

# Portals for Development and Use of Guidelines and Standards

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## INTRODUCTION

Nowadays, guidelines and standards play a key role in the adoption of (computer) technologies by industries and society. In essence, they constitute a rapidly evolving medium for transferring established and de facto knowledge to various interested parties. For instance, designers and developers, in various application domains, require guidelines and standards in order to achieve consistency and user-friendliness of user interfaces, especially in cases where complex and rapidly evolving technologies are employed. Despite the indisputable value and importance of such knowledge, several studies investigating the use of guidelines and standards by designers and developers (e.g., Wandke & Hüttner, 2001) have concluded that they are frequently ignored. This is attributed partly to the fact that such knowledge is not easily exploitable (Tetzlaff & Schwartz, 1991), and partly to their incarnation medium (i.e., paper based-manuals) that usually raises issues of ineffectiveness and lack of user-friendliness (e.g., Bevan & Macleod, 1994).

These limitations, in combination with the emerging need for interactive tools to support development activities, have given rise to a new generation of tools, which are usually referred to as tools for working with guidelines (TFWWGs). TFWWG are interactive software applications or services that offer support for the use and integration of guidelines-related knowledge at any stage of an IT product development lifecycle. In this direction, preliminary efforts were targeted to the integration of guidelines into hypertext-based tools, which allow software designers to access design guidelines organized either as a database or hypertext (e.g., Perlman, 1987; Vanderdonckt, 1995) or using a digital

library that facilitates design time assistance, such as I-dove (Karampelas et al., 2003). Furthermore, TFWWGs, such as Sherlock (Grammenos, Akoumianakis & Stephanidis, 2000), were designed to assist the user interface usability inspection process and therefore provide active support to various phases of the development process. Nonetheless, R&D efforts in the field of TFWWGs have mainly focused on the effective and efficient delivery of such knowledge to potentially interested parties, paying limited attention to the process of its development. For instance, guidelines and standards are meant to represent a level of know-how and technology which renders the inclusion of industry in its preparation cycle indispensable.

Under the light of these efforts, portals technologies can potentially be employed in order to overcome the limitations mentioned and of significant support in working with guidelines. The main advantage of portals over other alternatives is that due to their nature they can facilitate the collaborative development of such knowledge by multidisciplinary teams, and contribute to avoiding under-utilization and regeneration of existing knowledge, bridging the gap between knowledge developers and knowledge consumers, and initiating and promoting rapidly guidance and standardization activities in various application domains.

This article describes a portal structure in the form of functional requirements to serve as an advanced, Web-based environment for enabling one the one hand the cooperative development of guidelines and standards—at the knowledge developers' site, and on the other hand the practical use of guidelines and standards—at the knowledge consumers' sites. Overall, depending on the needs and constraints (market, time, etc.), there is a number of available guidelines and

standards-type document than can be produced and exploited by means of the proposed portal structure, including: (1) (recommendations for) standards, (2) design/development/use guides, (3) technical reports and specifications and (4) collections of guidelines.

## KEY STAKEHOLDERS

For the establishment of a portal structure aiming at supporting the development and practical use of guidelines and standards, a thorough analysis of the key stakeholders involved and their functional requirements is necessary. Such an analysis is intended to support identifying the appropriate structure, in terms of functionality, that will facilitate the work of a wide range of portal end users. An initial overview of the target user population can provide an initial classification of users. More specifically, two basic groups of stakeholders can be identified, namely knowledge developers and knowledge users.

### Knowledge Developers

Research and development of guidelines and standards covering a large area can be organized into general *thematic areas* in order to allow coherent coordination, planning, and programming of all activities. The responsibilities and characteristics of each stakeholder involved in the knowledge development process are briefly analyzed below. Knowledge developers can be further subdivided into the following subgroups that participate having different roles in process of knowledge development:

- **Thematic Area Members:** These are persons or organizations with expertise or direct interest in a specific field and who can potentially participate in activities regarding the development of knowledge. These stakeholders are also responsible for conducting, in a collaborative manner, analysis of the state of the art within the thematic area in question, and brainstorm ideas for new knowledge development activities.
- **Coordinator of Activities within a Thematic Area:** This is a person or organization delegated to moderate (invite, accept, etc.) the thematic area members, as well as co-ordinate technically all knowledge development activities.
- **Originator:** This is a person or organization proposing the initiation of a new knowledge development activity.
- **Editor:** This is typically the same person or organization with the originator and is responsible for drafting the new set of knowledge in cooperation with a number of authors. To this end, the editor is also responsible for coordinating the work of all involved authors.

- **Authors:** Authors are members of the team of experts (i.e., persons or organizations) who will participate in the process of drafting new knowledge.
- **Coordinators of Knowledge Development Activities:** This is a group of persons or organizations who are responsible for the operational work issues and general decisions. The responsibilities of this group include:
  - The overall management of the thematic areas structure
  - The establishment and dissolution of thematic areas
  - The delineation of thematic area's scope
  - Coordination issues
- **External Experts:** These are external persons or organizations with technical expertise that are willing to review and provide comments upon (draft versions of) knowledge.
- **Liaisons with Industry:** Persons or organizations who represent the target market for the knowledge under development in the context of a particular thematic area. Interested Parties are offered the right to vote and comment upon knowledge that is currently under development.
- **Guidelines and Standardization Specialists:** These are persons or organizations with expertise in procedural and normative matters. They are mainly responsible for the quality of the knowledge delivered by editors.

### Knowledge Consumers

Knowledge users include anyone that wishes to gain access to the developed knowledge for several purposes. More specifically, knowledge users can be further subdivided into:

- **Decision Makers:** *Decision makers* are the individuals or organizations that are responsible for providing a high-level specification of a new application, or leading the overall development process. For example, their tasks might include decision making regarding whether an application should be developed for a particular task, the technology (h/w & s/w) that will be acquired/used, as well as functionality and usability characteristics of the future system.
- **Designers:** *Designers* are responsible for collecting and analyzing all relevant requirements for the creation of a particular application, and translating them into a concrete design.
- **Developers/Engineers:** *Developers/Engineers* have the task to instantiate the design of an application by implementing the envisaged system.

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