The future is an interoperable one

London, 29 July 2013

John Mc Namee, President EIBF
Johannes Gutenberg University Mainz

Why do we need interopable e-book formats?

Non-interoperable ebook formats cause problems for consumers

- After having bought an ebook from specific ebook stores / platforms, reading and using this ebook is tightly connected to this platform
    - transfer of ebooks from one ebook platform to another is not possible
    - buying books on different platforms and reading them using the same reader (application) is not possible

-> This hampers cultural diversity, a free choice between online booksellers for customers, and the opportunities for "brick and mortar" bookstores

Why do we need interopable e-book formats?

... and are in contradiction to EU policies

"[It is important to establish] *effective interoperability between IT products and services to build a truly digital society. **Europe must ensure that new IT devices, applications, data repositories and services interact seamlessly anywhere** – just like the Internet.*"

[Pillar II (interoperability and standards) of the Digital Agenda of the European Commission]

Why do we need interopable e-book formats?

... and are in contradiction to EU policies

"Interoperability [...] applies to ebooks too. When you buy a printed book it's yours to take where you like. It should be the same with an ebook. You can now open a document on different computers, so why not an ebook on different platforms and in different apps? **One should be able to read one's ebook anywhere, any time on any device."**

[Neelie Kroes (Vice-President of the European Commission, in charge of the Digital Agenda) in the foreword of our report]

Research Question

- Is an interoperable ebook format across platforms / "ecosystems" technically and functionally possible?

- And: Is this sufficient for interoperability?

- Focus on:
  - EPUB3
  - KF8 (Amazon)
  - .ibooks (Apple)
  - Fixed Layout EPUB (Apple)

EPUB3

- Result of earlier standardization efforts, e.g. EPUB2

- Declarative, structure-oriented (rather than presentation-oriented) ebook format

- Approved as an official standard by the International Digital Publishing Forum (IDPF) in October 2011

- Recognized by the International Publishers Association (IPA) as the preferred standard in March 2013

EPUB3 (contd.)

- Makes use of established standards, especially HTML5 and CSS4

- Enables the integration of video and audio
- Enables fixed/reflowable layout
- Enables interactive features
- Enables non-western writing modes, character sets, etc.
- …

Feature Comparison / Result

Are there features of Amazon and Apple formats that do not exist in EPUB3?

- No, EPUB3 can express everything needed for enhanced ebooks. Examples are
    - A configurable text-to-speech functionality (for the reading-aloud with a synthetic voice) is supported by EPUB3; none of the other formats supports this at the moment.
    - The synchronization of pre-recorded audio and text highlighting is supported by EPUB3 and Apple´s Fixed-Layout EPUB, but not by KF8 and .ibooks.
    - EPUB3 offers full flexibility regarding character sets (UTF-8) and reading directions, where KF8 only supports a few Asian languages and Apple´s formats do not support languages beyond those with Latin characters.
    - …

Findings

- Expressive power of the different formats is
  - either about equivalent (e.g. regarding the treatment of images) or
  - **EPUB 3 realizes a superset of features** (e.g. text-to-speech functionality)
- For "historical" reasons (common ancestor: EPUB2), KF8 and Apple's formats share many concepts and constructs with EPUB3
- We observe an ongoing convergence of KF8 and Apple´s formats towards EPUB.
- **Transformation of KF8 and .ibooks/Fixed Layout EPUB (Apple) into EPUB3 is possible without loss of information**

Mission accomplished ?

In the future, with the widespread use of EPUB3
"one [will] be able to read one's ebook anywhere, any time on any device"

This is not the full story.

Until now, we only talked about formats, but …

eBook Ecosystems

- An ebook ecosystem includes the sales platform, readers, formats, distribution channels, production tools/formats, terms&conditions, …

- An ecosystem is closed if
  - it forces customers to stay inside and buy ebooks from the associated store(s)
  - no platform-independent reading or use of ebooks is possible

- Characteristics of closed ecosystems are
  - tight coupling between reading devices and store,
  - use of proprietary and incompatible ebook formats,
  - it is impossible or at least difficult to export ebooks,
  - legal restrictions, and/or
  - proprietary digital rights management (DRM) systems

Ecosystems in Real World

Major players in the ebook market (e.g. Amazon and Apple) created closed ecosystems for ebooks:

– reading device and store is tightly coupled (Kindle reader/Kindle Store, iBooks/iBookstore)

– used ebook formats are proprietary and non-interoperable (KF8)

– export/transfer of ebooks is forbidden, not allowed and/or not possible (Apple and Amazon)

– limitations on ebook creation

  • proprietary formats (.ibooks)

  • exclusive right to distribute and sell new content (Kindle Direct Publishing Select Program)

– proprietary DRM systems prohibit a free exchange of ebooks between different ecosystems

DRM Schemes

- Amazon DRM
  - ebooks sold through Kindle Store can only be read using Kindle readers
  - Kindle readers can display only Amazon books
- Apple Fair Play
  - ebooks sold through iBookStore can only be read using iBooks
  - eBooks allows customers to import non-protected EPUB books
- Adobe Digital Experience Protection Technology (ADEPT)
  - e.g. Barnes&Noble
  - works with pdf and EPUB
- Marlin DRM
  - open DRM standard
  - emphasizes the interoperability between various ecosystems
  - not widely used

The Apple Case

- Apple supports EPUB3
- Apple Fair Play is applied to all EPUB3 ebooks sold through the iBookStore

-> Although interoperable format is used, Apple ebooks are non-interoperable

-> The use of an interoperable ebook format (EPUB3) is a necessary but not sufficient condition for interoperability.

Interoperability of ecosystems

To ensure that

"one is able to read one's ebook anywhere, any time on any device"

- eBook formats must become interoperable, ✅ (EPUB3)
- DRM schemes must become interoperable, ❓
- ecosystems must include functionalities for export/transfer of ebooks, ❓
- ecosystems must remove legal restrictions on the export/transfer of ebooks ❓
- ecosystems must abstain from exclusive rights to distribute and sell ebooks ❓

Conclusions

- **EPUB3 can serve as a format standard for interoperable enhanced ebooks.**

- **EPUB3-compatible readers are available.**

- **Interoperable formats are not sufficient.**

- **To "***read one's ebook on any device***" the ecosystems must be interoperable:**

  – **interoperable DRM schemes,**

  – **export/transfer possibilities,**

  – **no legal restrictions on transfer of ebooks between ecosystems.**

This guy bought a car from a locked ecosystem and can't find any fuel for it....

© IEuroMag.com

This man bought a car which takes ordinary fuel from any garage !!