.

Key Program Components:

- Structured a four-month timeline from launch to award.
- Conducted national outreach with a focus on equitable access.
- Provided guidance, webinars, and technical assistance throughout.
- Hosted a judging panel of aviation and forecasting experts.
- Delivered a closeout report and presentations to NASA stakeholders.

Winner Showcase

From a highly competitive pool of university participants across the U.S., eight individuals stood out for their creative and effective solutions:

Rank	Winner	University
1st	**Matthew Motoki**	University of Washington
2nd	**Julia Chuzhoy**	University of Chicago
3rd	**Brian Hu**	California Institute of Technology
4th	**Nika Chuzhoy**	California Institute of Technology
5th	**Donald Rea**	Michigan State University
6th	**Jakapop Khongnawang**	University of Hawaii
7th	**Sarah Ming-Xin Zhao**	Stanford University
8th	**Ilan Upfal**	Massachusetts Institute of Technology

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These winners demonstrated exceptional problem-solving and strategic thinking while working within the constraints of a real-world planning environment.

CrowdPlat Advantage

Experience with Innovation Challenges

CrowdPlat has delivered dozens of open innovation projects, including for NASA, NIH, and other federal agencies.

Access to Talent

CrowdPlat engaged a vibrant academic network while ensuring high platform reliability and secure result validation.

Focus on Education & Equity

The challenge intentionally encouraged participation from top colleges and ensured that all students had access to the tools, support, and resources needed to succeed.

Turnkey Execution

CrowdPlat led the entire process—from kickoff and outreach to judging and final reporting—ensuring a seamless experience for the client and maximum impact from the results

Conclusion

The NOIS2-179 Airport Throughput Prediction Challenge not only delivered a suite of innovative forecasting solutions to NASA but also created a high-impact opportunity for academic engagement, equitable participation, and real-world problem-solving. By bridging federal objectives with university-led creativity, CrowdPlat demonstrated how structured competitions can drive measurable innovation, expand access to federal challenges, and prepare the next generation of technical leaders.

Through strong execution, expert guidance, and an inclusive approach, the project successfully met all milestones—and left NASA with operational tools and insights that can help shape the future of air traffic efficiency.