

RULEBOOK

Version: 1.0

Revision Date: 18.03.2025

NIDAR



**INDIA'S LARGEST
DRONE INNOVATION CHALLENGE**

About SwaYaan

SwaYaan, a national initiative by the Ministry of Electronics and Information Technology (MeitY), is dedicated to strengthening India's UAS/Drone ecosystem, aligning with the Government's vision to establish India as a global drone hub by 2030. The initiative empowers learners—from undergraduates to faculty and open learners—across five key technical areas, conducting over 1,500 academic, research, and knowledge-sharing activities. Implemented through a network of 30 premier academic and R&D institutions, SwaYaan collaborates with skill councils and industry bodies to drive technological advancements, meet market demands, and set industry standards, ensuring a transformative impact on drone innovation.

About Drone Federation India (DFI)

Drone Federation India (DFI) is a non-government, non-profit, industry body representing over 550+ drone companies and 5,500+ drone pilots in the country with a mission to promote the design, development, manufacturing and export of Indigenous drone and counter-drone solutions in the country. DFI plays a pivotal role in policy advocacy, trade promotion, skill development, standards development, community building by bringing together government, industry, academia and civil society. DFI hosts several events like Bharat Drone Mahotsav which was inaugurated by the Hon'ble Prime Minister Shri Narendra Modi and Bharat Drone Shakti which was inaugurated by Hon'ble Defence Minister Shri Rajnath Singh. DFI drives India's leadership in the global landscape through its global alliances and collaborations.

About NIDAR

The National Innovation Challenge for Drone Application and Research (NIDAR) is India's largest and most impactful drone innovation challenge, designed to push the boundaries of engineering, innovation, and real-world problem-solving. It fosters cross-functional collaboration and focuses on addressing critical challenges in drone technology, particularly in disaster management. By engaging students with problem statements that reflect real-world needs, NIDAR encourages industry-oriented research, driving innovative solutions such as geotagging survivors and delivering survival kits using drones.

Beyond technical problem-solving, NIDAR provides participants with invaluable industry exposure through mentorship, guidance, and internship opportunities. This experience extends beyond engineering, equipping students with insights into business practices and entrepreneurship, helping them navigate the path to success in both technology and industry leadership. With its strong emphasis on applied research and industry collaboration, NIDAR aspires to develop the next generation of leaders in the drone sector, empowering them to drive the future of aerospace innovation.

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1. Eligibility

- 1.1. Each team member must be enrolled as a valid student in a graduate degree program in science, engineering or any other technology discipline.
- 1.2. A team must have a minimum of 4 and a maximum of 10 members.
- 1.3. Additionally, each team must have a faculty member.
- 1.4. Each team must be multidisciplinary and must include at least one participant from another academic branch/stream/discipline. Any team composed solely of members from the same academic branch/stream/discipline shall not be eligible to participate.
- 1.5. Multiple teams can be formed from the same academic institution. However, no team shall be allowed to share participants, team members, faculty members, mentors, drones, components or any other equipment with any other team.

2. How to Apply

- 2.1. Each team must register online by 18th April 2025, 23:59:59 IST, via the registration link - www.nidar.org.in.
- 2.2. In case of an extension of the registration deadline, the same shall be updated on the official website and promptly communicated to all registered members as well.
- 2.3. Each team can choose only one mission(s) in their online application form.
- 2.4. Each team shall submit the following documents in their online application:
 - 2.4.1. Letter of Approval from Academic Institution
 - 2.4.2. Team Details (along with Govt ID Proof & College ID)
 - 2.4.3. Proof of Payment of Registration Fee.

3. Registration Fee

- 3.1. The Registration Fee for each team shall be INR 5,000 and shall be deposited in the bank account as per the details given below:

Account Name: Drone Federation India (DFI)
Bank: ICICI Bank Ltd
Account No: 054401005234
IFSC Code: ICIC0000544
Branch: MIDC, Andheri East
- 3.2. Payment shall not be accepted in Cheque or Demand Draft form.
- 3.3. The Registration Fee will be non-refundable.

4. Missions

Mission 1 - Disaster Management:

- 4.1. A coastal town is flooded, affecting the entire area. Water has entered homes, forcing residents to evacuate or take shelter on rooftops without food, water, or medicines. Severe weather initially hindered relief efforts, but after 48 hours, the rain has stopped, and the wind speed has reduced. However, water levels remain high, leaving many people trapped and stranded on their rooftops. National Disaster Response Force (NDRF) and Local Administration teams are ready to start rescue efforts.
- 4.2. Teams must build two drones to:
 - 4.2.1. Scan an area of 30 hectares to locate survivors while sending real-time video.
 - 4.2.2. Geotag survivors and communicate to them via a speaker mounted on the drone.
 - 4.2.3. Deploy a delivery drone to deliver survival kits (Size: 5x10x20cm; Weight: 200 gms).
- 4.3. Scanning and geotagging survivors is considered as Part 1 of the mission and delivering survival kits is considered as Part 2 of the mission.
- 4.4. Each team may build one drone as a “Scout Drone” for scanning and locating survivors and another drone as a “Delivery Drone” for delivering survival kits.
- 4.5. Teams may also consider building both drones as a combination of “Scout+Delivery Drone”. The solution strategy shall remain flexible for teams.
- 4.6. Both drones must fly autonomously while reporting their status and mission details from a single command and control station.
- 4.7. However, teams shall also have the option to operate both drones manually with different command and control stations by accepting a Penalty as outlined in the subsequent section of this document.

Mission 2 - Precision Agriculture:

- 4.8. A village was once a thriving agricultural hotspot. However, as the years passed, most residents migrated to cities for modern, high-tech job opportunities. The village now struggles with labour shortages during peak crop seasons. Furthermore, the soil quality is deteriorating due to the continuous use of pesticides in enormous quantities. It has reached alarming levels, and there is an urgent need to bring pesticide use under control. Residents have decided to adopt modern farming methods and drone technology to implement precision farming techniques.
- 4.9. Teams must build two drones to:
 - 4.9.1. Scan an area of 2 acres to identify crops under stress (depicted by pigmentation on leaves) while avoiding obstacles like trees, poles and wires.

- 4.9.2. Geotag stressed plants on a map.
- 4.9.3. Deploy a spraying drone to spray pesticides on the specific plants.
- 4.10. Scanning and geotagging stressed plants is considered as Part 1 of the mission, and spraying pesticides is considered as Part 2 of the mission.
- 4.11. Each team may build one drone as a “Scan Drone” to scan and identify stressed crops and another drone as a “Spray Drone” to spray pesticides.
- 4.12. Teams may also consider building both drones as a combination of “Scan+Spray Drone”. The solution strategy shall remain flexible for teams.
- 4.13. Both drones must fly autonomously while reporting their status and mission details from a single command and control station.
- 4.14. However, teams shall also have the option to operate both drones manually with different command and control stations by accepting a Penalty as outlined in the subsequent section of this document.

5. Prizes

Award(s)	Disaster Management	Precision Agriculture
NIDAR Gold Trophy	INR 6 lakhs	INR 6 lakhs
NIDAR Silver Trophy	INR 4 lakhs	INR 4 lakhs
NIDAR Bronze Trophy	INR 3 lakhs	INR 3 lakhs
NIDAR Ignite Prize	INR 1 lakh x 5 Teams	INR 1 lakh x 5 Teams
NIDAR Outstanding Design Gold Award	INR 60,000/-	INR 60,000/-
NIDAR Outstanding Design Silver Award	INR 40,000/-	INR 40,000/-
NIDAR Outstanding Business Strategy Gold Award	INR 60,000/-	INR 60,000/-
NIDAR Outstanding Business Strategy Silver Award	INR 40,000/-	INR 40,000/-
NIDAR Participation Certificate	All participating teams and team members	
Additional Benefits (to be announced soon)	Incubation support Cloud Credits Design and Simulation Software Internship Opportunities	

- 5.1. All trophies, prizes and awards shall include taxes and deductions, if any.

- 5.2. Gold, Silver and Bronze Trophy shall be awarded to the top 3 teams.
- 5.3. Prizes & Awards shall be awarded to teams that do not win Gold, Silver, or Bronze Trophy.
- 5.4. The NIDAR Ignite Prize shall be awarded to the top 5 teams after the first 3 winners. However, the same shall be awarded to a team only if they have completed at least one part of the mission.
- 5.5. NIDAR Outstanding Technology and Business Presentation Awards shall not be awarded to trophy holders. However, the same shall be awarded to a team only if they complete Pre-Flight Inspection successfully.
- 5.6. All details regarding trophies, prizes and awards shall be communicated to all participating teams via the NIDAR website and community forums.
- 5.7. Organisers shall have the right to modify trophies, prizes, awards, and additional benefits for winners and participants at any time. The same shall be communicated to participants promptly.
- 5.8. The detailed rules, scoring criteria and other details regarding the competition, which may be necessary for teams to win trophies, prizes and awards, are outlined in the subsequent sections of this document.

6. Competition Timeline

- 6.1. All participating teams must note the essential deadlines as stated in this section. Failing to comply with any deadline may result in disqualification from the competition.
- 6.2. Organisers shall have the right to extend deadlines for broader participation and accommodate students' academic activities.
- 6.3. Important deadlines concerning the competition are as follows:

Event / Milestone	Date
Application Deadline	18th April 2025
Announcement of Shortlisted Teams	1st Week of May 2025
Progress Review - Round 1	1st Week of July 2025
Progress Review - Round 2	1st Week of August 2025
Final Competition	2nd Week of September 2025

- 6.4. All communications and reminders regarding competition timelines shall be communicated on the competition website and the community forums.

7. Competition Structure

- 7.1. The competition is scheduled to be hosted on the campus of a prominent technical university in the 2nd Week of September 2025. The exact details in this regard will be communicated to the teams subsequently through the competition website and the community forums.
- 7.2. The competition shall be conducted in 3 phases. All teams must duly note the phases and deliverables for each phase. The details of each phase are outlined below:

Phase 1A - Design Review:

- 7.3. Each team must present a comprehensive technical presentation before a jury on the first two days of the competition.
- 7.4. The total time allocated for each presentation shall be 25 minutes. Each team shall be given a maximum of 15 minutes for presentation and remaining time for Q&A.
- 7.5. The minimum topics to be covered in the presentation shall be - (a) introduction and team composition, (b) standard aeronautical 3D views, (c) design process and component details, (d) technical features, (e) autonomy & multi-drone control approach, (f) computer vision details, (g) safety features, (h) operation details.
- 7.6. There shall be no limit on the number of slides in the presentation. However, the time limit to make the presentation shall prevail.
- 7.7. Teams may include any other details that they consider relevant to showcase their approach to design, development, and mission solving. The exact scoring criteria are outlined in the subsequent sections of this document.

Phase 1B - Business Strategy Pitch:

- 7.8. Each team must present a comprehensive business strategy presentation before a jury on the first two days of the competition. This presentation should be made in a Startup Concept, whereby each team should pitch their drones as a business idea.
- 7.9. The total time allocated for each presentation shall be 25 minutes. Each team shall be given a maximum of 15 minutes for presentation and remaining time for Q&A.
- 7.10. The minimum topics to be covered in the presentation shall be - (a) introduction and team composition, (b) technical overview of the product, (c) product design and development journey of the team, (d) need for product in the market and its applications, (e) potential customers and market size, (f) current mechanism of funding/sponsorship for prototype development of drones in the competition, (g) current costs and potential pricing strategy of the business, (h) future plans and vision of the team.

- 7.11. Along with this presentation, teams must also break down the detailed costs in the form of a cost sheet, which must include all costs and expenses undertaken by the team to design and develop the entire solution for the competition.
- 7.12. There shall be no limit on the number of slides in the presentation. However, the time limit to make the presentation shall prevail.
- 7.13. Teams may include any other details that they consider relevant to showcase their approach to showcase their unique approach to problem-solving, fund-raising and potential business opportunities in the future. The exact scoring criteria are outlined in the subsequent sections of this document.

Phase 2 - Pre-Flight Inspection:

- 7.14. Each team shall undergo a Pre-Flight Inspection before a Jury Member (Flight Inspector) before the final mission.
- 7.15. A model Pre-Flight Inspection Checklist shall be released soon.
- 7.16. Each team failing to comply with the Pre-Flight Inspection shall be given one more chance to attempt modifications/changes and attempt the Pre-Flight Inspection. Such a team shall be imposed a Penalty as outlined in the subsequent section of this document.
- 7.17. A team failing to comply twice shall not be allowed to participate in the Final Mission.

Phase 3 - Final Mission:

- 7.18. Each team shall be allowed to proceed to this round only after successfully passing the Pre-Flight Inspection.
- 7.19. Each team shall position the Command and Control Station, including its associated equipment like antennas, screens, and remote control, if any, in the designated area provided.
- 7.20. Only two members shall be allowed to supervise or operate the Command and Control Station.
- 7.21. Each drone shall be positioned in the designated area provided.
- 7.22. One team member shall be allowed to position and supervise each drone. The same team member may reset or reload the drone if required during the entire course of the mission.
- 7.23. Each team shall be provided with a KML file consisting of a boundary of the area of interest that needs to be scanned by the Scout Drone or Scan Drone.
- 7.24. Each team attempting to fly autonomously must only upload/configure the KML file in the Command and Control Station and trigger a launch command.

- 7.25. After triggering the launch command, for disaster management, drones must scout the given area, identify survivors, and deliver survival kits by themselves without any intervention. Supervisors may only intervene in autonomous operations to reload the delivery drone and trigger a resume command.
- 7.26. After triggering the launch command, for precision agriculture, drones must scan the given area, identify stressed crops, and spray pesticides by themselves without any intervention. Supervisors may only intervene in autonomous operations to reload the spraying drone and trigger a resume command.
- 7.27. Any other intervention, such as path planning, mission command input, or drone control, shall be considered manual operation.
- 7.28. Each team shall be imposed a Penalty if a drone is operated manually in the manner specified in the Scoring Criteria of this document.
- 7.29. Each team shall be given an additional 5 minutes for setup. Failing to set up within 5 minutes may start the time counter of the Final Mission.
- 7.30. The maximum time limit for Final Mission 1 - Disaster Management shall be 30 minutes.
- 7.31. The maximum time limit for Final Mission 2 - Precision Agriculture shall be 20 minutes.
- 7.32. Any point scored after the maximum limit shall not be considered in the final total.
- 7.33. Technical Specifications of the Mission and Arena details shall be released soon.**

8. Competition Deliverables

- 8.1. Online Application: Form, Letter of Approval from Academic Institution, Team Details, Proof of Payment of Registration Fee.
- 8.2. Design Review Presentation: A comprehensive presentation in PDF/PPT format.
- 8.3. Business Strategy Pitch: A comprehensive presentation in PDF/PPT format.
- 8.4. Cost Sheet: A comprehensive cost sheet breaking down all team costs and expenses.
- 8.5. 2 Drones: Each team must showcase 2 drones developed explicitly for the mission.
- 8.6. Command and Control Station: At least one screen/device/display showcasing the position of both drones during the entire mission duration.
- 8.7. Failing to deliver any of the above deliverables before specified deadlines may lead to team disqualification or penalty as applicable.

9. General Rules

- 9.1. All teams must conceptualise, design, develop, program and operate drones independently without the direct involvement of faculty or any professional.
- 9.2. A two-drone system is mandatory. However, teams may choose a combination of strategies to complete the mission.
- 9.3. Each team must adhere to the following component-specific rules during the entire course of the competition:
 - 9.3.1. Airframe: No ready-made airframes are allowed. Teams must build their own frames but can use industrial parts and materials available in the market.
 - 9.3.2. Airframe Category: Teams may use any category - aeroplane, rotorcraft, or hybrid- to complete the mission.
 - 9.3.3. Propulsion: No restrictions on using any propulsion or power system.
 - 9.3.4. Command, Control and Data Link: Teams must ensure that they use a “delicensed frequency” in their command and control link. Use of frequency bands like 933 Mhz, which fall under the licensed category, is strictly prohibited.
 - 9.3.5. Interface: Each team must have at least one interface that can showcase the mission's status and the real-time location of both drones in the same interface.
 - 9.3.6. Dimensions: Each drone should fit within a launch area of 6 feet x 6 feet.
 - 9.3.7. Weight: The maximum takeoff weight (including payload) for each drone shall not exceed 25 kilograms.
- 9.4. No drone operation shall be conducted in any red or yellow zone or without permission.
- 9.5. No drone operation shall be conducted above 400 feet above ground level.
- 9.6. Each drone shall have a Return-To-Home feature. In case of any emergencies or other reasons, the system should have the provision to pause/stop the ongoing mission, trigger the Return-To-Home command, and recall the drones back to their launch location.
- 9.7. Each drone shall have a mandatory fail-safe feature for loss of command, control and data link, and both drones should have the capability to automatically return to the launch position in case the link is lost.
- 9.8. Each drone shall also have a mandatory fail-safe feature for low battery and both drones should have the capability to automatically return to the launch position in case of low battery warning. Furthermore, in case of a critically low battery, both drones should have the feature to perform a gradual descent in the same location.

- 9.9. Each drone shall also have a geofence and altitude breach feature to ensure that in case of a breach, both drones shall automatically return to the launch position.
- 9.10. The organising team may, upon request, allocate an industry mentor to each team to guide and mentor them in achieving successful participation in the competition.
- 9.11. Any team violating any rule under this section may be disqualified from the competition.

10. Scoring Criteria

- 10.1. This overall scoring criteria shall be responsible for deciding the winner of each award.
- 10.2. The scoring criteria are broken down based on the competition structure:

10.3. Overall Scoring Criteria:

S. No.	Competition Structure	Maximum Points
1	Phase 1A - Technical Review	200
2	Phase 1B - Business Strategy Pitch	200
3	Phase 2 - Pre-Flight Inspection	Success, Failure or Penalties
4	Phase 3 - Final Mission	600
	Total	1000

10.4. Phase 1A - Technical Review:

S. No.	Criteria	Maximum Points
1	Introduction & Team Composition	10
2	Overall Solution Architecture & Problem-Solving Strategy	20
3	Drone Design & Simulation Process	20
4	Automatic Detection, Geotagging & Accuracy	35
5	Payload Dropping / Spraying Mechanism & Accuracy	25
6	Path Planning, Autonomy and Deployment	35
7	Multi-Drone Operations & Command & Control Station	35
8	Fail-Safe Features & Safety	20
	Total	200

10.5. Phase 1B - Business Strategy Pitch:

S. No.	Criteria	Maximum Points
1	Introduction & Team Composition	10
2	Overview of Product	20
3	Product Design & Development Journey	20
4	Product Need, Market Sizing & Potential Customers	40
5	Current Mechanism of Funding/Sponsorship	25
6	Cost & Expense Breakdown	35
7	Pricing Strategy for Product	30
8	Future Plans & Vision	20
	Total	200

10.6. Phase 2 - Pre-Flight Inspection:

Pre-flight Inspection shall only be a deciding phase, and successful completion of this phase will allow team members to participate in the Final Mission. Teams shall only be permitted to retry this phase once.

10.7. Phase 3 - Final Mission - Disaster Management:

S. No.	Criteria	Manual (0.6x)	Autonomous (x)
1	Detection of survivor	21	35
2	Delivery of parcel (Accuracy Zone A)	24	40
3	Delivery of parcel (Accuracy Zone B)	18	30
4	Delivery of parcel (Accuracy Zone C)	12	20
	Total	360	600

Calculation of Final Mission Score: The total score shall be benchmarked against the fastest team, and the final mission score shall be computed as follows:

$$Final\ Mission\ Score = \frac{t_{fastest\ team}}{t_{current\ team}} \cdot Current\ Team\ Score$$

Note: If the parcel falls within two accuracy zones, the lower point shall be considered for scoring. If the total points exceed 360 for manual or 600 for autonomous, then the same will be adjusted on a pro-rata basis of 360 and 600.

10.8. Phase 3 - Final Mission - Precision Agriculture:

S. No.	Criteria	Manual (0.6x)	Autonomous (x)
1	Detection of survivor	21	35
2	Delivery of pesticide (Accuracy Zone A)	24	40
3	Delivery of pesticide (Accuracy Zone B)	18	30
	Total	360	600

Calculation of Final Mission Score: The total score shall be benchmarked against the fastest team, and the final mission score shall be computed as follows:

$$Final\ Mission\ Score = \frac{t_{fastest\ team}}{t_{current\ team}} \cdot Current\ Team\ Score$$

Note: If the pesticide is sprayed across two accuracy zones, the lower point shall be considered for scoring. If the total points exceed 360 for manual or 600 for autonomous, then the same will be adjusted on a pro-rata basis of 360 and 600.

10.9. Penalty Conditions:

S. No.	Penalty Criteria	Deductible Points
1	Weight Limit Exceeded	Not allowed to fly
2	Dimension Limit Exceeded	-10
3	Failure of 1st Pre-Flight Inspection	-5
4	Landing outside launch area (for each landing)	-5
5	Drones operated manually	As per scoring criteria
6	Drones operated without single interface	-50
7	Drones breaching geofence boundary of area of interest	-30

10.10. Final Score:

The final score shall be computed based on the accumulated score across all phases. In case of a tie, a higher score in the Design Review Phase shall be considered the first tiebreaker, and a higher score in the Final Mission shall be the second tiebreaker. If the tie persists, the organising team shall decide the final winners or award joint winners.

11. Overall Authority & Dispute Resolution

11.1. The Organising Team shall have the overall authority to create, interpret, modify, and amend rules, guidelines, conditions, trophies, awards and prizes from time to time.

- 11.2. The Organising Team has the final authority to declare results. Participants may raise their concerns with the organising team in case of disagreements, which the organising team may attempt to resolve promptly.
- 11.3. However, the decision of the Organising Team in all manners and conduct of the competition shall be final and binding on all stakeholders without scope for any dispute under any rule, clause or authority.

ABOUT DFI

The Drone Federation India (DFI) is a non-profit industry body pioneering the vision of making India a global drone manufacturing and export hub. We serve as an apex body that represents over 400+ drone companies and 5500+ drone professionals across the entire drone ecosystem.

We promote ease of doing business for drone companies, widespread adoption of drone technology across all sectors of the economy and build a skilled community of drone professionals to deliver high-quality world-class products from India.

We bring together government, industry, academia, experts and civil society to build a safe and secure unmanned aerial ecosystem in India.

ABOUT SWAYAAN

The Ministry of Electronics and Information Technology (MeitY) has launched 'SwaYaan – Capacity Building for Human Resource Development in Unmanned Aircraft Systems' in September 2022 with the goal of fostering a national industry-academia collaborative ecosystem for Drone/UAS & related technologies.

The initiative aims to train as many professionals in the UAS sector by 2027 through 1,500+ activities nationwide encompassing five major technical areas towards making India the Global Drone Hub by 2030.

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