An XML-Based Publishing System for Medical Guidelines

The Customer

The *Deutsche Gesellschaft für Hämatologie und medizinische Onkologie (DGHO) e.V.*, known in English as the German Society for Haematology and Medical Oncology, is a medical association whose goals include the training and education of doctors and medical personnel and the drafting and publication of medical guidelines. Its members include scientists and doctors specialising in the research, diagnosis and treatment of blood diseases and malignant tumours.

Together with other medical societies and associations from Germany, Austria and Switzerland, the DGHO operates the online guidelines portal “Onkopedia”. In addition to providing medical guidelines, it serves a source of important specialist information for patients and carers.

The guidelines portal was developed by Andreas Jung and ZOPYX on behalf of the DGHO in 2010. It is based on the Produce & Publish authoring environment from ZOPYX and the open source content management system Plone.

The guidelines portal revolutionised the work of the DGHO. In structuring and accelerating the editorial workflow, it has helped to ensure that doctors, patients and carers can obtain quick, easy, any-time access to the latest guidelines and information. Thanks to the portal, the DGHO has been able to intensify the exchange of specialist expertise and to provide clinical practitioners with an indispensable tool for quality assurance.

The doctors and scientists responsible for formulating the medical guidelines were not required to change their way of working. They continue to write the guidelines using Microsoft Word. A DGHO employee then checks the documents for technical suitability and feeds them into the CMS, where they are converted to HTML and - for printing purposes - to PDF.

The Brief

In 2014, the DGHO commissioned Andreas Jung and ZOPYX to extend the guidelines portal. Their wish was for the publication workflow to be automated to as great an extent as possible, since the large number of documents could no longer be managed by the available manpower. Furthermore, the DGHO asked ZOPYX to configure the technical foundations of the portal in such a way that Onkopedia content could be fed into external third party systems (e.g. hospital IT systems) via standardised interfaces. The DGHO will later use this functionality to open new channels of distribution.

The Solution

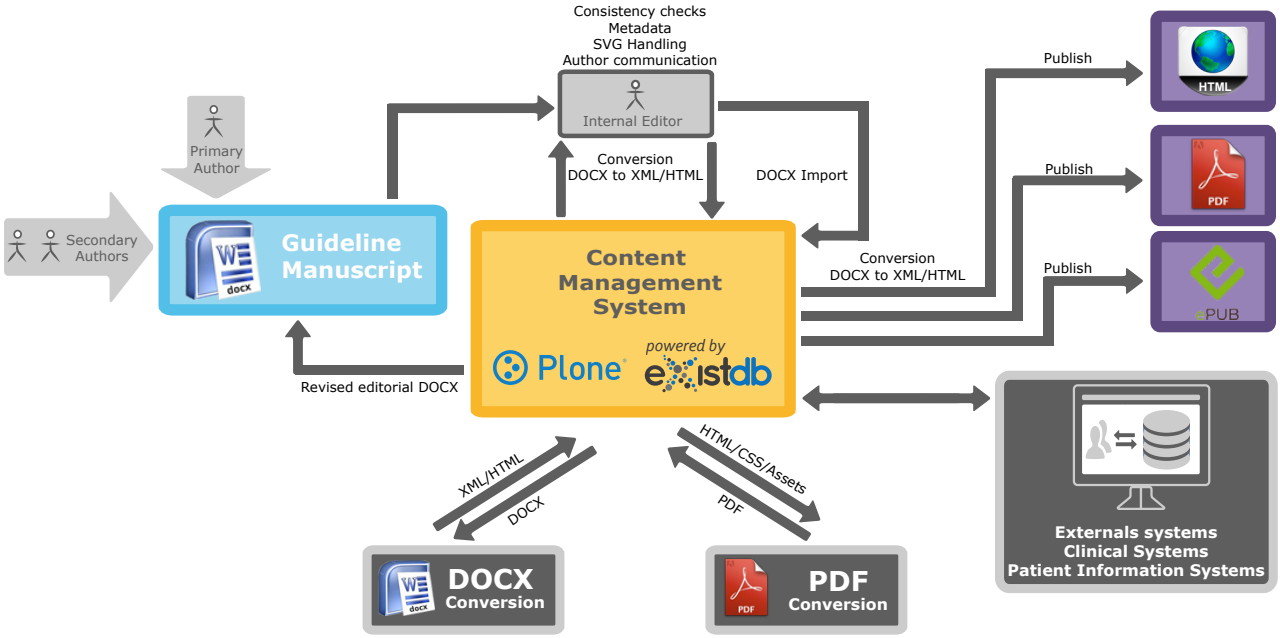
To guarantee semantically targeted, finely structured access to the guidelines via an API, ZOPYX decided to begin storing data in an XML format defined specifically for Onkopedia and to implement a completely XML-based publication workflow.

XML has numerous advantages. It has long been considered the undisputed industry standard for the publishing sector. Furthermore, there are a number of powerful, tried-and-tested tools available for XML processing.

For the authors, the new XML-based publication workflow brought very little change: they simply use a new Word template to create the content. The new template enables the automatic validation of document structures, the automatic generation of references and more. The conversion of DOCX files to XML is performed by the web service C-REX.net from Practice Innovation. The system has round-trip capability, which means that content can be converted from DOCX to XML and back as often as desired. This enables authors to access already-posted content as a Word document and revise it at any time. Finally, the C-REX.net converter also generates the HTML version for viewing the document on the website. The PDF data is generated directly from the XML data using CSS Paged Media and the PDF engine PDFreactor. The output of the new PDF converter meet all the demands placed on modern, high-quality PDFs: tables, multi-column layouts, hyphenation, complex graphical layouts and more.

The new Onkopedia can supply information in a semantically correct, structured form, making it possible for all content to be embedded easily in external systems. Since all the information is stored in an XML database, external systems can send targeted, highly specific queries to the system and meaningfully process the structured content that is returned. This makes the new Onkopedia an open and flexible system.

To enable users to obtain quick, efficient access to the most up-to-date medical knowledge, the guidelines are linked with other information via a convenient system of metadata. This information could take the form of study results, certifications, protocols and other types of content. In this way, all available information is compiled and organised into a clear list of topics.



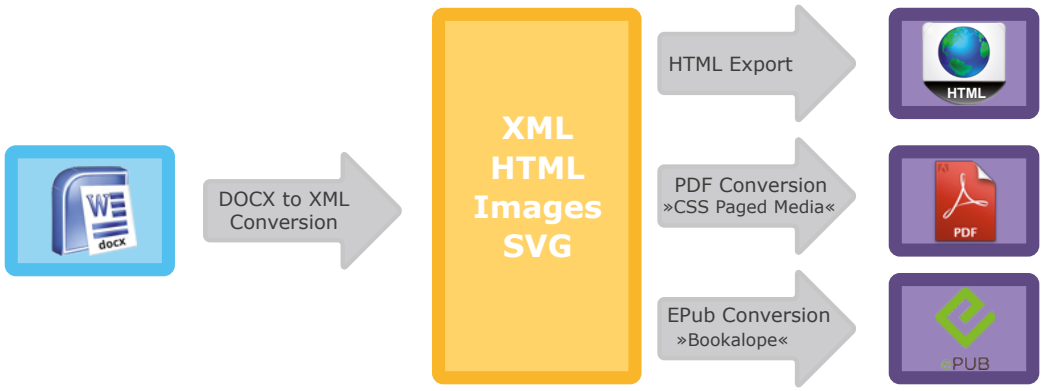
Flexible Metadata System

- Medical Topic
  (eigene Ontologie)
- Beteiligte Fachgesellschaften
- Type of Document
- Storage Location
- Language
- Date/Last Revision

Multilingualism and Target Group Portals

Onkopedia is a multilingual system that is well-prepared for international use. It currently supports the German and English languages.

In addition to the guidelines portal, Onkopedia offers two target group portals: one for patients and relatives and one for carers and care workers. This ensures that all relevant parties are able to obtain access to objective, comprehensive information.



Benefits At A Glance

Lower Workload

The simplified publication workflow, with automated quality control, reduces the amount of work for authors and editors.

New Distribution Options

Third party systems - such as clinical information systems or medical applications - can access information directly via open, standardised interfaces.

Stronger Image

With its multi-channel information service, the DGHO is able to position itself as a modern, highly professional and efficient medical society.

Higher Cost Efficiency

The new Onkopedia facilitates the highly efficient realisation of the DGHO's aims: to produce authoritative guidelines and to implement them in clinical practice. Thanks to its openness, the system is optimally equipped for adapting to future requirements; the range of services can be expanded without great expenditure or workload.

The Core Component: XML Director

The core component of the new Onkopedia is XML Director, an open XML content management system developed by Zopyx. It is based on the CMS Plone 5 and uses the open source XML database eXist-db to store data. Content can be entered through-the-web via the browser or imported from DOCX files via open interfaces. XML Director supports external editors like MS Word and embedded online editors that run in the browser. All content can be displayed in HTML and made available for download in the formats PDF and EPUB.

XML Director is an open system. It works not only with eXist-db, but also with databases such as Base-X or Marc Logic.

It possesses powerful CMS functions (e.g. role-based access management), adjustable workflows and a simple, intuitive user interface. Moreover, as an XML-based system, it is open in all directions and can be connected with both common office software and with external systems (via XQuery or WebDAV). This makes XML Director a key control component in high-grade, automated publishing environments.

Project Partners

- Deutsche Gesellschaft für Hämatlogie und medizinische Onkologie (DGHO) – www.dgho.de
- ZOPYX – www.zopyx.de
- Practice Innovation – www.practice-innovation.de
- Ute Mitschke – www.ute-mitschke.de
- Trabucchi Media Services – www.trabucchi.de
- I.T.YOU – www.ityou.de

References

www.onkopedia.com

www.xml-director.info

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