D8.1

Version: 1.00
Date: 2008-04-30
Author: TUV
Dissemination status: PU
Document reference: D8.1

Project Quality Plan

Project acronym:	COMPAS
Project name:	Compliance-driven Models, Languages, and Architectures for Services
Call and Contract:	FP7-ICT-2007-1
Grant agreement no.:	215175
Project Duration:	01.02.2008 – 28.02.2011 (36 months)
Co-ordinator:	TUV Vienna University of Technology (AT)
Partners:	CWI Stichting Centrum voor Wiskunde en Informatica (NL)
	UCBL Université Claude Bernard Lyon 1 (FR)
	USTUTT Universitaet Stuttgart (DE)
	TILBURG UNIVERSITY Stichting Katholieke Universiteit Brabant (NL)
	UNITN Universita degli Studi di Trento (IT)
	TARC-PL Apera sp. z o.o. (PL)
	THALES Thales Services SAS (FR)
	PWC Pricewaterhousecoopers Accountants N.V. (NL)

This project is supported by funding from the Information Society Technologies Programme under the 7th Research Framework Programme of the European Union.

Project no. 215175

COMPAS

Compliance-driven Models, Languages, and Architectures for Services

Specific Targeted Research Project

Information Society Technologies

D8.1 Project Quality Plan

Due date of deliverable: 2008-04-30

Actual submission date: 2008-04-30

Start date of project: 2008-02-01 Duration: 36 months

Organisation name of lead partner for this deliverable: TUV
Vienna University of Technology, Austria

Revision 1.00

Project funded by the European Commission within the Seventh Framework Programme		
Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

History Chart

Issue	Date	Changed page(s)	Cause of change	Implemented by
0.16	2008-04-09	initial version ready for review	new document	TUV
0.80	2008-04-22	reports (MR, QR), folders	addressing the review points	TUV
0.95	2008-04-25	improved name conventions; screen shots of the repository structure; maturity process adapted to the deliverable leader	addressing the final review points	TUV
1.00	2008-04-30	properties, header, release information	final check and header finalization	TUV

Authorisation

No.	Action	Company/Name	Date
1	Prepared	TUV	2008-04-09
2	Approved	TUV	2008-04-30
3	Released	TUV	2008-04-30

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Abstract

The research and development projects usually comprise a substantial number of processes. Most of the processes are targeted in the realization of the project objectives. Nevertheless, there are also supplementary processes, which importance is determined by the project scale.

1. Introduction

This document establishes the foundation for the project supporting processes. It covers verification of project deliverables and continuous improvement of project processes. Additionally, it introduces the *Internet Platform* as a dissemination tool.

1.1. Reference Documents

1.1.1. Internal Documents

[DoW] "Description of Work" for COMPAS, final version of 2008-02-01

1.1.2. External Documents

[IEEEref] IEEE Computer Society "Style Guide – References" , Nov. 2004; http://www.computer.org/portal/site/ieeecs/menuitem.c5efb9b8ade9096b8a9ca0108bcd45f3/index.jsp?&pName=ieeecs_level1&path=ieeecs/publications/author/style&file=refer.xml&xsl=generic.xsl&

1.2. Notation for Process Descriptions

In the following sections the supporting processes are presented in terms of their goals, deliverables, responsibilities (actors) and activities. They are described by diagrams using the notation explained in Figure 1.

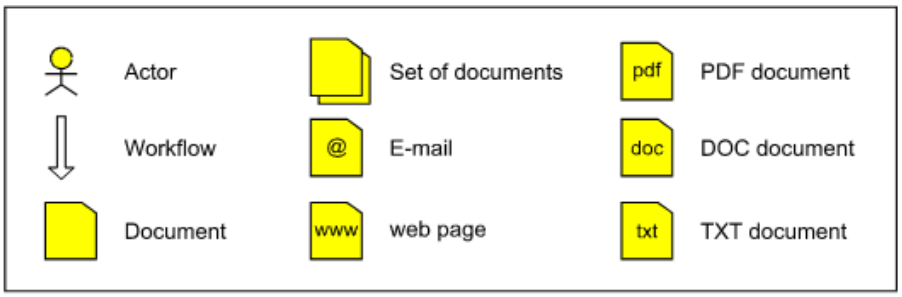

Figure 1: Notation used in Process Diagrams

1.3. Abbreviations and Acronyms

C	Comments
CO	Confidential
CR	Change Request
D	Deliverable

DOI	Digital Object Identifier
EC	European Commission
FR	Fault Report
IR	Internal Report
ID	Internal Discussion
MM	Meeting Minutes
MR	Monthly Progress Report
P	Presentation
PDF	Portable Data Format
PU	Public
QM	Quality Management or Quality Manager
QR	Quarterly Control Report
RI	Risk
RE	Restricted
RV	Review
WP	Work package

2. Document Control

All partners shall ensure that complete and correct issues of drawings, technical requirements, test instructions, and project reports are available as applicable at the time and place of design, manufacture, inspection, test, and installation. Any changes to the issue of partner documentation will be communicated to the WP Leader who will ensure that a list of the most up to date documentation is supplied to all the partners.

2.1. Types of Documents

Deliverable documents to the commission as listed in [DoW] – as well as all other reports, minutes, or presentations – shall be based on the document templates applicable for all documents to be created within the scope of this work. The templates for format are *mandatory*. Several different types of documents are in use with the following respective purposes.

2.1.1. Deliverable

Deliverables are official documents, which are enumerated in [DoW]. They serve as the content-oriented reporting towards the Commission. Deliverables are to be treated in a formal way: At well-defined *gates*, when the deliverable gradually builds up according to the *deliverable maturity process* (described later), the new parts of each deliverable have to

undergo *content reviews*, where each review is performed by assigned partners external to the work package. Before issued to the Commission, the versions issued by the respective work package leaders need a *formal authorisation of the Quality Manager*. Finally, the deliverables are released by the Project Manager.

The template for deliverables provides the following information on the **first page (title page)**: Document identifier, title, version, date, author, and dissemination status. These data *shall not be changed* except updating it indirectly via the document properties.

D8.1

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Figure 2: Document Properties on the Title Page

2.1.2. Internal Discussions

Internal Discussions (ID): An informal internal discussion document can be used for preparing deliverables. The nature of these documents is ad-hoc and unstable in terms of changes over time. Internal discussions shall relate to activity planning, research, etc. for a task.

The structure of internal discussions is derived from the structure of ID templates. ***However, further items can be omitted***:

- Authorisation paragraph
- History chart
- File property "Version"

Regarding their nature, the *dissemination status* of internal discussions is strictly CO. Files are managed in a repository with revision control, so the most current version of an internal discussion can always be determined. Internal discussions tend to be short-lived and shall be *included into internal reports (IRs) at the time they become mature*.

Internal Reports (IR) serve as "semi-official" documents that are not to be delivered to the Commission. In particular, IRs serve as the main documents for a particular **activity**. These IRs will typically be integrated into the deliverable of a WP. ***Please note, IRs are created by using ID templates. IR shall include:***

- Authorisation Paragraph
- History Chart
- File Property "Version"
- Dissemination Status

IRs are "semi-formal": They have issued versions, but need not to be reviewed or authorized in a formal process. IRs are in the responsibility of the respective author under the discretion of the work package leader.

2.1.3. Reports

Different types of reports are described in [DoW] in Section B.2.

Monthly Progress Reports *(MR)* are prepared by work package leaders of each phase and report the monthly progress of a given work package. It always refers to a particular calendar month.

Quarterly Control Reports *(QR)* are prepared by work package leaders every three months, summarizing advancement and status of work for the period. These reports will be transmitted to the EC according to the [DoW].

2.1.4. Meeting Minutes

Meeting Minutes are used to disseminate minutes from project meetings. Most importantly, they contain the agreed action items to be included into the overall action item list. They also serve as important addendum to the travel cost justification.

2.1.5. Change Request, Review, Fault Report

Change Requests are used to provide a list of requested changes to a given document. **Fault Reports** are used to provide a report on faults in a given document. **Reviews** are used during a review of a given document. They follow the same structure and hence there exists only one template (named "comments template" *(C)*) for all the three.

2.1.6. Presentation

Presentations not only serve as meeting documentation, but are an important building block for dissemination (e.g. slides from conference presentations).

2.2. Document Identification, Properties, and File Format

The following sections summarise in detail, how to follow the formal guidelines correctly in order to help the overall project management and configuration management to avoid unnecessary overheads or – even worse – incorrect or lost information dissemination.

2.2.1. Document Identification

Each document is identified by a unique *document identifier*, called **DocID**. This DocID shall start with the following character(s), depending on the type of the document and can be extended with a suffix "rev" followed by a revision number:

- **C** comments (a common template for CR, RV and FR)
- **D** for deliverables
- **ID** for Internal Discussion (Discussion Papers)
- **IR** for Internal Reports
- **MR** for Monthly Progress Reports
- **QR** for Quarterly Control Reports
- **MM** for Meeting Minutes
- **CR** for Change Requests
- **RV** for Reviews
- **FR** for Fault Reports
- **P** for Presentations
- **RI** for Risk Information

The document repository (see also Section 3.2) implicitly assigns a new revision number to a document that is (re)committed to the repository; therefore complete document identification is the combination of a simple DocID with a revision number. If no revision number is specified after an optional "rev" suffix to the DocID the latest version is meant.

2.2.2. Document Properties

Document properties are shown on the title page and/or the header/footer of the document. Properties shall be changed via the file properties and adjusted during document creation.

- **DocID**: Document identifier. E.g. **ID1-TUV-01** is an internal discussion document, belonging to WP 1, separated by dashes follows the acronym of the issuing partner and a two-digit sequence number (unique within the partner within the work package): IR[WP]-[partner]-[2-digit-sequence].
- **Version** (D and ID/IR only): The draft versions start with 0.1 and are incremented by 0.1. Released versions receive x.0 version numbers, e.g. 2.0. Note, the order: x.1 < x.15 < x.2 = x.20. The version number for internal discussions (ID) is optional.
- **Date**: The date denotes when a meeting has taken place or the particular document version was issued.
- **Author**: Authoring company acronym, not a person.
- **Dissem:** Dissemination level (PU, CO, PP, RE) The appropriate paragraph has to be chosen on the title pages of the template. Other paragraphs shall be deleted. The dissemination status for all discussion papers (ID) shall be confidential (CO).
- **DocRef**: Any partner-specific document reference you may need for your internal document management (optional).

These document properties can be set via the menu item "File-Properties". In the "Custom" tab folder of the displayed dialog, all above described settings can be adjusted according to the specific document requirements. Press 'F9' to "refresh" the document to see the changes.

Because the document repository implicitly applies a revision number to documents the version document property somehow becomes redundant. Nonetheless the version document property shall be increased independently of the repository for reflecting the maturity of the document. References to a certain version of a document (e.g. for a review) are realized by specifying the corresponding revision number of the document.

2.2.3. Naming Conventions

A **_[ShortTitle]** postfix to the filename is always optional.

Document Type, Template	Convention	DocID example	File Name example
Internal Discussion, [ID]	ID[WP#]-[org]-[sequence]_[Short Title].[extension]	**ID1-TUV-01** sequence identifier 01, work package 1 by TUV	**ID1-TUV-01_Patterns.doc**
Internal Report, [ID]	IR[WP#]-[org]-[sequence]_[Short Title].[extension]	**IR1-TUV-08** sequence identifier 08, work package 1 by TUV	**IR1-TUV-08_Teams.doc**

Deliverables, [D]	D[WP#].[D#]_[Short Title].[extension]	**D8.1** describes the deliverable 8.1 of work package 8	**D8.1_Project-Quality-Plan.doc**
Change Request, [C]	CR-[org]_[DocID]rev[Rev#].[extension]	**CR-TUV_*IR1-ULEICES-08rev49*** change request issued by TUV referring to the document IR1-USTUTT-08 with revision 49	**CR-TUV_IR1-USTUTT-08rev49.doc**
Fault Report, [C]	FR-[org]_[DocID]rev[Rev#].[extension]	**FR-TUV_*IR1-USTUTT-08rev29***	**FR-TUV_USTUTT-08rev9.doc**
Review, [C]	RV-[org]_[DocID]rev[Rev#].[extension]	**RV-TUV_*IR1-USTUTT-08rev29***	**RV-TUV_IR1-USTUTT-08rev29.doc**
Risk Information, [RI]	RI-[org]-[sequence] _[Short Title].[extension]	**RI-TUV-02** formal risk information number 02 of TUV	**RI-TUV-02.doc**
Meeting Minutes, [MM]	MM-[YYYY]-[MM]-[DD]-[org].[extension]	**MM-2006-05-15-TUV** minutes of a meeting, which started on the 20th of February 2008, TUV has prepared the minutes	**MM-2008-02-20-TUV.doc**
Monthly Progress Report, [MR]	MR[WP#]-[YYYY]-[MM].[extension]	**MR1-2008-05** monthly progress report of WP1 for May 2008	**PR1-2008-05.doc**
Presentation, [P] (the use of the template is not obligatory)	P-[org]-[sequence]_[Short Title].[extension]	**P-CWI-19** denotes the presentation number 19 of CWI	**P-CWI-19.ppt**

Table 1: Naming Conventions

3. Development of Deliverables and Maturity Process

This section describes the process how the development of deliverables (D) is managed and controlled and how reviews on deliverables shall be performed. This process is a specific instance of the more general change control process described earlier.

3.1.1. The Overall Process

The rationale behind the deliverable maturity process is to *decouple the **progress** of the deliverable from the actual invested or estimated efforts*. Therefore, this process defines *gates*, when the deliverable is expected to be of a pre-defined and precisely described maturity. The gate can only be considered passed, when the deliverable has been reviewed successfully. After a gate is passed accordingly, the percentage of **progress** (as defined in advance according to the expected maturity) is achieved for the deliverable, regardless how much effort has been invested and how much effort is estimated for the future. However, this in turn needs a planning having this progress assignment in mind and to partition the estimated work accordingly.

Table 2 depicts the **generic deliverable maturity process** as maintained by the deliverable leader and describes the phases required to create a particular deliverable. In order to harmonise the schedules of the working packages and hence to ease the control of the overall project progress, this process is *mandatory*. Also, the schedule for the gates of each phase will be synchronized and mandatory. Parts one, two, and n have to be roughly n equal **partitions of the deliverable**, thus all parts together comprise the whole document excluding only minor parts (like appendices, references, etc.).

Stage	Gates	Description
DEF	[Date] (10%)	Detailed work plan for developing the deliverable: Tasks and activities, responsible editor and contributing authors and team members, detailed schedule, coarse document structure and content (first level headings of table of contents), preliminary abstract.
PART1	[Date] (20%-80%)	Content part I, refined document structure and content (second level headings), revised abstract, related work section. Optional: new version of DEF for stage 2..n.
PART2	[Date] (20%-80%)	Content part II, revised part I, content and abstract, enhanced related work section. Optional: new version of DEF for stage 3..n.
PARTn	[Date] (20%-80%)	Content part n, revised part n-1, content and abstract, final related work section.
PREP	[Date] (95%)	Complete, structured and condensed document (including revised part III) *prepared* in first draft version (prepared by the respective editor), to be reviewed by the reviewers and the quality manager.
APPR	[Date] (99%)	Reviewed and updated complete document in second draft version, to be *approved* by the QM, and the project manager.
REL	[Date] (100%)	Complete document in final version, to be *released* by the project manager and submitted to the EC.

Table 2: Deliverable Maturity Process: Stages and Gates

3.1.2. Work Plan and DEF Gate

The following steps have to be performed in order to pass the **DEF gate**: Based upon the Project Plan and the respective WP plans, each deliverable has **preliminarily** objectives it should achieve and a scope it should cover. The DEF stage starts with analysing these requirements and provides a *tentative document structure*, *coarse contents overview* and a *preliminary abstract* for co-ordination between the partners working on that document. Consequently, a detailed work plan has to be derived to actually develop the document as planned. This comprises the tasks and activities, the contributing authors, the responsible editor, and a detailed schedule for the contributions.

To assist this planning procedure, Table 3 comprises the table skeleton for a **detailed work plan** for a particular deliverable of a work package. The tasks will mainly be derived from the [DoW], but may be enhanced if necessary. The tasks will be detailed into actual (research) **activities** with responsible and contributing team members (particular persons). These activities will comprise all the preparatory work (literature research, reading, presentations and discussions, small trial implementations, including research team meetings) necessary to gain the insights and results required for the deliverable. The **effort** of each activity will be estimated in *person weeks* and the sum of all efforts per partner will be *cross-checked* against the overall partner effort for the respective WP. Also, the schedule may need to be more detailed than the dates of the gates (e.g. for Inter-WP relations and synchronisation). Keep the structure for the activities *simple*. Generally, it is a good idea to have only one partner involved in a particular activity and not too many persons from this partner, either.

Stage Gate	Task	Activities	Responsible and contributing personnel	Effort	Schedule
DEF [Date] (10%)					
PART1 [Date] (20%-80%)					
PART2 [Date] (20%-80%)					
PARTn [Date] (20%-80%)					
PREP [Date] (95%)					
APPR [Date] (99%)					
REL [Date] (100%)					

Table 3: Deliverable Maturity Process: Table Skeleton for Planning

The DEF document is finally delivered from the deliverable leader to both the QM and the PM. The QM will check the formal requirements, while the PM will check the contents development.

At the PART gates it is further possible to revise the following stages (e.g. by inserting or removing activities or by changing time and effort). This makes maximum use of the flexibility the deliverable maturity process provides.

3.1.3. Content Development and Content Gates

For each gate (PART1, PART2...PARTn), the document editor distributes the draft version (i.e. the new parts of the deliverable) for **review** via the *repository*, thus all gate versions are made available for the whole consortium. Additionally, the editor shall send a *notification via email* that this draft is ready for download to the PM, the QM, and all other parties that may be involved.

The reviewers of each deliverable are assigned at the beginning of each project phase by the TCC according to [DoW] (by e.g. also taking project months of other partners involved into the work package into account); other partners are welcome to provide a review as well. The editor (usually the deliverable leader) informs the responsible reviewers at each gate about the material to be reviewed. Each reviewer provides his review of this material after **one week**. The editor in turn provides feedback to the reviewers **two weeks** after the gate (editor's comments on the review). A discussion may then be needed to settle open issues (phone talks, email, personal meetings). At the subsequent gate at the latest, the editor provides the new version of the respective parts.

It is important for the reviewers at these gates to have in mind that they review work-in-progress and not a final deliverable. Therefore, the reviews shall be content-oriented, qualitative, and not too extensive. They shall be helpful and progress-oriented instead of being picky and should serve as a basis for information exchange. The editor may also point out particular questions to the reviewers to actively solicit specific feedback on certain issues.

Only the final review (PREP gate) is more formal and quality oriented, there should be no big content issues at that point in time (see below).

All the parties providing review comments shall fill out the review comments form (RV) and submit it to the editor. The document editor shall only enter responses into the review comment form, if the comment will be rejected, or if further clarification to this issue is required.

The QM, PM, WP/deliverable-leader/editor, and the reviewers will jointly maintain the due dates and check the contents if it meets the overall objectives and covers the scope.

3.1.4. Final Review and Authorisation

The last three gates PREP, APPR, and REL describe the final review process of the whole deliverable and the necessary authorisation steps.

To reach the **PREP gate**, the responsible document editor compiles the first complete draft version, which also includes **prior re-structuring and condensation** of the whole document. This already **includes WP-internal reviews** and if the editor is not the WP-leader, it includes the acceptance of the WP leader. Then the editor distributes this first complete draft version

for **final review** via the *repository*. Additionally, the editor shall send a *notification via email* that this draft is ready for download to all parties involved.

This version has to be reviewed by the assigned reviewers for last minor content-issues, primarily to let the reviewers double-check, if their reviews have been taken into account by the editor accordingly and notify editors *immediately* by phone or email if not. However, at the PREP gate, the reviews shall focus primarily on minor corrections and grammar and style. Also, the QM reviews the document with respect to the management plan for supporting processes, as well as PDF convertibility (graphics formats).

All the parties involved in the review shall fill out the review comments form and submit it to the editor within **a week after PREP**. The document editor shall only enter responses into the review comment form, if the comment will be rejected, or if further clarification to this issue is required.

In order to reach the **APPR gate**, the editor incorporates the last minor correction and provides the final draft version of the deliverable to the QM for approval. The quality manager now checks, if the deliverable meets the *formal requirements* regarding the file format, naming and versioning schemes. The QM will provide *immediate feedback* to the issuing party regarding any deviation from the CM guidelines. In parallel, the PM checks the deliverables and informs the QM via email about the acceptance (release authorisation).

With the OK of the PM, the QM finally prepares the release version, adopts the title page and performs the PDF conversion for final release. The coordinator then forwards the documents to the European Commission, thereby reaching the final **REL gate**.

Careful planning of the required time schedule for these review iterations is an integral task for the deliverable leaders. Figure 3 depicts the complete document preparation and review process for a document with three parts.

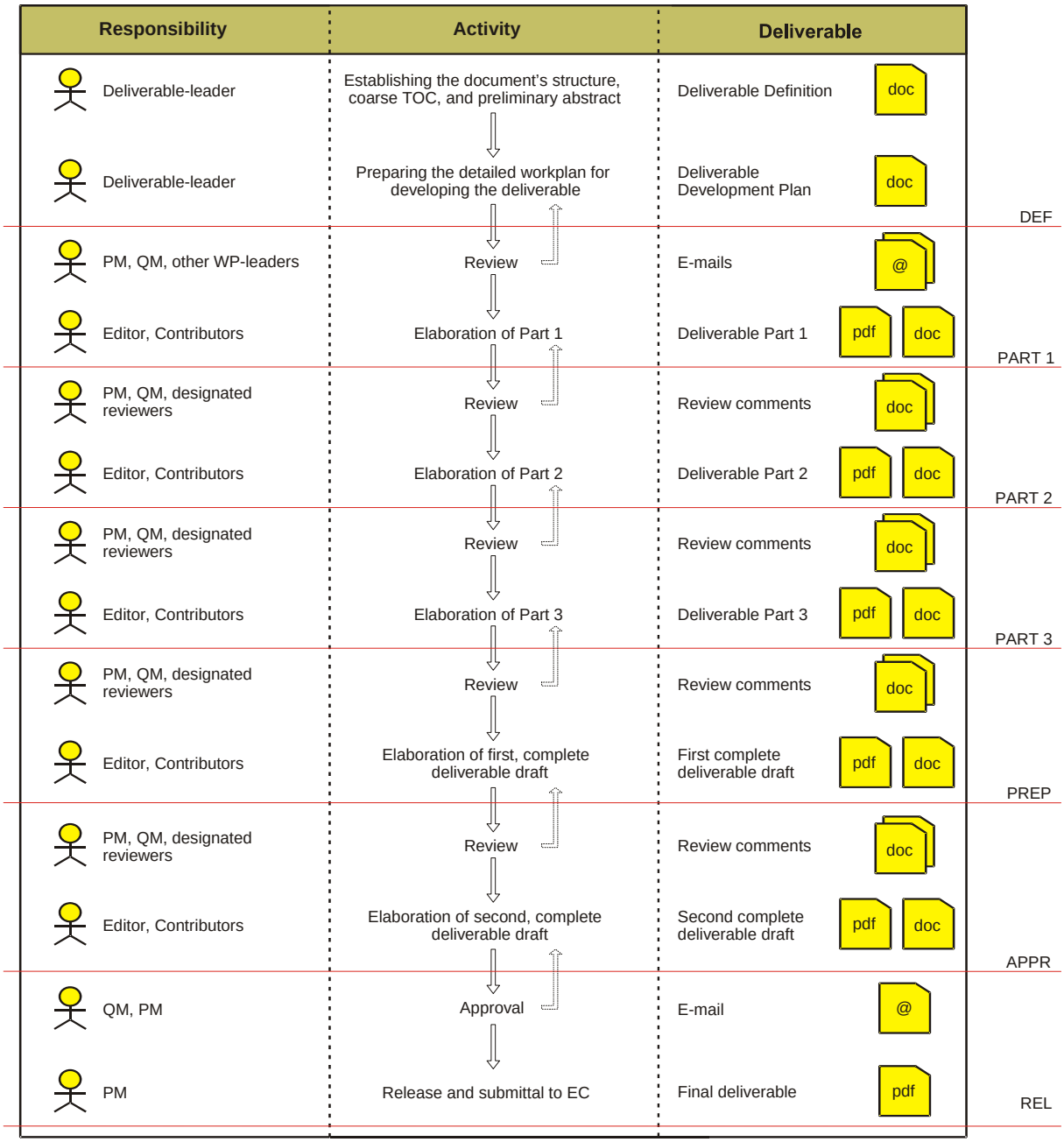

Figure 3: Deliverable Maturity Process: Document Preparation and Review

3.1.5. Change Management and Comments for Documents other than Deliverables

Internal Reports can be released on WP level. Some documents, like the management plans and project handbooks will undergo several draft and release cycles throughout the whole project.

After release, the guidelines of **version control** apply for IRs similar to deliverables. Only version control ensures the precise identification of a specific version and supports the later retrieval of any of the former versions. For this reason, the required information has to be entered into the *history chart*. ***Every change or update of a document requires detailed information about the change and its reason***. Therefore, the reason for change has to be stated as detailed as possible and the location, where the detailed description can be found,

has to be referred to precisely, e.g. the document with the review comments or any other source.

Documents are a priori only changed by the responsible editor of a document. If another organization or person wants to change something in the document or wants to add comments, there are two options:

1. Create an appropriate auxiliary document (CR/FR/RV) by using the provided template and send it to the responsible editor. This is the *only way for deliverables*. The editor collects the comments and incorporates or rejects them as described previously.
2. Request a “lock” from the responsible editor, and use a "track changes tool" or colouring for incorporating your changes directly into the document. In the meantime, the editor is not allowed to apply changes to this document. Finally, commit and unlock the document, when you are finished. This approach may be more convenient for incorporating a huge amount of changes, but it has to be performed sequentially and thus limits parallelisation.

In both cases, the following exemplary rules serve as a **recommendation for the combination of change tracking and versioning**: It is convenient to keep track of *all* changes *between frozen draft versions* of documents by using the "track change" feature: Let's say, UCBL sends a document version 0.3 (which is work in progress) to TUV, both make sure, that change tracking is activated. UCBL typically updates the document (using change tracking).

When the version 0.3 is finally frozen, it is checked in to the repository – still with all changes highlighted, which now reflect all differences to the previous version 0.2. No more changes are now allowed to this version 0.3. Then a new version - let's say 0.4 - is created: The version number increased: the editor updates the properties, accepts all changes and then continues with new change tracking, thus marking the differences of 0.4 with respect to 0.3.

However, per definition the actual state of a frozen document is always the one that results by accepting all changes. This approach allows focusing on the parts that have changed between any two versions. In any case, *all the document versions* as well as auxiliary documents have to be *stored in the COMPAS repository* to give evidence of the changes performed.

3.2. Documentation Repository

A SVN repository is the designated repository for the COMPAS project. Implicit revision control is applied on all documents. Therefore multiple revisions of one single document may exist. These revisions are identifiable by revision numbers. The repository gathers all sorts of documents generated during the project lifetime and its structure (see also Figure 4) reflects the types of such documents:

- **Templates**: templates for: content-oriented documents (D, IR), Progress Reports (MR, QR), Presentations (P), Meeting Minutes (MM), Comments (C), Risk Information (RI).
- **Meetings**: it contains folders for meetings with a name-convention of YYYY-MM. Within this folders meeting minutes (MM) are stored in a “minutes” subfolder and presentations (P) are stored in a presentation subfolder.
- **PrintedMatter**: it contains printed matter that can be used in documents or web pages
- **Final**: it contains final documents that have been or are to be released. It contains folders for each milestone. Within this folders deliverables, etc. are archived. A “publications” subfolder contains COMPAS related publications.

- **Risks**: it contains risk information forms provided by partners, related to still not resolved risks.
- **Work Packages**: Folder names for each work package derive from the work package number, e.g.: 1. Each work package folder shall comprise the subfolders for deliverables and tasks. Relevant documents are stored within this subfolder(s).
  - **Deliverables [D]**: it contains folders for each work package deliverable and its reviews [RV], change requests [CR] and fault reports [FR]. The deliverable folder name equals to the deliverable identifier.
  - **Internal Discussions [ID]**: internal discussion and report and all reviews, change requests and fault reports.
  - **Monthly Progress Reports [MR]:** are stored in the WP folder.
  - **Quarterly Control Reports [QR]:** are stored in the WP folder.
- **Sources:** This folder contains all software projects with respective source code.

Figure 4: The file structure of the COMPAS repository

3.3. Documentation Distribution

All internal and external reports, regardless of which issue or document type as well as source code, shall *always be distributed by using the SVN repository*. The direct dissemination of documents or source code via email is discouraged and only allowed for emergency reasons.

Document distribution in COMPAS is carried out using the project repository, accessible

- via the SVN URL *https://svn.compas-ict.eu* as well as
- via a SVN browser at *https://wiki.compas-ict.eu/browser* .

3.4. Reporting to the Commission

- **Interim Activity & Management Report**
  - A justification of the resources deployed by each partner, linking them to activities implemented and justifying their necessity
  - Financial Statement provided by each partner for that period
  - Summary financial report consolidating the claimed costs of all partners in an aggregate form
- **Periodic Activity Report** containing an overview of the activities carried out by the consortium during that period, a description of progress toward the objectives of the project, a description of progress towards the milestones and deliverables foreseen, the identification of problems encountered and the corrective actions taken.

The detailed contents and formatting guidelines of these reports will be defined in the FP7 reporting guidelines.

4. Quality Management

The QM supporting process focuses on managing the quality of the project's deliverables and improving the quality of the project processes.

4.1. Tasks of the Quality Manager and the WP Leaders

The Quality Manager shall ensure that all change documentation is monitored and that any effects of the changes on other areas of the project have been taken into account.

General duties are: "The Quality Manager will be a member of the project management team (specified in [DoW]) and will be responsible together with a representative from each partner for maintaining the quality control procedures. He will act as a focal point for quality issues and will liaise with the partner quality representative to ensure that an appropriate level of quality is maintained for each element of the project.", and further "In order to generate high quality output throughout the project Validation & Quality management has been identified as an autonomous work package."

The *Quality Manager* is in charge of following *tasks*:

- Producing, maintaining and reviewing the *Quality Control Procedures* by obtaining agreement on and ensuring effective implementation of Quality Control Process.
- Ensuring that coordinating activities and reports are completed to an adequate quality and in a timely manner (*control of the Project Manager* with respect to adhering to the supporting processes).
- Reviewing of contractual deliverables before shipment
- Ensuring each partner has a quality representative, with whom the Quality Manager will liaise in order to maintain the project's quality control procedures and to ensure that the level of quality for each project element is maintained.
- Acting as the interface for partners on all quality assurance-related activities and providing clarification and consultation quality issues.

- Monitoring and auditing of the project activities for conformance with the project plans, in particular performing milestone reviews of contractual deliverables.
- Support of EC audits.
- Ensuring good communication between the partners during set-up of the validation environment, using such mechanisms as special sessions during team meetings and regular status reports to aid this process.
- Make sure that the conditions for modelling, implementation and validation are appropriate. Make sure that the model matches reality to the best possible extent.

The *work package leaders* assist the QM and shall therefore ensure:

- To adhere the quality assurance procedures adequately, and to
- Inform the Quality Manager of any quality assurance-related problems immediately.

5. Risk Management

Risk management is a project management tool to assess and mitigate events that might adversely impact the project, in order to increase the likelihood of success. This section presents the process for implementing proactive risk management. Risk management deploys methods for identifying, analysing, prioritising, and tracking risk drivers.

5.1. Definitions

Risk

Risk is a measure of the inability to achieve overall project objectives within defined cost, schedule, and technical (performance and quality) constraints and has two components:

- Probability of failing to achieve a particular outcome
- Consequences of failing to achieve that outcome

For processes, risk is a measure of the difference between actual performance of a process and the known best practice for performing that process.

Risk Event

Risk events are those events that, if they go wrong, could result in problems in the development of the expected research results, production and assessment of the prototypes, and dissemination of the results. Risk events should be defined to a level such that the risk and causes are understandable and can be accurately assessed in terms of likelihood/probability and consequence to establish the level of risk.

Type of Risk

A **Technical Risk** is the risk associated with the evolution of the research results and the prototype development affecting the level of performance necessary to meet the requirements of the [DoW].

A **Cost Risk** is associated with the ability of the project to achieve its cost objectives as determined in the [DoW].

- Risk that the cost estimates and objectives are not accurate and reasonable

- Project execution will not meet the cost objectives as a result of a failure to mitigate technical risks

Schedule Risks are those associated with the adequacy of the time estimated and allocated for the development, production, and fielding of the system. Two risk areas bearing on schedule risk are

- Schedule estimates and objectives are not realistic and reasonable
- Program execution will fall short of the schedule objectives as a result of failure to mitigate technical risks

Risk Ratings

This is the value that is given to a risk event (or the overall project) based on the analysis of the likelihood/probability and consequences of the event. Risk ratings of *Low*, *Moderate*, or *High* shall be assigned based on the following criteria:

Low Risk: Has little or no potential for increase in cost, disruption of schedule, or degradation of performance. Actions within the scope of the planned project and normal management attention should result in controlling acceptable risk.

Moderate Risk: May cause some increase in cost, disruption of schedule, or degradation of performance and/or quality. Special action and management attention may be required to control acceptable risk.

High Risk: Likely to cause significant increase in cost, disruption of schedule, or degradation of performance and/or quality. Significant additional action and high priority management attention will be required to control acceptable risk. This type of risk may be subject to a report to the Commission.

5.2. Risk Management and Responsibilities

The COMPAS co-ordinator (**Project Manager**) is the overall Risk Manager and responsible for tracking efforts to reduce high risk, combine risk briefings, reports, and documents as delivered by the WP leaders and required for project reviews by the Commission.

The **Quality Manager** assists the Risk Manager with maintaining this risk management plan, provisioning and maintenance of risk information forms, and accounting the overall risk status using the COMPAS internet platform (i.e., document repository).

The **Work Package Leaders** of the respective phase are responsible for the Risk Assessment within their work packages, which includes identification, analysis, handling, information (in case of moderate or high risks), monitoring, and tracking efforts to reduce low and moderate risks.

5.3. Risk Management Process

Figure 5 shows, in general terms, the overall risk management process that will be followed. Each of the risk management functions shown in Figure 5 is discussed in the following paragraphs, along with specific procedures for executing them.

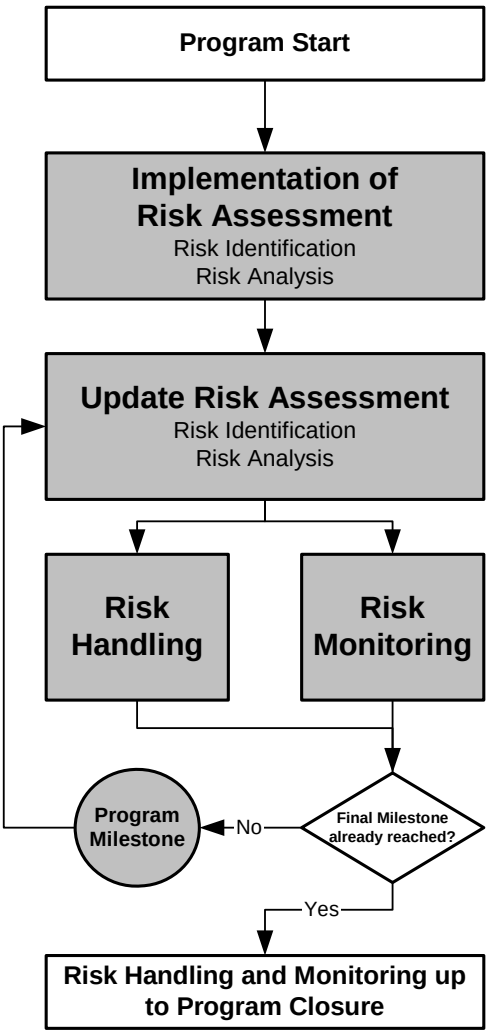

Figure 5: Risk Management Process

5.3.1. Risk Assessment

Risk assessment includes the identification of critical risk events/processes, which could have an adverse impact on the project, and the analysis of these events/processes to determine the likelihood of occurrence/process variance and consequences.

Risk assessment is an iterative process. Each risk assessment is a combination of risks identified/analysed in the previous phase and the identification/analysis of risks on current milestones according to the [DoW].

5.3.2. Risk Identification

Risk identification is the first step in the assessment process. The basic process involves searching through the entire project plan to determine those critical events that would prevent the project from achieving its objectives.

Risks will be identified by all individuals in the project, particularly by the **Work Package Leaders**.

The basic procedure of identifying risks consists of the following steps:

1. Understand the requirements and the overall project quality and performance goals. Examine the operational (functional and environmental) conditions under which the values must be achieved by referring or relating to the [DoW].
2. Identify the processes and activities (tasks) that are needed to produce the results.
3. Evaluate each activity/task against sources/areas of risk.

5.3.3. Risk Indicators

Following indicators are helpful for identifying risks (non-exhaustive list):

- Lack of stability, clarity, or understanding of requirements: Requirements drive the research and the design of the prototypes. Changing or poorly stated requirements guarantees the introduction of performance, cost, and schedule problems.
- Insufficient or inadequate resources: People, funds, schedule, and tools are necessary ingredients for successfully implementing a process. If any are inadequate, to include the qualifications of the people, there is risk.
- **Communication** is a critical success factor for COMPAS. Failure to provide (push) available information actively as well as to demand (pull) required information actively will both introduce considerable risk.

5.3.4. Risk Handling

After the project's risks have been identified and assessed, the approach to handle each significant risk must be developed. There are essentially four techniques or options for handling risks:

- Avoidance (application of tasks in order to avoid the risk event)
- Control (watch the environmental conditions for influences to an already assessed risk)
- Transfer (application of tasks to set a risk to a lower level)

Results of the evaluation process and how to handle shall include:

- What must be done
- Level of effort required and estimated costs
- Proposed schedule showing the proposed start date
- Time phasing of significant risk reduction activities, including completion date
- Their relationship to significant Project activities/milestones
- The person responsible for implementing and tracking risk handling measurements (usually the responsible work package leader)

5.3.5. Risk Monitoring

Risk monitoring systematically tracks and evaluates the performance of risk-handling actions. It is part of the Project Manager's and the Work Package Leaders' function and responsibility and will not become a separate discipline. Essentially, it compares predicted results of planned actions with the results actually achieved to determine the status and the need for any change in risk-handling actions.

Appendices

A. Formal Deliverable Formatting and Paragraphs

Mandatory paragraphs:

- Official first page consistent with the Commission reporting guidelines. This page must be updated before the final deliverable is passed over to the Quality Manager for his approval.
- History Chart for denoting all changes between draft versions or issued releases: The **versioning scheme** is based on the concepts of draft version and release version. Every time a deliverable is formally reissued, a new draft version is created. When a deliverable is successfully reviewed, its release version appears. The release version is a major issue of a deliverable. It usually occurs at a milestone point and creates a baseline.
- Authorisation:
  - Prepared: main author/editor; typically – responsible work package leader
  - Approved: the Quality Manager
  - Released: Co-ordinator (the Project Manager)
- Disclaimer (the appropriate paragraph has to be taken according to the respective dissemination status) and copyright information.
- Contents
- List of figures
- List of tables
- Abstract

The **introduction** follows as section 1 with the following content:

- Purpose/scope of the document (mandatory)
- Further introductory subsections (optional)
- Document overview, how to read the document (mandatory)
- Reference documents (mandatory)
- Definitions and/or glossary, acronyms and/or abbreviations (mandatory if applicable).

The **reference section** is an important part of the document. Reference documents are either internal or external. **Internal documents** are referenced by their document identification (note that this does neither include the date, nor the version, but only the DocID itself), e.g. this document [IR0.2-TUV-01]. Some special internal documents are the Description of Work [DoW], the Consortium Agreement [CA] and the Contract [Contract].

The **external references** shall obey the description rules defined by IEEE Computer Society. Sample formats and general style are available at: http://www.computer.org/author/style/refer.htm. Furthermore, to accommodate IEEE styles [IEEEref] to the project needs, the following changes shall be applied:

- If a DOI (Digital Object Identifier) is available, it shall be the last “item” in a reference description. A DOI resolver can be found at http://dx.doi.org.

- In case of more than three authors, IEEE style employs the shortened variant “at al.”, what makes resolving the reference identifiers difficult. Therefore, a different scheme is followed here (see below)

The external references shall be *ordered alphabetically* and the reference identifiers shall obey the following scheme:

- Papers with one author: Three first letters of his surname and two digits indicating the year of the publication, e.g. [Per98],
- Papers with two or three authors: First letters of their surnames and two digits indicating the year of the publication, e.g. [PW99], [JWZ01],
- Papers with more than three authors: First letters of three first surnames, '+' character and two digits indicating the year of the publication, e.g. [JWZ+01],
- Standards: Short name of a standard body and year of publication, e.g. [IEEE828],
- Internet RFC documents: RFC followed by its number, e.g. [RFC1596],
- If there are at least two references having the same form, they should be distinguished by adding a small letter at the end, starting from 'a' and following the alphabetical order, e.g. [Per98a].

URLs (Web references): They should be included directly in text, without using references. Moreover, they should reference stable starting points, but not point into very detailed structures, e.g. (http://www.w3c.org/Protocols) is OK.

B. File Formatting

The uniform source **file format** for all documents (except presentations) is MS Word 2000-2003 (DOC).

A **format** is provided via the respective document templates and its use is mandatory (except presentations). It provides the following elements:

- Standard font is Times Roman 12pt
- Headings 1 till 5 are bold and enlarged, and follow a numbering scheme
- Reference Heading is suitable for abstract, lists, and indexes and is also bold and enlarged
- Ordered List with sublists (different levels available through indentation)
- Bulleted List with sublists (different levels available through indentation)
- List for References (Related literature or reference documents)
- Figure caption and table caption (Arial 10pt, numbered by one sequence throughout the document)
- Table heading (Arial 10pt) and table text (Times Roman: 11pt) for table content
- Code (Courier 10pt)

You may use minor modifications (e.g. italics/slanted) if necessary, but you *shall not change styles or fonts* (e.g. Verdana instead of Times Roman, other captions, different headers, etc.). If you need a new formatting rule urgently, please notify QM to include it into the templates.

The use of these elements can be studied from the **templates**. All templates can be downloaded from the COMPAS repository (folder *templates* in the repository To start a new document, one will typically copy a suitable template and store it in a local folder, then open it, change the file properties and fill in the content by using only the styles and formats from the template as described above.

For released versions of documents or on demand, a **PDF** (v1.4 or higher) has to be provided with embedded fonts. *You may have to update the document title pages including the lists or the headers/footers explicitly by marking them and pressing F9 before producing a PDF file or before printing.*