

# The AAP EPUB 3 Implementation Project

## I. Executive Summary

Despite wide agreement on the importance of the EPUB 3 standard for ebooks, its implementation by reading systems and its use by publishers are currently incomplete and inconsistent. This situation is compounded by the fact that certain publishers are reluctant to use EPUB 3 features that can't reliably be expected to work across reading systems, and the fact that reading systems developers appear reluctant to implement features they seldom find in the EPUBs provided by publishers.

In an effort to help improve this situation, the Digital Issues Working Group of the Association of American Publishers (AAP DIWG) launched the "AAP EPUB 3 Implementation Project" in July, 2013. The goal was to bring together a group of people who could provide perspectives from a variety of publishers, reading system developers, retailers, service providers, and the accessibility community to jointly articulate priorities for the implementation of EPUB 3 features by reading systems and best practices for the creation of EPUBs, with a special emphasis on enabling accessibility. This is particularly urgent because many publishers plan to distribute large numbers of EPUB 3 files in the first quarter of 2014 and are already finding the need to prepare those files with workarounds due to the inconsistencies in the ecosystem.

It is important to note the near-term focus of this initiative. It is generally agreed that all features of EPUB 3 are important and useful. Complete implementation of all features, and the best practices in their use in the EPUBs created by publishers and their service providers, is a widely shared goal. The purpose of the AAP EPUB 3 Implementation Initiative was not to reassess the EPUB 3 specification, but to focus on the most important priorities and best practices in the near term.

This initiative was intended to *initiate* a process, not to conclude one. It is hoped that it will help stimulate and support further collaborative work by other organizations to advance the development of the EPUB ecosystem by developing preflighting and conformance testing tools, model EPUB files, and other resources. It is also hoped that this initiative will encourage publishers, reading system developers, service providers, and retailers to contribute—either through financial support, participation, or technical contributions—to such efforts as well.

People from many related industry organizations participated in this initiative, and several of those organizations have indicated support and a willingness to help further this effort.

- "The IDPF welcomes all efforts to accelerate both the implementation of EPUB 3 and its use by publishers. The AAP EPUB 3 Implementation project is making an important contribution, especially in helping to focus attention on the most urgent priorities for feature implementation and best practices, and thus helping to bring reading systems and publishers into better alignment around EPUB 3. In addition, it reinforces the value of work IDPF is doing in this regard, such as our in-development Reading System Conformance Test Suite for formally testing reading system compliance, and our future plans, including the development

of additional preflighting tools that build on what the EpubCheck validator currently does to also interactively test accessibility. We are also exploring the development of additional services to better assess accessibility and best practices in general, in line with the best practices articulated by the AAP EPUB 3 Implementation project.” —*Markus Gylling, CTO, the International Digital Publishing Forum (IDPF)*

- “The Radium Foundation is developing robust open source components to fully support EPUB 3 and the Open Web Platform. We welcome the work of the AAP EPUB 3 Implementation Project in helping to clearly articulate near-term priorities as both publishers and solution providers proceed to roll out EPUB 3 support. This important work will be of great assistance to the ongoing development of Radium technologies and most importantly to our members adopting Radium components to deliver EPUB 3 support in their products.”—*Bill McCoy, President, Radium Foundation and Executive Director, IDPF*
- “The Book Industry Study Group is fully supportive of AAP's EPUB 3 initiative. Through its Content Structure Committee, a volunteer group of publishing ecosystem stakeholders, BISG is heavily engaged in the successful promulgation of the EPUB 3 standard. The committee, already working with IDPF on the next generation of BISG's popular EPUB 3 Support Grid, plans to review the results of the AAP initiative, and to incorporate this work into its current and future initiatives, including the possible creation of a model EPUB 3 file informed by the work already undertaken by AAP. We look forward to making a meaningful contribution to this effort.”—*Len Vlahos, Executive Director, BISG*
- “EDItEUR is pleased to be able to support and endorse the work of the AAP EPUB 3 Implementation Project and will welcome future opportunities to collaborate with all the project participants in working towards a successful outcome for the project on a global scale. Through its work with WIPO's Enabling Technologies Framework, EDItEUR is actively involved in facilitating access to copyrighted works for people with print impairment; AAP's ground-breaking work is a major contribution to the establishment of best practice worldwide.”—*Mark Bide, Executive Director, EDItEUR Ltd*
- “The AAP Digital Issues Working Group (DIWG), which spearheaded the launch of the EPUB 3 implementation project, is delighted at the broad participation and valuable outputs which have resulted. The DIWG will review the EPUB 3 implementation landscape a year from now, to chart progress and determine whether there are areas requiring additional work where the AAP can provide support.”—*Ed McCoyd, Executive Director for Digital, Environmental & Accessibility Affairs, Association of American Publishers*

A group of volunteers from across the industry, coordinated by the AAP, was divided into “work streams” focusing, respectively, on assessing priorities for EPUB 3 feature implementation, articulating best practices for accessibility in EPUBs, addressing metadata issues, and developing use cases. These work streams conducted intensive virtual meetings through August in order to provide a framework for discussion in a face-to-face meeting held in New York City on September 10 attended by 90 publishing, technology, and accessibility professionals.

This White Paper summarizes the results of that meeting. The issues that the meeting participants deemed most critical for both publishers and reading systems are in the following categories (note that these are not in priority order):

### *Most Critical Issues as Identified in the Workshop*

- **The implementation of manifest and HTML5 fallbacks**
- **Consistent navigation**
- **The improvement and use of validation and preflight testing mechanisms**
- **The inclusion of image descriptions**
- **Proper use of and rendering of fundamental HTML5/CSS3 features such as HTML tables, lists, MathML, SVG, fonts, asides, floats, and image sizing and positioning**
- **Support for media using standard HTML5/CSS features for audio and video with proper fallbacks and EPUB 3's Media Overlays**

These categories were developed in the afternoon session of the workshop, which followed morning presentations by each of the work streams. Those presentations are provided as supplements to this White Paper, along with links to relevant resources. The findings of the Features and Accessibility Work Streams are also documented in the following section of this paper. A summary is provided here.

The Features Work Stream systematically assessed the relative priorities of 36 specific features of the EPUB 3.0 specification, with the publishers anonymously ranking them as critical, important, or nice to have, and the reading systems anonymously assessing whether they would be easy, medium, or hard to implement. That process, described in more detail below, resulted in the following ten categories of features (listed in order of relative priority):

1. **Navigation**, both via thorough TOCs and proper document structure
2. **Audio**, needed for media overlays, aligning with audiobooks, and accessibility
3. **SVG**, an XML-based for scalable images with searchable text
4. **Fonts**, including embedded fonts for design and special characters
5. **Media Overlays**, which enable synchronization of text with recorded audio
6. **Semantic Inflection**, for providing important information about an element's purpose and aids with contextual search and assistive technologies
7. **MathML**, the XML format for math, providing resizable rendering and accessibility
8. **Video**, including proper use and handling of fallbacks in systems without video
9. **Floats**, the CSS function for handling elements outside the narrative text flow
10. **Fixed Layout**, which enables control and display of fixed pagination in EPUB

The Accessibility Work Stream systematically assessed the 129 issues documented in the IDPF's EPUB 3 Accessibility Guidelines and developed a list of "Top Tips for Accessible EPUB 3," for publishers to consider as they implement:

1. **Separate content and presentation:** Use more than just visual cues to convey information. The content's meaning should be the same without styles or formatting.
2. **Provide complete navigation** in the form of a complete table of contents.
3. **Create meaningful structure** by always using the most specific tag possible.

4. **Define the content of each tag** with the EPUB 3 Structural Semantics Vocabulary.
5. **Use images only for pictures, not for tables or text.**
6. **Use image descriptions and alt text:** Every image should have a description, caption or alt text unless it is solely decorative.
7. **Include page numbers** for titles with print equivalents, and provide the ISBN of the printed edition.
8. **Define the language(s)** in both the root element and for words or passages that are not in the default language.
9. **Use MathML** for math content.
10. **Provide alternative access such as captions, transcripts, and sign language to media content:** Enable native video and audio controls by default and offer fallback alternatives.
11. **Make interactive content accessible.** If using custom controls, follow the W3C Accessible Rich Internet Application (ARIA) specification to make them accessible.
12. **Provide accessibility metadata** in your files so end users know what features are there and search engines can discover your accessible materials.
13. **Make sure your processes support the above best practices.**

The Metadata Work Stream addressed the following general issues regarding the use of metadata in, or in support of, EPUB 3 publications:

- **Internal (in the EPUB) vs. external (e.g., ONIX or MARC) metadata**
- **Permanent (e.g., titles) vs. volatile (e.g., pricing, rights, marketing) metadata**
- **Who is the audience for the metadata?**
- **Where is the metadata needed?**
- **What is the metadata needed for?**
- **Do vocabularies already exist?**
- **What are we asking reading systems to do?**
- **Immediate reading system implementation issues**
- **Priorities requiring further development**

The Use Cases Work Stream presentation provided examples of issues currently encountered by publishers in attempting to provide consistent EPUBs to reading systems and the variation in rendering and behavior currently encountered. Key issues in EPUB 3 implementation articulated by this work stream were:

- **Lack of table support**
- **Lack of SVG support to render text on paths**
- **Lack of support of embedded fonts**
- **Lack of consistent support across platforms of @font-face in CSS**
- **Inconsistencies in the implementation of image sizing and positioning**
- **Lack of support for good styling on lists and list-style types**

- **Lack of broad Unicode support across platforms**
- **Lack of support for the @hidden attribute**

In conclusion, the participants in the workshop agreed that it will be critical to continue the work of this initiative by involving other organizations, especially those that are already making meaningful contributions to various aspects of the issues articulated by this initiative. A willingness to support and extend this work was expressed by the IDPF, the Radium Foundation, the BISG, Benetech, the American Printing House for the Blind, the National Federation of the Blind, the DAISY Consortium, and other organizations committed to the successful implementation of EPUB 3.

While it is understood that both reading systems developers and publishers will need to make their own decisions in regard to their systems and publications, it was clear to all participants in this initiative that improvements in both reading system feature implementation and practices for creating EPUBs on the part of publishers are not just important, they are urgent. As mentioned above, the current situation is one of great inconsistency, requiring workarounds and multiple variant files, a situation that must be improved by the better implementation of this important standard.

## **II. Priorities for EPUB 3 Reading System Features**

The Features Work Stream articulated the following key items for implementation of EPUB 3 features by reading systems developers and their proper use by publishers.

### **Implement Manifest and HTML5 Fallbacks**

Publishers should consider including alternate files and proper encoding so that reading systems that do not support specific functionality can “fall back” to simpler functionality. For example, reading system support for video is optional, but if a reading system does not support video, it would fall back to an image provided in the EPUB by the publisher. In addition, there are fallbacks inherent to the HTML5 and CSS specifications, such as specifying a color in extended key terms of CSS3 but with a fallback to RGB.

### **HTML5 Structural Elements**

EPUB is based on XHTML5 structure in files and reading system processing. Without proper structure and nesting, accessibility is compromised, many features do not work, and many best practices cannot be implemented by the reading system or publisher. The proper use of and support for such tags as headings (<h1>-<h6>), <aside>, the @hidden attribute, and tags for lists and tables are considered particularly crucial.

## Navigation

One of the goals of EPUB3 was creating a simplified navigation document that meets the needs of publishers and the accessibility community. The HTML5 <nav> document uses HTML structure to meet the needs of accessibility while providing publishers the option of incorporating design elements. Many publishers have expressed that they dislike creating multiple TOCs, which, in their view, can lead to error and confusion. Many publishers expressed that they would like the navigation document to be the only TOC in the EPUB and for its features (including the use of @hidden) to be fully and properly implemented by reading systems.

## Validation and Preflight Testing

Several tools are being developed that will lead to improvements in EPUB files and Reading Systems. The IDPF and BISG are developing a second generation EPUB 3 Support Grid based on IDPF's Conformance Test Suite. Each test file will test specific functions of a reading system and document whether that system passes or fails. The DAISY Consortium has developed an "Accessibility Screening Methodology" designed primarily for testing the accessibility of a reading system's user interface and functionality. The Workshop stressed the need for financial and technical support of initiatives like these.

## Specific EPUB 3 Features Ranked as High Priorities

### 1. Navigation

- **TOC:** A linked table of contents is a high priority. The EPUB <nav> uses HTML5 markup that is accessible and easy to create, replacing a cumbersome navigation format in EPUB 2 (NCX). Elimination of dependence on the NCX by reading systems and its use by publishers is a high priority.
- **Page-list:** An optional mapping to print pages as part of navigation. Offering page-mapping enables users of print and ebook to be "on the same page" whether in a book club or the classroom, and enables textual references to page numbers (e.g., indexes, cross references, and citations) to work. It is considered critical for accessibility.
- **Landmarks:** An optional short table of contents, the landmarks nav can be used to access key elements of book. It is easy to implement.

### 2. Audio:

The EPUB spec requires support for one of two audio formats (this is a prerequisite for media overlays):

- **MP3**, currently the more popular and common audio format
- **AAC**, the audio format within the MP4 multimedia format

### 3. SVG:

Scalable Vector Graphics are XML-based vector images that can be zoomed infinitely without loss of clarity. This is important to publishers, which can use SVG images without grappling with responsive design. Further, SVG is accessible in that the content is machine readable and can work with Braille readers and even 3D printers.

4. **Fonts:** It is important to see support for fonts and information about fonts in EPUBs and EPUB 3 reading systems. Fonts are not just for design purposes; they are often needed in order to render characters that are not part of default character sets. This is common in non-English words and for special characters, such as those used in phonetics, physics, or math. Important font issues are:
  - **Font descriptors:** The characterization of font data. Support for basic CSS font descriptors without relying on work-arounds is a high priority:
    - font-family (at least serif and sans-serif, without font embedding)
    - font-weight
    - font-style
    - font-size
    - font-face
  - **Embedding:** Inclusion of font files inside the EPUB package.
  - **Font obfuscation:** A standard method for inclusion of font files inside the EPUB package such that they cannot easily be exported for usage outside the publication. (Note that this is not the same as encryption, which is required by some font licenses.)
5. **Media Overlays:** Representation of audio synchronized with text content. This can be a visual display, such as a bouncing ball highlighting words in an early reading book, or it can be an audio book/ebook that keeps one's place between reading and listening. Use of Media Overlays is particularly important for publishers in segments such as children's books as well as for the accessibility community,
6. **Semantic inflection** (e.g., page-break, part, chapter, index, glossary, sidebar, footnote): an attribute that allows for precise statements to be made about markup within HTML (e.g., "noteref" and "footnote"). This allows for precise and uniform markup and rendering across publications and reading systems, allowing for contextual search and improved navigation.
7. **MathML:** An XML vocabulary for describing mathematical notations and capturing both its structure and content. MathML allows for reflowable, resizable, searchable math equations. It is considered crucial for STEM and Education publishers, otherwise math must be displayed as static images. It is also critical for the accessibility community, as images are meaningless and descriptions of images do not convey the same meaning as the MathML.
8. **Video:** The EPUB specification offers two options for video support. Neither is a requirement. However, if video is not supported, the reading system should support a fallback to an image. Being able to “not support” video properly is as important as supporting video, so that each publisher can create one file for all retailers. The two video formats supported by EPUB 3 are:
  - **H.264**, currently the more popular video format
  - **VP8**, a royalty-free format increasingly used on the web

9. **Float:** The CSS property that enables elements to be positioned independently of the linear narrative flow. This is often a property of the underlying system or browser upon which the reading system is built.
10. **Fixed Layout (FXL):** A method for creating static, fixed e-book “pages”. Some content is better suited for a “fixed” instead of reflowable display. This is important to some segments of the publishing industry.

### **III. Top Tips for Accessible EPUB 3**

The following are considered best practices for providing content that is accessible to users who are visually impaired or have other print disabilities (such as dyslexia, etc.). They are based on the DIAGRAM Center’s “Top Tips for Creating Accessible EPUB 3 Files,” which is available at <http://diagramcenter.org/resources/diagram-related-links/54-tips-for-creating-accessible-epub-3-files.html>. Note that more detailed best practices are provided in the International Digital Publishing Forum (IDPF) EPUB 3 Accessibility Guidelines at <http://www.idpf.org/accessibility/guidelines/>. Additional links are provided below to locations within those guidelines and to other resources that address specific issues.

#### **1. Separate content and presentation**

Visual reading is only one way of accessing content. It is not a good practice to use visual-only cues such as colored text, font size or positioning as the only clue to the meaning or importance of a word or section, or to use tables or pictures of text to control the appearance of the content. The meaning of the content should be the same both with and without any styles or formatting applied. It is important for all the text of the publication to be available in a logical reading order. It is not a good practice to use inline CSS or the @style attribute. See <http://www.idpf.org/accessibility/guidelines/content/semantics/separation.php> for more detail.

#### **2. Provide complete navigation**

It is best practice to include a complete table of contents in the front matter and consider including smaller tables of contents at the start of each section. It is also best practice to use <section>, <figure>, and <aside> tags in the content to define a logical reading order. This is particularly important for academic, educational, and other texts with complicated visual layouts like many children’s books.

#### **3. Create meaningful structure wherever possible**

It’s best to create a structure by using numbered headings in a logical structure. For other tagged structures, it’s best to specify their content with the epub:type attribute. For example, the tag that contains the preface of a book might look like <section epub:type="preface">. Specific tags are for specific content only (i.e., the <cite> tag is only for citations) and should be used according

to the HTML5 standard. Use the most specific tag available and do not automatically wrap <div> or <span> tags around everything.

#### **4. Define the content of each tag**

Consider including semantic information to describe the content of a tag. A section tag for the table of contents would look like <section epub:type="toc"> or a list of definitions in a glossary would be tagged with <dl epub:type="glossary">. The EPUB 3 Structural Semantics Vocabulary as defined at (<http://idpf.org/epub/vocab/structure/>) can help to identify content.

#### **5. Use images only for pictures, not for tables or text**

Any content embedded in an image is not available to visually impaired readers. If the textual contents of a table or image are required for comprehension of the document, it's important to use proper and complete markup for text and tabular data, including headers and scope attributes for tables. If images of tables are unavoidable, it's best to provide a link to a separate page containing the properly marked up tabular data. If images of text are unavoidable, then it's important to provide a description and transcription of the text and for accessible SVG (<http://www.w3.org/2000/10/wcag2-svg-techs-020318>) to be used. Accessible SVG graphics allow text in images to be rendered in an accessible way. They can also make it possible to deliver tactile images electronically to blind users with appropriate devices or to help automate the creation of tactile images that can be mailed to the reader with minimum human intervention.

#### **6. Use image descriptions and alt text**

In order to be accessible, every image should have a description, caption or alt text unless it is solely decorative. See specific mark-up recommendations in the DIAGRAM Center Image Description Guidelines, including special mark up for decorative images: <http://diagramcenter.org/standards-and-practices/59-image-guidelines-for-epub-3.html>. See also the IDPF Accessibility for EPUB 3 Guidelines for Images at <http://www.idpf.org/accessibility/guidelines/content/xhtml/images>. and the Described and Captioned Media Program Captioning Key at <http://www.dcmp.org/captioningkey/>.

#### **7. Include page numbers**

Page numbers are the way many people navigate within a book. For any book with a print equivalent, the epub:type="pagebreak" attribute is used to designate page numbers. It is best to include the ISBN of the source of the page numbers in the package metadata for the book. A tag for a page number might look like <span xml:id="page361" epub:type="pagebreak">361</span>. See IDPF EPUB 3 Accessibility Guidelines and Examples for Page Numbers at <http://www.idpf.org/accessibility/guidelines/content/xhtml/pagenum.php>.

## **8. Define the language(s)**

Providing the default language of the content in the root html tag can ensure that each word will be rendered correctly by assistive technology. Likewise, the @xml:lang attribute is used to indicate any words, phrases or passages in a different language, e.g., `<span xml:lang="fr" lang="fr">rue Saint-Andre-des-Arts</span>`. See IDPF EPUB 3 Accessibility Guidelines and Examples for Language at <http://www.idpf.org/accessibility/guidelines/content/xhtml/lang.php>.

## **9. Use MathML**

MathML makes mathematical equations accessible to everyone by eliminating the ambiguity of a verbal description of a picture. There are many tools available to support MathML creation. See the IDPF EPUB 3 Accessibility Guidelines and Examples for MathML at <http://www.idpf.org/accessibility/guidelines/content/mathml/desc.php>.

## **10. Provide alternative access to media content**

When the native controls for video and audio content in HTML5 are enabled by default, media content is much more accessible. Fallback options such as captions or descriptions for video and transcripts for audio are also important. Sign language is also important to many deaf users. See the IDPF EPUB 3 Accessibility Guidelines for Audio and Video at <http://www.idpf.org/accessibility/guidelines/content/xhtml/audio.php> and <http://www.idpf.org/accessibility/guidelines/content/xhtml/video.php> and Described and Captioned Media Program Captioning Key at <http://www.dcmp.org/captioningkey/>.

## **11. Make interactive content accessible**

In order to make interactive content using JavaScript or SVG accessible, all custom controls should fully implement ARIA roles, states and properties, as appropriate. Native controls do not usually require ARIA. See also the IDPF EPUB 3 Accessibility Guidelines for Scripted Interactivity sections covering Progressive Enhancement, Content Validity, WAI-ARIA & Custom Controls, Forms, Live Regions, and Canvas at <http://www.idpf.org/accessibility/guidelines/>, as well as the IDPF EPUB 3 Accessibility Guidelines for SVG Interactivity at <http://www.idpf.org/accessibility/guidelines/content/svg/script.php> and the W3C Web Accessibility Initiative: SVG Techniques for Web Content Accessibility Guidelines at <http://www.w3.org/2000/10/wcag2-svg-techs-020318>.

## **12. Use accessibility metadata**

As part of a general good practice of documenting the accessibility of your content, providing accessibility metadata in your files lets end users know what features are there and search engines can discover your accessible materials. See the IDPF EPUB 3 Accessibility Guidelines for Metadata at <http://www.idpf.org/accessibility/guidelines/content/meta/onix.php>.

### **13. Make sure your processes support the above best practices**

The Accessibility Work Stream articulated the following best practices for publisher workflow processes:

- Create a point of contact in-house for accessibility who can act as a conduit for communication both internally and with external suppliers and customers.
- Initiate a sustained company-wide effort to make accessibility a core value in the production and dissemination of content and in marketing and sales, including development of a company policy statement to express the accessibility commitment.
- Develop and implement accessibility guidelines and training for authors.
- Develop and implement accessibility guidelines and training for editorial and production staff.
- Discuss accessibility issues and standards with vendors.
- Include an accessibility review in the quality-assurance process.
- Add accessibility information to your website and to appropriate marketing materials.
- Add accessibility awareness training for customer service staff.

(For further guidance on these points, see *Accessible Publishing, Best Practice Guidelines for Publishers* at <http://www.editeur.org/109/Enabling-Technologies-Framework-Guidelines/>.)

## **IV. Next Steps**

A fundamental purpose of the AAP EPUB 3 Implementation Project was to help stimulate dialog and collaboration among a wide variety of participants in the EPUB ecosystem—publishers, service providers, retailers, reading system developers, accessibility services and advocates, and others—who share a common interest in the success and wide adoption of the EPUB 3 standard.

The workshop summarized by this White Paper (and the work leading up to it) revealed an encouraging degree of consensus. While the inconsistencies and deficiencies of the current EPUB 3 ecosystem are widely acknowledged, the priorities for feature implementation and the best practices for creating EPUBs are largely shared among participating publishers of many different types, and acknowledged by retailers and reading system developers as well.

And while it is understood that there are obstacles to the implementation of some types of features—especially by reading systems that are based on certain browsers or other rendering technologies, and thus are dependent on those features being implemented in those underlying systems—many of the issues surfaced by this initiative only require good markup on the part of publishers and their service providers and full implementation of fundamental HTML5 and CSS features by reading systems.

While the ecosystem will never be perfect—both the EPUB 3 standard and the reading systems that implement it will continue to evolve—the prospect of a well-functioning EPUB 3 ecosystem is actually quite close: an ecosystem in which a great many fundamental and important features

can be used consistently by publishers with the expectation that they will be implemented in a wide range of reading systems and platforms.

A variety of organizations are already contributing in many ways to furthering this. The final section of this White Paper lists a number of resources that were identified in the course of this initiative as being relevant and helpful in furthering reading system development and best practices in the creation of EPUBs. In addition, many organizations have indicated a willingness to take responsibility for various aspects of the work that still needs to be done. The participants in the workshop encouraged organizations of all types—publishers, retailers, technology companies, service providers, and others—to contribute to these activities.

Activities moving forward outside of AAP at other organizations which have been identified by this initiative include the following:

- IDPF is currently requesting that publishers or others individually send what they consider to be model EPUBs that focus on the issues raised by this initiative, for contribution to the IDPF EPUB 3 Samples Project (<https://code.google.com/p/epub-samples/>).
- The BISG is engaging in the further development of its EPUB 3 Grid (<http://www.bisg.org/what-we-do-12-152-epub-30-support-grid.php>). The next generation of this valuable resource is being created jointly by the IDPF and the BISG based on the new IDPF EPUB 3 Compliance Test Suite, which is designed to formally and systematically test reading system feature conformance. The BISG Content Structure Committee is working with the IDPF to refine the user interface and perform the testing of reading systems. Publishers, developers, and others have been invited to participate in the testing, both initially and on an ongoing basis as reading systems continue to evolve.
- Financial support is being sought for the development and implementation of systems to facilitate accessibility testing as defined by the DAISY Consortium’s “Accessibility Screening Methodology Guidelines and Checklist” (<http://www.daisy.org/daisy-epub-3-developments>).
- Support is also being sought for the development by the IDPF of additional preflighting tools and the advancement of the EPUB 3 standard by its various Working Groups (<http://idpf.org/about-us>).
- The READIUM Foundation (<http://readium.org/readium-project-goals>), formed to promote EPUB 3 and the Open Web Platform via open source development, is seeking new members. Its activities include the Radium SDK project to develop an EPUB® 3 rendering engine optimized for native apps on tablets and other devices, to complement the browser-based READIUM reference implementation in Webkit.

The IDPF, BISG, and DAISY Consortium have all agreed to participate in this ongoing work.

## V. Resources

Resources identified by the work streams in the course of this initiative included the following:

### Features Work Stream

The EPUB 3 Specification: <http://idpf.org/epub>

The EPUB 3 Structural Semantics Vocabulary: <http://www.idpf.org/epub/vocab/structure/#>

Features Work Stream Workshop presentation:

<http://www.publishers.org/attachments/docs/epub3features.pdf>

HTML5 Specification (Candidate Recommendation): <http://www.w3.org/TR/html5/>

MathJax: <http://www.mathjax.org/>

jqMath: <http://mathscribe.com/author/jqmath.html>

W3C Digital Publishing Activity: <http://www.w3.org/dpub/>

### Accessibility Work Stream

For additional information on implementing these coding practices, including examples, a checklist for quality assurance, and more, please consult the International Digital Publishing Forum EPUB 3 Accessibility Guidelines maintained here: <http://www.idpf.org/accessibility/guidelines/>.

The following additional resources will also be useful.

EDItEUR Enabling Technologies Framework Guidelines: <http://www.editeur.org/109/Enabling-Technologies-Framework-Guidelines/>

Training Modules from EDItEUR (including the one on Accessible Images):

<http://www.editeur.org/137/Enabling-Technologies-Framework-Training-for-Publishers/>

DIAGRAM Center Top Tips for Creating Accessible EPUB Files:

<http://diagramcenter.org/resources/diagram-related-links/54-tips-for-creating-accessible-epub-3-files.html>

DIAGRAM Center Image Description Guidelines for EPUB 3:

<http://diagramcenter.org/standards-and-practices/59-image-guidelines-for-epub-3.html>

Described and Captioned Media Program Captioning Key:

<http://www.dcmp.org/captioningkey/>

SVG Techniques for Web Content Accessibility Guidelines:

<http://www.w3.org/2000/10/wcag2-svg-techs-020318>

### Metadata Work Stream

ONIX for Books Code Lists (current Issue 22):

[http://www.editeur.org/files/ONIX%20for%20books%20-%20code%20lists/ONIX\\_BookProduct\\_CodeLists\\_Issue\\_22.html](http://www.editeur.org/files/ONIX%20for%20books%20-%20code%20lists/ONIX_BookProduct_CodeLists_Issue_22.html)

LRMI (Learning Resource Metadata Initiative) schema.org specification:

<http://www.lrmi.net/the-specification>

Accessibility Metadata Project schema.org proposal:

<http://www.a11ymetadata.org/the-specification/>

DAP (Document Accessibility Profile) Vocabulary: <http://stepp.gatech.edu/dap.php>

Metadata Work Stream Workshop Presentation:

<http://www.publishers.org/attachments/docs/epub3metadata.pdf>