

BENJAMIN J. CAYETANO  
GOVERNOR OF HAWAII



CARL T. WATANABE  
ACTING REGISTRAR OF CONVEYANCES

TELEPHONE (808) 587-0120

FAX (808) 587-0136

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
BUREAU OF CONVEYANCES

P. O. BOX 2867  
HONOLULU HAWAII 96803

## MEMORANDUM

Date: January 17, 2002

*16.103.16.1 - SWB*

To: HLTA FYI Users

Fr: Carl Watanabe *[Signature]*

Re: FYI Rollover

The Bureau of Conveyances will be migrating from the Wang system to our new Bureau of Conveyance Information System (BCIS) effective Tuesday, January 22, 2002. Your current process of accessing LCATS will now be done through the internet via our VPN server. Operational instructions for use and set up is being provided for you.

You are receiving one certificate for your current LCATS usage. Certificates for additional users are available. Each certificate represents one paid subscription to access LCATS.

For technical help in setting up your system, please contact:

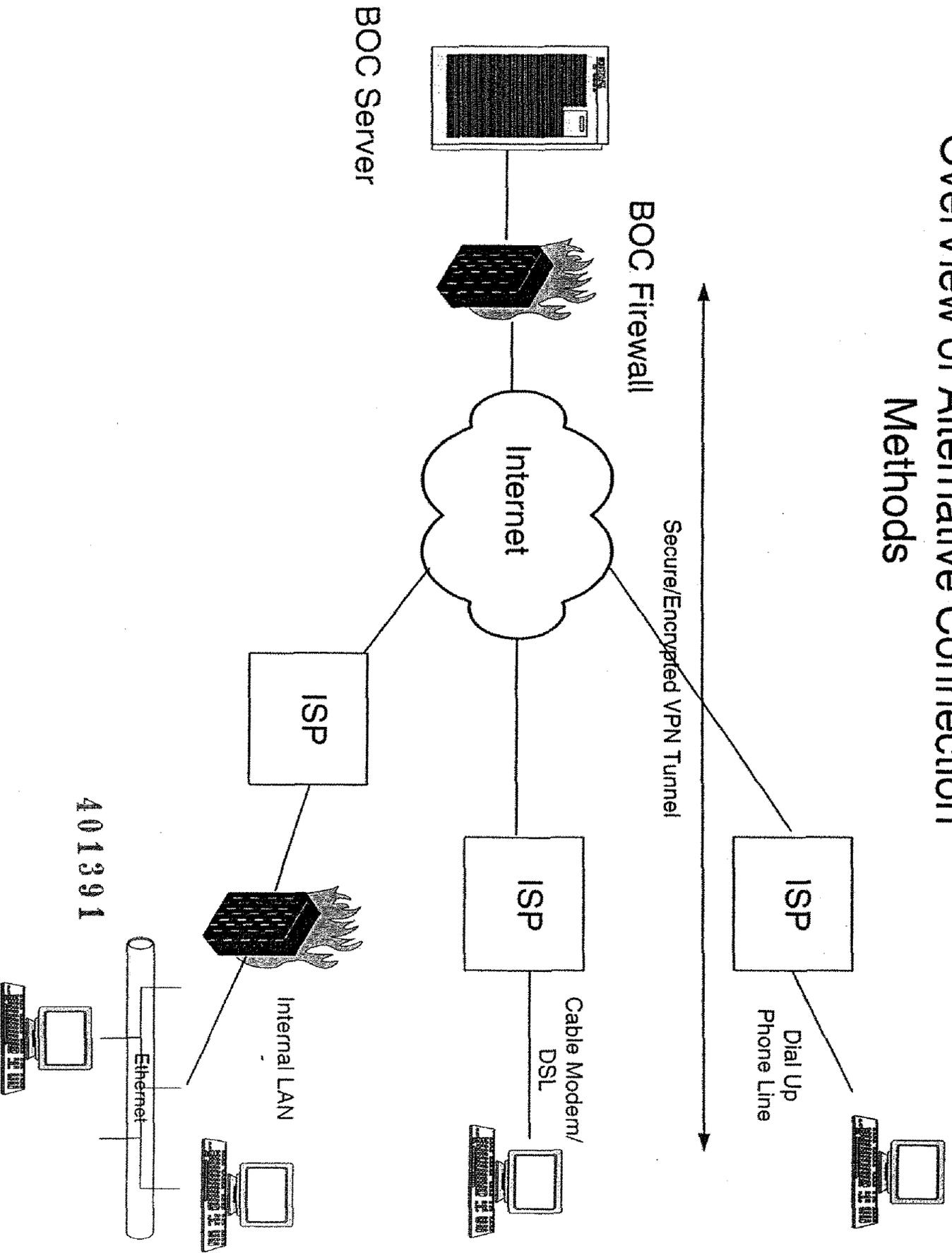
Nani Lindsey: 545-1822 (The Lange Group)  
Jock Pernell 597-9240 (IBM) *781-3125*

Thank you for your cooperation in this transition and we apologize for this late notice. Should you have any questions, please feel free to contact me at 587-0120.

*LCATS 2nd Floor  
1/21/2002*

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# Overview of Alternative Connection Methods



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**Dept of Land & Natural Resources**  
**Bureau of Conveyances Information System**  
**BCIS - FYI**  
*(Closed User Group)*

**CLIENT INSTALLATION**

**General Information:**

This CD contains the software needed to access the Bureau of Conveyances Information System FYI (BCIS – FYI) utilizing the Internet. This is an updated version of the Hawaii FYI system.

There are three software components on the CD:

- VPN software to provide secure, encrypted access to the BOC computer
- BCIS Application Client for Windows
- Java™ Run Time Environment

You must also obtain a companion diskette containing a certificate or “key” that uniquely identifies each remote user, and encrypts the data traversing the Internet which is needed during the installation process.

Software is provided for Windows 98/ME, Windows NT, and Windows 2000/XP. Installation is accomplished via a windows batch file (.bat) tailored to the different operating systems.

Hardware and Telecommunications Minimum Requirements:

- Access to the Internet
- Windows 98/ME, NT, or 2000/XP
- At least 64 MB of Main (RAM) Memory
- At least 15 MB of Disk space on your C:\ drive

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**CLIENT INSTALLATION**

**Installation Instructions:**

- 1) Place the certificate diskette in the a: drive.
- 2) Place the program CD in the CD ROM drive.
- 3) Select the appropriate batch (.bat) file to begin the installation for your Windows Operating System. It can be selected from RUN on the Start Menu, by browsing to it from the My Computer Icon, or running it from a command prompt. The bat file will:
  - a. Run the self-extracting file for the VPN software. It will first self-extract, and then invoke the Install-shield to install the software
  - b. Run the similar self-extracting file for the BCIS application software
  - c. Run the similar self-extracting file for the Java™ Run Time Environment
  - d. Copy the certificate from the a: drive to the C: drive.
- 4) Once you have selected the right bat file, the self-extracting file will start  
*Note: For Windows98 installations be sure to press any key (in the MSDOS .bat window to continue to the next component installation.*
- 5) For the first component VPN Installation: Reply Yes and Next until the screen asking which software to install.
  - a. Choices will be SecureClient or Securemote
  - b. You must click on Securemote, (change the default Secureclient)
  - c. When prompted for which adapters to install on:
    - If you will be using a phone line to access the Internet, select the option to install only the dial up adapter.
    - If you will be connecting to the Internet through your LAN, select the option to install on all adapters.
  - d. When prompted to restart your computer now, or later, select later.
- 6) For the second component BCIS Application Client Installation: Follow the directions in the Installation screens.
  - a. Choose to Install it in a new directory C:\BCISFYI
  - b. Choose to put the Icons in a new program group: BCISClient
  - c. Drag the shortcut BCIS-FYI from the C:\BCISFYI to the desktop  
*(Appx Client)*
- 7) For the third component Java™ Run Time Environment: Follow the directions in the Installation screens
- 8) Reboot the PC after the bat file completes.

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*Appx Client 4.1.1*

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**CLIENT INSTALLATION**

**Operating Instructions (First Time):**

- 1) Once you reboot the PC, the installation will complete
- 2) The first time you access the BCIS computer, operation will be different from subsequent operation
- 3) If you will be accessing the Internet via dial up phone line, initiate the dial up connection now.
- 4) Once you have access to the Internet, select the SecureRemote application from the System Tray on the bottom right side of the screen.
- 5) Once the SecuRemote popup is visible, do the following:
  - a. Click on Tools
  - b. Click on Encryption
  - c. Check IKE
  - d. Click on Advanced
  - e. Check Force UDP encapsulation and support IKE over TCP
  - f. Click OK to return
- 6) Create a site for accessing BCIS by
  - a. Click on Sites
  - b. Click on Create Site
  - c. In box for IP address, put 166.122.230.1, then click OK
  - d. When prompted for userid and password, click on "use certificate"
  - e. Below certificate name box, click on browse
    - i. Browse to c:\BCISFYI\userid.p12
    - ii. Select that certificate
    - iii. Then enter your password, and click OK
    - iv. You should get a message saying you have received the certificate
    - v. Click OK
    - vi. You should get a message saying you have authenticated with 166.122.230.1
    - vii. Click OK
    - viii. There will be another pop-up requesting you to click on OK to update the site > Click OK
- 7) Once you've created the site, you should be able to access the BCIS FYI system, so just double click the BCIS FYI application.

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**CLIENT INSTALLATION**

**Normal Operation:**

- 1) Double click the BCIS FYI icon on your desktop and enter the your Login and Password.  
*Note: If you have turned off your PC or disconnected from your ISP, you'll have to also reestablish the VPN connection.*
- 2) In the OPTIONS Menu you can choose GUI Interface or not, and to Show Option Numbers to enhance the features of the BCIS FYI User interface.
- 3) At the end of the day, or where appropriate, you should also Disconnect from your ISP.

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Readme

HOW TO INSTALL NEW BCIS CLIENT

1. Make sure you followed the directions in the email regarding downloading and saving the Appx 4.2.6. client to C:\newbcis\installer.
2. Open C:\newbcis and double-click VPNinstall.bat
3. A black window will appear and the installation process will start.
4. You will see a window called "InstallAnywhere" and the message "InstallAnywhere is preparing to install..."
5. Once the "AppxDesktopClient" window appears, accept all defaults at each window by clicking NEXT, NEXT, NEXT, INSTALL, DONE.
5. Close any open windows once you get the message in the black window that the new bcis client has been installed.
6. Double-click the 'BCIS' icon on your desktop to login to the new system. Use your same username and password.
7. Notice that you now have a second icon on your desktop called 'BCIS-OLD'. Please do not delete this icon or uninstall the old bcis client. The old client will be used as backup during the initial testing phase of the new client.
8. If you run into any problems with the installer, please contact me by email with a description of the problem and preferably a screenshot of the error message.

THANK YOU.

Larry Dy-Liacco  
Data Processing Systems Analyst  
DLNR, State of Hawaii  
lorenzo.dy-liacco@hawaii.gov

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**BCIS - FYI**  
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**CLIENT FIX PACK**  
**(FIX012202)**

**January 22, 2002**

**RELEASE NOTES:**

This release corrects issues that were found with the Client Installaion CD's dated January 16, 2002. It consist of 1 diskette containing:

- \* Batch file called FIX012202.bat to automate this installation
- \* A replacement desktop BCIS-FYI shortcut containing the correct settings
- \* An updated nature back drop when login on
- \* This README document

The batch file assumes that the BCIS-FYI software is in the default directory. You must change the batch file accordingly as well as the shortcut to reflect any other.

**BCIS DEFAULT DIRECTORY: C:\bcisfyi.**

**INSTALLATION NOTES:**

- 1) Place the diskette in the a: drive
- 2) Run the Fix012202.bat file. It can be run from the RUN on the Start Menu, by browsing to it from the My Computer Icon, or running it from a command prompt.

The Bat file will:

- a) Copy the replacement BCIS-FYI shortcut into the default directory
  - b) Copy the updated nature back drop into the default directory
- 3) Drag the shortcut BCIS-FYI from the default directory to the desktop

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# BUREAU OF CONVEYANCES

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## MEMORANDUM

Date: January 22, 2002  
To: HLTA LCATS Users  
Fr: Carl   
Re: BCIS Installation

The enclosed disk represents corrections to the one given to you earlier. Please follow the new instructions to allow access to our BCIS.

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*POC Project*

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Complete Manual for TG's

# BoC Imaging System

Version 2.03

by John F. Hubbard

Title Guaranty of Hawaii, Inc.

*23 December, 1998*

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# Overview

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## What is the BoC Imaging System?

### BoC Imaging System

The BoC Imaging System is a generic imaging system that has been fitted for use at the Hawaii Bureau of Conveyances ("BoC"). It has the following capabilities:

1. Scan images.
2. Perform Optical Character Recognition (OCR) on the scanned images, thus extracting some basic information directly from the documents. The amount and type of information extracted in this manner depends upon the type of document being scanned; OCR templates exist for several key document types, including—for example—Regular System and Land Court System documents.
3. View the scanned images within a few minutes after the associated documents are scanned.
4. Export the documents, and the information associated with each (a combination of data extracted via OCR, and data known by the system) to other locations, such as:
  - a. Portable media (currently an Iomega Jazz drive), for transport back to Title Guaranty (TG), or other location.
  - b. Remote network locations.
5. Provide file and database management on site at the BoC. This allows the BoC to maintain the most recent  $n$  days' worth of images, where  $n$  is a function of how much hard drive space is available on the BoC file server. The BoC Imaging System automatically purges imaging files older than  $n$  days old, and updates the database that tracks these files, as well.
6. Provide a foundation for a general imaging system that can be used throughout TG. This entails providing the following items:
  - a. A standard SQL Server and File Server configuration.
  - b. A standard format for transporting imaging data, including both the image files and the corollary data associated with each image file.

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- c. A set of COM (Microsoft Component Object Model) components to support easy construction of an image viewer via Visual Basic (VB), Active Server Pages (ASP), VB Script, C/C++, or any other environment that supports COM.
- d. A set of COM components that provides "location transparency." This sounds complicated, but all it really means is that the VB programmer can call a function such as "FindTheImage" without having to specify whether the imaging index is in a SQL Server across the intranet, or in a Microsoft Access MDB file right there on the local computer.
- e. A basic, but "bulletproof" and highly polished image viewer that makes use of the COM components discussed above.

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# Installation

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## Getting Started

The overall process of installing a complete BoC Imaging System is this:

1. Identify one or two main servers. These will be your SQL Server and your File Server, respectively. For this discussion, it will be assumed that the SQL Server and File Server are both on the same Windows NT server; note that you may opt to split them onto two machines if you expect very heavy loading of the system.
2. Install NT Server 4.0, service pack #4 or greater, on the server.
3. Install SQL Server, service pack #4 or greater, on the server. Ensure that you allocate at least 50 Mb for the Master database.
4. Adjust the amount of physical memory (RAM) allocated to SQL Server. See Microsoft's guidelines on this. At the time of this writing, the server had 256 Mb of RAM, so allocating about 64 Mb to SQL Server is reasonable (more if very large numbers of users are expected—which is not the case for the actual BoC installation).
5. Increase the size of TempDB by adding new data and log devices, and expanding onto these. Use your knowledge of anticipated loading levels; 100 Mb total for TempDB is probably a good starting point.
6. Within SQL Server, create a new database to hold Imaging Index tables. This document will assume you have called your new database "Imaging".
7. Load the BoC database structure. This may be done in one of two ways:
  - a. Restore from a backup ("dump") of a previously working BoC database, or
  - b. Run the SQL or TSQ scripts provided on the BoC setup CDROM. These will create a blank BoC database, ready for use.
8. Set up SQL Server daily database dumps. (A "dump" is SQL Server's term for a backup. The backup can occur while the database is running.)
9. Set up SQL Server incremental backups. The recommended interval is 15 to 60 minutes, on the low side of this if possible, to avoid data loss if someone makes a mistake while cleaning up the data.

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10. Set up NT Server daily file backups to tape. This is easiest if NT 4.0 Resource Kit is installed, as it includes a command scheduler—basically just a GUI for the “AT” scheduler service, but a big help.
11. Set up SQLExec automatic bulk imports from the text file (called, by internal convention, “Header.txt”) to the SQL Server table “HeaderTXT” in the Imaging database. This is done by directing SQLExec to automatically run the script file LoadHeaderDotText.SQL, which is included on the BoC Imaging System setup CDROM.
12. On any PC that you want to use as an image viewer, run Setup.exe from the BoC Imaging System setup CDROM. A standard Installshield program will guide you through setting up the viewer.
13. Configure the image viewer by running the *separate* configuration program. It is separate because the general public (or at least, people who should not be messing with the core configuration) may be using the image viewer program, and we want to avoid support issues associated with accidental changes to the configuration.
14. On any PC that you want to use as an File Manager (there should really only be one of these, but there is no harm in setting up as many as you like, as long as you don’t become confused), run Setup.exe from the BoC Imaging System setup CDROM. The same Installshield program that installs the image viewer also installs the File Manager.
  - a. Often, you will find it convenient to place the File Manager on the main NT Server. This allows you to perform File Management tasks while others continue with scanning, viewing, and verifying documents.
15. Configure the File Manager by selecting **System | Configure** from the main menu of the File Manager program.
16. Install the scanner and the OCRFF Optika software on a Windows 95 computer. Configure it to scan to a location on the NT Server. The way this is done is by contacting SIS and asking them to take care of it, as they are the contractors responsible for keeping the scanning subsystem healthy and working.

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## Installation Disclosure: What the setup program does to your system

Someday soon, it will probably be a legal requirement to disclose precisely what system changes the installation program is applying to your computer. For now, TG will take the lead by explaining what changes are applied to your computer when you install the BoC Imaging System. Here they are:

1. Your computer’s OLE substructure is upgraded, if necessary, to the latest version released by Microsoft. This is backward compatible, of course.
2. ODBC Drivers and the ODBC Driver Manager is installed. If it already exists, it is upgraded, if necessary, to the current version.

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3. BoC Imaging System settings are stored in the system registry, in this location: HKEY\_CURRENT\_USER\Software\Title Guaranty MFC-Based Applications\BoCImaging\Program Settings.
4. Several custom COM components are installed (or upgraded).

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# Operating the Imaging System

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## Operating the Imaging Database

### Re-scanning Documents

Should it be necessary—and it will be—to re-scan a document, you must first delete the document's record from the RecordedDocView table. Otherwise, the re-scanned document will show up in the FailedDataView table, rather than the final table ("RecordedDocView"), and will not be available to ImageViewer users.

As with the data cleaning techniques described below, this table may be reached by opening the icon labeled "BoCImagingSystem" on your computer's desktop. The BoCImagingSystem program is merely a custom-coded MS Access 8.0 database, that provides a portal into your Imaging System Database (which really resides within SQL Server).

### Basic Data Cleaning

Basic data cleaning refers to the need to ensure that the indexing information generated by the image scanning subsystem (assembled by the vendor, SIS) is correct. This data is gathered from an OCR of each document, based upon pre-assembled document templates for each type of document (Regular System, Land Court, Land Court Order, etc.).

There are four general classes of bad data that are routinely fed into the Imaging Database, from the scanning subsystem:

1. The **doubled-date** problem. This will cause the document to be reported on the Missing Documents report. The document will show up in the FailedDataView table in the BoCImagingSystem.mdb viewer. It is easy to identify and easy to fix: look for two dates in a row, such as: 12-20-199812-20-1998. Manually edit this so only a single correct date remains, then change the "ImportStatus" column to read "N" rather than "F". The database will automatically move this record into the final table ("RecordedDocView") on the next cycle. As of this writing, cycles occur every 5 minutes.
2. The **missing document** problem. This will cause the document to be reported on the Missing Documents report. The document will may, or may not, show up in the FailedDataView table. If it

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does not show up in the Missing Documents report, it may be part of a merged document; see item (3) below to solve that problem. Otherwise, follow the same steps as in (1) above, for a doubled date problem, except: instead of fixing the doubled date, fix any other obvious problem with the record. If you can not figure it out, you can always (as a last resort, usually) delete the document from the FailedDataView table, and rescan it. It should then show up after the next database cycle.

3. **The merged document problem.** This will cause the document to be reported on the Missing Documents report. The document will show up in the FailedDataView table in the BoCImagingSystem.mdb viewer, but it will look perfectly OK. The key to solving this little mystery is that the file name already exists in the final table ("RecordedDocView"), as you can verify by searching for the file name in RecordedDocView. The solution is not so elegant: delete the record with that file name from both the RecordedDocView table, and the FailedDataView table. Then rescan all documents (there may be more than two documents merged, this can best be determined by viewing the actual images in the image viewer), and wait for the next database cycle to verify that they make it in successfully.
4. **The missing digit problem.** This has much the same symptoms and solutions as the double date problem. Instead of a doubled date, however, you will notice that the document number has one digit missing (either from the left or right end). Correct this, but be sure you have entered the correct number. It is best to open the actual image file (search for the file on the server, then double-click on the file to open it in the Wang Image Viewer), and verify the real document number. Change ImportStatus to "N", and the record should make its way into the final table during the next database cycle.

## Advanced Data Cleaning

Please refer to the database diagram on page 15. I will describe the data flow through this system, because understanding this data flow is a prerequisite to advanced data cleaning.

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# Interface

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## How to Read the Interface Documentation

For the convenience of the actual intended users of this component, the interface function definitions are provided below in the Visual Basic language. Read them as if you were looking up a function in Microsoft's VB 5.0 Language Reference Manual. In fact, the exact same documentation conventions are used to describe these functions; please refer to the VB Language Reference Manual if there are questions in this area.

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## GetImageFullPath Method

Returns the full path and filename of the image file.

### Applies To

ImageManager object (or the IImageManager interface, if using C/C++)

### Syntax

```
returnValue = object.GetImageFullPath (sUniqueKey, sDocumentType)
```

The GetImageFullPath method has these parts:

<u>Part</u>	<u>Description</u>
<i>object</i>	An object expression that evaluates to an object in the Applies To list.
<i>sUniqueKey</i>	An alphanumeric value uniquely identifying the document you wish to retrieve.
<i>sDocumentType</i>	A standard abbreviation denoting the document type. There are enumerated below.
<i>returnValue</i>	A string containing the full path and filename of the image file.

<u>Abbreviation</u>	<u>Description</u>
RS	A Regular System document. This is a BoC recorded document (which means that the number is guaranteed to be unique, and is tracked by the BoC).

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LC	A Land Court document. This is a BoC recorded document.
DS	A Double System document. This is recorded under both the RS and LC systems. You may supply either the RS or the LC number, if you specify DS. Alternately, you may provide the RS number and specify "RS" as the document type, or provide the LC number and specify "LC" as the document type.
LCO	A Land Court Order document. This is a BoC recorded document.
LP	A Liber Page document. This is a BoC recorded document.
CTC	Land Court Order document. This is NOT a BoC recorded document. (However, it accompanies either a RS or LC document.)

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## ImageExists Method

Returns true if the specified image exists in the BoC Imaging System; false otherwise. This is a very fast routine, designed so that you can use it to quickly check for document existence before actually asking for the location of the image (which is a slightly slower operation).

### Applies To

**ImageManager** object (or the **IImageManager** interface, if using C/C++)

### Syntax

`returnValue = object.GetImageFullPath (sUniqueKey, sDocumentType)`

The GetImageFullPath method has these parts:

<u>Part</u>	<u>Description</u>
<i>Object</i>	An object expression that evaluates to an object in the Applies To list.
<i>SUniqueKey</i>	An alphanumeric value uniquely identifying the document you wish to retrieve.
<i>SDocumentType</i>	A standard abbreviation denoting the document type. There are enumerated below.
<i>ReturnValue</i>	A boolean value. True if the image exists in the BoC Imaging System; false otherwise..

Please refer to the "GetImageFullPath Method" on page 8 for valid document type abbreviations.

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## Version Property

(Read-only). Returns a string containing version information for the BoC Imaging System.

### Applies To

**ImageManager** object (or the **IImageManager** interface, if using C/C++)

### Syntax

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### **object.Version**

The Version property has these parts:

<b><u>Part</u></b>	<b><u>Description</u></b>
<i>object</i>	An object expression that evaluates to an object in the Applies To list.
<i>Return value</i>	String. Version information for BoC Imaging System.

# System Diagrams and Design Records

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## Architecture

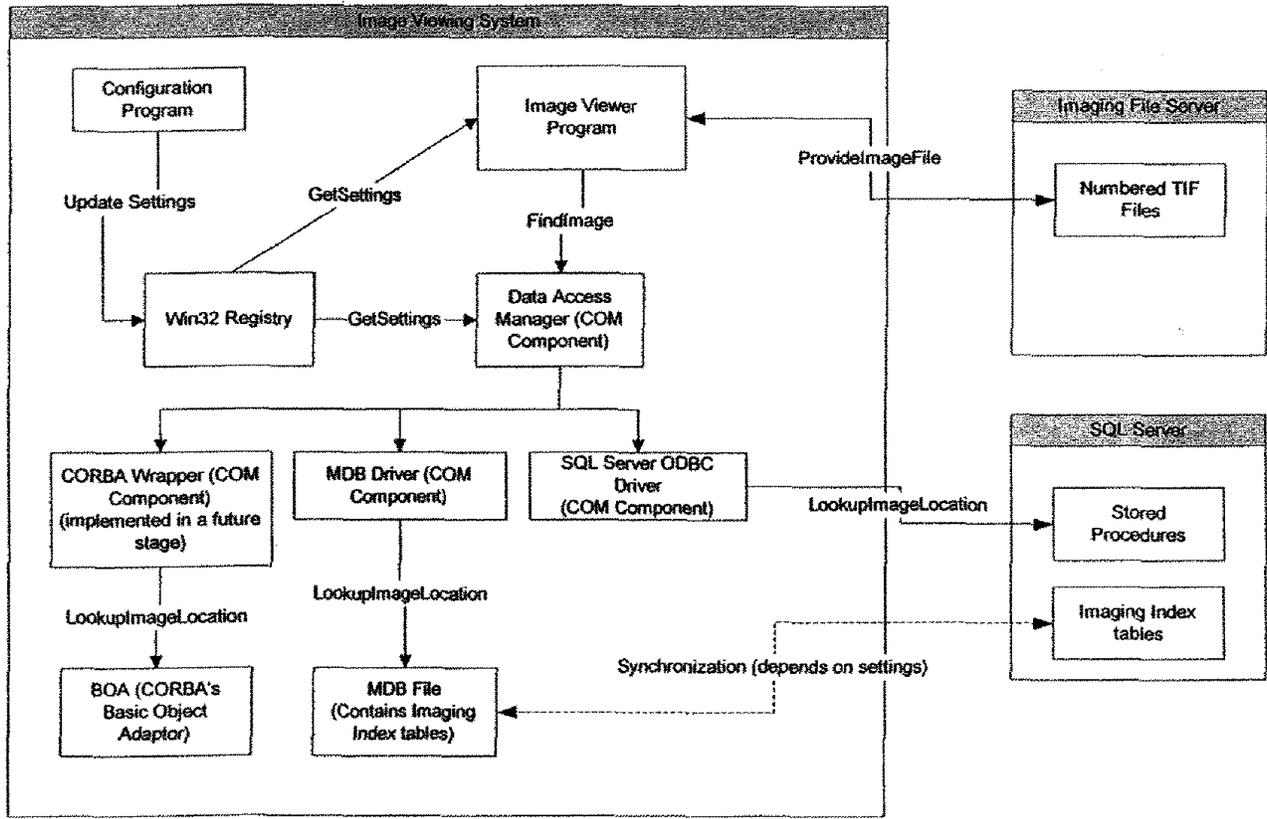
### Deployment Diagram

Here is the deployment diagram (using the UML definition of “deployment diagram”) for TG’s new imaging system.

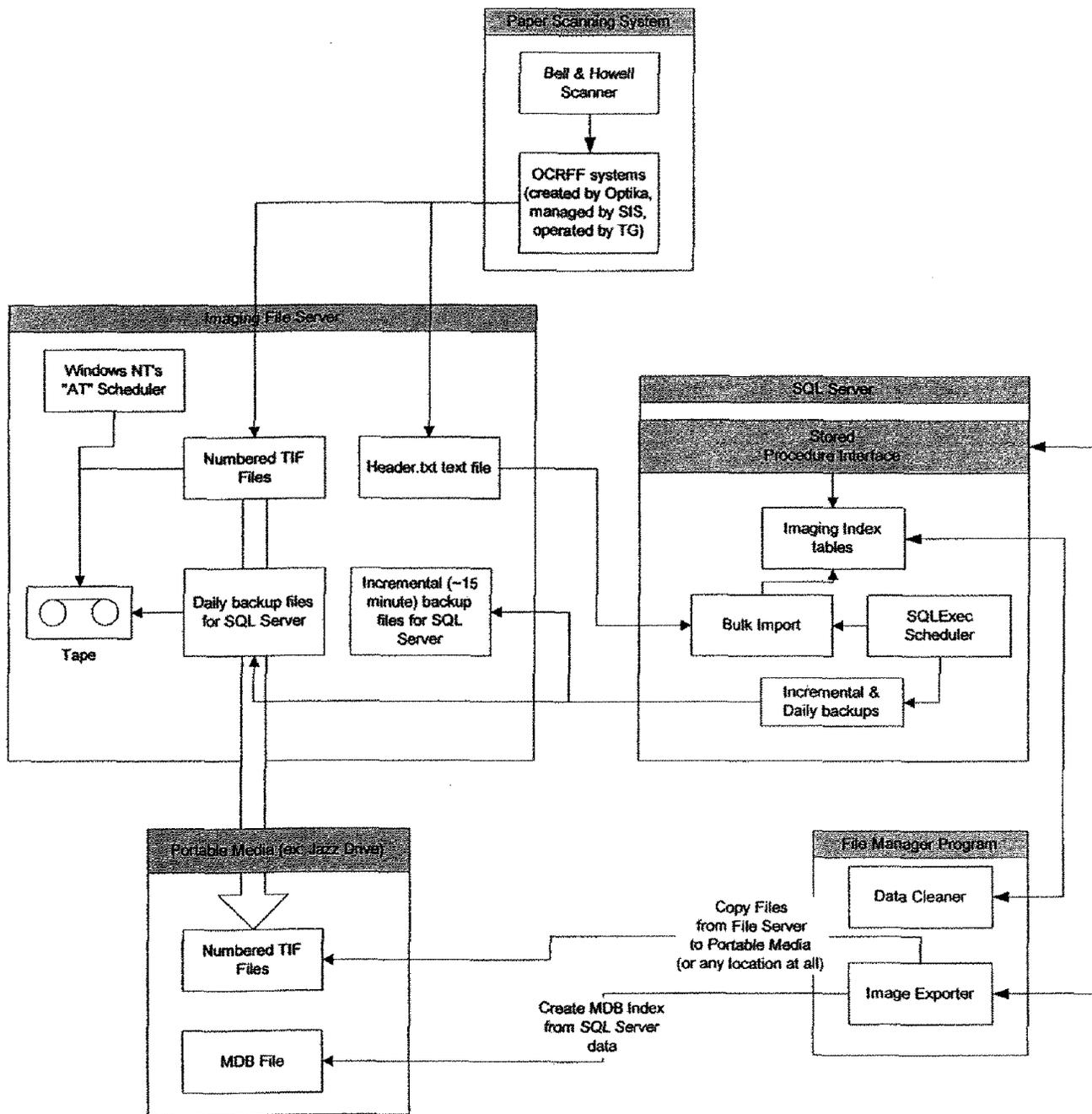
### Discussion of the Deployment Diagram

The first page of the deployment diagram concentrates on the system as seen from the perspective of the Image Viewer program, and related systems. The second page of the diagram shows the system as seen from the “back end,” that is, the server and administrative programs that end users do not usually see. As a result, the SQL Server and File Server are shown twice, even though only one instance of each exists for this system.

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Note: This becomes a standard method of exchanging TG Imaging Data: A number of Multi-page TIFFs and a single MDB file.

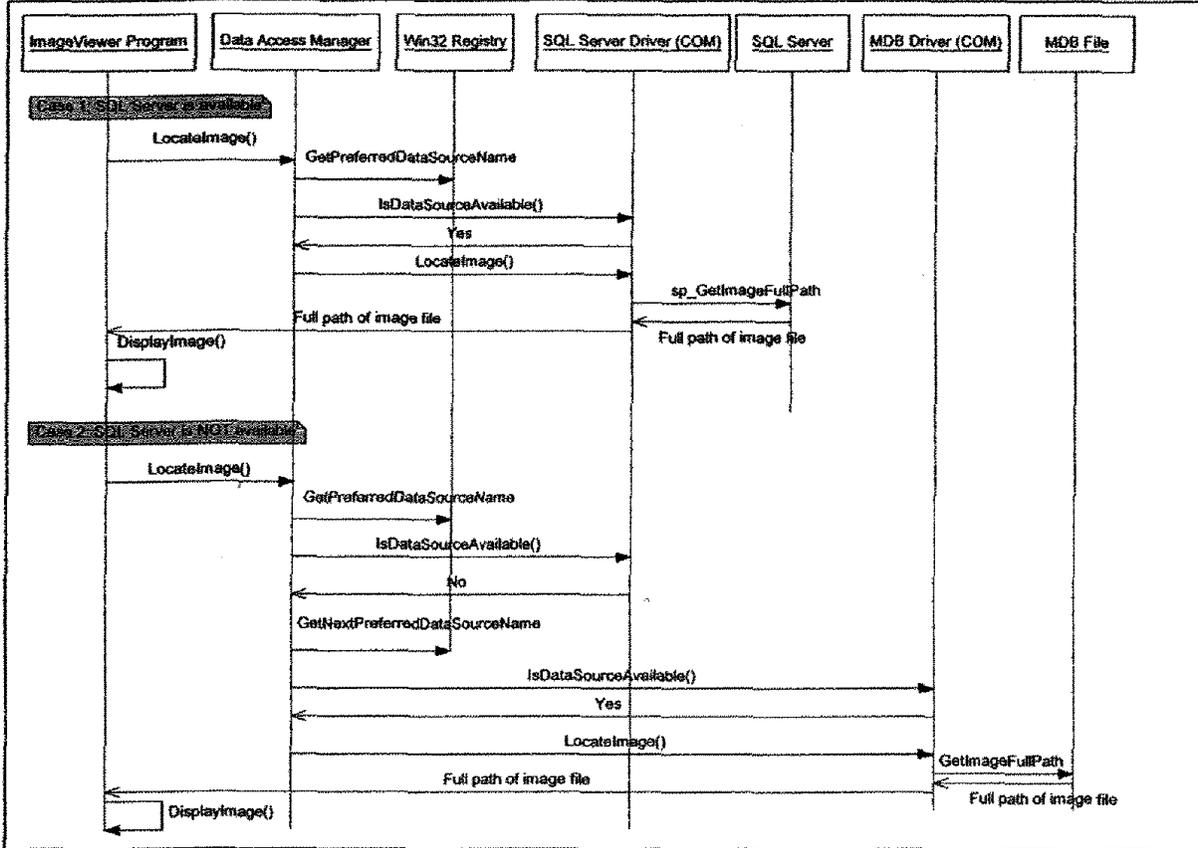
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# Sequence Diagrams

Here is a UML sequence diagram for the case when a SQL Server is available to the system:

Sequence Diagram: ViewAnImage

E:\vss\BureauViewer\Documentation\seqViewAnImage.Vob



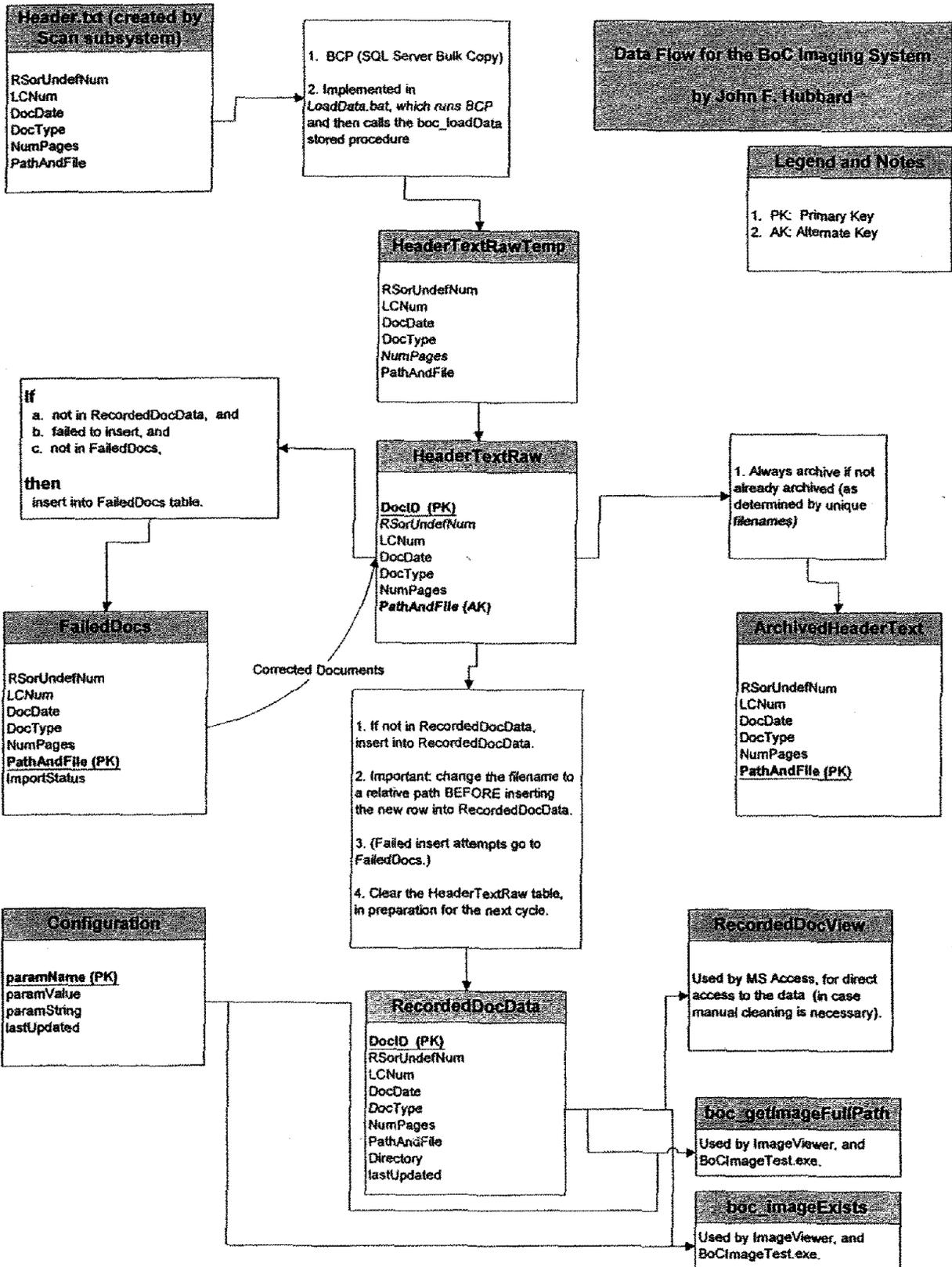
Date: Nov 9, 1998

Page: 1 of 1

Time: 12:13:39 PM

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**Data Flow for the BoC Imaging System**  
by John F. Hubbard



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## Technical Support

### Operating the System

Title Guaranty of Hawaii, Inc., operates the BoC system on site at the BoC. SIS provides support for scanning and OCR processing.

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### Design and Programming Support

Contact John F. Hubbard at Title Guaranty of Hawaii, Inc., for information about the architecture and design of the BoC Imaging System. Alternatively, any of the Windows programmers at Title Guaranty of Hawaii, Inc. can provide support in this area, as well.

# Glossary of Terms

## OCR

Optical Character Recognition. The process of reading information directly from an electronic image into alpha-numeric data that may be loaded into a database or text file. This is an inexact science, and often requires human intervention to ensure accuracy. SIS provides complete scanning and OCR systems that allow this to occur.

## SIS

Strategic Information Systems, 239 Merchant St., Honolulu, HI 96813. The company specializes in scanning and imaging systems.

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## **Minutes for the 6/1/98 Joint Information System Meeting**

**John Hubbard:** Gave an Imaging update. We met with SIS to determine needs for the PAL Project. We need to be sure that all of our Sub Projects are compatible with our Imaging System and future Imaging System.

We need to test Outlook 98 on a 486/33. Testing on a Pentium 100/16 was very slow.

We need to really determine who needs Office 97, Kulahuna and the full blown Outlook and when.

John needs to isolate himself to get the Title Plant Renovation Project completed. We set a deadline of July 1 to complete the programming.

**Paul Audet:** Update on Wang Conversion. Major Systems left to still do the initial conversion are GI, PI, TGC Daily and Typing. Equipment and software that we still need to purchase are the NCR Production Server, Ardent (fka UNIDATA) Data Base Product and Mascot.

**Jon Taira:** Before working on Y2K Projects the following projects need to be complete.

1. Write up a proposal to purchase 60 - 80 new PCs.
2. Proposal to purchase NT Servers for each branch to store and back up Kulahuna Data, and provide dial in capabilities.
3. Replace Ink Jet printers with Lexmark Printers.
4. Use a consultant to look at the Network.

It was decided that the TGOH Development Server could possibly be used to house the test Escrow System.

Mike brought up a concern that we are still not able to get reports out from our Kulahuna System.

**Lenny Fernandes:** PC's for the Bureau Project will be in this week. The set up and testing will be done on the 4<sup>th</sup> floor. Cynthia is the project

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lead. Our Virus Detecting Software discovered a virus from a diskette that we obtained from Pacific Century Trust.

Jerry Opedal: New Disk for Wang is installed. 5 Lexmark Printers to replace existing Imaging Printers should be in this week. Martin will be here June 29. We need to also set up a Lexmark in the Training Room. Projects being worked on. Supply Dun and Bradstreet data for Liens, Judgements and Court data, supply Bank of Hawaii with expiring UCC's, supply Tax Office with data for conveyance to replace the paper documents we now give them.

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## **Minutes for the 6/29/98 Joint Information System Meeting**

**John Hubbard:** The Title Plant Renovation Project is now on-line (completed). The Image Viewer for the Bureau Project is completed.

Mike asked John to look at what we need to do to be able to supply images to the Board of Realtors and possibly other Title Companies.

Screen Scan is still not working. John will be looking at a possible software issue with the interface card.

**Paul Audet:** Update on Wang Conversion. We met with David to discuss adding a disk to set up space for training on Escrow's System. Paul suggested that he and Debbie could spend about 2 weeks to get the system Year 2k compliant. Jon would rather wait until he and his staff have time to organize the system before doing the work.

**Jon Taira:** The merge of Head Office and Harbor Square Servers is pau. Escrow is looking to have an NT Server at every branch. Possible vendors are Dell, HP, Compaq and UNISYS. A single vendor to manage the NT Servers, PC's and all of the set up issues at the branch would be ideal. Jon proposed buying 15 Lexmark printers for the branches, along with the purchase of the NT Servers.

Last week Jon looked at a demo of Goldmine 4.0. Century Computers suggested that we use Crystal Report instead of the report function of Goldmine to get reports that we need.

**Jerry Opedal:** Martin will be here tomorrow.

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Complete Manual for TG's

# BoC Imaging System

**Version 2.03**

by John F. Hubbard  
Title Guaranty of Hawaii, Inc.  
*23 December, 1998*

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# Overview

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## What is the BoC Imaging System?

### BoC Imaging System

The BoC Imaging System is a generic imaging system that has been fitted for use at the Hawaii Bureau of Conveyances ("BoC"). It has the following capabilities:

1. Scan images.
2. Perform Optical Character Recognition (OCR) on the scanned images, thus extracting some basic information directly from the documents. The amount and type of information extracted in this manner depends upon the type of document being scanned; OCR templates exist for several key document types, including—for example—Regular System and Land Court System documents.
3. View the scanned images within a few minutes after the associated documents are scanned.
4. Export the documents, and the information associated with each (a combination of data extracted via OCR, and data known by the system) to other locations, such as:
  - a. Portable media (currently an Iomega Jazz drive), for transport back to Title Guaranty (TG), or other location.
  - b. Remote network locations.
5. Provide file and database management on site at the BoC. This allows the BoC to maintain the most recent  $n$  days' worth of images, where  $n$  is a function of how much hard drive space is available on the BoC file server. The BoC Imaging System automatically purges imaging files older than  $n$  days old, and updates the database that tracks these files, as well.
6. Provide a foundation for a general imaging system that can be used throughout TG. This entails providing the following items:
  - a. A standard SQL Server and File Server configuration.
  - b. A standard format for transporting imaging data, including both the image files and the corollary data associated with each image file.

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- c. A set of COM (Microsoft Component Object Model) components to support easy construction of an image viewer via Visual Basic (VB), Active Server Pages (ASP), VB Script, C/C++, or any other environment that supports COM.
- d. A set of COM components that provides "location transparency." This sounds complicated, but all it really means is that the VB programmer can call a function such as "FindTheImage" without having to specify whether the imaging index is in a SQL Server across the intranet, or in a Microsoft Access MDB file right there on the local computer.
- e. A basic, but "bulletproof" and highly polished image viewer that makes use of the COM components discussed above.

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# Installation

## Getting Started

Date	Upgrades Installed	The overall process of installing a complete BoC Imaging System is this:
12/16/1999	SP 5.0	<ol style="list-style-type: none"> <li>1. Identify one or two main servers. These will be your SQL Server and your File Server, respectively. For this discussion, it will be assumed that the SQL Server and File Server are both on the same Windows NT server; note that you may opt to split them onto two machines if you expect very heavy loading of the system.</li> </ol>
12/16/1999	SP 5a	<ol style="list-style-type: none"> <li>2. Install NT Server 4.0, service pack #4 or greater, on the server.</li> <li>3. Install SQL Server, service pack #4 or greater, on the server. Ensure that you allocate at least 50 Mb for the Master database.</li> <li>4. Adjust the amount of physical memory (RAM) allocated to SQL Server. See Microsoft's guidelines on this. At the time of this writing, the server had 256 Mb of RAM, so allocating about 64 Mb to SQL Server is reasonable (more if very large numbers of users are expected—which is not the case for the actual BoC installation).</li> <li>5. Increase the size of TempDB by adding new data and log devices, and expanding onto these. Use your knowledge of anticipated loading levels; 100 Mb total for TempDB is probably a good starting point.</li> <li>6. Within SQL Server, create a new database to hold Imaging Index tables. This document will assume you have called your new database "Imaging".</li> <li>7. Load the BoC database structure. This may be done in one of two ways:             <ol style="list-style-type: none"> <li>a. Restore from a backup ("dump") of a previously working BoC database, or</li> <li>b. Run the SQL or TSQ scripts provided on the BoC setup CDROM. These will create a blank BoC database, ready for use.</li> </ol> </li> <li>8. Set up SQL Server daily database dumps. (A "dump" is SQL Server's term for a backup. The backup can occur while the database is running.)</li> <li>9. Set up SQL Server incremental backups. The recommended interval is 15 to 60 minutes, on the low side of this if possible, to avoid data loss if someone makes a mistake while cleaning up the data.</li> </ol>

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10. Set up NT Server daily file backups to tape. This is easiest if NT 4.0 Resource Kit is installed, as it includes a command scheduler—basically just a GUI for the “AT” scheduler service, but a big help.
11. Set up SQLExec automatic bulk imports from the text file (called, by internal convention, “Header.txt”) to the SQL Server table “HeaderTXT” in the Imaging database. This is done by directing SQLExec to automatically run the script file LoadHeaderDotText.SQL, which is included on the BoC Imaging System setup CDROM.
12. On any PC that you want to use as an image viewer, run Setup.exe from the BoC Imaging System setup CDROM. A standard Installshield program will guide you through setting up the viewer.
13. Configure the image viewer by running the *separate* configuration program. It is separate because the general public (or at least, people who should not be messing with the core configuration) may be using the image viewer program, and we want to avoid support issues associated with accidental changes to the configuration.
14. On any PC that you want to use as a File Manager (there should really only be one of these, but there is no harm in setting up as many as you like, as long as you don’t become confused), run Setup.exe from the BoC Imaging System setup CDROM. The same Installshield program that installs the image viewer also installs the File Manager.
  - a. Often, you will find it convenient to place the File Manager on the main NT Server. This allows you to perform File Management tasks while others continue with scanning, viewing, and verifying documents.
15. Configure the File Manager by selecting **System | Configure** from the main menu of the File Manager program.
16. Install the scanner and the OCRFF Optika software on a Windows 95 computer. Configure it to scan to a location on the NT Server. The way this is done is by contacting SIS and asking them to take care of it, as they are the contractors responsible for keeping the scanning subsystem healthy and working.

Scanner → OCRFF Forms on NT (TG, BoC 2)  
 Indexing → OCRFF Forms on NT (TG, BoC 3)

currently on NT  
 ↓  
 Speed/perform. improved

## Installation Disclosure: What the setup program does to your system

Someday soon, it will probably be a legal requirement to disclose precisely what system changes the installation program is applying to your computer. For now, TG will take the lead by explaining what changes are applied to your computer when you install the BoC Imaging System. Here they are:

1. Your computer’s OLE substructure is upgraded, if necessary, to the latest version released by Microsoft. This is backward compatible, of course.
2. ODBC Drivers and the ODBC Driver Manager is installed. If it already exists, it is upgraded, if necessary, to the current version.

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3. BoC Imaging System settings are stored in the system registry, in this location: HKEY\_CURRENT\_USER\Software\Title Guaranty MFC-Based Applications\BoCImaging\Program Settings.
4. Several custom COM components are installed (or upgraded).

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# Operating the Imaging System

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## Operating the Imaging Database

### Re-scanning Documents

Should it be necessary—and it will be—to re-scan a document, you must first delete the document's record from the RecordedDocView table. Otherwise, the re-scanned document will show up in the FailedDataView table, rather than the final table ("RecordedDocView"), and will not be available to ImageViewer users.

As with the data cleaning techniques described below, this table may be reached by opening the icon labeled "BoCImagingSystem" on your computer's desktop. The BoCImagingSystem program is merely a custom-coded MS Access 8.0 database, that provides a portal into your Imaging System Database (which really resides within SQL Server).

### Basic Data Cleaning

Basic data cleaning refers to the need to ensure that the indexing information generated by the image scanning subsystem (assembled by the vendor, SIS) is correct. This data is gathered from an OCR of each document, based upon pre-assembled document templates for each type of document (Regular System, Land Court, Land Court Order, etc.).

There are four general classes of bad data that are routinely fed into the Imaging Database, from the scanning subsystem:

1. The **doubled-date** problem. This will cause the document to be reported on the Missing Documents report. The document will show up in the FailedDataView table in the BoCImagingSystem.mdb viewer. It is easy to identify and easy to fix: look for two dates in a row, such as: 12-20-199812-20-1998. Manually edit this so only a single correct date remains, then change the "ImportStatus" column to read "N" rather than "F". The database will automatically move this record into the final table ("RecordedDocView") on the next cycle. As of this writing, cycles occur every 5 minutes.
2. The **missing document** problem. This will cause the document to be reported on the Missing Documents report. The document will may, or may not, show up in the FailedDataView table. If it

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does not show up in the Missing Documents report, it may be part of a merged document; see item (3) below to solve that problem. Otherwise, follow the same steps as in (1) above, for a doubled date problem, except: instead of fixing the doubled date, fix any other obvious problem with the record. If you can not figure it out, you can always (as a last resort, usually) delete the document from the FailedDataView table, and rescan it. It should then show up after the next database cycle.

3. The **merged document** problem. This will cause the document to be reported on the Missing Documents report. The document will show up in the FailedDataView table in the BoCImagingSystem.mdb viewer, but it will look perfectly OK. The key to solving this little mystery is that the file name already exists in the final table ("RecordedDocView"), as you can verify by searching for the file name in RecordedDocView. The solution is not so elegant: delete the record with that file name from both the RecordedDocView table, and the FailedDataView table. Then rescan all documents (there may be more than two documents merged, this can best be determined by viewing the actual images in the image viewer), and wait for the next database cycle to verify that they make it in successfully.
4. The **missing digit** problem. This has much the same symptoms and solutions as the double date problem. Instead of a doubled date, however, you will notice that the document number has one digit missing (either from the left or right end). Correct this, but be sure you have entered the correct number. It is best to open the actual image file (search for the file on the server, then double-click on the file to open it in the Wang Image Viewer), and verify the real document number. Change ImportStatus to "N", and the record should make its way into the final table during the next database cycle.

## Advanced Data Cleaning

Please refer to the database diagram on page 15. I will describe the data flow through this system, because understanding this data flow is a prerequisite to advanced data cleaning.

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# Interface

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## How to Read the Interface Documentation

For the convenience of the actual intended users of this component, the interface function definitions are provided below in the Visual Basic language. Read them as if you were looking up a function in Microsoft's VB 5.0 Language Reference Manual. In fact, the exact same documentation conventions are used to describe these functions; please refer to the VB Language Reference Manual if there are questions in this area.

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## GetImageFullPath Method

Returns the full path and filename of the image file.

### Applies To

ImageManager object (or the IImageManager interface, if using C/C++)

### Syntax

```
returnValue = object.GetImageFullPath (sUniqueKey, sDocumentType)
```

The GetImageFullPath method has these parts:

<u>Part</u>	<u>Description</u>
<i>object</i>	An object expression that evaluates to an object in the Applies To list.
<i>sUniqueKey</i>	An alphanumeric value uniquely identifying the document you wish to retrieve.
<i>sDocumentType</i>	A standard abbreviation denoting the document type. There are enumerated below.
<i>returnValue</i>	A string containing the full path and filename of the image file.

<u>Abbreviation</u>	<u>Description</u>
RS	A Regular System document. This is a BoC recorded document (which means that the number is guaranteed to be unique, and is tracked by the BoC).

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LC	A Land Court document. This is a BoC recorded document.
DS	A Double System document. This is recorded under both the RS and LC systems. You may supply either the RS or the LC number, if you specify DS. Alternately, you may provide the RS number and specify "RS" as the document type, or provide the LC number and specify "LC" as the document type.
LCO	A Land Court Order document. This is a BoC recorded document.
LP	A Liber Page document. This is a BoC recorded document.
CTC	Land Court Order document. This is NOT a BoC recorded document. (However, it accompanies either a RS or LC document.)

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## ImageExists Method

Returns true if the specified image exists in the BoC Imaging System; false otherwise. This is a very fast routine, designed so that you can use it to quickly check for document existence before actually asking for the location of the image (which is a slightly slower operation).

### Applies To

**ImageManager** object (or the **IImageManager** interface, if using C/C++)

### Syntax

```
returnValue = object.GetImageFullPath (sUniqueKey, sDocumentType)
```

The GetImageFullPath method has these parts:

<u>Part</u>	<u>Description</u>
<i>Object</i>	An object expression that evaluates to an object in the Applies To list.
<i>SUniqueKey</i>	An alphanumeric value uniquely identifying the document you wish to retrieve.
<i>SDocumentType</i>	A standard abbreviation denoting the document type. There are enumerated below.
<i>ReturnValue</i>	A boolean value. True if the image exists in the BoC Imaging System; false otherwise..

Please refer to the "GetImageFullPath Method" on page 8 for valid document type abbreviations.

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## Version Property

(Read-only). Returns a string containing version information for the BoC Imaging System.

### Applies To

**ImageManager** object (or the **IImageManager** interface, if using C/C++)

### Syntax

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**object.Version**

The Version property has these parts:

<b><u>Part</u></b>	<b><u>Description</u></b>
<i>object</i>	An object expression that evaluates to an object in the Applies To list.
<i>Return value</i>	String. Version information for BoC Imaging System.

# System Diagrams and Design Records

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## Architecture

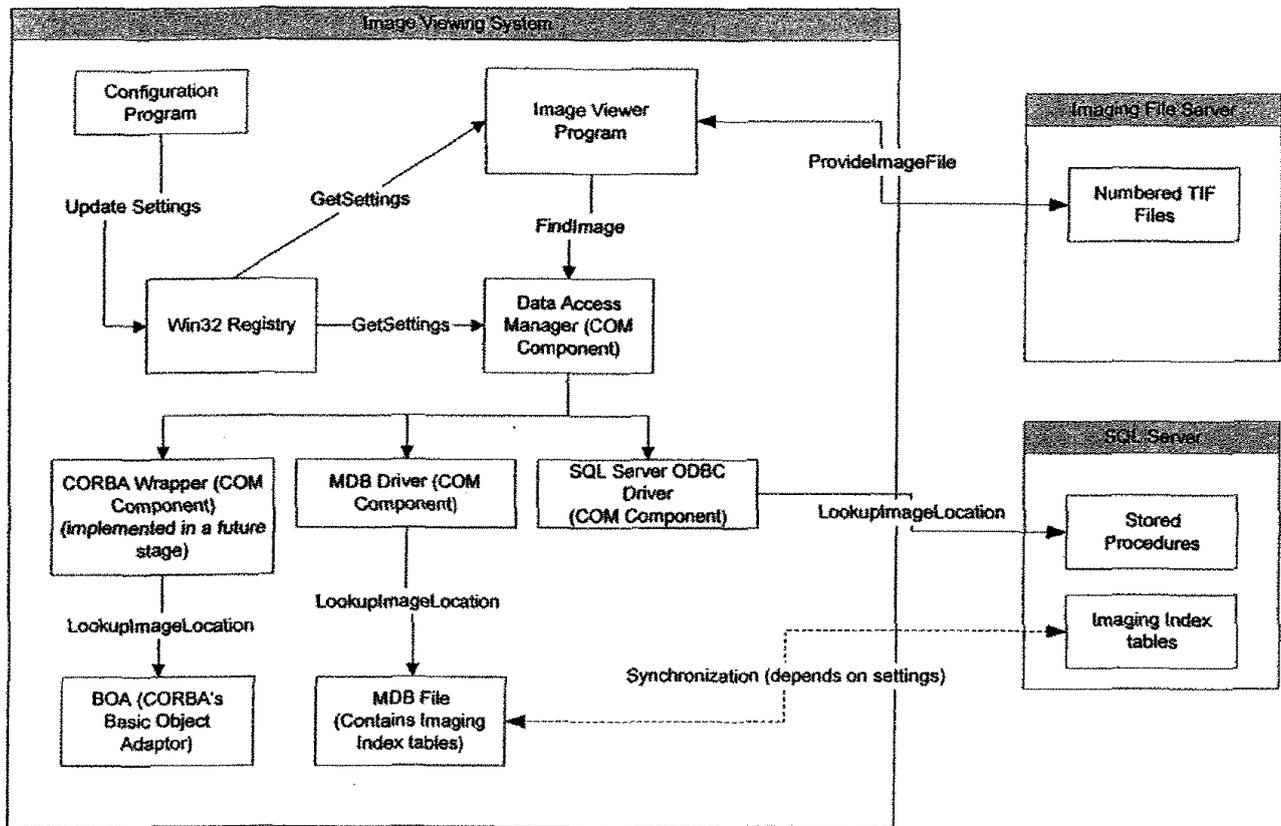
### Deployment Diagram

Here is the deployment diagram (using the UML definition of “deployment diagram”) for TG’s new imaging system.

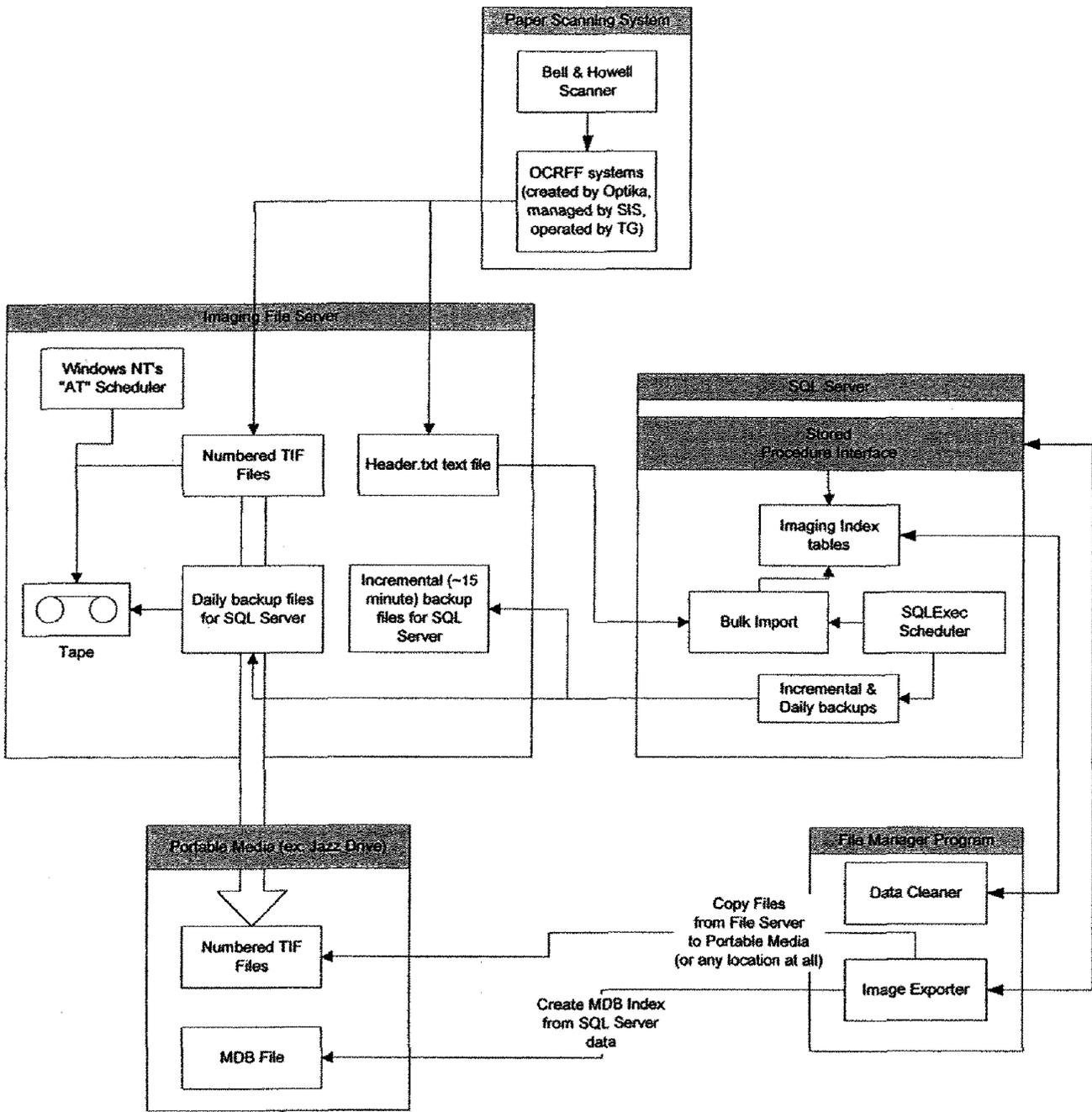
### Discussion of the Deployment Diagram

The first page of the deployment diagram concentrates on the system as seen from the perspective of the Image Viewer program, and related systems. The second page of the diagram shows the system as seen from the “back end,” that is, the server and *administrative programs that end users do not usually see*. As a result, the SQL Server and File Server are shown twice, even though only one instance of each exists for this system.

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Note: This becomes a standard method of exchanging TG Imaging Data: A number of Multi-page TIFFs and a single MDB file.

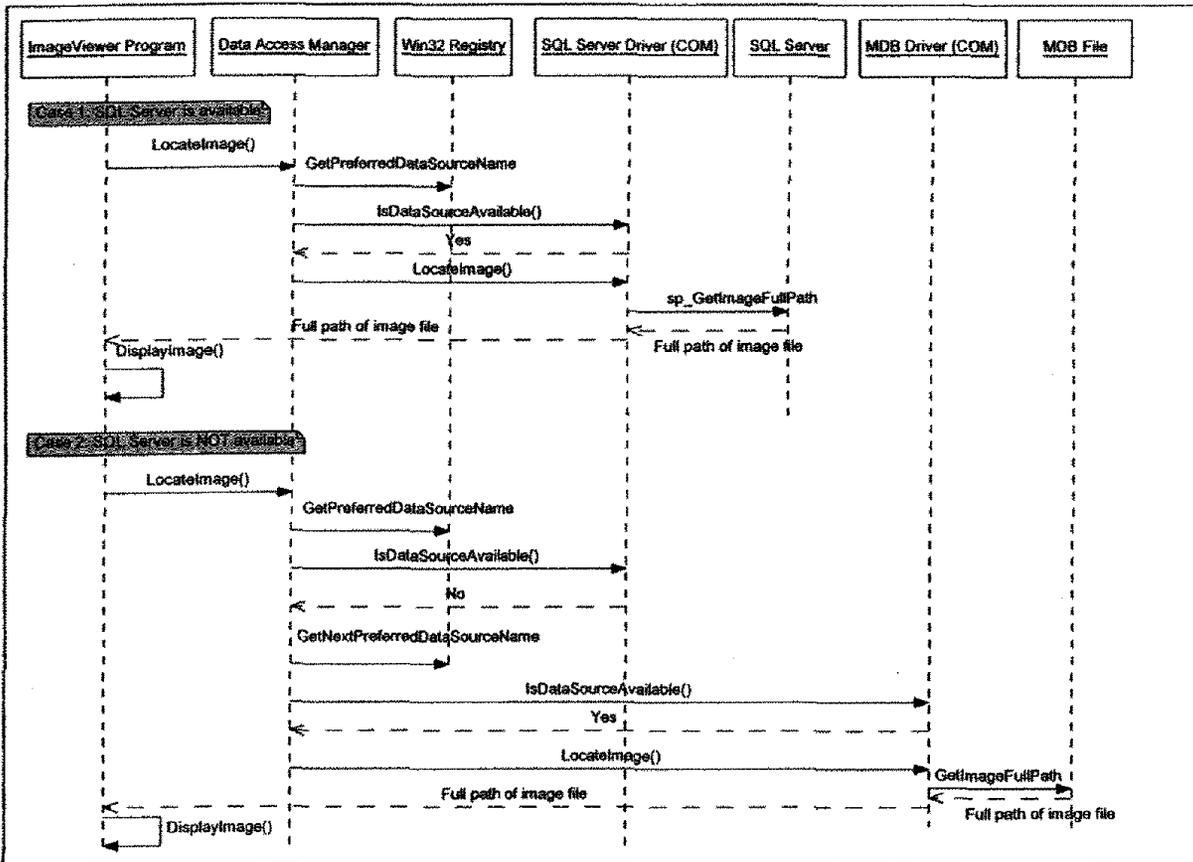
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# Sequence Diagrams

Here is a UML sequence diagram for the case when a SQL Server is available to the system:

Sequence Diagram: ViewAnImage

E:\vss\Bureau\Viewer\Documentation\seq\viewAnImage.Vob



Date: Nov 9, 1998

Page: 1 of 1

Time: 12:13:39 PM

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**Data Flow for the BoC Imaging System**  
by John F. Hubbard

**Legend and Notes**

1. PK: Primary Key  
2. AK: Alternate Key

**Header.txt (created by Scan subsystem)**

RSorUndefNum
LCNum
DocDate
DocType
NumPages
PathAndFile

1. BCP (SQL Server Bulk Copy)  
2. Implemented in LoadData.bat, which runs BCP and then calls the boc\_loadData stored procedure

**HeaderTextRawTemp**

RSorUndefNum
LCNum
DocDate
DocType
NumPages
PathAndFile

**if**  
a. not in RecordedDocData, and  
b. failed to insert, and  
c. not in FailedDocs,  
**then**  
insert into FailedDocs table.

1. Always archive if not already archived (as determined by unique filenames)

**FailedDocs**

RSorUndefNum
LCNum
DocDate
DocType
NumPages
<u>PathAndFile (PK)</u>
importStatus

**HeaderTextRaw**

DocID (PK)
RSorUndefNum
LCNum
DocDate
DocType
NumPages
PathAndFile (AK)

**ArchivedHeaderText**

RSorUndefNum
LCNum
DocDate
DocType
NumPages
<u>PathAndFile (PK)</u>

Corrected Documents

1. If not in RecordedDocData, insert into RecordedDocData.  
2. Important: change the filename to a relative path BEFORE inserting the new row into RecordedDocData.  
3. (Failed insert attempts go to FailedDocs.)  
4. Clear the HeaderTextRaw table, in preparation for the next cycle.

**Configuration**

<u>paramName (PK)</u>
paramValue
paramString
lastUpdated

**RecordedDocData**

DocID (PK)
RSorUndefNum
LCNum
DocDate
DocType
NumPages
PathAndFile
Directory
lastUpdated

**RecordedDocView**  
Used by MS Access, for direct access to the data (in case manual clearing is necessary).

**boc\_getImageFullPath**  
Used by ImageViewer, and BoCImageTest.exe.

**boc\_imageExists**  
Used by ImageViewer, and BoCImageTest.exe.

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## Technical Support

### Operating the System

Title Guaranty of Hawaii, Inc., operates the BoC system on site at the BoC. SIS provides support for scanning and OCR processing.

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### Design and Programming Support

Contact John F. Hubbard at Title Guaranty of Hawaii, Inc., for information about the architecture and design of the BoC Imaging System. Alternatively, any of the Windows programmers at Title Guaranty of Hawaii, Inc. can provide support in this area, as well.

# Glossary of Terms

## OCR

Optical Character Recognition. The process of reading information directly from an electronic image into alpha-numeric data that may be loaded into a database or text file. This is an inexact science, and often requires human intervention to ensure accuracy. SIS provides complete scanning and OCR systems that allow this to occur.

## SIS

Strategic Information Systems, 239 Merchant St., Honolulu, HI 96813. The company specializes in scanning and imaging systems.

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