

Open Call for Project Team Experts
"Interoperability of Registries"
BC/ENTR/000/2009-29

Within the framework of the ICT 2009 Standardization Work Programme, a proposal for the "Interoperability of Registries" has been accepted by the European Commission. This proposal will be executed under the umbrella of the CEN Workshop "Learning Technologies".

The main objective of the proposal is to enable the interconnection of learning object repositories in order to further increase their impact in making relevant content available to teachers, trainers and lifelong learners by specifying how a network of registries can be set up with existing standards and specifications. It will build on a registry data model of IMS LOD, include the selection and profiling APIs for registering, searching and synchronizing repository descriptions in a registry. It will build at least two reference implementations of registries.

The experts selected from this CEN call for experts will work together in a CEN Project Team.

The funding for the Project Team is available via the specific Grant Agreement 2009-29 between CEN and the European Commission. The official starting date of the Grant Agreement is 1st January 2010.

Project Teams are a light working structure, bringing together for a specified period of time a limited number of technical experts to complete specified tasks, on behalf of a supervisory consensus body, which in this case is the CEN Workshop Learning Technologies (CEN/WS-LT). The Workshop is responsible for directing the Project Team's deliverables, and for instructing the Project Team on what is to be produced. CEN/WS-LT will work on the project in close collaboration with CEN/TC 353 Information and Communication Technologies for Learning, Education and Training.

The Project Team will have a total budget of 80 mandays, to be allocated over maximum 4 paid experts.

The Terms of Reference (ToR) of the Project Team are attached in Annex I. These ToR describe in more detail what is expected from the Project Team.

In line with the rules on the selection and appointment of Project Team experts, the selection will be made by a selection panel whose composition will be:

- Jan Pawlowski (Chair of CEN/WS-LT)
- Tore Hoel (Vicechair of CEN/ WS-LT)
- Nikolaus Kovács (Secretary of CEN/ WS-LT)
- Marc Patuzzo (Programme Manager, CEN-CENELEC Management Centre)

The reimbursement rate for accepted experts is 650 €/person day. Travel and lodging costs incurred in the context of this project are however not reimbursed. It is expected that a

considerable part of the work can happen electronically. But travel and lodging of personal assistants (where applicable) of PT-experts will be reimbursable (within the limits of the available budget).

Payments to Project Team experts are dependent on CEN having received the corresponding payments by the European Commission. In this particular case, the payment steps are: *25% upon signature, a maximum of 50% at acceptance by EC of the Interim Report and the remaining 25% at the EC approval of the Final Report.* Applicants have to know that the delay before CEN being in a position to issue the final payment may be in the order of several months.

Interested candidate experts are kindly requested to send their application letter by **5th of March 2010** to Nikolaus Kovacs, Workshop Secretary (nikolaus.kovacs@din.de).

A short Curriculum Vitae has to be added and, if applicable, also an indication whether the nomination is for the role of Project Team leader or expert.

It is furthermore expected that selected Project team experts attend the Workshop meetings on a regular basis.

We are looking forward to receiving your applications.

Yours sincerely,

Nikolaus Kovács

(Secretary CEN/WS-LT)

Annex I: Terms of Reference of the Project Team

Annex II: Rules for the establishment and functioning of a Project Team in the CEN Workshops

Annex III: Extract from General Terms and Conditions of the contract between CEN and a Project Team expert

Terms of Reference for a Project Team on Interoperability of Registries

1. Title of the Project team to be established

Interoperability of Registries

2. Subject and Scope

Over the last 15 years, considerable effort has been spent on the development of standards and specifications for learning object repositories, with significant results, including:

- Content can be described through 1484.12.1-2002 IEEE Standard for Learning Object Metadata (LOM);
- CWA 15555 'Guidelines and Support for Building Application Profiles in e-Learning' (delivered under SA/CEN/2004/25) specifies how application profiles can be derived from LOM;
- CWA 14645 (delivered under SA/CEN/2000/42) specifies how the availability of alternative language versions of a learning resource can be described in LOM;
- CWA 15454 (delivered under SA/CEN/2003-13) defines a Simple Query Interface Specification for Learning Repositories (SQI) – alternatives include SRU/SRW;
- The ProLearn Query Language defines a query language for searching learning object repositories – alternatives include CQL and Xquery;
- OAI-PMH defines how metadata can be harvested from learning object repositories – alternatives include RSS;
- Ongoing work on SPI (under SA/CEN/2007-24A) in the CEN Workshop on Learning Technologies defines how metadata and content can be inserted into learning object repositories – alternatives include the Atom Publishing Protocol and PENS.

The result of all this work is that learning object repositories are being set up and interconnected worldwide, with a clear leadership position for European actors like ARIADNE [<http://www.ariadne-eu.org/>] and European Schoolnet [<http://www.eun.org/>]. Both organizations are core members of the GLOBE initiative to interconnect learning object repositories worldwide [<http://globe-info.org/>].

For instance, in the eContentPlus program, the standards and specifications mentioned above are the core of the technical backbone for projects like MELT [<http://info.melt-project.eu/>], MACE [<http://www.mace-project.eu/>], ICOPER [<http://www.icoper.org/>], ASPECT [<http://aspect-project.org/>], ORGANIC.EDUNET [<http://www.organic-edunet.eu/>] and others.

To date, there is no way for federations such as the EUN Learning Resource Exchange (LRE), Ariadne or GLOBE to automatically discover new repositories. The locations of the participating repositories and the description of the protocols they support for exposing learning resources are managed at the federation level, either directly by tools (i.e., harvesters, federated search engines) that need to connect to repositories or in a separate registry that manages this information on behalf of these tools.

As these registries are generally not available to the outside world, this leads to duplication of effort (repository descriptions must be entered in each registry) and difficulties to keep the information up-to-date.

Standardizing the APIs and data models of such registries would facilitate their use by external tools that can manage, query or update the information that they contain. It would also make it

possible to share registries between federations, thus enabling the automatic discovery of and connection to new repositories.

The development of a standardized API and data model can build on ISO-2146, which proposes an abstract data model for active registries, and IMS LOD, which proposes a profile of this data model for a registry of learning object repositories.

By tackling the issue of interoperability of learning repository registries, the work we propose here addresses the area of interest 'E-learning content repositories and exchange mechanisms, formats and vocabularies' from the 'ICT 2009 Standardization Work Programme' under the sectoral item 'e-Skills and e-Learning'.

See also:

8.1) COM (2007) 496: "e-Skills in the 21st Century: Fostering Competitiveness, Growth and Jobs" followed by Competitiveness Council Conclusions of 23 November 2007 on a long-term e-skills strategy

8.1) COM (2005) 229: "European i2010 strategy for information society and media of 1 June 2005"

8.2) SEC (2008) 2629: "The use of ICT to support innovation and lifelong learning for all - A report on progress" of 9 October 2008"

8.3) COM (2008) 865: "An updated strategic framework for European cooperation in education and training"

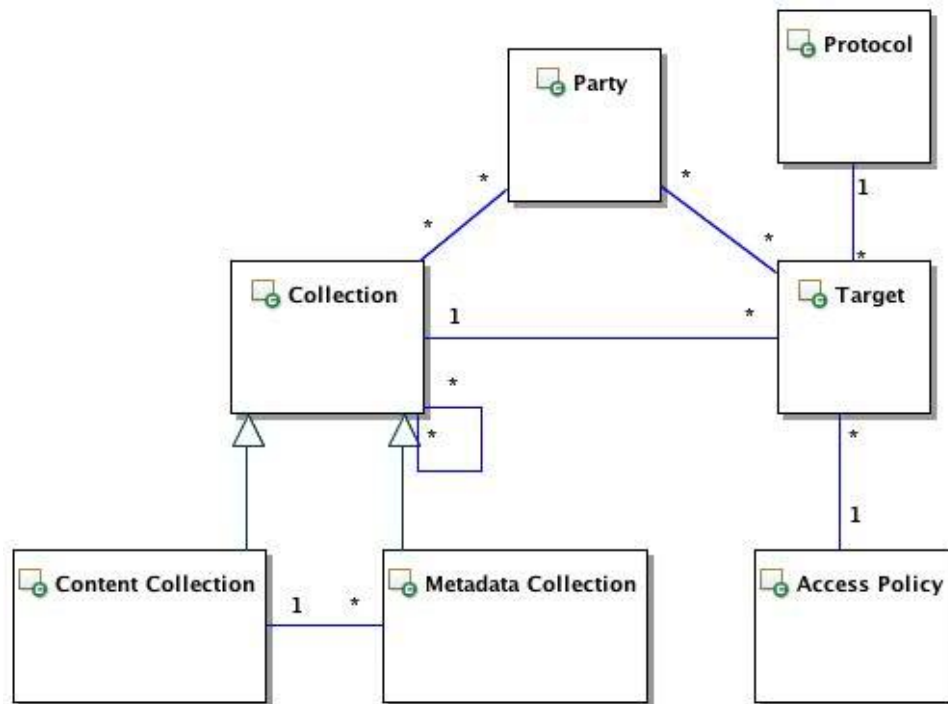
WS-LT work on SPI defines how metadata and content can be inserted into learning object repositories: this is a candidate specification for inserting metadata about repositories and collections into the repository.

In general terms, the goal is to make the envisaged specification as simple as possible ... but not more! This implies, among others, that we will consider web technologies like RSS and OPML, besides more traditional approaches based on UDDI or IESR.

In order to deal with consistency of the data involved, the registry can be thought of as a cache that avoids retrieving relevant information from individual repositories at run-time. Therefore, an important issue becomes ensuring that information stays current when repositories evolve.

In this work item, we will specify

- The data model that defines what data about the repositories the registry will hold and how these data are structured. For this aspect, we will base ourselves on the IMS LOD registry data model, which is itself an application profile of ISO2146 - Registry Services for Libraries and Related Organizations. The figure below illustrates a possible approach for the data model.

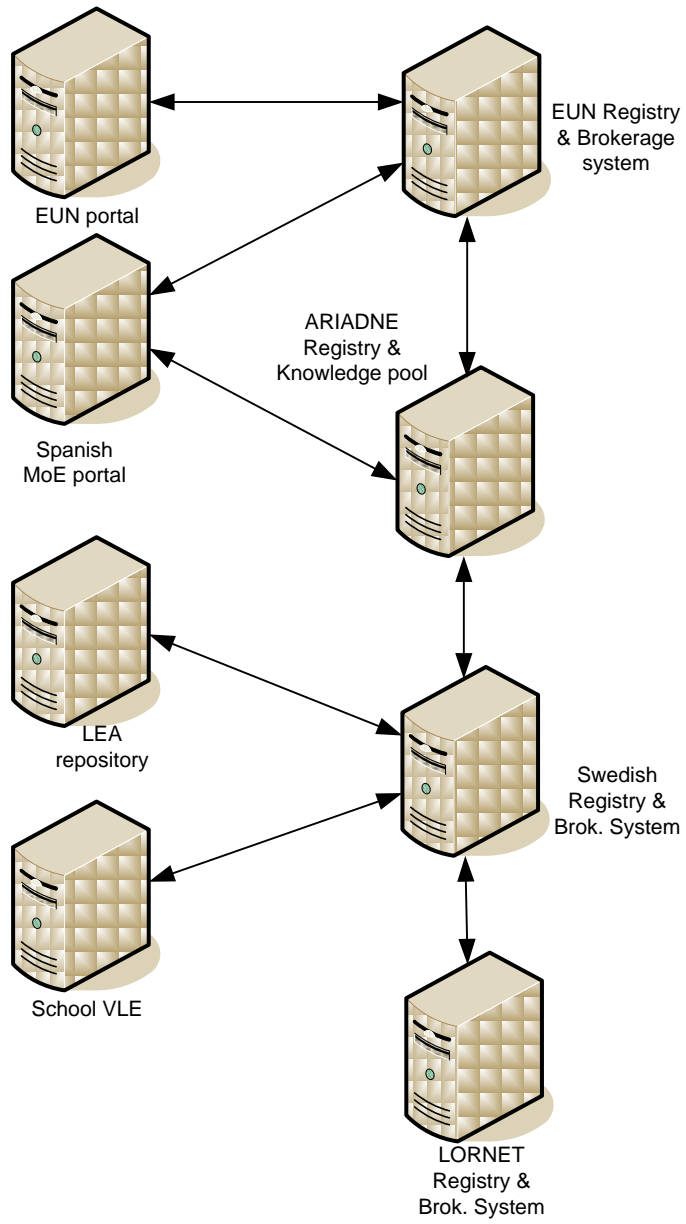


- The services for inserting and updating the information in the registry. In this area, relevant starting points include the ongoing work on a Simple Publishing Interface and the Atom Publishing Protocol.
- The services for obtaining information from the registry. For this aspect, we will base ourselves on CWA 15454 - a Simple Query Interface Specification for Learning Repositories (SQI) for federated search and OAI-Protocol for Metadata Harvesting as well as RSS for harvesting.
- The services for synchronizing information between registries. Here again, OAI-PMH is a good candidate to support pull scenarios whereas SPI can be used to support push scenarios.

The figure below illustrates how registries could interact with each other and with portals, repositories and Virtual Learning Environments through such services:

Collection
Providers & Consumers

Collection Registry
Providers



3. Justification of a PT

Relying on voluntary contributions only would not be sufficient to deliver within the timeframe set. There is therefore a need for a funded Project team.

4. Reference authority (CEN Workshop in charge of the follow-up action)

CEN/WS Learning Technologies.

5. General context/Background/Environment

5.1 Objectives

The objective of this work item is to enable the interconnection of learning object repositories, in order to further increase their impact in making relevant content available to teachers, trainers and (life-long) learners, by specifying how a network of registries can be set up with existing standards and specifications.

Concretely, this work:

1. Can build on the registry data models of IMS LOD. This data model can be profiled to support the main protocols used by European learning object repositories to expose learning content (e.g., SQL, OAI-PMH, SPI)
2. will include the selection and profiling APIs for registering, searching, and synchronizing repository descriptions in a registry
3. Will build a least two reference implementations of registries that support these specifications.

5.2 Relevance

This work will make it easier to scale up and interconnect networks of learning object repositories. As such, it comes at the right time (see above), as multiple such repositories have been set up and many stakeholders see their interconnection as an important issue – for instance, it is part of the Description of Work of the ASPECT eContentPlus project.

Managing a federation of learning object repositories consists of two main tasks:

1. Gathering and maintaining information about repositories participating in a federation and their collections of learning objects and
2. Using this information to provide federated access to or harvest the relevant learning objects hosted by the participating repositories.

Using standard registries such as those described in this proposal makes task 1 simpler and more efficient.

- Federations get information about relevant repositories by querying one registry from a network of such interconnected registries (they do not have to collect and maintain this information themselves).

- Repositories that want to expose their collections can register them in “one” registry and update their descriptions when needed (they do not have to register into different federations, potentially using different protocols).
- Inter-registry communication makes repositories globally discoverable, allowing a federation to discover relevant¹ repositories (it is not anymore limited to repositories that it explicitly knows about a priori).

5.3 Indicators

In terms of effectiveness, we envisage:

- A project team of 4 experts;
- Monthly open web-based short meetings, using flashmeeting or a similar tool, of the Project team and interested parties;
- A status update at each of the meetings of the CEN Workshop on Learning Technologies during the duration of this project;

Stakeholder engagement is guaranteed:

- Direct stakeholders that support this work item include the eContentPlus projects ASPECT, ICOPER, ORGANIC EDUNET and MACE. Organizations like European Schoolnet, the ARIADNE Foundation and the GLOBE consortium actively support this idea and will contribute to this work.
- Moreover, many of the organizations mentioned above are active participants not only to the CEN Workshop on Learning Technologies, but also to the IEEE Learning Technology Standards Community and the IMS Global Learning Consortium.

Regarding the impact of this work, it is important to note that, indirectly, the projects and organizations mentioned above serve many hundred of thousands of learning stakeholders that can be provided with more and more relevant content through this work.

Concretely, the following measurable and verifiable indicators are proposed:

1. Registry support for at least the three main protocols used by European learning object repositories to expose metadata: OAI-PMH, SQI, and SPI
2. Deployment of at least two prototypes of the registry supporting the proposed specifications by major *eContentplus* and CIP PSP projects (ASPECT, ICOPER, Organic.Edunet, VOA3R). One of the prototypes will be focusing on developing a registry of agricultural repositories for the AgLR Task Force (<http://aglr.aua.gr>). Another prototype will be deployed in the GLOBE global learning object repository federation.
3. Description of at least 50 European learning object repositories (from ASPECT, ICOPER, Organic.Edunet, VOA3R) in the prototype implementations of the registry.
4. Demonstration of tools that will rely on the registry to discover repositories and
 - a. Harvest them using OAI-PMH
 - b. Search them using SQI

These tools will be deployed in the live infrastructure of the ASPECT project, the ARIADNE Foundation and the GLOBE initiative.

¹ “Relevant” meaning, in this context, repositories containing resources on a topic of interest (e.g., a repository of biology resources for a federation of science repositories).

5. Presentations that refer to this work in at least 6 international conferences
6. The CWA will also be the core of a scientific article that we will seek to publish in an international conference or journal.

5.4 Impact

The proposed work item will further strengthen Europe's leadership in this area: global initiatives like GLOBE rely to a large extent on European technologies. As the registry is one of the core components in an interconnected network of repositories, it is important to consolidate this work and enable more scalable such interconnections to be supported.

It is expected that, by adopting the specification to be developed within the proposed item, repositories now connected to federations of a particular domain (such as the ORGANIC.EDUNET ones) will be made discoverable from more applications, further exposing their learning resources to wider communities of users. This can help them scale up the numbers of potential users, by facilitating their discovery and exploitation.

Moreover, by making registries interoperable, the proposed work could potentially lead to the creation of an international network of registries that will make open learning objects hosted in registered repositories globally discoverable.

6. Workplan & Milestones

We propose to structure the work as follows:

- T0: selection of Project team
- T1: overview and analysis of existing learning and other repository registry approaches (12 days)
 - This task will build on the IMS LODE specification, itself based on ISO2146. It will also take into account the ADL registry work and the ROAR repository for open archives. Ongoing work in the ASPECT, ICOPER and ORGANIC EDUNET projects will be fed into this process.
- T2: development of a proposal for a specification for a learning object repository registry (20 days)
 - This task will focus on the services for adding data about repositories to a registry and services for querying this data. The proposal will also document explicitly how scenarios for use of the registry by external tools and services can be developed. The specification development will be informed by the experiments ongoing in the eContentPlus projects mentioned under T1.
- T3: development of reference implementations (16 days) – at least two, but preferably more, so as to provide feedback on the outcome of task T2;
 - These 16 days will be mainly dedicated to informing and supporting the developers during their design, analysis, implementation and testing phases, so that developments can proceed in close interaction with the expert group. The main implementation effort will be supported by the projects ASPECT, VOA3R, the ARIADNE Foundation and the GLOBE initiative, that will run these registry instances, populate them, and use them to create registries of repositories in their areas of interest
- T4: revision of the first proposal of the specification (T2), based on implementation feedback (T3) (20 days)
 - We believe that this task is crucial to ensure a high quality and relevant specification. In this task, we will explicitly document the problems encountered and lessons learned in T3.
- T5: Discussion and consensus building (4 days)

- T6: Public commenting process (4 days)
- T7: Dissemination of results (4 days)
 - Dissemination will happen throughout the project, as we plan to solicit early feedback during the development of the specification and prototypes.

The timetable for the project is shown below:

Task	Month																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
T0																						
T1																						
T2																						
T3																						
T4																						
T5																						
T6																						
T7																						
Interim Report												X										
Final Technical deliverables																						X

7. Manpower (in man-days or man-months)

The Project Team will have a total budget of 80 mandays, to be allocated over maximum 4 paid experts. The travel to Workshop meetings as well as to Project Team meetings are not reimbursed.

A Project Team leader will be appointed among the selected experts.

8. Characteristics of the expertise required and criteria for the selection of candidates

For the Project Team in relation to this Grant, experts should have specific expertise and knowledge, which will be the main criterion for their selection and which is described in detail below:

- A project team leader who can demonstrate experience and expertise in the coordination of the development of standards and specifications for learning, and who have in-depth knowledge on the topic of this proposed work item.
- Three project team members, who can demonstrate experience and expertise in the development of standards and specifications for learning, and who have in-depth knowledge on the topic of this proposed work item.

A balanced composition of the different stakeholders (balanced in terms of background, representation, nationality (if applicable)) is preferred.

The candidates must provide a CV that underlines the possession of relevant expertise.

Candidate experts have to describe in their offer the expertise that they will bring to the Project Team.

For the Project Team, the selection panel will, in accordance with the existing rules for the selection of Project Team experts, consist of the Chair (and vice-chair(s)) of the technical activity, the Secretary and a CCMC staff member .

9. Deliverables

The deliverables will be:

An Interim report to the European Commission after **Signature + 12 months, i.e. December 2010**, containing the draft specification (CWA) for the Learning object repository registry.

The final technical deliverables to EC after **Signature + 22 months, i.e. October 2011**, which will contain the approved CWA "Specification for a learning object repository registry" and a report on the Indicators given in 5.3.

Rules for the establishment and functioning of a Project Team in the CEN Workshops

1 The concept of a Project Team (PT)

Project Teams are a light working structure, bringing together for a specified period of time a limited number of technical experts to complete specified tasks.

2 Types of work assigned to a PT

A Project Team may be created for each of the following purposes:

- to prepare a draft programme of work on behalf of a Workshop or Workshop Project, developing standardization/specification requirements;
- to provide support to a Workshop or Workshop Project on (a) specific and delimited task(s);
- to carry out a study or investigation and to produce a Report with recommendations to the Workshop or Workshop Project;
- to prepare the first drafts of CWAs for Workshop consideration and approval;
- to carry out editing of documents;
- to investigate and implement under the direction of the Workshop or Workshop Project prototype and pilot implementations of standards/specifications;
- to prepare and carry out specific implementations under the direction of the Workshop or Workshop Project (for example through the creation of a Web site, or a register of objects or codes, where CEN is required to provide a service to the standardization community).

3 Proposal for a PT

Proposals to establish Project Teams may be made by an existing or proposed Workshop, or Workshop Project, or by registered Workshop participants. The proposal submitted shall include the proposed Terms of Reference of the PT, including Technical Proposals where available, and the expected deliverables with corresponding target dates, as well as the required resources.

The originators shall also indicate the priority accorded to the request, due justification why a Project Team approach has to be used and the corresponding funding.

Proposals shall be approved by (where appropriate) the Workshop Project participants, and by the Workshop Plenary.

4 Terms of Reference of a PT

The proposal for a PT shall provide the necessary information to enable a good understanding of the expected task(s) and the corresponding outcome.

Proposals must at least contain the following sections :

- 1) Title of the Project Team to be established
- 2) Subject and Scope
- 3) Justification of a PT
- 4) Reference authority (Workshop in charge of the follow-up of action)
- 5) General context/Background/Environment
- 6) Work plan, including duration and target dates
- 7) Manpower (in man-days or man-months)
- 8) Characteristics of the expertise required and criteria for selection of candidates

9) Expected deliverable(s).

If relevant, and according to the type of work assignment, the Terms of Reference should also provide information about reference specifications and documents, and connected working bodies.

A Workshop Plenary may decide to open calls for Technical Proposals to its members, if there is a need to establish the detailed workplan for the Project; such calls, to be made by the Workshop Secretariat and posted on the CEN Web Pages, may be concurrent with the call for the Project Team's establishment. Technical Proposals may be made by companies or individuals. Selection of Technical Proposals shall be made by a Selection Panel as specified in section 5, and the selection approved by the Workshop Plenary. Approved Technical Proposals shall be included in the Project Team's Terms of Reference.

5 Approval and establishment of a PT

Calls for applications to become members of a PT shall be made by the Workshop Secretariat, and notified to the CEN Member bodies and to registered Workshop participants, with a minimum time limit of one month. Applications to become members of a Project Team shall be made only by individuals. Where a Project Team requires only an editing task, it may comprise only one individual.

A Selection Panel established by the Workshop shall make the selection of the best-qualified candidates for Project Team membership according to the criteria laid down in the call for candidates. The membership of the Panel shall include, the Chairman and Secretary of the Workshop (if they are not themselves candidates), the Project Manager of any relevant Workshop Project (if he/she is not a candidate) and a representative of the CEN Secretary-General.

One or more specialists who have a good knowledge of the subject concerned and its industrial and standardization environment may assist the Selection Panel. These specialists shall not be candidates for the PT or involved with the submission of competitive Technical Proposals.

The Selection Panel shall ensure the composition of the Project Team is balanced, having regard to the required expertise in the subject matter and the different interest groups present in the Workshop.

The Selection Panel shall inform the Workshop of the composition of the Project Team. Workshop participants with specific objections to the inclusion of one or more of the selected individuals shall notify the Chairman of the Selection Panel, with their grounds for objection. The Selection Panel shall consider any objections and notify the Workshop Plenary of the outcome of their consideration.

Contracts will only be signed with companies, in principle not with individuals. These companies bear total legal liability for the expert(s) from their companies and for the good execution of the work contracted.

One signatory of the contract shall be the Secretary-General, or the responsible person of the CEN member holding the Workshop Secretariat, the other signatory shall be the relevant management level of the organisation providing the expert.

Workshop Chairmen and Project Managers who become experts in a PT shall not chair those parts of the meeting discussing the PT's progress and deliverables. Workshop Secretariat officials who become experts in a PT shall resign from their duties until the PT completes its tasks.

6 Management of a PT

Supervision of the PT work lies within the responsibility of the CEN Secretary General, delegated to the Secretariat of the Workshop, which shall be responsible for the administrative procedure and payment of the PT experts.

The Workshop Plenary shall be responsible for monitoring the PT, and for the technical approval of its results. PTs not preparing a formal document for approval, but which have

been responsible for other tasks, shall prepare a report on their activities for the Workshop's acceptance. The PT shall in any case be disbanded when its tasks are completed.

After consulting the CEN Secretary-General, CEN or the CEN member holding a Workshop Secretariat may terminate a contract if there is evidence that a PT expert is not fulfilling his/her contractual requirements or his/her performance is deficient. In general, any problems arising should be resolved with the organization providing the expert before a contract is cancelled.

7 Rules for financing of a Project Team

The Project Team members shall produce an invoice for each payment to be made by the CEN/CS. The CEN/CS commits itself to make the payments as rapidly as possible. However it can only make the payments after it has received the payment from the sponsoring body (e.g. CEC, EFTA Secretariat, private interest groups, etc.).

Annex III

CONTRACTOR-EXPERT - extract from General Terms and Conditions of the contract between CEN and a Project Team expert

Article 1/1-A - Employee status for the EXPERT (Applicable to CONTRACTORS designating an Employee to participate in a Project Team)

The CONTRACTOR and CEN agree that the EXPERT shall be and remain an employee of the CONTRACTOR until the termination for whatever reason of the EXPERT's contract of employment with the CONTRACTOR, and shall not be deemed to be an employee of CEN.

The CONTRACTOR will continue to fulfil all legal obligations of an employer (e.g. social service contributions and charges, medical insurance contributions, fiscal charges and similar charges which are to be borne by any employer).

In addition, the CONTRACTOR shall ensure that adequate provision is made, whether by insurance or otherwise, to compensate for any injury or illness suffered by him/her in the course of the execution of the present contract.

The EXPERT shall perform his/her obligations under this contract without any bound of subordination to CEN and shall therefore not be subject to the dispositions of the Belgian law of 3 July 1978 relative to employment contracts.

Article 1/1-B - Self-Employed Status

(Applicable to self-employed CONTRACTORS EXPERTS)

The CONTRACTOR EXPERT and CEN agree that the CONTRACTOR shall remain a self-employed person and shall not be deemed to be an employee of CEN.

The CONTRACTOR EXPERT certifies that he/she is covered by a social security scheme in that capacity, and that he/she has taken adequate provision to cover his/her professional liability, and to cover him/her against the risk of injury or illness suffered by him/her in the course of the execution of the present contract.

The CONTRACTOR EXPERT shall perform his/her obligations under this contract without any bound of subordination to CEN, and shall therefore not be subject to the dispositions of the law of 3 July 1978 relative to employment contracts.