LINKVIT - Leveraging Inspire Knowledge into Vocational Innovative Training

LLP – Leonardo da Vinci Transfer of Innovation project
N° 2013-1-IT1-LEO05-04046

Quality Management Plan

Deliverable n. D.12

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Work Package / Task:

WP5 Quality Management

Task 5.1

References:

Project Handbook (D1), Description of the project (WP5)

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Plan to set out the methodology and procedures for quality assurance

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V2.0	16/04/2014	Domenico Patassini, Vincenzo Giannotti (IUAV University of Venice), Anders Ostman (Novogit), Bela Markus	Final version	Final version revised (received comments and notes included)

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Acronyms	
CMS	Content Management System
CSA	Customer Satisfaction Analysis
EC	European Community
EE	External Expert
ENQA	European Network for Quality Assurance in higher education
EPSILON	Epsilon Italia Srl
EQF	European Qualifications Framework
GI	Geographic Information
GISIG	Geographical Information Systems International Group
HALE	HUMBOLDT Alignment Editor
INSPIRE	Infrastructure for Spatial Information in Europe
ISPRA	Istituto Superiore per la Protezione e la Ricerca Ambientale
IUAV	Università IUAV di Venezia/ University of Venice
KU Leuven	Katholieke Universiteit Leuven
LI	Long-term impact
LINKVIT	Leveraging INspire Knowledge into Vocational Innovative Training
NOVOGIT	NOVOGIT AB
PLUS	Paris Lodron Universität Salzburg
QA	Quality Assessment
QAP	Quality Assessment Procedure
QMP	Quality management plan
SME	Small and medium enterprise
SC	Steering Committee
SI	Short-term impact
TG	Target group
U	User
VESTA-GIS	Vocational Educational and sectorial Training network on GIS and GI Application domain
WP	Work Package

1. Introduction

The LINKVIT Project focuses on the harmonization[1] and adaptation of training approaches, applying e-Learning methodologies and techniques to improve skills, knowledge and awareness of professionals in the field of geo-information (GI).

The project, which started in early October 2013, will last for a period of 2 years, and will be developed within the new EU legal framework, defined mainly by INSPIRE as well as other Directives regulating GI and environmental issues. The main aims of INSPIRE are to design and implement *Infrastructures for Spatial Information in Europe*[2].

LINKVIT is based on the results of several European initiatives, in particular, the results of the Leonardo da Vinci project VESTA-GIS (*www.vesta-gis.eu*). VESTA-GIS has developed a cooperative framework to share experiences about training and e-Learning in the field of GI, a catalogue of training modules (based on standard metadata) which may be clustered in the form of "learning/teaching paths"[3], according to needs of different target groups. The modules have been developed by European Universities, research institutions and companies.

The LINKVIT project has three main objectives: the first is to improve the access to training and ancillary contents, delivered by e-Learning platform; the second is to assess and validate standard professional profiles; the third is to define clear flexible training paths within a comprehensive training framework.

The training approach is practical (practice-led) and is supported by tutorials to facilitate the implementation of the INSPIRE framework in daily activities. An e-Learning Platform is available to this purpose.

Training materials, tutorials and related devices are modelled on the three user profiles, considered as the target groups (TG):

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[1] According to the HALE Data Harmonization Panel, the mapping of elements such as feature, types and attributes of one conceptual scheme (e.g. GML Application Schemas, Database Schemas or UML models) to another is a cornerstone of data harmonisation. The HUMBOLDT Alignment Editor (HALE) is a tool for defining and evaluating conceptual mapping.

[2] 'INSPIRE Directive brings a revolution in geo-information (GI), and a need of specific skill in public administration and GI stakeholders, as acknowledged by the *INSPIRE State of Play report*', LINKVIT, 2013, *Project Handbook*, p.3.

[3] The 'learning path' term is linked to the knowledge process of the student, while 'teaching path' refers to the delivery of training activities (lectures, laboratories, workshops and alike). The QMP is expected to assess the path from the supply (teaching) and the demand (learning) side.

- technicians working in public administrations and SMEs who wish to re-qualify, acquiring the new INSPIRE (TG1a) competences;
- decision-makers in the same sectors (TG1b);
- post-graduates seeking faster and more qualified access to the GI labour market with a more focused post-degree specialization (TG2).

The LINKVIT project envisages knowledge transfer within the user community in the short term and its expansion within a medium-long term. The knowledge transfer is meant to generate a multidimensional impact as it acts across different directions and levels.

Besides short and long term impacts (SI and LI) on the target group TG1 and TG2, of the direct type , the trainees, and of the indirect type, the organizations of the trainees, additional impacts are expected.

The latter relate mainly to geographical, thematic, functional, access and audience issues, as indicated below:

a) geographical impacts capture the effects of transferring to a national, regional and local audience the results of European projects achieved by pathfinders;

b) thematic impacts due to the transfer of the INSPIRE principles to other sectors and disciplines and to new stakeholders;

c) functional impacts which fit to a wider audience training content designed for “EU-aware” stakeholders. This audience most likely comprises local actors, typically people in local administrations, who are not accustomed to the INSPIRE approach to data sharing and use. Such a functional impact is supposed to have a lifelong learning effect which contributes to the development of human and institutional capital;

d) accessibility, considered either as a requisite of the above-mentioned impacts (a,b,c) or an outcome by itself. As a matter of fact, the project will create a more user- friendly version of documents and tools for improving access to geospatial data and services and for use by small organizations at the local level (including administrations);

e) a wider audience is expected, i.e. the training package will be used by professional operators (with impact on continuous training) and within Higher Education Programmes (with impact on post-graduate curricula).

LINKVIT seeks to have an overall impact at the European scale. The coverage of the project allows an effective and mutual transfer of knowledge and to cross-relate different spatial planning systems and cultures whose features have been highlighted by the 1997 EU Compendium and by European Spatial Development Perspective (ESDP)[4].

The aim of the 'Quality Management Plan" is to state the procedures and mechanisms used to ensure the quality of project activities and outcomes.

The quality management process promotes continuous improvements with the help of external evaluators (if necessary), monitoring and testing activities (*via* quality evaluation forms to the partners and target groups). In turn, the quality of project outcomes is assessed through a Quality Management Reports (QMR) issued every eight months, according to the time-schedule.

The Quality Management Plan (Task 5.1) guides the WP5 'Quality Assurance' activities where concerned procedures and devices are specified. Quality management considers the progress of the work plan, stating the success or failure of tasks, as well as the EU policies on quality assurance (ENQA) and qualification (EQF) of training initiatives.

2. Method

The WP5 reviews whether the planning, progress and implementation of activities ensures the quality of the e-Learning project as a whole. The review provides a detailed and aggregated summary on the basis of the available deliverable.

Quality Assurance includes various inputs provided by other WPs. Moreover, it enhances the available data on quality assessment (achievement of outputs), evaluation (achievement of outcomes and reasons for success / failure), auditing and monitoring (on project achievements and impacts).

Four 'semantic axes' make up the quality review: i.e. general functional quality, quality of training products, scientific and cultural quality, and implementation quality:

[4] EC, 1999, ESDP. *European Spatial Development Perspective. Towards Balanced and Sustainable Development of the Territory*, Brussels.

- The first semantic axis recognizes the quality of the operational features of the training framework as a whole: i.e., if the device is structured so as to ensure the quality in terms of organization, responsibilities, procedures, communication style, networking capacities, type and use of resources. In summary, along this axis, the *general functional quality* is defined.

- A second axis recognizes the *quality of training products* in terms of user learning outcomes: namely, if the products and teaching actions are reliable, continuous, modular, exposed to innovation, efficient in terms of net benefit, but especially if the acquired operational skill and knowledge within the target groups derive from these or other factors. This operation highlights and updates the learning path model that underlies the LINKVIT training framework and develops a 'grid for performance evaluation and benchmarking'. It also entails acknowledging the attitudes of the European countries involved. Meantime, dynamic (and not merely standard) templates will be designed and tested from a shared platform.

- The third axis concerns the scientific legitimacy of the program and the role of partners within the international scientific community. Recognition of the *scientific and cultural quality* generally has to do with the content- type and is carried out according to the standards of the European framework, but also with the development of new partnerships.

- The last axis deals with the program's contribution to the implementation of the INSPIRE Directive and its ensuing actions in different European countries. It is a type of *implementation quality* that is detectable both on the demand side (users with the ability of knowledge diffusion) and on the supply side (useful skills and knowledge). The Linkvit Program's follows the general and operational objectives defined by Leonardo da Vinci Life- long learning program (transfer of innovation)[5].

5 The Leonardo general objectives are supporting participants in training and further training activities in the acquisition and the use of knowledge, skills and qualifications to facilitate personal development, employability and participation in the European labour market (LEO-SpObj-a). The operational objectives are firstly related to the improvement of the quality and to increase the volume of co-operation between institutions or organisations providing learning opportunities, enterprises, social partners and other relevant bodies throughout Europe (LEO-OpObj-2). Secondly, they focus on supporting the development of innovative ICT-based content, services, pedagogies and practice for lifelong learning (LEOOpObj- 6). Among the horizontal issues of the Leonardo programme, it is worth mentioning that Linkvit is mainly related to three of them. The three issues are the following: a) making provision for learners with special needs, and in particular by helping to promote their integration into mainstream education and training (SpecNeed); b) providing men and women and people belonging to different age groups equal opportunities. Moreover, the Leonardo Programme defines indicators for impact on TG, sectors and geographical areas.

Based on the quality assurance procedure (QAP), a set of quality indicators for each type of semantic axis or dimension is designed, in particular for the foreseen results/outcomes keeping them updated throughout the project lifetime. The quality indicators assure the assessment of the project implementation according to the time and content-schedule together with the impact evaluation on beneficiaries (technicians, decision makers and post-graduates) and the sustainability of the e-Learning programmes beyond the project end.

As commonly specified in multi-criteria evaluation procedures, a three-dimension profile features each indicator with semantic, metric and benchmark (reference, target value or threshold). In order to identify a consistent evaluation domain, QAP will be linked to the EU policies on quality assurance (ENQA) and qualification (EQF) of training initiatives. QAP is conceived based on reviewing procedures (see section 3) to assure the improvement of the project outcomes and test the quality standards.

In such a view, the WP 5 "Quality Assessment" is scheduled in the work plan also with the aim to receive and collect comments and suggestions by the partners and the final users for tuning the project outcomes along all the project duration (*in itinere*).

QAP is developed according to a cluster-approach to the different types of deliverables (specifications, reports, tools and devices, services, and training framework). For each type of deliverable, timing of evaluation together with quality criteria, indicators and procedures are specified. Templates of evaluation forms are also identified.

The IUAV University of Venice (Italy) is responsible for LINKVIT-QAP.

Expert evaluation is required for the set of deliverables defined in section 3. Review reports will recommend improvements and will be an integral part of the periodic Quality Management Reports (QMR).

An external expert will be assigned based upon specific criteria which considers his/her competences and experience in the related field of the project.

Quality Management Reports (QMRs) are issued every 8 months according to the QMP. The project foresees three reports: a report on quality procedures used for outcomes; an assessment report of the project coordinator and/or Steering Committee; and a report from users (e.g. from

quality evaluation questionnaires distributed at events and training workshops/sessions, see WP4).

3. Results and reviewing procedures

The aim of WP5 is to assure that project outcomes correspond not only to the needs of target groups but also to generally accepted quality criteria. Project results consist of internal reports, public reports, articles and papers, public learning tools and databases, dissemination material, workshops and conferences, networking and alike.

To achieve this goal, WP5 operates in an integrated way with other WPs, the Steering Committee (SC) and the External Expert (EE). While the SC's primary role is to check the quality of all public deliverables and procedures, the external expertise is required to assess the external effectiveness of the project.

The project coordinator, the SC and the EE shall perform the following activities:

a) evaluate key project deliverables (see section 3.3), approving or suggesting improvements. This activity consists in preparing Reports on quality assurance and External review reports;

b) if required, evaluate internal reports and intermediate results (see section 3.2). This type of evaluations may be communicated by email to the author and the project co-ordinator;

c) co-ordinate the Task 5.1 "Quality Management" by involving final users and stakeholders to assess project outcomes, providing them quality evaluation templates to report the results of their activity;

d) evaluate progress at special quality management meetings (if required) or through email communication or online meetings.

The project coordinator must provide SC and EE with all the required deliverables and information. The WP5's only aim is to state the "Quality and Evaluation" rules that SC and EE are supposed to follow when assessing the project outcomes and monitoring the quality. Other types of assessment, in terms of quantity and deadlines of deliverables, are matters dealing with of the overall project management. GISIG and the project partners perform these types of assessment.

Each deliverable shall undergo an internal reviewing procedure. The partner/person responsible for each deliverable must follow the rules defined in sections 3.2-3.7 in order to guarantee that the deliverable complies with internal standards. Other partners, to ensure that the contents and the results correspond to the above-mentioned requirements, can also review the deliverable.

When producing deliverables and outcomes, the partners are expected to apply the guidelines contained in the D1-Project Handbook, which sets out the responsibilities and routines for project management and development. In particular, deliverable 1 specifies the rules, in terms of document delivery and timing. The project's quality evaluation process also incorporates compliance outcomes to internal rules.

The effectiveness of the dissemination and the valorisation of activities shall also be measured and reported. It includes measuring: the intensity and quality of cooperation among the partners; the level and intensity of the exchange of experience among the partners; the visits to the web site; participation in workshops and seminars; the degree of customer satisfaction; the relevance of pilot training, effectiveness in the organisation of the activities. Many of these measures are assessed using questionnaires at different events.

QARs (Quality Assessment Reports) provide useful information to verify the coherence and relevance of the training framework by comparing the available e-Learning tools with training profiles. In particular, partners' metadata of the training modules can be enriched with qualitative descriptors on the effectiveness of the training delivery and update (if any).

As indicated by the Project Handbook, a review of all deliverables will be performed, in particular the project documents and reports, the promotional material, the architecture and use of the web site. With regard to the operational performance of the web site, communication flows need to be assessed in tandem with the ways infrastructure is utilized.

Since the training material is organized and 'certified' based on metadata templates, QAs will focus on procedural and substantive consistency: the former refer to the use of the training material, while the latter, to the content it strives to offer, based on learning paths objectives.

Learning paths are calibrated to the target groups (technicians, decision makers and post-graduates). The QAs will serve to check the consistency between targets and training supply in terms of design, implementation and change of pre-post profile of the target groups.

3.1. Deliverables

As shown by the Project Handbook table, a variety of documents, dissemination materials, newsletters, reports, plans, devices and actions will be considered as deliverables.

Many deliverables fix procedures to manage the project operationally. This includes setting the standards, tasks and responsibilities, but also managing any changes or arising conflicts. The Project Handbook defines the communication rules.

In general, deliverables may be considered as final and intermediate products, either tangible or intangible, during the programme implementation. The products will be assessed as output and outcome. The progress of the work can thus be followed. Once assessed in terms of quality, they become stepping-stones within a process that leads to the results. Intermediate products should serve to align the project partners' expectations to those of the final beneficiaries (TG).

The following list specifies all deliverables of the LINKVIT project subject to quality evaluation procedures according to the Steering Committee (SC), External Expert (EE) or Target Users (US) revision. The deliverables are classified as follows:

DR = Document/Report

TS = Technical Specifications/Guidelines

QU = Questionnaire

DIS = Dissemination material

TF = Training Framework

WS = Workshops

Table 1 – Deliverable list

WP	No.	Title	Responsible	Reviewed by	Type	Date
1	D1	Project Handbook	GISIG	SC	DR	30th November 2013
	D2	Interim Progress Report		SC	DR	30th October 2014

	D3	Final Report		SC	DR	30th November 2015
2	D4	Learning paths specifications	KU Leuven	SC, EE	DR	28th February 2014
	D5	Learning Material and Infrastructure Adaptation Plan		SC, EE	TS	28th February 2014
3	D6	Infrastructure Technical Specifications	PLUS-Salzburg University	SC	DR	31st March 2014
	D7	Training Framework first release		SC, EE, US	TF	30th November 2014
	D8	Training Framework Guide for Users		SC, EE	TS	30th November 2014
4	D9	Evaluation questionnaire for training actions	GISIG	SC, EE, US	QU	31st December 2014
	D10	Training sessions and workshops		SC, EE, US	WS	15th November 2014
	D11	Training Framework second release		SC, EE, US	TF	30th September 2015
5	D12	Quality Management Plan	IUAV University	SC	DR	31st December 2013
	D13.x	Quality Management Reports		SC, EE	DR	31st May 2014 28th February 2015 30th September 2015
6	D14	Awareness and Dissemination Plan	ISPRA	SC, EE	DR	31st December 2013
	D15	LINKVIT Web site		SC, EE	DIS	31st October 2013
	D16	Dissemination		SC	DIS	30th November

		material				2013
	D17	Project Newsletters		SC	DIS	30th November 2013
	D18	Awareness and Dissemination Events		SC, US	DIS	27th June 2014
	D19	Exploitation and Sustainability Plan		SC, EE	DR	31st March 2014
	D20	LINKVIT Business Plan		SC, EE	DR	15th September 2015

3.2. Review of Training framework and e-Learning tools

A training framework includes the delivery modes, the instructional delivery style, defining the audience and the content structure. These aspects characterize the profile of the six partners' training/learning supply. The partnership agreement includes Novogit, KU Leuven, GISIG, EPSIT, PLUS-UNIGIS, IUAV, and ISPRA.

Building a training framework is an important part of creating a training program. It is crucial to consider the elements of the framework to ensure that logistics and delivery options are properly guaranteed (see, also, network and orchestration services). Morevover, visibility and accessibility of all training materials produced within the Project have to meet the licence conditions and requirements.

3.2.1. Delivery modes

Online instruction based on e-Learning allow materials to be delivered to various locations at any time. Interaction via video conferencing or social networking tools is also possible. While online courses require an instructor to monitor student progress, the upload of discussion questions and tutoring on-call make this flexible mode ideal in cases where the schedules of instructors and participants clash. The main disadvantage of online instruction is that participants (administrators, decision-makers and post-graduates) must have computer access and be computer literate to participate. The costs of online curriculum development can mean a huge initial outlay. The content of workbooks can be delivered without instructors or timeline. They are often used in distance learning offerings when participant numbers is too small to justify the costs of developing an online course. The main disadvantage of workbooks is that it does not allow participant interaction. In certain circumstances, the courses can be delivered in mixed modes.

3.2.2. Instruction style

In a self-paced mode it is the students who set their pace. Generally, there is no set timeline to complete the content. If an instructor is assigned, she/he usually has the role of tutor. Normally, online and workbook delivery modes are used with self-paced instruction. The instructor determines pace and timing through online delivery modes.

3.2.3. Delivery style

Interactive Group Work discussions, games, brainstorming and simulations all combine to make group work interactive. Participants can be divided in pairs or larger groups to work in groups on selected topics. A lecture instructor will lead information sharing, while a demonstration instructor will specify the learning process and underlying rationale. Homework will be assigned to individual participants. It includes assignments (worksheets, research papers, readings etc.), exercises, empirical tests on spatial data and experiments.

3.2.4. Defining the audience and updating profiles

The LINKVIT audience is clearly defined based on the three target groups specified in the “Introduction”, namely:

- technicians working in public administrations and SMEs who wish to re-qualify, acquiring the new INSPIRE (T1a) competences;
- decision-makers in the same sectors (T1b);
- post-graduates seeking faster and more qualified access to the GI labour market with a more focused post-degree specialization (T2).

Certain training content therefore needs to be restricted to a specific group of participants while others relate to all participants. LINKVIT will adapt specific training modules for administrators and decision-makers and others for postgraduates. Modules may also have to be divided based on roles, e.g. a different module for spatial data analysis (statistics), modelling, mapping or communication.

Finally, some of the content could prove to be beneficial to all participants (potentially even external clients and stakeholders). In such a case, the consistency among training modules needs to be taken into consideration.

3.2.5. Content structure

The training program is organized along a five-step path. Each step contains the specific modules offered by partners with appropriate metadata specifications:

a) The first step, 'Context knowledge for INSPIRE', introduces the technical content of the INSPIRE Directive, in particular to up-to-date specification and network services. Regarding the spatial data, the self-directed learning modules focus on two particular issues: quality and harmonisation. The module on quality introduces the basic concepts of geospatial data and their application according to international standards, while the module on harmonisation describes the basic concepts of geospatial data harmonisation and translation. In addition, the first step also embodies an *ad hoc* module (self-learning or instructor-led) which describes the basic concepts of XML, GML and UML and how they are related to one another. The introductory phase ends with a lesson on geo-data searching with illustrations from geo-data portals in Europe.

b) The second step, 'Advanced technical modules', develops the content introduced in the first step, providing additional inputs on data remodelling experiences, metadata, data validation, and catalogue services.

c) The third and fourth steps are thematic. The third one delivers 'modules addressed to the stakeholders in nature conservation', whereas the fourth offers 'modules addressed to the stakeholders in geology and civil protection'. Topics on nature conservation are introduced with reference to NATURA 2000 Network and to other EU and International Policies on Nature Conservation such as RAMSAR, IUCN, OSPAR and alike. The *ad hoc* module will focus on the role of the INSPIRE Directive in the field of nature conservation, introducing the four INSPIRE themes (Annex I, no. 9 Protected sites, Annex III no. 17 Bio-geographical regions, 18 Habitats and biotopes, 19 Species distribution), considered also by the former NATURE-SDI*plus* project. The two training modules on geology and civil protection, besides assessing the 'state-of-the-art', will design risk management strategies, reporting relevant international standards and practical experiences. A complementary focus will be on defining geological data, applying INSPIRE Directive and OGC GeoSciML standards. Harmonisation issues will cross political boundaries in order to highlight some of the problems and solutions in the cross-border areas belonging to similar geo-morphological structures.

d) The last step is a 'window to the future', which relates the LINKVIT e-Learning programme to lines of research that are close to the Inspire Directive implementation. A specialized module introduces sensor web enablement, giving an overview of the underlying semantic

web technologies and architecture. The semantic web is a collaborative project led by World Wide Web Consortium (W3C), which provides "a common framework that allows data to be shared and reused across application, enterprise and community boundaries" (W3C).

LINKVIT training modules and available metadata can be accessed from the project partner's main site: http://www.linkvit.eu/training-modules-2/.

Quality assessment of the **training framework and e-Learning tools** involves the following procedure.

Objectives:

- To ensure the quality training framework and related infrastructures, including the e-Learning tools.

Scope (items to be tested):

- start-up (structure, content, audience profile),
- updating (structure, content, audience profile),
- usability/accessibility (delivery modes, instructional style, delivery style).

Internal evaluation	**Steering Committee (SC)**
input	– infrastructure technical specifications – learning paths specifications – training framework guide for users – e-Learning platform
method	– review – testing – customer satisfaction analysis - CSA (by each target group) – feedback on the framework and infrastructure (from CSA)
quality criteria	– usability – accessibility – clarity – operational guidance

	– availability of documentation/instructions availability of a knowledge map (test of self-learning) – achievement of project objectives
output	– statements of proposed changes – quality evaluation report

External evaluation	**External Expert (EE), Users (US)**
input	– infrastructure technical specifications – learning paths specifications – training framework guide for users – e-Learning platform
method	– review – testing – customer satisfaction analysis - CSA (by each target group) – feedback assessment
quality criteria	– usability – accessibility – clarity – operational guidance – availability of documentation/instructions availability of a knowledge map (test of self-learning) – achievement of project objectives
output	– quality evaluation report

3.3. Review of project documents, reports, plans, devices and actions

Quality assessment of the **documents and reports** produced involves the following procedure.

Objectives:

- To ensure the quality of the produced documents and reports.

Scope (items to be tested):

- document layout,
- structure,
- content (test and appendixes),
- sequence.

Internal review	**Project Co-ordinator (CO), Steering Committee (SC)**
input	draft, version 1.x
method	review content analysis[6]
quality criteria	form according to project rules: – numeration – table of contents – standard template used – corporate design used – metadata contents: – objectives achieved – clarity of presentation – coverage of the topics – compliance with the Project work plan and time-table – compliance with the EU and international standards
output	– statement of proposed improvements – quality evaluation report

External review **(when required)**	**External Expert (EE) or Users groups (US)**
input	draft, version 1.x
method	review

[6] Analysis of a deliverable through classification, tabulation, and evaluation of its key symbols and themes in order to ascertain its meaning and probable effect.

quality criteria	form according to project rules: – numeration – table of contents – standard template used – corporate design used – metadata contents: – objectives achieved – clarity of presentation – coverage of the topics – compliance with the Project workplan and time-table – compliance with the EU and international standards
Output	– quality evaluation report

3.4. Review of dissemination material and of web site

The LINKVIT web site is based on the Content Management System (CMS)[7]. For the Restricted and Partner area of the project, a group of management features (documents & files management, contacts, to-do lists, and alike) have been implemented. All these resources are deployed using free and open source software hosted in a Linux-based dedicated cloud server.

QA does not consider the architecture of the web site, but its performances (even if the two components are connected), in particular the quality of communication and procedures.

The project's website (available at *www.linkvit.eu*) is designed to raise awareness and for dissemination purposes. It represents a 'community resource' for interested parties (stakeholders, simple users, developers) in the European Community and abroad.

3.4.1. Dissemination material

Dissemination material will be prepared and updated along the project according to the Dissemination Plan and project requirements. Material will consist in particular of a multilingual project leaflet, power point presentations and posters. The leaflet is produced at the beginning of

[7] CMS is installed on a web server to facilitate management of the site.

the project, and other material will be prepared in view of participation into sectoral events and conferences.

Reference dissemination material has been already finalized at the beginning of the project including a standard and a poster-based presentation of its objectives, in addition to the leaflet,

Moreover, four issues of electronic Newsletters are scheduled, the first being published at the project beginning as a general introduction, the others each eight months, to show project progresses and disseminate on-going outcomes. The newsletters are addressed to all actual and potential stakeholders and to final users of the project, following the dissemination rules defined by the Awareness and Dissemination Plan.

3.4.2. Infrastructure

The site is currently being designed and tested to provide project overviews and highlights, up-to-date information on on-going project results, and initial dissemination material such as the project factsheet.

The web site, being a communication channel, describes the goals of the project in simple, jargon-free language.

Project members will be asked to promote the project website, using banners or links, on other websites (INSPIRE or SEIS related websites, project and company websites, and so forth).

At full capacity, the web site will contain the following information:

- list of partners working in the project, with a short profile, role in the project and link to the partners' web site;
- public documents, including reports and publications, reports drawn from selected confidential material;
- project events, including user group meetings, conferences and public workshops proceedings;
- project news (i.e. events, publications, etc.);
- link to the training modules and concerned documentation;
- links to the project restricted area (collaboration and project management website).

The website will be cross-linked from/to other relevant EU and EU sponsored sites. Its "publications and media" section will make available all its public deliverables. The resources will be published in a non-proprietary format (i.e. PDF/A for textual documents) and with an 'attribution share alike' license. Public presentations will also be available in SlideShare.

Quality assessment of the **dissemination material and web site** involves the following procedure.

Objectives:

- To assess the layout, content, readability/attractiveness as well as usability and accessibility of the project's promotional materials and web site.
- To assess interaction between the project's progress and its web site content.

Scope (items to be tested):

- layout design,
- readability/attractiveness,
- usability/accessibility,
- updating,
- texts for printed materials and for web presentation.

Internal review	**Steering Committee (SC)**
input	draft, version 1.x
method	– review – content analysis
quality criteria	form according to project rules*:* – frame – design and graphics – open communication – standardized vs. specific documentation and reporting – acceptance of rules by all participants – workable tools

	contents: – clarity – accessibility for professional public – usability – attractiveness – effectiveness – updating
Output	– statements of proposed changes

External review	**External expert (EE)**
Input	draft, version 1.x
method	review
quality criteria	form according to project rules: – frame – design and graphics contents: – clarity – accessibility for professional public – usability – attractiveness – effectiveness – updating
output	– statements of proposed changes – quality evaluation report

3.5. Review of metadata for training material classification

The metadata template used by LINKVIT is designed to organize the training material according to a standard classification scheme which features the following description vector:

1) source;
2) ownership;
3) abstract;
4) structure;
5) learning outcomes;
6) intended audience;
7) pre-requisites;
8) language;
9) format;
10) expected workload.

The training material will be classified in accordance with the business process scheme (BPMN). In case of adaptation, a defined metadata template has to be followed.

Quality assessment of **metadata for training material classification** involves the following procedure.

Objectives:

- To ensure quality in the teaching material and its organization within e-Learning platform.
- To ensure Library consultation.

Scope (items to be tested):

- Updating the e-Learning framework content.
- Internal consistency.
- Didactic clarity.

- Effectiveness for searching.

Internal review	**Steering Committee (SC)**
input	draft, version 1.x
method	– review – testing – customer satisfaction assessment (see WP4) – cross-sectional analysis – semantic mapping
quality criteria	structure of metadata: – matching the vector of descriptors – layout – non-redundancy – easiness in filling – multilingual version (shared dictionary) content of metadata: – completeness – appropriateness – clarity of conditions for delivery – clarity of prerequisites for accessing – clarity of learning outcomes – evaluability of learning outcomes
output	– statements of proposed changes – quality evaluation report

***External review* (when required)**	**External Expert (EE), Users (U)**
Input	draft, version 1.x
Method	– review – testing – evaluation of the improvements management
quality criteria	structure of metadata: – matching the vector of descriptors

	– layout – non-redundancy – easiness in filling – multilingual version (shared dictionary) content of metadata: – completeness – appropriateness – clarity of conditions for delivery – clarity of prerequisites for accessing – clarity of learning outcomes – evaluability of learning outcomes added value of metadata: – adaptability to different kinds of training material classification of training material – potentiality of searching – development of semantic devices
Output	– results from tests – quality evaluation report

3.6. Review of the Learning Paths for technicians in public administrations and SMEs

The review is carried out to verify whether the e-Learning supply meets the training needs of the target group and promotes the dissemination of the INSPIRE approach. To verify the effectiveness of the training offer, quality assessment is carried out at three levels: the first concerns the design of the modules (contents and sequence), the second their implementation, and the third the impact, mainly in terms of learning outcomes.

Quality assessment of the Learning Paths **for technicians in public administration and SMEs** involves the following procedure.

Objectives:

- To provide homogeneous learning paths for selected categories of technicians in public administrations and SMEs.

- To promote the dissemination of the INSPIRE principles and approach.

Scope (items to be tested):

- Targeting professional categories within public administration and SME domains.
- Learning outcomes (skill, knowledge, awareness in practice).
- Contents (see training modules and tutoring).
- Consistency with public administration/SME requirements.
- Consistency of contents with training objectives and learning time.
- Dissemination multiplier effect (hypotheses and estimates, if possible, on dissemination of the INSPIRE principles and approach).

Internal review	Steering Committee (SC)
Input	draft, version 1.x
Method	– content review – assessment of content consistency with training objectives and learning time – analysis of significance of the target group (targeting) – analysis of consistency with PA/SME requirements – testing learning outcomes – customer satisfaction analysis – estimate of dissemination multiplier effect
quality criteria	– structure of Learning Path: o layout o metadata o objectives o learning contents o significance of the target group (targeting) o duration (time) – content of Learning Path: o consistency with training objectives and learning time o consistency with PA/SME requirements o clarity of learning outcomes (skill, knowledge, awareness in

	practice) o clarity of learning objectives o clarity of prerequisites for accessing – added value: o dissemination multiplier effect
Output	– statements of proposed changes – quality evaluation report

external review (when required)	**External Expert , Users**
Input	draft, version 1.x
Method	– content review – assessment of content consistency with training objectives and learning time – analysis of significance of the target group (targeting) – analysis of consistency with PA/SME requirements – testing learning outcomes – customer satisfaction analysis – estimate of dissemination multiplier effect – management and evaluation of the improvements
quality criteria	– structure of Learning Path: o layout o metadata o objectives o learning contents o significance of the target group (targeting) o duration (time) – content of Learning Path: o consistency with training objectives and learning time o consistency with PA/SME requirements o clarity of learning outcomes (skill, knowledge, awareness in

	practice) o clarity of learning objectives o clarity of prerequisites for accessing – added value of Learning Path: o EU dimension and standardisation degree o dissemination (application in the public and private domains)
Output	– results from tests, analysis and assessment – quality evaluation report

3.7. Review of the Learning Paths for decision makers

The review is carried out to verify whether the e-Learning supply meets the training needs of the target group and promotes a dissemination of the INSPIRE approach. To verify the effectiveness of the training offer, quality assessment is carried out at three levels: the first concerns the design of the modules (contents and sequence), the second their implementation, and the third the impact, mainly in terms of learning outcomes.

Quality assessment of the **Learning Paths for decision makers** involves the following procedure.

Objectives:

- To provide homogeneous learning paths for decision makers in public administrations and SMEs.
- To promote the dissemination of the INSPIRE principles and approach.

Scope (items to be tested):

- Targeting decision maker categories.
- Learning outcomes (skill, knowledge, awareness in practice).
- Contents (see training modules and tutoring).
- Consistency with decision making approaches and operational environments.
- Consistency of contents with training objectives and learning time.

- Dissemination multiplier effect (hypotheses and estimates, if possible, on dissemination of the INSPIRE principles and approach).

Internal review	**Steering Committee (SC)**
Input	draft, version 1.x
Method	– content review – assessment of content consistency with training objectives and learning time – analysis of significance of the target group (targeting) – analysis of consistency with decision making approaches and operational environments – testing learning outcomes – customer satisfaction analysis – estimate of dissemination multiplier effect
quality criteria	– structure of the Learning Path: o layout o metadata o objectives o learning contents o significance of the target group (targeting) o duration (time) – content of the Learning Path: o consistency with training objectives and learning time o consistency with decision making approaches and operational environments o clarity of learning outcomes (skill, knowledge, awareness in practice) o clarity of learning objectives o clarity of prerequisites for accessing – added value: o dissemination multiplier effect
Output	– statements proposing changes – quality evaluation report

External review (when required)	**External Expert (EE), Users (U)**
Input	draft, version 1.x
Method	– content review – assessment of content consistency with training objectives and learning time – analysis of significance of the target group (targeting) – analysis of consistency with decision making approaches and operational environments – testing learning outcomes – customer satisfaction analysis – estimate of dissemination multiplier effect – management and evaluation of the improvements
quality criteria	– structure of the Learning Path: o layout o metadata o objectives o learning contents o significance of the target group (targeting) o duration (time) – content of the Learning Path: o consistency with training objectives and learning time o consistency with decision making approaches and operational environments o clarity of learning outcomes (skill, knowledge, awareness in practice) o clarity of learning objectives o clarity of prerequisites for accessing – added value: o EU dimension and standardisation degree o dissemination (application in the public and private domains)
Output	– results from tests, analysis and assessment – statements proposing changes

	– quality evaluation report

3.8. Review of the Learning Paths for postgraduates

The review is carried out to verify whether the e-Learning supply meets the training needs of the target group and promotes the dissemination of the INSPIRE principles and approach. To verify the effectiveness of the training offer, quality assessment is carried out at three levels: the first concerns the design of modules (contents and sequence), the second their implementation, and the third the impact, mainly in terms of learning outcomes.

Quality assessment of the **Learning Paths for postgraduates** involves the following procedure.

Objectives:

- To provide homogeneous learning paths for postgraduates with different educational background.
- To promote the dissemination of the INSPIRE principles and approach.

Scope (items to be tested):

- Targeting postgraduate categories according to the educational backgrounds.
- Learning outcomes (skill, knowledge, awareness in practice).
- Contents (see training modules and tutoring).
- Consistency of contents with training objectives and learning time.
- Dissemination multiplier effect (hypotheses and estimates, if possible, on dissemination of the INSPIRE principles and approach).

Internal review	**Steering Committee (SC)**
input	draft, version 1.x
method	– content review – assessment of content consistency with training objectives and learning time

	– analysis of significance of the target group (targeting by educational background) – testing learning outcomes – customer satisfaction analysis – testing potential feedback on training courses of origin – estimate of dissemination multiplier effect
quality criteria	– structure of the Learning Path: o layout o metadata o objectives o learning contents o significance of the target group (targeting by educational background) o duration (time) – content of the Learning Path: o consistency with training objectives and learning time o clarity of learning outcomes (skill, knowledge, awareness in practice) o clarity of learning objectives o clarity of prerequisites for accessing – added value: o improvement of the Learning Path o dissemination multiplier effect o potential feedback on training courses of origin o EU dimension and standardization/context-led degree
output	– statements proposing changes – quality evaluation report

External review (when	**External Expert (EE), Users (U)**

required)	
input	draft, version 1.x
method	– content review – assessment of content consistency with training objectives and learning time – analysis of significance of the target group (targeting by educational background) – testing learning outcomes – customer satisfaction analysis – testing potential feedback on training courses – estimate of dissemination multiplier effect – management and evaluation of the improvements
quality criteria	– structure of the Learning Path: o layout o metadata o objectives o learning contents o significance of the target group (targeting by educational background) o duration (time) – content of the Learning Path: o consistency with training objectives and learning time o clarity of learning outcomes (skill, knowledge, awareness in practice) o clarity of learning objectives o clarity of prerequisites for accessing – added value: o improvement of the Learning Path o dissemination multiplier effect o potential feedback on training courses

	○ EU dimension and standardization/context-led degree
Output	– results from tests, analysis and assessment – statements of proposed changes – quality evaluation report

3.9. External evaluation of project management and procedures (PM)

The quality of project management will be evaluated by the External Expert, to guarantee an assessment of implemented procedures..

Objectives:

- To ensure that monitoring and management procedures put in place are suitable to:
  - guarantee the achievement of project objectives in accordance with the foreseen schedule and budget;
  - ensure that possible deviations from the original plan are properly addressed and corrective solutions adopted ;
  - avoid conflicts among Project Partners and, in case, start a negotiation suitable to solve any disputes.

Scope (items to be tested):

- quality of the management routines and procedures;
- quality of communication and cooperation among partners.

input	Project Handbook, Periodic Progress Reports, Minutes of Steering Committee meetings, Action Plans
method	review, evaluation of improvements along the project, collection of feed-back from Project Partners
quality	– management structures and procedures are appropriate and well-detailed

criteria	– management procedures are carefully followed by the Associated Beneficiaries, as well as indications by the Project Management and the Project Management Board – the communication flow between the Project Management and the Beneficiaries is well established and the Beneficiaries have a clear idea of their tasks and deadlines – the project plan and the budget are respected, possible deviations are timely detected and solved – the Quality Management process ensures a good level of control on the production of deliverables – the interaction of project partners is smooth, continuous and effective, the participation in project meetings is high and no communication problems are detected – the communication procedures and tools established are user-friendly and effective to ensure cooperation
output	– statements of proposed improvements – quality evaluation report

4. Summary and preliminary recommendations

The WP5 activities based on the Quality Management Plan (Task 5.1) incorporate the procedures and mechanisms that ensure the quality of project activities and the outcomes.

The quality management process, by engaging the partners during the two years, along with external evaluator, if and when required, strives towards ongoing improvements in the project plan and in its outcomes. A quality management report is foreseen every 8 months (Task 5.2).

The Quality Management strategy envisages progress in terms of the work plan, reporting the success or failure of tasks, as well as EU policies on quality assurance (ENQA) and qualification (EQF) of training initiatives.

The methods and criteria mentioned in the present document need to be tested and refined based on the deliverable contents, especially in collaboration with WP2, WP3 and WP4. The usefulness of QA will depend on the reliability of input and on the use of results, within and outside the project (see WP6 'Dissemination and exploitation').

Two operational results are foreseen: enhanced learning paths and products, and the design of a Master on the principles, the approaches and techniques suggested by INSPIRE.

The proposal for a Master's degree in INSPIRE which promotes an 'INSPIRE Driver's Licence' is already contained in WP6. Additionally, the QA-WP5 believes that promoting a Master's degree along with the Driver's Licence are the best actions to support the LINKVIT Training Framework after the project conclusion. The provisional designation of the Master is 'Climatic scenarios and spatial change. The INSPIRE contribution to environmental knowledge and management'.