This deliverable provides a detailed overview of the progress of the CARVIREN experiment for both the experiment venue and EXPERIMEDIA facility operators. This document has been prepared considering particularly information contained in deliverables D2.1.1 (First EXPERIMEDIA Methodology), D4.12.1 (CARVIREN: experiment description and requirements), D2.2.1 (EXPERIMEDIA Baseline Components) and D4.2.1 (CAR Experiment Design and Plan).
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<td>Delivery date</td>
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</tr>
</tbody>
</table>
# Table of Contents

1. Executive Summary .............................................................................................................. 4
2. Introduction .......................................................................................................................... 5
3. Description of the Experiment Progress ............................................................................. 6
   3.1. General Description of the CARVIREN experiment ....................................................... 6
       3.1.1. Data Acquisition and Process Server ................................................................. 7
       3.1.2. Baseline Components ......................................................................................... 8
3.2. Overview of the Experiment Design ................................................................................. 8
   3.2.1. System architecture ............................................................................................ 8
3.3. Tasks Developed within the CARVIREN Experiment ...................................................... 10
   3.3.1. Experiment design and definition ........................................................................ 10
   3.3.2. Integration of external ANT+ sensors .................................................................. 11
   3.3.3. Adaptation of the WIMU .................................................................................... 15
   3.3.4. Development of DAPS (Data Acquisition and Process Server) ............................ 16
   3.3.5. Development and implementation of the website .................................................. 17
   3.3.6. AVCC module ..................................................................................................... 18
   3.3.7. Development of the Sport widgets ..................................................................... 19
   3.3.8. Integration of the SCC-AVCC module for the Synchro team ............................... 21
   3.3.9. Implementation of the ECC ................................................................................. 22
   3.3.10. Experiment tests and evaluation ...................................................................... 23
4. Experiment Implementation .................................................................................................... 24
   4.1. Experiment Preparation ............................................................................................ 24
   4.2. Experiment Execution ............................................................................................... 24
   4.3. Integration with Other Components ........................................................................... 24
       4.3.1. Integration with Experiment Content Component (ECC) .................................. 24
       4.3.2. Integration with Audio Visual Content Component (AVCC) ............................... 24
       4.3.3. Social Content Component (SAS Integration) .................................................. 24
4.4. Analysis of Results ......................................................................................................... 25
4.5. Experiment Timeline ....................................................................................................... 25
5. Ethics and Privacy ............................................................................................................... 26
6. Update of Risks .................................................................................................................. 27
7. Meetings ............................................................................................................................. 28
8. Dissemination ..................................................................................................................... 29
9. Conclusions.................................................................................................................. 30
1. Executive Summary

This document describes the progress made in the development of the CARVIREN experiment in the first six months of the development period. A general overview of the current status of the development is presented describing in detail the technical goals achieved. A detailed explanation of the activities performed on each task within the experiment is also presented.

The document is organized in several sections starting by this executive summary covered in Section 1. Section 2 includes an introduction to the CARVIREN experiment. Section 3 presents a description of the progress made in the development of the experiment. In this Section a detailed explanation of the activities performed on each individual task of the experiment is presented. Section 4 describes the current status of the practical implementation of the CARVIREN at the CAR Venue. Section 5 deals with the ethics and privacy aspects of the experiment implementation at the CAR Venue. Section 6 includes an update of the risks identified in the experiment implementation with respect to those described in deliverable D4.12.1. Section 7 includes a list of the meetings in which RTS staff participated in the reported period. Section 8 covers the dissemination activities carried out in the reported period. Finally Section 9 briefly collects the conclusions of the whole report presented in a comprehensive manner.

1 D4.12.1 CARVIREN: Experiment Statement and Requirements
2. Introduction

CAR Virtual Environment (CARVIREN) is an experiment conducted by Realtrack Systems in the context of the FP7 EXPERIMEDIA project. The experiment consists of the development of a Virtual Community for the CAR Venue accessible using a browser where kinematic and physiological parameters with high definition recordings (from every training session) will be available in real time and/or remotely (if needed), and with the aim to provide rapid feedback to improve the athletes' performance.

In high performance centres, elaborated information is highly important. Information can come from multiple devices: wearables, machines, camcorders or information stored in the database. There is therefore a lot of raw data that has to be processed in order to be useful. This is one of the big problems: due the different communication protocols and because each one uses its own system, it usually takes too much time to be processed.

The other problem is the availability of the coach at the venue, or the limitation of having to be in one place at a time, therefore being able to only observe one workout.

Right now, the Future Media Internet brings us an opportunity to deal with these problems. First, because today technologies give us the chance to synchronize and deal with different devices in real time, and secondly, it gives the coach remote solutions, such access to training sessions from his phone, no matter where he is, and in real time.

All this provides rapid feedback: elaborated and relevant information in real time and remotely if needed.
3. Description of the Experiment Progress

3.1. General Description of the CARVIREN experiment

The CARVIREN experiment focuses on high quality content production for the gymnastic training sessions including 3D motion capture based on inertial sensors and 3D biomechanical analyses.

The main tool for the CARVIREN experiment is WIMU, a device developed by Realtrack Systems. WIMU is a lightly (11x9x5.5cms) smart device with Microprocessor, RAM memory, 3D accelerometer, gyroscope, magnetometer, barometer, microUSB and SD memory. WIMU has integrated Bluetooth, Ant+ and Wi-Fi radios. WIMU develops the concept of virtual sensors. Virtual sensors allow WIMU to deal with data generated by other devices like self-generated data.

These features make WIMU optimal to work as a hub, by connecting multiple devices together and sync them in the same network. WIMU is plug-and-play and it connects easily with the CAR Wi-Fi installation. It takes only seconds to setup for the very first time. Microprocessor and internal memory allow an installation of CARVIREN inside the WIMU. This possibility is a key point for Mobile Transmissions Units.

WIMU is not only a hub, it can be more. It can be a whole Mobile Transmission Unit (MTU). WIMU’s microprocessor can process data without being connected to the server. Internal memory and external memory (up to 32GB) can save the information collected and processed.

CARVIREN will carry out research on synchronization of motion capture data gathered from the inertial sensors, video obtained from the cameras available at the CAR Venue and metadata. The experiment will concentrate on the use of all those elements in the training process and on the improvement of the athlete's technique.

As the experiment will take place in the CAR Venue the interaction between athletes, trainers and other professionals involved in the preparation of the athletes will be ensured. This interaction will enable athletes to improve their performance.
The Sportwis are small utilities that show elaborated information in a simple and easy way.

Sportwis run in a web browser allowing any authorized person to access information from his tablet, laptop or a Smartphone. (Regardless the model or operating system).

Whenever possible, Sportwis will be available in two modes: real time and historical.

In real time mode, information will be displayed a few seconds after it’s been generated, while in History mode any information can be displayed by the system according to previously established access criteria (coaches, athletes, federations, etc.).

Each user can setup his own individual Sportwis dashboard, obtaining only the information he desires in every moment.

Access to the dashboard is not restricted to be in the range of CAR’s Wi-Fi network. It is possible to access remotely from whatever location (as long as there is internet access).

3.1.1. Data Acquisition and Process Server

The Data Acquisition and Process Server (DAPS) is the system in charge of reception and processing of data in order to generate elaborated information. This information will be stored in the database and it is available to the CARVIREN Sportwis. This Server integrates five modules described below.

3.1.1.1. Connection Manager

This is responsible for providing access to the data processing system to different WIMU-hubs and associated sensors. It also manages the data that has been stored in a WIMU-hub mobile in an isolated activity (reading loggers). When a connection request is made, this module is in charge of the negotiation process and the “tell” the hub to be ready for possible new profiles, getting ready to receive data from new sensors or users.

3.1.1.2. Data Processors or Monitors

They are independent and configurable modules that receive data from connection manager and process them, generating information to be stored in the database. A data processor can be also implemented in WIMU (information reaches the server and, it is directly stored in the database). This step achieves load balancing regarding processing power / network capacity in the system. With the addition of new data processors, we manage to make the system easily scalable for future expansions.
3.1.1.3. **Database and Info Manager**

These are the connection and information management system for the Sportwis. The Info Manager is in charge of offering the information as required (historical mode). It is directly connected to the database. It has full knowledge of all sessions and all available athletes’ information. This module contents the public interface and the access to independent Sportwis developments.

3.1.1.4. **Real time Manager**

The real-time manager is responsible for accepting subscriptions from the Sportwis and provides real-time information. It is directly connected to the Data_Processor to provide information quicker, avoiding mass access database. It also has a public interface very similar (if not the same) than the Info Manager’s interface.

3.1.2. **Baseline Components**

For the Experiment, we will use three baseline components: ECC, AVCC and the AVCC-SCC integration. Progress in each one can be found at 3.3.6 (AVCC), 3.3.8 (AVCC-SCC) and 3.3.9. (ECC)

3.2. **Overview of the Experiment Design**

The implementation of the CARVIREN experiment requires the integration of the WIMU’s hub system (developed by RTS) with the Experiment Content Component module (ECC), the Audio Visual Content Component module (AVCC) and the integration of the AVCC with the Social Content Component (SCC).

CARVIREN will also have a website with a role system where all information (elaborated information) will be available in real-time and in delay mode for the different actors.

3.2.1. **System architecture**

Figure 4 depicts graphically the system architecture to be implemented in the CARVIREN experiment.
The functional building blocks of this architecture are the following:

The implementation and/or modifications to be performed on those building blocks as well as the integration of the different modules in order to achieve the goals of the CARVIREN
experiment are being carried out according to the development tasks defined in the deliverable D4.12.1.

3.3. Tasks Developed within the CARVIREN Experiment

The tasks in which the CARVIREN experiment is organized are the following:

1) Experiment design and definition. This task deals with the detailed definition of the experiment. The results of this task are reported in the deliverable D4.12.1.
2) Integrate the external Ant+ sensors (the profiles) with the WIMU.
3) Adaptation of the WIMU as a hub and motion capture hardware simultaneously. This task consists of modifying the firmware so it can work simultaneously and continuously as a collector of data (either external or internal). Current modules have to be adapted to the particular conditions existing in gymnastics (trampoline) and triathlon. Modifications will involve the number of sensors used and required to run the experiment.
4) Development of DAPS (Data Acquisition and Process Server). This is the main core that will link the Baseline Components and the hubs.
5) Development and implementation of website (where the visual part of the Experiment will be displayed).
6) AVCC module. Synchronization of captured data with video and metadata. Implementation of the AVCC and the synchronization of it with the data; using the tools developed by ATOS.
7) Development of the Sport Widgets (Sportwis).
8) Integration of the SCC-AVCC (Social Annotation Service) module for the Synchro team.
9) Integration of the ECC, to control metrics and measure (along the surveys from Lime) the success of the Experiment.
10) Experiment tests and evaluation.

In the following sections the progress made on each of the particular tasks listed above is described.

3.3.1. Experiment design and definition

This task dealt with the definition of the requirements of the CARVIREN experiment. The main elements considered in this task are listed in the following points:

- Learning objectives for the different stakeholders in the experiment.
- Experiment procedure
- Assumptions and conditions
- Parameters of the experiment metrics
- Constraints
- Experiment design
  - Experiment requirements
  - System architecture and building blocks
  - Technical assets
  - Content lifecycle
• Plan for implementation
  o Experiment preparation
  o Experiment execution
  o Analysis of results

The results obtained in the development of this task are reported in fully detail in the document 'D4.12.1. CARVIREN: experiment description and requirements'.

3.3.2. Integration of external ANT+ sensors.
The external sensors used are all based on ANT+ technology. So far, we had developed the HR from the Heart Rate Sensor, which connects automatically with the WIMU and synchronizes the heart data with the kinetic data.

![Figure 5: ANT+ profiles integrated with WIMU. Quiko software](image)

We have integrated the following sensors:
3.3.2.1. **Stride based Speed and Distance**

A stride based speed and distance monitor (SDM) is a personal body-worn device that allows the wearer to measure the number of strides taken, the speed at which he or she is travelling and/or the distance he or she has covered based on stride measurements and calculations. Some examples of SDMs include the foot-worn pods that go on, or in, a shoe and reconstruct strides to compute speed and distance while walking or running. Similarly, pedometers that may be worn on the waist or elsewhere are also considered SDMs.

We will use this profile for triathlon when GPS won’t be available (GPS can measure way much better the speed, and also accelerations and breaks).

3.3.2.2. **Bicycle Speed and Cadence**

Bike speed sensors are devices mounted on a bicycle that measure the speed the bicycle is travelling. This is typically done using a magnet mounted on the wheel spokes and a sensor on the bicycle frame that senses the magnet passing. Bike cadence sensors measure the speed at which the user is pedalling, typically using a magnet attached to the pedal shaft and a sensor mounted on the frame. The standard mode of operation is for the bike speed or cadence sensor to transmit its measured data to the receiving display device. Typically this device is a bike computer, but it could be any ANT+ display device capable of decoding bike speed and cadence information, such as a watch, cell phone, PDA, etc.

The ANT+ Bicycle Speed and Cadence device profile describes the wireless link between the transmitting bike sensors and the receiving display device.

We are going to use it in triathlon (cycling), and specifically, the following profile:

Combined Bike Speed and Cadence Sensor - This mode has combined both the speed and cadence sensors into a single sensor. One sensor transmits data about the user’s speed and cadence over a single ANT channel.

3.3.2.3. **Weight Scale**

ANT+ weight scales are devices primarily used to measure the weight of the user that is placed on them. This requires the user to stand on the scale to take a measurement of the user’s weight.

This profile is now implemented. The idea is to create a widget where the user can get weight, when he gets into the scale. The system is going to be continuously recording data, so the moment the user indicates he is using the scale (and he’s signed in correctly); this date will get collected and added to his profile.

3.3.2.4. **Muscle Oxygen Monitor**

Muscle oxygen (SmO2) is a measure of the percentage of haemoglobin that is saturated with oxygen in the capillaries of a muscle. This value typically decreases as a muscle does work, for example when a person is exercising, and increases when blood circulation brings new oxygen to the muscle. The percentage of muscle oxygen varies from muscle to muscle depending on which muscle is used to perform a particular action.
A muscle oxygen monitor may be used by athletes to monitor the intensity of their training, and by coaches and physiotherapists to identify which muscles are being used when. An ANT+ muscle oxygen monitor provides a real time indication of the percentage of muscle oxygen in a particular muscle, which is transmitted to the closest WIMU (in case it hasn’t been associated).

![Figure 6. Thb and SmO2 charts of implemented moxys.](image)

This sensor can be used in all disciplines of the Experiment.

### 3.3.2.5. Controls

Personal audio devices, video devices, smart phones and other displays are often used during activities that may also be monitored by many traditional ANT+ devices. The ANT+ Controls Device Profile includes four control use cases that can be used separately or combined within a remote control or controllable device. Each use case is associated with its own icon and transmits information / control commands. We are going to use the generic control, used to send a push command using ANT+. We will use it to create a timestamp on the sessions.
Figure 7. Push timestamp used for synch the video. Quiko software.
3.3.3. Adaptation of the WIMU

So far, WIMU was a device that either collected data by itself, or acted as a hub of sensors and an access point. WIMU can be accessed as an AP by installing the RNDIS serial profile (Figure 6).

Figure 8. Inside WIMU. Sensors configuration

The most important task here was redesigning the firmware for this experiment. We are going to use several external devices. Each one will have an internal ID number. The device was configured to pair with specific IDs. Now it’s ready to collect data from every external sensor it finds. The solution was to create a configuration platform, so you can add to each hub the specific profiles and ID devices (Figure 7 and 8):
As shown in the pictures, now WIMU integrates internal and external sensors without making any difference at all. We will set up the hubs for the Experiment, but the CAR staff will now be able to change that configuration if needed.

### 3.3.4. Development of DAPS (Data Acquisition and Process Server)

This is the main core that will link the Baseline Components and the hubs. DAPS is being programmed in QT, so it can be integrated easier with the Baseline Components.
DAPS will be installed in CAR data centre. We have a space already configured with 100Gbs, 5Gbs RAM, Quad core and the Ubuntu 14.04 LTS I.O. installed.

Daps will manage the database with the sessions. Information will arrive to DAPS by the information collected by the sensors linked to WIMU (internal and external). DAPS will create a session and will save it in the database, so it will be able to provide “sessions on demand” to the CARVIREN users. Users will connect to the website (the website will manage the role system as we will see further in 3.3.5.), and will connect to DAPS using web sockets.

This is the UML Class Diagram:

![UML Class Diagram of the DAPS](image)

3.3.5. Development and implementation of the website

3.3.5.1. Requirements

Before beginning to develop the website, some elements were considered. The idea was to choose the elements and blocks to be integrated. Finally, we considered these:
• User’s role manager
• Sessions manager
• Hub manager
• Proxy between browser and DAPS

To accelerate the implementation we decided to use Joomla, a CMS used in previous projects by RTS. Also, with Joomla we have done before an entirely user’s roles management.

The role manager has been finished in April.

However, this election has required us to create a proxy between PHP and Java to integrate with the ECC

3.3.5.2. **PHP / Joomla Implementation**

The development of the web portal began quickly after installing Joomla! on a local server and modifying the user management module and the profiles for the integration of new fields (based on each user role).

The fact that each user has a different role and different fields made the integration more complicated than we initially thought. Once it was completed, we started with the implementation of proxy between PHP and Java. Soon we realized that the effort required to implement the proxy, as well as other problems (basically the implementation and the connection between the website and the DAPS) gave us more problems than solutions; so we decided to create a new portal using Java and JSF technology.

3.3.5.3. **Java / JSF Implementation**

In less than a week, we were able to integrate a small but efficient role manager module for the users. Also, we programmed a new Hubs manager and a new framework. Due to the fact that we used Bootstrap for our for Joomla attempt and for this new one, it was easy to export the styles with CSS.

3.3.6. **AVCC module**

The main goal of this task is the implementation of a software module which allows the synchronization of the metadata with the motion capture data and video (generated or recorded). This software module will make use of the AVCC tools developed by ATOS.

Although it was expected that this task would start in the next reporting period some actions have already decided and planned:

3.3.6.1. **Agreed:**

• Integration of the ingest services and social annotation services with the ECC, and configuration needed. RTS will develop their ECC clients using a local instance of the ECC, while Atos will setup the services directly to the Infonova ECC to be used in the experiment.
• AVCC services needed to live streaming and recording training session videos, using the camera installed at the CAR venue.
• RTS will use their own CMS which will be integrated with AVCC and Sport Training Management components.
• Ingest services needed to upload recorded videos to the content manager developed by RTS and create an event on Facebook (Facebook event page to be created)
• Possibility of integrating CARVIREN with an application with live streaming, records and ingests videos from Android devices.

3.3.6.2. **Actions:**

• In order to fulfill the EX12 needs, Atos will deploy:
  
  o Ingest service to process uploaded files from the content management (ex12Ingest) @ exp-avcc.car.edu
  o AVCC streaming instance for the live and recording features (ex12live) @ exp-avcc.car.edu
  o Ingest service to process recorded content from ex12live @ exp-avcc.car.edu
  o SCC Social Annotation Services (from ICCS) instance @ exp-avcc.car.edu

• The above services will report metrics to the ECC & RabbitMQ deployed by Infonova with an agreed UUID
• Atos will coordinate with CAR the setup and re-configuration of the Atos’ camera
• Atos will provide the PHP code of the Atos CMS (Drupal) as example of code to access to SCC Social Annotation Services
• Atos will provide a basic / simple example for the Ingest services
• Atos will provide URLs for the REST services to start and stop live reproduction and recording.
• Atos will provide URLs to ingest video files
• Atos will contact with ICCS to create an event on Facebook.
• Atos will provide a basic player to playback live content in Android devices
• RTS will provide an URL to received feedback from the AVCC ingest services
• RTS provides user information from its content manager

3.3.7. **Development of the Sport widgets**

The idea of a Sportwi is that it can show you simple information from raw data, in a simple and direct way. Also, it can create reports and provide elaborated information. All in the aim of the rapid feedback and the performance improvement.

In order to understand it better, let’s check how it works:

We have already developed something similar to a Sportwi. We call it “monitor” or “quidget”. In Figure 9, you can see how raw data looks like without transformation. This data is being collected by WIMU and its native software.
This way is complex and it takes time to analyze. The results are extremely accurate. A lot of functions are applied to this raw data, but they are always the same. So we integrate all these functions into a script and we develop it, creating a smart app, small and available:

Applying that quidget (or monitor) we create automatically the reports, including (in this case), the acceleration, HR, max speed, average speed, time and related information:
Figure 14: Interval Training reports

Right now, and just for testing the connection between the DAPS, the website and the local ECC, we have developed only 3 Sportwis for the CARVIREN:

1) Accel: measures inertial forces. It’s a 2D representation of a 3D accelerometer sensor integrated in the WIMU.
2) Heart Rate: collects the HR from every hr chest close to the WIMU (until 8 chest and with ANT+ technology)
3) Battery: indicates the remaining power

3.3.8. Integration of the SCC-AVCC module for the Synchro team

Activities in this task will be started during the next reporting period.
3.3.9. Implementation of the ECC

The first task to implement the ECC module was installing it at a local server at RTS installations. First tests were done locally, in a controlled environment. We found some configuration problems with PostgreSQL when compiling Java basic examples that came with the module to test its proper functioning.

Then, after installing all ECC packages in a local Maven repository, we began the implementation of the module with the website using the above example as a reference.

To do that, we used a bean with an application scope which would allow us to maintain a direct connection between different website requests. For initial testing, we set metrics that show the number of users by total and by roles:

![ECC Dashboard](image)

The activities leading to the integration of the ECC with the CARVIREN installed in the CAR will be started in the next reporting period.
3.3.10. Experiment tests and evaluation
Activities in this task will start during the next reporting period.
4. Experiment Implementation

4.1. Experiment Preparation
The experiment preparation requires that several tasks and conditions which have to be accomplished before the actual tests of the experiment are performed. These tasks are described in Section 3 of this deliverable.

During the reported period RST is preparing for delivery one Hub to CAR, so they can start getting used to it and how it’s work. Also, we need they record session in logger mode, so we can programmed the monitors and finally, the Sportwis.

4.2. Experiment Execution
According to the timeline defined in deliverable D4.12.1 the task of experiment development and evaluation will be started in summer 2014, between June and September. Despite this fact we want to set everything at the CAR by May, so we have one month to configure all components. This implementation will take place on May at CAR Venue. Participants in this will be:

- CAR personnel
- RTS personnel

The goal of this first implementation is to start recording sessions, so we have material to develop the widgets and adjust the integration with the Baseline Components.

4.3. Integration with Other Components

4.3.1. Integration with Experiment Content Component (ECC)
In the reported period experimenters held one meeting with ECC development team. The parameters for QoS in the CARVIREN experiment were discussed. In addition experimenters participated in one teleconference related to this activity.

The activities leading to the integration with ECC have started last month (March) and will continue during the next reporting period.

4.3.2. Integration with Audio Visual Content Component (AVCC)
In the reported period experimenters held three meetings with AVCC development team. The parameters for the integration of the CARVIREN experiment were discussed (as seen before in section 3.3.6).

4.3.3. Social Content Component (SAS Integration)
It schedules to be integrated at June, so the Swim Team can test it during the summer. It’s a very easy baseline component to deal with, due it has been developed and will work with our website and from the first integration (this was another reason we changed from Joomla to Java).
4.4. **Analysis of Results**

Preliminary analysis of results will be performed with the firsts recorded sessions. The task will be held by RTS and the technical stuff from CAR, in order to adjust any possible problem it can come out.

4.5. **Experiment Timeline**

Figure contains the updated timeline for the implementation of the CARVIREN experiment. Green colour indicates the task is already completed. Orange indicates an ongoing task, and blue a task that has not started yet. The activities (described in Section 3 in more detail) are:

1) Experiment design and definition, D4.12.1.
2) Integrate the external Ant+ sensors (the profiles) with the WIMU.
3) Adaptation of the WIMU firmware
4) Development of DAPS.
5) Development and implementation of website
6) AVCC module.
7) Development of the Sport Widgets (Sportwis).
8) Integration of the SCC-AVCC module for the Synchro team.
9) Integration of the ECC baseline components
10) Experiment tests and evaluation.

![Figure 27. Experiment timeline](image-url)
5. Ethics and Privacy

The CARVIREN experiment intends to record actual motion and sensible data from real athletes in the CAR Venue. This situation was discussed during the EXPERIMEDIA General Assembly held in Madrid in October 2013 and in Leuven in December 2013. It was agreed that we will sign a Controller-Processor Agreement under the current Data Protection Act (DPA) used at CAR.

This document has been already elaborated and it will be signed in April (before start collecting real data).
6. Update of Risks

We found different risks that forced us to change and updated our experiment:

1) CMS and Joomla were good for managing user’s roles, but too complicated to integrate with the Baseline Components. So we decide to change to JAVA and JSF.

2) We underestimated the complex of develop the DAPS. Starting with a new language (QT) has delayed us.

3) Sensors. We had to wait more than 1 month just to receive one moxy sensor. Almost 6 weeks. This delay was not due to us. Actually, we were able to implement the sensor with WIMU in a few days, but it took another 3 weeks to have confirmation of values from the manufacturer.
7. Meetings

During the reported period the experimenters in CARVIREN have participated in two meetings involving other partners in the EXPERIMEDIA project:

- EXPERIMEDIA Training Workshop (Madrid, Spain) on October, 2013. This meeting was hosted by ATOS. During this meeting were discussed the requirements for the CARVIREN experiment.
- EXPERIMEDIA European Board for Ethics (Leuven, Belgium) on December 2013. This meeting was hosted by Leuven University and we discussed with the European Board the issues of the Experiment related to privacy and data protection.
- EXPERIMEDIA General Assembly (Graz, Austria) on January 2013. This was a general meeting hosted by JRS in which we participated by videoconference, and we gave an updated of the Experiment progress.

In addition to the meetings reported in the previous points, RTS has participated in several teleconferences related to different activities within the EXPERIMEDIA project, namely Activity 4, ECC and teleconferences. Progress made in those teleconferences is reported in the minutes stored in the Google Docs repository.
8. Dissemination

During the reported period RTS has undertaken some dissemination actions related to the CARVIREN experiment. We have published articles in our blog and initiated a social campaign in our twitter and Facebook profiles. Also, we have share news and updates using ours LinkedIn profiles.

We have added CARVIREN to our Company dossier and we have in mind other activities for the following months. Between them, a wiki page (Wikipedia is the most powerful SEO Agent in Internet, ranking almost all search terms in the firsts places of every browser ranking). Having a wiki page will help not only our Experiment, but also the whole Experimedia Consortium.

A press note after we start the experiment in the CAR and a dissemination case study will be carry on by the end of the Experiment period.

No incidents have been detected in the planned development of the CARVIREN experiment in the first reporting period. The tasks in which the experiment is organized will be developed according to the proposed plan.
9. Conclusions

The development of the CARVIREN experiment suffered a delay at the beginning of this year (2014). Right now, we are gaining time back, and we don’t expect more delays. The rest will be developing according to the timeline (Section 4.5).

As described in this document all tasks in which the experiment is organized are being developed according to the proposed plan. Moreover a few tasks are ahead the proposed development plan (as is the case of the Sportwis and the website).

The collaboration with the rest of the partners in the consortium is satisfactory from the perspective of the developers of the CARVIREN experiment. Collaborations with CAR Venue and ATOS are running in a totally satisfactory manner as well.