BRIEFING PAPER

The Need For A New Publishing Workflow

Introduction

If you have started out along the path of developing an online, CPD or distance learning (DL) programme, you will have put a lot of thought into how you are going to source the content. One route is to look to the Publishers, as they have ready developed content of high quality.

However most DL programmes are developed in a way that offers the students materials in a range of formats – including print, PDF for the laptops and, of course, HTML for the institutional virtual learning environment or VLE. Any development will also include a variety of learning materials, not just core texts. These have to be backed up with formative assessments, cases and other support materials. The publishers realise this and this is precisely why popular texts now have fairly extensive 'companion' web sites.

A number of problems though, are encountered by teams progressing down this programme development route. First, the Publishers usually want you to use **their** systems, so you may be required to have students log into an external environment. This is annoying given that all institutions now have their own – often expensive – learning environments. The Publishers' response is to make many publications available as plug-in cartridges for the popular learning environments, but there is still a high degree of development inflexibility.

There are other more serious irritations, though. Many institutions would want to buy the **content** of the Publisher's text but not be solely restricted to the printed form. They would also, in some cases, like to use the text (and its companion web site) material as the base of their own learning materials that support their on-line distance programme. The Publisher's content would be used interlinked with the institution's own branded content, e.g. study guides or past papers. This has typically not been possible. The big Publishers now have custom publishing teams that go some way towards this, but custom publishing tends to be limited to chapter level manipulation of the printed texts – and it is obvious where one or more texts have been 'glued' together, reflecting their different printed formats. One major Publisher actually told us that they we almost ashamed of the final quality they offered, and it was easy to see why.

Going one step further down the customisation route is 'adaptation', where the programme designer could reuse the materials at the fragment level. Most Publishers firmly rule this out along with any other options involving a more detailed re-working of the materials. The objections are largely based on legal and cost grounds, where it is infeasible to look to original authors to approve every adaptation made to their materials. If you require this degree of flexibility in working with the subject materials for your programme, then you have probably reached the point where it is worthwhile investing in the creation and maintenance of your own materials assets.

Single Source Publishing

The cost of a custom published solution can be quite high for an institution, particularly if additional electronic forms (PDF, EPUB and HTML) are included. This reveals the underlying problem that makes this approach expensive and with varying quality of output. Quite simply most Publishers do not currently embrace single source publishing. A typical workflow starts with the production of the printed text, then prepares the content for other published forms. Regular readers of the CAPDM briefing papers will recognise that it is essential to start with a master source format that enables a **range** of output formats to be targeted. Today that single source has to the international extensible markup standard XML, with suitable structure (from a DTD or Schema). Putting XML up front results in a quite different, but much more flexible workflow (see Figure 1), but one that offers many other benefits:

- quality and consistency is preserved over different formats as there is but a single source of content;

- reuse, maintenance and revision management are simplified for the very same reason;

- the cost of production for a multiple format publication is lower;

- it can, and should, result in a unified feel to all of the content, which can also be institutionally branded to fit with other materials used.
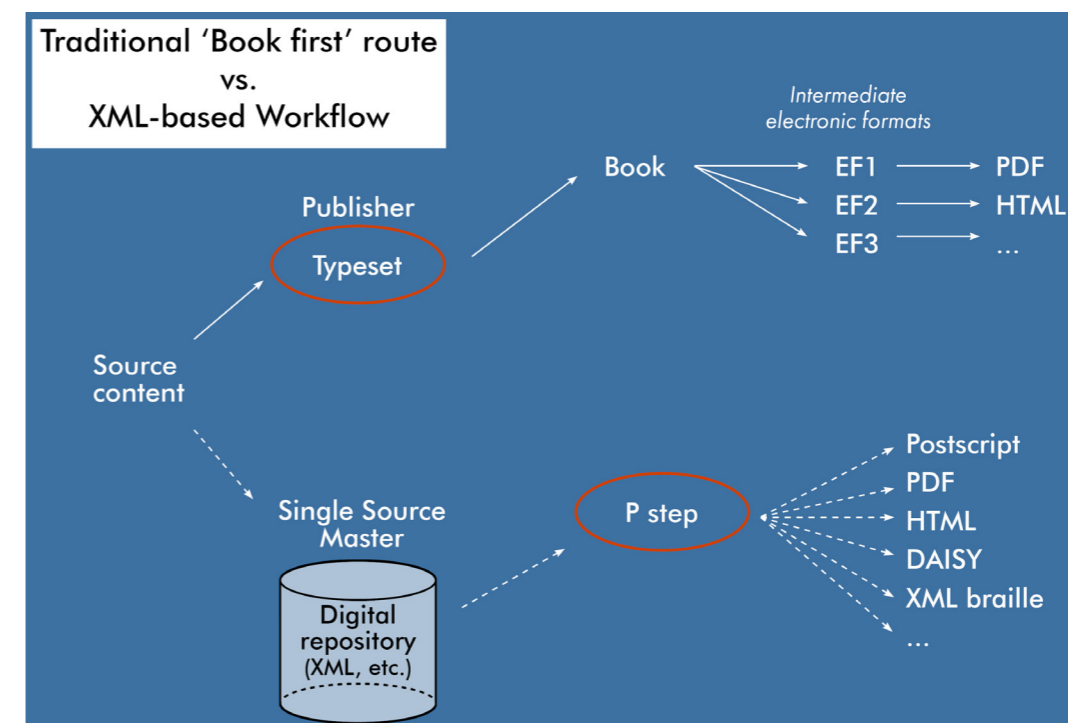
Figure 1: Workflows – traditional publisher vs. Single master sourcing

So why don't all Publishers embrace this XML-based workflow? There is one underlying reason – they are still very much text book oriented. This is a sweeping

statement, particularly as we acknowledge above that many publications have good companion websites. However the book is very much the primary target because this is what is sold. This is not strictly what developers of distance programmes want, though, and they need to ensure that their students have the materials and contexts they need in whatever format they need it in and when they need it.

If the learning content is part of a managed domain of information then the interactive, hyperlinked renderings can also be produced along with the support materials (formative assessments, etc) in a wholly integrated fashion. This can, and should, result in a seamless set of materials with rich functionality and a high degree of usability.

So what are the Publishers doing? Publishers are slowly embracing XML and standards and this, we would suggest, is a good thing. However they do operate in a very competitive business area so most still follow the route of developing in-house solutions which put proprietary rings around standardised content. For example they will have their own document type definitions or schemas to suit their specific processing expectations and needs. This misses one of the key benefits of embracing standards, namely that tools and production becomes cheaper and better when everyone is driving them forward.

Is an XML workflow the answer to everything? While there are big advantages in adapting the workflow to start with XML, it has to be admitted that there are some things that are very hard to achieve in a pure XML workflow. For example it is difficult to typeset a highly customised, almost individually laid out page publication, i.e. difficult to emulate what typical desktop publishing or "DTP" packages do. There is a way round these problems, though, and many Publishers either currently compromise, or will compromise, a pure XML workflow for an 'almost-there' workflow. This will allow them to use a system that either does final output touch-ups in a DTP package, or exports XML from their DTP packages after print release.

The down side is that this creates one of the very problems that XML workflows tend to solve, namely that **single source publishing** cannot be applied. Moving to one of the scenarios above, e.g. doing final touch-ups in a DTP, creates a separate master source. This solution does not allow the Publisher to then call this the master 'golden' – it will always be reliant on the tool-chain and the extra hand-crafted processes that this chain will have established.

The solution is to move to a pure batch model.

XML Workflows

In addition to the obvious cost benefits of an XML-first workflow, no compromises of the 'golden' master approach are possible because output never goes into an application in which hand-editing of layout is possible. This, by contrast, is the norm with DTP packages. All final outputs and any convenient 'fixes' have to be done either via the semantics of the underlying mark-up or through the processing instructions that the batch output generators interpret. The implication is that all outputs are reproducible time and again, and that the master becomes 'golden' – it can guarantee to produce exactly the same output with the same content every time, and to render from the same content base to all formats.

Such batch-driven typesetting tools are deterministic. The alternative is to use DTP-derived and word processor-derived tools – including batch process versions – that all have a randomised element. This means that the same content may produce different layout on a different day or on from different typesetting engine.

End-to-end XML-based batch production, as described above, ensures that the investment made in information and content is never wasted. Publishers are embracing the concept, but not fully. Our advice is not to go half way. It is worth putting in the extra effort to create, manage and exploit your information and content. In this way you can be sure of hitting the release button again in 6 months, or 6 years, and getting the desired output.

What are others doing?

The EU's Seventh Framework Programme cited that Information & Communication Technologies (ICT) are critical to the competitiveness of European industry. One plank of their ICT strategy is Digital Content & Learning, and they provided research funding for the development of digital libraries to support the creation, interpretation, use and preservation of cultural and scientific resources. These resources will, in turn, "revolutionise learning through adaptive and intuitive ICTs". Standards for information were to feature heavily at the heart of this work.

The UK's Joint Information Systems Committee (JISC) has been sponsoring programmes to develop Higher Education repositories and a digital content infrastructure. The aim is to develop Information Environments to support digital repositories and preservation of information, and functionality such as cross-searching facilities across repositories. The vision is to establish a network of digital resources and services, in order to significantly improve content use and curation.

Here in Scotland, the *The Books for All* report to the Scottish Executive Education Department (ISBN 978 0 7559 1535 4) highlighted the need for many accessible formats for books in our schools in order to ensure that no one is obviously disadvantaged. This was actually an opportunity to take the lead in the use of technology to provide better materials for all our children, including the disadvantaged, the culturally different, **and** the majority.

We can also help the teachers. How? That will be the subject of a future Briefing Paper but needless to say the starting point is with the workflow.

Why are these initiatives relevant here? They represent a vision for improvements to the economies of Europe and to education in general.

Conclusion

We need to change our publishing processes and workflows if the range of benefits outlined in this paper for education providers are to be obtained. They include better access to, and management of, intellectual outputs, increased capability to manage these assets for teaching, learning and research, and an information infrastructure that will support the sector into the future.

Education has been well served by the text book for hundreds of years but the demands for information are changing. There is a need for a new publishing workflow.

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