



Collection of User Requirements and Linkage to Standard Specification

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EDUPUB Workshop
2013-10-29, Boston MA

Summary



- User requirements of e-textbooks
 - Currently 73 items
- Classified these items into:
 - 6 functional categories
 - 3 groups according to necessary data
- Sample Big Picture of Learning EPUB
- Feasibility Check on EPUB3

International Trend of Digital Textbooks

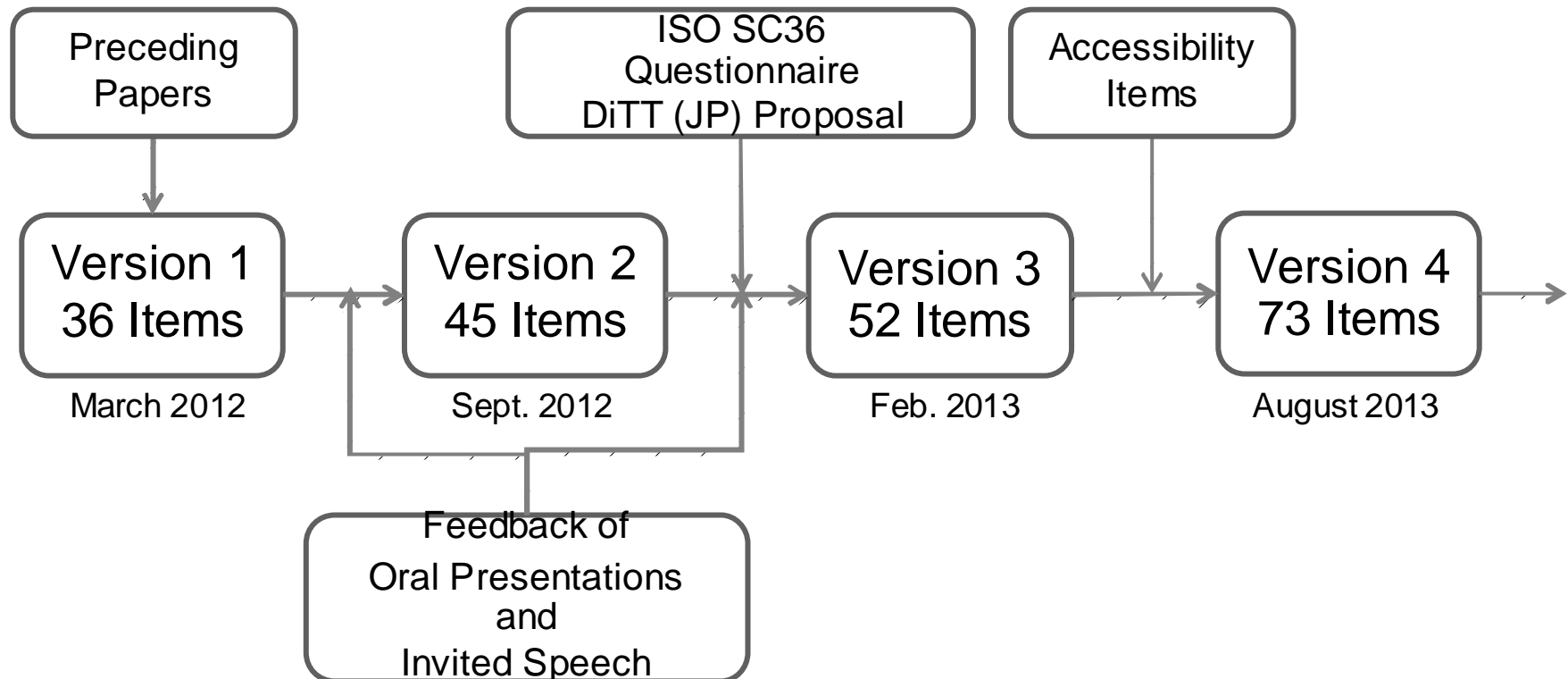


- US
 - IEEE to specify Actionable Data Book
 - IMS: ICE project
(<http://www.imsglobal.org/icecallforParticipation.html>)
- Europe: CEN eTernity Project from 2012
 - EPUB3 is major candidate
- Korea: to finish nationwide deployment in 2015
 - Leadership of ePub to de jure standard in SC34
- Singapore: FutureSchool@Singapore from 2008
- Japan: Computerization Vision of Education: 2011
 - To deploy e-textbooks to K-12 learners until 2020

User requirements of e-textbooks



- User oriented
- Independent of any products



Requirement Database



- Access <http://133.12.192.9/>
- Login as “Guest”, Select “English” from dropdown

Functional Requirements and Related Standard Specifications of e-Textbooks

List Japanese

Category Accessibility Updated 2013/10/17 ID AC01

Name Change text font Serial 01

Description Justification: need to specify easy-to-read font (Gothic etc.) for low vision learners.

Required Function E-textbook platform software should provide a menu to select fonts.

Data Format TBD: inclusive or downloadable font should be specified in some specific format.

Adaption of Standard Specification W3C specifies WOFF (Web Open Font Format) (<http://www.w3.org/TR/WOFF/>). Also, EPUB3 allows usage and dynamic download of WOFF fonts.

To Do, Note

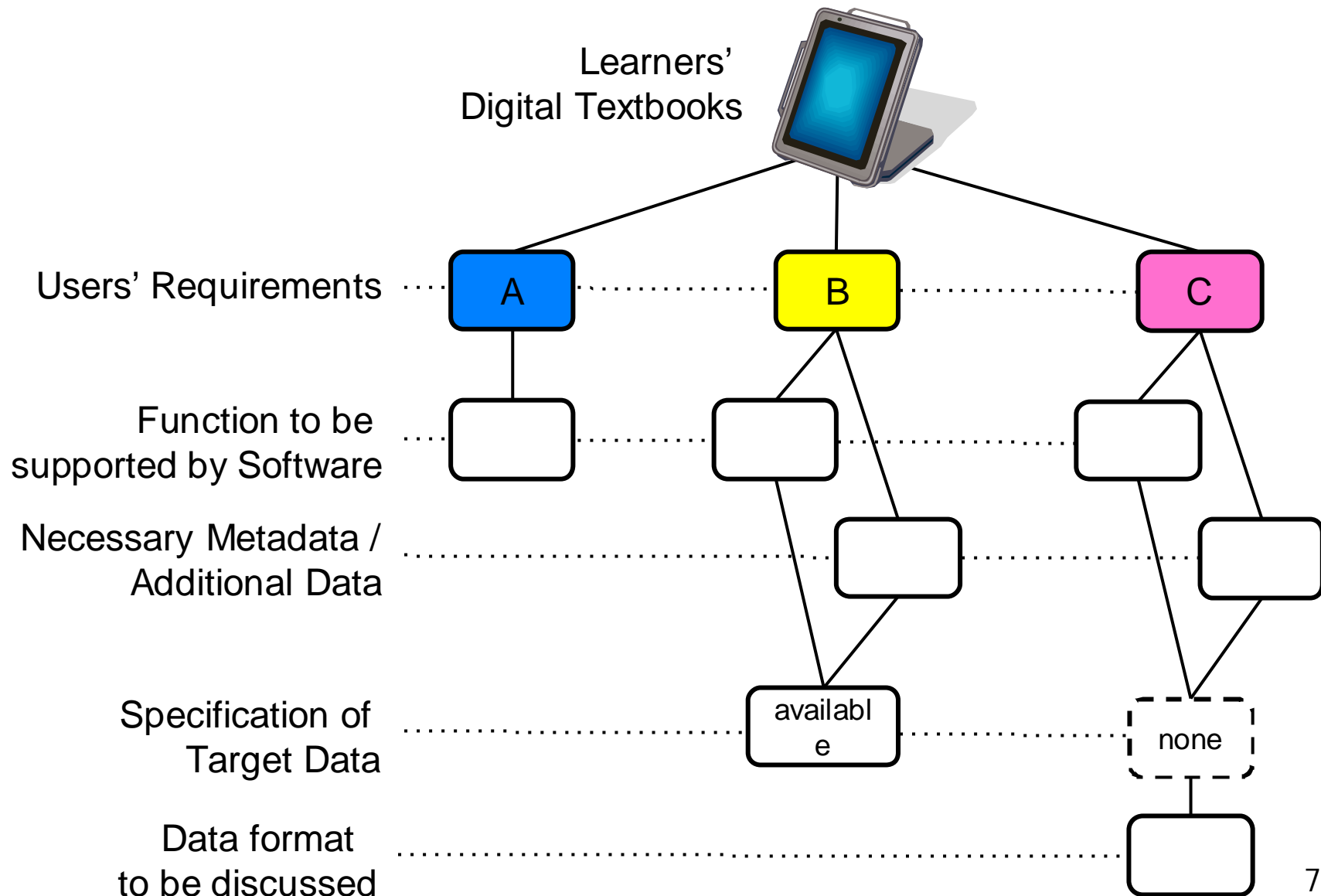
Standard Specification: Existent To Be Discussed

6 Functional Categories

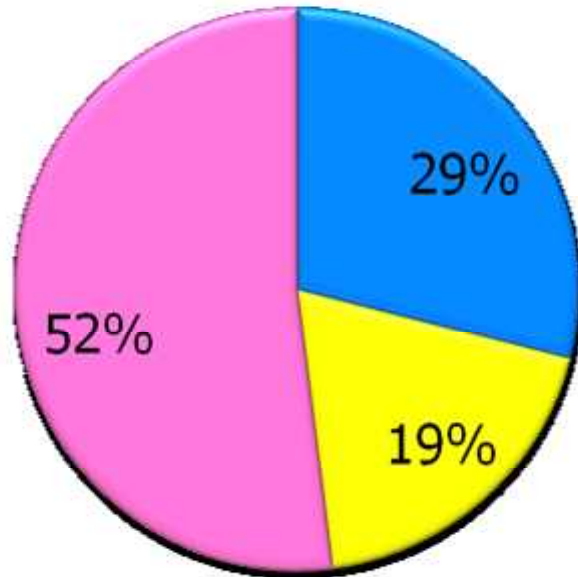


1. Accessibility: 17
 - TTS, closed captioning, black-and-white reverse ...
2. Added Information by Learners: 13
 - Learner note, bookmark, link ...
3. Authentication & Copyright: 6
 - LMS authentication, DRM
4. Contents Representation: 14
 - Multimedia, equation ...
5. Learning Support: 19
 - Server transmission, CSCCL support ...
6. Related Information: 4
 - Dictionary, reference, Web pages ...

3 Groups According to Necessary Data



Classification Summary



■ **Just Software function**

■ **Data needed, specification available**

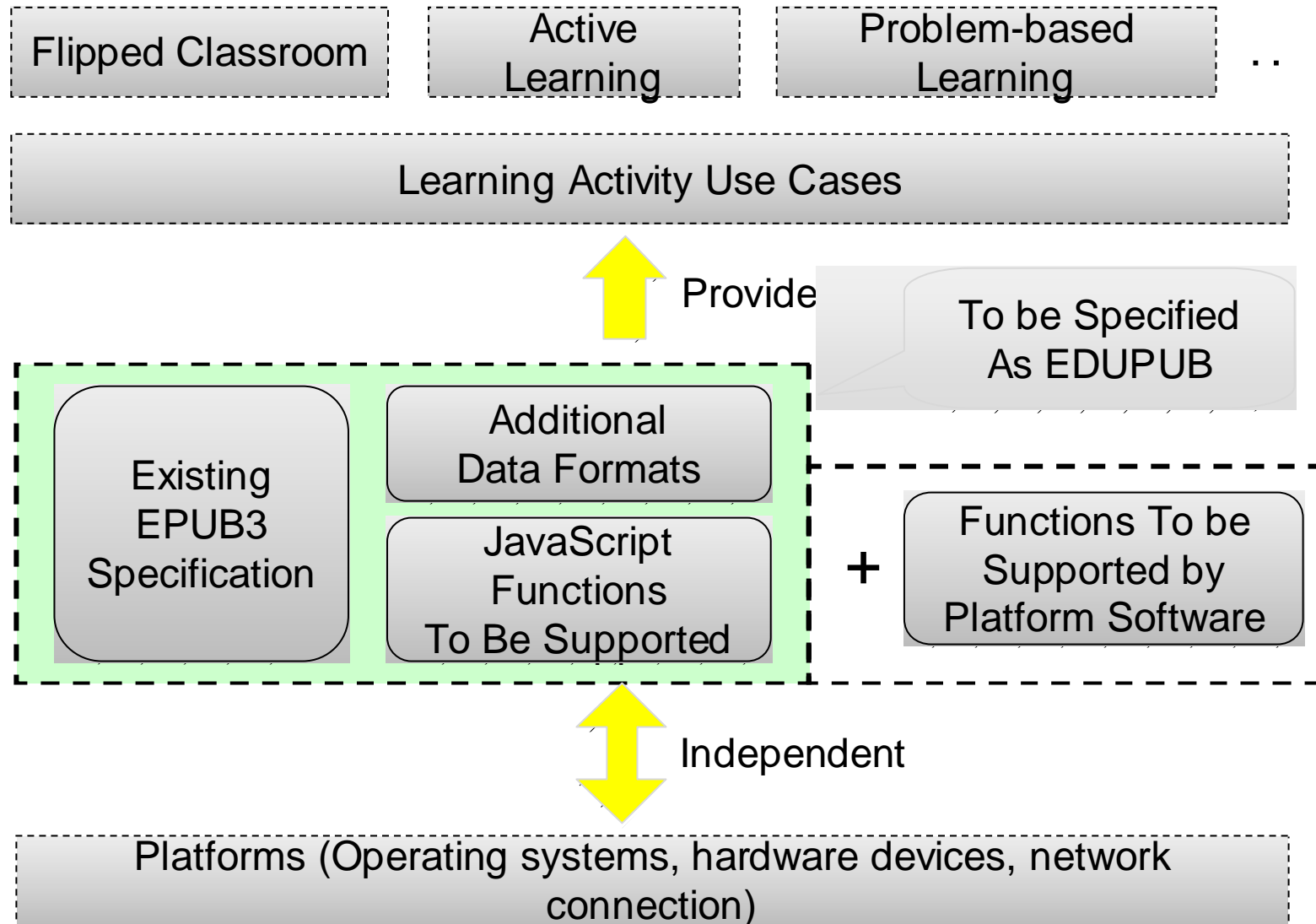
■ **Data format to be discussed**

- **Examples of Existent Specifications**
 - W3C WOFF font
 - W3C SMIL
 - W3C TTML
 - IDPF CFI
 - Dublin Core
 - ADL Experience API
- **Detail**
 - <http://goo.gl/tsZE8f> (Google Drive)

Serial	ID	Name	Exist	TBD	TBD Item
8	AC08	Metadata of body text for accessibility	X		Braille data format
9	AC09	Keep layout even expansion of figures, tables or graphs	X		AHL (Advanced Hybrid Layout)
10	AC10	Color configuration for color vision deficiency	X		Color contrast of pictures
15	AC15	Option of all ruby	X		All ruby format
16	AC16	Option of non-ruby	X		Non-ruby format
17	AC17	Double ruby, both-side ruby	X		Double ruby / both-side ruby format
18	Al01	Note to add, modify, delete, and move to body text	X		Learner note data format
19	Al02	Include picture in note	X		Picture data format / linkage from learner note
21	Al04	Search text in notes	X		Learner note data format
23	Al06	Add and delete linkage to references	X		Calling scheme of another application
24	Al07	Bookmark to add, index, delete, or move to body text	X		Bookmark data format
25	Al08	Add and delete underline and highlight	X		Underline / highlight data format
26	Al09	Add and delete linkage to Web	X		Learner note data format (to include Hyperlink)
27	Al10	Add, replay and delete audio memo	X		Learner note data format (to include linkage to audio file)
28	Al11	Text input with speech recognition	X		Learner note data format
29	Al12	Index of added information	X		To follow Al01/Al07/Al08
30	Al13	Time stamp of added information	X		To follow Al01/Al07/Al08
32	AU02	Online authentication	X		Purchase authentication scheme
33	AU03	Offline authentication	X		Purchase authentication scheme offline
34	AU04	Digital right management	X		DRM scheme
35	AU05	Usage restriction in case of copyright violation	X		DRM scheme
42	CR06	Interactive media representation	X		Options of interaction: HTML5? JS?
47	CR11	Equation expression with markup language	X		Equation data format: MathML, Tex, or another?
54	LS04	Sensor data utilization in tablet PC	X		Navigator API of HTML5 should be provided
55	LS05	Link to or call another application	X		Calling scheme of another application
57	LS07	Update of e-Textbook contents	X		Version control sheme?
58	LS08	Notice board	X		Calling scheme of another application?
59	LS09	Discussion board	X		Calling scheme of another application?
60	LS10	Q&A board	X		Calling scheme of another application?
61	LS11	Time table	X		Calling scheme of another application?
63	LS13	Archive of learning achievement and history	X		Data format of learning history
65	LS15	Assist of adaptive and self-regulated learning	X		Data format and necessary function of Javascript?
66	LS16	Material customization by teachers	X		Customization scheme
67	LS17	Organization and management of learner groups	X		Learner group data format
68	LS18	Screen sharing and file exchange	X		Calling scheme of another application
70	Rl01	Dictionary, linkage from/to body text	X		Calling and returning scheme of/from another e-book
71	Rl02	References books, linkage from/to body text	X		Calling and returning scheme of/from another e-book
72	Rl03	Selection of dictionaries and reference books	X		Calling and returning scheme of/from another e-book



Sample Big Picture of Learning EPUB3



Feasibility Check Example on EPUB3: Latitude / Longitude (LS04)



iBooks3 : OK

ライブラリ

現在の位置情報を表示

緯度 : 35.68185488999998
経度 : 139.73297233999995
緯度経度の精度(単位 : m) : 1414
高度 : null
高度の精度(単位 : m) : null
方角(3GSのみ) : null
対地速度 : null

この地点に近い住所を表示する(Finds.jp)

この地点に近い住所を表示する(Yahoo)

Readium : OK

Readium

現在の位置情報を表示

緯度 : 35.6834035
経度 : 139.7321436
緯度経度の精度(単位 : m) : 44
高度 : null
高度の精度(単位 : m) : null
方角(3GSのみ) : null
対地速度 : null

この地点に近い住所を表示する(Finds.jp)

この地点に近い住所を表示する(Yahoo)

Himawari: NG

センサー情報

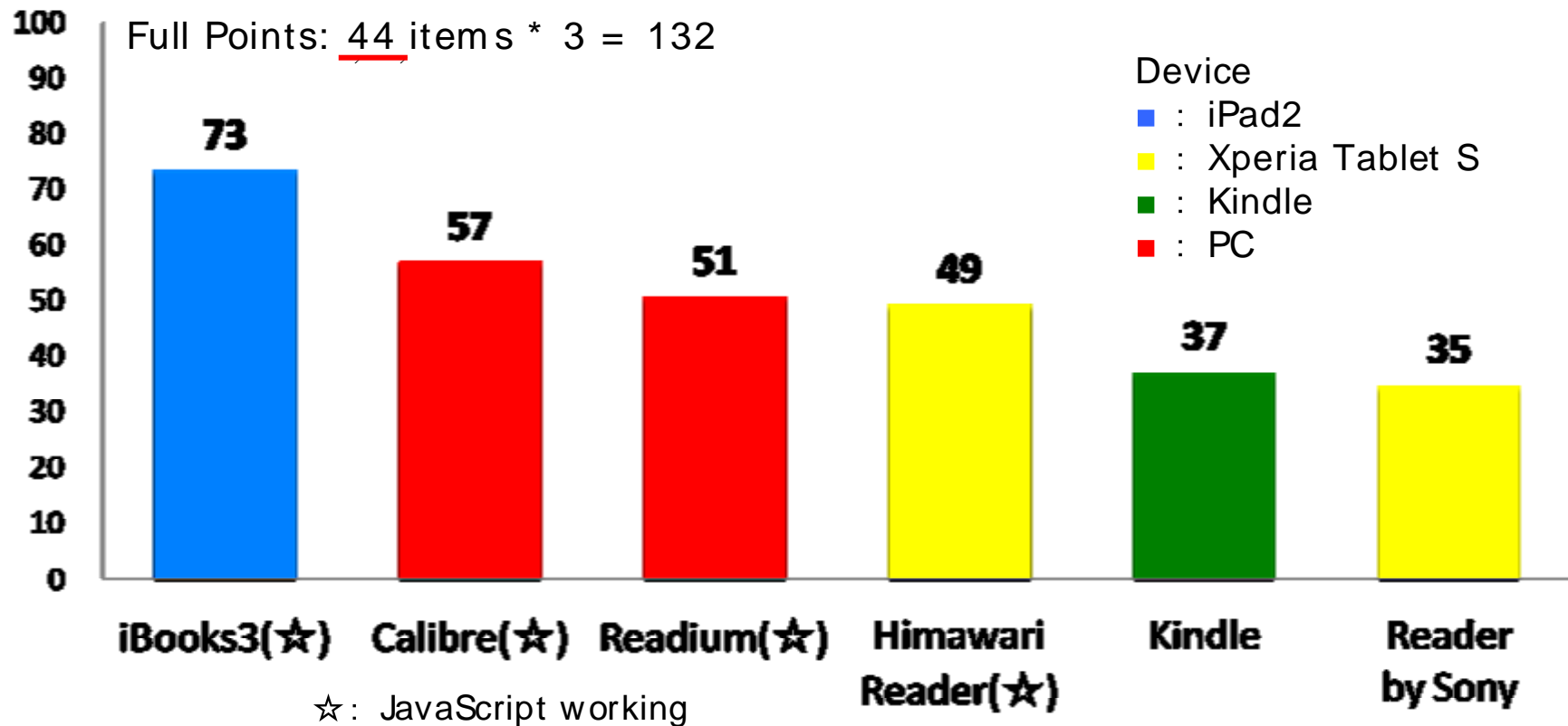
現在の位置情報を表示

lat, lng, accuracy

Evaluation Summary



- No Full-point EPUB software
- Reason: Functional Insufficiency / Performance Lack
- Findings: Both hardware and software should be improved





Thank you

Comments & Questions,

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