Brief 01 — Intelligent Seating Systems

Body Interiors Track — Innovation Challenge for Hypercars & Ultra-Luxury Vehicles

Document: Body Interiors Track — Brief 01: Intelligent Seating Systems

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1. Relationship with the Rules

This document is **Brief 01 of the Body Interiors Track** of the Rimac Innovation Challenge at FSAA 2026. It is issued under, and forms an integral part of, the **Rimac Innovation Challenge — Official Rules and Framework (FSAA), v1.4** (the "Rules"), in accordance with Clauses 2.3 and 4.2 of the Rules.

Capitalised terms used and not defined in this document have the meaning given to them in Clause 1 of the Rules. In case of any inconsistency between this document and the Rules, the Rules prevail, except where this document expressly addresses a Brief-specific point that the Rules leave to the Topic Documents.

2. Brief Overview

Seating systems in hypercars and ultra-luxury vehicles must simultaneously deliver extreme performance support, long-distance comfort, safety integration, and premium craftsmanship. Future seating systems are expected to evolve into intelligent mechatronic platforms capable of adapting dynamically to occupant behaviour, driving conditions, and wellness requirements.

This Brief focuses on redefining seating systems through advanced mechatronics, adaptive comfort technologies, and integrated sensory experiences, with seats treated as both a high-performance occupant restraint device and a refined luxury interaction surface.

3. Challenge Objective

The objective of this Brief is to propose innovative **intelligent seating concepts** that enhance occupant support, comfort, wellness, and engagement within high-performance and ultra-luxury vehicle environments, supported by a credible engineering rationale and a pragmatic cost–benefit view per Clause 5.3(e) of the Rules.

Final concepts should balance performance functionality with an exceptional luxury experience.

4. Suggested Areas of Innovation

Teams are encouraged — but not required — to address one or more of the following areas. The list is indicative, not prescriptive; Teams are free to propose alternative or adjacent ideas within the Brief scope:

- Active bolstering systems

- Adaptive posture and ergonomic adjustment
- Integrated thermal management
- Biometric and wellness monitoring
- Dynamic vibration and haptic feedback systems
- Lightweight seat structures
- Smart material integration
- Personalised comfort profiles
- Multi-mode seating behaviour for road and track driving

5. Brief Scope

5.1 In Scope

- Seat structure and kinematic systems.
- Adaptive support mechanisms (bolsters, lumbar, headrest, thigh support).
- Embedded sensors and actuators within the seat envelope.
- Thermal comfort technologies (heating, ventilation, active cooling).
- Wellness and biometric integration.
- Smart upholstery and material innovation.
- Human factors and ergonomics for high-performance and long-distance use.
- Lightweight construction strategies.
- Occupant interaction systems integrated in the seat surface.

5.2 Out of Scope

- Airbag system engineering and pyrotechnic restraint development.
- Full cabin packaging design beyond the seat envelope.
- Autonomous-driving seating regulations and rotating-seat concepts dedicated to autonomous use cases.
- Exterior body integration.

6. Submission Requirements

Submissions for this Brief must comply with the general submission requirements in **Clause 5 of the Rules**. In particular, the Technical Paper must be strictly less than ten (10) pages (i.e. maximum 9 pages) and address, at a minimum, the elements listed in Clause 5.3 of the Rules.

In addition, and specifically for this Brief, the Technical Paper is expected to address:

- The occupant use-cases and driving scenarios the proposed system targets (e.g., track session, long-distance touring, urban use).
- Integration constraints with the seat envelope, including mass, packaging, sliding and reclining kinematics, harness compatibility and mounting interfaces.
- Functional safety and homologation aspects relevant to the proposed functions (e.g., airbag interaction, occupant detection, behaviour during crash events, fail-safe defaults).

- Power and energy budget of any active sub-systems, including thermal-management consumption.
- Material, finish and craftsmanship considerations consistent with the hypercar / ultra-luxury context, including durability of smart materials over the expected vehicle life.
- A clear identification of which areas of the proposal are novel versus state of the art.

Submission File Naming

Submissions for this Track shall use the following file-naming convention, adapted from typical Formula Student document-naming practice. A consistent file name allows the Organiser to track Submissions reliably across both Tracks and avoids ambiguity in the judging stage:

`RIC2026_BI_<FSAA-TeamNumber>_<UniversityCode>_<TeamName>.pdf`

Where:

1. **`RIC2026`** – fixed prefix identifying the Rimac Innovation Challenge 2026.
2. **`BI`** – fixed track code for this Topic Document (Body Interiors).
3. **`<FSAA-TeamNumber>`** – the official three-digit team number assigned by FSAA (e.g., 023).
4. **`<UniversityCode>`** – short university acronym used by the Team (e.g., TUM, ETH, UNIZG, FER, UNILJ, POLITO).
5. **`<TeamName>`** – short team name without spaces; use dashes or CamelCase if needed (e.g., FSB-Racing, TUfast, AMZ).

Examples:

6. `RIC2026_BI_023_TUM_TUfast.pdf`
7. `RIC2026_BI_007_UNIZG_FSB-Racing.pdf`
8. `RIC2026_BI_018_POLITO_SCR.pdf`

Teams submitting to both Tracks shall use one separately named file per Track, each carrying the appropriate track code. File names are case-sensitive; please use exactly the casing shown above. Submissions whose file names do not follow this convention may be renamed by the Organiser at intake but will not be rejected on this basis alone.

7. Evaluation Focus

All Submissions are evaluated against the indicative judging criteria in Clause 6.4 of the Rules. For this Brief, particular attention is given to:

- Credibility of the engineering integration within a real seat envelope, not only the headline concept.
- Quality of the occupant-experience reasoning – why the proposed solution improves comfort, performance support, or wellness.
- Balance between performance-driven and luxury-driven requirements, which are often in tension.
- Honest treatment of crash safety, homologation and manufacturability constraints.

8. Live Presentation

Shortlisted Teams for this Brief present live at the Event per **Clause 7 of the Rules** (20 minutes per Team, up to 4 Presenters per Team). Teams are encouraged to bring physical mock-ups, material samples, sensor demonstrators or interactive seat-zone prototypes where useful, subject to venue and safety constraints.

9. Contact and Clarifications

Questions regarding this Brief should be addressed to the Organiser through the contact channel notified to registered Teams. The Organiser may, at its discretion, issue written clarifications applicable to all Teams in this Brief.