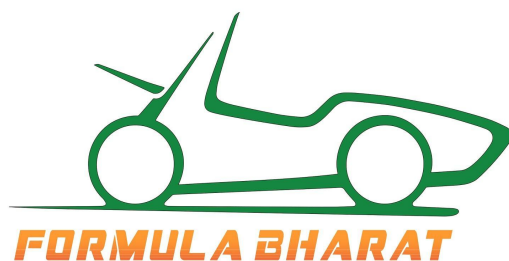


FBV 21-22

VIRTUALS AT FORMULA BHARAT 2021-2022 SEASON



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A ADMINISTRATIVE REGULATIONS

A.1. COMPETITION OVERVIEW

A.1.1. Competition Purpose

- A.1.1.1. The purpose of the Virtuals at Formula Bharat (FBV) competition is to provide an opportunity for teams unable to build a new vehicle in the season, to focus on team growth and knowledge enhancement on vehicle engineering design through a conceptual event.

A.1.2. Competition Objective

- A.1.2.1. The objectives of the challenge include the following:
- To provide an opportunity for Formula Student participants to participate in a FS-style competition when the opportunity to build a new vehicle this season is not possible.
 - To provide an opportunity for teams seeking to start out in Formula Student, to focus on team management, engineering design and static events, without having to dedicate a considerable amount of funds required to build a first-year vehicle.
 - To provide an opportunity for teams interested in switching to the EV category in Formula Student with a gradual shift that will strengthen their knowledge growth and competition preparation.

A.1.3. Competition Procedure

- A.1.3.1. The competition is organized by Curiosum Tech Private Limited, and shall be hosted online due to the COVID-19 pandemic.
- A.1.3.2. The competition website is www.formulabharat.com/virtuals.
- A.1.3.3. The official language of the competition is English.
- A.1.3.4. The competition is split into the following classes:
- Internal Combustion Engine Vehicle (CV)
 - Electric Vehicle (EV)
- A.1.3.5. The competition shall be based on the most recent Formula Bharat rulebook specifically the sections [T] General Technical Requirements and respectively, [CV] Combustion Vehicles or [EV] Electric Vehicles. The Formula Bharat rules booklet can be downloaded from www.formulabharat.com/downloads.

- A.1.3.6. The competition shall also include a virtual racing component (Rev-it!) as supplemented by the Rules and Regulations of the same available on www.formulabharat.com/rev-it. Scoring for the Rev-it! component shall take place separately.

Note: Sections A.1.6. Competition Registration, A.3.1. Teams per University and A.3.2. Team Members, of the Rev-it! Rules and Regulations document are not applicable to teams participating at the Virtuals at Formula Bharat competition.

- A.1.3.7. Unlike a typical Formula Student competition, a physical prototype of the vehicle is not required for this challenge, however, it is recommended to present any physical components / assemblies, if available.
- A.1.3.8. Vehicle concepts entered into the competition must be conceived, designed and maintained by the student team members without direct involvement from professional engineers, racers, machinists or related professionals. The student team may use any information from professionals or from academics as long as the information is given as a discussion of alternatives with their pros and cons.
- A.1.3.9. The following scored events are involved in the statics aspects of the competition:

Category	Aspects	Points
Business Plan Presentation	Pitch Deck + Presentation	75
Engineering Design	Engineering Design Presentation (along with Supporting Document) + Q&A Session	200
TOTAL		275

- A.1.3.10. The events shall also involve its own Q&A session with the relevant judging groups in scheduled time slots.
- A.1.3.11. All submission portals, deadlines, scheduling slots and scoring rubrics related to the competition shall be located on the competition website.
- A.1.3.12. Any changes to the competition details shall be communicated with the Team Captain from formulabharat@gmail.com.
- A.1.3.13. The competition and its organizers will operate from India. In all communication, any dates and time slots mentioned will be considered as Indian Standard Time (IST) unless stated otherwise.
- A.1.3.14. Queries with regards to the competition's various aspects must be directed to the relevant emails listed below:
- Financial related queries (registration fees, payment etc.): info@curiosumtech.in
 - General FSEV related (administration, competition events) rule-queries, participation certificates: formulabharat@gmail.com

- EV-specific technical rules queries: formulabharat-electric@googlegroups.com
- Non-EV technical rules queries: formulabharat-rules@googlegroups.com
- Rev-it rules and dynamic scoring: revit@iresports.in

Additionally, teams may also post their queries on www.formulabharat.com/forum.

A.1.4. Competition Awards

- A.1.4.1. The following are a list of tentative awards (however, not limited to) that will be provided by the competition, **for each class (CV and EV)**:

Overall: [Static Only]

- Winner / 1st Place
- 2nd Place
- 3rd Place
- 4th Place

Business Plan Presentation:

- Winner / 1st Place
- 2nd Place
- 3rd Place
- Audience Vote

Engineering Design Concept:

- Winner / 1st Place
- 2nd Place
- 3rd Place
- Best Powertrain

Any additional or special awards shall be mentioned on www.formulabharat.com/virtuals.

- A.1.4.2. The following are a list of tentative special awards (however, not limited to) that will be provided by the competition, **for each class (CV and EV)**:

EV - Special Awards

- Most Innovative Design (*separate submission required*)
- Software and Intelligence Awards (*separate submission required*)
- Best Battery Design
- Best FMEA Report

CV - Special Awards

- Most Innovative Design (*separate submission required*)

A.1.4.3. The following are a list of tentative virtual racing (Rev-it!) awards (however, not limited to) that will be provided by the competition, irrespective of class:

Overall [Rev-it Only]:

- Winner / 1st Place (Team) : INR 20,000
- 2nd Place (Team) : INR 15,000
- 3rd Place (Team) : INR 10,000
- 4th Place (Team) : INR 5,000

Endurance:

- Winner / 1st Place (Team)
- 2nd Place (Team)
- 3rd Place (Team)
- Best Driver (Qualifying + Endurance)

Hill Climb:

- Winner / 1st Place (Team)
- 2nd Place (Team)
- 3rd Place (Team)
- Best Driver

Drag:

- Winner / 1st Place (Team)
- 2nd Place (Team)
- 3rd Place (Team)
- Best Driver

Engineering Design Q&A:

- Winner / 1st Place (Team)
- 2nd Place (Team)
- 3rd Place (Team)

Media:

- Most Popular Livery Design

Note: Cash prizes are awarded to the Overall Rev-it! Top 4 Teams only. Any additional or special awards shall be mentioned on www.formulabharat.com/rev-it.

A.1.4.4. Winners of the above categories will receive physical awards by mail.

A.1.5. Competition Registration

- A.1.5.1. The registration fees, methods of payment and relevant deadlines shall be outlined on www.formulabharat.com/virtuals.
- A.1.5.2. Fees applicable to this competition include the team's participation at Rev-it virtual racing.

A.2. RULES OF CONDUCT**A.2.1. General Officials Authority**

- A.2.1.1. The officials reserve the right to revise the schedule of the competition and/or interpret or modify the competition rules at any time and in any manner that is, in their sole judgment, required for safe, fair and efficient operation.
- A.2.1.2. All team members are required to cooperate with, and follow all instructions from the officials.
- A.2.1.3. Official announcements shall be considered part of these rules.
- A.2.1.4. All guidelines and clarifications posted on the competition website for the current season including any competition handbook are considered part of these rules.
- A.2.1.5. Questions concerning the meaning or intent of the rules will be resolved by the officials.

A.2.2. Official Instructions

- A.2.2.1. Failure of a team member to follow an instruction or command directed specifically to that team or team member will result in 25 penalty points being deducted from the team's overall score.

A.2.3. Arguments with Officials

- A.2.3.1. Argument with, or disobedience to, any official will result in the team being eliminated from the competition.

A.2.4. Unsportsmanlike Conduct

- A.2.4.1. In the event of unsportsmanlike conduct, 25 penalty points will be deducted from the team's overall score. A second violation will result in expulsion of the team from the competition.

A.2.5. Violations of Intent

- A.2.5.1. Violation of the intent of a rule will be considered a violation of the rule itself.
- A.2.5.2. Any parts, devices or software fragments designed with the intent to violate a rule, will be considered as a violation.

A.2.6. Questions about the Rules

- A.2.6.1. Questions about the rules may be asked to the officials.
- A.2.6.2. The frequently asked questions (FAQ) section on the competition website must be checked before submitting a question.
- A.2.6.3. The officials will only answer questions that are not already answered in the rules or FAQs or that require new or novel interpretation.

A.2.7. Protests

A.2.7.1. Preliminary Review– Required

If a team has a question about scoring, judging, policies or any official action it must be brought to the officials' attention within the announced protest period for an informal preliminary review before a protest can be filed.

A.2.7.2. Cause for Protest

A team may protest any rule interpretation, score or official action which they feel has caused some actual, non-trivial, harm to their team, or has had a substantive effect on their score.

A.2.7.3. Protest Format and Forfeit

All protests must be filed in writing and presented to the officials by the team captain. In order to have a protest considered, a team must post a 25 point protest bond which will be forfeited if their protest is rejected.

- A.2.7.4. The decision of the officials regarding any protest will be in a written form and is final.

A.3. GENERAL REQUIREMENTS FOR TEAMS

A.3.1. Teams per University

- A.3.1.1. A university may register a CV team and an EV team.
- A.3.1.2. A participating team at the Virtuals at Formula Bharat, cannot participate in the on-site competition for that season, and vice versa. For example, a team participating at FBV 21-22 cannot participate at FB2022, and vice versa.
- A.3.1.3. For the purposes of registering and competing, a university's CV team and EV team are considered to be separate and independent entities.
- A.3.1.4. Teams which are formed with members from two or more universities are treated as a single team. In such a case, the team must inform the organizers upon registration as to which university will be represented.
- A.3.1.5. In the case where multiple colleges located in multiple cities or districts are grouped under a common University, either autonomous or through affiliation, the team must register under their College name.

A.3.2. Team Members

- A.3.2.1. A team member may only be part of one team and take part in the competition events for only one team.
- A.3.2.2. Each team must have one team member identified as the team captain. The team captain is the main contact person for the officials during the registration process and the competition.
- A.3.2.3. Persons who have previously attended any official event as a judge are not allowed to participate as team members.
- A.3.2.4. The team captain must have a 'current' student status at the attended College or University, at the time of the competition.
- A.3.2.5. [EV Only] In the case that the team decides to build and test a physical model, all team members are required to have basic electrical safety training to ensure they are aware of the risks and know how to respond in the event of an incident. Teams must follow the ESO requirements as mentioned in the Formula Student rulebook.

A.3.3. Student Status

- A.3.3.1. Team members must be enrolled as degree seeking undergraduate or graduate students in any university. Team members who have graduated within the eleven month period prior to the competition remain eligible to participate.

A.3.3.2. Students who have already graduated from a degree program and are seeking another degree of the same level or below are not allowed to participate.

A.3.3.3. Students seeking a PhD degree/PhD students or equivalent are not allowed to participate.

A.3.4. Team Member Registration

A.3.4.1. The competition allows for a complimentary registration of 15 members per team.

A.3.4.2. A maximum of 45 team members may participate on a team.

A.3.5. Participation Certificates

A.3.5.1. All registered team members will receive electronic participation certificates after the end of the competition, post verification of A.3.3.2.

A.3.5.2. Each team will be required to submit a Team Member Information (TMI) document to the organizers to avail the certificates. The organizers shall make the template available during the competition.

A.4. GENERAL RULES

A.4.1. Forfeit for Non-Appearance

A.4.1.1. It is the responsibility of each team to be in the right place at the right time.

A.4.1.2. If a team is not present and ready to compete at the scheduled time, they forfeit attempt at that event.

A.4.2. Negative Scoring

A.4.2.1. Should the team's total score or individual static score result in a negative score (as in below 0 points) due to late submission or other penalties, the specific result will be capped at 0 points.

A.4.3. Testing and Work Safety

A.4.3.1. Competition organizers are not responsible for the use of the equipment and vehicles outside of their competition.

A.4.3.2. The competition officials disassociate themselves from all activities of the teams besides their own competition and associated events.

A.4.3.3. All teams are advised to follow common practices and common sense when working on the vehicle and high-voltage related systems when operating the vehicle and systems, before, during and after a competition.

A.4.4. Q&A Slots Scheduling

- A.4.4.1. Teams will have the opportunity to schedule slots for their participation in the time frame as mentioned on www.formulabharat.com/virtuals for the static events and www.formulabharat.com/rev-it for the virtual dynamic events.
- A.4.4.2. It is not required for all team members to attend each Q&A session that the team is assigned to.

A.4.5. Technical Issues

- A.4.5.1. In case of technical issues from the organizer's end during the Q&A sessions which cause the session to stop abruptly, the affected teams shall be contacted via email and a new slot shall be provided. This is to the discretion of the competition organizers.

A.5. DOCUMENTATION AND DEADLINES

A.5.1. Required Documents and Forms

- A.5.1.1. The following documents and forms must be submitted by the action deadlines defined on the competition website:
- IAD, SES, BPPD, EDP (+ supporting document), TMI
 - [EV ONLY] FMEA

A.5.2. Submission Notes

- A.5.2.1. Uploaded documents may only be viewed by members of the submitting team, authorized judges and officials.
- A.5.2.2. By submitting documents via the competition website, the team agrees that they may be reproduced and distributed by the officials, in both complete and edited versions, for educational purpose.
- A.5.2.3. Documents that are largely incomplete or not readable will be considered as not submitted.

A.5.3. Submission Guidelines

- A.5.3.1. A submission portal will be made available on www.formulabharat.com/virtuals. Documents must be named correctly and uploaded in the correct format by the deadline.
- A.5.3.2. Documents must be named as 'Team#_TeamName_FBv-DocumentsName_Year_V#'. Eg: E09_Infiniti Racing_FBv-FMEA_2021_V1.

Note: V# is considered as a Version number. All consecutive files sent in as corrections or updates must proceed with V2 and so on.

A.5.3.3. Unless stated otherwise, the page size for documents submitted will be restricted to A4 paper size.

A.5.3.4. Teams are required to make the submissions in the following formats:

Submission	Abbr.	Template Available	Format	Max* File Size
Failure Modes and Effects Analysis	FMEA	Y	.xls / .xlsx	2 MB
Structural Equivalency Spreadsheet	SES	Y	.xls / .xlsx	20 MB
Impact Attenuator Document	IAD	Y	.pdf	1 MB
Business Plan Pitch Deck	BPPD	N	.pdf	10 MB
Design Specifications Sheet	DSS	Y	.xls / .xlsx	1 MB
Engineering Design Presentation	EDP	N	Refer to C.2.6. and C.2.7.	-
Engineering Design Supporting Document	SUP	N	.pdf	7 MB

A.5.3.5. The following are guidelines for non-template documents:

- Header of every page (where applicable) must contain the Team Number, Registered Team Name, Institution Name and Document Name.
- Footer of every page (where applicable) must include Page Number and Total Number of Pages (Example: Page 1/3 if referring to the 1st page out of 3 pages etc.)
- Format file based on table mentioned above (Column 4: Format).

A.5.4. Penalties

A.5.4.1. The following table indicates penalties and consequences apply to late or non-submissions:

Document	Late Submission: Points penalty per 24h	Penalty deduction from?	Non-Submission: After 7 days
FMEA [EV]	10	Overall	DR
SES	10	Overall	DR
IAD	10	Overall	DR
BPPD	10	BPP	DR - BPP, 0 pts in BPP
DSS	10	ED	DR - ED, 0 pts in ED
EDP (with SUP)	10	ED	DR - ED, 0 pts in ED

Legend: DR – De-registered; BPP – Business Plan Presentation event; ED – Engineering Design event

Note 1: TMI – No submission of TMI by deadline will result in team members' inability to receive electronic certificates towards participation at event.

Note 2: No response to official's communication on delayed or non-submission of the documents shall result in de-registration of the team from the competition.

A.5.4.2. The following table indicates penalties and consequences apply to delayed submission towards **correction requests**:

Document	Late Submission: Points penalty per 24h	Penalty deduction from?	Non-Submission: After 7 days
FMEA [EV]	5	Overall	DR
SES	5	Overall	DR
IAD	5	Overall	DR
BPPD	5	BPP	DR - BPP, 0 pts in BPP
DSS	5	ED	DR - ED, 0 pts in ED
EDP (with SUP)	5	ED	DR - ED, 0 pts in ED

Note 1: Simultaneous requests for different parts within one document or form will be penalized independently of each other.

Note 2: Unless the first revision is requested from the competition officials, uploading a revision before such request for a document would automatically make the latest submitted document the 'first submission', and any late submission penalties as per A5.4 shall apply.

Note 3: If the corrected version of the document does not completely contain all requested corrections, the late correction penalties shall continue to be applied from the date the correction was requested from.

A.5.4.3. The following table indicates penalties and consequences apply to incorrect file naming and formatting. Please note tables in A5.4.1 and A5.4.2 for column of points' deduction (i.e. Overall or Event-Specific with each respective document)

- Incorrect file type: 5 penalty points
- Incorrect template: Considered as non-submission
- Incorrect EDP link within ED supporting document: Considered as non-submission
- Exceeding page / slide limit: 10 penalty points
- Exceeding time limit: 10 penalty points

-
- (For non-template files) Missing Team Number, Team Name, Institution Name, Document Name in Header and Page number, Total Number of pages in Footer: 0-5 penalty points
 - Missed Presentation Session with less than 48 hour notice: 50 points

Note: While there is no penalty for file size, teams are requested to keep to the minimum possible size to ensure that judges and reviewers can easily download or review the file on any device and to also ensure that the team avoids uploading issues.

C COMPETITION EVENTS

C.1. Business Plan Presentation Event (BPP)

C.1.1. Business Plan Presentation Objective

- C.1.1.1. The objective of the BPP is to evaluate the team's ability to develop and deliver a comprehensive business model which demonstrates their product – a prototype race car – could become a rewarding business opportunity that creates a monetary profit.
- C.1.1.2. The judges should be treated as if they were potential investors or partners for the presented business model.
- C.1.1.3. The business plan must relate to the specific prototype race car entered in the competition.

C.1.2. Business Plan Procedure

- C.1.2.1. Prior to the competition, the team must submit a pitch deck and participate in an online web presentation delivery.
- C.1.2.2. The top teams are then judged by all business judges in the BPP finals at the competition.

C.1.3. Pitch Deck (BPPD)

- C.1.3.1. To convince the potential investors or partners that the team's business model is worthy of their time and investment, it is required that a pitch deck is submitted before the competition. A pitch deck is a brief presentation document which provides investors with an overview of the business, the business model, the company vision, the product and the monetization strategy.
- C.1.3.2. The pitch deck must be submitted online via the competition website, not later than the deadline specified by the competition.
- C.1.3.3. A missing pitch deck submission will forfeit the team's participation in the prelims. Additionally, if the judges find the pitch deck to be of 'poor form', the judges may choose to cancel the team's presentation preliminaries time slot.
- C.1.3.4. **Format:** The pitch deck should contain the following format characteristics
 - There is no template provided. Please follow A.5.3.5 for guidelines on non-template documents.
 - It should be submitted in a 'Presentation-type' format.
 - The final submitted document must be in .pdf.

- It should contain no more than 12 slides.
- All elements listed in C.1.3.5. Teams are allowed to change ordering of elements based on the flow of the pitch deck.

C.1.3.5. **Elements:** The following elements must be expanded on as a part of the pitch deck

- Problem Statement
- Solution
- Milestones
- Market Size
- Product
- Team
- Competition
- Go-to-Market Strategy
- Financials
- Amount being raised

C.1.3.6. **Other notes:**

- Drastic changes between content in the submitted BPPD and the online presentation must have the reasoning clarified with the judges.
- The team must be ready to provide additional supporting documentation to the judges, should it be requested.
- The team may include other elements as a part of either the pitch deck or the presentation, or both. These may include (and are not limited to):
 - Company Vision / Mission / Goals
 - Partnerships and Collaborations
 - Technical documentation
 - Exit Strategy
 - Market Research

C.1.4. Presentation Prelims

- C.1.4.1. The presentation preliminaries shall take place within three months to the competition. Teams will be provided with an online presentation web link and a first-come-first serve date and time slot, prior to the competition.
- C.1.4.2. Presentations are limited to a maximum of ten minutes. The judges will stop any presentation exceeding ten minutes.
- C.1.4.3. The presentation will not be interrupted by questions. Immediately following the presentation there will be a question and answer session.
- C.1.4.4. One or more team members may present the business plan.

- C.1.4.5. All team members involved in the BPP must be in front of the screen and must be introduced to the judges at the beginning of the presentation. The team members who have been introduced may answer the judges' questions even if they were not actually presenting.
- C.1.4.6. Teams that fail to make their presentation within their assigned time period will receive zero points for the BPP.
- C.1.4.7. For the online presentation, teams must ensure reliability of internet connection and positioning of media transmission device for best focus and sound. Lighting of space, choice of background and external noise must be paid attention to, to avoid interruptions during the presentation. Teams may choose to switch between live presentation and media display (PowerPoint, video etc.) at any point, during the course of the presentation delivery.

C.1.5. Business Plan Presentation Finals

- C.1.5.1. Finalist teams will be notified at least a week before the finals presentation dates.
- C.1.5.2. The BPP finals will be a public event at the competition.
- C.1.5.3. **Pre-submission:** Finalists will be required to submit the following before the finals. Details on the method of submission and file naming will be shared with the finalist by the organizer
- A comprehensive business plan (in a .pdf file) with a Table of Contents which includes, but is not limited to
 - pitch and proposal
 - market segmentation
 - service model
 - customer acquisition
 - implementation plan
 - human resource capabilities
 - Comprehensive financial models (in a .xls / .xlsx file) which includes, but is not limited to
 - Assumption with sources
 - Financial statements, example, P&L, Cash flow, Balance sheet etc. complete with EBITDA, and PAT ratios Y-o-Y
 - Budget allocation (with strategy)
 - Valuation methodology along with future projections
 - Shareholding patterns pre and post fundraising
 - ROI calculation (for investors)
- C.1.5.4. **Format:**
- Finalists will not be delivering their presentation again at the finals. The objective of the finals is to take a deep dive into the core of the proposed business plan.
 - At the beginning of the assigned slot, each team must deliver a maximum 3-minute pitch which will be a quick summary on the business model and the investment requested for.
 - The rest of the time slot will be a Q&A session in which the team will be judged on the following:

- Comprehensiveness of Business Model - market segmentation, completeness of service delivery model, ease of customer acquisitions etc.
- Financials
- Implementability - realistic viability and action plan to realise the idea
- Team Capability Analysis - HR capabilities to realise the business plan
- Post-finals, a window will be made available for the audience to vote on the team that performed the best in the finals. The winner will be awarded the 'Audience Vote'.

C.1.6. Business Plan Presentation Scoring

C.1.6.1. The BPP will be evaluated on the categories specified in the following table:

Category	Points
Pitch Deck	15
Novelty	10
Content	20
Finances	15
Demonstration and Structure	15
Delivery	10
Questions	10
General Impression	5
TOTAL	100

C.1.6.2. The scoring of the BPP is based on the average of the scores given by each of the judges.

C.1.6.3. The scoring for the non-finalist is calculated as followed:

$$BPP\ Score = 70 \times \frac{P_{Team}}{P_{Max}}$$

P_{Team} is the score awarded to the team

P_{max} is the highest score awarded to any team not participating in the finals

C.1.6.4. The scoring of the BPP finalists will vary from 75 to 71 points and is scored immediately after the BPP finals by all judges.

C.2. Engineering Design

C.2.1. Purpose of the Engineering Design event

- C.2.1.1. The purpose of the engineering design event is to evaluate the team's engineering process and effort that went into the design of an EV Powertrain system, meeting the intent of the competition and alignment with the Formula Bharat rules book.
- C.2.1.2. Proprietary components and systems that are incorporated into the design as finished items are not evaluated as a student designed unit, but are only assessed on the team's selection and application of that unit.

C.2.2. [EV Only] Failure Mode and Effects Analysis (FMEA)

- C.2.2.1. The purpose of the Failure Modes and Effects Analysis (FMEA) document is to review as many components, assemblies, and subsystems as possible to identify potential failure modes in a system and their causes and effects.
- C.2.2.2. The template is available on the competition website.

C.2.3. Structural Equivalency Spreadsheet (SES) Report

- C.2.3.1. The template is available on the competition website.

C.2.4. Impact Attenuator Design (IAD) Report

- C.2.4.1. The template is available on the competition website.

C.2.5. Design Specifications Sheet (DSS)

- C.2.5.1. The template is available on the competition website.

C.2.6. Engineering Design Presentation (EDP)

- C.2.6.1. The EDP must be considered as the team's design pitch to a senior-level Engineering Design group.
- C.2.6.2. The EDP must be presented by registered team members only.
- C.2.6.3. The EDP is a maximum 25 minute recorded video presentation which should contain a brief description of the overall vehicle's engineering design concept with a review and derivation of the team's design objectives. Any information to scope, explain or highlight design features, concepts, methods or objectives to express the value and performance of the vehicle to the judges shall be included at the teams' discretion.

C.2.6.4. The EDP could contain but is not limited to:

- Team Introduction
- Goals / Design Objectives for the competition season
- Constraints
- Cover major points in each area (and others): Chassis, Drivetrain, Powertrain, Suspension, Steering, Brakes, Ergonomics, Aero, Composites, Wheels & Tires, Electronics
 - Mention the design elements in the specific design area
 - Why you chose those elements
 - Any benefits
 - Any restrictions that limited your ability to improve / add to the design
 - Improvements from previous year's design

TIP: Do not cram too many slides within a minute of presentation. Try to keep the slides less heavy on text.

C.2.6.5. The EDP must be uploaded on a video sharing platform of your choice (Youtube, Vimeo etc.). Please do not upload on Google Drive. The video link must be publicly accessible. If uploaded on Youtube, the privacy setting of the video must be changed to 'Unlisted' so that only those with the link can view the video and it will not be displayed publicly on your channel as well.

C.2.6.6. The EDP link is submitted within the supporting document. Refer to C.2.7. for details.

C.2.7. Engineering Design Supporting Document (SUP)

C.2.7.1. The supporting document may contain additional detail such as simulations, calculations, flow charts etc. that would allow the judges to understand design considerations made, including any further research and analysis conducted by the team.

C.2.7.2. The cover page of the supporting document must contain the link to the EDP video.

C.2.7.3. The supporting document must contain a 'Table of Contents' which is either linked or contains page numbers. If linked, please ensure that links are working after the document has been converted to .pdf format.

C.2.7.4. The supporting document is limited to a maximum of 50 pages, not including the cover page and the Table of Contents.

C.2.7.5. The supporting document can contain 'external links' to assist with decluttering of the document.

Note 1: The longer the supporting document, the less reviewed it will be. So only include relevant information in this area, and provide external links to information that may be helpful but is not critical to the judging of the EDP.

Note 2: The supporting document may or may not be reviewed in its entirety. It solely depends on whether the judge wants to seek additional clarification that isn't already provided in the presentation.

C.2.8. Engineering Design Q&A

C.2.8.1. The Q&A session dedicated to Engineering Design shall be of a total of 30 minutes.

- 5 mins - Setup
- 20 mins - Judges' clarifications and queries
- 5 mins - Judges' feedback

C.2.8.2. The team may introduce themselves at the session, however, no formal presentation is required.

C.2.9. Engineering Design Scoring

C.2.9.1. The Engineering Design Concept Event will be evaluated on the categories specified in the following table:

Category	Points
Overall Vehicle Concept	30
Vehicle Dynamics	30
Mechanical / Structural Engineering	20
Tractive System / Powertrain	30
LV – Electrics / Electronics / Hardware	10
Driver Interface	15
Presentation	15
Q&A Session	50
TOTAL	200

C.2.9.2. The scoring of the Engineering Design Concept Event is based on the average of the scores given by each of the judges.

C.2.9.3. The scoring for the non-finalist is calculated as followed:

$$ED\ Score = 150 \times \frac{P_{Team}}{P_{Max}}$$

P_{Team} is the score awarded to the team

P_{\max} is the highest score awarded to any team not participating in the finals

- C.2.9.4. The scoring of the Engineering Design Event finalists will vary from 200 to 151 points and is scored immediately after the finalists Q&A by all judges.

C.3. Virtual Dynamics

C.3.1. Rev-it!

- C.3.1.1. The virtual racing component of the competition will follow a specific set of rules as indicated on www.formulabharat.com/rev-it.