EXPLAIN: Integrated Content Development by Means of a Web-based Authoring Management Platform

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Abstract. The poster introduces EXPLAIN, a project funded by the German Federal Ministry of Economy and Technology. The vision of EXPLAIN is to reduce efforts for content projects by means of integrated, IT-supported and independent content development. Current insights in the industry show that enterprises avoid the efforts to produce their own learning content by themselves because the process appears too complex to them. Furthermore, most existing tools support only singular aspects of the content development but do not provide comprehensive process integration of conception, production and management of learning content. To meet these requirements, a web-based Authoring Management Platform to support the production process of learning content and the management of in-house content projects, has been developed within the scope of EXPLAIN.

Keywords: Authoring Management, Learning Content, Process Integration, Web-based Content Development.

1 Introduction

In times of ubiquitous ICT and an increasing virtualization of everyday life, the use of technology-enhanced learning (TEL) in German enterprises is yet lagging behind the international trend – despite significant progress in technology and usability [1]. Nowadays, training in general and product training in particular is still carried out traditionally, i.e. classroom training in Germany and also in large parts of Europe – regardless of the strategic competitive advantage promised by the application of learning technologies. The technological availability of distribution channels for training media has raised significantly (DVD, CD-ROM, Internet, mobile devices etc.) and the degree of maturity of authoring tools has advanced, too. In this respect, the requirements for a broad application seem to be fulfilled from a technical and conceptional perspective. However, current insights in the industry show that

enterprises avoid the financial and personal efforts to produce their own learning content by themselves because the production process itself appears too complex to them. Furthermore, most existing tools do not provide a sufficient integration of product design and content development processes. Thus, they can hardly compensate for the lack of didactical and process-related know-how and link it to the domain expert knowledge within the enterprises [2]. The process of content development is extremely resource-intensive and intricate especially for small and medium-sized enterprises (SMEs) because interdisciplinary competencies and detailed knowledge (technical equipment, tools, project management, media production, and didactic expertise) are needed and a lot of employees need to collaborate across departmental and even enterprise boarders, what additionally increases the efforts for coordination and communication activities [3]. Furthermore, already existing tools support only singular aspects of the content development but do not provide comprehensive process integration of conception, production and management of learning content.

2 EXPLAIN Vision and Objectives

These challenges are elaborated and tackled by the research project EXPLAIN (http://www.explain-project.de). The project is funded by the German Federal Ministry of Economy and Technology and brings together experts from research and practice as well as enterprises from producing and pharmaceutical industries. EXPLAIN aims at the vision of significantly reducing efforts for projects of training media production (content projects) by means of integrated, holistic, IT-supported and independent content development. According to fundamental principles of Business Process Reengineering [4], the production process of training media as currently performed in most enterprises is being analyzed and optimized. The objective is to bridge technological and organizational gaps within the content development process by means of simple and intelligent tools, and in doing so, to increase the attractiveness of TEL especially for SMEs [5]. To meet these requirements, a web-based process-oriented Authoring Management Platform to support the production process of learning content and the management of in-house content projects, has been developed within the scope of EXPLAIN [6]. The platform enables knowledge domain experts in enterprises to create learning content for their products within reduced timely efforts by integrating this process into the operative business processes of enterprises. Additionally, didactical patterns are provided, on which domain experts can rely in developing typical product or professional trainings and thus are guided interactively through the process of content development [7]. Hence, the platform serves domain experts as well as training developers as an instrument of support and accelerates and simplifies the content development process. In doing so, existing authoring tools shall be expanded for an enhanced support of domain experts and integrated into EXPLAIN by means of standardized interfaces. Missing modules are compensated through a development of new components. The EXPLAIN platform is supposed to empower enterprises to simplified in-house development of multimedia trainings by providing intelligent technical, didactical as well as process-oriented support in content development and thus to open up the gates for a wider

dissemination of TEL. A prototype of the platform is being implemented for three medium-sized enterprises to enable the realization of training media for new products.

3 The EXPLAIN Approach

EXPLAIN has been developed in three phases approaching the IT-supported platform solution of the business problem step-by-step (see Fig. 1):

1.) At first, there is the vision of a platform for integrated content development in enterprises. EXPLAIN aims at enabling SMEs to produce their own learning content autonomously through integrated content development, thus being able to react on learning needs efficiently and in time.

2.) Within the first phase, a requirements specification is postulated independently from technological decisions concerning implementation issues which results in a process and service concept of the platform (see Fig. 2).

3.) In the following step, based on the process and service concept, a technical design specification is developed representing the system architecture.

4.) The final step encompasses the implementation of the EXPLAIN Authoring Management Platform based on the system architecture.

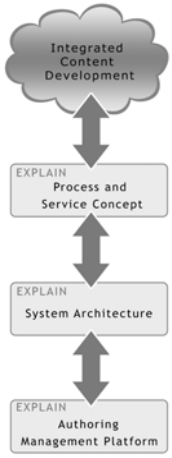

Fig. 1. Phases of development in EXPLAIN.

3.1 EXPLAIN Process and Service Concept

The requirements specification of all processes and value added services, which are implemented into the EXPLAIN platform, are included in the EXPLAIN process and service concept (see Fig. 2). Prior to the design of the target process and service concept, an inquiry, modeling and analysis of currently existing editorial processes and organizational scenarios within the scope of the process of content development

in SMEs is carried out. The synthesis of an optimized TO-BE process model, which has been revised considering the identified weak spots of the AS-IS process model, provides the basis for the EXPLAIN process and service landscape, which describes the implementation of the EXPLAIN platform on the requirements specification level. This TO-BE process interlinks the sub-processes of project management, authoring and content management with each other in an integrative way by using organizational and technological interfaces. Together with easy-to-use and low-cost implementation tools, this process is supposed to foster the acceptance and application of content development or TEL in general within enterprises [6]. The central element in the overall process is represented by the content model, which, similar to a bill of materials used in product design and development, integrates all required activities along the structure of a learning module [8]. Thus, it provides an interface between the processes of project management, authoring and content management. Furthermore, the platform offers value-added services to the project team, like support in didactic issues, in selecting appropriate tools, in retrieving external media experts (photographers, audio studios, translation agencies, etc.) out of a resource pool, as well as the provision of ready-made template and media asset libraries. These services will also support communication and collaboration activities in order to increase the process efficiency for review and creative team processes.

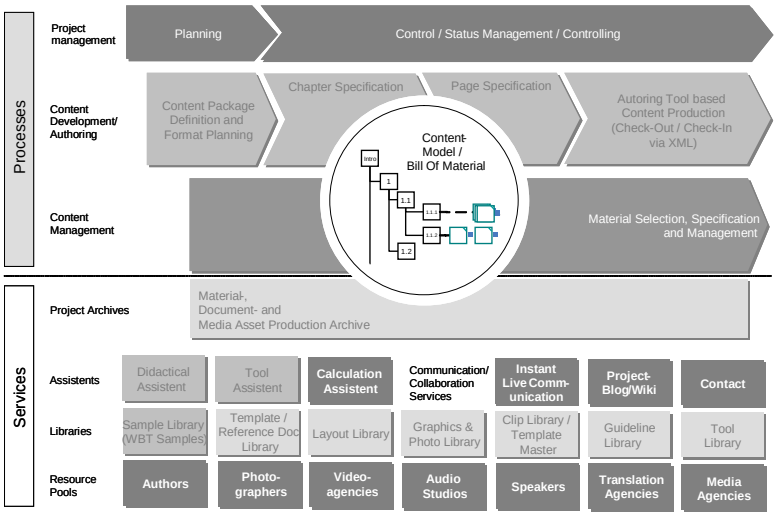

Fig. 2. Process and service landscape of the EXPLAIN platform.

3.2 EXPLAIN System Architecture

The next step is to transfer the process and service requirements to the development of the EXPLAIN system architecture (see Fig. 3), which is a technical-oriented design specification for implementing the before outlined process structures and services. The EXPLAIN architecture consists of the central applications of Content Process

Management, Content Authoring and Content Model as well as four service modules. Furthermore, interfaces for integrating EXPLAIN into existing enterprise infrastructures are identified and specified. Of great importance concerning the interfaces is the potential integration of authoring systems. To ensure interoperability, a synchronization of media and metadata between the EXPLAIN platform and the authoring systems is to occur. The main challenge here is the implementation of a consistent, lossless synchronization between the systems. From a technological perspective, this is the essential precondition to avoid media disruptions and thus, data or information redundancies or discrepancies between the applied tools.

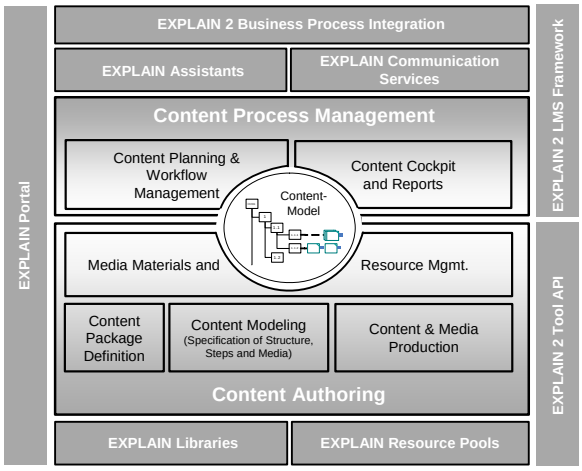

Fig. 3. EXPLAIN system architecture.

3.3 EXPLAIN Authoring Management Platform

During the last phase, the EXPLAIN platform is being prototypically implemented on the basis of the system architecture. The EXPLAIN Authoring Management Platform follows the thesis that it does not make sense for corporate training managers to run and maintain an own authoring infrastructure within the enterprise and have all the skills in an internal team – unless the volume of media production is on a very high level. Therefore, the approach of EXPLAIN is to enable enterprises to produce their own learning material independently as well as to respond to ad-hoc learning needs in a cost-effective and time-saving manner. In doing so, a closed self-supply of TEL actions would be unrealistic and economically not reasonable. The intelligent integrated solution will instead provide a multitude of authoring tools, assistants and services on-demand over a web-based platform accessible through the browser. The idea is that enterprises can use these services whenever they need it. So, services and tools can also be provided at the newest level of technology [6].

This demand-oriented approach provides a number of advantages for the user: First, corporate training departments avoid pre-investments into own infrastructures. Instead, appropriate tools can be utilized on-demand over the web-based platform and

can be integrated into the overall project. In a similar way, this applies also for media production, which can be outsourced to external service providers or carried out in-house over the platform. Thus, even small education departments will be released from the necessity to provide all expertise, technology and resources by themselves, but nevertheless, they will still keep their leading position within the content projects. Furthermore, by deploying the platform the professional efforts of internal experts on content development decrease and the amount of time needed for implementation can be shortened enormously, so that profitability for the creation of a learning module or WBT for products with very short lifecycles is assured.

4 Conclusion and Outlook

The EXPLAIN platform follows the momentum generated by the Web2.0-movement not just by applying message boards, blogs, wikis and communication services, but particularly by incorporating the aspects of individual adaptivity and enterprise-spanning collaboration, participation and collective intelligence, which contribute to the character of the platform as an intra-organizational community for content development. The innovative idea of a web-based platform additionally enables regardless of time and place use without the necessity of applying proprietary client software. Through the distributed provision of content, tools and technical services, new kinds of business models arise for the host of the platform, which ensure the sustainability of the EXPLAIN concept.

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