The renaissance of publishing using digital technologies

An overview for publishers and authors

Jonathan Stephenson

Publishing in the digital age

The demise of the printed edition

For centuries ink based print technologies have lent themselves to the production of editions, where the most cost effective outcome is a sizable print run. Whilst the printing of the work is only a factor in the overall investment a publisher makes, the set up costs and practicalities of traditional print have created conditions that substantially determine the product and the underlying economics of commercial publishing. A long print run gets the unit cost down, though the publisher commits to a stock of identical copies and takes a risk on the size of the edition, its lifespan – and on the content and qualities of the finished publication having been judged rightly for the target market.

Since the 1980s new digital technologies have challenged and changed the nature of printing; and indeed publishing. At the same time the significance and practice of allied activities such as graphic design and photography have undergone changes too and the expectations of the audiences for many types of publication have altered. How published materials are 'consumed' is no longer the same either. There are now many more choices available, mostly facilitated by the Internet, the variety of media it can carry in digital form (text, images, video and audio, as well as dynamic and interactive content) and the range of devices that this may be delivered to – such as laptops, smartphones, Kindle e-readers and iPads. How published materials are distributed has been effected as well. High street book stores have declined in the face of online competition from Amazon, for example; and the 'cherry picking' of popular titles by supermarkets and other retailers. The wastage of overprinting, transport and storage costs, as well as environmental and carbon footprint considerations all have to be taken into account now also.

The impact of this evolving scenario has been particularly noticeable for print based news media where, in addition to competition from digital alternatives, the new technologies have also undermined advertising revenue by providing other cost-effective, measurable, marketing solutions. However, it is much wider reaching than that and the ink based print industry is currently contracting at an accelerating rate as a consequence. The long print run no longer makes as much sense as it once did. So, with the demise of that industry, factors that have for a long time conditioned elements of the business of publishing are disappearing too.

Whilst the physical qualities of a printed work are beloved by many, it is by current standards an inflexible and limited product. For the time being it still has a place in publishing and long may that continue. However, as the ways of experiencing content multiply, the time has come to rethink the place of the printed edition, perhaps as simply one of several alternative publication channels; and to redefine what it does and perhaps even what commercial publishing is.

The rise of digital

In the same time frame the digital technologies that have tolled the death knell for the ink based print industry have become omnipresent. They provide the tools for writing and for designing documents: for graphics, typesetting, photography and video. They are both the physical and virtual product: digitally printed documents, e-books, music and film, the Internet. They provide the devices via which the content is consumed and made: desktop computers, laptops, tablets, mobile phones, digital cameras for still and moving images. And, they provide the enabling technology that supports the

communications and transactions that underpin all business activity and increasingly social interaction: email, text messaging, mobile phone calls, electronic purchasing and banking (which is also a rapidly evolving factor), online storefronts and social networks.

Among this seemingly tangled mêlée of activity there are coherent themes. Of these, media convergence, device convergence and trans-media consumption signal the direction for a potential renaissance of publishing.

On demand printing

It is not printing as such that has declined, at least not in its entirety. Rather it is the ink based print technologies, which are front loaded with set up costs and therefore require long print runs to make them economic that have ceased to be an ideal solution. Digital printing technology has developed in its place and is now on the threshold of equalling, or even surpassing, the qualities of traditional print media. Although the pricing has yet to drop to the unit cost levels typically achieved by a long print run on an inked press, the gap is closing. Digital also has the advantage of flexibility, the results are immediate and its pre-production costs are minimal.

Digital printing is print on demand (sometimes referred to as POD) and can as easily produce one copy of a document as a run of ten thousand, or a series of different documents one after another. Coupled with improved finishing techniques and ever evolving sophistications in document collation it now offers a comparable product. It also offers publishers a new set of possibilities, since the constraints of the long run no longer apply. These include:

Sales dummies and preproduction samples

Conveying the concept of a proposed publication in order to get co-editions on board, market testing of formats or covers with a target audience and preproduction sales to significant clients are all easily facilitated by digitally produced dummies and sample proofs. These could be perfect bound, or even at a cost case bound, to simulate the finished publication. Even if production is still contemplated as a long run on an inked press, the element of risk is better managed by having high quality digital examples as proof of concept and to sell from at the outset.

Backlist publishing

No publication need ever be out of print. So long as a master copy exists in a digital format, either as an original design file, a compiled PDF, a scan from a digitised archive or as an e-book, a printed version may be produced to order. Realistically the cost of doing this for a single copy of a substantial publication may not always make this an attractive option. However, where there is an established demand, though not enough to justify a conventional reprint, small digital runs could satisfy the market need. There will also be instances where something of a highly specialised nature justifies the cost of a one off reprint to a particular buyer. This opens the possibility of monetising historical archives held by libraries, museums, galleries and universities as well as those of major publishers.

Digital run-ons

Editions may be downsized to control risk and potential waste, limit the investment being made, or to test the potential market for a publication, knowing that if the total demand has been underestimated,

or the stock sells out quicker than expected, a digitally printed run-on may be produced, either to top up the original print run in order to mop up the remaining demand, or to create a bridge between it and a follow on edition.

Limited editions

Because digital printing is now capable of high standards and may be combined with quality finishing it is practical to produce limited editions cost effectively. This potentially opens up more specialist markets to publishers giving them greater freedom to publish worthwhile works as showcase examples to have in their lists, whilst also using the exclusivity of the limited edition to seek premium returns. This is an obvious route to the niche markets of special interest groups. The possibilities of producing alternative editions for different markets need not be overlooked either.

Since digital print may be combined with traditional print output, subject of course to good quality control to achieve a coherent standard, it becomes practical to produce 'special editions' around the core content of a generic one.

Book packaging and educational publishing

Following on from the logic of what has been said above, digital print technologies also lend themselves to book building for a particular purpose. This is already being exploited for education and training materials, where bespoke versions of course resources are compiled from the components of modular publications, or by assembling a single coherent output from elements taken from several different sources.

If the flexibility of this approach is combined with the versatility of digital authoring and design tools and the content resources of an established publisher, the potential for 'book packaging' is enormous. Different versions of a book could easily be produced for co-editions, or a multitude of books could be created for alternative markets, by combining sections of different publications seamlessly.

For educational publishing, the features available from digital technologies – bookbuilding, personalisation, versioning, related asset collation (such as linking associated teachers' notes); and making other means of absorbing information available for different learning styles (video, voice-over and interactivity); have huge implications for a market that is increasingly under pressure to deliver value and worthwhile outcomes for student clients, in a challenging and competative market.

Rolling updates

One of the benefits of publishing a digital output, whether as a digitally printed edition, or via some other digital channel, is that since it is called off on demand, updates, or corrections, may be made as a rolling process. This means that the content of a publication need never be out of date.

Magazines, catalogues, brochures and prospectuses

To be cost effective magazines and catalogues typically require relatively sizable print runs. However, as an increasingly individually focused information culture, fed by the experience of online environments, makes mass audience generic topic magazines, with fixed and limited content, less appealing and the consumer increasingly responds negatively to unwanted, or irrelevant marketing, a more flexible approach may be called for.

In the case of magazines, digital print combined with Variable Data Publication, personalisation and links to trans-media experiences (see all below) and a fully digital alternative (an e-publication), if preferred, open up considerable possibilities. These include developing publications for long-tail audiences (also below), particular audience segments, or delivering personalised content and relevant advertising to individuals. Indeed, if called from a pool of content, a magazine constructed differently for each individual reader is entirely possible. Revisiting the idea of subscription publishing, with pay per use royalty systems to remunerate content providers, could easily produce 'The Daily You', or 'Your Monthly' magazine.

Catalogues, brochures and prospectuses produced in long print runs are not targeted to the specific interests of the user. Whilst this may not always be a problem, it is often a lost opportunity to communicate with the potential customer directly and relevantly. It may also be confusing and simply annoying to bombard a prospect with information that they are not specifically interested in and may cause them to ignore, or overlook, that which does appeal to them. 'Push marketing', where the marketing professional 'pushes' what they want to say at the prospect is no longer very effective. A prospective customer knows that this is what this 'pushed' content is – and equally what their requirements for products, services, or information, are likely to be.

Variable Data Publication has proved very successful with prospectuses and advertising literature of various types, producing uptakes and call-to-action responses of up to eight times what might, at best, be expected from blanket print runs and generic mail outs. The same concepts are applicable to catalogues and offer leaner, greener and more customer-focused alternatives to a standard publication. The greatest incentive of course is the increased likelihood of customer engagement.

Magazines and catalogues may also act as gateways to further layers of content in other media. In the former case this allows a topic of interest to be 'consumed' in depth, or as a richer experience. The 'Esquire' magazine 'Augmented Reality Issue' from 2009 is an early example of this [e-note: 1]. In the case of a catalogue, it enables and converts the prospective customer by providing further detailed information, an opportunity to 'browse' virtually, or provides them with what they may need to know, in order to make best use of the product and become a satisfied customer (see *The trans-media experience* below).

Niche publishers, not for profit and the alternative press

Arguably the opportunities for niche publishers, not for profit organisations and the alternative press are self-evident in what is being said. It seems pertinent to emphasise this specifically though, since these activities collectively represent a substantial body of publishing that hitherto, with the exception of a few professionally developed specialisms, has existed largely as the efforts of, on the whole, enthusiasts and amateurs with varying degrees of skill. This is reflected in the qualities and commercial viability of much of the output. Access to digital technologies has a low entry level and production in limited quantities, or on demand, at affordable pricing, has made it possible for these areas of activity to both professionalise and grow.

In practice they will mostly fall within the category of self-publishing that follows. However, with access to world-wide long-tail markets of special interest groups and sub-cultures, particularly among the socially networked young, an expansion of the small scale commercial end of this is foreseeable. So too is improving quality, as template based solutions are enabled for commonly produced items.

Digital solutions certainly enable the growth of a semi-professional involvement in publishing and facilitate improved production values for anything from local history booklets to graphic novels.

Self-publishing

Professional publishers bring professional skills to the publication process. Inevitably though the availability of these technologies has broadened and user-friendly interfaces that access them are increasingly being offered to a wider public, making self-publishing by individuals and small scale niche market publication by enthusiasts a blossoming direction of travel. On demand, direct to consumer, printed copy sales portals are an allied development.

Whilst this is no doubt fuelling an increase in vanity publishing, it also facilitates publication pathways for authors and content providers of quality both established and as yet unpublished. The low entry level costs of publication using digital print remove barriers to self-publishing at a level of production value that is commercially viable. Seeing how the music industry has lost control of its marketplace since the rise of the Internet, with the digitisation of music and the use of social networks for promotion and marketing being used to bypass the big players — the publishing industry should take note. So too of course should aspiring authors.

Direct to e-book self-publishing functionality is becoming widely available to this market too, which may be an even more favourable option for it, since there are no print costs and the possibility of free or low cost services, that achieve this outcome has to be a consideration for many authors.

Variable Data Publication

To date typically used for marketing and communications and by no means limited to a digital print output, Variable Data Publication (VDP) produces radically different alternative versions of the same document to target segmented traits within a collective audience. These may vary in content, length, cover design, illustration, or even language. This might typically be done by assembling assets on the fly to match the criteria collected in a database prior to creating each run of deliverables. Here the individualisation is achieved by referencing know factors and although complex variables may be invoked, the personalisation is to a degree generic. Never-the-less it has proved highly effective.

Another and more subtle way of deploying the concept is to let the user generate their own version of the publication to meet their specific requirements, thus personalising it precisely, whilst passively identifying their individual profile. What they receive in return is a seamless, coherent, assemblage tailored for them only. As a result the customer satisfaction and 'buy-in' increase substantially, because the document produced is highly effective for their purposes. It is after all a bespoke product that contains exactly what they have asked for.

This technique also enables the accumulation of valuable statistical insights, as well as permitting extremely granular segmentation and highly personalised variables in any on-going digital marketing responses. The creation of the document becomes the entrance to a customer relationship management (CRM) process with the user volunteering their profile. Advanced implementations of this technology have CRM tools built into them.

A variation on this theme is to generate a document based on something else that they have done that profiles them equally accurately. The concept in that case is similar to ad-serving.

The possibilities of Variable Data Publication are by no means confined to marketing and communications, however. The concept is essentially that of giving the customer what they want. Combined with the principles of book building and personalisation, together with the on demand individualised output possible through digital channels – and of course an adequate supply, or archive

of content resources, new types of publication are possible, which adopt a one to one, rather than one size fits all, approach. (See *Limited editions*, *Book packaging and educational publishing* and *Magazines, catalogues, brochures and prospectuses* above.)

A less obvious use of Variable Data Publication is the creation of a user generated 'look inside' sample of a work in electronic form, to replace the browsing experience of a conventional bookshop. This would offer an improvement on the existing fixed selection e-samples currently in use by allowing the potential customer to 'dip into' the book in just the same way as they might in the real world.

Add-on sections and over prints may be added digitally to traditional ink based print runs too, as a further variation on Variable Data Publication. This combines the cost effectiveness of a long print run with an element of personalisation, or targeted audience reflection to achieve a hybrid solution.

Personalisation and the long-tail market

These ideas have been covered elsewhere in other several contexts, though it is worth making specific mention of their importance.

Personalisation may be the simple addition of a name or the more complex response of an advanced implementation of Variable Data Publication. Arguably it might also include allowing the selection of a cover style, alternative content version, or format, for a publication from a limited selection of choices – and perhaps uploading their personal content as part of a process. The point is that the user is responded to individually and may have some control over the outcome. The expectation that this will be the case has probably evolved from, or at least been encouraged by, the user experience of online environments and the evidence is that it improves the relationship.

The traditional publisher's edition based on a long print run of identical product, where there is only one choice and no element of that relates to the user, unless somebody hand writes a dedication inside the cover, does not fit this requirement. Subscription based publication, an old idea, probably has a place here.

The long-tail market has been enabled by the Internet – though it could be said that it existed previously in the form of catalogue based mail order operations. Here the idea is simple. In any one place there might be limited interest in a topic, product or service: 'something'. Such interest as there is may be replicated in other places though and globally that might amount to a huge, though widely distributed market for the 'something' in question. Digital technologies make it relatively easy to reach long-tail markets and certainly in the case of publishing, to provide them with product.

Whether the publication channel is real or virtual, so not necessarily involving print, digital solutions allow global reach and open up long-tail markets for specialist publishing. Some of these may prove to be quite substantial.

e-Books

The emphasis so far has been on solutions involving print and the possibilities that digital printing has introduced that traditional print industry and publishing practices have previously been unable to offer. There is of course no need to print at all though. A publication may be created digitally, exist digitally and be accessed from a digital device without ever becoming physically real.

This has been the case for a while, though full scale publications such as books have only recently become the subject of this way of consuming published content. The simulation of a familiar experience has aided its acceptance, with touch-activated on-screen page turning an obvious example. The introduction of tablet mobile devices, of which the iPad is the leading example, a concept now replicated by many other manufacturers; and paperback sized electronic book readers, such as the Kindle and Nook, has also opened the market for this means of delivery substantially. The market share of the e-book is increasing rapidly and the convenience of the library in the pocket that it enables makes it likely that growth for this format will continue exponentially.

A work of caution though, there is still latitude in the definition of what an e-book is. The technology is still evolving and there are different possibilities. The capabilities of an e-reader and a tablet are quite different also. A large amount of what has happened so far is text-centred, which has a low entry level, both technically and in terms of cost. A good deal of that does not depart from the two dimensional linear thinking of a printed work. Some of it is indeed just poor quality conversion of previously published novels and substantially text based documents; developed for print and subsequently dumped onto screen, when that became a market with apparent growth potential. Or, it represents the output of small scale independent publishers and enthusiastic self-publishers attracted by the low threshold to publication that e-books offer—and has relatively low production values.

Auto conversion tools and quick trick plugin solutions for print design software packages have also become numerous. Whilst these may solve an immediate problem for the graphic design profession and have proved reasonably popular with the magazine sector (which publishes short lived editions, often with a substantial circulation in print as the driver), it is debatable whether they are a long term answer. They facilitate some 'bells and whistles' additions to a page rendered on screen, though do not actually depart from essentially print based concepts.

ePUB 3

All this is about to change. The agreed and interoperable standard for producing e-books is the ePUB specification and a new version of that, ePUB 3, has been finalised (as of October 2011) by the International Digital Publishing Forum (IDPF) and is already being implemented by early adopters. (However, see *Alternative platforms and technologies* below).

Expanding on the comment about conversion tools and plugins above: Continuing to look towards the existing publishing processes for print and established practices of the graphic design industry as the foundations for what happens next is a misjudgement of the situation, because the underlying technologies of ePUB e-books are taken from the web and other digital development environments (XHTML, HTML 5, CSS 3, XML and SVG, plus multimedia, JavaScript and MathML). Nor are they radically new, although these are the latest implementations of them. Their possibilities are well understood by digital professionals and many of the technical problems that are evident in the evolving e-book market have already been met and dealt with online. This includes accessibility, which means that the e-book could become an extremely inclusive form of document.

An ePUB e-book is essentially a self-contained website in a wrapper. In the longer term those publishers that recognise this, assemble e-book production teams from the appropriate skillsets and re-evaluate their workflows, are more likely to gain commercial advantage from this format. This is already happening in the case of some global publishing interests, in educational publishing and among the more enlightened of the smaller publishing houses.

Earlier versions of ePUB already allowed creative latitude: the new ePUB 3 will permit considerably more—and that means a new definition of what a book is. The majority of e-book readers already support the present capabilities of ePUB e-books reasonably well and some of what is expected of

ePUB 3 also, in varying degrees. All the major players in the technologies and delivery mechanisms involved are signed up to implementing support for ePUB 3, so a common implementation seems inevitable—and in fact one reason why some of the Apple e-books appear to be ahead of the game is because their iBooks e-reader already supports many of the ePUB 3 features and some are being implemented within iPad 'apps'. The British Library's 'Turning Pages' books are an example of this, so are some of the Disney® children's books. Added to this, an ePUB file converts relatively easily into other e-reading formats. So, although there may be some inconsistency in how they are rendered in different e-readers to begin with, the flexibility and comparative future proofing that ePUB 3 will offer makes it the obvious choice.

The logic of the situation is to develop for ePUB 3 and then to derive alternative versions from that standards compliant product, to account for the segmentation of the market, its variations; and the time it may take the e-reading technologies and proprietary readers to catch up with what is required of them. The absolute logic here is to create a single source and output to the required channels, including ePUB 3, from that. (See *Content Management, Knowledge Management and the single source* below.) If one of those is a print deliverable, it is then just a matter of an appropriate version of the content being flowed into a template. Alternative e-book formats may also be produced that way, so this is still a good strategy even if there is a period of non-compliance whilst the major players (essentially Apple and Amazon) seek to ring-fence a share of the market for their own variant technologies. (Again, see *Alternative platforms and technologies* below.)

When is an e-book not a book?

With the introduction of ePUB 3 it becomes clear that an e-book is not a poor relation of a printed work, nor is its conversion from a print parent a sustainable model for the future. There are many additional advantages to developing the e-book format directly, which go beyond what a traditional book can do: the document becomes navigable in more complex ways; how it presents to the reader may be changed by them (font, type size and 'paper' colour); it may read itself aloud (so it is more accessible, even without assistive technology); and since it may contain a variety of media not just text, in some manifestations of the concept it becomes possible to embed features that would not be encountered in a printed work—for example video, possibly even one occupying a full spread that begins to play as the page is turned and pauses when it is turned again, a synchronised sound track, an image that zooms to show greater detail, images that open into entire galleries, or interactive notes and supplementary content.

For the time being this territory is occupied by interactive 'apps' for proprietary platforms (chiefly the iPad and iPhone—though alternative Android devices are establishing a market presence too), since these offer the most scope for new forms of creativity and for pushing boundaries towards where the book of the future lies. Al Gore's *Our Choice* demonstrates this, as does *The Professional Chef* from the Culinary Institute of America. The core technologies have common ground and in the short to medium term converting content developed for ePUB 3 e-books to create 'apps' may be a necessary option for publishers seeking to maximise their markets—and that may be a good way forward anyway if content that dynamically updates itself is part of the document's underlying principle. However, Apple's fixed page ePUB variant potentially makes their iBooks equally capable.

So, it not only becomes necessary to produce an e-book version of a print publication from now on, in order to reach all of its potential customers. There is also a need to consider what other dimensions that publication should contain and whether or not the e-book should be the lead product in the production process, or indeed the only one. Clearly that may not apply to every type of content. However, it is easy to conceive of many scenarios where the consumer is offered a different experience of the same work dependent on the publication channel.

Accessibility and inclusivity

Accessibility has been mentioned briefly and a few words should be said to expand on that. Firstly, as indicated above the underlying technologies are derived from the web where accessibility has already been given an in-depth consideration and there are solutions available that should improve access to content for the disabled user, either with the aid of assistive technology, or in some instances through standard functionality. A well-structured document is at the heart of this and producing an accessible e-book with ePUB 3 is not going to be that much different from delivering a good quality e-book for any purpose or audience, simply by the application of best practice. The ePUB 3 specification goes a step further though and makes accessibility an integral part of its standard. (This includes the ability to alter the appearance of the document to suit the user's needs. Interestingly, however, there is a contradiction in the non-compliant fixed page format presently being advocated for complex content layouts, which does not use flowing resizable text.)

The new Media Overlays specification is a part of the ePUB 3 standard as well, although the concept of a media overlay is not new and is present already in Digital Talking Books. Even without this Microsoft Reader and the Blio software for e-reading currently read aloud from variant forms of e-book file. Adobe Digital Editions version 1.8 is an e-reader currently in development that has greater accessibility as its theme, which includes the ability to integrate screen reading software. This makes it able to read out any ePUB e-book that is well made, including existing ePUB 2 e-books. The next generation of all e-reader technologies should incorporate improved accessibility features, so an ePUB 3 e-book will also be able to function as a talking book. With the support of aural style-sheets this should offer an improved experience and of course access to much more content.

Since CSS 3 enables vertical text layout and it is possible to embed fonts in ePUB 3 documents, publication in many different languages for a global market has also become possible. So, the ePUB 3 format promises to be extremely versatile and potentially inclusive of many different audiences.

Textbooks that teach

There are other applications of these capabilities. A media overlay might also be used to turn text into a reading aid, so that the e-book itself teaches its user to read. Or, it may provide an additional learning path to a language text book: a French book that teaches pronunciation perhaps? Combined with Scalable Vector Graphics, MathML, and multimedia additions such as video (which might also include quizzes and learning exercises) the possibilities of ePUB 3 e-books for creating advanced self-directed learning resources appear huge. Unsurprisingly some publishing technology suppliers are already becoming involved in this area of e-book development, not only in e-textbook production, in the solutions that provide global reach to such enhanced learning experiences as well, which will make it possible to deliver quality education to a massively extended audience.

The possibilities of this have clearly not escaped Apple, who in January 2012 introduced a new, free and easy to use development tool for creating interactive e-textbooks, iBook Author, which creates content for the iBook 2 platform. Some of the large educational publishers such as Pearson and McGraw Hill had already become involved and titles with interactive learning content were immediately available as role models of what is possible.

Whether or not iBook Author will become the direction of choice for professional publishers remains open to debate, since the licence and proprietary extensions used have come in for some criticism. Never-the-less the door has been opened on the obvious advantages of textbooks that teach—and that this will eventually revolutionise education seems inevitable.

(Again, see *Alternative platforms and technologies* below.)

Alternative platforms and technologies

To recap: A lot of e-book production to date has been focused on text-centred works, predominantly novels—that are presented to the reader on paperback sized e-reading devices such as the Kindle. The presentational possibilities of this initial approach have been limited and the introduction of more technically capable tablet devices, led by the iPad, has moved the e-book market on. Amazon's Kindle Fire e-reader recognises this and ensures that the evolutionary process will continue and accelerate to embrace other types of publication.

Tablet devices are able to deliver images and multimedia as well as text. The interactivity and rich media experiences that are already well established features of the web have been re-presented here as the self-contained 'app'. The ePUB 3 specification offers similar capabilities and is clearly where the future of the e-book should lie. This has opened up the possibilities of much more complex types of digital publication and some publishers have already moved into this area to begin exploiting the opportunities for adding value to their content; and with an eye to its future growth.

However, a further word of caution: there are alternative operating platforms and technologies currently fighting for dominance of the marketplace. Apple's iPad is the most successful tablet. Google's Android operating system has not yet dented its dominance although is making good ground in the related smartphone market. Both are likely to fully support ePUB 3 eventually. Apple's fixed page ePUB variant is not part of the agreed specification though, so may not work as intended on all devices. (This said, both Sony and Barnes & Noble have already indicated that they will also introduce a fixed page variation into their ePUB 3 e-readers.)

Amazon has introduced the KF8 (Kindle Format 8) file type for the Kindle Fire, which is proprietary. This does support fixed layouts, like the iPad—and uses HTML 5, CSS 3 and Scalable Vector Graphics, like ePUB 3. It may also contain audio and video content; however, it is not embracing the ePUB 3 specification in full for the time being. As an additional complication the format is intended to be degradable for backwards compatibility with earlier Kindle devices. There may be logic for that for retaining existing consumers within a ring-fenced market share; from a development standpoint though it presents difficulties.

Disappointingly as well Apple's iBook Author tools, already mentioned, use proprietary implementations of some of what was expected from ePUB 3, whilst the license prevents content created with it being sold on other platforms. It has pointed the way at some interesting options though like content that flips from fixed to fluid layout, which may be adopted elsewhere. Because of this it may have to be the Android market and the independents involved in production and distribution that will push ePUB 3, as intended, forward. The Readium Open Source Initiative project announced in February 2012 by the IDPF has the support of other significant parties, so could make this happen. Other downloadable e-readers that will support ePUB 3 on different host devices will most likely erode the hold of proprietary formats as they become available as well.

Whilst conversion from one format to another should not be too problematic, as long as a sensible publishing strategy is in place, a possibility that this may introduce is that the lowest common denominator among the formats will be worked to by many publishers in order to avoid overcomplicating their production processes, rather than the full capabilities of the ePUB 3 specification. There are also variations in the screen size, resolution and colour space in use from device to device—a situation that parallels the evolution of the web and the battles that have taken place there between different platforms; and the 'browser wars', where non-standard features were employed to encourage a greater market share and brand preferences among users, rather than standards compliant interoperability.

There are different solutions available for dealing with the critical issue of Digital Rights Management as well, which arguably also seek to ring-fence market share, or enforce customer loyalty, for the benefit of one technology supplier or another. This further complicates e-publication production processes, so one approach so far has been to focus on a particular market segment only; typically Apple's iPad and its iBook reader; and to develop publications with complex content just for compatibility with that. This is not a sustainable position as the market grows, since it is not only competing tablet devices that represent untapped market share. Mobile phones and laptop and desktop computers are also able to access e-books and several e-readers are available for them (Adobe Digital Editions for example).

Amazon's move directly into publishing, cutting out the publishing houses and Literary Agents, will no doubt prove to be a significant factor too. How this will play out remains to be seen. Apple and Amazon have different business models and motivations (Amazon is primarily a content supplier in the e-publishing market, whereas Apple is a technology supplier, with e-books and 'apps' being the consumables of its devices), so both the iPad and its clones and the Kindle Fire could coexist. Never-the-less the likelihood is that the common desire of the consumer for a capable and exciting product will bring about convergence—and that intolerance of proprietary product will eventually emerge as customers react negatively to 'buying' something that they do not truly possess. It is worth emphasising again here that ePUB standards are platform independent and that all the major organisations in the marketplace have been involved with the creation of the ePUB 3 specifications. So, it is difficult to contemplate that not becoming the common ground in the fullness of time.

The trans-media experience

The existence of parallel, alternative versions of a work, not just in different formats for different devices – also enriched by the possibilities of the particular publication channel it is being consumed through; with additional or related content enhancing the experience, perhaps offering the possibilities of interactivity; and allowing alternative navigation paths through the extended content available to satisfy the requirements of different audiences and scenarios of use, is already possible. Personalised, profile specific or geo-position related content might be added too.

QR codes like the one at the end of this document, which convey information through a complex black and white pattern contained in a square (a two dimensional bar code, in this case containing full contact details, though it could as easily be a link to an online resource) and Augmented Reality, which links the real and virtual worlds through a printed target picked up by a webcam, both offer many possibilities. These include hybrid book concepts. QR codes increasingly appear in the corner of adverts, the margins of printed documents and on television screens, to facilitate the quick transfer of additional information. Linked data is a developing field that could potentially join masses of related content through tagging and a publication may eventually find itself referenced within a wider context by the actions of the 'crowd' as a consequence of this.

Not only is it possible to experience a publication across a range of delivery channels, it is possible to do this simultaneously, or to dip in and out of the alternative versions to access the format and content variations that best suit the user at any time. And, the interactive experience may go beyond that and beyond that which the publisher provided. The rise of user generated content and social networks, as well as the availability of alternative devices, each increasingly convergent and capable of overlapping functionality means that the complete trans-media experience is gradually becoming a reality. There are probably rights issues to address here. That will not stop it happening though.

Here is an example of what is conceivable: a novel might be possessed in print and as an e-book; and could be being read sequentially from the book itself and on a tablet device and on a mobile

phone at the same time, depending on whether the reader was at home or say on a train, picking up and putting down each version as the situation required. Meanwhile the film adaptation of the novel could be watched on a TV, laptop, tablet or phone – or at the cinema even, whilst the reader blogs about their experience of the story to a virtual book group, post comments about it on social networks and links to tourist information about the location it is set in. A novel might have a soundtrack to set the mood of each chapter; a work on history might connect to primary sources or contextual information; and a book on art may cross-link to an online version of a picture, which allows the user to zoom in on every detail and brush stroke, like the examples that may be found on the National Gallery's web pages [e-note: 2].

This level of interaction would give a whole new meaning to an illustrated work. Add the possibilities of user-generated content and a book or magazine linking to recommendations about where to eat near to where you happen to be reading it, is within the realms of possibility. Great for travel guides of course, though just as easily a detective story could suggest an atmospheric bar to go to that conjures up a mood that fits the genre.

The book of the future

To summarise: A book may exist in parallel versions inhabiting different real or virtual delivery channels. It may be a printed work or an e-book (and that might involve alternative versions for proprietary tablet computers and different mobile devices). It might also be an interactive digital book. Or, it could be a combination of all of these things. (Time Warner's decision to bundle all formats of some of its magazines in one subscription illustrates this direction of travel [e-note: 3].)

For example: a printed book might trigger online content with QR codes; one format may access supplementary material in another. As suggested above a book could have a soundtrack. Images could open galleries of further images, or higher resolution versions of themselves. A video may be embedded in a virtual page or could be accessed as added value content from a target in a printed version. An edition of a work produced for a popular market may have deeper academic content available online. The same book could therefore be navigated in different ways by different 'readers'. New content could be added to these other channels as it becomes available and some of that might be separately charged for.

This means the user could have an on-going relationship with the work and might be offered further relevant products and services as part of that – a personalised catalogue of the latest publications available from that publisher for example; and perhaps only those that fitted the interests of that particular customer. Geo-positioning may provide useful additional content for a gallery guide, as already indicated. However, that could also be a learned discussion about an object as an audio or video file made available through a QR code, or links to an online shop. In certain topic areas access to digital archives may be appropriate and equally possible.

In future a book could and arguably should be some or all of these things simultaneously. At the moment the market is feeling its way and picking one delivery channel in preference to another for apparent advantages – and yet clutches on to replications of familiar experiences, transferring them into other media. Online magazines with embedded video still have turning pages with numbers on them, though exploring the content of them is hardly like reading, or holding, a printed work. Similarly a linear navigational style in such publications often hints at the work of a graphic designer unfamiliar with the multi-dimensional, multi-directional requirements of a different medium where user-centred functionality definitely has the edge on form; and if the colours are lifeless and there is no added value that makes use of the potential of the means of delivery, then it is simply a piece of print design dropped unthinkingly into another channel.

The novelty of this approach will eventually wear off and a new model will have to be found. One way is to sell each alternative version of a publication separately, which might maximise revenue in theory though may have limited take up across the board. Another would be to bundle the e-book version with the purchase of the printed book and perhaps to provide some additional digital material as standard content. Access to this via registration, the purchase price enabling one username and password per copy might control the Intellectual Property Rights position, with any further use to be paid-for access; and extra material of particular value to be paid for too, maybe.

There is of course an expectation driven by the experience of the internet to date that things will be free. Pay-walls are only likely to succeed where the content is unique, of a particularly high quality, where there is demand and supply can be controlled, or is in some way advantageous to the user to have. For magazines this may be a surmountable problem. By structuring them as selling vehicles rather than chasing dwindling advertising revenue, or by linking them to ad-serving technologies, which can measure and justify the expenditure of the advertisers [e-note: 4]; and without print costs; they may succeed without a monetary cover price [e-note: 5].

Books are not the same proposition. Is their way forward that complex to resolve though? Buying a book is crossing a pay-wall and always has been. That gives the user access to the content it contains. It could be that all that needs to change is what the customer gets access to for the price of the book. The essential argument here is that the book of the future is no longer simply a book. It exists across media and may be 'read' differently by each user, offering different experiences to match the requirements of the individual and their levels of interest or engagement. The book of the future could be a door that opens on another world.

New skills and production processes

The realities of the current position are being clouded to some extent by the industry sector's immediate reactions to the rapid decline of print publishing and the associated changes in book sales or advertising revenues, in the face of digital alternatives. The decline or rather repositioning of the distribution market towards online sales is also affecting thinking; and there remains a somewhat myopic view of what an e-book or e-publication is. Many publishers are still wedded to the idea that they should produce for print and that a token conversion afterwards for the digital market will suffice. This presumes quite wrongly that the end point of one production process is a suitable starting point for another—and certainly the relatively narrow concept of a print deliverable is not an adequate beginning for something that could be so much more complex and variable as an e-book.

Digital technologies are convergent and have become progressively integrated—processes that will no doubt continue. Although print remains a desirable outcome it now represents only one output channel for content. So, the truth is that print dominated publication workflows are becoming redundant, as are several of the roles that feed into them or that they support. These need to be put aside and replaced by a more multi-channel project management approach that is supported by creative skillsets with more technical depth and range across the entire digital environment. There is also a need for publishing strategies that begin with a convertible resource rather than a fixed end product, which is what current print production workflows produce. See *Content Management, Knowledge Management and the single source* below.

On a positive note the traditional skills of the professional publisher are still likely to be important factors in differentiating product in the altered marketplace. However, they will need to be adapted. New skills and production processes are likely to emerge as the e-publishing market matures, though some of what is required is predictable—not least because the roles models already exist in best practice for online and multimedia production.

Foreseeably there will be a need for a book producer's role to oversee concurrent alternative outcomes, which also means being able to conceive and marshal the variables involved for a range of interconnected though possibly different products—and content creators capable of being interactive authors, not just writers, will have the advantage.

Graphic designers will inevitably give way to, or need to become, more versatile cross-media designers that understand the importance of other input disciplines and appreciate concepts such as usability and the user experience, as well as accessibility—none of which are inherent in the majority of print product. High quality visual design still has a place of course; though not in a lead position. As the experience of online development has shown its place is as a component piece that adds value to project outcomes, which are based from the outset on quantifiable functionality and measurable performance. There is also a strong argument for an e-book developer's role, or digital designer's role, in place of the graphic designer, which would require a specialised technical skillset combined with creative design skills.

Education has a role to play and also needs to reposition its thinking about the specialisms it teaches and the employability of its students in a convergent digital economy. This applies not only to graduate level courses. There is a real need for functional and vocational skills that support the digital environment as well. This is certainly true of e-publishing—though arguably it applies equally across many different uses of digital technology. A content management system will only be as good as the skillset creating that content or uploading it for example.

Something along these lines will undoubtedly emerge if publishing embraces the possibilities offered by the digital challenge and turns them to its advantage. Several new and exciting directions for publishing are on the horizon and the conditions for these to become realities are already in place.

Content Management, Knowledge Management and the single source

It is easier to create alternative versions of something, each suited to a different means of consumption, which contain varying features and offer alternative formats and content – so interrelated, though not identical, if the starting point is not committed to a single inflexible concept. This is where Content Management Systems, Asset Libraries and Knowledge Management structures as part of an overall publishing strategy play a part. A single source is desirable. Although a single source in one piece is perhaps not. The parent resource needs to be composed of coordinated fragmented content, in reusable form, with flexible, scalable relationships a possibility from the outset. Once that is achieved multi-channel publication becomes much easier.

Hesitation over the sustainability of such systems, given the investment costs that might be involved and the likelihood of technologies moving on again within their lifetime, is understandably a consideration for even large scale, well established, publishing houses. Nobody can afford to be lumbered with a redundant legacy system. However, careful requirement led specification and the adoption of recognised standards, together with the availability of XML (Extensible Mark-up Language) outputs, which may be processed and changed into something else, mitigate these factors. This is of course easier to achieve at the beginning than with hindsight and easier to populate with new material than old.

A remaining stumbling block is publication processes originally developed for print sitting in front of much more advanced technologies, slowing them down and limiting their outcomes as a consequence. For example the difficulties sometimes encountered with so called 'round trip to print' scenarios, where Content or Knowledge Management Systems are employed, are more easily eliminated if the human element in the production cycle is repositioned, so that these roles only occupy the output channels that they apply to.

Rights issues

Possible problems with Intellectual Property Rights (IPR) have been hinted at and remain a consideration. Copyright permissions are typically granted for a number of impressions and specified uses, or for low resolution versions of images, for example, for online use. Problems will inevitably occur where the viewings of something in a trans-media environment exceed what the rights owners wish to agree to, where the permission does not cover a particular variation of use, or contemplated context, or where unlicensed content becomes linked to a publication through actions outside the publisher's control.

The music industry has already had to engage with similar issues and there is no doubt that it will be easier, initially at least, to develop solutions around new works and where the author, or content creator, possesses all of the IPR and is willing to embrace a cross-media or trans-media approach. However, technologies that should assist with this in future are emerging and there will have to be some adjustment in thinking by all parties in recognition of how the rights and revenue landscape is being changed. One possibility is to create revenue streams from higher value attached content and to seamlessly split the payment for it at the pay-wall point, in effect as a royalty, or as a proportionate share of a levy, like lending rights payments.

Digital and publishing experience

Magus Digital has a strong background in digital technologies and environments and is able to call on extensive experience and expertise, which encompasses both digital and print production. As well as content creation for online and multimedia deliverables, video and interactive presentations, this includes professional writing, photography and design direction, for books and magazines; and the management and direction of Corporate Website and Content Management System implementation projects. This explains a particular interest in the future of publishing, where it is believed that the technologies that are eroding its traditional markets also offer the potential for a renaissance.

The almost unique combination of skills available here has already provided path finding direction to Variable Data Publication applications and as a result Magus Digital benefits from the experience of leading a co-developed project in this area that has taken three UK industry awards and was subsequently shortlisted for a fourth. The same skillset, it will be evident, underpins the future development of the e-book and of the publishing sector generally, as it embraces the possibilities of ePUB 3 and the changing expectations of the market.

Magus Digital also offers extensive practical experience of digital marketing, Internet intelligence harvesting for reputation management, research and horizon scanning; and customer-focus and usability consultancy; all of which provides creative insight and innovative thinking for forward looking digital solutions. An understanding of today's multi-channel, multi-platform and multi-device marketplace, where media convergence and fragmented 'tribal' audiences are considerations, supports these activities.

Taking things forward

If there is interest in taking any, or all, of these ideas, or new ideas prompted by the concepts presented here, forward, on a consultancy basis; or if the support and guidance of a client's agent is

required to help implement change, or embrace technology, in professional publishing businesses, Magus Digital would be happy to discuss opportunities and explore ways of supporting clients and stakeholders in their future publishing ventures.

Magus Digital is currently engaged with interactive e-book production and is able to support publishers in the development of their e-publications, or in the development and implementation of their publishing strategies. It is also helping to establish easy access functionality for the use of professional publishers and designers making use of digital solutions. Magus Digital is working to enable the self-publishing market for special interest groups and aspiring authors too; and has its own virtual publishing house and e-book imprints to demonstrate the effectiveness of these approaches by publishing role model examples and bringing them to market.

Contact details:

Jonathan Stephenson

m: 0789 4512102

e: jps@magusdigital.com

e-notes: the e-notes in this document link to online examples of what is mentioned, to illustrate the point being made.