OpenEFT:
What It Is and Why It Matters

By John Parsons, Principal of IntuIdeas LLC

“In response to queries from across the industry about OpenEFT, the open specification magazine publishing format posted for industry use in September 2013, IDEAlliance employed the highly respected journalist and former editor of The Seybold Report, John Parsons, to develop this white paper. Our goal is to provide the industry with a knowledgeable perspective on what OpenEFT is and where it fits within the publishing landscape.”

David Steinhardt, President and CEO, IDEAlliance
Magazine and general business information publishers are in such a cycle today. The recent introduction of touch-based smartphones and tablets—combined with the rise of Internet-centric content and a corresponding decline in print—has disrupted the publishing ecosystem. As with many past disruptions, the initial costs of effective mobile content are high, and the potential for revenue is elusive.

The Need for Standards

Naturally, disruptive technology inventors seek to advance their own economic agenda, while everyone else looks for ways to cope with new challenges related to multi-platform publishing. Eventually, however, as the technology becomes generally accepted, economic pressure induces most companies to adopt a set of common industry practices. Ideally, the resulting specifications lower costs by making systems more interoperable, and reducing barriers to entry. They also encourage more innovation by increasing the number of potential competitors on a level playing field.

“Open standards and platforms create a foundation for success. They enable interoperability of technologies and encourage innovativeness and healthy competition, which in turn increases consumer choice and opens entirely new markets.”

– Jorma Ollila, Chairman, Nokia Board of Directors, 11/22/2006

Proprietary technologies offer the short term potential for competitive advantage. However, in the long term, industry standards offer a greater economic benefit, providing businesses and consumers with much greater freedom of choice, thereby creating new and often
unforeseen market opportunities.

Specifications can be influenced or controlled by the dominant industry player, by a larger group of related industries, or by governmental bodies. A specification controlled by a single company may be free and available for others to use. However, the word "standard" applies only to specifications that are developed through an open, public process, fully published and documented, and available–royalty-free–without restrictions. Changes to a true standard are by consensus among many stakeholders, not limited to the business agenda of a few or a single company.

Background: Mobile Device Publishing

Digital magazine editions have existed since the advent of PDF, which could accurately render the appearance of printed pages on almost any desktop or laptop computer. Interactivity, however, was limited to hyperlinks, navigation buttons, and occasionally the playing of audio or other media–using features added to Adobe Acrobat in the early 2000s. Later, Flash-based online digital editions replaced the use of PDFs, offering greater potential for interactivity making it much easier to distribute magazines to remote locations. However, these were still largely restricted to being replicas or facsimiles of the printed original.

During the same timeframe, many publishers experimented with Web-based versions of magazine content, often with disappointing results. Some magazines achieved visual design parity (or at least harmony) between their printed and Web versions. However, for reasons debated to this day, many posted Web content for free while simultaneously selling print subscriptions offering the same or similar content. Paywalls and similar strategies have emerged to counter the free Web content trend, but magazine publishers are still seeking ways to stabilize revenues.

While tablets and smartphones continue to grow in popularity, the fate of magazines on these devices is less certain.

The rise of smartphones and tablets radically changed the nature of digital publishing. In particular, Apple's 2010 introduction of the iPad offered a combination of factors that gave magazine publishers occasion to change their strategy. These factors included:

- Screen dimensions roughly similar to those of many print magazines.
- A more magazine-like “lean back” user experience, in contrast to the “lean forward” experience of desktop or laptop computers.
• Internet connectivity, with its potential for fulfillment cost reduction, frequent content updates, user analytics, interactive multimedia, eCommerce (for editorial, event, and advertising uses), and more.

• Arguably the most important, a more controlled “native app” environment, giving the publisher greater control of the reader experience, payment, and digital rights management.

Even before the iPad was released, some magazine production system developers were busy creating tools for magazine publishers. For example, WoodWing Software added a robust environment for creating tablet apps to its magazine content management and production system. Adobe Systems, AquaFadas, Hipzone, Mobile IQ (later acquired by Quark), Mag+, Paperlit, Zinio, and others also developed systems for creating interactive content apps for the iPad and other tablets and smartphones.

WoodWing went further, releasing its Open Format for Interactive Publications (OFIP) specification under a free license agreement in 2011. According to the press release, OFIP would give publishers the ability “to pick and choose different suppliers and technologies for the various parts of the supply chain. Both the tools to create your publication, as well as the reader apps for the various platforms can be chosen freely.” In fact, many companies used OFIP to create their own tablet creation and packaging tools. However, six months later, WoodWing retired the OFIP format as part of an agreement with Adobe, driving developers who had used the specification to develop proprietary means for creating and packaging interactive tablet apps.

The Adobe tablet app solution, Digital Publishing Suite (DPS), began as a development project with Wired magazine to create a unique content app for the new iPad. It was later released as a combination of Adobe InDesign 5.5 and a cloud-based subscription service for publishers. DPS has come to represent the idea that page layout software originally intended for print page design and production can be used to create apps for tablets and smartphones.

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1 Press Release: WoodWing Releases Open Format for Interactive Publications; April 7, 2011
While other systems have similar attributes, because of DPS’ large market share, it’s worth describing in some detail. DPS includes features that many magazine and general business publishers find essential for creating device-specific or “native” content apps. Interactive overlays, such as slideshows, animations, web content, video, and the like, can be added directly using InDesign. To supplement the strict page constraints of the InDesign environment, users may also add HTML articles to any app. Each edition can be managed in the cloud, distributed to digital newsstands, and viewed on a growing number of devices.

Integral to DPS is Adobe’s .folio format for packaging and delivering data. Until recently, the .folio format was strictly proprietary (see page 11), limiting distribution of DPS apps to supported digital newsstands. However, as an internal format for DPS users, .folio offered a convenient path to creating and distributing content apps on popular mobile devices. In addition to WoodWing, magazine workflow developer vjoon (formerly SoftCare) also offers DPS integration for larger publishers.

Adobe is not alone. Other developers like BlueToad, iMirus, Nxtbook, Tesseract, Zinio, and others have created their own reader and cloud-based newsstand technologies, often based on HTML. They also offer tools for adding interactivity to their tablet editions. Quark Software’s App Studio provides app creation functionality similar to that of DPS, not only from InDesign but also QuarkXPress, as well as from structured XML data repositories.

Several other developers, including Aquafadas, Hipzone, Mag+, and Twixl, have created their own InDesign-based system for creating tablet and smartphone apps. Unfortunately, however, because of the demise of OFIP and the lack of a common standard, these companies have had to develop their own proprietary formats for packaging and delivering content.

The native device app strategy—using DPS or any of its competitors—has significant drawbacks. Creating regular interactive editions for an increasing number of mobile devices is a daunting prospect. Mounting labor costs—only partially offset by steady improvements in page-centric systems—are of increasing concern. By some accounts, digital tablet editions account for only about 4% of total magazine sales volume, so for many, the benefits do not yet justify the continued costs.

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3 Supported digital newsstands for DPS currently include Apple’s App Store, Google Play Store, Amazon Kindle Fire Newsstand, and Windows Store.

4 DPS apps currently play on tablets and smartphones based on iOS, Android, and Windows 8.1.

Many publishers also question whether page-centric, native tablet apps are ultimately the best way to offer a digital edition. The responsive design trend on the Web—where content adapts to any screen size or orientation—is leading many publishers and solution providers towards “Web apps,” using HTML5 and CSS3 for a more flexible rendering of content.⁶

While tablets and smartphones continue to grow in popularity, the fate of magazines on these devices is less certain. Without question, these devices offer a rich media environment in which the “magazine experience” could evolve. However, the current technology for creating tablet and smartphone content—and the cost/benefit equation for doing so—are anything but settled.

**Magazines’ Unique Nature**

Magazines are a unique medium. Taken as a whole, magazines are a complex combination of content, design, reader experience, and economic models—none of which can be completely satisfied by a single format or device. Creating a true multi-media strategy to address these needs is obvious in theory but difficult in practice. To better understand what a technology must accomplish, it is helpful to think about the steps involved in magazine publishing for any format, including print.

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A magazine always contains editorial content, often coexisting with advertising or sponsored content.⁷ In its simplest terms, a magazine workflow involves content creation, production, multi-channel distribution, consumption by readers, and some form of response, ideally fostering an ongoing relationship between the audience and its spokespeople or storytellers.

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⁶ Parsons, John; “The HTML5 Question: To App or Not To App?” FOLIO; Access Intelligence; April 13, 2011

⁷ The inverse is true for catalogs, which often have the appearance of a magazine and follow many of the same production workflows
It will help to remember that this simplified workflow is actually circular in nature, regardless of the medium or channel being discussed. Feedback or response to editorial or ad content is a time honored part of the medium, although it has been accelerated with the advent of digital.

When discussing workflow and standardization, it is also important to note that in today’s economy, almost all elements of the magazine experience are digital, even those associated with the print channel. Computers are invariably central to the creation of static content, the addition of new media types, the sale and design of advertising elements, the design and assembling of the final package, production variables like color management and final output, as well as tracking of delivery, sale and audience response.

For each step of the digital process, a complex array of variables must be maintained. Some of these are already standardized, such as the delivery of PDF-X or SWOP profile for print, or the use of PRISM for structured content syndication and content management. However, in the emerging digital channel, standards have not yet been applied to many key facets of the magazine experience.

Each of these elements—whether on the editorial or advertising side—has complex requirements for interaction with adjacent elements or processes. To make matters worse, such interaction is often between many different companies with separate IT infrastructure and business systems. In addition, there are often unique resources and interactions required to accommodate different devices, operating systems, platforms, and distribution channels. To the extent that these interactions are manual, the costs will remain high. A truly common specification or standard would lower the overall cost structure for the complex magazine supply chain.

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While the actual printing and distribution of magazine copies involves physical processes, these are overwhelmingly controlled and managed by the digital information world. Reading the printed magazine is of course non-digital, although 2D barcodes and augmented reality apps are changing the “pure analog” experience of reading.
OpenEFT: History and Technology

As tablet and smartphone apps have increased in importance to magazine publishers, many have expressed a desire for a truly open interoperability specification. In part, this reflects a desire to replace the now-defunct OFIP format with one that is not dependent on the agenda of a single developer. Others, including DPS users, have expressed frustration at not being able to easily use certain digital newsstands.

In early 2013, members of IDEAlliance eMedia21 New York group proposed such a specification. IDEAlliance is an industry association for both print and digital media, and an active developer of best practices and open specifications. At the initial meeting, both publishers and technology companies agreed that the industry would be best served by a specification that was:

- Openly published, documented and made available for all to use royalty-free and without restrictions
- Based on underlying open standards (e.g., Dublin Core, PRISM, HTML5 …)
- Developed through a public, community-driven process
- Created, enhanced and maintained over time by a vendor-independent standards organization

An IDEAlliance working group was formed to develop this concept, which was named OpenEFT.⁹ The committee’s key finding was that “there are a variety of readers and newsstands (which accept varying formats and level of interactivity) for digital editions of magazines,” but “…there is not a common open format to publish digital editions.” The goal was to develop “an open format specification for the exchange and rendering of enhanced tablet publications that can be delivered to and ingested by multiple newsstands and rendered on multiple devices.” Version 1.0 of the specification was published on September 30, 2013.¹⁰

OpenEFT is an XML format for the packaging, delivery and display of interactive magazine and other design-intensive content on tablets and mobile devices. It leverages both the EPUB Open Packaging Format (OPF) and IDEAlliance’s PRISM Metadata Specification for content and advertising, along with the definition of a new XML rendition language with support for both common and custom interactive enhancements and an open analytics

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⁹ EFT stands for “Enhanced for Tablet.” This is one of several designations for tablet-specific publications, as defined by The Association of Magazine Media (http://www.magazine.org/insights-resources/guidelines/tablet-metrics).
¹⁰ The current specification and related resources can be downloaded from the OpenEFT website, at http://www. idealliance.org/specifications/openeft/resources/46.
tagging model. The format is documented in two specifications: a standardized definition for packaging content\textsuperscript{11} in ZIP format plus platform-independent XML rendering instructions for the contents of a magazine issue.

The committee determined that the specification must be based on certain principles, including conformity with relevant standards and specifications. Current and future versions must also support all the common types of tablet interaction, provide full support for advertising integration, and allow for emerging technology trends, including HTML5.\textsuperscript{12}

In practice, OpenEFT will enable users to export interactive digital magazine issues using existing workflow tools, into a standardized format for exchange and rendition. It will also deliver a non-proprietary content package that digital newsstands can easily transform or customize. Developers will be able to publish reader applications to a broad spectrum of platforms with a single set of reader/viewer-independent XML based instructions.

Because magazines are typically complex hybrids of editorial and advertising content from multiple sources, it is especially important that OpenEFT be used to facilitate the exchange of production-ready interactive ads from brands or agencies packaged with all required media files, enhancements and business data.

OpenEFT can also provide a vendor-neutral framework for gathering user metrics for both editorial and advertising content, for any analytics reporting model.

Finally, OpenEFT can serve two equally important functions for publishers trying to bridge the gap between their legacy print or print replica models and a device-independent, responsive design model. Whether authoring tools remain in the traditional page design realm, a “pure” content-first approach, or a mix of the two, it is important that these tools communicate in a common language. Without a public, unrestricted, magazine-specific packaging and exchange format, publishers will have to choose between a decreasing number of proprietary solutions–or commit to a model that does not fully express the unique nature of magazines.

\textsuperscript{11} Content types include page images, ad images, PDF files, pictures or thumbnails, video and other multimedia assets, HTML5 encoded text, scripts, style sheets, icons, and navigation elements. Other content types are under consideration.

\textsuperscript{12} Go to http://www.idealliance.org/specifications/openeft/design-principles for the complete list of OpenEFT design principles.
The Business Case

To date, several developers have demonstrated software tools for generating and handling content using OpenEFT. More are anticipated. Broadly speaking, these applications fall into five categories:

- Content Creation or Capture (from conventional tools or XML repositories)
- Adding and Modifying Metadata (for articles, advertisements, and the entire issue)
- Design and Rendering (of both static and interactive elements)
- Packaging and Distribution (for multiple platforms and newsstands)
- Data Gathering and Ongoing Engagement (complex reporting of user/consumer behavior, including social media usage)

As with any standards initiative, the business case lies within a number of key factors:

**Interoperability:** In the complex, multi-vendor, multi-system world of magazine publishing, a universal exchange format for interactive content has obvious cost savings potential for advertisers, agencies, publishers, digital newsstands, and ultimately consumers.

**Automation:** By definition, the use of standards and specifications provides a greater potential for process automation and the resulting reduction on costs across the supply chain.

**Innovation:** With a common framework for basic functionality in digital publications, developers can focus more on new solutions and innovations, offering publishers new ways to attract and engage subscribers and advertisers–and thereby increase revenue.

**Choice:** An open platform allows a greater number of developers to create new and better tools and workflows–not constrained by traditional methods or systems. By definition, a larger, open marketplace will drive down costs.

By definition, an open standard or specification is one that is owned by the entire industry, and is not driven by any one agenda or business model. For publishers dealing with the burdens of ever-multiplying and changing mobile devices, and the stagnation or decline of traditional channels and revenue models, OpenEFT represents a means for publishers of all sizes to cope with present technologies and move towards a better, more profitable technology mix.
Adobe’s .folio Specification

Shortly after OpenEFT was published, Adobe announced its intent to release the .folio technical specification under a free license arrangement, which it did on March 17, 2014. According to the company, this was done to accelerate “digital publication adoption and enabling newsstands to produce their own viewing apps capable of displaying digital content built using DPS.” Version 2.4 of the format specification is based on DPS release 29. Its high level XML structure includes:

• A hierarchical manifest (for the publication and its collection of articles)
• A collection of ZIP packages for the content of each article
• Metadata
• Article directories
• A declarative syntax representing interactive content
• An optional bundle of resources (HTML, CSS) used by multiple articles

While it’s far too soon to evaluate the practical uses of .folio by developers, there are indications of some concerns. The license agreement does allow anyone—even DPS competitors—to use the .folio format at no charge. However, it also makes it clear that developers must accept it “as is,” with Adobe reserving the right to “amend, modify, change, and cease distribution or production of the Specification at any time.”

Adobe’s control of the .folio specification—which is required in order to meet the legitimate needs of ongoing DPS development—may limit its usefulness to the publishing community as a whole.

The agreement also requires that developers who use .folio to create a marketplace for finding, buying or viewing apps, must also provide “equal and non-discriminatory access” to apps or content created in DPS. They must also make a reasonable effort to assist Adobe in integrating DPS with their marketplace. According to Lynly Schambers, Adobe’s Group Product Marketing Manager for DPS, this provision means that such a marketplace would promote and enable the same purchase process of applications containing .folio files as they would for alternative file formats.

14 The most recent version of DPS, announced on the same date, is release 30.
15 The caveat is from Section 4 of the license agreement. Section 3.4 allows Adobe to terminate the agreement with a developer for cause within 30 days, or “for convenience” with one year’s notice.
For current DPS users, the release of .folio will undoubtedly make it easier to publish on a greater number of digital newsstands. According to Schambers, this will not result in pricing changes for DPS users who distribute to newsstands not directly supported by DPS.

A closer look at the .folio specification raises some issues. The .folio packaging model uses ZIP compression but is otherwise not related to comparable industry standards. Initially, there was no XML schema provided to provide a detailed blueprint for the .folio.xml rendering of content for mobile apps. According to Schambers, “Adobe will be providing access to a schema that enables verification of the structure of folio XML files under license and more information will be available soon.”

Article metadata is supported, but it is proprietary in nature, with only 15 fields per article and, more importantly, not related to standard metadata schemas like Dublin Core, or publishing-specific schemas like IPTC or PRISM. Schambers indicated that Adobe does not provide a process for mapping or reconciling such metadata, and that “anyone wanting to do that should decide how to map metadata to the fields DPS currently supports.” For publishers with existing content management and syndication systems, this lack of parity may pose burdensome integration costs. Metadata also plays a critical role in advertising, so .folio’s lack of specific brand or product fields will pose additional burdens.

Schambers indicated that there were no restrictions on InDesign-to-.folio export by developers outside Adobe, provided that the developers were .folio licensees. There are also no prohibitions against converting .folio publication files to or from other formats, such as OpenEFT or EPUB 3. However, the interactivity supported by .folio is limited to the overlays supported in DPS. These represent a rich selection of interactive behaviors. However, the .folio specification cannot be modified (except by Adobe) to accommodate new features such as complex game-like behavior. As a result, .folio limits publisher innovations that would be facilitated by OpenEFT.

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16 The metadata approach of .folio is also incompatible with Adobe’s XML Metadata Platform (XMP).

17 Adobe has indicated it would consider incorporating new interactive overlays into DPS and the .folio specification, but would be the sole arbiter of such changes.

18 Simple, non-Flash animation is possible in HTML5, using applications like Adobe Edge Animate. There are a number of other options available, including Canvas, SVG, CSS, and JavaScript.
Third-party use of .folio raises similar questions with respect to analytics. DPS itself boasts a robust analytics approach, particularly in concert with Adobe SiteCatalyst. However, the .folio format does not appear to include an open model for analytics tagging, as does the OpenEFT format.

For top-tier publishers—many of whom already use DPS—the free license .folio specification may indeed provide better distribution through an increase in compatible digital newsstands. However, for second-tier or content-first publishers who do not or cannot use DPS, .folio poses at least as many potential limitations and cost barriers as it purports to resolve. Above all, Adobe’s control of the .folio specification—which is required in order to meet the legitimate needs of ongoing DPS development—may limit its usefulness to the publishing community as a whole.

Other Considerations

Another open format that could be employed by magazine publishers is EPUB 3. A true, open specification governed by the International Digital Publishing Forum (IDPF), EPUB 3 has expanded the role of EPUB from its original focus on reflovable text documents (e.g., ebooks) and now has more advanced capabilities for rendering complex, design-intensive publications. This is especially true in the business world, where companies like IBM have decided to support EPUB as their primary packaged portable document format.19

To support print-replica magazine publication, an EPUB 3 file can be used to render fixed layout content, using HTML and/or SVG. A PDF rendering mechanism has been considered, but is not yet implemented. EPUB 3 already has some recognition in the magazine world, primarily in Japan, and several developers, including some of those who also have developed OpenEFT capabilities, as well as Adobe itself, also support EPUB 3 output.

Both IDPF and IDEAlliance have expressed interest in working together at some point in the future to define a unified specification to meet the industry’s multi-platform publishing needs. However, at least for the present, some of the more complex aspects of magazine editions—notably the exchange of advertising and other third-party content and a framework for tagging analytics—have not yet been incorporated into the otherwise robust EPUB 3 specification.

According to Dianne Kennedy, IDEAlliance Vice President of Digital and Emerging Technologies, and editor of the OpenEFT Specification, “OpenEFT is a tactical solution that provides almost immediate exchange and rendering capabilities for today’s tablet magazine editions, without having a disruptive impact on current workflows and practices. OpenEFT

19 TIDPF Press Release: IBM standardizing on EPUB to reduce digital barriers and increase mobile support; February 13, 2014
was designed to address the complex combination of content, design, interactivity, analytics, and advertising that typify today’s digital magazines. It was built to support both today’s page-replica based models and to foster the evolution toward the more dynamic magazine models of the future. We have adopted the EPUB packaging model, as that is mature and widely accepted today, and will continue to collaborate with IDPF to assure compatibility in the future.”

Conclusion

OpenEFT 1.0 was published in September 2013. By October 2013, two implementations were demonstrated at the IDEAlliance PRIMEX EAST event in New York City. The ability to write an OpenEFT package out of InDesign® layouts using Scriba XML™ was demonstrated by eMerge Consulting. The first OpenEFT reader software was demonstrated at the same event by Hipzone. By the end of 2013, support for the OpenEFT format was demonstrated by Aquafadas in its full-featured OpenEFT visual editor based on Adobe InDesign.

OpenEFT is only in its first incarnation. While the specification is already sufficient for many developers, there is much to be done. Fortunately, the nature of an open process means that such changes can occur without limits to innovation and opportunity. With the open format that OpenEFT provides, publishers can take the future into their own hands.
About the Author

John Parsons (john@intuideas.com) is the Principal of IntuIdeas LLC in Seattle. He writes for Folio, Publishing Executive, Book Business, and other publications, and advises on a variety of topics and technologies, including mobile publishing, ebooks, online video, editorial and design workflow, digital color, and Web-to-print.

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About IDEAlliance

IDEAlliance® is a not-for-profit membership organization of more than 1,400 brand owners, publishers, print and premedia service providers, and their materials and technology partners. The Association has been a global leader in information and media technology since 1966. The mission of IDEAlliance is to foster and advance core technologies as well as develop technical specifications and best practices that enhance efficiency and speed information across the end-to-end integrated media supply chain. It has a rich history in information technology, being instrumental in the founding of the first ANSI (American National Standards Institute) committee and served as convener for the ISO Technical Committee that developed SGML, which evolved to become XML (eXtensible Markup Language) that was launched at an IDEAlliance markup conference in 1998. Other industry-leading specifications borne from IDEAlliance Working Groups include Mail.dat, MailXML, papiNet, PRISM (Publishing Requirements for Industry Standard Metadata) and OpenEFT. The Association maintains alliances with global association and standards-making organizations, including ANSI, ISO, Ghent Workgroup, W3C, ANA, 4A’s, Ad-ID, IDPF, MPA, PIA, FTA, SGIA, ISA, and more. IDEAlliance specifications and membership span the globe, with International Affiliates in China, Europe, India, Mexico, and South Korea. More details at www.idealliance.org, 703.837.1070, or info@idealliance.org.

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