

VirtualLife

WP1 Project Management and Coordination

D1.1.2 - Project Progress Report (Jul-Dec '08)

AUTHOR	Nergal
MAIN CONTRIBUTORS	all partners
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1. Introduction

This document, entitled "Project Progress Report - 2", is the second 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 corrective 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 finalize the definition of the elements that constitute the virtual world and to define Interfaces among modules
- to finalize the development of a Security Infrastructure System
- to finalize the development of the Search Engine Prototype
- to finalize the Topological Connection Engine Prototype
- to finalize the design of a Virtual Constitution based on the previous analysis on legal fundamentals
- to continue working on the Virtual Reality Engine Implementation
- to actively work on the design and development of the Message and Data Exchange System
- to actively work on the Virtual Reality Engine Implementation and on the Scripting Virtual Machine
- to finalize the Exploitation Plan

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

With respect to the objectives stated above this second semester did not face any major difficulty with respect to administrative tasks. Most of the effort has been devoted in finding the proper compromise between finalizing the crucial initial design deliverables with content that was agreed among all the partners and in respecting deadline as for DoW schedule. The most striking delay to handle regarded D4.1 . Its crucial content, i.e. the overall core architecture, and some overall re-thinking of the approach as stemmed from a Conference call among partners held in September are the most relevant contribution to this delay. More detailed information can be found in the WP4 section below. The delay in D7.1 was on the other hand already expected and hence announced during previous report. The deliverable reached its final form in M10. At last, with respect to D3.1 and D11.3 the review process has in both cases taken longer than planned. At the beginning of project the Consortium agreed that every Deliverable should always be internally reviewed for quality assurance. For such review usually a time-window of 1 week is enforced internally. However to improve overall quality in both cases an extra iteration in the writing/review cycle has been necessary.

From a more practical point of view several action took place. A final SVN directory layout has been decided. Some of the code is already in place within the repository. Coding rules have also been agreed so that overall the code will look alike and hence will be more maintainable. Of great importance in this respect has been the decision that all interface functions will have to be documented inline using Doxygen syntax. A new communication rule has also been agreed for better flow of information within the mailing list. For any mail there should be a list of partners from which the sender expects some response. This is to try to focus specific partners on the content of the mail and avoid un-necessary delays in the answers.

Since from now on the amount of code submitted to the repository is going to increase a more efficient way to handle the code is foreseen. A tracking system is under evaluation for bug and issues in general.

Moreover all partners agreed on the need for a few "syncing" releases during the development cycle that will ease the final integration phase, ironing out earlier the possible inconsistencies.

4.1.3. List of previously unexpected difficulties

Overall there have not been any major unexpected difficulties. There have been however several unexpected delays. All of them can be justified in terms of better quality for the final deliverable; nonetheless the whole Consortium has agreed that deadlines are to be respected. Some corrective action has taken place especially to ease the reviewing procedure, and make them more effective.

4.1.4. Plans for next period and lessons learnt

Next period will be devoted to organization and setup of background facilities for development of software modules, such as a Bug Tracking System and an automatic

building toolchain. A software release schedule will be set up. Given the delay introduced in reviewing process the time-window for it to occur will be increased to 2 weeks, and involved partner should be made available draft version as soon as possible.

4.2. WP2 - Service and System Design

This WP has been finished at M6.

4.3. WP3 - Virtual World Security and Communication Infrastructures

4.3.1. Work package objectives

This work package will provide VirtualLife with the security and network implementations that will allow it to function securely and reliably. The two deliverables will implement the security architecture described in D2.3 and the network architecture described in D2.2.

The security architecture will be implemented in a programming library used by other modules in VirtualLife. The library will provide the system with data structures and algorithms required to implement security measures.

The network architecture will also be implemented in a programming library. It will allow the nodes of VirtualLife to talk to each other using complex protocols. The main design goals of the library are performance and the capability to implement and handle complex protocols.

4.3.2. Progress toward objectives

D3.1, that is the prototype of the security library, has been delivered to partners in central repository. It is a working prototype with partial test coverage and some demonstration applications. It provides baseline cryptographic primitives like encryption, signing, hashing and message authentication. It also contains operations for X.509 certificate handling.

The development of the networking library has also been started. A peer-to-peer networking core that supports end-to-end streams between different modules in different nodes has been implemented. The streams can be encrypted for stronger security.

4.3.3. List of previously unexpected difficulties

Parts of the security architecture required the networking system to be already present. According to the work plan the networking was supposed to be implemented later. It has been decided to start the implementation of the networking system early and that if eventually there will not be enough to complete the whole security architecture, it will be taken from that needed for implementing networking at an earlier time. At the end, both implementation will be completed in time.

4.3.4. Plans for next period and lessons learnt

The prototypes for the security and networking subsystems will be made feature-complete. Integration of this work with that of other partner will be initiated.

4.4. WP4 - Virtual World Elements Design

4.4.1. Work package objectives

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

Its output is the 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

As stated in the objectives, the work package has allowed defining more precisely what will be the data used in the project development, and selecting Lua as the scripting language to be supported in the VR engine.

The last part (Module Interfaces Definition) appeared to be heavily dependent to the overall software architecture. Therefore focus was on this particular part.

After some unsuccessful attempts to stick to a traditional OOP hierarchical design, it came to our understanding that it was not possible to plan every aspect of such a complex project at this stage. It has been decided to try something else and to shift from this use of deep hierarchies to a method that composes an entity object as an aggregation of component.

The advantages of this approach can be summarized as follows:

- no (or less) programming work required for designers to modify the logic (behaviours, interactions, ...)
- circumventing the "impossible" problem of hard-coding all entity relationships at start of project
- allowing for easy implementation of design ideas that cross-cut traditional OOP objects
- much faster compile/test/debug cycles
- much more agile way to develop code

The approach does not come without some drawbacks. Its complexity (at least for programmers very comfortable with OOP) makes it difficult to explain and to implement in a short period.

In the same time, we tried to unify the architecture in order to have mostly the same components over the system, in client, z-server and nation-server implementations. The goal is to provide a smooth and transparent communication system between these systems.

4.4.3. List of previously unexpected difficulties

The lack of documentation about the way to implement this kind of system was the most challenging issue. It is known that since the early 2000s, most of the MMO projects are built around data-driven component systems, but these projects are not published and they are very few articles about them. Fortunately some personal contacts have been activated with game development companies and the maximum of information available has been collected.

The second issue was to find a workable compromise between two opposite worlds, classic OOP hierarchical design and data-driven component system design. Most of the inputs collected, suggested that this is a very difficult challenge: introducing a kind of hierarchy and hard-coded objects into a data-driven component system might lead to a system where complexity is not balanced by flexibility. The design contained in D4.1 should however show the way we intend to develop such a system. As a direct consequence of the above issues the delivery of the D4.1 document has been delayed until M11.

4.4.4. Plans for next period and lessons learnt

This WP has been terminated on M11.

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

As stated in the WP4 part, the core of the VR Engine has been designed as a component based entity system. During the creation of the D4.1 document, a lot of testing code has been written to validate the different concepts involved in this design. The current task is to re-assemble these pieces of software in a coherent core system.

During this period, the final prototype for the Search Engine has been finalised. A preliminary implementation of Client GUI and the final choice for the User Scripting Virtual Machine have been carried out. The Z-server Topological Connection Engine prototype is also being finalized and it is waiting for the basic VZ Core Messaging System to be validated.

4.5.3. List of previously unexpected difficulties

As stated in the WP4 part, the core architecture has been transformed from a classic OOP hierarchical design to a data-driven, component based entity design. The main consequence is that a large part of the testing code has to be reconfigured to match the new design. Moreover some of implementation details are still under construction, in particular the way to manage data definition: messages, data types, entity types. The prototype deliverable of Search Engine and Z-server Topological Connection Engine have

suffered a small delay (a couple of weeks) mostly to take into account the new data-driven approach.

4.5.4. Plans for next period and lessons learnt

Once the base system is in place, the next period will start with the integrations of different modules (T3.2: Message and Data Exchange System, T5.2: Z-Server Topological Connection Engine, T5.3: Search Engine, T5.4: User Scripting Module). According to the involved partners, we expect to have a running prototype around mid-January.

4.6. WP6 – Client D&D

This Work Package shall start in M13.

4.7. WP7 - Virtual Nation Juridical System

4.7.1. Work package objectives

The objective of WP7 is to develop and technically implement a juridical system for the virtual community VirtualLife.

In order to define the legal framework within which the juridical system of a virtual community can be shaped this included, as a first step (D7.1), an extensive analysis of the status quo regarding the legal issues that arise in such a community with the focus being on the European situation. Areas of law that had to be considered were *inter alia* intellectual property, contract formation, e-commerce, protection of minors and data protection.

The second step (D7.2) involved the development of model contracts, namely the Supreme Constitution addressing the user/software provider relationship, i.e. a form of end user license agreement, and a Virtual Nation's Constitution outlining a Virtual Nation's law making ability.

Thirdly (D7.3), the rules of the Constitution will be translated into technical constraints in the next period.

4.7.2. Progress toward objectives

During the third quarter of 2008 D7.1 was finalised. On the basis of the use case scenarios developed in WP2 (D2.1 and D2.2) UGOE conducted detailed research in different areas of law evaluating, in particular, international journal articles and case law with a focus on the protection of intellectual property interests in virtual worlds arising from copyright law, the law of registered trademarks and the law against unfair competition; the protection of minors in virtual worlds; advertising in virtual worlds; user evaluation systems in virtual worlds; contract formation including the requirements regarding electronic signatures and dispute resolution in virtual worlds. (International) law journals and online publications were monitored for new publications concerning legal issues in the context of virtual world, which also resulted in an extensive list of the current state of scholarly writings in this area.

During the fourth quarter of 2008, model contracts for the virtual community VirtualLife were developed, resulting in the Supreme Constitution and a sample Constitution for a Virtual Nation. Additionally, a handbook elucidating the terms chosen was written.

4.7.3. List of previously unexpected difficulties

Due to the delayed finalisation of D2.1 and D2.2 research on the legal issues and thus the progress of D7.1 was slightly hampered because the definition of use cases was essential to narrow down the areas of law that had to be analysed.

4.7.4. Plans for next period and lessons learnt

In January and February 2009, there shall be an analysis of how the rules of the Supreme Constitution and the Virtual Nation Constitution can be translated into actual technical restraints in order to minimize disputes from the outset.

Suggestion for the next two years: The progress of VirtualLife's architecture as well as the fact that the law in the context of virtual worlds is developing constantly, it is advisable that the project has permanent legal support by UGOE. Under the current allocation of the budget, UGOE will be able to provide legal support under WP 7 and under WP 8 only for a very limited period of time (probably until August 2009 when the PMs under WP 8 are exhausted and WP 7 is finished). Particularly in 2010, under the current allocation, UGOE can barely provide any support. Therefore, UGOE suggests carrying forward some of the "unused" PMs granted under WP 7 for 2008 to the following years. This will allow for further research and constant contribution to the general academic debate relating to virtual worlds. In particular, it will be possible to expand on certain topics and to develop further arguments.

4.8. WP8 – Virtual Nation D&D

This Work Package shall start in M13.

4.9. WP9 – System integration and test

This Work Package shall start in M23.

4.10. WP10 – Evaluation and Recommendation

This Work Package shall start in M27

4.11. WP11 - Dissemination and Exploitation

4.11.1. 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.

4.11.2. Progress toward objective

Dissemination activities

During this reporting period project-specific dissemination activities have been concentrated on:

1. Project website design and development

Design and development of the website <http://www.ict-virtuallife.eu> continues in both the internal and external use. Software repository "subversion" is available for internal use only. The website and the repository are hosted on a server of project partner VU-FC (Vilnius University). MediaWiki technology is used. Internal use (restricted access) is dedicated only for project partners.

All project deliverables are available on the website. Confidential deliverables are available only in the restricted area.

2. Paper publication on specialised journals

Each project partner is encouraged to do publications. Each subject matter being developed is worth of publication. Innovative items are, (1) the overall VirtualLife conception and (2) the contribution of the University of Goettingen.

Currently the project innovations have been discussed in personal discussions with conference participants.

3. Participation in international conferences

ICT 2008, 25-27 November 2008, Lyon, France, see http://ec.europa.eu/information_society/events/ict/2008/index_en.htm Session 12a: "Networked Media & 3D Internet". Networking session on ICT 2008 organized by the User Centric Media Cluster: Research challenges and user's role in the Future Media Internet.

NordiCHI2008, 20-22 October 2008, Lund, Sweden, see <http://www.nordichi2008.org/>. NordiCHI is the main Nordic forum for human-computer interaction research.

JURIX 2008 (21st International Conference on Legal Knowledge and Information Systems) 10-13 December 2008, Florence, Italy, <http://www.ittig.cnr.it/Jurix08/>.

4. Creation of blogs, forums and newsletters on the subject

Currently project partners communicate extensively using, first, two mailing lists (vlife-mgmt, vlife-tech), and, second, making comments in the restricted area of the website. Communication with UCM cluster members is via e-mail list usercentricmediawg2.

Development of a blog or a forum is explored. The forum will be needed when VirtualLife software will be proposed for demonstration and public trial.

5. Creation and distribution of multimedia contents containing detailed information and downloadable from the website

VirtualLife software will be available via the website in the future for purposes of demonstration.

6. Organisation of virtual meetings and conventions (that could take place also in other virtual worlds already existing, such as Second Life)

Currently virtual discussions are organised via e-mail lists, telephone conferences and comments on the restricted area of the project website.

7. Activities related to EC clusters.

With respect to activities related to EC clusters, two of VirtualLife's partners have been continuing to coordinate the activity of the working group '3d immersive media for Future Internet', which, in the meantime changed its name into "Future Internet of Immersive Media Experiences"

The working group joins the UCM cluster (Networked Media activities).

In particular, the consortium participated into the creation of the White Paper "User Centric Future Media Internet" and the individuation of future activities to be carried out by the cluster; among them, the creation of a forum specifically dedicated to all the cluster issues.

During the reporting period, the Consortium has attended the 2nd FP7 Networked Media Concertation Meeting held in St Malo, October, 15th 2008.

Exploitation Activities

In the reporting period, the Exploitation Plan was released and the first activities outlined in it have been carried out; we briefly enlist them:

- design of the website section dedicated to exploitation
- development of the website section dedicated to exploitation
- internal release of the first list of contacts
- release of the first on line presentation
- first activities related to the creation of a *digital ecosystem* surrounding the project

4.11.3. List of previously unexpected difficulties

There have not been any unexpected difficulties in this WP.

4.11.4. Plans for next period and lessons learnt

The Exploitation activities will follow the table outlined in the Exploitation Plan trying to respect the tentative calendar.