PROCESS DRIVEN DOCUMENT MANAGEMENT

SUMMARY:

PROCESS DRIVEN DOCUMENT MANAGEMENT IS A NEW CONCEPT FOR HOW TO MANAGE ELECTRONIC DOCUMENTS. CO-EXISTING WITH EXISTING SYSTEMS, THE CONCEPT DRAMATICALLY IMPROVES OVERALL MANAGEMENT OF CENTRAL ARCHIVING, JOURNALING, ACCESS CONTROL AND ACTIVITY LOGGING OF DOCUMENTS IN THE CONTEXT OF THE BUSINESS PROCESSES TO WHICH THE DOCUMENTS BELONG.

IMAGINE THAT YOUR ORGANIZATION'S WORD, EXCEL, POWERPOINT, PDF AND E-MAIL DOCUMENTS ARE ALWAYS SECURELY STORED IN A CENTRAL ARCHIVE AND EMBEDDED IN EACH DOCUMENT IS INFORMATION ABOUT HOW AND WHERE TO STORE THE DOCUMENT IN THE RIGHT CONTEXT (~ CLIENT AND PROJECT OR SIMILAR).

YOUR STAFF WILL NEVER LOSE A DOCUMENT AGAIN AND YOU WILL HAVE COMPLETE VERSION CONTROL AND ACCESS HISTORY IN ADDITION TO BEING ABLE TO EASILY FIND INFORMATION AGAIN FOR COMPLIANCE AUDITS. EACH STORED DOCUMENT OR E-MAIL IS INDEXED (WORDS AND PHRASES) WITHIN SECONDS PROVIDING EASY SEARCH ON CONTENT AND CONTEXT.

IF A DOCUMENT IS UPDATED DURING AN AIRPLANE FLIGHT IT CAN BE SYNCHRONIZED WITH THE CENTRAL ARCHIVE ONCE THE EMPLOYEE IS ONLINE AGAIN AND HE/SHE WILL NEVER NEED TO FIGURE OUT WHAT FILE SERVER TO USE – THE CBRAIN ARCHIVE IS ONE SINGLE CENTRALIZED FILE REPOSITORY.

THE CONCEPT SUPPORTS HOW AN ORGANIZATION WORKS WITH CURRENT TOOLS AND FACILITATES THAT EVERYBODY CAN ADAPT TO DEMANDS FOR REGULATORY COMPLIANCE SUCH AS SARBANES-OXLEY, HIPAA, ETC.

THE NEW COMPONENT ARCHITECTURE (SOA, XML, ETC.) IS THE ENABLER FOR MAKING CENTRALIZED DOCUMENT MANAGEMENT AN INTEGRAL PART OF BUSINESS PROCESS MANAGEMENT. THE BUSINESS PROCESS IS THE DRIVER RATHER THAN FUNCTIONS IN LEGACY SYSTEMS LIKE ERP, CRM, ETC.

VERSION 4.1

CBRAIN TECHNOLOGY

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EXECUTIVE SUMMARY

Information is increasingly seen as an operational resource on par with employees, equipment and capital. Consequently, the need to manage and share information effectively among all people involved in a business process is essential as is the need to reduce risk and cost of efficient storage of information.

Research has shown that 80% of an organization's written documentation is created in an unstructured fashion and therefore difficult to trace and verify, i.e., a project related e-mail that is never journalized in a project database or memos written during weekends and stored on private PCs.

Information Life Cycle Management becomes a business imperative driven by regulatory compliance requirements like Sarbanes-Oxley. Demands for central archiving and journaling of all digital communication is driving the need for new solutions that avoid the cost of traditional function based standard systems requiring extensive changes to existing business processes.

Key drivers behind establishing central archiving are:

- Establish central policy for managing, journaling and storing of all electronic documents for the entire organization across traditional departmental silos.
- Central control of all business transactions, including interim document versions leading to the final documentation of the business transaction – who created, amended or modified what document and when.
- Operational productivity improvements by optimizing business processes and reducing manual workflows. Documents should be stored in the context of the business process.
- Effective search for relevant documentation for the purpose of auditing, due diligence or general management inquiries.
- Regulatory compliance achieved regarding access control and safety of document archiving and retrieval.
- Establish one set of archiving policies and routines across the entire organization including e-mail, word processing, spreadsheets, reports, drawings, etc...
- Security against loss of vital business information, i.e. contracts and their amendments, unstructured communication, etc…

Process driven document management is a radical new approach to how information is shared among all people participating in the execution of a business process.

New software technologies known as SOA (Service Oriented Architecture) based on XML and WEB Services facilitate that systems can be constructed from software components resulting in composite applications.

This means that systems can now be built in months to meet an organizations exact requirement for support of a specific business process instead of having people and processes adapt to a parameterized “standard system”.

This concept is what has become known as “process driven document management.” Process and people are at the center driving system development.

The concept is characterized by:

- Scalability – from few users to many thousands and from few documents to many millions of documents.
- Choice of journaling strategy – tight central control enforced or more flexible decentralized options.
- Integration with existing infrastructure like e-mail systems, MS Office suite, ADOBE products, etc.
- Free text search capabilities across all documents with search for time, people, projects, customers, departments, document types, etc…
- Co-authoring of documents with or without forced locking.
- Versioning and journaling of all electronic communication
- Access control based on organizational structure and often “inherited” from existing systems (Active Directory, etc…).
- All information is stored in the context of the business process.

This document gives a short description of the concept of Process Driven Document Management.

The concept is implemented in a large consulting organization with more than 1,000 employees and over 20 million documents stored.

PROCESS DRIVEN DOCUMENT MANAGEMENT

The amount of electronic information is ever increasing and so is the need to manage information effectively. Organizations have to make sure the right information gets to the right people on time without wasting time searching through myriads of data to find what is relevant. Today document management deals with all aspects of collecting, organizing, distributing, storing and controlling access to electronic documents of all types (text, graphics, video, speech, e-mails, instant messages, spreadsheets, presentations, etc...).

The term Enterprise Content Management (ECM) System is often used for this type of system and it is high on the priority list for most organizations. At the same time larger organizations have a healthy respect for the consequences of making changes to daily work routines for thousands of employees – a decision that has been shown often to be very costly and create a lot of resistance within the organization.

Sarbanes-Oxley increases the pressure for larger organizations

Tighter corporate governance is required in order to be able to comply with new regulatory compliance guidelines, like Sarbanes-Oxley. Organizations have to think of new ways to make sure that all relevant information is captured and can be traced and easily retrieved related to specific events.

In order to facilitate that information can be traced, organizations tend to centralize the control over how information is captured and where it is stored as well as how it is archived and journalized (who created a document and when, who has read a particular document version, who amended/updated a document to create a new version and when, etc…). It should not be possible for employees to by-pass the policies for archiving and it should be made a natural part of the daily routine for how they deal with information.

At the same time most organizations are faced with increasing demand for productivity enhancements and continuous process optimization. Traditional document management systems have over the years claimed to do just that with their support for rules based workflow. However few organizations have seen the benefits because the standard system suites are too complex requiring substantial end-user education and the suites dictate changes to otherwise sound business routines.

The goal is that the user does not experience to have gotten “a new system,” but only a process optimization.

Process driven document management is a concept that on one hand satisfies the organization’s desire for structure, security and advanced functionality, and on the other hand assures minimal changes to the

employee's daily routines and existing productivity tools like Microsoft Word, Excel, Outlook or IBM's Notes, etc. Traditional function based document management systems have a steep learning curve because they are function driven and complex. Process driven document management systems are integrated into the process and the employees will not experience a new system complex but rather that existing processes are optimized in how documents are handled and the ease of use will lead to real productivity improvements.

SOA and XML are the foundation for individual process optimization

A number of technology advancements in recent years have made it possible to create composite applications based on what has become known as Service Oriented Architecture (SOA) using XML and WEB Services. Process driven document management is based on this new and exciting technology. cBrain's component library has been compared to LEGO blocks – you put the components together to form composite applications to match the exact requirements for each individual business process and achieve optimal process improvements in weeks rather than months and years as is often the case for traditional "standard systems."

Step by step process improvements rather than large IT projects attempting to adapt standard system functionality.

SOA, Web Services and cBrain's large XML component library make it possible to create a whole new generation of individualized process optimizations. This means that organizations can optimize discrete business processes one at a time independent of other business routines and independent of the rest of the organization's infrastructure. Instead of trying to support business routines by adapting functionality within a standard system you can now support the business process directly with a WEB service that can be fine tuned as the business process evolves. Existing systems will typically make vital data available to the SOA solution. Typically you want information for employees, access privileges, organizational structure, customers, projects, etc., to be maintained in one system and from that system make the data available where it is needed. This can now be done with XML and WEB services.

SOA solutions can be implemented process by process. Implementation is less expensive and takes a shorter time period than it does to modify a standard system or alternatively wait for the next upgrade of the standard system.

SOA strategy minimizes overall risk

The risk assumed by implementing a SOA strategy is relatively small. Each project has minimal economical and structural impact on the overall IT infrastructure but SOA has great potential for savings and productivity improvements.

DESIGN CRITERIA AND MAIN FEATURES

Individual solutions built from a library of WEB components

Process driven document management solutions focus on each organization's need for structure and security related to how documents are stored and how people work with documents. Therefore solutions are designed to meet each organization's exact need in a simple and straightforward way. The concept is based on a library of standardized WEB components – with some analogy to the concept of LEGO blocks – and solutions are built by combining the WEB components into a business process solution where people assume their assigned roles in the execution of the business process.

The following description gives an overview of a typical implementation. It is not an overview of the cBrain component library but it provides a brief overview of the key design principles and key functionality of a process driven document management implementation. Specific functionality is often defined and designed during the initial workshops at the beginning of a customer implementation and added as an integral part of the solution and delivered in weeks.

SCALABILITY

The concept is a WEB solution that will co-exist with the organization's current infrastructure and safely interface to existing systems, productivity tools and directories for user access and role definition. The resulting solution can scale from few users and documents to thousands of users and millions of documents.

STRATEGY FOR DOCUMENT ARCHIVING AND JOURNALING

Strategy for archiving and journaling is defined on a case by case basis

Most organizations wish to tighten central control of how documents are stored and keep a complete audit trail of a document over its lifetime. What project/process/customer does it refer to, who created it and when, and over time, who read it, amended it, updated it and approved the final version of it before it is locked as a "committed and properly approved" document.

Should it be possible to retain interim versions of a document on the user's PC or only on the central document file server? Who has access to create, read and update/amend what documents? With a process based approach to document management the organization can avoid being forced into ONE standard for how documents are created, shared and stored. Instead for each business process the organization can

support rules and routines that are most practical for the execution of the business process while still ensuring regulatory compliance.

MS Office and Notes documents are made process aware with cBrain plug-ins

Acknowledging that the majority of documents today are created using Microsoft Office products (Outlook, Word, Excel, PowerPoint, Project, Visio, etc.), IBM Notes and similar productivity tools, the cBrain process driven document management system is using cBrain XML plug-ins to make user documents process aware. When a document is created the user identifies what process/project the document belongs to and specifies certain "process information" by pointing to the folder in cBrain's Archive Explorer structure (representing the central archive) and from then on the document will automatically be stored in the context of the business process and have process specific attributes assigned to it (customer, project, task, type, etc…).

SAVE function expanded

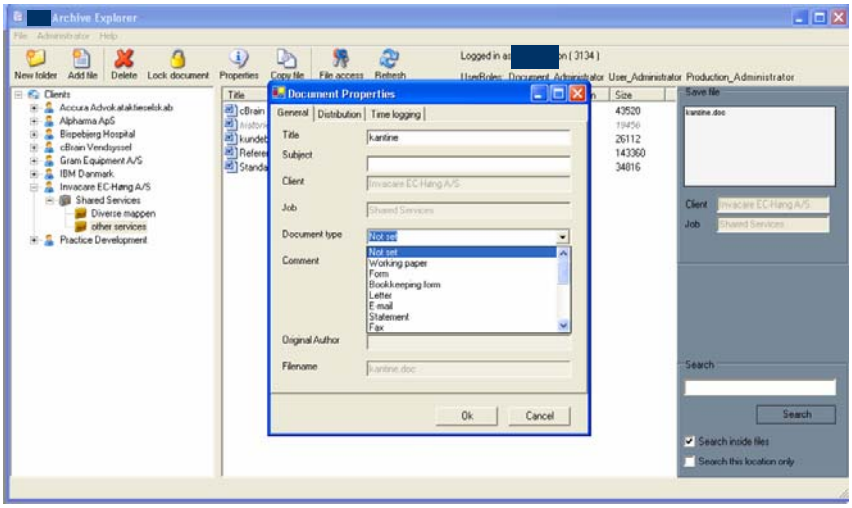
The SAVE functions for Microsoft Office Products and other productivity tools are simply expanded so once the documents are created they will always automatically be saved in the correct location in the central archive. When the user retrieves an existing document to work on he/she will know the document version and have access to previous versions. A new version is automatically created each time the user saves the document to the archive.

Access control structure "inherited"

For certain organizations the archival methodology and file structure are determined by other systems. Professional services firms often have a project accounting system where customers and projects are created and maintained. That structure is "inherited" by the cBrain document management system using a web services interface that automatically creates the relevant folders for customers and project. Access control can similarly be "inherited" from an active directory system often already in place for larger organizations. This gives optimal process control of information and ensures that core information is only entered and maintained in one place.

E-mails can be saved or automatically captured

E-mails are an increasing component of information exchange for any business process and they are handled as an integral part of the cBrain process driven document management system. E-mails can be archived as open e-mails (.eml format) in the central archive or as PDF files with possible attachments automatically locked and stored in sub-folders in the central archive. E-mails can be captured automatically by establishing process rules or archived manually using the cBrain XML save plug-ins. The e-mail client will have a "save to archive" button and the user will point to where the email should be archived and might be asked a few questions depending on the process setup.

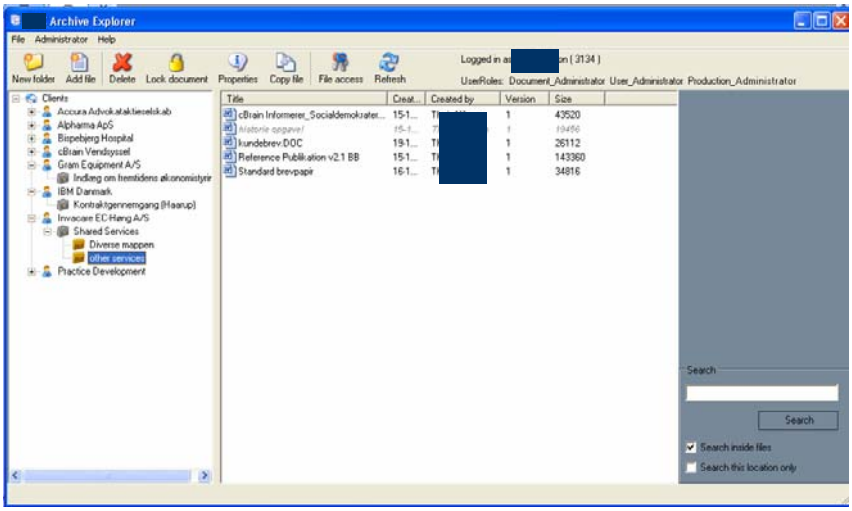


There is easy access to all documents in the cBrain browser. A user will only see the processes, projects and documents that he/she has access rights to. Right clicking on a document will give access to certain actions, like converting to PDF, lock, see properties, see who has read the document, etc…

SEARCH

Comprehensive indexing enables fast text search involving up to millions of documents and terabytes of data.

In addition to searching on all the normal properties for a document (type, time created, time changed, user, etc…) the cBrain solution indexes the content of all documents enabling a very powerful free text search. The search will only search within the documents the user has access to. The search structure is “Google like” free text search enabling you to search all documents within a particular project or customer.



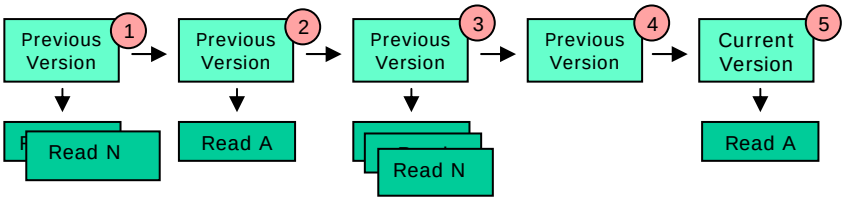
Archive browser with full free text search

VERSIONING, SYNCHRONIZATION AND COLLABORATION

Most organizations have a need for their employees to be able to bring documents with them out in the field, on the airplane, home, etc. The key here is to make sure this is managed without compromising the policy for document safety and integrity. The cBrain process driven document management concept enables you to choose the strategy for how documents are synchronized between the central archive and the employee's personal PC hard drive in such a way that it adheres to the organization's need and policy.

Tight central version control or allow team leader to police version control

Some organizations want documents to be locked in the central archive when an employee retrieves a document to work on it. Other organizations want the opposite – namely, that documents can be retrieved but are not locked for the other employees with a need to access the same documents. In this case a complete document log is maintained with pertinent information about all transactions (read, update, amend, etc…) related to that document. This information is then synchronized when the employees are online again with access to the central archive.



Principles for document versioning

Several people can work on the same document at the same time

Several employees can thus work in parallel on the same document and everybody will know who has read (retrieved) the document. When a document is retrieved you will be notified of who else has retrieved the same document and when you return and store your version in the central archieve you will be notified if others have done the same. As a major customer explains – "we simple need this to get work done and locking a document is not acceptable. It is up to the project team leader to resolve synchronization issues within the team and MS Word has excellent functionality to help do just that. cBrain's workflow notification engine gives us that flexibility and complete transparency and safety."

DELETING DOCUMENTS

It is often equally important to be able to control the deletion of interim versions of a document in the document overviews that employees see (the system will still retain a complete log for auditing purposes).

Delete policies varies greatly. “Delete” relates to what an employee sees – audit trails of documents are always retained.

Experience has shown that different organizations have different policies for how, when and who should be able to delete documents. Some organizations want documents converted to PDF files when a project is closed and have certain documents transferred to another system of record.

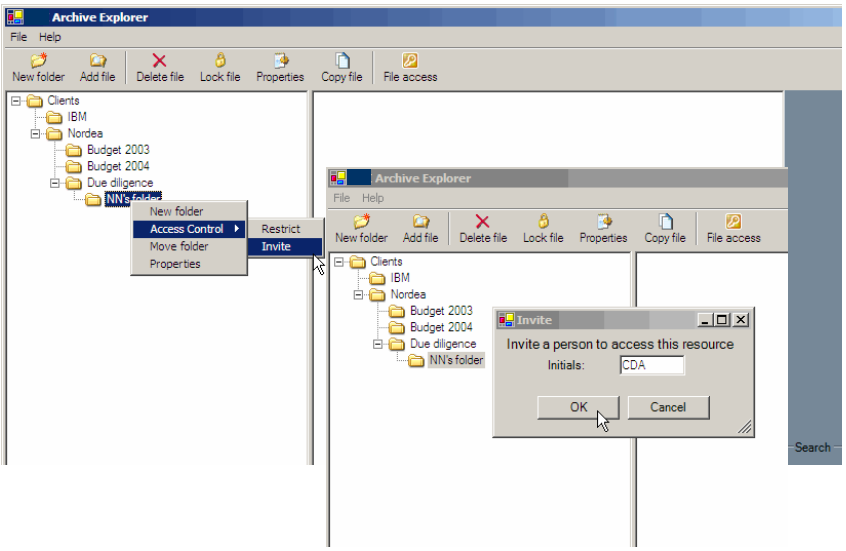
Often there is a need to retrieve/copy a document from a closed project and use it, for example, as a starting point for developing a scope document for a similar new project.

The term ”delete” relates to how employees see the central archive rather than physical deletion. Documents are retained for a specified time period (often 7 years or more) and can be retrieved by the system administrator and made available to the people needing access.

ACCESS CONTROL

Organizational structure and access privileges are often handed down from other systems using an XML web services interface.

Access control principles will conform to the organization’s security policy and existing infrastructure. Most organizations have centralized control for who has the right to access what systems and perform certain specific actions. Systems for HR, ERP, CRM, Project accounting, etc. typically have access hierarchy built in and for many organizations tightly integrated with access control modules like Active Directory for “single sign-on”. This ensures that vital data for customers, projects, products, etc. are only maintained in one place and new information is communicated to the cBrain process driven document management system via an XML web service. Exceptions are handled individually.



Optionally you can invite other users to access the documents you control yourself.

WORKFLOW AND OTHER FUNCTIONS

Workflow and processes are supported individually and matched to the exact process need

When initiating any implementation of the cBrain process driven document management system, the first thing we do is to analyze and clarify the business process or processes to be supported.

Often people collaborate on developing a document and as a result you have several parallel approval processes in order to finalize a document before it, for example, can be sent to a customer as a project status report. Furthermore for some organizations like consulting firms, a status report should be matched against a scope document and changes to the scope of a project should often lead to a contract amendment. Responsibility for amending a contract could reside with a third person and so on. Events related to certain documents (new version of a scope document) can automatically trigger notifications of relevant people.

Some organizations want to apply strict control over how a process is executed, whereas other organizations delegate a lot of responsibility to team members and just want to police, that policies and guidelines are followed. Controlling or policing can further vary by process/project.

TECHNICAL OVERVIEW

The advantages of the SOA architecture are fully exploited.

All internal system communication is using Simple Object Access Protocol (SOAP) – an XML based protocol for effective information exchange in a distributed environment.

All versions of all documents are identified by a cBrain unique MD5 key which at any time ensures safe identification of documents and their interim versions.

Indexing of documents (words and phrases) is a process that happens automatically when documents are archived. It is done using Microsoft Index Server and all documents will be available for search in minutes.

The solution can be combined with existing document management systems and thus help optimize workflow and business routines when using these systems as the final document repository.

Collection and distribution of information can further happen via SQL, XML or other languages across different platforms - Microsoft®, IBM/Notes®, SAP® or the like.[1]

[1] Registered trademarks belong to their individual owners.