# A Novel Document Services Framework for Multi Process Site Based on SOA

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*Abstract*—**In most document management system, all documents are stored in center database server. Actually in daily work, documents uploaded is always need to be stored in the client where the business processes is dealing accordance with the requirements ,but management information system and OA system can not solve this problem. This paper presents a novel framework which integrated the SOA Service of storage to client –so called multi process site, to meet the document management requirements that different document processing unit requires document storage is distribution, but the business processes requires centralized.**

*Keywords- Multi process site; SOA; Document collection; Distributed Memory;*

## I. INTRODUCTION

Nowadays, information technology has been popularized, OA (office automation) systems and MIS(Management Information System) has already been used in large and medium-sized enterprises. Documents collection with Specific requirements is a high frequency business in the daily affairs of the office. For example, we need part of personnel of the unit that meet the specific conditions to commit documents with special requirements within the specified date, which business be called Multi Process site document collection. Because the requirements is different, the person collecting document is different, and the person commit document is also different, so it can not be part of the information management system as a specific business. At present, this business is usual dealing by e-mail. Collector commits the documentation requirements, and related person commits documents by the email, then collector download the documents from the mailbox, and then sort out.[1] There are several problems in this method, first, staff maybe ignore the e-mail, or forget to hand over before deadline, second, documents collects is always takes a lot of time.

Send and receive text management system, through the form of services such as web service, provide the service of file management on the network. But the existing Send and receive text management system has a fundamental characteristic is that all documents are unified stored in data server, while the client does not save any business documents. In the enterprises that has multiple business units has urgent requirements of management and business that the need of different business sectors to be able to manage their own documents to facilitate a variety of business processing. Therefore, regardless of the current management

information system and OA system can solve the above proposed multi process site document collection problems. [2]

To solve the existing management information system and OA system based multi processing document collection issues, this paper presents a distributed SOA-based (service-oriented architecture) file collection framework, which can integrated with existing management information systems or OA system seamlessly, and it is the perfect solution for multi process site document collection problem.[3]

## II. SYSTEM ANALYSIS

To meet the requirements that deal documents in the client machine, we must store the documents in the client machine, so the best method is upload documents to the client directly, then the client must has a service to receive the documents be uploaded.

Existing management information system and OA system are stored centrally on the server side of the storage server, even distributed storage is to improve the access efficiency and space expansion requirements. File distribution does not consider the classification of business, as shown in Figure 1.
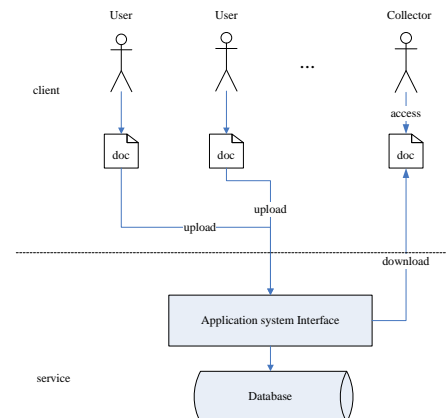


Figure 1. The form of document store of Existing management information system and OA system

The essence of multi process site document collection is that the business units which processing documents wants the documents that related to their own business be stored in their client machine, so facilitate to follow-up document processing in local. To achieve the requirements that document is stored on the client, then we must deploy

service to store document received on the client. This is a mode that Client embedded service, so that the client will not only be able to access the business server, but can also provide a document receiving as a service.

We use SOA as the documents service in the client. Service-oriented architecture (SOA) is a design method to construct distributed systems software, which provided the application functionality to end-users or other services in the form of services.[4] It uses a well-defined interface to the application of different functional units linked as a service ,interface is independent of service hardware platforms, operating systems and programming languages, which makes the service can be constructed in a variety of systems and interact in a unity and a common way.[5][6]

The application Service provide redirect service for each document receiving services, when the relevant documentation submitted, the document can be submitted directly to the appropriate processing point, rather than application store server.

This framework can ensure that the business logic centralized, while achieving a specific document stored in the corresponding process site. This framework not only to meet the requirements of convenient document processing, but also reducing business server-side document storage, as shown in Figure 2.
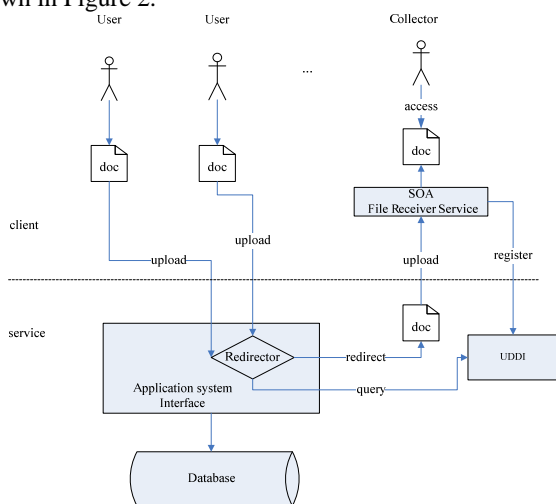


Figure 2. The form of novel document services based on SOA framework

## III. PRELIMINARY DESIGN

In the new framework, we present the concept of process site. The so-called process site means the client which centralized collecting and processing a certain type of business document. The primary function of the process site is to receive documents, so it should first have a basic file storage management functions, or a miniature external document management server, to provide file receive functions external, and provide file management functions internal.

In theory, each user who requires document collection can specify own process site. In the extreme case, each user login on system can used itself machine as a document processing machine. For actual use, we need to specify users that can use the process site through authorized in business systems. When specify a process site, we must record the IP address of the client machine which act as the address of document service on the process site.

When a process site has been specified, the workflow of document collection will have some change as follow.

### A. Specify person who need to upload document

We can specify person who need to upload document through two methods. The first is create group, add persons with same business to the same group, then specify a group is specify all person in the group. The second is select person one by one at the beginning of the process.

### B. Specify process site for the workflow

Specify process site is the most important settings. In usual, the process site manage by a user is not change, so we can save process site as an attribute of the user. At the beginning of a document collection process, we can specify the default process site of the user as the processing- point of the document collection process. Certainly the user can also be modified the process site according to the actual needs.

### C. Specify the deadline and document template

Deadline is important for the process, because after that another work on the documents will begin. All persons have been specified in A must upload documents before Deadline, to avoid of delays of Follow-up work.

The document template should be maintained in the application server because those document templates are the most important materials of management.

### D. Upload document

This is a key step of the whole process, all the fundamental document is be uploaded to server. To those fundamental users, they need to upload a lot of document in daily work, so they may be forgot to upload document in former work style. But in this novel framework, each process has been specified the deadline. When a user logon on the system, the list of document that he need to upload and each deadline will be show to him. System can also provides some alert function, gives some alert when the deadline is approach.

When the user begin to upload document, the application service will redirect the document service to the service provide by process site which specified by the process. The document service is transparent to the user who upload document.

## IV. IMPLEMENTATION

SOA is an open framework, most of development platform supporting SOA program. We can provide document service based on SOA easily. The important is those addition service will not impact any original functions in the system. [7]The only thing we need to do is to add an SOA interface on the web service which will deployed on the collector machine, is also a process site, be call Document Service on Client (DSC).[8]

The client of collector will access two services, one is the application service, which manages all the business centrally, and another is the local DSC. On the application service, the main work of collector is to start a collection process, then deal with documents on local machine after deadline of the process.

A DSC will provide two functions: one is to act as a document receive service which provide service for network, and the another is to act as a document service which provide service for local machine user.

The UDDI (Universal Description, Discovery and Integration) play a key role in this system. [9] All document service must register to UDDI with provide necessary information. The key information of DSC is its name, act as identity, which must be unique in the whole system. As figure 3 shown, application service will query UDDI about the information of DSC when it redirects an upload request to DSC.
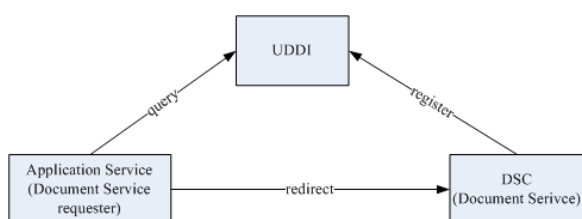


Figure 3.    The interaction between parts of system

To the common user, application service will provide an approachable function: the list of document need to commit, and each deadline of document are clear, user can see all the work has not finished and do it successively, never be afraid of forget to commit important document.

To be easy to manage all the work document, collector need to classify those documents through file save path. Those paths are the disk store path in the client machine, so it should be transparent to the application service. But collector wish the document be received should be store to the catalog it should belong to. So we need to build alias to map those paths, in another word, give a name to file store path.

When collector start a process, beside provide parameters of process had previously mentioned, he must provide an alias as a property of the process. When common users begin to upload a document, his client will send an upload request to application service. In old service, it will save the document on the application server, but in this framework, application service will redirect the request to the DSC, meanwhile, the alias will be delivered to DSC as a parameter. DSC received the document, and gets the store file path from alias-path map, then save the document to the file path. So

files uploaded by common users will be sending to the collector's work path, and collector can deal with those files in local machine in need.

## V.    CONCLUSION

In this paper, we present a novel framework of  multi process site document services based on SOA, it is a good solution to the requirement that document need to be process in multi business sector, in line with the actual needs of business. This framework revolve problem of document service, one is the document collection and another is the reminder of document upload.

Of course, in solving the conventional problems, there is a constant need for improvement. For example, embedded in the file server to the client, which means that the client machine must be able to keep the power on, certainly, if the requirements documents submitted during office hours, this is not a problem. Further more, the processing point can also be shared. A business process site can be shared within the business sector to all users in a department.

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