



Scanning for a disaster

A Cyon Research White Paper
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Early in the morning, on Monday, April 13, 1992, an engineer at the Chicago Merchandise Mart discovered water flooding the third sub-basement of the building. Unbeknownst to him, a large hole had ruptured in the restraining wall of an abandoned and long-forgotten underground freight tunnel – which just happened to run under the Chicago River. Within hours, the breach dumped over 250 millions gallons of water into tunnel – and ultimately into the basements of buildings all throughout the area.

The Chicago Flood was one of the worst business disasters in history, knocking out electrical power, forcing businesses to close, and putting the subway out of commission. But the long-term loss may have been even more significant than the immediate loss, because stored in many of the basements were irreplaceable infrastructure documents and blueprints— which were lost forever.

In today's world, natural disasters are not the only threat. The potential of terrorist actions, while remote, is real enough to add a new urgency to the issue.

For organizations with significant facilities – governments, hospitals, transit authorities, schools and businesses – the inability to locate critical infrastructure documents rapidly could turn an emergency into a disaster.

Consider this: If your facility was inaccessible, could you find the plans for it? And if you could, how long would it take? Would you be able to find the location of utility shut-offs if there were a disaster?

If you don't have good answers to these questions, you're not alone. Very few organizations could put their hands on their facility plans quickly in the event of a disaster or homeland security emergency.

Fortunately, the process of scanning and making these plans available quickly to the right people is not complicated, difficult, or particularly expensive.

Waiting for the bomb.

Those of us who grew up in the late 1950s and early 1960s remember the paranoia about the Russian Nuclear threat. And, because it was distant and far-fetched it was easy to ignore.

Similarly, it's easy to ignore the current threat environment. Yet, separate from homeland security concerns, there are good reasons you should scan your critical facility documents. These reasons include:

- Natural disasters come in all shapes. Hurricanes, floods, fires, power outages, earthquakes, or even building structural failures can precipitate an emergency where instant access to facility plans would be important..
- Even if the plans were accessible in an emergency, the logistics of getting to them and finding the right document could cause dangerous delays for emergency response teams.
- They might be necessary for rebuilding after a disaster.
- Scanned documents may be helpful in supporting an insurance claim.
- The process of scanning and indexing helps locate documents that might otherwise have been difficult to find.
- Even if there is never an emergency, blueprints (and many engineering documents) are not of archival quality—and will degrade over time.
- It's possible to physically lose a roll of prints, through either theft or carelessness.
- Once documents are scanned, they can be made available to anyone who needs them—no matter where they are.
- Once documents are scanned, the paper originals can be transferred to a secure long-term storage facility, or can even be shredded. In either case, their storage space will be cleared up for other use.
- It is possible with scanned documents to enforce tighter security and access control than it is with paper documents.
- In many cases, the time a person spends locating documents can be a significant drag on their productivity. A well designed digital archive can provide practical everyday productivity gains by making documents nearly instantly accessible.
- Have you looked recently at how much money you pay FedEx and UPS? In 1997, IDC estimated that FedEx made a half-billion dollars shipping blueprints.

Despite these justifications, all too many companies find good reasons not to go to the trouble. Budgets may be a constraint. Or they may be too busy. Or they may have had a horrible experience in the past with document scanning projects. Fortunately, though, technology has made scanning quite a bit more predictable, and quite a bit less expensive. By using common sense, it's possible to quickly preserve your blueprints and plans from loss—without it becoming a major undertaking.

Scanning Planning

The first challenge in any kind of scanning project is to get buy-in at a high-enough level to overcome the delays inherent in the budgetary process. While a scanning project could fall under the facilities or engineering budget, it could just as easily fall under the risk management budget—right next to insurance.

No matter what budget, or where the money comes from, the challenge is to get it done sooner rather than later. To that end, here is a short guide to the steps to take to make the process as simple as possible.

1. **Scan everything.** Yes, it's possible to go through the prints, and figure out what to scan and what not to scan – but doing so requires someone who is very knowledgeable, very busy, and very expensive. Better to just scan every piece of paper you can find that's larger than 11"x17".
2. **Do it fast and furiously.** Spreading a scanning project out over time is a guaranteed way to make sure it doesn't get done.
3. **If you have the equipment in-house, use it.** You might be surprised to find that you have large-format scanning equipment in-house. Many modern engineering copier/printers include a scanner that, with a bit of software (which you probably already have), will do an excellent job of capturing your valuable prints. And, even if the equipment is already heavily used for printing, there is a good chance that there is quite a bit of time available on the scanner. You'll be happy to learn that, while all vendors of large-format reprographics equipment have a "per-click" maintenance charge for printing, they don't increase their maintenance charges based on the volume of scanning you do. Commercial quality scanners are capable of handling heavy use.
4. **If you have a lot of documents, consider adding one or more standalone scanners to get the job done.** The cost of this equipment is nothing compared to the value of the documents you'll be scanning. All the major vendors of large-format reprographics equipment offer standalone scanners, in a variety of resolutions, speeds, and often with optional color. (Yes, you might find that you have a significant number of large-format documents that are in color.)
5. **If your people are too busy to do the work, consider hiring temps.** Scanning is not brain surgery. It requires a well-defined process, some reasonable care, and periodic quality checks. It is well within the realm of what can be done by temps.
6. **Investigate the cost of having a contractor handle some or all of the job—** even if you have in-house equipment, or are willing to buy equipment to get the job done. There are at least three types of organizations that can handle this type of work. Reprographers (they used to be called blueprinters), copyshops (many business-oriented copyshops have wide-format scanners), and document-scanning specialists. These companies vary in the equipment they have, and their ability and experience to handle large jobs – but you may find that having one or more contractors handle the bulk of the job will get it done with less management overhead on your part, and with good accountability for the results.

7. **Make sure your documents are secure.** Don't send your irreplaceable documents by anything but an insured and reliable shipper, and don't send originals off-shore. If the information on the documents is sensitive (and it will be), take reasonable precautions.
8. **Don't fiddle.** The best in class scanners are able to automatically adjust their scanning properties based on the type of document. Operators will get the scanning job done a lot faster if they use equipment that handles the detailed settings automatically.
9. **Scan first, index next.** While indexing is critical to being able to find a document in a hurry, it doesn't make good sense to slow down the process of scanning to do more than the basics. Initially, scanned documents should include a sequence number, print number, and title. Further indexing should be done as a separate process.
10. **Post-processing is a luxury.** De-speckling, de-skewing and image enhancement are excellent things to do to make a scanned document print nicely. But they are not an acceptable alternative to having good quality scans to start with.
11. **Use a reasonable resolution.** 200 or 300 dpi is generally considered adequate.
12. **Use PDF as your format.** Why PDF? Because viewers for it exist everywhere, it can include thumbnail views, and it supports including metadata (such as title-block information inside the file, where it belongs. Further, work is underway on a version of this format, PDF/A, which is specifically designed for archiving documents. (See www.aiim.org)
13. **Don't drop the ball.** It's best to scan critical documents on a continual basis, as they arrive, as part of your overall document management process.
14. **Keep it simple.** Avoid the temptation to complicate things. Just get it done – soon.

Once a scanning project is completed, there is the not so minor question of what to do with all those files. While simply putting the scanned documents on a few sets of DVDs, and locking them up in a bank vault may be a reasonable thing to do, it misses many of the advantages that can come from having done the work to get the documents in digital form to start with.

The ideal place to put scanned documents is in a secure digital archive, to be used not only in emergencies, but also for day-to-day access to working documents. There are far more options in this area than there are in the actual scanning process. But some of the basic guidelines are:

1. **A digital archive must have reliable security**, not just against unauthorized users, but against viruses, trojan horses, and hackers as well. This is easier said than done – but it can be done.
2. **Replication is the best insurance** against catastrophic data loss.
3. **Even with replication, backup is still necessary.** No matter what medium you use, it should provide enterprise-level reliability.
4. **Flexible user privileges** are baseline requirement.

5. **Web-based publishing** allows vendors and suppliers to get access to information they need. Web-based access is also necessary for remote access—as might be required during an emergency.
6. **Strong set printing capabilities** are important, and must include support for small-format and large-format devices
7. **The indexing system should be based on a high-performance database.** Neither Access nor Excel is an acceptable choice.
8. **Metadata should be stored inside the scanned document files**, making it possible to rebuild the database index as required.
9. **In many cases, the best way to extract title-block information is manually.** OCR-based tools are available, but they may not handle hand-written or non-standard title blocks. (The process of extracting title block information from documents may be the most time-consuming part of a scanning project.)
10. **There are many variables in implementing a digital archive—so use an experienced vendor**, and check their references.

The guidelines in this paper are a starting point—a common sense set of suggestions, intended to help you understand the factors involved in securing your critical infrastructure documents.

Ultimately, cost plays a role in everything. While the cost of scanning documents and creating a digital archive may not be trivial, it can be more than offset by reduced storage costs, saved time in locating documents, reduction in lost documents, and lower document shipping costs.

Think of it as insurance that pays for itself, whether or not you actually use it.

About Cyon Research...

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We are a company focused on strategy and vision for our clients. We help our customers understand where they need to go and how to get there, but we don't walk them down the road.

Cyon Research—Vision. Clarity. Insight. Direction.



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