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FROM PAPER BOOKS TO SMART BOOKS – A BREAKTHROUGH OF GREEN GAME CHANGERS

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Abstract – Conventional paper books till now are the most significant tools for modern knowledge societies. They collect, distribute and save old and new knowledge. The advantages of paper books are: Mastered technologies, abundant existence and material durability. The disadvantages of paper books are: Big mass (weight), limited mobility and high prize. Innovative smart books overcome these disadvantages. Smart books are books which can be manufactured, transferred, used and saved with smart computers in clouds. The functionalities of smart books are going far beyond the functionalities of paper books. Smart books are green game changers. Green is a synonym for sustainable qualitative growth with lower specific consumption of matter, energy, information, capital and labour. Aim of the paper is to give an overview about the attractive new functionalities of smart books and to explain their practical elaboration for small and medium sized enterprises and research institutions. Smart books are convenient, reliable and affordable.

Keywords: smart books, smart computers, web services

1. TRANSFORMATION OF PAPER BOOKS INTO SMART BOOKS

The transformation of paper books into smart books can be accomplished in three steps:

Step 1.1: Record of the paper book with book scanner, for example with Plustek OpticBook 3600 www.plustek.com (Fig. 1-01).

Step 1.2: Transcription of the printed letters into digital letters with optical character recognition and storing under .pdf for example with Adobe Acrobat X Professional www.adobe.com (Fig. 1-02).

Step 1.3: Generation of the smart book as a flash based web service, for example with FlipBuilder PDF 3.4.0 www.flipbuilder.com (Fig. 1-03).

Fig. 1-01
Plustek Optic-
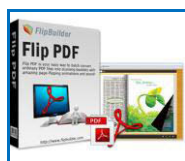Book 3600

Fig. 1-02
Adobe Acrobat
X Professional

Fig. 1-03
FlipBuilder
PDF 3.4.0

As a result the surface of the smart book contains all necessary information concerning the available functionalities (Fig. 1-04).
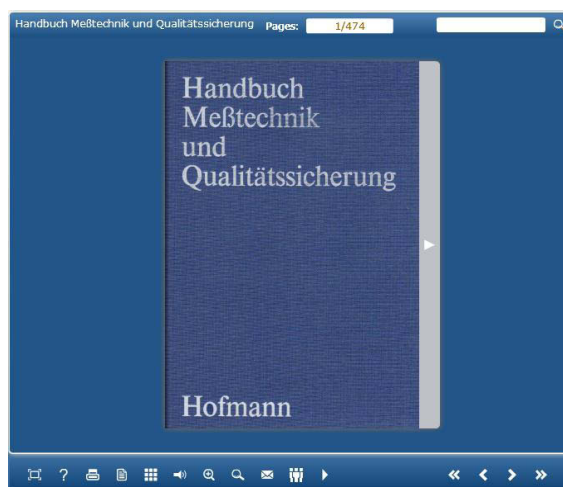

Fig. 1-04 Transformation of a paper book into a smart book

The upper row shows the title of the paper book (smart book), a registration and control field for Page numbers and a search field for words or phrases.

The central area in Fig. 1-04 is the smart book itself. The lower row shows fifteen different functionalities:

	Enable FullScreen
	Help
	Print
	Bookmark
	Thumbnails
	Sound On
	Zoom In
	Search
	Share
	Social Share
	Auto Flip
	First Page
	Previous Page
	Next Page
	Last Page

Fig. 1-05 Different functionalities of smart books

For easier understanding of the functionalities of smart books their typical manifestations are shown in screenshots (Fig. 1-06 to Fig. 1-11).
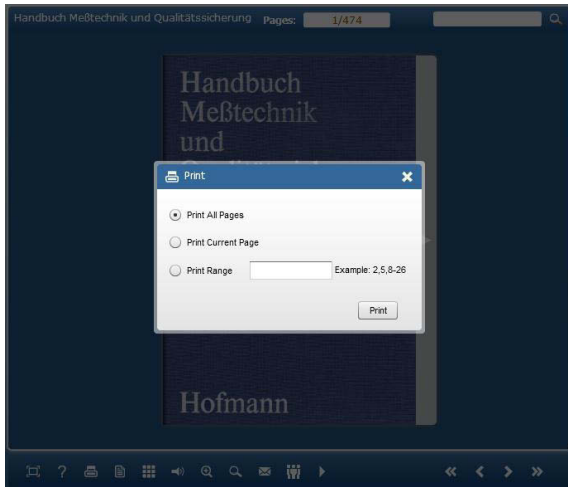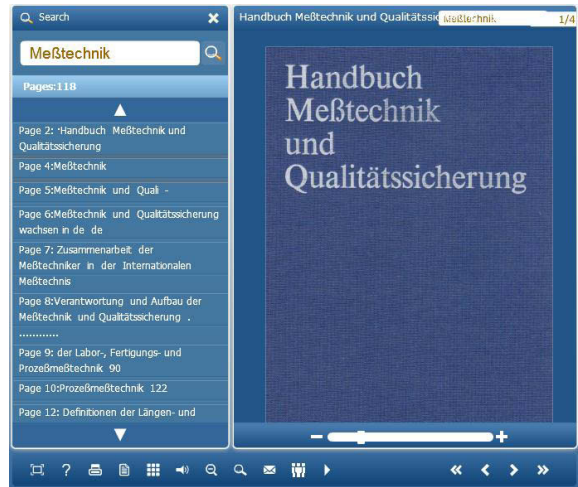

Fig. 1-06 Printing of smart books

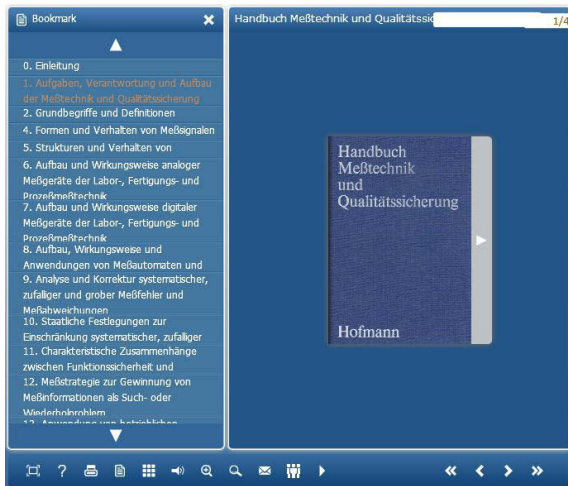Fig. 1-09 Searching and highlighting of smart books

Fig. 1-07 Table of contents of smart books

Fig. 1-10 Linking of smart books to social networks
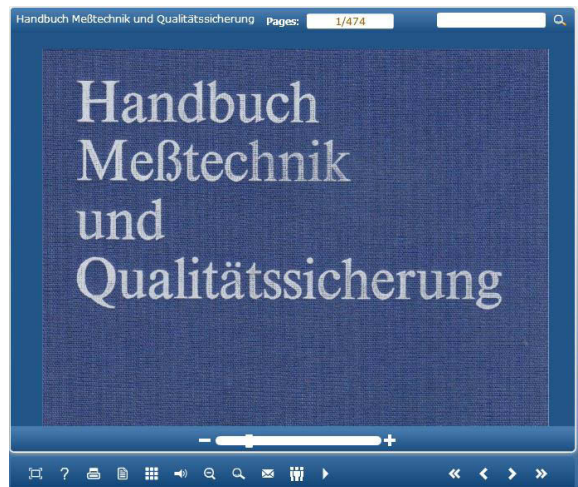

Fig. 1-08 Thumbnail preview of smart books

Fig. 1-11 Zooming of smart books

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2. DESIGN OF SMART BOOKS FROM DIGITAL DATA AND IN DIFFERENT LANGUAGES

If the pages of a paper book already available as digital data it is not necessary to scan the pages and perform optical character recognition again. In that case smart books can be directly generated from data sources in formats of Word (Fig. 2-01), of Powerpoint (Fig. 2-02), of Images (Fig. 2-03) and of PDF (Fig. 1-03).
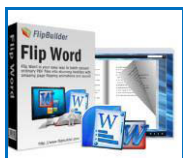
Fig. 2-01
FlipBuilder
Word

Fig. 2-02
FlipBuilder
Powerpoint

Fig. 2-03
FlipBuilder
Image

Practical example for the design of a smart book in a standardized format is the "Qualitätsmanagement für Ingenieure" (Fig. 2-04 to 2-06).
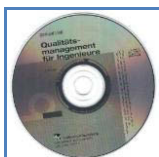
Fig. 2-04
paper book
for quality
management

Fig. 2-05
CD of the paper
book for quality
management

Fig. 2-06
Smart book
for quality
management

The layout of the smart books is not restricted to the standardized measures of printed paper books. The See See & Click operation instruction of OMRON Xpectia Vision Sensor has been designed in a free format for easier handling (Fig. 2-07).
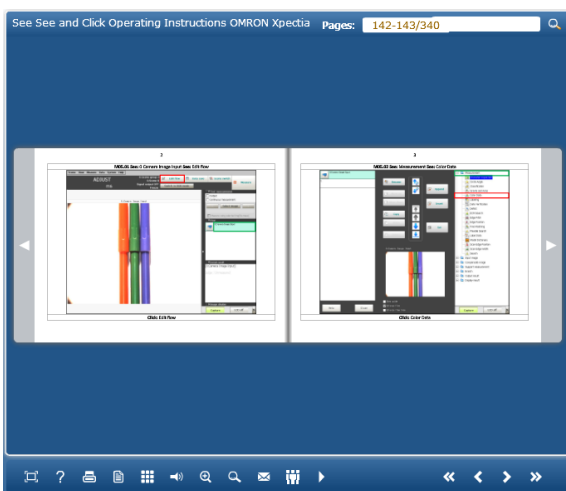
Fig. 2-07 See See & Click operating instructions as flash based smart book

If the pages of a paper books written in **different languages** than due to the progress in optical character recognition concerning international languages and due to the special capabilities of FlipBuilder the smart books can be elaborated from paper books also in different languages (Fig. 2-08 to Fig. 2-09).
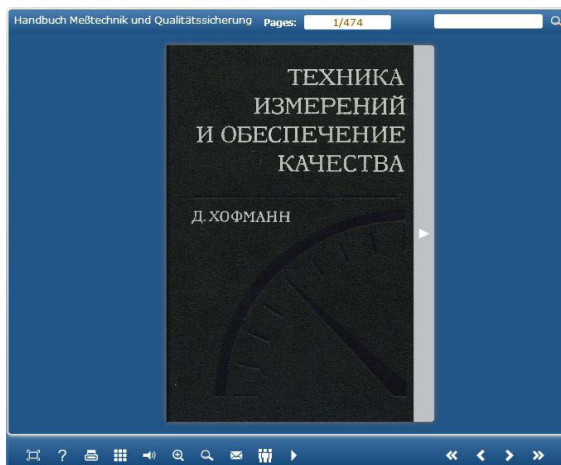
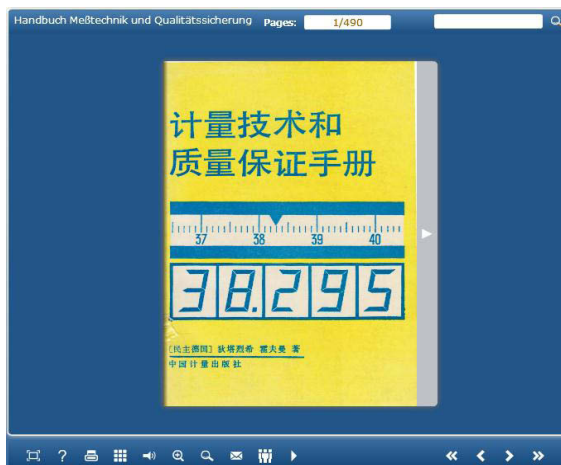Fig. 2-08 Transformation of a Russian paper book into a smart book

Fig. 2-09 Transformation of a Chinese paper book into a smart book

3. MOBILE NETWORK COLLABORATION WITH SKYPE AND SMART BOOKS

Networks are a progressive structure for the collaboration of small and medium sized enterprises and research institutions to increase the efficiency of their work. Smart books can be easily used as information sources in networks.

The mobile, digital collaboration can be organized in three steps:

Step 3.1: Organization of people from different locations for collaboration, for example via e-mail, telephone and/or cellphone (Fig. 3-01).

Step 3.2: Collaboration in networks with Voice over IP Software, for example with Skype www.skype.com (Fig. 3-02).

Step 3.3: Simultaneous reading and discussing of contents, for example with smart books (Fig. 3-03).

| Fig. 3-01 | Fig. 3-02 | Fig. 3-03 |
| Organization via e-mail or phone | Collaboration with Skype | Discussion of contents in smart books |

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4. SMART BOOKS ON MOBILE DEVICES

Another advantage of smart books is their availability on mobile devices (smartcomputers). Smart books can be used with standard laptop and tablet PCs. They can also be used with reduced functions on smartcomputers like smartphones (Fig. 4-01) and smartpads (Fig. 4-02). Smart books are optimal for mobile use with a Windows 7 Tablet (Fig. 4-03).

| Fig. 4-01 | Fig. 4-02 | Fig. 4-03 |
| Dell Streak Smartphone Android | iPad Smartpad iOS | Asus EeeSlate Tablet Windows 7 |

5. SUMMARY AND CONCLUSION

Aim of the paper was the representation of innovative capabilities for the knowledge transfer in networks of small and medium sized enterprises and research institutions. It was shown that smart books are modern green game changers in scientific work and mobile collaboration. Smart books are convenient, reliable and affordable. Therefore they have great chances for quick acceptance.

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