Jakob Nielsen's Alertbox, August 29, 2011

Transmedia Design for the 3 Screens (Make That 5)

Summary:
Mobile use will rise, but desktop computers will remain important, forcing companies to design for multiple platforms, requiring continuity in visual design, features, user data, and tone of voice.

Many people predict that **mobile devices will be the only important user interface platform** in the so-called "post-PC" future. Some even recommend designing websites for mobile first, and then modifying the design for the desktop PC as an afterthought.

I disagree.

Although it makes for a good story to claim that something **new will kill the old**, things rarely work out that way. As Peter Zollman once said, "with the possible exception of the town crier, a new medium has never put an old medium out of business." Despite TV, we still have radio — and, for that matter, live theater. In the computer industry, we still have mainframes, and IBM harvests billions each year accordingly.

Computers are now so cheap that **most people in rich countries own several devices**: one for each major need. Of course, under "computer" I include not just PCs, but also tablets, phones, mainframes, and servers. Sure, most homes won't have a mainframe in the basement, but many have a family file server to host their photo and video libraries.

(Under "desktop PCs," I obviously include Windows, Macintosh, and Linux — if it ever becomes easy to use — as well as potentially new platforms, such as desktop machines running webOS. Similarly, I include laptops as well as mini-towers and the like because the physical size is less important than the user experience. Although laptops are *movable*, they're not *mobile* devices, so I count them as a subspecies of PC.)

PCs Will Remain Important

Desktop PCs have 2 inherent advantages over mobile:

- Much **larger screens**, letting users see more information at a glance. This enhances content comprehension, facilitates navigation and interleaved browsing, and supports compare-and-contrast tasks, which are often the most critical high-value tasks.
- **Better input devices**, with a big keyboard and a real mouse.

Big screens and big input devices are both **inherent advantages** of the desktop PCs; mobile devices must be small so users can carry them around. Desktop PCs also have 4 additional

advantages that will hold for at least the next decade:

- **Faster bandwidth**, supporting the required response times, such as sub-second download for simple Web pages. In contrast, mobile users suffer as if it were 1998, and frequently complain about slow downloads when we test mobile sites.
- **Hardware oomph** such as faster processors, more memory, and larger hard drives. Although computers are already quite powerful, the next 20 years will make your current PC seem as feeble as an abacus. Most applications won't need that much power, but some will.
- **Software maturity.** This is a mixed blessing; software accumulates crud as it ages. Still, you can do several things much more easily on a desktop PC than on a phone, such as manipulating multiple windows and copying/pasting between them.
- **Printing.** The paperless office is a myth; people often want hardcopy. Most desktop PCs will thus continue to have a printer attached or be networked with one, while most mobiles can't print. This ought to change: a *print* command in mobile operating systems should produce pages on a user-specified remote printer, with the actual printing deferred until the device is within WiFi range of the printer's network.

Bandwidth and hardware–software prowess are only **temporary advantages** for desktop PCs. Because mobile moves at a faster pace, it will eventually reach a level sufficient to support most user needs in these areas.

However, better input and better output are **durable advantages for the desktop user experience.**

I am a screen-size bigot: bigger screens deliver hugely higher user productivity. Anyone who's experienced a 30-inch monitor cringes at the idea of doing a major project on anything smaller. I'm astounded that PC makers don't offer even bigger screens. (I'd be first in line for a 40-inch screen with 300 dpi crispness.)

Sadly, Apple aside, PC vendors are universally incompetent at marketing and product differentiation. No one ever says: "Buy this machine at $500 more for a 10% productivity gain," which would indicate a great investment for companies who bought one for every employee who makes more than $50,000 a year and spends at least an hour per day on the computer. (Last week, I told one of my own employees to spend that extra $500 for a higher-end laptop to increase her productivity during business trips — but I had to make that argument myself, as it was nowhere to be found on Sony's site.)

Usage Shifting to Smaller Devices; Much Value Remaining on the Desktop

IDC estimates that PC sales this year will increase by only 4% over last year — which is actually not a shabby growth rate for a mature product in a recession. Still, it's certainly true that **desktop PC dominance will decrease** in the future, as a large percentage of usage shifts to phones and tablets.

Photographers have a saying: "The best camera is the one you have with you when something worth photographing happens." This will often be a pocket camera or a phone camera; people typically carry professional-grade cameras only when they plan to shoot

photos.

Similarly, **the best computer is the one you have with you** when you want something done. This will often be your phone or tablet. I move my iPad around the house so it's close at hand when I want to look up something on the Web. For example, I often make dinner reservations using the OpenTable app on my iPad. Although that app is clunkier than the OpenTable website on my desktop PC, I'd rather suffer 20 seconds of extra interaction overhead with a bad app than spend a minute walking upstairs to the PC.

Much use will thus shift from desktops to phones and tablets, but a big percentage of use will remain on the desktop. It's hard to estimate the exact percentage for each device class, but it's fairly certain that the **highest-value use will stay predominantly on desktop**. Thus, the percentage split of *value* between devices will be more favorable to the PC, even if the percentage split of *time* increasingly turns more toward tablets and phones.

Of course, it's value (i.e., money in our pockets) and not time that matters when we allocate our investments across user experience projects.

We've known since our early mobile user research in 2000 that **killing time is the killer app** for mobile devices. This again means that much small-device use is fairly low value: playing casual games, checking social network updates, reading celebrity gossip and other generic news, and using intermittent-use apps.

Yes, a few providers of highly successful time-killers can score good coin: *Angry Birds* has sold more than $300 million in downloads. But this equates to about **3 cents per hour of user time** spent slinging those addictive birds. Similarly, celebrity gossip is probably worth 0.02 cents per page view. (Clueless marketing managers might currently pay more for banners nobody looks at, but eventually CPM for generic content and generic traffic will drop far below a dollar to match their real value. Advertising budgets won't be misspent forever.)

Other mobile use is worth more: the minute I spent making a dinner reservation on the OpenTable app translated into $115 revenue for that restaurant and about a dollar for OpenTable itself. Let's say $60/hour = 2,000 × the value of playing *Angry Birds*.

Conversely, much desktop use is of little commercial value — such as when people email their friends and family. Still, much other **desktop use is of substantial business value:**

- **Most enterprise tasks** are done with desktop PCs. Our recent study of enterprise portals found incredibly slow uptake of specialized mobile design. Corporate IT departments are notoriously conservative — partly with good reason because it costs too much to chase every fad. I do believe they're too sluggish in adding mobile intranet features, however, which offer benefits in better supporting the sales force and other nomadic workers. Still, there's no doubt that most work should be done on a desktop PC when employees are in the office.
- **Most e-commerce purchases** are made on desktop PCs. The Department of Commerce estimates that **2% of U.S. e-commerce revenues** currently come from mobile devices. M-commerce will grow as the mobile user experience improves and people become more comfortable with entering their credit card info on mobile sites; a common growth estimate is 15% mobile sales by 2015. This rapid growth rate definitely indicates that investment in mobile sites or apps is wise, but neglecting your full site — and its 85% of

sales — would be disastrous. Also, because total e-commerce sales will double over the next decade, absolute sales through desktop sites will grow even as their relative share declines.

- **Most complex tasks** have vastly better user experience on the desktop and thus will be performed there. I'm talking anything from researching your next car purchase to learning about a new medical condition (and its associated pharmaceuticals) to managing your investment portfolio. Yes, you might enter a stock trade with your broker's mobile app, but you'll research new mutual funds on the desktop.
- **Most B2B tasks** will be done on the desktop. It's a complicated and longwinded job to, say, comparatively evaluate law firms, write up a shortlist of recommendations, and create a presentation outlining them for your boss. Won't happen on a phone or even a tablet.

In summary: use of mobile devices will dramatically increase, but much high-value use will remain on desktop PCs. Most companies must **support both device classes**, and our usability research shows that this must be done with **separate UI designs** that target the different characteristics of the two types of user experience. **One size UI does not fit all screen sizes**.

The 3rd Screen: TV

After mobile devices and desktop PCs, the 3rd main category of screen-based user experience is television. It's quite valuable, at anywhere from 20 cents to $2 per hour of user time. (In my household, we pay the cable company about $2/viewer-hour, but we watch much less TV than most families. Amazon.com charges $1.99 cents to stream any *Star Trek* episode, which also seems on the high end.)

I focus on mobile and desktop usability because so few companies engage in TV-based interaction design. Usability is typically horrible, as exemplified by my article on remote controls. However, there's some hope for the future, as exemplified by the Kinect gestural UI.

Currently, designing for TV is relevant primarily for companies in the entertainment or consumer electronics industries. If interactive TV usability improves substantially, more companies will need to pay attention to this platform. At that point, one thing is certain: TV will need a 3rd UI that's distinct from both your mobile and desktop designs.

Screens 4 & 5: Tiny, Huge

As if it weren't enough to design 2 or 3 different UIs for mobile, desktop, and possibly TV, there are 2 even more extreme screen sizes to consider: really, really small and really, really large. Again, each will need its own UI.

Tiny screens include the postage-sized displays on lots of consumer electronics — even my toothbrush has its own display these days. If we stretch the definition a bit, we can also include the user experiences driven by items with embedded RFID chips and QR codes.

Huge screens go from meeting-room-sized displays to smart buildings, and even smart campuses such as hospitals that guide visitors and patients to the right buildings and rooms.

As yet, there hasn't been much usability work done on these two extremes, but they definitely have their own challenges. And for sure, any decent UI will have to be very different from those on phones and desktop PCs.

Transmedia User Experience

Most companies will probably deploy only 2 UI designs: mobile and desktop. Others might need 3, 4, or even all 5, depending on their industry. Whatever the number, there are two key points to remember:

- **Create separate and distinct** UI designs for device categories that are sufficiently different. It's okay to have a similar design for, say, iOS and Android, with only a few modifications to suit each platform vendor's human interface guidelines. But your mobile sites and full desktop sites must be different, just as your mobile and desktop applications should be different.
- **Retain the feel of a product family** across devices, despite the different UIs and different feature sets. This requires a **transmedia design** strategy.

Our experience with transmedia usability is not yet sufficient to provide an exhaustive list of guidelines for achieving a cohesive user experience across platforms. But we do know that it's essential to get the following 4 issues right:

- **Visual continuity**. Obviously, UIs will look different on different screen sizes but they should look similar enough to feel like two sides of the same coin. No, it's not enough to have the same logo or the same color scheme. The interactive elements also must have a similar look. Layouts will clearly differ, but users should still feel confident where to locate stuff as they move between platforms.
- **Feature continuity**. The smaller the device, the smaller the feature set you can comfortably provide. However, users should still feel that the same main features are available in all locations. Even more important, they should feel that the features work consistently, even if they've been simplified. Let's say, for example, that your e-commerce site offers product ratings. Both your mobile and full sites should use the same rating scale, but maybe your mobile site doesn't let users enter new reviews or doesn't show the full text of existing reviews by default. Designed correctly, however, users will still feel that they get the benefit of the full site's reviews while using the mobile site.
- **Data continuity**. The user's data should be the same in all locations. Because of different feature sets, some data might not be available everywhere, but anything accessible in multiple places should be the same. Users shouldn't have to "synch" as a separate action.
- **Content continuity**. We know that you must write much more concisely for mobile than for desktop use. But the basic content strategy should be the same; in particular, you should use a **similar tone of voice** for all platforms, so that you "sound" the same everywhere. For example, children love characters in Web design. If you use them, your mobile site might not have room for all the creatures, but should include the lead characters from the full site. (This will also promote visual continuity: the characters should look basically the same, even when drawn with fewer pixels. For that matter, character reuse also promotes feature continuity to the extent that navigation is based

around the characters.)

To conclude: cross-platform UIs should be **different but similar**.

Learn More

More on visual continuity in the full-day Visual Design for Mobile Devices and Tabletstraining course on Visual Design for Mobile Devices and Tablets at the annual Usability Week conference.

The full-day training course Mobile User Experience 1: Usability of Websites and Apps on Mobile Devices discusses how to allocate features between the full desktop site and a mobile design, and the course on Writing for Mobile Users covers content style.

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