

# Digital Educational Publishing and the Open Web Platform

W3C and the Publishing Industry

Paris, September 20, 2013

Ivan Herman, W3C

These slides are available on-line:

<http://www.w3.org/2013/Talks/0920-Paris-IH/Talk.pdf>



# A bit of history...



Sir Tim Berners-Lee  
Web Inventor and  
W3C Director

## 1989

Tim Berners-Lee invents the World Wide Web.

## 1994

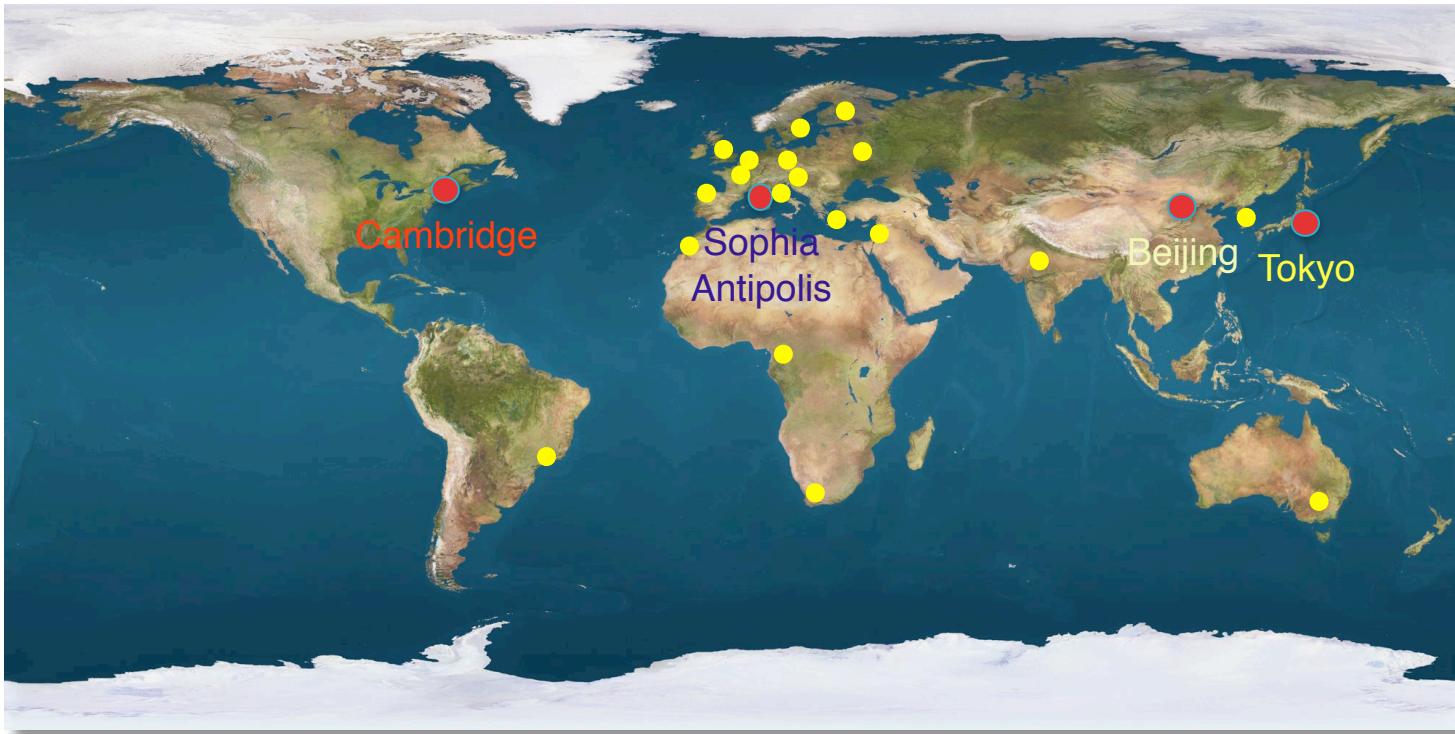
The W3C is founded by Tim Berners-Lee at the MIT, in collaboration with INRIA

## 2013

The W3C is a joint endeavor of MIT, ERCIM, Keio University, and Beihang University

**W3C's mission is to ensure the long-term growth of the Web with the vision of ONE WEB FOR ALL**

# W3C is an international community around 4 “hosts”



- ▶ W3C is a non-profit membership organization with more than 370 members from all industries

# W3C at a glance

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W3C sets the standards that make the Web work:

- ▶ Basis of today's Web (the “Open Web Platform”):
  - HTML, CSS, SVG, Web Architecture, XML, ...
- ▶ Advancing the Web of tomorrow
  - e.g., Social Web, Web of Data, Mobile Web, Digital Publishing
- ▶ Key efforts focusing on universality:
  - Web Accessibility Initiative, Internationalization, Mobile Web, Security/Privacy

# What W3C does

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- ▶ *Develops specifications* (i.e., Web standards)
  - e.g., HTML, SVG, ...
- ▶ Develops guidelines, best practices
  - e.g., Web Content Accessibility Guidelines, Data Publishing Best Practices, ...
- ▶ Provides diverse forums for discussions, joint pre-standard specifications, participates at outreach events
  - e.g., Open Annotation Vocabulary
- ▶ Offers a validation suite and service, various courses, documentations

# What W3C does not do

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- ▶ Major software developments, standard implementation (except for proof of concepts)
- ▶ Conduct independent research (it does what the members want it to do...)
- ▶ Act as a legislative body (e.g., to *require* certain implementations to happen)

# Digital Educational Publishing and the Open Web Platform



# Trends of past decade have transformed reading and publishing

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- ▶ Internet everywhere
- ▶ Multi-function devices
- ▶ Mobility
- ▶ Much higher quality display, typesetting, speed
- ▶ Social
- ▶ Customization
- ▶ Cloud
- ▶ Broadband



# Many industries feeling the impact

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- ▶ Mobile
  - ▶ Television
  - ▶ Automotive
  - ▶ Health Care
  - ▶ Gaming
- 
- ▶ Digital signage
  - ▶ Government



# But publishing in particular

20% of all US Newspapers are digital

Google Ad Revenue Now More Than U.S.  
Print Publications Combined

Pew: Survey Finds Rising Reliance on Libraries  
as a Gateway to the Web

“After 79 years in print, Newsweek goes digital  
only”

E-Books See Triple Digit Growth  
As Paper Book Sales Dive

# That is because Publishing = Web

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- ▶ Web is “intimately” tied to the intrinsic purpose of publishing
  - the Web’s impact on automotive, government, health care, etc., is secondary to their intrinsic purposes.



# That is because Publishing = Web

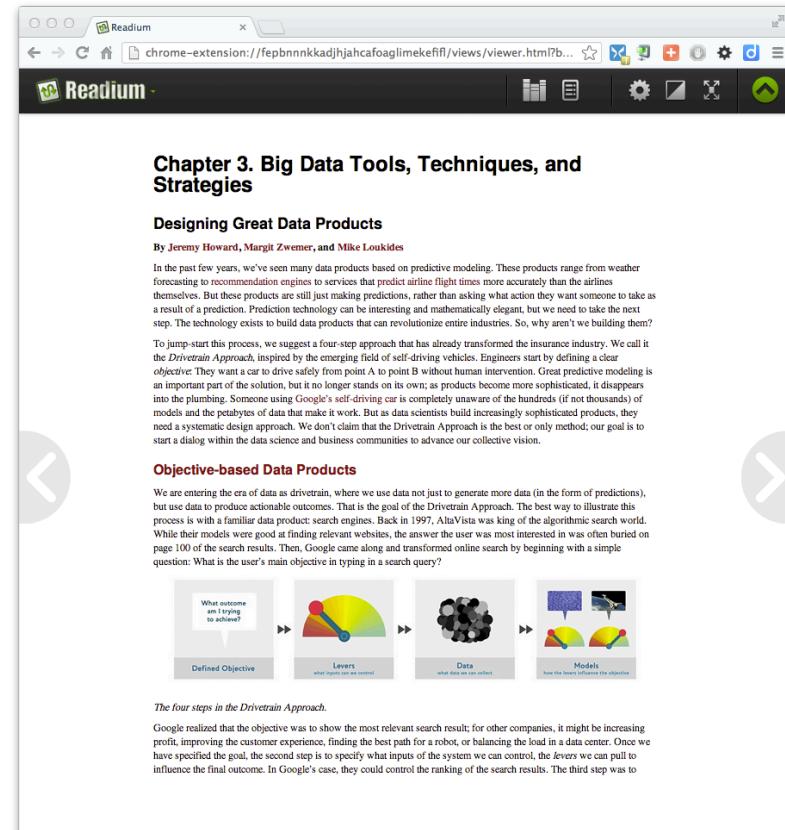
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- ▶ Publishing industry has leveraged the Web for 20 years
  - parts of industry have been early adopters
- ▶ Tomorrow they will be fully part of the Web
  - ebooks, magazines, journals picking up the technology *today*



# What “Ebooks picking up the technology *today*” means

- ▶ An EPUB file is, technically, a frozen and packaged Web site
  - XHTML 1.1 for EPUB 2
  - XHTML 5 for EPUB 3
- ▶ *An EPUB reader is “just” a very specialized browser!*



# The Web has become an Open Web Platform

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- Web pages are more attractive, interactive and intelligent
- HTML5, SVG, or CSS provides cross-browser and cross-device interoperability
- Video, audio, etc., are a first-class citizens
- Data integration has been simplified
- It has tools for social networking (privacy, security, identity)
- Is the most interoperable platform in the industry

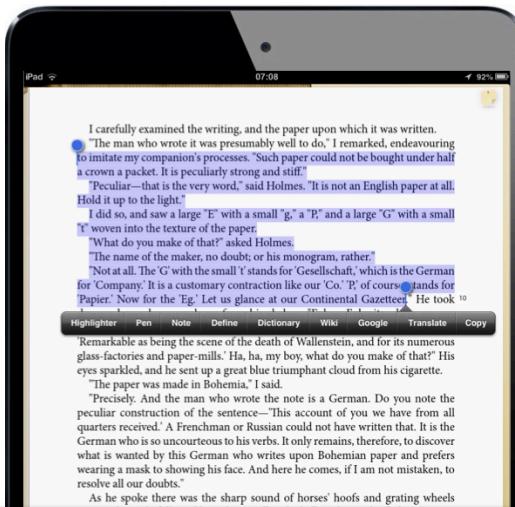
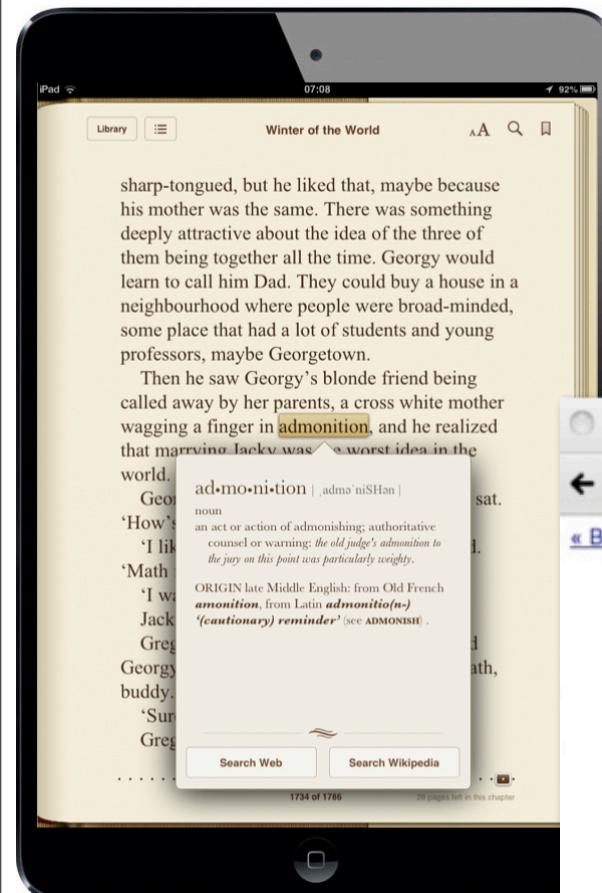


# The Open Web Platform has influenced publishing

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- ▶ EPUB 3 has picked up on many of the OWP features
  - uses HTML5, i.e., includes audio and video as first class objects
  - SVG comes to the fore
  - CSS 3 instead of older versions of CSS
  - (limited) scripting
  - MathML

# Third-party service integration

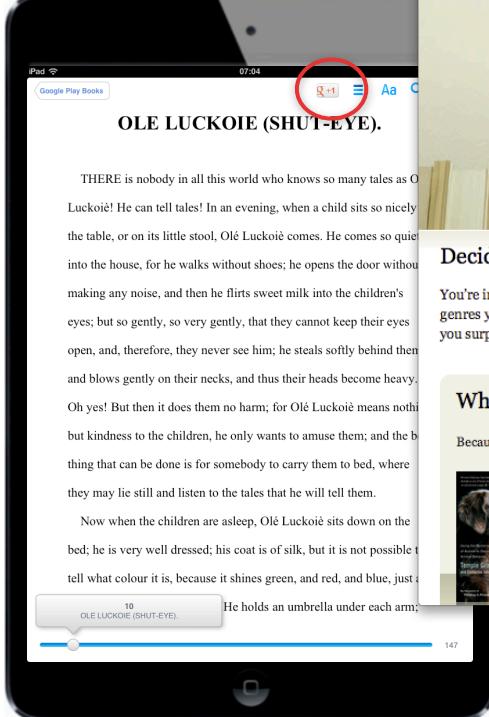


applied Tickler to further investigation. She concluded by showing me. I often served her as a connubial missile at Joe, who, glad to get hold of me on any terms, passed me on into the room. They and quietly fenced me there with his great legs.

"Where have you been, you scoundrel?" said Mrs. Joe, stamping her foot. "Tell me directly what you've been doing to wear me away with

[Define](#)  
[Translate](#)  
[Search Book](#)  
[Search Google](#)  
[Search Wikipedia](#)

# Social becoming part of reading



**OLE LUCKOIE (SHUT-EYE).**

THERE is nobody in all this world who knows so many tales as Olé Luckoie! He can tell tales! In an evening, when a child sits so nicely at the table, or on its little stool, Olé Luckoie comes. He comes so quietly into the house, for he walks without shoes; he opens the door without making any noise, and then he flits sweet milk into the children's eyes; but so gently, so very gently, that they cannot keep their eyes open, and, therefore, they never see him; he steals softly behind them and blows gently on their necks, and thus their heads become heavy. Oh yes! But then it does them no harm; for Olé Luckoie means nothing but kindness to the children, he only wants to amuse them; and the best thing that can be done is for somebody to carry them to bed, where they may lie still and listen to the tales that he will tell them.

Now when the children are asleep, Olé Luckoie sits down on the bed; he is very well dressed; his coat is of silk, but it is not possible to tell what colour it is, because it shines green, and red, and blue, just like a rainbow.

10 OLE LUCKOIE (SHUT-EYE)

He holds an umbrella under each arm;

**Deciding what to read next?**

You're in the right place. Tell us what titles or genres you've enjoyed in the past, and we'll give you surprisingly insightful recommendations.

**What will you discover?**

Because Shomeret liked...

She discovered:

**Reading Life**

**FRIENDS**

**Friends Are Reading**

**Friends On Facebook (4)**

- Mark Birbeck
- Murray Maloney
- Phil McHale
- Uldis Bojars

**Love lists**

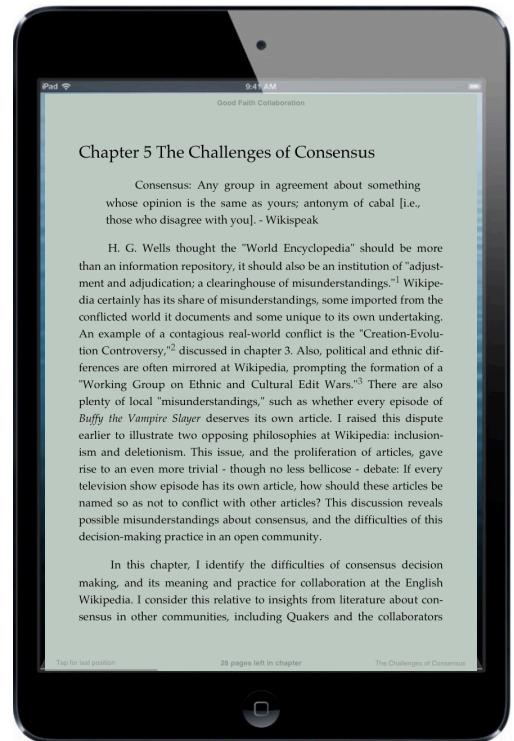
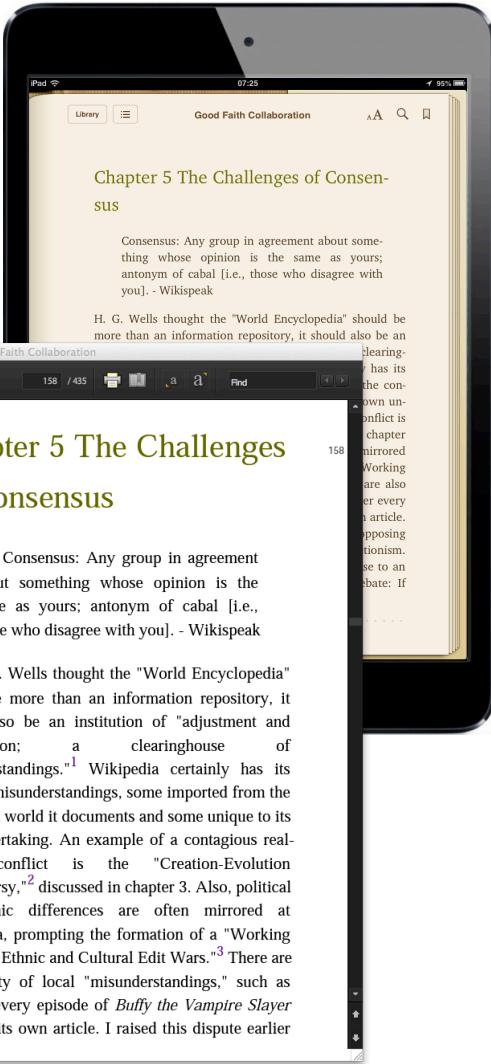
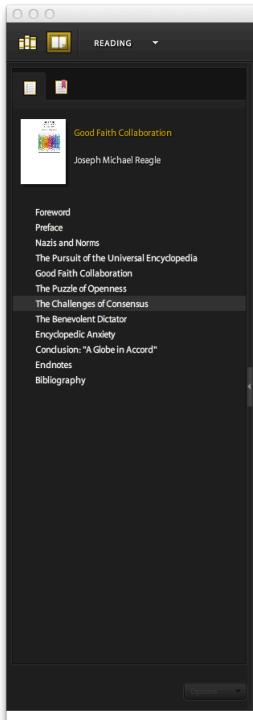
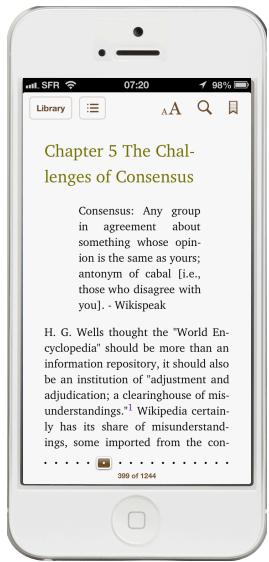
**Best Books of the Century**  
4,920 books | 33,100 reviews

**Best for Book Lovers**  
2,821 books | 7,755 reviews

**Best Crime & Mystery Books**  
1,670 books | 10,000 reviews

**Friends**   **Activity**   **Stats**   **Awards**

# And run on any device



A photograph of a traditional Japanese garden. In the foreground, there is a gravel path with several large, light-colored rocks arranged in a circle. Behind the gravel, there is a low stone wall made of rough stones. Beyond the wall, there is a body of water, possibly a pond or a large koi pond, with a dark, weathered wooden structure, likely a pavilion or a bridge, reflected in the water. A weeping willow tree hangs its branches over the left side of the wall.

Is everything perfect and fine?

i.e., are publishers and the Web  
coexisting perfectly?

No... ☹

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- ▶ Most of the publishing industry players have just been “users” of Web technologies
- ▶ Technology evolution has been driven by “traditional” Web browsing

*The specific needs and priorities of the publishing may not be reflected in the evolution of the Web!*

# Digital educational publishing has a special position

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- ▶ From a technical point of view educational publishing is at the bleeding edge of OWP usage
  - requirements are much more stringent than for, say, a novel!
- ▶ The specificities of this area should play an important role in bringing the communities together

# Some quotes from a recent survey

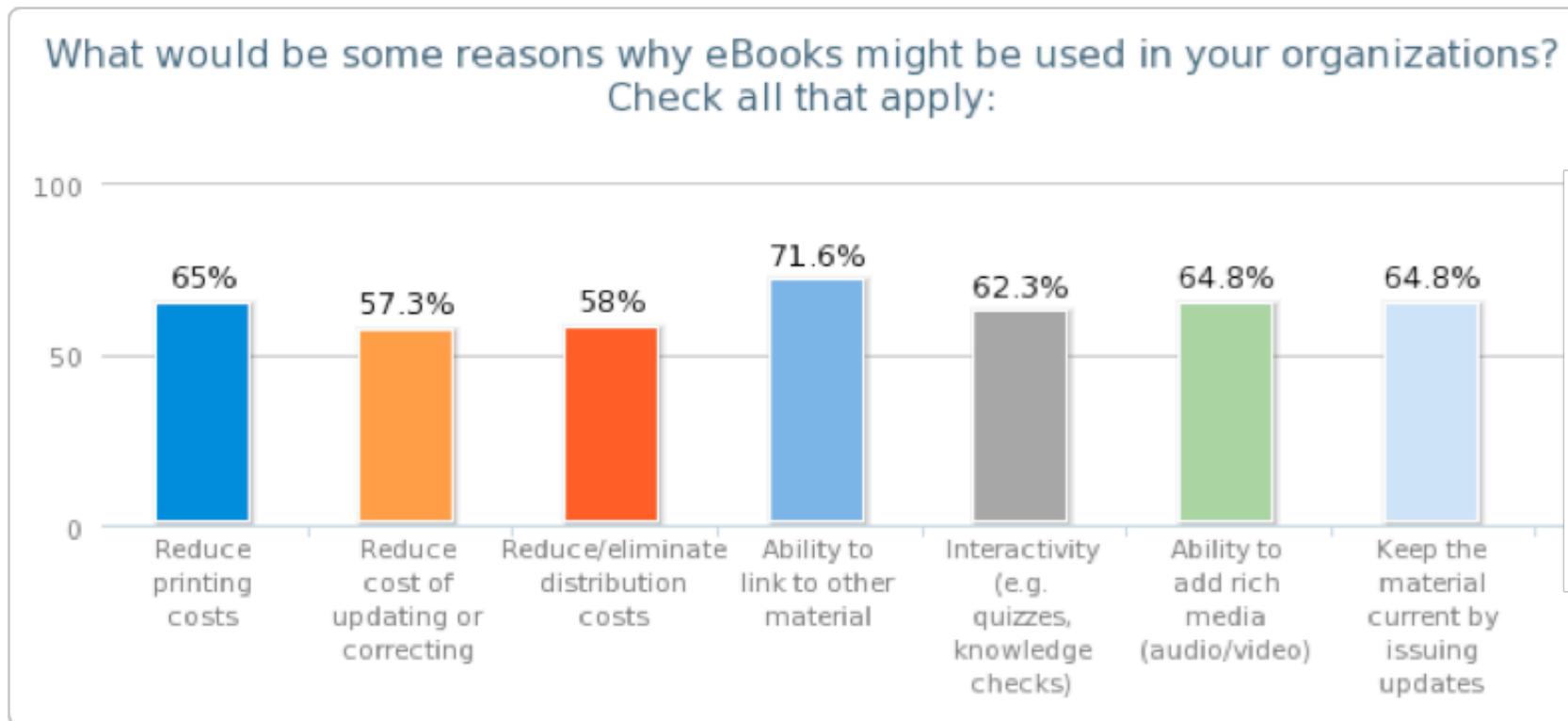
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An e-book should be more than a simple digital version of a print book. It should also make use of opportunities such as adding sound and video and also linking it to internet.

The real problem turned out to be the capabilities of browsing, annotating and referencing. Despite electronic aids, dog ears and sticky notes [on printed versions] are superior in re-finding a pertinent paragraph. Note taking could be done on the device but a piece of paper did better.

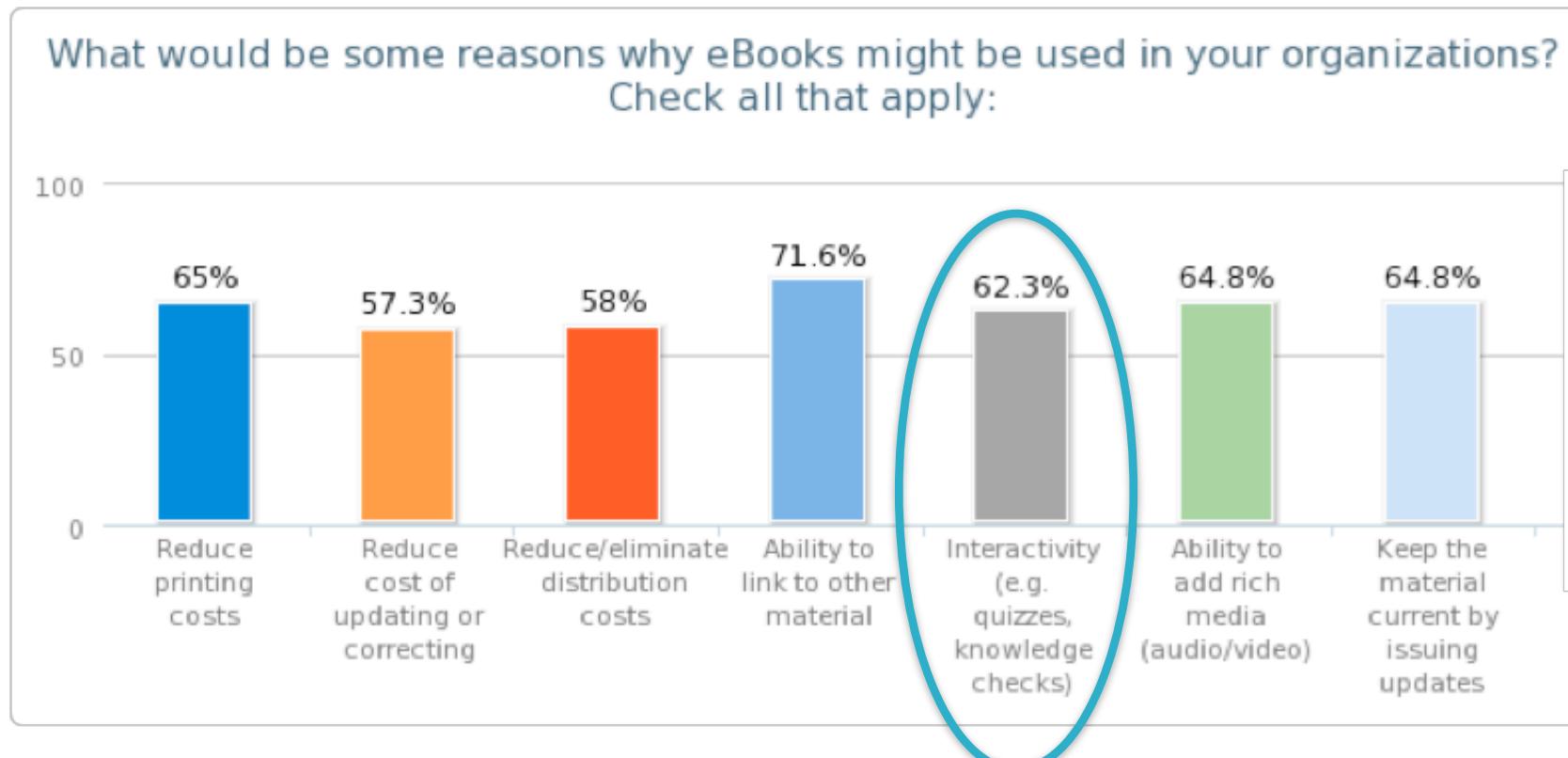
[...] browsing and annotating turned out to be essential. [...] Students rated the integration of social media in the study material of great value in order to exchange findings and problems[...].

# Another study...



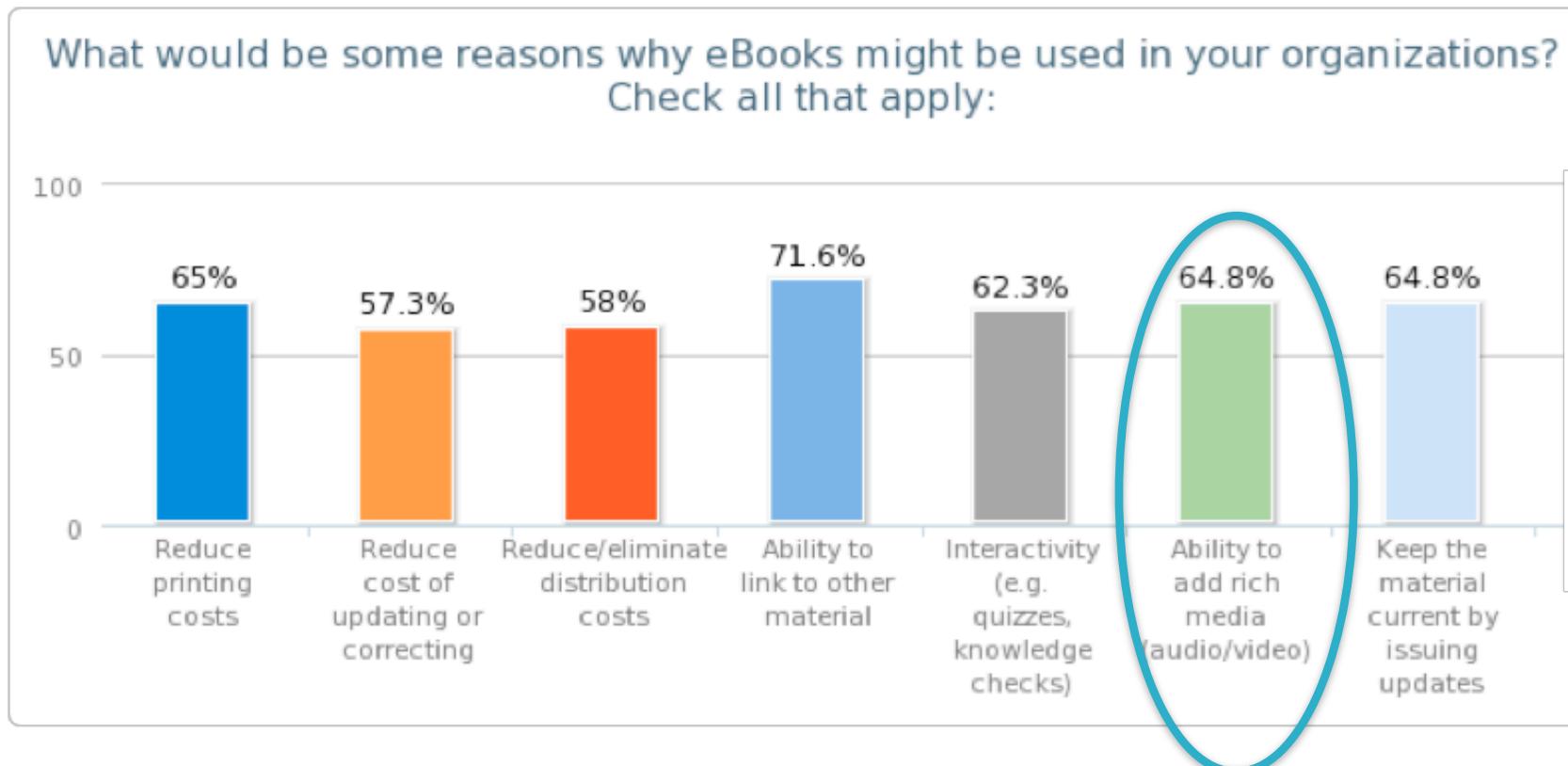
Masie “eBook for Learning?” Survey, July 2013

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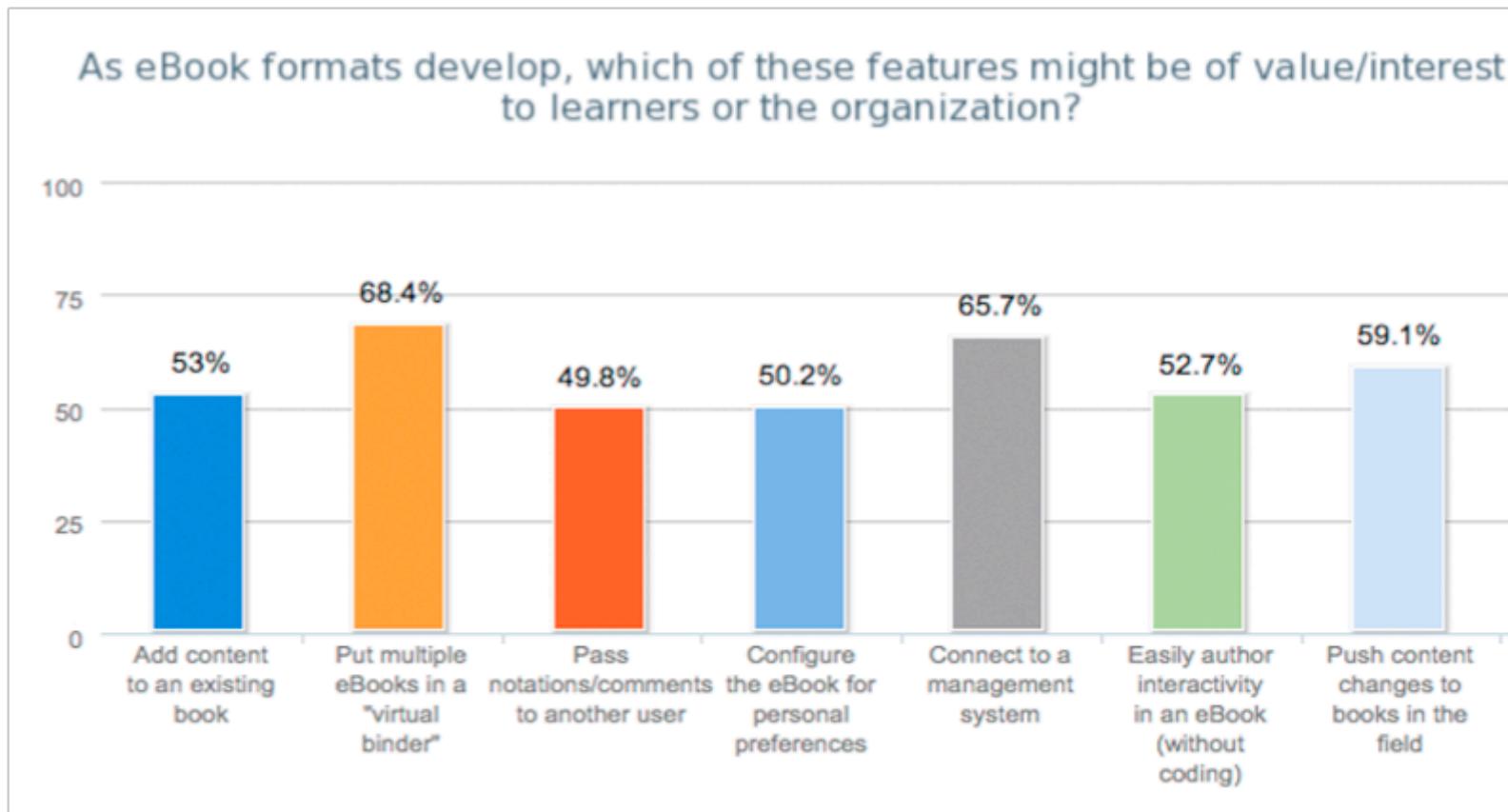
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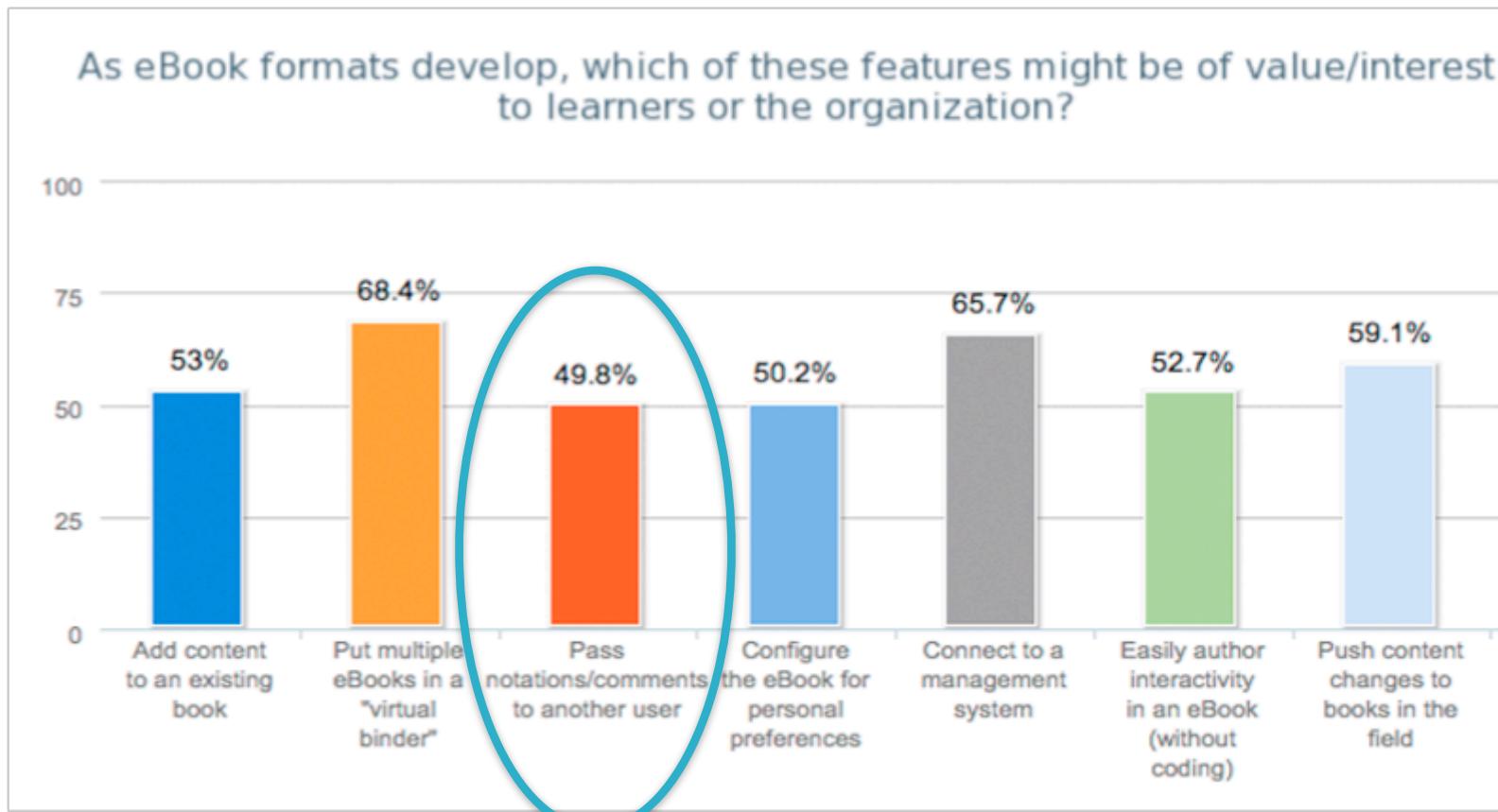
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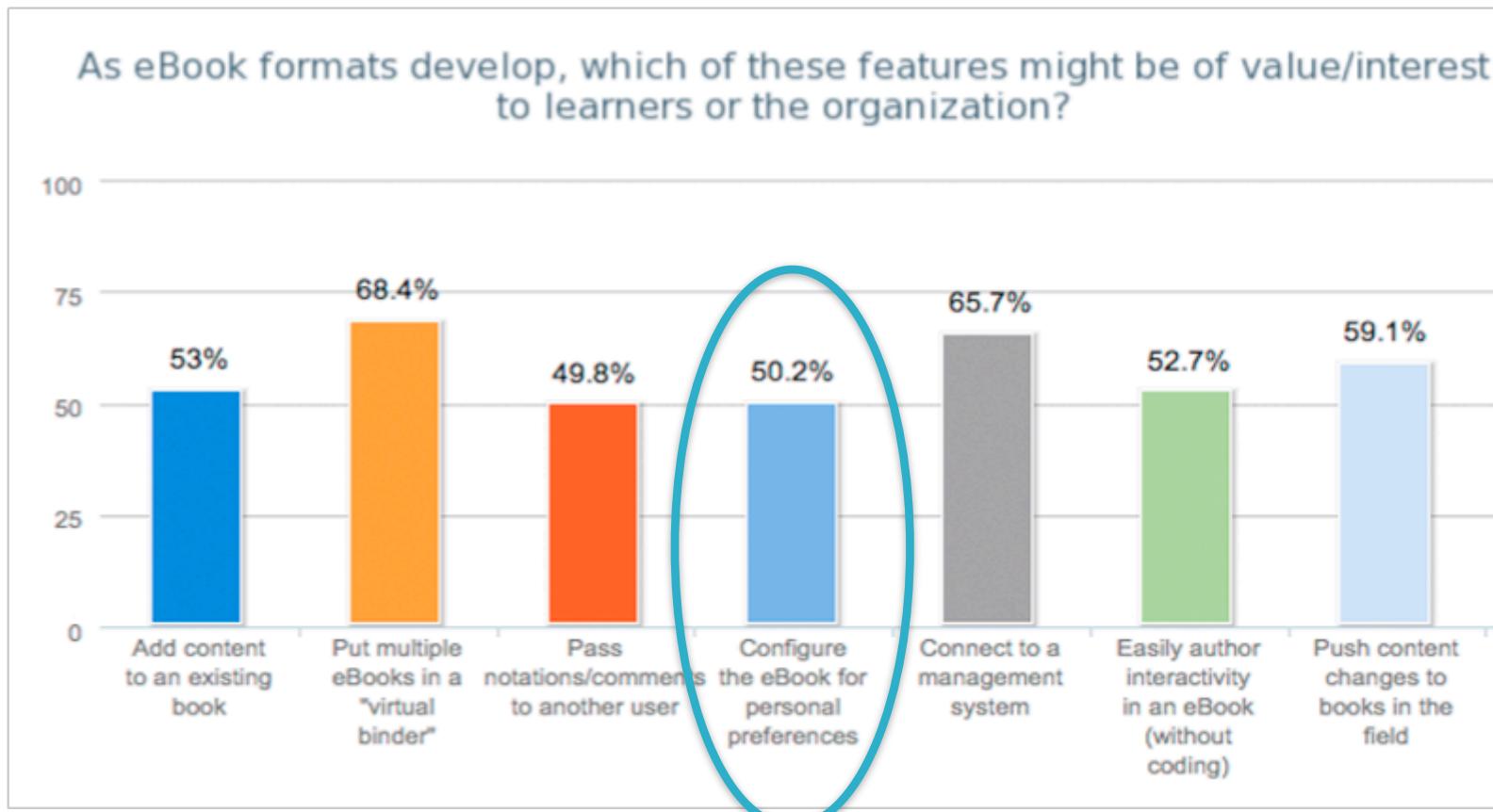
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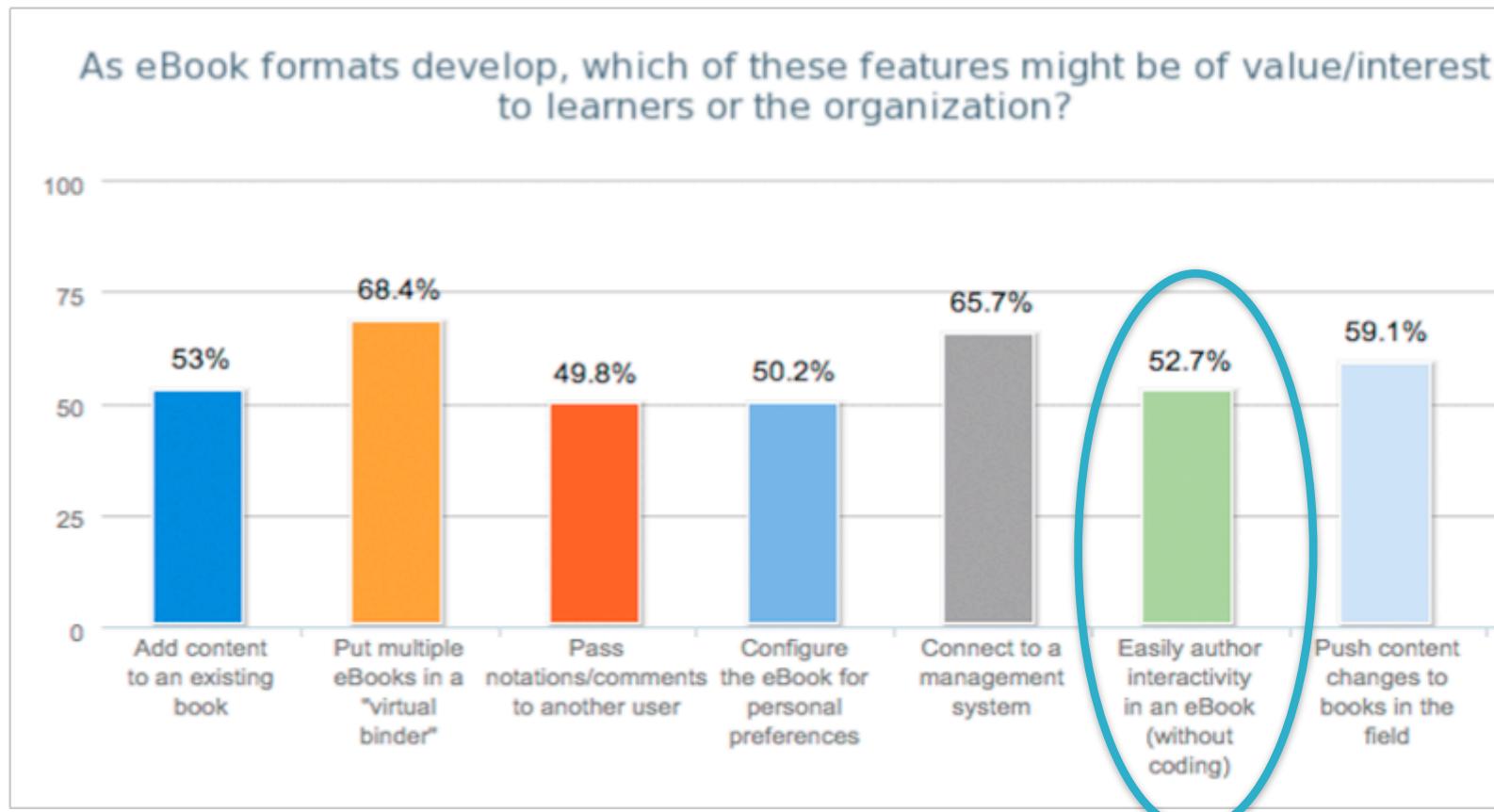
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# Example: high-school mathematics

## GCSE MATHEMATICS

With inbuilt Search Facility

### REVISION TEST

Age 15 to 16



GCSE Mathematics Revision Test, is based on our GCSE Mathematics:

- Book 1 of 3 books: Number, Weights and Measures
- Book 2 of 3 books: Algebra
- Book 3 of 3 books: Shape, Space, Statistics and Probability

Included in this book are:

- Polygons, Tessellation, Circle, Locus, Measure, Net, Trapezium Rule, Mid-ordinate Rule, Simpson's Rule, Perimeter, Area, Volume, Bearing, Symmetry, Vector, Mean, Median, Mode, Range, Frequency, Tally Chart, Pie Chart, Cumulative Frequency, Ogive, Probability, Probability Tree and Laws of Probability.

[www.mathslearning.com](http://www.mathslearning.com)

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She is an affiliate member of The Chartered Institute of Educational Assessors and a member of The Society of Authors.

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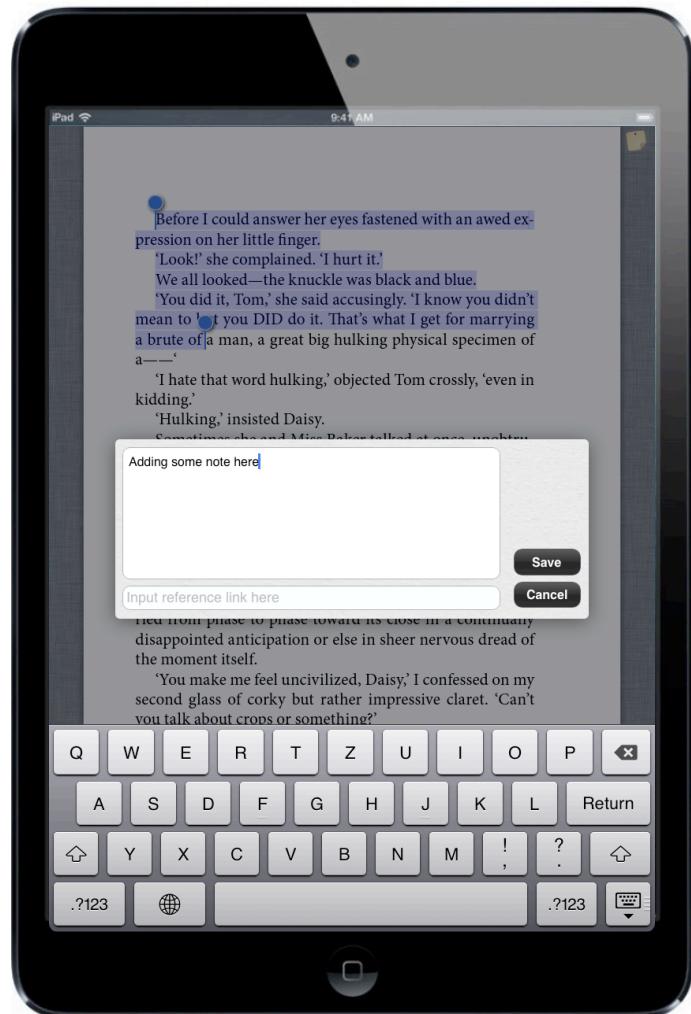
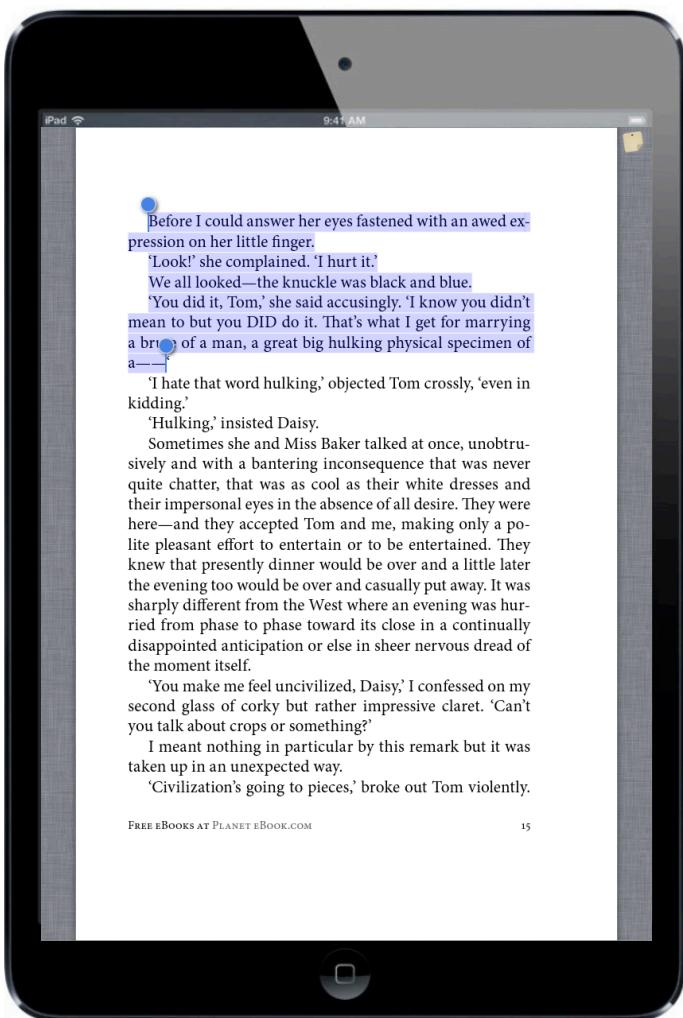
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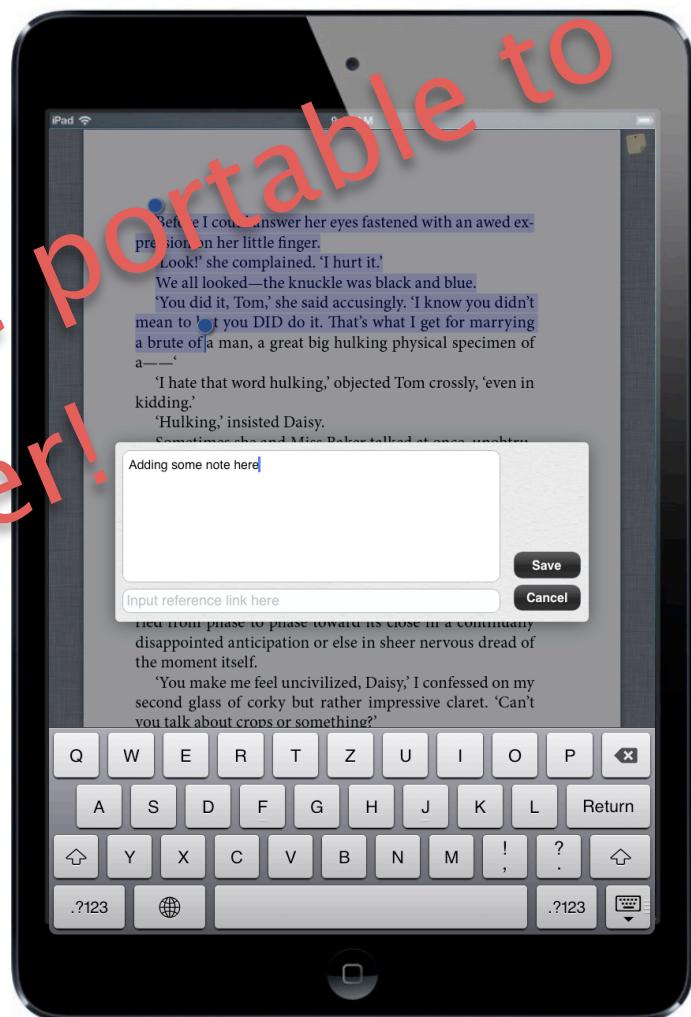
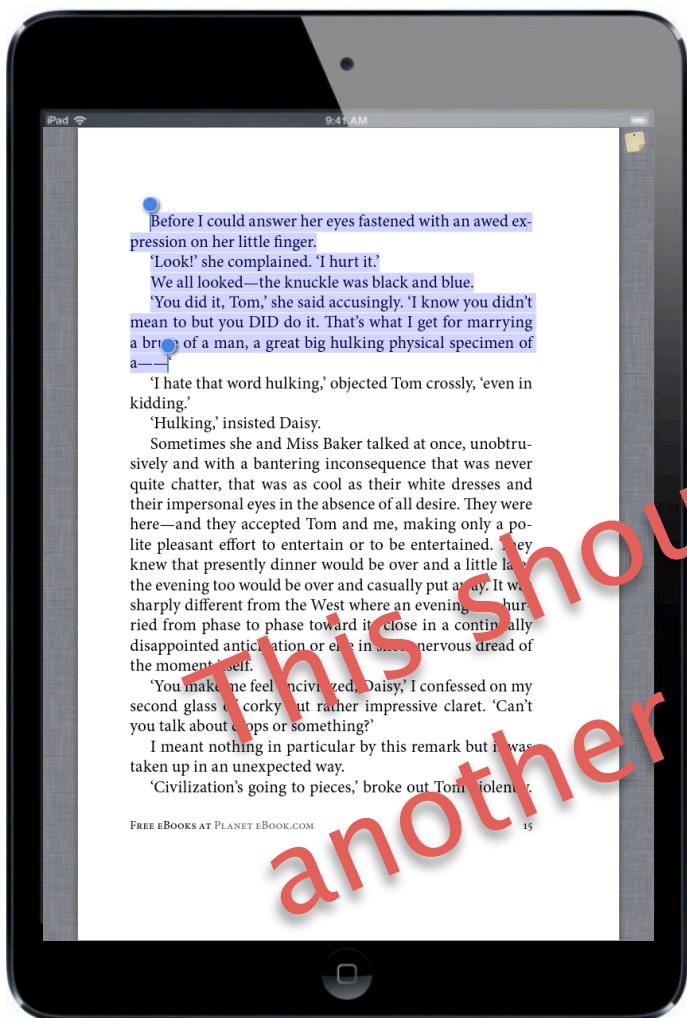
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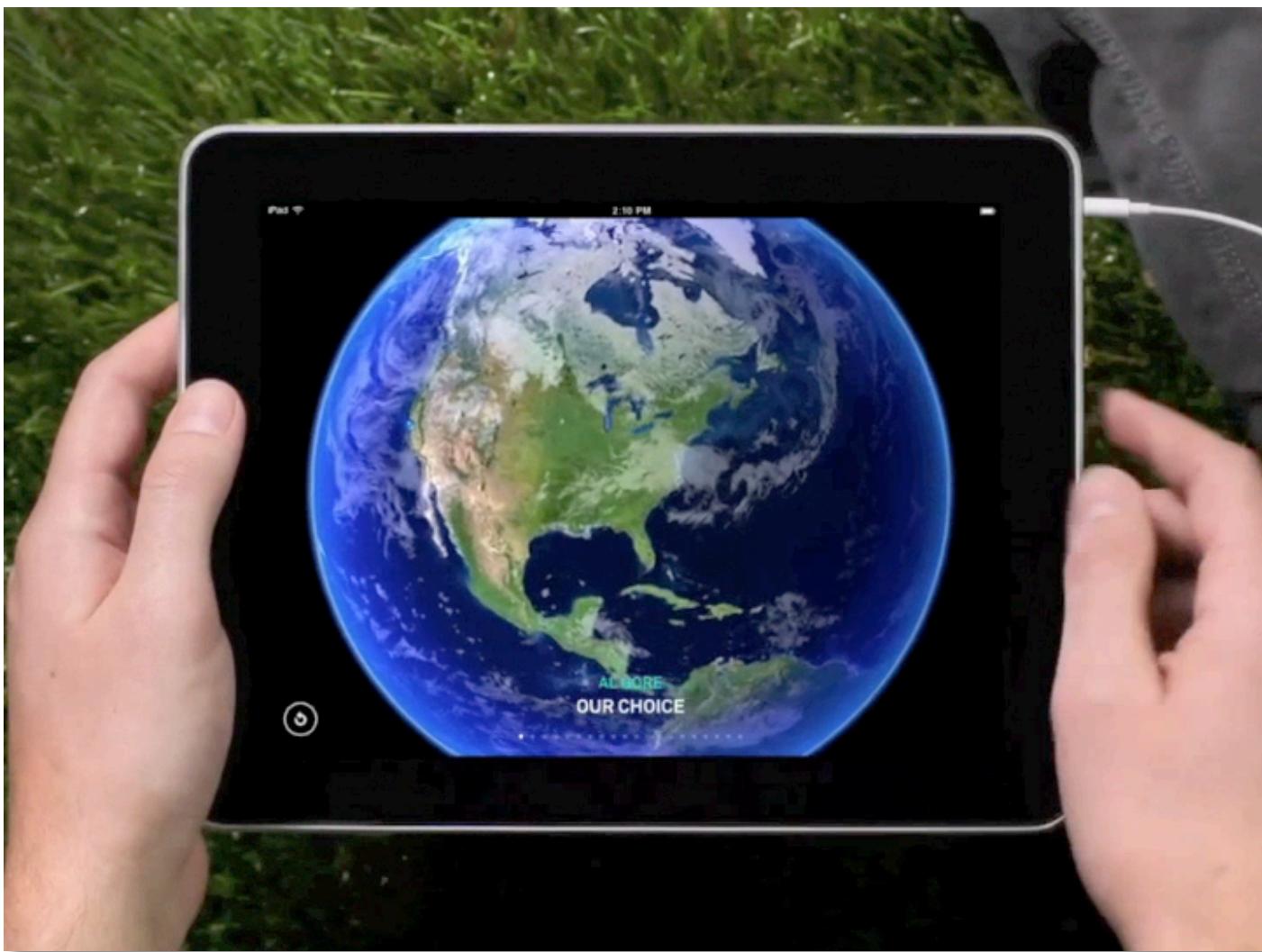
# Example: user annotation



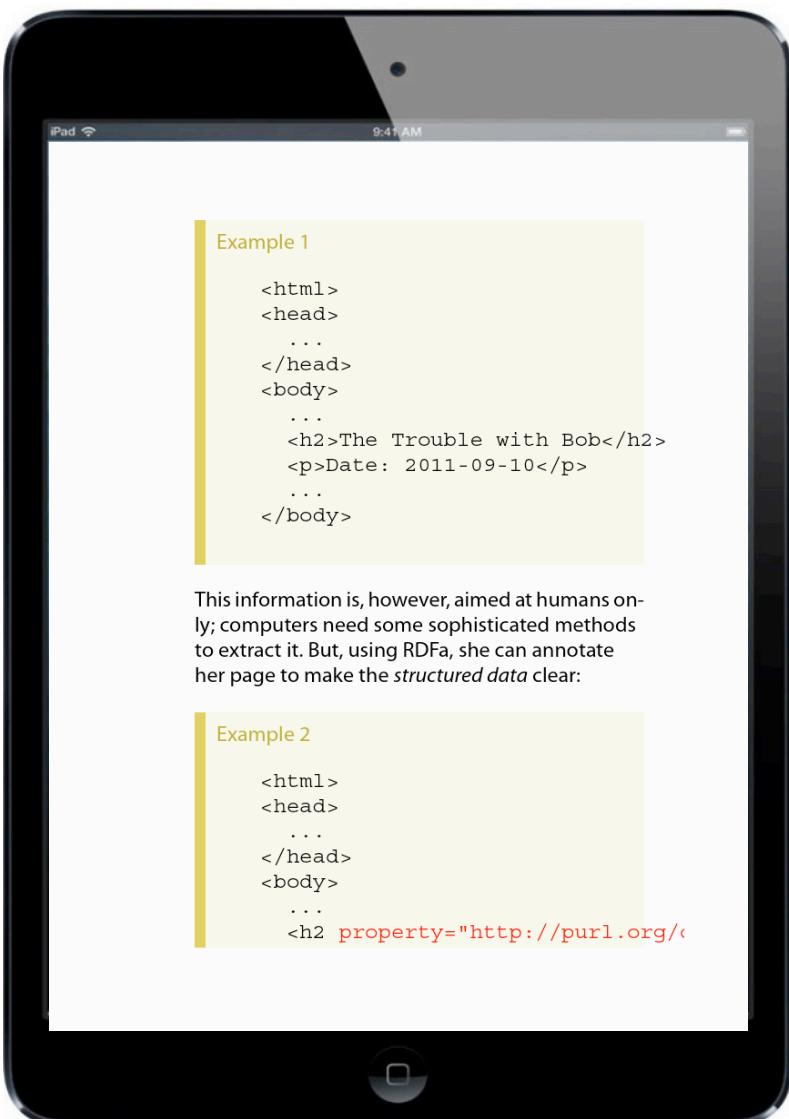
# Example: user annotation



# Example: “Our Choice”



# Example: content portability



## Example 2

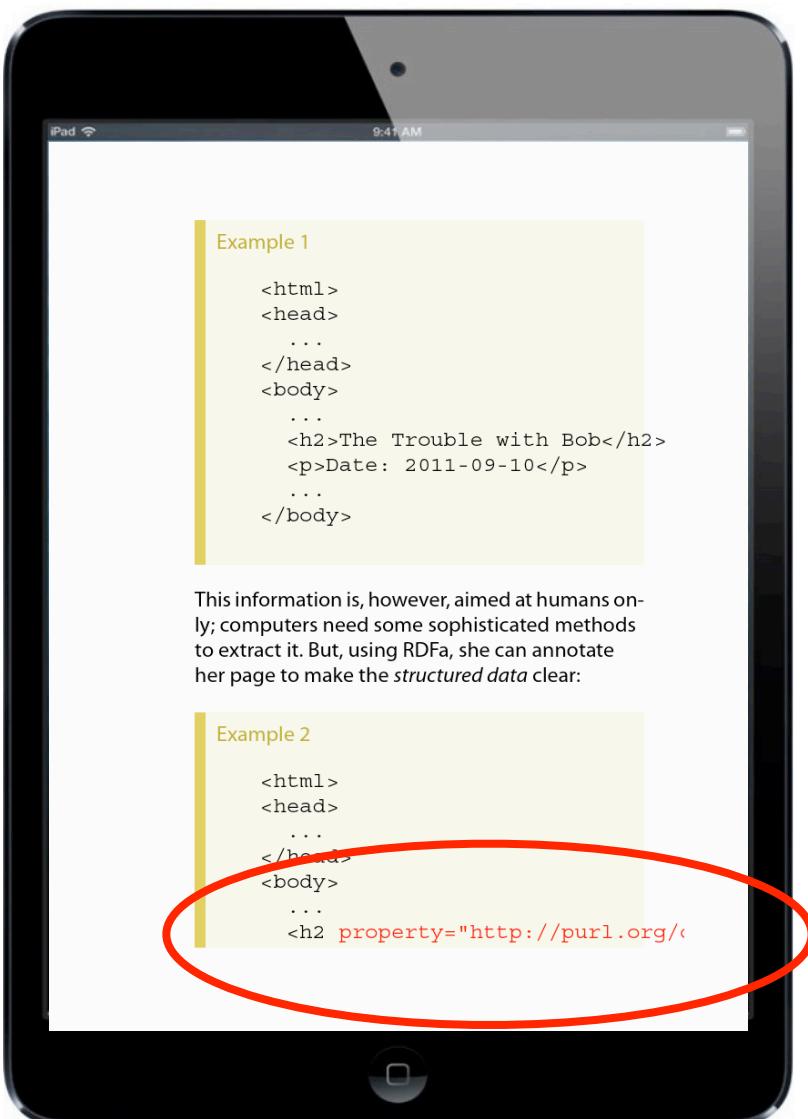
```
<html>
<head>
...
</head>
<body>
...
<h2 property="http://purl.org/dc/terms/title">The
Trouble with Bob</h2>
<p>Date: <span property-
ty="http://purl.org/dc/terms/created">2011-09-
10</span></p>
...
```



## EXAMPLE 2

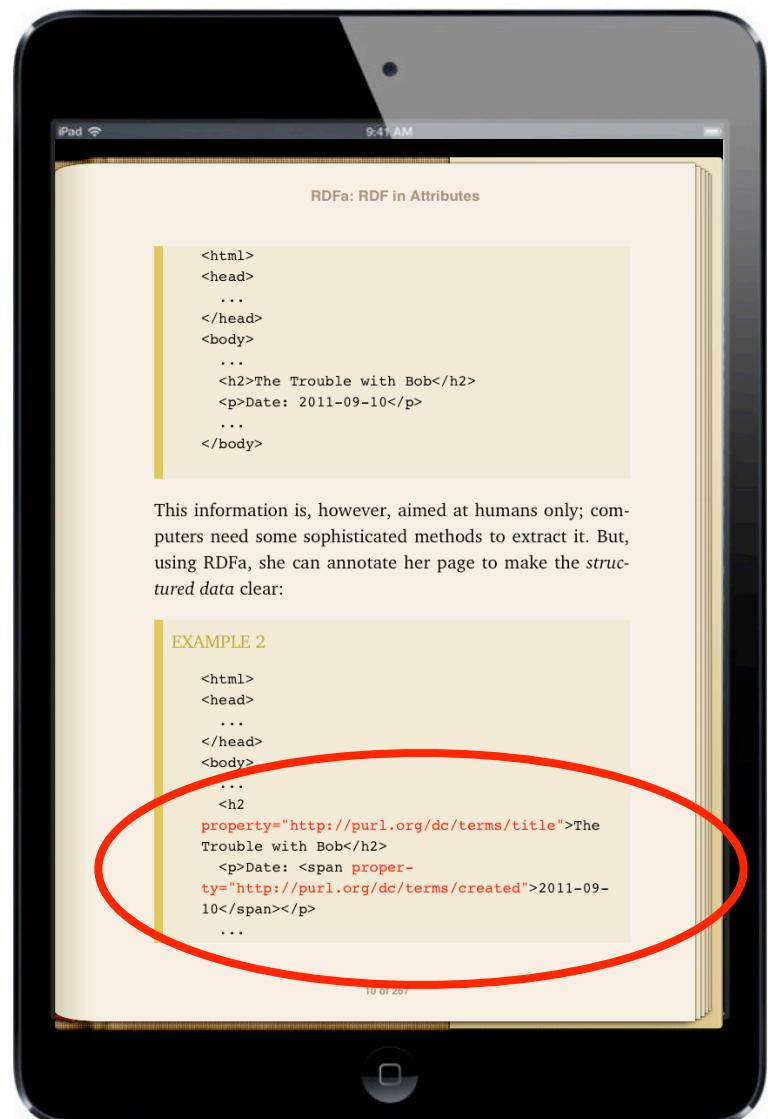
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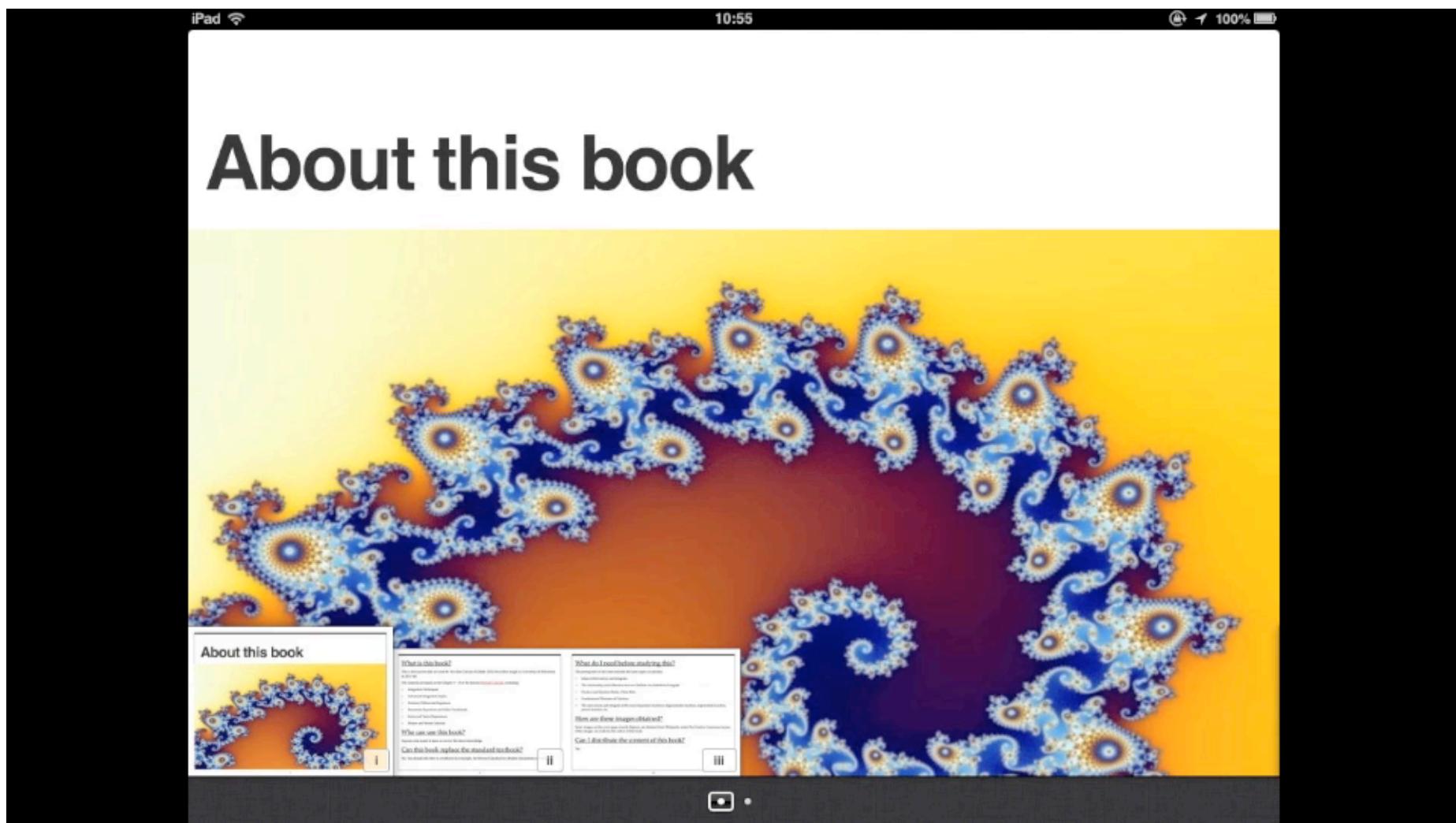


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10</span></p>
...
```



# Example: Calculus



# Some interesting OWP challenges in the clips

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- ▶ Digital educational books need
  - advanced and interactive graphics (SVG or Canvas object)
  - annotation and bookmarking in a portable manner
  - MathML
  - font management
  - fixed layout
  - audio, video
  - local (Web) storage
  - ...

# Some interesting OWP challenges in the clips

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- ▶ Digital educational books need
  - advanced and interactive graphics (SVG or Canvas object)
  - annotation and bookmarking in a portable manner
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  - ...

Most of these are being worked on at W3C, but still need extra care and clear requirements!

# To repeat...

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*The technology evolution of the Web has been driven by “traditional” Web browsing*

*The specific needs and priorities of the publishing industry may not be reflected in the evolution of the Web!*



The way forward: how can  
W3C help?

# Cooperation

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- ▶ Develop cooperation with relevant organizations:  
IDPF, BISG, IPTC, JEPA, EDItEUR, ...
- ▶ Try to be on one another's events, build contacts
- ▶ Create bridges between the developers' communities  
and publishers
- ▶ *Ensure that the publishers' requirements are  
channeled to the relevant W3C groups*

# Example: presence in the respective communities' events

- ▶ W3C keynote at TOC
- ▶ IDPF presentation at W3C's AC meeting
- ▶ Joint presence at the CONTEC event in Frankfurt

The screenshot shows a computer browser displaying the TOC (Tools of Change for Publishing) Conference website. The main header features the TOC logo and the tagline "CONNECT/EXPLORE/CREATE". Below the header, a banner image shows several people smiling. The main content area displays a speaker profile for "Jeff Jaffe". His title is "CEO, World Wide Web Consortium (W3C)". Below his name, there are links to his "Website" and "Attendee Directory". To the right of his bio is a small thumbnail photo of him. Below the bio, there is a brief description of his role as CEO of the W3C. Further down, under the heading "Sessions", there is information about a specific session he is speaking at: "Great Expectations for Digital Publishing with HTML5 and the Open Web Platform". At the bottom of the page, there are links to O'Reilly's footer information, including their address, phone number, and various social media links.

# Example: increasing cooperation with IDPF

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The EPUB format developed by IDPF is a major user of current web standards (HTML5, CSS2.1 /CSS3 modules, SVG...)

...BUT...

The relevant W3C groups have only weak contacts with the IDPF community,...

⇒ **The objective of the IDPF-W3C relationship is to ensure that the EPUB requirements become central to the OWP developments.**

# W3C's Workshop Series

- ▶ “eBooks: Great Expectations”, NYC, February 2013 (co-organized with BISG and IDPF)
- ▶ “eBooks & I18N”, Tokyo, June 2013
- ▶ “Publishing and the OWP”, Paris, September 2013
- ▶ Regional events in Germany, India, ...



# Example for results: public list of discussions, presentations



W3 eBooks: Great Expectation... X

www.w3.org/2012/08/electronic-books/rapportebok.html

other topics. The full list is given in the summary or the wrap up session.

## Main workshop discussions

- Workshop agenda, links to slides and minutes

### First day, February 11th afternoon

The first day included: an Overview speech; a first [Keynote 1](#); and two sessions -- the first on [Presentation](#) and the second on [OWP/ePub](#). [\[Minutes from Day 1\]](#)

Following a welcome by session moderator Karen Myers (W3C) and scene setting talk by **Thierry Michel (W3C)** [[Slides](#)] the Workshop Co-Chair, **Jeff Jaffe (W3C)** [[Slides](#)] presented an overview of the World Wide Web Consortium and the Open Web Platform as a platform for innovation, consolidation, and cost efficiencies. Jeff also presented the expectations for this workshop and the workshop success criteria.

**Bill Mc Coy (IDPF)** [[Slides](#)] gave a keynote on the need to increase collaboration between W3C and the IDPF, urging that W3C collaborate on a shared vision and roadmap, building on EPUB 3 as the standard packaged format, for the eBook (portable document) instantiation of the Open Web Platform. Bill also talked about the need to extend current W3C work to address the requirements of the publishing industry, such as high-design content and rich media, accessibility for people with disabilities, internationalization, and semantic structure. He also emphasized the difficulty met by developers when adopting the large number of individual W3C Recommendations that constitute the full Open Web Platform.

#### Session 1

The first Session focused on "Presentation" (CSS, Fonts, etc.). It included four talks:

**Håkon Lee (Opera Software)** gave a demo style presentation showing an implementation of extended layout capabilities in a news magazine format. It demonstrated pagination and multi-column formatting, gesture-based navigation between pages for book-like presentations, all done adding a few lines of CSS to their code. Håkon said that the technical solution he proposed should cover most digital publishing needs.

The second talk by **Vladimir Levantovsky (Monotype)** [[Slides](#)] emphasized that digital publications should achieve the same level of typographic quality as print publications. Proposals for topics to be worked on included: high-quality typesetting and font definition and management. To achieve these goals, the standards developed by W3C and IDPF should provide adequate, unified support for all critical technology solutions enabling high-quality typography for eBooks and on the Web.

The third talk by **Jaejeung Kim (Kaist)** [[Slides](#)] took the position that electronic books should resemble the paper book in both design and functionality. Do so he talked about enrichment of eBook user interfaces with a Skeuomorphic approach. He demonstrated a prototype with features such as thumbing-through the book to get an overview concept, or temporal bookmarking by holding a page with one's finger and jumping back and forth between pages, letting go of the bookmarked finger when done.

Finally, **Alan Stearns (Adobe)** [[Slides](#)] compared and contrasted the Web and eBook ecosystems. He proposed the adoption of a single solution when interests converge, and where EPUB leads, to improve the Web. He advocated for the prioritization of CSS specs like CSS3-Text and CSS3-Speech. He also talked about Paginated Views or Adaptive Layout as new Web features adapted from EPUB draft (CSS Regions, CSS Exclusions and Shapes CSS Page Templates). Alan also addressed the necessity for testing and the need for eBook readers to contribute their own test cases to, e.g., the [Caniuse](#) site.

These four presentations were followed by a discussion and feedback on presentation issues with the audience, moderated by Alan Stearns (Adobe) [[Minutes](#)]

#### Session 2

The second session focused on the Open Web Platform and the eBook format and included five presentations:

# Example for results: prioritized list of I18N requirements for CSS



table and caveats related to the table ranking.

Short name	Description	Experts	Ave	Non-experts	Ave	Weighted score
<b>Vertical text</b>	Vertical text support in CSS needs to be finalised.	4 4 4 4 3 4 4 4	3.9	4 4 4 4 3 4 4	3 3.7	<b>11.5</b>
<b>Ruby</b>	Ruby markup and ruby styling (especially alignment) needs to be finalized in HTML5 and CSS.	4 4 4 4 4 3 4 4	3.9	3 4 4 3 3 3 3	4 3.4	<b>11.2</b>
<b>Hyphenation/line-breaking rules</b>	Hyphenation and line-breaking rules for other languages than European ones need to be understood.	3 4 3 3 3 1 4 4	3.1	4 2 4 3 3	2 3.0	<b>9.3</b>
<b>More requirements data</b>	We need to replicate work on the Japanese Layout Requirements initiative for other languages and scripts, and also address special format issues (such as Arabic mathematical layout).	4 3 3 4 2 2 2 3	2.9	3 3 3 3 3 3 3 3	3.0	<b>8.8</b>
<b>Extra long ruby (nakikawakare)</b>	A solution is needed for support of 'extra long ruby' (nakikawakare) when it runs across lines and pages.	2 1 2 3 4 4 4 4	3.0	2 3 2 3 3 4	4 2.8	<b>8.8</b>
<b>Tate chu yoko</b>	A mechanism is need to support automatic creation of tate chu yoko (horizontal numbers and acronyms in vertical text).	3 3 1 1 4 2 4	2.6	3 4 3 3 4	3 3.3	<b>8.5</b>
<b>Online samples</b>	A way is needed to indicate, in a locale-specific way, which parts of a book should be extracted for samples in online book stores, eg. the illustrations and other information at the start of light novels in Japan.	3 2 2 1 4 3 4 4	2.9	2 4 3 3 3 3 1	1 2.7	<b>8.4</b>
<b>Positioning items on page</b>	CSS needs to provide more features for positioning floats in pages, especially vertical centring of items on a page.	3 3 4 3 1 3 3	2.9	2 1 3 3 3 3	3 2.4	<b>8.1</b>
<b>Autospace</b>	The autospace feature of CSS that puts visual spacing around embedded Latin text or numbers in lines of ideographic/kana text needs to be supported.	4 2 3 4 1 1 2 4	2.6	2 2 3 3 2 3	2 2.4	<b>7.7</b>
<b>Customised line break rules</b>	It should be possible for an author to customise rules for line breaking (eg. kinsoku or geumchik rules).	3 2 2 3 1 2 4	2.4	2 4 1 3 3 3 3	3 2.7	<b>7.5</b>
<b>Bopomofo ruby</b>	Tone mark placement for bopomofo ruby needs to be clarified and whatever changes needed to support bopomofo ruby in CSS need to be finalised.	4 2 3 4 2 1 0 3	2.4	2 3 3 3 2 3	2 2.7	<b>7.4</b>
<b>Switching between vertical &amp; hor</b>	It needs to be possible to switch between horizontal and vertical layouts and automatically make all appropriate changes needed to number formats, punctuation styles, etc.	2 4 3 2 2 3 1 2	2.4	3 2 1 3 4 3 2	3 2.7	<b>7.4</b>
<b>Language selection</b>	Selection of language should be based on media queries, not just elements.	3 2 3 2 1 4	2.5	3 1 3 3 2 2	2.4	<b>7.4</b>
<b>Ruby generalization</b>	Ruby markup needs to be extended to allow for more general annotations (such as for glosses, or to support other languages).	2 3 2 2 2 3 0 3	2.1	1 4 3 3 3 4 3	4 3.0	<b>7.3</b>
<b>Rich metadata</b>	Metadata values need to be changed to support markup or annotations (such as for indicating text direction, ruby text, custom embedded fonts for non-unicode characters, language, etc).	3 2 2 2 2 3 0 3	2.1	2 3 2 3 3 3 2	3 3 3 2.7	<b>6.9</b>
<b>Font availability</b>	There are very few fonts available for use with ebooks (unlike printed fonts), and a significant reason is that font owners are not giving permission for download.	3 2 3 0 2 1 2 4	2.1	3 2 3 3 4 4 2 0	2.6	<b>6.9</b>

# Main result of the activities so far

- ▶ Creation of a separate Digital Publishing Activity at W3C (June 2013)
  - *Digital Publishing is now a major focus area at W3C*

The screenshot shows a web browser window displaying the W3C Digital Publishing Activity page. The URL in the address bar is `localhost:8001/dpub/`. The page has a blue header with the W3C logo and navigation links for STANDARDS, PARTICIPATE, MEMBERSHIP, and ABOUT W3C. A Google search bar is also present. The main content area is titled "W3C DIGITAL PUBLISHING ACTIVITY". It features a sidebar with sections for ACTIVE GROUPS (Digital Publishing Interest Group), CALENDAR, W3C WORKSHOPS (Publishing and the OWP, eBooks & I18N, Great Expectations), OTHER EVENTS (IDPF EDUPUB Workshop, Liam Quin's Presentation at Balisage 2013, Jeff Jaffe's keynote at IDPF 2013), and OTHER RESOURCES. The main content area discusses the goal of the activity, current work in the Digital Publishing Interest Group, and the relationship between the publishing industry and W3C. It also mentions the Daisy Consortium, NISO, and other groups. A sidebar on the right is titled "News" and lists recent articles: "EDUPUB: A Workshop on Digital Publishing for Education" (July 31, 2013), "W3C Workshop Report: Richer Internationalization for eBooks" (July 28, 2013), and "Digital Publishing Interest Group WIKI now available" (July 12, 2013).

# New Digital Publishing Activity and Interest Group at W3C

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- ▶ Co-chaired by Markus Gylling (IDPF) and Madi Salomon (Pearson)

“The **mission** of the Digital Publishing Interest Group, [...] **a forum for experts in the digital publishing ecosystem** [...] for technical discussions, gathering use cases and to **better align existing formats and technologies (e.g., EPUB) with the broader Open Web Platform.**”

# In practice...

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- ▶ The interest group collects use cases and requirements
  - these requirements will be channeled to the CSS, HTML, MathML, SVG, etc., Working Groups
  - members of the IG will also join these groups, if necessary, to develop the necessary technologies
- ▶ The interest group contributes to the general OWP interoperability testing effort at W3C
  - ensuring that the special publishing issues are also properly tested by implementations

# The work has already begun...

Screenshot of a web browser displaying a W3C wiki page titled "NakaTobira\_01". The page content discusses the Naka-Tobira layout design, its requirements, stakeholders, ranking, dependencies, and examples.

**Use case**  
In Japan, 'Naka-Tobira' layout design is commonly used. The design is typically applied to part title pages, and involves various variations of horizontal and vertical centering (see examples below).

**Requirement(s)**  
1) It is possible center a block of text vertically on a page  
2) **TODO EXPERT NEEDED:** describe spreads and other variations

**Stakeholder(s)**  
PUBLISHERS-ALL

**Ranking**  
TBD

**Relations/dependencies**  
N/A

**Relevant W3C group(s)/specification(s)**  
CSS, SVG

**Comments**  
This requirement corresponds to *Positioning items on page* from the [eBooks & i18n: Richer Internationalization for eBooks workshop report](#). See also [Takeshi Kanai's overview](#).

**Submitted by**  
Markus Gylling with input from Takeshi Kanai (Sony)

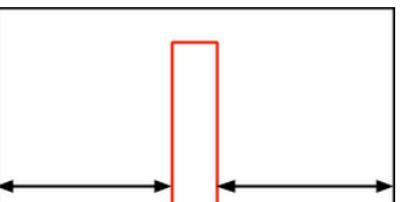
**Status**  
NEW

**Contents [hide]**

I Examples  
I.1 Simple centered Tobira  
I.2 Simple left-aligned Tobira  
I.3 Tobira with centering + additional lines (sub title, descriptions)

## Examples

**Simple centered Tobira** [edit]



# Possible Interest Group task forces

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- ▶ Some topics have already come to the fore as requiring special attention (“task force”)
  - pagination, layout
  - interaction
  - annotation
  - metadata
  - MathML
  - Internationalization/Ruby



**Thank you for your  
attention!**