This deliverable is a compilation of the infrastructure and software assets that will be used in EXPERIMEDIA project. The partners involved are CAR, Schladming, IME, FDF and Interactive, providing information on the high performance athletic training facility, the ski-resort, the Hellenic cultural educational facility and a variety of other facilities respectively.
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1. Executive Summary

1.1. Scope
This deliverable contains a compilation of the facilities offered by all EXPERIMEDIA participants. These facilities will be used in the development of the project.

1.2. Audience
This deliverable has limitations respecting its dissemination; it is restricted to other programme participants including the Commission Services and no one not belonging to this defined group is authorised to access to the content.

1.3. Summary
This deliverable is a compilation of the infrastructure and software assets that will be used on EXPERIMEDIA project. All partners involved in Operations Activity have described their facilities in the present document.

1.4. Structure
The deliverable is structured in four sections, which are briefly described below:

Section 1 is the introductory section and contains the basic information about what could be read in this deliverable, as well as the private or public character of the document.

Section 2 shows a general description of the facilities offered by all partners involved in Operation Activity. This section is divided in two subsections; one of them explains the general description whilst the other one indicates socio-economic requirements related to every facility.

Section 3 contains the inventory of the assets offered for the development of EXPERIMEDIA project. This section is divided in subsections; one subsection per partner involved in the elaboration of this deliverable. Each subsection is divided in three other subsections that explain the assets offered for content provision as well as services and communications infrastructures used by the facilities offered.

Section 4 contains all operational requirements offered by the company owner of the facility. The structure of this section is similar to the previous one.
2. Facilities

2.1. General Description

In this section we look at the different facilities offered by the different partners involved in the project. EXPERIMEDIA offers facilities related to several different sectors.

For instance, we have facilities coming from the world of sport; this is the case of CAR. This centre allows athletes to improve their performance in so many athletics disciplines, as can be read some sections below, in Section 2.2.1. These disciplines are mainly related to the Olympic Games.

Also related to sport, but more oriented to winter and mountain, we find Schladming. Schladming offers the perfect environment for enjoying snow and puts to EXPERIMEDIA disposition one of the leading international ski facilities in Europe. More information can be found in Section 2.2.2.

Both CAR and Schladming have the latest technical equipment for allowing a perfect and complete broadcasting of all events held in their premises.

IME offer the facilities of the ultra-modern Cultural Centre and Museum Hellenic Cosmos. These installations are prepared to create all kind of virtual and interactive exhibitions through the latest audiovisual technologies. More information can be found in Section 2.2.3.

FDF is another partner that offers access to a network of resources operated by third parties and made available "on-request" on a case-by-case basis. One of these third parties is SOS-21. SOS-21 will contribute facilities related to immersive technologies. In addition, the Interactive Institute operates two public venues in Sweden, the C-studio in the Norrköping Visualization Center, and the Digital Art Center in Stockholm. These venues could also be used in upcoming experiments if desirable. These other facilities are further described in Section 2.2.4.

Finally, we note that not all facilities in the project are physical facilities. This is the case of “3D Innovation Living Lab”. This living lab has been created by the FDF association and has received the ENoLL label in 2008 and as such is an official member of this European network. It could be best described as an ecosystem of partners which have a special interest or expertise in 3D, augmented reality and immersive technologies. Some prominent partners of the living lab are Dassault Systèmes and Institut Telecom, and it also includes smaller enterprises such as I-Maginer and SOS-21. The living lab currently does not have any physical facilities but does have access on demand to the facilities and expertise of our partners.

This lab is quite active within ENoLL: it participates in various events, and it is establishing the French living lab chapter and promoting the concept of “viving lab” (virtual living lab). It is also setting up a thematic transversal network on 3D and participating in 3D events (Imagina, Laval Virtual), etc.

Moreover it has designed a project within SmartSystem to establish its own facility in Paris (the Innovation Living Lab Campus or ILLC). This facility is targeted to be operational end of
2013/mid 2014 and shall benefit from the support of the Cap Digital, the Paris area cluster in the field of digital. It may also host the EMC2 Competence Centre, the physical facility envisaged within the Network of Excellence “3D Life”.

2.2. Facility’s Socio-economic Requirements
In this section, every partner involved in Operation Activity gives a description of the socio-economic requirements related to the facilities offered to the EXPERIMEDIA project.

2.2.1. CAR

2.2.1.1. Purpose of the infrastructure offered
The High Performance Centre (in Catalanian, Centre d'alt Rendiment, CAR) is an organisation which gives support to athletes so that they can be competitive at an international level, optimizing resources of the highest technical and scientific quality.

A new sport building is almost complete. Its infrastructure includes a dedicated data-centre and a Gig Ethernet network with wireless coverage in order to provide high speed services, with an external link of 100MB from the building to the Internet.

The aim of this infrastructure fully dedicated to high performance sport preparation, is to make a step forward approach on an advanced training facility, ready for the challenges of the global and future network applications and services.

2.2.1.2. Stakeholders addressed
The end users are coaches and athletes of the 12 different sports hosted in that building which includes: Swimming, Waterpolo, Synchronized Swimming, Diving, Table Tennis, Taekwondo, Judo, Wrestling, Men’s Gymnastics, Women’s Gymnastics, Weightlifting, plus the CAR Staff to support them.

2.2.1.3. Benefits to Stakeholders
- To redesign the training process in high performance training.
- To get information faster.
- To share information to achieve more accurate decision making.
- To enhance reality to create a better picture and increase the quality of sports training.

2.2.1.4. Application sector addressed by the new services created
Sport in general, high performance training in particular.

2.2.1.5. How to cover infrastructures costs
In common with all the facilities at the High Performance Training Centre in Sant Cugat, all the infrastructure costs are covered by the budget approved yearly by the Catalan Regional Government and the National Spanish Government.
2.2.2. Schladming

2.2.2.1. Purpose of the infrastructure offered
Schladming is a tourist destination, offering a wide range of activities. These activities include all kinds of winter sports like skiing, snowboarding, sledging, ski hiking, cross country skiing, etc, and summer sports like hiking, biking, climbing. The region is also known for other events like the Ennstal classic (old timer race), mid Europe (Brass music festival) and more.

In 2011 the region of Schladming implemented a Wi-Fi infrastructure to offer free internet connectivity to its guests and the citizens.

Schladming is one of the leading international ski resorts in Austria and part of the Ski Amadé network covering 28 ski areas and towns that combined make up the largest ski area in Europe. Schladming has been the host of several world-class events on Alpine and Nordic skiing including the FIS Alpine World Ski Championships 1982. Recently Schladming has been selected to host the FIS Alpine World Ski Championships 2013 which will provide a perfect setting for EXPERIMEDIA experiments.

2.2.2.2. Stakeholders addressed
- Inhabitants as well as guests from the Schladming region;
- TV viewers who are interested in the region;
- people who use the by then newly created "Schladming App" with their smartphones;
- visitors, guests, citizens, journalists, local businesses.

2.2.2.3. Benefits to Stakeholders
As Schladming will be the host of the FIS Alpine World Ski Championships 2013, during the 14 days (4 - 17 February 2013) of the championship an average of 200,000 visitors can be expected on-site and approximately 650,000,000 TV viewers will participate remotely. This provides an enormous international outreach and ideal setting for powerful experiments on a large scale.

The venue provides an ideal setting for experiments that enhance the experience of on-site visitors and remote visitors. Schladming provides an ideal setting for several reasons:

- It is extremely representative.
- It allows for conducting experiments on a large scale with massive audience-reach.
- It has good cooperation with local representatives.
- If offers an excellent IT-infrastructure (Internet connectivity, wireless networks, UMTS/HSDPA/LTE mobile networks) commitment to long-term cooperation and sustainable developments (Schladming 2030 GmbH).

In addition to the FIS Alpine World Ski Championships 2013, there is a series of other important events (primarily ski races) that will take place regularly in similar settings. Among these events are the following:

- 24 January 2012 - The Nightrace.
These ski races will be followed by spectators on-site and remotely by millions of TV viewers. The experiments conducted within EXPERIMEDIA will allow for extending the reach to the Future Internet and enable innovative methods of interacting with interested visitors.

### 2.2.2.4. Application sector addressed by the new services created

The testbed services for experiments in Schladming include the configuration of the baseline technologies with the hardware infrastructure assets identified within the inventory so that they are accessible to the experiments.

As already mentioned at the live events approximately 200,000 spectators can be expected on-site as well as up to 650,000 TV viewers. People from almost every demographic group can be expected to participate. Especially people interested in sports with middle to higher income will be present on-site. Affinity to technical developments can be expected and the majority of spectators will have some sort of mobile device with internet connectivity. In addition, approximately 1,200 journalists will be on-site and report from there.

During the live events, there are several opportunities for conducting experiments: on-site visitors will access online information and also interact with opportunities for providing advertisements for local services (restaurants, hotels, ski rental, etc.) as well as general brand marketing. Remote visitors will be ready to interact virtually and will also be willing to accept advertisements that might be informative to them (booking journeys into the ski region, buying the ski of the winner, etc.).

Additionally, a smartphone-app-service via “Augmented Reality”-techniques is planned. People will be able to see specially defined hotspots (e.g. a landscape) in the region during the winter appear as they are during summer, for instance.

### 2.2.2.5. How to cover infrastructures costs

Costs will be covered depending on the type of infrastructure and / or experiment. Additional funding may come from Schladming 2030 GmbH, Schladming-Dachstein Marketing GmbH or Sponsors of the World championships. As Schladming 2030 GmbH (Ltd.) itself consists of three different shareholders, there are several possibilities of financing depending on the experiment.

### 2.2.3. IME

#### 2.2.3.1. Purpose of the infrastructure offered

IME is the private owner and operator of "Hellenic Cosmos", an ultra-modern Cultural Centre and Museum that stands out for its innovative programmes. It lies on a former industrial zone on an axis between Athens and Piraeus, where memory of Athens past meets the city's modern identity, and its architecture characterises Pireos street. "Hellenic Cosmos" is a multifunctional area where visitors experience Hellenic history and culture, while at the same time it is a venue of...
cultural creation and expression. In its areas we organize a wide range of activities, open to people of all ages and interests:

- Interactive exhibitions
- Virtual Reality Tours
- Educational Programmes
- Conferences
- Theatrical Performances
- Internet Café
- Documentaries
- Art events

Through the use of state-of-the-art technology the examination of Hellenic history becomes a truly remarkable experience! Audiovisual and interactive media provide a new way for the dissemination of historical information, where the audience participates actively, wonders, intervenes and shapes the way the events develop.

"Hellenic Cosmos" continuously evolves. New areas and activities are being developed, so that the Cultural Centre has expanded from the initial 16,000m² in 1998 to become gradually a cultural park of 60,000m², which will constitute the meeting place of history, technology and architecture.

- 1998: "Hellenic Cosmos" is inaugurated with the exhibition on national anniversaries and historical memory, which provided a new dimension in the way we approach the past.
- 2006: "Tholos" is inaugurated, the new semi-spherical virtual reality theatre where FHW's digital productions are presented.
- 2008: "THEATRON" opens its gates to the public, a multifunctional area that has the ambition of housing contemporary artistic creation and expression.
- Today: the development is still on-going.

As can be seen by the above, "Hellenic Cosmos" is a unique venue that strives to deliver history and culture to its audiences in the most remarkable ways, through the exploitation of state-of-the-art technology. In this context, "Hellenic Cosmos" fits perfectly within the EXPERIMEDIA project. On one hand EXPERIMEDIA acquires access to an infrastructure that is already equipped with media technology that is far from outdated and is expected to still be relevant when the technologies examined within the project reach wide practical application, and on the other hand "Hellenic Cosmos" benefits from the chance to have first-hand experience with new and upcoming media internet technologies and to examine possible ways to incorporate them in its infrastructure and operations.

2.2.3.2. Stakeholders addressed

"Hellenic Cosmos" is privately owned by the Foundation of the Hellenic World, which is a non-profit institution with the founding goal of exploiting technology in order to present Hellenic
history to the wider public, with a main focus on educational activities. As such, "Hellenic Cosmos" is addressed to the wider public, but has a special focus on students and pupils and runs special programmes for school classes coming for organized visits. The way these groups are served is central to the operation of the venue as on one hand this is directly related to the foundational goal of the Foundation of the Hellenic World and on the other hand they form the vast majority of the venues visitors and therefore they are responsible for the greater part of its income.

As far as the operation of the infrastructure is concerned, with the exception of some static exhibitions that may also be visited by independent individual visitors, most of the exhibits require the presence and/or direct operational involvement of trained personnel. When it comes to the presentation of the exhibits to the audiences, "Hellenic Cosmos" boasts a specially trained group of museum educators who guide the audience through the exhibit thus making sure that the desired educational experience is offered while at the same time operating the infrastructure as needed. For more technical operation such as the installation of new exhibits, the update of content etc "Hellenic Cosmos" also has a team of specialized technicians.

The infrastructure itself can be split into four different categories, as follows:

- The buildings themselves have been designed in a way that assists the venue's goals. Both the design and construction of the buildings is performed by contracting companies.

- The equipment installed within the buildings, with a special emphasis on equipment used to project 3D and VR content, is a core part of the venue's infrastructure. The design of the technological infrastructure has in some part been performed by contracting companies and to some part by the Foundation of the Hellenic World. The installations themselves, as well as subsequent upgrades are performed by contractors.

- The software used to display the 3D and VR content has in most part been developed by the Foundation of the Hellenic World, over a period of several years.

- The digital content displayed in the various 3D and VR sites of the venue, as well as in the conventional exhibitions, is in most part designed and developed within the Foundation of the Hellenic World. In some cases content developed by other parties may be processed by the Foundation of the Hellenic World in order to become compatible with the infrastructure.

2.2.3.3. Benefits to Stakeholders

As already mentioned "Hellenic Cosmos" is privately owned by the Foundation of the Hellenic World which is a non-profit organization. The benefit that the Foundation of the Hellenic World has from the operation of "Hellenic Cosmos" is that it contributes to the fulfilment of its founding goals.

2.2.3.4. Application sector addressed by the new services created

All operations of "Hellenic Cosmos" are oriented to the educational and cultural sector, as the audience consists of school classes on educational trips on one hand and individual visitors to
the Cultural Centre and Museum on the other hand. The extent to which any newly developed services might affect the working practices in place remains to be seen when these services have been more clearly specified, developed and practically tested.

2.2.3.5. **How to cover infrastructures costs**

"Hellenic Cosmos" sustains its infrastructure via the tickets of its visitors as well as with the help of the Foundation of the Hellenic World. This same infrastructure will be exploited in the context of the EXPERIMEDIA project. No particular infrastructure costs are expected to arise from the participation to the project, so if this becomes the case, that will have to be addressed accordingly at that time.

2.2.4. **Other Facilities**

A variety of other facilities are potentially available to the project. Interactive Institute bring in C-Studio and the Digital Arts Center. FDF (through its subsidiary SmartSystems) can bring to the project its ecosystem of partners, who could make available for EXPERIMEDIA their physical premises to carry out experiments, on a case by case basis. One of the most prominent partners is SOS-21.

**SOS-21**

SOS-21 (S.O.S. for the 21st century) is a free open source tool for creating virtual worlds in which the users are able to create on-line role games to teach the citizens of the 21st century its rights and duties facing the challenge of sustainable development.

SOS-21 provides:

1) a simple editor for creating and connecting different scenes of enhanced reality related (or not) one to the other. This editor allows the production and adaptation of reality in simple illustrations in which a basic webmaster is able to place any kind of content (video, sounds, integrated mini-games or others and create interactions with them). It uses the CoachDB (No-SQL) database system.

2) an ethical on-line role playing game, free and massively multiplayer, which sensitisizes all members of the family to the three dimensions of sustainable development (social, economic, environmental) through usual daily acts.

3) a database of content provided by its numerous partners (United Nations Environment Program, UNESCO, WWF, European Environment Agency, etc)

The serious game SOS-21 helps to upgrade the skills of the participants to a better cognitive degree of engagement and then helps to modify their reactions and behaviour in real life.

For the local authority, it can be used as a project of public utility enhancing communication on the topic of sustainable development and its local application, raising the inhabitants’ awareness and to proposing alternative behaviours.
For the enterprise, it may be used in a similar way as an educational tool adapted to disseminate at all levels of the organization the sustainable development plan of the company, as well as to encourage better behaviour, on an individual or collective level.

**C-Studio**

Interactive Institute operates a facility called C-Studio, which co-operated with a public science and art centre. Among other things, it features a very large dome-type 3D cinema, used for visualization research, experimental media, conference, and public screening of 3D media.

On the cupola-shaped screen both our own and international productions are shown. The dome holds 102 seats, including three wheelchair spaces, has a diameter of 14.80 meters, and the projection area covers about 300 square meters. The dome theatre at Norrköping Visualization Center C is northern Europe's most modern and most technically advanced installation. In addition to the 3D dome, there is an adjacent public science centre where projects could be exhibited. The facilities are located in the city centre of Norrköping, providing easy access for users.

C-Studio is also part of “Visualization Center C”, a collaboration between the Municipality of Norrköping, Linköping University, Norrköping Science Park and the Interactive Institute. The center constitutes a focal point for visualization research, education and development in northern Europe.

**Digital Arts Center**

Interactive Institute also provide access to the Digital Arts Center (DAC), a public showroom for research and design prototypes in Kista, Stockholm. It features a space where artists, designers, hackers, and other can meet up and work on joint projects. DAC is jointly operated by Interactive Institute, Stockholm University, the municipality of Stockholm, as well as a number of smaller design, technology and art related companies and groups.

DAC is a project at the intersection of cultural, educational and industrial politics that aim to promote local and regional growth. DAC is based on a close interaction between the academic, industrial and public sectors. DAC displays both occasional and permanent exhibitions. The exhibitions will create a bridge between the visitors and that which is new and yet unfamiliar in the technological evolution and the contemporary cultural landscape.

DAC is a collaborative project between Stockholm University/DSV, Interactive Institute, Atrium Ljungberg, Kista Science City, IT-gymnasiet, City of Stockholm and Swedish ICT Research AB. The project is also supported by Kista Science City AB, University College of Arts Crafts and Design, KTH/Nada, Kulturhuset/Lava, Royal institute of Art, Stockholms City Library, The National museum of Science and Technology and Tensta Konsthall, Mobile Life, Kista Idea Lab, Mindball, Mediatec Group, VIC-Stockholm, Dataföreningen Stockholmskretsen, Fido Film, APEM, Konstfack, Movinto Fun, EFG, Atelje Lyktan, Kungl. Konsthögskolan, Sensavis, Syntjuntan, Digiwall, Performing Pictures, Imagination Studios, Kulturhuset Lava, Kulturskolan, Skövde Högskola, EIZO.
Other potential facilities

Other partners of FDF who may be able to offer their facilities in the near future are:

- **CLARTE**: located in Laval (western France) is a research and development centre for virtual reality operational solutions. It develops tools, interfaces and software to enable organisations from all domains to virtually immerse themselves in their research fields in order to move efficiently and make important savings on real environments and material means. With a team of seven engineers and with one of the best equipped platforms in France or even Europe, Clarte has evolved in recent years from the experimental development phase to a phase of operational exploitation of its tools. Recently SAS3+ facility was inaugurated. It is a kind of “virtual room” made of glass, cameras, projectors and sensors.

- **Dassault Systems’ Cave**: Located in Velizy (in the suburb of Paris), Dassault Systems’ CAVE, called LIVES (Lifelike Immersive Virtual Experience Space) is equipped with the latest virtual reality technologies. A huge projection system on three sides (front wall, side wall and floor) fully immerses users in the heart of virtual products and allows them to move freely in the 3D virtual environment, explore complex data and collaborate in real time as they would in the real world.

- **READI**: Located in Nantes at the Design School, READI is a platform for creation and experimentation. READI aims to create bonds between education, the business world and user-centred research. The READI team will strive to assess the potential uses of R&D-induced technological innovations, thus keeping in line with downward innovation strategies. The lab also contributes to upward innovation efforts by monitoring trends in information technology (mostly usage-related). It can launch innovative service initiatives. READI is equipped with a prototyping unit fit for testing graphic interfaces, modalities of interaction and for thinking up new ways to represent information. All these specific skills will be put into practice as part of collaborative research projects.

- **AFRV**: The Association for Promotion of Virtual Reality (APRV) also known as Virtual Reality Centre located in Clermont-Ferrand (centre of France). This new technology and science centre funded by Clermont City Community, the Regional Council of Auvergne and European funds aims to make available to regional enterprises technologies related to virtual reality. APRV provides technical expertise and methodologies on:
  - Installation of equipment and demonstrations of use.
  - The first phase of learning and personalized technical assistance.
  - Import of demonstrations / simulations in 3D machines.
  - Supporting the right choice of applications.

The centre is equipped with innovative technology for 3D demonstration including:

- Icube, immersive cube: four walls comprised of projecting high-resolution 2.75 x 2.15 m per side, this system provides a 3D rendering at 1:1 scale which allows you to move in real time in a virtual environment.
- Artificial-I, LCD auto stereoscopic (3D without glasses).
- IBox, stereoscopic projection system LCD high-definition with glasses.
o Screen TouchLight, interactive display that allows non-contact manipulation.
o ICatch, a portable stereoscopic projection system.
o Scanner 3D turntable to model small objects.

- The 3D Innovation Centre Berlin: member of the NOE (network of excellence) 3Dlife will certainly be willing to offer its facilities:
  o a showroom for products, prototypes and ideas;
  o a development platform and testbed for 3D technologies, applications and infrastructures;
  o an R&D lab for projects, innovations and standards;
  o a communication platform for providers, users and the general public;
  o a transfer platform for expertise and professional training;
  o a marketing instrument for advertising, sales and PR; and
  o a pool of resources for experts, know-how, and marketing and target audience data etc.

2.2.4.1. Stakeholders addressed
The stakeholders are a very wide range of organizations in the following domains: of scientific, economic, territorial, clusters, communities of users and the general public.

2.2.4.2. Benefits to Stakeholders
FDF has two specific points of focus:

- One is on co-creation and living labs methods. In this sense, the main benefits we provide to stakeholders are to always take into account in all experiments the user-led aspects and value.
- Secondly on open innovation: it allows our various stakeholders to broaden their horizons, find critical new partners, practice cross-fertilization and create ad hoc ecosystems to support their innovation projects, from idea generation to market launch.

2.2.4.3. Application sector addressed by the new services created
With the stakeholders coming from diverse sectors, the areas of application are numerous, and could be in all areas.

2.2.4.4. How to cover infrastructures costs
Depending on the infrastructure that will be used, conditions of access will be required by operators of these infrastructures. These conditions cannot be specified in advance because they depend on the specific requirements related to experiments that will be conducted. In all cases, favourable terms are expected because of the strong link to project partners.
3. Assets inventory

3.1. CAR

3.1.1. Content provision
According to the available resources coming from the project, linked projects and potential future budgets from sponsors, or its own available budgets, CAR will provide the output of the sensors deployed in the new sport training facilities, including IP cameras, force plates, stop watch systems, physiological devices, and strength training machines with other sensors. Potentially there would be several sport disciplines which will become available as the media infrastructure becomes available on the facilities and the training personnel agree.

As already agreed, CAR will provide content from synchronized swimming training sessions and this content could potentially be enriched by some of the following disciplines available in the new building as is: Gymnastics, Women's artistic, Men's artistic, Trampoline, Weightlifting, Swimming, Paralympics swimming, Taekwondo, Judo, Table Tennis, Women's and Men's Water Polo, Men's and Women's Diving.

A set of video, audio and metadata feeds from training sessions will be distributed over the Internet to a controlled number of users, based on services provided by Atos, which could be reused for additional experiments.

3.1.2. Communication infrastructures
The communications infrastructure is based on 10g high speed network described further in Figure 1.
Services available on the first quarter of 2012 will include wired network 10g, up to 1000 connection points plus full coverage of Wi-Fi 802.11n with 125 access points, plus storage of 100 TB, and a CCS Blade Cluster under a private cloud computing infrastructure with an external backbone of 100MB to Internet and the GEANT2 network.
3.1.3. Services infrastructures

As per the building itself a set of services will be available for management purposes, distributed in a set of 7 racks along the building. These racks will be fibre optic connected at 10gig to the datacentre of the sporting building and then a 20gig link between the two CISCO NEXUS 7000. This network will provide an external link of 100MB to the internet.

The internal services in the building as soon the network is available will include light control, climate control, CCTV security control, PA system, audio for sport, video for sport, IP telephony and videoconferencing (see Figure 2).
A set of profiles will be available to allow different users to access their own services (see Figure 3).

CAR makes use of the infrastructures developed in previous technological initiatives and offers them for EXPERIMEDIA's experiments.

A detailed inventory of the infrastructure is provided in the following plans. The following infrastructure is present in all the pictures below:

1) Light adapted for the sport requirements (from Siemens SCADA).
2) Security detection points for building alarm system (from Siemens SCADA).
3) Climate control sensors for building control and management (from Siemens SCADA).
4) PA Systems with speakers and IP amplifiers (BOSE).
5) Special audio for sport requirements including underwater speakers and connected IP amplifiers.
6) Special video for sport under CCTV standards including all megapixel IP cameras.
7) Standard IP telephony wired and wireless with real time tracking and mapping of Wi-Fi devices.

All wired and wireless network connections points for all the above mentioned equipment are provided.
Figure 4. Technology distribution Assets on Level -1.

Figure 5. Technology distribution Assets on Level 0.
Figure 6. Technology distribution Assets on Level 1.

Figure 7. Technology distribution Assets on Level 2.
Figure 8. Technology distribution Assets on Level 3.

Figure 9. Technology distribution Assets on Level 4.
3.2. Schladming

3.2.1. Content provision
Within the project, a data pool (including such information as points of interest, snow conditions, status of services such as lifts and slopes, etc) for the region at first needs to be opened for public use and enhanced and can then be used (probably with some limitations) for further experiments. The data will be available via the Internet.

3.2.2. Communication infrastructures
The region offers a public Wi-Fi with approximately 60 hotspots on the mountain and 110 hotspots in the valley (Dec. 2011). This number is growing, as the service has been available for the first year and is being promoted. Furthermore there are another 200-300 hotspots provided by the ski resorts of Amadé (see Figure 11). Guests are able to connect to this Wi-Fi network for free. At the moment there is a limit on data consumption of 250 MB per day, to make sure the service stays fast. The network is open, but guests have to accept the terms and conditions when they connect the first time through a landing page. This landing page might be used to promote services in the region in the near future.

There are plans for Schladming to be a trial area for LTE (a flavour of “4G” technology): the next generation of mobile data access. Currently there is quite good 3G coverage provided by the national telecoms operators. Hotels in the town are served by two broadband operators.
3.2.3. Other assets

Within the project, Schladming will create a data pool with information about the region (historical and current, combined with augmented-reality elements). Furthermore, information about the area such as pharmacies, doctors, parking, places to sleep, restaurants and bars is provided. Additionally, during the FIS Alpine World Championships 2013, different side events should be promoted via the data pool.

Additional assets which may be available for use in experiments come from the four partners in Schladming2030: the city, tourist office, Austrian ski federation and Planai (the ski lift operator). For instance, Planai operate the facilities on the surrounding mountains including the main lift station in Schladming. This facility will include a stadium once completed and already has a broadcast room for TV companies. Planai use a ski ticket system with an embedded RFID chip which is also use to identify skiers for:

- **SkiTrack**: a camera that tracks you down a slalom course.
- **SkiLine**: which plots your altitude/time chart for your stay by registering your journeys on the ski lifts.

In addition, there is a speed tracking system which displays each skiers speed at the bottom of a slope. Planai also operate several webcams and weather stations around the region and run a local TV station (“Planai TV”).

The city owns a new media centre (or “congress house”) close to the bottom of the main ski slope. This includes a large (1400m²) hall which can be subdivided into two parts and includes a stage, three video projectors and audio equipment. The building also contains smaller meeting rooms and has Wi-Fi and a fast internet connection.

3.3. IME

Here we provide a brief overview of the assets that the Foundation of the Hellenic World is able to provide to the project, so that experiments can be designed, implemented and analysed. Given
the nature of the venue and its operations, these assets are organized in content provision, communication infrastructures, services infrastructures, people and operations, as found below.

3.3.1. Content provision
The Foundation of the Hellenic World is an independent producer of large amounts of digital scientific content, as well as the possessor and/or occasional user of various elements of tangible and intangible content. It is practically impossible for this list to be absolutely exhaustive, yet in the following we make all reasonable effort to include all categories of content that may be made available to the project.

3.3.1.1. Digital content
Virtual Reality productions

When it comes to content, the Foundation of the Hellenic World (hereafter FHW) is primarily known for its VR reconstructions of ancient Greek cities. What is exceptional in these reconstructions is their scientific detail and validity. Specifically, FHW has developed and uses a visualization methodology that assures that any element that is included in a VR reconstruction is based on archaeological findings and scientific consensus. On one hand this greatly augments the productions costs; on the other hand this makes this content unique in its scientific value.

In this context FHW has developed a series of VR reconstructions of ancient Greek cities, including Athens (the area of the agora), Miletus and Olympia. New reconstructions are currently underway, including those of Aghia Sophia and of historical sites in Boeotia.

FHW VR productions are not limited to those based on reconstructions of cities. Other productions include one on the battle of Thermopylae and another on Archimedes.

Interactive Multimedia

In order to enhance its physical exhibitions and to enrich their educational effectiveness, FHW also has a department with the exclusive role of developing interactive multimedia content. This includes, for example, the educational interactive exhibits that are included in the physical exhibitions or as supporting material in FHW’s online resources or in its educational CDs. Such multimedia content can also be made available to the project.

Documentation / textual content

As a content developer, FHW produces mainly two types of digital content: the visual content that is mentioned above and textual scientific content which is the focus of the current section. The textual content comes in two main forms

- Textual content that is the core element of a production
- Textual content that forms the documentation for another production

In the first category FHW boasts its encyclopaedic works, such as the Encyclopaedia of the Hellenic World (hereafter EHW). EHW is an original electronic project aiming at collecting, recording, documenting, presenting and promoting the historical data that testify to the presence
of Hellenic culture throughout time and space. EHW includes entries that concern geographical-cultural areas lying beyond the borders of the Hellenic nation-state.

The EHW aims to offer a complete view of the development, spatial dissemination of the Hellenic cultural phenomenon through time. The issues under examination are not dealt with individually, detached from the framework within which they were created, but in relation to the geographical region in question as well as the non-Hellenic cultural traditions. EHW’s ultimate goal is to contribute to the understanding of how Hellenic culture was shaped and disseminated, taking under consideration its contacts and osmoses with other cultural realities and traditions.

EHW’s entries cover the entire spectrum of the Hellenic life and activities and take advantage of the results of current research in relevant scientific fields. EHW draws information as well from archives and archaeological excavations.

The EHW is original in its conception, design, organization and operation. It integrates a number of projects related to Hellenic culture (data bases, electronic texts archives, audiovisual archives, multimedia applications, connections with Internet sites which provide research and information services). In its first stage the project’s structure is defined around the following units:

- Entries database, where the historical and cultural information is organized and presented in the form of encyclopaedic entries that are accompanied by photographic documenting material.
- Audiovisual applications, where the information appearing in the entries is complemented with the visualization of historical events, processes and phenomena, three-dimensional representations, digital models of cities, music and video.
- Bibliographical database, which includes the complete bibliography of the entries and will be gradually updated, independently from the entries.
- Historical interactive atlas, where the spatial information is organized in the form of maps and is complemented with historical and audiovisual information.

EHW is an on-going project that currently contains volumes on Asia Minor, Black Sea, Constantinople and the Aegean, whilst volumes on the Mediterranean (East, Italy, and West), Aegean, Boeotia and Athens are currently under development.

Hellenic History is an earlier online encyclopaedic work that shares many of the characteristics of EHW and is also provided freely by FHW to the general public. Hellenic History has been certified by the Hellenic Pedagogic Institute as appropriate for scientific and pedagogic purposes.

In the category of supporting textual works we find mainly the detailed documentations detailing the scientific sources used and informed decisions made in the process of developing other FHW productions, such as the VR productions. In this context, each FHW VR reconstruction is associated to a dedicated web site that provides all the information regarding the scientific information that is visualized in the production. Similar documentations are often available for other FHW digital content elements, exhibitions and exhibits, as the methodology followed for their development required it.
**Testimonies Archive**

Since 1997, the Foundation of the Hellenic World is conducting a program that collects filmed autobiographical interviews by people who came to Greece from Asia Minor and Pontus, around 1922, as refugees. The program records the experience of enforced and violent displacement of the refugees and how the refugee experience affected the course of their lives and subsequently their social identity.

Until today, more than 150 people that belong in the refugee generation born prior to 1924 have given interviews and autobiographies. People from younger generations, who experienced the efforts of refugees to recreate their lives, are added to this database. Each and every one of them, are in their own right, guardians of the memory and heritage of their communities.

The "Testimonies" are organized in a one of a kind archive, precious, exactly because it preserves the image of the last Asia Minor born Greeks. Material from the interviews was used in the documentary "We were children then", which is available at "Hellenic Cosmos".

**3.3.1.2. Tangible content**

**Educational exhibitions**

In addition to digital productions, FHW possesses and displays at its Cultural Centre Hellenic Cosmos a series of tangible collections and exhibitions. Leading amongst them is FHW's exhibition on the development of mathematics and mathematical thought in the ancient Greek world, a period in which the foundations of science were established, attempts to demonstrate one of the most important aspects of ancient Greek culture.

In accordance with the Foundation's general policy and vision, the exhibition targeted from the beginning two basic objectives or messages: To demonstrate that the mathematics of the ancient Greeks was the foundation stone of scientific thought and to emphasize that mathematics is for everyone, since:

- it contributes to the personal growth of each individual
- it is an intellectual challenge
- it can help us in many activities and
- it is an essential part of the history and culture of the society that creates and uses it

The exhibition spans the whole period of Greek mathematics from the 6th century BC to the 4th century AD, and covers the most important events and people in the history of Greek mathematics. Pre-Hellenic mathematics, that of the Egyptians and the Babylonians, is also dealt with briefly, as is the story of the Greek texts themselves from the end of the ancient world as they passed from Byzantine monks and Arab copyists to the European scientists of the Renaissance and the scientific revolution. The basic applications of mathematics to other sciences during this period, with special emphasis on astronomy, mathematical geography and music, complete the picture of Greek mathematics.
Furthermore, the exhibition sets out the cultural framework of Greek mathematical thinking, from the Hellenic cities of Asia Minor and southern Italy to Classical Athens and the Alexandria of the Hellenistic Period.

Visiting or temporary exhibitions are almost always available at Hellenic Cosmos. For example, at the time of the generation of this inventory one may find exhibitions on monsters and mythology, on costumes as well as on toys in different dedicated spaces of Hellenic Cosmos

**Coin collection**

FHW acquired 2007 Collection 13,214 coins, of which 11,202 represent the geographical area of Asia Minor. The collection is currently being studied, and will gradually be published following the de facto coin publication standard set by SNG. The volumes of Pamphylia, Pisidia, Lycaonia and Isauria-Cilicia are already available.

FHW's Coin Collection is an award winner of the "EUCLID" programme, first implemented in Europe in 2010.

### 3.3.2. Communication infrastructures

Both the research facilities of the Foundation of the Hellenic World and its Cultural Centre Hellenic Cosmos have been around for a while. As a result, their communications infrastructures have been designed and implemented with what was considered as state of the art at that time.

Both locations work mainly on a fast Ethernet backbone. End users typically connect at fast Ethernet speeds, whilst legacy Ethernet speeds are also found in some cases. The connection between the two premises is based on ADSL. Internet access is also based on ADSL.

### 3.3.3. Services infrastructures

Depending on the type of service offered, the related infrastructures can be partitioned into systems and premises, as follows.

#### 3.3.3.1. Systems

**Virtual Reality projection systems**

The Foundation of the Hellenic World, and more specifically the Virtual Reality Department utilizes the advanced Virtual Reality technology in order to promote learning through the combination of the visitor's active participation and imagination. As a consequence, the visitors of the Foundation's Cultural Centre "Hellenic Cosmos" are able to approach the past in a modern and exciting way. In this journey through time they can experience history, explore the geographical area and discover the architecture of cities of antiquity and the sites of Hellenic cultural heritage. The three systems that operate are described below.
The "Tholos", the Foundation’s new domed-shaped Virtual Reality theatre, with a capacity of 132 people, is a building of impressive aesthetics (Figure 12, Figure 13). Thanks to its unique technological infrastructure it enables the public to have access to FHW’s digital collections and it constitutes a unique "tool" of research and development regarding issues of visualization and presentation of cultural content. The "Tholos" provides the opportunity for both monoscopic and stereo projection on the whole surface of the concave screen, something that happens for the first time in the world, while real time happenings can be incorporated in the virtual space. The shows, which are supported by a powerful cluster of computers, are interactive, they are controlled by the spectators and they are not static. This is a unique experience of being immersed into the virtual world, which is characterised by direct response, flexibility, originality and liveliness.

The "Kivotos", which is installed at Hellenic Cosmos, is a spectacular environment where visitors participate actively in virtual journeys. The system is a room 3 by 3 by 3 metres, where both the walls and the floor are projection screens. In every screen digital images are projected, which are produced by a super-computer. The "Kivotos" can receive 10 people, who are wearing special glasses. These glasses allow them to see the projected images stereoscopically, in other words they create a sense of depth to the users, the sense that the image has a third dimension and that they are immersed in it. With the help of an interactive hand devise, which resembles a 3D mouse, visitors can move within the projected image or even interact with it.

"Virtual Cinema" is a large bright screen which is 3.2 metres wide and 2.4 metres high, while the resolution is 1024 by 768 pixels. These dimensions allow approximately 20 people to stand in front of the screen, while the projector is placed in front and higher from the screen so that viewing is unhindered. With the use of stereoscopic glasses visitors have the feeling that they are immersed into the environment created by the 3D digital graphics. Furthermore, with the use of an interactive hand device, one of the visitors has the opportunity to guide the tour and to participate actively in the exploration, and sometimes even the modification of virtual environment. "Virtual Cinema" is used by FHW in order to transport children and adults to magical worlds of our cultural heritage.

All the Virtual Reality systems are open to the public daily at Hellenic Cosmos and they are one of the very few examples of using this advanced technology for cultural issues.

*Content management and provision systems*
For the development, organization, management and provision of its textual and other online works, FHW has developed over the years an infrastructure of supporting systems and services. These include specialized content production software, content management and online publication software, dedicated servers, databases, backup systems etc.

3.3.3.2. Premises

For some of the operations of Hellenic Cosmos the core infrastructure required is not some digital system but rather the space itself. In that respect, and depending on the type of experiment one may envision, FHW possesses and can make available to the project the Tholos building,

![Figure 13. The Tholos building.](image)

The THEATRON,

![Figure 14. The THEATRON building.](image)

The Hellenic Cosmos reception hall and the attached ESTIA web access facility

![Figure 15. The Hellenic Cosmos reception hall.](image)
as well as its network of buildings and spaces as a whole.
3.3.4. People

In designing and implementing any experiment, in the sense understood in EXPERIMEDIA, perhaps the most important asset one needs to consider are the people involved. Therefore we find it useful to enrich our assets inventory with a brief reference to the people that the Foundation of the Hellenic World and Hellenic Cosmos are able to engage. These include:

- Groups/classes of pupils
- Individual visitors
- Teachers
- Museum educators
- Reception personnel
- Technicians and system operators
- Content development group
- Archaeologists, historians etc
- VR programmers, 3D modellers, graphics artists, etc
- Directors, sound engineers, actors, etc
- External experts

Each entry in the above list represents a separate group of people, in the sense that their type and level of involvement differs. Therefore, their interests, goals and expectations on the services and experiences made available to them are also distinct, which makes for a very interesting experimentation base.

3.3.5. Operations

Finally, in order to fully understand the assets available one also needs to understand the ways in which they may be used. It is for this reason that we close the FHW assets inventory with a brief listing of the types of operations that they are used for, as this listing can also be a guide with regards to the types of experimental settings one might envision for this venue.

Whilst the different operations collocated in Hellenic Cosmos are virtually countless, they can be roughly grouped into educational, hosting and development operations.

Educational operations are the ones most closely related to the founding goals of FHW. Therefore it is not surprising that they are the vast majority of the Hellenic Cosmos operations. Although they come in a variety of forms, their overall structure and goal includes structuring an
educational experience around FHW's digital and/or tangible exhibitions. Such operations are implemented by specially trained museum educators.

Hosting is a core business element for the THEATRON. It refers to leasing a part of the Hellenic Cosmos premises for use by a third party, typically an artist wishing to present a play in a state of the art stage or a company for a promotional event. Such operations often include heavy support and/or content adaptation services, which allow for the third party operations and content to be integrated in the Hellenic Cosmos setting.

Content development is a core business element for the research centre of the Foundation of the Hellenic World. In that sense, and with respect to the 3D and VR content, Hellenic Cosmos also operates as the test bed and final testing facility for the newly developed content.

### 3.4. SOS-21

#### 3.4.1. Content provision

**Educational Content**

The SOS-21 content is provided by a partnership spanning Europe (and Canada) including the United Nations Environment Program, as well as the European Environment Agency, the WWF, and UNESCO (see Figure 17). It is composed by hundreds of video files, PDF, illustrations etc.¹

Each content asset is tagged by keywords in a socio semantic tool provided by the French University of Technology in Troyes where a group of students is working on it almost every day. The SOS-21 contents database provides thousands of documents related to education and covers all the topics of sustainability. It is also able to cover any kind of other topic. The SOS-21 tool and operation system has been recognized by the UNESCO awards of the best tool of the decade 2005/2014 for educating on environment. All of this content can be used without limitations by the EXPERIMEDIA project. The SOS-21 team is providing new content each week as well as new on-line events.

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SOS-21 is also providing a virtual exhibition of 10,000 photographs from all over the world, under an environmental theme. The SOS-21 server is the only place in the world where all these pictures can be seen. The artists are there exposing the way they see the environment through their eyes as photographers. This exhibition can be provided and promoted in the EXPERIMEDIA virtual world, representing any place (e.g. Schladming, Athens) in the reality.

Virtual Worlds

Each creation that can be provided in the SOS-21 virtual world production tool is made in isometric 3D including all user interfaces (Figure 18). In the creation process, the artist illustrator works from scratch basing his creation upon a picture of the real place. The reality is then drawn with the goal of being able to fit all the thematic information into the illustration. Sometimes the virtual reality includes objects that are not in the real place. This may be done for a serious gaming or an educational objective.
An associated database containing a large library of objects (a full range of furniture, pavements, public lights, etc) that can be placed, recolored and re-linked is also provided. Every time a new composition is made, each new component placed into the database is carefully tagged and categorised in order to be rapidly found and used in the future. Different media are also provided by the SOS-21 partners (like United Nations Environment Program). They are also tagged and can be easily used.

Finally, SOS-21 offers a full range of mini-games that can be directly plugged on the user interface.

**Core skills and capability**

The SOS-21 team provides a full range of services with a unique experience upon the topic of sustainability. (The SOS-21 tool received more than 20 European awards on topics of pedagogical support on sustainability).

The team is used to working by remote access on game design with a speciality of the founder on distance training. The founder of SOS-21 (Philippe Le Gonnidec) used to be a consultant for the United Nations on distance training. All the team works remotely in order to reduce CO₂ emissions. The team’s experience is unique on the topic of serious game for companies and institutions.

3.4.2. **Communication infrastructures**

The SOS-21 systems are hosted by a French professional hosting provider, OVH. The server capacity is not limited and can be increased on demand.

3.4.3. **Services infrastructures**

The SOS-21 team provide help and creation on two main axes:
1) ICT technologies and data for composing virtual worlds.
2) Sustainability behaviour: the team is focussed on the question of sustainability in all approaches and can provide a complete analysis of any kind of situation.

The EXPERIMEDIA project is then directly related to one of the best programmes in Europe for sustainability education (validated by the UNESCO) placing the relation between ICT and sustainability at the heart of the proposed directions of the experimentation.

3.5. C-Studio
The C-Studio in Norrköping, Sweden has the most advanced 3D dome in Northern Europe (Figure 19), and is co-located with a public science and exhibition centre right in the middle of Norrköping (Figure 20).

Pre-produced media such as films are shown to the public, but the facility can also render real-time interactive visualizations in stereoscopic 3D. This is primarily used for scientific visualizations of various kinds of data (e.g. climate or meteorological, medical, air-traffic control, aerial photography for city planning, etc), but also for interactive science or culturally oriented productions open to the public.

Some details about the 3D dome:

- 102 seats.
- Screen: NanoSeam (perforated aluminium).
- Diameter: 14.80m.
- Total resolution: 3710 x 3180 pixels.
- Stereoscopic 3D over the entire surface.
- 7.2 Surround Sound.
• Driven by several High End PC clusters.

Figure 20. The public science centre at C-Studio, with various interactive installations. At the front, there is a virtual autopsy table operated from a large touch screen.

3.6. Digital Arts Center
The Digital Arts Center is a public exhibition space in Kista, Stockholm (see Figure 21). It has facilities for artists working with digital media and hardware hacking, and areas for installations and exhibits. It is located in the Kista area in Stockholm which is where most IT and media companies are clustered. Via DAC, EXPERIMEDIA can gain access to a local community of artists, hackers and ordinary citizens interested in new media, as well as the many high-tech companies located nearby.
Figure 21. A gallery of images from exhibitions at the Digital Arts Center in Kista, Stockholm.
4. **Operational Requirements**

In this section, all partners involved in the development of this deliverable describe the operational requirements related to the facilities offered for the purpose of EXPERIMEDIA project.

### 4.1. CAR

**Constraints of the infrastructure offered**

The infrastructure of the new building at CAR Sant Cugat will progressively be made available during the period of the project.

As the cabling of the 10g network is already available as detailed on the schemes on Section 3.1.3, the routing and switching will come along by January 2012. Also the data-centre with 100Tb of NetApp storage and Cisco Blade and VMWare infrastructure. The remaining cameras and sensors are subject to available budget or to be provided by the experiments to be implemented.

**Stakeholders’ constraints**

Users at the centre are submitted to a registration under the Spanish Personal Data Protection Law.

For any other application of registered video signals, additional forms should be required according with the project and the experiment to be implemented.

**Types of services/applications offered**

Based on the model designed under the IP standards those will include:

1) IP voice and telephony
2) Access to internet through the CAR backbone wired or Wi-Fi
3) PA centralised services
4) Climate management
5) Light management
6) Security management
7) Audio for sport
8) Video for sport
9) Data for sport

**How are services/applications supported?**

Services of network infrastructure will be supported by CAR under the already available maintenance agreements with IT providers. New applications for the EXPERIMEDIA project should be supported by the project itself.

**Types of resources needed for content provision**
A set of IP Cameras will be required for the first testing experiments.

**Types of resources needed for content consumption**

Streaming and decoding equipment and facilities will be required to distribute the contents along the already established network.

**Resources allocation by stakeholders**

Resources will be provided by CAR as part of the building resources and the experiment resources has to be provided by the experiment as part of the project.

**Stakeholders’ expectations for the infrastructures**

There are not many expectations at short term, yet this will grow upon the capacity of the project and aligned budgets to provide more services and infrastructure.

**Guarantees / penalties**

The lack of budget for some of the required infrastructure could incur a penalty at some point in time.

**Risk for the stakeholders**

Big competitions may impact on performance if the infrastructure and services are not at the level expected. Control of video data distribution could also constitute a risk.

4.2. **Schladming**

**Constraints of the infrastructure offered**

At the moment we see no constraints apart from some TV licence regulation.

**Stakeholders’ constraints**

1) Money and time resources.
2) Projects in Schladming have to align with the Austrian law; for video signals and other data we have to take care about the right of usage. Some rights might be prohibited. This is dependent on the experiment and cannot be answered in general.

**Types of services/applications offered**

Mobile applications, combined with augmented reality and web applications.

**How are services/applications supported?**

Via marketing, promotion on-site – already before the events, during them and afterwards, via different shareholders, partners and cooperations.

**Types of resources needed for content provision**
Personnel costs to generate the necessary data-pool as well as probably some financial resources to get all the necessary data are needed.

**Stakeholders’ expectations for the infrastructures**

Should provide value for Schladming and also be available also after the world championship.

**Risk for the stakeholders**

For TV material, it has to be noted that in many cases special rights have to be observed, but the EXPERIMEDIA consortium collaborates closely with officials and makes sure that all legal aspects will be taken care of accordingly.

### 4.3. IME

**Constraints of the infrastructure offered**

"Hellenic Cosmos" is not limited to offering its services to a particular audience, so in that respect there are no constraints on the use of the infrastructure.

On the other hand, it is a core characteristic of the venue's business model that the content offered at the premises is not also offered online or at any other venue. Therefore streaming the content to external general public users is not permitted.

**Stakeholders’ constraints**

No such constraints are in place either

**Types of services/applications offered**

The type of services to be offered within the project is to be determined during the project. As far as the Foundation of the Hellenic World is concerned, its own services will be determined with the finalization of the corresponding scenarios. On the other hand, "Hellenic Cosmos" is a venue that may also be used by additional partners that will join the project consortium at a later time, so it is not possible or desired to limit their options at this time.

**Stakeholders’ expectations for the infrastructures**

As already mentioned, the Foundation of the Hellenic World is the sole stakeholder in "Hellenic Cosmos" and it is bound by its founding goals. Therefore these founding goals also form the stakeholder's expectations for the use of the infrastructure.

### 4.4. SOS-21

**Constraints of the infrastructure offered**

Constraints vary on a case-by-case basis, but the main SOS-21 system has already been used in many cases for private companies (including L'Oreal and HSBC) and also institutions (European Environment Agency, UNESCO and many cities in France).

The main constraints that can be encountered are:
On the editorial side of it:

1) Using a serious game in a company during working time is not always well received by the human resources department (at the beginning).
2) Orienting an action of communication (like a theme of oriented reality) towards sustainability can easily turn into a hidden "green washing" action (painting in green some actions that are not green). The SOS 21 position keeps always attention to this matter.
3) Sustainability is a theme that must always updated in terms of theories as well as quotas especially when related to local actions. This creates the constraint of being well organised.

On the technical side of it:

1) If the application is placed local on an internal web server, some companies can refuse the application because of a question of security.
2) The diversity of media formats used as additional content can be a problem because of the customer front end environment. Some plug-ins and the corresponding updates can be constraints too.

Stakeholders’ constraints

No specific constraints, depending on each condition and the place where the information is provided. Each editor is responsible for its contents. SOS-21 helps to determine the best approach for creating an attractive virtual world (from the users’ point of view) in order to be useful in the daily life.

Types of services/applications offered

Management, coaching, technical, design, game design, sustainability, social semantic, pedagogical approach.

How are services/applications supported?

Via an audio, video, design, pedagogical process with huge partnership all over Europe and extending into North America and Iceland.

Types of resources needed for content provision

1) Internet access through a simple browser, representation or pictures or each place with the indicated interactions on the components.
2) Objectives and goals of the scene in order to be built in a serious game direction.
3) List of main partners involved in sustainability actions in the area.
4) List of local contents related to any topic included (not especially sustainability).

Types of resources needed for content consumption

1) List of contents that have to be used in the interface.
2) List of local contacts that could help in the creation process.

Resources allocation by stakeholders
Usable content in each place related to a use on the internet (e.g. video, PDF, images) with the related rights of use.

**Stakeholders’ expectations for the infrastructures**

Budget necessary for the expenses.

**Guarantees / penalties**

1) No specifications, under the common rules.
2) An important exception (capacity to cancel an operation) is made on ‘green-washing’ attitudes. Green-washing is a compound word modelled on "whitewash"), or "green sheen", and is a form of spin in which green marketing is deceptively used to promote the perception that a company's policies or products are environmentally friendly.
3) There are several private companies that SOS-21 needs to analyse before proposing the SOS-21 service to the company.

**Risk for the stakeholders**

None specified.

**4.5. C-Studio**

The C-Studio in Norrköping is operational since two years and fully open to the public. The 3D dome can host 102 visitors simultaneously. The exhibition area can have about 300 simultaneous visitors. Pre-produced 3D films can be readily displayed. Interactive 3D renderings need to be adapted to the local conditions. As the facilities are frequently used for other projects, some planning is necessary should we want to use this facility in upcoming EXPERIMEDIA experiments.

**4.6. Digital Arts Center**

The Digital Arts Center is operational but is planning to move to another part of Kista in the coming year, in order to be able to provide a larger space for exhibitions. During the move, access to DAC can be limited, so experiments which might utilize DAC needs to be planned well in advance.
5. Further Information

This document sets out the current understanding of the assets available in the EXPERIMEDIA project. Some of these assets are necessarily listed as possibilities, items that “might” be available. In some cases this is because of operational concerns and the reader is referred to the companion deliverables “D3.1.2: General facility operational procedures” and “D3.1.3: Site specific facility operational procedures” for further information on how to negotiate access to certain facilities (though these document are not publically available). In other cases the uncertainty is due to the constantly evolving nature of the facilities. Updated information can be found on the EXPERIMEDIA website.²

² EXPERIMEDIA website: http://www.experimedia.eu

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6. Conclusion

The EXPERIMEDIA consortium brings a great variety of facilities, which provide very diverse grounds for live social and networked media experiments, covering professional athletes training, culture and archaeological education and 3D social entertainment. These state of the art facilities provide unique opportunities to carry out real world experiments and will provide rich results to be analysed. On top of this foundation, the EXPERIMEDIA consortium will execute the experiments already defined in the DoW and those coming from the open calls. Those experiments will rely on these facilities and on the EXPERIMEDIA software.

This way, some of these results will be related to multimedia experiences in sports events whilst other ones will have relation to multimedia experiences over virtual and interactive environments or immersive technologies.

It should be mentioned that there is also potential infrastructure that is not now available, but will be ready during the development of EXPERIMEDIA project. Even, new facilities may appear although they have not been addressed in this first inventory. Some of those facilities could be brought in by the open call experiments planned in the project. For this reason, part of this document will be extracted for creating another one. This new document will be a live one, and it will be continuously updated with all new infrastructures and facilities that would be offered to the project.