

# **GROWING THE INFORMATION TECHNOLOGY SECTOR IN AROOSTOOK COUNTY MAINE**

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## **FOREWORD**

In the spring of 2003, the Northern Maine Development Commission, NMDC, supported a study of the potential for industry cluster development in Aroostook County. The Study was conducted through a collaboration of Planning Decisions of South Portland, Maine, Jim Damicis and Coin Baker. Five industry sectors were examined including agriculture, forest products, tourism, precision manufacturing, and information technology. This report is based on the information technology section of that study which was conducted by Jim Damicis Associates of Scarborough, Maine. It is designed to be useful for state and local business and economic development professionals interested in strategies to grow this increasingly important sector in rural areas.

I would like to thank all of the business professionals that took time out of their busy schedules to participate in interviews. These interviews were an integral part of the analysis. I would also like to thank NMDC for their interest and support in this project.

Jim Damicis

## **Information Technology**

Information technology (IT) and information services companies are some of the fastest growing businesses in Aroostook County, and will likely play a leading role in job growth in the County in the years ahead. In addition, businesses outside of the IT sector in the County are increasing their use of computers and the Internet in everyday business transactions, creating further demand for employees that are familiar with computers. Jobs that utilize IT typically pay higher wages than those that do not. For these reasons, information technology (IT) should be a key part of the County's strategy for the future.

### **The Information Technology Sector**

For purposes of this analysis, the information technology (IT) sector includes the following kinds of businesses:

- Computer software design & development
- Computer programming, database and network services & administration
- Web site design & development
- IT Telecommunications including Internet Service Providers (ISP's) & Web hosting

This analysis also includes an examination of local industries that are significant users of IT products & services including insurance, healthcare, and information services.

### **Approach**

Because of the lack of consistent reliable employment and occupation data and because the essence of cluster development lies in relationships, an interview process was used as the primary data source for the cluster analysis. Persons interviewed for this study are listed in the appendix for this section. In addition, economic and labor market data, industry research, and previous economic development studies completed for the County were reviewed for findings related to the future growth of the IT sector.

### **Understanding the IT sector**

There are two types of jobs data for measuring industry sectors: employment and occupation data. Both types of data are limited in their ability to accurately portray the breadth of employment related to the IT sector. In general, data on employment by industry sector understates the significance of IT and IT-related services to state and regional economies. A main reason for this is that employment data is typically categorized by the primary industry sector of the employer. For example, computer system administrators and technicians employed by banking and insurance companies are classified as finance and insurance employment. Even with the inclusion of telecommunications which includes IT and related companies such as phone services, the

data on employment in IT-related industry sectors indicates that this sector accounts for less than 2% of private covered employment in Maine for 2001 (see Table 1).

<b>Table 1 – 2001 Maine Private Employment within IT-Related Industry Sectors</b>			
NAICS Code	Industry Description	Average Annual Employment	% of Total Maine Private Employment
5112	Software Publishers	216	
5161	Internet Publishing & Broadcasting	71	
5181	ISP and Web Search Portals	279	
5182	Data Processing & Related Services	1,083	
5415	Computer System Design & Related Services	3,667	
<b>Maine Total – IT-Related Sectors excluding Telecommunications</b>		<b>5,316</b>	<b>1.1%</b>
517	Telecommunications	3,441	
<b>Maine Total – IT-Related Sectors including Telecommunications</b>		<b>8,757</b>	<b>1.8%</b>
<b>Maine Total All Sectors</b>		<b>496,432</b>	
Source: Covered Employment & Wages, U.S. Department of Labor, Bureau of Labor Statistics, <a href="http://data.bls.gov">http://data.bls.gov</a>			

Occupational wage data is categorized by the occupational code (standard occupational classification or SOC) of the employee as opposed to the industry code of the employer. Thus it captures IT related positions within a company regardless of the company's primary industry sector classification (NAICS Code).

Based on the occupational data, there were an estimated 8,300 jobs classified as IT-related occupations in Maine, representing 1.4% of all occupations in Maine (see Table 2). Though the occupational data provides an estimate of the magnitude of IT-related employment across all sectors the data still likely significantly underestimates IT-related employment in Maine. There are likely many occupations that are classified as non-IT related even though a great deal of the day-to-day tasks of the employee involves significant use of computers and IT related equipment.

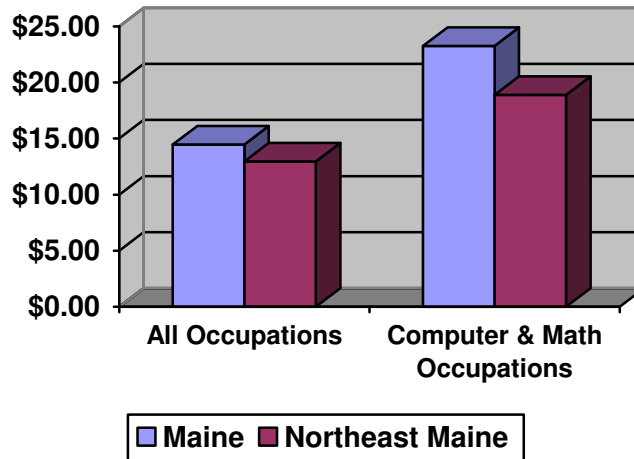
One need not look further than the typical Maine company and see the amount of IT equipment being used that is integral to business to see that IT-related jobs are a much larger part of the employment picture than are typically portrayed in employment data.

<b>Table 2 – Estimated Employment in Maine within IT-Related Occupations - 2001</b>		
Occupational Code	Occupational Title	Estimated Employment
11-3021	Computer & Information System Managers	1,160
15-1021	Computer Programmers	1,420
15-1031	Computer Software Engineers – Applications	650
15-1032	Computer Software Engineers – Systems Software	310
15-1041	Computer Support Specialists	1,700
15-1051	Computer Systems Analysts	1,330
15-1061	Database Administrators	350
15-1071	Network & Computer System Administrators	780
15-1081	Network Systems & Data Communications Analysts	220
15-1099	Computer Specialists – Other	380
<b>Total Estimated Employment Within Maine IT-Related Occupations</b>		<b>8,300</b>
<b>Estimated IT-Related Employment as % of All Employment in Maine</b>		<b>1.4%</b>
<b>Total Estimated Employment – All Maine Occupations</b>		<b>592,940</b>
<b>Source:</b> <i>2001 Maine Occupational Wages</i> , Maine Department of Labor, Division of Labor Market Information Services, Released March 2003		

While currently a relatively small sector in Maine, growth in the IT sector is important to economic development. IT-intensive jobs typically pay considerably higher wages. Regardless of the exact amount of IT-related employment in Maine and Aroostook County, the wages generated by IT-related jobs are considerably higher than those that are not IT-intensive as indicated in Table 3 and Chart 1<sup>1</sup>. By growing and attracting IT and IT related businesses Aroostook County can benefit through increased income levels.

<sup>1</sup> Source: *2001 Maine Occupational Wages*, Maine Department of Labor, Division of Labor Market Information Services, March 2003.

**Chart 1 - Average Hourly Wages - 2001**



**Table 3**  
**Average Hourly Wages in Maine for IT Occupations Vs All Occupations, Maine**  
**Statewide & Northeast Portion of State**

Occupational Code	Occupational Title	Average Hourly Wage in \$	
		Statewide	Northeast Portion Of State
00-0000	All Occupations	\$14.46	\$12.95
11-0000	All Management Occupations	\$27.69	\$23.69
<b>11-3021</b>	<b>Computer &amp; Information System Managers</b>	<b>\$32.02</b>	<b>\$25.04</b>
<b>15-0000</b>	<b>All Computer &amp; Mathematics Occupations (non-management)</b>	<b>\$23.27</b>	<b>\$18.90</b>
<b>15-1021</b>	<b>Computer Programmers</b>	<b>\$24.47</b>	<b>\$18.16</b>
<b>15-1031</b>	<b>Computer Software Engineers – Applications</b>	<b>\$26.69</b>	<b>n/a</b>
<b>15-1032</b>	<b>Computer Software Engineers – Systems Software</b>	<b>\$32.41</b>	<b>\$30.11</b>
<b>15-1041</b>	<b>Computer Support Specialists</b>	<b>\$15.72</b>	<b>\$14.61</b>
<b>15-1051</b>	<b>Computer Systems Analysts</b>	<b>\$27.26</b>	<b>\$24.31</b>
<b>15-1061</b>	<b>Database Administrators</b>	<b>\$25.25</b>	<b>\$20.73</b>
<b>15-1071</b>	<b>Network &amp; Computer System Administrators</b>	<b>\$22.58</b>	<b>\$21.04</b>
<b>15-1081</b>	<b>Network Systems &amp; Data Communications Analysts</b>	<b>\$22.93</b>	<b>n/a</b>
<b>15-1099</b>	<b>Computer Specialists – Other</b>	<b>\$24.10</b>	<b>\$16.29</b>

Source: *2001 Maine Occupational Wages*, Maine Department of Labor, Division of Labor Market Information Services, Released March 2003

\* - includes Aroostook, Hancock, Piscataquis, Penobscot (excluding Bangor MSA), and Washington Counties

n/a = data not report due to confidentiality requirements

## Information Technology in Aroostook County

There are several factors that are very important in the success of IT industry clusters in other locations around the country. These factors include:

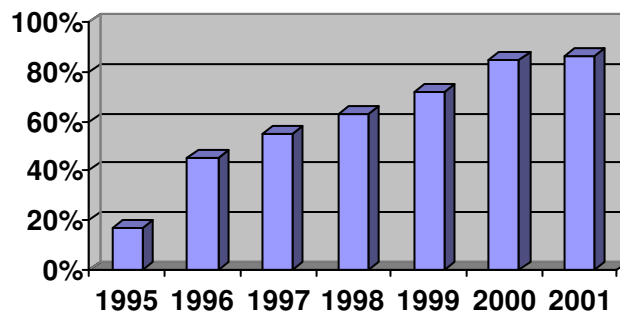
- IT infrastructure, including ability to utilize redundant services;
- the ability to attract and retain a skilled and educated workforce;
- research and development;
- industry networks and trade associations;
- leadership companies; and
- market potential, including local and export demand.

### IT Infrastructure

Maine business use of the Internet has dramatically increased since 1995, when only 17 percent of Maine businesses reported using the Internet<sup>2</sup> (see Chart 2). By 2001, 86% of businesses used the Internet. However, for today's businesses, simply having Internet connectivity is not enough. Two additional IT infrastructure factors are essential for supporting the IT industry. They are "high-speed" or broadband access and service redundancy.

Because Aroostook County is largely rural, one would expect the County to be at a competitive disadvantage with regards to IT infrastructure. This however is not the case. The population centers of Aroostook County are well served by infrastructure to support high-speed Internet connectivity for businesses and residences alike.

**Chart 2 - Business Use Of the Internet in Maine**



There are multiple options for Aroostook businesses in obtaining high speed Internet access. Time Warner provides high speed Internet cable services to several population centers in the region. Presque Isle was one of the first areas in the County to receive Roadrunner service and it is now available in the County within the population centers of Caribou, Fort Fairfield, Limestone, and Presque Isle. Verizon has deployed DSL (Digital Subscriber Line) service in Presque Isle, Caribou, Houlton, and Madawaska, and will further expand its DSL offering in the next few months to other regions of the County. Where available, DSL will provide another affordable high speed Internet option to

<sup>2</sup> Maine Development Foundation, 1995-2001 Survey of Maine Businesses, Maine Development Foundation.

Aroostook businesses and households. Verizon currently provides T1 (1.544 megabit service) and T3 (45 megabit service) lines to many businesses in the region for their high bandwidth needs. Several of the larger businesses and organizations interviewed relied on T1 lines for connectivity. Aroostook Internet located in Houlton also provides T1 service in the region and St John Valley Communications located in Fort Kent provides T1 lines as well as ISDN service.

The County is also well served by high-speed Internet wireless services. Wireless services within the County emerged out of business demand for high-speed connectivity in the region prior to the ready availability of other options and wireless continues to be the best option for several of the businesses interviewed. Two local companies, Pioneer Wireless and MFX Wireless can provide high speed wireless services to businesses within most all of the County's population centers as well as many of the County's remote areas.

Pioneer, which was interviewed for this project, extends services from Sherman in southern Aroostook to Madawaska in northern Aroostook. It should be noted that local demand for wireless broadband is still not very strong, though this is changing as more customers become aware of the benefits. Start-up costs for a company to install transmitters and receive wireless broadband are currently in the \$400 range, which is competitive compared to other broadband options in the region. However, residential customers will often forgo wireless broadband due to perceived high start-up costs.

For businesses and households not requiring high speed connectivity, in addition to the ISP's that provide Internet access statewide via toll free "500" service, there are several local ISP's within the region that provide low cost, dial-up services including Aroostook Internet and St John Valley Communications.

Both large and small IT businesses interviewed for this project require broadband connections to provide an adequate level of service. Though the bandwidth requirements may be greater for the large companies like Burelle's and ATX, both large and small IT firms in the County need broadband for providing services to clients over the Web and for communications with partners, staff, vendors and clients. None of the businesses representatives interviewed for this analysis cited IT connectivity as an obstacle to business growth and development in the County; in fact, several indicated that the wide availability of connectivity options in the County provides their company with advantages over firms located elsewhere in Maine.

Several industries and businesses provide the kinds of products and services which require little to no "downtime" over the course of the year. For these industries and businesses, it is important that the IT infrastructure connecting Aroostook County to the rest of the world contain sufficient redundancy, or alternative broadband pathways, should a key digital cable or IT infrastructure component be disrupted.

Until several years ago, all broadband connections out of Aroostook flowed south to Bangor and onto Portland over a single cable route, owned by Verizon. This is no longer

the case. Efforts have been implemented or in some cases are well underway to provide a significant level of redundancy in Aroostook County. In 1999, Verizon completed a second fiber optic route that connects the County with central and southern Maine, a move that significantly improved the reliability of the network. In addition, Verizon deployed SONET (Synchronous Optical NETWORK) rings to further improve the reliability of the network and reduce downtime that may be caused by local and regional disruptions. Time Warner has installed its own fiber line from Presque Isle to Fort Fairfield and is in the process of connecting this line to service and gateways in New Brunswick, thus providing an alternative way out of the County for information flows. Pioneer Wireless is also implementing plans for sending a signal to New Brunswick thus providing wireless users a third alternative route out.

The broad array of Internet connectivity options combined with the infrastructure to support redundancy, position Aroostook well for growth in the IT sector. In fact, compared to many areas of Maine and the rural and urban US, Aroostook County may even have a competitive advantage with regard to IT infrastructure.

It should be noted however, that much more than access to reliable IT infrastructure is needed to grow and sustain a vibrant IT sector. There is often a misconception that IT intensive businesses can locate and thrive anywhere that there is connectivity. This is based on the assumption that these companies can conduct all of their business through virtual broadband networks. Interviews with IT companies in the Aroostook region revealed that this assumption is incorrect. While a great deal of software development work can be done in a virtual network with companies in other locations, client services including sales, installation, training and support require extensive in person, on-site interaction. While this is not a significant obstacle to the larger software firms in Aroostook such as ATX that have full sales and support staff nationally, the smaller software and computer service firms in the County indicate that distance from potential markets and clients is a potential obstacle for growth. This is exacerbated by a lack of consistent, reliable air transportation options.

#### *Ability to Attract and Retain Skilled & Educated Workforce*

The ability to attract and retain skilled employees varies in the County depending on the size of the business. For the larger companies interviewed, attraction and retention of skilled workers is a challenge, though for the most part has not been a major impediment to growth. They offer skilled employment and are able to compensate employees at levels above the regional average. This allows them to attract the best talent that is already living within the region. However, because of the relative small size of the County, there is not enough local talent, particularly with regard to programmers and high skilled positions, to meet the demands of all the IT businesses. Therefore companies must recruit talent from other areas of Maine and throughout the country. Attracting talent to the region requires the companies being able to sell the small-town, rural lifestyle offered in the County. For some professionals this lifestyle is desirable, for others it is not. The larger companies interviewed have considerable experience recruiting employees and have achieved reasonable success in their efforts.

Attraction is much more difficult for the smaller IT companies than the larger firms in the region. Staff in small software companies must possess a variety of skills. These companies need programmers that are not only skilled in software development but also project management, sales and marketing, and customer service. Recent graduates of the Northern Maine Community College and University of Maine System typically don't have the experience to meet these requirements and it is difficult for small firms to invest in long-term employee development. Therefore, in order to grow, small software firms must rely on either recruiting talent from outside the region, establishing one person branch offices at locations outside the region, or partnering with individuals and firms outside the region. Recruitment can be tough for small companies because they cannot offer the compensation packages or job security that can be offered by larger firms.

Table 4 provides data from a statewide labor force survey conducted in 2001. As indicated in the table, finding employees with the requisite computer skills was easier in Northern Aroostook, and the North Central portion of Maine which includes Southern Aroostook compared to the state as a whole and more difficult in the Presque Isle-Caribou region. It should be noted that this survey was conducted of all types of businesses not just IT businesses.

**Table 4**  
**Maine Workforce Survey – 2001 – How easy is it to find employees with the requisite computer skills?**

Region*	Employer Mean Rating where 1=very hard to find employees and 5=very easy
North Central Maine	3.06
Presque Isle-Caribou	2.67
Northern Aroostook	2.94
Statewide	2.93

Source: *Maine's Labor Force Regions in Comparison*, University of Southern Maine, Center for Business and Economic Research, October 2001

\* The regions are defined by the following communities:

North Central – Lincoln-Howland, Millinocket-East Millinocket, Houlton, and Patten-Island Falls Labor Market Areas; Presque Isle-Caribou – Presque Isle-Caribou Labor Market Area; Northern Aroostook – Madawaska, Fort Kent, Van Buren Labor Marker Areas

Aroostook County is home to three institutions of higher education that each offer programs in IT and IT-related fields including the Northern Maine Community College, University of Maine Presque Isle, and University of Maine at Fort Kent. In addition, higher education courses and programs are provided through the University College in Houlton. In general, the companies interviewed viewed these institutions as assets in providing skilled technicians but felt that more was needed to meet the demands of the IT programming positions.

Table 5 presents data from the statewide labor force survey on use and ranking of job training entities. As in the previous table, survey responses include all types of business not just IT related. As indicated in the data, the Presque Isle-Caribou region had a significantly higher usage rate (61%) of the technical college system (now known as the

community college system). This is not surprising given the region is home to the Northern Maine Community College (NMCC) in Presque Isle. Within this region, business expressed high satisfaction with the community colleges with an average rating of 4.23 out of a possible 5.0. Technical college usage in the North Central Maine region and Northern Aroostook region was lower compared to statewide usage levels. This is likely related to the distance of businesses within these regions from NMCC. The Presque Isle-Caribou (home to the University of Maine at Presque Isle) and Northern Aroostook (home to the University of Maine at Fort Kent) regions had higher usage and satisfaction rates of the University of Maine System than that experienced statewide. North Central Maine, which lacks its own University Campus, had lower usage and satisfaction rates, than the statewide averages. As the data indicates, proximity of businesses to higher education resources impacts both business usage and satisfaction levels. Furthermore, the higher education institutions in northern Maine are viewed as good resources for training for businesses within reasonable proximity.

**Table 5  
Maine Workforce Survey – 2001 – Employer Job Training Use & Ranking**

Region*	North Central Maine		Presque Isle-Caribou		Northern Aroostook		Statewide	
	% Use	Rating (1=poor, 5=excellent)	% Use	Rating (1=poor, 5=excellent)	% Use	Rating (1=poor, 5=excellent)	% Use	Rating (1=poor, 5=excellent)
Maine Technical Colleges	8.0%	3.26	60.8%	4.23	8.2%	3.89	11.4%	3.66
University of Maine System	3.3%	2.60	N/A	3.91	6.6%	3.46	4.6%	3.40
Private Vendors	16.7%	3.66	2.7%	4.00	9.8%	3.93	16.4%	3.68
Public Schools & Adult Ed	6.7%	3.46	20.5%	N/A	8.2%	3.71	5.9%	3.42
Trade & Professional Associations	20.5%	3.85	N/A	N/A	16.4%	3.96	21.3%	3.67
State Agencies	8.1%	3.31	N/A	3.40	5.7%	3.27	7.7%	3.63

Source: *Maine's Labor Force Regions in Comparison*, University of Southern Maine, Center for Business and Economic Research, October 2001

\* The regions are defined by the following communities: North Central – Lincoln-Howland, Millinocket-East Millinocket, Houlton, and Patten-Island Falls Labor Market Areas; Presque Isle-Caribou – Presque Isle-Caribou Labor Market Area; Northern Aroostook – Madawaska, Fort Kent, Van Buren Labor Market Areas; N/A – question not asked within regional survey

The following is a brief description of the IT related resources offered at the higher education institutions within Aroostook County.

The University of Maine at Fort Kent (UMFK) offers several computer and computer related education opportunities. An Associate's Degree in Computer Science and the Bachelor of Science in Computer Applications provide students with programming, database, and systems analysis and management coursework. Two areas within IT education that provide a unique niche within the County are UMFK's programs and coursework for Geographic Information Systems (GIS) and E-Commerce. UMFK has a

laboratory dedicated to GIS and Global Positioning System (GPS) technology. GIS and GPS coursework can be integrated into the Computer Science Degree programs. They are also integrated within the Bachelor's of Science in Environmental Studies and Associate's in Forest Technology Program at UMFK. As a recent addition to UMFK, students can now obtain a Bachelor of Science in Electronic Commerce providing them with coursework and experience in networks and network security, systems analysis and management, Internet programming and architecture, database design, and e-Commerce initiatives and applications.

The University of Maine at Presque Isle (UMPI) offers a Management Information Systems (MIS) concentration within its Business Management, bachelor's degree program. The program combines broad-based business management coursework with MIS coursework and is designed to provide students with the ability to analyze and manage business information systems.

The Northern Maine Community College (NMCC) is located in Presque Isle. Within its Business Technology Department, the NMCC offers two different associate of applied science degree programs that focus on IT. They are the Computer Information Systems (CIS) and Information Technology (IT) programs. The CIS program is designed to provide students with the qualifications needed for employment as computer programmers and programmer/analysts. All students within this program become experienced at programming using the IBM AS/400 series mid-frame system. It is the only such program in the state. NMCC is currently in the process of working with ATX Forms in Caribou for the creation of Windows-based programming courses that can be applied towards a certificate program. Through the IT program, NMCC students become prepared for employment as end-user technical support specialists with experience in personal and mid-range computer operations, software development tools, computer networking and configuration, and Internet tools. NMCC has made a significant investment in IT equipment to support IT related as well as non-IT intensive coursework. NMCC houses six major computer labs and seven smaller labs specific to individual programs or departments.

With a mission geared towards serving the local and regional community for education and workforce training, NMCC is well connected to local and regional businesses. NMCC utilizes business advisory boards that meet once per year to help guide program direction. NMCC also offers customized training to area businesses which can be taken at NMCC or delivered on-site at the business through the NMCC mobile computer labs. Recent clients of NMCC for customized computer training include the Aroostook Mental Health Center, Maine Mutual, McCain's, J. Paul Levesque, Frazier Forms, and Smith & Wesson.

#### University College at Houlton

The University College at Houlton is one of the State's ten University College Centers designed to provide access to those who can not access the traditional UMaine Campuses by providing UMaine System coursework at the regional centers, through interactive

television, and through on-line instruction. In terms of IT-related education, there are very few IT offerings at the University College in Houlton and currently there are no IT courses offered in coordination with the Northern Maine Community College. The opportunity for such offerings may increase as agreements between the UMaine System and Community College System are further developed following the recent statewide shift from a technical college system to a community college system. An increase in offerings would be of benefit to Houlton area residents and workers seeking to upgrade computer skills, and enter into IT related fields. The one-hour commute from Houlton to the Northern Maine Community College may currently be prohibitive for some residents.

### Research and Development

Research and development R&D activity is an important component of cluster development for many industries. Information technology companies are often engaged in research and development to create new products and services to compete in highly competitive national and international markets. In many cases this R&D is done in house and built over-time on a project by project basis. Therefore, worldwide in this industry, a great deal of R&D occurs at the street level within the businesses offering products and services as opposed to occurring within research institutions. Part of the reason for the R&D being done in-house as opposed to within research institutions is the demand to get new products development and to market quickly in a rapidly changing market. Good examples of this in Aroostook County are ATX and Taxware both located in Caribou, which conduct a significant amount of in-house research for product improvements and new product development.

With that said however, even in this industry, access to research institutions within the region can provide significant competitive advantage for local firms. The Aroostook IT sector lacks any significant connections to R&D entities. The state's largest academic research institution, the University of Maine, located in Orono is viewed as being too far for Aroostook IT business to serve as a significant asset. The University of Maine System campuses located within Aroostook County at Fort Kent and Presque Isle do not have R&D as their primary mission. The state of Maine has been making R&D grants available to Maine businesses since 1999 through the Maine Technology Institute. To date, no Aroostook Company has received MTI funding for IT intensive R&D. R&D initiatives within IT are being supported in nearby New Brunswick and Quebec; however, these efforts are viewed as servicing the Canadian IT industry.

In spite of these R&D shortfalls, there is some important applied R&D occurring within select IT areas at UMaine Fort Kent in the areas of GIS and E-commerce and UMPI in the area of management information systems. The location of GIS and E-commerce research within the County represents a regional asset which may be able to be leveraged to attract and developed businesses within these rapidly growing industries. Success of companies including Photo Science and James Sewall in the Bangor area indicate that these industries can compete from rural regions.

### Industry Networks and Trade Associations

Industry clusters are characterized by strong networking among businesses and professionals within the industry to share resources, discuss industry trends and issues, problem solve, and to represent industry to interests outside the industry including business and government leaders. These functions are typically performed by industry or professional associations.

MESDA, Maine's association for the software and information technology industry, does not currently have a significant number of members in Aroostook County but is in the process of attempting expanding its reach through IT user groups throughout the state. MESDA has applied for a cluster enhancement grant from the Maine Technology Institute to help finance the expansion. The expansion project will involve increasing facilities and partnerships for hosting user groups.

In addition to MESDA, another potential resource for IT related businesses in Aroostook County for networking and training is the Target Technology Center in Orono, which is roughly 100 miles from Houlton. The Target Technology Center is an IT business incubator that is supported by the State and the University of Maine. In addition to providing office space for start-up companies, through their affiliate program, the Target Center provides business assistance and training services to IT business throughout the State. These services are often provided by the Center in cooperation with statewide business and industry service providers including the Maine Patent Law Center, Maine Technology Institute, and Maine Small Business Development Centers.

All of the companies and entities interviewed expressed an interest in increased networking and availability of user groups, however the need was greater in the smaller firms compared to the larger companies. Also, most of the entities stressed that any networking efforts should be based on Aroostook needs for Aroostook businesses. There was some skepticism of statewide efforts eventually reaching out to include Aroostook interests. Another important point that was commonly expressed was that networking, training and user groups felt that they should cover not only technical IT material but also business functions such as business and project management, sales and marketing.

### Leadership Organizations

Industry cluster development often includes one or several leadership organizations. In the IT sector Aroostook County has several businesses that serve to some extent as leadership organizations or potential leadership organizations. These companies can play a significant role in the future growth of IT in Aroostook County.

ATX – Founded in 1991, ATX grew out of a small two-person operation providing spreadsheet templates to local accounting businesses into a corporation with approximately 300 employees, with offices in three states, producing “off the shelf”

software” for tax preparation businesses all over the US. As of the last full business year, ATX has grown to serving over 40,000 tax professionals.

ATX was acquired by UCG of Rockville Maryland in 2001. Through new product and services and through acquisitions, UCG has a portfolio of 15 business information companies providing products and services to over two million clients worldwide. UCG also acquired Kleinrock, a leading tax research software and on-line service company. The acquisitions lead to the merger of ATX and Kleinrock for the creation of the “Total Tax Office”, ATX’s comprehensive tax preparation software package.

Since, 1998, ATX has been headquartered in Caribou, Maine. With approximately 200 employees, the Caribou offices perform the sales, marketing, financial management, IT service, product support and primary programming functions for the company. Approximately 55 of ATX’s Caribou employees are programmers. The Caribou office also houses a call center operation to provide call center support for ATX products and services. An additional 85 ATX employees work out of the company’s Fort Pierce, Florida office on development of tax forms. Another 25 employees work out of Kleinrock in Maryland on the tax research components of the Total Tax Office and providing tax research products and services.

There are several reasons why ATX can be considered an IT leader organization in Aroostook County. First, it is focused wholly on IT and large enough to create a substantial local market for IT professionals including programmers. The company is currently working with the Northern Maine Community College on the development of coursework and certificate program to meet the needs of these employees as well as future IT employees in the region. Second, the company is growth oriented and is part of a much larger company, UCG, with a network of 15 companies serving clients worldwide. ATX products and services, though used by some businesses in the County, are exported all over the US bringing income and investment into Aroostook. Finally, ATX has created several “spin-offs” of persons or businesses that started at ATX and now operate separate businesses within Aroostook County, most notable Taxware and Blue Ox which are also located in Caribou. Taxware is a software development company based in Salem, Massachusetts that purchased the Tax Solver software product created by ATX for sales and use tax calculations. Taxware kept Tax Solver operations in Caribou and currently has a staff of 17 employees including managers, programmers, and customer service professionals all who were originally with ATX. Blue Ox is a two person custom software development firm in Caribou that was started by a former ATX employee.

Burrelle’s Information Services - Started in 1888 in New York City, Burrelle’s Information Services opened operations in Presque Isle 23 years ago. The Presque Isle region was chosen because of the availability of reliable, qualified and affordable labor and the owner’s familiarity with the region. Attractive incentives provided by the State also aided the decision. Burrelle’s is one of the largest companies in its industry providing information services including clipping services of print media, broadcast and Internet media clips, and analytical services. Its clients include major marketing firms

throughout the world. Currently headquartered in New Jersey, Burrelle's Maine presence includes two facilities in Presque Isle, one in Houlton, and one in Belfast. The Presque Isle facilities serve as one of three major national clipping service centers, and the Houlton facility is a branch office of Presque Isle where additional staff readers are located. Combined there are approximately 515 employees at the Presque Isle and Houlton facilities.

Burrelle's has served as an IT leader organization in Aroostook County by driving demand for connectivity, increased bandwidth and redundancy. Over the last ten years, the information services industry has grown significantly in terms of its use of and reliance on electronic media and Internet services. Because of Verizon's infrastructure throughout the State and Time Warner's services and infrastructure within the region, Burrelle's has been able to meet its IT infrastructure and service needs.

Burrelle's is in process of upgrading its technology to a state of the art scanning system (hardware, software and networking) for this industry. This \$10 million investment will solidify Burrelle's Presque Isle operations as a central location for the company's national clipping services and the operators/maintainers of the new technology. Effectively utilizing the new technology will require additional bandwidth and redundancy of services to insure against "down-time". In order for Burrelle's to make the investment at the Presque Isle facility, they had to be assured that they could obtain the required bandwidth for the system upgrade and that redundant services would be possible. Currently, the company is working with Time Warner and Pioneer Wireless on proposals to obtain the increased capacity and redundancy through additional connections to services and gateways in New Brunswick, Canada.

In Presque Isle, Burrelle's currently has a staff of ten IT professionals that provide in-house IT services. They anticipate adding 2-3 more staff as a result of the technology upgrade. Once chosen as a location because of access to labor, the region is now being chosen because of its IT infrastructure and services.

Maine Mutual Group - A good example of the importance of companies that are heavy users of IT is Maine Mutual Group (MMG). MMG is a property and casualty insurance company headquartered in Presque Isle doing business in Maine, New Hampshire, and Vermont. For 2003, MMG expects to have approximately 131,000 policies representing \$84 million written premiums. MMG has been in operations in the region for over 100 years and sells exclusively through a network of over 135 independent agents located throughout the three states.

IT has been instrumental in driving MMG's business model. MMG has approximately 127 employees of which 105 are in Presque Isle, including 16 IT staff (10 programmers, 5 technicians, and 1 manager). MMG's IT staff was instrumental in the creation of a proprietary imaging system, which has enabled the company's conversion to a paperless work environment. The group has also furthered efficiencies within product delivery through facilitation of data download to its agents' management systems and agency inquiry on various levels through a secure Web site. They are also responsible for

developing and maintaining all of the company's policy, billing, payroll, and claims systems; hardware and network support; and administration. Future plans include the ability to receive all data electronically and further Web hosted platforms for submission delivery. They serve both the headquarters in Presque Isle and the Company's branch location in Concord, New Hampshire.

Heavily dependent on IT connectivity, MMG utilizes Road Runner for broadband services. The availability of broadband in the region is a significant contributor to the MMG being able to meet the demand for services across the entire company by providing the best possible customer service through quick response times for customers, high speed access for remote employees, underwriting research, and more. As a leadership organization MMG has also fostered solid working relations with the areas educational institutions particularly the Northern Maine Community College.

All three of the above IT leadership company's in Aroostook County are growth oriented, have developed relationships with the area educational institutions, and export goods and or services outside of the County and Maine bringing revenues and investment into the State.

#### Market Potential - Local Demand

Because of the relatively small number of businesses in the region, the local demand for IT services is not strong enough at present to generate sufficient activity for a regional cluster. Several small custom software firms indicated that the relatively small size of the County leads to insufficient local demand for products and services to support further growth. In order to grow, the firms must compete in other geographic areas in Maine, outside of the state, and/or across the border in Canada. Furthermore, several interviewees indicated that institutions and businesses that are heavy users of IT such as financial, insurance, health, and educational institutions, are not generating sufficient investment in the hardware, software, and network upgrades to sustain local providers of these services. In several cases when this investment has occurred, it has been accomplished through little or no local contracting.

Although local demand for IT services is not large enough to solely support and IT cluster, several of the smaller IT firms have developed regional and national niches based experience gained in the local market. For example, several of the firms interviewed have developed expertise in providing IT services to the forestry and agriculture sectors (two sectors that have been important traditionally within Aroostook County) by serving local clients. This has helped the companies compete for business in these same industries outside of Aroostook County.

Larger IT or IT-related companies such as ATX and Burrelle's are national in terms of market scope and do not rely on local demand for products and services.

### Market Potential -Export Demand

The larger Aroostook IT or IT related businesses have achieved growth primarily by providing products and services to clients beyond Maine. Though, they provide products and services to companies within Aroostook County and Maine, ATX, Taxware, and Burrelle's obtain most of their sales from clients outside of the County and Maine. Burrelle's information services are provided to companies internationally and ATX and Taxware to entities across the US. Maine Mutual sells its products and services to clients throughout Maine, Vermont, and New Hampshire.

Regarding the smaller IT firms offering custom software development, networks, Web design, and computer support services; it was indicated that smaller Aroostook IT firms have a difficult time competing in the central and southern Maine markets because they are viewed by other Maine businesses as being too remote to be serious competitors. This has led some firms to consider nearby Canadian markets as opposed to looking south. Other firms are still looking to compete in central and southern Maine markets. Partnering with firms in other regions was viewed as an important means for small Aroostook IT firms to compete in other markets.

### *Potential for relationships with Canadian businesses*

One company interviewed has broken into partnering with a Canadian firm offering complimentary services. Still in the early stages, this relationship is seen as providing mutual benefits to the partners, providing each a presence in the other's home country. Canadian firms may view Aroostook firms as good partners. They have close proximity and provide the Canadian firm with an "American presence. The same could be said of how Aroostook IT firms might grow to view Canadian partnerships.

While viewed as offering potential and being done by some Aroostook firms, there is not a great deal of activity currently between Aroostook IT firms and Canadian businesses. The smaller firms indicated a need for greater technical assistance with entering into and developing Canadian business and partnerships.

### **Recommended Strategy Areas**

The following are general strategy recommendations based on the findings from the analysis. More detailed suggested actions are contained in the last section of this report.

- Create an Aroostook IT Identity - Greater focus on marketing of the region to promote identity as rural IT region is needed. Such efforts are currently underway and are experiencing early success in New Brunswick, Canada, which shares similar demographics to Aroostook County. This should be separate from general business marketing of the region and include increased awareness of IT businesses, resources, and infrastructure. This message should be provided to businesses within the County as well as those external to it.

- Increase awareness of the region's IT infrastructure. None of the businesses representatives interviewed for this analysis cited IT connectivity as an obstacle to business growth and development in the County; in fact, several indicated that the wide availability of connectivity options in the County provides their company with advantages over firms located elsewhere in Maine. This story needs to be shared with IT and IT dependent businesses looking for locations to grow.
- Increase potential for information technology R&D in the region. Encourage Maine Technology Institute, Federal Small Business Innovative Research, and other similar grant programs; tie into existing R&D centers including the State's IT Incubator in Orono, explore increased R&D activity and relationships between research and business at UMaine Aroostook Campuses building on e-commerce and GIS at Fort Kent, and Business MIS at UMPI.
- Build IT Networking/Support Opportunities - Explore coordination with MESDA, the Target Technology Center and New Brunswick IT Association. Consider IT related higher education professionals and students for program participation and delivery, administration, and hosting. Beyond coordination with the State IT association, IT businesses in the County may want to consider developing a regional chapter. If mutual agreement and opportunities do not develop, then formation of a regional IT network organization should be pursued.
- Market IT locally in addition to other efforts – stimulate local demand from heavy local IT users such as hospitals, education institutions, banks, and not-for-profits. Provide information that lets these entities know that expertise and ability exists locally, promote state of the art among all businesses, integrate IT professional within the larger companies and institutions through user groups and networks.
- Foster linkages between IT companies in nearby Canadian regions and companies in Aroostook - Consider a program to promote stimulate co-location in which a Canadian firms open an Aroostook branch and vice versa. Both companies will benefit by increasing international market share.
- Attract and retain professional IT talent - Increase utilization of the regional education Institutions (UMaine Fort Kent, UMaine Presque Isle, the Northern Maine Community College, and the University College in Houlton) as major support institutions for IT.

## Information Technology Marketing Plan

The following table outlines a specific action plan to grow and develop the information technology sector in Aroostook County. The plan is designed to address four main goals:

- Create IT Identity for Aroostook County
- Foster linkages between IT companies in nearby Canadian regions and companies in Aroostook County
- Increase networking and training opportunities for County IT professionals and businesses
- Attract and retain professional IT talent

The marketing plan is based on the findings and analysis from previous sections of this report. This report provides much of the information and background to support the marketing strategies. Therefore little new information or studies are needed to take the next steps. Resources are needed however to implement and organize the actions and sustain them over time. All of the actions are meant to be ongoing or re-occurring. One-time quick fix actions will have little to no impact on growing the County's IT sector.

<b>GOAL</b>	<b>I. CREATE IT IDENTITY FOR AROOSTOOK COUNTY</b>
<b>Desired Action</b>	<b>Ia. Create Marketing Material Specific to Aroostook IT Sector</b>
Product	Print and/or electronic brochure that highlights County's, existing IT businesses and activity, IT related education resources, IT connectivity capacity (including high speed Internet accessibility and redundancy), and rural/natural resource assets.
Who takes action	NMDC, Maine Public Service, sub-regional economic development agencies; higher education institutes (NMCC, UMPI, UMFK, University College at Houlton).
Reason for party to take action	Currently there is a lack of awareness both within the County and external to it regarding the County's current capacity and potential for IT sector growth.
How to get going	Develop IT working group that includes IT business leaders, IT faculty, and IT business users to oversee product and assist with distribution of message. NMDC to provide staffing and administration for group.
To whom to market	IT identity, capacity, and potential needs to be communicated to: (1) IT businesses considering locating or expanding in rural areas (NAICS Codes: 5112-software publishers, 5161-Internet publishing & broadcasting; 5181-Internet service providers and web search portals; 5182-data processing, hosting, and related services; 5415-computer systems design and related services). The geographic areas to be marketed to should include the Atlantic Provinces of Canada and Quebec, the Bangor Region, the rest of Maine, and New England. (2) Entities that are heavy IT users within the County should also be marketed to including insurance and financial businesses, business services, hospitals and health services, and not for profits. These

	<p>entities need to be made aware that firms within the County can help them meet their IT needs and they need not look outside the County for contracting.</p> <p>(3) Entities and individuals involved in economic development including Maine &amp; Co, Maine Department of Economic &amp; Community Development, MESDA (Maine’s Information Technology Industry Association), state and federal legislative delegation, and the Governor’s office. These entities and individuals are involved in marketing Maine to the rest of the world and can help Aroostook if they know the message and capacity of the region.</p>
Who organizes	NMDC (no other entities exist that represent the IT sector in the County).
Resources needed	Funds for production and distribution of marketing materials, sufficient information already exists in Cluster Study. Resources are now needed to produce specific marketing products to deliver message.
Federal & State Partners	Few federal & state programs exist that provide direct funding for marketing materials. Technical assistance and support for this task should be coordinated with Maine & Co. for the development of an effective marketing message for Aroostook IT outside of the state and the Maine International Trade Center for assistance with developing an effective message for Aroostook IT internationally.

<b>GOAL</b>	<b>II. FOSTER LINKAGES BETWEEN IT COMPANIES IN NEARBY CANADIAN REGIONS AND COMPANIES IN AROOSTOOK</b>
<b>Desired Action</b>	<b>IIa. Create programs to stimulate business to business partnerships and possible co-location between Canadian and Aroostook IT companies</b>
Product(s)	Distribution of marketing materials, business to business event/conference that includes networking and training, on-going training for Aroostook business on how to partner with Canadian businesses, loan/grant program for Aroostook business to support market expansion activities.
Who takes action	NMDC initially to engage other partners.
Reason for party to take action	Companies on both sides of the border will benefit by developing international presence and entry into larger market. International presence can be achieved without need for significant travel due to proximity between Aroostook and targeted Canadian Provinces.
How to get going	Develop database of IT companies within targeted NAICS codes (see goal B) located within Aroostook County and the Canadian Atlantic Provinces and Quebec. Engage the Maine International Trade Center to coordinate efforts between NMDC, MESDA, and IT trade associations in the Canadian regions.
To whom to market	IT companies in Aroostook and the Canadian Atlantic Provinces and Quebec within the targeted NAICS codes. The demand and potential benefit seems greatest for small to medium sized IT firms seeking to expand market.
Who organizes	NMDC in coordination with the Maine International Trade Center.
Resources needed	Funds for database development; outreach/marketing to firms, and event.
Federal & State Partners	The Maine International Trade Center can provide technical assistance and coordination with statewide efforts.

<b>GOAL</b>	<b>III. INCREASE NETWORKING AND TRAINING OPPORTUNITIES FOR COUNTY IT PROFESSIONALS AND BUSINESSES</b>
<b>Desired Action</b>	<b>IIIa. Incubate IT industry association presence in Aroostook County to increase products and services available to Aroostook IT companies and professionals.</b>
Product(s)	Create professional user groups targeted to specific IT business interests including technical user groups (designed around a particular language or product), business marketing, international trade and project management; increase Aroostook participation in industry association databases and Web sites for statewide IT directory that provides access to Requests for Proposals for IT services (MESDA's CodeME); identify or develop location for teleconferencing to support participation in user groups and training outside of County.
Who takes action	NMDC in Coordination with MESDA, Maine's Information Technology Industry Association, IT related departments at higher education institutions (NMCC, UMPI, UMFK, and University College at Houlton) and the Target Technology Center.
Reason for party to take action	Due to geographic size of County networking among IT professionals and business is difficult, yet demand for networking was expressed by professionals interviewed. Networking would assist IT business and professionals in reducing feeling of isolation in rural county, and provide greater opportunities for partnering and training.
How to get going	Organize initial meeting/mini-conference in which results of IT Cluster Study and Marketing Plan are presented.
To whom to market	Aroostook IT businesses.
Who organizes	NMDC and MESDA.
Resources needed	Funds to support initial meeting/mini-conference; funds to match MESDA efforts for teleconferencing facilities.
Federal & State Partners	MESDA is currently seeking funds from the Maine Technology Institute (MTI) for a Cluster Enhancement Grant to fund extension of its professional user groups program. NMDC and the partners listed above can leverage this effort to initiate professional networking and user group activity in the County.

<b>GOAL</b>	<b>IV. ATTRACT AND RETAIN PROFESSIONAL IT TALENT</b>
<b>Desired Action</b>	<b>IVa. Pool recruiting efforts among IT businesses and other technology intensive businesses</b>
Product(s)	Annual or semi-annual IT job fairs/events to be held in Bangor and Portland areas to attract talent to region, and a local fair/event at higher education institutions (NMCC, UMPI, UMFK, University College at Houlton) to introduce students to IT careers in the County.
Who takes action	NMDC in cooperation with Maine Department of Labor, Maine Career Centers, higher education institutions (NMCC, UMPI, UMFK, University College at Houlton), and Aroostook IT and technology-intensive businesses.
Reason for party to take action	While recruiting IT professionals in Aroostook is not much more difficult than in other rural areas of state, it is still a challenge particularly for small to medium-sized IT companies desiring talent with proven experience. These are the same companies that often lack resources for recruitment efforts. The IT sector is likely not large enough to be able to pull-off their own events/fairs. Therefore to increase chance for success IT effort should be pooled with other technology intensive sectors.
How to get going	NMDC express desire among potential partners, organize planning session among interested parties.
To whom to market	Exiting IT professionals as well as students in IT related disciplines located in Aroostook, Bangor and Portland regions.
Who organizes	NMDC.
Resources needed	Resources for hosting event and for getting the word out.
Federal & State Partners	Maine Department of Labor would be a natural partner for this activity.
<b>Desired Action</b>	<b>IVb. Develop IT internship program</b>
Product(s)	Paid Internship program designed to provide Aroostook higher education students with hands-on experience in IT related job.
Who takes action	NMDC in cooperation with higher education institutions (NMCC, UMPI, UMFK, University College at Houlton), and Aroostook IT.
Reason for party to take action	IT companies indicated that they need workers that not only have education background in IT but also proven IT experience. IT companies particularly small to medium sized, are reluctant to hire inexperienced students and do not have sufficient resource to utilize interns. Therefore, opportunities for students to stay and work in County during and after education experience are limited.
How to get going	NMDC express desire among potential partners, organize planning session among interested parties.
To whom to market	Aroostook IT companies.
Who organizes	NMDC.
Resources	Free market currently not supporting enough paid interns. Funds are

needed	needed in the form of grant to businesses to offset the costs of hiring interns.
Federal & State Partners	Maine Department of Labor would be a natural partner for this activity as well as the University of Maine and Northern Maine Community College.

## Technical Notes – Information Technology

The following table lists persons interviewed for the IT cluster analysis along with the company/entity and IT related sector.

<b>IT Sector Interviews Conducted for Northern Maine Development Commission Cluster Analysis</b>			
Contact Name/Title	Company/Organization	IT Sub-Sector	Maine Location (if applicable)
David Olsen, Chief Operating Officer	ATX	Software Development	Caribou, ME
Christopher York, President	Blue Ox Technologies	Custom Software Development	Caribou, ME
Brad Potter, IT Department Manager	Burrelle's Information Services	IT user for Information Services Industry	Presque Isle & Houlton ME
Dottie Wheeler, Vice President, Maine Operations	Burrelle's Information Services	IT user for Information Services Industry	Presque Isle & Houlton ME
Joe McClescal	CNT's Professional Services	Telecommunications Sales	Boston, MA
Peter Thibeault	Delphi Global Services, Inc	Telecommunications Consultant	Hallowell, ME
Joe Wischerath, President	Maine & Company	Statewide Business Attraction	Portland, ME
Stacy Shaw, Information Systems Manager	Maine Mutual Group	IT User for Insurance Industry	Presque Isle, ME
Joe Kumiszczka, Executive Director	MESDA, Maine's Software & Information Technology Industry Association	State IT Industry Association	Statewide programs, Office based in Portland
Dwight Clayton, Director & Instructor, Business Technology Department	Northern Maine Community College	Higher Education	Presque Isle, ME
Todd Player, President	Oak Leaf Systems, Inc.	Network design, implementation, & support,	Caribou, ME
Chris Anderson, President	Pioneer Wireless	Wireless Telecommunications	Houlton, ME
Tim McAfee, Technical Director	Pioneer Wireless	Wireless Telecommunications	Houlton, ME
Mike Hilton	Sun-Gard Availability Services	Disaster Recovery	Boston, MA
Matthew Olson, Software Development Manager	Taxware, Division of govONE Solutions	Software Development	Caribou, ME
Barry McCrum, Former Vice President of Governmental Affairs	Time Warner	Cable Based Telecommunications	Statewide
Stephen C. Jordan, Esq.	Troubh, Heisler & Piampiano, P.A.	IT and Intellectual Property Atty	Portland, ME
Dave Hobbins, Professor of Forestry &	University of Maine Fort Kent	Higher Education	Fort Kent, ME

**IT Sector Interviews Conducted for  
Northern Maine Development Commission Cluster Analysis**

Contact Name/Title	Company/Organization	IT Sub-Sector	Maine Location (if applicable)
Environmental Studies			
Dan Breton, Director Governmental Affairs	Verizon	Telecommunications	Statewide