Document
And
Content
Output and Presentation

A User Guide

DOCUMENT AND CONTENT OUTPUT AND PRESENTATION

A White Paper

Authored by Strategy Partners

This is one in a series of User Guides from Strategy Partners. They are intended to educate and inform potential purchasers and users of document and content systems at an initial level, and position the technologies within a business context. They are designed to explain:

- How document and content output and presentation technologies work.
- How they are justified in business terms, and what difference it makes to the bottom line.
- How they are used operationally, and what constitutes best practice.
- How they relate to, and integrate with other aspects of IT.
- The roles of operational users, the IT function, system integrators and other service providers in the document and content management space.

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INTRODUCTION TO DOCUMENT AND CONTENT OUTPUT AND PRESENTATION

Document and Content Output and Presentation systems are fundamental to Information Technology. They provide a cost-effective, accurate and operationally simple mechanism to deliver structured and unstructured documents from data processing and document and content repositories to people, in the most appropriate format. They offer the capability to improve the presentation of the content, format it to take account of the viewing device, and present the brand image of the sender.

Without effective Output and Presentation of documents and/or their content, information-based processes starve and die. Although many data and document systems are functionally capable, most focus on document creation and management, and tend to overlook their capability to print, display, format and present their output, and enable users to assimilate it easily and correctly. How user organizations transfer business information makes a key contribution to the overall success of the organization.

Document and Content Output and Presentation may be said to have come of age. The core technologies have developed from printers, microfilm, optical disks, indexing and viewing software and hardware, web delivery mechanisms, and advanced print spool formats, such as AFP, Metacode, PCL, Postscript and others. They are mature and the understanding as to how to deploy them effectively is well developed. Such systems have developed a strong reputation for delivering operational value and a pragmatic return on investment, as well as for equipping the organization to face the vision that is the eBusiness age.

It does NOT include applications including:

- Paper printing of low volume, unstructured documents eg personal printing
- Graphic arts and high volume magazine or newspaper production
- Storage systems and systems management components such as file compression and back up

These outside the scope of document and content output and presentation for most users.

This Guide sets out to explain in straightforward terms how Document and Content Output and Presentation works, where and how it delivers real benefit to organizations and the key current and emerging applications and technologies that make it an investment for the future as well as for the present.

DOCUMENT AND CONTENT OUTPUT AND PRESENTATION: WHAT IS IT?

Origins

Document and Content Output and Presentation (Document Output, for short) can trace its origins to printers and the software to control them. Today' s systems can be seen as direct developments of the need to minimize the costs of storing and printing and viewing large volumes of document outputs. They meet the need to provide something accessible that can be read and assimilated. Today that includes presenting the relevant information, in the most appropriate and economical format, that is factually correct, interesting to read, and available to be accessed and stored and updated using a set of management processes. It renders documents in the appropriate format for delivery via multiple touch-points – paper, telephone, PDA, Web, etc.

Early data processing and accounting systems tended to deploy batch programs that produced large amounts of paper printed output as a way or reporting the results of their calculations, and present it to human users. Access to the information depended on access to the latest copy of the printout, being able to find the relevant page, and being able to understand and interpret it.

Early document output systems managed the process of printing, and simply replaced the output from printers with a better archive medium, either film (called Computer Output to Microfilm, or COM, in the 1980s) or optical disk based archives (Computer Output to Laser Disk COLD, in the 1990s). Both approaches were configured to accept the data streams written

for printer, and decode them so that information that the original application thought was going to a printer could be used to store it to the new storage medium, e.g. microfilm or optical disk, often without having to make any changes to the host application.

The major advantages of this approach were:

- It improved the speed and ease of access- a printout can only be viewed by one person at a time is physically bulky and difficult to find the right page etc.
- Being able to make a query at any time, without having to wait for the host system to run a new report.
- Reducing the frequency of printed output, saving paper and storage space.
- Storing the information on another systems that the originating or host systems, which allowed for increased availability to unconnected users, backup of the information.
- The ability to extract and manipulate the information and query it, without being directly connected to the host application, e.g. to prepare a management report, without having to alter the host systems.
- Back-up and security - microfilm lasts for hundreds of years and can be read by humans using a light and a lens, unlike floppy disks only ten years old, which require a computing infrastructure so obsolete that it is rarely available.
- Being able to query data form numerous disparate systems e.g. from an accounting system and a payroll system at the same time, and comparing and collating the answers.

As the systems became more mature, techniques evolved to:

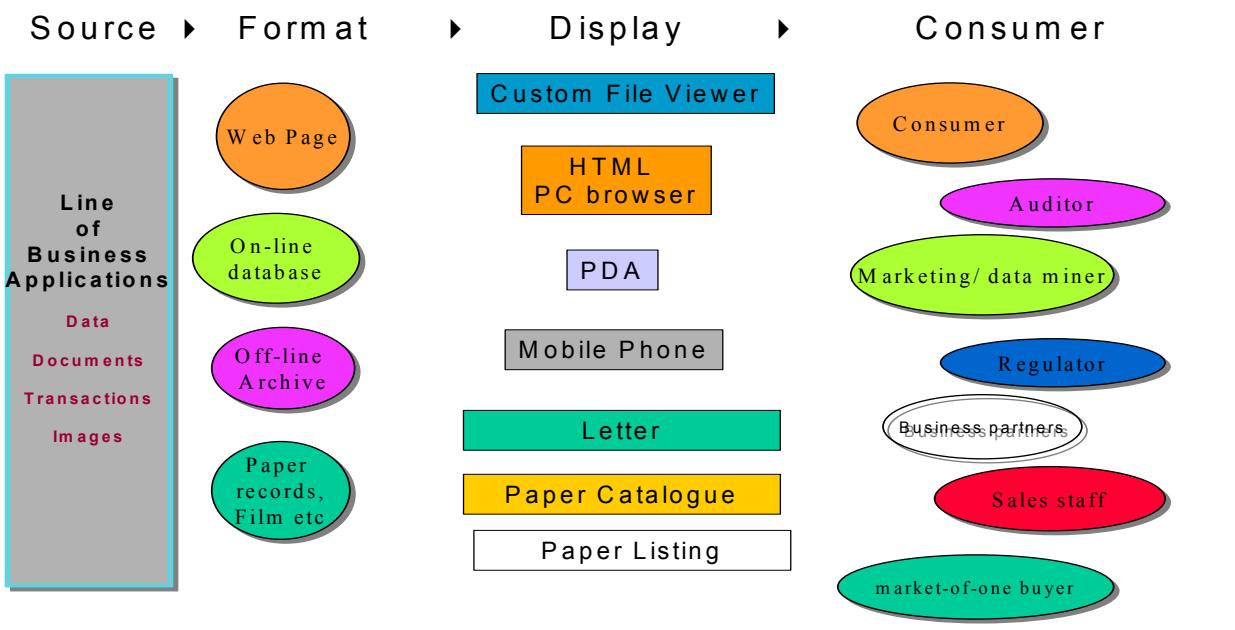
- Extract the form from the variable form from the fixed content, so that it can be recreated at viewing time, to saves storage costs.
- Index the information using metadata or indexing fields e.g. invoices could be indexed, stored and retrieved by invoice number, date, amount, author, Supplier name, Location, Product code etc. This would have meant numerous printouts or copious manual searching of paper printout.
- Generate pre-formatted reports that could be sent to senior management, without laborious data extraction and re-formatting.
- Provide access in numerous locations, across networks.
- Provide secure backup of the key data in readily-retrievable, low volume storage.
- View data on PC screens, not just systems-specific terminals.
- Deliver output across new viewing mechanisms such as Internet browser, PDA, mobile phones.

Document output comprises of a set of functions that take the contents of document and content and other information repositories, irrespective of format, and manage their delivery to users. As such, they provide a crucial interface between the world of computers and the real world of people, physical resources and goods.

These functions appear as applications to users, and are often the visible manifestation of complete enterprise management systems. They exploit the capability capture content, to store, manage and exploit it, to manage the underlying processes. But it is Document Output that delivers the fulfillment, the “finished goods”, and therefore its value.

Functional Overview

The Document Output Value Chain



The diagram above illustrates the document output value chain, commencing with the data, transactions and documents held in corporate information systems.

This data and these documents can be exploited if it the parts relevant to specific classes of users are made available. The value is in being able to take any relevant part of the information and make it available to each class of user in the most appropriate format, securely and cost effectively.

In practice, the success and value of document output depends on:

- The format of the information.
- The way the information is stored.
- The value to the user and their role.
- The way it is presented and displayed.
- The management of the process of document output, including the economics of each stage, optimized to exploit economies of scale, new technologies and devices.

The format of the information in the Corporate System

Document Output systems were originally developed to manage large volumes of structured repetitive documents such bank statements, utility bills and invoices. The content of these usually can be divided into a fixed data stream and some variable fields.

The fixed data stream consists of the basic form and fixed fields, such as name of the originating company, logos and location details, which change rarely. The variable fields, such as customer details, transactions, are usually listed by event or by day and by amount and item description, which change every line.

By handling the fixed part of the form, which rarely changes, and variable parts, separately, the systems can compress the files into smaller files, and re-create them when required by merging

the fixed and variable parts when needed, which can then be printed and viewed as if they were a single file.

The way the information is stored

The economics of each stage, optimized to exploit economies of scale, new technologies and devices The format of the storage systems also offers advantage of security and back up, in that many users like online access via networks or the internet, whilst paper can be the preferred medium for many users to read and assimilate.

Storage economics and retrieval speed are factors. Optical disks can provide highly compact storage medium for very high volumes, magnetic storage can provide very high speed access for online queries, and microfilm can provide ageless, secure and economical archival for rarely retrieved files.

Other formats stored can include:

- Bank statements, credit card statements, utility bills, telephone calls and bills.
- Invoices, bills of sale, human resources and payroll records, attendance and contribution records.
- Tax records, immigration records, social security and sickness benefits, insurance claim details and pension contributions.
- Taking customer correspondence from backoffice processing systems for insurance banking, government, utilities, telecommunications, manufacturing, accounting systems.
- Store it and indexing it, so that the data stream can be printed, accessed off line, which provides commercial separation, saves clogging up on lone disk space, enables analysis, and viewing and manipulation.
- Customizing or personalizing to suit the needs of the viewer eg the right language, the best screen resolution, right size paper, the best font, adding information sending to the most appropriate device by fax, by email, by printed paper, to a mobile phone or PDA, with appropriate security.

Although early document systems tended to be optimized for highly structured and repetitive information, document output has been extended to include:

- Email archival and retrieval, including enclosures.
- Manufacturing data, such as batch records, configuration and parts lists.
- Stock transactions and trading records.
- Call center telephone calls.
- Customer correspondence systems of outgoing letters and emails and faxes and telephone calls.
- On line commercial trades and transactions, on Internet B2B and B2C market places, routinely stored and mined to ensure regulatory compliance and enable fraud detection.
- Complex financial documents such as pension plans, investment plans and regulatory submissions in financial and pharmaceutical and manufacturing applications.

The Value to the User and Their Role

The value of document output is increased significantly if the role of the user is taken into consideration. For example, users have different levels of skill in understanding documents, preferences as to language, paper size, reading capabilities and levels of security. These can and should be taken into account when presenting information, and document output system provide processes so that the same information can be presented in ways to suit such audiences.

For example, if the output is a credit card statement, it can have different values to bill payer, bank staff and other parties.

- For the consumer, or the owner of the credit card, the preferred statement might be paper, which can be posted, and presented as historical information, so that all the transactions in the last month can be viewed. Of course, these can be presented as a list, but also sorted by type e.g. travel, restaurants, and car expenses. The owner and bill payer might also like to know what special offers or discounts or loyalty points are available or be informed about other Banking products, or to receive information on extending the available loan amount. The format of the printed statement might be generated by a mainframe application in AFP format, and printed on special paper at a contract printing business local to the consumer, to minimise postage costs. Lastly, the consumer may prefer the content to be on a different size of paper, if based overseas, or even a different language, so the same content would need to be re-formatted to reflect those preferences.

- Some consumers do not want to store all their old credit card statements in the metaphorical “shoe box”. They prefer to see their balances on a secure online web site, and welcome trending information supplied to help them track their expenditure. Thus the content also comes form a mainframe or large UNIX server or Windows Server, and would need to be output to a browser in HTML. It would be sent out via secure web servers and presented in colourful formats to make it easy to assimilate, with buttons and advertisements inserted into the HTML stream to explain how to request other services and products.

- For the Bank counter staff, when asked about the account when the consumer is in a branch, the best format would be an online request to a terminal on the counter, which could be connected directly to the host, to provide up-to-the minute balance, not just that for last night or last month.

- To the call centre, when contacted with a query on the account, the key aspect is to retrieve the information quickly so that a real-time response can be made and the query resolved, rather than passed to another party, incurring delay and reducing customer service.

- To the Bank product development staff, the details of that statement could be examined to determine if the consumer might be better suited to another sort of card, or a good prospect for other banking products, which can be advertised on parts of the written statement. For example, if it can be ascertained from transactions that the consumer lies going skiing every January, it might be a good time to offer travel and accident insurance.

- To the Bank Security staff, the contents might be mined to detect patterns to indicate unusual spending patterns that might indicate some sort for fraudulent use of the card.

- To the Banking financial regulator, the details might be of value on tracking fraudulent transactions and correctly-followed processing and selling procedures by the Bank

- To the printer and shipping staff, the statement might be part of a collection of information to be sent to the consumer, and savings in printing and shipping can be made by collating all the documents into one package and directing to a printer local to the consumer, rather than sending several separate packages that all need envelopes, address labels, stamps, collations, sorting and handling.

The Way Information is Presented and Displayed

Although early systems replaced "Green bar" paper listings of accounts and invoices, document output can be configured to provide information in the most appropriate format, to match the display devices, connection bandwidth and file format preferred by the user. Example include

- Browser access. The ubiquitous internet browser, run on a PC, is so readily available that most systems can take information presented in proprietary formats and convert into HTML so that the browser can view structured data, photographs, print streams and multi-lingual character sets
- Proprietary viewers, of which the best known is Adobe Acrobat. This is a proprietary document-viewing format that has achieved widespread use because it is secure in most applications, provides a very high quality of reproduction, and the viewer is free form Adobe Inc.
- Specialist Viewers. Although text and basic images are straightforward, more advanced formats require special viewers e.g. for X Ray images, engineering drawings, geophysical maps and three dimensional models
- Mobile phones are increasingly capable, with richer displays and faster connections. Information previously stuck in head offices can be made available to roaming workers. In most cases, a query about an order status needs to be short and simple, as sending several pages of complex images would not be suitable even on the latest phone technology.
- Personal Digital Assistants (PDAs) are becoming increasingly capable, as powerful as laptop computers, although their display size means that documents need to be re-formatted from full size originals.
- Most paper catalogs have "stickiness" that websites dream of, so many retail companies seek to make the same information available on line as in the latest generation of customized full and spot color paper catalogue. This applies as much to retail goods such as clothes, to technical manuals for cars, planes and electronic devices
- Paper, that much maligned format that is so transient that it will probably only last another two hundred years, is still the medium of many businesses, and is unlikely to be substituted in many physical transactions such as receipts, order notes, shipping documents, etc.
- Long-term archival media include optical disks, tapes, microfilm and others. These can be connected to receive automatic copies of key documents for storage and retrieval reasons. It will be years before significant legal document such as house deeds, wills and some Government papers are entirely acceptable at all stages of their lifecycle in just digital formats.
- Many users prefer to read and assimilate complex documents on paper, but want to store them electronically, to lower physical storage size, increase security and enable faster location and access and communication.

The management of the process of document output

At each stage of the process above, the management challenge is to be able to maximize effectiveness, ensure predictability, and increase value and lower costs. In practice, this can be though a variety of processes, including:

- Controlling print and document handling costs.
- Controlling postage costs, so that all items to be sent to a single location can be collated into the same package, or printed at remote sites to minimize physical transport costs.
- Adding value at display e.g. presenting trending information that makes it easy for the bill payer to see how much they spend last year, or just on one area e.g. clothes, holidays etc.

- Reformatting to enable another display mechanism e.g. to mobile phones.
- Maintaining a profile of and security of access to information and results of queries.
- Optimizing for storage, so that information likely to be used is stored on accessible media, and rarely retrieved information is stored off line.
- Providing tools to extract and query data e.g. cut and pate into a spreadsheet to enable further analysis to be carried out.
- Adding variable data depending on the profile of the user or the market, called personalization, e.g. special offers, cross-selling etc.

WHY/WHERE IS OUTPUT AND PRESENTATION IMPORTANT?

Document and Content Output and Presentation are critical in paper or content intensive applications. These include such diverse areas as Customer Relationship Management (CRM), and other line of business applications. Some examples are described below.

Horizontal Applications

- Accounts Payable is a notorious paper chase for both bill payers and invoicing companies, not helped by a tendency for both to be economical with the truth when it comes to process, amounts and timeliness. Document output systems that can deliver the invoice to all parties, manage the process of it being signed off and approved, and connect to electronic funds transfer systems can reduce the overall transaction times to seconds. In the old days, purchasers of raw materials and services that asked for lower product prices in return for prompt payment were often greeted with the statement that " it takes weeks to get the invoice paid in our company" Companies that can actually pay bills in days can gain major advantages in purchase costs.
- Purchasing systems in the old days consisted of a short order and a long purchasing contract with numerous caveat and conditions, which were written by lawyers for lawyers, and caveat emptor" (Buyer Beware" was the watchword. Modern approaches integrate purchase requirements and select the most appropriate legal contract clauses that apply, reflecting the goods purchased, liabilities, geographic jurisdiction, and aim to inform. Word Macros that drive template documents are becoming increasingly inaccurate and obsolete.
- Customer communications used to be boring and routine and about printing, but document output systems can integrate paper correspondence with electronic communications with advertisements and personalized call center campaigns. Simple metrics such as the number of phone calls it takes to make a travel booking or query and invoice can be reflected in cost savings and customer churn. Although many IT departments have been distracted by CRM components that do wonders for the sales force and little for customers, document output applications add value when it matters most - in the customer's face.
- Human resources are another back-office function involving a paper chase where secure, correct and readable output is critical. Few organisations can afford days of delay or errors in informing employees about their benefits and terms and conditions, and paper-based approaches are slow and can be costly. Modern document output approaches collate stored document containing procedures, and can merge them with actuarial and payroll systems to calculate benefits. These can form complete automatically generated secure correspondence, which can be transferred and recorded through the most appropriate medium.

Vertical Applications

- Banks were the earliest and are still the largest user of document output systems, for generating statements for current and savings accounts, credit cards, stock brokerage, credit card statements and investment portfolios, all of which combine structured data with personal information.
- Insurance companies are using document output systems to generate and distribute insurance policy proposals, certificates and customer information to sales channels. Consumers and regulators. If consumers can "read the envelope without opening it", insurance companies are unlikely to be able to cross- sell products or sell advanced products.
- Telecommunication companies make extensive use of document output systems for telephone bill statement generation, in both paper and online. Often the only way to brand a commodity service such as telephone rental is by differentiating the customer service aspect, so the presentation of bills and their ease of use is a critical component.
- Utility companies have realized that the costs of billing and revenue collection are their core competencies, so use document output system to aggregate bills for telephone, gas, water, cable television, etc. Such multi-payment approaches lower costs by aggregating collection, enabling promotional offers, and exploiting credit histories.
- The governments of Europe and North America are embracing the opportunities that the Internet can bring to provide more relevant and easier to access information. Good progress is being made in taxation and immigration systems in terms of making information available, but much of the outgoing communication for Government to Citizen (G2C) is still paper based, and rarely stands comparison with its commercial equivalent in terms of ease of reading or appearance. Many techniques developed by phone companies and consumer products could be copied to make citizen benefits and services more attractive and to make citizens aware their rights, responsibilities and the value of their contributions to the Revenue. Government tax statements look like any other bill, but more boring. Document output systems can make them easier to understand and pay, even if they are unlikable. More recent applications include the need to keep track of large financial regulations to defeat accountancy fraud.
- Manufacturing companies are required by increasing product liability laws to keep large amounts of data concerning the configuration parameters and ingredients of products, especially high volume consumer products including food, drugs, electronic devices, transportation systems and employee records. Document output systems can store these long after the host systems have become obsolete, and can archive and present them for analysis.
- Retail companies are driving new approaches to document output, as they seek to combine paper and electronic catalogues and merchandising. The Internet provides a cheap, accessible way to provide information on thousands of products to potentially millions of new purchasers. In practice, simply managing product information of hundreds of fast-changing products is non-trivial, and too much price transparency is not always a good thing. Few web sites have the stickiness of a good thick holiday brochure or Radio Shack catalog, but document output systems are making major strides in producing the most up to date and relevant "market-of-one" catalog, even if the objective is to make sure we never pay the lowest price.
- The travel and transportation sectors produce large volumes of traffic and ticketing data that needs to be sorted, analysed, consolidated and output to numerous users. Although airline tickets are increasingly electronic, paper-based approaches are still dominant and the resulting trends provide the basis for most transportation systems, whose core competence is matching resources to passengers.

- Other sectors, such as the legal market, publishing, entertainment and energy have specific applications that exploit document output technologies, and these are covered in more detail in Strategy Partners applications research.

How Document Output and Presentation Relates to ERP Applications

Applications such as SAP, PeopleSoft, Baan, JD Edwards, Oracle Financials, and others generate huge amounts of data records, and consume large storage volumes which make disk manufacturers and their sale staff very happy about twelve moths after system implementation, because many need to buy more disk at around that time. .

Document output systems offer the capability to transfer large amounts of historical operational data off the host online system to the document output system. This stops the host system disks getting clogged up and provides additional commercial and security separation. The data can then be accessed, queried, put into tables and trended, extracted for further analysis e.g. into spreadsheets, and merged with other data to increase understanding the transactions, identify trends and increase business intelligence.

Many large commercial systems have specific output formats that the document output systems are optimized to handle. Such formats include:

- All printers receive stream of data, which can be interested by receiving devices to control hardware settings- where to place ink, of course- as well as computer output systems. The receiving device needs component software to interpret these strings into content, structure etc, if they are to be used for other applications.
- AFP (Advanced Function Printing, now Presentation) is a family of IBM-defined protocols it has used since the 1980s to structure the print streams used by all its computers, including mainframe, AS/400, UNIX and other servers, workstations and printers. As mainframe were widely adopted by large banks and utility companies, the AFP formats have been widely used in other environments, and form the basis of many document output systems.
- Xerox Metacode is the generic name given to point stream for large high volume Xerox printers, which many billing systems used for streaming output.
- Postscript is a proprietary format developed by Adobe Inc that is a page description language, and is widely used in the graphics arts industries and for office computing.
- PCL (Print Control Language is the format defined by Hewlett Packard to drive its printers and is widely used for office documents.
- SAP is an ERP and enterprise software company that has defined and certified document output formats (eg BC-XOM, OMS), that users can use to print and store its output files.

How Document Output and Presentation Relates to Document Capture Applications

The synergy between systems that capture document content, and those that generate it, are rarely exploited. In the AIIM User Guide on Document and Content Capture, we have explained the features; advantages and benefits of capture systems, yet much of the correspondence received by companies is in response to paper and other communications that it sent out itself.

If companies know that a significant amount of incoming communications is a version of what it sent out, then economies can be made by ensuring that document output systems generate content that is easy to capture when it is received back.

If you can control the structure and much of the content of both out-going and incoming communications, techniques can be incorporated to enable faster capture, indexing, routing and collation. Techniques include:

- Bar codes, which can be placed on forms sent out, so that they can be scanned upon receipt and key indexing information quickly and cheaply captured, without costly character recognition or scanning entire paper forms.

- Forms systems e.g. character and mark recognition, forms removal, field parameter checking, date fields, tick boxes, that can generate structured and easy to read statements can be used to ensure that capture systems only scan variable fields, and use other fields, such as repeated name and address fields to train handwriting recognition engines.

- Specific variable fields such as zip or post codes, invoice amounts, supplier codes etc. can be located and read to save reading variable fields and increase indexing accuracy.

Best practice

Strategy Partners research shows that:

- Although document output systems can often be justified simply by cutting out unnecessary printing costs and saving paper, the biggest benefits are not archiving or security in the back office, but best expressed in terms of customer service.

- Many users start document output by purchasing a kit of parts, e.g. printers, archiving and viewing systems, mail sorters, and extending their mailrooms, because that is what they have always done. A more viable approach for many is not to buy hardware and write a program, but to purchase service from specialists that can buy and operate more modern equipment more effectively and at lower cost. The users can focus on their business and their key customers, rather than printers and optical disks, print stream indexing and web measurements, which are often not core activities.

Return on Investment/Total Cost of Ownership

The Value of Output and Presentation

Unlike main IT systems, the value of document output systems is often far more in the operational aspects the system, than the build phase. On conventional systems, application development and system building costs are often greater than ongoing maintenance and consumer costs, yet the reverse is often true for most document output systems. Any evaluation of the return on investment for Document Output systems revolves around the value of documents and the processes they support.

- Operational ongoing costs can be measured and include:
  - Paper saving, and related consumables reduced, if online access is granted to invoices, bill statements etc.
  - Postage and other transportation costs can be directly reduced by providing access to online systems or collating correspondence into single instead of multiple shipments.
  - Quantifiable cost savings- such as saving costs of city-center office space used for paper filing cabinets, compared to the cost of storing on microfilm, optical or magnetic disks.

- Indirect savings by increasing the speed of the business cycle – or “business velocity,” e.g. giving customer service staff access to customer correspondence on call center screens, so that requests can be handled in minutes, while the customer is on the telephone.

- Branding. Many holders of bank accounts rarely visit their banks so the only contact they have is with written correspondence. Old fashioned stereo-typed letters may have been the norm years ago, but a personalized look and feel, modern color printing makes even the most boring document easier to read, and an opportunity to up-sell and cross-sell other products.

- Customer fulfillment - shipping the phone as well as the document, sending the MP3 files as well as the receipt, in one transaction, rather than a series.

- Business survival, in the areas of compliance and customer service in particular. For example, providing timely evidence concerning safety certificates, tickets used, financial

assets transferred and other mission critical documentation can make the difference between continuing in business, being shut down by the regulator or, as some are finding out, spending time in the penitentiary.

WHAT IS CHANGING NOW AND OVER THE NEXT 12-24 MONTHS?

The current IT recession is promoting an attitude to investment that is more about reducing costs, and less about eBusiness vision. Document output systems have come of age, because they are more about lowering easily-measured operational costs, then building an new ivory tower Internet something that cannot be easily quantified and rarely impact operations quickly, (if ever). Market and technical features that are changing in the next one to two years include:

- Integrated components so that output systems can handle multiple print stream formats, provide process management capabilities for adding personalization, and deliver output to multiple devices. Single trick components are becoming increasingly difficult to justify, as their integration costs can be too great over the lifetime of a system.
- Many services providers originated by being good at doing one thing e.g. high volume printing. Most providers now offer integrated services that include scanning, data entry, paper archiving, secure payment and call centers, combined.
- Paying bills by mobile phones is not theory, it is commonplace. Most users can call up and find out the status of their phone bill, and other bills can be enquired about and paid by the same mechanisms. The barriers are largely down to user familiarity and trust, not the technology. Add the storage display and processing capabilities of PDAs and hand held accounts are a reality, not a dream.
- Junk mail is the curse of modern letterboxes, and the number of paper mail-shots sent to " the Occupier" or not even addressed to an individual is still astronomical. Personalization techniques not only identify the location of bill payers and buyers, they optimize the contents of the document output.
- Electronic document output brings new formats and ideas, including sound branding. Just as all companies have a letterhead and logos, digital documents present new options and the potential for innovation in sound and displays to encourage familiarly and branding. Everyone knows the sound of "Intel Inside" and the theme from ET. Your best clients know your logo on your letters and website. What does your company sound like?

HOW DO YOU BUY IT?

Software vs. Solutions vs. Process Outsourcing

The value of Document Output lies in the value the content and presentation of the document to the person that views it, and this can be subjective, i.e. beauty is often in the eye of the beholder. This means that partners and solutions channels take on a particular importance. Strategy Partners' research indicates that suppliers for Document Capture split into five major types:

Software Vendors

Many Document Output component vendors sell directly to IT departments and end-users, as well as through a combination of delivery channels (see below). When selling components directly, they rarely take responsibility for the final system, including associated hardware, software, and support. Many component vendors sell one of the following three types of output systems:

- Format-centric e.g. that are optimized to manage the data stream output from an IBM mainframe or from SAP R/3 or other accounts packages.
- Process-centric- i.e. generate value by enabling systems to add business logic at the output stage e.g. special offers, discounts, personalized presentation.

- Application-centric - optimized for specific sectors e.g. generating insurance proposals, electronic bill presentment for utilities, printing regulatory submission for pharmaceuticals companies.

In the next three years, the vendors will combine these to be make sales more cost-effective, so expect to see document capture, process, storage, format transfer, output, personalization and multi-viewing systems combined and pre-integrated.

Generalist Integrators

All systems require document output, but paradoxically few generalist system integrators specialize in these functions. Generalists tend to focus on bid dynamics and change management in very large project deployments. In general, they lead and prime major government and/or international contracts, and tend to bring in specialists to carry out the specific document output aspects.

Specialist Integrators/Solutions Providers

These operate in specific applications, vertical market areas, or geographic regions. They seek to deliver whole solutions into their core market. Such solutions tend to have document capture as an important, but not overriding component within the overall solutions offered. Examples include retail marketing, print and mail-shot optimization and brokerage, or insurance contract generation

Value Added Resellers

These resellers take a component product and build and configure them into specific applications Examples might include:

Specialist Outsourcers and Application Service Providers

These exist at three main levels:

Document Print Bureaus

These offer functional services; that they sell on price, and on speed/reliability and geographic location and reach.

Managed Services Providers (MSP)

MSPs set out to deliver documents, data and process into some part(s) of a business process. As an example, they may take all the credit card statements or utility bills,

Other examples include document hosting, and electronic bill printing and presentment services. It works best where there is an opportunity to implement an annuity, or “pay per click” pricing model. Their business model is to find replicable services solutions that drive down the cost of service through economies of scale.

Business Process Outsourcers (BPO)

The key difference between BPO providers and MSPs is defined by business outcome vs. technical or functional output. For example: sending out an invoice is a functional output. Handling the accounts receivable process on behalf of a client is a business outcome. The systems approach is largely the same: the difference lies in the value of the outcome to the client, and to the level of understanding the BPO provider has of its clients’ business.

Emerging areas for this level of service are to be found in utility bill presentment and payment, with the provider being compensated on revenue gained, rather than numbers of claims processed – and campaign management and mail-shot production, where the business metric might be based around levels of sales generated, rather than pieces of paper printed, shipped and replies garnered.

HOW TO PLAN FOR THE FUTURE

Some key guidelines:

- Do not forget to plan document output when planning and purchasing new systems. Just like printers, it rarely appears on IT strategy documents, but consumes considerable resources. Operationally, it is where most of the money goes over the lifetime of a major customer service system, and can far exceed the cost of systems development.
- Investigate services as well as products. Unless you have existing systems and skilled staff, and the regular throughput to justify the cost of major capital items, then purchased services can offer greater flexibility and return on investment.

SUMMARY

Document and Content Output and Presentation is a critical set of technologies and disciplines that:

- Bring the value of your enterprise content management systems into face of the user.
- Present the brand and capability of your company to suppliers and clients.
- Provide an opportunity to inform and impress, in ways that back-office systems never will.
- Deliver explicit measurable bottom line benefits in a wide variety of business cases.

Document and Content Output is NOT just about print stream formats and archiving. Today, the technologies and the business environment have reached the point where Document and Content Output can play a real role in front line mission-critical business processes and lower operational costs.

Precisely how users source implementation and fulfillment services depends on their position and organizational culture. As the technologies mature and become commodities, many users prefer to purchase an ongoing service that enables them to focus on core business functions, not tie up valuable capital in color printers and mail shots, yet take advantage of the increasingly capable document and content output and presentation systems.

GLOSSARY OF TERMS

Name	Description
B2B/B2C/G2C	Business to Business, Business to Consumer, Government to Citizen – segments of Internet-inspired markets.
Browser	A program that allows you to receive HTML stream and thus access the web.
CRM	The processes by which an organisation attracts and retains prospective customers, leveraging an initial transaction via knowledge of their requirements into a long-term, ongoing transactional relationship to the financial good of the organisation.
Document management system (DMS)	Term often used to refer to document repository system (see below). In this report we are using the more precise term of document repository.
EBP(P)	Electronic Bill Presentment (and Payment), the processes around delivering invoice information to customers in digital format, and providing facilities for electronic payment of the same.
XML	eXtensible Mark-up Language – an established standard, based on the Standard Generalized Mark-up Language, and designed to facilitate document construction from standard data items. Now being used as a generic data exchange mechanism.
AFP	Advanced Function Printing (later used for Advanced Function Presentation). An IBM –defined print stream format
PCL	Print Control Language, a print stream protocol developed by Hewlett Packard
Xerox Metacode	The format of a print stream intended for Xerox printers
COLD	Computer Output to Laser Disk, A set of technologies that take the output form mainframe and other systems, originally designed for printers, and store, index and compress it on optical laser disks so that it can extracted and viewed electronically
COM	Computer Output to Microfilm, a document output technology developed in the 1960s that enables print streams to be written to microfilm directly, offering high integrity, low cost and low space long term storage
Viewer	A software programme that runs on a PC that enables files to be viewed n screen without the need for the original generating application to be present or connected
Rendition	A version of a file which maintains the same information content as the original but is in a different format, eg different file type, language, appearance
Acrobat	A proprietary file format owned and defined by Adobe Inc, which is optimized for viewing and securing and printing files
Renditioning	Delivering the output in the format demanded by the user, the application or the delivery technology – e.g. printer, PDA, Web-site etc.

ABOUT STRATEGY PARTNERS

Strategy Partners is an established professional retainer and project based IT advice business. We deliver independent advice and original market analysis in the key areas of Content Management, Electronic Document Management (EDM), Customer Relationship Management (CRM), Application Integration, Enterprise Resource Planning (ERP) Outsourcing, and Knowledge Management (KM).

As users make investments, we empower them against the vendors to make the technologies 'safe to buy'. We measure, analyze, and understand the purchasing process and know how to speed it up, not slow it down.

In addition, Strategy Partners delivers expert advice to help vendors in formulating and improving their marketing strategies. For the investment community Strategy Partners provides market diligence and acts for organizations seeking Venture Capital. We also work for buyers and sellers in mergers and acquisitions by providing market knowledge and a process to assist in the valuation of businesses.

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Rory Staunton, Managing Partner. UK

Rory is recognised as one of the leading industry analyst in Europe, having provided extensive IT advisory services to major European and North American organisations in the governmental, pharmaceutical, finance, and utility sectors. He is also a much sought-after speaker at conferences and consults at Board level on IT strategy, Rory is co-author of the "Content Management for eBusiness" Report and the lead author of 'EDM Europe Reports", the annual update of 500 users of EDM technologies in Europe, which has come to be considered as a barometer for the EDM industry.

Prior to founding Strategy Partners, Rory was Research Director at Gartner Group Europe, responsible for establishing Gartner's Integrated Document and Output Management (IDOM) service in Europe. There his role was to research into the business impact of document technologies and document management systems. Previously, Rory was Information Systems Manager at Imperial Chemical Industries (ICI) where he was responsible for generating IT strategy, performing cost/benefit analyses, and implementing image processing and document production systems.

Rory is a member of the Executive Board of AIIM International, the not-for-profit industry organisation that represents the content management community worldwide, and is the Chairman of the European Advisory Trade Board of AIIM.

Helmuth Gümbel, Managing Partner, Strategy Partners, Germany

Based in offices in Germany and Switzerland, Helmuth Gümbel oversees and directs Strategy partners' German-speaking market activities. Widely acknowledged as a leading expert in IT business applications in general, Helmut has also come to be considered as a "SAP GURU", one of the world's foremost authorities on the organisational and implementation issues of SAP products and services.

He has extensive Board-level experience in assisting users in their adoption and use of leading-edge IT products. He is consulted to determine the most cost-effective ways of exploiting information technologies in line with business objectives. Helmut has also helped many vendors in Europe and North America in formulating and improving their business, market and product strategies.

Prior to joining Strategy Partners, Helmuth was responsible for Gartner Group's Software Market Strategies service in Europe. He has also held senior product management positions with Siemens-Nixdorf Informationssyteme and Digital Equipment Corp.

John Richardson, Projects Director, Strategy Partners.

John's role is to bring together the Pan-European resources and skills of Strategy Partners to bear on clients' needs. He is also one of the lead authors of the highly acclaimed EDM Reports, the Strategy Partners annual report series on the state of the EDM market in Europe. John is co-author of the latest Strategy Partners Report: 'Document Capture for eBusiness'.

With almost 20 years experience in the IT industry, John has been actively involved in delivering and implementing systems solutions to users across all sectors of the UK economy.

Having entered the newly emerging document image processing (DIP) market in 1985, he was responsible for some of the earliest and most successful DIP systems installed in the UK.

John's consultancy and advice has been engaged in over 100 projects, including working with end-users in the banking, insurance, offshore exploration, legal and property sectors to install major systems. He has also been retained by vendors to help them bring the right products and services to market at the right time, in the right way.

An experienced speaker and presenter, John has chaired many conferences on the subject of EDM and delivered numerous learned papers on the subject. He has also developed and delivered training courses aimed at all levels of the industry, from users through to sales, sales support and systems analysis.

In 1993, he won the IMC (International Information Management Congress) Education Award for "having made a significant contribution to education in the field of document-based information systems". In 1996, he was elected a Fellow of IMC (now AIIM), and in 1999 was made a Fellow of Merit.

Jean-François Tougard, Managing Partner, Strategy Partners, France

Jean-François Tougard specialises in providing in-depth analysis of the progress of document management in Europe. Since 1996 he has been responsible for extending and developing Strategy Partners' activities and market presence in France and other French-speaking countries.

Jean Francois has more than twenty years' experience in IT in Europe, including senior positions with Burroughs and 3Com. He is a member of the Association for Imaging and Information Management (AIIM), as well as of Aproged, the French Association of Document Management. He is also one of the lead authors of Strategy Partners' EDM Reports on the state of the EDM market in Europe.

John Symon –Document Market Specialist & Director of Business Development

John Symon has thirty years experience in the Document and Information Management industry with international sales, marketing and management roles for North American and European suppliers with postings in Chicago, Brussels and London. John has also owned and operated his own specialist document service company in the UK.

John has also been active in the establishment of the DLM Network on Document Lifecycle Management, a European Union-supported initiative for the National Archives and public administrators of all EU member states.

From 2000-2002 John held the position as Sr. Vice President Europe of AIIM International, the worldwide association representing both users and suppliers of document, business process and content management technologies and solutions (Enterprise Content Management).

John has authored several articles on the above technologies, has spoken at a range of industry conferences and has an extensive knowledge of the Electronic Document Management market in Europe. John is a graduate from the University of Waikato, New Zealand.

Hans Kaashoek – Benelux Market Specialist

Hans has over twenty years experience in the Document, Business Process and Content Management industry in the Netherlands and other International markets. He has held senior positions in product, sales, marketing and project management for leading multi-national suppliers such as Philips, Olivetti, Wang, Unisys and Xerox Global Services.

Hans has an extensive knowledge of the IT market with considerable systems integration and account management experience for large user's information management requirements in both the public and private sectors. He has a masters diploma in marketing from the INSEAD Institute and is based in Driebergen, The Netherlands.

