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Building Collaboration Networks and Alliances to Solve the IT Talent Shortage: A Revelatory Case Study

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Abstract

As companies increasingly face challenges finding sufficient numbers of skilled IT workers, regions around the country have attempted different strategies to address the gap. In Northeast Wisconsin, the primary strategy has been the formation of a formal organization, the NEW Digital Alliance, charged with attracting, developing, and retaining IT workers in Northeast Wisconsin, funded by local companies and universities. In this paper, we will explore collaborative networks and the innovative effect they have on solving the IT talent pipeline challenge in a specific geographic region. Specifically, we explore the role of collaboration maturity and present a new comprehensive framework that may help understand and direct new regional collaborative efforts. The findings suggest that an alliance of business, education, and economic development partners can move a region forward in ways that are difficult for single players to achieve. We find that the Northeast Wisconsin region has been able to achieve coordination between K-12, higher education, and employers to improve on awareness of the problems that each part of the talent pipeline is facing. With an increase in collaboration maturity, the organization was able to relatively easily transition to virtual activities as well as assemble new constellations of collaborative efforts in short order when faced with the COVID-19 crisis.

Keywords: Collaborative Networks, IS Recruitment, Case Study

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1. Introduction

In the early part of the 2010's, businesses in the Northeast Wisconsin region faced significant challenges recruiting and retaining IT talent. As a result, they joined forces with area universities, K-12 schools, non-profits, and economic development agencies to form what was originally known as the NEW IT (Information Technology) Alliance is now referred to as the NEW Digital Alliance¹. This paper explores the events that led to the formation of this Alliance, the increasing maturity of the Alliance, and the impact of the Alliance on IT talent in the region from 2015 through the COVID-19 outbreak.

Then as now, organizations struggled to fill the growing demand for information technology (IT) jobs. In fact, demand for IT talent is expected to grow 12.1% from 2019 to 2029 with an estimated 48,941 new IT-related jobs opening each year (U.S. Bureau for Labor Statistics (BLS), 2020). The IT field is projected to see the third-fastest growth after health care and community and social support occupations. At the same time, interest in IT-related academic majors has not kept pace with the rapidly increasing demand (National Center for Educational Statistics, 2018). This imbalance is causing significant talent shock in the marketplace and causing companies and colleges to explore heretofore unexplored options and possibilities.

Individual organizations have adopted comprehensive talent management, recruitment, and acquisition programs. These programs have included recruitment software and applicant tracking systems, social networking sites, video interviews, as well as formalized onboarding and training programs (Jose, 2019). Traditionally, these efforts have been carried out by individual companies. Even with these efforts, IT talent issues have consistently ranked as the second or third most worrisome concern of CIO's over the past 7 years (Kappelman et al., 2020). The inability to solve these issues independently led individual leaders from these companies to seek a more collaborate approach to the talent shortage.

Similarly, individual colleges and universities have attempted to address the challenges of increasing enrollment through the development of new majors, minors, and certificate programs. Some of these programs include artificial intelligence, big data analytics, business intelligence and analytics, cybersecurity, ERP, Internet of Things (IoT) (Case et al., 2019). As with individual organizations, these colleges and universities often worked in isolation.

In response to this talent shortage, the Northeast Wisconsin Digital Alliance (NEW Digital Alliance) was founded in 2015 to address the talent shortage in the Northeast Wisconsin area. This article explores the establishment and maturation of the NEW Digital Alliance. Guided by the work of Schilling (2015), who focused on technological collaboration and innovative outcomes, as well as Morgan (2012), who developed a collaboration maturity model, we explored three key areas. First, inflection points that highlight the transition from one phase of maturity to the next were identified. Second, the relationship between the NEW Digital Alliance maturity and the overall collaboration network maturity was explored. Finally, innovative outcomes from the collaboration were identified. As we face the ongoing challenges of the COVID-19 crises, the findings of our research can be applied to new networks being developed to face new challenges.

This paper is organized as follows. The next section covers the theoretical background around collaboration networks and alliance formation as well as collaboration maturity. Section 3 describes the single-case study research method that was used to guide the research as well as an overview of the case environment. Section 4 provides a detailed case description and analysis. Section 5 provides a discussion on the findings. Finally, the conclusion includes a summary, limitations, and direction for further research.

2. Theoretical Background

In an effort to explore and understand our case study as well as develop research questions, we explored established literature on collaboration networks and alliance formation as well as collaboration maturity. While studying these individual theories, we identified that prior research had not integrated them into a comprehensive framework. Data from the case study helped showcase concepts from these theories to explain how a regional collaboration can form and mature.

¹ For clarity, in the rest of this paper we will refer to the organization by its current name, NEW Digital Alliance, or simply 'the Alliance.'

2.1 Collaboration Networks and Alliance Formation

Uncertainty motivates firms to enter into alliances (Frankort et al, 2016). Schilling (2015) identified the relationship between a technology shock, alliance formation, collaboration network, and the resulting innovation outcomes (Figure 1). In this model, a triggering event, such as the introduction of a new technology, facilitates the formation of an alliance of firms as well as the larger collaboration network. Consequently, the alliance formation directly positively contributes to the development of the collaboration network. The alliance formation contributes to, supports, and generally guides the collaboration network. Both the alliance formation and collaboration network result in innovation outcomes. For Schilling (2015), the network included firms, government labs, universities and other organizations that together represented significant components of the global technology network. Schilling (2015) measured the innovation outcomes by the number of patents issued.

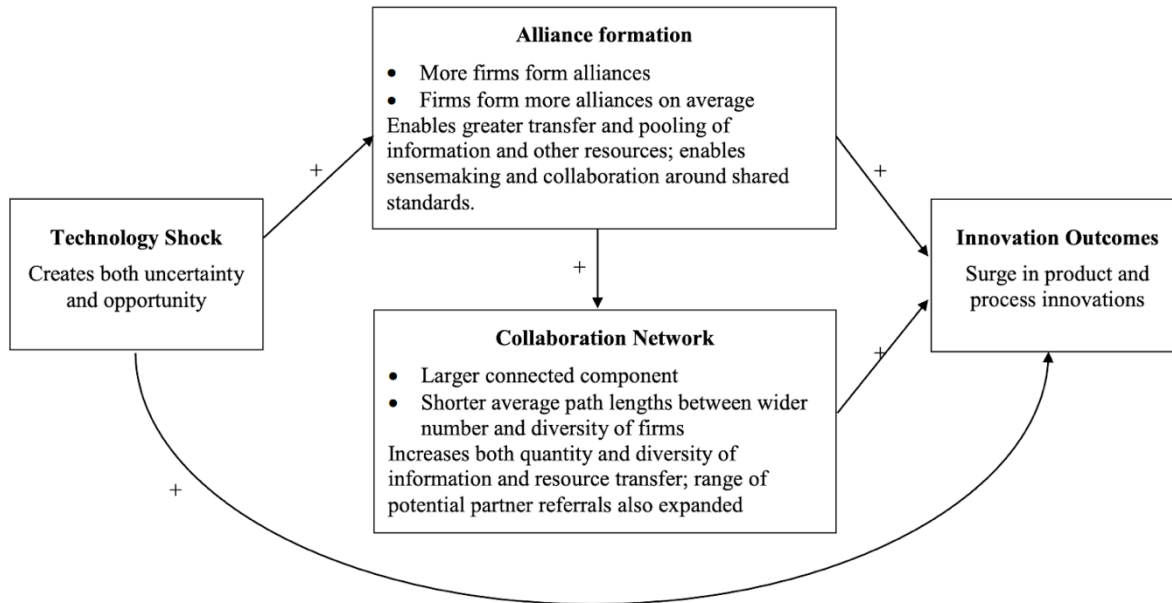


Figure 1: Technology shocks, technological collaboration, and innovation outcomes. Adopted from Schilling (2015).

This model has also been used to explore interorganizational knowledge transfer (Milagres & Burcharth, 2019). Specifically, technology shock was identified as a significant environmental uncertainty that facilitates knowledge transfer. Similarly, the technology shocks and resulting innovation was used to explore technology alliances and market cycle (Martynov, 2019). Finally, this model was used as a foundation to show that the growth of an inventor network is associated with innovative impacts (Argyres, et al., 2020).

2.2 Collaboration Maturity Model

All organizations mature over time and have unique characteristics at each stage of maturity. The notion of a model to describe this growing maturity was first developed and popularized at the Software Engineering Institute at Carnegie Mellon University in the 1980s and 1990s. This work resulted in the Capability Maturity Model aimed at describing the maturity of software development processes (Paulk et al., 1993). Morgan (2012) used the maturity concept to identify an emergent collaboration maturity model for describing stages of a collaboration ecosystem progression. In the Morgan (2012) model, collaborative networks progress along five maturity stages that include: Unaware, Exploratory, Defined, Adoptive, and Adaptive. The primary goal is to reduce the strategic value gap and deliver greater business value. The strategic value gap represents the gap between current maturity and business value achieved from a fully adaptive organization. As the collaborative network matures, the strategic value gap declines and the overall business value increases. Figure 2 shows the five levels of maturity and provides a definition of each level.

The five phases of collaboration maturity can be assessed along five characteristics: goals and objectives, organizational culture, process, technology, and governance.

2.2.1 Goals & Objectives

Goals and objectives represent the outcomes that an organization hopes to achieve. Morgan (2012) identified the following organizational levels: company, department, employee, and customer. In the Unaware phase, goals and objectives have not been stated at any level. During the Exploratory phase, they have been explored. In the Defined phase, goals and objectives have been defined. During the Adoptive phase, they have been formally communicated. Finally, in the Adaptive phase, goals and objectives have been adapted to the particular situation of the collaborative network.

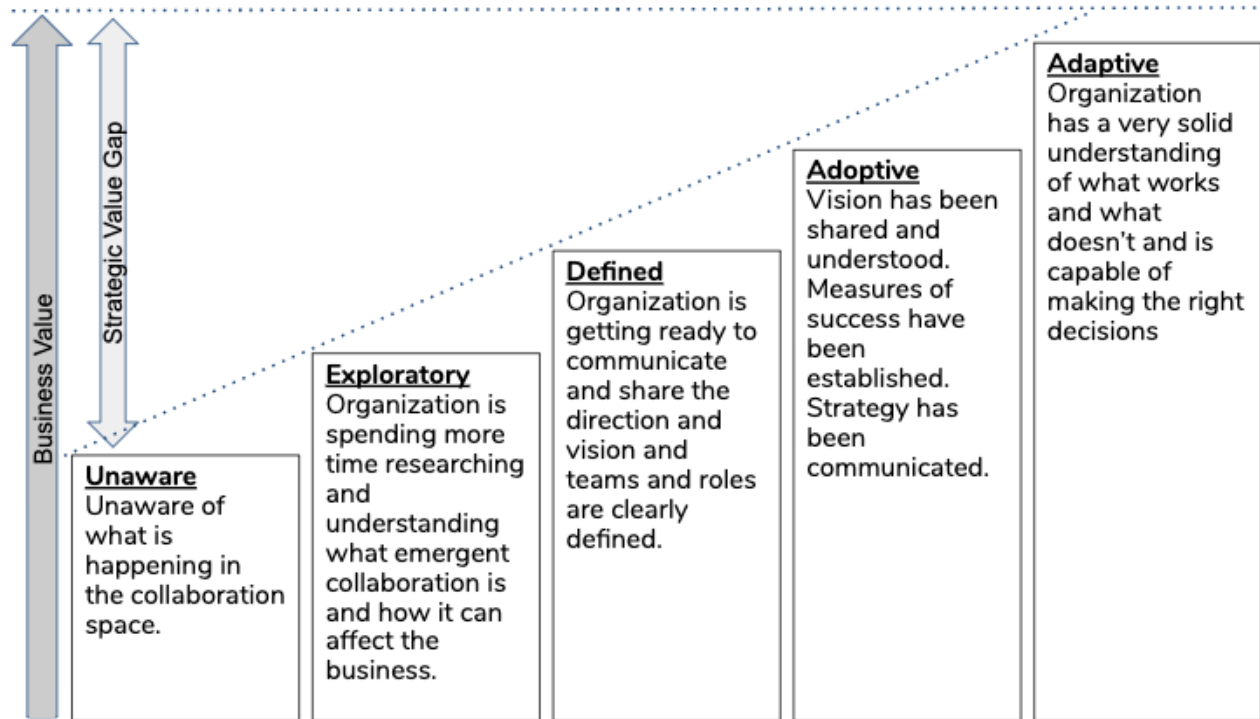


Figure 2: Emergent Collaboration Maturity Model. Adopted from Morgan, 2012.

2.2.2 Organizational Culture

Organizational culture can be defined as ensuring that collaboration is valued and incentivized. Morgan (2012) identified the following components of organizational culture: leadership, organizational change management, ensuring evangelists, fostering openness, and establishing mutually beneficial value. In the Unaware phase, the organizational culture components are not addressed and have no sponsorship. During the Exploratory phase, these components begin to be identified and discussed. In the Defined phase, many of the organizational culture components are defined and secured. During the Adoptive phase, the components are initially communicated and executed. Finally, in the Adaptive phase the components are formally communicated and adapted.

2.2.3 Process

Process refers to the required organizational changes that will occur to support the maturing collaboration. Morgan (2012) identified the following components of process: escalation, automation, and information management. In the Unaware phase, the process components are not in place nor considered. During the Exploratory phase, processes and plans are identified. In the Defined phase, process components are developed and communicated. During the Adoptive phase, the process components are implemented. Finally, during the Adaptive phase, these components are generally adapted as circumstances change.

2.2.4 Technology

Technology can be defined as the technological advances that enable communication, information sharing, and collaboration. Morgan (2012) identified the following components of technology: tool selection, integration, training, adoption, and maintenance and upgrades. In the Unaware phase, technology is not considered or addressed. During the

Exploratory phase, problems and opportunities are identified and technology is considered. In the Defined phase, strategies for addressing technology are developed. During the Adoptive phase, the road map for technology is communicated and further developed. Finally, during the Adaptive phase, training occurs, and technology is continuously adapted.

2.2.5 Governance

Governance can be defined as ensuring employees understand the policies of the organization. Morgan (2012) identified the following components of governance: best practices, guidelines, policies, oversight team, and social service level agreements. In the Unaware phase, governance does not exist. During the Exploratory phase, governance is recognized as needed. In the Defined phase, approaches are identified, and teams selected. During the Adoptive phase, governance components are created and developed. Finally, in the Adaptive phase, governance components are evaluated and evolved on an ongoing basis.

This model was used to develop the book *The Future of Work, Build Better Leaders and Create a Competitive Organization* (Morgan, 2014). In addition, this collaboration framework was used to provide insight into the adoption of social collaboration software (Komarov et al., 2014) as well as to explain the social impact of knowledge work (Getto et al., 2014).

2.3 Research Questions

Morgan (2012) highlighted that business value is directly related to organizational maturity. Schilling (2015) focused on the value of collaboration. In considering the collaboration maturity model as well as collaboration networks and alliance formation, we identified the following research questions:

1. What are the inflection points that highlight transition from one phase to another phase?
2. How does maturity of the alliance formation contribute to the maturity of the collaboration network.
3. What innovation outcomes occurred? How were they measured?

3. Research Methodology & Case Environment

In an effort to explore and understand our case study as well as develop research questions, we explored established literature on collaboration networks and alliance formation as well as collaboration maturity. While studying these individual theories, we identified that prior research had not integrated them into a comprehensive framework. Data from the case study helped showcase concepts from these theories to explain how a regional collaboration can form and mature.

3.1 Research Methodology

This revelatory case study seeks to investigate the development and maturation of a collaborative network. As research of regional collaborative networks is limited, it is suitable to conduct the study from an exploratory perspective utilizing a single case (Eisenhardt, 1989; Yin 2017). Case study methodology is appropriate under specific conditions. Yin (2017) notes that a case study is an “empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between the phenomenon and context are not clearly evident” (p. 13).

3.2 Case Environment

This case is set in the Northeast Wisconsin economic development region (New North). This region is made up of 18 counties covering roughly a quarter of the state of Wisconsin. Figure 3 shows a map of the region. The primary economic development organization for the region is New North Inc, which was established with a mission “to be the catalyst for regional prosperity for all through collaborative action”. The primary industries in the region include transportation equipment manufacturing, dairy product manufacturing, foundries (pulp, paper, paperboard manufacturing and converting), electrical equipment manufacturing, machinery manufacturing, and fabricated metal product manufacturing. Manufacturing in the region has become increasingly reliant on technology and 25% of the workforce is estimated to work in advanced manufacturing industries (New North 2020).



Figure 3: Map of the 18 counties that make up Northeast Wisconsin

Having been involved in the IT community in the region for several decades, the authors have observed the changing demands for IT professionals in the region and the desire to collaborate at the regional level. In the late 1990s, demand for talent was strong and students responded by enrolling in IT-related programs in very large numbers. For example, in 1999-2000 the Information Systems major at University of Wisconsin Oshkosh was the largest in the college. However, student demand dropped sharply and by 2004, the major had shrunk to 10% of its size 5 years prior and it stayed at that level for about 10 years.

One of the authors was involved in the very early days of the NEW Digital Alliance in 2014 and 2015 when it was just a loose affiliation of companies, universities, K12 schools, and interest groups, and was able to follow the early stages of the formation of the collaboration. Another of the authors was a founding member of Women in Technology and chair of its WIT4Girls program aimed at increasing opportunities for girls ages 5-18 to experience IT. She was later hired as the first director of the NEW Digital Alliance and has been instrumental in the increased level of collaboration in the region as well as the maturation of the collaboration efforts. The final author has extensive consulting, strategic planning, and IT project management experience in a number of companies and organizations in the region before joining UW Oshkosh as a faculty member. He has since been involved in several NEW Digital Alliance committees and initiatives. Because of their close connections, the authors have had many informal conversations about the IT community in the region that have impacted the direction of the Alliance, and several other programs in ways that cannot be teased out formally.

As we discussed the recent efforts in the region, we realized that our experiences provided us with a unique vantage point from which to provide an inside account of the formation and shaping of strong regional collaborative efforts aimed at strengthening the local IT community for both employers, students, and IT professionals.

4. Case Description & Analysis

In Northeast Wisconsin, over the past several years, the need for an increased number of technology-educated and technology-trained employees has been recognized (Matzek, 2018). Several organizations started to explore this issue but without a central hub for this developing network, activities were not well coordinated.

Through the formation of the formal NEW Digital Alliance with a dedicated full-time director, the region has been able to move up the levels of maturity. The Alliance now plays a central role in coordinating and organizing a number of activities as well as being a central hub for information about all the events in the region through a website, monthly newsletter, and robust social media presence. This section will describe the development of the organization and how it fits in the collaboration maturity model. As part of this narrative, we have identified several inflection points of particular

significance that signaled maturation of the Alliance. Figure 4 shows a timeline of all the inflection points. This section is organized by stage on the collaboration maturity model.

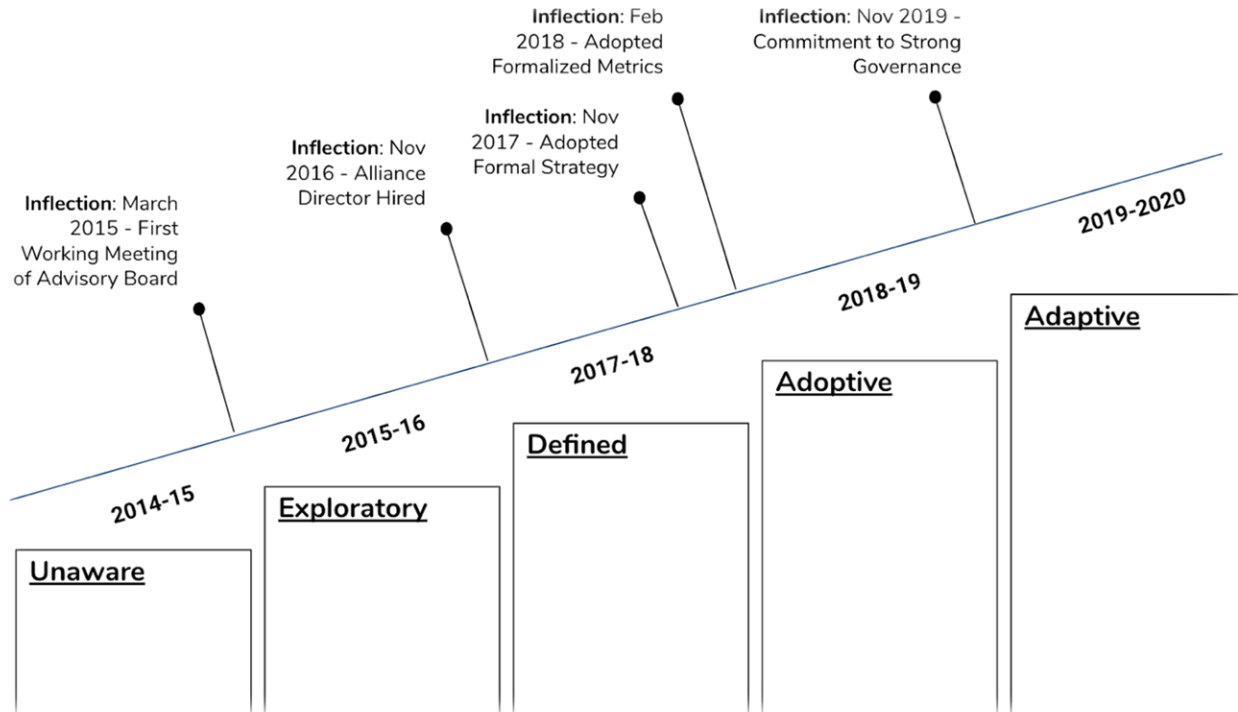


Figure 4: Reflection Points Between Maturity Levels

4.1 Unaware Stage (prior to March 2015)

In the early 2010s, IT leaders in Northeast Wisconsin businesses gradually realized that it had become difficult to find the necessary IT talent. In spite of this, educational institutions did not see an uptick in students to meet the demand. However, with no shared understanding of the problem among businesses, companies largely felt they were alone with the problem of finding IT talent, and educational institutions felt no pressure to systematically increase offerings or attempt to draw more students. With no collaboration, and moreover, no real sense that there was a problem, the region was firmly in the Unaware stage as shown in Table 1.

In early 2015, a small group of IT leaders in the region started discussions about how to solve the problem across the region so as to avoid cannibalizing IT employees from each other but instead increase the supply of IT talent in the entire region. We identify the first meeting of this group in March 2015 as the first inflection point towards moving from the Unaware stage towards exploration of a collaborative approach to solving the IT talent crisis.

Characteristics	Assessment	Description
Goals & Objectives	Vague	Vague realization that problems with finding IT talent are shared across many companies. No specific goals or objectives.
Culture	Unaddressed	Not addressed.
Process	None	Nothing in place.
Technology	Unaware	Nothing in place.
Governance	None	Ad hoc leadership team.

Table 1. Unaware Stage (Prior to March 2015)

4.2 Exploratory Stage (2015-16)

For about two years, efforts to solve the IT talent problem were driven by various individuals and organized groups. The NEW Digital Alliance grew out of these efforts and was envisioned as a forum to coordinate the disparate efforts across the region that were hampered by the lack of dedicated focus on collaboration and coordination. Each stakeholder group had specific motivations to be included. Businesses sought to improve the talent pipeline, thus reducing recruitment and hiring costs. Universities sought to raise enrollments in these high-value STEM majors. Several of the founders, nearing the end of their active careers, sought to positively impact the region.

Table 2 shows the primary characteristics of the efforts during this period that culminated with the hiring of a director for the Alliance. We characterize this as the Exploratory phase as the focus was on considering goals, identifying leaders, seeking sponsorships, and recognizing the need for additional governance.

4.2.1 First Meeting - March 2015

In 2015, Northeast Wisconsin business and educational institutions partnered to form what first became known as the NEW IT Alliance and later the NEW Digital Alliance. From the first meeting in March 2015, the group invited business partners, higher education, K-12 schools, non-profits, workforce development agencies, economic development agencies, chambers of commerce and others to participate in roundtable discussions on how to solve the problem. At these quarterly meetings it became clear that many organizations in the region were working to solve the same issue but with limited coordination. This alliance began to explore the issue of the IT Talent Pipeline and potential paths for approaching this issue. Meetings often had 40-50 people in attendance, and all were involved in working on various initiatives to help solve the problem. The meetings consisted mostly of updates on various initiatives going on around the region with an attempt at establishing collaboration where appropriate. Appendix A includes a list of the partners in the region that helped form the Alliance and have collaborated since then.

4.2.2 Survey of IT Talent Issues

One of the first formal activities of the organization included working with Northeast Wisconsin Educational Resource Alliance (NEW ERA), a collaborative of all the higher education institutions in the region, to conduct a survey of businesses in the region to determine the extent of the problem of hiring IT talent. The NEW ERA survey showed that demand existed for an additional 3,000 IT employees by 2021. One of the issues that became clear from the survey and the follow-up meetings around the region to present the results to groups of businesses was that many businesses were unaware that the problem of finding IT talent extended beyond their own organization. The survey results raised the awareness that a broader problem existed.

4.2.3 Volunteer Efforts Continue

The community leaders who were informally leading the regional discussions realized in 2016 that they were hamstrung by not having someone who could dedicate full-time attention to the issues raised. It became a problem that little progress was being made between the infrequent meetings. So, a consortium of businesses and higher education institutions decided to pledge enough money to hire a full-time director for the Alliance.

During 2016, the Alliance began to coordinate activities offering a central hub to the growing distributed network of organizations, businesses, and educational institutions focused on this challenge. The group discussed how to achieve open communication of goals and activities, sponsorship of the entire network, governance of the network, and goals and objectives.

4.2.4 Hiring of Director

This process concluded in November 2016 with the hiring of a full-time director for the organization, which we identified as the second inflection point, as it allowed the organization to have a person dedicated to coordinating the various efforts and increasing collaborative maturity in the region. The director has a background in IT having worked 13 years at a large local employer. As a founding member of Women in Technology Wisconsin and leader of their WIT4Girls initiative, she had deep connections to the broader IT community in the region.

Characteristics	Assessment	Description
Goals & Objectives	Initial Goals Defined	These goals included the hiring of the full-time director (Nov. 2016), legal registration of the organization, and funding to ensure initial and ongoing operations.
Culture	Developing	Collaborative networks forming and growing across the region.
Process	Developing	Ad hoc leadership group calling meetings approximately quarterly.
Technology	Unaddressed	Email and ad hoc file sharing among the members.
Governance	Developing	Leadership team becomes more defined.

Table 2. Exploratory Stage (2015 - 2016)

4.3 Defined Stage (2016-17)

We identify the period from the end of 2016 through 2017 as crucial for the organization. Having hired a director, the focus in this period was primarily on formalizing most aspects of the organization. This included major changes to processes, technology, strategy, and governance. This period moved the organization from the Exploratory stage, which is primarily about planning and into the Defined stage, which is characterized by having put plans into action. By the end of 2017, the organization was vastly different from what it looked like a year earlier. See Table 3 for summary of characteristics of Defined stage.

4.3.1 Initial Director Actions - November 2016 –2017

During the director’s first year, most of the effort was focused on establishing the organization and its governance. However, the first NEW Connect IT job and Career Fair was also conducted in November 2017. Hiring a director who was able to dedicate full-time attention to the organization led to a dramatic increase in maturity with processes being defined and technology resources established. During 2017, the following activities were accomplished:

- Established website with Job Board
- Established initial sponsorship amounts for supporting organizations.
- Launched monthly newsletter
- Established social media channels and hired outside resource to manage social media presence ensuring regular activity
- Implemented Wild Apricot for event management and communication.
- Hired a college intern to support marketing and social media efforts.

Towards the end of 2017, the organization was well established with a strong presence in the community a website with strong content, social media presence across multiple channels, and a regular newsletter.

4.3.2 Adopted Strategy - Fall 2017

The director led the Executive Committee through a series of discussions to determine a formal strategy for the organization. This culminated in November 2017 with the formal adoption of a strategic plan for the organization that defined three pillars and three key audiences. Figure 5 lays out the key elements of the strategy. We identify the adoption of the strategy as an inflection point as it provided direction and focus to the efforts of the organization over the next several years.

The strategy was later refined to define three pillars related to increasing the talent pipeline: Attract, Develop, and Retain. The strategy was initially conceived to be very broad in terms of audiences. It included convincing high school students to study IT, keeping IT professionals in the region, attracting IT professionals from other regions, and inspire working or under-employed adults to pursue an IT career.

NEW IT Alliance Mission, Vision, and Strategy Framework

Mission:

Attract, develop & retain diverse IT talent in Northeastern Wisconsin to support economic growth.

Vision:

By 2021, Northeast Wisconsin employers will have IT talent to meet or exceed their expectations.

Strategic Intent: N.E.W. is digital technology destination and a great place to work and live.
Goal: Increase enrollments into regional IT programs by 15% for 4-year colleges and 7% for 2-year. Also increase student persistence rate in 2-year IT programs from 54% to 59%.

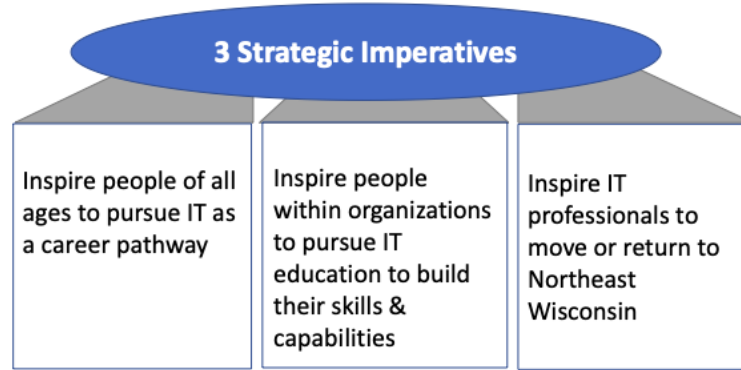


Figure 5: NEW IT Alliance strategic framework adopted in late 2017 and metrics adopted in early 2018.

4.3.3 Defined KPIs - Q1 2018

The next inflection point followed relatively quickly after the establishment of the strategy as the Executive Committee defined formal KPIs for one of the three pillars in the strategic framework: Develop. The goal was set to increase enrollments in regional IT programs by 15% for 4-year institutions and 7% for 2-year institutions. It also recognized the problem of students dropping out of 2-year programs at high rates by looking to increase the persistence rate in these programs from 54% to 59%.

Characteristics	Assessment	Description
Goals & Objectives	Defining throughout the period	Adopt strategy and set metrics.
Culture	Developing	Strong collaboration with partners throughout the region. Founders and Director setting the tone for the organization.
Process	Defined to Adoptive	<ul style="list-style-type: none"> • Social media presence through a contract with an external partner. Launched monthly newsletter. • Hired college intern. • Held NEW Connect IT (job and career fair). • Invoicing handled by parent organization (New North). • No CRM system for membership tracking and invoicing. Spreadsheets and manual processes used instead.
Technology	Selected - in some areas	<ul style="list-style-type: none"> • Adopted Google as collaboration platform set up as personal accounts and not with a dedicated business domain. • Website launched. Adopted software to manage events and newsletter mailing list as well as collaboration.
Governance	Defined	<ul style="list-style-type: none"> • Formalized executive committee with clear roles responsibilities. • Formed Talent and Marketing Committees • Established sponsorship amounts for supporting organizations

Table 3. Defined Stage (2016 - 2017)

4.4 Adoptive Stage (2018-19)

With the adoption of a strategic framework and defined metrics, the organization signaled a readiness to move into the Adoptive stage where the focus shifts to collecting metrics, executing on plans, and strengthening governance. Table 4 shows the characteristics of the organization during this period as collaboration moved from the Exploratory through Adoptive towards the Adaptive stage.

4.4.1 Data Collection

Having defined the KPIs, the organization set out to collect the data necessary to determine progress. This was done through an annual survey to each higher education institution for data to show whether enrollment was increasing or decreasing. Figure 6 shows the data for 2015-2020 for both 4-year universities as well as 2-year technical colleges in the region where data is available for each of the five years.

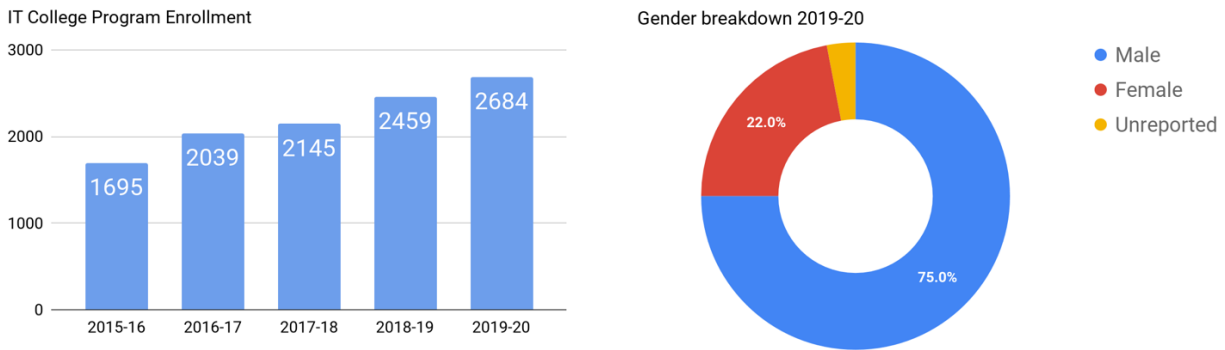


Figure 6: Enrollment in college IT programs

Simultaneously, the Alliance launched a collaboration with Microsoft to collect data from the K-12 system. That survey launched in 2018 as a pilot in two counties before expanding to the entire 18 county region in 2019. This survey collected data on both course offerings and enrollments as well as what barriers exist within the K-12 schools to offering more CS coursework. Figure 7 shows an example of data available in the dataset. This is the percent of high school students enrolled in a few standard CS classes in 2018-19 and 2019-20. As can be seen, most of the courses exhibited significant growth year-over-year. In the period, the average number of CS courses run by each district also increased from 3.4 to 4.2. Gender breakdown across the four traditional computer science courses mirror the trend in higher ed with about 76% of students identifying as male.

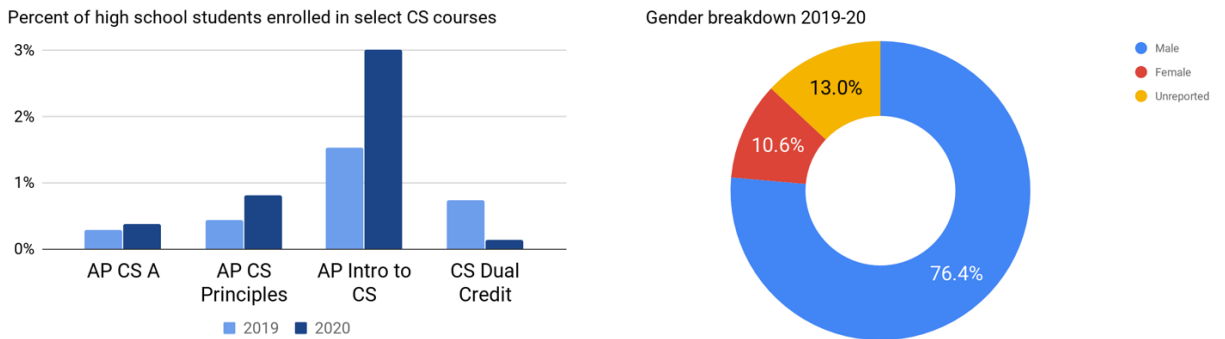


Figure 7: Enrollment in high school computer science classes

4.4.2 Promoting IT Careers

The Alliance was recognized to receive several grants to help boost focus on the K-12 space. The Wisconsin Department of Public Instruction awarded \$14,000 to support developing IT Career Pathways from the high school level through college and into careers. Microsoft granted a \$25,000 grant to help grow digital learning opportunities for underserved populations. The result was a map connecting high school and college educational opportunities in the region to five specific IT careers (DPI, 2019).

In fall 2018, the Alliance launched an effort to promote the IT profession in the region by creating a series of videos featuring local IT professionals talking about what they find exciting about their jobs and working in the Northeast Wisconsin region. This resulted in a series of 10 short videos uploaded to YouTube and made available to schools and others in the region to use for the promotion of IT.

4.4.3 Commitment to Stronger Governance - Fall 2019

Towards the end of 2019, it became clear that governance needed to be improved. At that time, the organization had the following committees: Executive, Talent, Higher Ed, and Marketing. The Marketing committee had become dormant due to lack of engagement from member volunteers whereas the other committees met regularly. Meetings were planned and led by the director. It became clear that there was a need for more engagement from committee members. This led to an inflection point when the Executive Committee members pledged to become more active in various activities of the organization, including participating in the other committees. The Higher Ed committee also elected a chair to help the director set the agenda and provide direction for the committee's work. In the Talent committee, no volunteer for the position stepped forward.

At the same time, several companies announced plans to drop their membership citing lack of time to engage and internal financial constraints.

In January 2020, the data collection efforts came to fruition with the publication of key data from K-12 and higher education on a dedicated page on the NEW Digital Alliance website (www.newdigitalalliance.org). This Factsheet page showed data from the first two years of K-12 data as well as four years of data from the higher education institutions. Both sets of data indicated growth among students engaged in IT education. It also highlighted challenges still ahead - including demand outpacing supply and a gender imbalance where the number of men far exceed the number of women. Figures 6 and 7 show some of the published data.

Characteristics	Assessment	Description
Goals & Objectives	Adoptive	<ul style="list-style-type: none"> Expanded with a new strategy. Launched survey to companies. Continuing to collect K-12 and Higher Ed data. Planning IT Summit in June 2020 to report on the state of IT across the region from K-12, Higher ed, and companies.
Culture	Exploratory/Defined	Lack of engagement may be holding back progress both within the Alliance as well as across the larger community in the region.
Process	Adoptive	<ul style="list-style-type: none"> NEW Connect IT event planning smoother due to experience. Social media presence expanded with additional channels and in-housing some management and content creation to interns. Launched videos of IT Professionals. Launched Insights on Technology with local publishing partner. Added a high school intern to help with website support and set up regular working sessions with interns.
Technology	Adoptive/Adaptive	Switch from Google to Microsoft. Standardized on Microsoft as a collaboration platform to ensure consistent organizational support and access.

Governance	Adoptive	Governance strengthens significantly in this period: <ul style="list-style-type: none"> • Formed Higher Education committee. • Discussions with the Executive committee on strengthening engagement. Each member signed up for additional work. However, limited actual follow-through. • One executive joined the Higher Education committee, which also elected a chair so as to not have the director be solely in charge of the meetings.
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Table 4. Adoptive Stage (2019)

4.5 Next Steps (2020 and beyond)

In early 2020, the organization was at a crossroads. The need for IT talent was still strong and a major concern for many companies in the region. Enrollment in IT courses in high schools across the region had increased significantly and barriers to further growth had been identified. At the higher education level, enrollments had started to slowly increase. However, company engagement with the organization had dropped with several member companies announcing they were not renewing their membership. Similarly, there was a general lack of engagement from member volunteers.

Even with these setbacks, the Alliance moved forward on several fronts. Table 5 highlights the movement toward the Adaptive stage.

4.5.1 New Strategy and Renamed Organization - February 2020

To help increase the number of member organizations, improve on engagement from member organizations and stabilize the financial outlook for the organization, the Alliance embarked on a strategic planning effort during the first quarter of 2020. This culminated with a decision to broaden the scope of the organization and a rebranding. By renaming the organization from the NEW IT Alliance to the NEW Digital Alliance, the idea was that the scope of the organization would be broadened to not just focus on traditional IT roles but to expand to also focus on the digital skills needed to be successful in any career.

4.5.2 Technology Transition - Google Docs to Microsoft SharePoint

Early on, the organization had adopted Google’s collaboration tools - Google Docs, Drive, Hangout etc. - to support the organization. However, it had become increasingly clear that this choice wasn’t sustainable as the accounts were set up as personal Google accounts making it difficult to provide professional branding and strongly separate organizational business from personal accounts. In addition, some companies blocked key Google technologies from their networks making it difficult to collaborate across companies. The Alliance decided to switch to a comprehensive platform and chose Microsoft Teams and SharePoint for collaboration instead. While most of the work to transition to the new platform fell to the director and the two interns, the value of the collaborative network established by the organization became evident here as well. When the process hit a snag, a local technology training firm and member organization made one of their SharePoint trainers available for several hours of consultation to help fix the problem.

4.5.3 And Then the World Changed

Like all organizations, the NEW Digital Alliance was affected by the transition to remote and virtual operations as a result of the COVID-19 pandemic that hit in early 2020. This meant that almost all in-person activities and events from March through at least the end of the year would be conducted virtually. Because of the increase in maturity along all dimensions, the organization was able to transition and continue operating with little disruption. The recently adopted collaboration technologies in the form of Microsoft Office 365/SharePoint as well as Zoom allowed for all meetings to be transitioned to virtual instead of in person.

The NEW Digital Alliance was also well positioned to take advantage of the collaborations and networks previously established to set up new related collaborative efforts, such as a survey launched in collaboration with internship coordinators at regional colleges (most of whom had not previously collaborated) to examine the impact of the pandemic on summer internships for college students. The Alliance also quickly pulled together a broad-based committee to look at opportunities for displaced workers to re-skill into IT roles. Both of these efforts show the organization having matured and able to play to the strengths it had built up over the previous years in establishing collaborative networks across the region.

Characteristics	Assessment	Description
Goals & Objectives	Adoptive/Adaptive	Expanded with the new strategy to also include digital readiness of the entire workforce as well as innovation across the region.
Culture	Defined	Significant effort required to increase engagement and evangelism on behalf of the organization and IT community in the region.
Process	Adoptive/Adaptive	Ability to pivot in face of change is a testament to mature processes.
Technology	Adaptive	Transition to Office 365, SharePoint, Teams and Zoom. Email addresses transitioned to new domain names instead of personal Gmail accounts.
Governance	Adoptive/Adaptive	<ul style="list-style-type: none"> Working towards 501c.3 status. Exploring tiered investment options for various types of organizations (higher education, not-for-profit, and for-profit). The Higher Education Committee works on setting goals and objectives for the committee that is more independent of the Alliance with the purpose of making the committee more valuable to the members from the higher education institutions.

Table 5. Moving to Adaptive Stage (2020)

4.6 Innovative Outcomes

Discrete activities represent the primary measurement of innovation outcomes. These activities originate from both the Alliance directly as well as from the overall collaborate network. Activities have been tracked through identification and self-reporting since early in 2017. Table 6 provides an overview of activities from 2017 through 2020. Many events in 2020 were not even scheduled given the COVID-19 restrictions. See Appendix B 2019 Alliance and Network Events for the full list of 2019 events.

	2017 ²	2018	2019	2020	Total
Alliance	4	10	12	16 (3 cancelled) ³	42
Network	16	52	97	40 (2 cancelled)	205
Total	20	62	109	56 (5 cancelled)	247

Table 6. Alliance and Network Activities

There are several key Alliance events. First, NEW Connect IT represents a yearly conference targeted toward high-school and college students. This full-day event allows students to learn about technology careers and the educational pathways to pursue those careers, meet with higher education institutions, and talk to many area employers. Second, quarterly TechTalks bring presentations of the newest technology to colleges and universities in the region. Third, the annual Tech Talent Summit provides the state of the Digital ecosystem in Northeast Wisconsin. This event includes data, successes, and various panel discussions for all Alliance members and the community at large. Finally, a quarterly CS Advisory Board meeting facilitates addressing the IT gaps in high schools through facilitation of advisory boards. All current events can be viewed at <https://newdigitalalliance.org/events/>.

5. Discussion

In this case study, we explore our experience working and interacting with the NEW Digital Alliance and the related collaborative effort that is evolving across Northeast Wisconsin. Significant effort and resources have been focused on building the IT Talent pipeline in the region. As predicted by Schilling (2015), collaborative behavior is induced by a

² Calendar starts halfway through the year.

³ Cancelled events are still listed in the calendar.

major technology shock. In Northeast Wisconsin, the trigger event was the robust growth of job demand. That is, the common realization that many companies were facing talent shortages. Before this point, each company thought they were unique in their difficulties to identify and attract technical talent. As a shared understanding of the problem emerged, this talent demand shock led to an informal collaboration network. With the hope of developing innovative outcomes relating to talent, a formal alliance was created. This relationship, in light of the original Schilling model, can be seen in Figure 8.

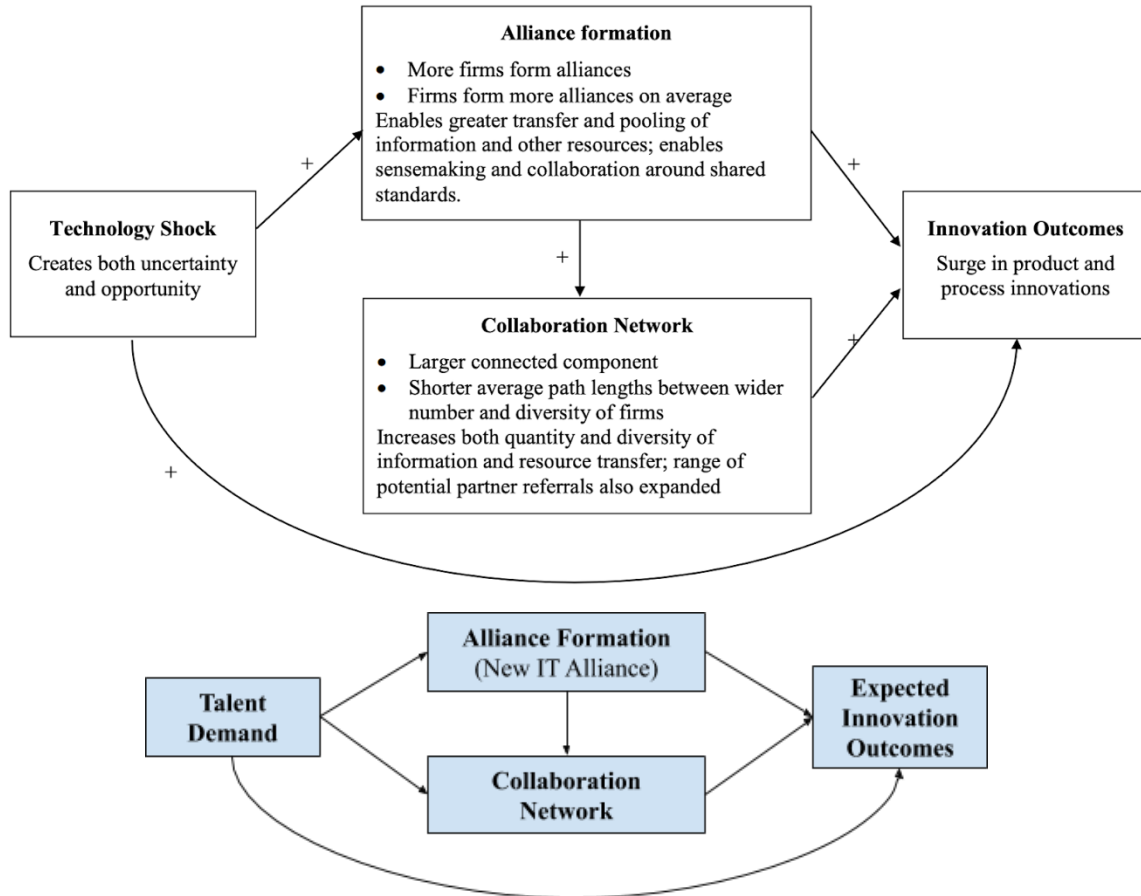


Figure 8: (Top) Original Schilling (2015) model and (Bottom) NEW Digital Alliance Collaboration

As noted earlier, the Northeast Wisconsin collaborative network is transitioning from the Adoptive phase into the Adaptive phase. Many projects are underway targeting distinct groups. In addition, new opportunities are continually identified. These are expected actions of a collaboration network. By moving to a more mature state, the network should increase both capabilities and value. Following guidance from the collaboration maturity model, the NEW Digital Alliance should recognize the need to mature and articulate strategies in support of culture, process, technology, and governance.

5.1 What are the inflection points that highlight transition from one phase to another phase?

In reviewing the previous five years of activities and maturity, several inflections points have been identified that signaled a transition in maturity. First, in 2015, an initial meeting occurred with senior IT leaders from across the Northeast Wisconsin region. This resulted in the recognition of collaboration potential and opportunities for collaboration and began the Exploratory phase of maturity. Second, in 2016, a director was hired. This resulted in the organization becoming more defined. The implementation of a strategic plan in 2017 shifted the NEW Digital Alliance and related collaboration space into an Adoptive phase. This phase was further enhanced in 2018 with the development of specific strategic-related KPIs. In 2019, a strengthened governance framework was established signifying the shift from Adoptive to Adaptive maturity. As can be seen in Figure 4, these inflection points tended to occur at the beginning of the move towards a new level of maturity and we contend that the inflection points were major drivers towards achieving the next level of maturity.

COVID-19 and the resulting economic and health uncertainty represent a new shock of the collaboration ecosystem of Northeast Wisconsin. The impact on the current alliance is unknown. Initially, IT-related hiring remains strong and sponsoring companies remain involved and committed to collaboration. However, it is unclear if companies will continue to be able to commit financially to the effort during the downturn in the economy. It is also unclear what grant opportunities may be available and whether the NEW Digital Alliance will be able to access them to help establish re-skilling efforts as we transition out of the pandemic.

5.2 How does maturity of the Alliance contribute to the maturity of the collaboration network?

While serving as the central point for collaboration and event organization, the ongoing focus on goals and objectives, culture, process, technology, and governance by the NEW Digital Alliance positively impacted the related collaboration network. Ongoing strategy and KPI development were driven by a board representing regional companies, economic development organizations, and higher education institutions. These representatives have a vested interest in the collaboration network remaining viable and impactful. Their involvement also helped ensure alignment between the activities and actions of both the Alliance and their respective organizations. Similarly, technology maturation facilitated greater collaboration. Finally, committees and subcommittees set goals and objectives in alignment with the regional strategies directed by the Alliance.

5.3 In what ways are innovative outcomes impacted by maturing collaborative alliances and networks?

Innovative outcomes are difficult to measure. While traditional metrics such as the number of companies involved in the NEW Digital Alliance, number of events, number of attendees, or job postings can offer insight into results of the Alliance and the collaborative network, they do not specifically represent innovative outcomes. As an example, a single job opening that is filled may or may not have resulted from the work and effort of the Alliance and related collaboration network. Anecdotally, companies will continue supporting the Alliance and partaking in the collaboration network if they feel they receive value for the time and money they are spending. This culture of loose affiliation has allowed the collaboration to take hold and grow but may also represent a barrier to future maturity. This culture also impedes formal tracking of innovative outcomes. This lack of measurable outcomes represents a challenge to the Alliance.

6. Conclusion

Given the tremendous impact of COVID-19 on our workplace, educational institutions, and society at large, understanding collaboration, collaboration networks, and innovative outcomes is critical. This timely study explores the formation and maturity of an alliance and related collaboration networks and the impact on innovative outcomes to solve real challenges and problems. Combining the concepts of collaboration networks and collaboration maturity, we present a first attempt at a new comprehensive framework that may help understand and direct new regional collaborative efforts. Further research will be needed to fully realize this framework and explore its applicability to different regional settings.

There are two key limitations to this study. First, this paper only explores a single collaboration network in a single geographic region. It would be beneficial to explore additional networks in the same geographic area or similar types of network in different geographical areas to increase generalizability. Second, this study is based on personal experiences and knowledge of the authors. Wider interviews and surveys could yield richer results and greater insight into decisions throughout the maturation of the NEW Digital Alliance and the associated collaboration network.

There are several paths for future research. First, issues of diversity (gender, racial etc.), have not been addressed in this research. As an innovative outcome to solve the talent shortage, research into how the Alliance and related network can target a more diverse base of participants in the technology community would be warranted. Efforts are under way to collect more data on diversity of IT students and the IT workforce in the region. Second, this study occurred mostly during periods of strong economic growth (2015-2020). Different economic conditions are likely to cause alliance and network developments to proceed differently. Finally, understanding the impact of working “safely from home” on collaboration alliances and networks could be explored. While the pandemic will pass, the long-term impacts may involve continued remote working for employees and members of organizations.

By identifying key inflection points, maturation relationship between a formal alliance and collaboration network, and impact on innovative outcomes, we hope to provide guidance to those struggling to solve new challenges. The value of collaboration can result in positive and innovative outcomes. This is required now more than ever.

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Appendix A: Collaboration Network

Organization	Collaborative Role
Amplify Oshkosh	Local organization started by the Oshkosh Chamber of Commerce to promote the confluence and capabilities of technology in Oshkosh.
Central Wisconsin IT Alliance (CWITA)	Group of action focused employers in central Wisconsin working together to enhance the image of IT careers and position the region as a hub for IT opportunities.
Chambers of Commerce	Advocates of the local business and industry community, many of whom have a focus on workforce development.
Code.org	National nonprofit dedicated to expanding access to computer science in schools and increasing participation by women and underrepresented minorities.
Cooperative Education Service Agency (CESA)	Serve educational needs in all areas of Wisconsin by serving as a link between school districts, and between school districts and the state.
Department of Public Instruction (DPI)	State organization that sets standards for public schools in Wisconsin.
Department of Workforce Development (DWD)	State organization, developing youth and adult apprenticeships in IT
Employers	Organization with IT talent needs, many of whom are engaging with and providing financial support for one or more non-profit organizations within the collaboration network.
Microsoft	Microsoft's TechSpark is focused on regional internet connectivity, digital skills development, career skills development, nonprofit support and digital business transformation.
NEW Digital Alliance	Regional non-profit, funded by local employers, to help attract, develop & retain diverse IT talent in Northeastern Wisconsin to support economic growth.
NEW Manufacturing Alliance	Group of manufacturers, educators, workforce development, chambers of commerce and state organizations working to promote manufacturing in the Northeast WI region.
New North	Regional marketing and economic development organization representing the 18 counties of Northeast Wisconsin.
Northeast Wisconsin Education Alliance (NEW ERA)	Alliance that fosters regional collaboration among public colleges and universities in Northeast Wisconsin.
School Districts	Many of the school districts across the region were represented.
TEALS	National non-profit whose mission is to get computer science in every high school, with a focus on AP level CS classes.
Women in Technology (WIT) Wisconsin	Regional non-profit focused on initiatives designed to attract, grow and retain women and girls in technology related careers.

Appendix B: 2019 Alliance and Network Events

January 2019

Jan 17 Business Intelligence Best Practices
Jan 24 NEW CS Advisory Board
Jan 24 Ideas Amplified: Exploring the World of Virtual Reality & Augmented Reality

February 2019

Feb 05 Salesforce Technology: Wisconsin Non-Profit Group (Appleton) Kickoff Meeting
Feb 07 Counselors for Computing: Professional Development in Emerging Careers
Feb 21 CS Fundamentals Workshop
Feb 21 LinkedIn Best Practices
Feb 21 Amplify Member Mixer
Feb 21 Fox Valley Business Intelligence and Analytics Meetup
Feb 22 WIT@Work Breakfast Series - How to Leverage Social Media for Talent Acquisition and Talent Retention
Feb 28 Foxconn R&D center in Green Bay topic of Tech Council network luncheon on Feb. 28

March 2019

Mar 05 EDCi Taste of Technology
Mar 12 NEW CS Advisory Board
Mar 12 Salesforce Nonprofit User Group Meeting
Mar 12 WIT Networking and Social Event
Mar 14 Fox Valley Business Intelligence and Analytics Meetup
Mar 18 Wisconsin Tech Summit 2019
Mar 19 Virtual/Augmented Reality: Business Applications
Mar 20 Ideas Amplified: The Ins & Outs of E-Recycling
Mar 28 LinkedIn Best Practices

April 2019

Apr 02 Fox Valley Business Intelligence and Analytics Meetup
Apr 07 Hack Appleton
Apr 09 Salesforce for Nonprofits User Group - Problem-Solving Workshop
Apr 23 Building Blocks to a Highly Optimized Website
Apr 23 Building Blocks of Stellar Digital Marketing
Apr 25 Amplify Oshkosh- What is Blockchain and How Does it Work?
Apr 26 WIT@Work Breakfast Series - How to Stay Current With The Latest Technology
Apr 26 Innovation Challenge on the Aging Community
Apr 27 Innovation Challenge on the Aging Community
Apr 30 TechTalk 2019 @ Moraine Park Technical College

May 2019

May 09 Fox Valley Business Intelligence and Analytics
May 14 Building Blocks to a Highly Optimized Website
May 17 WIT@Work Breakfast Series - Learn how to persuade, inform and plan through enhanced communications
May 21 Midwest Association for Information Systems 14th Annual Conference (MWAIS 2019)
May 23 WIT4Girls Community Info Event
May 30 A Beginner's Guide to Salesforce Trailhead, In Action!

June 2019

Jun 08 Headway Open House Happy Hour
Jun 09 Robotics & STEM Camp: Session 1
Jun 11 Building Blocks to Stellar Digital Marketing
Jun 13 2019 Digital Learning Opportunities in NEW
Jun 13 6 Tips for Increasing and Managing Leads
Jun 13 Salesforce for Non-profits Group – Reports & Dashboards Workshop and Problem Solving
Jun 13 Fox Valley Business Intelligence and Analytics

Jun 16 Robotics & STEM Camp: Session 2
Jun 17 FVTC Technology Camp
Jun 17 Tech Titans Mobile App Academy
Jun 18 First Meeting of the Green Bay "Titletown" PUG
Jun 19 Microsoft Dynamics 365/CRM User Group - Security
Jun 19 Amplify Celebration Event
Jun 23 Video Game Programming Camp: Level 1 (Session 1)
Jun 24 FVTC Technology Camp
Jun 25 CRM A-Z: From Selection and Implementation to User Adoption and ROI

July 2019

Jul 07 Video Game Programming Camp: Level 1 (Session 2)
Jul 11 WIT Annual Meeting
Jul 15 FVTC GirlTech Summer Camp
Jul 16 Ryan Tischer - Strategic Cloud Engineer at Google
Jul 18 Fox Valley Business Intelligence and Analytics
Jul 21 Video Game Programming Camp: Level 2
Jul 23 Northeast Wisconsin Collaborative Intern Event - Members Only!
Jul 23 How to Do Customer Interviews & Gain Valuable Insights
Jul 30 IT Career Pathways Discussion
Jul 30 Code.org CS Fundamentals Intro Workshop
Jul 31 Code.org CS Fundamentals Deep Dive Workshop

August 2019

Aug 05 2019 NSA/NSF GenCyber Teacher Camp
Aug 06 THAT Conference
Aug 08 Amplify Member Mixer
Aug 12 Startup WI Week Happy Hour - Green Bay Community Partnership
Aug 21 Tech and Tailwinds
Aug 22 Advancing Cybersecurity in the Industry, Energy, Water Nexus
Aug 22 Fox Valley BI & Analytics - Google Cloud Platform's Big Query and BI & Analytics
Aug 24 2019 UWGB Cyber Teacher/Educator Workshop
Aug 27 IT Career Pathways Discussion

September 2019

Sep 09 The Story of Starting a Cryptocurrency Exchange
Sep 12 Fox Valley BI & Analytics - Data Visualization Best Practices Part II
Sep 17 Challenges and Opportunities: The Future of the Internet of Things in Wisconsin and the Midwest
Sep 17 NEW AITP - Navigating Shift Creek: A Guide to Career Transition in Today's Business World
Sep 17 ReactJS: Managing State with Hooks & Context
Sep 18 Microsoft Dynamics 365/CRM User Group: Sept. 2019 – Training Topic SharePoint and OneNote Integrations
Sep 18 RAMS - Documentary Screening to Benefit the Boys & Girls Club Arts Initiative
Sep 19 Titletown HDI September Meeting - Cloud/Cyber Security
Sep 19 Ideas Amplified: Data Ethics
Sep 26 Code.org CS Fundamentals Intro Workshop
Sep 26 TechTalent Summit - Members Only!
Sep 27 WIT @ Work Breakfast Series - Feel to Heal: The Truth about Health and Happiness – September

October 2019

Oct 04 Great Lakes Analytics Conference
Oct 09 IT Leadership Academy: Critical IT Communication Skills
Oct 10 Pulp, paper and packaging: Future of industry topic of Oct. 10 Tech Council luncheon in Appleton
Oct 10 Pulp, paper and packaging: Future of Industry
Oct 10 Fox Valley BI & Analytics - Panel Discussion "How are you Managing Self Service BI and Analytics?"
Oct 15 NEW CS Advisory Board: IT Career Pathways
Oct 15 NEW AITP – Design Thinking: From Theory to Application
Oct 18 Code.org CS Fundamentals Deep Dive Workshop

Oct 22 React.js 101 - Build Your First React App! (Beginners)

Oct 25 WIT @ Work Breakfast Series October - Intelligent Automation -- Successes through Automation

Oct 29 Envision 2019

November 2019

Nov 04 Meet the Meetups

Nov 04 Meet the Meetups

Nov 06 NEW IT Alliance TechTalk 2019 @ UW Oshkosh

Nov 08 Startup Wisconsin Week

Nov 14 Fox Valley BI & Analytics - Building a Data Insights Practice or Center of Excellence

Nov 15 Ethical IT Conference

Nov 19 NEW AITP presents Brent Walkow, Comedian/Entertainer

Nov 21 NEW Connect IT Job and Career Fair

Nov 22 WIT @ Work Breakfast Series - Productivity Beyond the Information Age – November

December 2019

Dec 03 UX Design and Development Education - Community Discussion

Dec 07 Northeast Wisconsin Code Camp 2019

Dec 11 Microsoft Girls Workshop: FVTC Hour of Code

Dec 12 Holiday Member Mixer - Amplify Oshkosh

Dec 12 Fox Valley BI & Analytics - End of Year "All Things Data" Networking Event

Dec 16 Digital Fertilize Presents: 2019 Year-End Celebration

Author Biographies



John Michael Muraski is an assistant professor of information systems in the College of Business at the University of Wisconsin – Oshkosh. After 20 years of working and consulting in industry, he transitioned into higher education and earned his DBA at the University of Wisconsin – Whitewater. Over the last 10 years, he has taught at both the undergraduate and graduate level and led the development of several new programs, include the ERP and Business Analysis programs at UW Oshkosh. Dr. Muraski conducts research into two main areas: (a) new technology characteristics that enhance infusion between a software and an employee in an organizational context and (b) challenges and opportunities relating to high school and college student reluctance to explore technology-related educational pathways.



Jakob Holden Iversen is a Professor of Information Systems with 20+ years of experience in higher education teaching, research, and administration. He currently serves as Associate Dean for the College of Business at University of Wisconsin Oshkosh. He earned his Ph.D. at Aalborg University in Denmark with a focus on Software Process Improvement. He has been at UW Oshkosh since 2000 where he has taught a range of courses at both the undergraduate and graduate level in Information Systems. Throughout his time at the University of Wisconsin – Oshkosh he has worked on creating new degree programs in collaboration with other departments as well as other universities in the University of Wisconsin System. This included leading the development of the Interactive Web Development Management major, the Information Systems minor, and participation in the creation and redesign of a number of other degree programs. As a scholar he has published in leading academic journals including MIS Quarterly, and is the co-author of two textbooks on Mobile app development and C# programming. A recent focus for his research and teaching has been in the area of mobile app development and usage.



Kimberly Jean Iversen Kim Iversen is the founding Director for the Northeast Wisconsin Digital Alliance (formerly NEW IT Alliance), a position she has held since November, 2016. In that time, she has established the NEW Digital Alliance as the leading regional IT & Digital collaborative network focused on growing the digital talent pipeline and the digital ecosystem in the region. In her role as director for the NEW Digital Alliance, Iversen works to coordinate the efforts across K-12 and Higher Ed to attract, retain, and develop students interested in joining the IT and digital workforce in the 18-county region of Northeast Wisconsin. Prior to joining the NEW Digital Alliance, Iversen spent 13 years at Kimberly-Clark in various roles within the IT program management office, including an effort to resolve IT resource constraints globally within KC projects. Iversen was a founding member of Women in Technology Wisconsin, where until recently she also chaired the WIT4Girls committee, which is committed to introducing young women in 6-12th grade to the exciting opportunities in IT. Iversen holds a Bachelor of Science in Biochemistry from Oklahoma State University, along with a Master of Science in Molecular Biology and Human Genetics from Aarhus University, Denmark, and a Master of Science in Information Systems from the University of Wisconsin Oshkosh.