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Re-Engineering Australia Foundation Ltd.
PO Box 136
Castle Hill NSW 1765
P: 61 2 8850 6311
F: 61 2 8079 0622
E: contact@rea.org.au
W: www.rea.org.au

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CONTRIBUTORS
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Article C1 - Definitions

C1.1 Australian Competition Season
The standard sequence of Australian SUBS in Schools competitions runs across a single calendar year. The State Finals held early in the year will feed to the National Final in Nov/Dec of that year. This encompasses a complete season, for which the regulations SHOULD remain constant. REA Foundation Ltd reserves the right to update / revise the regulations if deemed appropriate. For the 2017 season there will be no state finals, and as such all competitors will be invited to compete in the National Final.

C1.2 Australian Competition Calendar
This is a calendar of State and National Final events which is available via the Finals Information tab within the SUBS in Schools menu on the REA Foundation Ltd. website, www.rea.org.au.

C1.3 State & National Finals
State and National Final events are managed by Re-Engineering Australia Ltd., are generally held over 2 - 3 days and may include various programmed social and competition activities. These events aim to provide all participants with an educational and personal development experience.

C1.4 SUBS in Schools National Coordinator
A person employed by Re-Engineering Australia Ltd. (REA) to manage the SUBS in Schools competition in Australia.

C1.5 Language Used
The language of the regulations is tiered. Those clauses expressed as “MUST” are mandatory and failure to comply will attract objective point and/or racing penalties and in the extreme, disqualification. Those expressed as “SHOULD” or “MAY” reflect some level of discretion and choice. Some clauses will be satisfied through team registration processes or declarations signed as complied with as part of the Challenge Terms and Conditions, whilst others will be tested through a variety of objective and subjective judging.

C1.6 Event Programme
This programme will detail the schedule of all competition activities from Event Registration through to the Awards Presentation.

C1.7 Judging Schedule
A separate Judging Schedule will detail the times and locations of all judging activities for all teams.

C1.8 Terms and Conditions for Entry
There are forms prepared by Re-Engineering Australia Ltd. that teams and teachers are required to complete and submit prior to an event. These forms outline a range of Terms and Conditions that must be complied with as part of the initial registration process and participation of all teams in the competition. Failure to submit these forms MAY result in teams being ineligible to compete at an REA Foundation Ltd. managed State or National Final. Copies of all forms can be found within the Resources /Competition Documents tab within the SUBS in Schools menu of the REA Foundation Ltd. website. For detailed information refer to ARTICLE C2.4.1.

C1.9 Regulations Documents
C1.9.1 Issuing Authority
REA Foundation Ltd. issues the regulations, their revisions and amendments.

C1.9.2 Competition Regulations
This document is mainly concerned with regulations and procedures directly related to judging and the competition event. Competition Regulation articles have a ‘C’ prefix. This document should be read in conjunction with the SUBS in Schools Australian Technical Regulations document.

C1.9.3 Technical Regulations
A document separate to this one which is mainly concerned with those regulations that are directly related to SUBS in School ‘spatial’ design and model manufacture. Technical Regulation articles have a ‘T’ prefix.

C1.9.4 Interpretation
The final text of these regulations is in English, should any dispute arise over their interpretation, the regulation text, diagrams and any related definitions should be considered together for the purpose of interpretation.

C1.9.5 Text Clarification
Any frequently asked questions that are deemed by REA Foundation Ltd. to be related to text needing clarification will be answered. The question and the clarification will be published on the REA Foundation Ltd. website.
C1.9.6 Supplementary Competition Regulations
Other documents may be issued by REA Foundation Ltd. that provide teams with further logistic and other important event information. Any supplementary regulations will be issued to all teachers and team managers of registered teams, where a valid contact email address has been supplied to REA Foundation Ltd. and published on the REA Foundation Ltd. website.

C1.10 Key Performance Indicators (KPI’s)
These are portions of text that feature on the score cards within a corresponding points range. The KPI’s describe the type of evidence the Judges will be looking for in order to score the team appropriately.

C1.11 Virtual Model
This can refer to the computer generated model, video walk through or both.

C1.12 Project Elements
These are any materials and resources that the team presents as part of its entry for any judging activity and which are submitted at event registration or as advised.

C1.13 Engineering Drawings
CAD produced drawings which should be such that, along with relevant CAM programs, could theoretically be used to manufacture the fully assembled water craft by a third party. Such drawings include all relevant dimensions, tolerances and material information. SUBS in Schools engineering drawings include detail to specifically identify compliance intent for the virtual cargo and control surfaces.

C1.14 Penalties
A range of penalties will be applied for non-compliance with identified competition regulations including:

C1.14.1 Point Penalty
Invoked from non-compliance with some competition regulations governing any Portfolio or Trade Display restrictions and Submarine/ROV Servicing/Substitution. These are identified as [Point Penalty]

C1.14.2 Eligibility
Teams need to meet certain eligibility criteria to compete at a State or National Final. Failure to comply with certain eligibility criteria MAY lead to disqualification from the competition or a class of competition. These are identified as [Eligibility]
Article C2 - General Regulations

C2.1 Representative Team Selection
C2.1.1 State Finals
In all states the first level of competition for teams is usually a State Final. However, REA Foundation Ltd. reserves the right to request Regional Finals in any state if total registrations across all classes of competition, received by the advertised deadline, exceed the maximum 24 teams allowable for any State Final.
In 2017, there will be no State Finals, and as such competing teams will be invited to the 2017 National Finals.

C2.1.2 National Final
At each State Final, the champion teams in each class of competition and their supervising teachers (2 maximum) will be invited to represent their state at a National Final. At State Finals where only 1 – 3 teams represent an individual class of competition, the Chair of Judges will determine if the Class Champions have met the minimum standard required for a National Final.
REA Foundation Ltd. reserves the right to offer ‘Wildcard’ invitations to selected teams. The number and criteria for selection is at the discretion of REA Foundation Ltd. and is not necessarily based on final rankings. Teams receiving wildcard invitations will be notified in writing within 7 days of the conclusion of the State Final.

C2.2 Cost of Participation
C2.2.1 State and National Finals
Teams and teachers are responsible for all costs associated with participating in the competition, including registration fees, as per ARTICLE C2.3.7. This includes but is not limited to project costs, travel and accommodation and meals. Some meals MAY be provided to teams and teachers at National Finals.

C2.3 Team & Project Entry Conditions
C2.3.1 Varying the Conditions
REA Foundation Ltd. reserves the right to vary the Team & Project Entry Conditions where special circumstances exist.

C2.3.2 Team Membership
Each team registered in the Australian competition MUST consist of the following minimum and maximum number of students. Mixed gender teams are encouraged.
C2.3.2.1 Level 3: 3 to 5 team members

C2.3.3 Collaboration Teams
These teams will ONLY be formed from State Final teams at the invitation of REA Foundation Ltd. for National Final events. A maximum of 2 schools can participate with balanced representation from each school.

C2.3.4 Supporting or Affiliate Team Members
Supporting or affiliate team members are NOT permitted for any class or level of competition.

C2.3.5 Multiple Class Entry Restrictions
Individual students can only compete in one competition class per event.

C2.3.6 Enrolled Full-time Students
All team members MUST be enrolled as full-time primary/secondary students studying at school or TAFE or home schooled (at the time of the event) to be eligible to participate in State and National Final competitions.

C2.3.7 Team Registration Conditions
Each student team MUST be registered for their first competition event by the prescribed date advertised on the SUBS in Schools web site. The REA Foundation Ltd. registration process SHALL be followed and the entry fee received by REA Foundation Ltd. before the competition date. Entry fees are non-refundable once processed. Fees only apply to State and National Finals.

C2.3.8 Team Membership Changes
Each team MAY only make one change (i.e. add, subtract or substitute) to its membership when progressing to the next level of competition. REA Foundation Ltd. will consider up to two team membership changes between a State and National Final when extenuating circumstances exist and upon written request to the Rules Committee.

C2.3.9 Changes to Team Classification
When progressing from State to National Finals, teams MUST remain in the class in which they qualified. This includes the effects of changes to team membership.
C2.3.10 Entered Projects
Entered projects MUST be designed and produced during the current Challenge Season and the same project design MUST NOT be entered in more than one Challenge Season.

C2.4 Competition Procedural Regulations
C2.4.1 Submitting Documentation
Each team MUST complete and submit ALL the relevant competition documentation as required by REA Foundation Ltd. and within the stated timeframes. Some forms are signed electronically when teachers register teams. Others must be printed, signed and forwarded to REA prior to the event. All forms are downloadable from the Resources/Competition Documents tab of the SUBS in Schools menu on the REA Foundation Ltd website. The following documents apply:

C2.4.1.1 Terms and Conditions Form
This form constitutes an agreement between REA Foundation Ltd. and supervising teachers regarding participation by teams in State and National finals. The form is electronically signed by teachers when registering their teams on-line via the REA Foundation Ltd website. It is very important that teachers read this form before registering their teams.

C2.4.1.2 Media Consent Form (all classes)
- One per student.
- Valid for the entire Australian Competition Season.
- Parent/Guardian signature required if student under 16 years.
- Must be printed, signed and emailed or faxed to REA one month prior to event start date.

C2.4.1.3 Water Craft Finishing Declaration Form (all classes)
- One per team.
- New form must be signed and submitted for EACH event at check-in.
- Team Manager and Teacher signature required.
- MUST be accompanied by photographic or video evidence.
- Penalties apply for non-submission.

C2.4.1.4 Grievance Form (all classes)
- Provided to teams at Event Check-in.
- Completed only if teams have a judging grievance.
- MUST be submitted by the published deadline to the Event Director.
- MUST be completed by the Team Manager ONLY.
- The Chair of Judges decision is FINAL.

C2.4.2 Event Check-in
C2.4.2.1 Team Attendance
All teams MUST attend a team event Check-in process, the timing of which will be published by REA Foundation Ltd. no less than one month prior to the State or National Final. At this check-in, teams will be issued with State or National Final accreditation, event programs and detailed welcome pack.

C2.4.2.2 Submitting Project Elements
When checking in at State Finals and National Finals, each team MUST provide REA Foundation Ltd with minimum mandatory project elements as outlined in ARTICLE C2.9. Failure to provide the listed items MAY impact on a team’s eligibility to compete and judging outcomes.

C2.4.3 Team Dress
C2.4.3.1 Team Uniforms
At State and National Finals, ONLY members of the official competing team are permitted to wear the team’s uniform.

C2.4.3.2 School Uniform
In lieu of a Team Uniform, teams MAY wear an official School Uniform.

C2.4.4 Collaboration Team Awards
If a collaboration team wins an award at a National Final which involves a perpetual trophy, this MUST be shared between the team for the 12 months following the event. Award certificates will be duplicated for awards won by collaboration teams.

C2.5 Team Responsibilities
C2.5.1 Australian Technical Regulations
Teams MUST read the Australian Technical Regulations carefully to ensure their virtual model comply with those regulations.

C2.5.2 Australian Competition Regulations
Teams MUST read the Australian Competition Regulations (this document) carefully to ensure that all project elements satisfy these regulations and that they understand the requirements and procedures for all aspects of the competition and judging.

C2.5.3 Attendance at Schedule Activities
C2.5.3.1 Team Representation Only [Eligibility]
During the competition, ONLY the official team members can represent the team at event check-in, trade display set up, verbal presentation, portfolio, marketing and engineering judging, specifications compliance feedback, critical rule fix, racing and any direct communication with the Chair of Judges or Event/Competition Directors concerning judging matters.

C2.5.3.2 All Team Members Required [Eligibility]
During the competition it is the team’s responsibility to ensure that ALL team members are present at the correct time and location for all scheduled activities.

C2.5.4 Trade Display Security [Advice]
Security of a team’s Trade Display and its elements is the team’s responsibility during competition.

C2.6 Role and Responsibility of Supervising Teacher.
C2.6.1 Terms and Conditions Form [Advice]
All supervising teachers MUST carefully read and understand the terms and conditions for entry to the SUBS in Schools State & National Finals events, and must have explained all relevant information within this agreement to their team/s.

C2.6.2 Other Documentation [Advice]
All supervising teachers MUST ensure all declaration and media consent forms are completed and sent to REA Foundation Ltd. by the stated deadline.

C2.6.3 Duty of Care by Schools & Teachers [Advice]
It is the primary responsibility of any event accredited supervising teacher to administer their school’s duty of care / well-being, relevant to their education system’s guidelines, for all their student team members, throughout the entirety of REA Foundation Ltd. managed events. Any concerns arising during the event in relation to this should be brought to the attention of the SUBS in Schools Event Director immediately. A school’s Duty of Care cannot be transferred to a 3rd party such as REA Foundation Ltd.

C2.6.4 Standard of Care by REA [Advice]
REA Foundation Ltd. will do its utmost to administer a high Standard of Care for teachers, students and members of the public through adherence with requirements of Workplace Health & Safety, Risk Management and Child Protection procedures. It will also strive to ensure the judging process is applied fairly and equally to each and every team attending our managed events.

C2.6.5 Attending Judging Attending Judging Sessions [Advice]
Where space permits and at the discretion of the Chair of Judges, ONE approved supervising teacher is permitted to observe (in the background) any judging activity with their team but must not interact in any way with the student team, judges or judging process. Any incident considered inappropriate will be brought to the attention of the Chair of Judges.

C2.7 Team partnerships/collaborations
C2.7.1 Mentoring [Advice]
SUBS in Schools teams are encouraged to develop mentoring partnerships/collaborations with businesses, industry or higher education organisations throughout their project.

C2.7.2 Student Work Only [Advice]
All design work, text and scripting for ALL project elements presented for assessment MUST be wholly undertaken and created by the team. This includes all CAD and CAM data, electronic Portfolio, Trade Display and graphic content.

C2.7.3 Documenting in Portfolio [Advice]
Aspects of any partnerships/collaborations SHOULD be represented in the team’s Portfolio. For project elements produced utilising some outside assistance, teams should be able to demonstrate to the judges a high level of understanding of, and justification for, any of the processes and services used.
C2.8 REA Corporate Logos and National Sponsorship

C2.8.1 Logos [Advice]
As indicated in the ARTICLES T1.4 and T4.3 of the applicable Level Technical Regulations, teams MUST include the REA Foundation Ltd. corporate sponsor logos as a minimum on the water craft and within the portfolio. There are strict conditions around using the Department of Defence. Branding guidelines for use of all logos are available to download from the REA Foundation Ltd website and teams MUST be fully aware of the conditions outlined in these documents.

C2.8.2 Department of Defence National Sponsorship [Advice]
The Australian Government’s Department of Defence has been the National Sponsor of SUBS in Schools since 2014. As the “National Sponsor of SUBS in Schools, the Department of Defence is already a sponsor of your team, so please DO NOT approach them for any further funding.

C2.9 Mandatory Project Elements Submitted at Event Check-in
Following is a summary of the mandatory elements to be submitted for judging at State and National Finals:

C2.9.1 Level 3: Design a Submarine Spatial Environment [Eligibility]
• One complete virtual environment model
• One complete physical scale model
• USB drive containing all CAD data, parts, renders, engineering drawings and hi-res Portfolio. Microsoft Windows compatible operating system format required.
• Four (4) printed A3 Portfolios containing a 3D render (front cover/1st page) and orthographic drawing (last page), bound or in presentation folders.
• Engineering Compliance Booklet containing separate A3 size printed engineering compliance drawing/s for specification & CAD judging and A3 size render (same render as on the Portfolio front cover) for CAD judging. Booklet must be bound when submitted.

C2.10 Project Judging Elements Detailed Information

C2.10.1 Model [Advice]
C2.10.1.1 Virtual Environment Model
Produce a virtual 3D CGI (Computer Generated Image) model of your chosen submarine space. It MUST be produced in a way to exhibit the entire space, either as a video presentation or as an interactive walk through. You MAY use any 3D software package to design components and the virtual model ensuring you’re able to produce the desired outcomes.

The virtual model may be assisted through the use of virtual reality goggles, training simulation programs or a voice over, etc.

Depending upon the complexity and in-depth approach you take with the virtual model you may opt to have a scale model to assist in the explanation of your design. This is not linked to any accessible criteria.

C2.10.1.2 Scale Model
If you choose to produce a physical 3D model of the virtual design it MUST be at 1:10 scale. The scale model should be used to assist your virtual model in explaining your innovative elements. The scale model MAY exhibit elements of your designs or be a complete assembly of your environment. It is open to your discretion for you to choose the best way to exhibit your designs. If you feel your virtual model is intuitive and descriptive enough you MAY choose not to produce a scale model to assist your sales pitch, a scale model is optional.

C2.10.3 Portfolio [Advice]
Each team must submit four (4) A3 sized, well written and presented ‘hard copy’ Portfolios, which should clearly summarise the team’s key activities and key messages for assessment, evaluation, and event promotion. Teams SHOULD produce additional copies for exhibiting within the team’s Trade Display and for Verbal Presentation if desired.

The Portfolio is limited to 20 PRINTED pages which includes the front cover. This can be presented as single or double sided printed sheets. If a Portfolio comprises more than the maximum allowable PRINTED pages, the Judges will only review the first 20 printed pages.

C2.10.4 Orthographic Drawing/s [Advice]
A 3rd angle orthographic projection drawing, including plan, side and end elevations of the fully assembled water craft MUST be included as the last page in the Portfolio. These elements must be produced using CAD. The orthographic technical drawing should include dimensions and corresponding regulation numbers in order to illustrate regulation compliance. The team name and author MUST also be included in a title block.

At event check-in, teams MUST submit (as a minimum) a separate duplicate hard copy of the Orthographic Drawing appearing on the last page of their portfolio. Additional engineering drawings of their water craft assembly and parts MAY also be submitted if they wish these to be referenced by the engineering and specification Judges. These drawings MUST be on pages no larger than A3 in size and be bound or in a presentation folder clearly identified with the team name.
C2.10.5 3D Realistic Render
A separate, duplicate, hard copy of the 3D realistic render of the final water craft design appearing on the cover page of a team's portfolio must also be submitted at event check-in. This is to be bound with or included in the presentation folder of engineering drawings. Refer ARTICLE C2.10.3.

C2.10.6 Trade Display
Each team will be provided with a dedicated exhibition style space and trestle table for set-up of their display elements. The specific style and size of this space will be announced in supplementary event competition regulations. Refer to ARTICLE C6 for further trade display specifications and content requirements.

C2.10.7 Verbal Presentation
Teams will be required to deliver a verbal presentation in relation to their project to the Judges. The presentation MUST not last longer than twenty (20) minutes. Teams MUST bring their own laptop with any slide show or other multimedia files that need to be shown as part of their verbal presentation. Teams SHOULD also have available their own VGA and HDMI cables to connect to a data projector/TV monitor. Any team who needs a laptop for verbal presentation judging and is unable to bring one to a State or National Final must contact REA Foundation Ltd. (contact@rea.org.au) at least one month prior to the event. Refer to ARTICLE C8 of these regulations for details regarding presentation content and other requirements.

C2.10.8 Electronic Data
Teams MUST submit all engineering and other data specified below on a USB storage device compatible with the Microsoft Windows operating system.
- All CAD parts and assembly files
- Hi-res realistic renders
- Full Portfolio
- All additional engineering drawings submitted for judging
- Any trade display multimedia files
This data may be referred to for judging purposes and possible marketing and promotion following the event. Note that the USB storage device will NOT be returned to the team.

C2.10.9 Laptops for Judging
Teams MUST bring laptops for identified judging elements as follows. If multiple teams from the same school are participating, more than one laptop should be brought to deal with situations where teams are being judged in the same time block. Any team unable to bring a laptop to a State and National Finals event with CAD software installed MUST contact REA Foundation Ltd. (contact@rea.org.au) at least one month prior to the event in an effort to assist in finding a solution.

C2.10.9.1 Engineering Judging
A laptop with the CAD software used by the team and with all CAD part and assembly data MUST be brought to State and National Finals events. This will be needed during the engineering judging session so that the team can demonstrate their CAD work and better explain how they engineered their water craft design.

C2.10.9.2 Verbal Presentation
Teams wishing to run a slideshow or video as part of their Verbal Presentation MUST ensure they bring this on a laptop with their own VGA and HDMI cables available for connection to a data projector/TV monitor. Teams SHOULD ensure they are familiar with and adept at managing communication between their laptops and data projectors and TV monitors which will be provided by the organisers.

C2.10.10 Access to the Internet
At Australian State and National Finals, every effort is made but no guarantee given, for teams to have access to the internet at their Trade Display and rooms where other judging is conducted. Teams are strongly advised to organise their own internet access via a portable wireless device.

C2.11 Project Elements Retained by REA Foundation Ltd.
It is a condition of entry to Australian State and National Finals that each team permits REA Foundation Ltd. to retain 1 x 20 page printed Portfolio and the electronic copy of all specified project data submitted (including the USB storage device on which it has been submitted). Teams also permit REA Foundation Ltd. to use any of these project elements for marketing purposes and/or publication as exemplar projects for reference by others.
Article C3 - Competition and Judging Format

C3.1 Event Programme
An Event Programme outlining the timing and venue for all judging and competition activities will be formulated by REA Foundation Ltd. and provided to all teams at event check-in as well as being uploaded to the REA Foundation Ltd website.

C3.2 Judging Schedule
Each team will be judged as per the Judging Schedule. The Judging Schedule will be formulated by REA Foundation Ltd. to best and fairly accommodate all judging and other competition activities.

C3.2.1 Judging Session Timings
Teams will rotate around judging activities as per this judging schedule, with each rotation usually of between 20 – 30 minutes in duration.

C3.2.2 Judging Streams
The judging schedule MAY be divided into two or three parallel judging streams (Stream A, Stream B and Stream C), with each judging stream responsible for a class of competition. A number of strategies are implemented within the judging process, including judge briefings and judge reviews, for cross-moderation, to ensure there is consistency across the judging streams, particularly where parallel streams exist within a class.

C3.3 Judging Panels
REA Foundation Ltd. always makes every effort to select judges from industry and higher education institutions who have knowledge and experience relevant to the panel they will be judging on. All judging panels are fully briefed by the Event Director and/or the Chair of Judges prior to the start of the competition.

C3.4 Who Attends Judging?
ALL team members MUST attend every scheduled judging session as per the Judging Schedule except for Specifications Compliance Feedback. At Specifications Compliance Feedback, the Team Manager, Design Engineer and Manufacturing Engineer MUST attend as a minimum. One supervising teacher MAY observe judging sessions as per the conditions set out in ARTICLE C2.6.5. This teacher MUST not directly approach or discuss any judging matters with the judges at any time unless invited to do so.

C3.5 Students with Special Needs
In circumstances where a student has special needs and upon written application to REA Foundation Ltd. by the supervising teacher at least one month prior to a State or National Final, every effort will be made to accommodate the needs of the student.

C3.6 Judging Categories
There are eight (8) main judging categories, each with its own team of judges – where possible - and specified judging activities as detailed in further articles.

- Engineering - CAD
- Engineering - Manufacturing
- Engineering - Design Process
- Portfolio – Project Management
- Portfolio - Design
- Marketing – Branding and Trade Display
- Verbal Presentation
- Virtual Environment Trail

C3.7 Point Allocations
At State and National Finals, points will be awarded to teams across five (5) categories with maximum possible scores as detailed in the following table.

<table>
<thead>
<tr>
<th>Category</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAD</td>
<td>65</td>
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<tr>
<td>Manufacturing</td>
<td>65</td>
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<tr>
<td>Design Process</td>
<td>70</td>
</tr>
<tr>
<td>Project Management</td>
<td>60</td>
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<tr>
<td>Design</td>
<td>50</td>
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<tr>
<td>Branding</td>
<td>40</td>
</tr>
<tr>
<td>Trade Display</td>
<td>40</td>
</tr>
<tr>
<td>Technique</td>
<td>70</td>
</tr>
<tr>
<td>Content</td>
<td>60</td>
</tr>
<tr>
<td>Virtual Model</td>
<td>200</td>
</tr>
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<td>TOTAL</td>
<td>800</td>
</tr>
</tbody>
</table>

Figure C3.7 (Point Allocations)
Article C4 - Engineering Judging (200 Points)

C4.1 General Information

C4.1.1 Team Preparation

C4.1.1.1 CAD & Manufacturing Judging
A laptop with the CAD & CAM/CNC software used by the team and with all CAD part and assembly data must be taken to engineering judging. (Refer ARTICLE C2.10.8.1). Other items may also be taken to help the team explain any engineering or concepts. The engineering judges will not have access to the team trade display for judging purposes. Preparation should include careful reading of the score card. The key performance indicators describe what the judges will be looking for.

C4.1.1.2 Engineering Design Process Judging
- Teams should thoroughly document their Design Process in Section B of their Portfolio.

C4.1.2 Judging Process / Procedure

C4.1.2.1 CAD & Manufacturing Judging
CAD & Manufacturing will be judged via scheduled judging interview sessions that will focus on the Key Criteria. These are informal interviews where Judges will ask teams to demonstrate their CAD and CAM/CNC work and query them on what they have done. This will be supported by secondary evidence contained within a team's Portfolio. The assessment of the geometry and surface finish of the final product will be judged during a separate ‘closed to teams’ session.

C4.1.2.2 Engineering Design Process
Engineering Design Process will be judged from the information documented in the Section B of the team's Portfolio. Teams will be awarded points as per the key performance indicators shown on the Engineering Design Process score card. This MAY be supported by a verification interview of team members at the Trade Display allocated to the team. This is an informal interview where Judges will ask the team to clarify and/or verify the information presented in the Portfolio.

C4.2 Key Criteria

C4.2.1 CAD (65 points)
Refer to the Engineering/CAD judging score card for key performance indicator information.

C4.2.1.1 What Will Be Assessed?
The engineering judges will assess the team's use of CAD technologies, analysis, rendering, technical merit as well as comparing the CAD model with the finished product. Specific areas to be assessed are:
- Application of CAD
- CAD Organisation
- CAD Based Analysis
- Overall Design Technical Merit
- CAD Virtual Model
- Orthographic (Portfolio last page – separate A3 copy)
- Rendering (Portfolio front cover – separate A3 copy)

C4.2.2 Manufacturing (65 points)
Refer to the Engineering/Manufacturing judging score card for key performance indicator information.

C4.2.2.1 What Will Be Assessed?
The engineering judges will assess the team's use of CNC and other technologies when manufacturing their virtual environment and other components, the technical merit as well as comparing the geometry and surface finish quality of the final product. Specific areas to be assessed are:
- Application of CAM/CNC
- Proposed manufacturing process
- Tolerance / Quality Control
- Overall Manufacturing Technical Merit
- Quality of Finished Product - Geometry/Form
- Quality of Finished Product - Surface finish
C4.2.3  Design Process (70 points)
Refer to the Engineering/Design Process judging score card/s for key performance indicator information.

C4.2.3.1  What Will Be Assessed?
The engineering judges will assess the team’s Design Process which includes all stages from identifying the requirements of the brief through to the final design. Specific areas to be assessed are:

- Requirements Analysis
- Ideas
- Development
- Analysis
- Physical Testing
- Evaluation
- Overall Design Technical Merit
Article C5 - Portfolio Judging (110 Points)

C5.1 General Information
C5.1.1 Team Preparation
Each team MUST prepare a Portfolio as per ARTICLE C2.10.2. A team’s Portfolio tells the story of the team’s journey including the knowledge and skills they have acquired along the way. It is considered a professional business document so attention to detail is paramount. Most importantly, teams need to read the Portfolio judging score cards carefully to ensure that all areas to be assessed are included within the context of their Portfolio.

C5.1.2 Portfolio Structure
To streamline the judging of team Portfolios, teams MUST structure this as one document containing two distinct Sections with content as follows.
- **Section A**
  - Project Management
  - Marketing
- **Section B**
  - Engineering Design Process

Section A and B MUST be clearly identifiable, perhaps discreetly via a header or footer. The section identification method is at the discretion of the team, as is the number of pages allocated to each section. Portfolio Design elements will be assessed throughout the entire team Portfolio. For more information on the suggested page content of the Portfolio, refer to APPENDIX 1.

C5.1.3 Judging Process / Procedure
The Portfolio will be assessed initially behind closed doors and conducted before the commencement of scheduled judging sessions. For some key criterion, this will be supported by a verification interview of team members at the Trade Display or other area identified in pre-competition event documentation. Teams should have a copy of their Portfolio on their Trade Display at all times. Teams are required to submit several copies of their Portfolio for pre-assessment at Event Check-in. Failure to submit the required number and correct Portfolio size will result in penalties being applied.

C5.1.4 Portfolio Penalties
The Chair of Judges reserves the right to apply penalties for teams who:
- **DO NOT** submit the correct number of copies required for judging [10pt Penalty]
- **DO NOT** provide copies in the mandated A3 size [10pt Penalty]
- **DO NOT** structure their Portfolio as per C6.1.2 [10pt Penalty]

C5.2 Key Criteria

C5.2.1 Project Management (60 points)
Refer to the Portfolio/Project Management score card for detailed point scoring and key performance indicator information. There will be **NO** verification interview required for this key criteria.

C5.2.1.1 What will be Assessed?
Project Management MUST be contained within Section A of each team’s 20 page Portfolio in order to assess the following specific areas.
- Team Roles & Tasks
- Scope & Time Management
- Resource & Risk Management
- Internal Communication
- Stakeholder Engagement
- Evaluation

C5.2.2 Portfolio Design (50 points)
Refer to the Portfolio/Design score card for detailed point scoring and key performance indicator information.

C5.2.2.1 What Will Be Assessed?
Judges will review each team’s entire 20 page Portfolio in order to assess the following specific areas.
- Production Quality of Materials
- Production Quality of Content
- Content Organisation
- Layout Design
- Typography
- Photos & Images
- Creative Graphics (Visual effects and infographics)
- Writing & Editing
- Proofreading
- Readability

2017 Stage 3 Competition Regulations
Article C6 - Marketing Judging (80 Points)

C6.1 General Information

C6.1.1 Team Preparation
Each team MUST prepare a Portfolio as per ARTICLE C2.10.2 and a Trade Display as per ARTICLE C2.10.5. Some Branding elements MUST be contained within Section A of each team's 20 page Portfolio. Others will be assessed within a team's Trade Display. Read the Marketing Score Cards carefully to ensure that all areas to be assessed are included within the context of their Portfolio and Trade Display.

C6.1.2 Judging Process / Procedure
The branding and trade display criteria from the Marketing Score Card will be assessed primarily within the trade display with secondary evidence on logo development assessed from within Section A of a team’s Portfolio. The Judges will introduce themselves then ask questions to help them find certain content and/or seek further explanation. Teams SHOULD have a copy of their Portfolio on their Trade Display at all times. Teams may be asked to step away from the trade display so judges can gain first impressions and concur before asking them to return to their display.

C6.1.3 Shell Scheme Information
REA Foundation Ltd. will provide each team with a self-contained shell scheme exhibition style display space including 1 x power supply. At National Finals only, trade displays will also contain integrated lighting and fascias. Teams need to supply any power boards they may require which must have a valid electrical safety test tag. A trestle style table will also be supplied to teams. Use of this is optional. Teams must provide their own tablecloth.

C6.1.3.1 Nominal External Dimensions
Nominally 2000mm long x 1000mm wide x 2400mm high.

C6.1.3.2 Internal Dimensions
Internal dimensions vary depending on the type of shell scheme provided and the quality of build supplied. In addition, the dimensions can vary between end displays sharing one side wall and internal displays sharing two side walls.
As such REA Foundation Ltd. advise teams to build to maximum internal dimensions of 1940mm long x 960mm wide x 2360mm high.

C6.1.3.3 Trestle Tables
Approximately 1800mm long x 730mm high x 750mm wide.

C6.1.4 Set up
A time period will be scheduled for teams to set-up their trade displays, usually after event check-in and prior to the commencement of judging. Setup will be conducted simultaneously by all teams. A time limit of 2hrs maximum will be enforced to avoid penalties.

C6.1.5 Conditions
Teams must comply with the following conditions:

- Trade Displays MUST be fully fitted out for judging at the end of the 2hr setup whereupon photos will be taken.
- NO other items can be added to the display (excluding top-up marketing items) from this point forward and penalties will be applied for teams breaching this rule.
- REA Foundation Ltd. will instruct teams to remove or alter any display inclusions considered to be a safety hazard or inappropriate, including rubbish, bags etc. which are not part of the display.
- NO part of the team's completed trade display is allowed to protrude beyond the physical dimensions of their allocated space. This includes anything that might protrude above the display space highest point e.g. flags, banner, balloons. Teams will be required to remove items infringing this rule and penalties will apply.
- Teachers or adults are NOT permitted to assist teams with the set-up of Trade Displays. All displays must be designed so that adult assistance is not required for setting up. This includes power, lighting and height issues. Step or full sized ladders will not be provided, therefore teams need to factor this in to their set-up requirements if they cannot supply their own. All adults (excluding officials and judges) will be required to remain out of the venue where Trade Displays are located until the setup is complete.
- Teams MAY provide their own display internal walls and tables/cabinets so long as they strictly fit within the display system provided. No part of a team's substitute internal walling system can encroach beyond or above the walls of the display system provided by the competition organisers and systems must be designed so that NO part of the provided display system (including the fascia framework) requires dismantling.
- Teams MUST NOT play sounds or music at their Trade Display at a loud volume. Any sound or music played must be strictly relevant to the project such as commentary on a video produced by the team and not just for 'entertainment' value.
• Chairs are NOT permitted in or near the displays unless it is a stool specially designed for the display, and this MUST sit within the volume of the display’s external dimensions.
• Display space will be pre-allocated to teams by the event organisers. Teams MUST use the space allocated and displays cannot be repositioned by any team unless there is an obstruction to the display or an issue of WHS and this must first be approved by the Competition Director or Chair of Judges.
• Displays MUST be manned by at least one team member at all times excluding judging sessions. When a team is undertaking a judging session, the teacher or a supporting adult should supervise the display to ensure security. Note that competitions are generally open to the public.

C6.1.6 Trade Display Penalties
The Chair of Judges reserves the right to apply penalties for teams who:
• DO NOT complete their set-up within the 2hr time limit [10pt Penalty]
• DO NOT leave their stand in a safe state [10pt Penalty]
• DO NOT clear their pit and surrounding area of all rubbish [10pt Penalty]
• DO NOT contain their display within the booth volume [10pt Penalty]
• DO NOT comply with added content restrictions [10pt Penalty]

C6.2 Key Criteria

C6.2.1 Branding (40 points)
Refer to the Marketing/Branding score card for detailed point scoring and key performance indicator information.

C6.2.1.1 What Will Be Assessed?
The Marketing judges will assess a team’s branding primarily within their Trade Display. As a secondary source of evidence, the judges will also access a team’s Portfolio to assess logo development. Specific areas to be assessed are:
• Team Name
• Logo Ideas
• Logo Development
• Final Logo Design
• Logo Application
• Team Branding
• Branding Strength
• Team Uniform

C6.2.2 Trade Display (40 points)
Refer to the Marketing/Trade Display score card for detailed point scoring and key performance indicator information.

C6.2.2.1 What Will Be Assessed?
A trade display is to visually ‘sell’ the team’s most important key messages in snapshot form for assessment and event promotion. The Marketing judges will assess a team’s trade display content and structure. Specific areas to be assessed are:
• Team Presence
• Team Knowledge
• Virtual Environment Display
• Information Design
• Use of ICTs
• Structural Visual Design
• Structural Materials Design
• Sponsorship ROI

C6.2.2.2 Jetta Express Sponsorship
Jetta Express – an Australian excess baggage company – generously offer National Final teams FREE shipping of Trade Display assets from a team’s home state capital city to the event venue and return. Teams wishing to take advantage of this offer must adhere to strict guidelines including maximum weights and dimensions. When designing Trade Displays, teams SHOULD give thoughtful consideration to the construction material used which will impact portability and transportation costs.

A copy of these guidelines can be downloaded from the REA website at: http://rea.org.au/f1-in-schools/for-teams/competition-documents/
Article C7 - Verbal Presentation Judging (130 Points)

C7.1 General Information

C7.1.1 Who Needs to Attend?
All team members must be present at and contribute to the Verbal Presentation.

C7.1.2 Judging Process / Procedure
Verbal presentation judging is scheduled for the same duration as other judging sessions, usually 20 – 30 minutes. Teams will be given 5 minutes at the start of their time to set-up and test their laptop and any other presentation technologies and resources. The team will inform the judges when they are ready to begin. The judges start timing the 8-minute duration and will provide a discreet time warning signal when one minute of presentation time remains. The team will be asked to cease presenting when the time limit has been reached. At the conclusion of the team’s presentation time, the judges may choose to provide some feedback and / or ask any clarifying questions they feel necessary. However, assessment can ONLY be based on the team’s 8-minute presentation. Verbal presentations may be filmed for judge’s review or promotional and future resource purposes.

C7.1.3 Team Preparation
Each team is required to prepare a verbal presentation as per the requirements at ARTICLE C2.10.6. Any multimedia content, slides etc. MUST be saved on and shown using the team’s own laptop along with VGA and HDMI cables. Teams need to have all presentation resources tested and ready for verbal presentation judging. Most importantly, teams should read the verbal presentation judging score card carefully to ensure their presentation features all elements and content that the verbal presentation judges will be looking for.

C7.1.4 Verbal Presentation Judging Provisions.
REA Foundation Ltd. will provide a dedicated private space, such as a small meeting room, where each team will deliver their presentation to the judges. This space will include a data projector and screen or large TV monitor. Multimedia sound systems may not always be available and teams may have to bring their own portable speakers. If available these will be in fixed positions but usually with sufficient cable length to allow teams some freedom for choosing where they wish to locate their laptop. A single table will also be made available with its use and location in the presentation space being optional.

C7.1.5 Verbal Presentation Video Recordings
The verbal presentations of all teams may be video recorded by the REA Foundation Ltd. for the purpose of judging review and / or post event publicity and promotional purposes for SUBS in Schools.

C8.2 Key Criteria

C8.2.1 Technique (70 points)
Refer to the Verbal Presentation/Technique score card for detailed point scoring and key performance indicator information.

C7.2.1.1 What Will Be Assessed?
- Presentation Energy
- Team Contribution
- Visual Aids
- Audience Engagement
- Articulation
- Structure
- Use of Time

C7.2.2 Content (60 points)
Refer to the Verbal Presentation/Content score card for detailed point scoring and key performance indicator information.

C7.2.2.1 What Will Be Assessed?
- Team Objectives
- Description of the Product
- Innovation / Refinement
- Collaboration
- Learning Outcomes
- Overall Clarity
Article C8 - Virtual Environment Trial (200 Points)

C9.1 General Information

C9.1.1 Virtual Environment Trial Process
Teams will be scheduled a time slot in order to complete their Sea Trial. The Sea Trial is a timed race event in which teams will be required to perform certain tasks or manoeuvres with their water craft in order to score points.

C9.1.2 Who Needs to Attend?
All team members **MUST** be present at the Sea Trial event. A minimum of 3 team members must control the water craft through at least 1 gate (SUBS) or complete 1 criteria (ROV) during the event.

C9.2 Safety Checks
All virtual model aids must be checked for safety prior to display. If you produce a scale model it must also be approved for any safety concern prior to its use as part of the display. If the judges have any safety concerns teams must rectify the issue before they may display their items.

Unresolved safety concerns **WILL** prohibit virtual model from being used in the display and **WILL** result in zero points being awarded for the virtual environment trial.
Article C9 - Grievances

C9.1 Procedure

C9.1.1 Specifications Compliance Related
1. Following the Specifications Compliance judging and prior to the commencement of racing, teams found to have failed any critical regulations will be handed a form listing all infringements.
   • This form will NOT contain infringements of non-critical regulations.
   • It is the responsibility of team members to read, identify and respond to all of the infringements relating to failed critical regulations.
2. As per ARTICLE C4.1.4.2, teams will be given a special 20 minutes water craft servicing time to modify the water craft so as to comply with the failed regulation/s. Students will need to complete the form provided and hand it back to the supervising Scrutineer within the allocated 20 minutes.
3. Scrutineers will then recheck the water craft for compliance and advise team of outcome before or during their Specifications Compliance Feedback interview.
4. During the scheduled Specifications Compliance Feedback interviews, teams will be notified of ALL non-compliance issues for both critical and non-critical regulations as per ARTICLE C4.1.3.3.
5. Should a team be dissatisfied with the decision of the Lead Scrutineer, an appeal MAY be submitted in writing within two (2) hours of the conclusion of Specifications Compliance Feedback interviews using the official Grievance Form provided to teams in their Check-in pack. Refer ARTICLE C2.4.1.4. The grievance is to be handed to the Event Director, whereupon it will be registered and handed to the Chair of Judges.
6. The Chair of Judges will discuss the appeal with the scrutineers and may seek additional advice from REA Foundation Ltd. regulation authorities. The Chair of Judges will then meet with the team, to discuss the appeal and explain the final decision.

C9.1.2 Non Specifications Related
Submitted by the time and date stated in the event supplementary regulations using the form provided in the team check-in pack.

C9.2 Judge's Decision
The Chair of Judges decision related to any grievance is final and no further discussion will be entered into.
Article C10 - Judges

C10.1 Overview
There will be several teams of judges that form the entire judging panel. Judges are generally higher education and industry experts invited by REA Foundation Ltd. They are selected and appointed to teams based on their qualifications and experience.

All judges undertake a comprehensive briefing prior to the competition and are required to declare any conflicts of interest with respect to the teams they are judging. Where a conflict of interest may occur, the judge is required to step back from judging the relevant team/s.

Some judges may perform a dual role. For example, undertake the specifications compliance of water craft AND Engineering judging.

Each judging category will have one judge appointed as the Lead Judge.

C10.2 Chair of Judges
An independent authority appointed by REA Foundation Ltd. to oversee all judging procedures. The Chair of Judges will determine the final judging decision where a grievance has been submitted or other judging issue needs resolution. The Chair of Judges will also preside over a meeting of all Lead Judges to ratify the final results and work with the Competition Director to ensure all scores are entered correctly into a spread sheet to identify awards winners.

C10.3 The Judging Teams

C10.3.1 Specifications Judges
Will scrutinise each race water craft with respect to the Australian Technical Regulations.

C10.3.2 Engineering Judges
Will assess each team’s use of CAD/CAM, CNC technologies, quality of manufacture and the engineering design process.

C10.3.3 Portfolio Judges
Portfolio Judges will assess each team’s portfolio design and project management as per the Portfolio score card.

C10.3.4 Marketing Judges
Marketing Judges will assess each team’s branding and trade display as per the Marketing score card.

C10.3.5 Verbal Presentation Judges
Verbal presentation Judges will assess each team’s presentation technique and content as per the verbal presentation score card.

C10.3.6 Virtual Environment Judges
Will oversee and assess each teams virtual model as per the virtual model trial score card.

C10.3.7 Water Craft Servicing Judges
Water craft Servicing Judges will oversee all water craft service activities and rule on any infringements that may occur.

C10.4 Judging Decisions
THE DECISION OF THE JUDGES IS FINAL.
Article C11 - Awards

C11.1 Awards Celebration
At each State and National Final, an Awards Presentation is conducted, the timing of which is included in the Event Programme which is released closer to the event.
At some National Finals, the Awards Presentation is combined with a Gala Dinner Celebration.

C11.2 Participation Recognition
At State and National Finals, all students, supervising teachers and judges will receive official participation/recognition certificates. These will be provided in the team and judge information packs.

Students participating at a National Final MAY also receive participation medallions presented at the Awards Presentation ceremony.

C11.3 Prizes and Trophies

C11.3.1 State Finals
At State Finals, teams winning an award will be presented with an A4 certificate only.

C11.3.2 National Finals
At National Finals, winning teams will be presented with an A3 framed certificate as well as individual award medallions. Post event, all team members will be sent individual A4 certificates.

C11.4 List of Awards to be Presented

CHAMPIONS
Team with the highest scoring sum of all marking criteria

2ND PLACE
Team with the second highest scoring sum of all marking criteria

3RD PLACE
Team with the third highest scoring sum of all marking criteria (National Final only)

BEST VIRTUAL MODELLING AWARD
Team with highest combined score for:
Criteria 1: Engineering/Specifications
Criteria 2: Engineering/Computer Aided Design (CAD)
Criteria 3: Engineering/Manufacturing
Criteria 4: Engineering/Design Process

BEST ENGINEERING SPACE AWARD
Team with highest score for:
Criteria 2: Engineering/Computer Aided Design (CAD)

BEST MANUFACTURED VIRTUAL ENVIRONMENT AWARD
Team with highest score for:
Criteria 3: Engineering/Manufacturing

BEST TEAM PORTFOLIO AWARD
Team with highest combined score for:
Criteria 4: Engineering Design Process
Criteria 5: Portfolio/Project Management
Criteria 6: Portfolio/Portfolio Design

BEST GRAPHIC DESIGN AWARD
Team with highest combined score for:
Criteria 6: Portfolio/Portfolio Design
Criteria 7: Marketing/Branding
Criteria 8.3, 8.4, 8.5 & 8.6: Marketing/Trade Display

BEST TEAM MARKETING AWARD
Team with highest combined score for:
Criteria 7: Marketing/Branding
Criteria 8: Marketing/Trade Display
Criteria 5.5: Portfolio/Portfolio Management

BEST TEAM VERBAL PRESENTATION
Team with highest combined score for:
Criteria 9: Verbal Presentation/Presentation Technique
Criteria 10: Verbal Presentation/Content

OUTSTANDING INDUSTRY COLLABORATION AWARD
Team with highest score for:
Criteria 10.4: Verbal Presentation/Content

INNOVATION AWARD
Team with highest score for:
Criteria 10.3: Verbal Presentation/Content

ENCOURAGEMENT AWARD
Discretion of the Chair of Judges
## Article C14 - Appendices

### C14.1 Portfolio Page Content Plan

<table>
<thead>
<tr>
<th>Section A</th>
<th>Project Management</th>
<th>Marketing &amp; Skill Development</th>
<th>Engineering Design Process &amp; Engineering Drawings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cover* Rendering (B)</td>
<td>Team Mgt: Roles, Responsibilities, Interaction</td>
<td>Virtual Environment Design Reqs &amp; Research***</td>
</tr>
<tr>
<td></td>
<td>Name &amp; Logo (A)</td>
<td>Project Scope &amp; Time Management Tools / Methods</td>
<td>Virtual Environment Design Ideas***</td>
</tr>
<tr>
<td></td>
<td>*** Team Finances / Risk Management Tools / Methods</td>
<td>Communication Tools / Methods</td>
<td>Virtual Environment Design Development***</td>
</tr>
<tr>
<td></td>
<td>***</td>
<td>***</td>
<td>Virtual Environment Design Analysis***</td>
</tr>
<tr>
<td></td>
<td>***</td>
<td>***</td>
<td>Virtual Environment Manufacturing***</td>
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<tr>
<td></td>
<td>***</td>
<td>***</td>
<td>Virtual Environment Physical Testing***</td>
</tr>
<tr>
<td></td>
<td>***</td>
<td>***</td>
<td>Water Craft Process Evaluation***</td>
</tr>
<tr>
<td></td>
<td>***</td>
<td>***</td>
<td>Orthogonal Drawing**</td>
</tr>
</tbody>
</table>

| Pink     | Portfolio content assessed in Portfolio criteria |
| Blue     | Portfolio content assessed in Booth criteria    |
| Red      | Portfolio content assessed in Engineering criteria |
| White    | Assessed in Marketing criteria                  |
| Green    | Aspects not assessed in portfolio, but this content documents the project breadth, and may be used as evidence to support other awards such as the Innovation Award (State/ National) Collaboration Award (State/ National) and potentially others. |

This page content plan is a guide. Students are to prioritise and organise their content to best reflect and communicate their unique message, ensuring it is complete and meets all criteria.

*Components of the Cover are critical to both A and B sections.
### C14.6 Criteria 2 - Engineering: Computer Aided Design Score Card

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Low</th>
<th>Developing</th>
<th>Advanced</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Application of CAD</td>
<td>Basic understanding and application of CAD</td>
<td>Good understanding and application of CAD</td>
<td>Advanced understanding and application of CAD throughout.</td>
</tr>
<tr>
<td>2.2</td>
<td>CAD Organisation</td>
<td>Generally disorganised</td>
<td>Satisfactory organisation of data and models</td>
<td>Data &amp; parts highly ordered &amp; linked. Full CAD product assembly</td>
</tr>
<tr>
<td>2.3</td>
<td>CAD Based Analysis</td>
<td>Minimal analysis shown</td>
<td>Good analysis. Results applied to development</td>
<td>Variety of advanced and relevant analysis techniques conducted</td>
</tr>
<tr>
<td>2.4</td>
<td>Overall CAD Technical Merit</td>
<td>Basic CAD design with little technical merit</td>
<td>Developed CAD design with some technical merit</td>
<td>Original &amp; clever developed CAD design with excellent technical merit</td>
</tr>
<tr>
<td>2.5</td>
<td>CAD Model vs Finished Product</td>
<td>Basic Similarity</td>
<td>Good Similarity</td>
<td>Excellent Similarity</td>
</tr>
<tr>
<td>2.6</td>
<td>Orthographic (in portfolio - last page)</td>
<td>Basic drawing</td>
<td>Good technical drawing</td>
<td>High detail &amp; includes spec dimensions.</td>
</tr>
<tr>
<td>2.7</td>
<td>Rendering (on portfolio cover)</td>
<td>Basic rendering on cover</td>
<td>Realistic rendering on cover</td>
<td>Photorealistic render on cover</td>
</tr>
</tbody>
</table>

**GRAND TOTAL** /65
### Article C14.8  Criteria 4 – Engineering: Design Process Score Card

<table>
<thead>
<tr>
<th>Judging Sub Category</th>
<th>Engineering Design Process</th>
<th>Team ID</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Evidence</strong></td>
<td><strong>Team Portfolio: Section B</strong></td>
<td><strong>Team Name</strong></td>
<td><strong>[Team Name]</strong></td>
</tr>
<tr>
<td><strong>Secondary Evidence</strong></td>
<td><strong>Team Interview</strong></td>
<td><strong>School</strong></td>
<td><strong>[School Name]</strong></td>
</tr>
<tr>
<td><strong>Criteria</strong></td>
<td><strong>4</strong></td>
<td><strong>Competition Class</strong></td>
<td><strong>[Competition Class]</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Low</th>
<th>Developing</th>
<th>Advanced</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1 Requirements Analysis</td>
<td>Limited development of objectives</td>
<td>Good development of objectives</td>
<td>Excellent statement of objectives supported by research</td>
<td>/10</td>
</tr>
<tr>
<td>4.2 Ideas</td>
<td>Single or basic concepts</td>
<td>Multiple concepts with links to research</td>
<td>Several technically inspired ideas for different features/functions</td>
<td>/10</td>
</tr>
<tr>
<td>4.3 Development</td>
<td>Limited development shown</td>
<td>Logical design developments explained</td>
<td>Clearly justified developments based around research and testing</td>
<td>/10</td>
</tr>
<tr>
<td>4.4 Analysis</td>
<td>Little evidence of analysis</td>
<td>Analysis which is relevant and results documented</td>
<td>Quality analysis methodologies. Accurate results and data linked to design revisions. Advanced use of design tools.</td>
<td>/10</td>
</tr>
<tr>
<td>4.5 Evaluation</td>
<td>No or limited evaluation</td>
<td>Evaluations at different stages</td>
<td>Excellent ongoing evaluations linked to improvement actions</td>
<td>/10</td>
</tr>
<tr>
<td>4.6 Overall Design Technical Merit</td>
<td>Basic design process with little technical merit</td>
<td>Developed design process with some technical merit</td>
<td>Original &amp; clever developed design process with excellent technical merit</td>
<td>/10</td>
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**Grand Total** /60
### Criteria 5 - Portfolio: Project Management Score Card

<table>
<thead>
<tr>
<th>Judging Sub Category</th>
<th>Team &amp; Project Management</th>
<th>Team ID</th>
<th>Primary Evidence</th>
<th>Team Portfolio: Section A</th>
<th>Team Name</th>
<th>Secondary Evidence</th>
<th>School</th>
<th>Criteria</th>
<th>Competition Class</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>0 1 2</td>
<td>3 4 5 6</td>
<td>7 8 9 10</td>
</tr>
</tbody>
</table>

#### 5.1 Team Roles & Tasks
- Limited understanding of roles and responsibilities:
- Team roles and responsibilities identified:

#### 5.2 Scope & Time Management
- Limited understanding of scope or evidence of time management:
- Some planning used to guide progress of project goals and stay on task:

#### 5.3 Resource & Risk Management
- Limited budgeting or risk awareness:
- Some resources identified, budgeting and contingency plans:

#### 5.4 Internal Communication
- Limited team communication:
- Basic team communication processes discussed:

#### 5.5 Stakeholder Engagement
- Limited stakeholder engagement:
- Basic understanding and application of stakeholder engagement:

#### 5.6 Evaluation
- Limited evaluation:
- Some evaluation applied:

**Grand Total /60**
### Criteria 6 - Portfolio: Portfolio Design – Clarity and Quality Score Card

<table>
<thead>
<tr>
<th>Judging Sub Category</th>
<th>Clarity &amp; Quality</th>
<th>TEAM ID</th>
<th>Primary Evidence</th>
<th>TEAM PORTFOLIO: Section A &amp; B</th>
<th>TEAM NAME</th>
<th>Secondary Evidence</th>
<th>SCHOOL</th>
<th>Criteria</th>
<th>Competition Class</th>
<th>TEAM_CLASS</th>
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<td>CLARITY &amp; QUALITY</td>
<td>TEAM ID</td>
<td>PRIMARY EVIDENCE</td>
<td>TEAM PORTFOLIO: Section A &amp; B</td>
<td>TEAM NAME</td>
<td>SECONDARY EVIDENCE</td>
<td>SCHOOL</td>
<td>CRITERIA</td>
<td>COMPETITION CLASS</td>
<td>TEAM_CLASS</td>
</tr>
<tr>
<td>Article C14</td>
<td>Appendix</td>
<td>Appendix</td>
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<th>Advanced</th>
<th>Score</th>
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</thead>
<tbody>
<tr>
<td>Production Quality of Materials</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Poor quality</td>
<td></td>
<td>Basic printing and binding.</td>
<td>Quality printed document on quality paper in appropriately durable binding</td>
<td></td>
</tr>
<tr>
<td>Production Quality of Content</td>
<td></td>
<td>Missing documentation</td>
<td>Basic documentation provided</td>
<td>Correct number of pages. All required documentation included and professionally presented. Sub rendering and team logo on cover page in keeping with branding.</td>
</tr>
<tr>
<td>Content Organisation</td>
<td></td>
<td>Disorganised content</td>
<td>Some content organisation</td>
<td>Highly organised and managed portfolio content with logical structure and flow of information.</td>
</tr>
<tr>
<td>Layout Design</td>
<td></td>
<td>Distracting imperfections weaken the work</td>
<td>Some layout design format attempted</td>
<td>Well formatted layout design consistently applying margins, alignment, spacing, graphics and design elements with consideration of visual balance and flow. All pages optimally used and uncluttered. Creative style realised.</td>
</tr>
<tr>
<td>Typography</td>
<td></td>
<td>Font choices are distracting or weaken the work</td>
<td>Some consideration for type treatment.</td>
<td>Consistent use of typography with appropriate choices and limited number of text and headline font sizes, styles, colours and hierarchy. In keeping with branding. Easy to read.</td>
</tr>
<tr>
<td>Photos &amp; Images</td>
<td></td>
<td>Poor quality or use of images. No captioning.</td>
<td>Basic quality and use of images. Some reasonably concise captioning.</td>
<td>Justified use of excellent, un-pixelated, clear, undistorted photos and images that are concisely and accurately captioned. Properly sized, coloured and integrated with text to illustrate key messages. Considers branding.</td>
</tr>
<tr>
<td>Creative Graphics (Visual effects and infographics)</td>
<td></td>
<td>Poor graphics and/or execution. No captioning.</td>
<td>Graphics attempted with some success. Some reasonably concise captioning.</td>
<td>Justified, well executed and placed, un-pixelated, undistorted graphics that are concisely and accurately captioned. Consistent use of colour, tones, shapes, without visual overload, in keeping with branding.</td>
</tr>
<tr>
<td>Editing/Proofreading</td>
<td></td>
<td>Error ridden. Poor attempt at proofreading.</td>
<td>Good attempt with additional editing required for clarity.</td>
<td>No errors detected in text and graphics</td>
</tr>
<tr>
<td>Referencing/Plagiarism</td>
<td></td>
<td>Obvious failures in referencing.</td>
<td>Some attempt at referencing. Some errors evident.</td>
<td>No detected plagiarism with excellent use of referencing for author’s written work, graphics/photos and video sources etc.</td>
</tr>
<tr>
<td>Writing &amp; Readability</td>
<td></td>
<td>Difficult to understand. Unable to read.</td>
<td>Does not sustain reading or interest. Does not ‘flow’.</td>
<td>Concise, appropriate, grammatically correct text, captions, and headlines. Inviting and engaging. Sustains the reader’s interest.</td>
</tr>
</tbody>
</table>

**GRAND TOTAL /50**
### Criteria 7 – Marketing: Branding Score Card

<table>
<thead>
<tr>
<th>JUDGING SUB CATEGORY</th>
<th>BRANDING</th>
<th>TEAM ID</th>
<th>[TEAM ID]</th>
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</thead>
<tbody>
<tr>
<td>PRIMARY EVIDENCE</td>
<td>TEAM INTERVIEW AT TRADE DISPLAY</td>
<td>TEAM NAME</td>
<td>[TEAM NAME]</td>
</tr>
<tr>
<td>SECONDARY EVIDENCE</td>
<td>TEAM PORTFOLIO: <strong>SECTION A</strong></td>
<td>SCHOOL</td>
<td>[SCHOOL NAME]</td>
</tr>
<tr>
<td>CRITERIA</td>
<td>7</td>
<td>COMPETITION CLASS</td>
<td>[COMPETITION CLASS]</td>
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<table>
<thead>
<tr>
<th>Criteria</th>
<th>Low</th>
<th>Developing</th>
<th>Advanced</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1 Team Name</td>
<td>Irrelevant choice</td>
<td>Limited consideration of meaning</td>
<td>Well considered, meaningful team name appropriate to goals and image projection</td>
<td>/5</td>
</tr>
<tr>
<td>7.2 Logo Development</td>
<td>Limited ideas &amp; development. No original work evident.</td>
<td>Some logo idea progression &amp; creative logo modification of type or graphics noted.</td>
<td>A number of logo ideas considered with attention to team goals and identity. Creative &amp; original logo development clearly relates to the team's chosen name, identity and purpose.</td>
<td>/5</td>
</tr>
<tr>
<td>7.3 Final Logo Design</td>
<td>Team logo is absent or confusing.</td>
<td>Logo message is simple and obvious.</td>
<td>Strong team logo that grabs attention, generates a positive response, and is easily recognised and recalled. Well considered use of colours, type and shapes enhance meaning. In keeping with branding.</td>
<td>/5</td>
</tr>
<tr>
<td>7.4 Logo Application</td>
<td>Poor quality reproduction. Limited team logo badging.</td>
<td>Most team are badged with team logo. Team logo quality diminished when enlarged or reduced across applications.</td>
<td>Team logo scales well to large and small badging applications. All applications are of high quality and appropriately positioned for strong impact.</td>
<td>/5</td>
</tr>
<tr>
<td>7.5 Team Branding</td>
<td>Branding message is weak with inconsistent application across the project.</td>
<td>Effective team branding consistently applied across project components.</td>
<td>Excellent and highly effective messaging of team image. Quality and consistent branding of team name, logo, typography, &amp; colours applied across all project elements: portfolio, uniforms, car display, social media and collateral. Icon, tagline or mascot added to strengthen branding.</td>
<td>/10</td>
</tr>
<tr>
<td>7.6 Media Exposure</td>
<td>Limited or ineffective.</td>
<td>Some development, some impact, some consideration of audience and platforms.</td>
<td>Clear, developed, high impact media strategy, including social media. Careful consideration of target audience and suitable platforms. Evidence of attempt to work with media broadcasters/publishers with some documented success.</td>
<td>/5</td>
</tr>
<tr>
<td>7.7 Sponsorship ROI</td>
<td>Little or no ROI.</td>
<td>Sponsorship acknowledged.</td>
<td>Clear and appropriate visibility of sponsors. Quality reproduction of appropriate sponsorship logos across all project collateral.</td>
<td>/5</td>
</tr>
<tr>
<td>7.8 Team Uniform</td>
<td>Ineffective or inconsistent, same or similar to supporters.</td>
<td>Basic and consistent across the team, distinct from supporters.</td>
<td>Creative and considered use of branding and appropriate styling for all members. Team member names and roles clearly identified. Clearly distinct from supporters.</td>
<td>/5</td>
</tr>
<tr>
<td>7.9 Team Presence</td>
<td>Not all present / Poor energy.</td>
<td>Generally enthusiastic.</td>
<td>All team members are appropriately engaging and enthusiastic about their work.</td>
<td>/5</td>
</tr>
<tr>
<td>7.10 Team Knowledge</td>
<td>Limited engagement.</td>
<td>Some members knowledgeable.</td>
<td>Each member is highly knowledgeable in their role and also broadly knowledgeable about details of their entry. Able to defer to others with confidence and share project ownership.</td>
<td>/5</td>
</tr>
</tbody>
</table>

**GRAND TOTAL /55**
### Article C14  |  Appendix

**C14.13 Criteria 8 – Marketing: Trade Display Score Card**

<table>
<thead>
<tr>
<th>Judging Sub Category</th>
<th>Trade Display</th>
<th>Team ID</th>
<th>Primary Evidence</th>
<th>Trade Display</th>
<th>Team Name</th>
<th>Secondary Evidence</th>
<th>School</th>
<th>Criteria</th>
<th>Competition Class</th>
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<table>
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<th>Developing</th>
<th>Advanced</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1 Product Display</td>
<td>0/1</td>
<td>2/3</td>
<td>4/5</td>
<td>/5</td>
</tr>
<tr>
<td>Little consideration given to presentation of the design</td>
<td>Some attempt to display the design as a key feature</td>
<td>Excellent display materials and methods used to effectively display the design and its key components</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.2 Information Design</td>
<td>Limited or repeat of folio</td>
<td>Project message is expanded beyond folio</td>
<td>Clean, well-organized layout of written and visual information with sharp professional appeal. Conclusive snapshot of team’s key messages. Uncluttered, engaging, and easy to read. Consistent branding style</td>
<td></td>
</tr>
<tr>
<td>8.3 Use of ICTs</td>
<td>Limited ICTs</td>
<td>ICTs used to enhance presentation</td>
<td>Excellent integration of appropriate technology and ICTs to engage and inform</td>
<td></td>
</tr>
<tr>
<td>8.4 Structural Visual Design</td>
<td>Limited or irrelevant</td>
<td>Some relevant creative messaging evident with consideration for some factors</td>
<td>Creative and justifed structural design with excellent use of space for primary display components and team message. Evidence of development considering factors, e.g., branding, materials, budget, sustainability, transport and assembly constraints</td>
<td></td>
</tr>
<tr>
<td>8.5 Structural Materials Design</td>
<td>Choice of materials problematic/limited/irrelevant to branding</td>
<td>Generally effective and relevant choice of materials considering some factors</td>
<td>Highly effective choice of materials. Evidence of development considering factors, e.g., branding, materials, budget, sustainability, transport and assembly constraints</td>
<td></td>
</tr>
</tbody>
</table>

**Trade Booth Penalties:** 10-point penalty each

- DO NOT complete their set-up within the 2hr time limit
- DO NOT leave their stand in a safe state
- DO NOT clear their pit and surrounding area of all rubbish

**Trade Booth SUB TOTAL** 25/25

**GRAND TOTAL** (with penalties deducted) 25/25
### Criteria 9 – Verbal Presentation: Presentation Technique Score Card

<table>
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<th>Judging Sub Category</th>
<th>Presentation Technique</th>
<th>Team ID</th>
<th>Article C14</th>
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<td>Primary Evidence</td>
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<tbody>
<tr>
<td>9.1 Presentation energy</td>
<td>0 1 2</td>
<td>3 4 5 6</td>
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<td>9.2 Team Contribution</td>
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<tr>
<td>9.3 Visual Aids</td>
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<tr>
<td>9.4 Audience Engagement</td>
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<td>9.5 Articulation</td>
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<td>9.6 Structure</td>
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<td>9.7 Use of Time</td>
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<td><strong>GRAND TOTAL</strong></td>
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### Article C14 | Appendix

**C14.15** Criteria 10 – Verbal Presentation: Team Presentation Score Card

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<th>COMPETITION CLASS</th>
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<td>«TEAM_NAME»</td>
<td></td>
<td>«SCHOOL_ORGANISATION_NAME»</td>
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<tr>
<td></td>
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<td>2 3</td>
<td>4 5</td>
<td>/5</td>
</tr>
<tr>
<td></td>
<td>0 1 2</td>
<td>3 4 5 6</td>
<td>7 8 9 10</td>
<td>/10</td>
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<td>0 1 2 3 4 5</td>
<td>6 7 8 9 10 11 12</td>
<td>13 14 15 16 17 18 19 20</td>
<td>/20</td>
</tr>
</tbody>
</table>

| 10.1 | Team objectives | Limited statement of objectives | Good statement of objectives | Excellent statement of objectives supported by sound reasoning | /5 |
| 10.2 | Description of Product | Basic description of design only | Good description of design, components and features | Excellent description of design, components and features including design decisions. | /5 |
| 10.3 | Innovation | Little innovation presented | Innovations described and justified | Originality. Clever innovations with high positive project impact | /20 |
| 10.4 | Refinement | Little refinement presented | Refinement described and justified | Clever refinement with high positive project impact | /20 |
| 10.5 | Collaboration | Little collaboration discussed | Links with industry or higher education described | Collaborations justified with links to learning and project outcomes | /20 |
| 10.6 | Learning outcomes | No real reflections discussed | Good explanation of some learning outcomes | A range of personal, life-long learning and career skills acquired and identified as project outcomes for a range of team members | /20 |
| 10.7 | Overall clarity | Several concepts lacked clarification | Clear and appropriate concept explanations | Everything presented was understood through excellent explanations | /10 |

**GRAND TOTAL** /100
### Article C14.17 Criteria 11 – Virtual Model Trial: Level 3 Score Card

<table>
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<th>Judging SUB Category</th>
<th>Presentation Technique</th>
<th>TEAM ID</th>
<th>Primary Evidence</th>
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<th>Secondary Evidence</th>
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<th>Advanced</th>
<th>Score</th>
</tr>
</thead>
<tbody>
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<td>Execution / Delivery</td>
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</tr>
<tr>
<td>Functionality</td>
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<td>Visual Realism</td>
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<tr>
<td>Human Ergonomics</td>
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<td></td>
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</tr>
<tr>
<td>Space Optimisation</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Spatial Flow</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

TOTAL

- **Execution / Delivery**: Highly resolved and considered methodology of display
- **Interactivity**: High level of interactivity and ability to assess elements functionality
- **Functionality**: Ability to test features/design elements and practicality
- **Visual Realism**: High level of visual accuracy and surface details of a realistic environment
- **Human Ergonomics**: Thorough understanding of human ergonomics and environmental/functionality considerations
- **Space Optimisation**: Well considered layout and design for spatial optimisation
- **Spatial Flow**: Well considered flow and movement of occupants around space.