NUCLEUS RESEARCH

ROI: 258%
Payback: 3 Months

DIGITECH SYSTEMS
WOODSTOCK GENERAL HOSPITAL

ANALYST
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THE BOTTOM LINE

Woodstock General Hospital (WGH) deployed the Digitech Systems PaperFlow solution to digitally capture the hospital's paper health records as well as simplify and expedite record retrieval. The hospital achieved significant benefits in both savings and improved productivity. Medical records staffing was reduced by 3.9 full-time equivalents (FTE) due to the elimination of the need for round-the-clock staffing and the reduction of time needed to retrieve a medical record. Since deployment, the hospital has experienced an overall improvement of medical record workflow and simplified real-time access to patient information while strengthening the security for the patient information.

THE COMPANY

Woodstock General Hospital serves residents of Oxford County in Ontario, Canada. It opened a new 178-bed facility in 2011, replacing an 1895 building. It is a full-service community hospital that provides primary care to 55,000 people locally, and to more than 100,000 residents regionally. The Emergency Department (ED) gets nearly 50,000 visits annually, and the hospital provides a variety of other services including acute medical-surgical care, obstetrics, continuing care, mental health, and inpatient and outpatient rehabilitation.

THE CHALLENGE

Woodstock General Hospital had a traditional Medical Records Department that utilized a third party to convert paper records into a microfiche format initially and then gradually shifted to using microfilm. WGH used the third party for scanning archival and historic documents exclusively. Not only was this expensive, but it also impacted patient care because the process did not provide real-time information to the medical staff nor did it guarantee compliance with Canadian Personal Health Information Protection Act (PHIPA).

When a patient arrived in the ED, the hospital staff would access the patient's history from their legacy system, but many records existed only on paper. A request would be generated to the Medical Records Department for the additional documentation stored on-site. Additional requests for patient records would come from other facilities and departments, and they also received about 370 monthly applications for information from outside the hospital, such as from lawyers, and insurance and other providers. When WGH decided to convert all physical files into digital records, it focused on improving patient care, assuring document security, and reducing the annual costs associated with third-party scanning.

Cost : Benefit Ratio | **1 : 2.2**

THE STRATEGY

Woodstock General Hospital was already using Digitech Systems PaperVision Enterprise to securely store and retrieve scanned historical records for document retention. After a thorough investigation of its options, the hospital purchased Digitech Systems PaperFlow solution for the following reasons:

- Native integration with existing Digitech Systems solution.
- The ability to deploy at individual workstations at the point of care.

- Capability for on-site scanning and digitization that enables WGH to eliminate the expense of third-party services.
- Simplified access for retrieval and viewing of patient records at "workstations on wheels" (WOW) throughout the institution.

WGH began the implementation of PaperFlow in phases starting in October 2014, initially focusing on transitioning the ED. Records are scanned in the ED, regardless of whether the patient is admitted or discharged, enabling information to be accessed immediately. Phase two was also initiated in October 2014 and concentrated on scanning ten years of backlogged records—more than 10 million pages. The hospital worked with its partner, Polar Imaging, to scan those records into PaperVision for secure storage and retrieval. Phase three began in April 2016 with the purchase of additional PaperFlow licenses to scan all inpatient and outpatient records. On average, record clerks scan 3,500 pages per day, using a barcode to create indices that can retrieve data immediately. The hospital revised all its forms to include these barcodes, thereby ensuring accuracy and reducing the time for scanning by eliminating manual identifications. Training was performed internally with a manual created by the hospital and is now a part of the employee orientation on-boarding process.

TYPES OF BENEFITS

Direct 36%   64% Indirect

KEY BENEFIT AREAS

Key benefit areas seen as a result of the Digitech Systems deployment include cost savings, staff reduction, and a decrease of office expenses. WGH improved productivity, decreased call volume to medical records, reduced delivery of physical charts, and increased efficiency in coding the documents for reimbursement.

- Cost savings from third-party services. WGH paid a third-party vendor to scan and digitize its patient records. With the Digitech Systems solutions, the company was able to scan, digitize, and retrieve files in-house, thereby saving the hospital more than $80,000 annually.
- Reduction of medical records staff. Before deployment of Digitech Systems PaperFlow, medical records dedicated an average of 6.8 full-time equivalents (FTE) to manage paper patient records and staffed the department round-the-clock. After implementation, only 2.5 FTEs were needed for scanning records, saving the hospital $550,000 over three years.

- Decreased office expenses. Before files were digitized and available at workstations, WGH paid for the paper to copy patient records, postal fees to share patient files, and couriers to deliver the documents. WGH was able to reduce those costs, thereby saving more than $10,000 annually.

- Improved staff productivity. WGH has documented significant time savings for staff as a result of the PaperFlow deployment, generating higher productivity from both clerical and medical staff. Reducing time to access patient information from approximately one hour to fewer than five minutes not only saves money but also improves patient care with faster service.

- Decreased call volume to Medical Records. On average, Medical Records received 40 calls per day to pull records, copy information, and deliver files. After Digitech Systems PaperFlow, call volume was reduced by 90 percent, not only saving time and money but also allowing the staff to focus on value-added tasks.

- Greater efficiencies in coding the records for reimbursement. Coding charts was a manual process that included retrieving and reviewing paper documents. Although the manual nature of the process has greatly improved, each page of the record is still reviewed. Now that it is online, the coding turnaround time has gone from over 50 days to 21 days, thus reducing turnaround time by 58 percent.

CUMULATIVE NET BENEFIT

Year 1: 331,964
Year 2: 824,964
Year 3: 1,157,659
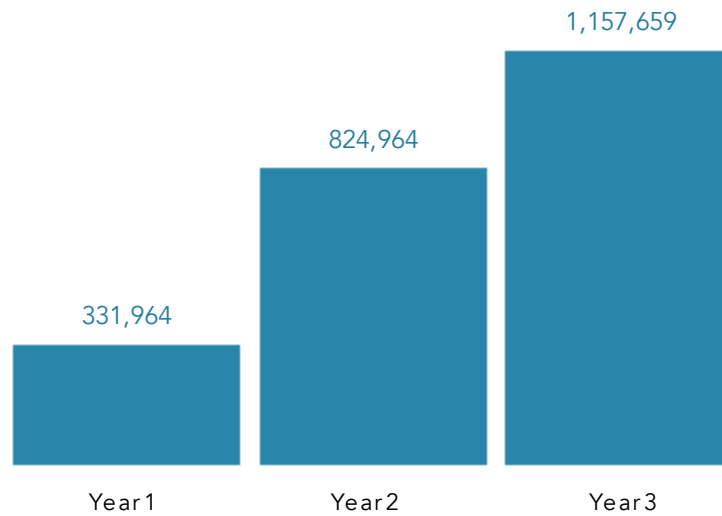
KEY COST AREAS

The most significant cost area of the WGH deployment was the scanning of backlogged records. Other cost areas over the three-year period included the price of new scanners, new licenses for PaperFlow and the purchase of additional PaperVision licenses.

LESSONS LEARNED

The impact of implementing Digitech Systems' PaperFlow solution improved not only patient care but also working conditions for medical practitioners and hospital staff as well. Immediate access to patient information enabled the medical staff to diagnose and treat issues more quickly. The fact that WGH completed this project efficiently, and delivered positive results, highlights the importance of common goals and appropriate change management to ensure the successful adoption and engagement of a new process. Since the staff was kept informed at all stages of planning, the deployment went smoothly without significant issues.

NET CASH FLOWS

473,207 — Year 1
493,000 — Year 2
332,695 — Year 3
(141,243) — Initial
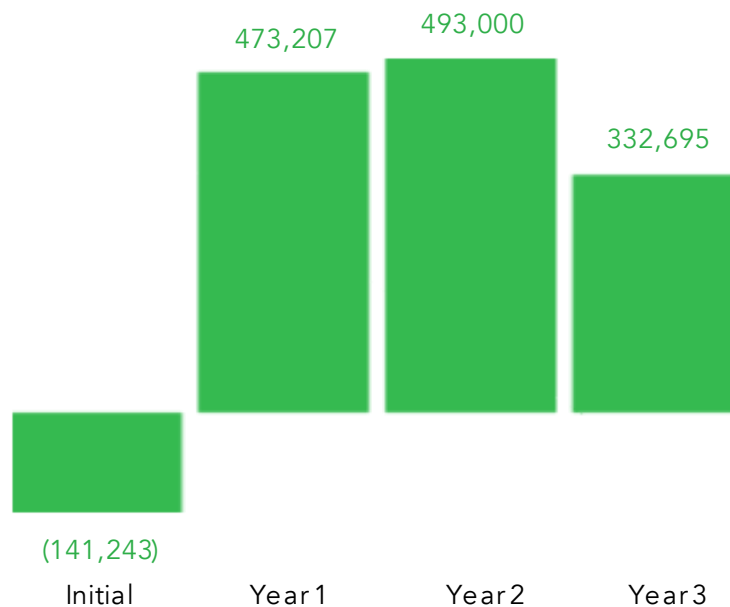
CALCULATING THE ROI

Nucleus Research analyzed the costs of software, hardware, personnel, and third-party services over a three-year period to quantify WGH's total investment in Digitech Systems technology. Direct and indirect benefits were also quantified over the three-year period.

Direct benefits quantified included the cost savings realized from the elimination of third-party imaging expenses, decreased office expenses, and staff reductions. Indirect benefits quantified included improved productivity from time saved with improved real-time data capture and access. We calculated the time savings benefit using the fully-loaded cost per hour of employees. Time savings were multiplied by a correction factor to account for the inefficient transfer of time between time saved and additional time worked.

FINANCIAL ANALYSIS

Annual ROI: 258%
Payback period: 0.4 years

BENEFITS	Pre-start	Year 1	Year 2	Year 3
Direct	0	345,923	348,382	65,341
Indirect	0	453,392	453,392	453,392
Total per period	**0**	**799,314**	**801,773**	**518,733**

COSTS - CAPITALIZED ASSETS	Pre-start	Year 1	Year 2	Year 3
Software	34,022	0	0	0
Hardware	928	3,043	0	0
Project consulting and personnel	0	0	0	0
Total per period	**34,949**	**3,043**	**0**	**0**

COSTS - DEPRECIATION	Pre-start	Year 1	Year 2	Year 3
Software	0	6,804	6,804	0
Hardware	0	1,254	5,366	4,112
Project consulting and personnel	0	0	0	0
Total per period	**0**	**8,058**	**12,170**	**4,112**

COSTS - EXPENSED	Pre-start	Year 1	Year 2	Year 3
Software	2,694	4,081	5,706	0
Hardware	0	0	0	0
Consulting	103,600	59,200	59,200	0
Personnel	0	259,784	243,867	186,038
Training	0	0	0	0
Other	0	0	0	0
Total per period	**106,294**	**323,065**	**308,773**	**186,038**

FINANCIAL ANALYSIS	Results	Year 1	Year 2	Year 3
All government taxes	45%			
Cost of capital	7.0%			
Net cash flow before taxes	(141,243)	473,207	493,000	332,695
Net cash flow after taxes	(93,411)	262,521	276,627	184,833
Annual ROI - direct and indirect benefits				**258%**
Annual ROI - direct benefits only				-9%
Net Present Value (NPV)				544,430
Payback period				**0.4 years**
Average Annual Cost of Ownership				320,721
3-Year IRR				274%

All calculations are based on Nucleus Research's independent analysis of the expected costs and benefits associated with the solution.