

Mobile: not just putting a print document onto a tablet

Summary

Mobile devices are appearing everywhere, in all kinds of environments from school rooms to aircraft cockpits. For example, the Apple® iPad® is certified by the FAA as a Class 1 EFB.

When moving to mobile it's very tempting to just "put a PDF up there" - after all, PDFs are all-but free. Let's be clear about one thing though: this blog is not about deriding the PDF format. As a universal print format, it's unrivalled.

This blog suggests we need to carefully think about how we deploy information onto mobile devices. Mobile technology gives us new opportunities which don't exist with printed documentation. To remain at the cutting edge we need to grasp these opportunities.

Surprise, surprise: it turns out that doing it on the cheap may not be the best option.

Users can't be predicted



Unfortunately, we tend to assume that we know how users will use the documentation we provide. That's a common misconception. It's not possible to predict in advance what a user will need to do with the information we provide. The users' actions will have an array of dependencies:

- Context: for example, in a routine context vs. an emergency context.
- Situation: for example, in flight or on ground.
- Environment: for example, being used in dark conditions or high glare conditions.
- Time: for example, dealing with an urgent request vs. a casual enquiry.
- Who the reader is: very technically aware or not technically aware.

The common thing running through these dependencies is that they don't happen in a pre-determined manner. On the other hand, one of the biggest limitations of printed manuals is that the user has to work their way through a pre-ordained structure; the manual is written in a linear fashion, whereas the user's requirements are non-linear. They will be entirely context dependent and the context may well be different on each and every usage.

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Mobile creates the need for non-linear publications



The most important opportunity that mobile technology presents us with is that we can build a **non-linear publication** relatively easily; but this *cannot* be done by simply placing a print file onto the mobile device. A print file is just that: a specification for "putting dots on paper". Now, you can say that this is no longer *literally* true. For example, you can declare the entries in the table of contents to be hyperlinks.

However, try doing this:

- The aircraft flies into cloud and we want the original dark text on a white background to be transformed into light text on a dark background; then when the aircraft flies into sunlight again, for the text to be transformed back again.
- You want the display of certain hyperlinks to change from yellow (amber - CAUTION) to red (WARNING) according to the situation in which the text is being read.
- To reduce ambiguity and the sheer volume of text, you include a diagram. You want captions on the diagram displayed differently according to the route taken by the user leading up to displaying the diagram. For example, if the user was looking for advice on a particular part of a larger assembly, display those captions in bold.
- We need the same manual to be displayed on a Windows®-based EFB; on an Android®-based tablet; oh, and on a printed page as well. The simple-in-the-short-term approach is simply to save the document in three different formats. Less simple if the document is large and/or complex. Consumer of lots of duplicated effort medium/long term. And an ideal environment for errors to creep in as the three different versions inevitably lose synchronism.

Some of this *could* be done using print formats, but with great difficulty. And most likely there will need to be multiple versions of the text being required to represent the same *content* in a different *context*. This of course results in duplicated effort, hence wasted money. And the duplication also leads inevitably to different versions stating different things. The different versions start off with common content, and then gradually diverge.

Doing it that way in fact negates the potential advantage that the mobile device can deliver.

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The format miss-match

Let's look at our existing document set. It's probably formatted either for A4 or US Quarto paper size.

Now take a look at your iPad® or Android® based device. It's not that size at all – completely different in fact. So what, can't the user just scroll around? Well they *can*, but is that really what you want to give them? Wouldn't you rather give them something that's easy to read? In answering that question, bear in mind that if the manual is difficult to read, users will tend to ignore it. And when problems happen, they won't blame themselves for not reading the documentation – they will blame you ! Reputational damage starts looming, or worse still litigation.

Simple then. Just provide two versions – one a PDF formatted for paper and one for tablet devices. OK, we probably need two printable versions, one for A4, the other for US Quarto. And actually, we'll need several different versions for tablets, because tablets come in various physical form factors.

So, we end up with multiple versions of the same thing. Duplicated effort again. Quality issues again as we have to keep the different versions in step. Unnecessary costs. If we use an XML based system, we have *one* version of the publication. Since the principle of using XML is to separate *content* from *display* information, we have a single (XML) source that is formatted for each type of environment via an automatic process (n.b. including PDFs for printing!)

The integrated document



Mobile devices can also offer significant and in-context **outreach** as part of an integrated information system which can't easily - and in many cases not at all - be achieved in a print document. Yes, we can insert hyperlinks into a print document. But suppose that to be *interactive*, we would like to have a diagram (as distinct from inline text) in a document.

We need to take advantage of the *visual/tactile interaction* that a mobile device gives, by which we mean using the touch screen to its fullest advantage. Using XML-based technologies like SVG means that diagrams can be fully interactive, with the user's next action being selected from a drop down menu when the user clicks on different parts of the diagram. Linking a *hotspot* on the diagram to a particular location in the spares database (internally passing the part number in the process) allows the user to click on a

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part in a diagram and be shown the spares availability, then place a parts requisition immediately.

This really isn't practicable at all with a print document. Unless we want to include the entire spares database in the document itself. This could *just possibly* be practical, unless of course you have a large database. But even if it was possible, it's certainly not desirable. Somehow you will have to come up with a way of keeping the data in the printed document up to date. This results in yet more duplicated effort and opportunity for error. And of course, the document has its own version of the spares inventory situation, which will not be an accurate reflection of the actual situation.

Conclusions



The foregoing examples demonstrate the highly interactive aspects of mobile technology that we ought to capitalize on. This is usually where the doubting Thomas's of this world start to emerge.

But, but but ...

- *It's all going to need a lot of user re-training.*

No it isn't. The operating environment lends itself to rapid self teaching.

- *I meant re-training in how we make the document.*

In fact for the subject matter experts, this isn't the case at all. The interfaces that modern structured documentation editors present to the SME are practically identical to those of contemporary word processors.

- *If you think I'm going to pay for my people to become XML experts, you are sadly mistaken.*

No we aren't expecting that - it's unnecessary. Just as the user interface is familiar (see previous point), the management of XML is insulated from the SME. Think of it this way: when using a word processor, the SME doesn't have to think about the internal protocol of the .doc (or .docx) format. Similarly,

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with modern XML editors, the SME doesn't have to think about the technicalities of XML - that's taken care of by the software.

- *Anyway, tablet devices are just for the young.*

Tablets have been around for some time now and people *of all ages* are coming to *expect* touch screen operation. To see what I mean, pick up a first generation hand-held GPS, say only 7-8 years old. It has a LED screen, but *not* a touch-sensitive screen. It feels positively clunky whether you are 6 years old or 66 years old.

- *Tablet devices are just trendy consumer products.*

Aha! That must explain why the FAA has certified the iPad® as a Class 1 EFB!

- *It's going to need a different approach.*

Yes it will, a different way of thinking about information delivery and presentation. In fact it requires a transformation from a type of artistic activity to an engineering activity. **RIGHT - now you've got it!**

In summary:

Simply putting up a print file on the mobile device might appear good and cheap.

However, it probably won't be cheap in the long run, or even the medium term as you fall behind competitively.

And it certainly won't allow you to capitalize on the advantages that mobile technology can bring to you.

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