

A **paperless office** is a work environment in which the use of paper is eliminated or greatly reduced. It is argued that "going paperless" can save money, boost productivity, save space, make electronic documentation and information sharing easier and minimize environmental damage. The concept can be extended to communications outside the office.

With recent laws that require businesses to exercise due diligence in managing and storing documents with personally identifiable information, paperless office systems are now more critical.

In reducing the amount of paper used, processes and systems are employed to further that objective and convert all forms of documentation to digital form.

-

Traditional offices have [paper](#)-based filing systems, which may include [filing cabinets](#), [folders](#), [shelves](#), [microfiche](#) systems, and drawing cabinets, all of which take up considerable space, requiring maintenance and equipment. In contrast a paperless office could simply have a desk, chair, and computer (with a modest amount of local or network storage) and all the information would be stored in digital form, including [speech recognition](#) and [speech synthesis](#).

The **paperless office** was a [publicist](#)'s slogan, intended to describe the [office of the future](#). An early prediction of the paperless office was made in a [Business Week](#) article in 1975.^[1]

The idea was that office automation would make paper redundant for routine tasks such as record-keeping and [bookkeeping](#). The idea came to prominence with the introduction of the [personal computer](#). While the prediction of a PC on every desk was remarkably prophetic, the 'paperless office' was not. Improvements in [printers](#) and [photocopiers](#) have made it much easier to reproduce documents in bulk, with worldwide use of office paper more than doubling from 1980 to 2000.^[2] This has been attributed to the increased ease of document production^[2] and indeed more widespread use of electronic communication: this has resulted in users receiving large numbers of documents, for example via e-mail or in a web page, a proportion of which they may well wish to print out. However, since about 2000, global use of office paper has leveled off and is now decreasing, which has been attributed to a generation shift^[2]: younger people are believed to be less inclined to print out documents, and more inclined to read them on a screen. Modern screens make reading less exhausting for the eyes; a laptop can be used on a couch or in bed.

Eliminating paper via automation and enterprise forms automation

To "go paperless" one uses systems that work entirely online and without the need to print on paper. Common examples are financial systems that replaced general ledgers, databases replacing index cards and rolodexes, email replacing type-written letters and faxes, the internet replacing reference books (e.g. phone books, vendor catalogs, encyclopedias, etc.).^[3]

Another way to eliminate paper is to automate paper-based processes that rely on forms, applications and surveys to capture and share data. This method is referred to as 'Enterprise Forms Automation' and is typically accomplished by using existing print-perfect documents in electronic format to allow for pre-filling of existing data, capturing data manually entered online by end-users, providing secure methods to submit form data to processing systems and digitally signing the electronic documents without printing.

The technologies that may be used with Enterprise Forms Automation include -

- Form Technology (e.g. [Adobe PDF](#)) - to create, display and interact with documents and forms
- [Enterprise Forms Automation](#) software - to integrate forms and form data with processing systems
- Databases - used to capture data for prefilling and processing documents
- Workflow platforms - used to route information, documents and direct process flow
- [Digital signature](#) solutions - used by end-users to digitally sign documents
- Web servers - used to host the process, receive submitted data, store documents and manage document rights

One of the main issues that have kept companies from adopting paperwork automation is capturing digital signatures in a cost-effective and compliant manner. The [E-Sign Act of 2000](#) in the United States provided that a document cannot be rejected on the basis of an electronic signature and all companies must accept digital signatures on documents. Today there are sufficient cost-effective options available, including solutions that do not require end-users to purchase hardware or software.

Digitizing paper-based documents

Another key aspect of the paperless office philosophy is the conversion of paper documents, [photos](#), engineering plans, [microfiche](#) and all the other paper based systems to digital documents. The technologies that may be used include -

- [Scanners](#)
- Digital Mail Solutions
- High speed scanners - used for scanning very large volumes of paper.
- Book copiers - used for taking photos of large books and manuscripts.
- Wide format scanners - used for scanning engineering drawings.
- [Photo scanners](#)
- Negative scanners
- [Microfiche](#) scanner - used to convert [microfiche](#) to digital documents.
- Laserfiche convert microfiche to searchable and digital
- Digitization of postal mail - provides online access of scanned contents.
- Fax to PDF conversion
- [Online post offices](#) - outsourcing management of [snail mail](#)
- [Multifunction printer](#)
- [Document management system](#)

Each of the technologies uses [software](#) that converts the [raster formats](#) (bitmaps) into other forms depending on need. Generally, they involve some form of [image compression](#) technology that produces smaller [raster images](#) or the use of [optical character recognition](#) (OCR) to convert the document to text. A combination of OCR and raster is used to enable search ability while maintaining the original form of the document.

An issue faced by those wishing to take the paperless philosophy to the limit has been [copyright](#) laws. These laws restrict the transfer of documents protected by copyright from one medium to another, such as converting books to electronic format.

An important step in the paper-to-digital conversion is the need to label and catalog the scanned documents. Such labeling allows the scanned documents to be searched. Some technologies have been developed to do this, but generally involves either human cataloging or automated indexing on the OCR document.

However, scanners and software continue to improve, with small, portable scanners that are able to scan doubled-sided A4 documents at around 30-35ppm to a raster format (typically [TIFF](#) fax 4 or [PDF](#)).

Securing and tracing documents

As awareness of identity theft and data breaches became more widespread, new laws and regulations were enacted requiring companies that manage or store personally identifiable information to take due care with those documents. Paperless office systems are easier to secure than traditional filing cabinets^{[\[citation needed\]](#)}, and can track individual accesses to each document.

Difficulties in adapting the paperless office

A major difficulty is that much of a business's communication is with other businesses and with individuals, as opposed to internally within the business. Electronic communication requires the sender and recipient to have easy (comparative to reading a piece of paper) access to the appropriate software and hardware.

There may be costs and temporary productivity losses when converting to a paperless office. Government regulations and business policy may also slow down adoption.

Businesses must overcome technological difficulties such as file format compatibility, longevity of digital documents, system stability and making sure employees and clients have the technological skills required.

Another difficulty in adopting the paperless office is the human factor. It is not technology. Commercially feasible technology is widely available to digitize documents, even full libraries of backlogs, at feasible cost. Sufficient processing power, storage, backup, and Internet speeds are available that can make old paper records instantly available not just from stationary computers but laptops and even phones. Inexpensive skilled labor is available in places like India

and the Philippines to perform labor-intensive work like naming files or creating links or bookmarks. Sufficient processing power is available to perform massive amounts of optical character recognition.

The challenge in commercial implementation is that often people who make decisions are simply used to how things are and don't want to sign off on drastic change. As younger generations of people mature into leadership positions and at the same time as technology becomes even more efficient in the future, offices will likely become increasingly paperless. It can equally well be argued that business managers tend to make changes for the sake of change, and to justify their existence.