

# Integrating Business Process Descriptions and Lessons Learned with an Experience Factory

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**Abstract:** Business Processes and Lessons Learned are valuable experiences of an organization. By integrating them, synergies can be leveraged. This integration was practically evaluated in the Corporate Information Network (COIN) initiative of Fraunhofer IESE, a project that officially started in January 2000. COIN combines "learning from project experience" with "reuse of Business Process knowledge". The integration of top-down Business Process descriptions with bottom-up elicited Lessons Learned resulted in multiple benefits, including improvement of process descriptions through experience, explication of context information for Lessons Learned, and development of a flexible technical infrastructure supporting both approaches.

## Introduction

Business Process descriptions and Lessons Learned can be regarded as the experience of an organization. For example, the process descriptions for executing projects of a software organization are based on the experience about good practices applied in the past. However, both kinds of experiences play a distinct role in the knowledge available within an organization: *Business Process descriptions* coordinate the activities of the organization's members, thus presenting a top-level view of these activities and defining interfaces to the organizational environment. Lessons Learned describe the experiences gained when these activities are performed, thus capturing a bottom-up, fine-grained knowledge close to practice. Therefore, the integration of both is likely to reveal synergies [SS99].

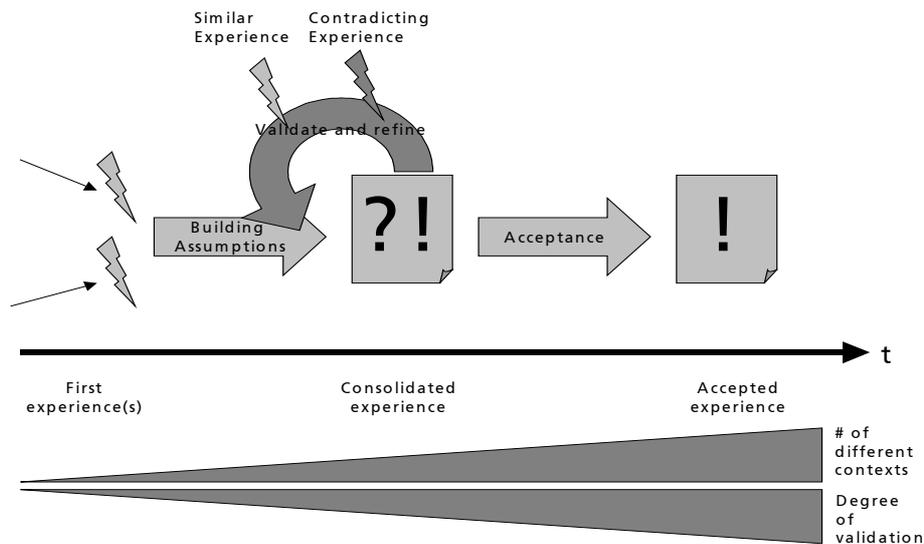
Such integration was practically evaluated in the Corporate Information Network (COIN) initiative of the Fraunhofer Institute for Experimental Software Engineering (IESE), a project that officially started in January 2000. COIN combines "learning from project experience" with "reuse of Business Process knowledge". The integration of top-down Business Process descriptions with bottom-up elicited Lessons Learned resulted in multiple benefits, including improvement of process descriptions through experience, explication of context information for Lessons Learned, and development of a flexible technical infrastructure supporting both approaches. In addition, COIN served as a means to build up concepts, methods, and tools to support the continuous operation of such top-down and bottom-up knowledge management activities, including validating, refining, and adapting IESE's methodology for building and running an organizational unit responsible for these knowledge management activities.

The paper is structured as follows: In the following section, the theoretical foundations on experiences with special regards to process descriptions and Lessons Learned are presented.

Then, the Corporate Information Network (COIN) initiative - in which this integration is being practically evaluated - is presented in an overview. The following two sections describe the Lessons Learned and the process description part of COIN. The paper ends with a conclusion regarding the synergies of integrating Business Processes and Lessons Learned and an outlook to future work in COIN.

## Managing Business Processes and Lessons Learned as Experiences

In non-repetitive, project-based businesses like the software business, experience such as process descriptions and Lessons Learned has to be applied regarding context and validity [BCR94] [AB+99]: The *context* of an experience is anything that is related to it. For instance, in the software business, projects are done under different preconditions (e.g., planned effort, customer, domain). Hence, the experiences from different projects are gained in different contexts. Additionally, two types of contexts can be distinguished: The context in which the experience was gained (root context) and the context in which the experience is applicable (application context). *Validity* means how a certain experience was confirmed in the same or in similar contexts compared to the current one, i.e., the degree of validation. The number of occurrences of the experience determines the degree of probability that the experience can be applied to the current context.



**Fig. 1.** Experience Life Cycle

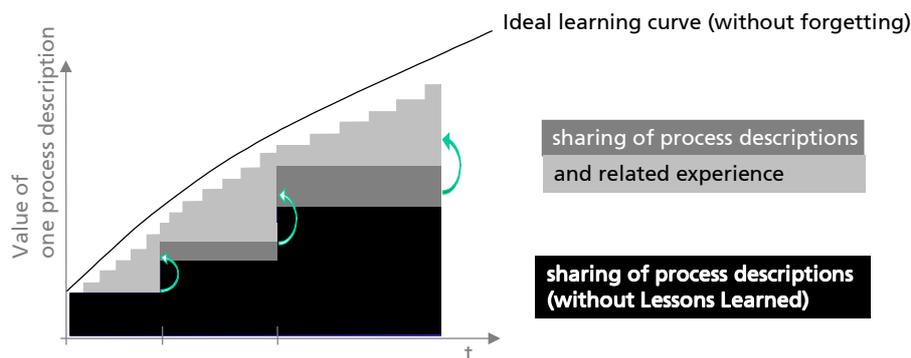
Validity and context are interrelated. The higher the validity and number of contexts, the more consolidated a certain experience is. This gradual consolidation of experiences in dependence of context and validity is described in the Experience Life Cycle [ABT98] depicted in Figure 1. During *initial consolidation*, singular experiences are combined to an

assumption. Because this assumption is built upon these initial experiences, it can be seen as an experience, too. During the *refinement phase*, these consolidated experiences are subject to further refinement and validation, based upon the subsequent experiences. Finally, given a high validity and number of contexts, the refined experiences are *accepted* and used organization wide.

Lessons Learned can be found across the whole Experience Life Cycle, since they may be experiences that were observed once, or that were observed many times in different project contexts. Process descriptions can be seen as consolidated experience to be applied without a certain project context and are thus located at the end of the Experience Life Cycle.

If both process descriptions and Lessons Learned are available jointly in an organization, mutual benefits occur:

- *For a given Business Process with a description, more Lessons Learned will be available than for Business Processes without descriptions:* When several instances of Business Processes are executed according to a Business Process description, the execution of these instances will be more similar than execution without such a description. Since the Business Process in which a Lesson Learned was gained is part of the root context, the root context as a whole is more similar, too. Furthermore, Lessons Learned are also applied in an instance that is performed according to the process description, hence the application context is more strictly defined.



**Fig. 2.** Continuous Process Improvement by capturing Lessons Learned.

- *Lessons Learned can (a) complement process descriptions with practical experience and (b) be utilized to learn about processes for further improvement of the process.* The advantages are depicted in Figure 2. By *complementing process descriptions* with Lessons Learned, more relevant experience is available at a given point in time. Therefore, the value of the process description for the organization is higher. For the *improvement of process descriptions*, Lessons Learned avoid that experiences are forgotten. When processes are revised, consolidated Lessons Learned can be integrated into the process description.

## **COIN, the Corporate Information Network**

However, elicitation, distribution, and integration of process descriptions and Lessons Learned need an investment of effort. The project teams using the process descriptions and gaining the experiences cannot be expected to invest this effort. Compared to the objectives of the organization, projects have a short-term perspective, focusing on the development goals of the project. Therefore, an organizational sub-structure separated from the projects responsible for knowledge management is crucial. According to [BCR94] [AB99+], this separate organization is called the Experience Factory (EF).

The part of the Experience Factory in which the process descriptions and Lessons Learned are archived, maintained and distributed – possibly together with the other knowledge managed by the Experience Factory - is called the Experience Base (EB).

The initiative for installing and running such an Experience Factory at IESE is called COIN (Corporate Information Network) [Tau00] and was started in January 2000. As an institute for applied software engineering research, knowledge is the main productive factor for the products and services provided to a customer. Management of this knowledge is therefore crucial. Furthermore, IESE's continuing growth increases the need to explicate the Business Processes and Lessons Learned to (a) introduce new members to IESE, (b) to coordinate the increased number of people, and (c) to provide them with the needed information. Additionally, COIN is intended to be used as a real project environment for the development and validation of knowledge maintenance, knowledge evaluation, knowledge analysis, and knowledge generation technologies and methods.

From the technical point of view, the COIN project is about building and operating an Experience Base, where most of the experience located in the EB is accessible via the IESE Intranet. This distribution channel for experience was chosen since (a) compared to a paper-based representation, the knowledge is easier to maintain, to search and to link and (b) it is accepted by all potential users of COIN, i.e., IESE members.

COIN is structured into two sub-projects, each one adding one specific kind of experiences to the EB: COIN-IQ (for IESE quality management system) and COIN-EF (for Experience Factory). *COIN-IQ* covers the elicitation and description of IESE Business Processes on the Intranet. *COIN-EF* deals with (a) capturing and distributing qualitative project experience, that is, Lessons Learned and (b) creating the technical infrastructure for the presentation of Lessons Learned.

## **Capturing and Presenting Lessons Learned: COIN-EF**

Lessons Learned can cover different topics and take on different forms [BT98]. Within COIN-EF, Lessons Learned about project management are captured. One Lesson Learned can take on the form of an Observation, a Problem, Guideline, Pragmatic Solution, or an Improvement Suggestion. The root and application context of these Lessons Learned are modeled by the two concepts "Project" and "IQ Process": "*Project*" is a characterization of the project in which the Lesson Learned was gained (e.g., person month, duration). "*IQ Process*" names the Business Process and thus the project phase in which the Lesson Learned was gained. Therefore, a project worker can specify her current environment as well

as the current situation to search COIN-EF for similar experiences. Figure 3 shows the interrelations between the context and the different types of Lessons Learned.

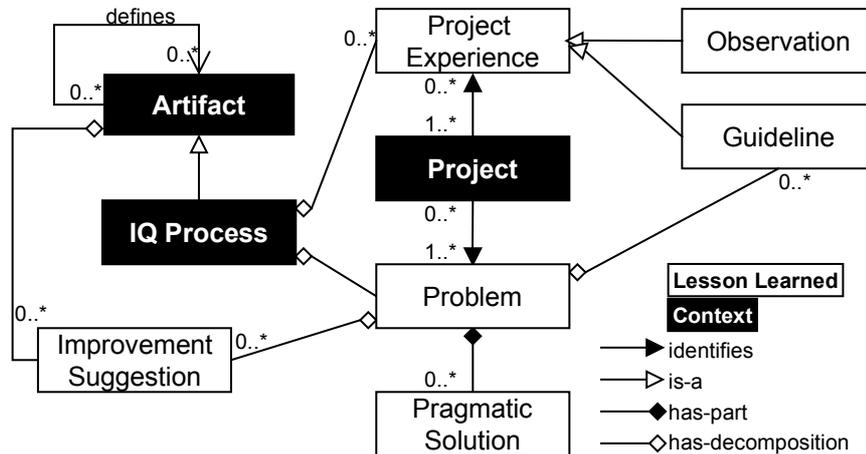


Fig. 3. COIN-EF Ontology according to [Tau00]

*Observations* are facts that are of interest to future projects, often expressing some baseline (e.g., “it took 10% of the total effort to manage the project”) or some positive effect (e.g., “the customer was happy because we provided him with a ready-to-use tutorial”). *Problems* are descriptions of negative situations that occurred during a project (e.g., “the expectations of the customer were not met”). *Guidelines*, *Improvement Suggestions* and *Pragmatic Solutions* relate to one or more problems. *Guidelines* are recommendations on how a particular Business Process should be performed. For example, a guideline could be the following: “Interact with the customer frequently, at least twice a month.” An *Improvement Suggestion* is a proposal to change an artifact to avoid problems that occurred during its usage. *Pragmatic Solutions* are sequences of immediate countermeasures taken by a project team in response to a recognized problem. While a guideline aims at preventing a problem from occurring in the first place, a correction is applied after a problem has already occurred.

These project management Lessons Learned (a) complement process execution differently and (b) are integrated differently into the process descriptions: Observations can be used to build mental models or validate assumptions about project work (e.g., customer preferences). Furthermore, baselines expressed by Observations can be the starting point for developing quantified models, which can then be integrated into the process description. The analysis of Problems attached to a process description can reveal deficiencies in processes. Furthermore, related Problems could be seen as an extended context for the applicability of Guidelines, Problems and Improvement Suggestions. The pairs of Guideline and related Problem can be utilized for experience-based risk management. By judging the severity and probability of problem occurrence in a given project, it can be determined which Guidelines should be applied as proactive measures. Additionally, consolidated Guidelines can be integrated into process descriptions. The corresponding artifacts affected by an Improvement Suggestion can be process descriptions. Together with the effort to change the descriptions,

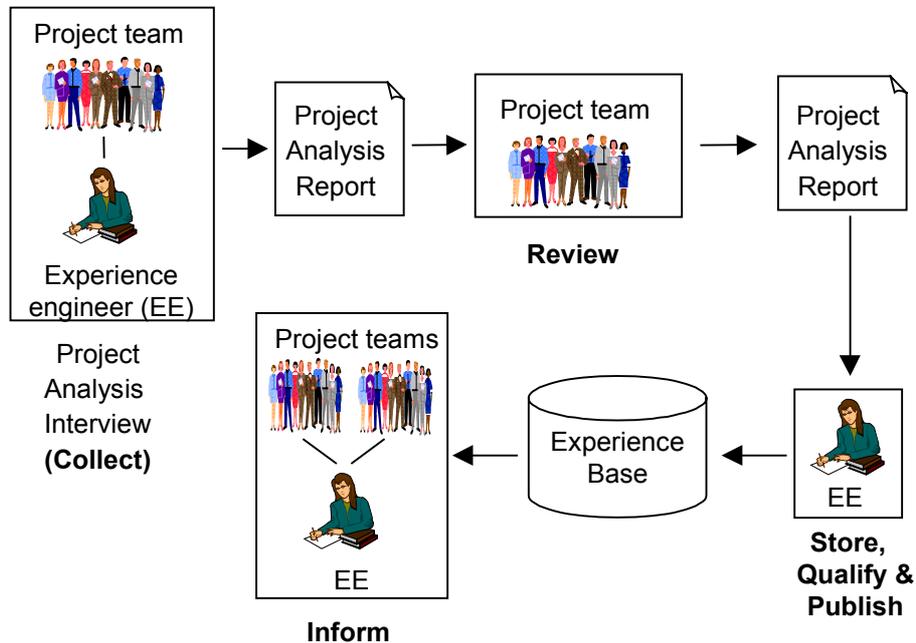
severity and frequency of the problem guide the decision on whether the Improvement Suggestion is implemented or not. Note that unlike Guidelines, which simply have to be applied to solve the problem, the related problem of an Improvement Suggestion remains unsolved until an Improvement Suggestion is implemented. Finally, available Pragmatic Solutions attached to Problems can be adapted if the problem arises again. If the Pragmatic Solution has been validated, it can be integrated into the process description.

To store and retrieve the various types of Lessons Learned, the technical infrastructure of COIN-EF was developed based on INTERESTS (Intelligent retrieval and storage system; [ABT00][AB+99]). This technical infrastructure was systematically developed using the DISER method (Design and implementation of software engineering repositories [Tau00][TA00]). Part of INTERESTS is a case-based reasoning tool allowing similarity-based, context-sensitive retrieval: CBR-Works from tec:inno [Tec00]. Case-based reasoning has been recognized as a suitable technology for implementing knowledge management applications (e.g., [GT99][GR99]. This was confirmed for COIN-EF: An experiment showed that using COIN-EF was rated as more efficient than asking colleagues. Furthermore, this experiment showed that most users of COIN-EF would combine querying COIN-EF and asking their colleagues [TA+00].

All instances of Lessons Learned and context concepts are modeled as cases. Semantic relationships between cases, for instance the relation of a Lesson Learned to the Business Process part of a context, are represented by references. For example, an observation references the Business Process for which it is relevant and the project in which it was gained (root context). The similarity-based querying facility of INTERESTS/CBR-Works allows finding Lessons Learned that were captured in contexts similar to a context at hand. Thus, potentially applicable Lessons Learned are identified (even if the application context has not been generalized from the root context yet). All Lessons Learned have the name of their originators attached, which enables a user of COIN-EF to ask the experience provider for more detailed information if necessary.

### **Populating the Experience Base**

The Lessons Learned repository must be filled and updated with new Lessons Learned, to build up and maintain the value of the repository [NA00]. Since the elicitation of Lessons Learned cannot be fulfilled automatically due to the complexity of project management, COIN applies the following steps shown in Figure 4 according to [AB+99]:



**Fig. 4.** Process for recording Lessons Learned.

- *Collect:* The initial step in experience collection is done by performing project analysis interviews. Those interviews are either conducted at the end of a project [CDF96] or — in case the project has a duration of more than nine months — periodically every six months. The interview results are documented as project analysis reports (PARs). A PAR contains an updated characterization of the project, things to watch out for in similar projects, things that went well, and things that the interviewed project team would do differently if it had to do the same project again.
- *Review:* To avoid misinterpretations and for granting publication permission for the content, the project team reviews the PAR.
- *Store:* In the next step, the collected experience is stored by copying it into the repository, splitting the experience into reusable parts, and initially characterizing each reusable part. Since COIN utilizes CBR, the PARs are split into individual cases: The project characterization in the case base is updated; the different types of Lessons Learned are extracted from the PARs and entered into the case base.
- *Qualify:* Each Lesson Learned is qualified by analyzing its quality (e.g., its comprehensibility) and checking whether a similar Lesson Learned is already stored in the case base. If a similar Lesson Learned is already stored, the new Lesson Learned may be rejected, be merged with the already stored Lesson Learned — possibly generalizing its context —, or replace the stored Lesson Learned.
- *Publish:* After the new experience has been qualified, it is made available for retrieval, thus enabling the sharing of the new Lesson Learned.

- *Inform*: Finally, everybody who may be interested in the new Lesson Learned (i.e., project teams working on a similar project) is informed. This is currently done as part of the in-between project analysis. The project teams can now access the new Lessons Learned in the experience base.

The Collect and Review step are currently represented in COIN-IQ and referenced from the project execution and project wrap-up process descriptions. The reason for this selection was that the build-up of COIN-IQ concentrated on processes that are of relevance to a large number of IESE members. Collect and Review require the interaction with project teams at IESE, which are the majority of IESE members. The other steps are performed only by the COIN team. However, COIN applies the Project Analysis to itself, thus gaining Lessons Learned that support the description of the other steps in COIN-IQ in the future.

How these and other processes are represented within COIN-IQ is the subject of the following section.

## **Bringing Business Processes Descriptions into the Intranet: COIN-IQ**

The first question raised when processes are to be described is the general purpose of the process modeling effort. [CKO92] identify five different categories: Facilitate human understanding and communication, support process improvement, support process management, automate process guidance, and automate execution. According to this classification scheme, COIN-IQ fits into the first category of facilitating human understanding and communication: The processes are executed by human agents (i.e., IESE members), based on the process description. To support and enforce process execution beyond this human-based approach (e.g., by workflow-modeling and enactment as in [MH99]) was regarded as non-suitable for the purposes of IESE due to the creative nature of its Business Processes. Furthermore, the experience made with the Electronic Process Guide (EPG) [BV99] showed that web-based process descriptions are a feasible way of distributing process knowledge within creative environments like Software Business.

This human-based execution requires that the desired process is found, that the process description is accepted, and is, in fact, understood by the human agent.

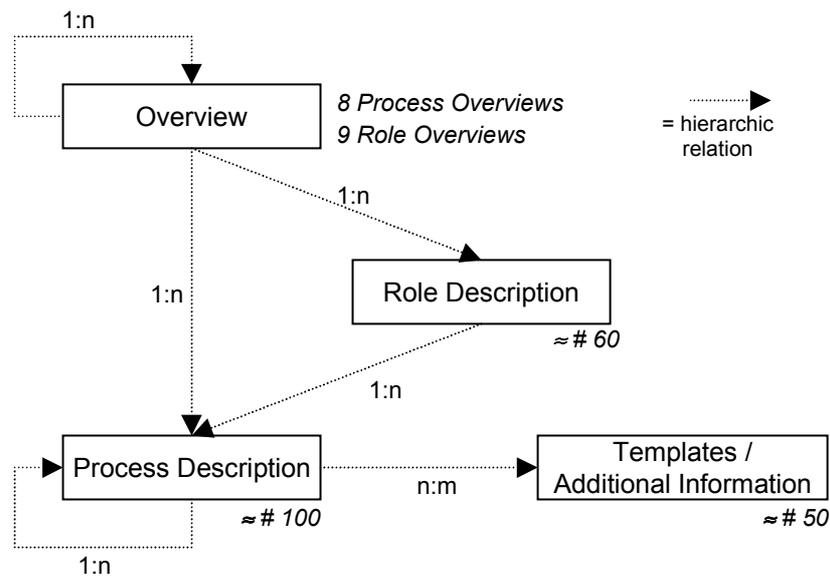
To *find a desired process description*, the user has to be supported in navigating through COIN-IQ, since it comprises about 100 process descriptions (including sub-processes), 50 template and additional information files, and about 60 role descriptions. The basic idea in providing this navigational support is (1) to provide hierarchically arranged overview pages structuring the web pages within COIN-IQ (see Figure 5) and (2) display the current position in this structure. As pointed out in [Gri94], this hierarchical structure is sufficient to provide navigational support.

In general, each link to another HTML page is explained with a short text. This content summary allows to determine the desired direction when navigating through COIN-IQ: A user will enter the entry page as the main overview. On this page, the user can choose to approach the process descriptions via themes or roles. Users choosing the process theme overview have at least a vague idea about the topic of the *process*. Choosing a theme overview, followed by a process description and eventually one or more sub-processes, gradually refines this topic down to the desired process description. Users choosing to approach COIN-IQ via roles have at least a vague idea about the *role*, but not about the

processes this role is involved in. First, a user gets an overview of the categories of roles. Second, an overview of the roles in the chosen category is presented. Third, the user chooses a role description, which then explains the role in detail and points to the process descriptions this role is involved in.

Orthogonal to this hierarchic structure, cross-references can be included in any part of the process description. The most frequent cross-reference is referencing role descriptions from process descriptions, thus allowing immediate access for users to unknown role descriptions.

To create *acceptance* of the process descriptions, COIN-IQ also provides templates and sources of additional information for download or online usage (see Figure 5). Templates are either document templates or online forms to be filled in during execution of the process (e.g., project plan template). Sources of additional information are references to web pages located within or outside IESE or information about where to obtain documents only available physically. One of these templates or additional information sources can be referenced in more than one process description (e.g., Project Acquisition and Project Set-Up reference the Project Plan template), and one process description can have more than one reference to templates and additional information sources (e.g., Project Acquisition also references a template with IESE fees). In particular, COIN-IQ references COIN-EF from several processes as an online form when Lessons Learned are to be applied. The resulting query interface is adapted to the needs of the process. For example, if a process is about industrial projects, the parameter "funding" is set to "Industrial".



**Fig. 5.** Simplified Structure of HTML documents in COIN-IQ. Arrows show how pages are linked. The relations are to be read according to the direction of the arrows (e.g., one overview can refer to n other overviews, role descriptions or process descriptions). Italics denominate the number of elements of the respective type of structure within COIN-IQ.

To facilitate quick and comprehensive *understanding* of processes, COIN-IQ uses structured text to represent the Business Processes [Dil95]. Structured text has proven its

ability to describe processes in paper-based Quality Management System Documentation, which are inherently performed by human agents. Furthermore, using a specific process notation would require training IESE members in reading the process description.

The second reason for choosing structured text lies in the different thematic areas that are described within COIN-IQ, like project-related processes, administrative or service processes. Depending on the thematic area, process descriptions concentrate on different aspects of product flow, control flow or role interaction (e.g., product flow is accented in administrative processes). The experience gained in the COIN project showed that structured text is flexible enough to capture those different aspects in a uniform way.

After this high-level presentation of COIN-IQ, the rest of this section will cover the detailed description of the structured text of process and role descriptions.

## Process Descriptions

As depicted in Figures 6 and 7, a process within COIN-IQ is described according to the following structure: "Applicability Information", "Overview of Templates and Additional Information", "Objectives, Results, and Quality Measures", "Actions and Subprocesses" and "Guidelines". The content and purpose of these sections are described in the following:

"*Applicability Information*" gives a short overview of a process's context, thus helping the user to determine if the current process description is the desired one. To facilitate this overview even more, it is again structured into three sub-sections: Scope, Trigger and Viewpoint. "*Scope*" contains one or two sentences about the thematic range of a process and thus the content of a process description. "*Trigger*" as the second sub-section describes the condition that starts the execution of a process. These triggering conditions can be events released from outside IESE (e.g., a customer telephone call), dependencies with other process executions (e.g., start or finish of a process) or dependencies from product states (e.g., a deliverable is about to be finished). "*Viewpoint*" contains the role from whose view the process is described.

"*Overview of Templates and Additional Information*" lists the templates and additional information sources referenced by the process description. This overview is intended to support IESE members who are accustomed to the process and just need quick access to artifacts.

"*Objectives, Results and Quality Measures*" is information intended to guide the execution of a process. The difference between the three sub-sections is the increasing degree of quantification of quality information. "*Objectives*" are general objectives of the process (see Figure 6 for an example). "*Results*" are tangible outcomes of the process (e.g., meeting minutes). "*Quality Measures*" describe properties of such results (e.g., the number of pages of the meeting minutes should range between 10 and 20) or the process itself (e.g., the effort spent on preparing a meeting should not exceed one person day).

"*Actions and Subprocesses*" describe the steps of the process execution. In COIN-IQ, a distinction is made between actions and sub-processes. Actions are atomic steps that are not refined any further. Sub-processes are described in a separate process description according to this structure. The super-process contains a link to the sub-process, followed by a short explanation of the sub-process content.

"*Guidelines*" give hints for performing a process, like "do's and don'ts" or frequently asked questions about a process. Furthermore, frequently used variances of a process are

modeled as guidelines. This reduces the number of similar process descriptions and lowers the effort to maintain the process description. Each guideline has a “speaking headline” in the form of a question or statement, followed by explanatory text. These Guidelines are a special kind of Guidelines captured within COIN-EF: They are independent of the project context. By querying COIN-EF for retrieving such project independent Guidelines related to a certain Business Process, the resulting Guidelines could be presented in the "Guideline" section of a process description. Thus, each process description in COIN-IQ is linked with COIN-EF. However, the full implementation of the technical integration of COIN-IQ and COIN-EF is currently being developed.

**Meetings**

**1 Applicability Information**

**Scope**  
Preparing and conducting meetings as well as IESE internal or with customer / project partner participation. The process information is also applicable to meetings that are conducted as part of Line Management activities (e.g., group or department meetings).

**Trigger**  
A meeting has to be organized.

**Viewpoint**  
[Meeting Organizer](#) (Guidelines also relevant for Meeting Participants.)

**Overview of Templates and Additional Information**

**Templates**

	<a href="#">Meeting Minutes</a>	Template for recording meeting
	<a href="#">Action Item List</a>	List describing WHAT is to do by WHOM till WHEN.
	<a href="#">FC-MD Teleconference Guidelines</a>	Description for teleconferences between FC Maryland and IESE.
	<a href="#">Invitation Template</a>	Email template for meeting invitation.
	<a href="#">Reservation Form</a>	Top page for all reservation forms in IESE Intranet.
	<a href="#">Room Reservation Form</a>	Online reservation form in IESE Intranet.

**Additional Information**

**Fig. 6.** Screenshot of a Process Description. The left frame provides functions applicable to all pages within COIN-IQ (help, printing, giving feedback) and navigation functions, including an indication of the current position.

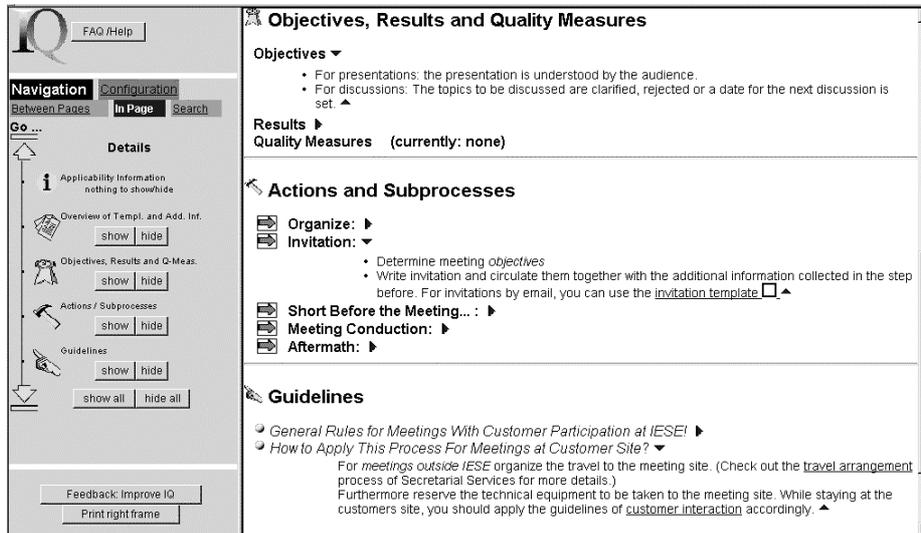


Fig. 7. Screenshot of a Process Description, continued. The left frame shows GUI elements used for navigating in a page.

## Role Descriptions

Role Descriptions in COIN-IQ are structured into three main sections. "Role Description", "Processes Referring the Role X", and "Other Roles of Interest". The first section "*Role Description*" contains a general description of the role, who is able to perform this role, who can substitute this role if the respective agent is not available, and which roles support this role in their work. If an agent (i.e., a certain IESE member) can be assigned to one of the latter three sub-sections, the name, telephone and email is stated. For example, Project Accounting is performed by one IESE administration member, who is mentioned in the role description. The second section "*Processes Referring the Role X*" lists the processes in which the role is involved. The function of the third section "*Other Roles of Interest*" is straightforward; it contains links to other roles that can be relevant to the performer of the current role.

Therefore - besides describing roles themselves - Role Descriptions serve (a) as "yellow pages" and (b) as a role-specific selection of the Business Processes. The "*yellow pages*" function is created by the role descriptions that contain contact information. A user of COIN can deduce from the role description if the person mentioned in the contact information is the appropriate one and contact him or her directly. The role-specific selection is defined by the list of processes that is part of a role description. This allows the performer of a role to gain an overview of the processes involved.

## Conclusion and Outlook

After this presentation of COIN, the remainder of this paper covers (a) further mutual synergies of integrating (Business) process descriptions and Lessons Learned in addition to the synergies presented in the introduction and (b) an outlook to the future activities within COIN.

The *additional synergies* are based on experiences gained within the COIN project. To facilitate reading, the synergies are described in two steps: First, the advantages for Lessons Learned generated by the availability of defined Business Processes are presented. Second, the advantages of complementing Business Process descriptions with Lessons Learned are described (see also [War97]):

- The analysis of Business Processes can be utilized to facilitate the identification of knowledge demands and thus, the definition of knowledge goals [TA00].
- Lessons Learned can refer to Business Processes as part of the root and application context. Without this opportunity to reference, the process part of the context could be (a) not specified or (b) specified textually. However, *not specifying* this part of the context would lead to a loss of context information. A free *text specification* also has disadvantages. First, process descriptions capture information about Business Information in a more unambiguous and comprehensive way, since in practice, freely defined text will be shorter than process descriptions. Second, the effort for referencing the process descriptions is supposed to be lower than the free specification. This factor is not to be neglected, since Lessons Learned have the tendency to occur in large numbers. For example, in COIN-EF, 466 Lessons Learned are currently captured.
- Processes for capturing, processing, and presenting Lessons Learned can be described as Business Processes (e.g., the Collect and Review step of the Project Analysis). The interfaces of these experience management processes can then be integrated into the Core Business Processes (e.g., project execution). This integrates Experience Management into daily business.
- Finally, changes in Business Processes do not happen unobserved. Therefore, the potential effect to the applicability of a Lesson Learned can also be regarded explicitly.

The advantages for Business Processes in having related Lessons Learned are as follows:

- In general, Lessons Learned give supplementary information on the execution of Business Processes like other process-related sources of data [AB+98]. This supplementary information fosters the execution in accordance with the Business Process descriptions. In COIN, this is currently done by integrating queries to the Lessons Learned repository with default settings into the process descriptions.
- In addition to this, Lessons Learned can cover rare variations and exceptions from the Business Processes. The context of a Lesson Learned gives the circumstances under which these deviations should be applied. Therefore, these deviations need not be described in the Business Processes themselves, which otherwise would lead to a cluttered process description.
- Lessons Learned can give impulses for process improvement. In COIN these impulses are given by the problems discovered during project analysis.
- Consolidated Lessons Learned can become part of Business Process descriptions. Furthermore, Lessons Learned can be utilized to learn about elements of a process.

These findings will be investigated further during the continuous operation of COIN, which started in January 2001. For this continuous operation, the following activities are ongoing or planned:

- A supporting tool for *maintaining COIN-IQ* was finished in December 2000 and is currently evaluated in practice.
- A supporting tool for *defining views* to the Experience Base will be finished in June 2001. One usage of these views will be to re-implement and extend the process-specific queries to the Experience Base.
- COIN will be used as a *real project environment* for the development of more advanced techniques on knowledge maintenance, knowledge evaluation, knowledge analysis, and knowledge generation.
- COIN will be used to *develop methods and techniques* for use in customer projects and to build up practical experience for training IESE members.

COIN will be installed as a continuously operating Experience Factory. For COIN-EF, this includes eliciting new experiences and integrating them into the Experience Base. For COIN-IQ, the current process descriptions have to be maintained and further process descriptions will be elicited.

Furthermore, the DISER method and the INTERESTS tool are used in projects with industrial customers.

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