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For the present time, our library will continue to use a multiplicity of online newspaper resources, at least until the holes in digital coverage are mended. You can read the full 2019 TOW Center for Digital Journalism at Columbia's Graduate School of Journalism report, *A Public Record at Risk: The Dire State of News Archiving in the Digital Age* at [https://www.cjr.org/tow\\_center\\_reports/the-dire-state-of-news-archiving-in-the-digital-age.php](https://www.cjr.org/tow_center_reports/the-dire-state-of-news-archiving-in-the-digital-age.php).

For more information about archiving the digital version of the New York Times, see Sharon Ringer, *Digitizing the Paper of Record: Archiving Digital Newspapers at the New York Times*, JOURNALISM (June 2021), <https://doi.org/10.1177/14648849211023849>.

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## THE INTERNET

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### Institutional Software Approval Processes

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#### **Introduction.**

One of the growing trends in large organizations, including the universities and colleges I have worked with, is more centralized control of software and formal approvals for use of software. This is driven by increasing awareness of privacy and data issues around software. This article is a discussion of potential pressures that an approval process puts on the type of software that can be approved at all and potential weaknesses in a software approval process.

#### **History of organizational software approvals: Internet exposure necessitates software screening for security issues, beyond screening for purchase price.**

Long ago, software wouldn't necessarily have gotten an approval separate from the physical computer. For example, the first generation of Macintosh computers came bundled with basic office software, and separately purchased software was for specialized applications like animation.<sup>1</sup> When computers became more common, to the point where there was a market for a variety of software, it might have been the case that software purchases were looked at for procurement issues only - pricing and what kind of competitive selection process software had to go through for procurement.

The transition from computers being stand alone devices to computers being integrated with the Internet has been gradual. Over the past 30 years, Internet connectivity has become the norm, then software has transitioned online to a cloud computing model or to desktop software that regularly communicates with the vendor via the Internet, or even cloud-based software which runs online and is available to the personal computer over an Internet connection. To use the current version, many dominant software programs today require information to flow back and forth over the internet. As of this year, Windows 11 requires an Internet connection to activate.<sup>2</sup> Adobe Acrobat Professional requires connecting to the Internet every 30 days to reactivate the license.<sup>3</sup> Microsoft Office 365 requires connecting to the Internet every 39 days.<sup>4</sup>

Essentially, a significant amount of software today either automatically connects with the manufacturer for regular check-ins over the Internet or is entirely web-based. Either way, there's a regular flow of information both ways. And computers practically have to be connected to the Internet in order to function, so even software that doesn't require an Internet connection has access to the Internet. This means that there is the potential to have information flow in and out of the organization. Poorly designed software can inadvertently expose information to the Internet. Malicious software can send information out of an organization. And cloud-based software is just someone else's computer.

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## **Centralized control of software within organizations.**

Over time, there has also been more awareness in administration of large organizations and governments about the implications of software. For example, reviewing software contracts based on the type of information that will be shared out rather than on monetary procurement thresholds. A trend in trying to manage the possibility of software sharing information over the web is to centrally screen software within an organization and only allow approved software.

This article is about the implications of different approaches to how centralized software approval processes are handled.

### **Aspects of a software approval process.**

*Whether to have a software approval process at all.*

All institutions I have interacted with have some limitations on what software can be installed. Believe it or not, not all institutions have a software approval process. This came up when I worked in the central consortium in Florida and did tech support to various libraries. Some campuses couldn't install software independently and essentially had an approved list of software from campus but couldn't go outside of that. Having no approval process at all gives clarity and maybe saves time versus navigating a clunky process that results in denial. In general, though, it has the downside of having no flexibility.

*Whether to have the same approval process for all software.*

Cloud-based software is different from desktop. Software for doing simple math is different from software for storing and saving information for later. Giving the same approval process or having the person requesting software fill the same form regardless of what the software will be used for means the initial form or information requested will be complicated because it has to cover the most complex, most dangerous situation. Someone wanting to install a driver for a device will have the same initial form or questionnaire as someone looking to load all the HR info about the employees to the cloud, and that initial form or questionnaire will be long. A longer initial questionnaire or form is more complex for people to navigate. Meanwhile, providing multiple paths to approval, depending on what will be installed, means that finding which process to use (which form or questionnaire to use) adds complexity. Having one long process that everyone knows to use might be simpler than having multiple processes and trying to set things up to let people self-sort into the approval process for what they need.

*A difficult process encourages people to circumvent it.*

One of the benefits to a central software approval process is that, if the approval process is universally followed, there's a way to know across an organization what software people have installed and what cloud-based services they have registered for. Even if the approval process is as simple as getting the name of the software, then rubber-stamping a yes to everything, it has the benefit of making it possible to know what's going on and who has installed what. Likewise, a process that is difficult to comply with (requires reporting lots of information or filling multiple long forms, has a low approval rate, or requires a lot of time to navigate) will result in people avoiding the process and circumventing approval. A simpler process may be better than a complex process because simplicity encourages compliance.

The vast majority of us are not structuring approval processes but rather are navigating them and trying to get tools to do day-to-day work. If a process appears to be onerous and strict, it's likely that it will not be applied as written and that the people applying that process and issuing approvals are under tremendous pressure to rubber-stamp things so that people across the organization continue to report rather than circumvent the process.

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*Whether to examine software versus examining the license or contacting the manufacturer for information.*

The trend I have seen is for software approval processes to either examine the license to see what it says about private data or to have a set of questions and expect to be able to contact an office and ask about the software. The organization I'm now at has an approval process which anticipates someone from information security contacting the paid staff privacy office within each software company and asking a list of questions about past data breaches, 5-year plans, etc. Alternatively, with software, it's often possible to examine the software, and that approach seems to be disfavored. There are two issues going on with this choice of asking the company versus examining the software. First, with actual malicious software, the license doesn't matter. And with actual malicious software or phishing schemes, they even will call you or chat you up online, and it's not too much of a stretch to imagine a phishing scheme that lists an office number specifically to discuss software and data privacy issues. Second, there's a significant amount of software that is made by individuals. A software approval process that reads a license can be compatible with these software programs since standard licenses are available. However, expecting to contact and ask questions about the software is not. For example, consider MARCedit. It's tremendously valuable in the library field. It's also programmed by one person.<sup>5</sup> Xenu Link Sleuth is also programmed by one person who has a full-time job that isn't related to supporting Xenu Link Sleuth.<sup>6</sup> The idea of an organizational approval process that involves contacting the software company and gathering information about privacy practices is geared towards large software companies and is incompatible with software developed and released by one person.

An alternative approach is to examine the software. This is not a trend I have tended to see in organizational software approval processes. Examining the software requires someone to take the time and focus to do the examination, and requires a higher level of technical skill, which might be hard to find. It's likely harder to find someone with the skillset to examine a piece of software than it is to find someone with the skillset to phone a corporate office and ask a list of questions. However, it probably is necessary to have a process that anticipates examining the software in order to allow the use of a wide variety of software programmed by one person or small companies. Not having that process precludes software approval for software from individuals or small companies. Something important to say is that examining the software isn't necessarily looking at code. MARCedit is not open source. It's not possible to get the code.<sup>7</sup> Xenu Link Sleuth also is not open source. There are still instructions and looking at reputation, such as published studies that used software. For example, a Google Scholar search shows 19 articles that cite Xenu Link Sleuth published since 2018, and looking through those hits shows that it was used as a tool for published analyses of websites, rather than discussed as an example of notorious bad software.<sup>8</sup>

This is really important because having an approval process that requires a software program to be made by a company large enough to have an office and dedicated staffing for answering questions will mean that only software made by large companies can propagate and be installed. It's not just isolated organizations that are doing central control and approval. Approval processes are now the norm, so trends in approval processes will determine what software can be used at all. Bureaucracy favoring larger companies is not a new issue, since almost everyone can relate to being unable to purchase something in the past because the company couldn't issue purchase orders or deal with organizational purchasing. The type of approval process can be another layer of that, however.

### **Conclusion.**

I hope this helps to think through issues with how organizational software approval processes are impacted by and impact the bigger picture. Because all computers practically have to be Internet-connected today, all software potentially can send information out of an organization over the Internet. Hence, organization-level software approval processes are now the norm. Some kinds of approval processes, notably not allowing any approvals outside of a predefined list or approval processes that anticipate contacting the company that makes the software, will block out useful software programmed by individuals.

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OCLC

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- ⇒ The Library of Congress recently replaced the subject heading “Illegal aliens” with two new headings, “Noncitizens” and “Illegal immigration.” Using a combination of automated processes and OCLC Quality Control Staff, OCLC has been working to update these LCSH terms in OCLC records. Since “Illegal aliens” is a class of persons, OCLC is taking care to apply subdivisions correctly. Subdivisions used only under classes of persons will be copied to “Noncitizens” but not to “Illegal immigration.” FAST headings will be updated similarly in a separate process.
- ⇒ There was an OCLC Cataloging Community meeting on January 28, 2022. The first part of the meeting featured three presentations on diversity, equity, and inclusion. Adrian Williams spoke about Homosaurus, Misty Alvaro spoke about DEI in public library consortia, and Cynthia Whitacre spoke about DEI at OCLC. The second part of the program was an OCLC update. David Whitehair gave an OCLC Metadata Services update, John Chapman and Petra Löffel spoke about WorldShare Record Manager, and Cindi Blyberg and Marcie Burton spoke about Worldshare Collection Manager. Robert Bremer spoke about changes to LC subject headings for Aliens and Noncitizens. Recordings and slides are available on the OCLC website: <https://www.oclc.org/go/en/events/cataloging-community-meeting/january-2022.html>
- ⇒ The OCLC Global Council in cooperation with OCLC research will be presenting three upcoming webinars on Libraies and Open Ecosystems:

**1. Creating a New Model Library**

Monday, 28 February, 11:00 am – 12:15 pm US Eastern Time (UTC -5)

Join Brittany Brannon, Research Support Specialist, Library Trends and User Research, and library leaders from OCLC’s Global Council for a discussion on emerging library models. This session will focus on changes made both before and during the pandemic that influenced leaders’ visions for their libraries during the next five years. Join us as we discuss these transformations toward a New Model Library and how library leaders can strategically adapt to anticipate evolving needs and expectations.

Register: <https://www.oclc.org/en/events/2022/open-ecosystems-creating-new-model-library.html>INAR