Badegruber & Partner GmbH

Diogene

Experimenation Comments and Suggestions

Deliverable 7.1

Version 1.1

Revision History

Date	Version	Circulation	Reviewed paragraphs	Author	Reviewed by	Approved by
22/07/2004	1.0	Restricted	Intermediate version.	Erich Herber	Renate Mahringer	Renate Mahringer
27/07/2004	1.1	Restricted	Final version.	Erich Herber	Renate Mahringer	Renate Mahringer

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1. INTRODUCTION

This report forms **deliverable D7.1** of the DIOGENE project.

The aim of the report is to both reflect on and provide feedback on the first prototype of the DIOGENE system, and the deliverables and outputs that the DIOGENE project team has produced for the community. This will include consideration of the processes undertaken by the project, lessons learnt and potential suggestions for improvement that shall be of use for system improvement and further development of DIOGENE project results.

This report uses the following form for explanation of experimentation results: inputs, processes, data, outputs, outcomes and impacts. It was felt that these headings encompassed the variety of factors in which experimentation could best be presented to the project consortium and the commission.

2. INPUTS

The highly complex focus of the DIOGENE system and the timescale of the experimentation period dictated the necessity for experimentation to develop a very precise and clear plan. It was also essential that this process was informed directly by relevant stakeholders in a timely manner.

As well as seeking consortium-wide input into the initial conceptual process, the DIOGENE project dedicated a significant amount of time to user needs analysis and detailed functional specifications for the project. The full process is documented on the DIOGENE deliverable D1.1. This deliverable was an input for evaluation planning and had an impact on experimentation and its results.

The experimentation phase was based on the evaluation plan provided in deliverable D1.2.

Stakeholder requirements and specifications remained a priority for the DIOGENE project throughout implementation phase, and were revisited on several occasions by the project and implementation team. Stakeholders were given in this experimentation phase to restate their ideas and opinions, notably through consultation tasks and exercises. Specific care was taken to gather feedback on the learners' experience and interaction systems, and for this information to be fed back to the implementers. A clear example of this can be seen in the 'experimentation results' of the various DIOGENE organisations as part of the complete experimentation report.

The timescale of the project and the ongoing system implementation made experimentation and time management a high priority for the this work package. It was essential that all test groups and implementers were fully informed and aware of the deadlines and experimentation requirements in order to meet the deadlines laid out by the project plan and generate relevant and in-time feedback for implementation teams. Any slippages or lost time would have had a significant negative impact on project development and success.

To support this process, the project made use of ViewletBuilder technology[1] – an online presentation and system documentation tool for software simulation and documentation. This product was appropriate in terms of scenario description and system introduction to test users and enabled effective documentation and supportive direction of experimentation tasks, and was easily accessible for all involved partner institutions and test users. This process has been generally successful, and would be recommended to other projects.

[1] ViewletBuilder Technology <www.viewletbuilder.com>.

3. PROCESSES

EXPERIMENTATION BACKGROUND

The experimentation of the DIOGENE prototype took place from March 2004 to July 2003. It was intended that the evaluation would inform the project consortium of any operational issues with the system and therefore enable system improvement best suited to project objectives and stakeholders' requirements.

FORMATIVE EVALUATION

An experimentation as a set of formative evaluation tasks was undertaken for the various system components (DIOGENE organisations) produced by the project. The time spent on this process has helped support and guide DIOGENE system implementation throughout the remaining implementation phase. The project team has been able to proceed with implementation based upon user feedback, and comments and suggestions for improvement could be incorporated into a final DIOGENE system.

In order to improve the system, it was necessary to understand how well the system is moving towards its objectives and stakeholders' requirements so that changes could be made in the DIOGENE components. The tasks of this stage was to look for potential problems, technical and usability concerned.

Subsequently, the elaborated weaknesses of the DIOGENE system prototype as well as a list of comments and suggestions for further system development during the final implementation phase were sent to the responsible partners (mainly the technical responsibles and their implementation teams) whose task it was to improve the available system based on the findings of experimentation.

CONTINUOUS PROCESS

This process was ongoing throughout the final phases of implementation, and addressed the functional and usability needs of all organizations involved in the DIOGENE network. It is important to note, however, that these processes were limited to the extent and interactivity level organizations have been integrated into the whole DIOGENE network by the time of experimentation. As far as possible, system integration and collaborative experimentation was pushed by implementation teams so as to allow for full functional and interactive experimentation. This was achieved by the project team members meeting and agreeing a series of tasks and functions that were suited to fulfil the experimentation task.

A set of scenarios was defined that contained organisations and functions and defined the processes and tasks for experimentation. It clearly indicates that experimentation can be carried out successfully and synchronously during ongoing implementation work provided regular and clear discussions and agreements on experimentation scenarios occur.

A key element of this work was constant communication between implementation team member and experimentation work teams, working groups at all involved partner organisations. Running across all of these experimentation tasks was a strong focus on continued communication between all stakeholders in a timely manner. This included the implementation partners directly involved in, or connected to the experimentation phase, test users involved in the peer groups, and the whole partner consortium, through meetings and offline discussions.

SCENARIOS

The experimentation was based on a set of scenarios. The following table explains what DIOGENE organisations were included in what scenario and phase.

DIOGENE System Component	Experimentation Scenario
Abstract Organisation – the DIOGENE network to support the DIOGENE process and web services	from scenario I
DIOGENE Network Reception – Web Portal and entry point for DIOGENE users	from scenario I
DIOGENE Service Registry – Registration and Administration of services to DIOGENE	from scenario I
Training Agency – Access point for students of DIOGENE network to request for personalised training offers	from scenario I
Knowledge Agency – Knowledge representation and the provision of learning concepts and paths	from scenario I
Brokerage Office – The course brokerage service	from scenario I
Publishing House – Publishing service for content providers	from scenario I
Authentication Agency - User authentication and authorisation service	from scenario I
Tutor Agency - Management of freelance tutors for Training Agency	from scenario II
Skill Agency - Skills retrieval service and Curriculum Vitae search engine for skill managers	from scenario II
Web Catcher Agency - Retrieval of free ICT content in the semantic web	from scenario II
Bank - The DIOGENE payment service and monetary transaction services	from scenario III
Café – Collaboration and communication services for learners and tutors	from scenario III

METHODS

The experimentation of DIOGENE has been extensive, and ongoing throughout the experimentation period (March 2004 – July 2004) in the following steps:

- Installing and setting up the DIOGENE system environment.
- Inputting a series of existing and representative data.
- Import of user data and registration for all test users in the network reception.
- Development of three experimentation scenarios.
- Development of experimentation material, including task lists, system documentation, feedback reports, handbooks for different user roles and stakeholders.
- System documentation to support experimentation tasks.
- Support of relevant test users in use of the DIOGENE system prototype.
- Allowing supported test users to interact with the DIOGENE system prototype in order to be able to comment on the system.
- Gathering and analyzing feedback.
- Reporting the experimentation results to the project coordinator and project partners.

Stakeholders were asked to keep a diary of issues as they worked with the DIOGENE system, and this information was collected by B&P in cooperation with the responsible partners for summary and analysis. These diaries primarily informed the 'suggestions and comments' issues detailed in section 5 'Outputs' of this report.

Formal feedback was gained in two ways: a feedback report filled in by test users working through scenarios and evaluation tasks, and direct discussions and communication with test users that were collected during the process of experimentation. Other feedback has been generated from direct discussions with users and/or partners and considered in the list of recommendations.

For performance recording users were asked to record their comments based on their interactions with the DIOGENE system that were mainly based on the provided system evaluation tasks. Such resulting protocols provided clear overview on visited pages, learning paths, dwell times, accomplished interactions, used tools (eg: search functions) and so on.

User feedback data was compared against data provided by DIOGENE based on the completed tasks to verify adequacy of the feedback. This helped interpreting users' comments and feedback issues to the most relevant extent.

4. DATA

CONTINUOUS PROCESS

Experimentation was a continuous process that built up on different versions of the DIOGENE prototype. All work was split into two phases: Phase I and Phase II.

Phase I involved a limited number of users and evaluates DIOGENE on a specified 1st scenario. **Phase II** involved more test users (also tutors) and evaluated DIOGENE on a specified 2nd scenario, to some part within the implementation teams on the 3rd scenario.

Experimentation Phase I
April 8 – April 28, 2004

Start:	March 2004
Preparation & Internal	
Experimentation:	March – April 2004
Experimenting:	Mon, April 12 – Fri, April 23
Feedback:	Mon, April 19 – Wed, April 28
Analysis:	April – May 2004

Experimenation Phase II
July 8 – July 21, 2004

Start:	June 2004
Preparation & Internal	
Experimentation:	June - July 2004
Experimenting:	Thur, July 8 – Fri, July 16
Feedback:	Wed, July 14 – Wed, July 21
Analysis:	July 2004

UNSKILLED AND EXPERIENCED USERS

A consideration of the different stakeholders and working practises of the various organisations and user roles involved in DIOGENE network was essential. These differences provided a range of user viewpoints of the DIOGENE system, and also posed a series of various aspects for usability engineering and system improvement. This meant that any system component (DIOGENE organisation) selected for experimentation scenarios had to be tested and experimented among a wide number of test users and generated valuable results for various system components and development teams within the consortium.

The experimentation initiated during the first pilot phase, when the first prototype of the DIOGENE system was available, and continued based on an improved prototype considering issues that resulted from previous experimentation tasks.

In total, the formal experimentation peer group consisted of at least

- **59 users** and
- **7 tutors**

coming primarily from Spanish, French, Bulgarian, Greece, Austrian and Italian project partners. Additional users from implementation teams, partners of the consortium, and people eng

A mixture of unskilled users and experienced users were integrated into the experimentation phase process. Unskilled users were provided documentation and simulation material to better understand their tasks and the DIOGENE system. Experienced users from previous experimentation phases were undergoing experimentation process repeatedly so that they could report on improvements of the system.

5. OUTPUTS

In total, the experimentation team identified a set of key requirements that further system development should address to produce any commercial system under consideration. These key requirements have been put into three categories:

- **Technical Difficulties (TD)**
- **Missing Information (MI)**
- **Comments and Suggestions (CS)**

In these categories, the feedback collected from users has been broken down to and summarized in a number of requirements and recommendations for further system development.

TECHNICAL DIFFICULTIES (TD)

This category of user feedback identifies the technical problems that were detected by test users during their interaction with the DIOGENE system. These problems must be verified and solved by the responsible implementing team. The final DIOGENE system must assure that no such problems exist. Consideration in further implementation work has high priority in this category.

Please find here a list of requirements that have been identified for Technical Difficulties.

	No. of related issues that were generated from experimentation
TECHNICAL DIFFICULTIES (TD)	**126**
System runtime errors - This category of comments concerns temporary or constant instability and/or unavailability of the system or parts of the system (single DIOGENE organisations). It also identifies issues where the provided functionality of the system did not provide positive or no results due to technical difficulties.	**50**
Unreliability of Messaging service - This category of comments concerns temporary or constant unavailability of the DIOGENE messaging service and/or identifies use cases in which test users did not achieve the suggested results or were partly unable to continue work due to technical difficulties.	**9**
Problems with Data Retrieval - This category of comments relates to problems and/or suggestions identified concerning the retrieval and/or display of DIOGENE data from the database and their listings in the user interfaces, this relating to fields with no or wrong data content.	**8**

System Performance - This category of comments relates to obvious performance problems such as is slow data retrieval and/or navigation between pages and/or various parts of the DIOGENE system, heavy load times on data requests, etc.	**9**
Login and access control problems - This category of comments reports potential errors that had been identified on user registration, authorisations and/or authentication services.	**15**
Listings contain errors - This category handles various issues concerning technical difficulties related to listings, including display, retrieval, and/or sorting mechanisms.	**14**
User sessions – This category provides feedback on technical correspondence of user sessions with the DIOGENE requirement – it also reports timeout problems.	**3**
Others	**18**

MISSING INFORMATION (MI)

This category of user feedback describes in what way and context users requested more detailed information and/or guidance to better understand the system and/or have the required information to complete their tasks.

All issues handled have been discussed within the responsible team of the project and considered in further development of the DIOGENE system. Solutions to diminish such problems were to be found in this ongoing process of and will be incorporated into the final DIOGENE system at most possible extent.

Please find here a list of requirements that have been identified by test users as relevant for 'Missing Information' .

	No. of related issues that were generated from experimentation
MISSING INFORMATION (MI)	**68**
Fields - Missing information concerning user interface field descriptions and explanation.	**33**
Concept Structure - Missing information concerning DIOGENE concepts and knowledge structure was detected.	**10**
User feedback – Users request clear information on the processes that are going on, when they are finished, and what the results are. System feedback to the users is important for better transparency.	**8**
DIOGENE Organisations – A better understanding of DIOGENE organisations must be created for users and support must be given to understand their different functions. Descriptions will be beneficial.	**4**
Usability Problems – User request for a better understanding of the diverse contexts of user interfaces and processes. User instructions that are incorporated directly into the various screens of the DIOGENE system are vital to any commercial DIOGENE system especially in complex tasks such as is the selection of DIOGENE domain concepts.	**10**
DIOGENE Elements and Architecture – Users request for more detailed information on DIOGENE elements and concepts that they are offered – this concerns courses, tutors, concepts, etc. Better description of the DIOGENE elements and concepts will lead to better results.	**1**
Others	**2**

COMMENTS AND SUGGESTIONS (CS)

This category of user feedback provides a set of suggestions and comments that have been collected from test users and evaluators to improve the DIOGENE system in

1) technical and functional correctness
2) usability.

Recommendations

All comments and suggestions for further system development that could be identified by test users as relevant have been formulated in a list of 10 basic recommendations for DIOGENE system improvement.

The responsible partners were asked to work through this check list and to discuss the comments and suggestions that they received with this check list within their implementation team and/or – if necessary – with the coordinating partners of the project. Solutions to improve DIOGENE according to the suggestions and comments were to be found and incorporated in the final DIOGENE system.

Priority to the comments and suggestions in this list was given by the responsible partners according to their ranking in the following list. The priority ranking was made based on the impact of the single suggestion and/or improvement to a better and more requirements related DIOGENE system as well as the number of related comments that came from test users during the experimentation phase.

	No. of related issues that were generated from experimentation
COMMENTS & SUGGESTIONS (CS)	**282**
1. Improve system performance and avoid technical problems! (see TD)	**126**
2. Incorporate more information on relevant items and processes! (see TD)	**91**
3. Use clear and stable formatting!	**15**
4. Improve on User Session and Timeout problems!	**1**
5. Provide user feedback and immediate and direct notification on processes!	**4**
6. Avoid restrictions in listings!	**7**
7. Include more exhaustive explanation for unknown terms!	**4**
8. Avoid spelling mistakes!	**5**
9. Provide user guidance on selections!	**2**
10. Provide an Online Help and Information System!	**3**
Additional: Requests for new functionality	**27**

6. OUTCOMES AND IMPACTS

EXPERIMENTATION RESULTS

In total, the experimentation team

identified

- **7 technical and functional related problem issues**
- **6 information and context related problem issues**

that further system development towards a commercial DIOGENE system must address,

and generated

- **10 basic recommendations for further system development and improvement based on the findings from experimentation**

that were provided to implementation teams with a detailed list of related comments and suggestions that came from the test users.

Additionally,

- **27 issues requesting new DIOGENE functionality**

could potentially be addressed. The formative evaluation therefore also revealed a number of issues that could help upgrade the DIOGENE system with additional functionality to make it more related to stakeholders requirements.

Further implementation based on these findings and more in depth experimentation of this system within the implementation team will be necessary to address the above mentioned problem issues. This means that all 282 issues identified by the test users and 10 priorities for further system development raised in the initial formative evaluation process must be considered by the implementing teams within the project consortium during the last phase of DIOGENE implementation phase.

IMPACT ON DIOGENE EVALUATION AND DIOGENE AS A COMMERCIAL SYSTEM

Summative evaluation will be chosen for further evaluation. Summative evaluation will be based on the findings of the experimentation phase. Some material could be created in experimentation phase that will support the evaluation of the DIOGENE system, such as is

- **a set of key requirements on that the quality and requirements of DIOGENE will be evaluated**
- **some key test users that will contribute to DIOGENE evaluation as experienced users**
- **a set of evaluation material, findings, and lessons learned that can be reused for evaluation**
- **the creation of online system help materials that can be reused for evaluation and any later commercial DIOGENE system**

7. ADDITIONAL DOCUMENTS

Additional internal reports and reusable material has been produced for communication of experimentation results between the project consortium. They are listed in the following.

INTERNAL REPORTS

Report	Document
Learners' Feedback & Recommendations a summary report that reflects the tutors' experience, comments and suggestions based on their interaction with the DIOGENE framework, with special reflection on the DIOGENE Network Reception, Training Agency, Brokerage Office, Authentication Agency and the whole framework. All collected data was generated from DIOGENE experimentation phase.	ExpReport_Learner.doc final version: July 23, 2004
Skills Managers' Feedback & Recommendations a summary report that reflects the skill searchers' experience, comments and suggestions based on their interaction with the DIOGENE framework, with special reflection on the Skill Agency. All collected data was generated from DIOGENE experimentation phase.	ExpReport_SkillManager.doc final version: July 23, 2004
Tutors' Feedback & Recommendations a summary report that reflects the tutors' experience, comments and suggestions based on their interaction with the DIOGENE framework, with special reflection on the Tutors' tools and Knowledge Agency. All collected data was generated from DIOGENE experimentation phase.	ExpReport_Tutor.doc final version: July 23, 2004
Feedback & Recommendations on Web Catcher Services a summary report that reflects the tutors' experience, comments and suggestions based on their interaction with the Web Catcher Agency and Knowledge Agency. All collected data was generated from DIOGENE experimentation phase.	ExpReport_WebCatcher.doc final version: July 27, 2004

MATERIAL

Scenario Description & Documentation	Document
Scenario Description (Learner) an animated simulation of the scenario for test users 'learner' based on Viewlet Technology.	Learner.html (.swf) final version: July 23, 2004
Scenario Description (Tutor) an animated simulation of the scenario for test users 'tutor' based on Viewlet Technology.	Tutor.html (.swf) final version: July 23, 2004
Scenario Description (Skill Manager)	Skill_Manager.html (.swf)

an animated simulation of the scenario for test users 'skills manager' based on Viewlet Technology.	final version: July 23, 2004
Scenario Description (Web Catcher) an animated simulation of the scenario for test users 'web catcher' based on Viewlet Technology.	Web_Catcher.html (.swf) final version: July 23, 2004
Task Lists	**Document**
Task List (Learner) a list of tasks test users 'learner' were asked to complete in the experimentation phase.	Tasks_Learner.pdf final version: July 23, 2004
Task List (Tutor) a list of tasks test users 'tutor' were asked to complete in the experimentation phase.	Tasks_Tutor.pdf final version: July 23, 2004
Task List (Skill Manager) a list of tasks test users 'skills manager' were asked to complete in the experimentation phase.	Tasks_SkillManager.pdf final version: July 23, 2004
Task List (Web Catcher) a list of tasks test users 'web catcher' were asked to complete in the experimentation phase.	Tasks_WebCatcher.pdf final version: July 23, 2004
Feedback Reports	**Document**
Feedback Report (Learner) a feedback report and commentary sheet for test users 'learner'.	FB_Learner.xls final version: July 23, 2004
Feedback Report (Tutor) a feedback report and commentary sheet for test users 'tutor'.	FB_Tutor.xls final version: July 23, 2004
Feedback Report (Skill Manager) a feedback report and commentary sheet for test users 'skills manager'.	FB_SkillManager.xls final version: July 23, 2004
Feedback Report (Web Catcher) a feedback report and commentary sheet for test users 'web catcher'.	FB_WebCatcher.xls final version: July 23, 2004
Online Documentation & Help Material	**Document**
DIOGENE Handbooks diverse handbooks for DIOGENE system components and/or organisations to provide offline user guidance	diverse documents (in Word and/or HTML format)
DIOGENE Online Help an animated online help system with various simulations of DIOGENE processes and organisations to provide online user guidance and a reference list for user.	diverse documents (in HTML and SWF format based on Viewlet Technology)