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Contents

1. Executive summary

Early February 2004, the Cooperation Platform for Research and Standards (COPRAS) started its activities, aiming to improve the interfacing process between ICT research and standardization. After 3 years, it concluded its activities end of January 2007. This final evaluation report follows the interim evaluation report that was released by COPRAS early October 2005 and, in addition to briefly summarizing the results achieved during the first half of the project's lifespan, primarily addresses the work carried between August 2005 and January 2007, as well as the results that were generated during this period. Objective in this respect is to measure the qualitative and quantitative aspects of the results achieved against the targets set at the start, but even more to address whether COPRAS managed to achieve its goals and generated the impact it has been aiming at.

First, the evaluation and execution of Standardization Action Plans developed for selected projects in Calls 1 & 2 showed that COPRAS eventually concluded plans with 14% of projects, outperforming its quantitative target of 8-10%. Moreover, in terms of the impact generated by projects, COPRAS also outperformed its target as instead of the anticipated number of 6 tangible results, already 10 had been achieved, by the time COPRAS had to terminate its activities. Impact is not only spread across a variety of different European and global standards organizations, but also the nature of the impact ranges from establishing constituencies working towards an industry standard, via the promotion of emerging standards, to the delivery of concrete technical specifications.

Nevertheless, the analysis also shows that projects are many times too optimistic with respect to the standards work they will be able to complete, and frequently have to abandoned action steps because other project targets have to be prioritized. A lower number of planned actions therefore increases the chance of a project being able to complete all of these. This time and resource issue was also pointed out in feedback from standards representatives, which generally underlined the positive effects that contributions from research projects have on progress that can be made in standards organizations.

Second, the feedback gathering process, seeking to generate input from the ICT research community to improve the Standardization Guidelines that were produced earlier, generated a response rate of more than 40%, considerably higher than the 25-30% that was expected, and again stressed that standardization – and cooperation with standards organizations – is an important issue for many IST projects. Many projects downloaded the Standardization Guidelines and – specifically the Call 5 projects – used them while preparing their initial proposals, resulting in more resources being allocated to standards work. However, the guidelines cannot be understood from a panacea addressing al research/standards issues, and more improvement will be necessary.

Input from both the feedback gathering process and the execution of the Standardization Action Plans was used to upgrade the Standardization Guidelines into an interactive platform supporting the various stakeholders to the research/standards interfacing process. However despite this upgrade and the high appreciation of the Standardization Guidelines among the ICT research community, additional improvements will be necessary, additional issues will need to be addressed, and more activity will be required in FP7, both from the side of the standards community and from the side of the European Commission.

These aspects were also put forward at an Open Meeting COPRAS organized towards the end of its lifespan. At the meeting, that gathered all relevant stakeholders to the research/standards interfacing process, the COPRAS platform was launched, and several recommendations for improving interfacing and cross-fertilization between ICT research and standardization in FP7 were discussed.

Although COPRAS, and the deliverables it produced had an overall positive impact among its three main constituencies, i.e. the ICT research and standards communities and the European Commission, actions beyond COPRAS' scope are required as well, specifically aiming to establish:

- A more permanent and unified platform, system and/or methodology for research projects and standards organizations to facilitate the start of their cooperation;

- Additional mechanisms within research programmes that will enable projects to continue their standards work also beyond their project's lifespan.

2. Background and objectives

The Cooperation Platform for Research and Standards set out against the background that interfacing and cross-fertilization between standardization and research – that is essential to the success of both activities – often fails, for example because the ICT standardization environment is over-crowded with hundreds of different (and difficult to contact) organizations, or because projects do not have a clear perspective on the benefits standardization can bring to them.

COPRAS was therefore established as a horizontal Support Action project in FP6. Its aim was to support projects in most of the Strategic Objectives in Calls 1 and 2 in their interfacing with standards organizations, as well as to produce generic materials and tools that would support projects in future Calls and Framework Programmes in this process.

During the first 18 months of its activities, the project concentrated on establishing cooperation with a selected group of projects in Calls 1 and 2, as well as on developing a first set of Standardization Guidelines for IST projects interfacing with ICT standards organizations. Results achieved over this first period are reported and assessed in the Interim evaluation report (D17) that was delivered early October 2005, and are briefly reiterated in sections 2.3 and 2.4. Sections 2.1 and 2.2 hereunder will discuss the objectives, methodology and expected results for the second half of COPRAS' lifespan.

2.1 Objectives for the last 18 months

The objectives for the second half of COPRAS lifespan have been strongly focused on the development and execution of the Standardization Action Plans, as well as on the improvement of the Standardization Guidelines and the dissemination of COPRAS findings and achievements.

The first objective therefore was to implement measures ensuring that the anticipated number of Standardization Action Plans (8-10% of projects in Calls 1 & 2) could actually be achieved, and – more importantly – that the action steps described in these plans would generate at least 6 tangible contributions from projects to (ongoing) standardization activities.

A second objective was to generate feedback from the most important groups of stakeholders (and specifically from the ICT research community) with respect to the Standardization Guidelines. Aim in this respect was to update and transform the guidelines in such a way that would optimize their contribution to improving research/standards interfacing in FP7.

A third objective for the second half of the project's lifespan was to disseminate – and discuss – the results of the standards work COPRAS had carried out with individual projects in Calls 1 and 2, as well as the (upgraded versions of the) Standardization Guidelines, to its main groups of stakeholders, i.e. the ICT research and standards communities and the European Commission.

Finally, as a fourth objective, measures, methods or models should be defined that would support the sustainability of COPRAS' results and deliverables so that these would remain accessible for projects in future research programmes.

2.2 Methods, strategies & expected results

In order to achieve the objectives as described, COPRAS applied and implemented the following main methodological principles and strategies:

- With respect to Standardization Action Plans, the approach that had been successful in Call 1 was maintained in Call 2. This meant that plans should be prepared for individual as well as projects across a large variety of Strategic Objectives in this call.

- The execution of the Standardization action Plans was monitored on a regular basis in the CSG meetings as well as by the project team. This 'rolling action plan' review kept track of the execution status of the action steps and signalled when additional support was needed to avoid delays in projects' standardization activities.

- For projects that managed to complete their standards activities successfully, case study brochures were prepared documenting the results as well as the issues and key learning points

emerging from their standards activities. The purpose was to use these brochures as a dissemination tool, both for COPRAS and the projects themselves, as well as to use them – at an aggregate level – as a feedback source.

- The Standardization Guidelines should be transformed into an interactive platform, in addition to being upgraded in document format. This process should largely be based on feedback derived from the ICT research community, i.e. on the input generated through the feedback gathering process towards projects in Calls 4 and 5.

- The Final plan for using and disseminating the knowledge (Annex A to deliverable D29, the Final report) should contain a number of scenarios documenting the methods the COPRAS consortium partners may use to ensure the sustainability of the main COPRAS tools and deliverables.

The following picture provides an overview of the timing of the methods and processes discussed above, and also shows the status of these processes at the time COPRAS terminated its activities.[1]

COPRAS project planning	2004	2005	2006	2007
Start				
Rolling Action Plan Call 1				
Rolling Action Plan Call 2				
Standardization Guidelines				
Standardization Guidelines update				
Case study brochures				
COPRAS platform on line				
Feedback gathering process Call 1 & 2				
Open Meeting				
Conclusion project				
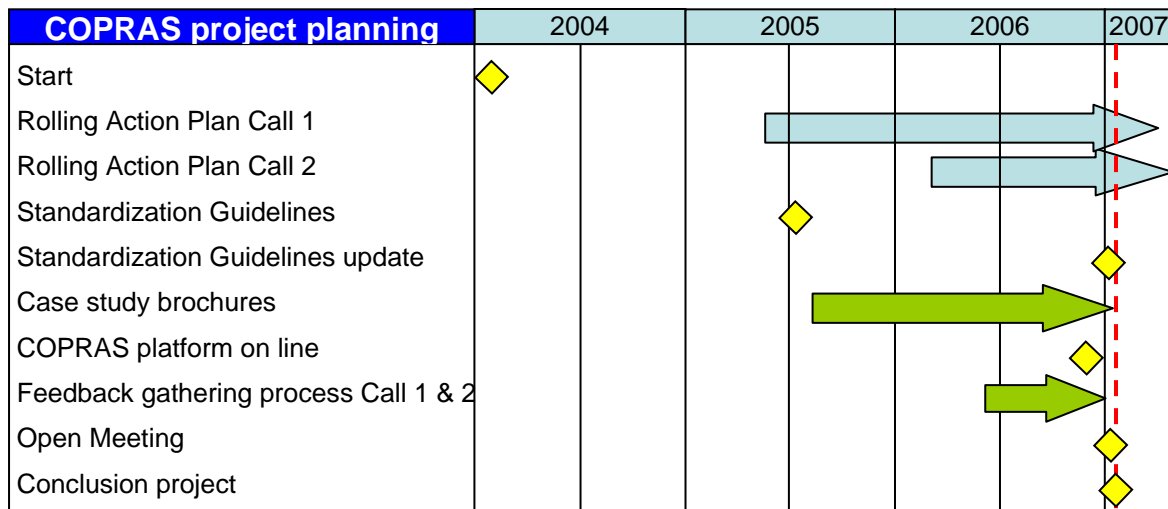
Contrary to the first 18 months of COPRAS' lifespan, the results the methods, processes and strategies are expected to generate over the last 18 months are not all quantifiable. Those that are, are the targeted response rate from the feedback gathering process towards Calls 4 and 5 (25-30%), the number of case study brochures (for which the target was set at 10), the number of participants to the Open Meeting (150-200) and the tangible contributions to (ongoing) standardization activity (for which the target was 6).

More importantly however are the qualitative targets, focusing on the appreciation and usage of the Standardization Guidelines by projects in Calls 4 and 5, the flexibility, completeness and usefulness of the COPRAS interactive platform, and the additional input the discussions and interactions at the COPRAS Open Meeting will generate to make further recommendations for improving the research/standards interfacing process.

2.3 Results achieved during the first 18 months

COPRAS' activities during the first 18 months primarily focussed on building up cooperation with a selected group (8-10%) of projects in Calls 1 & 2 of FP6 (the "COPRAS Programme"). To achieve this, activities in Work Packages 2, 3 and 4 encompassed a series of sequential steps that enabled the project to achieve this quantitative target. In this respect, WP2 aimed at gathering information on projects' standards related objectives and activities, and WP3 focused on the analysis of this information as well as on selecting those projects that were expected to benefit most from cooperation with COPRAS. This selecting process was concluded during 'kick-off' meetings, where COPRAS enabled selected projects to present and discuss their standardization targets. Finally, the objective in WP4 was to develop Standardization Action Plans for individual or clustered

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[1] Although COPRAS has terminated its activities, the completion of Standardization Action Plans may continue, as carried out by the respective projects, also beyond COPRAS' own lifespan

groups of projects, defining the concrete steps these projects planned towards achieving their standardization goals.

The following table provides an aggregated over view of the quantitative targets in these Work Packages, and the actual results that were achieved, mostly during the first reporting period. As the figures show, COPRAS managed to achieve (and in terms of projects concluding Standardization Action Plans even outperformed) its targets, and hence established a good basis for its work towards at least 6 tangible contributions to standardization generating from the Standardization Action Plans. This also led to the conclusion that the methods and process steps followed – at least where the activities in Work Packages 2 and 3 are concerned, have most likely been adequate.

	Projects in Call	Projects addressed in WP2	Projects responding	Projects selected in WP3	Projects attending kick-off meeting	Cooperating towards Standardization Action Plans
Call 1	176	164	92	40	28	16
	100%	93%	52%	23%	16%	9%
Call 2	111	107	55	31	10	26
	100%	96%	50%	28%	9%	23%
Total	**287**	**271**	**147**	**71**	**38**	**42**
	100%	**94%**	**51%**	**25%**	**13%**	**15%**
Target	no target specified		> 50%	no target specified		8-10%

Based on the experience it generated when going through these process steps and working with selected projects in calls 1 and 2, COPRAS also developed a set of "Generic Guidelines for IST research projects interfacing with ICT standards organizations". This document – later to be renamed simply as 'Standardization Guidelines', was also made available in a summarized brochure format, with the aim to promote the usage of the document among projects in FP6 IST Calls 4 and beyond, preferably before they submitted there initial proposals. For that purpose, both the Standardization Guidelines and the brochure were distributed via Commission Project Officers overseeing the relevant Strategic Objectives in FP6 IST Calls 4 and 5.

The activities during the first half of COPRAS' lifespan were mainly focused on establishing the right (quantitative) basis for optimizing the qualitative results and impact of its activities and deliverables during – and after – the second half. Consequently, a meaningful qualitative evaluation of the interim results was not considered possible. Nevertheless, based on the positive feedback from research projects, Commission Project Officers, standards organizations and other stakeholders, the COPRAS consortium partners concluded the first half of the project's activities with an overall confident feeling that the project would manage to generated the impact it anticipated.

2.4 Review conclusions interim evaluation report

Despite the good results that were achieved during the first 18 months of COPRAS' activities, the conclusions in the Interim evaluation report pointed out a number of aspects that should be addressed in the Final evaluation report, when the necessary results are available:

- A quantitative assessment of the number of contributions made to a standardization-related activity in Europe or elsewhere, and of a number of such contributions taken into account by the standards groups concerned.

- A qualitative assessment by standards groups of the input made to their processes, assessing the quality of the input from the COPRAS Programme projects;

- A qualitative assessment by the projects that cooperated with COPRAS of the benefits achieved from their links with the standards process.

In addition, the conclusions underlined that a number of additional issues could be addressed by COPRAS during the second half of its lifespan, for example as part of transforming the Standardization Guidelines into an interactive platform, or as part of the debate during the COPRAS Open Meeting. Amongst these issues are:

- How to provide better means for research projects to identify the right standards and standards bodies;

- How to provide better means for closing the 'standardization gap' at the end of a project's lifespan;

- How to provide better means of synchronizing standards organizations requirements with research projects' standardization objectives.

These issues will be specifically addressed in sections 3.2 on Standardization Action Plans (WP4), and 3.3 on the Standardization Guidelines and the project's dissemination activities (WP5).

3. Results of activities during the last 18 months

The following sections provide a brief overview of the activities that were deployed by COPRAS in Work Packages 2, 4 and 5 over the last 18 months. In addition the results that have been achieved with respect to the Feedback gathering process (WP2), the execution of the Standardization Action Plans (WP4) and the installation of the COPRAS platform and the improvement of the Generic Guidelines (WP5), are analysed and held against the targets and objectives.

WP3 is not addressed in this overview, as the activities in the Work Package finalised already in the summer of 2005 and therefore do not fall within the period covered by this report. WP1 (Project management) and WP6 (Project coordination) do not cover activities that fall within the scope of this Final evaluation report.

3.1 Work Package 2: gathering feedback from projects in Calls 4 & 5

As a result of the first COPRAS project review, in was decided to extend the information gathering process – that initially was only targeting Calls 1 & 2 – to Calls 4 & 5, for the purpose of gathering feedback on the appreciation and usage of the COPRAS Standardization Guidelines, which were distributed via the European Commission to most projects in these calls. Target was to ensure feedback from at least 25-30% of the projects in these calls, in order to be able to generate meaningful conclusions with respect to the usefulness, and consequently the upgrading of the Standardization Guidelines.

The methodology that was used during the feedback gathering process was similar to the methodology used in the information gathering processes that addressed Calls 1 and 2, and consequently based on a questionnaire that was distributed to all projects in the call, following the distribution (9-12 months earlier) of the Standardization Guidelines. The nature of the questionnaire however was considerably simpler to lower the threshold for responding, as – this time – COPRAS had no concrete support to offer the projects. The 3 main topics addressed by the questionnaire were:

- Whether projects planned to deliver standards related output, and whether they had resources allocated to this activity;

- Whether projects had received and used the COPRAS Standardization Guidelines, and whether they had suggestions for the improvement of the document;

- Whether projects could indicate additional research/standards interfacing issues that should be addressed outside the scope of COPRAS.

These three topics deliberately addressed a wider scope of issues as originally planned. Reason for this was that this would enable an analysis of trends in the research/standards interfacing process (i.e. has the issue grown more important while FP6 has been progressing), and would also enable COPRAS to map 'general' issues and/or recommendations with respect to the improvement of research/standards interfacing (i.e. addressing those aspects that were not directly within the scope of COPRAS itself) against findings emerging from the Open Meeting (deliverable D25) or the Case study brochures (deliverable D26). With a response rate of more than 40%, that was reasonably equally spread across the two Calls, the Feedback gathering process was very successful from a quantitative perspective.[2] The following sections will evaluate the results that were achieved from a more qualitative perspective.

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[2] As a result of COPRAS having to complete its activities, the feedback gathering process towards Call 5 could not be completed in full. Therefore a number of responses from projects in this Call were not considered in the analysis. However, they do bring the level of response in the two Calls closer together (44,35% for Call 1 and 37,33% for Call 5).
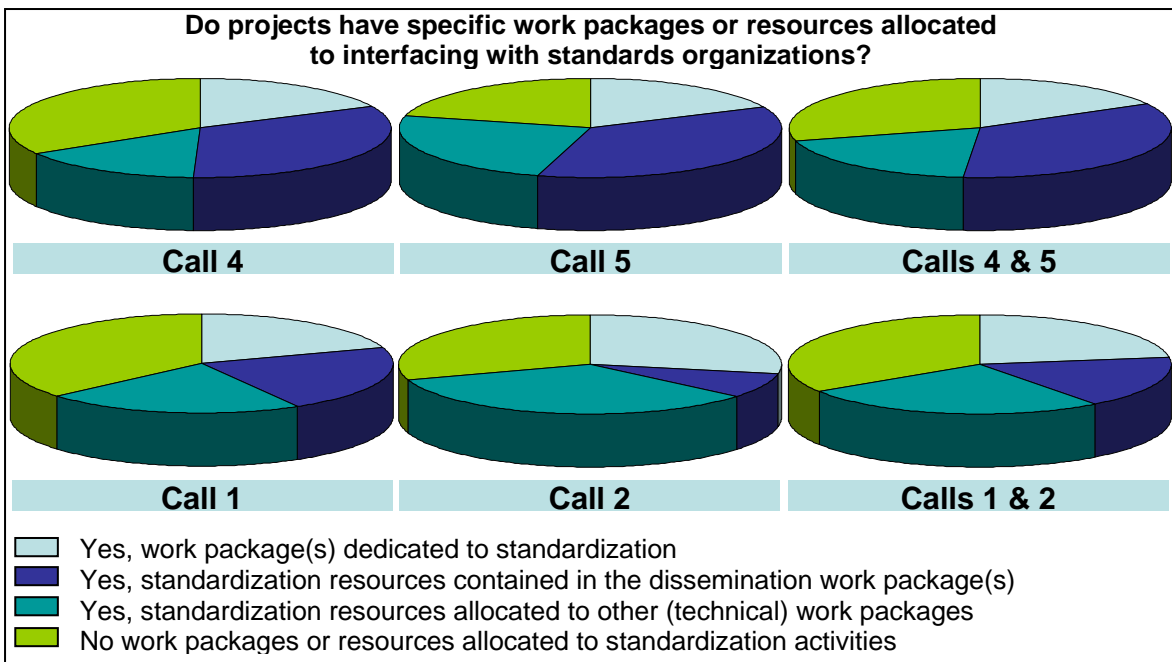
3.1.1   Relevance of research/standards interfacing for IST projects

The results of the Call 4 & 5 feedback questionnaire clearly show that standardization – and therefore research/standards interfacing – is an important issue in ICT research, with almost 90% of projects in these two Calls indicated they are either determined to interface with standards organizations, or will do this pending the course of their activities and results. This figure is slightly – although not significantly – higher than the 88% that indicated this in Calls 1 & 2.[3] Moreover, taking into account that half of this 90% is certain they will interface with standardization, whereas only 33% of projects across all key areas in EU funded research eventually interfaces with standards organizations,[4] it can be stated that interfacing with standards organizations is significantly more important for IST projects than it is for projects in other areas of research.

These very high figures of 88% and 90% raise the question whether there are significant deviations between the Calls that were addressed, or between Strategic Objectives within these Calls. Analysis however showed that – across the board – this is not the case, although the percentage of projects that is unlikely to interface with standards organizations is a bit higher in Calls 2 and 5, as these Calls include some Strategic Objectives (e.g. Cognitive systems) where projects – by nature – are unlikely to interface with standards organizations.

3.1.2   Impact and usage of the Standardization Guidelines

More important in respect of COPRAS' objectives however is to define if the Standardization Guidelines have actually made an impact. The first question here is whether there is a difference between Calls 4 and 5 with respect to the percentage of projects that allocated resources to standardization, because projects in Call 5 received the Standardization Guidelines before they had to submit their project proposals, whereas projects in Call 5 received them afterwards.

Do projects have specific work packages or resources allocated to interfacing with standards organizations?

Call 4   Call 5   Calls 4 & 5

Call 1   Call 2   Calls 1 & 2

☐ Yes, work package(s) dedicated to standardization
■ Yes, standardization resources contained in the dissemination work package(s)
■ Yes, standardization resources allocated to other (technical) work packages
■ No work packages or resources allocated to standardization activities

As the analysis presented in the figure above shows, only two thirds of Call 4 projects allocated resources to standardization, either in a dedicated work package, or as part of the dissemination package or other activities. For Call 5 however, this is almost 78% (or an increase of almost 15%). This suggest that the fact that Call 5 projects – contrary to the ones in Call 4 – were able to use the Standardization Guidelines before submitting their proposals, has led to more resources being allocated to standardization, which indicates a tangible result of the guidelines.

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[3] Projects in Calls 1 and 2 received a questionnaire with open questions, rather than multiple choice options, but the first question both groups of projects were invited to respond to, addressed the issue whether or not they intended to deliver technologies that were intended to be submitted to standards organizations. Hence a comparison was reasonably possible.
[4] As demonstrated by research carried out by the INTEREST project among projects in FP5
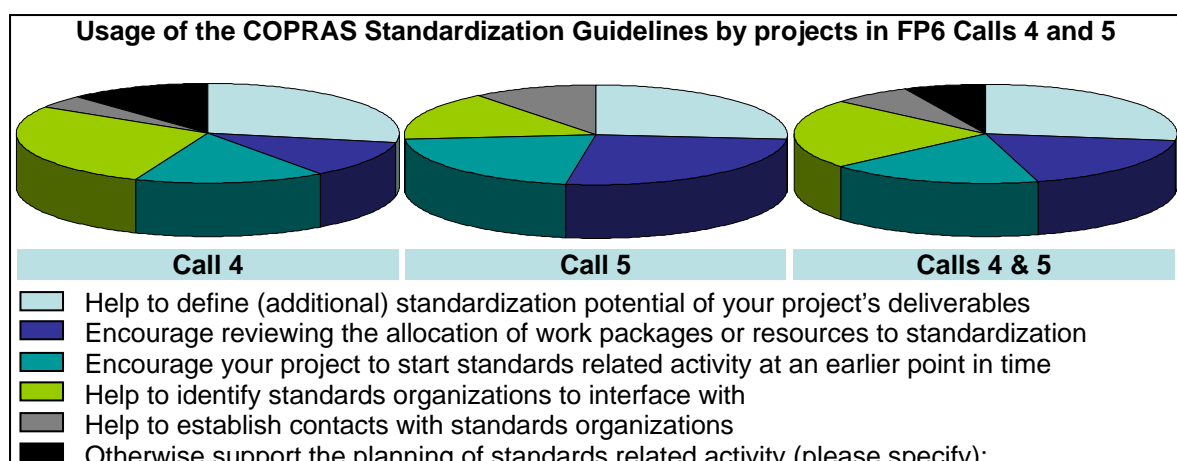
However, as this difference may have been caused by many other reasons (such as the specific focus areas of projects in Call 5), an additional validation of this conclusion is necessary. Therefore a comparison with projects in Calls 1 and 2 was made as well. Here projects were also asked – although through open questions rather than multiple choice – whether they had resources allocated to standards related activities and if so, whether these were put in a separate work package, integrated into the dissemination activities, or otherwise embedded in the activities.

The figure above also demonstrates the differences between the results in Calls 1, 2, 4 and 5 in more detail and shows that the amount of projects in Calls 1 and 2 that allocated resources to standardization is equal (66%) to Call 4, although there is a slight discrepancy between Calls 1 and 2. Nevertheless, the number of projects allocating resources to standardization in Call 2 is still significantly lower than in Call 5.

Taking into account that the aggregate results for Calls 1 and 2 are equal to the results in Call 4, the conclusion seems justifiable that the Standardization Guidelines did in fact lead to more projects allocating resources to standardization in their original work plans, thus improving their perspective of achieving tangible results here. Moreover, the discrepancy in Calls 1, 2, and 4, between the amount of projects that envisage interfacing with standardization on one hand, and the number of projects that actually allocate resources to this activity on the other, has disappeared in Call 5, also suggesting that a higher percentage of projects in this Call will be able to finalize their standards work. This is also underlined by the graph below, which analyses when the Standardization Guidelines were used among those projects (25%) that actually received or downloaded the document: here, the percentage of projects that used the Guidelines to adjust their Technical Annex is more than twice as high in Call 5. This again underlines the impact and relevance of the Guidelines in the preparatory process, when work packages have to be defined and resources have to be allocated.

Have projects been able to use the Generic Guidelines during the preparatory process, or during the early stages of their projects?

| Call 4 | Call 5 | Calls 4 & 5 |

☐ Yes, the Guidelines were used to adjust the technical annex prior to launch
☐ Yes, the Guidelines were used to adjust the work plan during the first months
☐ Yes, we expect to use the Guidelines during the course of the project
☐ No, the Guidelines were not applicable to our project (go to question 7)

Although the number of projects that actually received (or downloaded) the Standardization Guidelines is relatively small, it should be underlined that a relatively high number of them (32 out of 38, or 84%) actually used the Standardization Guidelines. Moreover, usage was spread reasonably equally across the Strategic Objectives in the two Calls. The analysis of the nature of this usage however does not point out a single particular reason for using the Standardization Guidelines as the graph below shows.

Usage of the COPRAS Standardization Guidelines by projects in FP6 Calls 4 and 5

| Call 4 | Call 5 | Calls 4 & 5 |

☐ Help to define (additional) standardization potential of your project's deliverables
☐ Encourage reviewing the allocation of work packages or resources to standardization
☐ Encourage your project to start standards related activity at an earlier point in time
☐ Help to identify standards organizations to interface with
☐ Help to establish contacts with standards organizations
☐ Otherwise support the planning of standards related activity (please specify):

Nevertheless, across the two Calls, identifying a project's standards potential and identifying the standards organizations that go with it are the most frequently mentioned. This was also in line with the feedback that was received with respect to improvements that could be made to the Standardization Guidelines. Here, it was clearly pointed out that more detailed information on how to choose and contact a standards organization, as well as more information on structuring standardization activities in a project's work plan are the key areas where improvements are necessary.

3.1.3   Addressing issues outside the scope of the Standardization Guidelines

Next to improvements to the Standardization Guidelines, projects in Calls 4 and 5 also pointed out a number of other measures that should be implemented to encourage more and better cooperation between research projects and ICT standards organizations. The two aspects that were most frequently mentioned here were the fact that projects currently have no possibilities to obtain additional resources to complete standardization activities after the formal termination of their activities, as well as the fact that standards organizations do not provide sufficient mechanisms and/or facilities encouraging research projects to interface with them.

In addition, a number of other areas were mentioned by projects, where other stakeholders to the research/standards interfacing process should take action. This concerned:

- The cost (and specifically focusing on membership fees for standards organizations) of participating in standards processes;

- Internal coordination in and between project consortium partners with respect to standards actions to be taken;

- The lack of comprehensive lists of standards that could – or even should – be applied by projects;

- Measures to encourage a project to continue their standardization activities after the completion of the project itself.

3.1.4   Evaluation and conclusions

The feedback gathering process addressed was one of COPRAS' main objectives for the last 18 months (i.e. to generate input from the ICT research community pointing to aspects where the Standardization Guidelines could be improved). Contrary to the expectations, the projects in Calls 4 and 5 generated a response rate of more than 40%, considerably higher than the 25-30% that was expected, and again stressed that standardization – and cooperation with standards organizations – is an important issue for many IST projects.

This was underlined by the fact that the vast majority of projects that received or downloaded the Standardization Guidelines actually used them while preparing their initial proposals, or indicated to use them during course of their activities. As a consequence, a significantly higher number of projects allocated resources to standards activities in Call 5, than had be the case in previous Calls in FP6. For Call 5 this also closed the 'gap' between the number of projects with standardization intentions, and the amount of resources allocated to standardization. Taking into account the discrepancy between these two across all the other Calls in FP6 this leads to the assumption that projects in Call 5 – on average – will have a better starting position to complete their standards work, as a result of using the Standardization Guidelines. Also, in view of the fact that only 25% of projects actually managed to use the guidelines, it is likely that in the future this gap may be closed completely when 50-75% of projects will use them, effectively synchronizing the overall standardization intentions in a Call with the amount of resources necessary to achieve the goals set.

However, the quantitative approach of allocating more resources – although an essential precondition – is not enough to embed projects' standardization activities in their initial project plans in the most optimized way. Standardization Guidelines are necessary during a projects preparatory phase as well as during the active period. Therefore, they will have to be improved in a couple of specific areas, for example with respect to how to choose and contact a standards organization, and how to structure standardization activities in a project's work plan. These issues will be further discussed in section 3.3.2.

Notwithstanding the improvements to the Standardization Guidelines, additional actions, from the side of the research and standards communities, as well as from the side of the European Commission will be required to structurally improve the research/standards interfacing process, and to ensure that ICT research projects' overall contribution to innovation processes in Europe as well as on a global level can be improved. These actions should primarily address:

In this respect, many projects pointed out that additional issues need to be addressed, and most frequently pointed out here are the fact that insufficient means currently exist for projects to continue their standards activities, even when the project these activities originate from, has ended. Also the fact that the ICT standards world does not provide proper mechanisms for encouraging and facilitating research projects to initiate a cooperation process is seen as a major area of improvement.

This leads to the conclusion that – despite the fact that the (improved) Standardization Guidelines will considerably improve the pre-conditions for research projects seeking to interface with standardization (and may even entirely take away the discrepancy between the level of standardization intentions across a Call and the amount of resources allocated) – it is unlikely that this alone is sufficient to improve the process on a structural basis, and to generate more tangible standardization results from EU funded research. Closing the standardization gap at the end of a project's lifespan will require more actions and measures from the side of the European Commission as well as from the side of the standards community. This will also be demonstrated in the evaluation of the results achieved in Work Packages 4 and 5, in the next sections.

3.2 Work Package 4: development of standardization paths

Activities in this work package were started in the autumn of 2004, working towards the development of appropriate Standards Action Plans for each of the selected projects in Call 1. Purpose of these plans was to help projects carrying forward their standards-related deliverables into the standards process, and to provide specific assistance where needed. A more detailed evaluation of the process towards projects in Call 1 is provided in deliverable D17.

Subsequent to Call 1, between summer 2005 and spring 2006, COPRAS addressed Call 2 and developed a set of Standardization Action Plans for those projects that were selected following the Call 2 kick-off meeting taking place 16 June 2005 in Brussels (see also deliverable D14). This process will be documented and evaluated more closely in section 3.2.1. Moreover, as the COPRAS work plan specifically quantified the high-level objective to be achieved by the end of the project as being at least six contributions of standardization work introduced into the relevant standardization processes, sections 3.2.2 and 3.2.3 encompass the analysis of the 'rolling action plan', and evaluate to which extend the action steps that were planned by the projects have been achieved, and to which extend this generated tangible impact with respect to (ongoing) standardization processes.

3.2.1   Developing Standardization Action Plans for Call 2 projects

In order to establish cooperation with a selected group of projects in Call 2 towards the development of Standardization Action Plans, the same procedure as adopted for Call 1 was followed. Consequently, based on an analysis of information gathered, a group of projects was selected and invited to participate in a kick-off meeting that took place 16 June 2005. This resulted in the development of 8 Standardization Action Plans in collaboration with 22 projects across 6 different Strategic Objectives in IST Call 2. Included in these are 2 clustered plans for Embedded systems (4 projects), and for GRID-based systems for solving complex problems (12 projects).

In addition, a Standardization Action Plan for a cluster of 4 IP projects in Strategic Objective 2.5.9 (Collaborative Working Environments) was developed. This outlined the concrete steps and deliverables the projects, along with COPRAS, would undertake towards establishing a recognized industry standard that is important to each of the projects. However, as this plan – contrary to the others – was developed prior to the start of the projects end of spring 2006, concrete results cannot yet be evaluated here.

The following sections encompass a quantitative analysis of (the execution of) the action steps that were agreed in the Call 1 & 2 Standardization Action Plans, as well as an evaluation of the impact several of the projects that have been able to advance most, have managed to achieve.

3.2.2 Rolling action plan: quantitative analysis of action steps

The COPRAS project established 19 separate Standards Action Plans in support of a total of 42 IST projects under the FP6 programme that were selected using the open and transparent set of selection criteria established by the COPRAS project. Amongst the 42 projects selected, the COPRAS project created 5 clusters of IST projects where projects shared common interests or objectives towards standardization and where working together towards standardization of project results would be beneficial.

Each Standards Action Plan included specific steps that would lead to increased standardization of the selected IST project's results. These steps were identified collaboratively between the selected projects and COPRAS, with target dates for completion of each step agreed. Some steps involved the projects undertaking actions, others involved COPRAS partners taking actions in support of the projects, and others were joint activities between COPRAS partners and the project partners, sometimes involving others.

The Standards Action Plans were tailored to the specific standardization objectives of each IST projects, which resulted in a wide variation of actions taken by the projects themselves as well as the COPRAS partners. Some examples of this variation include:

- Standards Action Plans address standardization bodies that were both internal and external to the COPRAS partners and the ICTSB.

- Some Standards Action Plans targeted the establishment of new standards grouping as no existing grouping addresses the research areas of the IST projects.

- The action steps scheduled within the Standards Action Plans range from 6 to 24 months in the future, after which further steps were to be established.

- Many of the Standards Action Plans target actions that involve interfacing with multiple standards bodies.

- The Standards Action Plans in some cases addressed revisions to existing standards, while others focused on established a new standard or specification.

- The number of action steps typically ranged from 3 to 4 for an individual project addressing a single standards body, to as many as 7 to 9 steps and sometimes more when the activities target multiple standards bodies or were established for a cluster of projects.

With such a wide ranging set of standardization objectives and associated action steps, the results achieved by the projects also had a high degree of variability with regard to implementing the steps established within the Standards Action Plans.

The COPRAS project utilised a rolling action plan that combined all of the individual steps from each of the 19 Standards Action Plans into a single list so that progress could be tracked and monitored on a monthly basis. It should also be noted that the projects selected from IST Call 1 has substantially more time to complete action steps than those from IST Call 2 as there is more than a year's difference in starting dates between the two sets of projects.

One key quantitative measure of the performance of the COPRAS project is the degree to which the action steps were undertaken as prescribed in the Standards Action Plans. The COPRAS partners have monitored the progress of the Standards Action Plans throughout the COPRAS project and in completing the project have determined the status of each action step in each plan according to the following:

- Completed - action step was completed (or mostly completed)

- Delayed - action step late, but still likely to be completed

- Pending - action step is not yet due but is still likely to be completed

- Abandoned - action step was abandoned

The following table summarises the situation with regard to the action steps identified within the 19 Standards Action Plans:

		Action Steps Status				
		Completed	**Delayed**	**Pending**	**Abandoned**	**Total**
Call 1	Count	54	4	6	30	94
Projects	%	57%	4%	6%	32%	100%
Call 2	Count	25	6	17	8	56
Projects	%	45%	11%	30%	14%	100%
All Projects	Count	79	10	23	38	150
	%	53%	7%	15%	25%	100%

The COPRAS project has gained some important insights based on the quantitative analysis of the implementation of the actions steps within the 19 Standards Action Plans:

- There is a significant level of abandonment of standardization actions steps amongst the IST projects in Call 1. The majority of these steps being abandoned were due to prioritisation of standardization work within the selected IST projects relative to other technical project deliverables or commitments.

- The completion rate of action steps as a percentage of total action steps were fairly consistent. This shows that in terms of planning there is generally an over optimism about what can be achieved by the projects from a schedule standpoint. Sometimes this was internal to the projects, other times it was aligning steps to the target standards bodies processes.

- The COPRAS partners have gained experience in working with IST projects between Call 1 and Call 2. The total number of projects involved in the Standards Action Plans is similar between the two Calls, but the actions steps are fewer in total for Call 2 as the COPRAS partners encouraged the projects to focus on achieving a fewer, but important steps. There is a significant number of steps pending for Call 2 projects due to their starting projects later, but the expectation is that many will be completed raising the percentage completion above what was achieved for Call 1 projects.

- The achievements by the projects by collaborating with the COPRAS partners was substantial with many more action steps being taken by projects in Call 1 and Call 2 than would have occurred without the support of the COPRAS project.

The quantitative results have been used to update the Generic Guidelines for the projects so that others may benefit by what was learned within the COPRAS project in implementing Standards Action Plans.

3.2.3 Rolling action plan: impact analysis action steps

The main purpose of the each of the Standards Action Plan established with the selected IST projects is to describe an effective path where RTD project results can impact new or existing standards. As noted above many of the projects have not yet completed all of the action steps within the Standards Action Plans, however some important results have been achieved by several projects regarding new or existing standards.

The following table summarises the standardization impact that has already been achieved by 10 of the IST projects or clusters of projects that have collaborated with COPRAS:

Project	Standardization Impact
Embedded Systems Cluster	The HIJA project within the Embedded Systems Cluster has been successful in creating a new working group within the Java Community Process programme that includes project partners and other organisations from around the world interested in Java for safety-critical embedded systems. The new group known as the JSR 302 has voted to adopt the HIJA project results as the basis for a new safety-critical standard for the Java programming language expected to receive formal approval within the Java Community Process in 2007. The availability of a new industry standard specification is expected to accelerate the take-up of the real-time Java tools and technologies that were developed within the HIJA project.

Project	Standardization Impact
SIMILAR	SIMILAR has promoted the standardization of UsiXML language developed within the project as a standard to be adopted by W3C. The project presented their results and the UsiXML specification to the Device Independence Working Group within W3C. The Catholic University of Louvain from the SIMILAR project has been accepted by W3C for entering its academic initiative and is leading the standardization process of UsiXML within W3C.
GRID Cluster	The GRID Cluster of projects has been successful in establishing a new Technical Committee under ETSI by establishing successful conferences and workshops demonstrating sufficient industry interest. The new ETSI Technical Committee is working towards a first set of specifications for new GRID standards with the collaboration and participation of representatives from the projects within the GRID cluster.
e-Learning Cluster	The work within the projects of the eLearning cluster and in particular the UNFOLD project has lead to the number of 'Units of Learning' produced using the Learning Design standard specification going from near zero in 2004, to several hundred today. The eLearning projects have worked together along with substantial involvement from other industry organisation to validate the Learning Design standard and to identify further enhancements and new extensions to address the needs of European content providers. These have been submitted to the IMS standards organisation and are progressing through the consensus process.
TALK	The advanced research technologies developed within the TALK project were presented and an initial constituency has been created. The project learned that substantially more work is needed to unite the various communities around the project technologies. In order to build a broader awareness and understanding of the potential new standards from the project the partners have been successful in obtaining funding for a follow-on IST project AMIDA to further progress the standardization initiatives.
POLYMNIA	The project worked within the W3C standards organization to identify a number of Working Groups as potential target constituencies for the project results. The project work has been submitted to the Semantic Web Deployment Working Group, focusing on the development of guidelines that assist users of the Semantic Web in publishing data and vocabularies in the Semantic Web.
TEAHA	The project has submitted it's project results to the HGI standards body in the form of a specification for a secure service discovery protocol, business clusters requirements, a contribution on policy management, and a proposal to use UPnP to describe devices. The work by the TEAHA project partners towards adoption of these contributions within HGI is ongoing.
Collaborative Working Environments Cluster	The 4 Integrated Projects have worked together during the negotiation process of the project contracts to formalise the process for establishing a common architecture across the projects as a new industry reference for use in building collaborative working tools and applications. The innovative approach of establishing a co-ordinated approach towards standardization amongst the IPs from the outset with specific tasks identified in each work programme, coupled with the participation of over 100 organisations in the 4 projects has already gained recognition as an upcoming de facto standard.
EUAIN	A CEN/ISSS Workshop was formed to establish consensus around the requirements and specifications being developed within the EUAIN project. This has resulted in main stakeholders participating in the decision process. The level of participation in the CEN/ISSS Workshop has gone considerably beyond the membership of the EUAIN consortium itself and a collaborative document known as a CEN Workshop Agreement has been prepared summarizing the consensus reached amongst some 85 experts, which is substantially based on developments within the EUAIN project.
MediaNet	The MediaNet project developed a reference architecture and has contributed directly as a project to the IETF standards organisation, focusing on the standardization and management of interfaces between different layers of the architecture. MediaNet also contributed to ETSI TISPAN and to the work in the DSL Forum, specifically focusing on Video over IP. Further, MediaNet's consortium partners individually contributed to processes in UPnP, DLNA and IEEE. MediaNet has demonstrated that an IP project is capable of making a relatively large number of substantial contributions to standardization within a relatively short time frame.

As demonstrated above, the IST projects collaborating with COPRAS have already had an important impact on standardization. As the consensus processes continue within several of the standards organisations, even greater impact will be achieved beyond the completion of the COPRAS project.

3.2.4 Feedback from standards organization

In order to establish a balanced overview of the issues that still need to be addressed in research standards interfacing, COPRAS set out to gather feedback from those organizations that interfaced with projects in Calls 1 and 2, to the extend that this was possible, as some interfacing processes – specifically where Call 2 projects were concerned – were still ongoing by the time COPRAS had to terminate its activities. This raised a number of issues that are summarized below:

- Most projects that seek to interface with standards organizations grossly underestimate the amount of time and resources necessary to complete a standardization process. In order to be successful the commitment from projects must be to go all the way rather then just attending a few meetings. This needs to be backed up through funding

- However, when the need for building a constituency is recognized, when a good perception of the processes in a standards organization exists, and when cooperation is launched at an early point in time, projects have demonstrably been able to provide essential input that proved critical in view of turning a standardization effort into a success.

- In order to address several critical aspects in standards processes, such as confidentiality, membership, constituency building, timing, etc. it is essential to have representatives in a project that are already active in targeted standards organizations.

- Nowadays, most of the technology that is used in standards has IPR attached to it. This increasingly creates problems for non members (e.g. projects) participating in standardization processes, as these are not bound by an organizations IPR rules or policy (and could attempt to introduce clandestine IPR into a standard).

- The output of standards organizations is many times publicly available, and for a research project it is not a trivial task to decide which standards might be relevant to its particular area of work; however, internal coordination in companies that participate in standardization processes as well as in research projects may make this an easier task.

- Research projects covering topics cutting across several areas of standardization many times contribute to a better coordination between the standards organizations concerned with these topics and hence help addressing a standardization challenge, that otherwise would remain in a 'vacuum' between different organizations, in an integral way.

- Standards organization can benefit a lot from input from research projects if representatives from the members that are also active in research projects actively monitor progress in these projects and bring their output to standardization once it is the right moment to do so.

3.2.5 Evaluation and conclusions

In quantitative terms, COPRAS supported a considerably higher number of projects in Calls 1 & 2 (and even in Call 5) than it originally expected: whereas the target was 8-10%, the result eventually was 14%. This also provided a large number of action steps across the plans and an opportunity to gain some insight in the processes based on an analysis of the implementation of the actions steps.

This shows that projects are many times too optimistic with respect to the standards work they will be able to complete, and frequently have to abandoned action steps because other project targets have to be prioritized. Also, experience showed that a lower number of action steps increases the chance of a project being able to complete all of these, even though several may have to be pushed backward; however, in any case, projects that receive support (e.g. from COPRAS) for their standards activities will almost certain be able to generate more standardization results.

In terms of the impact generated by projects, COPRAS also outperformed that target it set itself. Instead of the anticipated number of 6 tangible results, already 10 had been achieved by projects, by the time COPRAS had to terminate its activities. Expectation however is that this number will

still increase as the execution of many of the plans – specifically in Call 2 – is still ongoing. Analysis of the impact shows that this is not only spread across a variety of different European and global standards organizations, but also that the nature of the impact ranges from establishing constituencies working towards an industry standard, via the promotion of emerging standards, to the delivery of concrete technical specifications.

The feedback received from standards representatives generally underlines the positive effects that contributions from research projects have on progress that can be made in standards organizations, for example by establishing the required constituencies, by supporting the coordination between standards organizations, or by improving existing specifications. However, several aspects complicating the interfacing process, such as membership/IPR issues and the time and resources available for standards work, will have to addressed.

3.3 Work package 5: Standardization Guidelines & dissemination

The activities in Work Package 5 established the main focus area for COPRAS during the last 18 months of its activities, because the communication, usage, and sustainability of its deliverables and results were amongst the project's prime targets. Therefore, the Standardization Guidelines were first of all transformed into an interactive platform that could be used along side an upgrade document version, to provide guidance to projects and other stakeholders on research/standards interfacing issues in the most comprehensive and effective way. Secondly, a set of case study brochures were developed, documenting the progress that selected individual projects in Calls 1 and 2 had made towards their standardization targets, as well as the key issues and learning points arising from these processes. Finally, an Open Meeting was organized in month 36, with the objective of bringing together all groups of stakeholders to the research/standards interfacing process, to discuss the results and deliverables of the COPRAS project, as well as to define additional recommendations that would support improving research/standards interfacing in FP7.

3.3.1   Impact dissemination activities over the last 18 months of the project

During the last half of the project's lifespan, most of COPRAS' promotional activities, some of which were also mentioned in the Activity report over the second year (deliverable D23), were aimed at the dissemination of the Standardization Guidelines (both the document version and the interactive platform), and the promotion of the Open Meeting, both as a launching event for the COPRAS platform, and the main industry event to discuss research/standards interfacing in FP7. These activities, of which the main ones are listed below, have been essential with respect to the project achieving it goals:

- The COPRAS web site established itself as the main dissemination and communication tool for the project, generating on average 6.500 hits on a monthly basis during 2006 (against an average of 4.000 during the period before that); During the 4 months prior to the Open Meeting this number however rose to almost 16.000 per month.

- The Standardization Guidelines were promoted through a dedicated brochure, presentations at conferences and other events, as well as distributed to the project community with the help of the European Commission. Figures from the COPRAS web site show that, during 2006, the guidelines were accessed more than 5.000 times, with a 45% - 55% split between the (downloadable) pdf-version and the HTML-version.

- The Open Meeting was promoted through direct and consecutive email communications to the research and standards communities as well as to representatives from the European Commission, through newsletters and the distribution of a dedicated brochure (both in paper and electronic format), and through announcements at meetings and events;

- The IST2006 event, and the workshop that was organized here by COPRAS were used to promote both the COPRAS interactive Standardization Guidelines platform and the Open Meeting;

- The Open Meeting itself functioned as an important dissemination instrument, providing delegates with a set of case study brochures (see section 3.3.4), and an updated version of the

COPRAS Standardization Guidelines (see section 3.3.2), next to a complete report of the Open Meeting (deliverable D25).

The high level of attendance at the open meeting as well as the web site statistics underline that the promotional strategy for the second half of the project's lifespan was successful in achieving its goal, i.e. the dissemination of the Standardization Guidelines and the gathering of feedback from the main constituencies. Moreover, experience, specifically during the last 6 months of the project, suggests that the aggregate communication and dissemination efforts to a certain extend have managed to establish COPRAS as a brand in the 'market'.

3.3.2   Standardization Guidelines: updated document & platform version

One of the main tasks for the project, resulting from recommendations from the second project review, was to transform the Standardization Guidelines into an interactive tool guiding the various stakeholders through the research/standards issues specifically relevant to their particular constituency.

After considerable discussion between the consortium partners it was decided to base this COPRAS platform on an FAQ system that would address most of the issues or questions with respect to research/standards interfacing that arise among the various stakeholders. Reasons for this approach are the following:

- An FAQ platform would most likely not address the full 100% of the issues that may arise among all stakeholders, but would be relatively quickly to build;

- The platform would not have to rely on complex, maintenance intensive technology, hence would be easily sustainable, also after the closure of the project;

- The platform would allow many different entry points and hence facilitate each visitor to navigate through the issues in its own way;

- The platform would be easily extendable with additional issues/questions, i.e. emerging from the feedback gathering report or the Open Meeting.

The COPRAS platform can be found at: http://www.w3.org/2004/copras/docu/faq/Overview.html, and was put on line mid December 2006, i.e. later than expected and just before Christmas. Despite the fact that this did not provide COPRAS with a lot of opportunity to market the platform, it was already accessed almost 213 times during January 2007 (as a comparison: the long-marketed html and pdf-versions of the Standardization Guidelines document were accessed 326, respectively 365 times during that same period).

For there reasons, COPRAS is confident that the platform will be able to establish itself as one of the main sources of information on research/standards interfacing, provided that the means will be found to secure proper upgrading and maintenance. However, a full evaluation of the platform will have to be addressed in the context of the options that will be available in the future to secure this maintenance process.

In parallel to the development of the interactive platform, the document version of the Standardization Guidelines was updated as well. More than 500 copies of this new version were distributed January 2007, both electronically (via the COPRAS web site) and in paper format, in the delegate pack of the Open Meeting.

Compared to the first release, and based on feedback that was received through various channels (e.g. the feedback gathering process, the development of the case study brochures or the monitoring of the rolling action plan), a number of improvements were made to the document, elaborating more in depth on:

- the nature, form and type of projects' contributions to standards organizations;

- finding the standard(s) that could be relevant to a project's activities;

- the cost for a project of initiating or participating in standards processes;

- synchronizing a project's work plan and timing with (ongoing) standardization activities;

- how to initiate a new standards process;

In addition, other areas of improvement were pointed out, for example providing (access to) list of standards that could be relevant to specific categories of research projects, and providing more sophisticated tools to match projects with the 'right' contacts within the 'right' standards organizations. These – and other – improvements will however require substantial effort, time and resources and therefore should be addressed in the conjunction with the options there are to guarantee the sustainability and maintenance of COPRAS' results and deliverables. In any case, the Standardization Guidelines, regardless of their format, should be seen as a 'living document',

This last step completed the dissemination of the Standardization Guidelines, that are now upgraded and available in different formats. Figures have shown that the guidelines are being accesses around 500 times a month on average, and feedback from the main constituencies underline their importance with respect to improving research standards interfacing. This leads to the conclusion that COPRAS well achieved its objectives with respect to this important deliverable.

3.3.3   Open Meeting

To discuss its findings and deliverables with its main stakeholders, COPRAS organized a conference 17 January 2007, on research and standardization towards FP7. The conference was set up with a quantitative target (i.e. attracting 150 – 200 participants, mainly from the research and standards communities as well as from the European Commission), but also had clear qualitative targets, i.e. to encourage discussion between the different constituencies in order to generate input for improving the COPRAS deliverables, as well as recommendations for further improvement to the research/standards interfacing process in FP7.

The conference, which had been anticipated by an intensive marketing campaign, attracted than 200 registrants and featured speakers as well as delegates from all constituencies (e.g. the research and standards communities, larger companies and SMEs, and the European Commission). Although not all of those that registered actually participated, it is felt that with an estimated 140 people taking part, the conference was sufficiently successful from a quantitative perspective. Moreover, as the graph below shows, attendance was distributed fairly equally across the different sub-constituencies.[5]
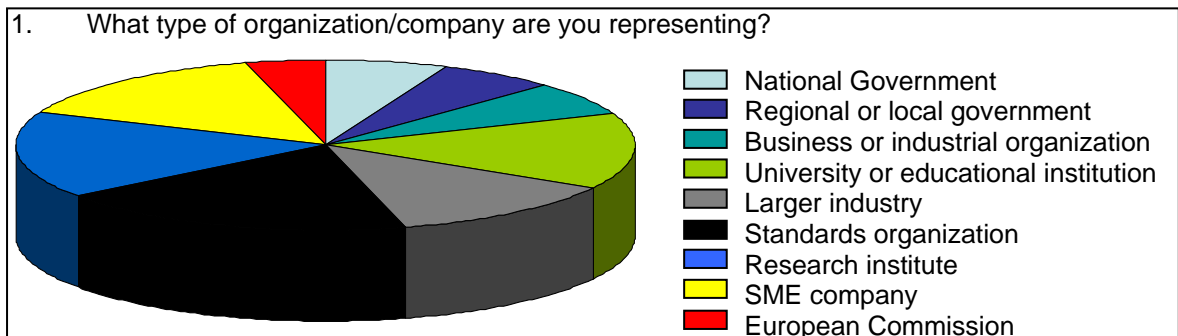
More relevant however, is whether the conference (on which a full report is contained in deliverable D25), managed to achieve its qualitative goals, which can best be described as:

- To demonstrate the COPRAS interactive platform, and in this context to address the broad spectrum of issues research and standards communities are encountering when trying to cooperate with each other.

- To aggregate input from different constituencies to determine how the COPRAS deliverables could best continue to support and improve the research/standards interfacing process beyond COPRAS' own lifespan, e.g. in FP7.

- To formulate additional recommendations, pointing out steps to be taken by the stakeholders themselves (standards organizations, research project or the European Commission), to improve the process of research/standards interfacing.

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[5] Based on information retrieved through the audience feedback questionnaire (N=46)

Despite the importance and appreciation of the presentations given by the conference speakers, one of the main focus areas in terms of addressing these objectives was the interactive panel discussion organized at the end of the conference. Here, three groups of statements on research/standards interfacing in FP7 were introduced, addressing the following main themes:

- Tools should be available to ease research/standards interfacing

- What can standards bodies do to improve interfacing with projects?

- How should standardization be an integral part of EU research programmes?

As the audience's involvement in the discussions had already shown to be very high during the morning and afternoon presentations, the conference chair decided to invite feedback from the audience with respect to these statements, followed by reactions from the panel, rather than the other way around. This approach was very successful and generated overwhelming feedback, for example pointing out that:

- The COPRAS Standardization Guidelines could support project evaluators as well as Commission Project Offices to encourage projects to include standards aspects in their work plans.

- Standards organizations in the ICT domain compete with one another, hence more and better tools should be made available to support projects finding the organization that would be most suitable to them.

- Support actions should be defined pulling standards activities in projects together, in order to coordinate standards activity and jointly approach the relevant organizations.

- Standards bodies' interfacing with research projects could improve considerably by introducing a more generic methodology and logic into the current actions and processes.

- It is not entirely clear what drives the standards organization and processes, and as a consequence projects often fail in their objectives because they do not get further that influencing the members of the standards organizations.

- Standards organizations should reconsider the confidentiality of drafts in certain situations.

- Standards organizations will have to become more pro-active to encourage projects to participate in standards processes as this is very difficult if a project does not already have those people participating in targeted standards processes on board in the project as well.

- COPRAS already achieved a number of things, but extension into FP7 (and possibly also into other areas than ICT) will still be required as there are clearly many issues still to be addressed as the conference has shown.

- Installing a standardized mechanism for providing information on what is being done in standardization processes would already be helpful.

- Coordination between research and standardization will therefore remain necessary, also as an insurance that public funds spend on research will generate tangible results in the form of standards. This may best be achieved by continuing COPRAS in FP7.

The high level of audience participation in the conference, also reflected by the fact that – despite the high quality and high appreciation of speakers' presentations – this session received the highest rating in the audience feedback questionnaire,[6] indicated that COPRAS succeeded in achieving the goals it set itself with the Open Meeting. Moreover, when evaluating the overall outcome of the conference, as summarized in the five points below, it can be concluded that most of these conclusions are in line with the findings from the feedback gathering process among Call 4 and 5 projects.

- Standards establish a bridge between research results and the implementation of innovative products. Standardization is therefore an essential component for boosting innovation;

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[6] Also see COPRAS deliverable D25, page 17

- Timing is essential for standardization; an early start provides better chances for being successful; moreover, the current pace of technological development forces standardization and research to proceed in parallel;

- There are still many barriers for projects participating in standardization such as membership fees or confidentiality rules; also more tools are needed to find the right standards organization and to determine the differences between various bodies;

- Competition between standards organizations forces the latter to put more effort into marketing, specifically towards the SME community;

- Interfacing with standardization remains an important aspect in FP7. Additional measures are needed and continuation of COPRAS' efforts to bring European research and standardization closer together is a necessity to reinforce Europe's position as a leading provider of technologies for the global information society.

3.3.4   Case study brochures

In order to document both the results that research projects can achieve in their cooperation with standards organizations, as well as the lessons that can be learned from this interfacing process, COPRAS selected a number of projects for which it produced Standardization Action Plans, and summarized their achievements in 'case study brochures'. These 2-page flyers quickly explain the standardization challenges the projects faced, document the steps that were taken to achieve the targets, and point out a number of key learning points that may in turn serve other research projects when they prepare their interface to standardization. The following 11 brochures were prepared:[7]

Project	Strategic Objective	Subject
GANDALF	2.3.1.3	Standardization in combined wireless and wireline technologies
TALK	2.3.1.6	Standardization of Multimodal Dialogue Context Formats
ENTHRONE	2.3.1.8	Standardization in technologies for the audio-visual chain
MediaNet	2.3.1.8	Standards that ease exchange of Digital and Audio-Video Content
TEAHA	2.3.1.8	Interconnecting standards for home appliances and audio-visual applications
Telcert	2.3.1.12	Standards for interoperability of eLearning systems
UNFOLD	2.3.1.12	Standardization in eLearning technology for Europe
HIJA	2.3.2.5	New programming standard for safety-critical embedded systems
POLYMNIA	2.3.2.7	Improving personalized content detection in audio-visual standards
EUAIN	2.3.2.10	Standards for accessibility of digital information for disabled citizens
CWE cluster	2.5.9	Standardization of a Reference Architecture for Collaborative Work

The case study brochures served a dual purpose: first they intended to help individual projects disseminate their standardization achievements, and second, they point out (additional) issues in the research/standards interfacing process that may have to be addressed, either by COPRAS, or by other stakeholders. Although many different aspects were put forward in this respect, there a clearly e few main categories emerging, when analysing these ' key learning points':

- **Choosing standards organizations to interface with:** this activity usually requires much more time and resources than anticipated; however, sometimes different paths should be explored before deciding on the best organization to interface with; moreover, technological developments may not be perceived equally mature in all standards bodies.

- **Cooperation with standards organizations:** timing is an important aspect in standardization processes, and processes should not be initiated too early or too late; therefore synchronising a project's standards activities with ongoing standardization processes requires permanent action; further, to make submissions to standardization, projects should best be represented in the targeted organizations.

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[7] It should be noted that the table includes all brochures, i.e. those that were included in deliverable D19 (GANDALF, UNFOLD and ENTHRONE), as well as in deliverable D26 (MediaNet, TEAHA, Telcert, TALK, HIJA, POLYMNIA, EUAIN, and the CWE cluster).

- **Building a constituency:** The time necessary to build a constituency is often underestimated; moreover, despite obvious benefits, other circumstances may cause barriers to unite a constituency around a standardization challenge; also, it can be difficult to trigger contributions from all stakeholders, for which reason projects should also invest in collaborating with organisations involved in standards outside their own consortium.

- **Embedding standards work in a project's work plan:** interfacing with a standards organization at an early point in time, as well as allocating a substantial amount of resources will substantially improve a project's starting position with respect to its standardization objectives; however, it is equally important to synchronize these objectives with the agenda of the individual project partners, as standards work should – preferably – involve more than one project partner; moreover, embedding standardization targets (and the required resources) into a project's work plan seems almost a necessary precondition to complete standards work successfully.

- **Additional supporting measures:** the availability of the support from a project like COPRAS was very beneficial to projects' achieving their goals, e.g. because it helped focusing on standards issues at an early point in time; however, additional facilities, for example allowing projects to participate directly in standardization activity (instead of having to go through their consortium partners), and allowing them to continue and finalise their standards work beyond their own lifespan, are necessary.

The brochures, which were developed in close cooperation with the projects themselves, were much appreciated as it provided a way to present a comprehensive and quick overview on their standardization activities and achievements.

Another important function of the brochures was to document – or even to confirm – the relevance of the Standardization Guidelines, with real-life experience from projects. Therefore, the 6 brochures that were available before the Open Meeting, were included in the delegate pack.

When comparing the summarize version of the key learning points as described above, with the main issues addressed in the Standardization Guidelines, it can be concluded that there is considerable overlap, specifically where the second, third and forth bullet point are concerned, addressing the timing aspect, the need for constituency building, and the need to embed standards activities in the initial versions of a project's work plan.

3.3.5   Evaluation and conclusions

Work Package 5 encompassed some of the main deliverables COPRAS planned to produce, specifically when looking at the second half of its lifespan. The most important objective of these deliverables was to aggregate and disseminate the knowledge and experience COPRAS had build up while working with selected projects in Calls 1 & 2, as well as to assess this experience and 'package' it in such a way that it could easily be used by projects in subsequent Calls and Framework Programmes to assist them in passing their output through standardization processes. With respect to these objectives, the following can be observed:

- The thousands of times that the Standardization Guidelines, either in pdf-format, HTML-format or interactive format have been accessed, downloaded and consulted not only underline that COPRAS has been very successful in communicating its findings with its main target groups, but it also underlines that interfacing with standards organization presents many research projects with major challenges.

- There is considerable overlap between the feedback generated during the Open Meeting, though the case study brochures, as well as through the feedback gathering process, thus providing a consistent picture with respect to the usefulness of the Standardization Guidelines, as well as with respect to the areas that may need improvement

- COPRAS' deliverables and dissemination activities have encouraged projects to address standardization issues at an earlier point in time, thus increasing their chances to achieve their standardization objectives, but to improve the process structurally, considerable follow-up activity will be necessary, both within a 'COPRAS-type' scope, as well as on other levels.

4. Impact analysis

Through its activities and deliverables COPRAS not only raised the profile of research/standards interfacing among several of its target groups, but also addressed a number of concreted issues through providing tangible – and demonstrably working – solutions. The following sections will elaborate a bit more in depth on the impact the COPRAS activities have had on its three main groups of stakeholders.

4.1 IST project community

The main target group for COPRAS have been the IST research projects, not only on an individual basis, as partners to the development of Standardization Action Plans, but also as a community participating in the Open Meeting, and using the Standardization Guidelines. When evaluating the results and achievements of the project, the conclusion must be that on both accounts, COPRAS has been very successful.

The quantitative results in Work Packages 2, 3 and 4 outperformed practically all targets set: the information gathering process managed to generate a higher response rate than the 50% anticipated; the number of projects that COPRAS developed Standardization Action Plans with turned out to be 15% instead of the 8-10% that was expected, and the 41% Call 4 & 5 response rate in the feedback gathering process was considerably higher than the 25-30% that would have been satisfactory. Moreover, the number of tangible contributions to standardization stood already at 10 at the point where COPRAS terminated its activities.

Combined with the qualitative feedback reflected in the case study brochures, and the analysis of the rolling action plan, it seems justified to state that COPRAS did have an impact in terms of increasing the amount of research results in Calls 1 and 2 that was – and will be – passed though standards processes, and consequently in terms of making more of these results earlier available to industry and society. In addition, the feedback analysis report indicates that the Standardization Guidelines have demonstrably managed to close the gap for a number of individual projects in Call 5, between their standardization target, and the amount of resources necessary to reach these. As a whole, this put projects in this call in a better starting position to complete their standards work and achieve their goals.

Probably more important however is the impact on the IST research community as a whole. The massive usage of the Standardization Guidelines indicated COPRAS did manage to address a clear need for information and guidance on research/standards interfacing. In addition, 3 years of continuously communicating the importance of research/standards interfacing at concertation meetings, conferences, industry gatherings and other relevant events, have definitely increased interest in this matter – as demonstrated by more than 100.000 hits the COPRAS web site received only in 2006 – and have most likely managed to give standardization a higher place on IST project consortium partners' agendas than it previously had; moreover, in view of the continuous monthly increase in terms of hits on the web site, it can even be concluded that specifically the dissemination activities over the last 18 months have given the issue a certain momentum.

However, despite – or perhaps better: in addition to – the positive impact, the activities over the last 18 months showed that the fact that COPRAS has managed to improve the basic starting position for research projects, is not enough to structurally improve interfacing between ICT standardization and research. The following issues should be taken into account:

- A number of features that were pointed out by research projects – and other stakeholders – should be added to the Standardization Guidelines and the interactive platform. Next to maintenance, several rounds of upgrading will therefore be necessary in order to maximize its impact.

- The Standardization Guidelines will only have optimal impact when in combination with additional measures implemented by the European Commission, e.g. addressing the 'standardization gap' at the end of a project's lifespan.

- Certain levels of (tailored) support that are necessary for a reasonably large group of (mostly STREP) projects cannot be captured in documents, platforms or other types of measures, but

will have to be embedded in Support Action Projects carrying specific experience on re-search standards interfacing.

If these issues are not being addressed in FP7, it is likely that the positive impact COPRAS had on the research/standards interfacing process across FP6 will eventually fade away. Moreover, structural improvements can only been achieved in case the momentum that the project seems to have generated can be capitalised upon through follow-up activity.

4.2 European Commission

The European Commission including in particular Project Officers across many Units in DG Information Society and Media has been an important target group for COPRAS. As already indicated in the interim evaluation report, Project Officers were therefore closely involved in the distribution of the first version of the Standardization Guidelines, and the accompanying brochure, to projects and project consortia in Calls 4 and 5. As the more than 25.000 hits during the last half of 2005 on the Standardization Guidelines pages (both HTML and pdf-versions) show, this support has been instrumental in the guidelines generating the impact among the research community as described in the previous section.

Following the distribution of the Standardization Guidelines, COPRAS, together with its then Project Officer Mr. Peter Wintlev-Jensen, organized a training session for Commission Project Officers on RTD/standards interfacing, 15 February 2006. This session was well attended and generated useful feedback for COPRAS. Project Officers underlined the relevance of the reverse mapping report (deliverable D18) and indicated that more in depth information documenting to which extend the main focus areas of specific standards organizations are being addressed by research projects would be welcomed.

Subsequent to the positive responses and cooperation received from Commission representatives with respect to the initial release of the Standardization Guidelines, COPRAS strongly involved the European Commission in the organization of the Open Meeting as well. This resulted in the conference programme featuring a speaker from DG Information Society and Media, and a speaker from DG Enterprise, as well as a representative from the European Commission on the closing panel session. More important however, almost 20 Commission representatives registered for the Open Meeting, demonstrating that COPRAS had been able to raise the level of interest in re-search/standards interfacing issues also among this major group of stakeholders.

The positive feedback from Commission Project Officers, their active support in distributing the Standardization Guidelines to projects in Calls 4 & 5, and their (inter)active participation in the Open Meeting suggest that COPRAS managed to bring the main issues in ICT research/standards interfacing to the attention of those overseeing the work in the EU funded research programmes. As some of the feedback from Call 5 projects suggest, this may already have led to Project Officers more strongly encouraging projects to embed more resources dedicated to standards work in their work plans. However, as already indicated in the previous section, more effort will have to be put into discussing the implementation of additional measures with the Commissionthat can structurally improve the research/standards interfacing process.

4.3 Standards community

During the last 18 months of its lifespan, COPRAS has spend considerable time and effort presenting the importance of improving the research/standards interfacing process at a variety of standards meetings and events, which has not remained without result. As the analysis of the Open Meeting report shows, the standards community represented the largest group of stakeholders at the conference, with 26 registered participants. This first of all underlined that also to them, passing research projects' output through standardization processes, is an important issue.

The importance of research programmes and standardization processes growing closer together was also reflected by the results of the reverse mapping process (deliverable D18), that showed that the vast majority of issues currently addressed by standards organizations, were also addressed by one or more research projects, hence the need for interfacing between the two. The relevance of this topic is also demonstrated by the fact that this reverse mapping report is the second most frequently

accessed document on the COPRAS web site over last year (after the Standardization Guidelines), with more than 2.500 hits/downloads during 2006.

Finally, when evaluating the feedback received from standards representatives with respect to the contributions made by some of the projects that COPRAS had developed Standardization Action Plans for, the conclusion can be made that although many standards organizations recognize the value of these contributions – and sometimes even stimulate them – a considerable number of barriers still needs to be addressed, e.g. relating to IPR, membership, timelines, resources, etc. Action will have to be undertaken here, and COPRAS' impact here primarily has to be seen as raising a number of issues within its own constituency, and – through creating the COPRAS platform – building a basis for the standards community to (jointly) address these issues.

All in all, COPRAS has managed to generate considerable impact within the standards community as well; the main issues establishing barriers to cooperation are clearer, as are the measures and tools that could be developed among standards organizations to address these barriers. The fact that many standards organizations clearly recognize the value of interfacing with research projects – also as a result of the Standardization Action Plans – may stimulate them cooperate towards addressing these issues, e.g. in COPRAS-type follow-up actions in FP7.

5   Conclusions & recommendations for further action

The results and deliverables that COPRAS produced clearly point out that interfacing with standardization is an increasingly important issue for IST research projects, and also underline that this is an area within research programmes where many issues still need to be addressed. These issues range from establishing a clearer view on the benefit of standardization for a research project, up to addressing the 'standardization gap' that occurs at the end of a project's lifespan, when standards activities often cannot be continued as resources and time have run out.

Through its activities targeting individual (or clustered) projects in FP6 Calls 1 & 2, COPRAS managed to address a lot of these issues by developing Standardization Action Plans that structured projects' paths through standardization. As the analysis of the execution of these plans, as well as a set of 'case study brochures' show, this support has made an impact and did contribute to standardization deliverables becoming available that otherwise would have taken a longer time, or might not have been produced at all.

In addition, the Standardization Guidelines, that were based on the knowledge and experience COPRAS had build up working with projects in Calls 1 & 2, and aimed to support projects in Calls 4 & 5, as well as in future Framework Programmes, proved to be very supportive. Analysis not only shows that the vast majority of projects that got access to the guidelines either used them or plans to use them during the course of their activities, but it also shows a significant increase in resources allocated to standardization among those projects that could use the guidelines prior to submitting their initial proposals. It is therefore likely that further promotion and improvement of the Standardization Guidelines will support a structural improvement of ICT research/standards interfacing.

However, further to upgrading the Standardization Guidelines themselves, many projects pointed out that additional issues need to be addressed to improve research/standards interfacing in future Framework Programmes. Most frequently mentioned here are the fact that insufficient means currently exist for projects to complete their standards activities (specifically when the project that these activities originate from has ended), as well as the fact that the ICT standards world does not provide proper mechanisms for encouraging and facilitating research projects to initiate a cooperation process.

In addition, many different issues creating barriers were pointed out, such as confidentiality, IPR or membership of a standards organization, mapping research activities with standards work, or finding the standards and standards organizations most relevant to a project, and contacting them. Despite the fact that the (improved) Standardization Guidelines will contribute to more research output finding its way to usage in industry and society more rapidly, they will not be able to address all issues to the full 100%. Additional COPRAS-type support activity directed at individual or clustered projects in Framework Programmes will remain necessary.

Also, additional actions, from the side of the research and standards communities, as well as from the side of the European Commission will be required to establish structural improvements so that ICT research projects' overall contribution to innovation processes in Europe as well as on a global level can be improved. These actions should primarily address:

- A more permanent and unified platform, system and/or methodology for research projects and standards organizations to facilitate the start of their cooperation;

- Additional mechanisms within research programmes that will enable projects to continue their standards work also beyond their project's lifespan.

When looking at FP7, and taking into account the results COPRAS achieved so far, the following recommendations should be made:

- More information and higher levels of support are needed from the standards community in order to pass more research output through standardization and – ultimately – encourage Europe's leading role in furthering the information society.

- Standards organizations will have to put more effort into marketing the benefits of making as well as applying standards to the research and industrial communities in Europe, and will specifically have to emphasize their communication to SMEs.

- To encourage the global uptake of European standards it is important that standards organizations implement an active policy to encourage and facilitate projects passing their output through European standards organizations. This may also imply that specific arrangements addressing the barriers projects currently encounter in their interfacing with standards organizations (membership fees, IPR rules, confidentiality issues, etc) may have to be implemented.

- Although research and standardization ideally should proceed in parallel, in most situations this is simply not possible because standardization processes generally take more time than projects have. European research programmes should acknowledge this and provide mechanisms that would enable research projects to acquire additional resources in situations where standards work exceeds a project's lifespan.

- Additional mechanisms will have to be put in place to facilitate and encourage research projects getting in contact with standards organizations. Specific tools will be necessary to help projects finding the standards and standards organizations that are most relevant to a project's activities and results, and to provide better perspectives on background and processes adopted by individual standards organizations.