

Web Applications or Power Users?



Podcast by Tim Liston, ASC president, and John Liston, director of loan origination products, respectively for Associated Software Consultants, Inc. a leading developer and marketer of mortgage lending software solutions. Tim and John provide their insight on issues impacting the mortgage technology industry in a series of podcasts. Below are some additional notes relating to the podcast.

All PCs now come with an Internet browser, and Internet connectivity has become almost universal, so Internet browsing has become the most popular computer application. That has given rise to many well-known Web applications like eBay and Amazon, which require no installation and are easy to use by anyone with an Internet connection and a browser.

Businesses take advantage of the simplicity of Web application delivery. They understand that simple applications that people use infrequently such as expense reporting are best deployed as web applications. They extend this principle to their intranets as well. IT personnel are saved the time and expense of visiting each desktop PC to install these simple applications, and all can be updated with one mouse click. These are known as “thin client” applications, so named because they require very little client PC maintenance.

Using web applications where they make sense frees up IT staff to manage the more complicated desktop applications that businesses rely upon, like word processing and spreadsheet applications. Why are word processing and spreadsheet applications installed on each desktop PC? Good question. It's probably because these are visually rich and powerful applications, and because they were in use way before the Internet became popular.

Even so, some companies challenge the notion that word processing and spreadsheets must be installed on PCs. For example, Google now offers Google Docs & Spreadsheets, which are word processing and spreadsheet web applications. So does Zoho and others. Does Google Docs & Spreadsheets and its ilk keep Microsoft awake at night? Probably not.

A recent survey in an online publication for the technically-savvy (*And the centre of your desktop is...* http://www.theregister.co.uk/2007/04/20/desktop_office_suites/print.html) showed that “online office services” are used by only around 1% of respondents. It showed that the vast majority of respondents continue to use Microsoft Office or a competitive office suite like OpenOffice. Certainly the results are not scientific, but the sample of 4,800 readers is so large that the results cannot simply be ignored. *Register* readers are Internet “power users” so their preferences should be considered representative of that group, if nothing else.

Why do technically-adept Internet power users not embrace online office services? After all, these are the same users who embrace the Web and web applications, and who quickly learn how to use unfamiliar web user interfaces. The answer is somewhat complex and requires an understanding of web applications. And lenders who are considering using Web-based LOSs should consider the lessons that power users teach us about Web applications.

As with any application, your loan origination and processing system has several constituencies, and in choosing your LOS, you must balance their needs. The trend has been to choose a LOS web application to reduce your IT burden. But the downside to that is your back office power users work less effectively than you would like. LOS power users want to use a desktop application interface that is fast and feature-rich. If you choose a Web-based LOS, you may please your IT staff, but you are crippling your own power users.

Here's many reasons why:

1. LOS web applications offer but a subset of desktop application features. It is just too hard to make a Web application do everything a desktop application is capable of – if it was easy, we would see Word and

Excel replacements on the Web. Because web applications lack useful features, your power users will always choose the desktop application over the web application. Web applications are never best-of-breed for power users.

2. LOS web applications do not perform as well as desktop applications. Today's browsers are complicated applications that must know how to process anything the web throws at them, making them Jack-of-all-trade applications but masters of no specific application domain. Browsers have become bloated with features most LOS web applications do not use, but which you can't turn off. Desktop LOS applications, in comparison, can at least avoid excess bloat.
3. LOS web applications are single-threaded. Because a browser must process any and all web content, and yet cannot be tested with any and all web content, browsers are designed as single-threaded applications and are therefore unable to take advantage of modern multi-core processor PCs. Desktop LOS applications may be multi-threaded and therefore smarter and faster.
4. LOS web applications are sluggish. Web application interactivity is made possible by downloading a lot of JavaScript programming source code with every web page. Without JavaScript, your browser-based LOS will work like a static first-generation web application, if it works at all (experiment: turn JavaScript off in your browser settings and see.) But using JavaScript costs both in download time and in execution time, because JavaScript is interpreted at run time in the browser, slowing it down. Desktop LOS applications, on the other hand, are immediately available and compiled to fast machine code.
5. LOS web applications provide less data security. Unless you host the Web application yourself on your own server inside your firewall, your data is at risk. LOS Web applications that are exposed outside your firewall open you up to many forms of attack. The public Internet is not a forgiving application environment, and the more complicated the application, the more ways you may expose yourself to security risks.
6. LOS web applications are more difficult to use. Human computer interaction experts know that applications that may be fully navigated from the keyboard are faster to use. However, LOS web applications are typically designed for users who are better with a computer mouse than a keyboard, slowing down web application users. Desktop LOS applications support both the mouse and keyboard, and only desktop applications can be navigated completely from the keyboard.
7. Web applications don't prevent erroneous data entry very well. Web applications let you type answers that cannot possibly be correct, like letters where the answer is digits. Sometimes web applications detect such errors when you are done with that entry, but usually you do not know until you've completed the entire form. There's no set way for web applications to inform you of errors, so it's often hard to know what you need to correct. Often you must use extra keystrokes or mouse clicks to get back to where you can correct your mistake. And often what you typed is not there anymore so you have to start over.
8. LOS web applications offer a single point of failure. Typical LOS Web applications are installed on a single web server, and if that server fails, your LOS is down. Desktop LOS applications often are installed on individual PCs having their own local databases, and may continue working even amidst a server failure.
9. LOS web applications require high bandwidth and constant connectivity. With a LOS Web application, if your network is slow or intermittent, you cease operation. Web applications tend to be heavy network bandwidth users. Desktop LOS applications may continue operation during network downtime.
10. LOS web applications provide substandard hardware support. Browsers support a low-common-denominator hardware configuration, and they do not support advanced graphics hardware. For example, you cannot scan documents from within a browser. As a result of this, browser-based applications do not directly support OCR optical character recognition.
11. LOS web applications provide substandard file format support. Browsers directly understand HTML, XHTML, RSS, and few other document types. For example, browsers do not understand PDF documents, and use helper applications like Adobe Reader to manage those. With a lot of effort you can make them

appear to support other document types, as Google Docs and Spreadsheets does, but that type of support is only rudimentary and is implemented server-side. If your application depends on using other document types, like word processing or spreadsheet documents, your best choice is a desktop application.

12. LOS web applications are difficult to develop. There are many browsers and browser versions, and because of the many differences from one another, it is difficult to program an LOS Web application that offers high functionality and good interactivity on more than one browser. There are better development tools now becoming available (e.g. Google Web Toolkit) but existing browser-based applications must continue to use unwieldy legacy development tools. However, desktop LOS applications need not consider differences among browsers, and may offer a higher common denominator set of capabilities.
13. LOS web applications are hard to test. As mentioned earlier, you have to test your LOS Web application on every supported browser version. And tools for automated testing of Web applications are more complicated and less comprehensive than tools for automated testing of desktop LOS applications.
14. LOS web applications are no easier to support. Certainly web applications offer a simple deployment model, but not uniquely so. There are many ways to deploy desktop applications that are just as simple and cost effective. Some companies use Citrix. Some companies use software that centrally manages and deploys their desktop applications. And some desktop applications now include their own auto-update capabilities.
15. LOS web applications are a threat to Microsoft's business model. While Microsoft maintains a better-than 80% share of the browser market, it historically has neglected Internet Explorer so that it may maintain its operating system and desktop application dominance. Microsoft is hurt by web applications, and does what it can within the limits of Justice Department oversight to prevent them from becoming a threat to its core business. Microsoft already entered (and left) the LOS business once.
16. LOS web applications don't adapt to the next generation of computer CPUs. Instead of trying to push CPU speeds any higher, chip makers have changed strategies and now produce multi-core CPUs. Multi-core CPUs effectively have multiple CPU cores (usually 2) on one chip, but each core runs somewhat more slowly than today's fastest single-core chips. The bottom line is that a multi-core CPU has more total processing power, but each individual core has less than average. To gain the benefit of multi-core chips means that your software has to be designed to make use of them. Browser-based software cannot be, again because it is written in interpreted code. That means that your browser-based LOS may actually run more slowly on the next generation of computers.
17. LOS web applications lack multi-level 'Undo' capability. Think of your own experience running Web applications. Everything's fine until you make a mistake, but once you do, there's no good way to undo it. You press the 'Back' button only to be told you cannot go back. Yes, you may use Ctrl-Z to undo changes you make to a single Web input control, but that's all. While it's theoretically possible to support multi-level undo on the web, the feature is rarely provided simply because it's hard to do. It takes the richness of a desktop application to permit a multi-level undo capability. The desktop paradigm permits this richness, which may never be achieved by Web applications.
18. LOS web applications enjoy no "network effect". One reason for the popularity of some Web applications is that they have obtained a natural monopoly. Applications like eBay and Facebook obtained a dominant position in their areas (auctions and social networking) not because they were inherently better than their competition, but because each additional user increased the value of the application for the next new user. LOS Web applications are too narrow in scope to benefit from such network effects.
19. The *Register* survey offers up additional hints regarding the role of the browser in enterprise applications. Those results show that for the tech-savvy power-user, the Web browser is the central application only 25 percent of the time. That indicates that the vast majority of mission-critical power user applications are desktop applications, not Web-based applications. The study concludes, in part, that "there has been a bit of myth explosion here that the web browser has become the general pivot point for end user computing in a business environment, which is clearly not the case, at least at the moment." The study says:

- a. Perhaps the bottom line here, therefore, is to shake all of those romantic notions of thin clients everywhere and just think "thinner" – i.e. shift as much back to servers as possible, and try to implement as much central management and control as you can, but accept that the pivotal applications we have been discussing will mean an ongoing software footprint on the desk for a long time to come.

20. There is wide agreement that delivering applications using the Internet browser is the easiest way, but there is much less agreement that browser-based applications can be considered best-of-breed. In the long run, Web applications will replace desktop applications where it is appropriate that they do so, but they will not replace all desktop applications everywhere. In particular, mission-critical back office applications that are their users' primary application, and for which they are power users, are better off provided as desktop applications.
21. At ASC, we chose to make PowerLender a desktop LOS application so the power user gains the many benefits desktop applications have over LOS Web applications. More specifically, PowerLender permits users to define their own data entry screens to conform to their unique business processes. Perhaps competing LOS Web applications permit some level of customization, like "branding" for example. But it is unlikely that any LOS Web application permits users to design their own input screens with the ease-of-use, speed, and interactivity that PowerLender offers. Designing PowerLender input screens is an order of magnitude easier than programming a web application.
22. Web UIs are great for reaching occasional users, but PowerLender is much better for back-office activity. And it will be easier to put a Web UI on PowerLender if we choose, than it will be to make any Web UI easy to use and customizable for back-office personnel.

Question Comments on this or any of our podcasts? We would like to hear from you. Tim Liston can be reached at listont@asconline.com, and John can be reached at listonj@asconline.com.