



INFORMATION TECHNOLOGY COUNCIL
OF NORTH DAKOTA

State of the
IT INDUSTRY
Guide

2013

THE STATE OF NORTH DAKOTA'S IT INDUSTRY

North Dakota is at the forefront of a rapidly expanding technology industry. Although the state has received significant attention for its booming energy industry, North Dakota is also experiencing a boom in its technology sector. With technology changing faster than ever and new technologies quickly adopted across the globe, it's now easier for IT businesses to share information and follow entrepreneurial visions right here in North Dakota.

As of Nov. 1, 2012, the state has 430 high-tech, high-paying job openings. Nearly 20% are in the oil producing counties with 80% of the openings in other areas of the state. With a recent first place ranking in STEM job growth in the Enterprising States study, North Dakota is showing the nation its thriving opportunities for IT businesses and professionals.

IT is an integral component in all of the state's industries, and it is evident the IT industry will continue to progress in North Dakota. In order to keep up with workforce needs, it is essential partnerships continue with industry, education and government. It is also vitally important the state maintains and continues to enhance its IT infrastructure and maintains business-friendly incentives.

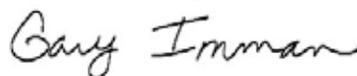
In a cooperative effort to share the status of North Dakota's IT industry, the Information Technology

Council of North Dakota (ITCND), along with the sponsors below, is pleased to present the 2013 *State of the IT Industry Guide*. The Guide is an assessment of North Dakota's IT industry in the areas of infrastructure, workforce, trends, competitiveness and economic impact on the state.



This publication is a valuable tool in informing the community, partners in private and public sectors, and potential business prospects about opportunities within North Dakota's IT industry. We know it will be a valuable resource for you and your organization.

ITCND's mission is to actively encourage the use, growth and development of IT in North Dakota. We are continually looking for new ways to advance that mission and welcome your input. Feel free to contact me at inmangary@hotmail.com or 701-371-1563 or ITCND Executive Director Deana Wiese at office@itcnd.org or 701-355-4458.



Gary Inman, President
Information Technology Council of North Dakota

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INTRODUCTION

North Dakota's information technology (IT) industry plays an important role in the state's economy. In addition to the contribution of IT businesses, IT is a vital function of virtually every business, government, education or nonprofit entity across the state, nation and world.

This report is produced biannually to showcase the impact of the state's IT sector and identify opportunities and challenges within the IT industry. The data was collected by ITCND in partnership with Job Service North Dakota and supplemented by the results of surveys of the ITCND membership. The information throughout the report refers to the North American Industry Classification System (NAICS) and the Occupational Information Network (O*NET).

For the purposes of this report, the North Dakota IT sector includes businesses classified within NAICS 51 – Information and NAICS 54 – Professional, Scientific and Technical Services. References made to the North Dakota IT subsectors include NAICS 511 – Publishing Industries (except Internet); NAICS 518 – Data Processing, Hosting and Related Services; and NAICS 541 – Professional, Scientific and Technical Services (Table 1).

Along with its sponsors, ITCND is pleased to present the 2013 edition of the *State of the IT Industry Guide*, which provides a snapshot of North Dakota's IT industry, including the economic impact to the state; the status of the IT workforce and infrastructure; the competitiveness of the industry at the regional and national level; and the key industry trends.

[Table 1]

IT INDUSTRY BREAKDOWN

North Dakota IT Sector (NAICS)

- 51 – Information
- 54 – Professional, Scientific and Technical Services

North Dakota IT Subsectors (NAICS)

- 511 – Publishing Industries (except Internet)
- 518 – Data Processing, Hosting and Related Services
- 541 – Professional, Scientific and Technical Services

North Dakota IT Occupations (O*NET)

- 11-3021 – Computer and Information System Managers
- 15-1021 – Computer Programmers
- 15-1032 – Software Developers, Applications
- 15-1033 – Software Developers, Systems Software
- 15-1050 – Computer Support Specialists
- 15-1021 – Computer Systems Analysts
- 15-1041 – Database Administrators
- 15-1042 – Network and Computer Systems Administrators
- 15-1179 – Information Security Analysts, Web Developers and Computer Network Architects
- 15-1799 – Computer Occupations, All Other
- 25-1021 – Computer Science Teachers, Postsecondary

Source: Job Service North Dakota

EXECUTIVE SUMMARY

North Dakota's economy is booming, and the state's IT industry is no exception. With job growth in North Dakota's IT subsectors more than doubling that of the nation, the industry remains a growing and vibrant part of the state's economy. Opportunities for existing and start-up IT businesses are abundant, and North Dakota boasts one of the lowest unemployment rates in the country.

The state's IT subsectors employ 16,700 people at more than 2,600 IT-related businesses. These businesses contribute more than \$1.6 billion to the state's gross domestic product. Of those 16,700 employees, 2,680 are employed in IT occupations with the remaining employed in areas such as accounting, human relations and management. An additional 4,350 North Dakotans hold IT occupations in other industries, such as energy, health care and finance, for a total of 7,030 IT employees.

The average annual wage for IT positions in North Dakota is \$57,392, which is 48% higher than the state average. However, North Dakota wages for IT professionals still lag behind surrounding states and the nation. The state is closing this gap as wages have increased at a greater rate than the national average.

With the growth of the industry, workforce continues to be a challenge. North Dakota has seen an increase of more than 50% in IT occupations over the past decade and is projecting a 20% increase for the next decade. It is estimated more than 2,600 new and replacement IT positions will be needed between 2010 and 2020 in North Dakota. Of these positions, nearly 1,400 will be new jobs created by growth in the industry, and the remaining will be replacements. With 7,030 IT employees currently in the state, this means replacement and new positions will equal nearly 40% of the current IT employees across all of the state's industries.

In an effort to address this issue, industry, government and education stakeholders are collaborating to inform students about the IT career opportunities and the potential education pathways to secure these positions. North Dakota currently offers an IT career awareness program, internship opportunities, more than 50 post-secondary IT education programs and a loan forgiveness program.

The ever-changing environment of the IT industry creates ongoing opportunities and challenges. IT leaders statewide have identified infrastructure/bandwidth, workforce and software as a service as the state and national trends that most impact North Dakota's IT industry. The state is well positioned to take advantage of the opportunities and address the challenges presented by these emerging trends due to the cooperation among North Dakota's industry, government and education entities.

IT continues to play a vital role in North Dakota's economy, and the future of the industry is bright. As the industry continues to evolve, collaboration at the state and federal level will allow North Dakota's IT industry to remain a strong competitor in the global economy.

Economic Impact

North Dakota is home to a diverse IT industry that contributes significantly to the overall growth and economic strength of the state. There are more than 2,600 businesses within the IT subsectors, which employ 16,700 North Dakotans in various fields including IT, human relations, finance and marketing.

IT plays a key role in enhancing productivity and growth in numerous industries, including agriculture, health care, energy, manufacturing and financial services. In addition, the IT industry generates tax revenues for both local and state governments.

Three critical elements speak directly to the impact of IT on the state:

- IT businesses are knowledge-based and create a significant number of high-paying jobs.
- The IT industry is categorized as a primary sector, meaning it brings outside dollars into the state.
- Technology industries on average generate higher-added value per worker than non-technology industries.

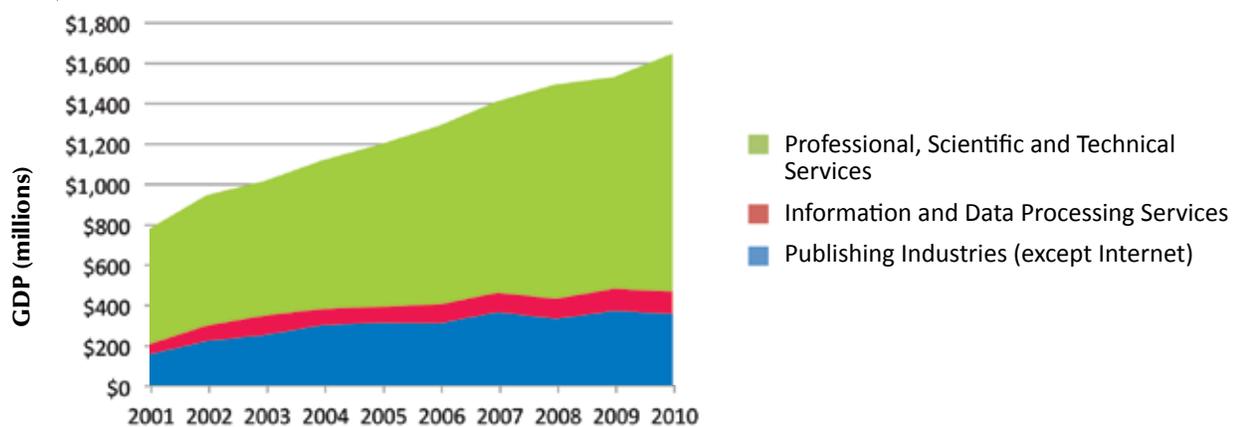
Gross Domestic Product Contributions

Gross domestic product (GDP) is defined as the total market value of all goods and services produced within a state and is one of the measures of income and output for the state's economy. It is considered the sum of the value added at every state of production.

The contribution of the IT subsectors to the state's GDP has more than doubled from 2001 to 2010 (Figure 1). With a contribution of more than \$1.6 billion, the IT subsectors are responsible for 4.6% of the state's total GDP.

[FIGURE 1]

GDP: IT SUBSECTORS (2001-2010)



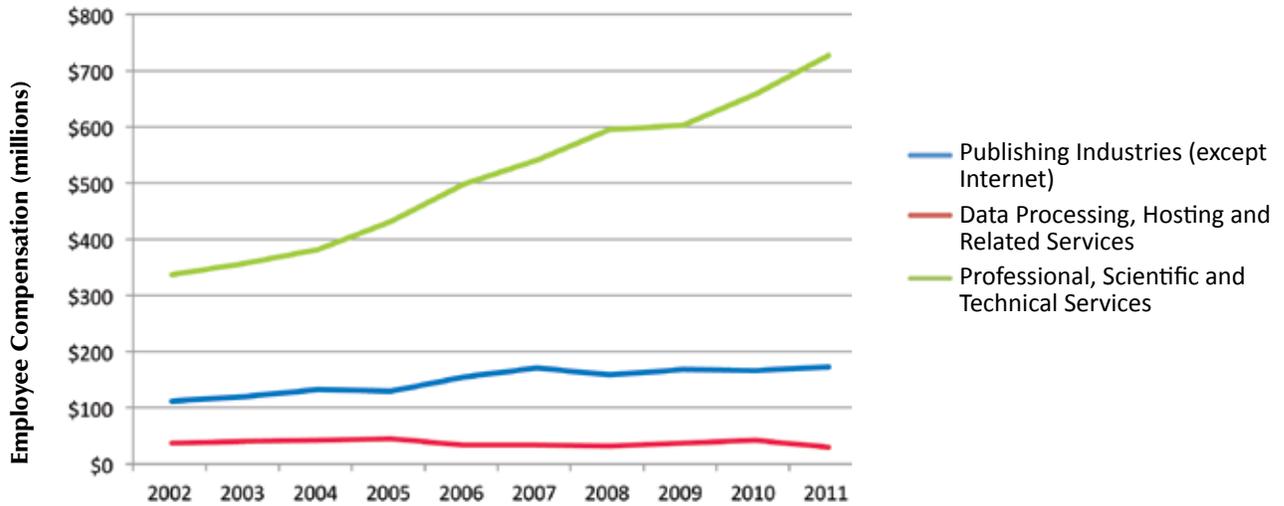
Source: U.S. Bureau of Economic Analysis, U.S. Department of Commerce

Pay Contributed to the Economy

In 2011, total employee compensation contributed to the state's economy by the 16,700 jobs in the IT subsectors was approximately \$931 million. This is an increase of nearly 91% since 2002 (Figure 2).

[Figure 2]

EMPLOYEE COMPENSATION CONTRIBUTED TO THE ECONOMY (2002-2011)



Source: U.S. Bureau of Economic Analysis, U.S. Department of Commerce

Average pay for those employed in the IT subsectors has been on a steady incline over the past decade as well (Table 2).

[Table 2]

AVERAGE PAY (2002-2011)

NAICS	Subsectors	2002	2011	% Increase
511	Publishing Industries (except Internet)	\$37,189	\$58,925	58%
518	Information and Data Processing Services	\$30,882	\$37,642	22%
541	Professional, Scientific and Technical Services	\$34,533	\$56,169	63%

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

IT Subsector Job Growth

The employment in North Dakota IT subsectors (publishing industries except internet; data processing, hosting and related services; and professional, scientific and technical services) has more than doubled the national growth rate. There has been a 7% increase in employment from 2002 to 2011 across the nation, while North Dakota's IT subsectors have experienced a 19% increase (Table 3).

[Table 3]

IT SUBSECTOR Job Growth (2002-2011)

Subsector	2002 US	2011 US	2002 ND	2011 ND	US %	ND %
					Change	Change
Publishing Industries (except Internet)	958,959	743,871	3,032	2,949	-22%	-3%
Data Processing, Hosting and Related Service	441,128	250,422	1,204	802	-43%	-33%
Professional, Scientific and Technical Services	6,770,791	7,781,429	9,769	12,943	15%	33%
Total	8,170,878	8,775,722	14,005	16,694	7%	19%

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

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INFRASTRUCTURE

Despite having one of the lowest population densities in the nation, North Dakota continues to be at the forefront of offering broadband services to even the most rural communities in the state. According to the North Dakota Association of Telephone Cooperatives, more than 95% of the state's population has access to broadband services.

North Dakota's broadband infrastructure has made significant advances in recent years. Service providers have invested hundreds of millions of dollars deploying fiber to rural areas across the state. For example, Dakota Carrier Network and the independent telephone companies have more than 16,000 miles of fiber optic facilities offering Carrier Ethernet, DSL and cable-based internet access. Century Link also has a major fiber footprint in the state with connections to its advanced fiber optic network. This network spans more than 173,000 route miles globally. Century Link offers its Century Link Metro Optical Ethernet services for businesses in Bismarck and Fargo and has more than 300 remote terminals for DSL throughout North Dakota.

Consumers in the state can choose from Dakota Carrier Network, Century Link, Midcontinent Communications or the local independent telephone company for their broadband needs. Broadband connections can be ordered as T1, DS3 or OCx connections.

The North Dakota state government has recognized the importance of a robust IT infrastructure in order to compete in today's global economy. It created the Information Technology Department to provide effective and efficient state-of-the-art services to serve education, agencies and public safety groups throughout the state. Education and public services benefit from the foresight of creating this key state department.

Broadband infrastructure is one of the Obama Administration's sectors of business targeted with the stimulus program. To date, North Dakota service providers have been awarded more than \$100 million to improve the state's broadband infrastructure. Recipients include: BEK Communications, Dakota Central Telecommunications, Dakota Carrier Network, SRT Communications, Consolidated Telcom, Moore & Liberty Telephone, Griggs Telephone Company, Red River Telephone and Reservation Telephone. These companies are installing fiber optic-based infrastructure in their territories, enabling customers to have access to the most state-of-the-art broadband service.

The fiber backbone serving North Dakota is supported by multiple Dense Wavelength Division Multiplexing (DWDM) rings, offering 10, 40 and future 100 Gigabit speeds. Redundancy has been built into every corner of the state. The state of North Dakota is served by multiple fiber optic backbone rings that provide broadband access to every K-12 school, state agency and hospital in the state.



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STATUS OF THE WORKFORCE

Despite the national recession, North Dakota's economy is thriving thanks to numerous successful industries, including IT. The state continues to offer opportunities for business start-ups and expansions and boasts one of the lowest unemployment rates in the country. Industry, government and education continue to work together to inform potential in- and out-of-state employees of the great jobs that exist in North Dakota's IT industry.

North Dakota's three IT subsectors employ 16,700 individuals. These subsectors include the state's IT businesses. Of these jobs, 16% (2,680) are IT positions. The remaining jobs are in areas such as accounting, sales and marketing. An additional 4,350 North Dakotans hold IT occupations in numerous other industries, including health care, energy, education and government. When combined with the 2,680 IT employees in the IT industry, the total number of North Dakota IT professionals is 7,030 (Table 4). The average annual wage for IT positions is \$57,392 – 48% higher than the state average.

[Table 4]

IT OCCUPATIONS (2011)

O*NET	Occupation	Number of Employees
11-3021	Computer and Information Systems Managers	550
15-1131	Computer Programmers	510
15-1132	Software Developers, Applications	860
15-1133	Software Developers, Systems Software	580
15-1150	Computer Support Specialists	2,290
15-1121	Computer Systems Analysts	670
15-1141	Database Administrators	170
15-1142	Network and Computer Systems Administrators	510
15-1179	Information Security Analysts, Web Developers and Computer Network Architects	500
15-1799	Computer Occupations, All Other	290
25-1021	Computer Science Teachers, Post Secondary	100
	Total	7,030

Source: Occupation Employment Statistics, Job Service North Dakota

Leading Subsectors for IT Employees

The subsectors with the most North Dakota IT employees in 2011 were professional, scientific and technical services with 1,480 employees; publishing industries except internet with 720 employees; and educational services with 600 employees.

The subsectors with the largest percentage of IT employment growth between 2002 and 2011 were data processing, hosting and related services (109%); insurance carriers and related activities (85%); and administrative and support services (84%) (Table 5).

[Table 5]

IT Subsector Employment Change (2002-2011)

NAICS	Subsector	2002	2011	Number Change	% Change
518	Data Processing, Hosting and Related Services	230	480	250	109%
541	Professional, Scientific and Technical Services	1,240	1,480	240	19%
524	Insurance Carriers and Related Activities	260	480	220	85%
511	Publishing Industries (except Internet)	530	720	190	36%
561	Administrative and Support Services	190	350	160	84%
551	Management of Companies and Enterprises	410	560	150	37%
622	Hospitals	120	180	60	50%
522	Credit Intermediation and Related Activities	100	140	40	40%
992	State Government	450	470	20	4%
611	Educational Services	630	600	-30	-5%

Source: Job Service North Dakota



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[Table 6]

CHANGE IN IT OCCUPATIONS (2002-2011)

O*NET	Occupation	2002	2011	Number Change	% Change
11-3021	Computer and Information System Managers	480	550	70	15%
15-1021	Computer Programmers	900	510	-390	-43%
15-1032	Software Developers, Applications	280	860	580	207%
15-1150	Computer Support Specialists	1,110	2,290	1,180	106%
15-1121	Computer Systems Analysts	460	670	210	46%
15-1141	Database Administrators	210	170	-40	-19%
15-1142	Network and Computer Systems Administrators	250	510	260	104%
15-1179	Information Security Analysts, Web Developers and Computer Network Architects	220	500	280	127%
25-1021	Computer Science Teachers, Postsecondary	150	100	-50	-33%
	Total	4,060	6,160	2,100	52%

Source: Job Service North Dakota

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IT Occupations

More than 7,030 North Dakotans hold IT occupations, and the number of jobs has grown by 52% between 2002 and 2011. The occupations seeing the fastest growth, both in number and percent, during this time period were software developers (applications); information security analysts, web developers, and computer network architects; and computer support specialists (Table 6).

Employee Concentration

Of the 16,700 employees in North Dakota's IT subsectors, the largest concentration of workers are found in the following counties: Cass (7,144), Burleigh (2,636), Grand Forks (1,292), Ward (761), and Morton (710).

Projected IT Workforce Needs

It is estimated between 2010 and 2020, more than 2,600 new and replacement IT positions will be needed in North Dakota. Of this total, nearly 1,400 employees will fill new positions created by growth in the industry, and the remaining positions will be replacements.

With 7,030 IT employees currently in North Dakota, this growth means replacement and new positions will equal 37% of the current IT employees across all the state's industries. The IT occupations with the highest percentage of growth are database administrators (35%), network and computer systems administrators (27%), and computer support specialists (24%).

The three IT occupations projected to have the largest number of openings through 2020 include computer support specialists with 1,089 projected openings, computer systems analysts with 394 openings, and software developers (applications) with 258 openings (Table 7).

The majority of these employment opportunities are for high-skill, high-wage occupations. As a result, training and education partners in the state are working together to meet these industry needs through new curriculum and personalized, flexible training opportunities.

[Table 7]

PROJECTED IT WORKFORCE NEEDS (2010-2020)

IT Occupations	% Growth	Number of Openings	Annual	High Wage	High Demand	High Skill
			Average Wage			
Computer and Information Systems Manager	20%	194	\$86,180	Y	Y	Y
Computer Programmers	11%	198	\$51,810		Y	Y
Software Developers, Applications	23%	258	\$64,000	Y	Y	Y
Computer Support Specialists	24%	1,089	\$43,280		Y	
Computer Systems Analysts	22%	394	\$60,770	Y	Y	Y
Database Administrators	35%	82	\$63,520	Y	Y	Y
Network and Computer Systems Administrators	27%	246	\$59,090	Y	Y	Y
Information Security Analysts, Web Developers and Computer Network Architects	18%	160	\$62,910	**	**	**
Total		2,621				

Source: Job Service North Dakota

EXPANDING & ATTRACTING BUSINESS

North Dakota has received extensive national recognition for its thriving business climate (Figure 3). A number of programs and incentives are available to current North Dakota IT businesses looking to grow or expand, businesses looking at locating within the state and innovative entrepreneurial ventures.

North Dakota Department of Commerce • www.ndcommerce.com

Centers of Research Excellence invest in the infrastructure and research capacity at North Dakota's research universities and encourage students and scientists to find ways to commercialize new ideas into products, skills and services that can create and attract new businesses and career-path jobs. Twenty-one new or expanded businesses currently operate in North Dakota as a result of the Centers of Excellence program, and four of these businesses are IT-related.

Innovate ND is a competition looking for entrepreneurs who want to turn ideas into new ventures. It brings together entrepreneurs, investors and educators and works with participants from both new and existing companies to identify the tools and resources needed to create a successful business venture in North Dakota. Of the 400 teams that have participated in this competition, more than 50 have been IT-related ventures. Ten IT-related businesses, out of 142 businesses, are currently operational or under development in North Dakota as a result of this program.

Technology-Based Entrepreneurship Grant Program provides up to \$1 million in grants to entrepreneur centers to provide business incubator services such as mentors, shared services, relationships with educational institutions, marketing assistance, accounting/financial management, training and regulatory compliance.

North Dakota Tax Department • www.nd.gov/tax

North Dakota has some of the most aggressive income and sales tax incentives in the nation. The state offers tax incentive programs to encourage business development, expansion and research and provides the strong economic climate and workforce to draw companies to North Dakota.

Angel Fund Investment Credit provides individuals, estates, trusts and corporations an income tax credit for investing in an angel fund certified by the North Dakota Department of Commerce Division of Economic Development and Finance. The credit is equal to 45% of the investment, up to a maximum of \$45,000 per year and a lifetime maximum of \$150,000 per taxpayer.

Computer and Telecommunications Equipment Sales Tax Exemption provides primary sector businesses (other than manufacturers and recyclers) with a sales tax exemption on the purchase of computer and telecommunications equipment. The equipment must be an integral part of a new primary sector business or create an economic expansion of an existing business and does not extend to the purchase of replacement equipment. The primary sector business must be certified by the North Dakota Department of Commerce Division of Economic Development and Finance.

Research Expense Credit provides an individual, estate, trust, partnership, corporation or limited liability company an income tax credit for conducting research in North Dakota. The credit is equal to a percentage of the excess of qualified research expenses in North Dakota over the base amount in the state.

Telecommunications Infrastructure Sales Tax Exemption provides a sales use and tax exemption through December 31, 2012, for the purchase of tangible personal property used to construct or expand telecommunications service infrastructure within the state. To qualify, the property has to be incorporated into a telecommunications service infrastructure owned by a telecommunications company.

Wage and Salary Credit provides an income tax credit to a corporation organized in North Dakota and doing business in North Dakota for the first time. The corporation must be engaged in the assembling, fabricating, manufacturing, mixing or processing of an agricultural, mineral or manufactured product. The credit is equal to 1% of the wages and salaries paid during the tax year for each of the first three tax years of operation and a half-percent of wages and salaries paid during the fourth and fifth tax years.

Workforce Recruitment Credit provides an individual, estate, trust, partnership, corporation or limited liability company an income tax credit for employing extraordinary recruitment methods and hiring employees for hard-to-fill positions in North Dakota. The credit is equal to 5% of the compensation paid to the employee during the first 12-consecutive-months of employment and is allowed in the first tax year following the tax year in which the employee completes the 12-consecutive-month employment period.

[FIGURE 3]

10 REASONS TO INVEST AND DO BUSINESS IN NORTH DAKOTA

1. North Dakota ranks #1 for the Best Jobs Market. (*Gallup Job Creation Index, 2012*)
2. North Dakota's exports have increased 440% since 2000. (*U.S. Department of Commerce, 2012*)
3. North Dakota ranked #1 in the nation for the highest growth of GDP in 2010 and 2011. (*Bureau of Economic Analysis, 2012*)
4. North Dakota ranks #2 in the nation in state competitiveness. (*Beacon Hill Competitiveness Index, 2011*)
5. North Dakota ranks as the #4 pro-business state in America, according to *Pollina Corporate Top 10 Pro-Business States for 2012*.
6. North Dakota was named the nation's #2 top growth performer since 2000. (*U.S. Chamber of Commerce, 2011*)
7. *Forbes Magazine* has recognized North Dakota as the #4 state for business. *Forbes* ranks Fargo #2 and Bismarck #3 in the *2012 Best Small Places for Business and Careers*.
8. North Dakota residents and businesses have received over \$1 billion in cuts to personal, corporate and property taxes from the 2007, 2009 and 2011 legislative sessions. (*North Dakota Tax Commissioner*)
9. North Dakota ranks #3 for economic growth potential. (*Business Facilities, 2012*)
10. North Dakota is the top performing state in the nation reporting positive economic growth for the first quarter of 2012, with job creation and increased incomes as the key indicators. (*Bloomberg Economic Evaluation of States Index, 2012*)

Source: North Dakota Department of Commerce

Building THE Workforce

Through collaborative efforts of industry, education and government, North Dakota is working to inform students of IT career opportunities, provide industry-driven secondary and post-secondary IT education, and offer incentives for pursuing an IT career path. The state also offers aggressive workforce training programs to meet the ever-changing skill demands of the IT industry.

Educational Opportunities

IT Career Awareness Program • www.discoverndit.com

ITCND, in cooperation with industry stakeholders, launched the first-ever North Dakota IT Career Awareness Program in 2007. The goal of the program is to address future IT workforce needs by informing students, parents and educators of IT career opportunities in North Dakota and encouraging students to enroll in IT-related classes and degree programs at the secondary and post-secondary education levels.

Through a partnership with the North Dakota Department of Career and Technical Education, the program has reached more than 6,000 students and 350 educators in more than 20 communities with information on IT career opportunities in North Dakota. Additional program partners are the Bank of North Dakota, Basin Electric Power Cooperative, Bismarck State College, Dakota Carrier Network, Discovery Benefits, Evolution1, First International Bank & Trust, MDU Resources Group, Microsoft Fargo, Minot State University, National Information Solutions Cooperative, Sundog and Valley City State University.

Secondary IT Education

Through the North Dakota Department of Career and Technical Education, high schools across the state can offer elective IT courses, which continue to grow in popularity and availability. These courses include introduction to information technology, computer hardware and maintenance, networking, programming, geographic information systems, web design, desktop and network operating systems, and cooperative work experience. Many of these courses align to current industry certification standards and students enrolled in the courses take the certification exams upon course completion. In 2012, IT courses were offered in 62 schools with a total enrollment of 1,521 students, which is a 47% increase over 2011. For more information, visit www.nd.gov/cte.

Post-Secondary IT Education

North Dakota offers more than 50 IT programs at the post-secondary level. These are offered through the 11 colleges and universities making up the North Dakota University system, four tribal colleges and two private colleges. In 2009-2010, 411 college students graduated with an IT-related degree offered at these colleges and universities. In 2010-2011, that number decreased by 17% to 340.

STEM Occupations Student Loan Forgiveness Program

Recognizing the need for high-quality employees in the areas of science, technology, engineering and mathematics (STEM), the state established the STEM Occupations Student Loan Program. The intent of the program is to reduce student loan indebtedness for individuals who have graduated in a STEM-related field and have been employed in a STEM occupation in North Dakota for one year.

Funding recipients are eligible to receive up to \$1,500 per year in continued loan forgiveness for each year they are employed in an approved STEM occupation in North Dakota, subject to a maximum of 48 months of eligible employment. Individuals must re-apply annually for new or continued funding. Qualifications and additional information is available at www.ndus.edu.

Operation Intern

Administered by the North Dakota Department of Commerce, Operation Intern provides a valuable way for students to make connections with businesses and identify career options in North Dakota. The program is designed to expand the number of internships, work experience and apprenticeship positions provided to students attending a North Dakota college or university. Employers in the state's targeted industries, including technology-based businesses, can access up to \$3,000 in matching funds for each position or up to \$30,000 per employer. During the 2011-2013 biennium, over 100 businesses participated in Operation Intern, with 31 technology-based companies hiring a total of 93 interns. Additional information is available at www.operationintern.com.

Workforce Training Programs

Job Service North Dakota • www.jobsnd.com

New Jobs Training was created to assist expanding businesses in North Dakota. Due to the assumption that creating a new job has costs, the program allows a business to be reimbursed the North Dakota state income tax paid in on those new jobs for a 10-year period. Of the companies setting up new agreements under New Jobs Training in 2011, 27% were IT-based. The use of the program by new and expanding IT companies remains steady.

Workforce 20/20 assists North Dakota businesses and industries in retraining and upgrading workers' skills to meet the demands of new technologies and work methods. The funding is available to offset training costs for current and new employees and requires a 50% funding match from participating businesses. Over the 2009-2011 biennium, five IT-based training requests were approved. This accounted for 3% of the total biennium funding.

Workforce Investment Act provides funding for on-the-job training, youth employment and training, and adults and dislocated worker assistance. Funding is available for a maximum of three years of training. In program year 2011, the Workforce Investment Act provided 15 individuals with training opportunities in IT-related careers.

North Dakota Department of Commerce • www.ndcommerce.com

Workforce Enhancement Grant Program was created by the 2007 North Dakota Legislature to address the workforce training needs of North Dakota businesses and industries. The four designated training institutions qualify to apply for funding to develop curriculum, purchase equipment and technology, and train or certify instructors to help meet the needs of the state's target industry employers and employers with high-skill and high-wage job opportunities. The designated institutions include Bismarck State College (BSC), Lake Region State College (LRSC), North Dakota State College of Science (NDSCS) and Williston State College (WSC). To date, in the 2011-13 biennium, five grants have been awarded. Grants impacting IT include precision agriculture (LRSC), high fidelity nursing simulation (BSC), enhanced energy labs (with instrumentation and controls) (BSC), and mechatronics (NDSCS).

North Dakota University System • www.ndus.edu

TrainND provides comprehensive customized employee training and professional development for North Dakota business and industry. As part of the North Dakota University System, TrainND comprises the largest network of professional, vocational and industrial specialists in North Dakota with regional offices located in each of the four workforce training regions. TrainND offers a full range of beginning and advanced professional training on virtually any topic that organizations and businesses need. In fiscal year 2012, a total of 1,765 businesses were served by the program with 18,466 employees participating in training activities. Since 2009, that is a 16% increase in businesses served and 67% increase in employees participating.

MEASURING UP

The wages North Dakota IT employees receive are competitive with several surrounding states, including South Dakota and Montana. However, North Dakota's average median hourly wage for IT-related occupations lags behind Minnesota and the national average (Table 8). North Dakota is closing this wage gap as the median hourly wage increase has more than doubled that of the nation from 2002 to 2011 (Table 9).

[Table 8]

MEDIAN HOURLY WAGES (2011)

O*NET	Occupation	Median Hourly Wage				
		ND	SD	MT	MN	Nation
11-3021	Computer and Information System Manager	\$40.11	\$50.29	\$42.19	\$54.64	\$56.74
15-1131	Computer Programmers	\$22.14	\$24.49	\$29.25	\$32.60	\$34.92
15-1132	Software Developers, Applications	\$30.38	\$33.84	\$28.29	\$42.59	\$42.92
15-1133	Software Developers, Systems Software	\$32.10	\$34.06	\$32.27	\$46.39	\$46.44
15-1150	Computer Support Specialists	\$19.37	\$18.37	\$18.47	\$23.38	\$22.91
15-1121	Computer Systems Analysts	\$26.56	\$30.61	\$29.67	\$35.88	\$37.87
15-1141	Database Administrators	\$31.33	\$30.78	\$24.82	\$37.22	\$36.15
15-1142	Network and Computer Systems Administrators	\$27.39	\$26.09	\$25.68	\$32.87	\$34.12
15-1179	Information Security Analysts, Web Developers and Computer Network Architects	\$26.64	\$28.42	\$26.17	\$38.21	\$37.43
15-1799	Computer Occupations, All Other	\$28.83	\$33.28	\$30.11	\$34.51	\$38.43
	Total	\$28.49	\$31.02	\$28.69	\$37.83	\$38.79

Source: U.S. Bureau of Labor Statistics



CORPORATE TECHNOLOGIES

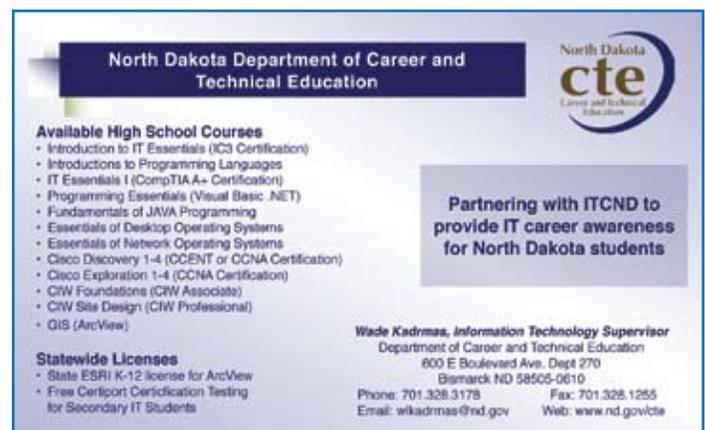
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- Essentials of Desktop Operating Systems
- Essentials of Network Operating Systems
- Cisco Discovery 1-4 (CCENT or CCNA Certification)
- Cisco Exploration 1-4 (CCNA Certification)
- CIW Foundations (CIW Associate)
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Partnering with ITCND to provide IT career awareness for North Dakota students

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Department of Career and Technical Education
600 E Boulevard Ave. Dept 270
Bismarck ND 58505-0610
Phone: 701.328.3178 Fax: 701.328.1255
Email: wkadmas@nd.gov Web: www.nd.gov/cte

[Table 9]

MEDIAN HOURLY WAGE CHANGES (2002-2011)

O*NET	Occupational Title	U.S. % Change	ND % Change
11-3021	Computer and Information Systems Manager	39%	15%
15-1021	Computer Programmers	21%	-43%
15-1132	Software Developers, Applications	26%	207%
15-1133	Software Developers, Systems Software	30%	N/A
15-1150	Computer Support Specialists	22%	106%
15-1121	Computer Systems Analysts	25%	46%
15-1141	Database Administrators	36%	-19%
15-1142	Network and Computer Systems Administrators	30%	104%
15-1179	Information Security Analysts, Web Developers and Computer Network Architects	34%	127%

Source: Occupational Employment Statistics

IT Occupational Shift Share

Shift share is the total change in employment over a period of time. This analysis breaks down North Dakota's total IT employment change (shift share) into three components:

- National Growth Share: Employment change attributed to national economic growth.
- Occupational Mix Share: Employment change attributed to national IT occupational trends.
- Local Share: Employment change attributed to North Dakota economic factors.

North Dakota has experienced an increase of 2,100 IT jobs over the past decade with 1,422 (68%) attributed to the state's positive economic climate. Twenty-four of the 2,100 IT jobs were attributed to national economic growth, and 654 were attributed to national IT occupational trends (Table 10).

[Table 10]

Shift SHARE (2002-2011)

O*NET	Occupation	National Growth Share	Occupational Mix Share	Local Share	Shift Share
11-3021	Computer and Information System Managers	3	62	5	70
15-1131	Computer Programmers	5	-275	-120	-390
15-1132	Software Developers, Applications	2	142	436	580
15-1150	Computer Support Specialists	7	350	823	1,180
15-1121	Computer System Analysts	3	17	190	210
15-1141	Database Administrators	1	12	-53	-40
15-1142	Network and Computer Systems Administrators	1	116	143	260
15-1179	Information Security Analysts, Web Developers and Computer Network Architects	1	228	51	280
25-1021	Computer Science Teacher, Postsecondary	1	1	-52	-50
	Total Change in Employment	24	654	1,422	2,100

Source: Job Service North Dakota

Location Quotient

Location quotient (LQ) compares an area’s business composition to that of a larger area (Table 11). For the purpose of this document, the IT occupations at the state and national level are compared. A LQ greater than one (1) indicates the state has proportionally more workers than the nation employed in that occupation. This implies the state has the opportunity to attract additional IT professionals to meet workforce demand.

[Table 11]

IT OCCUPATION LQ (2002-2011)

O*NET	Occupation	LQ 2002	LQ 2011
11-3021	Computer and Information System Managers	0.74	0.63
15-1131	Computer Programmers	0.80	0.55
15-1132	Software Developers, Applications	0.32	0.55
15-1133	Software Developers, Systems Software	0.00	0.52
15-1150	Computer Support Specialists	0.95	1.25
15-1121	Computer System Analysts	0.40	0.47
15-1141	Database Administrators	0.84	0.54
15-1142	Network and Computer Systems Administrators	0.44	0.52
15-1179	Information Security Analysts, Web Developers and Computer Network Architects	0.67	0.63
15-1799	Computer Occupations, All Other	N/A	0.56
25-1021	Computer Science Teacher, Postsecondary	1.85	1.03
	Total	0.70	0.66

Source: Occupation Employment Statistics

ITCND IT AWARD WINNERS 2011-2012

Premier IT Business

2011 – Lighthouse1, Fargo

2012 – Sundog, Fargo

Technology Innovator

2011 – OnSharp, Fargo

2012 – Discovery Benefits, Fargo

North Dakota IT Innovator

2011 – Todd Reynolds, Lighthouse1, Fargo

2012 – Matti Kon, InfoTech Solutions for Business, Minot



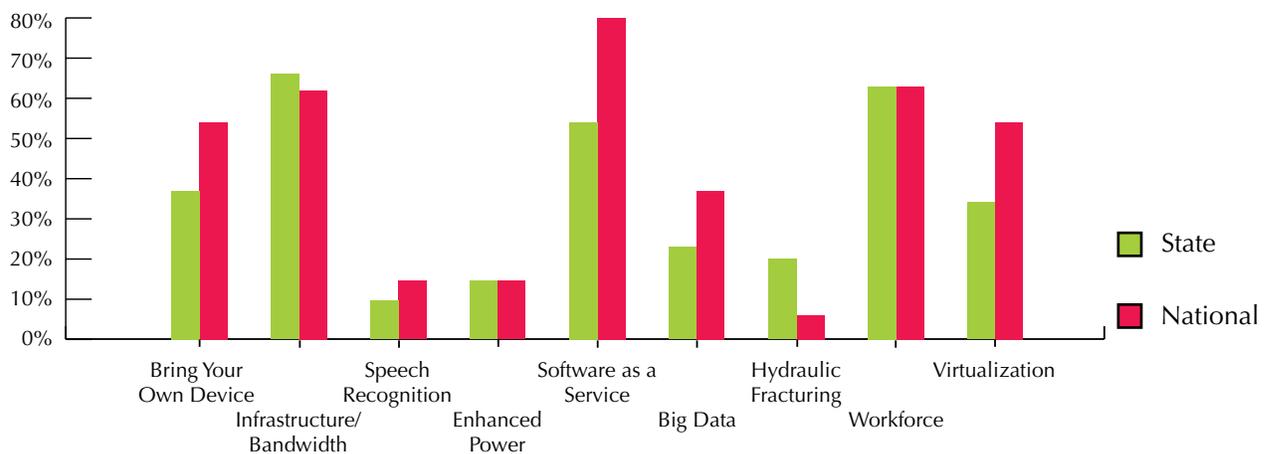
INFORMATION TECHNOLOGY COUNCIL
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EMERGING IT TRENDS

The IT industry is a diverse field impacting virtually every business – from the service industry and trucking companies to manufacturing specialists and health care professionals and from large companies to small sole proprietor businesses. As the industry changes and matures, new technologies and applications are being developed that have the potential to create opportunities, as well as challenges, for North Dakota’s IT industry. In a survey conducted by ITCND, IT leaders within the state identified infrastructure/bandwidth, workforce and software as a service as the three state and national trends impacting or having the most potential to impact their businesses (Figure 4).

[FIGURE 4]

STATE AND NATIONAL IT TRENDS (2012)



Source: 2013 ITCND Membership Survey

Definitions

Big data is a collection of data sets so large and complex that it becomes difficult to process using on-hand database management tools.

Enhanced power is the increased efficiency to create, store or use energy in ways that were not possible before, such as longer battery life for mobile devices.

Software as a service is a software distribution model in which applications are hosted by a vendor or service provider and made available to customers over a network, typically the Internet. It is also known as cloud computing.

Speech recognition is the ability of a machine or program to identify words and phrases in spoken language and convert them to a machine-readable format.

Virtualization is the creation of a virtual (rather than actual) version of something, such as an operating system, server, storage device or network resources.

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Guaranteeing Uptime

Dakota Carrier Network (DCN) recently opened a new office in Bismarck, North Dakota. The 42,000-square-foot facility is designed to not only accommodate DCN's expanding network and growing customer needs, but also to provide even greater assurance of business survivability.

Home to DCN's customer service and sales teams, Co-Location services, and state-of-the-art Network Operations Center (NOC), the building is a carrier-grade hardened facility, meaning that it is extremely reliable, well-tested, and proven in its capabilities. Carrier-grade systems are tested and engineered to meet or exceed high availability standards.

The facility ensures 99.999 percent network uptime, which is especially important since DCN provides network connectivity to North Dakota's most critical institutions, including health care, public safety, state government and financial organizations.

"While business continuity and survivability in the face of a catastrophe is important for any organization, it is especially critical for those entities that provide vital services," says Evan Hass, general manager of DCN.

Delivering Confidence

DCN is owned by 15 independent rural telecommunications companies. Together with DCN, these owner companies have made significant investments in fiber infrastructure over the last three years.

- DCN and its owner companies have over 40,000 miles of fiber optic facilities deployed across the state.
- DCN and its owner companies employ more than 1,000 people that live and work in local communities.
- The owner companies have a collective total plant investment worth more than \$1.2 billion, and they have invested more than \$100 million per year in fiber construction and electronics for each of the last three years.



These owner companies represent all the major local independent telephone companies and serve more than 164,000 customers in 250 communities — more than 85 percent of all the exchanges in the state. DCN's new building enables the company to accommodate an expanding network and growing customer needs — and provide even greater assurance of business survivability.

"These companies are committed to delivering leading-edge technology across the state, providing our customers with increased communications capabilities and business continuity," Hass says. "Our new facility, and more specifically the NOC, is one more component in achieving ultimate connectivity for North Dakota organizations."

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At VCSU, business needs drive IT programs

At many universities, students who study Information Technology get a heavy focus on programming languages, databases, or network architectures. But at Valley City State University, the focus is more broad. "These topics are certainly important," said Sue Pfeifer, an instructor of Business and Information Technology at VCSU, "but we believe today's IT graduates need more."

This is the message VCSU received from the business community. "We keep our roots in the business community to be sure our graduates are continuing to meet their needs," said Pfeifer.

For example, VCSU's Advisory Board, which is comprised of representatives from area business and IT leaders such as Eide Bailly, John Deere, Sanford Health System, and many more, meets regularly with VCSU faculty to discuss program updates at VCSU and make recommendations.

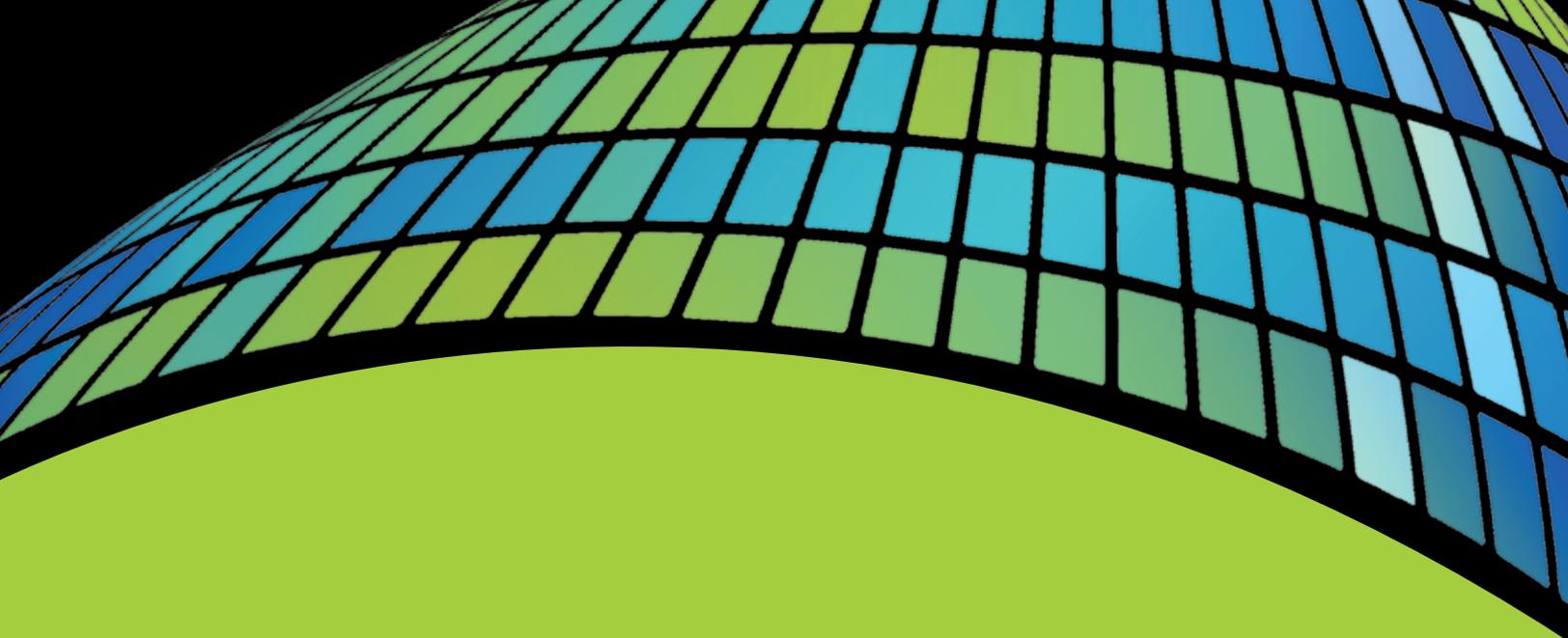
Another key resource is VCSU's partnership with SAP, the leading provider of technology

solutions for businesses. VCSU is a member of the SAP University Alliance, which allows VCSU to incorporate SAP software into their business curriculum so graduates enter the workforce with hands-on experience using SAP. VCSU is also a member of the Americas SAP User Group (ASUG) which enables faculty and students to attend user group meetings to keep in touch with industry.

The focus on business skills is evident in the programs that VCSU offers. For example, in addition to their major in Computer Information Systems, VCSU recently introduced a new major in Business Process Integration Management (BPIM). The BPIM major helps students combine skills in communication, problem-solving, and collaboration with knowledge of current business processes and enterprise systems. "These are essential to today's knowledge workers but are not often emphasized as a whole in higher education," said Gary Inman, president of the Information Technology Council of North Dakota (ITCND). "To my knowledge, VCSU's program is the first to offer this combination."

VCSU also offers certificates in CRM and Enterprise Software Applications that are available to students of any major, and can be particularly attractive for students planning a career in business. Dr. Brenda Finger, chair of VCSU's Division of Business and Information Technology, said, "In most organizations, enterprise applications are managed by the IT department, but they work very closely with end-users who work in sales, marketing, accounting, or manufacturing. This is one reason that companies look for employees who offer both technical skills and an understanding of the strategies and processes that drive the business."

VCSU also takes steps to ensure their programs meet the needs of students. An articulation agreement with Dakota College at Bottineau allows students who have completed an Associate degree in Information Technology from DCB to earn a Bachelor's degree with a major in Computer Information Systems (CIS) from VCSU.



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