



WONDERMAR II

Wide Open Network for Development and Research in Maritime Industries

Project Number: **IST-2001-33017**

Project Acronym: **WONDERMAR II**

Project Start Date: **October 2001**

WONDERMAR II Consortium: **BAL, BMT, IRCN, AMD, TNO, BIBA, MDCE, IST, CTO, OSS, RS, IZAR, FC, JLM, KMY, LIS, CAT, TIS, GDYNIA, KWW, GL, BV, DNV, TRIBON, SENER, NAPA, LMC, UNIQUE, OPI, CENIT, EMSA**

Document Name:

Shipbuilding Information Society Technology (IST) Reviews II

Document Author/s:

Stephan Wurst, Joachim Brodda,
Jean-Yves Pradillon, Rob Wheeler

Document Editor

Stephan Wurst (BAL)

Document Reference Number: **D6**

Security Status **Public**

Circulation: **Public**

The information contained in this report is subject to change without notice and should not be construed as a commitment by any members of the **WONDERMAR II** Consortium. In the event of any software or algorithms being described in this report, the **WONDERMAR II** Consortium assumes no responsibility for the use or inability to use any of its software or algorithms. The information is provided without any warranty of any kind and the **WONDERMAR II** Consortium expressly disclaims all implied warranties, including but not limited to the implied warranties of merchantability and fitness for a particular use.

© COPYRIGHT 2001, 2002, 2003 THE WONDERMAR II Consortium

This document may not be copied, reproduced, or modified in whole or in part for any purpose without written permission from the **WONDERMAR II** Consortium. In addition, to such written permission to copy, acknowledgement of the authors of the document and all applicable portions of the copyright notice must be clearly referenced.

All rights reserved.

Executive Summary

WONDERMAR II aims at improving communication and information transfer regarding new developments and research in the maritime industry. The project is structured as a thematic network with 31 partners located in the EU and associated countries. 6-monthly workshops will be held to present the state of the art and new developments in ICT to interested companies. A WWW site (www.wondermar.net) informs about project events and provides additional information.

The kernel of the project, i.e. the key thematic network builds Workpackage 2 by forming three expert groups covering the three shipbuilding process relevant topics: design support, manufacturing/assembly and supply chain/logistics. The very representative members of the industry in these expert groups discuss and answer four major questions for the industrial application of ICT in shipbuilding in a revolving cycle:

- What is the state of the art in the three relevant processes ?
- What are the standards used ?
- What are the economic potentials of the technology ?
- What are the gaps in ICT to be approached by future projects and joint developments ?

The results will materialise in a so called “Shipbuilding Information Society (IST) Review” for the three areas design support, manufacturing/assembly and supply chain/logistics. The “Shipbuilding IST Technology Report” will be updated and complemented twice during the project duration and contains four parts each:

- State of the Art report
- Standards Report
- Economic Potential Report
- IT Gaps report

Deliverable D6 contains the “Shipbuilding IST Technology Report” in the areas of design, production and supply chain and logistics. The current version is the result of the second iteration of interviewing shipyards, classification societies and technology providers. It is mainly focused on describing future scenarios in supporting the maritime industry by information technology.

Due to the amount of information collected, the actual results of the surveys can be found on the Wondermar website (www.wondermar.net). This document only gives an overview of the results and the organisation of the database.

1.	Introduction	4
1.1.	Aims	4
1.2.	Overall strategy	4
2.	Strategy for scenario development	5
2.1.	Questionnaires and interviews	5
2.2.	Input from software vendors, consultants and researchers	5
2.3.	Definition of future scenarios.....	5
2.4.	Collection of general information	6
2.4.1.	Available solutions (tools and methods)	6
2.4.2.	Standards and formats	6
2.4.3.	IT Gaps	6
2.5.	Results from workshops	6
3.	Structure of the D6 online part	7
3.1.	Scenario description	8
3.2.	Tools.....	9
3.3.	Standards	9
3.4.	Formats.....	10
3.5.	Methods.....	11
3.6.	IT gaps.....	12
4.	Database usage guide	13
4.1.	Software environment	13
4.2.	User interface and functionality provided.....	13
5.	Conclusion.....	17

1. Introduction

1.1. Aims

The "Shipbuilding IST Review" report will address four critical topics:

- State of the Art
- Standards and protocols
- Economic potential
- IT Gaps

It is divided into three main sections covering the domains of expertise of the Wondermar II expert groups (Design, Production and Supply Chain & Logistics) and is mainly aimed at the shipbuilding industry (shipyards, suppliers, technology providers and classification societies). It collects information about the tasks being carried out, the information objects generated and the technology and tools used. Some major processes and their tasks have been identified that will be used as basic structure of the questionnaire. Main actors in the tasks have also been identified. The review will start at the function level, will continue with the technologies used by the functions and will finally analyse the software applications implementing the technologies.

1.2. Overall strategy

In a first step questionnaires have been distributed to the end-users in the three expert groups who tested the questionnaire, provided feedback and delivered a first set of results about the current practice in the supply chain at European shipyards.

In parallel, the technology providers have carried out a survey of the state-of-the art as well as of the future tools and technologies in this area. They have also generated new ideas how to address supply chain and logistic related problems in the shipbuilding industry by monitoring other industries (automobile, aviation, etc.)

The answers to the questions have been analysed and summarized in the report to reflect the needs and requirements of the European shipbuilding industry in the use of Information Technology.

After evaluating the results of the questionnaire, weaknesses have been identified and possible solutions are provided especially in the areas where the economic impact will be most promising. Together with the users these solutions will be evaluated and potential projects or IT gaps were identified.

To make the results more interesting for the reader, the presentation of the second release follows a new idea. A set of so-called "future scenarios" has been developed and will be presented as entry point for all available information. The background data collected from the different sources will be available via hyperlinks or can be accessed directly on a separate page. This latter access point is mainly intended for people looking for a specific topic.

This paper document does not contain the actual information gathered during the last 12 months. Instead it only describes the ideas behind the D6 website and how to access it. All deliverable content is therefore available only online.

2. Strategy for scenario development

After the first information collection round which was finished in March 2002 it was decided to contact further maritime companies inside and outside the Wondermar consortium. Slightly improved questionnaires should be used to consolidate the already gathered information and additional information should be retrieved.

A further goal in the second phase of Wondermar was to shift the focus from a collection of state of the art information towards a more advanced approach that would concentrate on outlining future scenarios in the IT support for the maritime industry. As a result, information gathering was extended by more open questions to get knowledge about ideas. To reflect these findings, presentation of the IST review reports was changed from a static paper document towards a dynamically evolving website that will be available to the public and will grow continually during and after the end of the Wondermar project.

2.1. Questionnaires and interviews

The three expert groups distributed further questionnaires to shipyards. Especially the design group was able to contact some 15 yards and got results from them. The supply chain group was able to retrieve two more questionnaires and will interview further maritime companies in the German Baltic Sea area.

Additionally, with all partner in the consortium future scenarios were developed and discussed. This process will be continued in the last phase of the project and will lead to extended existing future scenarios as well as to the development of new ones.

2.2. Input from software vendors, consultants and researchers

While the end-users provided information about their current working environment, the technology expert were asked to deliver an extend view on present weaknesses and future developments. New concepts, planned enhancement to existing tools and project ideas were expected from these groups of participants.

2.3. Definition of future scenarios

The core concept of D6 and the major change compared to the predecessor document D3 is the introduction of the so-called future scenario. They introduce a new view on the maritime IT world by defining to-be concepts without first thoughts about the current situation and the feasibility of the ideas.

A Wondermar future scenario first defines an “ideal solution” for a given problem. From this theoretic concept, backward steps are defined to the current state in order to identify a migration strategy. Together with these steps, requirements and needed skills are defined and lead to a definition of today’s IT gaps that have to be closed.

Since the future scenarios are defined by consultants and researchers, it is absolutely necessary to also involve the end-users in the evaluation process. Therefore, scenarios are developed using the following steps:

1. Somebody (an end-user or a researcher) invents a scenario that looks like a valuable goal for the future.
2. The idea is discussed with one ore more end-users.
3. Depending on the results the scenario is refined and published.
4. A broader audience can now discuss the scenario again and try to find the final shape of it.

5. Realisation of the entire scenario or parts of it starts and leads to new insights.
6. During the implementation process or triggered by other developments further refinement is carried out.

2.4. Collection of general information

As second major part of information to be included in D6, general information that is not related to a specific scenario, should be collected. In this area, existing tools, standards and formats are covered. Additionally, a collection of maritime IT gaps will be provided.

2.4.1. Available solutions (tools and methods)

The software vendors, consultants and researchers have been asked to provide their knowledge of existing software solutions that are already in use or could be used in the maritime industry. While the vendors mainly provided information about their own products, the independent participants were asked to contribute experiences and a more neutral view on the tools. As a result, the descriptions contain the features as introduced by the vendors as well as the weaknesses that might occur in industrial use.

2.4.2. Standards and formats

A comprehensive collection of relevant standards has been compiled, based on results of former research projects like MARVEL OUS. The list aims at introducing all standards that are already in use by the maritime industry. Additionally, it mentions standards from other industries that might be applicable in shipbuilding.

2.4.3. IT Gaps

As a result of the future scenarios and the available solutions, a set of IT gaps has been identified. Based on this list, new research or industrial projects will be set up to close the gaps by either developing new solutions or by transferring concepts and tools from related domains to close the gaps.

2.5. Results from workshops

During the 3rd workshop in Delft (20 February 2003, see deliverable D5), the reviewers' feedback of the first review meeting was taken into account and a higher interactivity was reached. The result was valuable input by the participants that was used to further improve the future scenario definitions. Especially comments regarding feasibility and improvements of the introduced concepts were included on the deliverable website.

3. Structure of the D6 online part

Central entry points of the online presentation are the descriptions of the future scenarios. For each of the three expert groups, an entry page with the different scenarios exists. Below these top level pages, detailed information regarding the scenarios and the state-of-the-art has been collected.

Each future scenario is described according to the structure in the chapter “Scenario description”. Links to other scenarios or supplemental information should be provided in the “References” part of the respective items.

A fourth chapter provides a direct link to the background information (Tools, methods, IT gaps, etc.). It is mainly intended for directly viewing information regarding specific topics not necessarily related to a single scenario.

The chapters “Tools”, “Formats”, etc. are used to describe the items used by the future scenarios in more detail. For each of the topics mentioned, one document has been created according to the given structure. Interesting concepts not used in the future scenarios are also described in separate documents which are not linked to a scenario then.

By providing links between all areas, the user can browse through the database. Additionally, a full text search will be provided to immediately find the documents containing the request content. The following picture shows the connection between the different text elements.

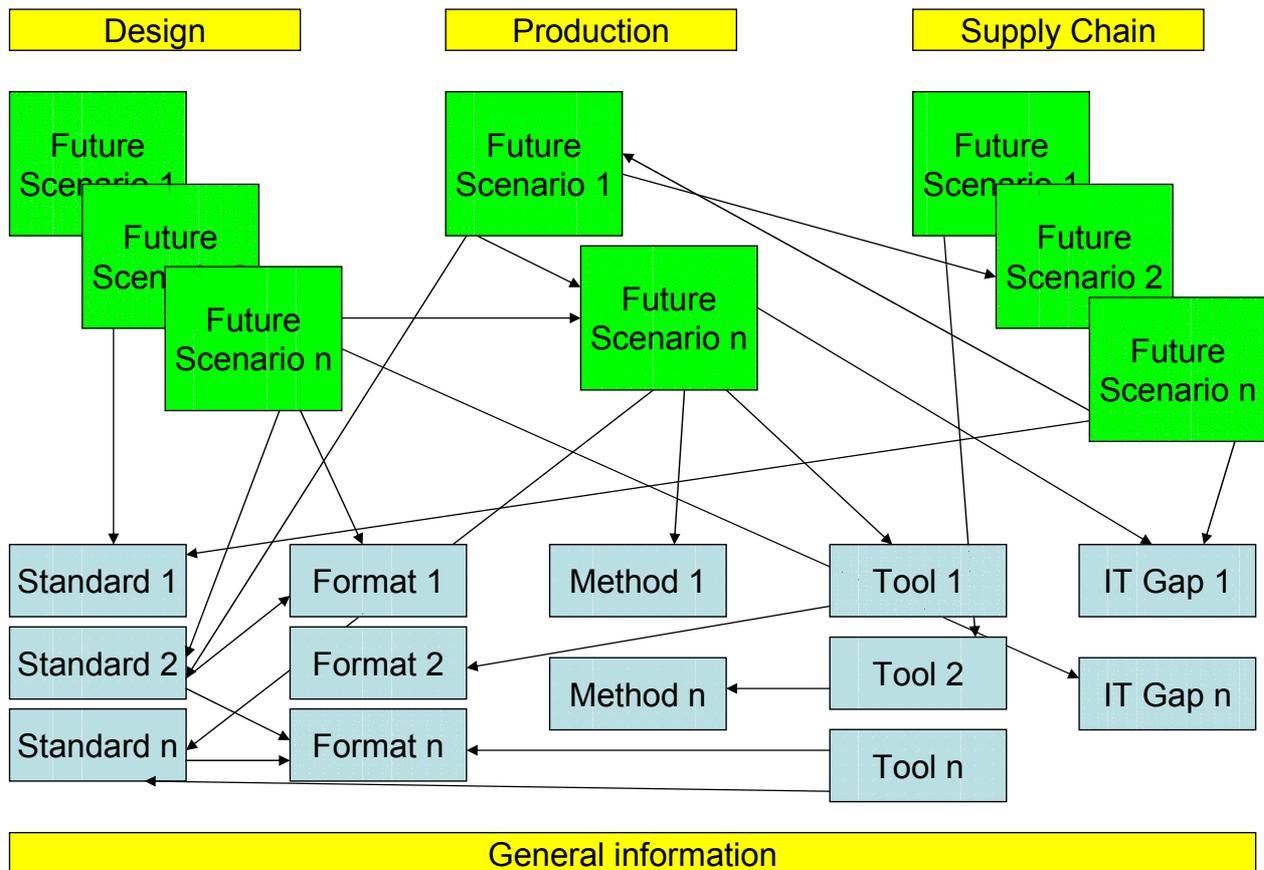


Figure 3-1: Structure of D6 website

3.1. Scenario description

Scenario name:

Content: Unique scenario name

Short description:

Content: A short explanation of the scenario to give the reader a first overview.

Description:

Content: Detailed introduction containing figures and pictures. The description should be focused on the user's point of view and show the work processes that would be applied when the scenario would be realised. Technology should be mentioned if necessary for the understanding of the scenario.

References: Other scenarios that could be linked to the current one (not only scenarios from one expert group, but from all three)

Benefits of scenario application:

Content: What benefits could be expected when applying the scenario as a whole or partially. Benefits should be expressed in terms of economic potential (cost savings, increased revenues, etc.) as well as in terms of other factors like increased employee satisfaction, improved skills, better competitiveness, etc.

References: Other scenarios that could be linked to the current one

Skills required:

Content: What skills do the employees need? What skills have to be available at the yard/supplier/class society? What methods have to be known?

References: Chapter "Methods"

Tools required:

Content: What functionality has to be available in the software tools? What types of tools should be used? What interfaces have to be available between applications? Interfaces to the user? Interfaces with external components (machines, components, material, etc.)?

References: Chapter "Tools"

Standards and formats required:

Content: What standards should be used? What standards are required? What functionality are they lacking? What file formats should be used? Are the required formats already existing? What has to be improved?

References: Chapters "Standards" and "Formats"

Possible levels of implementation:

Content: Which subsets can be implemented? What company type should use what level of implementation? In what order could further parts be implemented? (Use skill/technology matrix)? What is missing to carry out the implementation?

References: Chapters "Methods" and "IT gaps"

State-of-the-art/Technology used in maritime industry:

Content: How is the respective process carried out today? What could be realised with existing technology?

References: Chapters “Tools”, “Standards”, “Formats”, “Methods”

3.2. Tools

Name:

Content: Official tool name

Vendor:

Content: Name and address of vendor

References: Vendor WWW page

Version and date of release:

Content: Current version

Overview of functionality:

Content: Brief description of major features

Detailed description of functionality:

Content: Detailed description of major features, based on vendor material

References: Company brochures

Reference customers:

Content: Name of important customers

References: Link to customer’s home page

Supported standards, methods and formats:

Content: List of standards, methods and tools and a short description what they are used for

References: Chapters “Standards”, “Formats”, and “Methods”

User reports:

Content: User descriptions of software tool

References: Link to home page and subsequent material

Strengths and weaknesses:

Content: Description of positive and negative aspects of the tool

3.3. Standards

Identifier:

Content: Official standard name

Long name:

Content: More detailed name

Organisation:

Content: Organisation responsible for development of the standard

References: Website of the organisation

Version, status and date of release:

Content: Version of current release

Application domain:

Content: Brief description of the domain the standard is intended for

Overview of functionality:

Content: What does the standard offer?

Level of acceptance:

Content: Is the standard useable for industrial application? Is it commonly used?

Detailed description:

Content: Introduction to the standard, based on original standard documents

References: Official standard documents

Available implementations:

Content: Overview of processors and similar tools

References: Vendor websites

Used file formats:

Content: List of file formats supported by the standard

References: Chapter “Formats”

User reports:

Content: Experiences made by users of the standard

Strengths and Weaknesses:

Content: Critical analysis of the standard based on user experience and acceptance levels

Related standards:

Content: List of standards directly linked to the current one (e.g. substandards or standards re-used)

References: Chapters “Standards”

3.4. *Formats***Identifier:**

Content: Official format name

Organisation:

Content: Specifying organisation

References: Organisation website

Version and date of release:

Content: Current version of format

Application domain:

Content: Brief description of the domain the format is intended for

Overview of functionality:

Content: What type of data can be exchanged?

Level of acceptance:

Content: Is the format useable for industrial application? Is it commonly used?

Detailed description:

Content: Introduction to the format, based on the official specification

References: Official format specification

Available implementations:

Content: Overview of processors, converters etc.

References: Links to the product websites

User reports:

Content: Collection of user experiences using the file format

Strengths and Weaknesses:

Content: Critical analysis of the format based on user experience and acceptance levels

3.5. *Methods*

Identifier:

Content: Name of the method

Organisation:

Content: Organisation responsible for development of the method

References: Organisation website

Application domain:

Content: Brief description of the domain the method is intended for

Overview of functionality:

Content: What type of problems are addressed by the method?

Level of acceptance:

Content: Is the method useable for industrial application? Is it commonly used?

Detailed description:

Content: Introduction to the method, based on the official specification

References: Official format specification

User reports:

Content: Collection of user experiences using the method

Strengths and Weaknesses:

Content: Critical analysis of the method based on user experience and acceptance levels

3.6. *IT gaps*

Name:

Content: Unique identifier of the gap

Application domain:

Content: Which domain and which processes are affected by the gap?

Short description:

Content: Short overview of the problem

Detailed description:

Content: Detailed introduction to the problem, its consequences and the affected parties and processes

Ongoing measures to overcome the problem:

Content: Do projects exist that already address the problem? Could their solutions be re-used

References: Websites of existing projects

Planned projects:

Content: Do proposals exist for new projects?

References: Address of contact point

Ideas for further measures:

Content: How could a project look like that would close the gap?

Contact:

Content: Address of the organisation/person who defined the gap

References: Organisation website

4. Database usage guide

4.1. *Software environment*

The Wondermar D6 website has been realised using common Internet development tools that are available free of charge. The database has been realised using PostgreSQL 7.2 and is implemented in standard SQL. The actual software for database queries and user interface has been developed with the scripting language PHP 4. The selected tools guarantee that the software is running under most operating systems. The current implementation uses Linux but has also been tested under Windows 2000.

The software users do not need to install any software on their PC as long as they already have a standard WWW browser (newer versions of MS Internet Explorer, Opera or Netscape Navigator) and a connection to the Internet. In this case they simply have to open the URL http://www.wondermar.net/wondermar_d6/index.phtml in order to access the D6 website.

The current version offers read-only access to all Internet users without the need for registration or getting a password. On the other hand, to insert or modify data, an account is needed that is currently only been given to the Wondermar partners.

4.2. *User interface and functionality provided*

The entry page offers two menus for all visitors:

- The menu on top offers the possibility to browse the scenarios of the three expert groups and additionally provides access to the general information that is not related to a single scenario.
- Depending on the selection, the left menu shows the titles of the subsection available.

After selecting one entry in the left menu, a list of items is shown in the central part of the browser window. In case of a general information item, e.g. standards, an additional search field is displayed since these lists are often quite long. Entering a phrase in the search field reduces the size of the list below. The scenario list does not contain a search field due to the smaller number of entries.

When selecting an entry of the list, a detailed description according to the structure described in chapter 3 is shown.

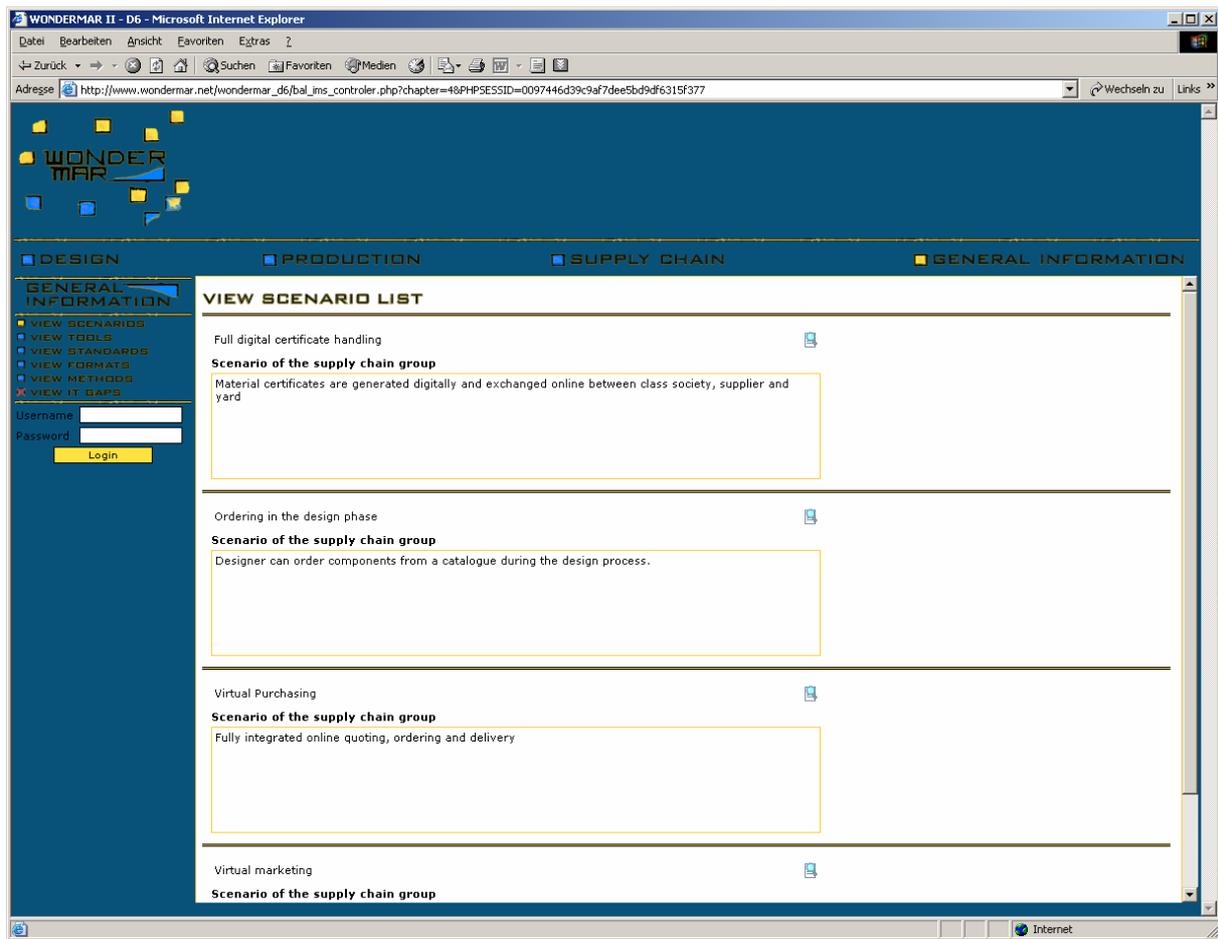


Figure 4-1: D6 window - public view

To edit the database content, the user has to insert user name and password. As a result, the menu on the left shows further items to edit and delete entries. Despite of that, the public functionality is still available.

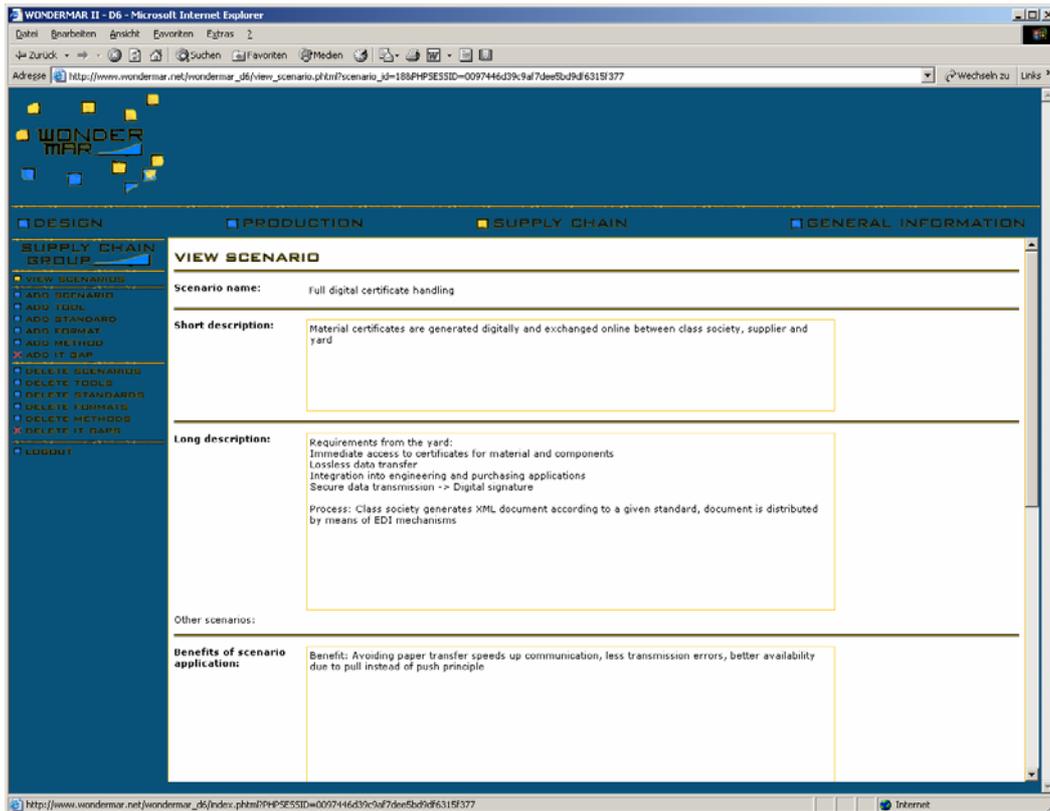


Figure 4-2: D6 window - restricted view (scenario)

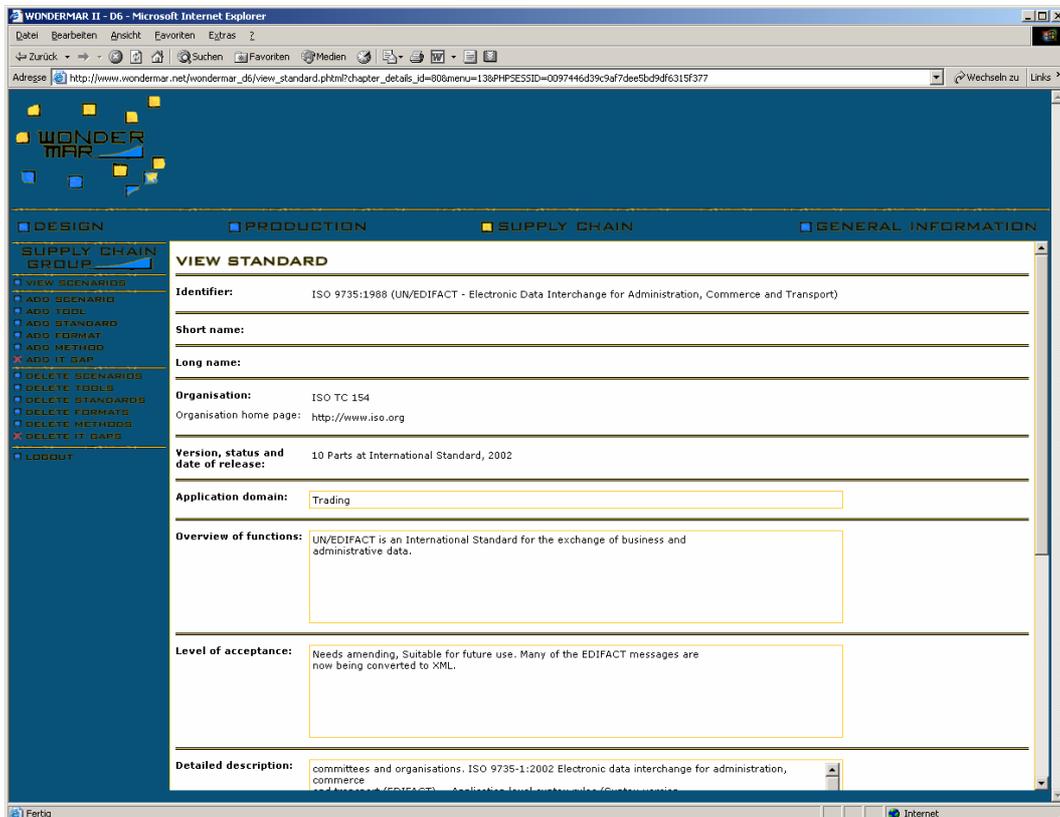


Figure 4-3: Standard description

To enter data, the item “Add ...” has to be selected. A form is displayed that reflects the structure as shown in chapter 3. The user can enter text into the entry fields. Cross references to different scenarios, standards etc. can be established. It is also possible to upload supplementary information, e.g. product brochure, pictures, user reports, and even demo versions of tools. All this information is stored in the database and can be downloaded by other users.

Deleting data from the database also removes the cross references in other database fields.

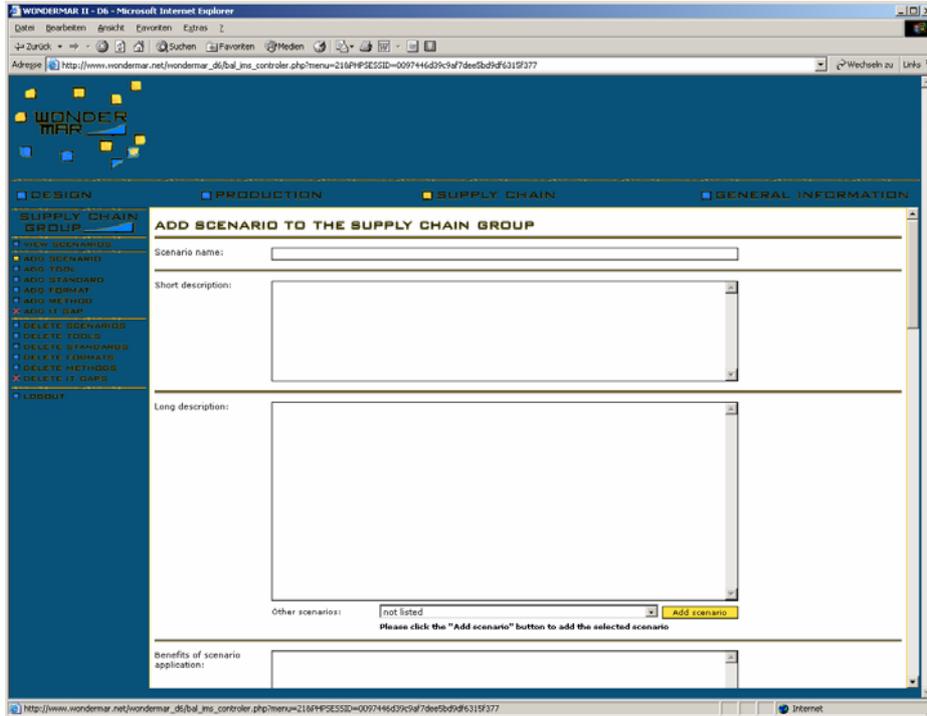


Figure 4-4: Entry field for scenarios

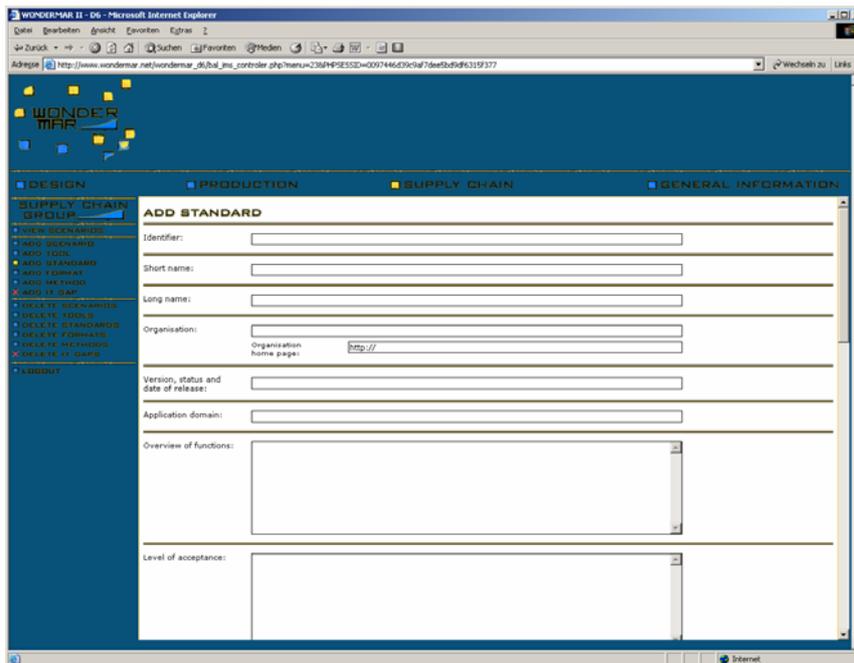


Figure 4-5: Entry field for standards

5. Conclusion

The Internet site described in this document reflects comments provided by reviewers, project partners and organisations outside the consortium regarding contents and presentation of the IST review report I (Deliverable D3). It tries to present the information in a more interactive and therefore more attractive way. The functionality provided is still relatively simple but before starting to develop complex browsing or searching functionality, a first user feedback will be analysed. Requirements and comments from project partners but also from externals will be used to further improve the quantity and quality of the provided information.

D6 is the second release of the Wondermar IST review report and will contain the information provided in the first release together with the new future scenarios. Due to the grouping into several areas the information is presented more readable, making it easier for the reader to find the information he is interested in. This concept is supported by cross-linking the different items and therefore supporting to browse through the information.

Another advantage, especially from the consortium point of view, is the better maintainability and extensibility of the document. Compared to the static paper document prepared initially, the online version can extend as needed. As a consequence, preparation of the last release which will be published as deliverable D9 by the end of the project will be generated iteratively starting immediately. All partners will insert information as it will become available, releasing them from time constraints that often cause delays in the preparation of such documents. On the other hand, new findings can be incorporated into the website directly, which is especially important in the IT sector. New information often becomes outdated within very short time scales, raising the need to make it available as early as possible.

As a result, D9 will not be created by collecting information during the next 12 months and writing everything down within weeks, but will simply be the state of the IST review report website, as it will look at the end of the Wondermar project.