

# VirtualLife

## WP1 Project Management and Coordination

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### D1.1.1 - Project Progress Report (Jan-Jun '08)

AUTHOR	Nergal
MAIN CONTRIBUTORS	all partners
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## 1. Introduction

This document, entitled "Project Progress Report - 1", is the first of a series of periodic reports that VirtualLife's Project Manager is going to issue on a six-monthly basis as a management task within work package WP1, "Project management and coordination".

The purpose of this document is to provide an overview of overall status of the project for the reporting period and to emphasize achieved results, possible total or partial failure on one of the WPs, and to outline future correcting steps if needed.

In order to achieve such objectives each section (one for each WP) contains:

- (a) a summary of the objectives achieved in the reporting period.
- (b) Possible problems raised during execution of the WP
- (c) Future steps left for the WP, possible correction actions and lessons learnt that could be useful in future work.

## 2. List of Beneficiaries

Beneficiary no.	Beneficiary name	Beneficiary short name	Country
1 (Coordinator)	Nergal S.r.l.	NER	Italy
2	Cybernetica AS	CYBER	Estonia
3	Digital Video S.p.A.	DV	Italy
4	Geumacs	GEU	Romania
5	Mathematics and Informatics Faculty Vilnius University	VU-FC	Lithuania
6	Panebarco S.a.s.	PAN	Italy
7	TAVAE	TAV	France
8	Universität Göttingen	UGOE	Germany
9	Virtual Italian Parks	VIP	Italy

### **3. Project Objectives for the Period**

The objectives of the reporting period were the following:

- to ensure a smooth start-up of the project;
- to define the core services offered by VirtualLife;
- to identify the VirtualLife modules and their mutual relations;
- to realize a comprehensive analysis of the user needs;
- to obtain a description of use cases.

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### **4. Work Progress and Achievements During The Period**

#### **4.1. WP1 - Project Management and Coordination**

##### **4.1.1. Work package objectives**

The overall objectives of WP1 work package on Project Management can be easily summarized in:

- To manage the financial issues and administrative tasks being the interface between the Commission and the Consortium.
- To ensure that the Project is proceeding timely and according to the plan in terms of deliverables and administrative tasks.
- To ensure that the Project is proceeding timely and according to the plan in terms of objectives and milestones.
- To co-ordinate the project.
- To ensure the optimal quality of all deliverables.
- To ensure the optimal communication flow within the consortium.
- To facilitate and promote working relationships among participating organisations and other relevant organisations or external groups
- To maintain the System Quality Assurance.
- To handle the IPR aspects

Those objectives should be pursued throughout the whole project, ie. up to M36.

#### **4.1.2. Progress toward objectives**

The first 6 months of work have been quite busy for WP1 since a lot of effort has gone in ensuring that solid and trusted procedure were established to accomplish the objectives outlined above in a durable (ie. good for the entire project) way. All the rules adopted have been shared and agreed upon by the whole Consortium.

The Consortium has defined that all formal discussion should take place on two different mailing lists. One of the list is devoted to technical issues (skyscanner-tech) the other to management issue (skyscanner-mgmt). At least 1 member for each organization shall be included in each mailing list.

When very focused discussion need to take place among a narrower group of participants, then any achieved result should be forwarded to the above list.

A collaborative Wiki has been set up, hosted by Vilnius University, in the private part of the web site, for sharing ideas and documents in a centralized but still efficient way.

Every few months the Consortium shall meet for an altogether session to discuss project status and to ensure proper interface among modules to ease the integration phase.

The Consortium has also decided that all developed software shall be kept under revision control. For this purpose the open-source software SVN (Subversion) has been chosen. We are currently organizing the repository layout, and it will be hosted, most probably, in Vilnius University.

With respect to Quality Assurance for deliverables the Consortium has agreed that each deliverable, before submission to EC, shall be proof-read and reviewed by one of the partners that has not directly been involved in its writing.

Also the Project leader has distributed templates with pre-defined typographical styles in order to ensure a minimal standard in the typographical layout of deliverables. The Consortium has agreed that all deliverables should be formatted using either MS-Word or OpenOffice.org. The latter should be preferred.

The Project Coordinator periodically sends mail to the Consortium to inform it about present and future deadlines. The Coordinator then ensures that all the formally raised issues are answered in due time by the responsible partners.

#### **4.1.3. List of previously unexpected difficulties**

Overall there have not been any major unexpected difficulties. There has been some delay in deliverables for WP2 as is explained in more detail in section 4.2.

#### **4.1.4. Plans for next period and lessons learnt**

Next period will be devoted to organization of background facilities for development of software modules. The Subversion repository will be set up. Usage of agreed coding style and common rules will be ensured. A software release schedule will be set up.

## 4.2. WP2 - Service and System Design

### 4.2.1. Work package objectives

- To identify the end user's segmentation and potential services for each segment.
- To analyze and specify the end-user needs and requirements (for application, privacy, human machine interface, security and 3D quality).
- To plan and design the integration of the system and all subsystems required to meet the user expectation and business needs.
- To design the project and success criteria.
- To define the protocols, technologies and interfaces to meet the requirements.
- To consistently design:
  - Subsystems
  - Communication between subsystems

### 4.2.2. Progress toward objectives

The whole WP2 Work package has been completed as planned within six months from the start of the project. Very early during WP2 work, the partners involved in WP2 (actually the whole Consortium, albeit with different efforts) has realized that the three sub-tasks of the WP, namely:

1. End-user definition and needs (T2.1),
2. System and Service Design and Specification (T2.2),
3. Security infrastructure architecture definition (T2.3),

were very strictly interconnected and that it was more productive to carry out the work in the sub-tasks in a parallel fashion instead of the sequential one previously planned. Moreover the comprehensive analysis of the State of the Art for the Virtual Worlds has been somehow hindered by the difficulty in finding reliable and authoritative information on the subject.

Throughout WP2 there has been a lot of effort by all the Consortium in trying to establish a common language and most of all a common set of core features that were felt by everyone as being part of the VirtualLife system.

Starting from an initial set of use cases (mostly derived in accordance with user expectations as outlined by work in T2.1), an iterative incremental process of redefinition, modelling, design has been started using established channels (i.e. mailing list, conference calls, tri-monthly meeting). This process, specifically for D2.2 "System and Service Design and Specification", that was a deliverable involving all partners, has led to 9 internal releases of the document to achieve desired result.

Indeed, D2.2 contains information both on the services that VirtualLife system will offer to its user, and on the technologies and architecture that should enable them.

It has been a very difficult task both because it needed coordination of the whole Consortium at all levels, and because the technologies that the project is going to use are

not yet mature enough. A lot of work has gone in scouting the technologies in order to find the best candidates for each identified sub-module. The analysis has focused mostly on (but not limited to) open-source components that were available in a multi-platform environment. The system shall work on the following platform: Windows, Mac OSX, Linux. Below a list of some of the technologies that have been analyzed and/or directly tested:

- GUI: WxWidgets, Qt or simply Ogre for the main program; *CEGUI*, *Navi*, *QuickGui*, *MyGui* for the main windows widgets.
- Render Engine: C4, Virtools, 3DVIA MP, Irrlicht, OGRE.
- 3D Object importer: COLLADA
- Scripting Engine: LUA, Python, Ruby
- Physics Engine: ODE, Bullet, Tokamak

The software architecture proposed in D2.2 has been agreed among all the partners. The various modules responsibilities have also been identified and assigned. The underlying network framework that should ensure communication among modules as well as among different actors (citizens) in VirtualLife has been analysed and designed in a specific section within D2.2. It will be developed on top of the open source Raknet library. The protocols and the interfaces have been outlined in order to ensure a smoother integration phase.

The overall framework for security has been analysed and assessed in D2.3. At a very broad level of description all transaction will be ensured by a PKI based infrastructure. It will allow secure ways to do: authentication, authorization, signing of a contract, citizenship, membership, copyright management etc.

#### **4.2.3. List of previously unexpected difficulties**

The decision to carry out all task of WP2 in parallel has led to a delay in the final release of the deliverables for sub-task 1 and 2. All due deliverables, i.e. D2.1 D2.2 D2.3, have actually been released at the end of June. Except for this delay, WP2 has achieved its objectives. The level of details achieved in architecture design is enough to let partners accomplish next WPs.

#### **4.2.4. Plans for next period and lessons learnt**

This WP is terminated on M6. Somehow the same iterative procedure used for D2.2 has been foreseen for use in the development phase. Indeed an Agile-like development style is preferred over more traditional "waterfall approach".

### **4.3. WP3 - Virtual World Security and Communication Infrastructures**

#### **4.3.1. Work package objectives**

- To implement a secure authentication system.
- To implement the communication infrastructure.

#### **4.3.2. Progress toward objectives**

The algorithms and protocols chosen in Task 2.3 "Security infrastructure architecture definition" are being implemented. Some partly functioning prototypes are already developed.

#### **4.3.3. List of previously unexpected difficulties**

There have not been any major unexpected difficulties in this WP.

#### **4.3.4. Plans for next period and lessons learnt**

Finalizing the development of the "Security Infrastructure System". Expected date M10 (ie. November 2008).

### **4.4. WP4 - Virtual World Elements Design**

#### **4.4.1. Work package objectives**

The only objective of this WP is to design the Virtual World physics and elements needed to create an immersive and user-friendly 3D environment.

Its output is detailed definition of the main elements characterizing the VirtualLife World:

- Virtual World Data Definition
- World Physics Definition
- Final User Scripting Language Definition
- Modules Interfaces Definition

#### **4.4.2. Progress toward objectives**

This WP is currently an on-going effort. The final definitions outlined above will be only ready in the next months. As is often the case for such complex projects and as it has been requested by the Consortium partners, there will always be room to improve the definitions in order to overcome unexpected difficulties or needs. The iterative agile-like development process will need to be mirrored continuously in the definitions contained in this document. Right now each partners has been assigned by the WP leader its set of definition and is autonomously working.

#### **4.4.3. List of previously unexpected difficulties**

So far there have been no unexpected difficulties.

#### **4.4.4. Plans for next period and lessons learnt**

Finalizing to the most detailed level possible all the definitions to allow a smooth development of the sub-modules.

### **4.5. WP5 - Virtual Zone D&D**

#### **4.5.1. Work package objectives**

To design and develop the Virtual Zone as the fundamental component of the Virtual World under direct control of the end-user in the peer-to-peer network.

#### **4.5.2. Progress toward objectives**

Up to the reporting period only one of the task for WP5 had to be completed, namely Task 5.1 "VR Engine Design & Implementation".

The main objective of this task was to experiment on possible VR Engine to be used as starting point for the development of VirtualLife. Possible options were offered both in commercial software and in open source world. Careful examination of pros and cons associated to each solution are presented in D5.1. Below a list of the criteria used for evaluation:

- 3D next-gen capabilities
- Cross-Platform
- Source code and documentation
- Licensing
- Community support
- Business and partnership opportunities

Among the following candidates: C4, Virtools, Dassault Systemes 3DVIA MP, Irrlicht, OGRE 3D, OGRE 3D has been chosen for future developments in VirtualLife.

To analyse more deeply the possibility offered by OGRE 3D, TAVAE, the partner responsible for the whole task 5.1 has even developed a proof of concept of a terrain engine based on the innovative idea of "geoclipmaps".

This proof of concept also served as a basis to define best practices that should be followed during development:

- Intensive use of parallelism: GPU, multi-core CPU
- Parametric data model representation
- Smart compression schemes

In the first two months devoted to task T5.2 "Z-servers Topological Connection Engine Development", various possibilities for implementing the connection among zones have been identified. Possible choices span a wide range of behaviour from a completely continuous zone transversal experience for the end-user, to completely opaque borders with special doors for transversal. The complexity both in terms of coding and of

message passing for these choices is quite different. At the moment, the specific scenario that will be implemented has not been chosen. The choice in fact will deeply impact other modules, specifically the VR engine, the physics engine and the message-passing layer. Possibilities are being evaluated together with the other partners.

#### **4.5.3. List of previously unexpected difficulties**

For the reporting period there has not been any unexpected difficulties.

#### **4.5.4. Plans for next period and lessons learnt**

The next months will be quite challenging since by next reporting period some of the final module will be in place, together with either stubs and/or partial implementation of the other modules. A more detailed evaluation of overall implementation should be feasible.

### **4.6. WP7 - Virtual Nation Juridical System**

#### **4.6.1. Work package objectives**

To define and give the technical specification for the implementation of an example of Constitution for a Virtual Nation.

The Constitution of a Virtual Nation will have to be designed according to the legal framework in the areas of ECommerce, copyright and related issues. Therefore the first step of the development of the virtual legal system will have to be comprehensive research in these areas with view to the particularities of virtual communities.

Due to the peer-to-peer structure of the Virtual World comprehensive research in International Law will be needed. The aim of this research is the definition of the legal framework within which the juridical system of a Virtual Nation can be shaped. The second step will be the development of the legal system of the Virtual Nation itself. Beside the legal framework the special needs of the users acting in a virtual economic system will have to be incorporated carefully.

#### **4.6.2. Progress toward objectives**

Elaboration of the concept of law governed interaction of artificial agents in multi-agent systems (MAS) in order to comply with the Constitution has been carried out. Analysing different type of commercial contracts between the avatars, a key assumption that shall always hold in VirtualLife is that liability is defined only when an avatar can be associated with a human being behind it. Ultimately only the human is liable for the actions of the avatar.

A theoretical concept for the legal framework for VirtualLife has been developed. Research on data protection requirements regarding the authentication and authorisation system and the inclusion of terms of service have been concluded. Research on the liability (e.g. contributory or vicarious liability) of service providers for their users'/customers' acts and the requirements for monetary transactions is nearly finished.

#### **4.6.3. List of previously unexpected difficulties**

For the reporting period there has not been any unexpected difficulties.

#### **4.6.4. Plans for next period and lessons learnt**

Finalizing the legal framework with particular focus on digital rights management within VirtualLife.

### **4.7. WP11 - Dissemination and Exploitation**

#### **4.7.1. Work package objectives**

Objectives of this workpackage are:

- Dissemination of system specific information and work progress to be achieved using different information media.
- Creation and execution of an Exploitation Plan.

#### **4.7.2. Progress toward objectives**

During this reporting period project-specific dissemination activities have been concentrated on the realization of a web site, for both internal and external use.

External part at the moment focuses on the description of VirtualLife project as outlined in Annex 1 to the contract. It has been set up in a way that it will contain, as project advances, new content that the Consortium decides to share publicly.

A restricted area has been also set up for internal use. This area contains both official deliverables to EC and internal documentation. A wiki system has been set up to contain up-to-date description of current implementation "frozen" ideas, as well as a discussion part where new concepts are shared before inclusion to final VirtualLife system.

With respect to activities related to EC clusters, one of VirtualLife's partners has coordinated the activity of the working group '3d immersive media for Future Internet', that joins the UCM cluster (Networked Media activities). A lot of work has been performed in collecting contributions from all the involved projects, and participating into the realization of a cluster's position paper.

The Exploitation Plan will be basically a Business Plan in which the consortium lists and analyzes possible ways of exploiting VirtualLife platform.

Each partner within the Consortium is currently investigating the specific opportunities that can be opened by the platform and the appropriate marketing strategies to promote them.

It can be foreseen that interesting opportunities are opened in services either in B2B or B2C perspective. The EP will take into account:

- the market and the competitors (using results from D2.1)
- the nature of VL platform

- the nature of the consortium (specifying the single skills and core business of each partner)
- the services that the consortium can potentially deliver through VirtualLife
- the ways in which each partner will offer and promote these services
- the potential customers
- the potential business partners

#### **4.7.3. List of previously unexpected difficulties**

There have not been any unexpected difficulties in this WP.

#### **4.7.4. Plans for next period and lessons learnt**

The next steps in dissemination will consist in updating the content of the web with a description of the current status of the project. There will also be a deliverable area where Deliverables marked as "Confidential" will contain at least an abstract description of the main achievements. A detailed and final Exploitation plan shall be written and executed.