

Bringing the Cloud into Focus:

5 Things to Consider When Selecting Cloud-Based Museum Collections Management Software



Thinking About a Cloud-Based CMS?

In addition to the range of traditional options, there are a growing number of **cloud-based** collections management software (**CMS**) solutions available to museums and collecting organizations. Most of these products operate on a “Software as a Service” (**SaaS**) model. Unlike traditional software which is installed onto an organization’s computer or local server, in the SaaS model, the software application and associated data are remotely hosted “in the cloud” and user access is provided through an Internet connection via a web browser or through a **mobile app**. A commonly used SaaS product is Google’s Gmail service. In popular nomenclature, “cloud” can be interpreted to mean “via the Internet.”

There are plenty of arguments, both for and against, migrating collections documentation into a cloud-based system, but finding the right product and vendor for your particular needs is key. If you are considering replacing or upgrading your current CMS to a cloud-based system, there are a number of things to consider.

5 Things to consider:

- 1. Accessibility***
- 2. Software and Hardware Management***
- 3. Cost***
- 4. Security***
- 5. Migration and Export***

Glossary of Terms

Underlined text indicates we’ve included a definition for the term. If the hyperlink does not work, refer to page 10 of this paper.

This paper was prepared by the collections management team at History Associates, led by our Director of Information Resources Management, Mark Evans. The team helps clients get the most value out of their collections through improved policies and processes. They assist in developing and implementing effective collections management programs, and they provide guidance and hands-on support for the standardization and development of collections management software. Their work involves collections inventories, assessments of museum procedures, and developing collections management systems.

1

Accessibility

An attractive feature of [cloud-based CMS](#) products is the ease and flexibility with which a user accesses the application and associated data. As mentioned, these products can be accessed through the Internet by a range of supported devices such as [web browsers](#), tablet computers, or [mobile phone apps](#). This means that a user can potentially access a cloud-based CMS from pretty much anywhere there is an available Internet connection. Although users can access the Internet through a variety of devices, the functionality of the cloud-based CMS may vary from device to device. For example, on a web browser, a user may have access to view and update the data, yet through a mobile phone app, they might be restricted to 'read-only' access.



When thinking about accessibility, it is also important to consider performance and availability. Data transfer speeds over the Internet can vary, and are typically lower than the transfer speed of an internal network. This can lead to a decrease in overall performance when transferring large quantities of data to and from the cloud. However SaaS vendors tend to use high performance hardware. This means that the computing power of a cloud-based system is likely to be more robust than your local infrastructure. Users may experience faster results on complex database searches on a cloud-based system and no discernable change in performance as the amount of collection data grows.



The availability level—the ability for a user to access the system—may vary across providers. Some [SaaS](#) providers may offer an availability level which cannot be met on a local infrastructure without significant investment. It's important to fully understand the level of service that is being provided and ensure that both the performance and availability stated in a cloud-based CMS's service level agreements ([SLAs](#)) fit within your own requirements. If you are unsure of your internal requirements, be sure to consult with your IT staff or a technical adviser.

If your organization plans to make part or all of your collection data available online to researchers or the general public, the ability to provide accessibility to other platforms is another important consideration. Many traditional CMS systems offer modules for providing content to websites, but this generally involves exporting selected data for uploading onto a website. Given that all of the information is already hosted online in a cloud-based CMS, this part of the process tends to be easier.

2

Software and Hardware Management



[Cloud-based CMS](#) products offer a new approach to how collection software and hardware are managed, as vendors of these products host and maintain them. This removes the necessity for your staff or IT department to establish and maintain the CMS infrastructure and software as they would in a [locally hosted](#) CMS, reducing the stress on these limited resources. The fact that the SaaS vendor houses the software and hardware also makes technical troubleshooting easier, as they do not need an on-site visit to diagnose problems.

Standard [SaaS](#) solutions regularly include system backups along with CMS software and hardware upgrades as part of their [SLAs](#). Providers have the flexibility of rolling out upgrades more regularly.



Other points to consider when transitioning into a cloud-based CMS are the shared resources that most SaaS providers offer. Generally, cloud platforms are built on a framework of robust components (servers, data storage devices, and networking equipment). These optimized infrastructures offer clients scalable environments, which can grow or contract to meet the changing needs of a collection without the need for local infrastructure investment. In short, you can add a large amount of data without having to worry about storage space on your server or hard drive.

Data backups in the cloud can be more robust and reliable than backups you do on your own – SaaS providers often store backup copies in geographically dispersed and physically secure facilities to mitigate risk of loss. You also benefit from their technology infrastructure; they are likely to maintain redundant systems in order to guarantee consistent performance and system access.

3

Cost

[Cloud-based CMS](#) solutions present a different cost model than [locally hosted](#) CMS products. The emphasis shifts from a capital expenditure to an operating expense, since a [SaaS](#) solution represents a recurring subscription fee.

Both cloud-based and locally based approaches have similar factors that can contribute to the total cost. These include the number of users, licensed features, and product support and training. In either approach, costs vary across available products. In the case of cloud-based CMS solutions many of these common elements are bundled into a primary subscription fee supplemented by a range of add-ons such as training.



There are, however, significant differences within SaaS solutions. Most cloud-based CMS solutions offer a “pay as you go” approach so there is no need to purchase data storage before you need it as you would with a locally based CMS. The use of a cloud-based CMS may require increased network speeds and hence costs to facilitate acceptable performance of the CMS solution. Disaster recovery and related support costs are typically included in cloud-based CMS subscription fees as opposed to additional costs with locally based solutions. There may be additional costs associated with migrating existing local content into a cloud-based CMS, as well as future fees for bulk importing/exporting data and related media files such as [JPGs](#), [TIFFs](#), [MP3s](#), and/or [WMVs](#).

The elimination of local infrastructure and technical resources through implementing a cloud-based CMS can present cost savings at the beginning. Although the initial cost of a locally based CMS may be higher, future incremental costs may be lower depending on the pricing model in use by the cloud CMS vendor.

Careful consideration should also be taken in relation to basic collection management functions that cloud-based CMS products may not support or which can be provided for an additional cost. Evaluate whether common collections management functions, such as capturing and editing photos; support for word processing; and producing and scanning barcodes are part of the cloud-based solutions [SLAs](#) or whether they can be made available at an additional cost.

Be sure to review any cloud-based CMS options carefully to identify the potential hidden costs. As a recommendation, include a detailed cost comparison as part of your needs assessment exercise when considering implementation of a new cloud-based CMS solution.

4 Security

Since [CMS](#) systems often include personal data or financial details such as donor information and appraisal figures, [cloud-based](#) technology raises data security concerns. Ask yourself, “Can I trust a third-party with the security of our collection’s greatest digital asset – our data?” [SaaS](#) providers are aware of the museum community’s concerns and have made security a priority. Most providers ensure that sufficient procedures are in place to regulate access to permitted information. Besides the security concerns of proprietary information, cloud-based CMS providers are forerunners in maintaining another type of security—data integrity. Most, if not all, perform regular backups of data on failsafe, redundant storage systems to ensure the overall security of your collections documentation.



There are many recognized standards when it comes to information management security and the cloud; however, there is no unifying set of standards that regulate the cloud-based community as a whole. Several recognized guides for industry standards which are commonly accepted in some form include [FISMA](#) , [ISO27001](#), [FIPS 140-2](#), [SSAE 16](#), or [ISAE 3402](#). If you haven’t done so yet, review or define your internal security requirements for your collection documentation. Afterward, find out if your potential CMS provider’s security capabilities and offerings as outlined in their Service Level Agreement ([SLA](#)) match your guidelines. You may find that they meet, or exceed, the internal capabilities of your own organization.

5

Migration and Export

When considering a move to a [cloud-based CMS](#), it is important to consider how you will migrate any existing data and content into the system. First, some questions to consider. Does the [SaaS](#) provider offer tools or an application programming interface ([API](#)) to support the export, migration, and import of existing data and content as part of their offering? Does the SaaS provider offer additional services that can speed up this process and hence reduce the cost?



Should you wish to exit the cloud-based CMS solution at some point in the future, or the SaaS provider ceases to continue business, consider the system's export capabilities. Can both [data](#) and [content files](#) be easily exported? Are there any additional charges associated with exports? Any trusted cloud-based CMS provider should provide a clearly documented exit strategy in their [SLAs](#) along with full disclosure regarding any associated costs. Some CMS cloud providers may provide an escrow option, where a copy of the data and content is placed with an independent third party. This approach can provide an additional alternative to a provider's documented exit strategy.

Summary



While many remain skeptical whether [cloud-based CMS](#) solutions can meet the needs of museums and collecting organizations, the adoption of cloud-based systems and software continues. These products offer a centralized system that provides the capacity to identify, describe, and account for collection assets in similar ways to a locally based CMS. What differs is that [SaaS](#) solutions provide hosted software and storage space; data security in the form of access and integrity; and ongoing development and implementation of software functions—usually included in a single subscription fee.

Evaluate cloud-based CMS products in the same manner in which you would compare and contrast the features of a [locally hosted](#) CMS product. Unlike desktop or server hosted CMS products, the basic costs associated with a SaaS product are based incrementally on the amount of storage space used, service agreement/support charges, and add-on costs.



If you are facing limited in-house knowledge or resources, you don't have to "go it alone." Professional colleagues, software vendors, and consultants like History Associates offer expertise and experience to help make the transition as painless as possible.

We can help you avoid potential pitfalls, translate your needs and objectives into clearly-defined functional requirements for IT vendors, and assist with transferring collections data into your new system.

The selection process may seem overwhelming, but it's prudent to take a little extra time at the outset for planning and evaluation of CMS solutions. The reward will be a smoother transition to a new system that will enable broader access, better management of your collections, and may even open doors to new ways of bringing the full value of your collections to light.

Cloud-Based CMS Pros and Cons



Cloud-based CMS Pros:

- Can be accessed anywhere you can connect to your SaaS provider's site via the Internet.
- Availability levels are typically higher than those achievable in-house for the same investment.
- Certain functional behaviors and response times may be higher due to high performance hardware and cloud network infrastructure.
- Little or no degradation in performance and response as collection data grows in size.
- Support for a broad range of devices including tablets and smart phones.
- Making CMS data available on a public website or for a researcher tends to be a more streamlined process.
- SaaS providers manage CMS software and hardware infrastructure along with storage and backups.
- SaaS providers apply CMS software and hardware updates and fixes for clients.

Cloud-based CMS Cons:

- Access and speed of SaaS products are dependent on local terminal hardware and the availability of Internet connection bandwidth.
- Software may not be optimized for specific types of local terminal hardware such as tablet computers or smartphones.
- Importing/transferring large amounts of data and/or media files to a SaaS product can take longer than in a locally based solution.
- Service outages on the provider's end can limit, or completely disrupt, a user's access to their CMS data.
- Providers may implement updates to software and hardware, with little or no notice to end users, leaving little opportunity to plan for the changes.
- Users have limited control over the function and execution of hardware and software in SaaS environments.
- Image capturing/editing, word processing, and bar code production/scanning may not be supported by basic SaaS products.
- Subscription costs may increase as your total collection documentation and storage allocation grows. The larger the collection, the more it will cost.



Cloud-based CMS Pros:

- The shared resources of cloud-based CMS products are scalable to meet a client's needs.
- Cloud platforms generally are built from optimized computing solutions structured from robust components.
- Pay for what you use. Costs are typically calculated incrementally depending on the number of users, required storage space, and add-on features/services.
- Reduces the need for some in-house computer hardware, such as dedicated data storage space for collections documentation.
- Reduces or eliminates the costs associated with in-house IT staffing resources.
- Most CMS providers can offer compliance with security standards.
- CMS providers manage the security of a user's collections data by controlling user access and providing storage backup.
- Vendors may supply tools and/or an API to facilitate and expedite the migration and import of existing data and content.



Cloud-based CMS Cons:

- Cloud-based solutions are not necessarily cheaper. Costs associated with computer terminal hardware, Internet bandwidth fees, and the initial content transition should be considered in addition to any subscription fees.
- There is a level of risk associated with storing proprietary data and digital assets on a cloud-based system. In some circumstances, regulation and national standards for digital rights are still being defined.
- The migration and import of [legacy content](#) can be complex and time consuming if the SaaS provider does not have a mechanism to support this activity.
- Additional costs may arise from the provider to support importing and exporting data and content.

Glossary of Terms

API: Application programming interface. This is a type of software code that enables two different software programs to talk to each other.

Cloud-based: this term has many nuanced meanings within various technology communities; however in general, the term refers to software and infrastructure that is provided over the Internet.

CMS: collections management software.

Content File: a digital file that contains contextual information, like a written article or a piece of music.

Data File: a digital file that contains primarily sets of data, like customer information or billing records, for example.

FIPS 140-2 (Federal Information Processing Standard 140-2) published in 2001 by the National Institute of Standards and Technology (NIST).

FISMA (Federal Information Security Management Act) was enacted in 2002 by the United States.

ISAE 3402 (International Standard on Assurance Engagements No. 3402) was issued in December 2009 by the International Auditing and Assurance Standards Board (IAASB).

ISO27001 was published in 2005 by the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC).

JPEG: an acronym for Joint Photographic Experts Group, the committee that developed the standard. JPEG is a common file format for digital images and is widely used in digital cameras. It is also referred to as a "JPG," which is the file extension that appears after the file name (e.g. "picture.jpg").

Legacy content: information that will be moved from one format or system to another, such as from a spreadsheet into a new collections management system, or from data cards to a database.

Locally-hosted: the hardware and software are physically located at the organization's site. The hardware, like individual desktop computers or a server are at the location and the software and associated data are also saved there. This information can only be accessed on-site or through a private network set up by a local IT administrator.

Mobile app: short for "mobile application," is software that is designed to run on a smartphone, a tablet computer, or other mobile device.

MP3: A common format for digital audio files and is used by most digital audio players.

SaaS: Software as a Service. This refers to software applications that are hosted and maintained by the vendor on their own servers and accessed by the user through an Internet connection.

SLA: A Service Level Agreement is a formal document which explicitly defines services to be provided and includes specific metrics for measuring acceptable performance, such as percentage of time that service will be available, procedure for network maintenance and planned outages, and other performance benchmarks to be met.

SSAE 16 (Statement on Standards for Attestation Engagements No. 16) was finalized in January 2010 by the Auditing Standards Board of the American Institute of Certified Public Accountants (AICPA).

TIFF: acronym for Tagged Image File Format, a common file format for digital images.

Web browser: A software application which accesses and displays information on the World Wide Web or on private networks. Popular browsers include Internet Explorer, Google Chrome, Mozilla Firefox, and Safari.

WMV: A common video format initially developed for streaming on the Internet.

About History Associates

History Associates specializes in helping organizations manage and use historical resources. Since 1981, we've assisted corporations, government agencies, professional associations, cultural institutions, individuals, and others in preserving their legacy and artifacts, telling their stories, and answering their historical questions. Over the years our clients have come to value our ability to complete projects on time, on budget, and tailored to their needs.

The collections management team at History Associates has extensive experience in:

- preservation, arrangement, and description of museum collections, and archival materials;
- cataloging collections using a wide variety of museum cataloging software;
- surveys and assessments of collections and archives;
- collection and management of inventory data;
- metadata creation, update, and quality control;
- creation of planning documents, policies and procedures, and specifications; and
- database design.

Organizations like the U.S. Mint, the United States Merchant Marine Academy, and the National Archives and Records Administration have trusted us with their historical collections. We will treat your collections with the same high level of care and attention.

You don't have to go it alone

We'd be happy to confidentially discuss your project, whether you need project support or you just want to ask a question.

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