AIIM White Paper
Putting Archived Content into Play

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AIIM has been an advocate and supporter of information professionals for nearly 70 years. The association mission is to ensure that information professionals understand the current and future challenges of managing information assets in an era of social, mobile, cloud and big data. AIIM builds on a strong heritage of research and member service. Today, AIIM is a global, non-profit organization that provides independent research, education and certification programs to information professionals. AIIM represents the entire information management community: practitioners, technology suppliers, integrators and consultants. AIIM runs a series of training programs, including the ERM Certificate course. www.aiim.org/training/Electronic-Records-Management

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Despite the fact that these days almost all documents, drawings, specifications and business documents are created digitally, we still live in a hybrid world of paper and digital. This is particularly true in those areas where records are kept for a long time — often because the building, plant, hospital, school, patient or client has a lifetime over many decades, and the majority of their related records were created on paper. But do they still need to be stored on paper?

We all know the problems of stacking up paper records in file cabinets, storage basements and offsite warehouses — cramped office space, month-on-month service costs, findability, retrieval times, inability to cross-reference, application of retention policies — but the task of converting them to digital can seem daunting. We can opt for a day-forward scanning policy for all new paper arriving in the business, we can set up a scan-on-retrieval policy to convert the most frequently accessed, but the archive is still costing us money to keep, and is virtually useless if we can't find what we need, when we need it. So what most people do is… nothing. "We'll leave the records in the warehouse until something forces us to do something about it."

Of course, in the past digitizing an archive was more difficult and more expensive than it is today. Advances in document capture technologies and automation in data indexing, along with the economics of SaaS or cloud-based document management solutions, make it a much more viable option. And as more operational processes go paper-free, the disconnect with a paper archive becomes a drag on the efficiency of the business.

Now an interesting factor here is that most businesses feel it appropriate to use an outsourced provider for their physical storage services — after all, temperature and fire-controlled cellars and warehouses are not core competency. But when it comes to the digital archive, the preferred place of storage is in-house, on the company's own servers or in its own data centers. Traditionally, this provided a sense of security, and enabled

network access by those within the business, albeit that in many of the applications described above — construction drawings, facilities plans, plant records, accounting records and client files — access might also be needed by those outside the business acting on a sub-contract or agency basis or in a professional capacity.

These days, of course, many organizations are virtualizing their storage and moving to the cloud in order to save infrastructure costs and to improve access for those outside the firewall. Many are utilizing public cloud or SaaS services to in effect outsource their storage provision, feeling that the maintenance of server infrastructure is not a core competency, particularly for long-term, seldom retrieved content.

So if we bring these threads full circle, wouldn't it be nice to wave a magic wand and "Hey presto" all of those paper-based archives sitting in the warehouse are converted to digital, and end up on a cloud server hosted by a specialist services provider, available to whoever has the right to see them, wherever they are. No more physical storage, no more overloaded servers, no more user complaints, and a reassurance that due diligence has been carried out in the conversion process, the storage management, and the access security.

So what's wrong with the "leave it there until something happens" approach? Well it depends what that "something" is. If it's an appraisal of the costs of keeping the paper vs. the cost of converting it, someone will need convincing that the savings to be made are worth the effort. That in turn will depend on an audit of what content is sitting in which basements or warehouses, what its value is to the business over time, and when it can or should be disposed of. This could be an internal audit, or outside providers could be brought in.

It may be that a building move has questioned the space taken up by records storage and forced a rapid re-appraisal between moving and re-accommodating it, outsourcing it, or converting it. Each of these will have costs, both short-term and long term. Mind you, it could also be that if the archive had been converted over time to digital, sufficient space could have been reclaimed to completely avert or delay the need for the move.

Centralization and re-organization triggered by mergers and acquisitions will quickly show up the difficulties of merging drawing and document archives, or customer records. Even if they can physically be combined, alignment of numbering schemes and classifications can plague the business for many years. More often than not, the need for proximity to the paper archives counts as a negative when it comes to re-organizing processes, and can have immediate impact on the potential savings from consolidation. The process flexibility and potential for improved customer response based on universal access to content can be a huge asset when it comes to post merger process improvement. In short, an all-digital archive can add considerable shareholder value.

If it's the case that new work needs to be done on a building, a manufacturing plant, a hospital or a school campus, then it will be much more productive to convert all of the original records to digital at the start of the project — even before bidding takes place by architects, planners, maintenance teams or constructors. This is a perfectly valid approach, but of course, it immediately becomes time-critical, and the temptation is to

bundle the project off to a local scanning shop on a short-term contract, losing the chance to align templates, classification and terminologies with a longer-term corporate standard, to cross-reference final drawings and as-builts, and to remove duplication.

Somewhat more dramatically, it may be that some event or incident has triggered an urgent need to consult floor plans, plant layouts, operations and maintenance manuals, quality reports or student records. It could be environmental such as earthquake, flood or storm damage, structural failures such as collapse, fire or explosion, or it could be regulatory actions such as compliance reviews, audits or safety issues. Access to the archives will be needed in minutes not hours, and certainly not days. There may be disaster plans and incident handling procedures in place, but if they still refer to paper records and drawings, they are well overdue for revision. This can in itself be a driver to back-file convert the archive, although, of course, the outcome of a post-incident inquiry is much more likely to be the trigger — somewhat retrospectively.

Even for day-to-day business, information access is the key to process improvement - the ability to search and retrieve documents in seconds, not hours or days, the ability to share or comment on the documents digitally, or respond immediately to an internal or external customer information request. These process productivity and customer response improvements can deliver far more ROI than simply comparing the cost of storage to the cost of conversion, and they provide the long-term benefits of information access.

Although scanned images are no longer considered to be huge consumers of disc space, they can still be somewhat weighty, particularly large format drawings. Converting and moving an archive of any size onto in-house servers will involve a scaling exercise, and could exceed the capacity of local servers or storage network. It will certainly increase back-up sizes and times, and require additional server maintenance. So as we see from previous AIIM survey results in Figure 3, cost reduction in IT resource can be the primary driver for a move to the cloud.

However, it is the next three benefits listed that have the most impact for the types of content we are describing. Cloud provides immediate access across the business, and outside of the business, without the need to create local network logins and VPNs. Access for project teams can be quickly deployed — and equally quickly re-arranged. Collaboration routings and sign-off workflows can be set up to involve advisors and professionals in a very straightforward way — including participation via mobile devices.

Another more technical aspect is that high capacity broadband links separate the need for scanners and servers to be co-located, allowing on-site scanning teams to move in to the physical records store and quickly be productive for back-scanning projects, simplifying logistics and maintaining continuity. Day-forward scanning can be handled through outsource, using the digital mailroom concept to scan incoming documents at the point of entry, or from distributed scanners and MFPs within any office or branch. If access to drawings and documents is needed onsite, they can be quickly downloaded to mobile devices, or to locally provided print services.

Figure 1: What are or would be the main drivers for you to put some or all of your content in the cloud? (Max THREE) (N=102, AEC, Manufacturing and Utilities) [1]
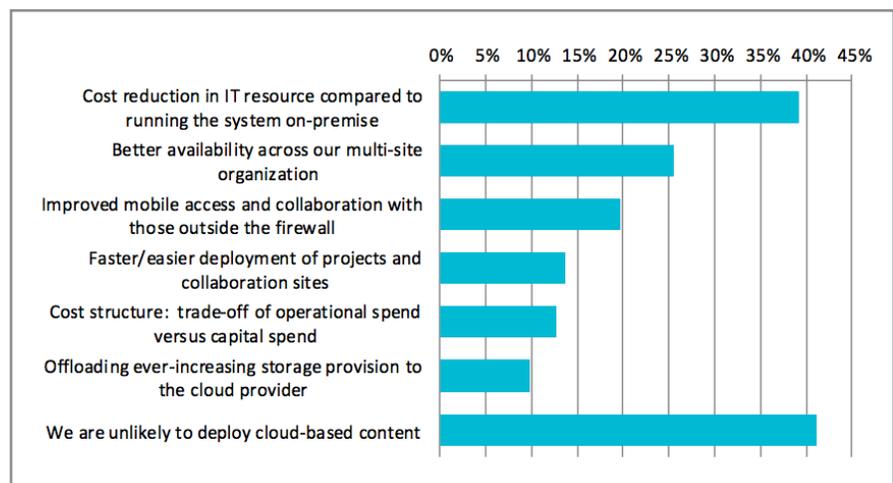
Over the years, AIIM surveys have tracked the willingness of users to adopt cloud storage and cloud services. Security and availability have always been the key issues. What if the system is hacked? What if our internet connection goes down? We have seen the cloud service providers step up to the plate on compliance with a whole raft of security and operating standards. Meanwhile, broadband and fiber connections have dramatically improved the reliability and throughput of internet connections. As a result, the number of organizations willing to adopt cloud services has grown steadily, including major operations in government, healthcare and finance. And in fact, users give capture and records management as the most likely candidates for cloud provision.[1]

There is also a dose of reality when users compare the standards of security and reliability deployed by cloud providers, and the expertise of the people they employ, with those of their own data centers. Many find that the cloud can actually provide a safer home for their content.

Figure 2: Would you consider adopting a Cloud/SaaS system for your records? (N=83, AEC, Manufacturing and Utilities) [2]
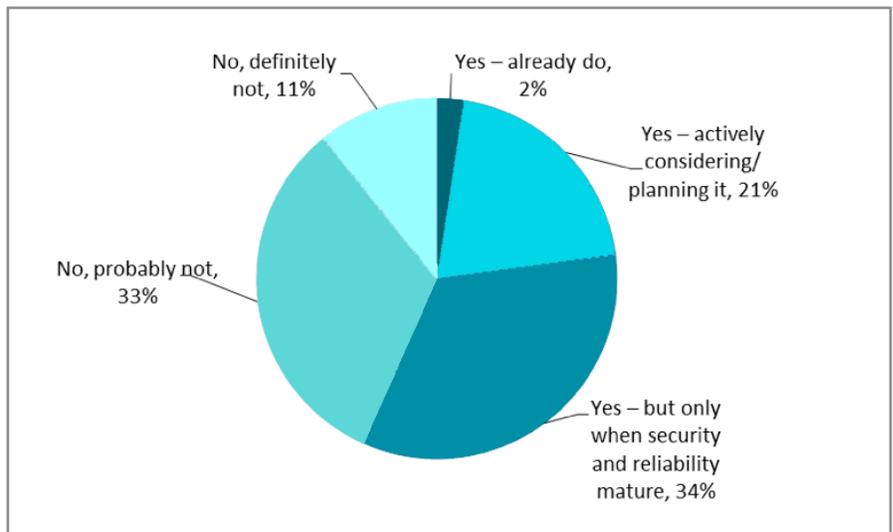
So we can buy into the arguments of why our records archive should live in the cloud, but right now they are still sitting in racks, box on top of box, rack after rack. How do we structure the project? How do we rationalize what to keep? How do we classify and index the content so that it doesn't end up digital but still un-findable? How do we rationalize terminologies and normalize numbering schemes? And all this is before we start looking at equipment, logistics, staffing, quality standards, and which platform we are going to use once the content is in the cloud.

Our recommendation would be to take external advice on this. Don't simply go to a scanning service bureau and ask how much per page or per drawing. Bring a qualified full-service provider into your business. Share your objectives regarding the desired end-state, and over what time, and be open about who should take responsibility for each aspect of the project, both during the conversion, and on-going over time. Look for experience in your industry sector. A good provider will be seeking to reduce the amount of content to be converted, not to increase it. With the help of the provider, you need to draw up a set of value criteria. Can we dispose of this rather than convert it? Are we legally obliged to keep it — in fact in some cases we may be legally obliged to delete it. These questions may have quite different answers depending on which sector you are in.

Chances are the paper records will be littered with duplicates, and misfiled or cross-filed documents. Should we attempt to de-duplicate the paper, or wait until it is converted and then run de-duplication? Can we run document type recognition and classification checks as part of the scanning process using OCR? What about poor quality or damaged documents? How much time is it worth spending on these? What level of image quality will be acceptable? Perhaps there are alternative copies on microfilm or aperture card that can be used instead. Would it make sense to OCR paper documents to text, or scanned drawings to vector, in order to kick-start work on new projects or extensions?

Our advice would also be not to get too hung up on rationalizing your content management systems as part of this project. You are looking to get the archive converted with consistent and repeatable classification and tagging. You then need to see the immediate benefits of electronic search and access to these documents and drawings. It may be that the SaaS content management tool used by the service provider as the receptacle for your records is actually a solid fit for your needs — or even highly optimized if you need specific viewers for drawings, or you need to provide time-limited access for the duration of a project. Alternatively, your objective may be a single, standardized ECM or records management capability across the business. If this is the case, make your requirements clear in your requirements document. Your service provider can then ensure that the SaaS platform meets your exact requirements and will coordinate the imaging and indexing to match your current classification, search, sharing and retention policies.

We have touched on the specific requirements that surround construction drawings and as-builts, floor plans, plant records and infrastructure plans. In a modern design scenario we could add to this 3D BIM models, plant maintenance specifications and records, and environmental impact models. We could also add the commercial reality that construction services, plant maintenance, facilities management, and even ownership are increasingly shifting between prime contractors, sub-contractors, developers and agencies. Much as with the service record of a car, the document record of a building or plant should either be passed on from owner to owner, or placed in some independent repository where it can be accessed as needed by the current contractor or developer.

A benefit of a cloud repository for these records is that access can be readily opened up or passed on as required, with "ownership" passing to whoever funds the service, either as owner or operator. Traditionally in the built environment, the document management provider involved in initial construction has served as an "independent" holder and distributor of the drawings record, although in the physical world, extending that role once the project has finished has been problematical. Does the architect own the drawings and continue to pay the bill - and are they interested in maintaining them through as-built updates and later modifications? Does the developer or the construction project manager take care of them, or hand them off to the building owner or the tenant? If the building record is stored in file boxes and plan chests, this round-robin takes on a physical element, but once they are digital, in theory the task is easier. In practice, though, it can be even harder due to project-by-project system deployment and inconsistent classification and templating. 3D BIM models may be a standardizing factor, but there will be even more need for maintenance to reflect the as-built status over time.

It is our view that the document solutions provider is uniquely positioned to offer this cradle-to-grave support of the building or plant record, and by creating a straightforward cloud-based SaaS content management repository, the shifts of ownership and access can be much more easily accommodated. The owner will be the custodian, and through the service provider's SaaS platform, they can enable access for tenants, facilities managers, and maintenance operations, and to the architects and contractors involved in new building projects, extensions and refurbishments. If emergency services or environmental agencies need access to floor plans and service schematics, they can be opened for access without the need to deposit physical drawings. Above all, everyone will be using the single version of the truth — the cloud-stored archival master.

No decision about a cloud archival system should be made without careful evaluation of the facilities for mobile access. Users across many sectors, especially those that involve considerable numbers of field-based staff, are increasingly demanding access to documents and drawings held on ECM or document management systems from smartphones and tablets. As we can see in Figure 3, the demands go further, encompassing comment and approval facilities, document edit and create, and capture of images, scans and signatures — all particularly useful for survey work. VPN access and browser-based interaction are unlikely to suffice in these complex situations, especially where off-line or out-of-range reference and interaction are needed. Cloud-deployed systems are obviously going to provide easier access here, and a degree of industry-specific functionality such as drawings access and red-lining may be required.

Figure 3: When connected to the main ECM/DM system using a mobile device (tablet or smartphone, NOT laptop), which of following basic content functions are readily available? (N=340) [3]

16
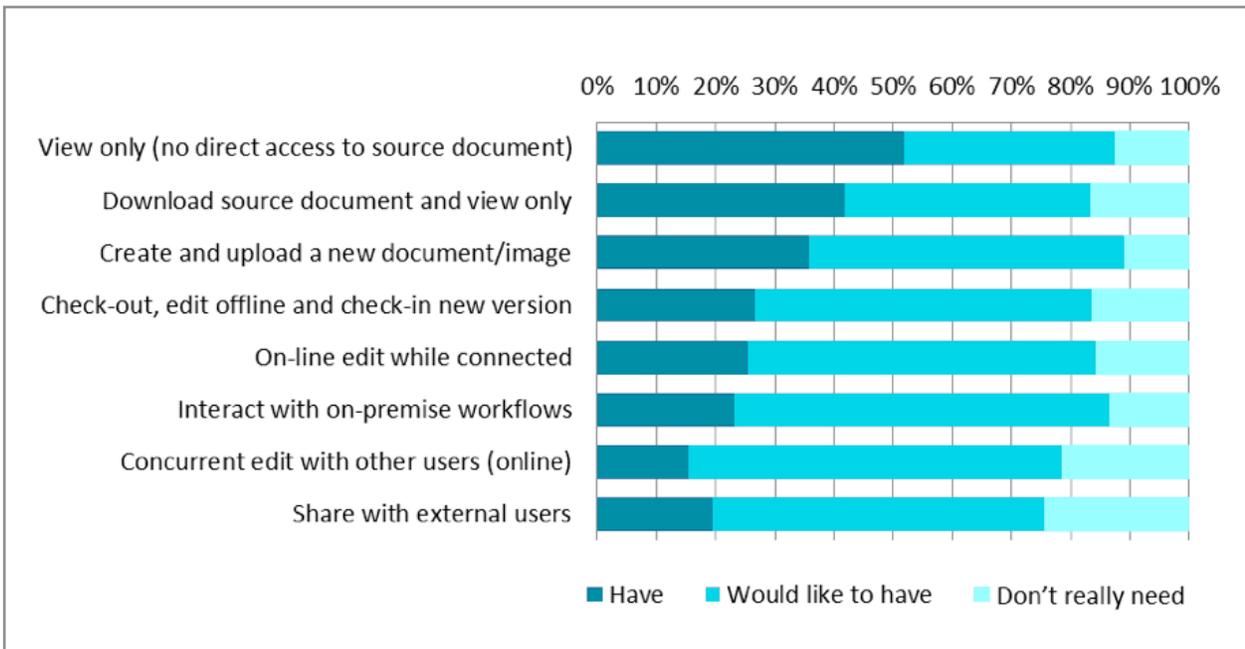
Conclusion

Migrating IT systems and storage to the cloud has become a straightforward deployment alternative in many application areas. Savings on technical staff and data center costs are the main driver. For archival records of buildings, operational plant, street infrastructure, and manufacturing installations there is the additional benefit that a cloud-based retrieval service can be opened up to third parties easily and safely. If the document management and search facilities are simple and straightforward, users can be brought on board with little or no training, and equally can be dropped as and when their project or case involvement ceases.

Moving existing paper documents and drawings from the archival storage facility to the cloud can be the most daunting aspect of a paper-free project, but calling in an experienced document services provider to audit and analyze your specific requirements, within your vertical industry, could well produce some surprisingly imaginative approaches to the problem. They will be bringing a level of experience and expertise from all their previous engagements to your benefit.

Just as long-term accessible storage of physical records can most readily be entrusted to a third-party service provider, the same is true for a cloud-based records archive. It becomes the outsourcer's responsibility to dimension servers, to secure and back-up the content, to maintain accessibility over many years or decades, and to set up and administer retention periods and planned deletion. In a fast moving world of mergers, reorganizations, privatization and agency services, and especially if the archive record relates to a construction or facilities management project, then the natural custodian of the record could well be document management provider from the original project. They will need to be equipped to deal with both the initial conversion and provision of a SaaS-based management system that suits your operational requirements. Of course, they also need to have a proven track record and a sustainable business model that will meet long-term needs.

- Seek out or anticipate triggers that might question why you still maintain paper archives. These could be storage costs, space requirements, accessibility under adverse conditions, difficulties with ownership and access, litigation and legal risks, or the need to begin modification, extension or refurbishment projects.

- Audit the types, quantities and incurred costs of your archives, and take a view on their on-going value to the business, as well as potential legal liabilities. Take a view on the additional costs incurred by lack of timely information access and poor business processes. At this point, it may be worthwhile to bring in external consultants who have experience in your sector.

- Decide on the eventual home for the converted records. This may be within an existing or new enterprise ECM/RM system, or it may be a cloud service platform will offer a more cost effective, flexible long-term solution. In either case, ensure that you can migrate content to or from any cloud storage service while maintaining and/or aligning metadata.

- Take advice from the consultants as to the timing and suitability of scan on retrieval, day-forward capture, and full or partial back-file conversion. Look for their help on removal of duplicated, out-of-date, or trivial records. Look for a one-stop shop on consulting, scanning, indexing, format conversion, automated classification, data validation, cloud platform, customization, implementation and go-forward solutions to stay digital.

- Be particularly aware of the need to provide mobile access to the archival content. Many sectors are moving very quickly to the idea of hand-held tablets for field survey work and for drawings retrieval. The ability to participate in sign-off workflows and approvals is also important.

- If your building or infrastructure project is already using a document solutions or managed print services provider, consider whether they would be the most suitable and independent consultant on your document conversion process, providing a single-source solution that brings all the moving parts together to deliver a successful conversion project. They may also be the most appropriate custodian of the long-term documentation record.

1. AIIM Industry Watch "ECM at the Crossroads" May 2013. www.aiim.org/research

2. AIIM Industry Watch "Automating Information Governance — assuring compliance" May 2014. www.aiim.org/research

3. AIIM Industry Watch "Content Sharing and Processing in a Cloud and Mobile World" April 2014 http://www.aiim.org/research