



**DEVELOPMENT OF THE INNOVATIVE DATABASE MODEL
FOR ADDING INNOVATION CAPACITY OF LABOUR FORCE AND ENTREPRENEURS
OF THE METAL ENGINEERING, MACHINERY AND APPARATUS SECTOR**

TEST PLAN

for the INNOMET Prototype System

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Partners:

- *TCEB, Tallinn City Enterprise Board, Estonia*
- *EML, Federation of Estonian Engineering Industry, Estonia*
- *TUT Tallinn University of Technology, Estonia*
- *BME, Budapest University of Technology and Economics, Hungary*
- *IAL Piemonte, Training Institute for Workers of Piemonte, Italy*
- *KTH, Stockholm Royal Institute of Technology, Sweden*
- *LMA, Association of Mechanical Engineering and Metalworking Industries of Latvia*
- *Alfamicro Lda, Consulting in Technology Transfer and Information Technology, Portugal*

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1 INTRODUCTION

The main goal of INNOMET I-II project is introducing a tool to ensure particularly qualified labour force for enterprises in the subject sector in terms of local and European needs, and also to increase the responsiveness of education institutions to business demands and following to improve the access of specialists both from vocational and higher education level on the labour market.

For this purpose an “Innomet Prototype Solution” has been developed as a pilot system in the project INNOMET I. The recent Test version of “Innomet Prototype System” (hereinafter; “IPS”) has been developed further more within the project INNOMET II under the lead role of EML. After implementing IPS in a given environment (including hardware and software elements) with its transformed printable and on-line documentation within an applied language and database structure compose an Innomet system application (hereinafter; Sysware).

Sysware as a “final” version of an **INNOMET System** application

- will include real time database (existing educational opportunities – different levels of study programmes; industrial needs for human resources based on the employee qualification standards) and
- will work as an integrated real time advisory system
- and via Internet as a web-based solution (available on the Internet in English as common language and in respective language versions)
- and useable in the different partner regions.

In this view the Innomet Sysware can be considered as “hardware” of the whole system application and the means of testing works with it as its “software” component.

Testware is the documentation, test procedures, data, and environment that are designed and developed on the basis of requirements and system achievement. Testware is used to verify and validate the current state of INNOMET conformance to future customer requirements. Testware can be considered marketable along with the system elements, which are tested.

The INNOMET system is to be tested in two different phases;

- in **Preliminary Test** phase – testing IPS for further development and
- in **Validation Test** phase – testing Sysware for implementation in different regions.

1.1 Objectives of Preliminary Test

In order to create a testable **INNOMET system** a common **database test-version is being introduced** (simultaneously with the testing activities in WP5) as an open access type system, which structure includes two main parts:

- 1 the education institutions, study programmes, re-training programmes and links to e-learning platforms of the sector in detail;
- 2 private sector - human resources and labour force demand taking into account present situation and strategic development of manufacturing sector.

The main goals of Preliminary Test is the systematic **test of**

- the INNOMET **database model** in the common IPS and
- the entire test of the IPS capability and functionality

1.2 Test Glossary

ACRONYMS AND ABBREVIATIONS:

D<num.num>	Deliverable Document <num.num> (concerning on INNOMET project)
DD	responsible person for database design and implementation
EE	responsible person for setting up the IPS in Estonia
HU	responsible person for setting up the IPS in Hungary
IPS	INNOMET Prototype Solution
IT	responsible person for setting up the IPS in Italy
LV	responsible person for setting up the IPS in Latvia
PL	IPS project leader
PT	responsible person for setting up the IPS in Portugal
SD	responsible person for IPS design and coding
SE	responsible person for setting up the IPS in Sweden
TQ	test and quality coordinator

DEFINITIONS

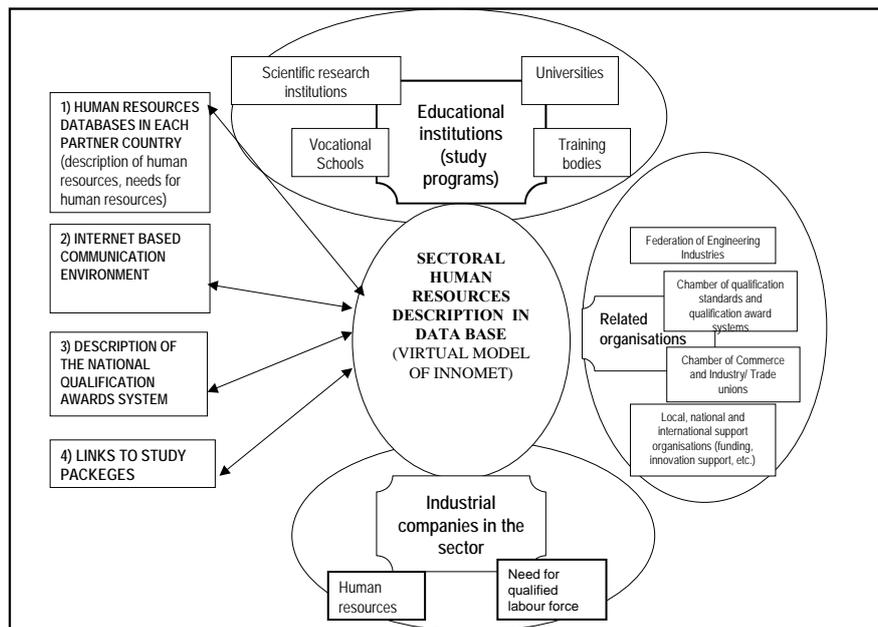
Deliverable Document	Documents are to be delivered to internal or external users or prepared for another (e.g. public or marketing) interest
Dynamic Black-Box Testing	is called sometimes as Behavioural Testing; the testing way when testers are testing how a system actually behaves when it is used. The Testware is to define testing elements without having an insight into the details of underlying code and used dynamically because the program is running.
INNOMET Prototype System	Testable common version of the Innomet prototype system consisting of database structure and tools for fulfilling the objectives of the INNOMET project
Integrated Document Testing	Is static and dynamic test under one roof; testing documentation on two different levels. The non-coded, such as a printed user's manual, document testing is a static process, thinking of it as technical editing or technical proofreading. The documentation and code being more closely tied, such as with a hyperlinked online manual, means a dynamic test effort
Network partner	External partner involved to the INNOMET project for prototype system validation
Sysware (applied IPS)	Hard and Soft components of an integrated computer system implemented in a given environment involving printed and On-line documentation, database structure, program components under a common concept.
Test	Preliminary test here – the activities, actions, events, procedures, documents in order to ensure the IPS database structure and user aspects (overall capability, documentation, interfaces, etc.)
Test Aspect	General viewpoint, respect of testing
Test Attributes	Selected Test Aspects for testing existing system (here IPS)
Test Case	Testable Use Case
Test Case Report Form	Template form of testing reports on the results of testing a Test Case
Test sub-characteristics	Features, details of Test attributes
Tester	Participant of Test procedures and activities, who enter the Innomet Prototype System in order to fill up or validate database or to test IPS' use-cases or documentation
Testware	Soft components of Testing, such as documents, methodical prescriptions, reports and validation data.

1.3 Testing Scope

Let us cite here the project system plan: “The aim is to develop **WEB-based info-source INNOMET database system** as publicly used Internet site targeted to the vocational and education institutions and companies in the sector.

TARGET GROUPS:

- ✓ Public users (e.g. professors, trainers, teachers, students, workers, visitors, ...)
- ✓ Educational or training institutes (e.g. vocational or higher level educational program or course managers)
- ✓ Companies (e.g. human resource managers of industrial companies)
- ✓ Consultancies (e.g. managers of industry associations and other support organisations)



1.3.1 Testing Philosophy and Strategy

IPS testers must work closely with their internal and external partners (i.e. Innomet and Network partners) to successfully determine key product functionality. Basically two terms that Sysware testers use to describe how they approach their testing are

- Black-Box Test (within the tester only knows what the Sysware is supposed to do) and
- White-Box Test (sometimes called clear-box testing - within the tester has access to the programs code and can examine it for clues to help testing).

Two other terms used to describe how Sysware is tested are

- Static Test (which refers to testing something that is not running, so as to examine and review only) and
- Dynamic Test (is what you would normally think of as testing, so as to run and use).

There are two fundamental approaches to testing;

- Test-to-Pass (when you really assure only that the Sysware minimally works, you do not push its capabilities, you do not see what you can do to break it, you apply the simplest and most straightforward test cases) and
- Test-to-Fail (sometimes called Error-Forcing - when test cases are designed and running with sole purpose of breaking the Sysware to assure that it does what it is

specified to do in ordinary circumstances to find bugs by trying things that should force them out).

The Test Boundary Conditions are the predefined situations at the edge of the planned operational limits of the Sysware.

In the frame of the INNOMET project and with consideration of the recent state of IPS (i.e. Innomet Sysware) the proposed strategy may only be Dynamic Black-Box Testing. However, during the Innomet Workpackage 5 the test can be considered as preliminary test, thus forcing errors and bugs may be out of place to target within the recent development plan (Testware).

Furthermore the Testware should cover testing of the informal solution as well as its formal description, documentation. It should be clearly mapped which documents are on the testable state under the test.

The Testware itself includes its documentation, which the testers are working with. These test documents should be also identified and prepared preliminary within the Preliminary Test Plan.

1.3.2 Testable Aspects of IPS

The respectable viewpoints of the test can be attributes into six categories at least. The categories are as follows:

- Functionality or/and Capability
- Reliability or/and Security
- Usability and Architecture
- Efficiency or Performance
- Maintainability or Manageability
- Portability or Flexibility

All of these respects are defined by the sub-characteristics belonging to the considerable aspects of future evaluation. The main attributes and characteristics of testing are summarised in the following table with respecting on the current state of IPS (tool), database structure and documents.

Attributes	Sub- characteristics			
Functionality or Capability	Adequacy	Interoperability	Precision	
Reliability and Security	Maturity	Error handling	Recoverability	
Usability and user oriented Architecture	Understand ability	Operability	Learn ability	Fulfilment
Maintainability or Manageability	Transparency	Changeability	Testability	
Efficiency or Performance	Time consumerism	Utility	Efficiency	
Portability or Flexibility	Replace ability	Adaptability	Install ability	

Note: the grey level in the background marks the relevance of the sub-characteristics

Usability of the IPS (tool) is how appropriate, functional, and effective that interaction is. The important traits common to a good User Interface are; follows standards and guidelines, intuitive, consistent, flexible, comfortable, correct and useful.

From the initial analysis of testability of the above listed attributes the *usability* seems to be most relevant to the recent Testware development.

1.3.3 Testable¹ Users of IPS

From this view the target user group of the full Innomet solution can be either individuals searching particular jobs or courses, exams, or organisations requiring labour sources or providing considerable services. Therefore the users can be registered or public rulers in the recent IPS.

Overview of possible user information and structure of IPS:

Category	Users				
Validity ²	Unlimited				
Registry or publicity	Registered				Public
Role and rule	Administrator	Company <i>needing HR innovation</i>	Educational institution	Consultancy <i>helping HR innovation</i>	Ordinary users
Mark of account	admin	comp	edu	cons	guest
Sub-role	organisations				individuals

Note: in the Innomet I the IPS had a cert user from certification institutions which type can be involved into the Consultancy under cons account

Implemented user types (roles) with rights in the IPS:

- ✓ Administrator registered user with full (admin) functionality
- ✓ Company registered users with specified (comp) functionality
- ✓ Educational institution registered users with specified (edu) functionality
- ✓ Consultancy registered users with specified (cons) functionality
- ✓ Ordinary visitor non registered users with functionality over public data

1.3.4 Testable Functions of IPS

Based on its documents and after entering and trying initially the IPS (i.e. recent version), it is also required to enlist all functions which are or are going to be the subjects of the Test, following the Preliminary Test Plan. Initially it must have been without fail determined what level the documents meet the IPS (i.e. tool) functionality; however, what is planned, what has really implemented and how it is to work during the test.

In the following table all functions and belonging actions (procedures) are listed and detailed in order to have the testable IPS understood well and to map the eventually necessary development or/and modifications before our external network partners are entering the system.

OVERVIEW OF IPS FUNCTIONS – USE CASES:

№	Functions	Activities	User roles	Relevant data requirements	Comments <i>Use Cases</i>
1.	Create new user	New: Edit, Disable, Role, Save, Cancel	Admin	User data	<i>Administrator-Users-New function; Role menu is still in Estonian</i>
2.	User account management	Search, Clear, Paging, Sort, Edit, Delete	Admin		<i>Administrator-Users function</i>
3.	Create new organisation	New: Edit, Save, Clear	Admin, Cons, Comp? Edu?	Organisational profile data	<i>Administrator-Organisation-New function</i>

¹ applicable in test

² time period

4.	Organisation management	Search, Clear, Paging, Sort, Edit	Admin, Cons		<i>Administrator-Organisation function</i>
5.	Define organisation structure	Add ..., Edit ..., Evaluate ...	Admin, Cons, Comp	Structure of organisation	<i>Administrator-Organisation-structure function; Still in Estonian menus</i>
6.	Create skill	New: Edit, Type, Save, Cancel	Admin, Cons,	Skill and Skill type list	<i>Administrator-Classifier-Skills-New function</i>
7.	Skill management	Search, Clear, Paging, Sort, Edit	Admin, Cons,		<i>Administrator-Classifier-Skills function</i>
8.	Create skill type	New: Edit, Type, Save, Cancel	Admin, Cons,	Skill type list	<i>Administrator-Classifier-Skill types-New function</i>
9.	Skill type management	Search, Clear, Paging, Sort, Edit	Admin, Cons,		<i>Administrator-Classifier-Skill types function</i>
10.	Create profession	New: Edit, Type, Save, Cancel	Admin, Cons,	Profession and Profession type list	<i>Administrator-Classifier-Professions-New function</i>
11.	Profession management	Search, Clear, Paging, Sort, Edit	Admin, Cons,		<i>Administrator-Classifier-Professions function</i>
12.	Create sector	New: Edit, Type, Save, Cancel	Admin, Cons,	Sector and Sector type list	<i>Administrator-Classifier-Sectors-New function</i>
13.	Sector management	Search, Clear, Paging, Sort, Edit	Admin, Cons,		<i>Administrator-Classifier-Sectors function</i>
14.	Create region	New: Edit, Type, Save, Cancel	Admin, Cons,	Region and Region type list	<i>Administrator-Classifier-Regions-New function</i>
15.	Region management	Search, Clear, Paging, Sort, Edit	Admin, Cons,		<i>Administrator-Classifier-Regions function</i>
16.	Event log management	Search, Clear, Paging, Sort	Admin		<i>Administrator-System log function</i>
17.	Settings	New, Search, Clear, Sort, Edit, Delete, Save, Cancel	Admin		<i>Administrator-Settings function</i>
18.	Create new course	New: Edit-general info, skills developed, target group, Schedule, Save, Cancel	Admin, Edu	Course data	<i>Training-Courses-New function</i>
19.	Course management	Search, Clear, Paging, Sort, Edit, View, Reserve, Delete	Admin, Edu?		<i>Training-Courses function</i>
20.	Create new study program	New: Edit, Save, Cancel	Admin, Edu	Study program data	<i>Training-Study programs-New function</i>
21.	Study program management	Search, Clear, Paging, Sort, Edit, Delete	Admin, Edu?		<i>Training-Study programs function</i>
22.	Search Courses and Study programs	Search, Clear, Paging, Filter, Edit-filters, Set-filters, Clear-filter, View, Reserve	Admin, Edu, Comp, Guest		<i>Training-Courses calendar function</i>
23.	Create new skill card template	New: Edit, Role, Save, Cancel	Admin, Edu, Comp	Skill card template data	<i>Skill card-Skill card templates-New function; Role menu is still in Estonian; but for comp Company-Company skill card template-New</i>
24.	Skill card template management	Search, Clear, Paging, Sort, View, Edit, Copy, Delete	Admin, Cons, Comp		<i>Skill card-Skill card templates function; but for comp Company-Company skill card</i>

25.	Create new company skill card	New: Edit, Role, Save, Cancel	Admin, Cons, Comp	Company skill card data	<i>Skill card-Company skill cards-New function; Role menu is still in Estonian; but for comp Company-Company skill card</i>
26.	Company skill card management	Search, Filters, Set-filter, Clear, Paging, Sort, View, Edit, Copy, Delete	Admin, Cons,		<i>Skill card-Company skill cards function</i>
27.	Evaluate company skill card	Prompt date, Edit, Save, Back	Admin, Cons,	Human resource evaluation date	<i>Skill card-Company skill cards-Evaluate function; Role menu is still in Estonian</i>
28.	Create regional report	Profession, Skill-type, All skills-, search, -clear, -paging, -cancel, -select, Region, Sort, Order, Next, Parameters, Save, Print	Admin, Cons, Edu, Comp, Guest		<i>Reports-Overview... function</i>
29.	Create company's report	Profession, All skills-, search, -clear, -paging, -cancel, -select, Organisation, Division, Order, Next, Parameters, Find ...	Admin, Cons, Comp		<i>Reports-Workers skill function; but for comp also Company-Workers skill function?!</i>
30.	My profile management	Edit, Save, Cancel	Admin, Comp	Current user information	<i>Settings-Contact function; But Company-Company information for Comp?!</i>
31.	My account management	Edit, Save, Cancel	Admin, Cons, Edu, Comp	Current user information	<i>Settings-User information function</i>
32.	My settings	Edit, Language, Edit language, Save, Cancel	Admin, Cons, Edu, Comp		<i>Settings-User settings function</i>
33.	Logging	Log in, Log out	All	User accounts	<i>From everywhere it is possible</i>
34.	Language management	Est/Eng	All		<i>From everywhere it is possible</i>
35.	<i>On-line Help</i>				<i>where it is possible</i>
36.	<i>On-line Glossary</i>				<i>where it is possible</i>

Note: Italic; considered as the future development opportunities of Innomet solution; the recently (up to December, 2006) testable functions have been emphasised by grey background

1.3.5 Testable Documentation of IPS

Documentation can make up a huge portion of the overall achievement. Here is a list of components that can be classified generally as documentation:

- Packaging text and graphics
- Marketing material
- Warranty/registration
- End User Licence Agreement
- Labels and stickers
- ✓ Installation and set-up instructions
- ✓ System analysis and requirement specifications
- ✓ User's manual

- ✓ Online help
 - Tutorials' wizards, computer based training
 - Samples, templates
- ✓ Error messages

The pipe (✓) marks the documents have been developed within the project Innomet I (grey) and II.

Testers must consider all these individual components as parts of the overall system. System documentation must contribute to the tool's overall quality in three ways:

- Improves usability
- Improves reliability
- Lowers support costs

Testing the documentation can occur on two different levels as efforts of

- Static test (within the documentation is non-code, such as a printed user's manual; thinking of it as technical editing or technical proof-reading.
- Dynamic test (within the documentation and code are more closely tied, such as with an online manual with hyperlinks).

In the recent frame of development and achievement the documentation coding cannot be considered as completed, therefore the documents are still not involved into the Testware

Integrated test effort – involving both methods, i.e. static and dynamic test simultaneously – may not be out of place in a very strict time-scheduled situation when the Sysware (to be running in quite different environments) is to be implemented right after the further development based on the results of the test.

1.3.6 Working with Test Documentation

Properly communicating and documenting the test effort with well-constructed test plan, test cases, and test reports are required to help testers. The Test Plan is the primary mean by which the testers communicate to the product development team what they intend to do. Test planning is a job that should involve all testers and key players from across the entire project team.

1.4 Referenced Documents

1.4.1 Base (source) Documents of Testing

The main documents of the recent development – and following the initial documents of the preliminary test – are the deliverable documents of Innomet I and WP2 and WP3, as follows:

- D5.2 New requirements from Innomet I: relevant document is “*Updated Requirements Specification*” (Doc. No. INNOMET.15.2; Deliv. Doc. No.: 4.02; R92-109; pp. 25-27); <http://www.manuf.bme.hu/innomet>; combined with the New Requirements Specification for Innomet II (relevant source document title: “*T_iendav_funktsionalsus_To_Do*”);

1.4.2 Updated Requirement Specifications

For having the right direction for testing it was required to update the document D4.02 (“Innomet Requirements Specification” providing an updated version which is to help

clarification of testing requirements. See the requirement list R92-R123 in the document „T_iendav_funktsionaalsus_To_Do“, ...!

1.4.3 Referencing documents

- Software Engineering, A Practitioner's Approach
Roger S. Pressman, 5th Edition
- Requirements Engineering – processes & techniques
Gerald Kotonya and Ian Sommerville
- IEEE 829-1998 (Software Test Documentation)
Software Engineering Technical Committee
- QA/Test Plans and Procedures: The Value of Software Test Documentation;
www.sqa-associates.com
- Preliminary Test Development Plan, Deliverable No. 4.01.[Document No. 12.1]
INNOMET project funded by the Commission of the European Communities under the Leonardo da Vinci programme (project no. 2002-EE/02/B/F/PP-135000)

2 TESTING ORGANISATION

From the goal of the project and via preliminary testing activities the core objective is to realise a dynamic working IPS in Estonia for having it installed – after correction and final development (based on the test results) – by the partners. After installation the IPS should work

- as a dynamic INNOMET Prototype System (Sysware) in Sweden (Stockhom area), in Hungary (Budapest area) and in Italy (Piemonte area) and
- as a prototype testable (demo) system for valorisation in Portugal and Latvia.

The objective is to insert full-scale human resource data of selected 25-30 network companies

- for mapping professions, competences and
- for evaluation and comparison both in national and regional (or European) terms.

2.1 Organisation – The involved partners

Those partners, who did not participate in the development process of the program and database structure, will execute test and filling up common database system i.e.:

- BME (lead role in co-ordination) with EML (lead role in development) and
- BME, KTH, IAL-Piemonte (full testing for companies and educational institutions)
- TUT (full testing for educational institutions)
- LMA, Alfamicro (testing and valorising within network companies)

2.2 Testing Responsibility

THE MAIN RESPONSIBILITY OF THE INVOLVED PARTNERS

Project partners	Testing scope	User roles to be used and tested	Involved regional network partners
BME	Test Plan development; Supervising of Testing; Full Testing and Validation of IPS functionality	Admin, Comp, Edu, Cons	1-2 Consulting companies 1-2 Network companies 1-2 Educational institutes with 1-2 Study Programs
EML	Software development and administration; Full Testing and Validation of IPS functionality	Admin, Comp, (Edu,) Cons	1-2 Consulting companies 1-2 Network companies (1 Educational institute with 2 Study Programs at least)
KTH IALP	Full testing and Validation of IPS functionality	Admin, Comp, Edu, Cons	1-2 Consulting companies 1-2 Network companies 1-2 Educational institutes with more than 1-2 Study Programs
LMA Alfamicro	Testing and Validation of IPS functionality	Admin, Comp, Edu, Cons	1-2 Consulting companies 1-2 Network companies 1-2 Educational centres with more than 1-2 Study Programs
TUT	Testing and Validation of IPS functionality	Admin, Edu, Cons	1-2 Educational institutes with more than 1-2 Study Programs

Note: The project partner can be defined as a consulting company or/and an educational institute in the database.

THE TESTING TEAM (TESTERS):

Name	Organisation	E-mail	Responsibility
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Boór Ferenc	BME – Hungary	boor@manuf.bme.hu	TQ

The last column above indicates the responsibility of each member according to:

- PL is the IPS project leader
- SD responsible for IPS design and coding
- DD responsible for database design and implementation
- TQ is the test and quality co-ordinator and
- HU, SE, EE, LV, PT and IT responsible for setting up the IPS in Hungary, in Sweden, in Estonia, in Latvia, in Italy and in Portugal

2.3 Staffing and Training

Testing staff training is absolved within the user training actions of IPS

- on the Cascais project meeting (October 19th-20th, 2006)
- and via internet co-ordination

3 TEST ENVIRONMENT

3.1 Testing Resources

The IPS (i.e. recent version) – as a very common combination of open source program is available on the web sites via English and Estonian user interface: <http://leonardo.innomet.org/test> and <http://leonardo.innomet.org/live> working on the same database established on TUT's server and had been tested in advance by the developers. IPS (i.e. common version) user names and passwords are distributed in advance to the partners.

The test is to be executed in the same form as the future users can reach and enter the system;

- via the user interfaces in English
- within browsers IE 4.0 or higher version and Netscape 4.2 or higher version
- using cookies for storing sessions (JavaScript is permitted in user interface)

The test is to be executed simultaneously with filling up the Innomet database via internet on the site: <http://leonardo.innomet.org/test> with

- realistic labour force requirements of the network companies and
- relevant education activities of network institutions

had been selected by the testing partners and reported to the TQ during Workpackage 5.

3.2 Testing Approach

The main strategy of the Preliminary Test Plan is

- „**Dynamic Black-Box Testing to Pass**“ and in this phase with
- “**Limited Documentation Test Effort**”

3.2.1 Dynamic Black-Box Test to Pass of IPS

The testers are using IPS as a customer would, and they are testing it without knowing exactly how it works. They are entering inputs, receiving outputs, and checking the results. To do this effectively requires some definition of what the IPS does namely, a Requirements Document and Product Specification. These documents define the details the testers must know about.

The Testware is to provide tools for testing the IPS (tool) usability without forcing to fail the system, so without detecting all error events and fault opportunities. This cannot be the target of testing and validation right after installing a local (national) system after development.

3.2.2 Documents Testing and Test's Documentation

Limited – dynamic – test method required for testing recent IPS' documentation. The relevant document is the D5.2 “Innomet Requirements Specification”, it must be verified with the response of IPS functions. The testers of IPS are

- to work with this Preliminary **Test Development Plan** in order
 - to select the **Test Data** (Human Resource data of selected Network Partners)
 - to fill up **IPS database** with realistic labour force requirements and educational courses and follows Test Cases (see **Test Case Report Sample**) prescribed
- to report testing results in the **Test Case Report Forms**
- in order to have all remarks and results been summarized in an **Overall Test Report**.

3.3 Item pass/fail Criteria - Testing specifications

From the mapped scope of test attributes the following evaluation factors can be applied as a template viewpoints in the testing activities for all cases of stand-alone testing process:

Test attribute	Test question	Answer
Adequacy1	The function is adequate to an INNOMET requirement (D5.2)	Yes (R ³)/No
Adequacy2	The function is adequate to user role assigned	Yes/No(U) ⁴
Maturity	The function is professional in terms of software development	Yes/No
Errors	The function is rather foolproof	Yes/No
Understandability	The ergonomics (name, attendant text) of the function is enough for understanding the content behind	Yes/No
Operability	The function fulfils the requirement or requires further development	Yes/No
Learnability	The function is coming natural (evident as much as possible) to the user how to use	Yes/No
Testability	A common user is able to make sure of whether the result is satisfied	Yes / No
Efficiency	A common user is able to make sure of whether the result is satisfied	Yes / No

3.4 Test Deliverables

Deliverable Documents of Test are as follows

- Preliminary Test Plan
- Overall Test Report
- Checked D5.2 “Innomet Requirements Specification”

3.4.1 Preliminary Test Plan

This document; the Preliminary Test Plan is one of the components of the overall Testware

- uses Dynamic Black-Box Testing to Pass methodology
- to test usability and interoperable testing attributes of IPS (i.e. common version) and
- to test User Interfaces involving error messages within dynamic efforts, and
- includes Test Specification and Test Case Report Form templates.

3.4.2 Checked “Innomet Requirements Specification”

After completing the Preliminary Test the remarks field of the test can be summarised with assignment to the requirements. From this checked IRS a new update (Version 4.0 of D5.2) can be generated as a base documents of further developments.

3.4.3 Overall Report of Preliminary Test

Includes the Stand Alone Partner Test Reports as well as the Summarised Reports of testing results and execution

³ Requirement number(s) (from the list of D4.2 „Requirements Specification“ must be defined (if it meets new requirement R+ should be used with short remarking/explanation the details of new one)

⁴ In case No: Further remark is required whether which user or users (U: Admin, Edu, Comp, Cons, Guest) should use this function else or instead current one.

3.5 Test Schedule

The periods, deadlines and the main activities of the TEST

Duration and deadline	Activity	Method & Subject	Responsibility
from October 24 th to December 1 st	IPS modification; clarification of test environment, clearing non-relevant users and data	via Innomet free list: Remarks on modification	PL, EML
by December 4 th	Preliminary Test Plan proposal (draft)	via Innomet free list	TQ, BME
by December 8 th	Identifying testing team members – responsible for test in the partners regions	via Innomet free list: Filling up Tester table in the chapter 2.2 of Preliminary Test Plan	All partners
by December 13 th	IPS documentation proposals	via Innomet free list: Filling up data missing in the Preliminary Test Plan (edited by grey color)	PL, SD, DD
December 15 th	Finalising and delivering to the Innomet partners	Preliminary Test Plan	TQ, BME
by January 8 th , and continuously	First list of test network companies and institutes, user profile requirements to TQ	via Innomet free list: name of test organisations, users name proposals	All Testers
from December 18 th continuously to January 8 th	Starting input IPS database with human resource data of companies and educational programs, events belonging to Local Network Organisations; reporting all defined users and organisations to TQ	via internet	All Testers
from January 8 th	Appearing and developing Innomet Test Website on the Innomet Hungarian Web Page	all information, documents and template forms belonging to Innomet Testware are available on the Test Website	TQ, BME
continuously	Input human resource data of companies and educational programs, events belonging to Local Network Organisations; reporting all changes in defined users and organisations to TQ	via internet; current actions and state of test development, temporary results can be followed on the Test Website	All Testers
to Februar 15 th	Sending comments and Test Case Reports to TQ and reports about the missing TCRs and expected delays	via Innomet free list: separated reports from TCR1 to TCR34;	
By the Budapest meeting	Summary of partial and sample Test Case Reports	via Innomet free list: Overall Preliminary Test Reports (Draft)	TQ, BME
by March 8 th	Final deadline to complete postponed Test Case Reports; Sending TCRs and proposals for the deliverable document to TQ	via Innomet free list: missing Test Case Reports, proposals for changes in Overall Report	All Testers
	All Test Case Reports and draft summary are available;	on the Test Website: http://manuf.bme.hu/innomet	TQ, BME
March 15 th	Summary of Test Case Reports and Updated Requirement Specification D5.2 (version 4)	via Innomet free list and on the Test Website: Overall Preliminary Test Reports (Complete)	TQ, BME

4 TEST PLAN IDENTIFICATION

4.1 Testing Conventions

The Testers are forced to follow and to keep the conventions listed here below as far as possible:

- ad 1* The **Test language is English** for all terms (profile data, professions, skills, courses, study programs, any text and abbreviations, ...)
- ad 2* The **source of input data** must belongs to Network Organisation (even if kept unidentified) and must be documented and reported to TQ (company identifications, responsible persons for organisation and human resource data)
- ad 3* **Let administrator stand-alone in every country (tester's region)** as only administrator user with a strictly reported name! Every tester in the region uses that user for registration and testing **administrator** use cases.
- ad 4* **Every Tester must be unambiguously identifiable** with his/her user name and organisation.
- ad 5* **Try all actions** (edit, delete, clear, etc.) **more than once** while entering Test Cases and Managing Skill Cards and Evaluations, Searching Programs and Work Needs!
- ad 6* **Test every Test Case under all user roles as possible in the recent IPS!**

4.2 Test Procedures

THE FOLLOWING TEST PROCEDURE IS SUGGESTED:

1. Testers create data base
 - Every testing partner defines organisations and regions as **administrator** concerning their selected local network partners and depending on the testing scopes defined by the Table in chapter 2.2 (the companies and institutes should have different profiles, sizes, demands, etc.;) and
 - Creates at least one user for every organisation defined in your testing scope and
 - Creates, fills up and evaluates human resource data and organisation structure, study programs, courses, via these predefined users.
 - Every testing partner except for LMA and EML defines at least two educational institutes as **administrator**; and
 - Creates at least one user for each educational institute. These users will define courses and study programs; and
 - Creates at least two study programs with more than one course for each educational institute based on realistic running programs. Courses should be focused different skills and different professions.
 - Every Partner reports each newly defined user to TQ in 3 days (otherwise this user might be cleaned by SD or TQ without question or any notice).
2. Create and fill up basic data
 - Create appropriate skills. These skills will characterise the properties of professions and work needs.

- Create appropriate professions. The human resource needs will refer on these professions.
 - Create skill cards and evaluation data for professions and skills.
 - Fill up the workforce requirement tables for professions; estimate the needed number of employees in the relevant professions, regions, companies.
3. Test the Use Cases of IPS following the list of Test Cases
 - Login the system with all possible user roles for evaluating the functionality relevant to the Use Case being tested!
 - Use every function and menu and try all possibilities!
 4. Create reports
 - Fill up the Test Case Report for every Test Case parallel with previous tasks!
 - Pay attention to use every possible action and command!
 5. Maintain the relevant documentation
 - Create Test Case Report for all (Summary of Test Cases Reports and Remarks)! The amount (number) of separated Test Case Reports must be equal with the amount (number) of Test Cases listed in chapter 4.5.
 - Check all your Test Case Reports whether you tested all actions and activities involved and under each user role as possible!
 - Create a non-edited informal report about impressions, ideas and things, which cannot be assigned to the report forms!

4.3 Test Evaluation

Over and above the deliverable test documents and results, TQ is to evaluate

- the testing users,
- the testing lists,
- the redundancy of input data (e.g. professions, skills),
- the proposed corrections and developments;

and reports (via Innomet Test Site) continuously about

- the activities and deadlines of the testing,
- the testing states and results,
- the progress of the testing and testing development.

4.4 Test Cases

All Test Cases:

№	Test Cases
TC 1.	Create new user
TC 2.	User account management
TC 3.	Create new organisation
TC 4.	Organisation management
TC 5.	Define organisation structure
TC 6.	Create skill
TC 7.	Skill management
TC 8.	Create skill type
TC 9.	Skill type management
TC 10.	Create profession
TC 11.	Profession management
TC 12.	Create sector
TC 13.	Sector management
TC 14.	Create region
TC 15.	Region management
TC 16.	Event log management
TC 17.	Setting
TC 18.	Create new course
TC 19.	Course management
TC 20.	Create new study program
TC 21.	Study program management
TC 22.	Search Courses and Study programs
TC 23.	Create new skill card template
TC 24.	Skill card template management
TC 25.	Create new company skill card
TC 26.	Company skill card management
TC 27.	Evaluate company skill card
TC 28.	Create regional report
TC 29.	Create company's report
TC 30.	My profile management
TC 31.	My account management
TC 32.	My user settings
TC 33.	Logging
TC 34.	Language management
TC 35.	On-line Help
TC 36.	On-line Glossary

4.5 Test Cases to be Tested

Testable Test Cases are as follows:

№	Test Case
TC 1.	Create new user
TC 2.	User account management
TC 3.	Create new organisation
TC 4.	Organisation management
TC 5.	Define organisation structure
TC 6.	Create skill
TC 7.	Skill management
TC 8.	Create skill type
TC 9.	Skill type management
TC 10.	Create profession
TC 11.	Profession management
TC 12.	Create sector
TC 13.	Sector management
TC 14.	Create region
TC 15.	Region management
TC 16.	Event log management
TC 17.	Setting
TC 18.	Create new course
TC 19.	Course management
TC 20.	Create new study program
TC 21.	Study program management
TC 22.	Search Courses and Study programs
TC 23.	Create new skill card template
TC 24.	Skill card template management
TC 25.	Create new company skill card
TC 26.	Company skill card management
TC 27.	Evaluate company skill card
TC 28.	Create regional report
TC 29.	Create company's report
TC 30.	My profile management
TC 31.	My account management
TC 32.	My user settings

4.6 Test Cases being non Tested

Non testable Test Cases are as follows:

№	Test Case
TC 33.	Logging
TC 34.	Language management
TC 35.	On-line Help
TC 36.	On-line Glossary

5 APPENDICES

5.1 Sample Test Case Report

TEST CASE REPORT			
Test case number:	29	Test case name:	Create Companies Report
Used user role:	Administrator: <input type="checkbox"/>	Educational Institute: <input type="checkbox"/>	Company: <input checked="" type="checkbox"/>
	Consultancy: <input type="checkbox"/>	Public user (Guest): <input type="checkbox"/>	
Date:	01.12. 2006.	Tester name:	Mikó Balázs
Tester organisation:	BME	Tester location:	Budapest, Hungary

No.	Action	Pass/Fail	Remarks
1.	Back		
2.	Cancel		
3.	Clear	x	
4.	Copy		
5.	Delete	x	
6.	Disable		
7.	Division		
8.	Edit	x	
9.	Enter data	x	
10.	Edit language		
11.	Edit general info		
12.	Evaluate	x	
13.	Filters		
14.	Find		
15.	Log in		
16.	Log out		
17.	New		
18.	Next		
19.	Order		
20.	Organisation		
21.	Page; Next/Previous	x	
22.	Parameters		
23.	Print		
24.	Profession		
25.	Prompt date		
26.	Region		
27.	Region sorting order		
28.	Reserve, Reservation		
29.	Role		
30.	Save	x	
31.	Save as image		
32.	Schedule		
33.	Search		
34.	Select		
35.	Set filters		
36.	Skills developed,		
37.	Sort		
38.	Structure		
39.	Target group		
40.	Type		
41.	View	x	

Question No	Test question	Answer		Remarks
		Yes	No	
1.	The function is adequate to an INNOMET requirement	✗		R+
2.	The function is adequate to user role assigned	✗		
	In case No: Remark is required whether which user or users (U: Admin, Edu, Comp, Cert, Guest, Temp, Web) should use this function else or instead current one.			
3.	The function is professional in the terms of software development	✗		
4.	The function is rather foolproof	✗		
5.	The ergonomomy (name, attendant text) of the function is enough for understanding the content behind	✗		
6.	The function fulfils the requirement or requires further development	✗		
7.	The function is coming natural (evident as much as possible) to the user how to use		✗	See remark at No.4.
8.	A common user is able to make sure of whether the result is satisfied	✗		

5.2 Test Case Report Form

TEST CASE REPORT			
Test case number:		Test case name:	
Used user role:	Administrator: <input type="checkbox"/>	Educational Institute: <input type="checkbox"/>	Company: <input type="checkbox"/>
	Consultancy: <input type="checkbox"/>	Public user (Guest): <input type="checkbox"/>	
Date:		Tester name:	
Tester organisation:		Tester location:	

No.	Action	Pass/Fail	Remarks
1.	Back		
2.	Cancel		
3.	Clear		
4.	Copy		
5.	Delete		
6.	Disable		
7.	Division		
8.	Edit (~ info, ~ language)		
9.	Enter data		
10.	Evaluate		
11.	Filters		
12.	Find		
13.	Log in		
14.	Log out		
15.	New		
16.	Next		
17.	Order		
18.	Organisation		
19.	Page; Next/Previous		
20.	Parameters		
21.	Print		
22.	Profession		
23.	Prompt date		
24.	Region		
25.	Region sorting order		
26.	Reserve, Reservation		
27.	Role		
28.	Save		
29.	Save as image		
30.	Schedule		
31.	Search		
32.	Select		
33.	Set filters		
34.	Skills developed,		
35.	Sort		
36.	Structure		
37.	Target group		
38.	Type		
39.	View		
40.			
41.			
42.			
43.			
44.			

Question No	Test question	Answer		Remarks
		Yes	No	
1.	The function is adequate to an INNOMET requirement (if Yes, remark is requirements number)			
2.	The function is adequate to user role assigned In case No: Remark is required whether which user or users (U: Admin, Edu, Comp, Cons, Guest) should use this function else or instead current one.			
3.	The function is professional in the terms of software development			
4.	The function is rather foolproof			
5.	The ergonomomy (name, attendant text) of the function is enough for understanding the content behind			
6.	The function fulfils the requirement or requires further development			
7.	The function is coming natural (evident as much as possible) to the user how to use			
8.	A common user is able to make sure of whether the result is satisfied			