16th Annual
First Nations Launch
Gateway Kick-Off Meeting

Welcome, as you enter, please type
in the chat:
Your Name & School

**Note: This presentation will be
recorded so team members not in
attendance may be able to rewatch
later**

16th Annual
First Nations Launch
Gateway Kick-Off Meeting

January 7, 2025

ARTEMIS
STUDENT CHALLENGES
nasa.gov/stem/artemis.html

NASA Partner

Overview

- Welcome and Introductions
- Competition Overview
- Reports and Scoring
- Prizes and Awards
- Recruitment
- Resources
- Reimbursements
- Patch Contest
- #IAMFNL

Meet the Team

- Wisconsin Space Grant Consortium
    - Kevin Crosby, Director   kcrosby@carthage.edu
    - Christine Bolz, Assistant Director, FNL Program Director   cbolz@carthage.edu
    - Rob Cannon, FNL Program Manager   rcannon@carthage.edu
    - Connie Engberg, Project Support Assistant   cengberg@carthage.edu

- First Nations Launch Administrative Team
    - Frank Nobile, Wisconsin Tripoli   maxq3@aol.com
    - Mark Abotossaway, Blue Origin - Structures Engineer   mark.a.abotossaway@gmail.com
    - Brittany Nez, GE Aerospace - Controls Engineer   brittanyanez4@gmail.com
    - Bob Justus, Illinois Tripoli   bob@mhbofni.com

- NASA
    - Grace Johnson, Kennedy Space Center

Meet the Judges

- **NASA**
  - Aaron Yazzie, Navajo
  - Ben Cervantes, Karuk
  - James Wood, Osage
  - Joe Connolly, Haudenosaunee, Onondaga Nation
  - Lauren Denson, Apache
  - Orson John, Navajo
- **BAE Systems**
  - Evie Clarke, Muscogee Nation
- **Blue Origin**
  - Bree Shepard
- **Boeing**
  - Garrett Nez
  - Starr Fowler
- **Raytheon**
  - Aaron Ashley, Dakota-Omaha
  - Alexa Martinez, Mescalero Apache
  - Jadon Shortman, Ft. Belknap Reservation, Assiniboine and Gros Ventre Tribes
- **USSF**
  - Haida Star Eagle, SouthEastern Cherokee
- **W.L. Gore & Associates**
  - Aaron Watson, Navajo

Meet the FNL Teams

College of Menominee Nation	Honolulu Community College	Northern Arizona University
College of Muscogee Nation	Northern Oklahoma College	Queen's University*
Haskell Indian Nations University	Stanford University	Turtle Mountain Community College
Leech Lake Tribal College	University of British Columbia*	University of California, Los Angeles
Northwest Indian College	University of California, Davis	University of Colorado - Boulder
Rochester Institute of Technology	University of Kansas	University of Hawai'i at Mānoa
United Tribes Technical College		University of North Carolina Pembroke
University of Toronto		University of Oklahoma
White Earth Tribal and Community College		University of Washington - Seattle

Key Changes for 2025

- Challenge Handbooks
- NASA STEM Gateway Registration
  - Extra step will be required this year. More information to come.
- Office Hours
  - I have open availability on my calendar, visit the following link to coordinate a time: https://calendar.app.google/VJ8XKXm6SeHXhwgE6
  - If no times are feasible, reach out and I am happy to coordinate times later in the day.
- Google Drive Team Folders
  - Used last year in limited capacity, expanding use this year.

Competition Handbook

- The key to understanding the Goals and Expectations of FNL Gateway is in the <u>Gateway Competition Handbook</u>

- It can be found on the WSGC FNL Website
  - https://spacegrant.carthage.edu/first-nations-launch/

- The Handbook:
  - Outlines Gateway Challenge Details and Requirements
  - Outlines Milestone Expectations
  - Provides Resources
   - Technical Resources
    - Project Management Resources

Gateway Challenge

- Teams shall design and construct a dual deploy high-power rocket from the following list of kits:

    - Loc Precision "FANTOM 438 EXL"

    - Loc Precision "Patriot"

    - Loc Precision "LOC IV X2"

- Teams may customize their kit with special add-ons provided by the manufacturer

- Pyro energetics via altimeter shall be used for main deployment recovery

    - Research altimeters to ensure it can support deployments, some altimeters are solely flight recorders (i.e., Jolly Logic)

- There is no payload/challenge associated with this challenge, with focus being on the safe and complete selection, simulation, procurement, assembly/fabrication, and flight of the kit rocket.

- The flight shall be stable and reach an apogee between 2200' - 2800' AGL.

FNL Gateway 2025
Flight Profile
Altitude 2200' - 2800' AGL
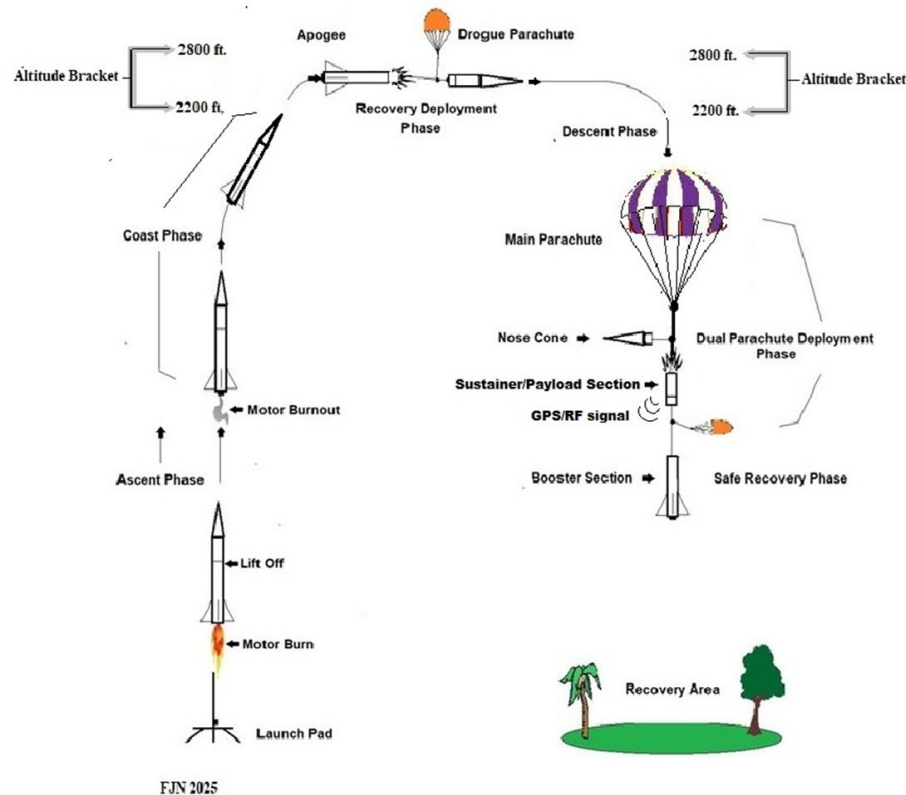
Gateway Challenge

- When ordering your kit, make sure to include the following components:
  - E-bay module
  - 38mm motor adapter
- Teams will select between two preselected motors per kit
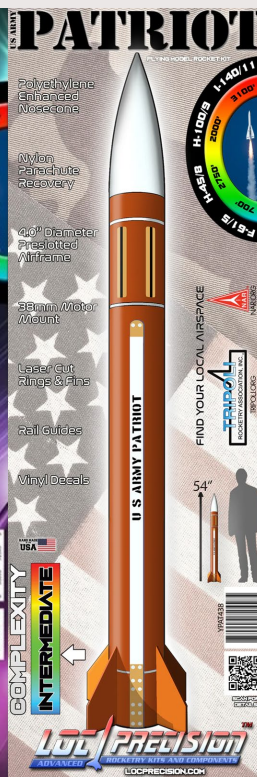
Milestones

- After Kick Off, there are 2 Milestones before Launch Weekend
    - Follows the Gated Process which is a Project Management Approach
    - Typically: Proposal -> PDR -> CDR -> FRR -> PLAR
    - Shortened for Gateway: CDR -> FRR -> PLAR

- CDR (first Review by the Tech Team)
    - You should have your simulations understood and near complete
    - You should have most of your components researched and selected

- FRR (final Review by the Tech Team)
    - You should have most of your components ordered
    - You should have most of your rocket built

Goals and Expectations of Gateway

- FNL Gateway is more than just building a rocket
    - You will learn how to simulate, understand rocketry parameters, understand requirements, research components (altimeters, GPS, parachute, other hardware), create and maintain a budget and schedule, perform component tests, integrate components, create and give presentations, teamwork, working with Advisors / Mentors, asking for help WSGC Office Hours etc.

- At each Milestone (CDR and FRR) you will submit;
    - A Milestone Fly Sheet
    - A Milestone Presentation
        - You will give your presentation to the Tech Team / Judges

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Milestones – RockSim Simulation

- RockSim is the main tool
  - To ensure your rocket satisfies challenge requirements <u>and</u>
  - To help with component selections

- Gateway Teams should Procure RockSim ASAP
  - All team members should learn RockSim
  - Team will use RockSim
    - To understand rocket performance
    - To help make component selections (Altimeters, GPS, Parachutes)
  - Teams should (in the coming weeks)
    - Examine RockSim models of all 3 kit options
    - Understand performance of all 3 kit options with motor options

Milestone - Fly Sheets

- **Fly Sheet is a summary of technical specifications of your rocket**
  - Be sure you understand how to find all of the parameters (ask your Mentor)

- **Teams are required to submit a flysheet at each Milestone**
  - For Gateway - CDR, FRR
    - Fly Sheet template found on FNL Website - Report Templates and Scoring Rubrics
    - https://spacegrant.carthage.edu/first-nations-launch/rubric/

- **Fill out your Fly Sheet at the same time as your Presentation**
  - Fill as much as you can at each cycle – much comes from RockSim
    - You may not understand much at Proposal, but will have a complete sheet at FRR
  - If you don't understand a specification – ask
  - If you don't have a specification, leave it blank
    - We don't expect all specifications at the Proposal

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Milestone – Fly Sheets

Milestones - Virtual Presentations

- **Summarize and present your design choices, simulations and project management**

- **A PowerPoint template is provided for each Virtual Review**
  - Links to virtual review templates are found in the WSGC Website
    - https://spacegrant.carthage.edu/first-nations-launch/rubric/

- **Every team member should participate during the presentation.**
  - Presentation is limited to 20 minutes total
  - Teams presents their slides for (10 - 12 minutes)
  - Judges and Tech Team will ask questions at the end of your presentation (5 - 10 minutes)

- **Each team given a presentation slot based on Judge's schedule.**
  - It will be the team's responsibility to be in attendance

Milestone – Virtual Presentations

https://spacegrant.carthage.edu/first-nations-launch/rubric/

Milestone – In-Person Presentation

- Similar to your Virtual Design Reviews – except in-person
  - Summarize your entire First Nations Launch experience and present your as-built rocket and payload

- A PowerPoint template is provided for presentation
  - Link to Launch Weekend Presentation template is found in the WSGC Website
    - https://spacegrant.carthage.edu/first-nations-launch/rubric/

- Every team member should participate during the presentation
  - The presentation is limited to 15 minutes (6-8 minutes for your team to give the presentation, 3-5 minutes for judges and questions and 5 minutes for scoring).

- Judges **only** will ask questions, following presentation (3-5 minutes). If time allows there may be additional questions from the audience.
  - Consider documenting your project with video or picture logs, using this information to compile your presentation.

Launch Weekend

- **Thursday, April 24, 2025**
  - Teams Arrive in Wisconsin
- **Friday, April 25, 2025**
  - Welcome Breakfast/Competition Kick-off, Rocket Fair, Motor Build Workshop, Breakout Sessions, Final Safety Inspections, Oral Presentations
- **Saturday, April 26, 2025**
  - Launch Day @ Richard Bong Recreational Park
  - Closing Banquet @ Carthage College
- **Sunday, April 27, 2025**
  - Rain Date, Certification Launches @ Richard Bong Recreational Park

Competition Timeline - January

- January 7, 2025 – Gateway Kick-Off Meeting
- January 13, 2025 – Acceptance Material Due
- January 14, 2025 – Gateway Project Management Webinar
- January 21, 2025 – Avionics/Altimeters Webinar
- January 27, 2025 – Critical Design Review Milestone
  - Flysheet Due
  - RockSim Due
  - Budget Due

Competition Timeline - February

- February 3-7, 2025 – CDR Virtual Presentations
- February 11, 2025 – Recovery Webinar
- February 17, 2025 – Documents Due:
  - Patch Design Contest Entries Due
  - Final Motor Selection Due
  - Official Team Roster Due
  - Lodging List Due
  - Team Bio Due
  - Team Photo Due
  - Team Member Registration Due (WSGC Portal & NASA Gateway)
- February 18, 2025 – Advisor/Mentor Meeting
- February 26-28, 2025 – Gateway Interim Reviews

Competition Timeline - March

- March 3, 2025 – First Payout Reimbursement Requests Due
- March 4, 2025 – Build & Assembly Techniques Webinar
- March 17, 2025 – Flight Readiness Review Milestone
  - Flysheet Due
  - RockSim Due
  - Education Outreach Forms Due
- March 24-28, 2025 – FRR Virtual Presentations

Competition Timeline - April

- April 8, 2025 – Launch Operations Webinar
- April 9-11, 2025 – Final Virtual Safety Inspections
- April 15, 2025 – Advisor/Mentor Meeting
- April 21, 2025 – Oral Presentation PPT Due
- April 24, 2025 – Teams Arrive in Wisconsin
- April 25, 2025 – Day 1
  - Workshops
  - Breakout Sessions
  - Rocket Fair
  - Oral Presentations
- April 26, 2025 – Day 2
  - Launch Day
  - Closing Banquet
- April 27, 2025 – Day 3 (Launch Rain Date)

Competition Timeline - May

- **May 12, 2025 – Post Launch Assessment Review Milestone**
  - Final Reimbursements Due
  - 2-3 Team Project Photos Due
  - 1-2 Minute #IAMFNL Video Due

Gateway - Review System

- New feedback mechanism created in response to last year's advisor feedback
- Goal is to help provide Gateway teams feedback on their performance throughout the competition.
- Working out how we will have the feedback posted for teams to access, but it will be based on a combination of factors, including:
  - Flysheets
  - Oral Presentations*
  - Attendance at Webinars

Competition Awarded Prizes

Grand Prize Award	$3000
2nd Place	$2000
3rd Place	$1000
Aesthetic Award	Team whose rocket has the most innovative and professional appearance
Team Spirit Award	Team chosen by their peers as the team that shows interactive spirit, helpfulness, and cooperation.
Altitude Award	Team whose actual apogee is closest to the predicted apogee in the Flight Readiness Report.
Judges Award	Team chosen by the judges as the team who met the goals of the program and exemplified hard work and determination
Outreach Award	$500
Patch Design Award	$100
Team Advisor Stipend	Up to $1000 (Teams must meet the conditions of participation)
Top Advisor	Awarded to an advisor or co-advisor that equips, encourages, and empowers their team to compete with confidence and capabilities that lead to next step opportunities
Top Team Lead	Awarded to the team lead that fulfills their role with excellence
Rookie Team	Awarded to a new team that completes all phases of the rocket competition with determination and perseverance.
Gateway Challenge	Awarded to top performing Gateway team

Team Recruitment

## How do we get students to participate and be engaged this year?

- Coordinate 5-10 minute presentations in classrooms and club meetings

- Hold a virtual recruiting event
  - Max 20 minute presentation
  - Invite FNL alumni (from your institution or another returning team)

- Reach out to other faculty for assistance, ask that they share recruiting emails

- Tap into new applicant pools

- Share other ideas in the chat!

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Resources - FNL Website

- Tools and Tips
- Calendar
- FAQ
- Application Process
- Report Templates and Scoring Rubric
- Rocket Instructional Videos/Webinars
- Rocket Certification Workshop
- Patch Contest
- Awards
- About Us
- History

First Nations Launch

- Tools and Tips
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https://spacegrant.carthage.edu/first-nations-launch/
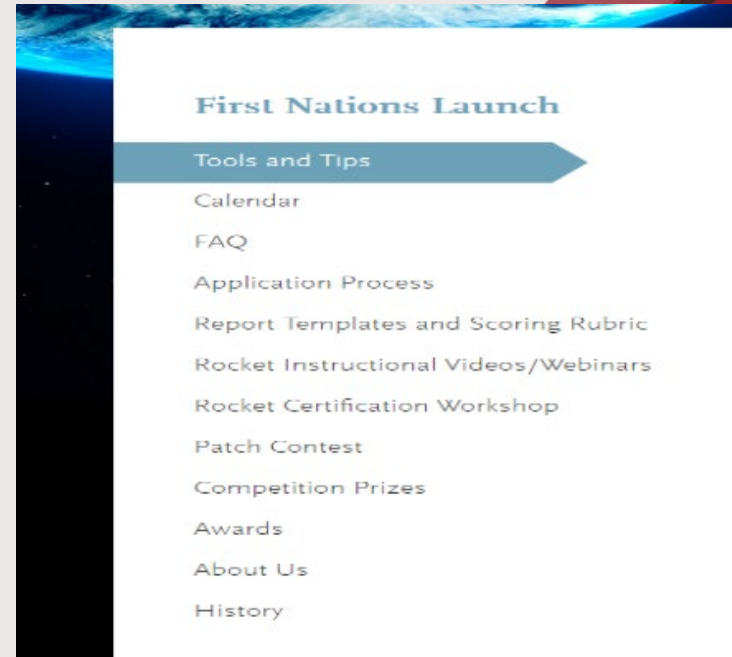
Resources – Website Tools and Tips

- FNL Resources
    - Team Bio Form
    - Team Roster and Lodging Form
- Reimbursement Request Forms
    - Project and Travel Expense Reimbursement Forms
    - Project and Travel Expense Form
        - Instructions
- Travel Guidelines
- First Nations Launch Home Page
    - Competition Handbook
    - Calendar
- Link for forms and additional information
  https://spacegrant.carthage.edu/first-nations-launch/tools-and-tips/
- General Resources: https://spacegrant.carthage.edu/fnl/faq/

Resources – Website Training Video Series

- https://spacegrant.carthage.edu/first-nations-launch/rocket-instructional-videoswebinars/

- Overview
- Avionics
- Recovery Systems
- Rocket Assembly
- RockSim
- Range and Motor Safety

Resources - Webinars

- **Review Past Webinars**
  - Fall - RockSim
  - Fall - Project Management
  - Fall - Structures
- **Attend Upcoming Webinars**
  - Project Management (Gateway)
  - Altimeters
  - Recovery
  - Build / Assembly
  - Launch Operations

First Nations Launch

- Tools and Tips
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Tools and Tips

FNL Resources

Webinars & Presentations

2025

- Informational Meeting PowerPoint (September 17, 2024)
- Informational Meeting Recording (September 17, 2024)
- Informational Meeting Recording (October 16, 2024)
- Proposal Webinar PowerPoint (October 8, 2024)
- Proposal Webinar Recording (October 8, 2024)
- Moon/Mars Kick-Off Meeting PowerPoint (October 29, 2024)
- Moon/Mars Kick-Off Meeting Recording (October 29, 2024)
- Challenge Parameters Webinar PowerPoint (November 5, 2024)
- Challenge Parameters Webinar Recording (November 5, 2024)
- RockSim Webinar PowerPoint (November 11, 2024)

Resources - Team TRA / NAR Mentors

- **Each team requires (can be the same individual)**
  - Faculty Advisor (usually non-technical)
  - Certified, active TRA / NAR Rocketry Mentor (experienced in HPR)

- **Mentor must:**
  - Be active TRA or NAR member (membership number needed)
  - Be certified at or above the level of team rocket (L2 or higher)
  - Preferred: Local to team with access to a certified launch site
  - Optional: Mentor does not need to attend Launch Weekend

- **Advisor Liaison will help teams find a local Mentor**
  - Use the TRA / NAR websites to find local clubs/contacts
  - https://www.tripoli.org/ OR https://www.nar.org/

Resources - Supplied by WSGC

- **Marketing/Recruitment Materials**
  - Posters and Postcards
- **Project Travel Award of $4000**
  - Reimbursements issued through Carthage College
  - Additional travel funds for teams traveling from Mountain, Pacific, Hawaiian, or Alaska time zones
- **Two (2) Rocketry Reference Books (New College/Universities)**
  - Modern Rocket Design and Construction
  - Modern High Powered Rocketry 2
- **Report Feedback**
  - Teams will receive report feedback 1 week prior to next report
- **Low-Powered Rocket for Demo Flight**
  - Each team to fly low-powered demo flight
- **Motors (1) and Casing at Competition**
  - Competition motor and a motor build workshop during Competition Launch
- **Ejection Charges at Competition**
- **Hotel Accommodations Launch Weekend**
  - Max three (3) rooms for three (3) nights at select hotel
- **Select Meals Launch Weekend**
  - Friday: breakfast, lunch and heavy appetizers in the evening
  - Saturday: breakfast, lunch and dinner

Resources - Additional Funding Support

- Additional funding should be above and beyond FNL funding
- Additional support should not replace FNL funding
- Funds can come from:
    - Your state's Space Grant
        - https://national.spacegrant.org
    - Academic Institutions
    - Student Groups
    - Industry
- Non-FNL additional funding can be used for
    - Travel to and from Kenosha, WI for mentors and additional team members
    - Stipend for team's TRA/NAR mentor(s)
    - Mobile tools for the rocket group (battery operated, hammer, Dremel, drill, screwdriver, scale)
    - Traveling tool box to bring to launch weekend
    - Safety equipment – PPE
    - Launch 2 Learn Workshop at academic institution
    - Level I Rocket, Motor, and Certification Fee
    - Level II Rocket, Motor, and Certification Fee
    - Outreach events (i.e. low-powered rocket event, displays, etc.)
    - Team shirts, jackets, etc.

Financial - WSGC Reimbursement

Two Options:

- The FNL team will submit reimbursement requests to WSGC through the University/College.
  - Quarterly Invoice by Institution

    OR

- Individuals will submit reimbursement requests to WSGC for supply and travel expenses.
  - March 4, 2024 and May 13, 2024 deadlines
  - Submit digital receipts and reimbursement forms per the reimbursement instructions.

Financial - Submitting Reimbursement Requests

Reimbursement request forms available on "Tools & Tips" under "Reimbursement Request Forms"

[Tools and Tips | Wisconsin Space Grant Consortium | Carthage College](#)

- Project Expense Form
- Project Expense Form Instructions
- Travel Expense Form
- Travel Expense Form Instructions
- Travel Guidelines

Reimbursement Request Forms

- Project Expense Form
- Project Expense Form – Instructions and Example
- Travel Expense Form
- Travel Expense Form Instructions
- Travel Guidelines

Financial - Submitting Reimbursement Requests

- Project reimbursement form
- Travel reimbursement form
- Updated reimbursement forms
  - .70 Mileage
- Incomplete information will be delayed in being submitted for reimbursement

- Email reimbursement forms, along with digital receipts, to WSGC Accounts
  wsgc.accounts@carthage.edu

NASA STEM Gateway

- New requirement from NASA that all education program participants must register within the NASA STEM Gateway system
  - Requirement for competitors to create a profile
    - Create a profile now, we are working through the next steps we need to take
  - The FNL application has a field that asks for the email address you used to create a profile in the system
  - A full walkthrough on creating a profile is available in the competition handbook:
    - https://spacegrant.carthage.edu/live/files/6500-fnl25handbookadvisorpdf
  - Link to the NASA STEM Gateway system:
    - https://stemgateway.nasa.gov/public/s
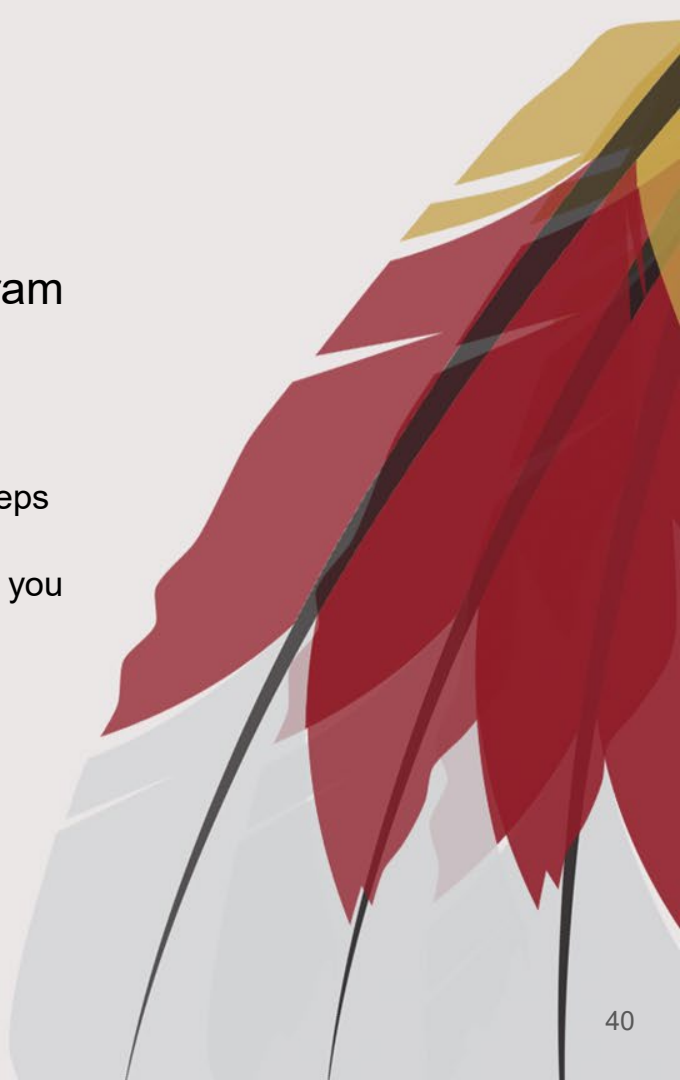
Outreach

- One goal of First Nations Launch is to promote science, technology, engineering, and math (STEM) fields through educational opportunities throughout the United States.
    - Outreach Form

Patch Contest

- FNL participants can enter
- Details and template available on website

  https://spacegrant.carthage.edu/first-nations-launch/patch-contest

- Entries Due February 17, 2025

Evie Clark, University of Colorado, Boulder
2024 Winning Design
2024 Theme: Deployable Payloads

Janna Steen, Nueta Hidatsa Sahnish College
2020 Winning Design
2020 Theme: Moon Capsule and Moon Lander Vehicle

Alex Armendariz, Cal Poly Pomona
2021 Winning Design
2021 Theme: Moon Warning Sensor System

Evie Clark, University of Colorado, Boulder
2022 Winning Design
2022 Theme: Moon GPS and Mars Cold Gas Thruster

Peyton Meader, Massachusetts Institute of Technology
2023 Winning Design
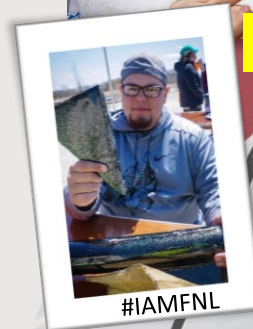2023 Theme: Lightweight Rocket Fabrication

#IAMFNL

- Send #IAMFNL a 30-second video clip
- Send #IAMFNL photos
- Tag Wisconsin Space Grant Consortium in videos and photos
- Tell your story about how FNL has made a difference
- Be featured during launch weekend

#IAMFNL

#IAMFNL

LAUNCH: A DOCUMENTARY FEATURE

september.club/film/launch/

Final Reminders

- Multiple Resources for your success:
    - Calendar
        - https://spacegrant.carthage.edu/first-nations-launch/calendar/
        - Office Hours: https://calendar.app.google/3XJRwLHvTzeW49Q77
    - Webinars
        - Upcoming Sessions: https://zoom.us/j/99258659434
        - Recordings: https://spacegrant.carthage.edu/first-nations-launch/tools-and-tips/
    - Video Series
        - https://spacegrant.carthage.edu/first-nations-launch/rocket-instructional-videoswebinars/
    - Templates:
        - https://spacegrant.carthage.edu/first-nations-launch/rubric/
- Contact Rob to coordinate Launch Documentary Team Interview

Any Questions?