

The Future of Standards for Digital Publishing

Liza Daly, Markus Gylling, and Ivan Herman
IDPF Digital Book Conference 2014
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Why is W3C interested in
this area?

We know that...

- ...digital publishing formats rely heavily on W3C's core technologies, i.e., the Open Web Platform (OWP)
 - (X)HTML5, CSS 3, SVG, MathML, SMIL, scripting...
- ...publishing workflow systems are also moving towards OWP (O'Reilly's Atlas, Chaucer, Inkling, ...)
- ...publishing represents one of the biggest use cases for the OWP after "traditional" browsers

Most of the publishing industry players have just been “users” of Web technologies



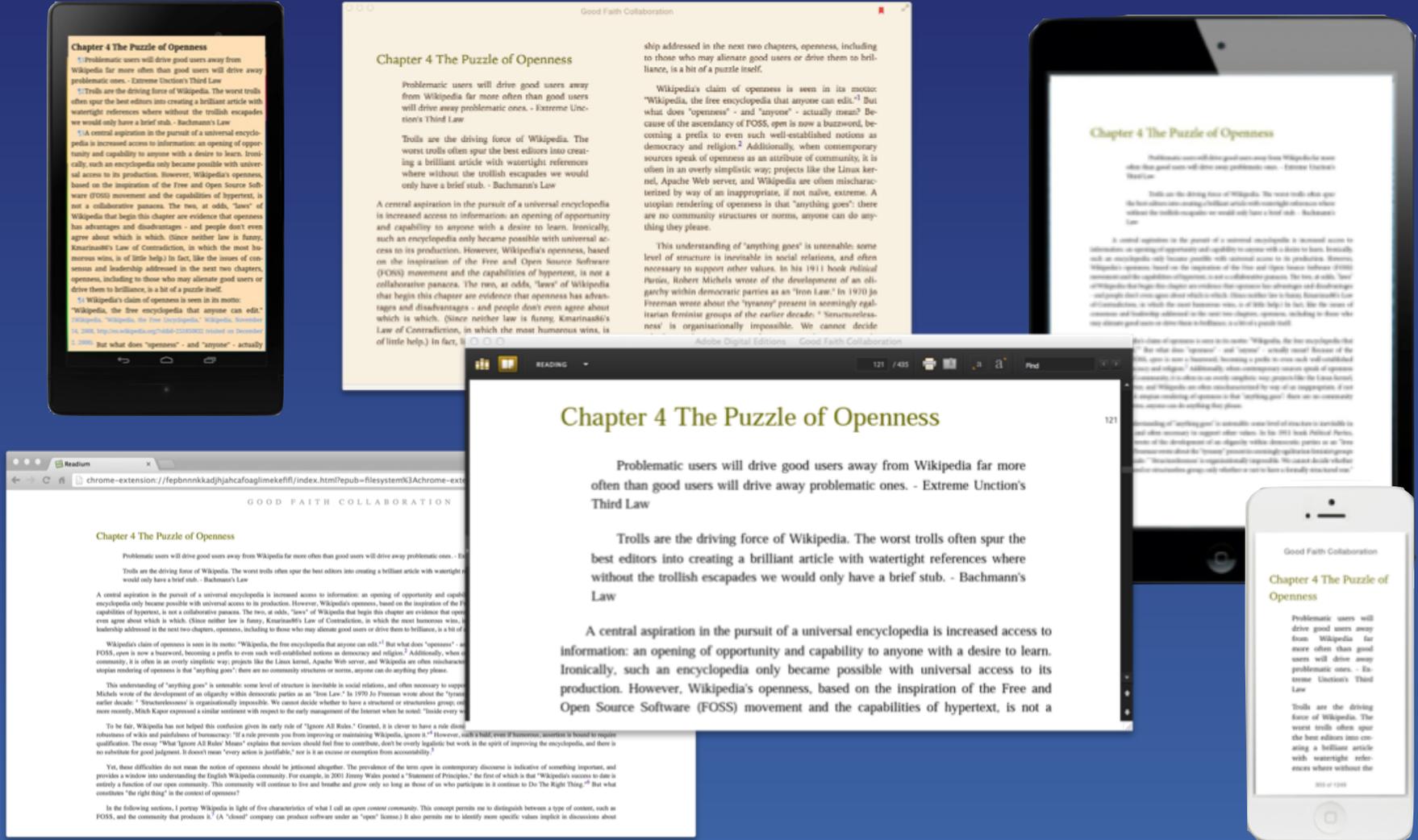
***The technology evolution of the Web
has been driven by “traditional” Web
browsing***



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

There are of course some
successes

We got some decent portability



Chapter 4 The Puzzle of Openness

Problematic users will drive good users away from Wikipedia far more often than good users will drive away problematic ones. - Extreme Unction's Third Law

Trolls are the driving force of Wikipedia. The worst trolls often spur the best editors into creating a brilliant article with watertight references where without the trollish escapades we would only have a brief stub. - Bachmann's Law

A central aspiration in the pursuit of a universal encyclopedia is increased access to information: an opening of opportunity and capability to anyone with a desire to learn. Ironically, such an encyclopedia only became possible with universal access to its production. However, Wikipedia's openness, based on the inspiration of the Free and Open Source Software (FOSS) movement and the capabilities of hypertext, is not a collaborative panacea. The two, at odds, "laws" of Wikipedia that begin this chapter are evidence that openness has advantages and disadvantages - and people don't even agree about which is which. (Since neither law is funny, Kaminashi's Law of Contradiction, in which the most humorous wins, is of little help.) In fact, like the issues of consensus and leadership addressed in the next two chapters, openness, including to those who may alienate good users or drive them to brilliance, is a bit of a puzzle itself.

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Wikipedia's claim of openness is seen in its motto: "Wikipedia, the free encyclopedia that anyone can edit."¹ But what does "openness" - and "anyone" - actually mean? Because of the ascendancy of FOSS, open is now a buzzword, becoming a prefix to even such well-established notions as democracy and religion.² Additionally, when contemporary sources speak of openness as an attribute of community, it is often in an overly simplistic way; projects like the Linux kernel, Apache Web server, and Wikipedia are often mischaracterized by way of an inappropriate, if not naïve, extreme. A utopian rendering of openness is that "anything goes"; there are no community structures or norms, anyone can do anything they please.

This understanding of "anything goes" is untenable: some level of structure is inevitable in social relations, and often necessary to support other values. In his 1911 book *Industrial Politics*, Robert Michels wrote of the development of an oligarchy within democratic parties as an "Iron Law". In 1970 Jo Freeman wrote about the "tyranny" present in seemingly egalitarian feminist groups of the earlier decade. "Structurelessness" is organizationally impossible. We cannot decide whether our structureless groups really differ or are in a broadly structured one.

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GOOD FAITH COLLABORATION

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In the following sections, I portray Wikipedia in light of five characteristics of what I call an open content community. This concept permits me to distinguish between a type of content, such as FOSS, and the community that produces it. (A "closed" company can produce software under an "open" license.) It also permits me to identify more specific values implicit in discussions about

We can produce books with nice graphics and with fixed layout...



Webb will be the largest telescope ever placed in orbit. To get this huge telescope into space, it will have to be folded up inside the rocket that carries it from Earth. It will unfurl as it nears its destination, the mirror unfolding and the sunshield spreading like wings.

With its infrared vision, Webb will be able to see light from vast distances that has been stretched as it travels across the expanding fabric of space – a process known as “redshifting.”

This will enable scientists to see the light from the first galaxies to form in the early universe – the first flicker of stars that formed after the Big Bang.

Hubble has seen the adult, teenage and child galaxies of the universe, but Webb will see the cosmos’ toddlers and infants.



Webb’s infrared view will allow us to see through opaque clouds of gas and dust in our own galaxy to objects within, like newborn stars and dusty disks forming new solar systems, expanding and deepening our knowledge about how stars and planets develop.

And Webb’s instruments will be able to analyze the light from planets around other stars, allowing us to search for traces of water vapor that could indicate the presence of life-giving oceans. Webb’s vision will be able to detect features in the atmosphere of a planet that could show biological activity.

Webb’s launch is scheduled for 2018. And despite the high expectations for the telescope, the true excitement will come from the discoveries Webb makes that no one planned. When Webb takes its place among the stars, it will give astronomers an unprecedented tool to explore the cosmos. The greatest science it reveals may – as with Hubble – open avenues to questions astronomers have not yet thought to ask. The true power of Webb may be its potential for unbounded, unexpected discovery.

Gallery 5.7 Webb Science Targets



A simulated image gives a hint of what deep-field images will look like with Webb. Far-distant galaxies reveal new galactic populations.



...that can also adapt themselves

of our local papers had been picked up by the AP and had spread worldwide. We did interviews for newspapers and radio stations all across the country and at least one radio station in Canada.

With all the exposure it wasn't long before we were made aware that the record of 120 hours had been broken already. A few emails and phone calls later and we found out that two State Farm agents from Texas held the last record certified by Guinness of 118 hours. That was quite a downer. We had followers counting on us to break the record and we had figured everything on a faulty premise.

We resolved to just keep at it and hope for the best. We received lots of encouragement from friends, family and fans and we couldn't let them down. After many miles and a few adventures (which can be found here) we finished our crazy trip at four corners. We beat our expectations by a long shot, hitting all 48 contiguous states in 106 hours and 43 minutes. Even though we had five more hours of driving to get home, we were ecstatic.

After we wrapped up we found out how many people had heard about our Great American Road Trip. We had as many as 25,000 hits on this site in a day from dozens of countries from every continent except Antarctica. We were mentioned in magazines ranging from a Christian Magazine to Car and Driver. We continued to do interviews and we found news articles in Chinese, German, and many other languages. We were astounded.

So many people connected with our trip in so many ways and we have been an inspiration to many to hit the road or follow their dreams. Some of those we inspired were inspired to beat our record and accomplished just that. The trip was great, the sense of accomplishment was wonderful but knowing we might have made a difference in someone's day, let alone life, is better than any record.

To anyone we inspired, to all those that enjoyed our journey, to our families and to our friends, thank you.

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We got some level of vertical writing sorted out

オオカバマダラ 24bis6



特徴

成虫の前翅長は5cmほど。翅は橙色で翅脈と縁が黒い。黒の縁取りの上には小さな白い斑点がある。オスとメスを比較すると、オスは後翅の腹部に近い部分に黒い斑点がある。メスにはこの黒い斑点がなく、黒い翅脈がオスよりも太い。ゆつくりと飛ぶが飛行能力にはすぐれていて、あまり羽ばたかずに気流に乗って遠距離を飛び続けることができる。

おもに北アメリカのカナダ南部から南アメリカ北部にかけて分布するが、西インド諸島、太平洋諸島（オーストラリアとニュージーランドなど）、カナリア諸島とマデイラ諸島にも分布する。日本では小笠原諸島や南西諸島で発見された記録があるが、これらは定着しておらず、季節風や台風などに乗って日本へやってきた「迷蝶」とみられる。なお、ロシア、アゾレス諸島、イギリス、スウェーデン、スペインでも、迷蝶としてしばしば記録される。

3 pages left in this chapter Page 3 Back to page 5

iPad 17:14 99%

Library オオカバマダラ 24bis6



特徴

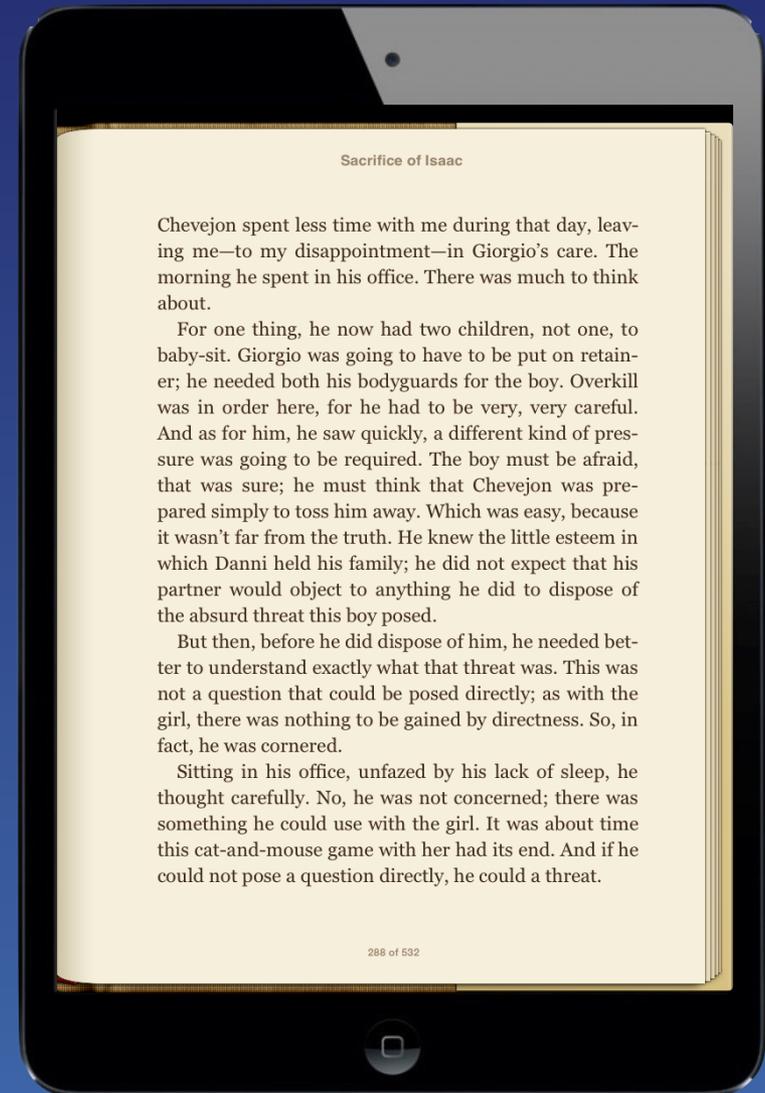
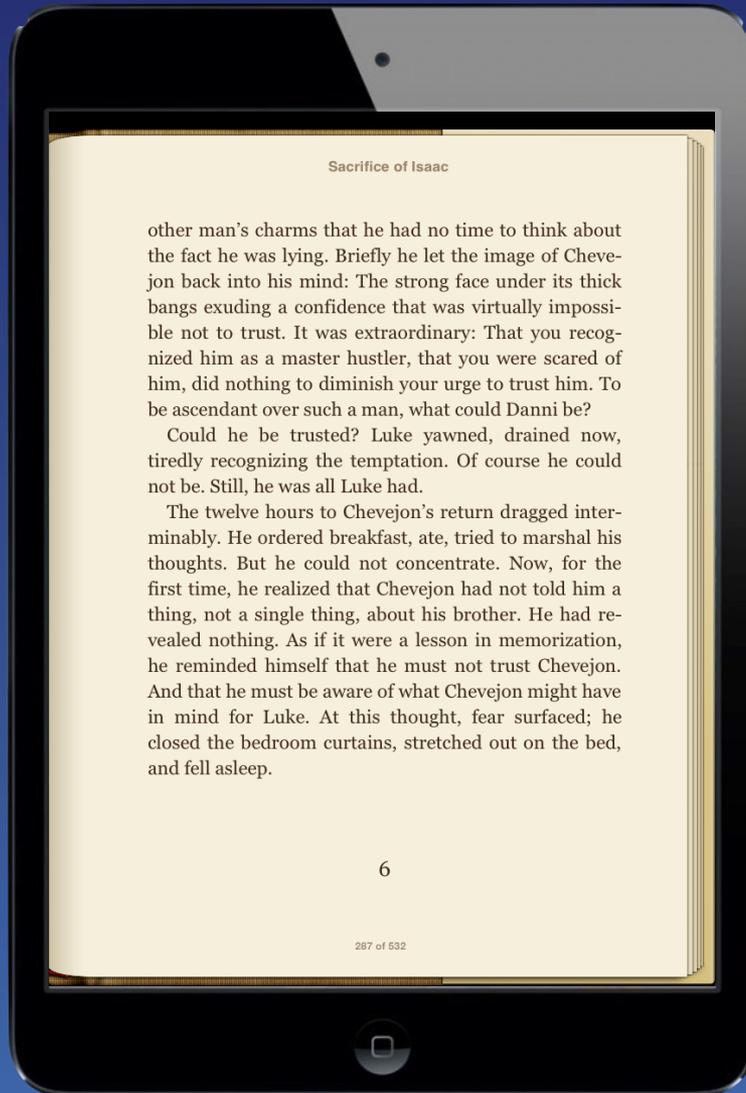
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Back to page 1 3 of 12 3 pages left in this chapter

But everything is not perfect...

Widow control possibilities are incomplete



Headers, footers, ...



January ↻ 4

Pennsylvania city, each of her days could easily resemble the next—she has a lot of time, having been laid off from her job busing tables at a fast food restaurant. She has enough money to live on, as a recipient of government assistance for people with disabilities.

But Beth also has something else: ingenuity.

This trait isn't generally ascribed to people

Headers, footers, ...



January  4

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We have to understand the requirements of various reading systems

$$f(x) = \begin{cases} \sum_{i=1}^s x^i & \text{if } x < 0 \\ \int_1^s x^i dx & \text{if } x \in S \\ \tan \pi & \text{otherwise (with } \pi \simeq 3.141) \end{cases}$$

$$\left. \begin{array}{l} \text{إذا كان } s > 0 \\ \text{إذا كان } s \ni m \\ \text{غير ذلك (مع } \pi \simeq 3.141) \end{array} \right\} = (s) \left. \begin{array}{l} \sum_{i=1}^s s \\ \int_1^s s \\ \pi \end{array} \right\}$$

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Publishing needs advanced features

- Advanced and interactive graphics
- Internationalization (Ruby, Bopomofo, vertical writing,...)
- MathML
- Font management
- Fixed layout
- Audio, video
- Headers, footers, ...
- Bridging on-line/off-line
- Harmonization of metadata
- Accessibility features (e.g., speech/braille publications)
- ...

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



What can be the Role of W3C?

**It is time for the Publishing Industry and
the traditional Web community to
cooperate in defining the Open Web
Platform!**



How to achieve that?

Creation of a “Digital Publishing Interest Group”

- Co-chaired by Markus Gylling (IDPF) and Liza Daly (Safari Books Online)

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

In practice...

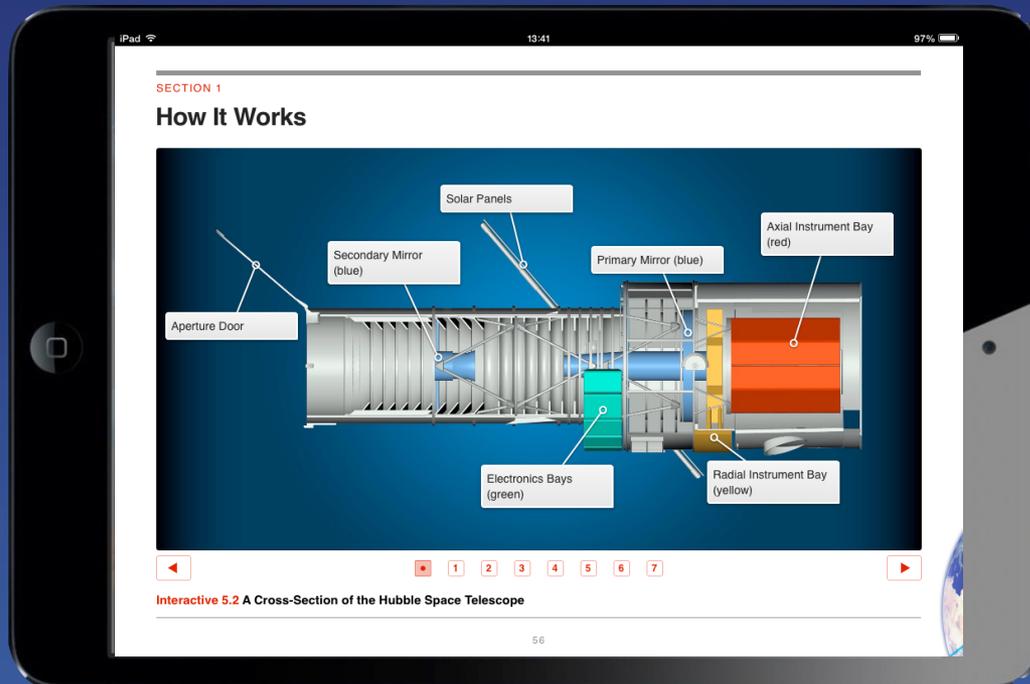
- The Interest Group has defined a series of Task Forces
 - the task forces collect use cases and requirements
 - these are, eventually, passed on to the relevant W3C groups (HTML, CSS, etc.)
- Reviews, from the publishers' point of view, other groups' relevant draft specifications

In practice...

- The group consists of representatives of the publishing industry
 - Pearson, Hachette, IDPF, Apple, Adobe, Benetech, Nokia, Monotype, BISG, ...
 - further discussions with others prospective members...
- Some IG members are also part of other W3C groups, working HTML, CSS, MathML, etc.

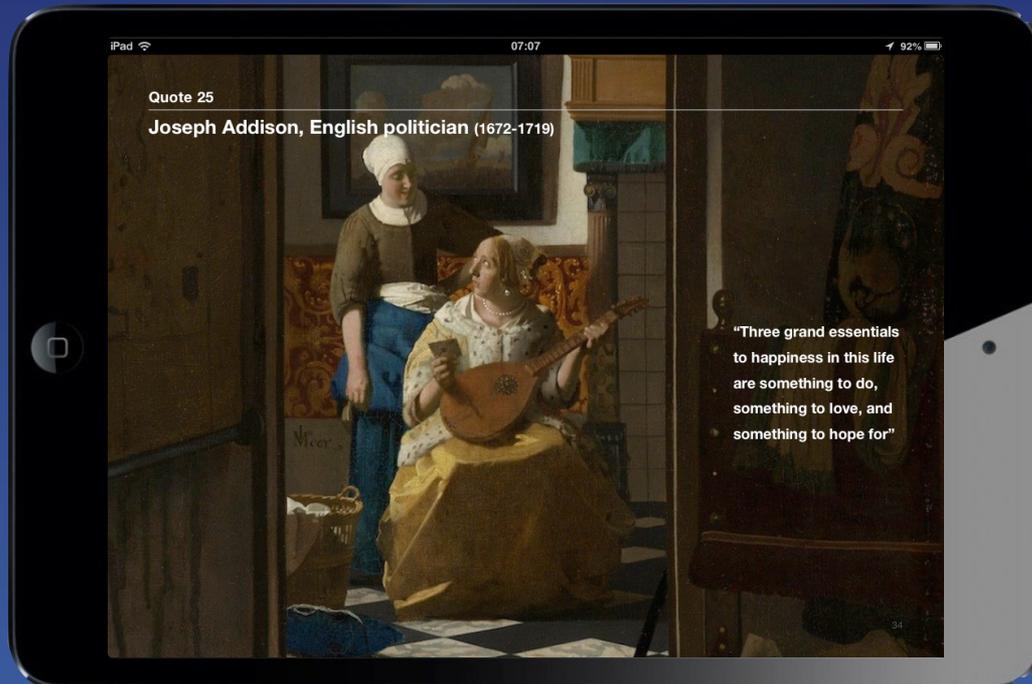
Some examples for concerns
addressed by the W3C Group

Books that require rich media...



- Requirements:
 - high quality graphics, video, interactive graphics
 - complex layout (text flowing through different part of the page)
 - user specific notes, bookmarks, annotations

... but with high quality aesthetics and ergonomics



- Requirements:
 - control over headers, footers, running elements
 - control over widows, orphans, hyphenation, justification
 - fixed or reflowable layout
 - high quality graphics, both in terms of bitmap images as vector graphics
 - drop caps
 - font management

- The ***DPUB IG Layout & Styling Task Force*** addresses these fundamental rendering issues
 - text flows, drop caps
 - hyphenation, widow, orphan, etc., control
 - video, audio
 - page layout with headers, footers, running heads
- These requirements are translated into specific requirements to be taken up by the CSS, HTML5, and SVG Working Groups

STEM publishing

- Requirements:
 - font management
 - high quality graphics
 - mathematical formulae
 - extensions to HTML for specific content (e.g., chemical formulae)
 - separation of “content” from explanations, notes, etc.
 - powerful indexing, table of contents

The screenshot shows an iPad interface with a document titled "Integration by Parts". The document has a table of contents on the left and a main content area on the right. The main content area is styled to look like a chalkboard with white text and formulas. The table of contents lists seven items, with the first item, "1. Integration by Parts", highlighted in red. The main content area contains the following text and formulas:

Product Rule of derivative:

$$\frac{d}{dx} [f(x) \cdot g(x)] = f(x)g'(x) + f'(x)g(x)$$

Integrate both sides by indefinite integral:

$$f(x) \cdot g(x) = \int f(x)g'(x)dx + \int f'(x)g(x)dx$$

Formula of Integration by Parts:

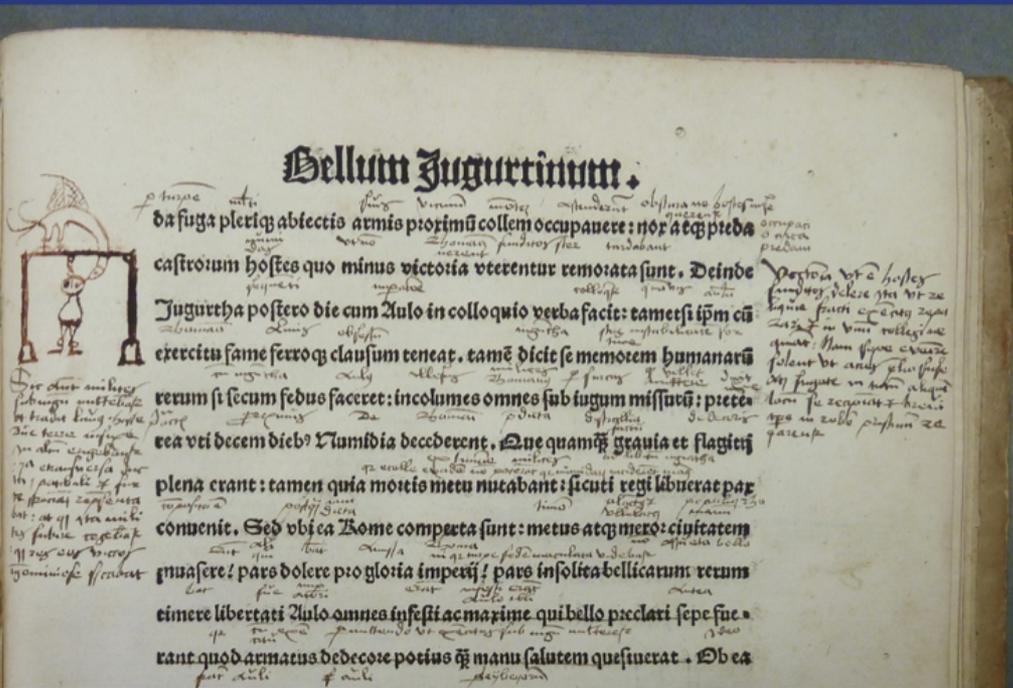
$$\int f(x)g'(x)dx = f(x) \cdot g(x) - \int f'(x)g(x)dx$$

The document is displayed on an iPad screen, with the status bar at the top showing "iPad", signal strength, time "10:56", and battery level "100%".

- The ***DPUB IG Content & Markup Task Force*** identifies ways to add structural information to the raw content:
 - terms to be indexed; sections that are used for notes, sidebars, explanations; accessibility information
- The ***DPUB IG STEM Task Force*** has collected a number of STEM specific use cases

Annotations

- Annotations belongs to the traditions of reading
- Annotations can be private, can also be shared among friends, colleagues, ...
 - classroom usage in education
 - sharing notes among friends on a new publication
- Annotations can be text, drawings, different types of media



- The ***EPUB IG Annotation Task Force*** has collected a number of eBook specific use cases and requirements
- The ***W3C Open Annotation Community Group*** has defined a general data model for annotations
- W3C may start an ***Annotation Working Group*** to define a standard, interoperable environment to create, store, and share annotations

Search and discovery

The screenshot shows a DuckDuckGo search results page for the query "la musique d'une vie". The search bar at the top contains the text "la musique d'une vie". Below the search bar, there are five product listings from Amazon.com, each with a book cover and price information. The first listing is "La Musique d'Une Vie (French Edition): MAKINE: 9782020542852 ..." priced at EUR 5,42. The second listing is "La musique d'une vie" by Odile Jacob, priced at EUR 22,09. The third listing is "LES MUSIQUES DE LA VIE" by Odile Jacob, priced at EUR 22,09. The fourth listing is "La musique d'une vie" by Publilook, priced at EUR 9,64. The fifth listing is "La musique d'une vie" by Lutèce Créatio..., priced at EUR 6,50.

Below the product listings, there are several search results from various sources:

- amazon.com**: La Musique d'Une Vie (French Edition): MAKINE: 9782020542852 ...
La Musique d'Une Vie (French Edition) [MAKINE] on Amazon.com. "FREE" shipping on qualifying offers. Le premier concert du jeune pianiste Alexei Berg est annoncé pour le 24 mai 1941. Fin du long purgatoire que sa famille a vécu durant les années de terreur. Promesse d'oubli
- ottawa.bibliocommons.com**: La musique d'une vie | Ottawa Public Library | BiblioCommons
Title: La musique d'une vie roman - Publisher: Paris -, Éditions du Seuil., c2001. Characteristics: 127 p. Language: French. Local Note: 17 26 27 ...
- livres-et-lectures.net**: Makine (Andrei) / La musique d'une vie. - livres et lectures ...
Makine, écrivain russe vivant, est un musicien des mots, de la pensée et certainement des notes... Il ne démontre pas, n'affirme rien.
- youtube.com**: Andrei Makine : La musique d'une vie - YouTube
2 avril 2001 Depuis le casino municipal d'Enghien-les-Bains, Olivier BARROT présente le livre "La musique d'une vie" de Andrei MAKINE, édité par Le Seuil. Im...
- e-litterature.net**: La musique d'une vie - Exigence : Littérature
Andrei Makine est né le 10 septembre 1957 en Sibérie; son enfance fut marquée par l'immensité des espaces et la singularité des coutumes de cette contrée ainsi que par les échos du Goulag.
- worldcat.org**: La musique d'une vie : roman (Book, 2001) [WorldCat.org]
Get this from a library! La musique d'une vie : roman. [Andrei Makine]
- Amazon.fr - Livres**: La Musique d'une vie - Andreï Makine - Amazon.fr - Livres

- Information on books should be discoverable on the open Web
 - basic information
 - reviews
- Not only on one, proprietary site...

- ***DPUB IG Metadata Task Force*** looks at issues on making books discoverable on the Web
 - what type of metadata is appropriate for, e.g., search engines
 - how to express those
 - what vocabularies to use

These are just examples!

- Lots of other issues may be discussed
 - the “pain points” are numerous
- ***We need a larger participation of the publishing industry***
 - ***W3C cannot do it all by itself!***

Why this matters to you.



EPUB 3 adoption is slow



EPUB 3 adoption is slow

Chicken & egg problem persists:

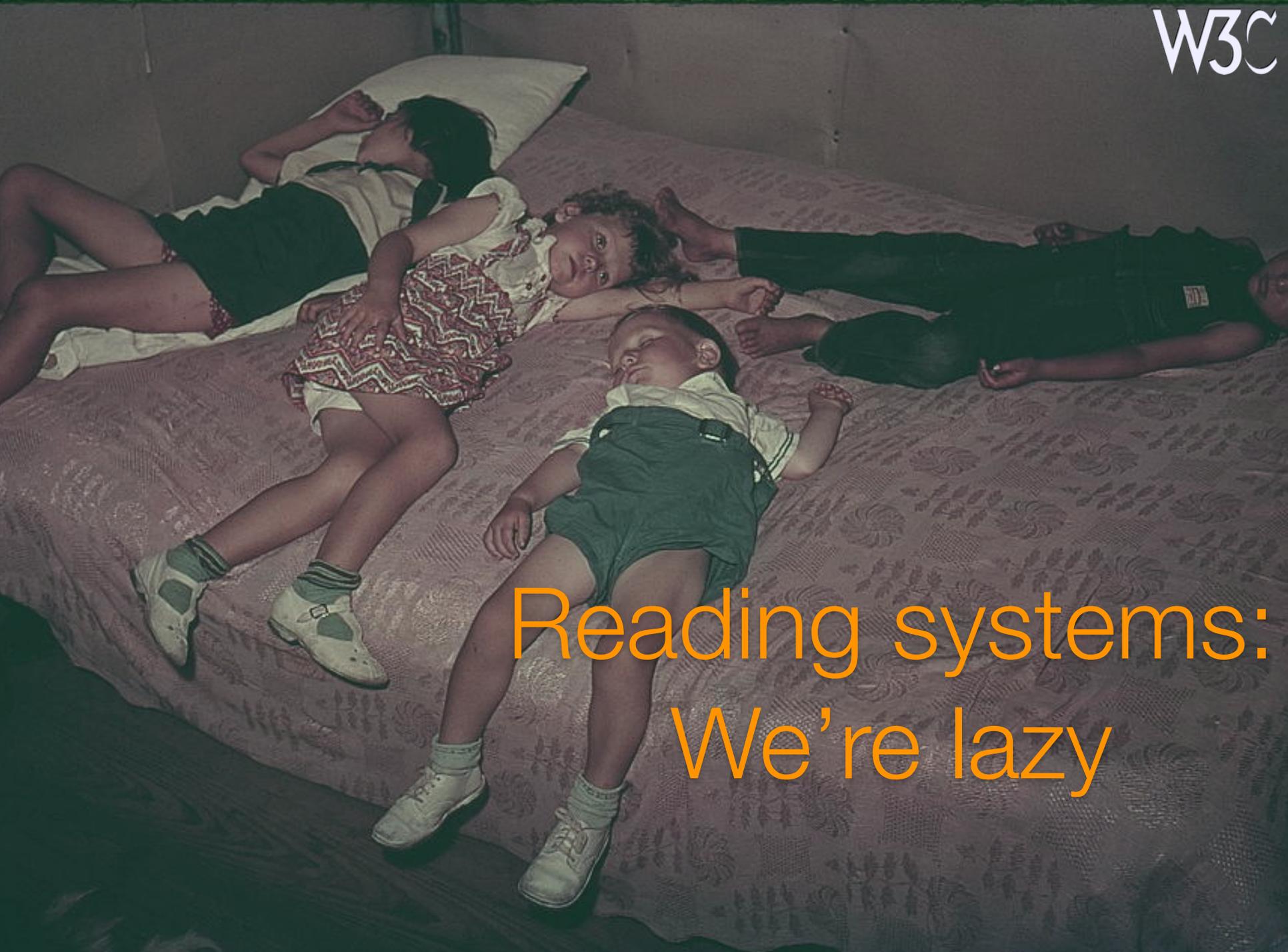
Not enough EPUB 3 content to support.

Not enough support to create EPUB 3 content.

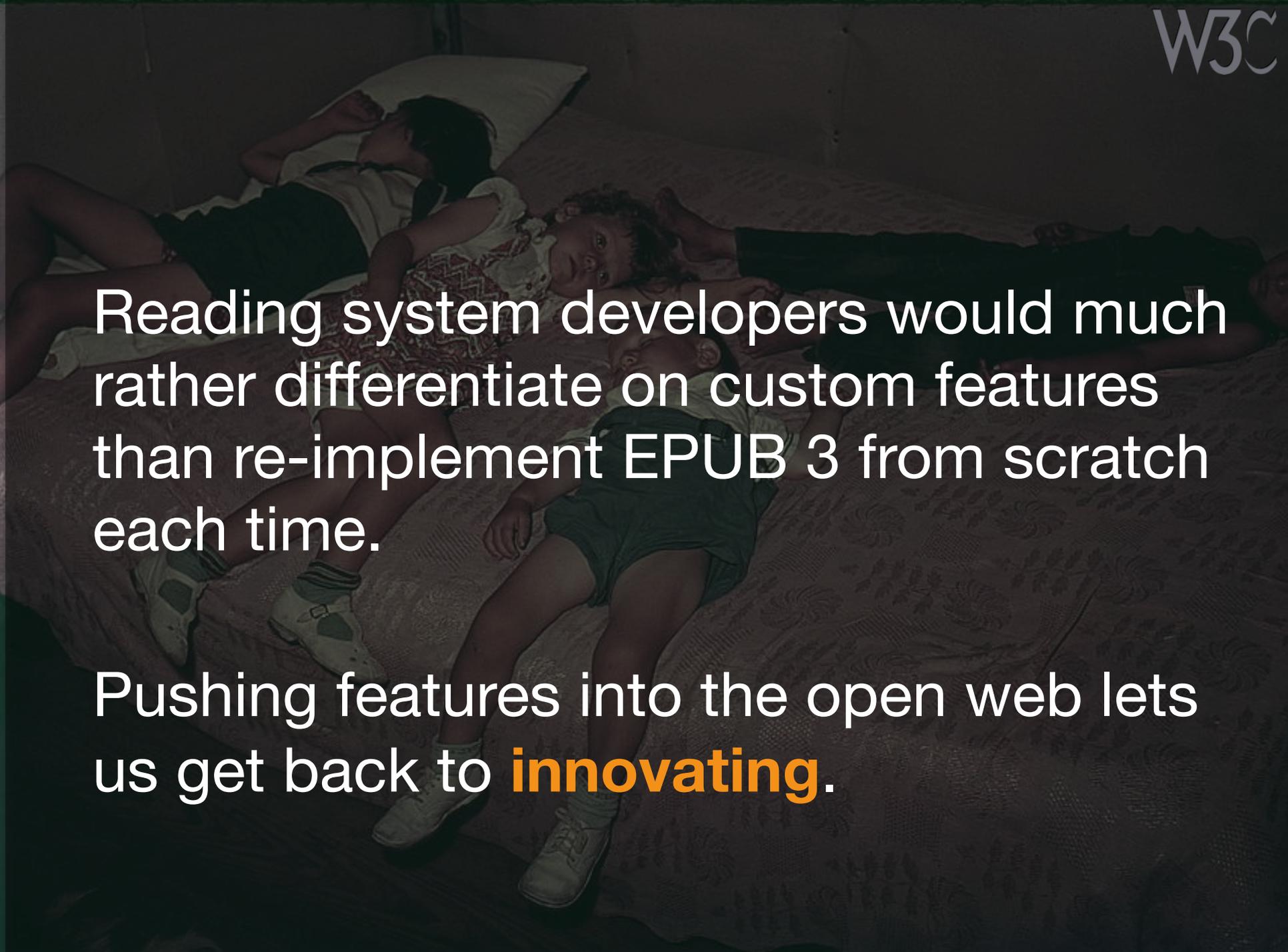
Few reading systems on epubtest.org score > 75%



How did we end up here?



Reading systems:
We're lazy

A photograph of a family of four lying on a bed, reading together. The mother is on the left, the father is on the right, and two children are in the middle. They are all looking at books or tablets. The scene is dimly lit, suggesting a bedtime or evening reading session.

Reading system developers would much rather differentiate on custom features than re-implement EPUB 3 from scratch each time.

Pushing features into the open web lets us get back to **innovating**.

Publishers: You're busy



Publishers can't invest in massive QA efforts just to make use of advanced features.

Advocating for adoption of web-based ebook standards lets you get back to **publishing**.

Towards a network of books



Towards a network of books

The most desired features require cooperation among reading systems, search engines, & browsers:

Portable annotations

Social sharing & commentary

Discoverability

Towards a network of books

The most desired features require cooperation among reading systems, search engines, & browsers:

Portable annotations

Social sharing & commentary

Discoverability

(Monocultures are dangerous)

Currently Unavailable

Want us to email you when this item becomes available?

Email me

What publishers can add



What publishers can add

What changes to HTML could trivially improve ebook markup?

A photograph of a sign in a field. The sign is white with a black border and features a simple line drawing of a house with a chimney. Below the drawing, the text reads "FUTURE SINGLE FAMILY HOMES". At the bottom of the sign, it says "OPENING 1976". The sign is set against a background of a dry, grassy field with several cows grazing. In the distance, there are rolling hills under a clear sky.

FUTURE
SINGLE FAMILY HOMES

OPENING 1976

What publishers can add

What's the best way to present textual content that promotes readability, comprehension, and retention?



What publishers can add

What's the best way to present textual content that promotes readability, comprehension, and retention?

What cultural traditions in reading and writing should be brought to the open web?

Help books become
natural citizens of the open web



Properties of a naturalized OWP citizen

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bridging online and portable publishing

- today, online and ebook publishing are separate forms
 - typically separate channels, separate clients, separate experiences
- portable document as a state, not as a form means that:
 - an online document can change state to portable at user request
 - ... while retaining all functionality
 - ... the publisher can choose which of these states to enable
 - ... the user can choose whether to read in the browser or a dedicated Reading System

Towards bridging online/portable

some topics

1. Generic archive format for the portable state

- recognized and supported (read/write) by both browsers and dedicated reading systems

2. Linking/cross-referencing

- a generic, registrar-free method for cross-referencing
- (for the simpler cases at least) no more difficult to employ than links on the web

3. Annotations

- Travel alongside the content, fully agnostic re states and devices

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4. Metadata

- Unified using HTML-embedded metadata as the vehicle
(building on e.g. RDFa and schema.org)
- addressing both discoverability and archival purposes
- ... enabling both publication- and fragment-level expressions

5. Security and privacy model

- For hire: a state-agnostic security model

Presentation Control

- Responsibility for layout control works the same across states and devices
- Publisher has complete control over presentation intent: 100% coverage via CSS
- Personalization: my preferences in an envelope



Content Protection (or not)

- Users will exercise their right to read their content when they want, where they want
- Content protection stands in the way to enable true ubiquity and longevity of e-content
- No apparent universal solution to this problem



Timelines

- DPUB IG charter: September 2015
 - steps after that currently undecided
 - many fundamentals will remain to be designed and implemented
- Through collaboration with W3C, IDPF remains dedicated to providing the portable document format based on the Open Web Platform...

Now (EPUB 3.x) and in the Future (EPUB NG)

Publishing will enhance the web

- Thousands of years of experience in reading, comprehension, communication able to bring to bear on web technology
- Web just beginning to understand...
 - the aesthetics of typography that we know best
 - the user requirements for engaging with long-form portable publications

Thank you for your attention!

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<http://www.w3.org/2014/Talks/0529-NYC-IH/Talk.pdf>