FEDERATION INTERNATIONALE DE L'AUTOMOBILE

WORLD RALLY CHAMPIONSHIP (WRC)
TIMING, TRACKING & CONNECTIVITY SOLUTIONS

CALL FOR EXPRESSIONS OF INTEREST / SELECTION PROCESS

1. INTRODUCTION

The Fédération Internationale de l'Automobile (the "**FIA**") is the governing body for world motor sport and the federation of the world's leading motoring organisations. It is a non-profit making association and brings together more than 230 national motoring and sporting organisations from more than 140 countries on five continents. Its member clubs represent millions of motorists and their families.

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.

Established in 1973, the FIA World Rally Championship (hereinafter the "**WRC**") is considered as one of the most challenging motor sport championship in the world. For more information, please visit the WRC official website www.wrc.com.

The FIA is now calling for expressions of interest to identify candidates (separately referred to as a "**Candidate**" and together the "Candidates") interested in acting as the official supplier of timing, tracking and connectivity Solutions for the FIA World Rally Championship with a view to concluding a 5 year agreement (covering seasons 2018 to 2022 inclusive) (hereinafter the "**Services Agreement**").

Each Candidate is invited to submit an application for the possible supply of the services of timing, tracking and connectivity solutions as well as additional services identified in Appendix 1 (hereinafter the "**Services**").

The present document (the "**Call**") intends to provide information and clarification on how the bidding process will be conducted, how the Candidates should present their proposals and conduct themselves during the process and the requirements and conditions to which candidates will be subject.

Summary calendar of the selection process (subject to changes depending on the amount of candidatures to be evaluated by the FIA):

- Date of publication of the Call: **26 April 2017**
- Deadline to register a formal expression of interest and Proposal: **29 May 2017 before 5 p.m. CET**
- Assessment and Discussion phase between each Candidate and the FIA until 30 June 2017
- Date of notification to the Selected Candidate: **30 June 2017**
- Deadline for negotiation and signature of the Services Agreement: **24 July 2017**

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2. SELECTION PROCESS

The selection process will consist of three stages:

Stage 1:

Candidates are invited to register a formal expression of interest and send their full dossier (hereinafter referred to as the "**Proposal**") with the FIA Administration **before 5 p.m. CET on 29 May 2017** as set out below. Interested Candidates are invited to send their Proposal to the FIA Selection Committee at candidatetiming@fia.com and, in case of voluminous files (exceeding 15Mo) via the FIA Box by using a link to FIA box which will be communicated to the Candidates upon request.

The FIA invites Candidates to direct any question they may have about the form and/or content of the Proposal at the same email address candidatetiming@fia.com.

Please note that any exchange of information between the Candidates and the FIA will be subject to the signature of a Non-Disclosure Agreement (NDA).

The Proposal shall contain:

- a formal expression of interest containing:
    - their full contact details and,
    - a letter introducing their candidacy,
- a complete dossier complying with the requirements stated hereafter.

The dossier shall include the following information on:

1. The organisational ability and its capacity (financial and human resources);
2. The Candidate's experience as a provider (and a list of references of its main clients if possible);
3. The Candidate's management experience regarding subcontractors as regards to the provision of services similar to the Services including the following information:
    a. any areas or elements for which it wishes to use a subcontractor;
    b. details of which subcontractor it wishes to use and for what elements;
    c. the reasons of this choice;
    d. details of any existing relationship with any subcontractor; and
    e. the appropriate management controls it will put in place for ensuring the quality of the Services to the FIA.
4. A confirmation of the ability to operate the Required Services and the corresponding separate proposals for:
    a. The Timing, tracking and Connectivity Solutions (see Appendix 1 for the description and Appendix 2 for the Technical Specifications)
    b. the Logistical Services (see Appendix 1 for the description and Appendix 3 for the List of the FIA Equipment);
5. An undertaking that the Candidate, accepts the Terms & Conditions attached at Appendix 4 to these Terms and Conditions

In areas other than those covered by the Terms and Conditions, a list of any essential changes (*i.e.,* changes which, if not made, would prevent it from entering into the final Services Agreement) and any significant additional points it would wish to see added, provided always that such additional points do not compromise in any way the core terms;

6. An indicative timetable of the Candidate's progress in preparing the provision of the Services and testing the corresponding equipment. This timetable must include the following final deadline: final testing and validation phase of the technical solutions during the WRC Rally of Wales on 27 - 29 October 2017;
7. A statement regarding the Candidate's position as regards to the Optional Services defined in Appendix 1 ;
8. A statement regarding the Candidate's position as regards to the (optional) Marketing Packages defined in Appendix 6;
9. A financial offer to the FIA (with detailed cost estimates) in consideration of the supply of the different Services. The pricing tables set out in Appendix 5 must be fulfilled;

   Please note that the financial offer (including price breakdown) must clearly distinguish the Required Services from the Optional Services;
10. An undertaking that the Proposal fully complies with the Specifications provided in Appendix 2 and covers the full list provided in Appendix 3. Otherwise, in the event the Proposal would include some deviations with such indications, the Candidate will have to clearly identify the main changes/amendments ;
11. A separate proposal setting out any additional services/benefits the Candidate could provide to the FIA in addition to the Required and Optional Services;
12. Any other details considered as relevant for the assessment of such Proposal.

All representations, statements and other commitments contained in the Proposal, and in other correspondence, communications, presentations and documents related to the Proposal, are binding on the Candidate and may be relied upon by the FIA in assessing a Proposal.

Stage 2:

The FIA will contact the Candidates that have submitted a Proposal within the deadline stated in Stage 1 and a discussion phase will start with the Candidates whose Proposal meets the requirements stated in this Call.

Candidates may be asked to clarify or resubmit any Proposal which fails to meet the requirements of the FIA as set out in this Call. The FIA reserves the right to enter into negotiations with one or more Candidates at its sole discretion without recourse to any unsuccessful Candidate(s).

This discussion phase will last until **30 June 2017.**

Stage 3:

According to the results of the various exchanges and discussions with the Candidates, the FIA shall select the Candidate which, in the FIA's sole opinion, best serves the FIA's interests in respect of the supply of the Services.

The FIA will not be required to give reasons for the acceptance or refusal of any particular Proposal. Notwithstanding the foregoing, the FIA will pay particular attention to the following parameters when assessing a Proposal:

- The commitments made by the Candidate in its Proposal;
- The technical capabilities of the Candidate;
- The relevant experience of the Candidate;
- The credibility of the Candidate;
- The Candidate's proposed pricing structure for the provision of the Services;
- The requirements and possible amendments to the FIA Minimum Terms and Conditions (provided in Appendix 4) made by the Candidate; and
- The viability of any additional services/benefits proposed by the Candidate.

The selected Candidate shall be informed of its selection no later than **30 June 2017** and will be required to negotiate and sign a Services Agreement with the FIA by **24 July 2017**.

The FIA shall be under no obligation to accept any Proposal submitted. Furthermore, if, at the sole discretion of the FIA, the FIA considers that no Candidate meets with the FIA's criteria for the appointment as a provider of the Services, the FIA may elect not to appoint any of the Candidates.

For the avoidance of doubt, the selection by the FIA of a Candidate does not impose any obligations on the FIA, or entitle the selected Candidate to any contract.

3. STATUS OF THIS CALL

The FIA reserves the right, at its sole discretion, to interrupt or make changes to this selection process at any time or to change and/or withdraw any aspect of this Call or to issue an amended Call at any time.

Nothing in this Call or any communication made by the FIA or its representatives, agents or employees at any time in relation to this Call shall: (a) constitute an offer or a contract between the FIA and any Candidate; or (b) be construed as placing an obligation on the FIA to grant rights to any Candidate; or (c) constitute any appointment of a Candidate by the FIA; or (d) not act as a representation that a Candidate will be granted any right(s) or appointed by the FIA in any capacity.

The information contained in this Call is provided in summary form only and does not purport to provide complete descriptions of the rights which are the subject of this Call, any arrangements relating to such rights or any contractual terms subject to which such rights will be granted.

4. SERVICES AGREEMENT

The selection and appointment of any Candidate shall be subject to the FIA and the relevant Candidate entering into a Services Agreement, which shall be in accordance with the FIA's Minimum Terms and Conditions provided in Appendix 4. It is expressly agreed that the Candidate's general terms and conditions shall not apply to the Proposal.

By submitting a Proposal, each Candidate acknowledges and accepts that the Services Agreement to be signed with the FIA and for which it is has submitted an application will contain clauses reflecting in full the Terms and Conditions. Although the FIA accepts to receive proposals for amendments to the Terms and Conditions from the Candidates, this does not imply any obligation on the part of the FIA to accept any change that may be proposed to the Services Agreement.

The selected Candidate undertakes to discuss in good faith with the FIA with the objective of concluding a satisfactory agreement for both parties.

5. INTELLECTUAL PROPERTY RIGHTS

Each Candidate acknowledges that all intellectual property rights for all purposes throughout the world and all commercial opportunities of whatsoever nature in relation to the FIA, this Call and any materials and/or information provided to or created by any Candidates during the Call process (including, without limitation, all physical materials upon which such materials and/or information is recorded or stored) are the sole and exclusive property of the FIA.

Each Candidate undertakes warrants and represents to the FIA that:

- all elements of and otherwise related to its Proposal shall be original (not copied) and will not infringe any third-party intellectual property rights;
- it shall own all rights (including intellectual property rights) in the Proposal submitted and shall be capable of assigning all such rights to the FIA;
- it shall not use any of the FIA's marks, logos or other properties without the prior written approval of the FIA;
- it shall not associate itself with the FIA, any FIA championship(s) or any other FIA trademarks or properties without the prior written approval of the FIA;
  For the avoidance of doubt, this also means that it is not entitled to make reference to the FIA in a way which could give to third parties the wrong impression of an association between the FIA and the Candidate.

- if its Proposal is rejected, within five (5) days of receiving notification from the FIA of such rejection it shall destroy this Call and any and all copies of this Call in its possession or control as well as any other materials and/or information provided to it by the FIA in connection with this Call or created by it in connection with this Call and shall no longer use any such materials or information (either itself or to provide services to any third party).

6. COSTS AND EXPENSES

Each Candidate participating in the Call process shall be solely responsible for all costs, expenses and/or liabilities incurred by it and its sub-contractors in connection with its Proposal including but not limited to:

- the preparation and submission of its Proposal, any presentations, responses to requests for further information and any negotiations with the FIA);
- the possible meetings in Paris and/or Geneva with the FIA;
- in the event the Candidate is selected, the testing phase of the equipment including the equipment transportation and travel expenses in relation to the WRC Rally of Wales (27-29 October 2017) or any additional event to be agreed by the parties.

7. CONFIDENTIALITY

Each Candidate undertakes, warrants and represents to the FIA that all documents and information provided by the FIA in connection with this Call (including this Call document) shall be kept strictly confidential at all times and that it shall not disclose any such information (or any part thereof) to any third party (other than its professional advisers who are bound by similar obligations of confidentiality) without the prior written consent of the FIA, which may be given or withheld in the FIA's absolute discretion.

Candidates are strictly prohibited from making any form of public announcement or statement relating directly or indirectly to this Call, the Call process, the FIA and/or any Proposal (whether

selected or not) without the prior written consent of FIA, which may be given or withheld in the FIA's absolute discretion. Each Candidate acknowledges and agrees that the FIA shall have the sole right to make any announcement in relation to this Call, the Call process and the selection and/or appointment of any Candidate (if at all).

8. GENERAL

Neither the FIA nor any of its representatives, agents or employees: (a) makes or gives any representation or warranty in respect of; or (b) accepts any responsibility for the accuracy or completeness of, any information contained in or otherwise relating to this Call or any communication made by the FIA at any time in relation to this Call, nor shall the FIA or any of its representatives, agents or employees be liable for any loss, damage, liability or expense suffered or incurred by any Candidate in reliance on this Call or any such information and/or communication.

Each Candidate hereby: (a) expressly waives any rights of action they may have against the FIA with regards to the Call process; (b) warrants and represents that the information contained in its Proposal shall not be false, inaccurate or misleading; (c) agrees to indemnify the FIA from and against all losses, liabilities, damages, claims and expenses of any nature whatsoever incurred by the FIA arising out of or in connection with any breach or non-performance by such Candidate of any of its obligations under this Call.

If, following submission of its Proposal, there is any change in a Candidate's circumstances which may adversely affect such information, the Candidate shall promptly notify the FIA in writing setting out the relevant details in full. In that regard, Candidates shall immediately inform the FIA of any change in its ownership or senior management at any time and the FIA reserves the right to reject any Proposal, at its sole discretion, as a result thereof.

Candidates are prohibited from sub-contracting or out-sourcing any part of the work required under this Call in any manner whatsoever without prior agreement in writing by the FIA.

If the FIA considers that any Candidate is, or is likely to be, in breach with the instructions provided by the FIA and/or any of the conditions of this Call, the FIA shall (without prejudice to its rights and/or remedies arising under law) be entitled to reject any Proposal received from such Candidate without any requirement to give such Candidate notice and without any further liability to such Candidate.

This Call shall be governed and interpreted in accordance with the laws of France. Any and all disputes arising out of or in relation to this Call or the Call process shall be submitted to the exclusive jurisdiction of the courts of Paris, France.

APPENDICES:

- *Appendix 1 – Definition of the Services*
- *Appendix 2 – Technical Specifications regarding Timing, Tracking and Connectivity Solutions related Services*
- *Appendix 3 – List of FIA equipment for Logistical Services*
- *Appendix 4 – Terms & Conditions*
- *Appendix 5 – Services pricing table*
- *Appendix 6 – Marketing Packages*

Appendix 1

Definition of Services

I. Scope of provision of the Services

A. WRC

The Services will be provided in relation to the World Rally Championship.
The selected Candidate will be required to perform the Services in compliance with the Sporting and the Technical Regulations applying to this Championship. The 2017 Regulations are available here:
http://www.fia.com/regulation/category/119

Please note that, based on the evolution of motor sport and the Rally discipline, the Regulations may be modified or amended every year and that this may imply adjustments from the future provider in some of the Services to be provided from one season to another.

B. Geographical scope

The Services will be provided in several countries worldwide.

The list of the countries may vary depending on the FIA WRC Calendar which is approved every year by the FIA World Motor Sport Council. The Candidate must take into account that the list of countries provided below is only provided for indicative purposes.

The 2017 WRC Calendar covers the following territories:

Rallye Monte-Carlo	19.01. - 22.01.2017
Rally Sweden	09.02. - 12.02.2017
Rally Guanajuato México	09.03. - 12.03.2017
Che Guevara Energy Drink Tour de Corse	06.04. - 09.04.2017
YPF Rally Argentina	27.04. - 30.04.2017
Vodafone Rally de Portugal	18.05. - 21.05.2017
Rally Italia Sardegna	08.06. - 11.06.2017
ORLEN 74th Rally Poland	29.06. - 02.07.2017
Neste Rally Finland	27.07. - 30.07.2017
ADAC Rallye Deutschland	17.08. - 20.08.2017
RallyRACC Catalunya - Rally de España	05.10. - 08.10.2017
Dayinsure Wales Rally GB	26.10. - 29.10.2017
Kennards Hire Rally Australia	16.11. - 19.11.2017

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C. Number of events

For 2017, 13 events will be organised. This number is only provided for indicative purposes in order to help Candidates to quantify the potential budget and the price breakdown to be provided.
The number of events may vary to +/- 2 events per season.

The official annual FIA WRC Calendar will be communicated by the FIA at the end of September, every year, for the following season.

II. Description of the Services

The Candidates are invited to respond to the Call in relation to a minimum number of services to be performed and identified below (hereinafter the "Required Services"). For those Required Services, a full quotation must be provided by each Candidate.

In addition to the Required Services, the Candidates have the possibility to submit an offer for the additional services defined below (the "Optional Services"). Such optional submission will not affect the assessment of the application submitted for the Required Services.

A. Required Services

a. Timing, Tracking and Connectivity solutions

Candidates are invited to submit a quotation for the following Services:

1. Reconnaissance

Reconnaissance is carried out before the rally, from the Monday to the Wednesday evening preceding the start of each WRC event.

The speed check is carried out on sections of the special stage. One or more maximum speeds are imposed by the organisers. These speeds are defined according to the layout, the dangers and the type of road surface of the special stage. Some rallies are mixed, and for these a maximum speed for asphalt and another for gravel may be applied.

i. Functions

The system must record the following events:
- Time of starting up
- GPS fix as well as PDOP, HDOP, number of satellites used
- Time of passing the start control point
- Time of passing the stop control point
- Loss of feed
- Loss of GPS cover

- Speeding
- Time of shutting down

ii. Characteristics and properties

As the system will help the stewards to take a decision in case of overspeeding, it must be:

- Robust (iP55 minimum)
- Difficult to abuse or to modify the information without notice
- Easy to follow and to download
- Easy to have access to the infringement
- Easy to install
- Give a speed accuracy (+/- 2,5km/h)
- Be operational with an internal Battery for at least 2h

2. Mobile Monitoring

The mobile monitoring is made up of two parts:

- The system on board the vehicles connected with the event
- The operating software

The combination of these two parts serves to display and dynamically monitor, on vectorised or photographic map backgrounds, the geographical positioning of the vehicles taking part in the sports event.

Mobile monitoring is carried out with the help of communication beacons using satellite terrestrial geographical positioning networks such as GPS or Galileo for acquiring the position, and transmission communications can be made via GSM (2G, GPRS, 3G, 4G), radio (UHF, VHF) or satellite (Iridium or other) and must be bidirectional in data (and in audio).

The internal memory of the on-board system must be capable of storing all the important demands (receipt of red flag, SOS request, acknowledgement, GPS position every 1s minimum, etc.) in case of air link failure.

iii. Installation

The installations differ according to the competition vehicles. Works teams will compete in all the events in the championship and will therefore be equipped, as regards the beacon cradle and the feed and communication looms, with permanent kits integrated into the wiring of the vehicle.

The more occasional competitors will be equipped with a simpler kit, comprising a feed cable, a visual console and a push-button console.

The fitting and the tests must be simple and fast.

iv. On-board Beacon

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The on-board beacon should be equipped with:

- An accurate GPS (with GPS antenna)
- A battery (2h autonomy minimum)
- A CAN bus
- A repeater
- A console
- Accelerometer
- Communication system to send the data to the headquarters
- An internal memory

v. Management of communications and key functions

The beacon will send a state message at least every 10 seconds via the available networks. Outside the special stages and if the speed is less than 5 km/h, it may transmit every 30 seconds.
This message will include the following information:

- Hour-minute-second
- Position Latitude-Longitude
- Heading of the vehicle
- Constellation and satellites used
- Speed in kilometres per hour
- State of the bonnet-boot-inclinometer-accelerometer-decelerometer sensors
- State of the vehicle's battery, presence or absence of the 12-volt on-board
- State of means of communication and RSSI rates
- State of the internal battery

The Rally Headquarters should receive all this information from each car at least every 10s, using an accurate and reliable communication system.
The software should have a process to analyse any communication failures and should register the % of incorrect information received by the HQ during the Special Stages.

vi. SOS

If the competitor encounters a major problem requiring outside help, he can call for assistance via an SOS button. This will trigger the rescue, and Rally HQ will then send acknowledgement of receipt of this SOS to the competitors in distress.

3. Timing

i. Purpose

The supplier should provide all the timing equipment necessary for the full Rally.
The purpose of Timing is to take the competitors' times on the special stages, but it also serves to manage the time controls, exit from the parc fermé, entry to the service park, time control at the start of the special stage, etc.

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Timing management also serves to manage penalties, draw up the classifications and generate the starting orders.

In rallies, the main object of the exercise is to time the competing cars. The times are measured both on the road sections (on open roads, subject to the normal traffic laws) and in the special stages.
These times are then calculated to provide the results.

On the road sections, the times are measured only to check that the crew has covered a given distance from one time control to the next according to a schedule drawn up by the organisers. This also allows the checking of the cars' running order during the Rally.

In the special stages, the times are measured from the start to the flying finish line. According to the current regulations, the times will be measured to the thousandth of a second.
The requirements for timing from the regulatory point of view are found in the FIA WRC Sporting Regulations, Articles 31 to 41.

The timing system should be able to cover:
- 10 special stages per day
- 1 super special stages per day
- 15 time control locations per day (in addition to the special stages)
- No limit on the number of special stages running simultaneously.

ii. Timing software

The results software must be capable of meeting the growing needs of the various parties involved – organisers, the FIA, competitors and media.

Some of these needs arise from the regulations, others from multimedia applications that are increasingly popular with the public.

It must also include the means of controlling and monitoring what the equipment at the different TCs and elsewhere is doing, thus allowing the organisers and the team responsible for the results to react in case of foreseeable problems.

The whole results system should be web-based, i.e. accessible from any computer or smartphone by means of a browser, subject to inputting a valid identifier and password.

Various levels of access must be available, giving access to various functions (results team, organiser, media, team, etc.)

A short and non-restrictive list of the various lists, reports and results that it would be necessary to be able to obtain from the system could read as follows:

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- Entry list
- Starting list
- Eligibility list
- Classifications: special stages, general, combined, classes, other championships (WRC, WRC2, WRC3 Junior…)
- Time controls (TC, SS Start, SS Finish)
- Top 10 times in the special stage
- Highest average speeds in the SS
- Penalties
- Retirements
- Intermediate times

Please note that for all the above described services, the Candidate will be required to organise different test sessions.

For technical details, please refer to the Specifications provided in Appendix 2.

b. Logistical services

In addition to the Services consisting of timing, tracking and connectivity solutions, the Candidate is invited to submit a proposal for logistical services during the Term of the Services Agreement.

Such services will mainly cover:

- transportation of the FIA equipment (*as per attached list in Appendix 3*) starting from the 1st race of the season (delivery at race point by the FIA) until the last race of the season (pick up by the FIA at the warehouse of the Candidate – Location to be confirmed as part of the quotation);
- During WRC events taking place in Europe, in case of multiple Service Parks, the Candidate will ensure transportation of necessary equipment from Service Park to Service Park (eg. Weighting scale …).
- any Custom declarations and/or formalities and any administrative-related work in relation to the transportation and storage of the equipment;
- storage of the equipment during the full length of the season, in location secure against damage and thieves, for the duration of the races and in between races;
- appropriate insurance covering all risks in relation to the performance services.

Installation and dismantling of the equipment on-site will be carried out by the FIA.

B. Optional Services

In addition to the quotation for the Required Services, Candidates interested in providing Optional Services are invited to provide a quotation for one or several of the services below:

a. TV & Media services for the WRC Promoter

In the event the Candidate would be selected in order to provide the following Optional Services, such appointment will be subject to the signature of a bilateral agreement between the Candidate and WRC Promoter GmbH.

The assessment and discussions in relation to these TV & Media services will be managed directly by WRC Promoter GmbH.

Candidates interested in submitting a proposal for those services are required to make a separate offer to be clearly identified as "Optional Services Proposal".

1. <u>TV timing graphics production for live and post production</u>

- Timing graphics are needed for all stages (up to 20 per rally) championship race information.
- No design needed, but implementation, production and controlling.
- Number of elements differs from live TV to live-to-web stages. Currently, there are between 2 to 5 live TV stages per rally.
- 2 persons (Graphics Operator and Timing Engineer) on site at each rally for 4 days; implementing the timing graphics in HD 1920X1080 50Hz into world feed / web-feed via VizRT based graphics machines (main and backup).
- 1 Graphics Operator for Post Production (highlights, magazine, news) on site at each rally for 4 days. Implementing graphics and timings (also telemetry) for the post production products in HD 1920X1080 50Hz via VizRT based graphics machines.
- Graphic elements include lower thirds (up to 4 lines), clock, split times, comparisons, stage standings/results, overall rally results, various full screen boards, comparisons, statistics, bios, telemetry, maps, etc. (see attached WRC Brand Book).

2. <u>API data feed for WRC digital and WRC+, accessible through a common web service API, which should include at least the following elements:</u>

- XML feed for all P1 and P2 cars' GPS data, provided via the official WRC tracking boxes
- Championship race information
- Entry lists
- Stage information for each race
- Overall classification after each stage
- Scheduled starting times for each driver on each stage
- Stage classifications
- Split times for each stage
- Real-time GPS data, including telemetry data
- Recorded GPS data accessible through start and end timestamps ("historic GPS data")

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3. Archive and statistics – database for all statistics (most wins, most stage wins, points, etc.)

Database for sports statistics to be used, i.e. for TV graphics, website and general evaluation.

4. Access to the tracking system and tracking app for cars (must be mobile accessible via tablets and smart phones).

5. Additional transponders to be visualised on overall rally map solution:

- transponders for WRCTV vehicles moving on stages for better safety and security;
- transponder on WRCTV helicopter.

b. Radio Communication services for WRC Competitors

In the event the Candidate would be selected in order to provide such Radio Communication Services, such appointment will be subject to the signature of:

- a bilateral agreement between the Candidate and WRC Promoter GmbH and,
- a bilateral agreement between the Candidate and the Competitors.

1. Communications (radio and data) for the Competitors and the teams:

The Candidate may provide radio/telephone or any other method of communication between all members of the teams including the Rally crew.

The Candidate is invited to submit a quote for the provision in which the following items will be distinguished:

- The hardware system for the team (price per device; mobile and fixed);
- The full service (excluding the hardware) in order to provide a good channel of communication between the service park and the rally car from the beginning to the end of the stages (relay, authorisation, etc.).

The Candidate could structure its quote per rally and/or for a full season from 1 to 5 teams (each team should have its own channel(s)).

2. Communications (radio and data) between the FIA Officials:

The Candidate may provide radio/telephone or any other method of communication between the FIA Officials.

The Candidate is invited to submit a quote for the provision of:

- The full service allowing good communications between the FIA Officials at the service park and the FIA Officials on the rally roads from the beginning to the end of the stages, including but not limited to:
    - Supply of the communication devices:
        - minimum 10 devices for the communications between the FIA Officials;
        - minimum 3 devices allowing the FIA Officials to listen to all the teams;
    - technical assistance;
    - relay;
    - authorisation;
    - any other service.

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Appendix 2

TECHNICAL SPECIFICATIONS
in relation to TIMING, TRACKING & CONNECTIVITY SOLUTIONS

CONTENTS

1. **Reconnaissance**

1.1 *Global vision of the project*

1.2 *Route note cars during the Rally*

1.3 *Operation of the system*

1.4 *Characteristics*

1.5 *Operating and analysis software*

2. **Mobile monitoring***Global vision of the project*

2.2 *On-board beacon*

2.2.1 *GPS calculator*

2.2.2 Red Flag

2.2.3 I/Os

2.2.4 *CAN Bus*

2.2.5 Good Stop

2.2.6 *SOS*

2.2.7 *Accident Trigger and Severity*

2.2.8 *Distress proximity radio (optional)*

2.2.9 *Management of communications and key functions*

2.2.10 *Message sent by the beacon*

2.2.11 *Audio (optional)*

2.2.12 *Input/Output sensors*

2.2.13 *Antennas*

2.2.14 *Battery*

2.2.15 *Connectivity*

2.2.16 *Console*

2.2.17 *Equipped vehicles*

2.2.18 *Cradle*

2.2.19 *CPU card*

2.2.20 *Mobile reception versions (Technical Delegate, Safety Delegate, …)*

2.3 *Operating software*

2.3.1 *Main screen*

2.3.2 *Alarm and alert on additional screens*

2.3.3 *Red flag*

2.3.4 *Database*

2.3.5 *Intermediate times (splits)*

2.3.6 *Crew interactive system*

3. Timing

3.1 *Global vision of the project*
3.2 *Time Controls*
3.3 *Timing kits*
3.4 *Timing software*

4. Countries hosting the World Rally Championship (WRC)

This note is intended to provide the key parameters for the FIA World Rally Championship in order to guide the Candidate in submitting their Proposal to the FIA.

This document is provided for guidance purposes only and intends to describe, at least in part, some of the functions of the current systems.

Under no circumstances shall this document be understood as a limitation or restriction to the content or the technical specifications of any Proposal made to the FIA by the Candidate.

All suggestions from the Candidates are welcome.

1. Reconnaissance

1.1 Global vision of the project

All cars must be equipped with a system allowing their speed to be checked during the reconnaissance of the special stages.

Reconnaissance is carried out before the rally, from the Monday to the Wednesday evening preceding the start of the Rally.

The speed check is carried out on sections of the special stage. One or more maximum speeds are imposed by the organisers. These speeds are defined according to the layout, the dangers and the type of road surface of the special stage. Some rallies are mixed, and for these a maximum speed for asphalt and another for gravel may be applied.

Certain precise points are subject to speed information (passage through a village close to a school, a dangerous crossroads, etc.); the competitor must therefore be alerted to this without being penalised, although the data is recorded in case analysis is necessary later on (police report, incident, etc.).

The systems are distributed according to a schedule drawn up by the organisers of the event, generally on the Monday, but the Sunday may be an option. These systems must be easy to install for people unfamiliar with automobile electrics (cigar lighter socket, and with Rilsan or Velcro on the dashboard to install the system in the competitors' field of vision).
Reconnaissance generally ends on the Wednesday evening.

1.2 Route note cars during the Rally

Depending on the type of road surface on the special stages of the Rally, the FIA Regulations may authorise route note cars for specific competitors. These vehicles are generally the vehicles of the crews that have carried out reconnaissance, passing a few hours before the start of the special stages so as to correct the crews' notes for the race. They are subject to the same speed limit that is imposed during reconnaissance. The system must therefore be installed for the 3 days of the Rally.

A timetable is imposed on the cars carrying out reconnaissance. Each category (Priority 1, 2 and 3 and non-priority) is given a time slot to carry out its two reconnaissance runs on each special stage.
As a rule, the Priority 1 and 2 cars have the same time slot and the Priority 3 and non-priority cars have another.
An analysis and a report must be made after the end of reconnaissance as well as at the end of the rally (if asphalt) and handed to the FIA authorities and the clerk of the course.

1.3 Operation of the system

The system must start up automatically as soon as the vehicle moves, to preclude the possibility that the competitor forgets to switch it on; the cut-off must also be automatic.
The system must display that operation is optimal, GPS cover, presence of the on-board power feed.
Although the sections between the special stages (road sections) are not controlled by the regulations, it is nevertheless necessary to record the main events (position, speed) but less frequently.
The system must see that the competitor respects these imposed speed limits.
A certain number of passes are also authorised (2 passes at present).
Two tolerances are applicable and may change:

a. 10% margin of tolerance on the imposed maximum speed
b. 3 seconds of latency on the authorised maximum speed with its tolerance of 10%.

1.4 Characteristics

Minimum characteristics of the on-board system for reconnaissance and route notes cars.

- A unit with a colour or monochrome LCD screen for displaying the main information – speed, name of the special stage, maximum speed, faults (reception, feed, exceeding the maximum speed…)

- A sound alarm is desirable to alert the competitor when he exceeds the authorised maximum speed.

- GPS 1 /10 hertz configurable
- Sensitivity -165dB
- 66 search channels
- 22 track channels
- Position 3.0 m typical. Horizontal 5.0 m typical. Vertical 0.02 m/s typical
- First acquisition time, cold-starting acquisition 30 s typical

- Memory capacity of 16M
- An LCD screen, colour or monochrome, with backlighting
- GPS antenna, internal or external, 25dB LNA minimum (no Helix technology)
- With or without means of communication (GSM)
- An internal battery allowing operation in autonomous mode for a period of 2H minimum (without backlighting) or communication if an option

Functions:

Necessary main information

The system must record the following events:

- Time of starting up
- GPS fix as well as PDOP, HDOP, number of satellites used
- Time of passing the start control point
- Time of passing the stop control point
- Loss of feed
- Loss of GPS cover
- Speeding
- Time of shutting down
- Recording of the position and speed with variable frequencies depending on the context.

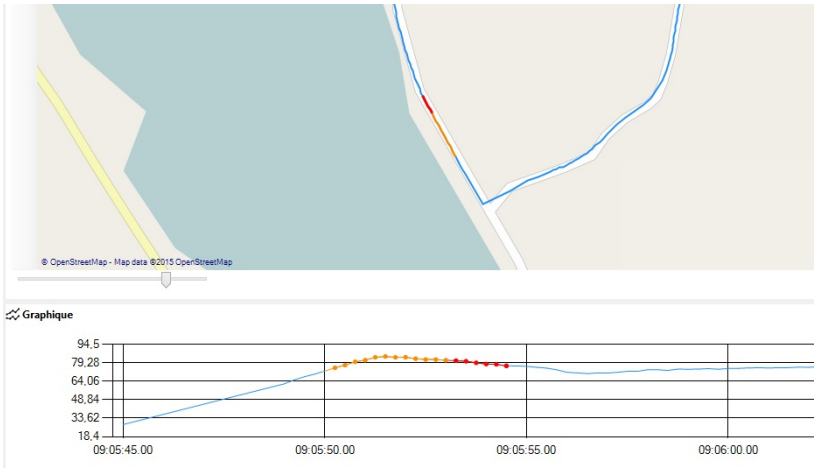
Table:

Programmed maximum speed	1 Hertz	5 Hertz	10 Hertz
50 km/h	From 1 to 45	From 46 to 54	55 and over
60 km/h	From 1 to 55	From 56 to 65	66 and over
70 km/h	From 1 to 65	From 66 to 76	77 and over
80 km/h	From 1 to 75	From 76 to 87	88 and over
90 km/h	From 1 to 85	From 86 to 98	99 and over

1.5 Operating and analysis software

Programming of the systems

- Name and number of the competitor
- Maximum speed imposed by the organisers
- Entry and exit of the special stages and subject to the speed limit
- Zone with reduced speed due to potential danger during reconnaissance (matched with the road book)
- Recovery of information
- Direct analysis of the number of passes
- Direct analysis of speeding
- Direct analysis of the selected events
- Visualisation of the information on a background map adapted to the location where the event is taking place



The number of competitors is generally limited to 90 on the rallies in the World Championship. There may be persons not registered as competitors who will carry out this reconnaissance.

Therefore, 110 to 120 sets of equipment are necessary.

2. Mobile Monitoring

2.1 Global vision of the project

The mobile monitoring is made up of two parts:

1. The system on board the vehicles connected with the event
2. The operating software.

The combination of these two parts serves to display and dynamically monitor, on vectorised or photographic map backgrounds, the geographical positioning of the vehicles taking part in the sports event.

Several categories of vehicles exist: competitors, organisers, TV, safety, medical and technical.

This helps to see that the event runs smoothly, in terms of safety as well as compliance with the sporting and technical regulations.

Mobile monitoring is carried out with the help of communication beacons using satellite terrestrial geographical positioning networks such as GPS or Galileo for acquiring the position, and transmission communications can be made via GSM (2G, GPRS, 3G, 4G), radio (UHF, VHF) or satellite (Iridium or other) and must be bidirectional in data (and in audio).

The internal memory of the on-board system must be capable of storing all the important demands (receipt of red flag, SOS request, acknowledgement, GPS position every 1s minimum, etc.) in case of air link failure.

Specific functions are necessary in order for the concept to work correctly.

Alarms linked to the moving of the mobile, spatial positioning sensors, receipt of a state, activation of the module, recording of states and events.

The systems must be robust and long-lasting. Extreme operating conditions (impacts, vibrations, humidity, temperature) IP 55 minimum.

Solutions and test equipment must be available to enable faults to be quickly remedied.

The installations differ according to the competition vehicles. Works teams will compete in all the events in the championship and will therefore be equipped, as regards the beacon cradle and the feed and communication looms, with permanent kits integrated into the wiring of the vehicle.
The more occasional competitors will be equipped with a simpler kit, comprising a feed cable, a visual console and a push-button console.

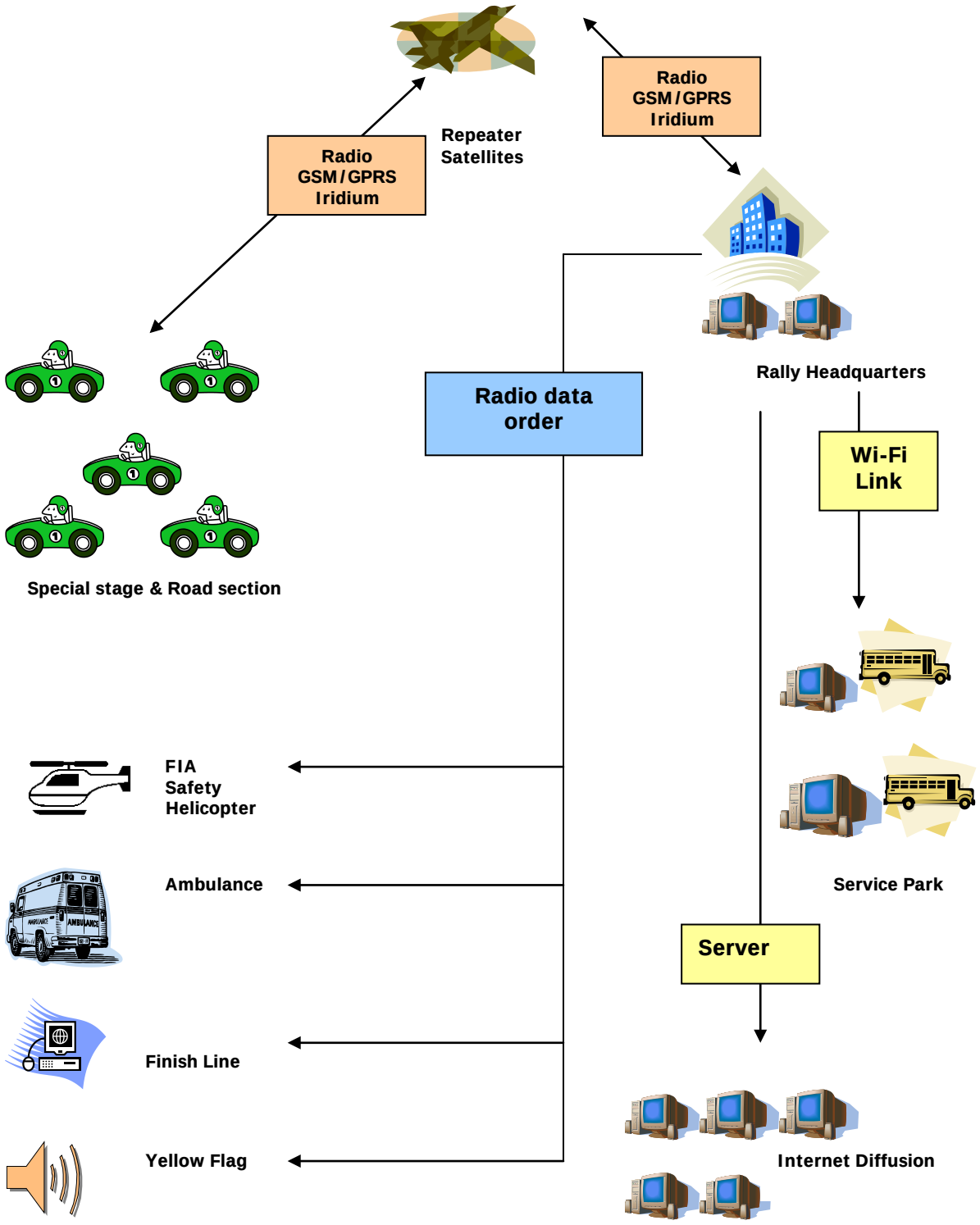
The fitting and the tests must be simple and fast. The beacons are distributed on the day before scrutineering, the day when the tests and checks will be carried out.

The beacons must be sealed in a tamper-proof manner via a VOID polyester sticker system.





Umbrella diagram



 © 2017 FIA

2.2 On-board beacon

2.2.1 GPS calculator

The GPS receiver must be of very good quality. It must position the vehicle with very good accuracy despite positioning contexts that are sometimes difficult: interference caused by forested, mountainous or urban surroundings. It must also allow the calculation of the intermediate times (splits) all along the special stages with the utmost precision (at least one every 5kms).

The data from the GPS receiver must be sent to the FIA data logger via CAN Bus (coordinates, speed, number of satellites seen, quality of reception, etc.).

- Channels 66/22 (search/track)
- Tracking sensitivity -165 dBm typ.
- Navigation sensitivity -165 dBm typ.
- Navigation sensitivity, re-acq. -160 dBm typ.
- Navigation sensitivity, cold acq. -148 dBm typ.
- Update rate 1 Hz (configurable up to 10 Hz)
- Position accuracy 3.0 m (67%) typ. Horizontal 5.0 m (67%) typ. Vertical 0.02 m/s (50%) typ.
- Max. speed /speed 1000 knots
- Differential GPS RTCM, SBAS (WAAS, EGNOS, MSAS, GAGAN, QZSS)

2.2.2 Red flag

The red flag is activated by the clerk of the course in the event of a major problem relating to safety on a special stage.

Activation by the clerk of the course must be easy and fast, in the order in which the vehicles are running on the special stage and not in the order of their numbers.

The red flag will be sent and be active for the vehicles upstream of the incident, whether they are already on the special stage or at the start if this is not interrupted. Competitors must acknowledge receipt of this message by pressing a button, and must reduce their speed and finish the course prudently.

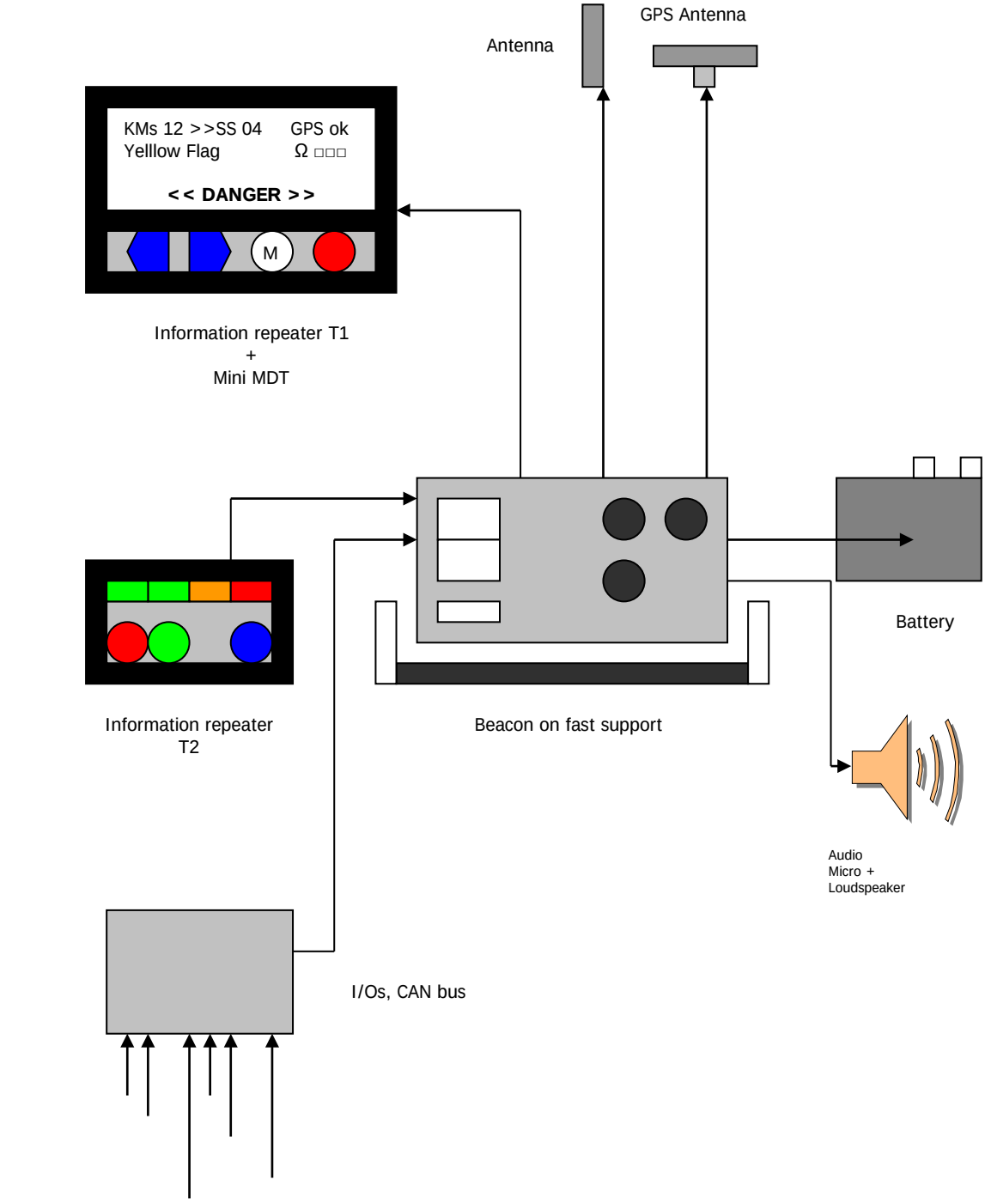
This state will be displayed through the activation of a white or red flash visible to the crew, who must then acknowledge receipt by pressing a button. This state will be backed up by a sound alarm if the crew does not acknowledge receipt within a given time (30 seconds for example).

Once the signal has been sent and received by the competitor, a maximum speed state will be activated on the beacon. In the event that this speed is exceeded, an alert message will be sent to the clerk of the course via one of the communication networks. This message will include the competitor's number, the speed, and the time and place of the infringement.

The end of the racing-under-the-red-flag state will be sent by the clerk of the course via a software command.
The receipt of a red flag must be recorded in the vehicle's unit and sent to DATA FIA via CAN bus.

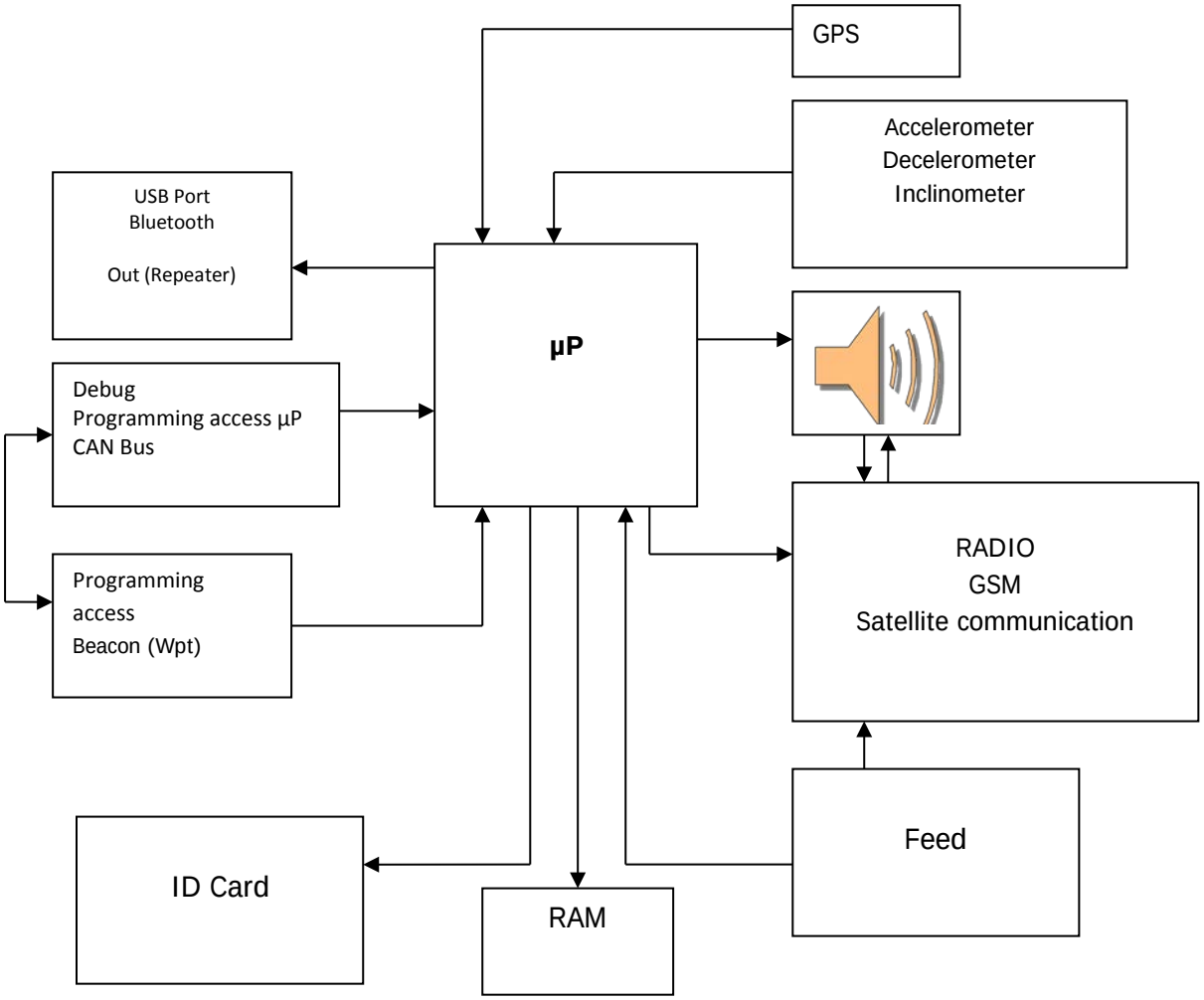


Accident with SOS, activation of the yellow flag by the clerk of the course	The competitors acknowledge receipt of the yellow flag (-2)	All the competitors on the special stage finish the stage under the yellow flag



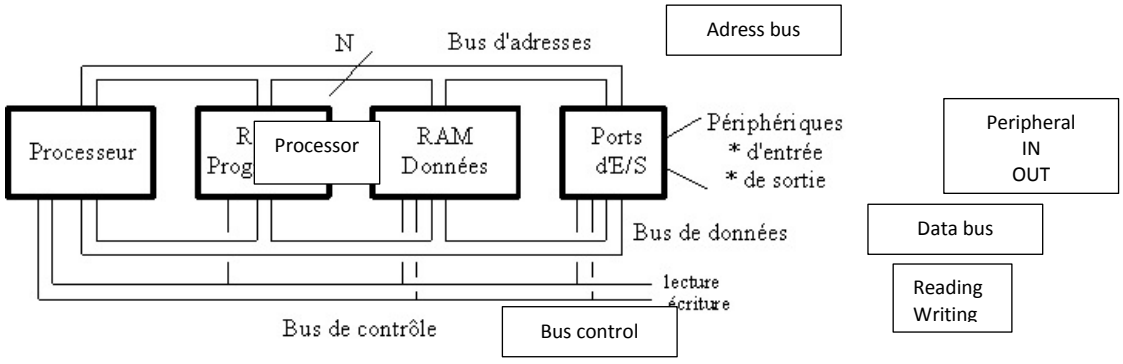
Synoptic of an example of a beacon
With a different console

 © 2017 FIA



2.2.3 I/Os

An in-port is essentially made up of three-stage buffers. These behave like electronic switches which, at the right time, make the logic levels of the input device (selected by the address bus) appear on the data bus.



These ports will be used to display a red flag state via a red flash, a sound signal, to connect a series of push-buttons allowing the race states (SOS, Good Stop, OK…) to be communicated quickly, or to monitor the opening and closing of a bonnet or boot. A minimum of 10 inputs and 10 outputs is required.

2.2.4 CAN Bus

The CAN (*Control Area Network*) bus is a standard means of communication which supports on-board systems in real time with a high level of reliability. Fields of application range from medium throughput networks to multiplexing networks. The structure of the protocol of the CAN bus implicitly possesses the following main properties:



- Hierarchical organisation of messages.
- Guarantee of latency times.
- Configurational flexibility.
- Reception from multiple sources with temporal synchronisation.
- Multiple-master application
- Detection and signalling of errors.
- Automatic retransmission of altered messages as soon as the bus is again at rest.
- Distinction of errors: of a temporary nature or permanent non-functionality at the level of a node, automatic disconnection of defective nodes.

This means of communication will be synchronised with the functions of the competition vehicle and with the DATA FIA unit which uses and controls certain parameters.

The CAN bus must comply with the standard CAN 2.0B, baud rate 1Mbps, 11bit identifier, Motorola - Big Endian.

All the functions of the on-board calculator must be sent to the FIA data logger by this CAN bus.

A small quantity of information sent by the FIA data logger must be able to be sent to the HQ.

2.2.5 Good Stop

When a competitor encounters a problem on a special stage (puncture, run-off) but with no consequences for the rest of the race, he must acknowledge a state called Good Stop to the clerk of the course so that the latter does not neutralise the race.

This acknowledgement is made via a push-button within the imposed time limit. A sound alarm must warn the competitor not to neglect this action (the signal is sounded after the vehicle has been stopped for a specific time (approx.10 to 30 seconds) to be further determined.

The exact time of acknowledgement must be recorded in the vehicle's unit and transmitted to DATA FIA via CAN bus.

2.2.6 SOS

If the competitor encounters a major problem requiring outside help, he can call for assistance via an SOS button. This will trigger the rescue, and Rally HQ will then send acknowledgement of receipt of this SOS to the competitors in distress.

The exact time of the SOS call must be recorded in the vehicle's unit and transmitted to DATA FIA via CAN bus.

2.2.7 Accident Trigger and Severity

In order to give race control an immediate warning of the occurrence of a significant accident, and its severity, the tracking system must be able to:

- acquire the relevant CAN signal from the FIA logger
- transmit an accident warning and peak deceleration value to race control

2.2.8 Distress proximity radio (optional)

The proximity radio allows the management of several functions.
The first function of this communication element is to compensate for a failure of the other 2 on-board communication systems (GPRS and Iridium for example) by sending a state and positioning message to the other competing vehicles directly on their GPS beacon, relaying the information on this low-energy, low-power radio in the event that the vehicle overturns.

A second function will allow a warning message to be sent to the other competitors nearby, to inform them of imminent danger – for example, a damaged vehicle is sideways on, blocking the road, with its crew on board – and thus prevent a further accident. This function is activated under the responsibility of the crew in danger, by means of a push-button, and relayed to Rally HQ via the available networks.

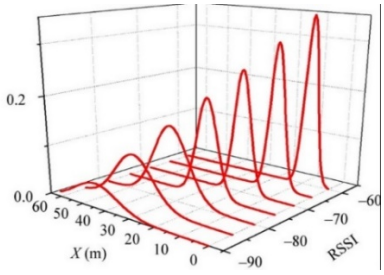
A sound signal and a visual will be triggered on the vehicle arriving at the scene of the incident. In order to limit the propagation of the radio signal, a power control will be applied to this function so as to limit reception to 100 metres, for example.

2.2.9 Management of communications and key functions

Communications are managed according to their availability. A minimum of two means of transmission must be available.

The principal means makes way for a backup means in case of low or no availability, the RSSI levels of each means allowing the efficient management of communications and switching. An identifier precedes the means used and the power available, and a separate display of the means and of its capacities is carried out on the operating software.

- Conformity with the requirements regarding licences in all countries currently hosting rounds of the FIA World Rally Championship.
- An operational state in the different conditions of terrain and climate encountered in this same Championship.



2.2.10 Message sent by the beacon

The beacon will send a state message at least every 10 seconds via the available networks. Outside the special stages and if the speed is less than 5 km/h, it may transmit every 30 seconds.
This message will include the following information:

- Hour-minute-second
- Position Latitude-Longitude
- Heading of the vehicle
- Constellation and satellites used
- Speed in kilometres per hour
- State of the bonnet-boot-inclinometer-accelerometer-decelerometer sensors
- State of the vehicle's battery, presence or absence of the 12-volt on-board
- State of means of communication and RSSI rates
- State of the internal battery

2.2.11 Audio (optional)

Each communication system currently allows audio communication. GSM and Iridium in full duplex constant or half duplex by radio, and this without latency.

In case of activation of a rescue call by the competitors or in case of activation of a decelerometer and/or inclinometer with detection of negative G due to a sudden deceleration, the clerk of the course may at any time enter into audio communication with the competing vehicle and dispatch the emergency services that are most appropriate to the situation that has been described to him by the competitor or by a third person at the scene.

The audio function may be coupled to the on-board intercoms via a Bluetooth or wired link.

2.2.12 Input/output sensors

Bonnet and boot

State (on/off) sensors fitted to the bases of the bonnet and boot are available on the competition vehicles. When these are opened, or closed, a modification of state is sent in the positioning frame of the vehicle and is visible on the operating software.

Accelerometer, Inclinometer and decelerometer

The system must be equipped with sensors allowing several states of the system to be checked:

- Accelerometer: Starting up and shutting down of the system, impact detection
- Decelerometer: Sudden deceleration following a frontal impact
- Inclinometer: Vehicle overturned

The data from the sensors must be sent to the FIA data logger via CAN bus. A change of state of a sensor must also be recorded in the internal memory of the unit.

2.2.13 Antennas

GPS and Iridium

They may be magnetic or fixed to the roof (by drilling) depending on the type of competitor.





Radio and GSM

Depending on the frequencies used (UHF, VHF) they will also be drilled or magnetic ¼ wave.



2.2.14 Battery

The system's internal batteries may be of the Li-ion or Li-polymer type. The battery will be fully charged before being distributed to the competitors. On the days of the Rally the charge will be maintained by means of the competition vehicle's on-board feed. An operating logic must be developed so that the battery is always at the maximum of its capacities, thus allowing the system to operate for 2 hours when switched to autonomous mode.

The state of charge of the battery must be sent to the FIA data logger via CAN bus.

This operating logic must be integrated into the system so as to moderate the discharging of the batteries, as the system will be fed after the general circuit breaker of the vehicle.

For example, programmed waypoints telling the beacon that it can go to sleep as it is in the service park or in the parc fermé; or that it is on a special stage and that it must remain in operation for two hours, despite zero speed and sensors not detecting any vibrations.

Parc fermé		assistance parc		road section		Special stage		regroupement		assistance parc		Parc fermé	
Sleep mode	Fonction		Sleep mode	Fonction					Sleep mode	Fonction	Sleep mode	Fonction	Sleep mode

2.2.15 Connectivity

The connectors and wiring looms must be of good quality and easy to fit and remove without specific tools. There must be permanent wiring for the works cars.

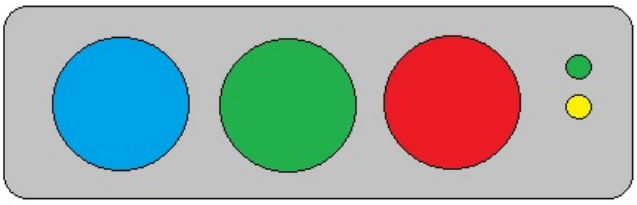




Souriau or Fisher connectors

- Feed (7 volts to 48 volts)
- CAN Bus and communication
- Console (indicators and push-button)
- External antennas (GPS, Iridium, GSM, Radio)

2.2.16 Console



In the case of a simple console with push-buttons for the following functions:
Good Stop, SOS and OK as well as function control indicators and a 110dBm buzzer

2.2.17 Equipped vehicles

Several types of vehicles will be equipped with this beacon. They must therefore be easily portable.

- Works type competition vehicle
- Semi-professional type competition vehicle
- Amateur type competition vehicle
- Organisers' vehicles
- Helicopter
- Aeroplane

The selected Candidate will be required to equip each Competition's vehicle entered in each event of the WRC. For each event, the selected Candidate is required to have a minimum of 150 working systems available at any time.

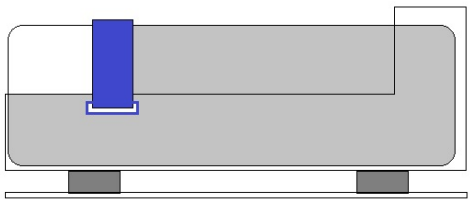
2.2.18Cradle

The cradle holding the beacon must be light and compact. It will be in two parts, the first being the base which is fixed to the floor of the competition vehicle. The second part will be coupled to the first part via silent blocks or any other means of absorbing impacts or vibrations due to the difficult conditions encountered on certain rallies.



The beacon will be slid into this assembly and held in place via a system of Velcro or rubber straps.





The design for holding the cradle onto the vehicle, and for keeping the beacon inside it, must be very robust. It must not come loose in the event of a violent impact.

At 50 km/h a beacon weighing 1 kilogram corresponds to a weight of 10 kilograms, so the system for supporting the beacon must be designed according to the risks.

2.2.19The CPU card (motherboard)

The management card must manage the feed to the sub-assemblies (GPS, radio modem, GSM modem, battery charger, etc.).

It will manage the means of communication as well as the processing of the data acquired (GPS, sensors, CAN bus, etc.).

Various parameters will be available via software. The latter must give access to the programming, and to the reading of the programmed information or of the data stored on the memory cards.

It will be autonomous to self-validate its correct operation and will automatically reboot if certain operating criteria are not validated.

This card will be equipped with a memory card allowing the data of the rally to be stored over 4 days.

This data will be of the following types: events (receipt of red flag, acknowledgement of the same, activation of the SOS button, activation of the Good Stop button), positioning, speed, states of the sensors, or the storage of the frames sent by the means of communication used.

The file will be of the log type and must be able to be used subsequently by a person unfamiliar with computer programming. All these data will be marked with the date and time (DDMMYY, HHMMSS).
The list is not exhaustive and may evolve according to specific requests that the FIA might make.

2.2.20 Mobile reception versions (Technical Delegate, Safety Delegate, etc.)

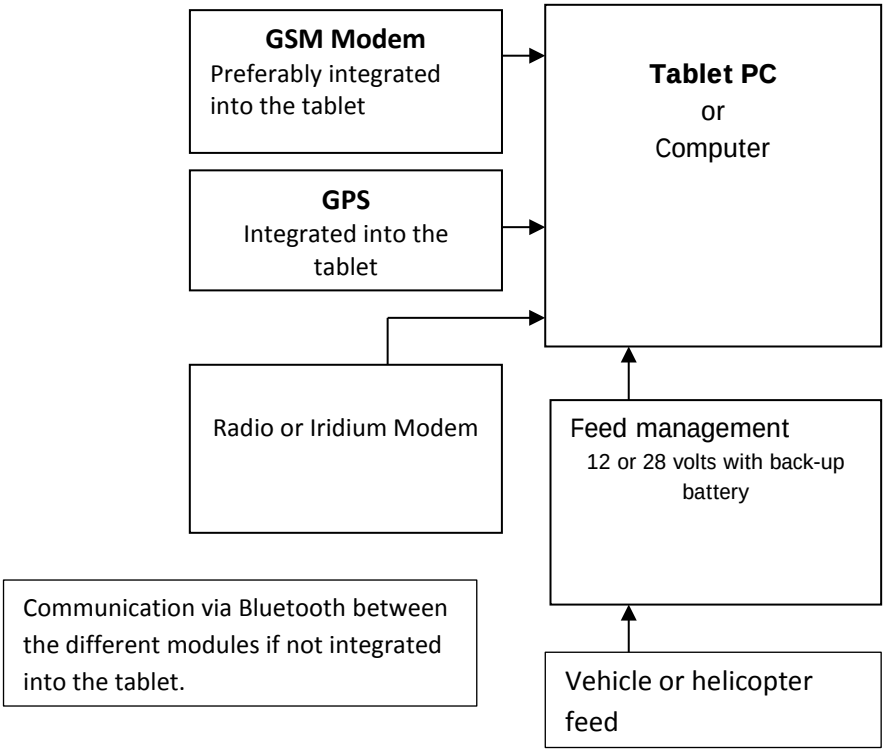
The mobile reception unit (MRU) is the means of receiving the data on the rally. Its main function is to receive positioning and states data from the mobiles (i.e. vehicles) taking part in the event (the competing vehicles and the officials). The secondary function is the real-time positioning of the mobile that is equipped with the MRU.

The MRU consists of a tablet PC allowing the use of the associated modems, such as the GPRS, the GPS and others like a radio or Iridium communication modem.

The MRU will be used on ground vehicles or helicopters. The assembly making up these reception units will be integrated into a “pelicase” or other type of case. They will be compact and designed for fast connection to the feed of the vehicle directly on the on-board battery and antennas with a magnetic base for the vehicles and specific bases for the helicopters. Installation must be fast and simple (replacement of one of the means of travel).

For the installation of these reception units on the helicopters used by the FIA, the system must be adaptable to each helicopter model, as the feed sockets differ according to the make of the helicopter (Bell, Eurocopter, Robinson) as well as the possibilities for attaching the radio, Iridium and GPS antennas.
Backup feed with autonomy for two hours must be added to the on-board feed for helicopter-borne installations in order to be able to function on the ground during this time on the assemblies not fed by the tablet.

On-board feed (12 volts on a vehicle and 28 volts on a helicopter) must power the on-board computer and charge the back-up battery on the helicopter version.
The operating software will be the media software if reception is via the GPRS or the data Iridium and an adapted software if there is direct radio reception from the plane relay or from mobiles nearby.
In the case of installation of a terminal allowing an interactive system linked to the timing with which the competing crews are equipped, the possibility of receiving information on this tablet would be an advantage in collecting information on the Rally for the technical, safety or other delegates.



2.3 Operating software

2.3.1 Main screen

Cartography and Icons

Coloured and numbered icons, representing the competitors, move on a detailed background map of the vector or photo type or according to acquired or free rights (e.g. Google Maps, Openstreet Maps).

Depending on the state of the message received, the icons will change colour or appearance, thus signalling the situation of the mobile: stopped, running, no reception, SOS, red flag…

The background map shows the different parts of the rally: road sections, special stages with TCs (time controls), starts and finishes.

It also shows information such as radio points and all the information necessary for safety.

- Route of the Rally
- Control points on the timed sectors
- TC points
- Safety or radio points
- Positions of ambulances and FIVs
- Hospitals
- Alternative routes and emergency access
- Positions of helicopters

- Landing zone
- Location of police
- Spectator parking
- Spectator zones

This information is displayed according to a selection filter that activates or does not activate the information.

The colours of the icons could be defined as follows:

- Green -> Moving
- Orange -> Good Stop activated
- Blue -> Stopped
- Red -> SOS activated
- Red -> Under red flag (after acknowledgement of receipt by the crew)
- Black -> No reception for a given time (window of alert with message to reboot the beacon)

The cartographic screen requires the same functions as a standard product:

- Zoom in and out
- Search for a geographical point by entering GPS coordinates
- Display of GPS coordinates by the pointer
- Calculation of distance.

The mobile monitoring software as well as the splits and timing must be available on a server so as to be able to be used by the promoter of the rally, the organisers and the media.

Each competition car shall send its state message (as defined in Point 2.2.10 of this document) every 10 seconds to the HQ. This message must be accurately received by the Race Control.

The software should have a process to analyse any communication failures and should register the percentage of incorrect information received by the HQ during the Special Stages.

The journalists and the team representatives present will use this media screen mainly to follow the progress of the competitors during the special stages, their main concern being to provide accurate positioning and timing information.

The information provided on the media screen must include:

- Route of the Rally (road sections, starts and stops of SSs)
- Position of the competitors
- Points for taking the intermediate times (splits)
- Management and display of intermediate times.

2.3.2 Alarm and Alert on additional screens

The clerk of the course must have the means to isolate and process events arising without losing sight of the current situation.

When a vehicle stops on a special stage, the information relating to this stop must be able to be processed on an additional screen.

On this screen, there is a page on the general situation of the mobile, showing all the available states: date, time, position, state of the sensors, etc.

The clerk of the course will thus have all the available information at his disposal to assess the situation and act accordingly, e.g. calling the crew, triggering the red flag, or neutralising the special stage.

The last screen will allow him to access the information and to communicate the closest landing point for the helicopter, and find the name and telephone number or radio call sign of the post chief responsible for the special stage concerned.

2.3.3 Red flag

The red flag function will be activated by the clerk of the course following an incident on a special stage. This action entails the neutralisation of the special stage.

The day's starting order will be updated before the morning start. The selection of the competitors concerned by the red flag will thus be easy and fast.

5	T. NEUVILLE N. GILSOUL	HYUNDAI MOTORSPORT HYUNDAI I20 COUPE WRC	M	RC1	P1
6	D. SORDO M. MARTI	HYUNDAI MOTORSPORT HYUNDAI I20 COUPE WRC	M	RC1	P1
7	K. MEEKE P. NAGLE	CITROËN TOTAL ABU DHABI WRT CITROËN C3 WRC	M	RC1	P1
8	C. BREEN S. MARTIN	CITROËN TOTAL ABU DHABI WRT CITROËN C3 WRC	M	RC1	P1
10	J. LATVALA M. ANTTILA	TOYOTA GAZOO RACING WRT TOYOTA YARIS WRC	M	RC1	P1
11	J. HÄNNINEN K. LINDSTRÖM	TOYOTA GAZOO RACING WRT TOYOTA YARIS WRC	M	RC1	P1
14	M. OSTBERG O. FLOENE	M-SPORT WORLD RALLY TEAM FORD FIESTA WRC		RC1	P1
15	S. LEFEBVRE G. MOREAU	CITROËN TOTAL ABU DHABI WRT CITROËN DS3		RC1	P1
16	V. GORBAN S. LARENS	EUROLAMP WORLD RALLY TEAM BMW-MINI JOHN COOPER WORKS	WRC TROPHY	RC1	P1
17	H. SOLBERG C. MENKERUD	HENNING SOLBERG SKODA FABIA R5		RC2	
31	T. SUNINEN M. MARKKULA	M-SPORT WORLD RALLY TEAM FORD FIESTA R5	WRC2	RC2	P2
32	P. TIDEMAND J. ANDERSSON	ŠKODA MOTORSPORT ŠKODA FABIA R5	WRC2	RC2	P2

Example:
Competitor n°14 causes an incident blocking the special stage; the clerk of the course selects n°15 (the next competitor on the list), and all the competitors upstream of the incident and up to the start will be selected automatically and the red flag order sent to them.

2.3.4 Database

- GPS control point
- Scheduled time of the first competitor
- Driver and co-driver team
- Hospital with telephone number, person to contact
- Alternative routes
- Name of the official in charge of a TC with their telephone number or radio call sign
- Any information that could prove useful in case of emergency.

2.3.5 Intermediate times

The mobile monitoring system also allows the calculation of the intermediate times on the special stages. The distance between these intermediate points is around 5 kilometres.

A waypoint with the smallest possible radius determines the point of calculation. These are marked out all along the special stage and are sent to the states frame of the beacon.

Associated software enables visualisation of these times and comparison between all the competitors.
These intermediate times should be given to TV live stages/program in an appropriate format.

150 monitoring system units (competitors, organisers' cars, safety, medical, technical, helicopters).

2.3.6 Crew interactive system

The integration of a visual system for consulting the times would be an advantage for the crews.
In the form of a tablet, the competitor would receive his time via a terminal situated at the finish TC stop point. The official could append an electronic signature at the competitor's request.
A second solution would be to have access, inside the cockpit and during the road sections, to all the timing information.

The data could be received via the GSM of the beacon (minimum 3G or 4G modem) with communication sharing and a connection via a Bluetooth link with the tablet or smartphone.

The provision of a tablet or of a smartphone app would be an interesting benefit.
At present the co-drivers recover the times of the previous competitors at the TC stop board after the finish line.

The putting in place of such a system would facilitate and guarantee the reliability of the information (currently collected quickly by hand in sometimes difficult conditions).
This function also opens up future solutions on interactions between Rally HQ and the teams and crews.


GSM reception
Server

3. Timing

3.1 Global vision of the project

The purpose of Timing is to record the competitors' times on the special stages, but it also serves to manage the time controls, exit from the parc fermé, entry to the service park, time control at the start of the special stage.
Timing management also serves to manage penalties, draw up the classifications and generate the starting orders.

In rallies, the main object of the exercise is to time the competing cars. The times are measured both on the road sections (on open roads, subject to the normal traffic laws) and in the special stages. These times are then calculated to provide the results.

On the road sections, the times are measured only to check that the crew has covered a given distance from one time control to the next according to a schedule drawn up by the organisers. This also allows the checking of the cars' running order during the Rally.

In the special stages, the times are measured from the start to the flying finish line. According to the current regulations, the times will be measured to the thousandth of a second.

The start of the cars in the special stages is habitually given at the top of the minute, at intervals of one, two or three minutes depending on the class of the competition car.

The requirements for timing from the regulatory point of view are found in the FIA WRC regulations, Articles 31 to 41.

The results of a stage are expressed in hours, minutes, seconds and tenths of a second (with the exceptions mentioned above).

They include all time penalties, reporting early or late for a time control, false start, etc.

Chronometer

A chronometer is an instrument that serves to measure time in an accurate manner. The name "chronometer" is defined by the standard ISO 3159, and is protected by certain national legislations, which accredit bodies authorised to practise the certification of watch movements. The Official Swiss chronometers testing Institute (COSC) 4 is the most important of these bodies, and the only one capable of certifying industrial quantities of movements (around one million per year). However, the controls carried out at the COSC are conducted on non-cased movements. The Observatoire de Besançon conducts the same controls on finished and cased watches, thus ensuring optimal reliability for the end purchaser. An accuracy test should be carried out every 2 years to check that the Quartz functions correctly (in accordance with the specifications of the chronometer supplier). Certain Federations, such as the FIS or the FEI, require certification for the use of timing equipment for official events. The FIA is currently working in this direction.
Synchronisation by GPS (pps) is also a possibility and some devices are equipped with it today.

Example of Equipment



Start

To the new technical specificities and with a range of 50 start programmes, the new TAG Heuer HL940 Start Clock offers the most logical and intuitive way to represent the time, as well as gaps and time intervals at the start, and the countdown, for the greatest benefit of sports disciplines.



Docking HL540-GSM

GPS Module • A satellite detection module (GPS) ensuring the automatic updating of the CP 540 and the control of its operating accuracy



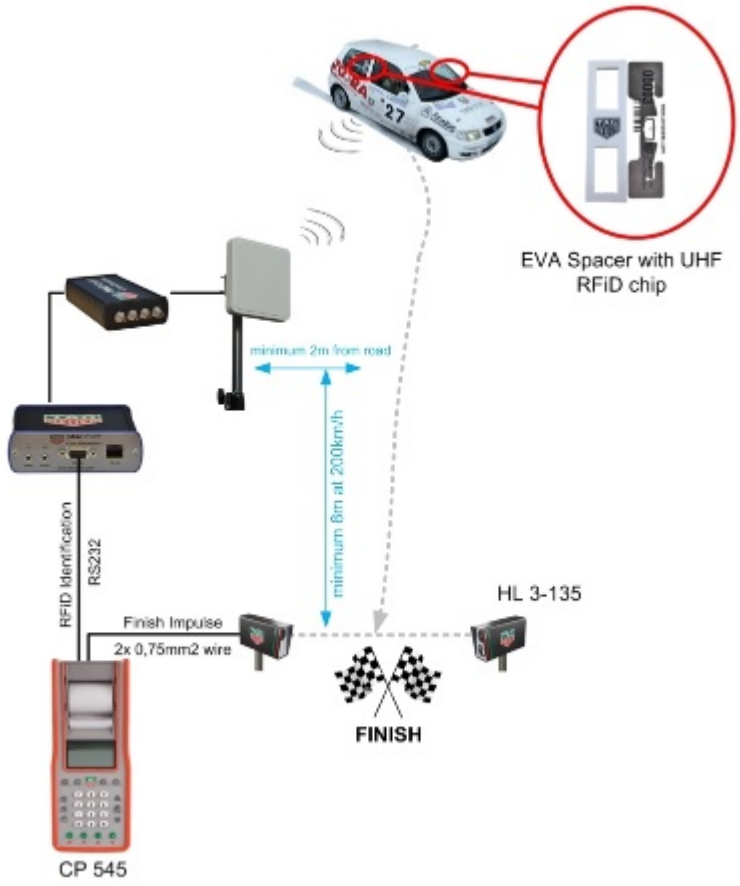
Photo cell HL2-33



Mini display panel

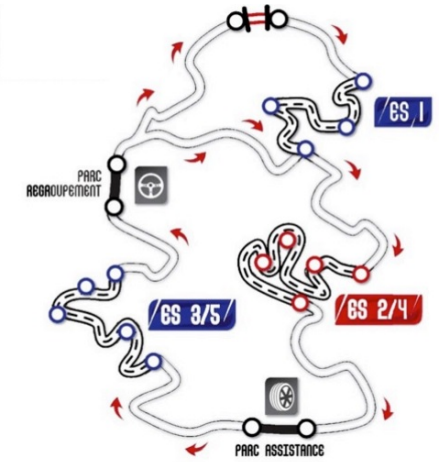
Clock

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Example of the finish of a special stage

3.2 Time controls



The Supplier will be required to provide equipment/Services for up to:

- 10 special stages per day
- 1 super special stage per day
- 15 times control locations per day (in addition to the special stages)
- No limit on the number of special stages running simultaneously.

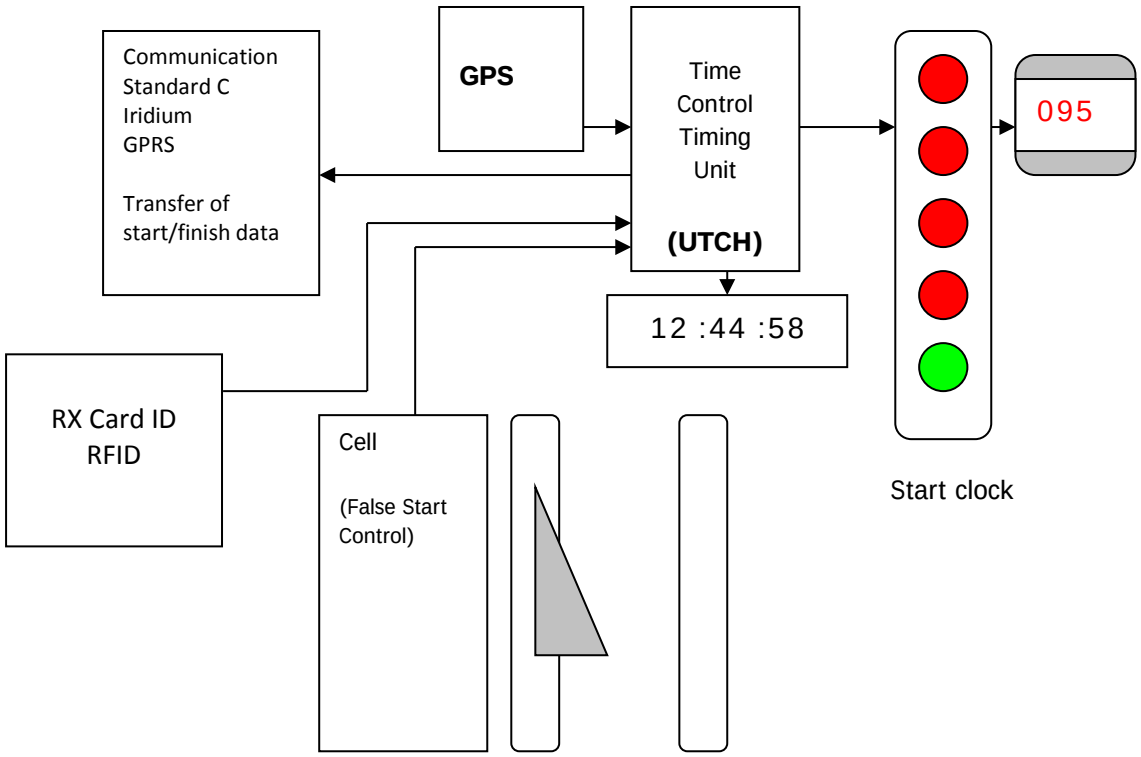


Diagram of a start TC

3.3 Timing kits



Time Control

- Yellow board before the time control
- Red TC board
- End-of-zone board (not used if followed by the start of a special stage)
- TC clock equipment
- Means of communication between the TC and the central timing/results software

Start of a special stage

- Red start board
- End-of-control-zone board
- TC clock equipment
- Start lights or start clock
- Photoelectric type false start detection cell (connected to the clock)
- Means of communication between the start and the central timing/results software
- Automatic identification of the car (RFID or other)

Finish of a special stage

- Yellow chequered board (to the left and right of the road)
- Red chequered board (to the left and right of the road)
- Photoelectric type crossing the finish line detection cell (connected to the clock)
- Automatic identification of the car (RFID or other)
- TC clock equipment
- Means of communication between the finish and the central timing/results software

STOP Control

- Red stop board (to the left and right of the road)
- End-of-control-zone board
- Means of receiving the competitor's time of finishing the special stage.

These are the minimum bases on which a rally may be run. Numerous functions may be added.

Communications between the special stages and the central results system must be reliable. A backup system must stand in for the main communication system in the event of the latter being totally or temporarily unavailable.

3.4 Timing software

The results software must be capable of meeting the growing needs of the various parties involved – organisers, the FIA, competitors and media – for information.

Some of these needs arise from the regulations, others from multimedia applications that are increasingly popular with the public.

It must also include the means of controlling and monitoring what the equipment at the different TCs and elsewhere is doing, thus allowing the organisers and the team responsible for the results to react in case of foreseeable problems.

The whole results system should be web-based, i.e. accessible from any computer or smartphone by means of a browser, subject to inputting a valid identifier and password.
Various levels of access must be available, giving access to various functions (results team, organiser, media, team, etc.).

The software must be able to produce the results of one or more events outside the main event, whether it be for the same competitors, only some of them or a group of competitors totally different from the main event.
This is necessary, for example, for the shakedown and for a concurrent event (historic, national championship) running alongside the World Rally Championship event. Also, there must be no restriction as to the number of special stages run simultaneously.

In order for the concurrent events to be able to publish the results, an appropriate data path must be provided for use on their website.

A short and non-restrictive list of the various lists, reports and results that it would be necessary to be able to obtain from the system could read as follows:

- Entry list
- Starting list
- Eligibility list
- Classifications: special stages, general, combined, classes, other championships (WRC, WRC2, WRC3 Junior…)
- Time controls (TC, SS Start, SS Finish)
- Top 10 times in the special stage
- Highest average speeds in the SS
- Penalties
- Retirements
- Intermediate times

The result service should include:

- Stage Results
- Rally Results
- Overall Rally Results

- Manufacturer Championship Standings
- Power stage Result (see FIA regulation)
- Any others results for WRC2, WRC3, Junior and additional series as enhanced by the FIA

The Result Platform should be ready for digital and mobile access:

a) Ready for accessibility by third parties
b) Ready for push Result Service and push modifications for time control penalties
c) With entry information (tyres used, etc.)

Application for XML Data feed should be ready for various uses (Website, post production, WRC+, etc.)

a) Data needs remaining IDs for the entire season
b) Data feed needs to be secure against 3rd party mis-use

4. Countries having hosted the World Rally Championship (WRC)

Monaco	Great Britain
Sweden	Turkey
Norway	Japan
Mexico	Poland
Argentina	USA
Spain	China
Italy (Sardinia)	India
Finland	Russia
New Zealand	Brazil
Australia	South Africa
France (Corsica)	Jordan

Special attention must be paid at events taking place close to bordering countries (emission licence, interference, etc.).

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Appendix 3

LIST OF FIA EQUIPMENT FOR LOGISTICAL SERVICES

Invoice file of:	Fédération Internationale de l'Automobile - WRC

									Value in total	Dimensions in cm			Gross Weight
Package N°:	C N	Type of package	Item N°	Qty	Commodity	S/N	HS Code	Country of origin	EURO	Len gth	Wi dth	Hei ght	in Kg
1	1	Flight case	1	1	Palmer TESA 0-30 mm	8F1076 02	9017	France	50.00 €	134	40	17	27
			2	1	Palmer TESA 25-50 mm	8F0858 01	9017	France	50.00 €				
			3	1	Palmer TESA 50-75 mm	8G1057 02	9017	France	50.00 €				
			4	1	Caliper Mitutoyo 600 mm	00 145 28	9017	France	200.00 €				
			5	1	Compare digital MAHR 0-100 mm	61090418	9017	France	100.00 €				
			6	1	compare support NOGA	173409	9017	France	50.00 €				
			7	1	Caliper Mitutoyo 150 mm	A16089320	9017	France	50.00 €				
			8-10	3	Spirit level		9017	France	45.00 €				
			11	1	Gauge set		9017	France	50.00 €				
			12	1	Durometer Kern	IA1400001	9017	Germany	200.00 €				
			13	1	Durometer gauge set Kern	160907325	9017	Germany	50.00 €				

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			14	1	Compare Kroeplin C450	LC04Q153	9017	Germany	100.00 €				
2	1	Flight case	15	1	Scale Sartorius BL12	13006895	8423	Germany	75.00 €	60	50	36	21
			16-17	2	Engine tool pop-off		8206	France	400.00 €				
3	1	Flight case	18	1	Echometer Karl Deutsh 1075-005	10308	9018	Germany	250.00 €	50	60	23	16
			19	1	caliper 250 mm	7R 0160 305 77	9017	France	50.00 €				
			20	1	Cylinder gauge set FIA		9017	France	50.00 €				
			21	1	Gauge		9017	France	15.00 €				
			22	1	Compass		9017	France	25.00 €				
			23	1	caliper 250 mm		9017	France	50.00 €				
			24	1	Ruler 20 cm		9017	France	5.00 €				
			25	1	Support for compare		9017	France	20.00 €				
			26	1	GW Instek SPS-1820	EF-170070	8514	Taiwan	30.00 €				
4	1	Flight case	27-66	40	Gauge block		9017	France	600.00 €	50	60	23	14
5	1	Flight case	67	1	GPS Tomtom	QR4315K01970	8471	China	100.00 €	63	50	30	12
			68	1	Laptop HP Zbook 14	BCAJM105CKE8S0GKEU	8471	China	500.00 €				
			69	1	PDA support WA4003-G2	A24C2001003	8471	China	1'000.00 €				

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			70	1	PDA motorola WA4521	WPSACF380097D1	8471	China	2'000.00 €				
			71	1	PDA motorola WA4521	WPSACF380054D1	8471	China	2'000.00 €				
			72	1	PDA motorola WA4521	WPSACF380075D1	8471	China	2'000.00 €				
			73	1	PDA motorola WA4521	WPSACF380442D1	8471	China	2'000.00 €				
			74	1	PDA motorola WA4521	WPSACE500060C2	8471	China	2'000.00 €				
6	1	Flight case	75	1	Hyundai WRC 2017 template set	W711A	3920	France	50.00 €	160	65	72	62
			76	1	Hyundai R5 2015 template set	A-5766	3920	France	50.00 €				
			77	1	Ford R5 template set	A-5748	3920	France	50.00 €				
			78	1	Citroen WRC 2017 template set		3920	France	50.00 €				
			79	1	Toyota WRC 2017 template set		3920	France	50.00 €				
			80	1	Ford WRC 2017 template set		3920	France	50.00 €				
			81	1	Damper Citroen C3		8206	France	10.00 €				
			82-84	3	Umbrella white-blue		6601	France	- €				
7	1	Flight case	85	1	Surface Pro HP		8471	China	1'500.00	40	50	55	100

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									€				
			86	1	Scale Captels RX1000	39084343	8423	France	1'000.00 €				
			87	1	Scale Captels RX1000	39084344	8423	France	1'000.00 €				
			88	1	Scale Captels RX1000	39084345	8423	France	1'000.00 €				
			89	1	Scale Captels RX1000	39084342	8423	France	1'000.00 €				
			90	1	Scale cable set		8423	France	- €				
8	1	Flight case	91	1	Aluminium extention set for Captels scale		7616	France	160.00 €	102	48	59	65
9	1	Flight case	92	1	Surface Pro Windows		8471	China	1'500.00 €	40	50	55	100
			93	1	Scale Captels RX1000	1002385	8423	France	1'000.00 €				
			94	1	Scale Captels RX1000	51002384	8423	France	1'000.00 €				
			95	1	Scale Captels RX1000	14012480	8423	France	1'000.00 €				
			96	1	Scale Captels RX1000	14012479	8423	France	1'000.00 €				
			97	1	Scale cable set		8423	France					

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									- €				
			98	1	Continous courant inverter		8504	France	10.00 €				
10	1	Peli-case	99	1	FIA electronic pop-off controller		8206	UK	100.00 €	57	42	25	11
11	1	Flight case	100	1	seals box		7616	France	- €	88	48	67	60
			101	1	Wheel base checking tool		9017	France	10.00 €				
			102	1	PDA support WA4003-G2	A24AH002160	8471	China	1'000.00 €				
			103	1	Electrical cables and adaptator set		8544	France	10.00 €				

									Value in total	Dimensions in cm			Gross Weight
Package N°:	CN	Type of package	Item N°	Qty	Commodity	S/N	HS Code	Country of origin	EURO	Length	Width	Height	in Kg
FIA MAGN - 1	1	Peli-case	1 - 3	3	Datalogger FLM, Magneti Marelli	95, 157, 46	8471	Italy	900 €	56	35	23	15
			4 - 5	2	Led Module, Magneti Marelli	141, 10 rx	8541	Italy	100 €				
			6	1	FIA sensor boxes set		9031	France	300 €				
			7 - 8	2	FIA fuel pressure sensor	8, 7777-7-28	9031	USA	20 €				
			9	1	Head set lamp		8513	China	5 €				
			10	1	Multimeter		9030	China	5 €				
			11	1	Electrical cables		8544	China	10 €				
			12	1	Electric charger 220-12Volts		8504	China	5 €				

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FIA MAGN - 2	1	Peli-case	13	1	FIA sensor boxes set		9031	France	300 €	56	35	23	15
			18	1	1 Laptop, Dell		8471	China	500 €				
			19	1	Electrical cables set		8544	China	10 €				
			20 - 24	4	Fischer rugged flash drive	341,342,343,344	8471	China	80 €				
			25	1	GPS Antenna set		8517	Italy	75 €				
			28	1	Dataloggers MLP 242 set, Magneti Marelli		8471	Italy	3'000 €				

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Appendix 4:

FIA MINIMUM TERMS AND CONDITIONS

SERVICES AGREEMENT

(FIA WRC)

1. DEFINITIONS AND INTERPRETATION

1.1 In this document (except where the context otherwise requires), the following words shall have the following meanings:

Business Day means any day (other than a Saturday or a Sunday) on which commercial banks are open for business in the Canton of Geneva, Switzerland;

Call means the Call for expressions of interest launched by the FIA as regards to the timing and tracking solutions for WRC;

Commencement Date has the meaning given in the Services Agreement;

Company means the service provider selected by the FIA at the end of the selection process of the Call and to be identified in the Services Agreement;

Company Personnel means each and any of the employees, consultants, agents, sub-licensees, sub-contractors and/or representatives of Company involved in the performance of the Services;

Confidential Information means the terms and conditions of this Agreement and any information and materials in whatever medium and whether written or oral which are obtained under or in connection with this Agreement;

Data means all the data (including but not limited to race results and timing data) in relation to the WRC collected by Company within the framework of the provision of the Services;

Deliverables means all equipment used by the Company in relation to the performance of the Services to be further defined in the Services Agreement;

Fee means the fee set out in the Special Terms payable by FIA to Company;

FIA means the Fédération Internationale de l'Automobile, 8 Place de la Concorde, 75008 Paris, France;

Force Majeure means any event affecting performance of this Agreement arising from or attributable to acts, events, omissions or accidents which are beyond the reasonable control of a Party;

Parties means FIA and/or Company (as the case may be). "Party" shall be construed accordingly;

Services means the services in relation to timing, tracking and connectivity solutions as well as any other services to be provided by Company to FIA as defined in Appendix 1 "Definition of the Services" of the Call and to be further specified by the Parties;

Services Agreement means the future agreement to be signed between the FIA and the Company applicable to the provision of the Services as executed by the Parties and on the basis of these Terms and Conditions;

Terms and Conditions means the present FIA Minimum Terms and Conditions applicable to the supply of the Services;

Term has the meaning given in Clause 6.1 below;

WRC means FIA World Rally Championship.

1.2 The Parties agree that: (a) references to Clauses are, unless otherwise stated, references to clauses of this Agreement; (b) references to "include" or similar are to be construed without limitation; (c) headings are for convenience only and do not affect the interpretation of this Agreement; (d) words importing the singular include the plural and vice versa.

2. APPOINTMENT

The FIA will appoint the Company to supply the Services during the Term via a Services Agreement on the basis of the Terms and Conditions, all applicable laws and with all due care and skills and to the best of its ability.

3. CONDITIONS OF PERFORMANCE

3.1. Quality of the Services

a. The Company undertakes to perform the Services in a professional manner, using the highest skill and care in compliance with the highest industry standards and all applicable laws for the type of services entrusted to the Company.

b. The Company guarantees its best and highest expertise and technology regarding the accuracy or completeness of the Data to be provided.

c. The Company undertakes to use and implement the appropriate technical and human resources, at its own costs, in order to ensure the perfect execution of the Services.

d. Accordingly, the Company defines and shall remain fully liable for the resources, tools, methods and means of execution necessary for performance of the Services.

e. The Company undertakes to strictly comply with the planning and the instructions provided by the FIA together with all FIA guidelines reasonably given in respect of the Services.

3.2. Continuity of the Services

a. The Company hereby undertakes that the Services will be performed in an uninterrupted and permanent manner.

Accordingly:

- In case of departure of any of the persons appointed to performance of the Services, for any reason whatsoever, the Company undertakes to provide for their replacement by resources of at least the same level of competence and experience ;
- The Company undertakes to organise the performance of the Services in order to ensure that absence of its personnel for training purposes or annual leave does not disrupt or otherwise prejudice the performance of the Services.

b. If the Company does not perform the Services on time or if the performance of Services, in part or completely, becomes impossible, for whatever reason other than Force Majeure, the Company's liability will apply in accordance with Clause 8 of these Terms and Conditions.

3.3. Advice and sharing of information

a. In accordance with its obligation to advise, inform and warn the FIA, the Company undertakes to:
   - timely provide the FIA, throughout the Term, with all useful and necessary information required for an adequate performance of the Services, including with respect to: (i) the quality of the Services; (ii) the state of the art requirements in relation to any equipment required in relation to the provision of the Services; and (iii) any event coming to Company's knowledge and which could adversely affect the Services or the quality of the Services, even if caused by the FIA, including, without limitation, absence of its personnel for any reason whatsoever;
   - Advise the FIA on the most appropriate choice of technical solution to be implemented for each Service;
   - Request all information it deems necessary for the performance of the Services;
   - Control the documents and/or technical information provided by the FIA or by third parties and ensure that such information is coherent and sufficient for performance of the relevant Services; and
   - Warn the FIA about any anomaly or missing information.

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b. Indeed, even if the FIA is reasonably knowledgeable, it could not, in any case, be considered as a professional in the Company's activity.

c. Each Party undertakes to designate its representative (the "**Party's Representative**") in order to ensure proper follow-up of the performance of the Services. The Party Representative of the Company shall have the required level of experience, competence and authority to take instructions from the FIA and follow-up as appropriate. The Company's personnel shall remain under the sole authority of the Company and the designation of the FIA's Representative shall not limit or otherwise substitute itself to the Company's authority.

d. The FIA undertakes to follow-up the performance of the Services by attending ordinary meeting(s) (the recurrence of which shall be planned in advance) or extraordinary meeting(s) (upon specific request of the FIA or the Company). The content of such meetings shall be recorded in minutes, which shall, in principle, be drafted by the Company and subject to the approval of the FIA.

e. The FIA undertakes to provide the Company with the means and information necessary to perform the Services and to communicate, as soon as reasonably possible, any new elements which could potentially impact the performance of the Services.

3.4 Key Performance Indicators

a. The Company acknowledges and agrees that the Services are of critical importance to the FIA.

b. Within the framework of the Services Agreement, the Parties will define Key Performance Indicators (KPI).

c. These KPI will serve as a basis to assess and control that the minimum level of quality of the Services is fully respected by the Company.

d. These KPI and shall be re-evaluated on an annual basis in order to take into account any possible technological advances and/or new technical requirements.

e. If the FIA is not reasonably satisfied with the results of any review of KPIs, it may at its discretion issue a notice in writing to the Company detailing failures to achieve KPIs ("KPI Notice").

f. As soon as practicable following issue of the KPI Notice, the Parties' representatives will meet to discuss the issues raised in the KPI Notice and to agree on steps to be taken by the Company as well as a timeframe to remedy the issues.

g. The Company's failure to adequately remedy the issues raised within a KPI Notice within the timeframes agreed will constitute a fundamental breach of the Services Agreement and will entitle the FIA to terminate this Agreement in accordance with clause 9.

4. DATA AND SECURITY

4.1 In relation to the Data, the Company undertakes to:
- to keep it secure and in an encrypted form;
- use all reasonable security practices and systems applicable to the use of the Data to prevent and take action against unauthorised access, copying, reproduction, etc.;
- establish in collaboration with the FIA, a Back-up procedure in case of loss or corruption of the Data

4.2. The FIA will retain ownership of the Data collected by the Company in the performance of this Agreement.

4.3. The Company will use highest industry standard software and hardware to ensure that the Services, data and content provided to the FIA do not contain or originate any contaminated file, viruses, worms, Trojan horses or other similar harmful components.

4.4. In case of intrusion of a harmful component in the Services or the FIA's infrastructure through the provision of the Services, the Company undertakes to use its best endeavours to minimise or neutralise the consequences for the FIA at its own costs and to fully indemnify the FIA of any costs or damages suffered from such intrusion.

5. SERVICE PROVIDER'S PERSONNEL

5.1. Notwithstanding the duration and place of performance of the Services, the Company's personnel appointed to the performance of the Services shall remain, at all times and in all circumstances, under the Company's authority and administrative control and shall not be considered as a temporary or permanent employee of the FIA.

5.2. The Company, as an employer, is in charge of the administrative, social and accounting management of its personnel. The Company recruits, remunerates and trains the personnel required to perform the Services. The Services Provider undertakes to comply fully with the applicable laws, including with regards to employment and payment of social security taxes for its personnel as well as potential accidents of its employees including while performing the Services.

5.3. The Company undertakes to procure that its personnel strictly complies with the Terms and Conditions and the Services Agreement.

5.4. The Company hereby undertakes: (i) that its personnel has sufficient skill and experience to perform the Services; (ii) that key personnel be recognised experts in their area of involvement; (iii) that all personnel should be able to speak and understand English; (iv) to maintain continuity in the staff designated to provide the Services as set forth under Clause 3.2 above and (v) while Company's personnel would perform the Services at the FIA or a third party's premises, that its personnel conforms to FIA's or the third party's normal codes of staff and health and safety regulations as reasonably notified.

5.5. If any Company employee is reasonably found by the FIA to be unsatisfactory in discharging his assigned responsibilities, the FIA may, by giving a written notice together with its basis and supporting evidence, require Company to provide a satisfactory replacement within a reasonable timeframe.

6. FINANCIAL TERMS

6.1. In counterpart of: (i) the performance of the Services and (ii) the assignment of rights set forth under Clause 11.3, the FIA undertakes to pay Company in accordance with the payment terms established in the Services Agreement.

6.2. Such remuneration shall include:

- A fixed fee in relation to the Timing & Tracking & Connectivity Solutions;
- A fixed fee in relation to the Logistical Services;

calculated on the basis of a minimum number of races in each WRC season during the Term and in accordance with the breakdown of the costs as set out in Appendix 5 of the Call.

In the event there are fewer/more the agreed number of races in a WRC season during the Term, the Fee shall be reduced/increased on a pro rata basis in accordance with the aforementioned breakdown of costs.

6.3. Unless agreed otherwise, the aforementioned remuneration shall be exclusive of VAT or any other tax, custom duties or levies these being invoiced in addition in accordance with the legislation in force, but shall include all costs and fees related to the performance of the Services.

6.4 Expenses

The Company shall be responsible for all of its own expenses and costs in providing the Services.

6.5 Invoices

h. All invoices shall be payable within thirty (30) days of receipt of such invoices by the FIA.

i. Each invoice shall refer to "FIA WRC Timing & Tracking" and be sent to the following address:

FIA – Procurement Department
Chemin de Blandonnet 2
1215 Geneva 15 - Switzerland

j. Each invoice shall: (i) comply with the applicable legal requirements; (ii) describe the nature of the Services performed; and (iii) be accompanied by the relevant evidence and receipt(s).

k. Upon request from the FIA, the Company shall establish a single invoice, which shall detail the Services performed as well as all the amounts due for the relevant invoicing period.

6.6. In case of dispute of an invoice, the FIA shall notify Company in writing within fifteen (15) business days of receipt of the relevant invoice. The FIA shall then be entitled to suspend payment of the contested part of the invoice until the Parties reach an agreement on the issue.

6.7. In case of late payment of an undisputed invoice, the amounts shall accrue interest as of the due date of such invoice at the legal rate in force in France. Such interests shall be due fifteen (15) days after receipt of a late payment notification sent by registered letter and which remained unanswered.

7. COMPLIANCE WITH LAWS

7.1. In the course of performance of the Services, the Company may have access to and process Data which includes personal data in the meaning of the Regulation (EU) 2016/679 Of The European Parliament and of the Council of 27 April 2016 (the "**EU Regulation**") or any subsequent amendment or replacement thereof. The Parties hereby expressly agree that the Company shall only have a temporary right to use such data strictly for the purpose of performance of the Services.

7.2. The Company expressly undertakes to comply at all times with the stipulations of the EU Regulation including without limitation in relation to the security requirements, the processing and storing of the data.

7.3. The Company undertakes to comply at all times with the applicable laws and regulations, including without limitation social and tax laws, and to regularly discharge its social obligations and to be able to provide evidence of the same upon request of the FIA.

7.4. The Company hereby undertakes to hold harmless and indemnify the FIA from any claim, liability, proceedings, actions, costs, losses, damages and expenses (including reasonable legal fees) suffered or incurred by FIA as a result of an actual or anticipated breach of the present undertakings on the part of the Company, its employees, officers, agents or sub-contractors.

8. LIABILITY AND INSURANCE

8.1. The Company is fully liable to the FIA for the proper performance of the Services and hereby undertakes to hold harmless and indemnify the FIA from all liabilities, claims, proceedings, actions, costs, losses, damages and expenses (including reasonable legal fees) suffered or incurred by FIA as a result of an actual or

anticipated breach of any representation, warranty, undertaking or obligations or any negligent act or omission on the part of Company, its employees, officers, agents or sub-contractors.

8.3 The Company shall take out all necessary insurances (including professional indemnity, public, product and employer' s liability) in order to ensure that: (a) the Deliverables are covered and insured against any accident, loss or damage which may occur in relation to the provision of Services to the FIA; and (b) its personnel who are involved in the provision of the Services are covered and insured against any accidents, injuries and deaths which may occur during such provision of Services to the FIA.

8.4 In respect of such insurance policies, the Company shall ensure that:

- any insurance policy taken out by it shall cover an amount not less than ten million pounds sterling (GBP 10,000,000) for any one occurrence;
- it notes the interest of the FIA on the policy as a person entitled to indemnity for its respective rights and interests but only for claims where the Company is deemed negligent;
- it maintains the insurance in place before the Services commence until no less than three (3) years after the Services have been provided;
- it provides the FIA with a copy of the policy promptly upon any request as well as confirmation that all premiums have been paid and any policy terms, conditions and warranties have been satisfied;
- it shall not act or omit to act in any manner that reduces or vitiates such insurance; and
- any insurance policy taken out shall be primary and non-contributory to any insurance maintained by the FIA.

8.5. The fact that the Company would benefit from such insurance coverage would not, in any way, exclude or limit the Company's liability for damages excluded from or exceeding such coverage.

9. TERM and TERMINATION

9.1. Unless terminated earlier pursuant to Clause 9.2 below, the Services Agreement shall commence at the date of its signature by both parties and shall remain in force for a period of 5 (five) years.

9.2 The FIA shall be entitled to immediately terminate the Services Agreement fifteen (15) days after receipt by the Company of a termination notice sent by registered letter if:

(a) the Company is unable (or deemed unable) to pay its debts as they fall due, enters liquidation or otherwise ceases or threatens to cease to carry on business;

(b) the Company commits a material breach of any other term of the Services Agreement and that breach is irremediable or, if that breach is remediable,
- fails to remedy that breach within a period of 30 days after being notified in writing to do so to adequately;
- fails to remedy the issues raised within a KPI Notice as provided in Clause 2.4;

(c) the Company repeatedly breaches any of the terms of the Services Agreement in such a manner to reasonably justify the opinion that its conduct is inconsistent with it having the intention or ability to give effect to the terms of the Services Agreement.

9.3. Unless otherwise agreed in the termination notice, the early termination of the Services Agreement for whatever cause shall not cause the immediate termination nor interruption of the Services being provided as regards the last WRC event(s) taking place before the termination date, and the Company shall refund the sums paid by the FIA pro rata of the Services actually performed.

9.4. The expiration or earlier termination of the Services Agreement shall be without prejudice to:
(a) any existing rights, remedies and/or claims the other party may have against the other party from fulfilling any of its obligations that accrued prior to such expiration or termination and,

(b) the coming into or continuance in force of any provision of the Services Agreement which is expressly or by implication intended to come into or continue in force on or after the expiration or termination of the Services Agreement.

9.5. The Company hereby expressly acknowledges that, as the case may be, the FIA shall be entitled at its own discretion to entrust a third party with the further performance of the Services.

10. FORCE MAJEURE

10.1. A Force Majeure Event means any act of God, war (declared or undeclared), terrorist activity, blockades, disturbances, fire, lightning, flood, storms, earthquakes, epidemic, governmental action, pandemic, explosion, failure of public utilities or civil commotion, or the genuine and immediate threat of any of the foregoing, and/or any other act or event beyond the reasonable control of the affected Party.

10.2. A Party shall not be deemed to be in breach of its obligations or otherwise liable to the other Party for any failure or delay in the performance by it of any of its obligations under the Agreement as a result of a Force Majeure Event and the performance of the relevant obligation shall be suspended for the period that the relevant Force Majeure Event continues but, for the avoidance of doubt, the performance of the Parties' other obligations shall be unaffected.

10.3. If a Party claims to be prevented from or delayed in performing of any of its obligations hereunder as a result of a Force Majeure Event, then it shall:

(a) promptly notify the other Party as soon as reasonably practicable in writing of the relevant Force Majeure Event and, if applicable, its likely duration;
(b) take all reasonable steps to bring such Force Majeure Event to an end and/or perform its obligations in spite of such Force Majeure Event; and
(c) notify the other Party in writing of the cessation of the relevant Force Majeure Event as soon as reasonably practicable thereafter.

10.4. In case a Force Majeure Event would last more than ten (10) days, the FIA and the Company shall negotiate in good faith during five (5) business days in order to find an amicable solution. In case the Parties do not reach an amicable solution, each Party shall be entitled to terminate the Services Agreement upon sending a notice to the other Party and the stipulations of Clause 9 will apply.

11. INTELLECTUAL PROPERTY

11.1. Reserved rights

All software, documentation and technical or other Proprietary Information of any type provided by the FIA to the Company for the purpose of performance of the Services shall remain the property of the FIA and shall only be used by the Company for the purpose of performing the Services.

11.2. Proprietary Information 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 Proprietary Information and, therefore, within the scope of the Agreement, unless specified otherwise in writing.

Upon request of the FIA and at the latest upon expiration or early termination of the Services Agreement, the Company undertakes to return immediately all Proprietary Information of any kind provided by the FIA to the Company for the purpose of performance of the Services and/or, at the FIA's entire discretion, to destroy all copies thereof and to certify the same.

The FIA recognizes that the Company's pre-existing software, ideas, know-how, development tools, techniques or any other proprietary material or information ("Company IP") is considered a trade secret and confidential information belonging to Company. Company shall retain ownership of all rights, title and interest to the Company IP.

The Company 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 Company IP made available to FIA and its authorised users throughout the Term to the extent necessary for the performance of the Services.

11.3. Assignment of rights

Unless expressly provided otherwise in the Services Agreement, any and all proprietary and any other rights such as, without limitation, intellectual property rights on the Services and the outcome thereof including all Data collected within the performance of the Services, any component and feature thereof, as well as all works developed by the Company on behalf of the FIA shall be fully and exclusively owned by the FIA ("FIA Intellectual Property") from inception and the Company hereby expressly assigns all rights on such FIA Intellectual Property to 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.

The Company agrees to execute, at the FIA's request and expense, any and all documents and other instruments necessary to prove or confirm such assignment. Such FIA Intellectual Property shall at all times be treated as Proprietary Information. For the avoidance of doubt, the assignment described herein expressly covers assignment of future works and remuneration therefore is deemed included in the consideration as set forth under Clause 6.1 above.

In case the FIA Intellectual Property would include software, the Parties will discuss in good faith their respective rights on such software including but not limited to the source and executable codes as well as all the relevant documentation, including without limitation the development and exploitation documentation and the user guide (to be delivered at least in English version).

In case the Services would cover the development of one or more databases, the Company 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 Company shall own no right to the structure nor the content of such databases.

The assignment of rights under the present Clause shall be effective worldwide and for the entire term of protection of the FIA Intellectual Property.

Accordingly, the Company undertakes not to use, reproduce, copy, edit, alter, adapt, translate, modify or distribute or otherwise exploit the FIA Intellectual Property under any shape or form and on any media.

11.4. Warranties

The Company hereby represents and warrants that the Services, as well as any deliverables, including without limitation the FIA Intellectual Property and the Company IP, are original works and do not violate any existing copyright or any other intellectual property rights or data protection/privacy rights of a third party and shall not violate the laws or regulations of any state which may have jurisdiction over such activity.

The Company represents and warrants that it has obtained any and all permissions for the use of third party material, as the case may be, contained in the Services. In such case, the Company shall provide the FIA with a copy of the written permission of the third party. It is expressly agreed that in case third party material would be incorporated into the Services, the Company undertakes to obtain for the FIA a non-exclusive, worldwide, perpetual, transferable, sub-licensable, royalty-free, assignable license to use, distribute, reproduce, broadcast, sublicense and transmit the Services, as the case may be, on any media, through any transmission means now known or later developed, and that, to the extent permitted by law, such use shall not cause any additional payment to be due to any third party, including collecting societies.

11.5 Use of other FIA rights

Neither in the provision of the Services or otherwise, the Company shall not use (or cause or permit to be used) any name, title, logo, image or trademark pertaining to the FIA or refer to any FIA championship without the express written consent of the FIA.

Unless otherwise agreed in writing, any reference by the Company to the FIA as a client shall be confined to the inclusion of the FIA's name (i.e. "Fédération Internationale de l'Automobile" or "FIA" only in verbal form – NO LOGO) in a list of reference in alphabetical order, with no prominence.

12. INDEMNIFICATION

12.1. The Company shall indemnify, keep indemnified and hold harmless the FIA against all liabilities, claims, proceedings, actions, costs, losses, damages and expenses (including reasonable legal fees) suffered or incurred by FIA as a result of an actual or anticipated breach of any representation, warranty, undertaking or obligations on the part of the Company contained in the Terms and Conditions, or any negligent act or omission by Company.

12.2. The FIA shall notify the Company of any claim or legal proceeding brought by a third party and to the fullest extent possible allow the Company to decide on any admission or settlement with respect thereto and shall co-operate with the reasonable requests of the Company, at the Company's expense, in its participation and control of any compromise, settlement or resolution or other disposition of such claim or proceeding involving a third party.

12.3. In the event that the Services or any component thereof infringes any intellectual property rights of a third party, the Company shall comply with its obligations hereunder in full satisfaction of all its liabilities to the FIA for breach of the warranties set forth in these Terms and Conditions.

12.4. Company shall at its own expense endeavour to either:

- procure the right for the FIA to continue to use the Services at no further cost, or
- make such alterations, modifications or adjustments to the Services as may be required to ensure that the same no longer constitutes an infringement; or
- replace the same (or any infringing component thereof) with a non-infringing substitute provided that, in any such case, there is no loss of performance or functionality as a result thereof.

12.5. In no event will the FIA be liable to the Company for the recovery of any special, indirect or consequential or incidental damages, whether foreseeable or not, including, but not limited to, lost profits, lost revenues, goodwill, failure to realize expected savings, or other commercial or economic loss of any kind.

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12.6. The maximum aggregate liability of the FIA to the Company in contract, tort or otherwise for losses or damages arising under or in connection with the Services shall be limited in respect of all incidents or occurrences in any year to the aggregate amount of the fees due and payable in that year.

12.7. Nothing in the Services Agreement shall exclude or limit either party's liability for:

- death or personal injury resulting from the negligence of either party or their servants, agents or employees;
- fraud or fraudulent representation; or
- misuse of Proprietary Information.

13. CONFIDENTIALITY

13.1. Both during the Term and after termination or expiry of the Services Agreement, each Party shall keep confidential the content of these terms and Conditions as well as the content of the Services Agreement itself and any pre-contract negotiations and any other confidential information and Proprietary Information provided by the other Party (and shall undertake whatever measures are necessary to preserve such confidentiality), except to the extent that:

(a) disclosure is made to a Party's employees, members of boards and/or other governance bodies, advisers or auditors (who are bound either by duties of professional confidentiality or by a confidentiality clause with the same effect as this Clause);

(b) disclosure is required by Applicable Laws, legal or administrative process or by other legal or regulatory requirements, or else required within the framework of an action or proceedings brought in the exercise of the rights deriving from the Agreement;

(c) the contents are, or the information is, in the public domain (other than by reason of a breach of this Clause); or

(d) at the time of disclosure, the contents were, or the information was already known by the recipient.

13.2. The Company shall not make any announcement, press release or other public statement regarding the Services Agreement, its subject matter and/or any of its terms without the FIA's prior written consent.

13.3. The present confidentiality undertaking shall remain valid for twelve (12) months after expiry or early termination of the Services Agreement, for whatever cause.

14. SUBCONTRACTING

14.1. The Company shall not transfer, assign or convey any of the rights or obligations or any part of them under the Services Agreement or appoint any agent or sub-contractor to perform the obligations under the Services Agreement, without the prior written consent of the FIA.

14.2. The FIA shall be entitled to transfer its rights and obligations under the present Terms to any of its affiliate, upon notification to the Company.

15. MISCELLANEOUS

15.1 The application of the general terms of the Company (or any of its subcontractor(s) as the case may be) is expressly excluded.

15.2 If any provision or part thereof contained in these Terms and Conditions is finally determined by any court, tribunal or administrative body of competent jurisdiction to be illegal, invalid or unenforceable, then, so long as the primary purpose of the Terms and Conditions is not frustrated, the remaining provisions hereof shall remain in full force and effect and the illegal, invalid and/or unenforceable provision shall be deemed to be replaced by the legal, valid and enforceable provision which comes closest to the original economic intention of the parties as evidenced by the illegal, invalid or unenforceable provision.

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15.3 The Terms and Conditions do not constitute either party the agent of the other or create a partnership, joint venture or similar relationship between the parties and neither party has the power to obligate, bind or attempt to bind the other party under contract or otherwise in any manner whatsoever. The parties are in all respects independent contractors.

15.4 Any waiver by either party in respect of a breach of any provision of these Terms and Conditions by the other Party shall only be effective if it is made in writing and specifically expressed as a waiver and shall not operate as, or be construed to be, a waiver of any other breach of such provision or of any breach of any other provision of the present document. No delay or omission by a party in exercising any right, power or remedy provided by law or under the Terms and Conditions shall affect that right, power or remedy or operate as a waiver of it and the single or partial exercise of any such right, power or remedy shall not preclude any other or further exercise of it or the exercise of any other right, power or remedy.

16. APPLICABLE LAW- JURISDICTION

16.1. The Terms and Conditions and the Services Agreement shall be governed by and interpreted exclusively in accordance with the laws of France without regard to choice of law principles.

16.2. Any dispute arising from or related to the Terms and Conditions and/or the Services Agreement including disputes as to their validity, binding effect, amendment and effective termination will be submitted exclusively to the courts of the Paris, and, for these purposes, each party irrevocably submits to the jurisdiction of such courts.

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Appendix 5

SERVICES PRICING TABLE

The Candidate is requested to fill in the below detailed breakdown of the costs as part of the Proposal.

Provision of the Required Services

	Services provided	Price per race - Euros excl. VAT	Price per race - Euros excl. VAT	Price per season Euros excl. VAT if and when price is independent of the number of races
		Europe	Non Europe	
	Minimum scope of Supply			
	Timing & Tracking connectivity solution			
1	Reconnaissance (price per car, per event)			
2	Mobile Monitoring			
3	Timing			
	Logistics			
4	Insurance, transportation and storage of equipement			

Provision of Optional Services

	Services provided	Price per race - Euros excl. VAT	Price per race - Euros excl. VAT	Price per season Euros excl. VAT if and when price is independent of the number of races
		Europe	Non Europe	
	Options			
	TV & Media services for the WRC Promoter			
5	TV timing graphics production for live and post production			
6	API data feed for WRC digital and WRC+			
7	Archive and statistics			
8	Access to the tracking system and tracking app for cars			
9	Additional transponders to be visualised on overall rally map solution			
	Radio Communication services for WRC Competitors & Officials			
10	Communications (radio and data) for the competitors and the teams			
11	Communications (radio and data) between the FIA officials			

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For each table:

- Please specify any fixed charges included for each service element and any amounts which vary according to changes in volumes, specifying how the variable element applies to each service.

- In relation to each service element, and in relation to the services as a whole, do you charge a minimum fixed charge or impose a minimum commitment and, if so, how does this work?

- Please specify any formulae, where relevant, which would allow the Company to calculate charge variations resulting from reduced or increased volumes or requirements or changes to service levels.

- Please explain all assumptions made in your pricing proposals (such as, for example, the number of staff you have assumed) and the rationale behind these assumptions.

- Please confirm that your pricing proposals include all costs, including travel and accommodation costs, of transporting your and/or Company personnel between all relevant locations for the purpose of implementing the proposed agreements, including training.

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APPENDIX 6 - Marketing Packages

Candidates will have the possibility to enter into discussions with the WRC Promoter with regards to the acquisition of commercial rights in connection with the WRC.
Such commercial rights may be acquired in total or in part, including the titles:

- "Official Watch Partner of the FIA World Rally Championship" and/or
- "Official Timing Partner of the FIA World Rally Championship" and/or
- "Official Tracking Partner of the FIA World Rally Championship", and/or
- "Official Connectivity Solutions Partner of the FIA World Rally Championship", and/or
- "Official Mapping Partner of the FIA World Rally Championship, and/or similar expressions

A presentation of the relevant partner packages and possible additional options is available upon request to the Promoter.

The result of the discussions between the Tenderer and the Promoter will be taken into account by the FIA when selecting the Timing, Tracking & Connectivity supplier of the Championship. Mutual financial obligations resulting from both agreements (i.e. the Timing, Tracking & Connectivity service agreement and the Official Partner agreement) may be offset, subject to terms and conditions.

For the avoidance of doubt, and in case no Official Partner agreement has been achieved, Candidate's Services provided under the Services agreement shall be on a white label basis, i.e. Candidates accept not being granted the right to have brand visibility within the FIA World Rally Championship (unless otherwise agreed with the Promoter), nor the right to use any WRC marks for communication and promotion. Furthermore, Candidates accept in such case that FIA and Promoter may grant to third parties the commercial and promotional rights to associate their brand(s) with the Timing, Tracking & Connectivity services of the FIA World Rally Championship.

The Promoter's contact details are:

WRC Promoter GmbH
Oliver Ciesla
Liebherrstrasse 22
80538 Munich
Germany
E.: oliver.ciesla@wrc.com
T.: +49 89 212 66 99-0

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