

***E-RACE RE***

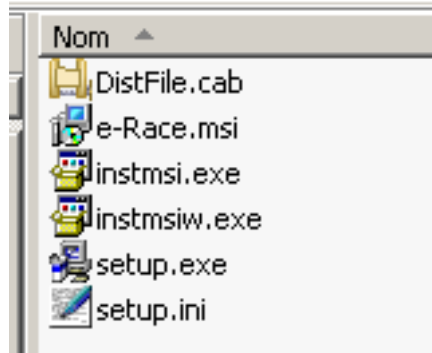
User Manual

<b>1. INSTALLATION</b> .....	<b>3</b>
1.1. DISTRIBUTION KIT.....	3
1.2. DIRECTORIES .....	4
<b>2. DATA MANAGER</b> .....	<b>5</b>
<b>3. DATA ANALYSIS</b> .....	<b>6</b>
3.1. MAIN MENUS .....	6
3.2. TIME/DISTANCE .....	6
<i>Overview</i> .....	6
<i>Channels</i> .....	7
<i>Zoom</i> .....	8
<i>Time/Distance toggle</i> .....	8
<i>Floating Panels</i> .....	8
<i>Simulation Panel</i> .....	8
<i>Graph Display</i> .....	9
<i>Screen configurations</i> .....	10
<i>Laps</i> .....	10
<i>Keyboard shortcuts</i> .....	10
3.3. CHANNELS REPORT .....	11
3.4. SPLIT REPORT .....	11
<b>4. MAPS</b> .....	<b>12</b>
4.1. MAP CREATION.....	12
4.2. MAP SELECTION .....	12
4.3. SPLIT SETS .....	13
<b>5. LAPS</b> .....	<b>14</b>
5.1. LAPS DISPLAY .....	14
5.2. LAP TOOLS .....	14
<i>Split</i> .....	15
<i>Merge</i> .....	15
<i>Beacon</i> .....	15
<b>6. TOOLS</b> .....	<b>16</b>
6.1. DIAGNOSTICS .....	16
6.2. DISPLAY OPTIONS.....	16
<b>7. SESSION INFORMATION</b> .....	<b>19</b>
<b>8. CHANNEL TOOLS</b> .....	<b>20</b>
8.1. ZERO TO CURSOR .....	20
8.2. CHANNEL SETUP.....	20
8.3. ADD TO DATA WINDOW .....	20

# 1. Installation

## 1.1. Distribution kit

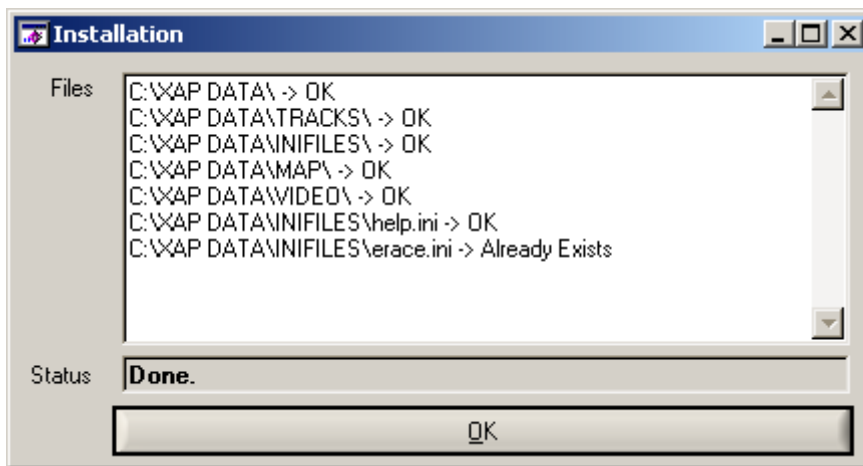
E-Race software is distributed as a set of 6 files :



If you are under Windows XP or 2000, you can double-click the E-Race.MSI file to install the software. The users of Windows 98SE should use the setup.exe file.

The installation software will detect if E-Race is already installed. In this case it will uninstall the previous release before. You have to re-run the setup utility to have it finally installed.

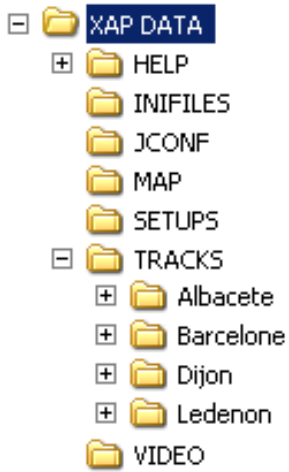
At the end of the installation, the following window should appear :



This is the report of the directory creation utility. Some files (like erace.ini) are not overwritten. If at this point you have any error, please contact us.

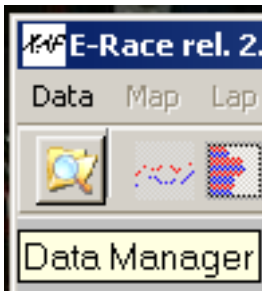
## 1.2. Directories

E-Race uses the C:\XAP DATA\ directory as root.



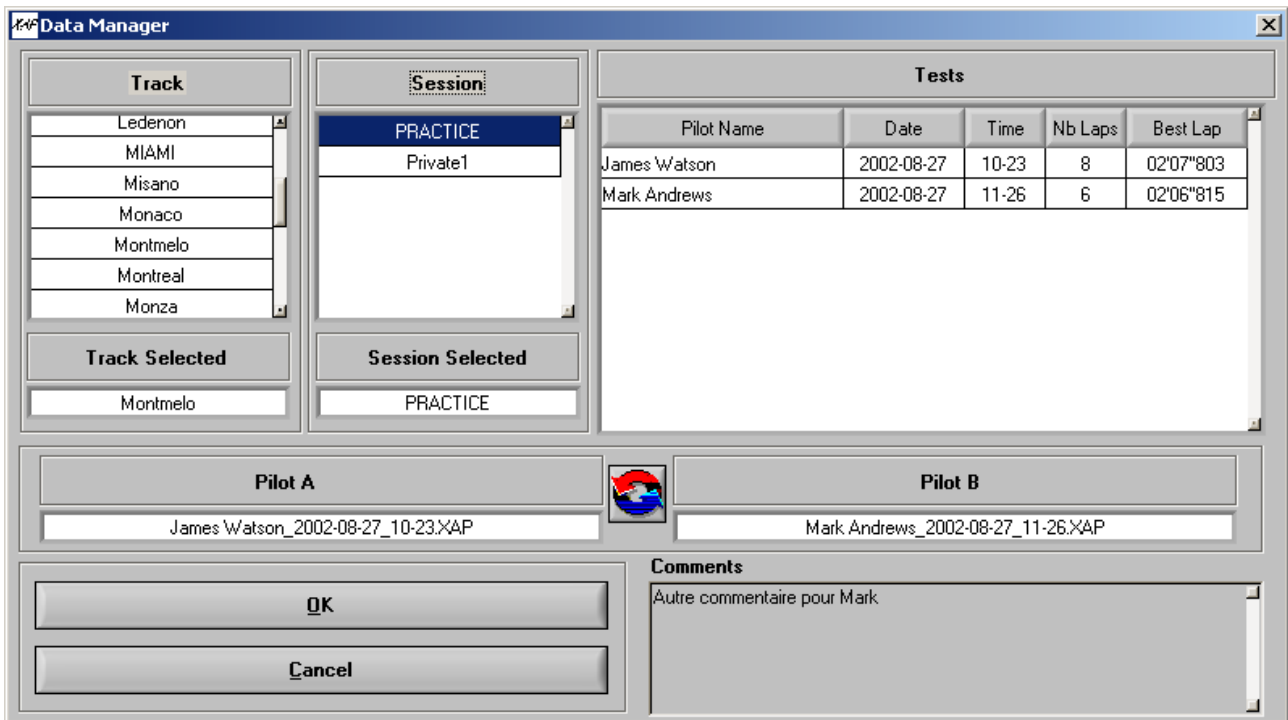
Each track and session created with Jdash are placed under this root. The Maps extracted will be saved under the MAP directory, as well as their splits.

## 2. Data Manager

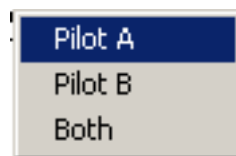


When E-Race is started the only available menu is the Data Manager, which allows you to open the data files.

The Data Manager windows presents on the left the available tracks and sessions, and on the right the corresponding files. To select a **Track** or a **Session**, double-click on the correspondent table.



E-Race is able to compare two different pilot data files, one is called **Pilot A**, the other **Pilot B**. You can drag and drop the name of the desired pilot over the textboxes, or click with the right mouse button to make this menu appear :



Choose **Pilot A** to select the file as Pilot A, and so on. If you only want to open one file, select **Both** or double-click on the line.

The arrows between the two **Pilot** textboxes allows to switch **Pilot A** and **Pilot B**.

When your selection is done, click **OK** to validate.

## 3. Data Analysis

### 3.1. Main Menu

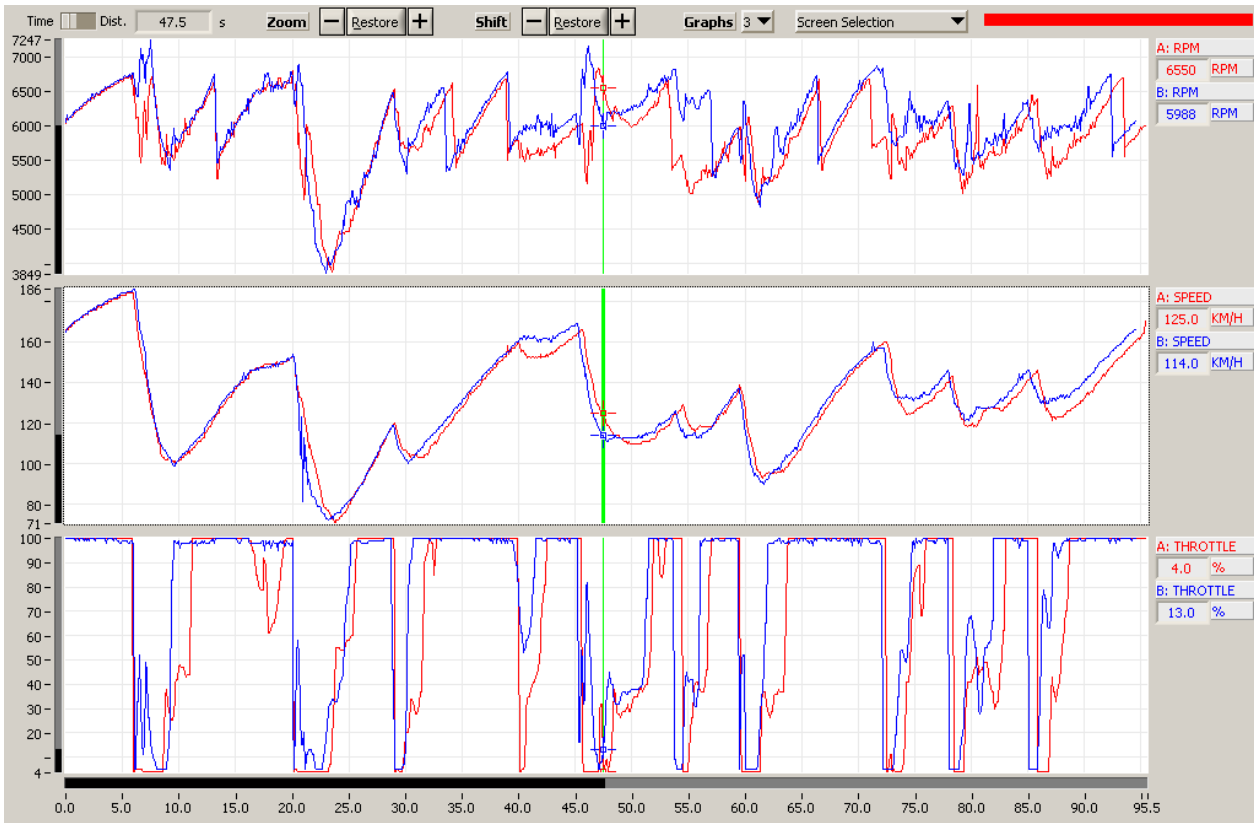


After opening the files, the main menu bar is undimmed, as the **Time/Distance** Analysis screen is displayed. The first five buttons are shortcuts of the **Analyse** Menu. The following three controls make the floating tool windows appear. And the list boxes change the laps you are visualizing.

### 3.2. Time/Distance

#### Overview

This screen (displayed by default) is the main visualization screen. It displays data on a time or distance basis, splitted by laps (by default the best laps are used).



Up to 4 graph controls can be displayed at a time. Use the **Graphs** list box to determine the number of graphs to show.

All graphs are synchronized, moving the cursor on one graph make also the others to move the same way. The red cursor (and trace) indicate by default the **Pilot A** and the blue one the **Pilot B**.

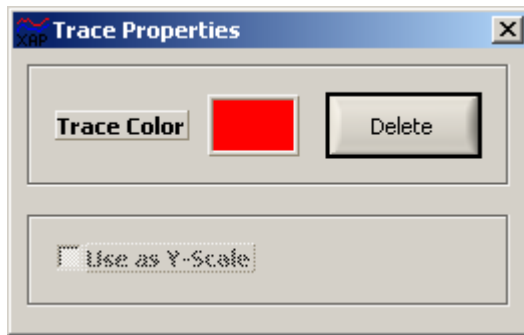
### Channels

Right-Clicking on a channel label make this menu appear :



The first button calls the “Channel Setup” tool. See below.  
 The second button brings up a popup window with the Min and Max value for the selected data.  
 The third button shows the “Trace Properties” panel.  
 The fourth and fifth buttons set the cursor position to the Min and Max of the data.

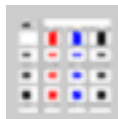
To make this menu disappear without clicking a button, click the right mouse button or press the Escape Key.



This allows you to change the color of a trace, or delete it. Then click on the **Close** button, or press the Escape key.

### Channels

You can trace any channel available in the Channels table tool. To make it appear, click on



This table lists all data

- To compare Pilots A & drag the name of a column) on any graph : traces and put the chose on this graph.
- To overlay the existent choose the (2<sup>nd</sup> or 3<sup>rd</sup> column), and chosen graph.

Channel	A	B	A-B
RPM	5501.0	5859.0	-358.0
SPEED	125.0	131.0	-6.0
THROTTLE	99.0	100.0	-1.0
WATERT	81.0	80.0	1.0
AIRT	55.0	55.0	0.0
VBATT	13.7	13.8	-0.1
G_LAT	-0.1	-0.2	0.1
STEER	-58.4	-58.4	0.0
GEAR	4.0	4.0	0.0
G_LONG	1.0	1.0	0.0

channels available :

B on one graph, channel (first this will erase all channel you

trace on a graph, correspondent cell drag it to the

overlay different different pilots for a given

Restrictions : You can only channels from a given pilot, or

The maximum number of traces on a graph is 4.

### Zoom

The zoom controls allows you to zoom around the current cursor, by dividing the scale by 2. You can also obtain the same result as the **PLUS** button when left-double-clicking on a graph. The **RESTORE** button will restore the original scaling.



### Time/Distance toggle

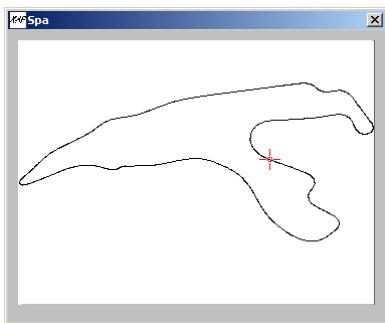
This toggle allows to choose the X-Axis mode, time or distance.



### Floating Panels

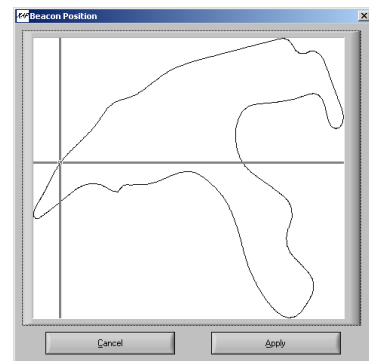


The **SHOW MAP** button make the map panel to appear. The red and blue cursors indicate the position of the two pilots, at the time or distance selected by the graph cursors.



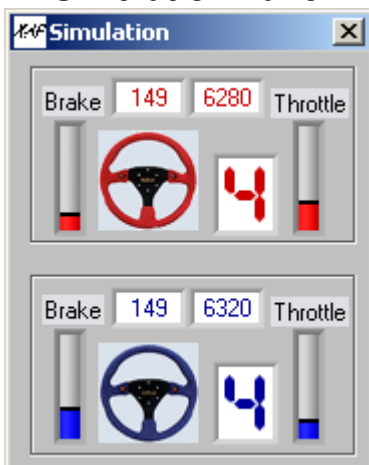
You can also click directly on the map to locate the cursor on the graphs.

The localization of the cars on the maps depend on the beacon position. If the data and the map position don't correspond, you can double-RIGHT-click on the map to use the **Map Setup** tool.



This tool allows you to change the position of the beacon, to a more acute position.

### Simulation Panel

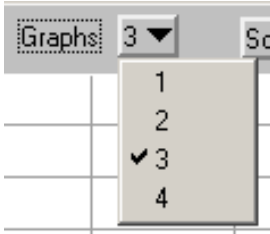


This panel displays the data in a more user-friendly manner. The two numerical controls are **Speed** and **RPM**. On the left you have a **Brake** progress bar, calculated with a derivation of the Speed. On the right there is **Gear** and **Throttle**.

The information on the steering wheel is only accurate when you have a steering sensor and reliable data.

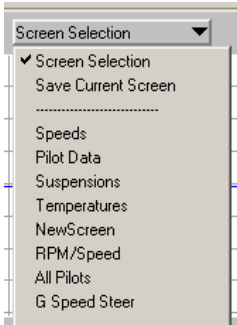


## Graph Display



This control sets the number of graphs displayed on the analysis screen. The default is 3, the maximum 4. Remember that disabling a graph will erase its traces.

## Screen configurations

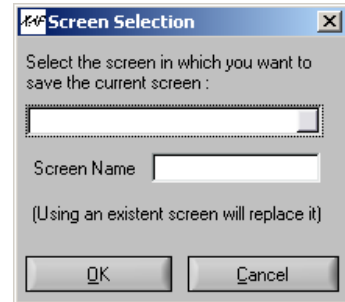


E-Race allows you to save your preferred screen configuration (graphs and channel traces on them), up to 16 different configurations.

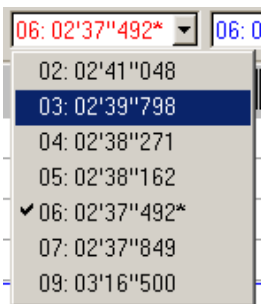
You can choose any saved screen configuration, or save the current screen.

When saving the current screen, a new window will appear, asking you to choose the slot in which you want to save the current

screen; choosing a non-empty slot will overwrite the configuration in it. Enter the new name and click **OK** to save the screen configuration. It may take some time.



## Laps



The lap control allows you to choose the lap you want to display, for each pilot. The Best Lap is indicated with an asterisk.

This control only show the **Enabled** laps. By default, all laps are **Enabled**.

## Keyboard shortcuts

You can use the **left/right arrows** to move the cursors on the graphs. If you are zooming, the arrow will make the graphs slide horizontally.

The **Page-Up** and **Page-Down** keys allow to change the current lap for the last used Pilot Lap control.

**F1** will bring the contextual help.

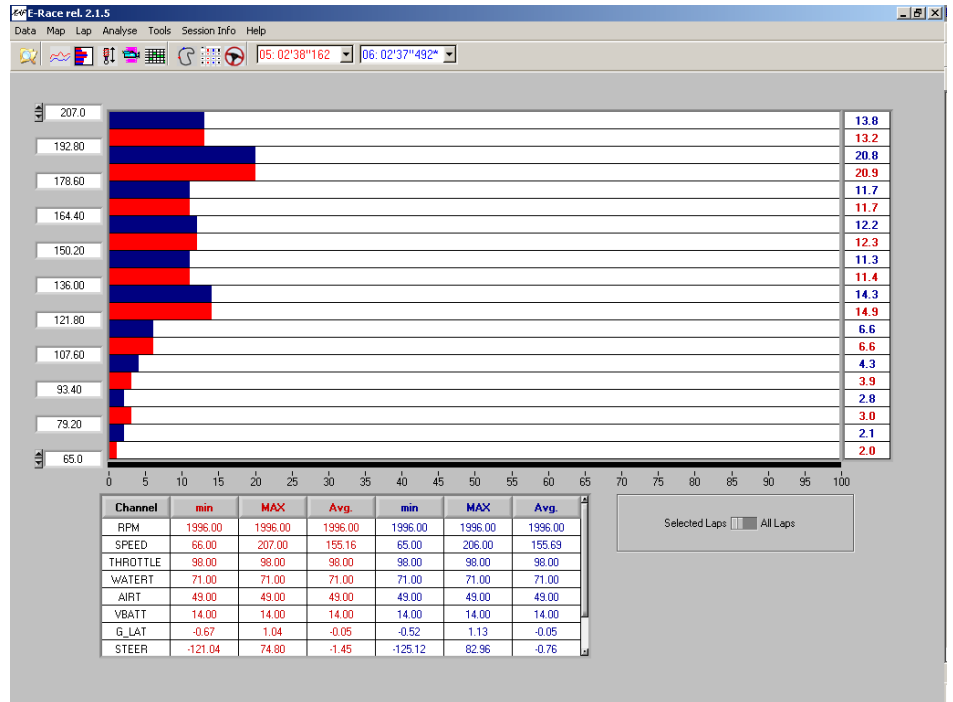
### 3.3.Channels Report

This screen offers an histogram representation of data, for the selected lap or all laps.

On the left of the screen, there are the intervals, and on the right the % of time for this interval.

For example in the capture beside, the **Pilot A** have been between 150.20 and 164.40 12.3% of time on this lap.

You can display the channel of your choice with drag and drop from the channel table below the histogram.



If you want to see all the values for the entire time of the session, use the **ALL LAPS** toggle.

### 3.4.Split Report

Lap	Lap Time	Split 1	Split 2	Split 3	Split 4	Finish Line
Lap 2	02'41"048	27.78	37.44	39.98	26.06	29.79
Lap 3	02'39"798	27.46	37.27	39.74	23.72	31.62
Lap 4	02'38"271	27.07	37.06	39.62	23.93	30.59
Lap 5	02'38"162	27.32	36.79	39.58	24.05	30.41
Lap 6	02'37"492	27.20	36.52	39.45	24.06	30.26
Lap 7	02'37"849	26.93	36.68	39.63	24.04	30.56
Lap 9	03'16"500	27.50	38.13	41.38	25.28	64.21
BL	02'37"492	27.20	36.52	39.45	24.06	30.26
Th. BL	02'36"407	26.93	36.52	39.45	23.72	29.79

Once the map you selected has been splitted (see next chapter), you can visualize all Enabled laps to compare the split times.

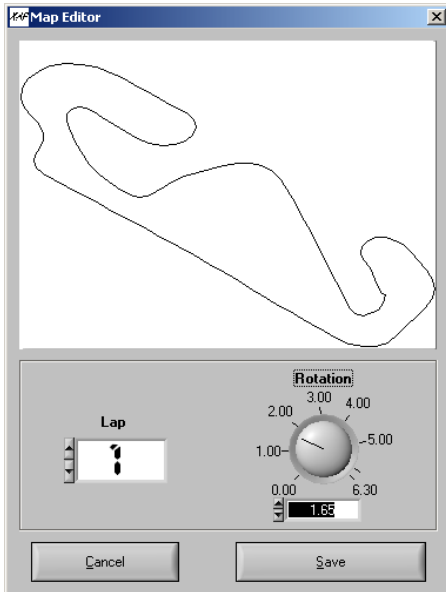
Best lap is grayed, and the best splits are greened. The table below indicates the splits of the Best Lap and the splits of the Theoretical Best Lap, which are the best splits of all laps.

You can also use the **DELTA - ABS** toggle to switch between absolute times (by default) and time difference with the best lap.

You can export the split times by selecting a range of cells, and clicking the right button to use the **Copy** tool. After you can paste the data in Excel for example.

## 4. Maps

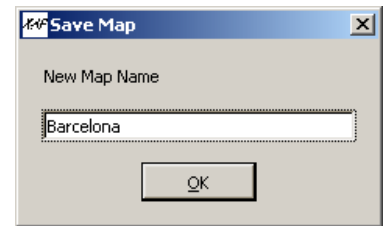
### 4.1. Map Creation



If the file you opened contains GPS data, you can use the **MAP\CREATE MAP** tool. Click on the arrows on the left of the numeric control **LAP** to visualize the GPS Data. When you have a good-looking map, you can rotate it with the **ROTATION** control on the right.

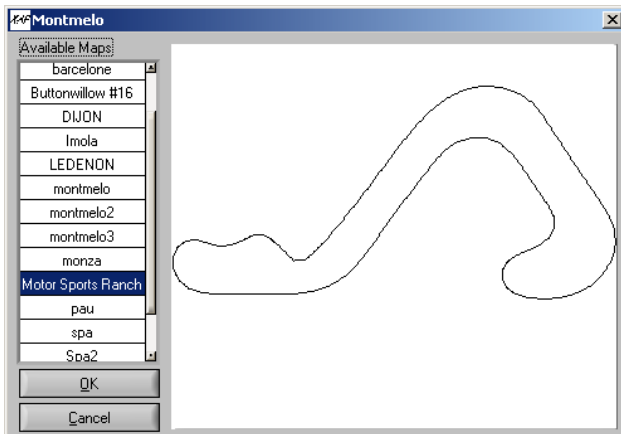
When you've finished, click on **SAVE**.

The software will ask you for the name of the map. If you give the name that already exists, it will be overwritten.



### 4.2. Map Selection

When you open a MAP file on a given track, the software take automatically by default the previous map selected for this track.

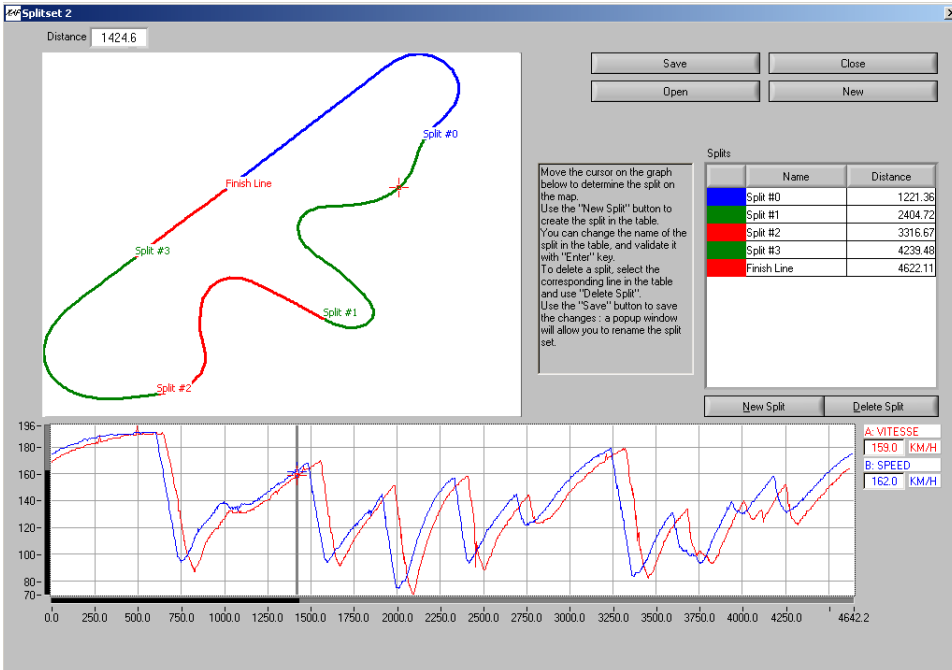


You also have to possibility to select another map, from all the maps you created. Use the **MAP\SELECT MAP** item :

Now double-click on the list on the left to choose the map you want to use on this track. Click OK when you've chosen the right map.

### 4.3. Split Sets

A split set is a series of splits on a given map. You can split any map, giving it a split set, with the Split Manager. To access the Split Manager, use *MAP\EDIT SPLIT SET*. Of course, you had to choose a map before.



The Split Manager will let you define the splits on the map of the track. You can create up to 10 splits on a map.

On the left you have the map, on the right the table of splits.

You have two choices to create the splits :

- Move the cursor on the graph below. It will move the cursor on the map.
- Point the cursor on the map.

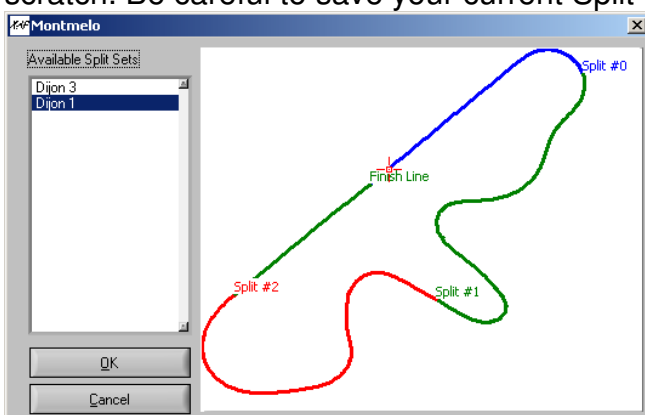
When the cursor is at the desired place on either the map or the graph, click on “New Split” button.

Each split is defined by its distance from the finish line, and a name you can modify. Click on the 1<sup>st</sup> column of the table to change the name of the split, then press Enter.

If you want to delete a split, click on the correspondent table line, and then click on “Delete Split”.

When you save your Split Set, you will be asked for a name. The default name for all Split Set is SplitSet 1. If you want to keep the former name, just click OK, or enter the new name before.

The “New” button on the Split Manager will allow you to create a new Split Set from scratch. Be careful to save your current Split Set before proceeding.



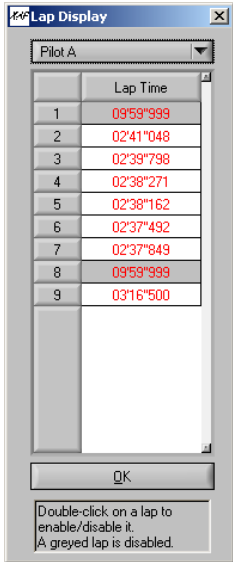
If you click on the “Open” button, you will have the ability to choose another Split Set. Be careful to save your current Split Set before proceeding.

Click on the list on the left to choose the Split Set you want to open. The map on the right will be modified to show you the splits on the map.

The “Open” tool has the same effect as the “Select Split Set” item of the MAP menu.

## 5. Laps

### 5.1. Laps Display



In some cases, the laps recorded by the data logging system are inaccurate. They appear in the lap time list, but are not representatives of any pilot performance.

So you may want to disable them, as they disturb the analysis of the good laps.

Use The *LAP\DISPLAY* item to show this window.

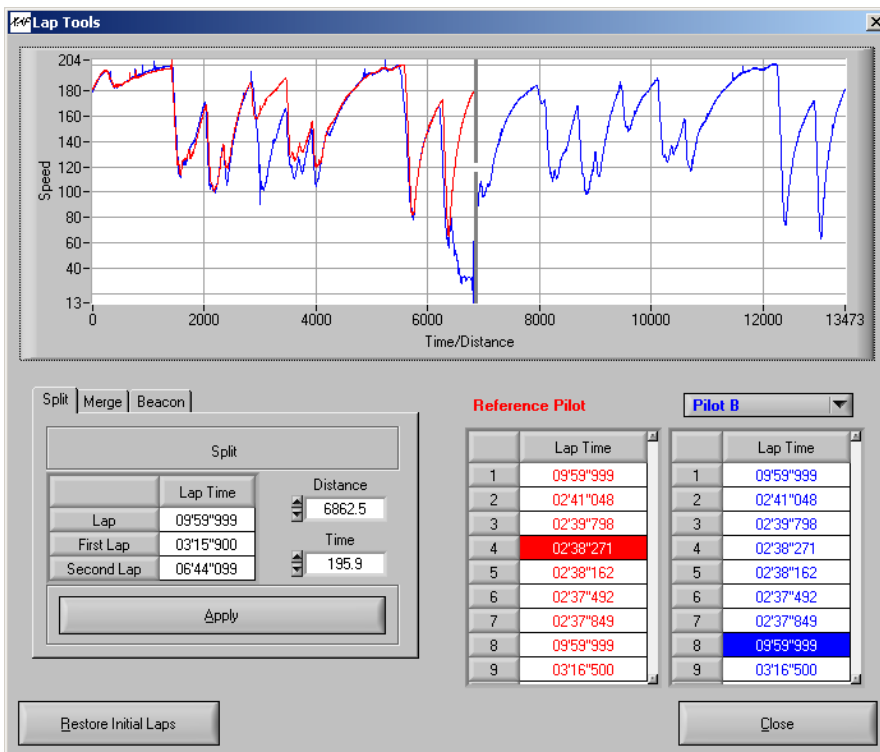
Choose the Pilot you want to modify the laps in the list control on the top of the window. His lap time list appear in the table below.

Then double-click on the lap time you want to disable. The cell will become gray, as the lap is disabled. To re-enable a lap just double-click on it.

The effect is immediate. Click on OK to close this window.

### 5.2. Lap tools

The lap tools utility is designed to allow you to merge, split, and shift any lap in the lap list. When you click on the *LAP\LAP TOOLS* item, the following window appear :



On the top of the window, the graph represent the speed channel for the selected lap.

On the bottom right, the two tables, with the reference pilot (the trace will be used only as a reference) and the other Pilots.

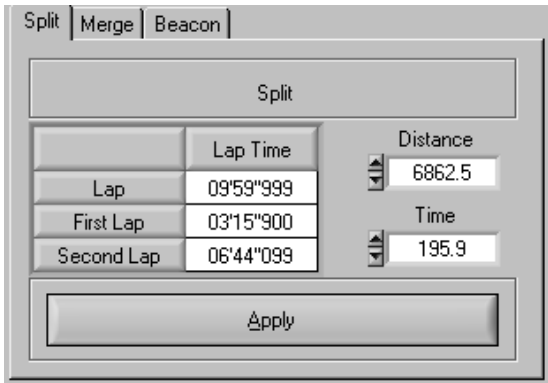
You have to double click on a lap in any table to trace it on the graph.

The controls on the bottom left differs with the tool used.

At every moment, clicking on the “Restore Initial laps” button will cancel ALL modifications since the record of data.

### Split

Click on the “Split” tab of the Tools control to access it. Double-click on the Reference Pilot Table to choose the lap you will use as reference (if you don’t want to use any reference you can jump this step). Then double-click on the other table to choose the lap you want to split. The screen capture above is an example of split.



Move the cursor on the graph to the point where you want to split your lap. Note that the table on the left indicates you the distance and time of your new laps.

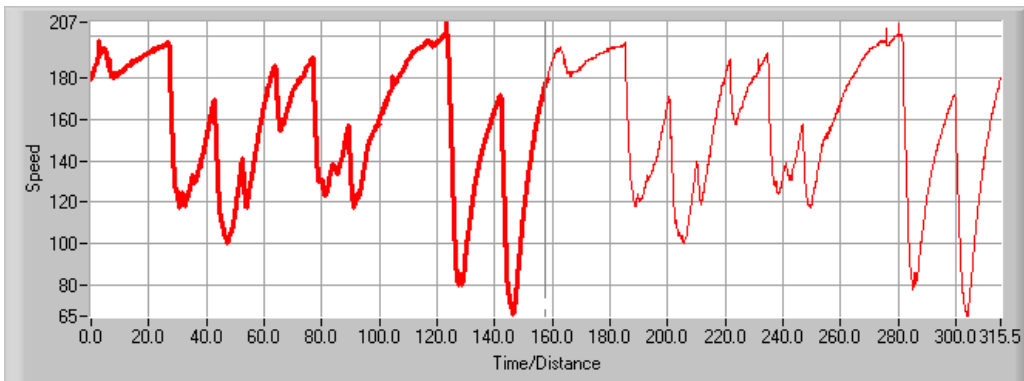
In a general manner, the most useful is the distance, because it’s easy to know the total length of the track.

When you think you’re OK, click “Apply”.

The new laps are created immediately.

### Merge

The Merge Tool allows you to merge the lap you selected with the previous lap. Select a lap in the second Pilot Lap list, and the trace of the two laps will appear like this :



Now click on “Apply” to create the single lap.

### Beacon

The Beacon shift tool allows to correct the lap shifting between two XAP files. Between the two session, the beacon may have been displaced, so you have to shift the starting of all laps.

Choose a reference lap, and a Pilot Lap from the two tables. Now use the Move Right, Move Left button to overlay the two laps as best as you can.

When you've finished, click Apply, or Cancel if you prefer to choose other laps.

The Close button will close the window and reload the files you modified. It may take a little time.

## 6. Tools

### 6.1. Diagnostics

	Pilot A	Pilot B
Alarm Poil	1	1
Alarm T wat	1	1
Alarm Battery	1	1
Diag Throttle	1	1
Diag T wat	1	1
Diag Battery	1	1
Diag Barrel	1	1
Diag Tair	1	1
Diag Padm	6	7
Pulse Right	0	0
Pulse Left	0	0
Spurious Lap	0	0
Power Reset	0	0
CAN Error	0	0

This window indicates the sum of all "Diag" errors recorded, directly sent by the ECU.

A high number of errors (>> 1) indicates a problem on the engine, of a fail on a sensor.

On the bottom, some other values give information on the logger's sensors : for example, if you have a very high difference between "Pulses Right" and "Pulses Left", it may be a failure on a wheel speed sensor.

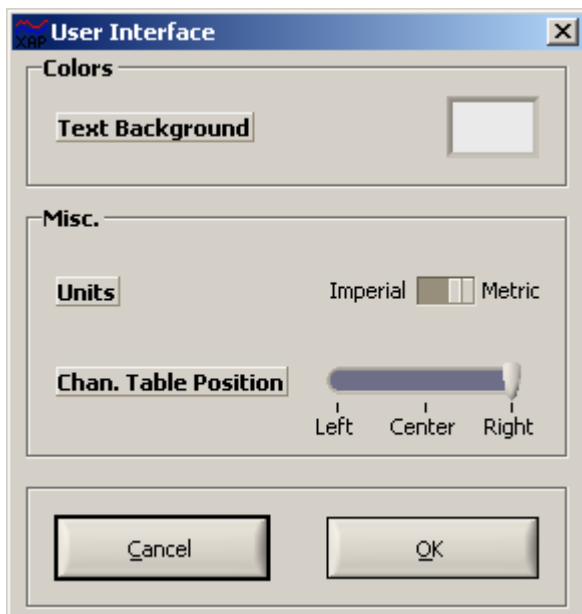
High numbers of errors on "Spurious Laps" indicates a problem on the beacon (transmitter and receiver). "Power Resets" errors show sometimes a problem on

the battery or the electric system.

And "CAN Errors" are problems of communication with the ECU.

### 6.2. Options

Display options allows you to set some parameters of the graphical user interface, like **background color** and **grid** on the graphs, and display **units** of some channels.



Here you can set the text background of the channels labels, the unit, and the position of the channels tables.

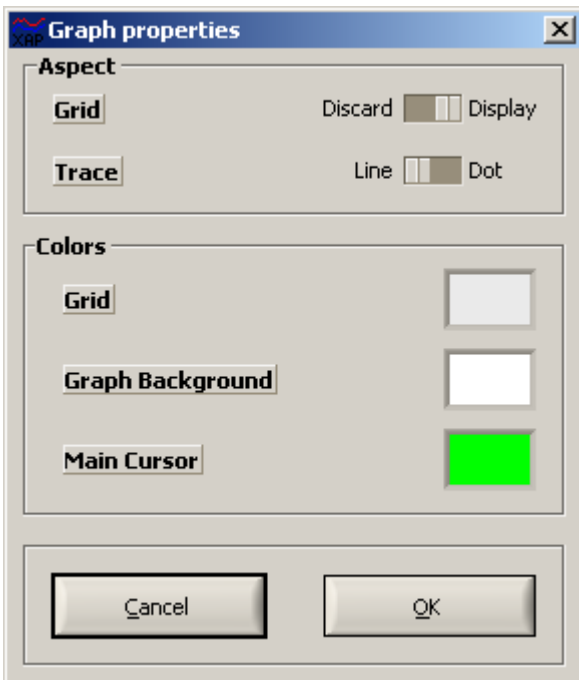




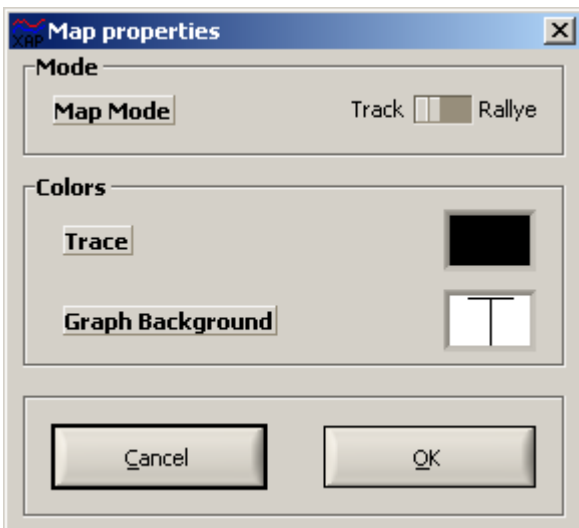
You can change the language of the E-Race User Interface. Clicking OK will automatically close the software. The new language will be effective on the next use.



In this box you can hide or show the grid of the graphs, and change traces from lines to dots (very slow). You can also choose any color you like for the grid, the graph background and the main vertical cursor.



And the same options for the map.



## 7. Session Information

The **Session Information** Tool allows you to access all information in the XAP file, as the pilot name, date, wheel perimeter...

**Session Information**

**Pilot A**

Name:  Wheel Perimeter:  Nb Teeth:

Date:  Time:  Nb Channels:  Nb Diags:

Best Lap:  Nb Susp.:

Nb of Laps:  Session time:

Laps	Lap Time
1	01'35''942
2	05'34''678
3	01'29''639
4	01'29''026
5	01'28''280
6	06'44''371
7	01'29''077
8	01'28''414
9	01'29''707
10	01'28''025
11	01'27''571
12	01'27''870
13	01'27''169
14	01'27''450
15	04'26''100

Comments:

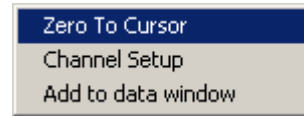
Print OK Cancel

The **Pilot Name**, **Date** and **Time** are only informational, and have no effect on the data.

The **Wheel Perimeter** field will influence the calculated Speed and Distance.

## 8. Channel Tools

By right-clicking on the channel table, in a particular pilot column, you can make this menu appear:



### 8.1. Zero To Cursor

This tool is useful when the “Zero” of a sensor has not been made properly. Place the cursor on the graph where the “Zero” value should be, and use the tool. The changes apply immediately and saved in the XAP file.

### 8.2. Channel Setup

Every parameter of a particular channel can be modified here.

- **Name** : the name of the channel as it appears in the table
- **Unit** : its unit. Beware of the units that can be translated into imperial units.
- **A & B** : Every data on a channel is the result of a  $A \cdot X + B$  operation, as the sensors only return an electrical information. The B parameter is useful to determine the Zero value of a channel, as it was explained on the previous chapter.
- **Min & Max** : While enabled, the Min & Max automatically toggles the manual scale of the graph the channel is traced.
- **Filtering** : A value between 0 and 3 (0 means no filter) for a high-frequency filter on data.

Values are updated only when you click **OK**. Otherwise click on **Cancel**.

### 8.3. Add To Data Window

Channel	Value 1	Value 2
RPM	6421.0	6421.0
OILP	2315.0	2315.0
THROTTLE	100.0	100.0

This allows you to add the channel to the small floating window where the current data is displayed.

To remove the channel once it's on the list, right-click and choose “Remove”.