



## **INVITATION TO TENDER FOR SOLE SUPPLY CONTRACT**

### **TENDER SUMMARY AND ADDITIONAL TENDER REQUIREMENTS**

The FIA's objective is to select an exclusive supplier of a standard Electronic Control System allowing the FIA to check the performance of the engine of the car and the respect by the drivers of the applicable regulations.

The task of the selected tenderer will be to ensure the production and delivery of the Electronic Control Systems used by the FIA to the competitors in the 2019, 2020, 2021, 2022 and 2023 FIA Championships ("Championships").

Interested parties are hereby invited to tender to become the exclusive supplier of the standard Electronic Control System used by the FIA from 2019 to 2023.

The selected tenderer will be invited to enter into a contract with the FIA that will establish the terms of the tenderer's appointment as exclusive supplier. The exclusive supplier will supply the products directly to the teams (not to the FIA) under terms and conditions to be agreed.

Bids must be submitted in accordance with the FIA's "Invitation to Tender for sole supply contract - tendering instructions" available on the FIA's website: [www.fia.com](http://www.fia.com), apart from article 1.1.8 and article 3 which will not apply to the present invitation to tender.

All information, instructions, plans, drawings, specifications, documents, materials and other items made available to tenderers within the framework of this Invitation to Tender by or on behalf of the FIA shall remain the property of the FIA. Tenderers shall immediately return all or any of the same or destroy the same within 1 week of the award to the Tender (except in the case of the successful Tenderer).

All Intellectual Property reflected or subsisting in the information, instructions, plans, drawings, specifications, documents, materials and other items made available to the tenderers within the framework of this Invitation to Tender by or on behalf of the FIA belong to the FIA or third parties as the case may be.

Bids and all accompanying documents, plans, drawing, materials or other items that are submitted by tenderers in response to this Invitation to Tender shall become the property of the FIA. However, Intellectual Property reflected or subsisting in the same shall remain vested with the tenderer or other third parties as the case may be.

**Bids must be sent to the FIA Administration by e-mail to the following addresses: [shilweg@fia.com](mailto:shilweg@fia.com) and [iaroutcheff@fia.com](mailto:iaroutcheff@fia.com). Bids which do not comply with these sending conditions will not be taken into consideration.**

The FIA reserves the right to make amendments to this invitation to tender at any time and to issue a new invitation to tender.

Publication of invitation to tender:	18 April 2018
<b>Tender submission date:</b>	<b>25 May 2018</b>
Notification of decision as to selection of tenderer:	29 June 2018

**ADDITIONAL REQUIREMENTS:**

In their bid, the tenderers shall notify the FIA of:

1. any invention or design subject of patent or registered design rights (or application thereof) of which the tenderer is aware which is owned by a third party, and which appears to be relevant to the performance of any resultant contract or to subsequent use by the FIA of anything required to be done or delivered under any resultant contract;
2. any arrangements or licence agreements as to intellectual property rights the tenderer may have entered into in order to submit the bid;
3. whether they are subject to any restriction (including any export requirement or restriction) as to disclosure or use or obligation to make payments in respect of any other intellectual property (including technical information) required for the purpose of any resultant contract or subsequent use by the FIA of anything required to be done or delivered under any resultant contract;
4. any patent or registered design, (or application thereof) owned or controlled by the tenderer which appears to be relevant to the performance of any resultant contract or to subsequent use by the FIA of anything required to be done or delivered under any resultant contract;
5. any allegation of infringement of intellectual property rights made against the tenderer which pertains to the performance of any resultant contract or subsequent use by the tenderer of anything required to be done or delivered under any resultant contract.

CONTRACT FOR SUPPLYING ELECTRONIC CONTROL SYSTEMS  
WITHIN THE FRAMEWORK OF FIA CHAMPIONSHIPS IN 2019, 2020, 2021, 2022 AND 2023

**BETWEEN**

**The FEDERATION INTERNATIONALE DE L'AUTOMOBILE (FIA)**

8 Place de la Concorde  
75008 Paris  
FRANCE

hereinafter referred to as the "**FIA**"

ON THE ONE HAND,

**AND**

[•]

hereinafter referred to as the "**PROVIDER** "

ON THE OTHER HAND.

## **PART 1 - GENERAL CONDITIONS**

### **RECITALS**

- (A) The FIA's authority in relation to international motor sport has been recognised since 1904 when national automobile clubs came together to establish the FIA to provide, amongst other things, an international forum to regulate motor sport internationally.
- (B) The FIA is the sole body governing international motor sport and is recognised by its members as the sole authority having the sporting power with the right to organise international FIA championships, including the CHAMPIONSHIPS.
- (C) The FIA has an absolute obligation conferred on it by its members to safeguard its authority over all safety, sporting, technical and disciplinary matters relating to the CHAMPIONSHIPS, as well as traditional values.
- (D) The FIA will continue the publication annually of the GOVERNING RULES.
- (E) The FIA has determined that the interests of the CHAMPIONSHIP require that a single supplier of the PRODUCT should be appointed for a limited term.
- (F) It is intended that the FIA and the PROVIDER will enter into this CONTRACT pursuant to which the PROVIDER will be appointed as the sole supplier of PRODUCT to the CHAMPIONSHIPS for the term set out herein.

### **1. APPOINTMENT AND SUPPLY**

- 1.1 The FIA hereby appoints the PROVIDER to be the exclusive supplier of the PRODUCT to the COMPETITORS for the CHAMPIONSHIP and the PROVIDER hereby accepts this appointment and agrees to supply the PRODUCT to the COMPETITORS for the CHAMPIONSHIP in accordance with the terms of this CONTRACT and the terms of the SUPPLY AGREEMENTS.
- 1.2 Following from its appointment, the PROVIDER shall enter into a SUPPLY AGREEMENT with each COMPETITOR setting out the terms upon which the PRODUCT shall be supplied.
- 1.3 The PRODUCT that is supplied by the PROVIDER to the COMPETITORS shall be compliant with the TECHNICAL SPECIFICATIONS.

### **2. RELATIONS BETWEEN THE PROVIDER AND THE COMPETITORS**

- 2.1 The PROVIDER shall treat all COMPETITORS in accordance with the PRINCIPLES OF SPORTING EQUALITY.
- 2.2 The PROVIDER shall supply the PRODUCT to all COMPETITORS on equivalent terms. It shall enter into a standard SUPPLY AGREEMENT with each COMPETITOR.
- 2.3 All SUPPLY AGREEMENTS shall be fully compliant with the PRINCIPLES OF SPORTING EQUALITY, the CONTRACT, the SPORTING REGULATIONS and the TECHNICAL REGULATIONS.
- 2.4 Separate from the SUPPLY AGREEMENT, the PROVIDER shall be free to enter into separate agreements with COMPETITORS, containing such commercial terms, including, for the avoidance of doubt, in relation to advertising, publicity and other promotional

arrangements, as those parties may agree. However, any such arrangements must not compromise the PRINCIPLES OF SPORTING EQUALITY, or be contrary to the SUPPLY AGREEMENT entered into with all COMPETITORS. In particular, the conclusion of any supplemental arrangement must in no way confer any sporting advantage upon one COMPETITOR over another.

- 2.5 If requested by the FIA, the PROVIDER shall supply a copy of each SUPPLY AGREEMENT in order to demonstrate that the PRINCIPLES OF SPORTING EQUALITY are maintained. With respect to the FIA, the PROVIDER hereby waives and confirms that it shall not assert or seek to rely on any confidentiality provision in any SUPPLY AGREEMENT or other agreement relevant to the supply of the PRODUCT to prevent the FIA from reviewing relevant agreements or carrying out its regulatory functions (including ensuring that the PRINCIPLES OF SPORTING EQUALITY are maintained).
- 2.6 The FIA may request amendments to a SUPPLY AGREEMENT if it considers that the SUPPLY AGREEMENT is not consistent or compatible with, or is otherwise contrary to, the PRINCIPLES OF SPORTING EQUALITY. For the avoidance of doubt, the PROVIDER's obligation to abide by the PRINCIPLES OF SPORTING EQUALITY shall not be limited or otherwise affected by the FIA's review of a SUPPLY AGREEMENT and/or a request for an amendment to be made.
- 2.7 In the event of uncertainty regarding whether any action taken or proposed to be taken by the PROVIDER may breach the PRINCIPLES OF SPORTING EQUALITY, the PROVIDER shall request guidance from the FIA, which shall make a determination in this regard. Where such a determination is made by the FIA, the PROVIDER's actions in complying with that determination shall be deemed to be in compliance with the PROVIDER's obligation in GENERAL CONDITION 2.1 to treat all COMPETITORS in accordance with the PRINCIPLES OF SPORTING EQUALITY.

### **3. LIABILITY**

- 3.1 Without prejudice to the FIA's other rights, the PROVIDER shall indemnify and hold harmless the FIA from and against all reasonably foreseeable losses incurred by the FIA as a direct result of the PROVIDER's:
- (a) failure to supply the PRODUCT of the requisite quantity;
  - (b) failure to supply the PRODUCT of the requisite quality; and
  - (c) negligence in the supply of the PRODUCT.
- 3.2 The PROVIDER represents and warrants that it is in a position to meet any liability that may arise under clause 3.1 of this CONTRACT and hereby covenants to maintain such position for the period of time during which the PROVIDER may be liable.

### **4. WARRANTIES**

- 4.1 The PROVIDER represents and warrants that it has full power and authority to enter into and fully perform its obligations under the CONTRACT and the provisions of the CONTRACT, when executed, will constitute valid and binding obligations on the PROVIDER in accordance with its terms. The PROVIDER also represents and warrants that it has full power and authority to enter into and fully perform its obligations under the SUPPLY AGREEMENTS when executed.

4.2 The PROVIDER warrants that:

- (a) it has full power and authority to carry out the actions contemplated under this CONTRACT, and that its entry into and performance under the terms of this CONTRACT will not infringe the rights of any third party or cause it to be in breach of any obligations to a third party;
- (b) all information, data and materials provided by it to the FIA pursuant to this CONTRACT will be, to the best of its knowledge, accurate and complete in all material respects, and that it is entitled to provide the same without recourse to any third party;
- (c) without limitation to the foregoing, its use of the BACKGROUND IP does not, so far as it is aware, infringe the rights of any third party. It will use all reasonable endeavours (including, by conducting searches of all relevant public registers) to ensure that its use of the FOREGROUND IP will not infringe the rights of any third party;
- (d) No third party has threatened or, so far as it is aware, is currently threatening proceedings in respect of such infringement, and none of its BACKGROUND IP is the subject of any actual or, so far as it is aware, threatened challenge, opposition or revocation proceedings.

4.3 The FIA represents and warrants that it has full power and authority to enter into and fully perform its obligations under the CONTRACT and the provisions of the CONTRACT, when executed, will constitute valid and binding obligations on the FIA in accordance with its terms.

## 5. TERMINATION

Notwithstanding any other provision hereof, either party may terminate the CONTRACT with immediate effect by written notice to the other if any of the following events occur:

- (a) the other party has committed a material breach of the CONTRACT which is not capable of remedy or, if remediable, has not remedied it within 30 days of the non-breaching party's written notice requiring the default to be remedied (for the avoidance of doubt, a breach by the PROVIDER of any of GENERAL CONDITIONS 1.2, 1.3, 2, 3 and 4.1 and any of SPECIAL CONDITIONS is acknowledged by the parties to be a material breach);
- (b) steps (including any steps analogous to those following) have been taken to wind up the other party or to place the other party into administration or to have a receiver appointed over any of its assets, other than as part of a scheme of solvent reconstruction or amalgamation; or
- (c) the other party shall cease or threaten to cease carrying on business or the other party shall make any composition or arrangement with its creditors or become subject to any other insolvency process or proceeding (other than as part of a scheme of solvent reconstruction or amalgamation) or have all or any of its assets or undertakings seized by a government or governmental agency or authority (including any acts analogous to the above).

## **6. GOVERNING RULES**

- 6.1 The GOVERNING RULES constitute the legal, administrative and technical framework of the CHAMPIONSHIP and the conditions set forth therein shall have binding force and prevail among the parties to the CONTRACT.
- 6.2 The CONTRACT shall in principle be interpreted in a manner that gives effect to the provisions of the GOVERNING RULES, the intention of the parties being to construe the provisions of the CONTRACT in the context of the more general framework of the GOVERNING RULES.
- 6.3 The PROVIDER acknowledges that the GOVERNING RULES are subject to amendment from time to time. The PROVIDER will be responsible (at its own cost) for all research and development associated with the manufacture of the PRODUCT, including the making of any changes to the PRODUCT to be supplied pursuant to the CONTRACT that may be necessitated by any amendment to the GOVERNING RULES or TECHNICAL SPECIFICATIONS.
- 6.4 The PROVIDER acknowledges that the FIA may take decisions regarding the supply of the PRODUCT, this CONTRACT and any obligations accruing from the GOVERNING RULES through whatever structure it deems appropriate, including through its disciplinary structures. The PROVIDER shall not challenge the competence of an FIA disciplinary body acting in accordance with the GOVERNING RULES.

## **7. GOVERNING LAW AND LANGUAGE**

- 7.1 The language that shall prevail for the interpretation of the CONTRACT shall be English and the CONTRACT and all documents connected with the CONTRACT shall be written in English. In the event of any conflict between the language of the CONTRACT and any translation thereof, the language of the CONTRACT shall prevail. In the event of any conflict between the language of any document connected with the CONTRACT and any translation thereof, the language of the document connected with the CONTRACT shall prevail.
- 7.2 The governing law of the CONTRACT shall be French law.
- 7.3 The Tribunal de Grande Instance de Paris, France, shall have sole jurisdiction to settle any dispute that may arise between the FIA and the PROVIDER in connection with the CONTRACT.
- 7.4 Without any prejudice to Article 7.3 above, the PROVIDER undertakes to strictly respect the Statutes and Code of Ethics of the FIA as well as the GOVERNING RULES. The PROVIDER hereby agrees to be subject to the internal judicial and disciplinary bodies of the FIA.

## **8. GENERAL**

- 8.1 Nothing in the CONTRACT guarantees or shall be construed as guaranteeing, the solvency of a COMPETITOR. The FIA is not responsible for ensuring that the COMPETITORS satisfy the terms of the SUPPLY AGREEMENTS and the FIA shall not be liable for a failure by any COMPETITOR to satisfy the terms of a SUPPLY AGREEMENT.
- 8.2 No delay or omission or failure to exercise any right or remedy provided herein shall be deemed to be a waiver thereof.



- 8.3 The CONTRACT shall be binding on and enure to the benefit of the parties and their respective successors and permitted assigns. The PROVIDER shall not be entitled to assign or sub-contract its rights or obligations under the CONTRACT in whole or in part without the prior written consent of the FIA.
- 8.4 Any notice to be given under the CONTRACT shall be given in writing delivered to the other party by any one or more of the following methods:
- (a) personal delivery to one of its corporate officers, in which case notice shall be treated as having been given at the time of such personal delivery;
  - (b) first class registered post or courier delivery service (such as DHL or UPS) to the address mentioned above (or such other address as may be notified to the other party in writing from time to time), in which case notice shall be treated as having been given on the date of actual receipt at that address (or on the next local business day if delivered on a local non-business day or after 4.00 p.m. local time on a local business day), which shall rebuttably be presumed to be the second local business day after posting; or
- 8.5 Any variations of the CONTRACT shall be ineffective unless agreed in writing and signed by the parties.
- 8.6 If any term, provision or condition of the CONTRACT is held by a court of competent jurisdiction to be invalid, void or unenforceable such invalidity, voidness or unenforceability shall not invalidate the remainder of the CONTRACT, all of which shall remain in full force and effect.
- 8.7 The CONTRACT may be executed in any number of counterparts (whether original or facsimile counterparts) and upon due execution of all such counterparts by all parties, each counterpart shall be deemed to be an original hereof.
- 8.8 GENERAL CONDITIONS 3, 7 and 8 shall survive expiry or termination of the CONTRACT for any reason (but shall terminate at the time expressly provided in the relevant GENERAL CONDITION, if any).

## **9. INTELLECTUAL PROPERTY RIGHTS**

- 9.1 Each party shall give full disclosure to the other of all BACKGROUND IP owned or licensed by it which is relevant to the CONTRACT.
- 9.2 All BACKGROUND IP is and shall remain the exclusive property of the party owning it (or, where applicable, the third party from whom its right to use the BACKGROUND IP has derived).
- 9.3 All BACKGROUND IP of any type including the TECHNICAL SPECIFICATIONS provided by the FIA to the PROVIDER for the purpose of this CONTRACT shall remain the property of the FIA and shall only be used by the PROVIDER for the sole purpose of delivering the PRODUCT.
- 9.4 Upon request of the FIA and at the latest upon expiration or early termination of this CONTRACT, the PROVIDER undertakes to return immediately all BACKGROUND IP of any kind provided by the FIA to the PROVIDER, at the FIA's entire discretion, to destroy all copies thereof and to certify the same.

- 9.5 To the extent that the PROVIDER sub-contracts performance of the CONTRACT, it shall ensure that any FOREGROUND IP arising from the work of its sub-contractor shall be assigned to it absolutely.
- 9.6 To the extent that any FOREGROUND IP arises or is obtained as a result of a research and development collaboration between the parties, it shall be jointly owned in equal and undivided shares by the parties.
- 9.7 FOREGROUND IP created solely by the PROVIDER in order to deliver the PRODUCT within the framework of this CONTRACT shall be the sole property of the PROVIDER.
- 9.8 The PROVIDER agrees to and does hereby grant to the FIA an irrevocable, non-exclusive, royalty-free, worldwide license to use the PROVIDER's BACKGROUND IP AND FOREGROUND IP, which license shall be exclusive for motor sport applications in order to make, and procure others (in particular its Championships' stakeholders) to use the PRODUCT.
- 9.9 Each party shall immediately give written notice to the other party of any actual, threatened or suspected infringement of any party's Background IP or Foreground IP, whether jointly or solely owned, or any unauthorised use of any party's Technology.
- 9.10 The PROVIDER grants to the FIA (as well as to the FIA's authorised users as the case may be), an irrevocable non-exclusive, royalty-free, worldwide license to use the Foreground IP made available to the FIA and its authorised users throughout the duration of the CONTRACT to the extent necessary for the implementation of the CONTRACT.

## **10. RECOGNITION OF FIA'S RIGHTS AS REGARDS THE CHAMPIONSHIP**

- 10.1 The PROVIDER agrees and acknowledges that all rights, title and interest of the results and DATA generated by the PRODUCT are owned by the FIA.
- 10.2 Unless expressly provided otherwise in the CONTRACT, any and all proprietary and any other rights such as, without limitation, Intellectual Property rights including but not limited to all DATA collected and any component and feature generated by the PRODUCT and/or in connection with the use of the PRODUCT shall be fully and exclusively owned by the FIA. Such rights shall include, without limitation, the right to use, reproduce, copy, edit, alter, adapt, translate, modify or distribute the same, in any media, shape or form, whether now known or hereafter developed.
- 10.3 The PROVIDER also acknowledges that the FIA shall be considered as the producer of such databases. Therefore, the FIA shall own all rights, title and interests in and to such databases and the PROVIDER shall own no right to the structure nor the content of such databases.
- 10.4 Save for the purposes of providing the PRODUCT under this CONTRACT, the PROVIDER agrees and acknowledge that no parts of the PRODUCT and no DATA relating to a COMPETITION may be reproduced, stored in a retrieval system or transmitted in any form or by any means electronic, mechanical, photocopying, recording, broadcasting means or otherwise to any other party than the FIA without the FIA's express prior written approval.
- 10.5 The PROVIDER agrees to use reasonable endeavours not to do anything or permit anything to be done at any time during and/or after the term which would in any way devalue, prejudice the ownership, management and/or exploitation of the DATA during and/or after the term.



## **PART 2 - SPECIAL CONDITIONS**

### **1. SUPPLY OF THE PRODUCT**

- 1.1 The PRODUCT supplied by the PROVIDER shall be of a strictly uniform quality throughout the duration of the CHAMPIONSHIP.
- 1.2 The PROVIDER shall draw up and make available to the FIA a record of PRODUCTS supplied which may be consulted at any time by the FIA.
- 1.3 The PRODUCTS shall comply with the TECHNICAL SPECIFICATIONS.

### **2. DELIVERY OF THE PRODUCT**

- 2.1 The PROVIDER shall ensure the transportation and delivery of the PRODUCT to the site of each COMPETITION.
- 2.2 The PROVIDER shall ensure that representatives of the PROVIDER arrive the day before the first free practice session at each COMPETITION and are present on-site throughout the duration of each COMPETITION.

In addition, the PROVIDER shall ensure that there shall be at least one appropriately qualified and senior representative of the PROVIDER available on-site throughout the duration of each COMPETITION.

- 2.3 The representative of the PROVIDER shall provide any assistance and on-track support the FIA may require using professional equipment of the latest and highest standard. The representatives of the PROVIDER shall provide the following tasks in particular:
  - checking and putting in place of the systems and/or the PRODUCT installed on all cars of the competitors in the CHAMPIONSHIPS;
  - securing the download of all DATA from the PRODUCTS installed on all cars after each OFFICIAL SESSION onto the computer of the PROVIDER under the control of the representative of the FIA;
  - once the download is completed, verifying the proper download of all DATA with the representative appointed by the FIA;
  - copying all DATA onto a CD/DVD and providing a copy of the same to the representative of the FIA.

The PROVIDER shall follow any directions provided by the representative of the FIA in connection with the tasks listed above.

- 2.4 The PROVIDER shall guarantee the replacement of any deficient PRODUCT or any deficient parts thereof at the PROVIDER's own cost during the first year after the purchase, considering that the PRODUCT was used with due care. In the event that there are any disputes between the PROVIDER and the FIA as to what constitutes due care, the PROVIDER accepts that the FIA's determinations in this regard shall be final.

The PROVIDER must be in a position to replace any deficient parts of the PRODUCT on the site of the COMPETITIONS.

### **3. MANUFACTURING CONDITIONS OF THE PRODUCT AND TECHNICAL CONTROL**

- 3.1 The PROVIDER shall provide to the FIA a detailed technical study of the PRODUCT as well as a sample, for the approval of the FIA ENGINEER by October 1<sup>st</sup> 2018 at the latest. In the event that an amendment is made to the TECHNICAL REGULATIONS or TECHNICAL SPECIFICATIONS that requires an amendment to the PRODUCT supplied pursuant to the CONTRACT, the PROVIDER shall provide to the FIA a detailed technical study of the amended PRODUCT to be supplied pursuant to the CONTRACT to take account of such amendment.
- 3.2 The PROVIDER shall not make any change to the PRODUCT during the CONTRACT without the prior written agreement from the FIA.

### **4. PRICING OF THE PRODUCT**

- 4.1 The price of the PRODUCT supplied pursuant to the CONTRACT at the site of each COMPETITION and, when required, at the site of each OFFICIAL TESTING shall be [...] (as further detailed on the PRICING FORM), which amount shall be inclusive of all taxes and charges and which amount shall not be increased for any reason.
- 4.2 If amendments to the TECHNICAL SPECIFICATIONS or GOVERNING RULES requiring modifications to the PRODUCT result in a significantly more expensive PRODUCT, the PROVIDER reserves the right to discuss with the FIA an update of the PRICING FORM.

### **PART 3 - DEFINITIONS**

The following terms shall be understood to have the following meanings for the purposes of the "CONTRACT".

- 1.1 **Background IP:** means any and all technical and non-technical information provided by either Party to the other, whether conveyed orally, in writing, or otherwise (whether or not designated as "confidential information") including but not limited to (a) data (b) Intellectual Property and Intellectual Property applications, (c) trade secrets, and (d) proprietary information, ideas, techniques, sketches, drawings, work of authorship, models, designs, inventions, know-how, processes, apparatuses, equipment, algorithms, software programs, software source documents, and formulae related to the current, future, and/ or proposed products and services of each of the Parties, and including, without limitation, their respective information concerning development, design details and specifications, engineering, financial information, procurement requirements, purchasing, manufacturing, customer lists, employees, business and contractual relationships (actual or prospective), business forecasts, sales and merchandising, marketing plans and information, data and market research methodology provided by a Party and regarding third parties. Any information derived from the above, and all information designated as confidential or which ought reasonably to be considered confidential or that is not readily available to the public, shall be considered as Background Intellectual Property and, therefore, within the scope of the Agreement, unless specified otherwise in writing.
- 1.2 **CHAMPIONSHIP or CHAMPIONSHIPS** means the 2019, 2020, 2021, 2022 and 2023 seasons of the FIA World Rally Championship, the FIA Formula E Championship, the FIA World Endurance Championship, the FIA World Rallycross Championship, the FIA European Truck Racing Championship and any other Championship indentified by the FIA for which the PRODUCT will be used.
- 1.3 **COMPETITION** means any race forming part of the CHAMPIONSHIP and entered on the International Sporting Calendar of the FIA. A COMPETITION is deemed to commence at the scheduled time for scrutineering and sporting checks and includes all practice, qualifying and the race itself and ends at the expiry of the deadline for the lodging of a protest under the terms of the International Sporting Code.
- 1.4 **COMPETITORS** means the racing teams that have been accepted by the FIA to take part in the CHAMPIONSHIP.
- 1.5 **CONTRACT** means the GENERAL CONDITIONS, the SPECIAL CONDITIONS and the DEFINITIONS.
- 1.6 **DATA** shall mean all numeric data stored inside the memory of the PRODUCT.
- 1.7 **DEFINITIONS** means the definitions set out in this Part 3 of the CONTRACT.
- 1.8 **FIA** means the Fédération Internationale de l'Automobile (FIA).
- 1.9 **FIA ENGINEER** means the technician appointed by the FIA to carry out all technical checks and controls and to grant the necessary approval prior to the starting up of production.

- 1.4 **FOREGROUND IP** means Intellectual Property arising from the research and development undertaken within this CONTRACT after the date of signature of this CONTRACT whether generated separately by one Party or jointly by both Parties.
- 1.5 **GENERAL CONDITIONS** means the provisions contained in Part 1 of the CONTRACT.
- 1.6 **GOVERNING RULES** means:
- (a) the International Sporting Code and the Appendices thereto;
  - (b) the SPORTING REGULATIONS;
  - (c) the TECHNICAL REGULATIONS;
  - (d) the Code of Ethics;
  - (e) the Judicial and Disciplinary Rules;
  - (f) any other regulations applicable to the CHAMPIONSHIP.
- 1.7 **INTELLECTUAL PROPERTY** means patents, utility models, rights to inventions, copyright and related rights, moral rights, trade marks and service marks, business names and domain names, rights in get-up, goodwill and the right to sue for passing off or unfair competition, rights in designs, database rights, rights to use, and protect the confidentiality of, confidential information (including know-how and trade secrets), semiconductor topography rights, image rights, rights in personality and similar rights, and all other intellectual property rights, in each case whether registered or unregistered and including all applications and rights to apply for and be granted, renewals or extensions of, and rights to claim priority from, such rights and all similar or equivalent rights or forms of protection which subsist or will subsist now or in the future in any part of the world.
- 1.8 **PRICING FORM** means the pricing form provided at **Appendix II** stating the prices at which the PRODUCT will be supplied at the COMPETITION, the PRODUCTION SITE and the OFFICIAL TESTING to the COMPETITORS.
- 1.9 **PRINCIPLES OF SPORTING EQUALITY** means the equal treatment by the PROVIDER of all COMPETITORS with respect to:
- (a) anything which may affect the performance of the PRODUCT;
  - (b) the terms on which the PRODUCT is supplied;
  - (c) the support, access and information made available to COMPETITORS in relation to the PRODUCT; and
  - (d) any other matter which affects or may have an effect, however minor, on sporting performance.
- 1.10 **PRODUCT** means the FIA Electronic Control System, as such word is described in the SPORTING REGULATIONS and TECHNICAL REGULATIONS.

- 1.11 **PROVIDER** means [•].
- 1.12 **PRODUCTION SITE** means the factory that will produce the PRODUCT supplied pursuant to the CONTRACT.
- 1.13 **SPECIAL CONDITIONS** means the provisions contained in Part 2 of the CONTRACT.
- 1.14 **SPORTING REGULATIONS** means the Sporting Regulations applicable to the CHAMPIONSHIP as published and amended by the FIA from time to time. The Sporting Regulations are available on the FIA website: [ww.fia.com](http://ww.fia.com).
- 1.15 **SUPPLY AGREEMENT** means any agreement and all amendments thereto, between the PROVIDER and a COMPETITOR pursuant to which the PROVIDER shall supply the PRODUCT to the COMPETITOR.
- 1.16 **TECHNICAL REGULATIONS** means the Technical Regulations applicable to the CHAMPIONSHIP as published and amended by the FIA from time to time. The Technical Regulations are available on the FIA website: [www.fia.com](http://www.fia.com).
- 1.17 **TECHNICAL SPECIFICATIONS (Appendix III)** means the technical requirements applicable to the PRODUCT as issued and amended by the FIA from time to time.



Signed

On behalf of the FIA:

On behalf of the PROVIDER:

In his capacity as:

In his capacity as:

In:

In:

On:

On:

## **APPENDICES**

I - INDEXATION FORMULA

II - PRICING FORM

III – TECHNICAL SPECIFICATIONS

## **APPENDIX I**

### **INDEXATION FORMULA**

Concerning the 2020, 2021, 2022 and 2023 seasons, the prices charged to COMPETITORS shall be the amount that equals the amount shown for 2019 in the PRICING FORM increased annually in accordance with the positive variation of the “Consumer Prices – All items” index published by the Organisation for Economic Cooperation and Development (OECD) in “Main Economic Indicators”. The indexation shall be in accordance with the variation between such base index and the index published in the October edition of “Main Economic Indicators” for the year to which the indexation applies.

**APPENDIX II**

**PRICING FORM**

**ROAD MAP FOR THE USE OF THE SYSTEMS**

Championships	WRC (2019)	WRX(2020)	WTCC(2020)	FE(2019-20)	WEC(2019-20)
Level 1	X	X	X	X	X
Level 2		X	X	X	X
Level 3			O	X	X
Level 4				X	X
Level 5				X (2020-21)	O(2020-21)
Level 6				X	X

**TABLES TO BE FILLED IN (please refer to the technical specifications for the description of the different levels)**

Price for sale per kit

	y1	Y2	Y3	Y4	Y5
Level 1					
Level 2					
Level 3					
Level 4					
Level 5					

Price for rent per kit

	y1 car/year	Y2	Y3	Y4	Y5
Level 1					
Level 2					
Level 3					
Level 4					
Level 5					

Support per championship / year

	y1	Y2	Y3	Y4	Y5
Level 1					
Level 2					
Level 3					
Level 4					
Level 5					

## **APPENDIX III**

### **TECHNICAL SPECIFICATIONS**

# **FIA Electronic Control System for 2019 – 2023 Appendix A Technical specifications**

## **1. INTRODUCTION**

As from 2019, the FIA is replacing his standard electronic control system for the CHAMPIONSHIP cars thus allowing the FIA to check the performance of the car (engine, hybrid and chassis) and respect of the technical regulations.

This datalogger must meet the requirements of all the categories that can run in an FIA championship.

Different levels of systems shall be provided, depending on the championship concerned:

- Level 1:
  - o Datalogger system
- Level 2 (in addition to Level 1):
  - o Telemetry lap by lap
- Level 3 (in addition to Level 2):
  - o Marshalling system
  - o Full telemetry coverage
- Level 4 (in addition to Level 3):
  - o Voice
- Level 5 (in addition to Level 4):
  - o On-board camera video
- Level 6 (in addition to Level 5):
  - o Team telemetry during test session

The different levels should be based on a modular approach, where modules are added in order to increase the level of the system.

## **2. GENERAL INFORMATION CONCERNING ALL UNITS OF THE SYSTEM**

### **2.1 Mechanical**

#### **2.1.1 Dimensions**

To be defined by the vendor of the system. Maximising reliability by design has a higher priority than miniaturisation.

The supplier must anticipate the way to go from one level to another with the most efficient solution in terms of packaging.

#### **2.1.2 Weight**

To be defined by the vendor of the system. Maximising reliability by design has a higher priority than weight reduction.

#### **2.1.3 Case Material**

Machined aluminium with blue anodised finish or high-level plastic casing (preferred blue).

#### **2.1.4 Connectors**

Autosport spec (Deutsch AS or Souriau 8LT) connectors are acceptable. Crimping and assembly tools must be easily available from any electrical harness manufacturer.

High-level plastic connectors can be proposed.

#### **2.1.5 Installation**

The supplier must provide either fixing points or brackets corresponding to the installation requirements.

#### **2.1.6 Heat sink**

The unit's housing to include mounting points allowing fitment of a bespoke heat sink to suit different car designs.

The unit must be designed to ensure necessary cooling mounted inside the cockpit at an ambient air temperature of up to 60°C.

### **2.2. ENVIRONMENTAL**

#### **2.2.1 Storage Temperature**

-25 to 85 °C ambient temperature.

## 2.2.2 Operating Temperature

-25 to 80 °C case temperature.

## 2.2.3 Operating Thermal Shock

1°C/second over operating temperature range.

## 2.2.4 Fluid Ingress Protection

To be rated to IP66 (EN60529). Impervious to all normal motor racing fluids.

## 2.2.5 Vibration

### 2.2.5.1 Design Validation

The design to be validated by demonstrating that the unit survives when vibrated, using the profile below, for three hours in each axis hard mounted to the shaker table.

Frequency (Hz)	Acceleration (G <sup>2</sup> /Hz)
10.0	0.0016
20.0	0.016
200.0	0.016
430.0	3.40
435.0	0.11
2000.0	0.11

### 2.2.5.2 Production Units

Each production unit to be tested hard mounted to a shaker table for 15 minutes in one axis using the vibration profile above.

## 2.2.6 Electromagnetic Compatibility

The system must comply with the requirements of electromagnetic compatibility directive 2004/108/EC that has applied since 20 July 2007.

## 2.3. ELECTRICAL

### 2.3.1 Supply Voltage

Nominal operating voltage: 13.5 V.

Continuous DC operating system: 8.0 – 18 Volts.

Any system must be able to be fully operational in less than 1s.

## 2.3.2 Protection

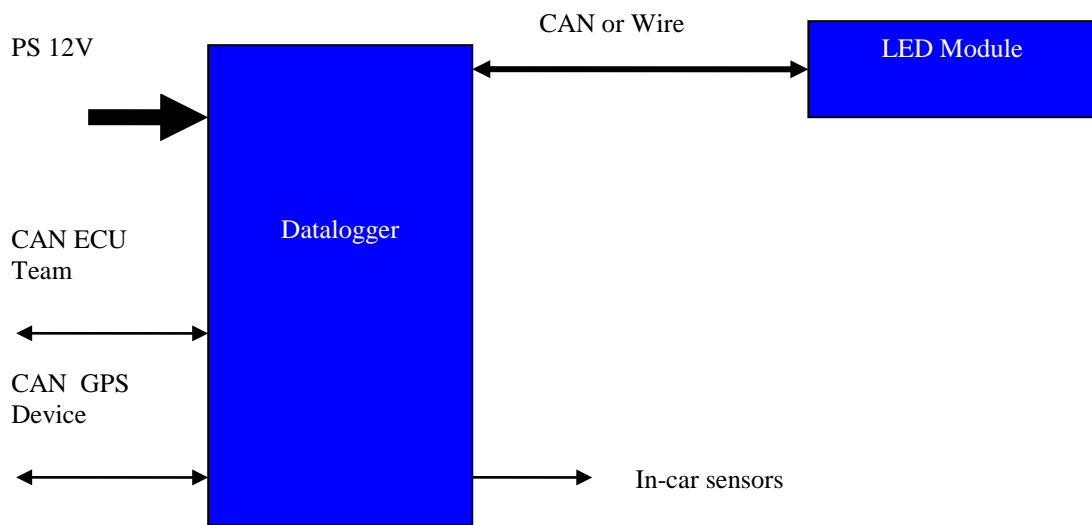
All systems must be protected against short circuit and polarity inversion.



### 3. LEVEL 1

#### 3.1 Introduction:

Level 1 is basically a datalogger unit enhanced with some features to make it more autonomous from team sensors. It is also the brain of the FECS from which all information will be collected and then sent back to the other modules. It must act as a logger but also as an ECU running strategies and calibration.



## 3.2 Features

Level 1 will include:

- Inputs
  - o Analog inputs 5V / 2kHz / 12 bits
  - o Temperature inputs PT1000 / NTC / 10 bits / 10Hz
  - o Input Capture: Inductive and Hall effect
  - o Lap trigger
  - o Digital inputs
- Outputs
  - o LED output / 500 mA
  - o Power output / 3A
  - o Safe 12V supply
  - o Safe 5V supply
- Communication
  - o CAN line
  - o Ethernet line
  - o USB 2.0 line
  - o RS232 line
- Internal sensors:
  - o GPS / 10hz
  - o Accelerometers 3 axis / +/- 20g
  - o Yaw sensor
  - o Voltage sensor
  - o Current sensor
  - o Atmospheric pressure
- Internal Battery
  - o 15min maximum internal battery
- Internal memory
  - o Flash disk over 4 Gbyte
  - o EEPROM / NVRAM : 1Mbyte

### 3.3 Internal battery

The datalogger must include an internal battery that makes it run for 15 minutes after the main power supply has gone off.

The battery will be charged from the main power supply, with the battery charge controlled by the datalogger.

The datalogger must stop data acquisition when it is running on the battery and the voltage drops below 9 Volts for more than 30 seconds.

The datalogger should be able to kill itself (auto-kill) in case of conditions to be defined (no changes to data for a given time, for example).

A LED on the LED module will blink if the power supply is disconnected and the datalogger will work on its battery.

The internal battery can be used to supply the datalogger during the downloading of data, to avoid the need for the car's power supply to be ON. An information pin should be added to the downloading connector.

The datalogger will provide the power supply for the LED Module even when it is running on its internal battery.

### 3.4. Inputs / outputs

#### 3.4.1 Input / output type and numbers (minimum)

Types	Number
<b>Inputs</b>	
Analog 0 – 5V / 12 bits / 2000Hz	4
Analog 0 – 5V / 12 bits / 1000Hz	14
Temperature PT1000 or NTC / 10bits / 10Hz (configurable)	6
Input capture Pick up or Hall Effect (configurable) / 15kHz max	8
Beacon / Lap Trigger	1
Digital inputs (ON/OFF)	2
Lambda	2
<b>Outputs</b>	
Non-regulated 12 V (Powered by internal battery) 300 mA each	3
5V Supply for analog sensor 50mA each	5
Lambda heater (Not powered by internal battery)	2
LED output (100mA each)	8
PWM High-side (1A each)	5

## **3.4.2 Inputs / outputs characteristics**

### **3.4.2.1 Analog input Highspec**

Signal: 0 to 5V

Resolution: 12 bits

Max sampling: 2000Hz

Pull up 5V : 383k ohms

Setup of gain and offset or mapping table with PC software.

### **3.4.2.2 Analog input Lowspec**

Signal: 0 to 5V

Resolution: 12 bits

Max sampling: 1000Hz

Pull up 5V : 383k ohms

Setup of gain and offset or mapping table with PC software.

### **3.4.2.3 Temperature**

PT1000 or NTC sensor (configurable)

Resolution: 10 bits

Max sampling: 10Hz

### **3.4.2.4 Speed inputs**

Type: variable reluctance or Hall effect

Configuration: at least half of them should be configurable between VR and HE; the rest will be HE.

Max speed: 15kHz max per channel with a maximum of 50kHz for all channels.

The trigger disk configuration must be programmable to adapt to the different patterns.

### 3.4.2.5 Digital input

TTL switching level

Pull-up to 5Volts

### 3.4.2.6 Analog Power Supply

Signal : 5V +/- 0.005

Max Current: 50mA each min.

### 3.4.2.7 Lambda

Compatible with NTK or Bosch LSU 4.9

Minimum resolution: 12 bit

Maximum sample rate: 100 Hz

Compensation resistor reading must be integrated

## 3.4.3 Internal sensors

The datalogger will include:

- X,Y and Z accelerometers +/- 20g, 40Hz filter
- Temperature sensor
- Supply Voltage sensor
- USB 5V supply feedback
- SOC of the battery
- Atmospheric pressure

## 3.4.4 GPS

The system must provide a GPS positioning. GPS can be either internal either external to the logger box. If external (preferred) the chipset must be as closed as possible to the antenna in order to reduce the length of the RF cable, and by this way reduce as much as possible any noise.

The acquisition rate must be at least 10Hz.

The system must be able to trigger events on crossing waypoints.

### 3.4.4.1 Positioning of the car

The logger and connect modules must allow an absolute precision of +/- 0.1m

The positioning must be robust enough in all condition and in particular on city tracks with GPS multipath.

The system can use an external base station that help to increase the positioning performance (only on some championships, can be link with telemetry service).

## **3.5 Timekeeper**

The ECU should include an internal timekeeping device which continues to accurately maintain the time of day and the date even when the unit is unpowered for a minimum of 1 month. Timekeeping must be accurate to a maximum of 1 second a day over the normal operating temperature and input voltage ranges.

The timekeeping device must be able to be synchronize with the GPS time automatically.

## **3.6. Communications**

### **3.6.1 CAN Line**

The datalogger will have at least 4 CAN lines that must be fully configurable (speed rate, message ID) for transmitting and receiving. In general, speed will be 1Mbps.

CAN protocol must be able to accept either continuous stream (time trigger) or event message (event trigger). It should also manage RTR message.

All CAN line must have a software configurable termination (120 oHms).

### **3.6.2 Ethernet Line**

The datalogger must have at least 3 Ethernet ports.

2 Ethernet ports will be dedicated to external modules (daisy chain, in/out).

1 Ethernet port will be to download data from the datalogger to the PC. The datalogger must use quick communication bus Ethernet; this should be at least a 100Mbps/s line.

### **3.6.3 USB Line**

To copy data live on a USB stick, a USB line of at least version 2.0 high speed must be implemented.

All diagnostics must be provided to ensure that the USB link is working properly.

The USB stick will be used also to update the firmware and the configuration.

## **3.7. Digital Board**

### **3.7.1 Processor**

The processor must be scaled to have a free CPU of 80% when all system software and logging at full band is running.

The number of processors in the datalogger should be limited in order to reduce the data transfer between them.

### 3.7.2 Memory

The datalogger must have an EEPROM of at least 1Mbyte

The datalogger must have an NVRAM or equivalent of at least 250kByte, with datas stored individually accessible.

### 3.7.3 Disc storage / USB mirroring

The datalogger should include minimum 4 Gbyte of memory used to store the data.

Data must be able to be mirrored on a USB memory stick live; data stored on this USB must be readable by a PC, and directly usable by the analysis PC tools. This USB must be hot plug.

The memory will be working in cyclic mode

The datalogger should go to over 100kbyte/s logging rate. The datalogger should be able to log at least 1024 channels.

Max sampling rate: 2000Hz per channel.

The datalogger must have a configurable trigger to start acquisition. The trigger must be able to be done via a CAN event.

The datalogger must have a double frequency trigger that allows a higher sampling rate in certain conditions (configurable).

## **3.8. LED Module**

### **3.8.1 Introduction**

The LED Module is defined to inform FIA and competitor of the status of the datalogger. It may be connected to the datalogger through a CAN line or with a direct command. Each LED should have a label or a symbol on it, to make it easy to understand, this must be done with stickers that can be different depending the championship.

### **3.8.2 Power Supply**

Nominal operating voltage: 13.5 V

Continuous DC operating system: 8.0 – 18Volts

The power supply will come from the datalogger.

### **3.8.3 LED Definition**

We recommend usage of programmable multicolour LEDs.

1 LED Power (Yellow)

1 LED Data OK (Green)

1 LED Data NOK (Red)

1 LED Sensors NOK

1 LED Memory Full

### **3.8.4 Mechanical**

Military spec or high quality plastic connectors are acceptable. Crimping and assembly tools must be easily available from any electrical harness manufacturer.



## 3.9. Datalogger RT Software

### 3.9.1 System software

The PROVIDER must deliver with datalogger a firmware that manage all the ressources of the device and make them accessible to the user software with a friendly library. As an example all variables from the system software must be available to the user code.

The start of the ECU must not take more than 1s from total cold start. A custom Real Time OS is appreciated compare to commercial option like LINUX or VxWorks.

### 3.9.2 Interface with a High Speed Camera

The system software must provide an interface to communicate with a High Speed Camera. This interface will synchronise the data acquisition with the video from the High Speed Camera, and also provide a trigger in case of accident detection to lock the accident video file.

### 3.9.3 User code software (FIA)

The Real-Time software of the datalogger must be capable of being modified according to FIA specifications, which will include:

- Real-time channels processing
- Diagnosis for the sensors
- Control of the LED module
- Power supply surveillance
- CAN surveillance
- CAN protocols
- ETH communications
- Management of 2D and 3D calibration tables
- Access to device ressources (memory, NVRAM, inputs/outputs,internal sensors,...)

The user software will be able to change the setup of the datalogger. For example, the user software can setup the wheelspeed input depending of the car type.

The management of the CAN specification must be easily feasible and not hardcoded. It must be possible to import dbc files. The user code must have access to any CAN channels (received or transmitted).

There will be no limitation on the number of versions during the period. (currently minimum 2 versions per month on the 5 years duration), all those modification will be free of charge.

The supplier can propose a solution whereby those modifications are done directly by the FIA (preferred).

The supplier will guarantee the confidentiality of these specifications.

If these modifications can be directly done by the FIA, all the necessary software and licences will be part of the package and free of charge.

Firmware (System and user code) upload must be done without any need of specific hardware input level (no use of pin to go on program mode).

It must be possible to upload firmware using the USB stick.

## 3.10. Datalogging PC Tools

### 3.10.1 Data analysis software

Licensing will be included for the full period of the contract including updating of the software. Access to archive data will be allowed without time limit.

The software must allow a quick and efficient analysis of the data, and must include:

- Automatic lap triggering
- Laps comparison
- Track section analysis
- Mathematics channels
- Protection to permit only COORDINATOR to watch data.

### 3.10.2 Configuration software

The connection between the datalogger and the PC must be secure, in order to ensure that only the FIA can connect to the datalogger. The same software must be able to configure the acquisition table for the internal memory and data-write on the USB stick.

The FIA must be able to:

- Download data from the datalogger
- Set up the datalogger (time, input configuration, etc.)
- Load the RT software
- Control the RT software that is in the datalogger
- Switch off alarm (LED)

### 3.10.3 Remote configuration software

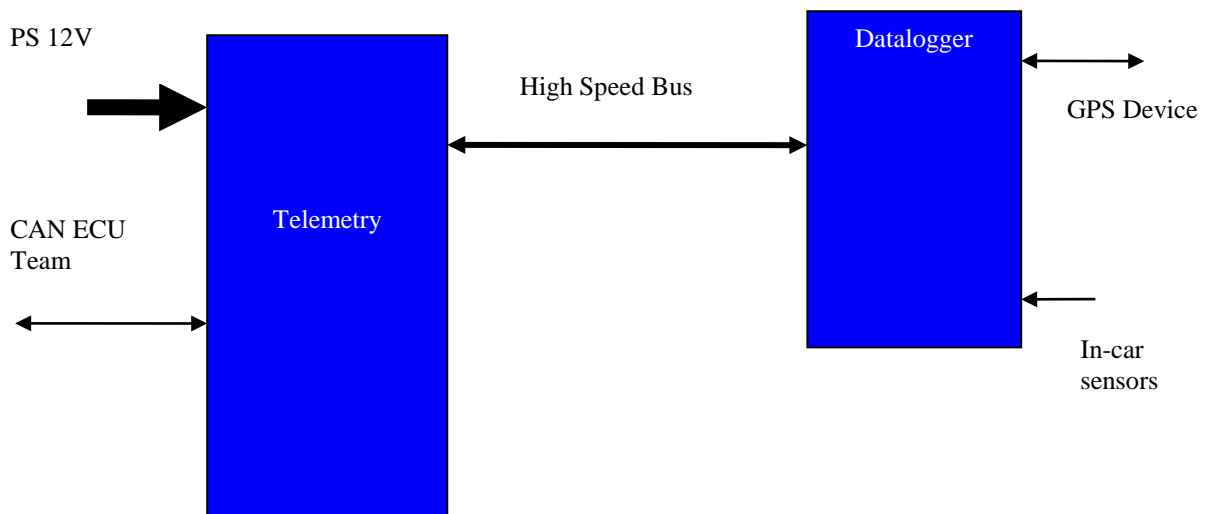
To enable servicing and maintenance from anywhere. A communication software that allows remote control of the system, downloading data and updating RT software, via internet connection.

This software must provide a High level of security, to avoid that teams could have by anyway access to data or calibration.

## 4. LEVEL 2

### 4.1 Introduction

The target of this module is to allow the downloading of data to the pit from the car every lap. Data can be buffered and sent when bandwidth is available, no more than 2 laps should be necessary to get data from all cars.



## 4.2 Features

This telemetry burst system should be able to:

- Receive data from up to 60 cars
- Latency time to get data: less than 2 laps
- Send data to cars that can be used by the logger unit in math channels (pit to car communication).
- One communication line should be available to manage data coming from the team ECU; those data will be isolated from those available for FIA, and they will be available to teams through the pit network (network deployment is not part of the perimeter of this EOI).
- All data should be available live on a server.
- A software must be able to check automatically all the data coming through the telemetry and display information in such a way that 1 person can follow the entire field.
- Bandwidth: each car lap is about 1Mbytes in size.
- There should be a software to configure channels that will send through the telemetry in both directions.
- The system should allow communication from car to car.
- A spare line must be available for teams' data.

In-car system includes:

- Telemetry unit.
- Cars' antennas.

Pit software:

- Must be manageable by 1 person.
- Must be able to manage up to 60 cars on the track.
- Must show alarms in case of regulation infringement.
- Should be easy to configure so even on track people can modify it.
- The software must be able to follow a multi-class discipline with specific regulation for each class up to 5 classes.
- Data coming through must be configurable on track.
- Must be able to merge data coming from an external stream (IP stream on timing network, for example).
- Data should be accessible from different points in the pits (through timing network, for example).

## 5. LEVEL 3

### 5.1 Introduction

This target of this level is have a full telemetry coverage on track and to operate the marshalling system in charge of all race control needs, including individual flags to any cars on the track.

List of flags:

- Red flag : stop session
- Black flag: driver must stop at pit
- Black flag with orange disc: mechanical problems
- Black and white: driver warning
- Yellow flag: signalling danger
- Blue flag: driver to be overtaken
- White flag: slow car in front
- Green flag: track clear
- Safety car flag: SC on track.
- ....

### 5.2 Marshalling

In-car system includes:

- FIA datalogger (Level 1)
- Sensors (GPS / IMU etc.)
- RF system
- Display device (depending of championships).

The marshalling system must be able to:

- The system must interface with the Race direction software (RaceWatchMS from SBGSoftware) including :
  - o Management of the flags
    - Collect orders from RaceWatchMS
    - Send info to car/s via the telemetry system
    - Display info into the car (Specific Display or CAN info to steering wheel)
    - Send acknowledgement to RaceWatchMS that flag have been displayed or cleared
  - o Management of track section
    - Generate compatible track Map with sections to be shared with RaceWatchMS
  - o Deliver car data
    - Need to deliver to RaceWatchMS all datas concerning positioning, and car behaviour from each car in Real time. This data table must be configurable and easily changeable at the track. A multiple stream of data can be proposed with a different level of reconstruction in order to have the best quality data, but this will be in addition to the real RT stream.
- Manage up to 60 cars.
- Send at any time information from race control to any car in less than 1s.
- Activate a flag in an area of the track with a precision of less than 10 m.
- Manage up to 40 sections on track (real or virtual).
- Manage positioning of safety cars.

### 5.2 FULL Telemetry system

This target of this level is to provide full real-time telemetry able to collect data all around the track and to deliver them to a central point where a real-time analysis will be carried out in order to police all the regulations.

The telemetry system should deliver as a minimum :

- Able to collect data from up to 60 cars with up to 5 different classes.
- Bandwidth must be configurable at least per class.
- Bandwidth should target a minimum of 40 Mbps for the full field at any time.
- Bandwidth on a single car should be able to go up to 4 Mbps and be configurable.
- Bandwidth pit to car datastream should be able to be at least 20kbps.
- The telemetry should have a high coverage of the tracks (>90%).
- The telemetry must guarantee a maximum delay of 1s from real time to the central system.
- The configuration of the channel sending through the RT telemetry must be able to be done on track.
- Configuration of units should be broadcast through the telemetry.
- RT data can be sent from pit to cars.
- RT data can be sent from cars to cars.
- Must be able to deliver data for TV graphics

Pit software:

- Must be manageable by 1 person.
- Must be able to manage up to 60 cars on the track.
- Must show alarms in case of regulation infringement.
- Should be easy to configure so even on track people can modify it.
- The software must be able to follow a multi-class discipline with specific regulation for each class up to 5 classes.
- Data coming through must be configurable on track.
- Must be able to merge data coming from an external stream (IP stream on timing network, for example).
- Data should be accessible from different points in the pits.
- The system must be able to sort data in different streams to feed different subsystems (TV graphics, FIA, timing, team, etc.).

## 6. LEVEL 4

### 6.1 Introduction

This level add the voice service on the top of the data service

- Must be able to manage a 2 ways audio channel from car to pits / pits to car (minimum 64kbps each way) full duplex.

A bip tone functionality (for shifting or other information) must be available as an option.

## 7. LEVEL 5

### 7.1 Introduction

This level adapts the bandwidth of the RF stream to be able to support video stream coming from cars.

The target will be to get video format from at least 60 cars in the same area of the circuit.

### 7.2 Features

- Must be able to deliver a low resolution video (426x240 @ 25) from all cars
- Must be able on request to send HD (1280x720 @25) from 2 cars
- Must be able to store on disc the HD stream.
- Must be able to recall stored HD video based on start time or lap number when the car is running (get video during race incident)
- The video module should
  - o accept IP cam or SDI cam (1 or 2 cam) with switch option
  - o have a specific extractable storage
- PROVIDER will propose a compact cam that is fully compatible with the system
- Video must be sync with telemetry data and lap define
- The PROVIDER shall provide a video server or connect all Cam stream as IP stream to the RaceWatchID video server.
- The video server :
  - o The server shall be accessible by RaceWatchID via IP stream
  - o Live stream shall be accessible by RaceWatchID

## 8. LEVEL 6

### 8.1 Introduction

This level should allow a team to have a full team telemetry coverage during a private test session.

This must be feasible without the need to install a complex trackside equipment, ie without the need to deploy a fiber all around the track.

This service must be manageable by the team itself, and doesn't request any PROVIDER trackside assistant.

## 9. EVOLUTION DURING THE PERIOD

Will be included in this offer for each subsystem (hardware or software):

- One evolution of firmware every year.

- One evolution of hardware.
- One evolution of each related software every year.
- Any debugged version of software.
- Any hardware modification needed to follow these specifications.

## **10. TRACKSIDE**

- Depending of the championship the PROVIDER will have to manage installation of the Fiber or not.
- In case the PROVIDER has to manage the fiber network installation, the PROVIDER must provide a network manager on all event.
- Supplier will be in charge of any installation from those points to the access points position.
- Radio frequency licences will be paid by the PROVIDER (championships dependant).
- A lower version of the system should be available for private test if requested by teams (teams will be charged for this service).

## **11. SERVICING**

- During the period any system must not need more than 1 servicing per year.
- Servicing will be paid by the teams.
- Servicing price shall not exceed 1/5 of the annual fee.



## 12. PERSONNEL

### Technical support:

- 1 full-time technician who manages the full project (all levels and all championships), FIA contact inside the supplier.
- Track support on each event may be more than one person in specific events (e.g. Le Mans 24 Hours) or during the development stage.
- The PROVIDER must provide a stability of the track staff for each championship.

### In charge of:

- Checking all units in cars before events.
- Servicing parts.
- Checking quality of data recorded.
- Assisting the FIA delegate by data analysis.
- Reporting after event.
- Following all technical issues.
- Setting up the units.

### On-track support:

- Arriving day before scrutineering.
- Leaving day after the race.

### Commercial support:

- Sales support for all commercial issues in contact with teams.
- Delivery of the systems to the teams.

### In charge of:

- Managing purchase order from teams.
- Managing delivery of units to teams.
- Managing supply chain.
- Reporting sales to the FIA.

### Logistics:

- Travel fees are included.
- Trackside / pit equipment logistics will be held and paid by the PROVIDER.

### 13. TEST AND RACE TOOLS AND MATERIAL

Must be supplied for any championship if needed:

- Test looms.
- Race looms.
- Power supply.
- Lap marker beacon.
- 2 complete bench looms (must include all functionalities).
- 1 loom to connect to the FIA HIL bench test.

### 14. GLOBAL ARCHITECTURE EXAMPLE

