

NIDAR Rule book Summary

1. Record of Revision

Date	Revision	Page Nos Affected
10th April 2025	Revision 1.1 1.1. Eligibility criteria relaxed: Students enrolled in any undergraduate, postgraduate, or doctorate program can apply for the competition. 2.5. Shortlisting criteria added: Applications shall be reviewed for completeness. Each complete application shall be shortlisted automatically by the organising team. 6.3. Competition timeline clarified: Phase 1A - Design Review, Phase 1B - Business Strategy Pitch, Phase 2 - Pre-Flight Inspection, Phase 3 - Final Mission shall be held during the final competition days in September 2025. 7.2A. Progress review rounds clarified: Progress review rounds shall be held online with the organising team, industry experts and mentors to guide the participating teams, if necessary. Annexure 1 & Annexure 2 - Mission Details & Technical Specifications Released: This section describes the mission area, dimensions, detection details and other technical requirements of the competition.	1 1 5 5 13 - 16

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3. Eligibility

- a. **Each team member** must be enrolled as a valid student in an **undergraduate**, postgraduate or a doctorate program and must be **currently studying** at a **university**, institute, or research organisation.
- b. A **team** must have a **minimum of 4 and a maximum of 10 members**.
- c. Additionally, **each team** must have a **faculty member**.
- d. **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**.
- e. 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.

4. How to Apply

- a. Each team must register online by 18th April 2025, 23:59:59 IST, via the registration link - www.nidar.org.in.
- b. 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.
- c. Each team can choose only one mission(s) in their online application form.
- d. Each team shall submit the following documents in their online application:
 - i. **Letter of Approval from Academic Institution**
 - ii. **Team Details (along with Govt ID Proof & College ID)**
 - iii. **Proof of Payment of Registration Fee**.
- e. **Shortlisting Criteria:** Shortlisting is only a verification process to confirm the completeness and adequacy of information submitted by the teams during registration. Each complete application shall be shortlisted by the organising team with no additional criteria and a confirmation email shall be sent to each shortlisted team.

5. Registration Fee

- a. 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
- b. **Payment shall not be accepted in Cheque or Demand Draft form.**
- c. The Registration Fee will be **non-refundable**.

6. Mission 1 - Disaster Management

- a. 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.
- b. Teams must build **two drones** to:
 - i. **Scan an area of 30 hectares to locate survivors while sending real-time video.**
 - ii. **Geotag survivors and communicate to them via a speaker mounted on the drone.**
 - iii. **Deploy a delivery drone to deliver survival kits (Size: 5x10x20cm; Weight: 200 gms).**
- c. **Scanning and geotagging survivors is considered as Part 1 of the mission and delivering survival kits are considered as Part 2 of the mission.**
- d. **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.**
- e. Teams may also consider building both drones as a combination of “Scout+Delivery Drone”. The solution strategy shall remain flexible for teams.
- f. **Both drones must fly autonomously while reporting their status and mission details from a single command and control station.**
- g. **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.**

7. 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	

- a. **All trophies, prizes and awards shall include taxes and deductions**, if any.
- b. **Gold, Silver and Bronze Trophy** shall be awarded to the **top 3 teams**.
- c. **Prizes & Awards shall be awarded to teams that do not win Gold, Silver, or Bronze Trophy**.
- d. **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**.
- e. **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**.
- f. **All details regarding trophies, prizes and awards shall be communicated to all participating teams via the NIDAR website and community forums**.
- g. 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.
- h. 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.

8. Competition Timeline

Event / Milestone	Date
Application Deadline	18th April 2025
Announcement of Shortlisted Teams	1st Week of May 2025
Progress Review - Round 1 (Online)	1st Week of July 2025
Progress Review - Round 2 (Online)	1st Week of August 2025
Final Competition (On-Site) <ul style="list-style-type: none"> - Phase 1A - Design Review - Phase 1B - Business Strategy Pitch - Phase 2 - Pre-Flight Inspection - Phase 3 - Final Mission 	2nd Week of September 2025

9. Competition Structure

- a. 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.
- b. Progress Review Round 1 & Round 2 shall be held online and shall merely review the progress made. These rounds may help teams get necessary guidance, if needed, from the organising team, industry experts and mentors.
- c. 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:
 - i. **Phase 1A - Design Review:**
 - Each team must present a comprehensive technical presentation before a jury on the first two days of the competition.
 - 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.
 - 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.
 - There shall be no limit on the number of slides in the presentation. However, the time limit to make the presentation shall prevail.

- 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.

ii. Phase 1B - Business Strategy Pitch:

- 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.
- 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.
- 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.
- 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.
- There shall be no limit on the number of slides in the presentation. However, the time limit to make the presentation shall prevail.
- 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.

iii. Phase 2 - Pre-Flight Inspection:

- Each team shall undergo a Pre-Flight Inspection before a Jury Member (Flight Inspector) before the final mission.

- A model Pre-Flight Inspection Checklist shall be released soon.
- 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.
- A team failing to comply twice shall not be allowed to participate in the Final Mission.

iv. Phase 3 - Final Mission:

- Each team shall be allowed to proceed to this round only after successfully passing the Pre-Flight Inspection.
- 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.
- Only two members shall be allowed to supervise or operate the Command and Control Station.
- Each drone shall be positioned in the designated area provided.
- 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.
- 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.
- Each team attempting to fly autonomously must only upload/configure the KML file in the Command and Control Station and trigger a launch command.
- 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.
- Any other intervention, such as path planning, mission command input, or drone control, shall be considered manual operation.
- Each team shall be imposed a Penalty if a drone is operated manually in the manner specified in the Scoring Criteria of this document.

- **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.**
- **The maximum time limit for Final Mission 1 - Disaster Management shall be 30 minutes.**
- **Any point scored after the maximum limit shall not be considered in the final total.**

10.Competition Deliverables

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

11.General Rules

- All teams must conceptualise, design, develop, program and operate drones independently without the direct involvement of faculty or any professional.
- A two-drone system is mandatory.** However, teams may choose a combination of strategies to complete the mission.
- Each team must **adhere to the following component-specific rules during the entire course of the competition:**
 - Airframe:** No ready-made airframes are allowed. Teams must build their own frames but can use industrial parts and materials available in the market.
 - Airframe Category:** Teams may use any category - aeroplane, rotorcraft, or hybrid to complete the mission.
 - Propulsion:** No restrictions on using any propulsion or power system.
 - 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 933Mhz, which fall under the licensed category, is strictly prohibited.
 - 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.

- vi. **Dimensions:** Each drone should fit within a launch area of 6 feet x 6 feet.
- vii. **Weight:** The maximum takeoff weight (including payload) for each drone shall not exceed 25 kilograms.
- d. **No drone operation shall be conducted in any red or yellow zone or without permission.**
- e. **No drone operation shall be conducted above 400 feet above ground level.**
- f. **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.
- g. 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.
- h. 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.
- i. 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.
- j. **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.**
- k. Any team violating any rule under this section may be disqualified from the competition.

12.Scoring Criteria

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

i. 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

ii. 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

iii. 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

iv. 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.

v. 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:

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

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.

vi. 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

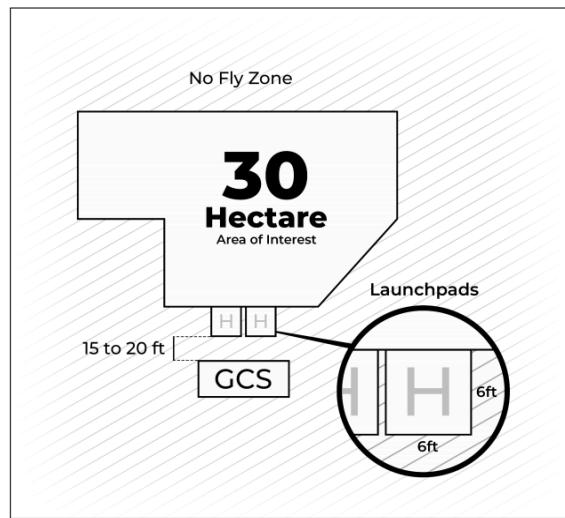
vii. Final Score:

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.

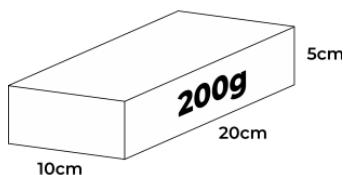
13. Overall Authority & Dispute Resolution

- 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.
- 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.
- 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.

14. Annexure 1 Disaster Management: Mission Details & Technical Specifications



- a. **Mission Map:** The above describes a sample map of the arena for the Final Competition. The shape of the Area of Interest (30 hectares) is for illustration purposes; the actual shape will be different. The organisers will provide each team with the KML file of the Area of Interest.
- b. **Launch Pads:** Teams will be provided with two launchpads (depicted by "H") of 6ft x 6ft each. The launchpads shall have level ground and be devoid of dust or free-moving particles.
- c. **Ground Control Station(GCS):** Two tables shall be provided 15 to 20 feet from the launch pads for team members to set up their Ground Control Station during the final mission. The GCS tables shall have provision for four standard power plug points.
- d. **Survivor:** Survivor shall be depicted by actual human volunteers standing in different parts of the Area of Interest. Teams shall be required to detect them and geotag them. Teams must alert the survivor on the ground by playing a loud sound. **Payload Box:** The organising team shall provide 10 payload boxes (Survival Kits) to each team for the final mission. Each box shall weight 200 grams and shall measure 20cm x 10 cm x 5 cm (length x width x height) as indicated in the figure.



- e. **Accuracy Zones / Delivery Zones:** The figure illustrates the Accuracy Zones described in Section 10.7 of the Rulebook. Teams must lower the drone's altitude to at least 20 feet and drop payloads near an actual person standing in Zone A, representing a survivor. Note: The zones shown in the figure are for illustration only and will not be physically marked on the field.

