



Q-PLM

Quality Assurance for VET Providers Using Product Lifecycle Management

LdV/TOI
Project Nr° 538379-LLP-1-2013-AT-LEONARDO-LMP

WP 6: Development of software and handbook

WP 6: Report on Feedback for technical and functional specifications

provided by P6, Cork Education and Training Board,
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Defined aims of the Report on Feedback for technical and functional specifications

The technical and functional specifications document will contain all relevant specifications necessary for the development of the software. Together with the report about variables for product lifecycle they will form the basis for the programming of the beta version of the PLM software. The specifications document will be setup as a kind of checklist for the programmers to mark which specifications have already been implemented and which are subject to further activities etc. In this format the specifications can be a supporting document accompanying the whole software development process.

Methodology

This report on Technical and functional specifications for the PLM software has been produced in combination with the report on Variables and Indicators for product lifecycles in Vocational Education and Training and the Report on Feedback from the panels of experts and stakeholders. It follows on from the Work package 5 Research & analysis report.

Prior to the compilation of the feedback forms for this report a number of significant steps in the preparation for the development of our Product Lifecycle Management software have been completed or significantly advanced. Conciderable discussion and analysis has taken place to identify the main Indicators involved in the Product Lifecycle of vocational edicational products, as well as the identification of the Key Success Factors and the relationship between Key Success factors and indicators. The various phases of Product Lifecycle have also been examined as well as which indicators influence each phase.

Research was also carried out into existing Product Lifecycle Management software which while providing a good insight into the uses of the software in the industrial sector also served to highlight the fact that the available software would not be suitable for use in the Vocational Education Sector. The complexity of much of the existing software and the high levels of integration into the manufacturing process serve to make it of little value for our proposed target group.

At this point it was necessary to turn our attention to the technical specifications that may be required from the software. To achieve this, each partner was asked to fill in a questionnaire on technical and functional specifications. This work was to be carried out in consultation with stakeholders in each country.





The Questions

Each partner was asked, in consultation with other stakeholders in their country, to complete a series of questions designed to ascertain the technical and functional specifications that would be required of the proposed Product Lifecycle Management software. The questions to be asked were:

What type of computer facilities does your organisation currently have: is it Apple or PC based, What operating system do you use, is it a network system

Before we start to develop any software it is essential that there is clarity as to the type of system in used within the stakeholder organisations. Are Apple machines widely used or do we all use PC based systems? How important is it that the PLM software is able to run on a network. Do most managers in Vocational Education work on stand alone PC systems. How up to date are the facilities in use particularly in terms of operating systems as the PLM software will need to work on these systems

Do you have Information Technology technical support available within the organisation

This question relates to the ease of use and of installation that may be required for the software. Clearly some of the partner institutes involved in this project have Information Technology technical support staff, but is this applicable to all. What level of technical expertise is available to most VET organisations?

Do you receive management related information from remote locations eg via the internet

How do managers in VET institutions currently get their information. In larger organisations is the internet used as a means of distributing management information or is this primarily done through the Local Area Network of the organisation or indeed confined to a single management workstation?

What type of Information Technology based management Systems does your organisation use:

Do the partners and stakeholders already use an information Technology based management system and if so what requirements in therm of integration with existing systems might be taken into account in developing our PLM software?





Do you use an IT based Quality Management system and if yes describe the system

We did not want to loose sight of the fact that Product Lifecycle Management is an integral part of quality control and management. This question was to ascertain whether other Information Technology quality management systems were in use by our partners and stakeholders.

What technical specifications would you require for a PLM software package e.g. platform on which it should run, compatibility with other programs, size limitations, type of user interface etc.

In many ways this is the wish list. For each partner what would be their ideal technical specification for the PLM software in terms of compatibility and interface.

What functional specifications would you require for a PLM software package e.g. ability to export data to other programs, ability to produce printed reports, ease of use etc.

Once the software is up and running what do we want it to do? Is it necessary for the data to be exported to other programs? What type of reports do we want the software to produce? What are our requirements in terms of user interface and ease of use?

By examining each of these questions we plan to gain a greater understanding of the technical and functional specifications that will be required of the Product Lifecycle Management software.

Combined Data

Following the completion of the questionnaire by each partner the main proposals from each country were summarised into a combined table as follows:

What type of computer facilities does your organisation currently have: is it Apple or PC based, What operating system do you use, is it a network system,

AT: We use PC based systems on Windows 7 as well as Windows 8 platform.

FI: PC- based, windows 7 network system

RO: Mainly PC, but Apple are available in library of USV, in languages laboratories and in some administrative offices.

Operation system: Windows

Network system: yes (LAN and wireless).

ES: PC based systems

The operation system we use is Microsoft Windows 7

We also have a Network that allows us to share information among centres located in different cities

SI: Windows XP, local network





BE: PC based, WIN 7 in a network environment

IE: PC, Win7, Networked. Apple platform based OS.

IE9-11 Firefox, Safari and Google Chrome.

Do you have Information Technology technical support available within the organisation

AT: Yes. We have four admins, that cover all platforms in server based systems, workstation based systems and networking, as well as second and third level user support

FI: Yes, we have ICT service staff in WinNova

RO: Yes. The university has a department for Information Technology technical support: STCI – Service for Communication and Information Technologies.

ES: Yes. And also we have a contract with a company for this support.

SI: Yes BE: Yes IE: Yes

Do you receive management related information from remote locations eg via the internet

AT: Yes, but our remote locations are connected via leased-lines (btw. 2 and 8 mbit each location)

FI: Yes we have e.g. marja.nordstrom@winnova.fi

RO: Yes. On specific interest fields.

ES: We have a private network that allows us to share information among centres located in different cities. We have the possibility of work at real time with the same files and documents.

SI: Yes BE: No IE: No

What type of Information Technology based management Systems does your organisation use:

AT: Nagios, Microsoft System Center, Sharepoint, OTRS Ticketing

FI: EDU-ERP system, which includes student management, courses etc

RO: Oracle EBS, Oracle People Soft, Oracle BI (in phase of implementation), Revisal, Saga, Winmentor **ES:** We use different databases: Marketing and sales Management database; Training courses management (it includes client – course details – student – cost - results -..); accounting and financial database

SI: CRM, web CMS, accounting system

BE: In house developed software

IE: A managed Service Desk application. A Student Database application. Internal Web based information sites using SQL back end and browser based front end.

Do you use an IT based Quality Management system and if yes describe the system:

AT: We are not certified in IT based QM, but we are following the best practices in ITIL, as long as they are useful for our daily business.

FI: The IMS Integrated Management System Software is a browser-based platform for a quality management, operating or management system. The IMS software includes five essential functions: a tool for drawing processes and process hierarchies, an editor for creating an operations manual and other manuals, document management, a section for indicators measuring the organization's operational performance and a tool for creating and analyzing feedback and reports. The usability is facilitated by additional functionalities related to communication between IMS users and the management of user rights. All these features form a holistic, easy-to-use operating system.

RO: No.

ES: No. We do not use IT based QM.

SI: No

BE: Syntra West complies to the ISO 9001:2008 standard. All procedures and documents are available through the intranet

IE:No





What technical specifications would you require for a PLM software package e.g. platform on which it should run, compatibility with other programs, size limitations, type of user interface etc.

AT: Database MS SQL Server 2012, Frontend Internet Explorer

We are using MS Dynamics NAV on MS SQL Server, if the PLM runs on MS SQL it's compatible, Size limitation of data is no issue, we are using NetApp Storage and so it's simple to gain more diskspace

FI: Server specification: Microsoft SQL-_based system

Workplace PC-based windows 7

Browser Microsoft IE 10 or later version

RO: Windows, compatible with Office MS,

Size limitation –

Type of user interface – Graphical interface.

ES: Compatible with window server.

SI: Windows based or any kind of browser/internet based

BE: The software should be integrated with the existing in house developed platform

IE: Should be windows/SQL backend and be able to run on Windows or Mac OS.

Should be compatible with multiple browsers and MS office.

User Interface should be web based

What functional specifications would you require for a PLM software package e.g. ability to export data to other programs, ability to produce printed reports, ease of use etc.

AT: If PLM runs on MS SQL, it's important to have a closely documentation on tables and table-relations, fieldmapping, etc ... We are using the BI version of SQL, thus we are able to create nearly any report, that is necessary.

FI: PLM should be open source- based application

Both directions export required: PLM-other programs-PLM

Browser -based user interface

Printed diagrams and graphics

Alert service for the indicators

Easy to use

RO: User-friendly interface, ability to export information to Office MS and PDF, possibility to release reports on specific steps and contents, possibility to issue tailored reports from case to case.

ES: Ability to import data from other database that we use: students; clients; ...databases.

Ability to export data to excel or other files to work with the info

Easy to understand and to use

Possibility of printed reports

Possibility of creating messages (e.g. by emails) to remain important tasks, errors

SI: Export to Excel, graphs, ability to produce printed reports, ease to use

BE: Ease of use, single point of entry, integrated in existing environment

IE: Ease of use, ability to print clear reports, export to excel

Export to xls and csv types

Be able to print to PDF and paper printers

Customised fields and reports

Clear / Easy graphical user interface

Browser based user interface





Conclusions and Recommendations

Following the completion of the questionnaire by all partners we were able to draw a number of important conclusions regarding the technical and functional specifications of the PLM software. All stakeholders reported that they were using PC systems although some also had Apple machines available. The oldest software package in use was windows XP but a majority of partners are using Windows 7. Based on this the proposed software would need to run on PC based systems operating on windows XP or better. It would also seem that most organizations have some technical support in place so the issue of installing the software and ensuring that it is running correctly on partner institute machines would not appear to be an issue.

Most partner institutions receive management information from remote locations, some via private networks but primarily through the internet. Generally VET providers seem to use Management Information Systems but there is no consensus as to which system should be used. Existing solutions to Management Information Systems include, Nagios, Microsoft System Center, Sharepoint, OTRS Ticketing, EDU-ERP, Oracle EBS, Oracle People Soft, Oracle BI, Revisal, Saga, Winmentor, CRM, web CMS as well as a number of custom written systems. The integration of our PLM software with all of these systems would clearly be impractical and expensive. However many of these systems are SQL based and the PLM software should ideally be SQL based with the possibility open for future integration with an institutions wider system.

Most partners are not engaging with Information Technology based Quality Management systems at present although all follow best practice in quality management and have a strong commitment to achieving consistent quality in their vocational products. In Finland the IMS Integrated Management System Software is in use. This is a browser-based platform for a quality management, operating or management system. The IMS software includes five essential functions: a tool for drawing processes and process hierarchies, an editor for creating an operations manual and other manuals, document management, a section for indicators measuring the organization's operational performance and a tool for creating and analyzing feedback and reports. The usability is facilitated by additional functionalities related to communication between IMS users and the management of user rights. All these features form a holistic, easy-to-use operating system. In Belgium Syntra West must comply to the ISO 9001:2008 standard. While this provides interesting information regarding the present approach to Quality management it also indicates that there is no immediate need to make the proposed PLM software compatible with any specific existing quality management system.

In relation to general technical specifications it is clear that the PLM software should be compatible with MS SQL Systems, it should be compatible with Microsoft XP and Microsoft windows operating systems developed since then and with windows servers. It should have a clear and easy to use





graphical user interface. Perhaps there would be merit in having a web based user interface with a windows / SQL backend.

In relation to functionality if PLM runs on MS SQL, it's important to have a closely documentation on tables and table-relations, fieldmapping, etc. It should be an open source based application. Exporting of data should be possible, for example to Microsoft Excel. The software should be capable of printing reports in both text (including pdf) and graphical formats. It should be possible for the user to customise these reports. And importantly the software should be as easy to use as possible with a clear user friendly Graphical Interface.

Additional Recommendations for Functional Specifications

Following the completion of the questionnaire some additional discussions occurred between the project partners in relation to software functionality. A number of additional functional specifications were raised at this time. These include the ability to give a weighting to each indicator so that indicators that are not important to a particular organisation, or indeed indicators of critical importance, can be given due recognition in the PLM process. A default value for indicators should be set within the system for organisations who do not wish to customise the indicator weighting. Once a weighting is set within the system it should be possible to save this for future use or future editing.

That Key Success Factors will carry a weighting based on the weight assigned to the individual indicators assigned to them. That is that the weight of a Key Success Factor will be the combined weighting of the indicators assigned to it divided by the number of indicators assigned to it.

That the software should be able to run both an analysis of the whole Product Lifecycle or of any of the individual phases within the lifecycle, specifically Design / Decision, Development, Delivery and Evaluation.

From a user perspective we would see the software running as follows:

- The user would be asked if the wish to give a customised weighting to the indicators, used previously saved weighting or use the default weighting values.
- Once the weighting of indicators is set it should be possible to see the relative Key Success Factor weightings which will have been calculated based on Indicator weighting.
- The user will be asked if the want to run the PLM process for the whole lifecycle of the product or for a particular period.





- Results will be displayed as appropriate with an option for the user to choose a report and / or graphical presentation of results.
- An option to print the results will be provided.
- Ideally printouts should allow for customisation in relation to margins etc so that they may be printed onto organisational headed paper.
- On screen warnings of poor performance results will also be provided.

Again it has to be stressed that at all stages of use the software must assume that the user is not an Information Technology specialist so a clear graphical presentation providing ease of use is essential.





Appendix 1

Feedback forms for technical and functional specifications





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WP 6: Feedback forms for technical and functional specifications





Organisation data

Name	
Name of organisation	
Type of the organisation	
(Vocational training center, university, Chamber,)	
Role within the Organoisation	
Organisation Website	
Country	

What type of computer facilities does your organisation currently have: is it Apple or PC based, What operating system do you use, is it a network system,
Do you have Information Technology technical support available within the organisation
Do you receive management related information from remote locations eg via the internet
What type of Information Technology based management Systems does your organisation use:
Do you use an IT based Quality Management system and if yes describe the system:
What technical specifications would you require for a PLM software package e.g. platform on which it should run, compatibility with other programs, size limitations, type of user interface etc.
What functional specifications would you require for a PLM software package e.g. ability to export data to other programs, ability to produce printed reports, ease of use etc.
add to serie. programs, ability to produce printed reports, ease or use etc.





Appendix 2

Feedback forms submitted by each partner country





Austria

Organisation data

Name	Gert Niederdorfer
Name of organisation	bfi Steiermark
Type of the organisation	institution of vocational training and further
(Vocational training center, university, Chamber,)	training
Role within the Organoisation	CIO
Organisation Website	http://www.bfi-stmk.at
Country	Styria/Austria

What type of computer facilities does your organisation currently have: is it Apple or PC based, What operating system do you use, is it a network system,

We use PC based systems on Windows 7 as well as Windows 8 platform.

Do you have Information Technology technical support available within the organisation Yes. We have four admins, that cover all platforms in server based systems, workstation based systems and networking, as well as second and third level user support

Do you receive management related information from remote locations eg via the internet Yes, but our remote locations are connected via leased-lines (btw. 2 and 8 mbit each location)

What type of Information Technology based management Systems does your organisation use: Nagios, Microsoft System Center, Sharepoint, OTRS Ticketing

Do you use an IT based Quality Management system and if yes describe the system:

We are not certified in IT based QM, but we are following the best practices in ITIL, as long as they are useful for our daily business.

What technical specifications would you require for a PLM software package e.g. platform on which it should run, compatibility with other programs, size limitations, type of user interface etc.

Database MS SQL Server 2012, Frontend Internet Explorer

We are using MS Dynamics NAV on MS SQL Server, if the PLM runs on MS SQL it's compatible, Size limitation of data is no issue, we are using NetApp Storage and so it's simple to gain more diskspace.

What functional specifications would you require for a PLM software package e.g. ability to export data to other programs, ability to produce printed reports, ease of use etc.

If PLM runs on MS SQL, it's important to have a closely documentation on tables and rable-relations, fieldmapping, etc ... We are using the BI version of SQL, thus we are able to create nearly any report, that is necessary.





Ireland

Organisation data

Name	Gerald Brennan
Name of organisation	Cork ETB
Type of the organisation	Vocational Education and Training
(Vocational training center, university, Chamber,)	
Role within the Organoisation	Assistant Principal
Organisation Website	www.corketb.ie
Country	Ireland

What type of computer facilities does your organisation currently have: is it Apple or PC based, What operating system do you use, is it a network system,

PC, Win7, Networked. Apple platform based OS.

IE9-11 Firefox, Safari and Google Chrome.

Do you have Information Technology technical support available within the organisation Yes

Do you receive management related information from remote locations eg via the internet No

What type of Information Technology based management Systems does your organisation use:

A managed Service Desk application. A Student Database application. Internal Web based information sites using SQL back end and browser based front end.

Do you use an IT based Quality Management system and if yes describe the system:

What technical specifications would you require for a PLM software package e.g. platform on which it should run, compatibility with other programs, size limitations, type of user interface etc.

Should be windows/sql backend and be able to run on Windows or Mac OS.

Should be compatible with multiple browsers and MS office.

User Interface should be web based

What functional specifications would you require for a PLM software package e.g. ability to export data to other programs, ability to produce printed reports, ease of use etc.

Ease of use, ability to print clear reports, export to excel

Export to xls and csv types

Be able to print to PDF and paper printers

Customised fields and reports

Clear / Easy graphical user interface

Browser based user interface





Slovenia

Organisation data

Name	Eva Žontar
Name of organisation	Chamber of Commerce and Industry of Slovenia (CCIS)
Type of the organisation	Chamber
(Vocational training center, university, Chamber,)	Chamber
Role within the Organoisation	Marketing, project management
Organisation Website	www.gzs.si
Country	Slovenia (SI)

What type of computer facilities does your organisation currently have: is it Apple or PC based, What operating system do you use, is it a network system, Windows XP, local network

Do you have Information Technology technical support available within the organisation Yes

Do you receive management related information from remote locations eg via the internet Yes

What type of Information Technology based management Systems does your organisation use: CRM, web CMS, accounting system

Do you use an IT based Quality Management system and if yes describe the system: No

What technical specifications would you require for a PLM software package e.g. platform on which it should run, compatibility with other programs, size limitations, type of user interface etc.

Windows based or any kind of browser/internet based

What functional specifications would you require for a PLM software package e.g. ability to export data to other programs, ability to produce printed reports, ease of use etc.

Export to Excel, graphs, ability to produce printed reports, ease to use





Belgium

Organisation data

Name	
Name of organisation	
Type of the organisation	
(Vocational training center, university, Chamber,)	
Role within the Organoisation	
Organisation Website	
Country	Belgium

What type of computer facilities does your organisation currently have: is it Apple or PC based, What operating system do you use, is it a network system,

PC based, WIN 7 in a network environment

Do you have Information Technology technical support available within the organisation

Yes

Do you receive management related information from remote locations eg via the internet

N0

What type of Information Technology based management Systems does your organisation use: In house developed software

Do you use an IT based Quality Management system and if yes describe the system: Syntra West complies to the ISO 9001:2008 standard. All procedures and documents are available through the intranet

What technical specifications would you require for a PLM software package e.g. platform on which it should run, compatibility with other programs, size limitations, type of user interface etc.

The software should be integrated with the existing in house developed platform

What functional specifications would you require for a PLM software package e.g. ability to export data to other programs, ability to produce printed reports, ease of use etc.

Ease of use, single point of entry, integrated in existing environment





Finland

Organisation data

Name	Liisa Sarasoja, Esa-Pekka Rantanen
Name of organisation	WinNova
Type of the organisation	Vocational training centre
(Vocational training center, university, Chamber,)	
Role within the Organoisation	Project manager (LS), Quality control
	system expert (E-PR)
Organisation Website	www.winnova.fi
Country	Finland

What type of computer facilities does your organisation currently have: is it Apple or PC based, What operating system do you use, is it a network system,

PC- based, windows 7 network system

Do you have Information Technology technical support available within the organisation *Yes, we have ICT service staff in WinNova*

Do you receive management related information from remote locations eg via the internet *Yes we have e.g. marja.nordstrom@winnova.fi*

What type of Information Technology based management Systems does your organisation use:

EDU-ERP system, which includes student management, courses etc.

Do you use an IT based Quality Management system and if yes describe the system: Yes, we have IMS- integrated Management System software

The IMS Integrated Management System Software is a browser-based platform for a quality management, operating or management system. The IMS software includes five essential functions: a tool for drawing processes and process hierarchies, an editor for creating an operations manual and other manuals, document management, a section for indicators measuring the organization's operational performance and a tool for creating and analyzing feedback and reports. The usability is facilitated by additional functionalities related to communication between IMS users and the management of user rights. All these features form a holistic, easy-to-use operating system.

What technical specifications would you require for a PLM software package e.g. platform on which it





should run, compatibility with other programs, size limitations, type of user interface etc.

 ${\it Server specification: Microsoft SQL-_based system}$

Workplace PC-based windows 7

Browser Microsoft IE 10 or later version

What functional specifications would you require for a PLM software package e.g. ability to export data to other programs, ability to produce printed reports, ease of use etc.

PLM should be open source- based application

Both directions export required: PLM-other programs-PLM

Browser –based user interface

Printed diagrams and graphics Alert service for the indicators

Easy to use





Romania

Organisation data

Name	Iulian Condratov
Name of organisation	University Stefan cel Mare, Suceava
Type of the organisation	Public university
(Vocational training center, university, Chamber,)	
Role within the Organisation	Assistant professor
Organisation Website	www.usv.ro/index.php/en
Country	Romania

What type of computer facilities does your organisation currently have: is it Apple or PC based, What operating system do you use, is it a network system.

Mainly PC, but Apple are available in library of USV, in languages laboratories and in some administrative offices.

Operation system: Windows

Network system: yes (LAN and wireless).

Do you have Information Technology technical support available within the organisation.

Yes. The university has a department for Information Technology technical support: STCI – Service for Communication and Information Technologies.

Do you receive management related information from remote locations eg via the internet

Yes. On specific interest fields.

What type of Information Technology based management Systems does your organisation use:

Oracle EBS, Oracle People Soft, Oracle BI (in phase of implementation), Revisal, Saga, Winmentor.

Do you use an IT based Quality Management system and if yes describe the system:

No.

What technical specifications would you require for a PLM software package e.g. platform on which it should run, compatibility with other programs, size limitations, type of user interface etc.

Windows, compatible with Office MS,

Size limitation –

Type of user interface – Graphical interface.

What functional specifications would you require for a PLM software package e.g. ability to export data to other programs, ability to produce printed reports, ease of use etc.

User-friendly interface, ability to export information to Office MS and PDF, possibility to release reports on specific steps and contents, possibility to issue tailored reports from case to case.





Spain

Organisation data

Name	ALBERTO CORTES
Name of organisation	FONDO FORMACIÓN EUSKADI
Type of the organisation	Educational and Training Provider
(Vocational training center, university, Chamber,)	
Role within the Organoisation	Technological Department Director
Organisation Website	www.ffeuskadi.net
Country	Spain

What type of computer facilities does your organisation currently have: is it Apple or PC based, What operating system do you use, is it a network system,

PC based systems

The operation system we use is Microsoft Windows 7

We also have a Network that allows us to share information among centres located in different cities.

Do you have Information Technology technical support available within the organisation Yes. And also we have a contract with a company for this support.

Do you receive management related information from remote locations eg via the internet We have a private network that allows us to share information among centres located in different cities. We have the possibility of work at real time with the same files and documents.

What type of Information Technology based management Systems does your organisation use: We use different databases: Marketing and sales Management database; Training courses management (it includes client – course details – student – cost - results -..); accounting and financial database; ...

Do you use an IT based Quality Management system and if yes describe the system: No. We do not use IT based OM.

What technical specifications would you require for a PLM software package e.g. platform on which it should run, compatibility with other programs, size limitations, type of user interface etc. Compatible with window server.

What functional specifications would you require for a PLM software package e.g. ability to export data to other programs, ability to produce printed reports, ease of use etc.

- Ability to import data from other database that we use: students; clients; ...databases.
- Ability to export data to excel or other files to work with the info
- Easy to understand and to use
- Possibility of printed reports
- Possibility of creating messages (e.g. by emails) to remain important tasks, errors,...