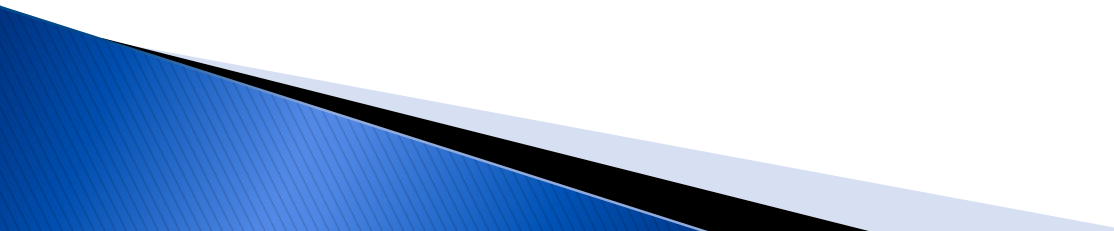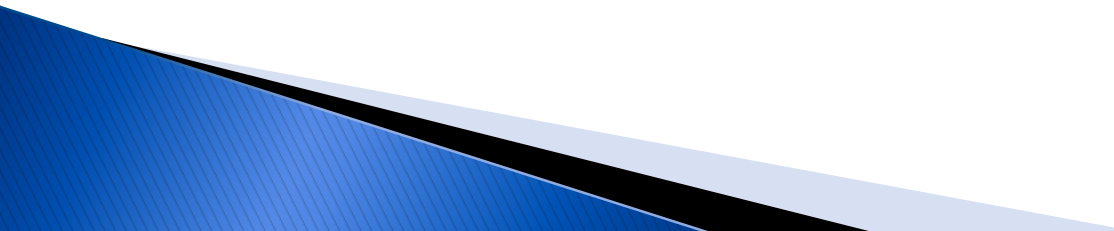# Building Northeast Wisconsin IT Talent Pipeline Analysis and Recommendations

Green Bay
August 12, 2015

Acknowledgement

- The Market Analysis Project was lead by Northeast Wisconsin Educational Resource Alliance (NEW ERA), the consortium of higher education institutions in northeast Wisconsin, with the support of Workforce Development Boards, Chambers of Commerce, Economic Development Organizations, and private industry in the region.
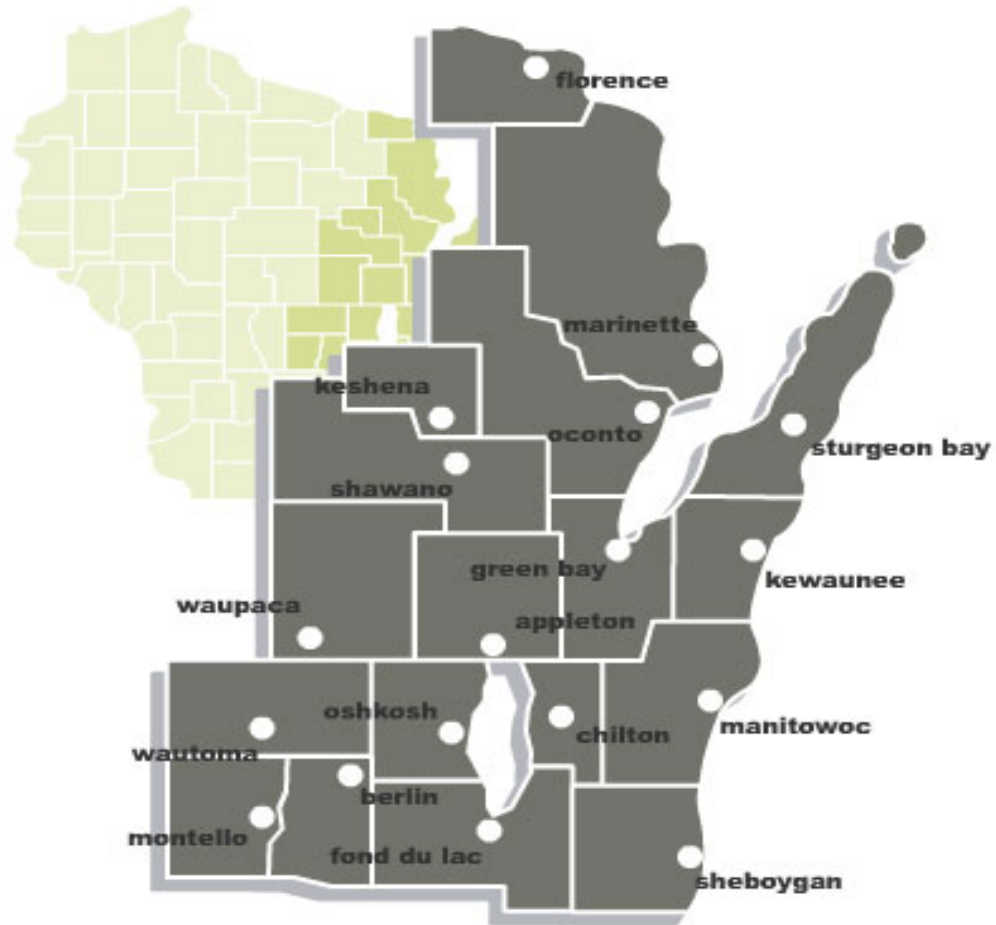- Mike Mathews, President, Economic Growth Advisors developed and implemented the research model.

Agenda

- Project Objectives and Sponsorship

- Study Approach and Participation

- Executive Summary
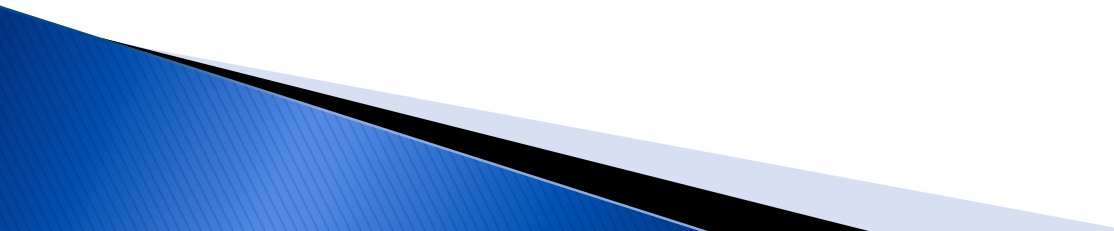
- Recommendations

Project Objective and Sponsorship

NEW ERA IT Market Assessment Area

Objective

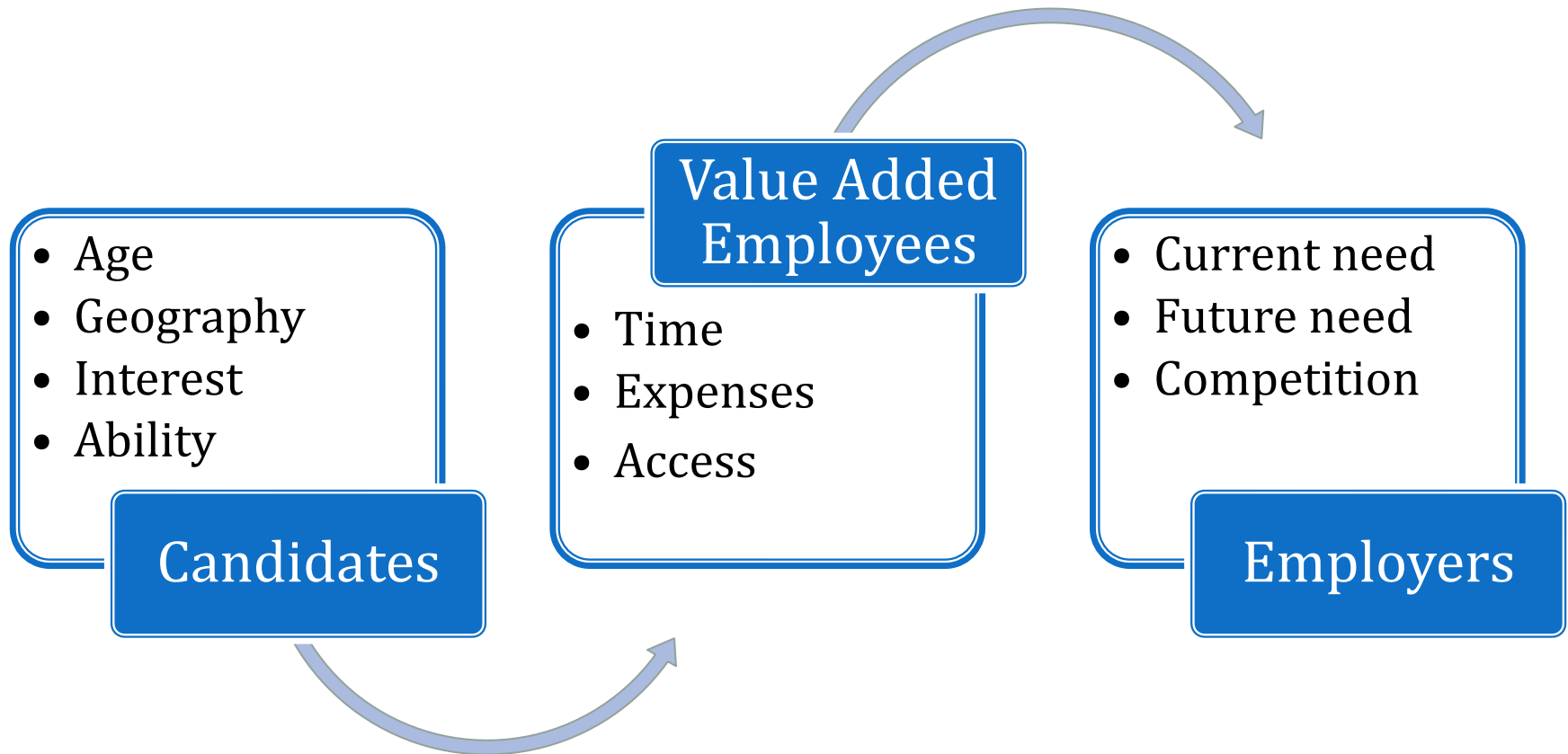Develop prioritized set of coordinated, market informed recommendations to guide decision making and investments that advance the growth and development of information technology jobs and firms in the New North region.

Bridge Regional IT Skills Gap

Candidates
- Age
- Geography
- Interest
- Ability

Value Added Employees
- Time
- Expenses
- Access

Employers
- Current need
- Future need
- Competition

Organization and Sponsorship

Project Sponsors:
- Northeast Wisconsin Educational Resource Alliance (NEW ERA)
- Bay Area Workforce Development Board
- Fox Valley Workforce Development Board
- **New North**
- Waupaca Area Chamber of Commerce
- Fond du Lac Association of Commerce
- Fond du Lac Economic Development Corporation
- Progress Lakeshore
- Sheboygan County Economic Development Corporation,
- Oshkosh Chamber of Commerce Economic Development
- Fox Cities Chamber of Commerce and Industry
- Fox Cities Regional Partnership
- **Green Bay Area Chamber of Commerce**
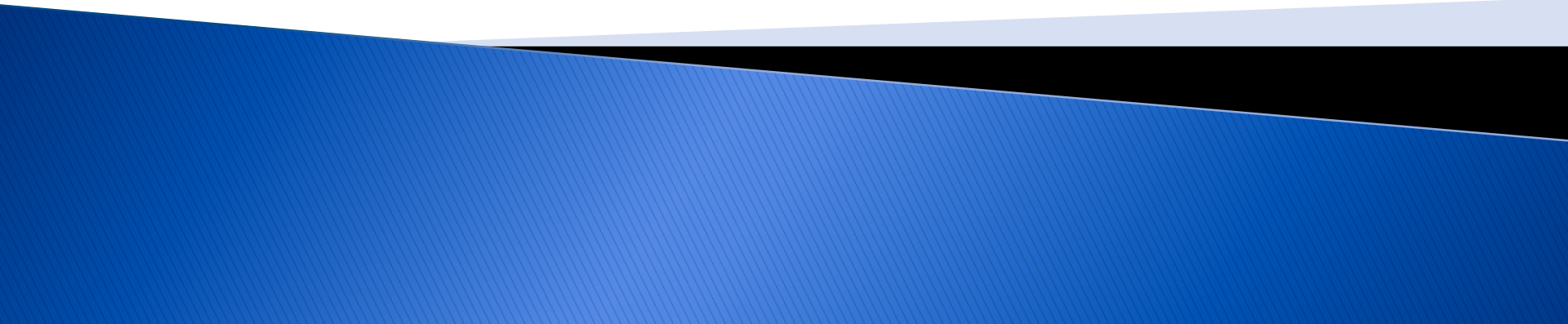- **Wisconsin Public Service Corporation**

Organization and Sponsorship

Project Steering Committee:

◦ Linda Bartelt – Northeast Wisconsin Educational Resource Alliance
◦ Terri Schulz – Waupaca Area Chamber of Commerce
◦ Anne Haberkorn – Fox Valley Technical College
◦ Doug Waterman – Fox Valley Technical College
◦ Jeff Sachse – Wisconsin Department of Workforce Development
◦ **Carol Karls – Wisconsin Public Service Corp.**
◦ Rob Kleman – Oshkosh Chamber of Commerce
◦ Patti Andersen – Shew – Oshkosh Chamber of Commerce
◦ Peter Thillman – Lakeshore Technical College
◦ Dane Checolinski – Sheboygan County EDC
◦ Jim Schuessler – Sheboygan County EDC
◦ Paul Stelter – Fox Valley Workforce Development Board
◦ **Jim Golembeski – Bay Area Workforce Development Board**
◦ **Julie Ebben-Matzke – Northeast Wisconsin Technical College**
◦ **Randy Smith – Northeast Wisconsin Technical College**
◦ Peter Wills - Progress Lakeshore
◦ Connie Loden – Progress Lakeshore
◦ Patty Milka – Fox Cities Chamber of Commerce and Industry
◦ Steve Jenkins – Fond du Lac Economic Development Corporation
◦ **Laurie Radke – Green Bay Area Chamber of Commerce (Sponsorship)**
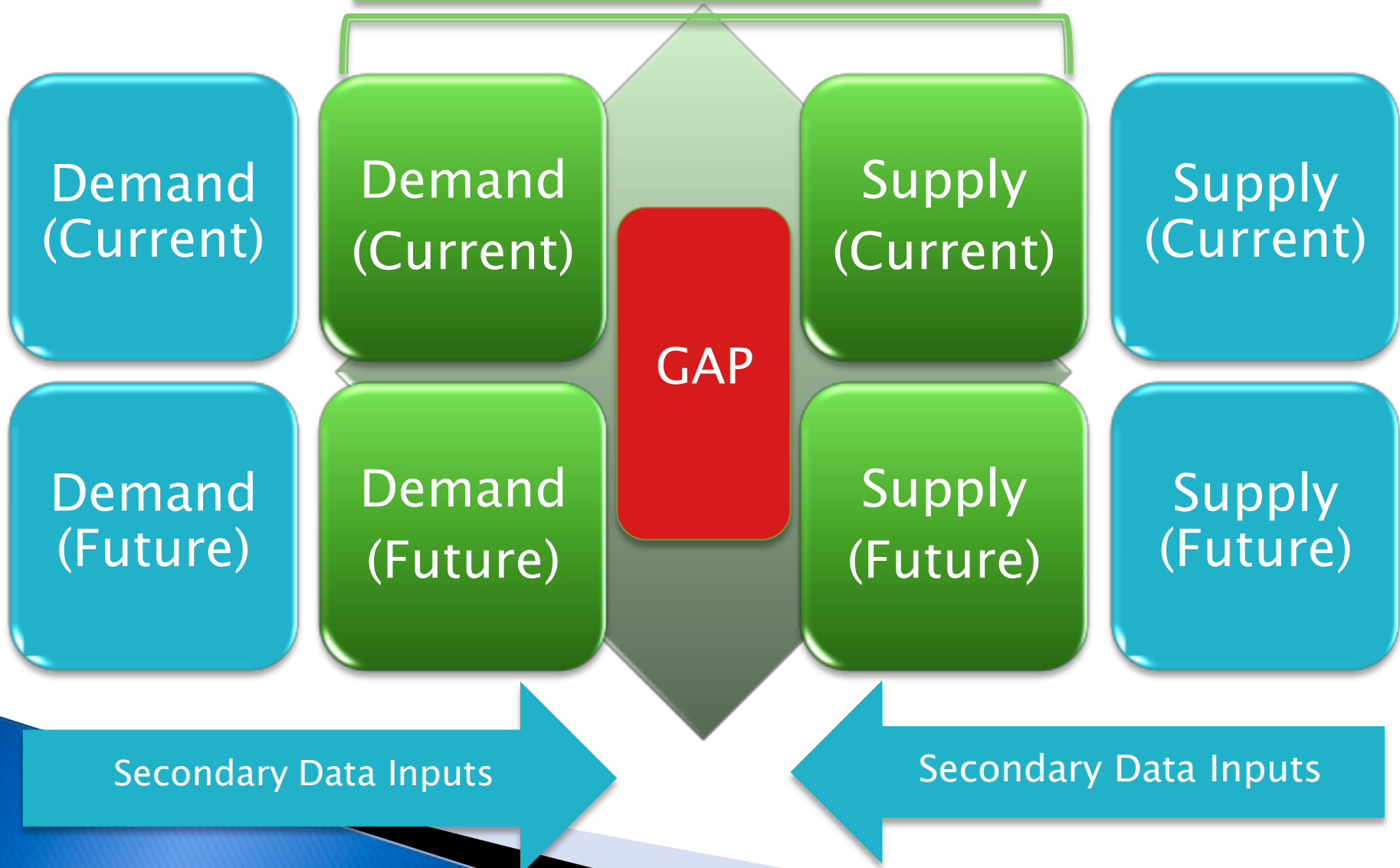◦ **Ann Duginske – NewNorth**
◦ **Jerry Murphy – NewNorth**

Study Approach and Participation

Data Collection

Primary Data Inputs:
Employer Interviews and Surveys

Demand (Current)

Demand (Current)

GAP

Supply (Current)

Supply (Current)

Demand (Future)

Demand (Future)

Supply (Future)

Supply (Future)

Secondary Data Inputs

Secondary Data Inputs

Direct Inputs

- Input from more than 40 employers representing:
  - **More than 108,000 employees**
  - **More than 3,650 IT employees (3.4%)**

- Round table meeting sessions (10); Fond du Lac (2),Green Bay (2), Oshkosh (2), Fox Cities (2), Sheboygan (1) and Manitowoc (1)

- More than **75 employer representatives** and 15 workforce and economic development representatives

- Collection and compilation of surveys and secondary data sources for both supply and demand

  - IT Professionals located in northeast Wisconsin
  - IT Career Pathway Selection - 8th grade/high school in 93 school districts
  - Technology educators, K-12, in 93 school districts
  - Public and private colleges and university programs in northeast Wisconsin

General Observations

- Very **diverse set of audiences** and potential impacts

- General **lack of employer recognition regarding how prevalent challenge is** to hire appropriate IT talent within the region

- General **lack of awareness regarding current regional initiatives** to address current and future needs

- Relatively **high level of interest in regional collaboration**

- **Appreciation for effort** to address employers 'concerns and pursue regional opportunities

Executive Summary
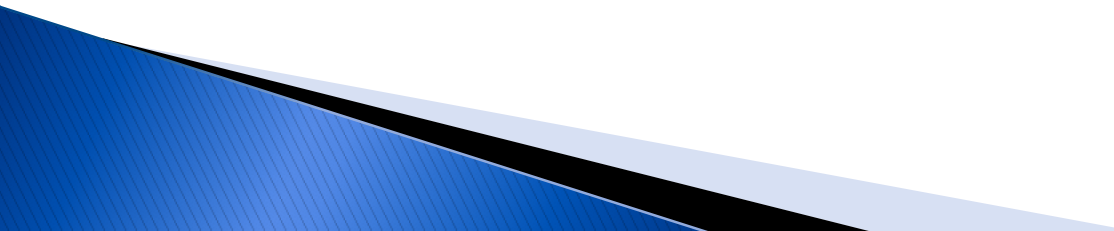
Northeast Wisconsin IT Jobs

- There were approximately 10,121 people employed in IT jobs in NEW in 2010

- NEW IT jobs total approximately 14.5% of the IT jobs in the State (69,566)

- There is strong potential and projected 10 year growth for IT jobs in the NEW region; 2,131 net new jobs out of 8,167 Statewide ; more than 26% of the growth in the State.

- NEW region IT jobs are projected to grow at a faster rate than Wisconsin as a whole (21% vs. 11.7% over a ten year period)

IT Demand Curve

- There is a **current, and growing gap** between supply and demand for IT talent in Northeast Wisconsin

- **Accelerating quantitative and qualitative demand** for IT talent within the region

- The IT talent gap has had negative competitive effects on NEW employers including **costly recruiting, delays in new products and services, and high turnover rates**

Costs of IT Talent Gap

▸ Given that NEW is approximately 15% of the IT jobs in the State, and is expected to account for more than 25% of the new IT jobs in Wisconsin

Estimated Job Shortfall   X   IT Median Wage   =   Cost to Region

	2012	2016	2021
State	780	5,200	11,600
14.5%	113	750	1,680
25%	195	1,300	2,900
$70,000	$13,650,000	$91,000,000	$203,000,000

IT Historical

	Agriculture	Construction	Manufacturing	Wholesale Trade	Retail Trade	Information	Finance/Insurance	Education	Healthcare
Sales									
Marketing									
Production									
Finance/ Accounting									
Customer Support									
Human Resources									
IT									

IT Today

Wisconsin Computer, IT Careers and Average Salaries

Occupation	Average Salaries
Software Developer/Systems Software	$83,220
Computer Network Architects	$82,790
Software Developers/Applications	$80,090
Computer and Information Research Scientists	$74,640
Database Administrators	$72,780
Computer Programmers	$72,300
Computer Systems Analysts	$69,400
Information Security Analysts	$68,710
Network and Computer System Administrators	$65,450
Computer Network Support Specialists	$52,410
Web Developers	$52,660
Computer User Support Specialists	$44,410

Source: Wisconsin Department of Workforce Development

Occupation	2012	2013	2014	2015 (YTD)
1. Software Developer/Engineer	630	903	841	387
2. Computer Support Specialist	379	552	464	196
3. Systems Analyst	262	284	354	111
4. Network/Systems Administrator	207	213	213	87
5. Business Intelligence Analyst	280	390	180	61
6. Computer Programmer	143	135	177	41
7. Database Administrator	130	196	176	58
8. Network Engineer/Architect	176	209	175	61
9. Cyber/Information Security Engineer	58	133	144	44
10. Software QA Engineer/Tester	79	117	133	61

Top 10 IT Occupation Openings – Postings in NEW WI (2012 – 2014)

NEW Survey Respondents – Question #2 Number of IT hires in the next 12 months

Occupation	Hires
Analyst	36
Software Development	32.5
Network Systems	21
Help Desk	17
Desktop Technology and Support	17
System Security	15
Data Management	10
ERP Development	7.5
Big Data	7
E-Commerce	1
User Experience	1
Quality Assurance	1
Other	19
Total:	205

Top Career Needs in Northeast Wisconsin (2015-2020)

Career	Category
Software Developer/Engineer	Software Engineering
Mobile/Web Developer Engineer	Software Engineering
Business Systems Analyst	Business of IT
Project Management	Business of IT
Quality Assurance	Business of IT
Network/Communications Administration	Hardware & Networks
Server/Infrastructure Administration	Hardware & Networks
End User Specialist/PC Support/Help Desk	Hardware & Networks
Data Management Administration	Data
Business Intelligence/Big Data/Analytics	Data
Information Security/Risk Management	Security

Talent Demand

- Employers report **4 year college degrees and credentials are preferred** to meet business demands; however, employers realize that more associate degreed individuals and certificate awardees will be needed to meet demand.

- Employer consensus that there are **not enough college graduates (associate/bachelor/master degrees) within the region** to meet current and projected IT workforce needs

- Influx of talent is needed, but employers cite **substantial competitive obstacles to attracting IT professionals to the region** including location, wages, perceptions of opportunities

- The region needs to address key strategic areas to be effective in the **recruitment, development and retention of IT professionals**
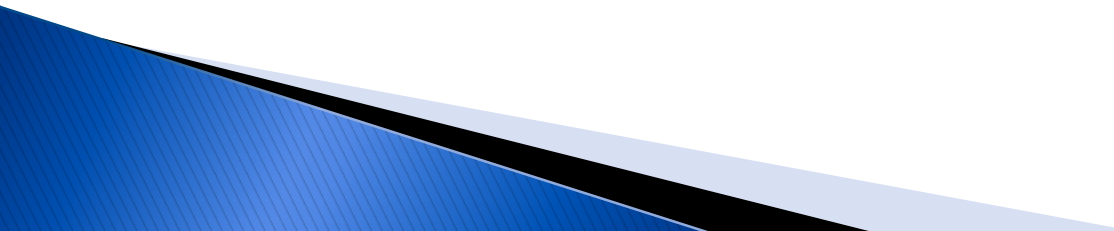
Good News - Regional Assets in Place

- The gap in Northeast Wisconsin is **not as severe as in other areas** of the U.S.

- **Existing educational resources and capacity to address the IT needs** of the region in terms of both quality and quantity

- **Large regional pool of potential IT candidates** who have traits and abilities employers are in need of, but need additional training and education to provide immediate value in these positions

- Opportunities to parallel global companies efforts (Google, Microsoft, Facebook, etc.) and regional efforts (Women in Technology, Amplify Oshkosh, Tech Savvy, etc.) to **attract greater numbers of women into IT careers.**

Different Approach to Solutions

- Addressing IT talent solutions **requires different approaches** than those that address other industries (i.e. manufacturing) or occupations (i.e. nursing)

- Although IT positions are widespread, addressing these needs **requires more than a shot gun approach**; **efforts need to be targeted** (time intensive)

- There is **no one "silver bullet" solution;** there are many things that need to happen in a coordinated manner, acknowledging and addressing the particulars of the region

- IT professions are not highly concentrated in a small number of industries; professions are **widespread across all industries**

Collaboration and Cooperation

- Employers were asked, "What is one big thing we can do in the next 12 months?" The answer was overwhelmingly **collaborate and cooperate on solutions that market the region** as tech savvy and attracts and keeps the next generation talent.

- Through a **collaborative approach**, regional companies can grow, residents can be employed in high demand, high wage professions, and communities and the region benefit from the dynamic economic growth cycle

- Regional **employers acknowledge need for regional public /private sector effort - situation requires more than any one employer can address effectively**
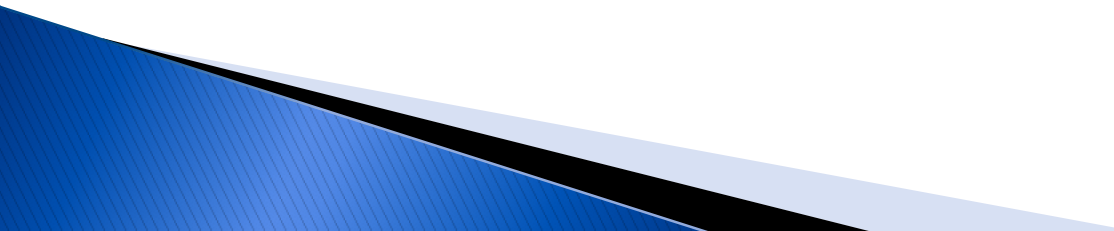
Recommendation Categories

▶ Input of regional employers (interviews, round tables, surveys), and analysis of data sources, has led to market informed recommendations including :

- **Organization and Advocacy**

- **Marketing and Branding**

- **Education and Training among Target IT Candidates**

Organization

Organization Framework

Organization- IT Alliance

- **Mission**: Regional, non-profit to develop, coordinate, prioritize, fund and advocate for the implementation of regional strategies designed to provide employment growth in IT careers.

- **Benefit**: Collaborative approach benefits regional companies on attracting, developing and retaining IT talent, regional residents can be employed in new growing, high wage careers , and communities benefit from economic vitality.

Advocacy

Current Initiatives

Local

- Amplify Oshkosh
- FVTC's GirlTech
- Talent Upload
- Young Professionals
- Hackathon
- Hour of Code
- Einstein Project
- College Avenue 212
- IT college student clubs
- Maker Space in Green Bay

Regional

- IT/Software Developer Group
- Women in Technology
- Tech Savvy
- Angels on the Water
- CIO Tech
- Software Developer Peer Groups
- IT Innovation Academy
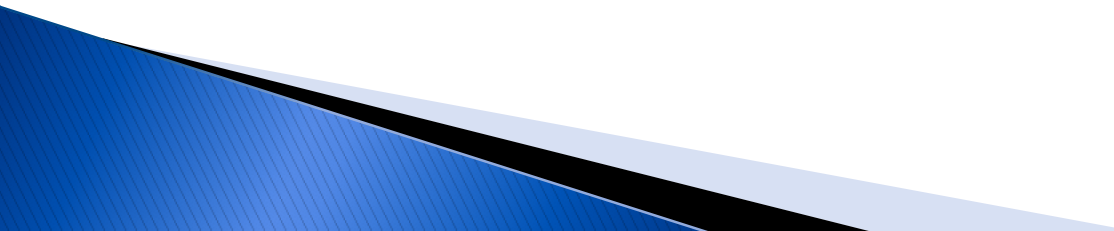- Aero Innovate
- Emergent Tech Center

Advocacy

- **Purpose**: Regional forums to share experiences, best practices, and identify and develop opportunities for the replication of successful local strategies across the region.
- **Benefit:** There are many successful efforts underway across the region. Some are unique to a particular area, but many are creating approaches and generating dynamics that can be scaled across the region.
    - Amplify Oshkosh
    - Emergent Technology Center in Fond du Lac
    - IT Innovation Academy for high school students
    - Women In Technology
    - FVTC's GirlTech
    - Tech Savvy
    - Talent Upload
  - Growth and efficiencies to support participation and resources for local and regional efforts.
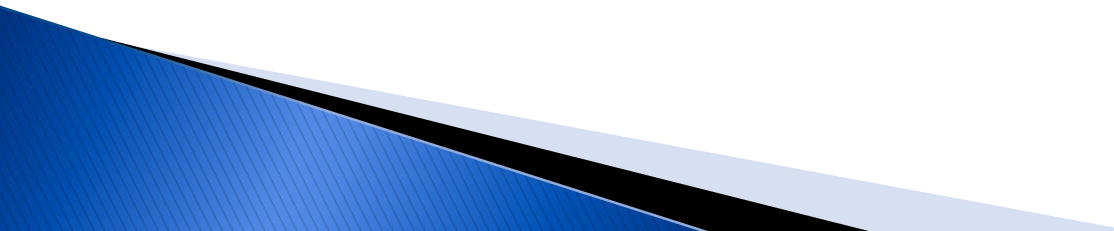
Regional Marketing and Branding
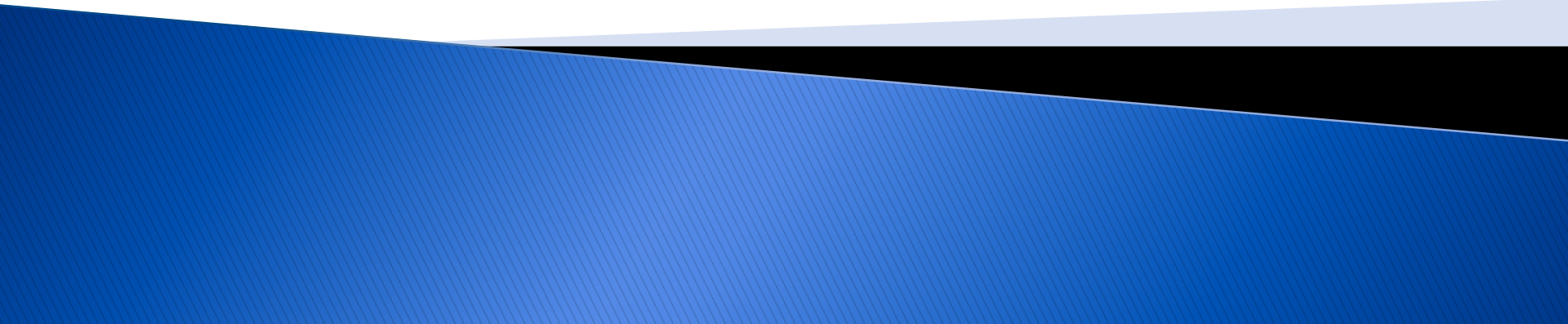
NEW Employer Survey Response

What do you believe are the factors contributing to the IT talent shortage?

- Lack of understanding of IT job opportunities and salaries (95%)

- Lack of interest from high school graduates (90%)

- Perceptions of IT jobs (76%)

- Northeast Wisconsin location (75%)

NEW Employer Survey Response

What is one "big idea" that we should pursue in the next 12 months to build and sustain IT talent in the region?

- *"*Collaborative marketing effort"

- "Create an education/awareness campaign where area employers can more closely engage college students or other IT professionals"

- "Advertise and drive high school and college students toward IT related degrees"

- "Collaborative branding of the Fox Valley area as a "high tech" area ... branding both to the current community members (i.e. high schools/parents) as well as to those outside the region

Marketing and Branding

- Purpose: To develop, manage and deliver a **consistent message and theme to raise awareness, recognition, interest and excitement about IT careers .** Key audiences :
  - College students, high school students, non- IT college graduates
  - Returning veterans, disabled workers
  - Non-residents of the region, and boomerangs (those who grew up in the region and would like to return)**.**

- Benefit: Employers were in agreement about the quantity of candidates was due to the **lack of interest, understanding and preconceived ideas of what IT careers and professions are like.** Many employers stated the **region has a compelling story to share** about the employers, employees, jobs and activities in the region today.

Education and Training

NEW ERA IT College Students

- Fox Valley Technical College,
- Lakeshore Technical College,
- Moraine Park Technical College,
- Northeast Wisconsin Technical College

  ◦ 19 Programs of Study in IT (2012-14)

  ◦ Graduates: Associate degrees awarded to 300 students per academic year (80% male)

Associate Degree Graduates (2013-14)*

Associate Degree	Male	Female	Total Graduates
IT Network Specialist	84	5	89
Computer Support Specialist	41	16	57
Web Development & Design Specialist	31	14	45
Software Developer	21	5	26
Technical Support Specialist	15	3	18
Network Systems Administration	14	1	15
Web Designer/Developer	4	6	10
Computer Support Technician	7	2	9
Web Application Programming Technician	3	3	6
Help Desk Support Specialist	6	0	6
Total:	226	55	281

*WTCS reporting for Information Technology Associate Degrees awarded in 2013–14 at FVTC, LTC, MPTC and NWTC

UW Green Bay & UW Oshkosh Graduates (May/Dec 2014)

Major	University	Male Graduates	Female Graduates	Total Graduates
Information Science	Green Bay	3	1	4
Computer Science	Green Bay	15	1	16
Master of Science in Management	Green Bay	8	3	11
Computer Science	Oshkosh	42	2	44
Management Information Systems (College of Business)	Oshkosh	11	6	17

86% of High School Seniors are not interested in IT Careers

Grade Level	Total Number of Students in Career Cruising in NEW region	Students Interested in IT	% of Total Students
8th Grade	6,652	984	15.8%
9th Grade	5,506	851	15.5%
10th Grade	5,738	628	10.9%
11th Grade	5,269	721	13.7%
12th Grade	5,162	718	14.0%
Total:	28,327	3,902	13.8%

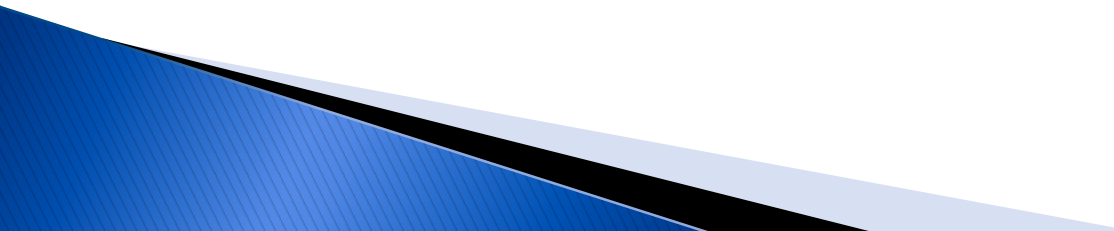# Only 4 IT Careers in top 100 for Senior High School students in NEW*

Career Ranking	IT Career	Total	Male	Female
8	Video Game Developer	140	117	23
36	Computer Animator	71	46	25
51	Website Designer	60	18	**42**
79	Computer Programmer	46	39	7
143	Computer Scientist	29	26	3
144	Computer Hardware Engineer	29	25	4
172	Computer Software Engineer	24	20	4
199	Webmaster	20	10	**10**
203	E-Business Consultant	20	10	**10**

*Career Cruising Database – 5,162 students in 12th grade in northeast Wisconsin school districts, 2015

Current Employer Engagement

▸ Rank order of engagement with IT talent pipeline:

◦ **IT incumbents within the region (79%)**
◦ **Universities (68%)**
◦ **Technical Colleges (68%)**
◦ **Returning Veterans (39%)**
◦ **Disabled Workers (39%)**
◦ **High Schools (33%)**
◦ **IT recruits from outside the region (32%)**
◦ **Middle Schools (22%)**
◦ **Returning Adults (16%)**

NEW Employer Survey, 2015

NEW Employer Responses on Education and Training

◦ "There is an insufficient number of annual graduates within the region to meet our needs."

◦ "This is <u>not a quality issue.</u> It is a quantity issue."

◦ A number of **employers are using internships as a means of building bridges to connect with candidates on the path to job readiness.**

IT Target Candidates

Targeting

- **Computing jobs are available for workers at all levels of educational achievement.**

- A small percentage 6% of computing professionals hold only a high school diploma or GED, and one percent have not graduated from high school.

- About a third, **29% of computing professionals have some college experience, a certificate typically requiring one year of study, or an associate degree, typically requiring two years of study.**

- Most computing professionals, about two thirds, have a bachelor's degree or higher; **44% hold a bachelor's degree, 18% hold a Masters degree, and 2% hold a doctorate.**

  (AAUW analysis of U.S. Census Bureau, 2011).

Broaden IT Talent Pool Within the Region

- Create Awareness
- Target Groups
- Educate and Train
- Develop Career Paths
- Find Placement
- Retention

Veterans

Identification of Interest

Veterans

Education and Training

Veterans

Placement
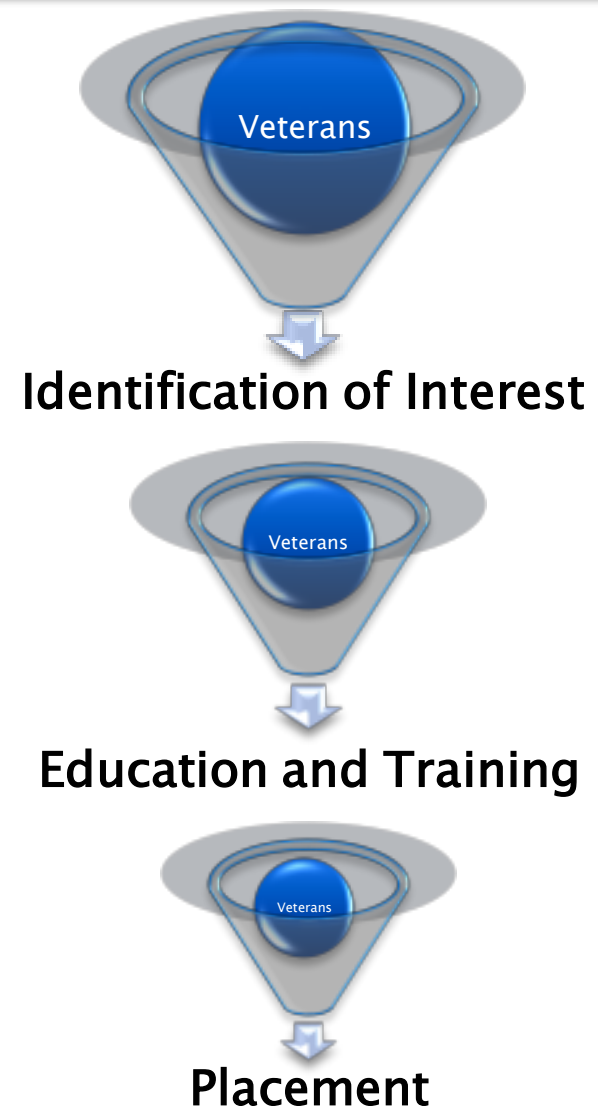
Degree Field – Up Skill Potential

County Geography	Psychology	Social Sciences	Liberal Arts/History	Communications
Brown	1649	2821	2059	2157
Calumet	308	610	239	344
Door	215	350	370	318
Fond du Lac	629	595	679	553
Kewaunee	59	197	70	46
Manitowoc	301	432	377	300
Marinette	101	114	254	69
Oconto	106	128	111	136
Outagamie	**1108**	**1817**	**1103**	**1235**
Shawano	89	170	171	96
Sheboygan	677	749	709	627
Waupaca	138	385	194	142
Waushara	80	118	114	44
Winnebago	1145	1758	989	1365
Florence	0	0	75	0
Marquette	0	0	325	0
Menominee	0	0	49	0
Green Lake	0	0	357	0
TOTALS:	**6605**	**10244**	**8245**	**7432**

Three percent of these individuals (**32,526**) who may be
underemployed in their degree field and want to participate in
certification programs = **975** individuals

Returning Veterans

County	Number of Veterans (Age 18–34)
Brown	1,215
Calumet	117
Door	58
Florence	547
Fond du Lac	537
Green Lake	1,529
Kewaunee	73
Manitowoc	354
Marinette	144
Marquette	1,696
Menomonee	342
Oconto	193
Outagamie	1,316
Shawano	148
Sheboygan	386
Waupaca	258
Waushara	134
Winnebago	1,057
Total:	10,104

Estimated Disabled Workforce

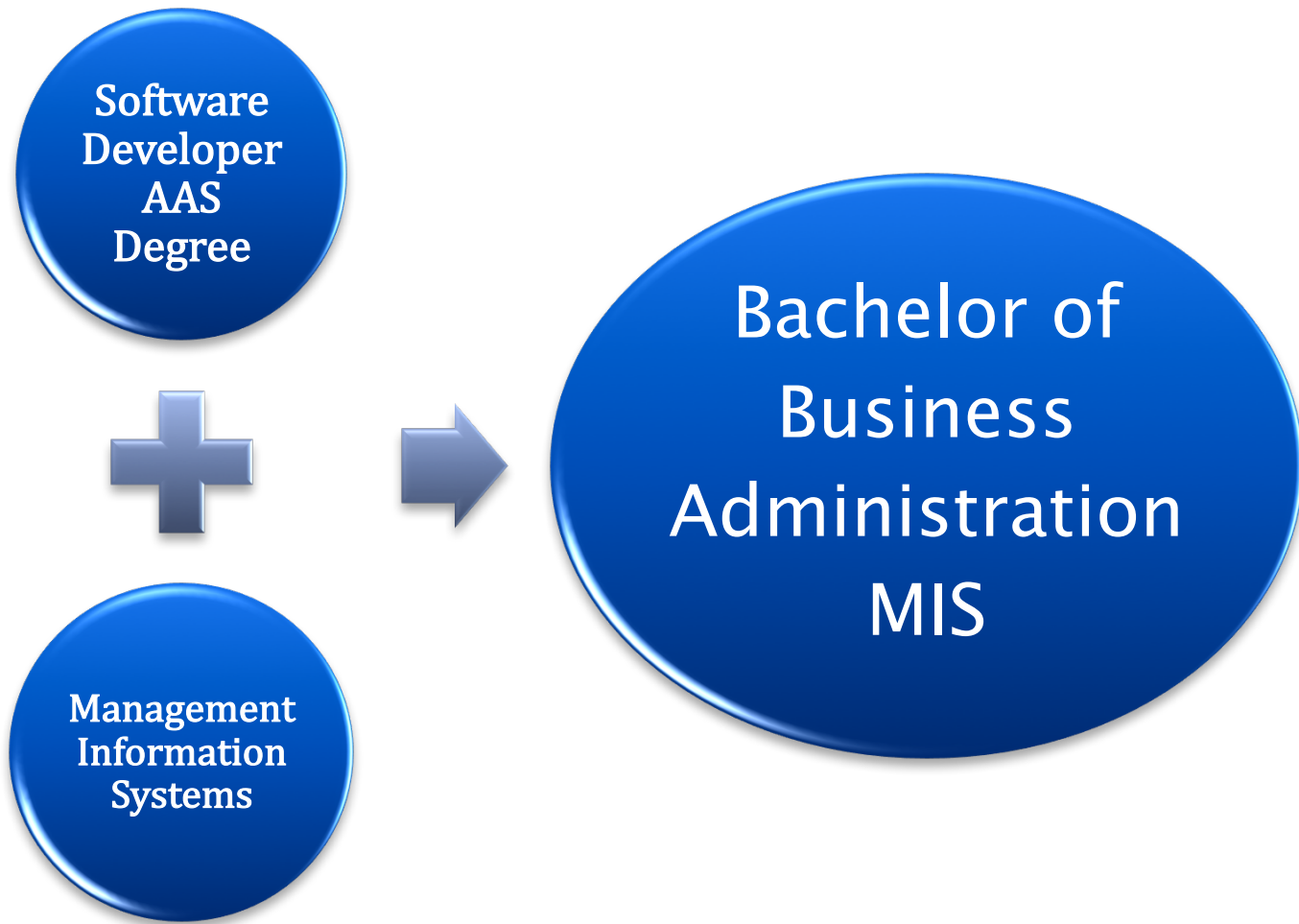| County	Number of Disabled Workers
Brown	11,729
Calumet	1,750
Florence	315
Fond du Lac	4,955
Green Lake	1,023
Kewaunee	1,076
Manitowoc	4,220
Marinette	2,737
Marquette	1,110
Menomonee	261
Oconto	1,885
Outagamie	**7,385**
Shawano	2,107
Sheboygan	5,300
Waupaca	2,896
Waushara	1,639
Winnebago	7,833
Total:	**58,221**

Would your organization consider committing staff and/or financial support for initiatives targeted to:

Program	Staff	Financial
Internships	24	9
Mentoring	21	5
On-site Training	19	8
Continuing Education Courses	16	8
Boot Camps	15	6
Degree Programs	13	8
Certificates	12	5
Competitions	11	2
Challenges	9	2

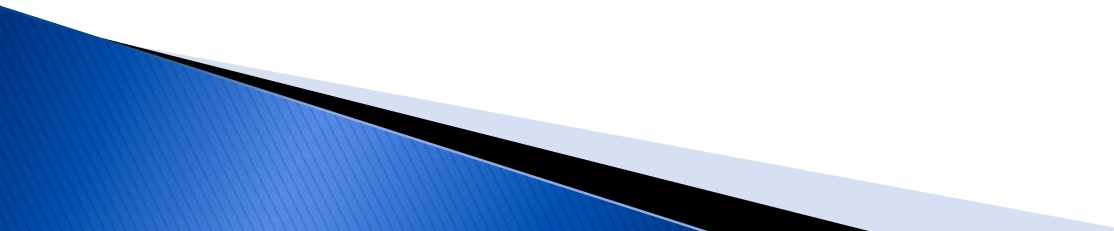Source: NEW Employer Survey

Education and Training of IT Candidates

- **Purpose**: Collaborate and coordinate with employers to build interest in existing IT programs of study and offer new collaborative degree programs in emerging, high demand IT professions. Potential for **credentialing programs through colleges and universities to deliver industry recognized certificates or credentialing programs in areas of high demand IT professions. Requests were made for such programs as user groups of ERP/SAP systems, and resources in cyber security, and data science analytics**.

- **Benefit:** There are **many qualified, but un-credentialed, candidates within the region** that will require direction, additional training and education, and assistance in finding the right path for them in terms of job interests and opportunities. The large majority of these **candidates are already located in NEW** and are part of the regional economy.

Example: 2+2 in Development

Software Developer AAS Degree

+

Management Information Systems

→

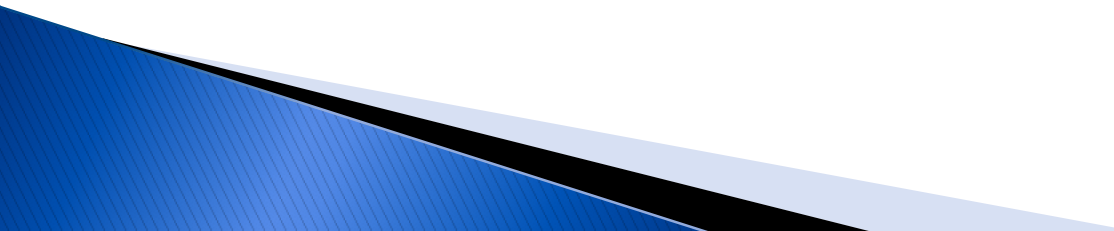Bachelor of Business Administration MIS

Why 2 + 2 Program?

- ▶ NEW employers demand for students with software development skills and business systems knowledge.

- ▶ Student flexibility to work full time, as credentialed software developer and continue toward a Bachelor degree.

- ▶ Affordability with potential employer tuition reimbursement.

- ▶ More students in the IT career track.

NEW Digital Transformation…..

▸ Collaboration and cooperation that builds awareness, interest and advancement of IT professionals.

▸ Regional marketing and branding to attract, develop, and retain IT talent.

▸ Education and training to develop the skills and talent of emerging and current IT professionals.

▸ Advocacy from communities, businesses, and IT professionals to collectively leverage resources and make northeast Wisconsin a leader in IT .

THANK YOU!