

# Quality Management Plan (QMP)

## Deliverable 4.1

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APPLIED SCIENCES

  
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## Dissemination level

Code	Access granted to	
PU	Public	x
PP	Restricted to other programme participants (including the Commission Services)	
CO	CO Confidential, only for members of the consortium (including the Commission Services)	

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0.2		Ludger Schneider-Störmann	Minor amendments
0.3		Jassi	Minor amendments
1.0	03/05/2018	Thomas Röhr	Application of RADICAL template

## Document status

Status description	
<b>For Information</b>	
<b>Draft Version</b>	x
<b>Final Version (Internal document)</b>	
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## Abbreviations

Acronym	Explication
<b>BM</b>	Bilateral Meeting
<b>Mx</b>	Month x of project run-time, starting with M1 in November 2017
<b>PCT</b>	Project Coordination Team (one suitably qualified representative of each Party)
<b>PL</b>	Project Leader
<b>PP</b>	Project partner
<b>PTM</b>	Project Team Meeting
<b>QMG</b>	Quality Management Group
<b>QMP</b>	Quality Management Plan
<b>WP / WPx</b>	Work Package / Work Package x
<b>WPL / WPLx</b>	Working Package Leader / WPL of working package x
<b>WPM</b>	Working Package Meeting

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# 1 Introduction

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## 1.1 Scope

WP4 Quality Assurance ensures a high quality of the work realised and the outcomes in the RADICAL project as proposed to the European Commission in the corresponding application in response to the “KA3 – Support for Policy Reform; action: VET-Business Partnerships on Work-based learning and Apprenticeships” call, submitted on 17 January 2017:

- ❖ Title: RADICAL – Filling Skills Gaps in Blue Industry by Radical Competence Boost in Engineering VET
- ❖ Grant agreement: 2017-2091/001-001
- ❖ Project number: 585186-EPP-1-2017-1-FI-EPPKA3-VET-APPREN

Quality assurance monitors the development of the project and procedures used to ensure high-quality deliverables by preventing mistakes and avoiding problems. It encompasses the entire process, which includes main activities such as needs literature review, in-depth interviews, surveys and piloting as well as exploitation and dissemination activities. It includes identifying, evaluating and managing of potential risks. Selected indicators will help to reach the objectives.

Whereas WP 4 focusses on guaranteeing that all project outcomes will be delivered in time, a close cooperation is done with WP 5 “Project evaluation” responsible for the evaluation of the content of the deliverables. Only if the document evaluation is validated in time following the evaluation process defined in WP 5 it will be accepted as high quality outcome by WP 4.

WP 4 is not treating financial issues: With a given maximum grant from the European Commission for each partner and no foreseen/accepted budget shifts between those, each project partner is responsible for his own budget and has to auto-finance possible exceeding costs to guarantee the production of the planned outcomes.

## 1.2 The RADICAL Project

The maritime technology industry, employing over 500 000 people and having a total annual turnover of around 91 billion euros in Europe, is crucial for the economy and employment of Southwest Finland since around 30 % of Finnish 8 billion euros’ annual turnover is generated in Southwest Finland, mostly by Meyer Turku shipyard and its network. Therefore, by following the European Commission’s Smart Specialization Strategy, RADICAL project is strongly focused on supporting the competitiveness of the ecosystem of the maritime technology in the Southwest Finland.

The main challenge in the maritime industry lies on qualified labour force. The overall objective of the RADICAL project is closing urgent skills gaps between the demands of working life and post-secondary vocational education and training (VET). It aims at developing a new regional implementation model for post-secondary engineering education with a focus on work-based learning and a new VET-business mentoring model. By this, companies will be more closely tight to the modern way of educating future marine technology professionals.

To reach the striven goals, RADICAL project is built around seven working packages (WP), table 1.

Table 1: RADICAL project work packages and WP leader

WP-Number	WP-Name	WPL
1	Management	Jassi Aho (Turku UAS)
2	New VET-Businesses Mentoring Model	Rauni Jaskari (Turku UAS)
3	New Regional Implementation Model for Post-Secondary Engineering Education	Tero Reunanen (Turku UAS)
4	Quality Assurance	Thomas Röhr (ESTA)
5	Project evaluation	Martin Grotjahn (Hannover UAS)
6	Exploitation	Janne Siivonen (Turku UAS)
7	Dissemination	Jassi Aho (Turku UAS)

The RADICAL consortium is based on multidimensional regional cooperation where key partners form also the main target group for the project. Higher education institutions from Germany and France contribute with their experiences and are responsible for Quality Assurance (WP4) and Evaluation of results (WP5). The project partners as well as their responsibilities and WP participations are listed in table 2.

Table 2: RADICAL project partners with their responsibilities and WP participation

Partner Number	Project partner	City Country	WP 1	WP 2	WP 3	WP 4	WP 5	WP 6	WP 7
1 (PL)	Turku University of Applied Sciences	Turku Finland	L	L	L	X	X	L	L
2	Varsinais-Suomen Yrittäjät ry	Turku Finland	X	X	X	X		X	X
3	Varsinais-Suomen liitto	Turku Finland	X	X	X	X		X	X
4	Meyer Turku Oy	Turku Finland	X	X	X	X		X	X
5	ESTA School of Business and Engineering	Belfort France	X	X	X	L	X	X	X
6	University of Applied Sciences Hannover	Hannover Germany	X	X	X	X	L	X	X
7	University of Applied Sciences Aschaffenburg	Aschaffenburg Germany	X	X	X	X	X	X	X

PL = Project Leader, L = WP Leader, X = participation in WP

### 1.3 Quality Management Plan building

The writing of the present document obeyed to the following approach: After the writing of a first preliminary version of the document, it has been accepted by all project partners. Comments, suggestions and proposed modifications have been arbitrated by the responsible of the four in WP 4 partners.

Figure 1 shows the QMP building and updating process.

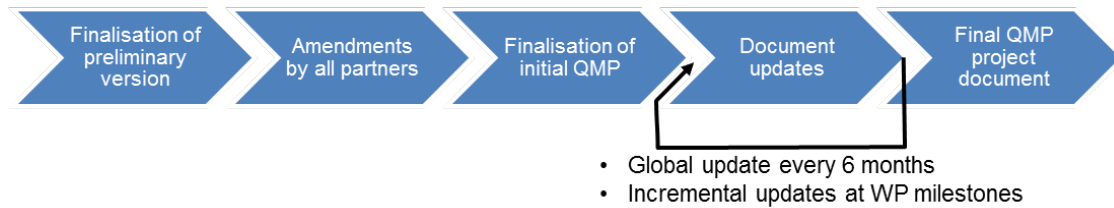


Figure 1: Quality Management Plan building and updating process

The present document will be updated after each quality control and evaluation by including the corresponding results, so that, at the end of the RADICAL project, all quality management related information are concentrated in this document, except for some tables externalised to Excel for easier handling.

All relevant dates for this building and updating process are listed in the “Document history” section at the beginning of this document.

### 1.4 Approach used for quality assurance

Quality assurance is a continuous process in projects. The present document describes the different aspects handled in this WP in detail.

The quality assurance approach is shown in figure 2.

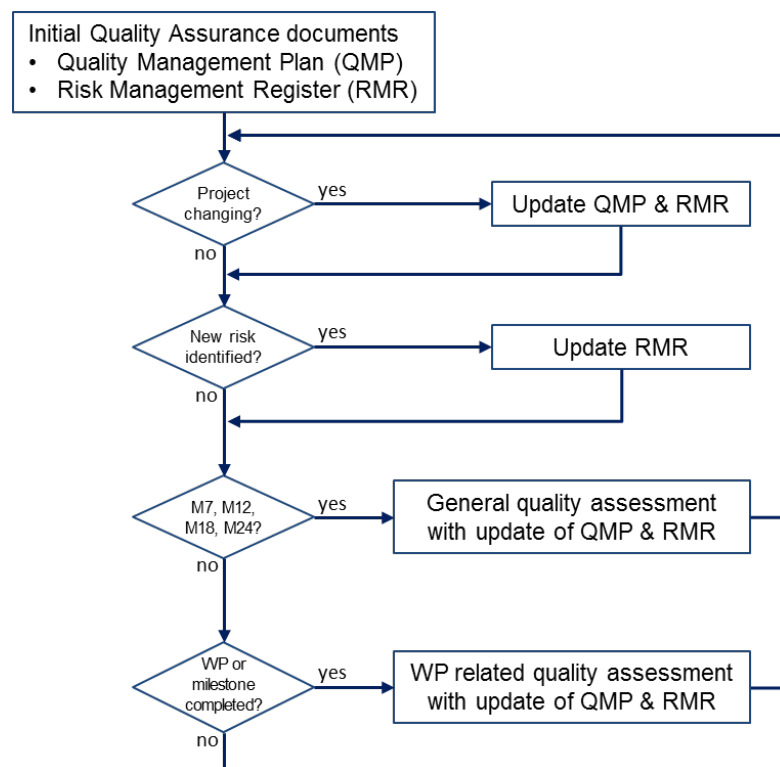


Figure 2: Quality assurance process in RADICAL project

## 2 Partner contact information

### 2.1 Turku University of Applied Sciences

Partner Number	1
Responsible contact and Project manager	Jassi Aho Project Advisor Phone: +358 40 3550 360 Mail: <a href="mailto:jassi.aho@turkuamk.fi">jassi.aho@turkuamk.fi</a>
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Content Manager	Tero Reunanen Degree Programme Leader in Industrial Management and Engineering Research Leader in Business Competences and Process Management +358 44 907 4592 Mail: <a href="mailto:tero.reunanen@turkuamk.fi">tero.reunanen@turkuamk.fi</a>
Administrational contact	Katja Halme Project Secretary Phone: +358 40 355 0806 Mail: <a href="mailto:katja.halme@turkuamk.fi">katja.halme@turkuamk.fi</a>
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Website	<a href="http://www.turkuamk.fi">www.turkuamk.fi</a>

### 2.2 Varsinais-Suomen Yrittäjät ry

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## 2.3 Varsinais-Suomen liitto

Partner Number	3
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Website	<a href="http://www.varsinais-suomi.fi">www.varsinais-suomi.fi</a>

## 2.4 Meyer Turku Oy

Partner Number	4
Responsible contact	Kari Sillanpää Head of R&D Phone: +358 50 371 4044 Mail: <a href="mailto:kari.sillanpaa@meyerturku.fi">kari.sillanpaa@meyerturku.fi</a>
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Administrational contact	Same as responsible contact
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## 2.5 ESTA School of Business and Engineering

Partner Number	5
Responsible contact	Thomas Röhr Professor, Head of International Relations Phone: +33 6 47 38 02 00 Mail: <a href="mailto:trohr@esta-groupe.fr">trohr@esta-groupe.fr</a>
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Website	<a href="http://www.esta-groupe.fr">www.esta-groupe.fr</a>

## 2.6 University of Applied Sciences Hannover

Partner Number	6
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## 2.7 University of Applied Sciences Aschaffenburg

Partner Number	7
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Project Team member	Same as responsible contact
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Website	<a href="http://www.h-ab.de/itv">www.h-ab.de/itv</a>

### 3 References and related documents

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The following reference documents are basis for the QMP; they are all saved in the RADICAL workspace.

- ❖ Folder Documents/Administration/1. MANAGEMENT/Agreements, Budget, Project Description:
  - Radical application: Radical 2017 Project Description.pdf
  - Radical budget: Radical 2017 revised budget.xls
  - Radical Grant Agreement: 2017-2091\_Agreement.pdf

For some tables, MS Excel has been used to facilitate data handling and update:

- ❖ List of milestones: 180112 RADICAL – List of Milestones (V1.0).xlsx
- ❖ Risk management: 080115 RADICAL – Risk management register (V1.0).xlsx

All three documents, the QMP, the list of milestones and the risk management register shall always have the same version number. If one document is updated, version number is also changed for the other ones, even if there is no modification in.

## 4 Quality Management Group (QMG)

Quality assurance is realised by four RADICAL project partners and is led by ESTA School of Business and Engineering, Belfort, France. The four partners form the Quality Management Group (QMG); the participants and their respective roles are listed in table 3.

**Table 3: Constitution of the Quality Management Group (QMG)**

Partner Number	Project partner	Name	Role
1	Turku University of Applied Sciences	Tero Reunanen	Assistant quality reviewer
5 (WPL)	ESTA School of Business and Engineering	Thomas Röhr	Responsible quality reviewer
6	University of Applied Sciences Hannover	Martin Grotjahn	Assistant quality reviewer
7	University of Applied Sciences Aschaffenburg	Ludger Schneider-Störmann	Assistant quality reviewer

The RADICAL project aims at developing a new VET approach for the maritime industry, implemented within the Turku UAS study programmes. Turku UAS therefore is the main beneficiary of the project, and is represented in the quality management group. The three other participants are specialists in higher education from Germany and France. A high level of independence of the QMG members with the main beneficiary of the RADICAL project is therefore given.

## 5 Standards to be used

### 5.1 Document management workspace

All official documents from working to final level, including intermediary document versions, are saved on the RADICAL Workspace which can be accessed by authorised persons via the Internet link at <https://messi.turkuamk.fi/tyotilat/378>.

### 5.2 Document standards

#### 5.2.1 File naming structure

All official documents related to the RADICAL project will follow the naming structure shown in figure 3:

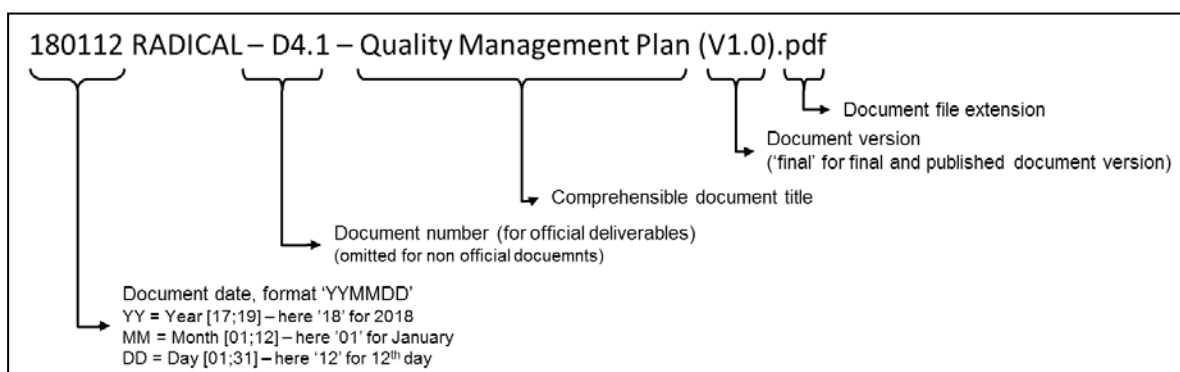


Figure 3: RADICAL File naming structure

#### 5.2.2 Document style

All RADICAL deliverables and presentations use the corresponding RADICAL templates developed in WP 7 to ensure a homogeneous presentation of the project to external persons:

- ❖ RADICAL Report template
- ❖ RADICAL Presentation template

Documents shall be optimised for double faced impression, with a larger frame on the inner side for better legibility.

#### 5.2.3 Structure and elements of RADICAL reports

All official RADICAL deliverables will respect the following structure:

- ❖ Cover page including (no page number)
  - Project logo and name
  - Document title
  - Deliverable number
  - Date of publication
  - Document version
  - Grant agreement number, Logo of Erasmus+ co-funding, Erasmus+ project number
  - Logos of project partners

- ❖ Back of cover page (no page number)
  - Document authors
  - Dissemination level
  - Revision history
  - Document status
- ❖ The document's executive summary (numbering starting with page 1, formatted in small roman figures i, ii, ...)
- ❖ Tables and lists (starting with an impair page, numbering continuous from previous section)
  - The table of contents
  - Used abbreviations
  - List of figures
  - List of tables
- ❖ The document content (starting on an impair page, numbering = 1,2,...)
- ❖ The annexes (starting on an impair page)

### 5.3 Organisation of meetings

During the RADICAL project, several meetings are planned involving different stakeholders and partners. Meetings can therefore be categorised with regard to table 4.

Table 4: Organisation of meeting

	Meeting type	Responsible organiser	Invitation	Minutes
PTM	Project Team Meeting	PL	At least 14 days before	max. 14 days after
PTM	Ad-hoc Project Team Meeting	PL	At least 1 week	max. 14 days after
WPM	WP related meetings	WPL	least 14 days before	max. 14 days after
BM	(Spontaneous) Bilateral meetings	All project members	-	Depending on discussed results, max. 14 days after

PTMs and WPMs are organised with an invitation to be send to all participants including

- ❖ The planned agenda
- ❖ The necessary annexes to prepare the meeting
- ❖ A list of known decisions to be taken

This allows that participants well prepare their participation and increase their efficiency.

PTMs and WPMs mandatorily need minutes to be shared with all participants within two weeks after the meetings maximum. All participants can request amendments and modifications within two weeks after the minutes have been shared. Without reaction within this delay, minutes are considered as accepted by the participant. All minutes are saved on the RADICAL workspace.

As BMs are spontaneous and bilateral, minutes are only requested if the subject is of importance for other project partners. If the decision taken impacts other tasks than the one the BM participants are working on, it must be confirmed by the WPL during the next PM

or, if the decision is urgent, by an electronic information of the PL and all WPL with request of confirmation/refusal of the decision.



## 6 Schedules

### 6.1 Project schedule

RADICAL project bases on seven (7) WP, each WP is divided into several tasks which can be continuous tasks for longer periods (e.g. project management) or tasks to be realised within restraint time frames.

WP	Title/Task	Start Date	End Date	2017		2018												2019																	
				11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12						
WP1	Project Management	01/11/2017	31/10/2019																																
	Consortium Agreement					4. RADICAL Gantt Chart																													
	Project Contract																																		
	Meetings																																		
	Progress report																																		
	Final report																																		
WP2	New VET – Businesses Mentoring Model																																		
	Study visit																																		
	VET Mentoring Model																																		
	Case studies																																		
	Study results																																		
WP3	New Regional Implementation Model for Post-Secondary Engineering Education																																		
	Gathering the current needs with first cases																																		
	Developing methods for piloting																																		
	Piloting first cases																																		
	Stabilizing the system																																		
WP4	Quality Assurance																																		
	QMP	01/11/2017	31/01/2018																																
	Quality monitoring	01/02/2018	30/10/2019																																
	Regular update M7	01/05/2018	31/05/2018																																
	Regular update M12	01/10/2018	31/10/2018																																
	Regular update M18	01/04/2019	30/04/2019																																
	Final update M24	01/10/2019	31/10/2019																																
WP5	Project Evaluation																																		
	Support providing																																		
	Evaluation plan																																		
	Final result's evaluation																																		
WP6	Exploitation																																		
WP7	Dissemination	01/11/2017	31/10/2019																																
	RADICAL CI																																		
	Regional seminar 1																																		
	Regional seminar 2																																		
	Final international seminar																																		

### 6.2 Quality management planning

Quality management is a continuous process. Each WPL assures that WP(s) are realised corresponding to costs, delay and quality described in the RADICAL application form (cf. section 3). WPL are also responsible for the daily management of risks related to their WP. They immediately inform the QMG

- ❖ When a risk occurs
- ❖ When a new risk is identified
- ❖ When an event occurs which impacts costs, delays and/or quality of WP results

After the elaboration of this QMP within the first two project month, the QMG intervenes in

- ❖ M7, M12, M18 and M24 for general QMP updates (planning and advancement, risks, milestones...) on month
- ❖ Within two weeks after completion of a WP/task/deliverable.

Each QMG intervention will be documented; minutes must be accepted by all QMG members and saved on the RADICAL workspace.

QMG is also responsible for the redaction of the final QMP report.

## 7 Deliverables and indicators

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### 7.1 Deliverables

Project deliverables are described in the RADICAL project description and listed again in table 5. The dissemination levels are according to Erasmus+ reporting the following:

- ❖ **PU** = Public
- ❖ **PP** =Restricted to other programme participants (including Commission services and project reviewers).
- ❖ **CO** = Confidential, only for members of the consortium (including Agency and Commission services and project reviewers).

This table is also part of the separated Excel file “180112 RADICAL - D.4.1 - Deliverables, planning and indicators.xlsx” which will be used during the continuous and cyclic QM update sessions.

Table 5: List of deliverables with deadline publishing manner

ID	Title	Deadline/ date	Language	Publishing manner	Diss. level
D.1.1.	Consortium Agreement	31/12/2017	English	Contract paper	CO
D 1.2.	Project contract	31/12/2017	English	Paper contract	CO
D 1.3.	Joint meeting report 1	19/12/2017	English	eReport published in project's internet pages <sup>2</sup>	CO
D 1.4.	Joint meeting report 2	27/02/2018	English	eReport published in project's internet pages	CO
D 1.5.	Joint meeting report 3	2 weeks after the meeting	English	eReport published in project's internet pages	CO
D 1.6.	Joint meeting report 4	2 weeks after the meeting	English	eReport published in project's internet pages	CO
D 1.7.	Progress Report	31/12/2018	English	Paper and eReport	CO
D 1.8.	Final Report	31/12/2019	English	Paper and eReport	PU
D 2.1.	Study visit to Germany and France	15/01/2018	English	Visit	PP
D 2.2.	Mentoring in cooperation processes model	30/06/2018	English, Finnish	ePublication	PU
D 2.3.	Study results	30/09/2019	English	ePublication	PU
D 2.4.	Case studies from piloting	30/09/2019	English	ePublication	PU
D 3.1.	Cooperation model	30/09/2019	English, Finnish	ePublication	PU
D 3.2.	New curriculum for BE	30/09/2019	English, Finnish	eReport and curriculum in SOLEops system	PU
D 3.3.	Model for execution of studies	30/09/2019	English	ePublication	PU
D 3.4.	Study of results	30/09/2019	English	ePublication	PU
D 4.1.	Quality management plan	31/01/2018	English	ePublication published in project's internal Management software	CO
D 4.2a.	Updating and monitoring quality M7	31/05/2018	English	ePublication published in project's internal Management software	CO
D 4.2b.	Updating and monitoring quality M12	31/10/2019	English	ePublication published in project's internal Management software	CO
D 4.2c.	Updating and monitoring quality M18	30/04/2019	English	ePublication published in project's internal Management software	CO
D 4.2d.	Final updating and monitoring quality M24	31/10/2019	English	ePublication published in project's internal Management software	CO

ID	Title	Deadline/ date	Language	Publishing manner	Diss. level
D 5.1.	Formative evaluation support	Starting 30/11/2017	English, German	Oral. ePublication published in project's internal Management software	CO
D 5.2.	Final Evaluation Report	31/10/2019	English	Written online report and annex in the Final Report of project	CO
D 6.1.	Report of partner exploitation	31/10/2019	English, Finnish	Articles in newspapers, Project's Internet pages, project report	PU
D 6.2.	Report of exploitation and impact in official level	31/10/2019	English, Finnish	Articles in newspapers, Project's Internet pages, project report	PU
D 6.3.	Report of exploitation in companies	31/10/2019	English, Finnish	Articles in newspapers, Project's Internet pages, project report	PU
D 7.1.	Dissemination plan	31/01/2018	English	ePublication published in project's internet pages	CO
D 7.2.	Articles in conference and journal publications	31/10/2019	English, Finnish	Conference and journal publications, project's Internet pages	PU
D 7.3.	Articles in newspapers and professional publications	31/10/2016	English, Finnish	Articles in newspapers and professional newspapers, project's Internet pages.	PU
D 7.4a	Regional seminar/workshops, Turku	18/04/2018	English, Finnish	Slide shows, articles in newspapers, printed hand-outs, Project's Internet pages	PU
D 7.4b	Regional seminar/workshops, Turku	31/10/2019	English, Finnish	Slide shows, articles in newspapers, printed hand-outs, Project's Internet pages	PU
D 7.4c	International seminar/workshops, France	Sept. 2019 October 2019	English, Finnish	Slide shows, articles in newspapers, printed hand-outs, Project's Internet pages	PU
D 7.5a.	Internet pages	17/04/2018	English, Finnish	Slide shows, publications, articles in newspapers, project reports, printed hand-outs i.e. all possible materials are set to project's Internet pages	PU
D 7.5b.	e-materials	31/10/2019	English, Finnish	Slide shows, publications, articles in newspapers, project reports, printed hand-outs i.e. all possible materials are set to project's Internet pages	PU

ID	Title	Deadline/ date	Language	Publishing manner	Diss. level
D 7.6	Dissemination materials for third party use	31/10/2019	English, Finnish	Internet pages, slideshows, handouts.	PU
D 7.7.	Dissemination to HEIs committed to Blue Industry	31/07/2019	English	Internet pages, PDF file(s).	PU

## 7.2 RADICAL project indicators

Project indicators are shown in table 5. This table is also part of the separated Excel file “180112 RADICAL - D.4.1 - Deliverables, planning and indicators.xlsx” which will be used during the continuous and cyclic QM update sessions.

Table 6: List of RADICAL project indicators (to be completed)

WP	Indicator	Target value	Reached value	Explications/details
WP1	Deliverables completed	8	4	D1.1. – D 1.8.
WP2	Deliverables completed, D2.2. Mentoring in cooperation processes model in action in autumn 2019	4	1	D2.1. – D2.4.
WP3	Deliverables completed, D 3.1. Cooperation model in action in autumn 2019	4	0	D 3.1. – D3.4
WP4	Deliverables completed	2	1	D 4.1. – D 4.2.
WP5	Deliverables completed	2	0	D 5.1. – D 5.2.
WP6	All deliverables completed	3	0	D 6.1. – D 6.3.
WP7	All deliverables completed	7	2	D 7.7. – D 7.7.
WP7	Web page visitors	500		
WP7	People receiving the project e-newsletter	300		
WP7	Workshop / seminar attendees	90		

## 8 Risk Management

### 8.1 Introduction

Risk management is one of the most important factors of project control processes and aims at ensuring the proper management of a project. It consists in the constant description, classification and discussion of the risks associated with the execution of the various activities. The objective of this section is to define the strategy to manage project-related risks such that there is acceptable minimal impact on costs and schedule, as well as on operational performance.

### 8.2 Definitions

The ISO 31000:2009 Risk management standard (ISO 31000:2009)<sup>1</sup> defines a risk and risk management as stated in table 7.

Table 7: Definition of risk and risk management following ISO 31000:2009

<p><b><u>Risk</u></b></p> <p>Effect of uncertainty on objectives</p> <p>Note 1 to entry: An effect is a deviation from the expected — positive and/or negative.</p> <p>Note 2 to entry: Objectives can have different aspects (such as financial, health and safety, and environmental goals) and can apply at different levels (such as strategic, organization-wide, project, product and process).</p> <p>Note 3 to entry: Risk is often characterized by reference to potential events (2.17) and consequences (2.18), or a combination of these.</p> <p>Note 4 to entry: Risk is often expressed in terms of a combination of the consequences of an event (including changes in circumstances) and the associated likelihood (2.19) of occurrence.</p> <p>Note 5 to entry: Uncertainty is the state, even partial, of deficiency of information related to, understanding or knowledge of an event, its consequence, or likelihood.</p> <p>[SOURCE: ISO Guide 73:2009, definition 1.1]</p>
<p><b><u>Risk management</u></b></p> <p>Coordinated activities to direct and control an organization with regard to risk (1.1)</p>

As stated in Note 2 of the ISO 31000:2009 definition of a risk, objectives can have different aspects and apply on different levels.

The risk management of the RADICAL project only applies on project level and does not consider potential risks during the long-term exploitation of the project results, especially the success of developed study programmes or teaching methods and models. Only exploitation and especially implementation during the project duration are taken into account.

<sup>1</sup> <https://www.iso.org/obp/ui/#iso:std:iso:guide:73:ed-1:v1:en>



## 8.3 Methodology

The purpose of this risk management (RM) section is the establishment of an approach allowing identifying, assessing, responding to, monitoring and controlling risks throughout the life of the RADICAL project.

RM is an ongoing process that continues through the life of the entire project, the RADICAL RM will therefore be regularly updated throughout the project lifecycle as new risks can be identified at any time, and as they can change their criticality during project life time or becoming obsolete at a specific moment.

RADICAL RM is based on four steps:

1. Risk Identification  
An initial and continuous effort to identify, quantify and document risks.
2. Risk Assessment  
An initial and continuous operation to evaluate identified risks during the project life cycle.
3. Risk Response / Mitigation  
Establish an action plan/response actions to mitigate non-tolerable risks or to prepare actions to be conducted in case of occurrence of those risks.
4. Risk Monitoring and Control  
Define who checks and monitors the risk and when

## 8.4 Risk identification

Risk identification focusses on those impacting the three factors of the project management tringle, figure 5.

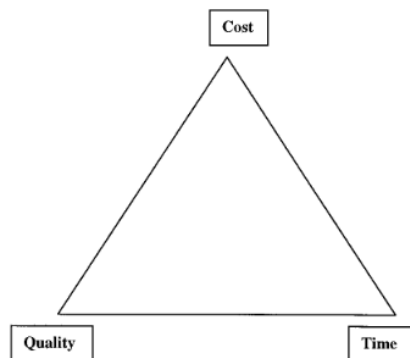


Figure 5: Project Management Triangle<sup>2</sup>

The building of the Risk Management Register follows a multiple step process, shown in figure 6.

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<sup>2</sup> Atkinson R. (1999), *Project management: cost, time and quality, two best guesses and a phenomenon, its time to accept other success criteria*, International Journal of Project Management, Vol. 17, No. 6, pp. 337-342

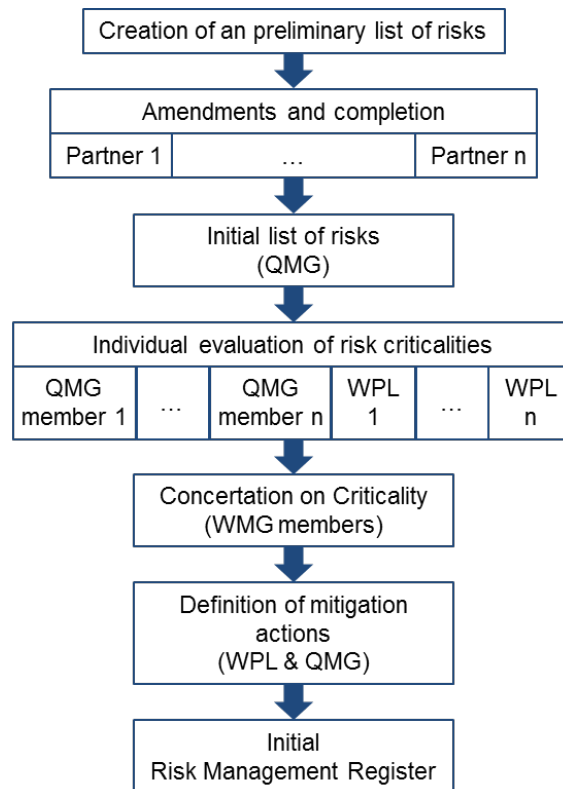


Figure 6: Risk management Register Building process

The first step includes an analysis of existing documents such as project description, grant agreement or budget to identify potential events/occurrences influencing the planned project. This analysis is completed by a global reflexion allowing determining other risks, e.g. linked but not restricted to human non-availabilities. This phase is ensured by the QMG as well as the WPL.

In a second step, the elaborated risk analysis is transferred to all project members for completion and annotation. This second phase will permit to finalise the initial RADICAL risk list.

This list is then individually evaluated on Impact I and Probability of occurrence P by the QMG members and all WPL. A concertation will allow a final attribution of a commonly accepted Criticality C.

The Risk Management Register is then completed by mitigation actions for those risks where mitigation is requested.

Within the Risk Management Register, each risk is described by the following information

- ❖ A unique Risk Identifier staying unchanged during the whole project duration
- ❖ A short Risk Description
- ❖ The related WP
- ❖ Responsible WPL
- ❖ The risk category, including the following possible elements
  - Deliverable
  - Milestone
  - Human resources

- ❖ Name of the person having initially identified the risk
- ❖ Date of initial risk identification
- ❖ Impact on
  - Costs
  - Duration
  - Quality
- ❖ Date, impact category, probability of occurrence level and criticality at
  - First risk identification date (as average of WPL + four QMG member evaluations)
  - Periodic update dates
  - Event related update dates (e.g. when a WP is completed)

The third step consists of a continuous update of the list when new risks are identified by a partner during the project life cycle.

## 8.5 Risk Assessment

Risk Assessment is done using the qualitative approach of the Failure Modes, Effects and Criticality Analysis method (FMECA), allowing the classification of identified risks by criticality, and thereby the identification of non-tolerable risks.

The FMECA method foresees the attribution of two indicators to each risk:

- ❖ An impact category I
- ❖ A probability of occurrence level P

Each indicator consists of different categories/levels with related values. The product of the values of both indicators results in the Criticality C:

$$I * P = C$$

Each risk is evaluated to determine its impact and its probability of occurrence. Each risk is also examined to determine its relationship to other identified risks. The evaluation of impact and probability of occurrence are done by the QMG members as well as the WPL.

### Impact categories in RADICAL

Within the RADICAL project the five impact categories shown in table 8 are applied.

Table 8: RADICAL Impact categories

Impact value I	Impact category	Impact description
0	Not (anymore) existent	Exists not (anymore), only in combination with P = 0
1	Very low	Risk that has a little impact on the project cost and time
2	Low	Risk that has relatively little impact on the project cost, quality, scope, time
3	Medium	Risk that has the potential to slightly impact on the project cost, quality, scope, time
4	High	Risk that has the potential to greatly impact on the project cost, quality, scope, time
5	Very high	Risk that has the potential to generate a standoff situation on the project

### RADICAL probability of occurrence levels

As for the impact categories, five probabilities of occurrence levels are applied within RADICAL, table 9.

Table 9: RADICAL Probability of occurrence levels

Probability of occurrence P	Probability of occurrence level	Probability of occurrence description
0	Not (anymore) existent	Exists not (anymore), only in combination with I = 0
1	Very low	<= 10% probability of occurrence
2	Low	> 10% and <= 30% probability of occurrence
3	Medium	> 30% and <= 50% probability of occurrence
4	High	> 50% and <= 80% probability of occurrence
5	Very high	> 80% probability of occurrence

### Risk classification and presentation

Once a Impact category and a Probability of occurrence attributed to each risk, their criticality is calculated by using the above shown formula.

The Criticality C allows

- ❖ classifying all risks depending on their criticality,
- ❖ representing all risks in a 5 \* 5 matrix for easily interpretation of their criticality

<b>Impact</b>	<b>VH</b>	<b>5</b>	5	10	15	20	25
	<b>H</b>	<b>4</b>	4	8	12	16	20
	<b>M</b>	<b>3</b>	3	6	9	12	15
	<b>L</b>	<b>2</b>	2	4	6	8	10
	<b>VL</b>	<b>1</b>	1	2	3	4	5
			<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
			<b>VL</b>	<b>L</b>	<b>M</b>	<b>H</b>	<b>VH</b>
			<b>Probability of occurrence</b>				

Figure 7: RADICAL Risk assessment matrix (example)

The four different risk categories as well as conducted actions where necessary are shown in table 10.

Table 10: Risk categories

Values	Colour	Description
0		Risk does not exist anymore and is not anymore represented in the matrix.
1 – 5	green	Risks classified as acceptable without further mitigation, will be routinely tracked. Value '5' only if impact is very low and probability of occurrence is very low.
5 – 9	orange	Risks which may require mitigation. For these risks, alternative dispositions will be identified and trade-offs conducted to determine the mitigation required. Value '5' only when probability of occurrence is very low and impact is very high.
10 – 25	red	Items classified as red are considered primary risk drivers. For these items, mitigation options will be developed

## 8.6 Risk response / mitigation

For each identified risk worth of mitigation, a response/action is defined in concertation between the WPL and the QMG. This applies to all risks classified as orange or red following table 10.

Mitigation activities are documented in the Risk Management Register, and reviewed as described in the following section.

## 8.7 Risk monitoring and control

The purpose of Risk Monitoring and Control is to regularly monitor the listed risks and to identify, analyse, and plan potential new risks, including their integration in the Risk Management Register. Risk monitoring and control ensures the execution of the risk plans, evaluates their effectiveness in reducing risks and, if needed, updates the organizational process assets.

Risk Monitoring and Control are conducted as follows:

1. WPL continuously monitor and control risks related to their WP. They immediately inform the QMG when events or risks occur, or when mitigation actions are considered as not sufficiently efficient.
2. The QMG monitors the entire Risk Management Register on a regular cycle of six months starting from the project start, meaning in M7, M12, M18, and M24 and updates Impact categories, probability of occurrence levels and thereby criticalities of all listed and still risks existing risks
3. The QMG and the corresponding WPL update the Risk Management Register event related when
  - a new risk has been identified, including assessment and mitigation plan when needed
  - a WP has been completed, all WP related risks are set to I = 0 and P = 0, they are not anymore considered in further evaluations.

## 9 Feedback and reports

The WP4 Quality Assurance will produce and regularly update the documents listed in table 11:

Table 11: Documents produced by quality assessment

Document name	Description	Type
YYMMDD RADICAL – D4.1 – QMP (Vx.x)	QMP versions. At each update, a new file is created with the current saving date and a incremented version number	doc pdf
YYMMDD RADICAL – D4.1 – RMR (Vx.x)	RADICAL Risks Management Register. At each update, a new file is created with the current saving date and a incremented version number	xlsx
YYMMDD RADICAL - D.4.1 - Deliverables, planning and indicators	List of deliverables with deadlines and completion dates	xlsx
YYMMDD RADICAL – D4.1 – Assessment minutes n	Minutes of the QMG Meetings. Each file is identified by the meeting date and has an incremental number	doc pdf
191031 RADICAL – D4.1 – QMR (final)	Final Quality Management Report	doc pdf