

**Capital Blue Cross**  
Independent Licensee of the Blue Cross and Blue Shield Association  
**Harrisburg, Pennsylvania**

**North American Excellence Award: Gold, Imaging**

Executive Summary:

Capital Blue Cross is the largest health insurer in Central Pennsylvania and the Lehigh Valley, serving nearly 1.5 million members in a 21-county region. Capital Blue Cross customers with Comprehensive Major Medical and Wraparound Major Medical coverage can be assured their claims are handled as efficiently as possible through the CBC Sigma Omnidesk system and Pennsylvania Blue Shield IBM ImagePlus system. Pennsylvania Blue Shield is also an independent licensee of the Blue Cross and Blue Shield Association. The CBC system invisibly uses automatic retrieval robots to interface with PBS and CBC mainframes and imaging systems for claims retrieval, conversion and processing among four locations. This imaging process, along with others, has reduced CBC's annual two million claims throughput by seven days.

The system is a result of a three-year, four-phase imaging implementation and internalization program across CBC to improve productivity and reduce costs. By late 1995, the high volume imaging system had completely automated over 60 percent of CBC's claims processing business. Like other imaging systems, the CBC implementation has achieved significant improvements in productivity while realizing substantial cost reductions. Specific benefits included:

- Lowered Claim Processing turnaround time by more than seven days
- Increased Claim Processing productivity by more than 25 percent
- Reduced Claims Processing costs by more than \$3.5 million over five years with a two year payback
- Reduced ongoing expenses by \$1.1–\$1.9 million annually through staff reduction of 220 FTEs through 1998
- Improved customer service by reducing call-backs and providing quick access to information

The final CBC system distinguishes itself from other imaging systems because it represents more than a single implementation within a single organization. Instead, it demonstrates a successful, wide-ranging imaging deployment in and across organizations with unique substantial benefits, system scope, and technology innovation and implementation approaches.

**Substantial Benefits:** In addition to claiming imaging benefits like other organizations, CBC's system has contributed to its enhanced ranking among other independent Blue Cross and Blue Shield Plans throughout the country.

**System Scope:** The CBC system eliminates paper in a claims processing environment coordinated among *four locations, across three separate organizations, between two distinct imaging platforms, for over 1,500 CBC system users*. As such, the system operates with processing dynamics much broader than most other imaging systems in the country. **Imaging World** considers this imaging implementation to be a leading example of horizontal imaging integration across separate organizations.

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**Technology Innovation:** During its four phases, CBC introduced leading applications of imaging technology including:

- Implementation of dynamic image transfer between different image system formats
- Introduction of user-oriented production tools which augmented the capabilities of imaging
- Integration of advanced technology in scanners, jukeboxes and PCs
- Coordination of multiple mainframe systems with different imaging systems
- Use of leading workflow technologies such as priority routing, dynamic load balancing and time and event queue processing
- This innovative use of technology contributes to making CBC a leader in imaging technology application.

**Implementation Approach:** CBC launched its imaging program with an orientation toward building an enterprise system and internalizing support capability. This was achieved by:

- Successfully implementing a phased roll-out of imaging
- Gradually “transferring knowledge” from its integrators to CBC for full system internalization
- Effectively coordinating imaging integrators and vendor products such as The Image Consulting Group (ICG), Wang Laboratories Inc. (Wang) and IBM, to ensure proper implementation across all development phases.

This orientation toward implementation is unique because it demonstrates a complete internalization of skills, operations, and support, making the CBC’s phased, internalized roll-out a model alternative approach for all major imaging implementations.

In 1996, the final CBC system captured 4,395,135 pages (supporting 1,103,167 claims) through four high-speed Kodak scanners where claims are assigned a single tracking number. From there, eight servers dynamically load-balance and route the claims to 300 claims processors who use Image Assisted Data Entry functions such as field highlighting, automated data loading and data edits to complete and check data entry.

Workstation automation assists the claims processors in checking member profiles and submitting claims to the mainframe systems for adjudication. Should a claim suspend from the adjudication process, it is routed to a Suspense Processing queue for further analysis. During suspense processing, analysts can dynamically access any claim images stored on one of CBC’s four Sigma based Hewlett-Packard large capacity jukeboxes (with high-density drives). Meanwhile, any of CBC’s 1,500-plus users have the ability to print or route/print images for review in supporting customer inquiries and related processing.

CBC made claim processor participation essential to the overall success and internalization of the system. From initial project kickoff in 1992, CBC maintained an Imaging Project Team and the objective that the new system for should be created with considerable involvement from CBC claims processors. As a result, the CBC Imaging Project Team actively participated in Joint Application Development sessions, Design Reviews and Developmental Prototype Demonstrations through all phases. This approach contributed to building an understanding of system capabilities that now allows the claims processors to suggest and in many instances develop macros themselves to enhance workstation efficiencies.

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CBC's Claims Processing Imaging System generates the superior productivity and cost reduction benefits which have enabled CBC to become an outstanding performer in the healthcare insurance industry. The evolution of the imaging systems also embodies the inherent scope, innovation, and approach that are elusive to many organizations implementing imaging technology today. As such, the CBC imaging system is one of only a handful of implementation stories that can offer a model approach toward a comprehensive and extensive application of imaging technology.

***1.) Describe the system application. What the system is used for, who are the users and what does the job entail? How often or how many hours is the system in use on a daily basis.***

### **Overview**

The phased implementation began in early 1993 and culminated in mid-1995. Like most imaging installations, the system involves workflow and routing. In the CBC system, the focus is predominately on the high-volume processing and availability of images of health insurance claims.

- Phase I: In early 1993, Wang, ICG and the CBC Imaging Project Team moved a 20-station pilot imaging environment into production to handle 200 claims per day. This area used high volume imaging viewing and routing capabilities to facilitate decision-making on claims. Once decisions were made, claims were submitted to an adjudication process on CBC's IBM mainframe. If a claim suspended because it could not be fully adjudicated, it would automatically route to a Claims Processor. Before resubmitting the claim to the host adjudication process, the claims processor would correct the claim data by viewing the image.
- Phase II: By mid-1994, ICG and CBC had expanded the CBC imaging system to a production environment for 300 users and two million claims per year, 8.5 million pages. During this expansion, CBC established T1 telecommunication lines to two remote facilities and replaced all microfilm storage with imaging. CBC installed three additional Kodak high-speed scanners and four new Hewlett-Packard large capacity jukeboxes to service increased processing volumes. Six newly installed servers used Wang/Sigma's new domain architecture to appear as a single system. To provide universal access to images for all its employees, CBC provided 1,500 host terminal users with the capability to print images or route the print output to any other location.
- Phase III: By spring of 1995, CBC had completely internalized and formalized imaging on the Sigma platform. Meanwhile, PBS had formalized imaging on IBM's ImagePlus platform. Each day PBS received and scanned Comprehensive Major Medical claims that had to be printed and manually shipped to the COMP I Center for processing. (Note: The COMP I Center is a joint venture of Capital Blue Cross, Pennsylvania Blue Shield and Blue Cross of North Eastern PA.) To eliminate imaging at both locations and reduce this three-day process, CBC and PBS, with ICG, developed automatic robotics processes which transferred images on both the IBM ImagePlus System to the Wang OPEN/image™ software imaging system, in both on-line and batch modes. Therefore, claims were scanned and stored only once.
- Phase IV: In the summer of 1995, as CBC built upon its internal imaging expertise, it augmented the functionality for its claims processors by introducing Image

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Assisted Data Entry (IADE), providing features such as field highlighting, loading and checking, to speed data entry. As part of this Phase, CBC also performed comprehensive upgrades of imaging software and hardware. In addition, operational enhancements introduced by system users were incorporated into the system.

CBC's final image system now provides claims processing throughout seven specific steps of operation: Image Capture/Indexing, Preprocess Coding, Workflow Routing, Claims Processing, Suspense Processing, Claimant Notification and Customer Service.

### ***Image Capture and Indexing:***

The final CBC imaging system captures and indexes image in two ways:

1. The PO Box number is applied to get the claims to document preparation. Users then perform pre-coding functions by indexing/sorting the claims. Certain claims have a barcode sheet attached and are routed by this barcode to specific claims processors. The majority of quality review occurs on the floor by the claims processors who send unreadable documents back to the rescan workstation for enhancements.
2. The CBC imaging system handles a large variety of incoming documents, of which 95 percent are handwritten or involve small drug receipts. In the first three phases, CBC delayed the introduction of OCR/ICR technologies because its effect on their inbound documents was limited. CBC is evaluating selective OCR/ICR preprocessing routines that can capture specific incoming data.
3. Comprehensive Major Medical claims mailed to PBS are prepared and scanned at PBS. Each night, an automated robotics process joining CBC and PBS servers, triggers the PBS mainframe to download and convert the PBS data claim record and associated ImagePlus images into batches. The images are then converted into CBC's Sigma imaging system
4. 3.Customer service representatives that require copies of comprehensive claims that were not batched to CBC overnight can retrieve these claims images directly from PBS' ImagePlus system dynamically by invoking the batch process through a single keystroke. The image is retrieved from the PBS mainframe and image system, converted and displayed into the CBC Sigma system within an average of 30 seconds using background processing. This approach replaced the previous one that took 2—3 days.

### ***Pre-Process Coding:***

After documents are captured, they are routed to claims processors for initial data entry preprocessing. When coding, claims processors view the image and a mainframe data-entry screen. Claims processors can complete the claims entry forms much, much faster using image-assisted-data-entry (IADE), consisting of field highlights, table lookups, field zoning/zooming and automatic field loading.

During coding, the CBC mainframe system performs Record Data Evaluation (RDE) consisting of spelling checks and logical data evaluations (i.e., provider, contract number, etc.). The system then accesses the CBC mainframe enrollment file to determine whether the customer is a valid CBC member. If a customer is not a CBC member, the claim is marked as an exception and routed to an exception queue. Any

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other exceptions during this validation process are flagged and handled in the same manner. Upon coding completion, mainframe fields automatically populate required image record data fields that will be used in the routing of image and data records.

### ***Workflow Routing:***

Once coded, the system establishes a priority order of claims processing. Because operational rules have been structured into exclusive hierarchies which trigger processing only in select instances, claims processing throughput is significantly faster than single level rule-based systems. During this stage, claims processors can also route claims to/from supervisors for review.

### ***Claims Processing:***

The CBC claims processors manage their work queues based upon a First-In/First-Out (FIFO) order established by the operating workflow rules. Multiple images from the client/server image system and multiple data fields from the CBC mainframe can be viewed on a single CBC image workstation. Data entry feeds both image and data records simultaneously, as required to eliminate the need for duplicate keying. If claims processors encounter a situation that requires a manager's opinion, the processor can prioritize and route the claim to a manager for immediate review. The manager can annotate the image with an opinion and return the claim to the processor.

After the claims processor finishes his/her review, the data is submitted to a Suspense Processing stage in the CBC mainframe application ESP (Electronic Suspense Processing) which matches a member's profile and history with the current claim. If, for whatever reason, the system can not process or pay the claim, the claim is suspended and forwarded to a suspend queue for processing. If the claim is payable, the mainframe system coordinates the appropriate record to notify the member.

### ***Suspense Processing:***

Suspense processors handle those claims that the CBC mainframe system identifies as exceptions. While researching the nature of the exception, suspense processors may access images, as well as annotation by the claims analyst that are associated with the image. Suspense processors can also route images and annotations for research.

### ***Claimant Notification:***

When a claim is processed successfully, the mainframe system either generates a check or prints an Explanation of Benefits (EOB) that will be mailed to the claimant. After printing, the image system removes claims from the cache to allow for faster processing. In the future, a claims processor requiring an image of a previously processed claim can retrieve it from one of the four high capacity on-line jukeboxes.

### ***Customer Service:***

CBC researches and resolves inquiries identified by mail, phone calls and faxes received from its customers. If the inquiry concerns major medical claims, customer service representatives have access to claim images and claim data screens as necessary to answer questions. Retrieval of mainframe data can automatically trigger a request to the image system to retrieve associated claim images. CBC customer service representatives use mainframe and image data to create a customer correspondence. Fax or U.S. mail can then deliver this correspondence. In addition, CBC's other 1500-

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plus employees operating on 3270-type terminals have the capability of printing claim images at a central site for review, or printing them remotely for other processors to review.

If customer service representatives determine that an error has occurred during processing, they can push a single key to create a new claim. They can then enter any pertinent information and route the new claim to the claims processor for adjudications. This process expedites correction and improves customer service by allowing customer service representatives to handle many problems on line that previously called for resubmitting the claim manually. This allows CBC to fully utilize the expertise and experience developed within each of the departments.

### ***2.) What were the key motivations behind installing the system?***

Providing quality service through the most efficient methods is a major goal of CBC and PBS. The National Management Information System (NMIS) creates standards of excellence in service quality and costs for independent Blue Cross and Blue Shield Plans in order to ensure consistency and quality within the Blue Cross and Blue Shield Association. Each Blue Cross and Blue Shield Plan must meet or exceed NMIS standards; and, each year the Plans are ranked by their performance against the NMIS standards. Competition is keen. Both service quality and costs must be managed equally, with little option to raise cost or lower service levels.

In 1992, CBC launched the evaluation of imaging technology to eliminate existing backlog reducing overall start-to-completion processing timeframe and address a growing concern regarding the rapid growth in major medical claims (and staff to process) that are primarily paper based, hand written and submitted by individual members. CBC had outlined a four-phase implementation approach that called for cost justification of each phase.

By mid-1995, CBC had experienced more than a 25 percent increase in operating performance. As a result, over 100 employees had been "freed-up" by imaging so they could be allocated to other operations. In addition, claims processing timeframes diminished by seven days while eliminating the need for night shift processing.

CBC was able to improve service and reduce costs effectively due to a successfully orchestrated and choreographed project approach to imaging. This involved a phased implementation of imaging technology, controlled introduction of leading edge technologies, construction of an internal development team to absorb integrators' transfer of knowledge, and the on-going education of system users to foster evolutionary enhancements to the system.

### ***3.) Please describe the current system configuration (number and type of software, servers, scanners, printers, storage devices, etc.).***

The final CBC Claims Processing System currently consists of the following configuration:

#### ***Parameters:***

Sites (5):	CBC (Capital Blue Cross):	Lehigh Valley
		Harrisburg East Shore (Elmerton Ave.)

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		Harrisburg West Shore (State St.)
	PBS (Penn. Blue Shield):	Pennsylvania Blue Shield Main Office
	CBC/PBS:	COMP I(Comprehensive Major Medical Claims Processing)
Image Systems:	CBC:	Wang OPEN/image (Sigma Omnidesk)
	PBS:	IBM Image Plus
Mainfram es:	CBC:	IBM ES9000: CICS Application
	PBS:	IBM Multiple Mainframe Environment
Volumes:	Claims:	1,000,000 plus per year
	Claims (Comprehensive):	50,000 per year
	Pages:	8,500,000 per year
Operation s:	Operators On-line:	6:30am–4:30pm Mon.– Fri.
	Operators Off-line:	8:00pm–9:00pm nightly backup and batch processing

CBC Claims System:		CBC Sites: <u>Number</u>		
		West	East	High
Scanners:	Kodak 923 (upgraded from 900)	4	0	0
Workstations:	IBM 486, 66Mhz or Pentiums	215	260	50
	16 MB RAM			
	560 MB Hard Drive			
	2 MB Winsprint 1000I Video Card			
	Windows 3.1			
	Image Print Enabled 3270 terminals	500	900	100
Monitors:	Hitachi 20" Super Scan Color	1	6	5

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	Monitor	90	0	0
	1600 x 1200 Resolution			
	72 hz scan rate			
Image Servers:	IBM Model 95 Pentiums	8	0	0
	32 MB RAM			
	4 x 2 GB Hard Drive			
	OS/2			
	Wang OPEN/image (Sigma Omnidesk) Software			
	IBM DB2/2			
Printer:	HP-IV SI	5	5	2
Print Servers:	IBM PS/2 Model 90	5	5	2
	16 MB RAM			
	500 MB Hard Drive			
	OS/2			
	Wang OPEN/image (Sigma Omnidesk) Software			
Jukebox:	Hewlett-Packard 200T	4	0	0
Jukebox Controller:	IBM PS/2 Model 95	4	0	0
	16 MB RAM			
	1 GB Hard Drive			
LAN:	IBM Token Ring-6 Mbit/sec		1	1
	OS/2 LAN Server			
Communications:	PCOM (3270 Emulation)		1	1
	T1 lines to all 3 CBC sites:			

PBS & CBC COMP (Comprehensive System):		P	COM	PB
			S	
OPEN/images Communications	T1 Line to/from PBS	1		1
LAN:	IBM Token Ring-6Mbit/sec	1		1
Image Transfer Robots:	IBM PS/2 Model 90	1		1



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	16 MB RAM
	500 MB Hard Drive
	Wang (Sigma) LAN Communication Facility

### **4.) How is this system integrated with the company's other information processing systems?**

The CBC client/server based Claims Processing System is unique because it integrates with three major information processing environments:

The CBC Mainframe environment including the CBC's:

SAMM (Shared Automated Major Medical) system, including

ESP (Electronic Suspense Processing) claims processing systems

The PBS mainframe-based claims processing system

The PBS mainframe-based ImagePlus image processing system

### **CBC Mainframe Environment:**

Integration into the CBC mainframe environment took five forms:

1. During *Pre-Process Coding*, "single entry" techniques were used to ensure that data input into the CBC mainframe is transferred automatically to the imaging system to eliminate dual data entry in both systems. Integration with the CBC, SAMM and ESP system is accomplished by using extensive DDE and HLLAPI interfaces to the host via Windows based terminal emulation.
2. Later, during *Claims Processing*, retrieval of mainframe data screen triggers the automatic retrieval of associated images by using the mainframe data to launch an image system search and provide view-to-the workstation capability.
3. After claim adjudication, the mainframe ESP system passes exception claims that have "suspended" back to the suspense processors for *Suspense Processing*. During that step, suspense processors can navigate to appropriate host screens and view claim images together to access all data necessary to research the claim. Data received from the host is used to route the record and image to the suspense processor for exception resolution.
4. When performing *Customer Service*, representatives use mainframe data queries to launch retrievals of corresponding images (when desired) in order to more quickly respond to customer inquiries.
5. Through the *Image Printing* function, CBC marries mainframe host terminals to the image client-server environment to allow all PC and Terminal users the ability to print. This function also provides users the ability to quickly retrieve hard copy. Printers are strategically placed throughout the CBC locations. Each department in CBC is assigned to a shared printer. By selecting a print request, users can default to their own printer or route the print to a different location for someone else to review. If both users are image enabled, this routing is done on-line without requiring production of a hard copy.

### **PBS Mainframe Environment:**

Each day, comprehensive major medical claims located at PBS need to be directed to COMP I for review. The Comprehensive Claim Robot issues a query to the PBS Comprehensive Major Medical Claims System to transfer all relevant Comprehensive

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Major Medical Claims. The PBS Robot, constructed by CBC, must query the PBS mainframe for comprehensive Major Medical claim records and ready these records for transfer. The data record is then coordinated with the image transfer from PBS' IBM ImagePlus System (see description below).

### ***PBS ImagePlus Imaging System:***

As PBS mainframe records are sent to the COMP I subsidiary located at CBC as an overnight batch, the CBC robot must also query and receive the associated PBS comprehensive Major Medical claim images. To accomplish this, the CBC robot creates an empty Wang (Sigma) document and triggers a query to the PBS Robot. The PBS-link Robot obtains the PBS ImagePlus images and converts them from a MODCA-IOCA format to a TIFF Group III format for file transfer over telephone lines. CBC's use of Sigma's network management capabilities to manage image transfer represents the first application of this technology for Wang (Sigma).

Once received, a CBC server converts the TIFF Group III format to a TIFF Group IV format for input into the Wang (Sigma) format that can be used by the COMP I claims processor the next day. Because PBS claims are stored as images on the PBS ImagePlus system, and are accessible at anytime by CBC, they are maintained only on magnetic storage at CBC.

COMP I service representatives who require copies of comprehensive Major Medical claims which were not batched to CBC overnight can retrieve these claim images directly from PBS' ImagePlus system by dynamically invoking the process through a single keystroke. The image is retrieved from the PBS mainframe and image system, converted, and displayed onto the CBC image system within an average 30 seconds using background processing instead of 2—3 days.

### ***5.) Describe how the company has been impacted by this system. Be as specific as possible. What cost savings or increased revenues have been realized since the system was first installed?***

Specific cost savings derived from the implementation of the Claims Processing Systems aggregate to more than \$3.5 million over a five-year period, which corresponds to a two-year payback. In addition, CBC expects to realize an additional \$1.1–\$1.9 million in savings each year. These savings were generated by:

- Reducing claims processing staff and support personnel by 80–110 employees
- Reducing the document preparation, batching and filing staff by 20-40 full time employees
- Eliminating microfilm, staff and servicing costs; calculator and calculating costs.

### ***What productivity improvements have been realized?***

Specific productivity improvements realized an increase of more than 35 percent in productivity as a result from the imaging system. Improvements include:

- Eliminating all existing backlog
- Reducing claims processing time by a minimum of seven days
- Reducing access to PBS claims from three days to 30 seconds
- Enabling customer service representatives to answer a question on the initial call

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- Reporting statistics on performance to restructure work profiles for optimum effectiveness:
  - Custom system reports included as part of the Claims Processing Imaging System provide CBC supervisors and management personnel with new levels of critical data that indicate how effectively CBC is processing the time-sensitive stream of ongoing claims. Comparing all scanned data and processing reports from the image system and comparing them to what was actually processed on the mainframe has developed a comprehensive reconciliation process. This is a double check to ensure accurate claim processing.
  - Supplying imaging users with tools that allow users to build on their own productivity-enhancing system features:
    - Once trained on the Norton Macro-Builder and Artist Graphics Control programs, users started creating their own productivity enhancements. A user group was formed across departments to propagate the transfer of information throughout the organization. Research functions that previously took several minutes were reduced to seconds by driving which mainframe screen appeared and how long it displayed before bring up the next.
    - The most exciting impact of the Claims Processing Imaging System is the effect that it has had on the CBC claims processing personnel. New imaging processes were designed and approved by people who performed the daily manual processes (see implementation approach) before any application development occurred, making way for new attitudes and job satisfaction levels.

### ***How has business workflow been affected (compared to before system implementation)?***

Much of CBC's productivity increase is attributable to changes in the claims processing workflow:

*Automated* processing in coding claims processing and comprehensive claims processing eliminated many or all manual tasks within each function. In comprehensive claims processing, for example, two "robots" automated the entire manual three-day process of getting claims from PBS to CBC.

*Access* to a variety of systems for information (multiple mainframes and other image systems) helped to coordinate information on the claims processors desktop. This ready access to information reduced long, drawn-out process of data collection, permitting the CBC claims analysts to concentrate on specialized customer services without being disrupted by the data entry or data manipulation processes.

*Distribution* and management of workload among multiple sites allowed CBC to dynamically balance workload processing among all its areas while centralizing system management. For example, customer service representative can now reroute errors directly to claims processors rather than resubmitting the claim for data entry.

*Ongoing* user education and involvement contributed to the initial project success and continued effectiveness. Armed with a thorough understanding of imaging and assistance from system administrators, system users have automated most of their processes. The success which users feel from their new image-based workflow has fostered a continuous effort to identify opportunities for improvement and use of productivity tools to build personal operation macros (see user tools in Productivity Benefit section).

***Other forms of impact:***

The final CBC system distinguishes itself from other imaging systems because its organizational impact goes beyond productivity improvements and cost savings.

Wide ranging *system scope* gives access to many types of documents among five locations, across three separate organizations, and between two distinct imaging platforms for over 1,500 system users.

*Innovative technologies* not only improved productivity, but also fostered ideas for improved workflow including: dynamic transfer between different imaging systems, user development tools, latest hardware/software, access to multiple mainframe and imaging systems, and innovative workflow functions such as priority routing, dynamic load balancing and time and event queue processing.

The day-one *approach toward implementation* that called for building toward an enterprise system and internalizing support capability was planned through a phased rollout of imaging. This allowed for continual training of users so that they can make simple system enhancements themselves. Effective coordination among the outside system integrators throughout the phases led to gradual “transfer of knowledge” that allowed CBC to fully internalize the system.

***6.) Describe the implementation process and methodology, the Imaging Project Team, and any change management and business process reengineering addressed.***

The CBC implementation evolved through four phases over three years and across three organizations. As such, the implementation methodology drove not only the vertical growth of imaging within CBC, but also the horizontal deployment and coordination of CBC imaging with other organizations such as PBS and COMP I.

CBC’s approach combined user feedback with design analysis to determine system requirements and impact on employees. In addition, CBC validated appropriate hardware and software platform selections and determined feasible and cost effective uses for the proposed technologies. Elements of (1) Building a Project Team, (2) Managing Change and (3) Applying Reengineering were contained within the overall implementation seven-stage methodology that CBC adopted.

***STAGE 1: Project Initiation and Management (Project Team/Change Management):***

During Stage 1, CBC launched an initiative that was critical to the success of the final CBC system. From the beginning, CBC established an Imaging Project Team consisting of CBC technical and user personnel, as well as integration consultants. CBC established an Executive Project Sponsor for overall project accountability and a Project Manager to manage on an ongoing, day-to-day basis. Integrators working with CBC were expected to mirror this structure with their own personnel. In this way, CBC constructed a management and delivery structure that could handle all project concerns, from implementation to funding and managing project change orders, including issue escalation and resolution. User involvement was critical because it provided a practical business orientation throughout all phases.

***Image/Workflow Project Education:*** During the initial phases, CBC staff gained knowledge and experience through joint participation with ICG and Wang consultants in the delivery of the Phase I and Phase II system. In later phases, CBC maintained a Imaging Project Team to iteratively continue development with CBC systems personnel and processors. ICG participated in an advisory role.

**Technology Education:** As the implementation progressed, it was important to communicate the capabilities of emerging technologies that the CBC users could exploit once the system was installed. This was accomplished through formal presentations.

**Post Implementation Review:** To address unanticipated expectations and issues that appeared after installation. CBC setup a review group composed of users, system personnel and integrators. Together, this team identified and provisioned for exceptions. The involvement of decision-making staff from all areas made resolution effective and timely. As issues were resolved, meetings were reduced. The group still met as required, however, to discuss problems and share solutions.

### ***STAGE 2: Project Analysis (Reengineering)***

In Stage 2 of all CBC project phases, CBC perform Project Analysis to determine the appropriateness and cost-effectiveness of implementing new imaging/workflow technologies to support their business objectives:

**Imaging Application Study:** In the first phase of the project, the CBC Image Project Team identified how the CBC workflows would benefit from imaging and workflow technology. The Imaging Project Team produced a Cost-Benefit Analysis that profiled costs to support these high-level flows and the resulting benefits. The Imaging Project Team also determined intangible business and system strategies, guidelines and standards that would evolve from the project.

**Process Reengineering:** As the costs of the technologies were justified, CBC proceeded with formal reengineering of business sub-processes within the targeted CBC area. Reengineering took a more exact look at the profiled revised flows created in the Imaging Application Study and included the following steps:

- Developing a thorough understanding of current processing flows and their rationale
- Dividing workflow and goals into processes
- Subdividing processes into tasks
- Identifying essential tasks and prioritizing those tasks
- Rebuilding processes with priority tasks while leveraging imaging/workflow technologies
- Formalized revised workflows
- Modeling revised workflows to determine accuracy and true benefit of reengineering
- Making adjustments and iteratively remodeling until reengineering proved effective
- Finalizing the reengineered workflow and building a proposal for management
- Building a preliminary/draft implementation project plan
- Obtaining management review/approval

### ***STAGE 3: Project Plan and Requirement Development***

After demonstrating how imaging added true value to the CBC processing environment in each phase, the Imaging Project Team embarked on building a project plan and identifying requirements for each system implementation:

**Project Plan:** Using the draft image project plan developed in the final phase, the Imaging Project Team worked with CBC management to fine-tune project details into an executable final project plan.

**Functional Specification:** Working with the user groups in the appropriate business areas for each CBC phase, the CBC Imaging Project Team defined user requirements that would become functional specifications for the system. This involved the identification of workflow rules, queuing algorithms, time and event triggers and other processing strategies. In addition, the Imaging Project Team focused on reports, screen layouts, indexing and database element definition along with high-level operational procedures.

**Navigational Prototype:** This assisted in determining functional Specifications and Project Plan in detail to ensure that initial system benefits were still intact. As such, the CBC Imaging Project Team moved toward developing detailed system design specifications.

### ***STAGE 4: Planning and Design***

Before proceeding to Stage 4, CBC management reviewed the Functional Specifications and Project Plan in detail to ensure that initial system benefits were still intact.

**Strategic Image Systems Plan:** As part of this stage, the Imaging Project Team revisited the corporate CBC vision for the strategic, enterprise-wide roll out of imaging technology to ensure that the current phase of development was consistent with this plan. Through user education and participation the CBC created a universal interest and desire for the imaging system. Because the departments had to cost-justify their use of the new system, they participated heavily in requirements and design stages to ensure appropriate system application. This participation contributed to total buy-in to the system by many different departments.

**System Design:** After the implementation platform was determined from the preliminary designs, the CBC Imaging Project Team produced Final System Design Specifications of the imaging and workflow system. System prototyping throughout the Systems Design stage helped expedite the design stage.

### ***STAGE 5: Installation, Development and Testing***

Before proceeding to Stage 5, CBC management reviewed the System Design again to ensure that initial system benefits were still intact. With the benefits intact, the CBC Imaging Project Team moved toward installing, developing and testing the system application:

**System Installation:** The CBC Imaging Project Team and integrators installed basic image system hardware and software. This system provided a base platform for development, backfile conversion and training.

**Application Development:** In CBC Phases I and II, ICG developed the CBC workflow and imaging functionality on the Wang imaging platform. By Phase III and IV, CBC had internalized this capability and used ICG, Wang and IBM in an advisory role.

**Testing:** After application development, the Imaging Project Team installed the application code and together performed unit and system testing on all operating routines. At the completion of formal testing, the test environment was released for training in Stage 6.

### ***STAGE 6: Documentation and Training (Change Management)***

At the start of the seven-stage methodology, the Imaging Project Team had outlined a documentation and training program that would support development of new processing procedures and user training required to operate the system. In some CBC

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phases, training on personal computers was required prior to the formal user training activities in Stage 6. In Stage 6, users had to be prepared to absorb documentation and training associated with the imaging system.

**System Documentation:** As each CBC project phase reached completion, the CBC Imaging Project Team coordinated appropriate documentation with personnel involved with the system. Documentation included 1.) A Systems Administrator Guide to assist CBC system staff in monitoring, performing system backups, handling routine maintenance and addressing simple operational enhancements; and 2.) A User Operations Manual to instruct on how to operate the CBC image system from their perspectives.

**System Training:** Once documentation was complete, the Project team coordinated appropriate training for system users.

Training included 1.) Systems Administrator training via a combination of classroom and joint participation efforts to transfer knowledge from the Integrator to CBC. This training focused on design, reengineering and workflow programming. (Advanced training for system administrators is on-going through interaction with the integrator, and formalized Wang/Sigma classes); and 2.) User training which consisted of instructional classes on how to operate the CBC system for management and all claims processing personnel. Integrators performed Train-the-Trainer activities while the CBC ImageProject Team coordinated training rollout. CBC advanced training programs ultimately allowed CBC system users to learn how to build and tailor their own productivity-increasing operating macros.

### ***STAGE 7: Cutover, Acceptance, and Warranty***

**Cutover:** After training, CBC released each phase of image system development into operation. Appropriate support personnel surrounded the users and system in order to address any anomalies in system operation.

**Acceptance:** The Project team certified system acceptance when completely confident that the system could provide expected operation support to CBC.

**Warranty:** After acceptance, integrators such as ICG provided warranty on that phase of the system for 90 days. If no integrator was involved, CBC provisioned for warranty type staffing after system acceptance.

**Maintenance:** Ongoing through all four CBC phases, ICG provided maintenance for the entire CBC imaging system. CBC System Administrators supplemented this effort.

### ***Judgment Factors***

The following paragraphs on Judgment Factors (IV) are summarized here for quick review. References are made to the originating Guideline Section to provide cross-reference to more detailed information in the Guideline Questions Sections. In some cases, Judgment Factors have been expanded beyond the topic areas covered by Guideline questions in order to provide a complete answer to the Judgment Factor questions.

#### ***1A) Innovation: Innovative use of technology to further strategic objectives***

Throughout its four-phased implementation, CBC used a controlled introduction of leading technologies to achieve enhanced productivity. Automated Robots, WAN image distribution, Image Assisted Data Entry (IADE), Priority Routing, Record Data Evaluation (RDE), and Remote Image Workflow are some of the innovative imaging technologies which CBC and other leading imaging installations have implemented. CBC

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distinguishes itself by introducing technology dramatically to handle three strategic initiatives:

Transfer of disparate images across separate organizational entities: COMP I Subsidiary required access to claims provided to PBS. To accomplish this, CBC had to:

- Coordinate with organizations not owned/operated within its direct scope of influence.
- Design and implement a system to dynamically convert ImagePlus to Omnidesk images.
- Pioneer use of Sigma's LAN network layer to manage memory overhead.
- Interface with multiple mainframe systems to pass data and manage image transfer.

Enterprise access and/or use of imaging throughout CBC: CBC wished to provide access and/or use of imaging throughout its organization. To accomplish this CBC not only implemented a major imaging network, but also provided imaging integration to mainframe terminal users. Specifically CBC:

- Developed a 300 image users network across four locations
- Integrated 1,500 mainframe terminal users into the imaging network

Enhanced workstation automation via user-trained macro scripting and special workstations: Having outfitted CBC with enterprise imaging, CBC wished to ensure that imaging users maintained a constant eye toward researching and implementing new productivity opportunities. To accomplish this, CBC developed a program to train users to develop personal macros, automating individual processing.

### ***1B: Degree of complexity in the underlying business process and IT architecture***

The degree of complexity in business process and IT architecture is revealed throughout the discussion of the CBC implementation. Highlights include:

#### **Complexity in the underlying business process involved:**

- Integrating three separate organizational entities, each under separate control.
- Centralizing claims systems into one location with operational distribution to five sites.
- Coordinating business processes and reengineering with PBS.
- Coordinating business processing and reengineering among three remote sites.
- Maintaining non-disruptive imaging roll-out, avoiding slippage in NMIS rankings
- Fostering user interest, even though 150 positions would be re-deployed
- Maintaining four-phased implementation as structured roll-out toward enterprise imaging.
- Building an internal CBC team to absorb "transfer of knowledge" from integrators.

#### **Complexity within the IT architecture included:**

- Structuring a high-volume claims processing environment
- Integrating three mainframe platforms
- Developing transparent interfaces among mainframes and imaging system
- Building and coordinating a WAN across 5 sites (3 CBC, 1PBS; 1 COMP. Claim)
- Printing images from Host terminals



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- Interfacing CBC Image Request Robot (Windows) to the PBS Retrieval Robot (OS/2).
- Invisible (to user) complete upgrade of technology within last six months.

### **1C: Creative and successful deployment of advanced workflow and imaging concepts**

Advanced workflows and imaging concepts are fundamental to making the CBC one of the more progressive imaging installations in the country. Although the entire Guideline Section refers to various forms of creative and successful deployment of workflow and imaging concepts, the following summary provides some highlights:

#### *Activities/Use showing creative emphasis on imaging:*

Throughout the CBC installations, imaging innovation has been demonstrated by technology use, involvement of the users and orientation of the integrators.

- Used *technology* in innovative fashion (Judgment Factors–Sections 1A; 1B)
- Involved *users* by (Judgment Factors–Section 2B)
  - Providing users with real tools to perform real development themselves
  - Establishing an environment of continuous improvement that has already “paid off”
- Integrators advanced new concepts of
  - Internalization so that CBC could become generally self-sufficient
  - Coordination among integrators for horizontal deployment of imaging across phases of implementation

#### *Activities demonstrating tangible success of imaging:*

- Installed large high-volume imaging scanning and storage location
- Maintained user involvement
- Obtained cost/productivity results relayed through MIS rankings
- Evolved through four comprehensive development phases—a unique string of successes
- Maintained cost-justifiability at each phase
- Gradually transferred knowledge from Integrator to CBC

### **1D: Achievement of Business Process Reengineering and/or continuous improvement**

CBC’s movement through four phases of development indicates management support of imaging technology benefits largely from reengineering which:

Automated processing in coding, claims processing and comprehensive claims activities that eliminated many or all of the manual tasks within each function.

Provided access to a variety of systems for information (multiple mainframes and other image systems) to help coordinate information on the claims processor desktop.

Allowed for distribution and management of workload among three CBC sites, which gave CBC the ability to dynamically balance workload processing among all its areas.

Supported ongoing user education and involvement. The success which users feel from their new image-based workflow has fostered a continuous effort to identify

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opportunities for improvement and use productivity tools to build personal operation macros.

As a result of reengineering, CBC can initiate consolidation of data entry functions from all locations to the central imaging facility. This centralization effort has maximized system uptime, availability, cross training between system administrators, and allowed system administrators to interact also with the users and automate processes.

### ***2A) Implementation: Successful implementation approach***

CBC's four-phase implementation over three years involved a detail 7-stage methodology that was launched for each phase of the project. The phases of the methodology included:

- STAGE 1: Project Initiation and Management (Project Team/Change Management)
- STAGE 2: Project Analysis (Reengineering)
- STAGE 3: Project Plan and Requirement Development
- STAGE 4: Planning and Design
- STAGE 5: Installation, Development and Testing
- STAGE 6: Documentation and Training (Change Management)
- STAGE 7: Cutover, Acceptance and Warranty

The result of this implementation methodology was a series of four successful installations and true transfer of knowledge to the CBC internal development team.

### ***2B: Extent of change management process***

CBC aligned its change management program with each phase of the implementation. The program involved two initiatives:

User Education:

- Image/Workflow Project Education: User involvement in all stages of each phase
- Technology Education: Updating users on emerging technologies
- Post Implementation Review: Reviewing and reexamining the system for opportunities

System Documentation and Training:

- Documentation for users and System Administrators for all system in all phases
- Training programs for users and System Administrators for all system in all phases

The result of this advanced level of Change Management is that CBC users have embraced the system and feel not only ownership for the system, but also pride in what the system has been able to accomplish, with their support, for the final CBC system.

### ***2C: Level of overall system complexity***

System scope, processing capacity, distribution, integration, technology and orientation to upgradeability continue to contribute to the overall level of complexity for the final CBC system:

System Scope: 300 direct image system users

1500 host-integrated users

System Processing Capacity: 4 high-speed scanners

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	4 high-capacity jukeboxes
	8 servers
	12 printers
	8.5 million images per year
System Distribution:	5 sites
	3 organizations
	Multiple high-speed lines
System Integration:	2 mainframe systems
	2 imaging systems
System Technology:	Image conversion/transfer
	Automated Robots
	Color monitors (one of 1 <sup>st</sup> in Industry 1993)
	Memory management using Wang LAN network
	Workstation automation via macro scripting
	Printing from the (1500) 3270 terminals
System upgradeability:	Strategic Hardware Selection: followed vendors growth path while not obsoleting last year's purchase
	Jukebox (4)—HP 100T 60 MB drives
	Upgraded to 200T 1.3GB drives
	600 platters still valid in new drives
	Holds 1.5 years on line
	Scanners (4)—Kodak 900. Upgraded to 923.
	Monitors and Windows Accelerator Cards:
	Pilot used 19" IBM 8508 with Image Adapter A (approx. 2,000). Phase II tested new Artist Graphic Card with Hitachi Monitor, 20" color (approx. \$2,000). For the same cost the monitor was color, bigger and had faster image display times than most market-available setups.

### ***2D: Level of integration with other advanced technologies***

The CBC Claims Processing System is unique because it integrates three major information processing environments:

The CBC mainframe environment including CBC AIRS' claims processing system

The PBS mainframe environment including PBS claims processing system

The PBS ImagePlus image processing system

**3A.) Impact: Extent and impact of demonstrated productivity improvements**

Specific productivity improvements realized are attributable to an increase of more than 25 percent in productivity as a result of the imaging system. Improvements include:

- Eliminating all existing backlog
- Reducing claims processing time by minimum of seven days
- Reducing access to PBS claims from 3 days to 30 seconds
- Enabling Customer Service Representatives to answer a question on the initial call
- Reporting statistics on performance to restructure work profiles and optimize effectiveness
- Supplying imaging tools which allow the users to build their own productivity-enhancing system features

**3B: Significance of cost savings**

Specific cost savings that have been derived from the implementation of the claims processing systems aggregates to over \$3.5 million over a five-year period and are expected to yield an additional \$1.1–\$1.9 million each year. These savings were generated by:

- Reducing claims processing staff and support personnel 80-110 employees
- Reducing the document preparation, batching and filing staff by 20-40 full-time employees
- Eliminating microfilm/microfiche servicing costs; calculator and calculating costs

**3C: Level of increased revenues, product enhancements, customer service or quality improvements**

CBC has generated opportunities for new products, more efficient customer service and improved quality through the introduction of the Claims Processing Imaging System:

Improved Revenue/Product Opportunities by:

- Freeing time for managers to meet on new products/processing strategies
- Evolving workflows into new forms of service offerings

Improved Customer Service By

- Processing claims seven days faster than before implementing imaging system
- Reducing need for call-backs
- Providing quick access to customer information
- Providing quick communications (letter/fax) to customers

Improved Claims Processing Quality by:

- Introducing data/management tracking reports
- Removing manual intervention (and possibility for error) through workflow
- Performing edit checks and lookups associated with Image Assisted Data Entry (IADE)

**3D: Proven strategic importance to the organization's mission**

The National Management Information System (NMIS) creates standards for excellence in service quality and costs for Blue Cross and Blue Shield Plans in order to ensure consistency and quality within the Blue Cross and Blue Shield Association. Each

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Blue Cross and Blue Shield Plan must meet or exceed NMIS standards and each year Plans are ranked by their performance against the NMIS standards. Competition is keen. Both service quality and costs must be managed equally—with little option to raise cost or lower service levels.

By mid 1995, CBC had experienced more than a 25 percent increase in operating performance. Over 100 employees had been freed up by imaging so they could be allocated to other operations, while eliminating the need for night shift processing. In addition, the amount of time required to process a claim had diminished by more than seven days.

### ***3E: Degree to which the system enabled a cultural change within the organization***

The CBC approach promotes an environment for continual improvement and reengineering, and by receiving a “transfer of knowledge” from integrators to building internal support and independence:

Foster environment for continual improvement:

- Ongoing imaging education classes
- User leadership and involvement in any systems development
- User training on productivity tools to build personal operating macros
- Team meetings to discuss improvements to imaging systems

Transfer of knowledge from Integrator to CBC—for internal capability and independence by Phase III:

- Phase I: ICG and Wang
- Phase II: ICG
- Phase III: CBC with IBM and ICG specialized consulting
- Phase IV: CBC with ICG specialized consulting

### ***3F: Impact of system on competitive positioning in marketplace***

CBC has become more competitive in the marketplace. This move resulted primarily from the following:

Improved productivity by 25 percent

Reduce costs by \$3.5 million and \$1.1–\$1.9 million annually

Improved ability to launch new products by freeing available resources to meet improved customer responsiveness by reducing callbacks and providing quick access to information.