THE MIDDLE GEORGIA INNOVATION PROJECT

INNOVATION FRAMEWORK AND ECOSYSTEM REPORT

February 2021

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THE MIDDLE GEORGIA INNOVATION PROJECT

INNOVATION FRAMEWORK AND ECOSYSTEM REPORT

This report presents the results and outcomes from Task 1 of The Middle Georgia Innovation Project. The objective of Task 1 was to map the existing innovation framework and ecosystem across the Middle Georgia region. Innovation was measured through the lens of Industry 4.0 technologies via military/civilian mapping, an Industry 4.0 Disruption and Preparedness Survey, network mapping and network focus groups to identify gaps and clusters. This report represents the first of three reports for The Middle Georgia Innovation Project.

More information on The Middle Georgia Innovation Project can be sourced at
https://lab2.future-iq.com/middle-georgia-innovation/

February 2021

Report Prepared by:

future→iQ®

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This report was prepared under contract with the Middle Georgia Regional Commission, as fiscal agent for The Middle Georgia Innovation Project, with financial support from the Office of Local Defense Community Cooperation, U.S. Department of Defense. The content reflects the views of The Middle Georgia Innovation Project and does not necessarily reflect the views of the Office of Local Defense Community Cooperation, U.S. Department of Defense.

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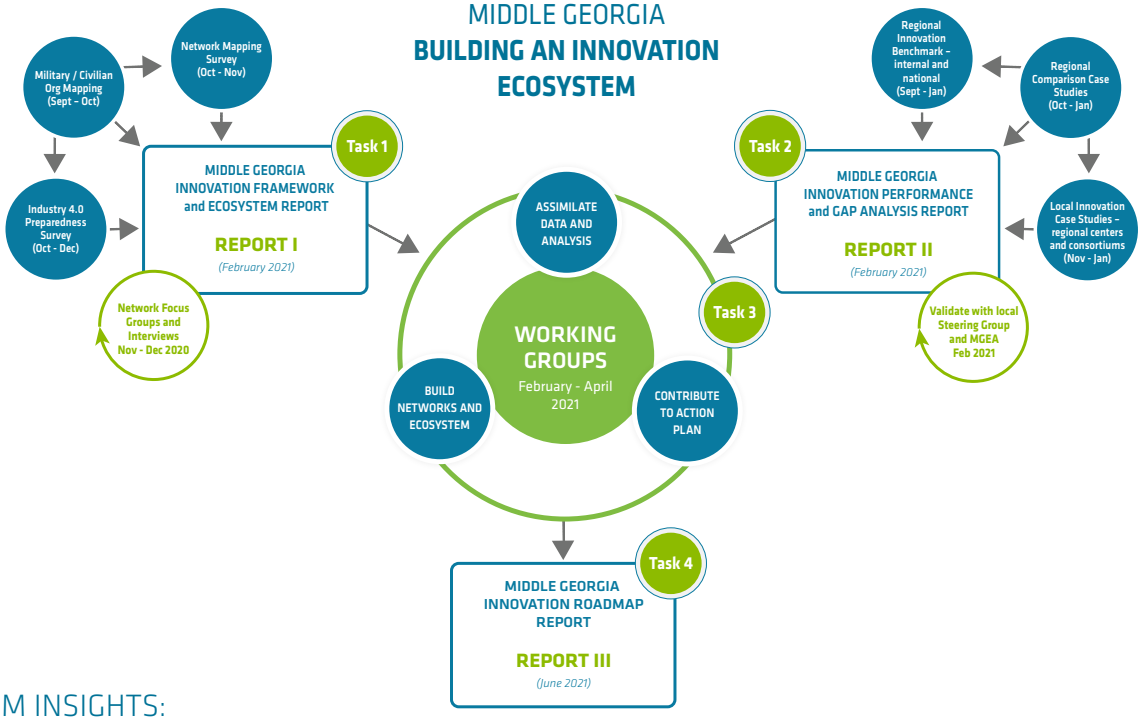
This report presents the results and outcomes from Task 1 of the Middle Georgia Innovation Project, which was exploring the existing ecosystem.

1.0 INTRODUCTION

In 2018, the State of Georgia received an initial grant from the Department of Defense Office of Economic Adjustment (OEA) to implement a region wide planning process. This supported the Middle Georgia Charrette and Regional Planning Initiative, which produced a Regional Action Plan that identified six pillars of action. It was concluded there was a regional need for an innovation gap analysis, to identify the current innovation ecosystem and gaps and clusters within that ecosystem.

This resulted in a second grant extension in 2020, which funded this Middle Georgia Innovation Project. This next phase will provide an innovation gap analysis across the 11 counties of the Middle Georgia region. The ultimate objective of the project is to develop the Middle Georgia innovation ecosystem and provide a road map for Middle Georgia to become a 'Software Center of Excellence'. The project will also advance the efforts building the workforce that Middle Georgia needs for the future. This will require understanding and enhancing the innovation ecosystem within the region. The final outcome will be a Middle Georgia Innovation Roadmap Report and recommendations for the path forward.

The Middle Georgia Innovation Project will run from late 2020 until mid 2021 and consists of four main tasks. The ultimate aim of the project is to build an innovation ecosystem including positioning Middle Georgia as a 'Software Center of Excellence'.



EcosystemInsight

ECOSYSTEM INSIGHTS:

- The Middle Georgia Innovation Project is undertaking a detailed exploration of the regional innovation ecosystem and studying where there are existing strengths and gaps with the goal of strengthening innovation ecosystem connections for growth.
- The approach aims to understand how people and organizations are currently working together, and how the region currently stimulates relevant innovation.

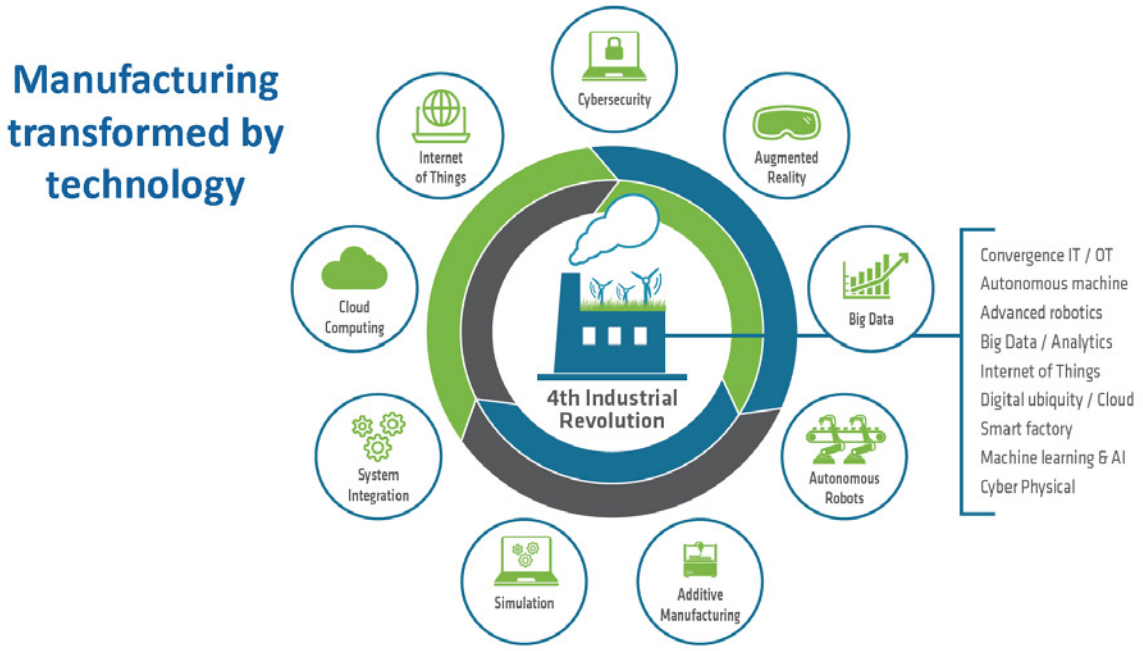
1.1 APPROACH TO EXAMINING THE INNOVATION ECOSYSTEM

The Industry 4.0 term, and its cluster of digital technologies is reasonably well understood and provides a direct linkage to existing business operations. These technologies are all underpinned by digital science.

As stated, the ultimate objective of the project is to build innovation and develop a road map for Middle Georgia to become a 'Software Center of Excellence'. This objective is based on two major factors:

- Robins Air Force Base (RAFB), through its missions, is a major demand driver of innovative software and data engineering capacity in the region. It is a key anchor and employer within the region. Supporting the needs of the base are critical to the long term sustainability of Middle Georgia.
- There is a stated objective in the region to build economic diversification, that leverages the concentration of assets at the base. The logical step is to build an 'off-base' ecosystem of businesses with strength in data sciences and software engineering that are able to serve future needs and drive innovation.

These objectives will require positioning the Middle Georgia region to become a region with a strong innovation culture and supporting ecosystem. Innovation is the creation, development and implementation of a new product, process or service, with the aim of improving, efficiency, effectiveness or competitive advantage. Innovation creates new value and captures value in a new way. However, in preparing for this project, it was noted that for many people in the region, the term "Innovation" can be somewhat nebulous and open to interpretation. Many people may be innovating, but not even recognize their activities in that way. Therefore, for the purposes of this project, innovation has been viewed through the lens of Industry 4.0 technologies, which are all underpinned by software engineering.



EcosystemInsight

ECOSYSTEM INSIGHTS:

- Mapping and analysis of the existing innovation ecosystem based around Industry 4.0 technologies helps to highlight where innovation is currently created and diffused in the region, and where people connect.
- Robins Air Force Base (RAFB) holds a critical role in driving innovation in the region. Many of the existing innovation centers in the region are tied to RAFB, however there is also innovation being carried out, beyond RAFB.

1.2 ECOSYSTEM ASSESSMENT METHODOLOGY

The assessment methodology reached approximately 200 of the key people in the regional ecosystem and sought direct input from most of the key organizations.

A series of methodologies were used to explore and understand the functioning of the existing innovation ecosystem. This work took place between September 2020 and January 2021, and included:

- **High-level environmental scan** - this explored various military, industries and organizations in relation to their usage of Industry 4.0 technologies. This work estimated whether usage was low, medium or high and whether the organizations were users, seekers or developers of Industry 4.0 technologies.
- **Industry 4.0 Disruption and Preparedness survey -** the survey was distributed to industry and across the regional economic development network to drill down to understand how Industry 4.0 technologies were being used. The findings from the surveys provided further clarity about how prepared organizations were to incorporate the technologies, and what stage organizations were at in adopting these technologies. The survey also explored perceptions about the potential for the region to become a 'Software Center of Excellence'.
- **Network Mapping** - this built on the 2018/19 network mapping and was conducted by phone interviews with key stakeholders to explore who they work with, to help apply and use Industry 4.0 technologies. They were asked who they interact with to seek information about these technologies and who they use to help develop specific new industry 4.0 solutions.
- **Focus Groups and Interviews** - Building on the qualitative methodology of the network mapping, three network focus groups were formed, in the areas of Economic Development, Military and Defense and Educational institutions. Finally, key individuals from the innovation ecosystem were interviewed in late December 2020 and early January 2021.

EcosystemInsight

ECOSYSTEM INSIGHTS:

- The results from the ecosystem assessment are outlined in Sections 3.0 and 4.0, and survey data is available on the project portal. Overall, stakeholders expressed enthusiasm and support for building the regional innovation ecosystem.
- The major building blocks in the regional ecosystem are the Robins Air Force Base, and the cluster of Higher Education Institutions. This is supported by local innovation clusters and entities. Together, at least the basic building blocks are in place to build an effective regional innovation ecosystem.

A high performing innovation ecosystem can be a primary economic driver by improving the innovation business climate.

2.0 MIDDLE GEORGIA – EXISTING INNOVATION CENTERS AND PARTNERSHIPS

Middle Georgia has a concentration of existing Innovation Centers and partnerships, radiating around the Universities and Robins Air Force Base (RAFB). Strong regional innovation ecosystems foster a strong entrepreneurial culture and a dynamic business environment. They provide long term resources that support the successful launch and scaling of innovation-based businesses, offering a suite of services for location specific enterprises. This attracts new opportunities and investment based upon the strength and energy of the innovation ecosystem. Some of the effective current innovation efforts in the region are centered around the following groups (more information is available at *https://lab2.future-iq.com/middle-georgia-innovation/about-the-project/innovation-in-middle-georgia-2/*)

- Mercer Engineering Research Center (MERC)
- Advanced Technology and Training Center (ATTC)
- Mercer Innovation Center
- Blue Sky Lab
- Synergy Labs
- MGA Center for Software Innovation
- Firestarter FABLab
- SparkMacon
- Robins Spark Innovation Hub
- Atrium Health Center for Disruption and Innovation

EcosystemInsight

ECOSYSTEM INSIGHTS:

- The Middle Georgia region has most key assets needed for innovation: human knowledge, technical expertise, higher education research institutions, entrepreneurial support programs and services and a friendly business climate.
- Areas of improvement are in respect to networks, including access to alternative finance and building a culture and climate to support and celebrate risk taking.

The survey included responses from across industry, educational institutions and local defense sector.

3.0 INDUSTRY 4.0 DISRUPTION AND PREPAREDNESS SURVEY – KEY FINDINGS

The Industry 4.0 Disruption and Preparedness survey was designed to explore the regional interest in developing an innovation ecosystem, and the current level of preparedness for Industry 4.0 technologies.

The survey ran from 2nd November to the 31st December 2020. It was distributed to industry and organizations within the existing innovation ecosystem, via regional Economic Development leadership, partner organizations and subsequent communications via the Middle Georgia Innovation Project portal and social media platforms.

Key data on survey responses includes:

- 80 stakeholders completed the survey, representing 36 organizations across the Middle Georgia region
- The majority of responses came from the education sector, followed by Manufacturing/Engineering and Local Economic Development Agencies. However, there was representation across all 14 sectors which were highlighted in the survey
- There was representation from all 11 counties across Middle Georgia, with most representation from Houston, Putnam and Macon-Bibb
- It was also useful to ascertain the size of the organization within the profiling questions. The majority of organizations (54%) had more than 100 employees, followed by organizations with 1-10 employees (20%) and then organizations with 11-50 employees (15%)

ECOSYSTEM INSIGHTS:

EcosystemInsight

- The survey captured input from numerous large organizations in the region, with more than 20 organizations of over 100 employees.
- The survey was a mixture of qualitative and quantitative responses, and results can be viewed on the project portal *https://lab2.future-iq.com/middle-georgia-innovation/*

The survey results support the perception that Middle Georgia has the potential to become the 'Software Center of Excellence', which is a key goal of this overall initiative.

3.1 REGIONAL INNOVATION ECOSYSTEM

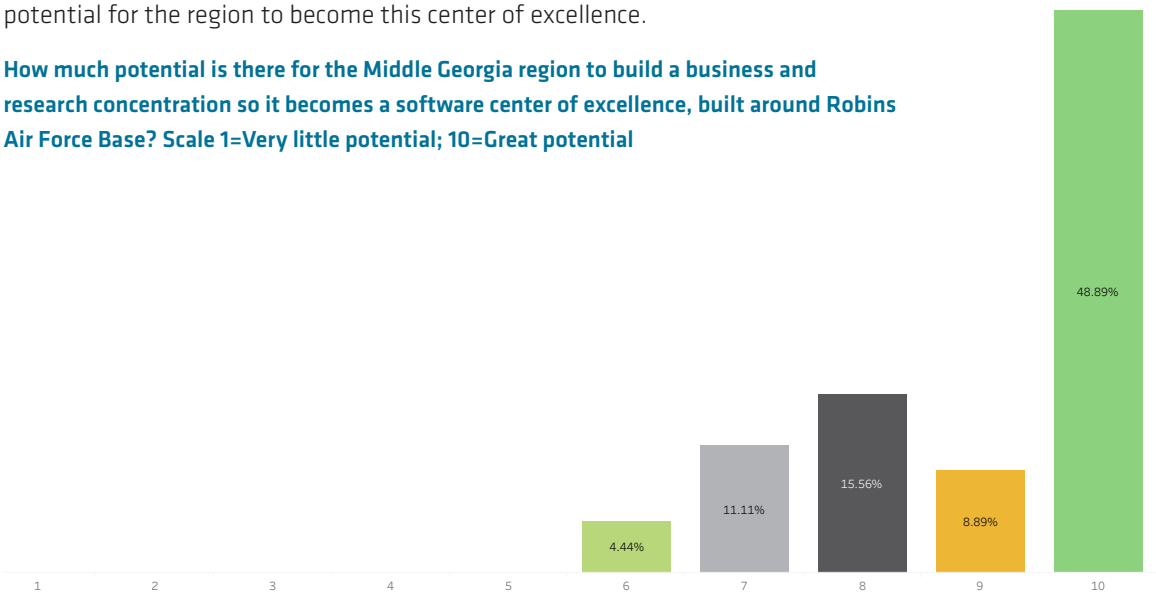
3.1.1 POTENTIAL FOR MIDDLE GEORGIA REGION BECOMING A 'SOFTWARE CENTER OF EXCELLENCE'

Previous planning work has indicted strong logic and support for positioning the region as an area of unique digital capability. Research and stakeholder liaison work has highlighted that Middle Georgia has a significant concentration of assets in the following areas:

- Adaptive maintenance and manufacturing
- Kaolin and mining companies
- Corrosion testing
- Agriculture and Food Processing
- Aerospace, drones and defense applications
- Healthcare and medical devices
- Cybersecurity and software
- Logistics

During this survey, respondents were asked to respond to a question about the potential of the Middle Georgia region to become a 'Software Center of Excellence", built around Robins Air Force Base. The results are very positive about the potential for the region to become this center of excellence.

How much potential is there for the Middle Georgia region to build a business and research concentration so it becomes a software center of excellence, built around Robins Air Force Base? Scale 1=Very little potential; 10=Great potential



The 'Software Center of Excellence' concept plays off some of these identified strengths, and especially focuses on the economic and technology driver of the Robins Air Force Base.

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ECOSYSTEM INSIGHTS:

- The majority of respondents felt that there was great potential for the Middle Georgia region to build a business and research concentration so that it becomes a 'Software Center of Excellence', built around Robins Air Force Base.
- All respondents opted for between 6 and 10 on the scale with almost 50% opting for 10, showing a high level of enthusiasm.

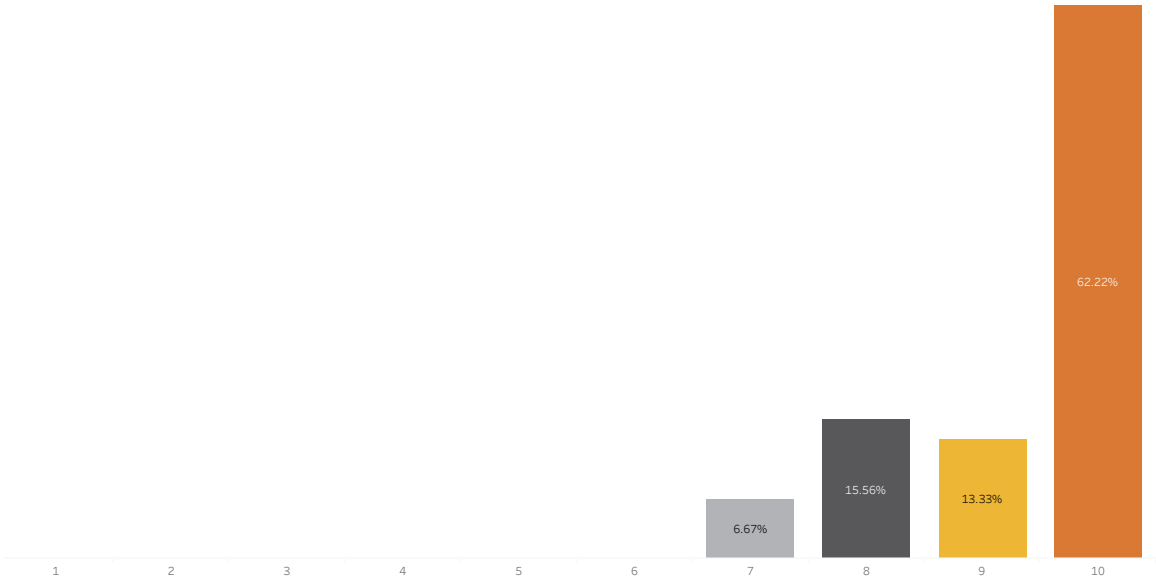
Survey respondents overwhelmingly perceive that it is critically important for companies and industries in the region to plan for Industry 4.0 technologies and future innovation.

3.1.2 PLANNING FOR INDUSTRY 4.0 TECHNOLOGIES AND FUTURE INNOVATIONS

A key part of the Middle Georgia Innovation Project is understanding what efforts need to be implemented to ensure the region is ready and competitive in an Industry 4.0 world. This especially is important with the context of wanting to position the region as a 'Software Center of Excellence'.

The survey probed this forward looking perspective and sense of priority about planning for current and future innovation. Respondents were asked to respond to a question about the importance of organizations planning for Industry 4.0 technologies, which was "Overall, how important do you think it is for companies and industries in the Middle Georgia region to plan for Industry 4.0 technologies and future innovations?"

Overall, how important do you think it is for companies and industries in the Middle Georgia region to PLAN for Industry 4.0 technologies and future innovations? Scale 1=Not Important; 10=Critically Important



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ECOSYSTEM INSIGHTS:

- This result skews strongly to 'critically important'. As other data shows, this is particularly relevant as the region is perceived to be somewhat currently behind in the adoption of Industry 4.0 technologies.
- This result strongly supports the idea of ecosystem building, which can help organizations and industries understand and prepare for future technologies and innovations.

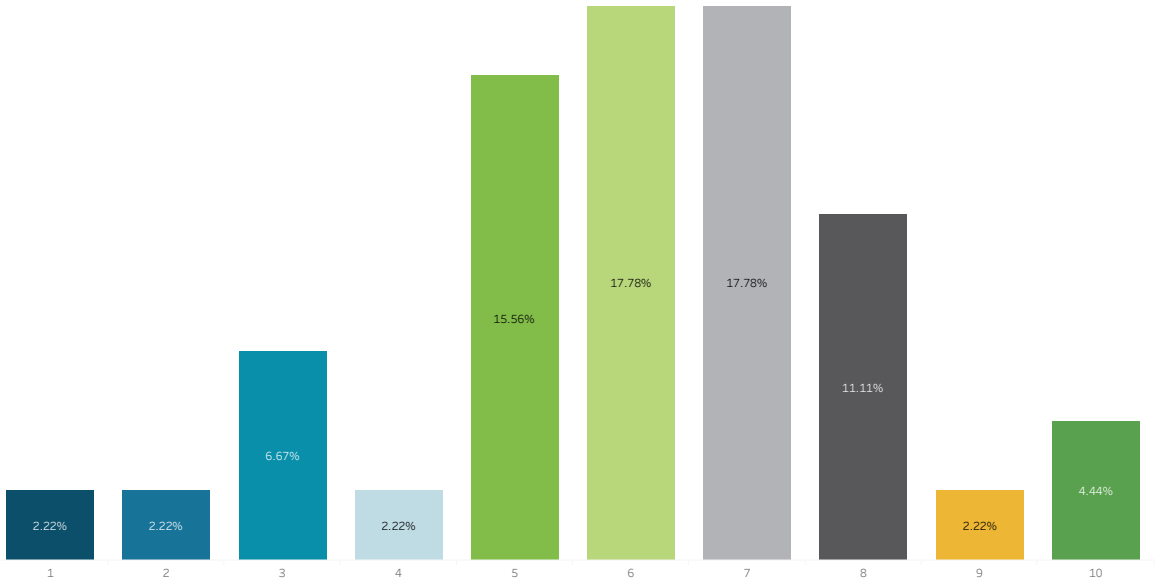
Boosting the current performance in adopting Industry 4.0 technologies will be essential to building the regions capability and ability to further innovate.

3.1.3 CURRENT REGIONAL PERFORMANCE – ADOPTION OF INDUSTRY 4.0

Understanding the current level of Industry 4.0 technology adoption, and the overall regional performance in adoption, helps give insight into the level of regional preparedness and vulnerability.

The survey asked respondents how they would rate current performance in adopting Industry 4.0 technologies and future innovations, across industries and companies. While it has been established that the regional stakeholders see a critical importance in planning for Industry 4.0 technologies and future innovation, the current adoption lags. This lag could indicate a lack of a strong innovation ecosystem in relation to Industry 4.0 technologies, and perhaps a lack of sharing knowledge or local advocacy groups that help with understanding about how adoption can occur.

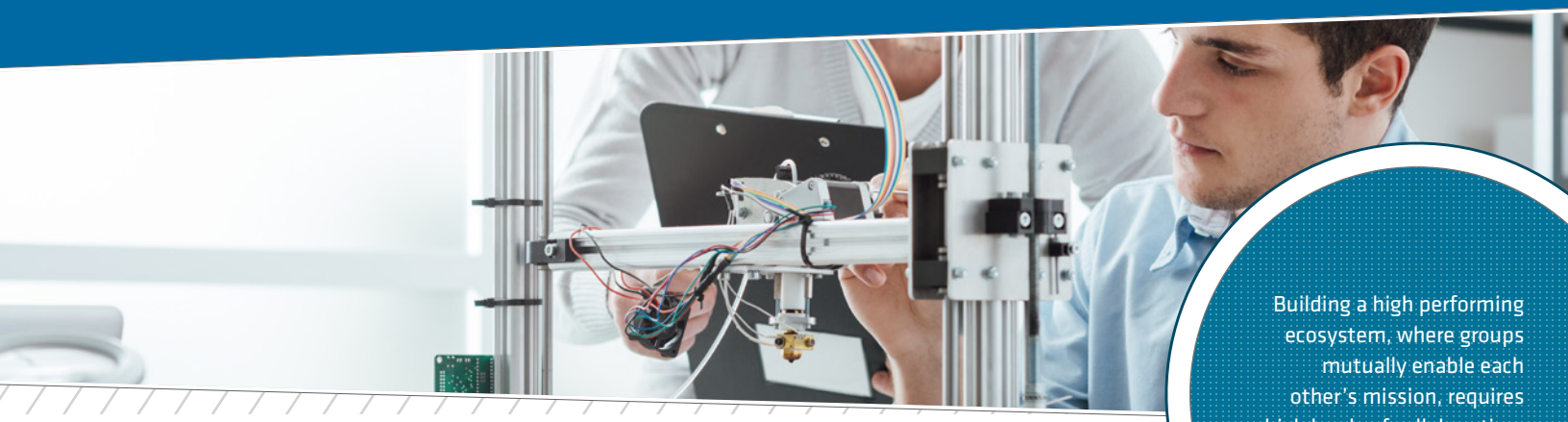
For industries and companies in the Middle Georgia region, how would you rate current performance in ADOPTING Industry 4.0 technologies and future innovations? Scale 1=Very Poor; 10=Excellent



EcosystemInsight

ECOSYSTEM INSIGHTS:

- Respondents mostly felt that industries and companies in the Middle Georgia Region were in the mid-range between very poor and excellent, in terms of adopting Industry 4.0 technologies and future innovations.
- In addition, nearly 45% of respondents viewed the region as vulnerable to technological disruption by 2025, from technologies such as Artificial Intelligence which could rapidly shift competitive advantage.



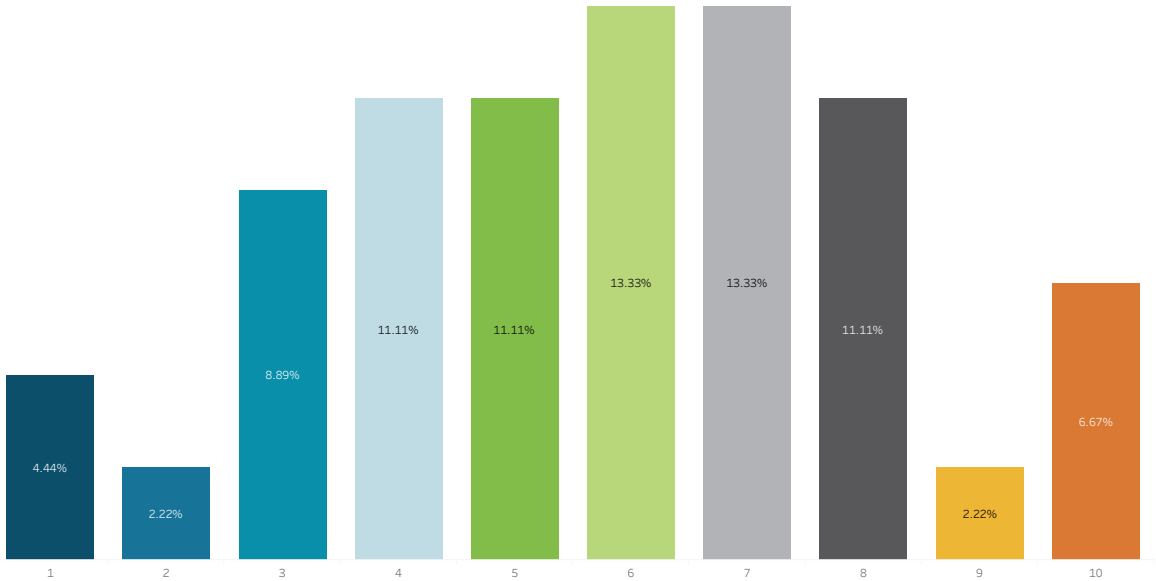
Building a high performing ecosystem, where groups mutually enable each other's mission, requires high levels of collaboration, communication, trust and sharing of resources.

3.1.4 CURRENT REGIONAL PERFORMANCE – ECOSYSTEM OF INNOVATION

Creating a concentration of industries and businesses around the concept of a 'Software Center of Excellence' will require building a dynamic and vibrant local innovation ecosystem. There is no doubt that many recent efforts have been targeting innovation and are attempting to build new thinking and opportunities. This is occurring across a range of businesses, start-up centers and within educational institutions. Robins Air Force Base has invested significant effort reaching out to help support and create various innovation centers and find ways to better connect the regional efforts to the current and future needs and demands on the base.

In the survey, we explored local stakeholders' perception about the strength of the existing local ecosystem of innovation, and how well multiple groups work together to drive innovation. Overall, the result was between very weak and very strong, so in effect only adequate.

How would you currently rank the Middle Georgia region in terms of having a strong ecosystem of innovation, where multiple groups work together to drive innovation? Scale 1=Very Weak; 10=Very Strong



EcosystemInsight

ECOSYSTEM INSIGHTS:

- These results reflect the observation that while there are pockets of attempts to drive innovation in the region, these are not yet working in a fully collaborative system. There are a number of notable and effective individual efforts, but the cross linkage between institutions and industries is not yet strong.
- This result could also indicate some respondents lack full knowledge and a common understanding of what is happening within the existing regional innovation ecosystem. This is a key communication and coalition building issue, where more focus needs to be placed on sharing current progress and successes.

Industrial application of Industry 4.0 technologies is solid, with a 3D printing / Additive manufacturing, and automation and robotics showing reasonable application levels.

3.2 INDUSTRY 4.0 TECHNOLOGIES

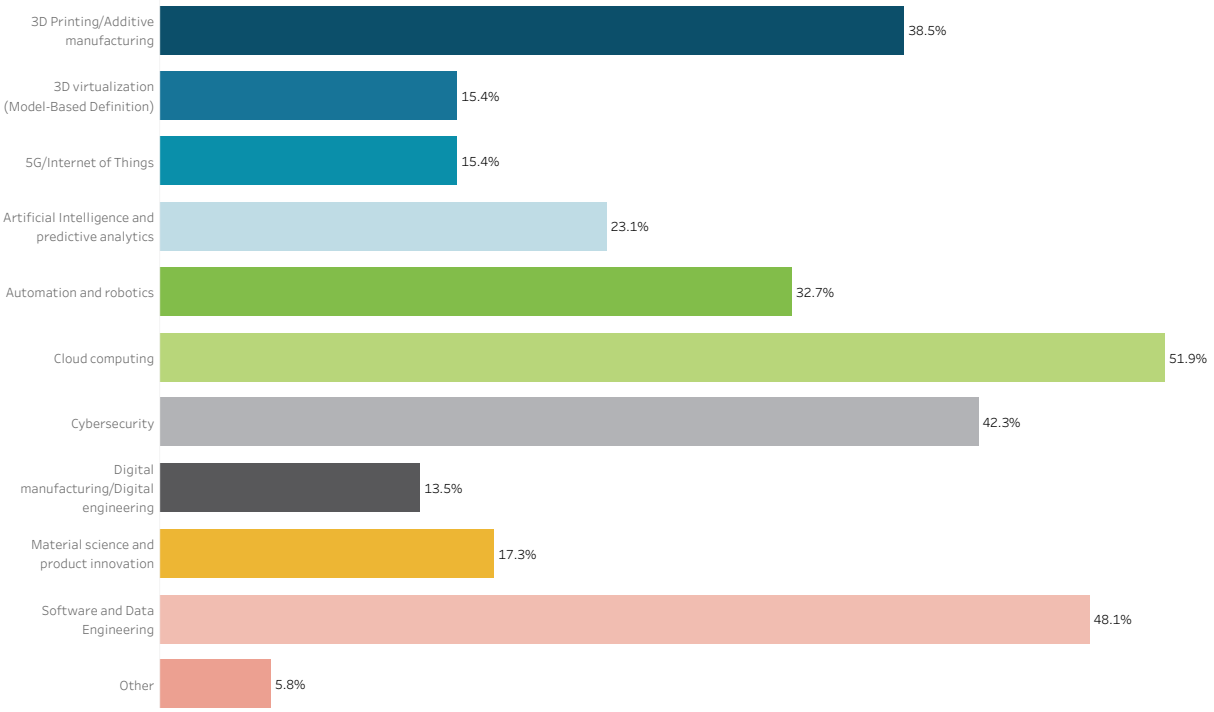
3.2.1 TECHNOLOGIES CURRENTLY BEING USED

Based on the initial environmental scan work, a series of common Industry 4.0 technologies were identified as being relevant to the region and the quest to create a 'Software Center of Excellence'. These technologies included:

- Digital Manufacturing/Digital Engineering
- 3D Printing/Additive Manufacturing
- Artificial Intelligence and Predictive Analytics
- Automation and Robotics
- Material Science and Produce Innovation
- 5G/Internet of Things
- Software and Data Engineering
- 3D Virtualization (Model Based Definition)
- Cloud Computing
- Cybersecurity

In the survey we explored what technologies are currently being used across the region.

Which Industry 4.0 technologies are currently being used by your organization?



EcosystemInsight

ECOSYSTEM INSIGHTS:

- The regional stakeholders are showing a high uptake of key technologies, well suited to the notion of a 'Software Center of Excellence', including software and data engineering and cloud computing.
- The cybersecurity awareness levels show the importance of this topic, especially in a defense and industrial context.

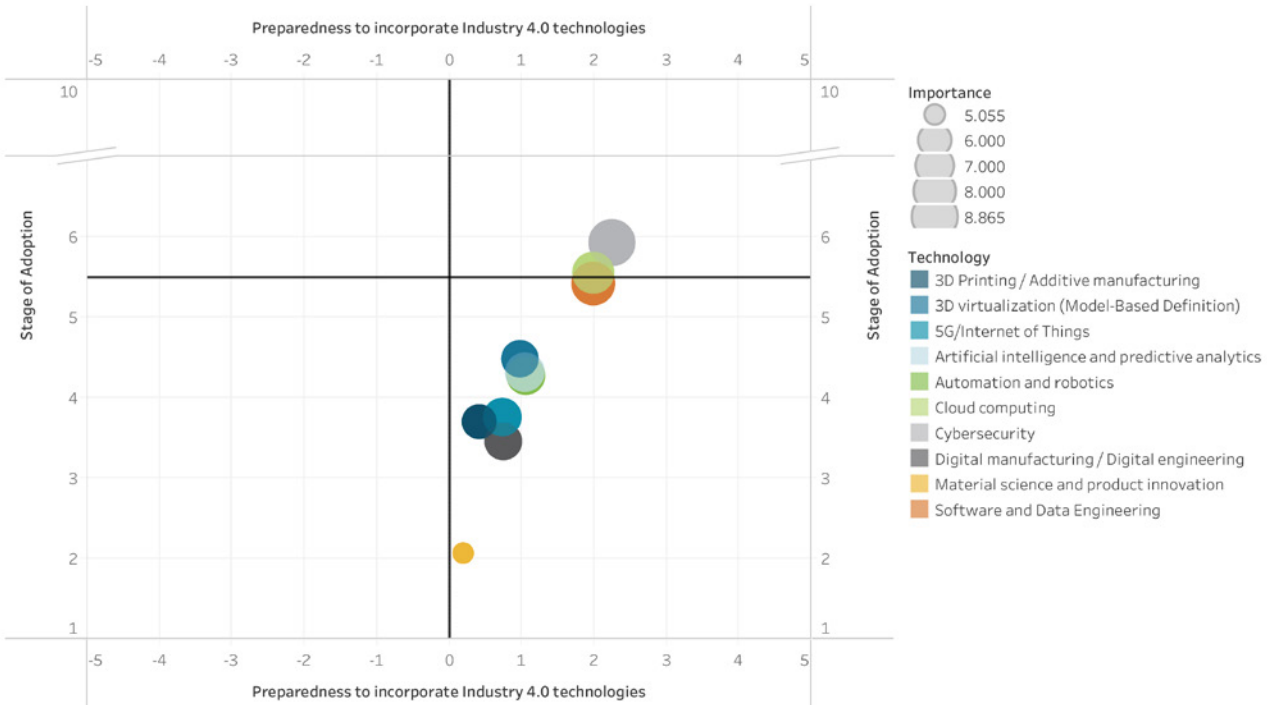
Overall, the regional organization and businesses have significant opportunity to increase the scale and rate of adoption.

3.2.2 PREPAREDNESS AND ADOPTION – KEY INDUSTRY 4.0 TECHNOLOGIES

Using the list of Industry 4.0 technologies, the survey explored preparedness, stage of adoption and importance. This survey chart combines responses to these three questions to create an interactive scatter plot. This visualization shows response data as it relates to all 10 Industry 4.0 technologies. This chart presents the average results based on all respondents. On the data visualization on the project portal you can explore responses by various cohorts of survey respondents in an interactive visualization *https://lab2.future-iq.com/middle-georgia-innovation/*

Key Industry 4.0 Technologies - Average Data

X axis is Preparedness (SCALE: -5 = Not at all prepared; 0= Neutral; 5 = Very well prepared)
Y axis is Adoption (SCALE: 1= Not even thinking about yet; 10= Already fully integrated into our operations)
Size of Circle is Importance (SCALE: 1 = Not important; 10 = Critically important)



EcosystemInsight

ECOSYSTEM INSIGHTS:

- The Industry 4.0 technologies that the region was most prepared to incorporate and were already adopting were Cybersecurity, Cloud Computing and Software and Data Engineering. The defense contractor's cohort is especially more advanced in adoption and preparedness. However, work remains to be done - especially in cybersecurity.
- Material Science and Product Innovation was the technology that the region does not see as that important and was least prepared and in a much earlier stage to of adoption.
- Overall, the chart shows there is a relatively low rate of adoption and preparedness for most of the Industry 4.0 technologies.

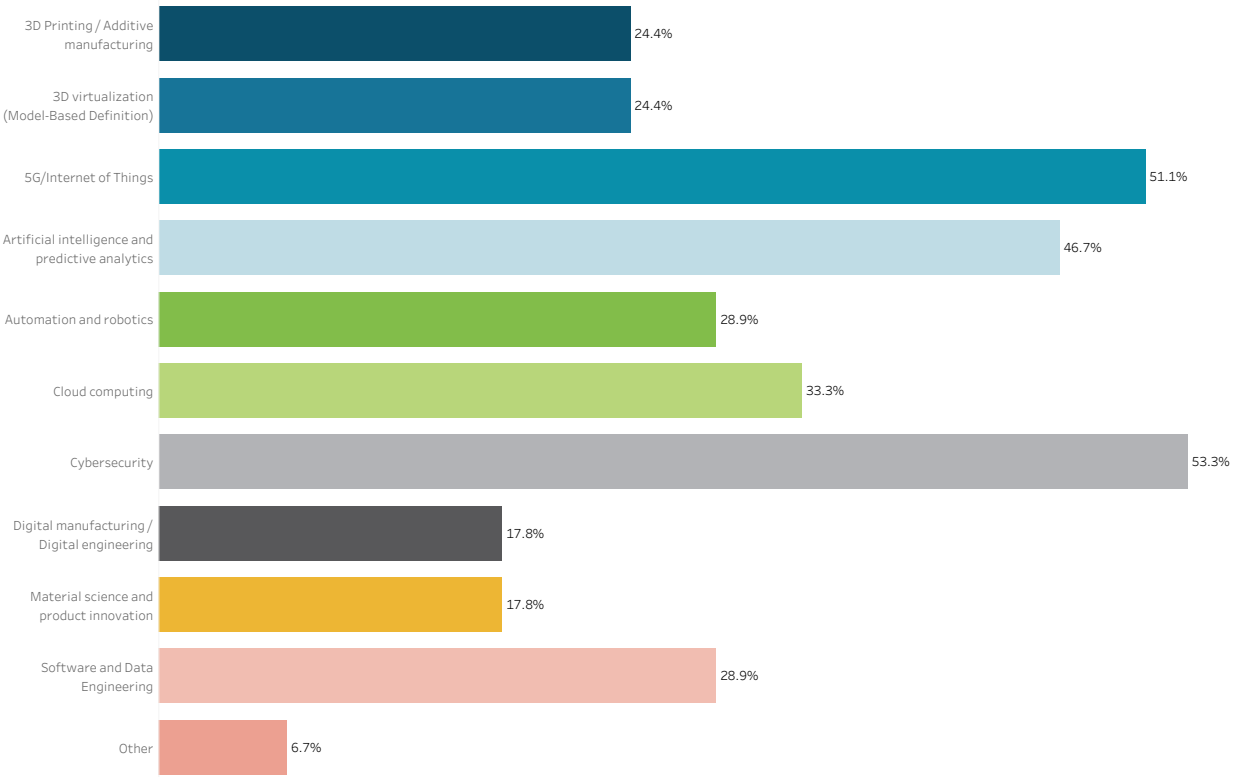
The emerging technologies of Artificial Intelligence and 5G/ Internet of Things are items where people are seeking new information and knowledge. These technologies have the potential to be major game changers.

3.2.3 INDUSTRY 4.0 TECHNOLOGIES - FUTURE NEEDS

Industry 4.0 technologies offer great promise to enable increased efficiency in industry and could drive colossal levels of new innovation and application of technology. In a rapidly evolving world, like that of Industry 4.0 technologies, it is critical for regions and industries to be focused on emerging trends and technologies, while also absorbing and assimilating existing technologies.

The survey explored which technologies respondents were wanting to learn more about. This information can help the regional ecosystem prepare information and training to support industry. This forward-looking perspective is vitally important, so the region does not get blind-sided by disruptive technologies and changes. Having a capacity to scan for new developments and think about how the region can adopt and apply new innovations is a key to future success.

Which Industry 4.0 technologies do you want/need to learn more about?



EcosystemInsight

ECOSYSTEM INSIGHTS:

- Respondents overwhelmingly wanted and needed to learn more about 5G/Internet of Things, Artificial Intelligence and Predictive Analytic and Cybersecurity. These technologies are at the heart of software engineering, and well suit the vision of the region to be a Software Center of Excellence.
- The key challenge is to understand where the region can source new information on the high interest technologies. This is explored more in the network analysis.

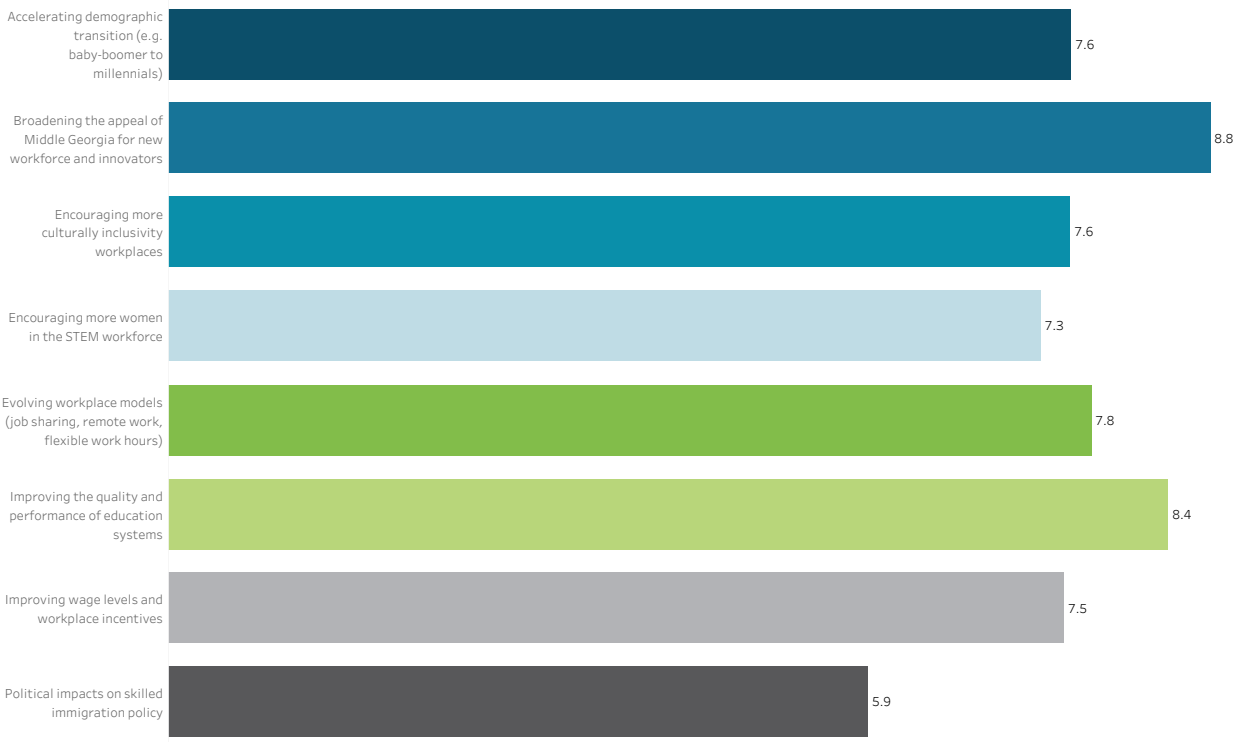
Of the workplace and workforce issues, all were rated as important for the future, in terms of driving innovation and technological adoption.

3.3 WORKFORCE AND WORKPLACE DRIVING INNOVATION

Throughout the background work, the future workforce in the region has been highlighted as a key issue. As well as providing the important skill sets for businesses, defense and regional organizations, the workforce is a key driver of innovation. Especially important is thinking about the people the region will need to help build a strong innovation ecosystem centered around software and data engineering.

The survey explored the topic of workforce and workplace driving innovation. There were eight key topics that were explored, by asking 'How important do you think the following workplace and workforce issues will be to driving innovation and technological adoption in your organization in the next 5 years?' The responses were on a scale of 1 = Not important; 10 = Critically important

How important do you think the following workplace and workforce issues will be to driving innovation and technological adoption in your organization in the next 5 years?



EcosystemInsight

ECOSYSTEM INSIGHTS:

- Broadening the appeal of Middle Georgia for new workforce and innovators was seen to be the most important issue to address in driving innovation and technological adoption in the next 5 years. This was followed by Improving the quality and performance of the education system in the region.
- These are two themes that have run throughout the Middle Georgia Innovation Project to date, including within qualitative research via interviews and focus group sessions.

4.0 INNOVATION ECOSYSTEM NETWORK ANALYSIS – KEY FINDINGS

Different approaches were used to help understand the existing ecosystem. These all relied on person-to-person interviews and discussion, and primarily focused on identifying success areas and gaps.

The overall purpose of this project is to build innovation in Middle Georgia, especially focused on the concept of a 'Software Center of Excellence'. It is understood that to create greater innovation, there needs to be a strong ecosystem that helps spark new ideas, accelerates information flow, and builds local business opportunity. Previous planning work has shown there is a great appetite for collaboration within the region around topics of economic diversification.

The Innovation Ecosystem Network Analysis aimed to understand at a practical level how innovation was being supported within the region, where it was being successful, and how the ecosystem functions. The work focused on three main methodologies:

- **Ecosystem Network Mapping** – this explored the direct connection people have with each other, especially as related to seeking information about Industry 4.0 technologies
- **Ecosystem Network Focus Groups** – focus groups with key sectors were held to understand the internal connections within main sectors (defense, education, economic development)
- **Individual Interviews** – direct interviews were conducted with network leaders to seek insights into network operation and gaps.

Following the discussions, key themes were summarized and are presented in the following sections.

EcosystemInsight

ECOSYSTEM INSIGHTS:

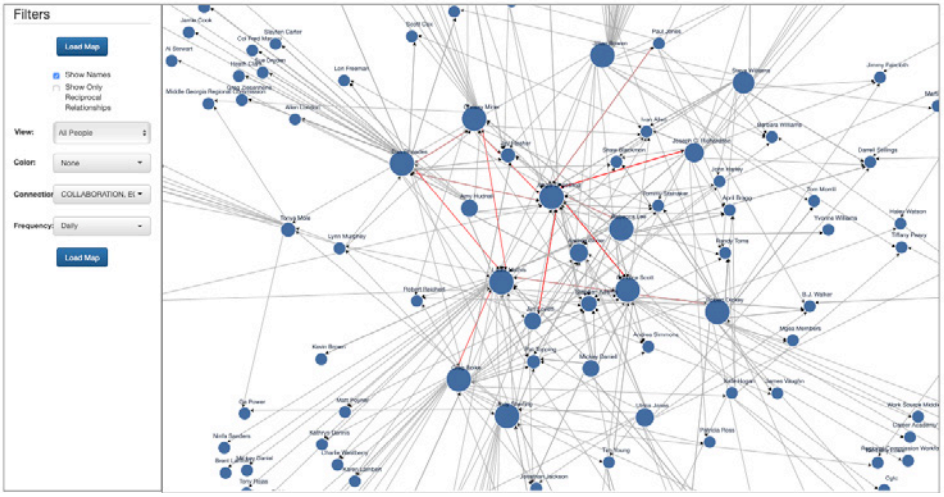
- Approximately 50 key regional leaders were engaged in these direct interviews and focus groups. Their background spanned innovation in areas of defense, economic development, education and health sectors.
- Overall, there was great enthusiasm expressed for the concept of building innovation across the region, however the challenges and gaps were acknowledged.

The existing regional network associated with innovation and Industry 4.0 technologies is very embryonic and is characterized by only a few clusters of connections. However, this could be amplified quickly by deliberate ecosystem network building.

4.1 ECOSYSTEM NETWORK MAPPING

Network Mapping was introduced via a network mapping survey and phone interviews with key stakeholders to explore who they work with to help apply and use Industry 4.0 technologies. These stakeholders were asked who they interact with to seek information about these technologies and who they use to help develop specific new industry 4.0 solutions. Finally, they were asked who they thought should be added to the survey and network analysis group. This method sought to drill down deeper to explore the current ecosystem and how it worked and how people connected around innovation. The responses were intended to help understand the regional network associated with innovation.

This approach was similar in concept to the 2018 network mapping, which can be viewed at https://lab.future-iq.com/middle-georgia-economic-alliance/network-mapping/. The primary difference was the 2018 work primarily explored existing networks associated with economic diversification and collaboration. The 2020 work was specifically exploring networks for innovation and seeking information on Industry 4.0 technologies. A standout feature of the 2020 work, is that it has highlighted the lack of depth and connectivity in the region, as it specifically relates to innovation and information flow regarding Industry 4.0 technologies. This highlights the need to focus on ecosystem development to deepen this network and amplify information flow.



EcosystemInsight

ECOSYSTEM INSIGHTS:

- The overarching outcome of the attempt to map the innovation ecosystem in the region, is that a regional network barely exists. There are a few pockets of connections, but many networks and connections associated with Industry 4.0 technologies are vertical within organizations, and do not spread across entities in the region.
- The mapping of collaboration in 2018 was more successful than the endeavor to map innovation in 2020. This reflects the long history of traditional economic development collaboration in the region, and the work that has been done by MGEA and others.

4.2 ECOSYSTEM NETWORK FOCUS GROUPS – EXPLORING THE CURRENT SYSTEM

The focus group discussions highlighted the strength of key cores within the regional ecosystem. This was the demand driver from the Robins Air Force Base, and the capacity within the Higher Education Institutions.

To deepen the understanding of the ecosystem, the project has also included collecting practical and anecdotal evidence via three network focus groups. Stakeholders from across Middle Georgia were invited to the focus groups which were held in the areas of Economic Development, Military and Defense and Educational institutions. The focus groups were held virtually and explored how the current ecosystem is working and where there are apparent gaps. Details of the individuals who took part in the Network Focus Groups can be seen in the Appendices of this report. Summary of key points is as follows:

- **Information flow.** From an Industry 4.0 perspective, it was observed that most information flow is vertical within organizations, and there is not yet a strong focus on building regional capability and sharing information. This regional diffusion of information and ideas can boost both understanding and help spur innovation.
- **Role of Education.** There are different levels of educational focus on Industry 4.0 technologies across institutions with Central Georgia Technical College appearing very strong in teaching about these technologies. There needs to be more of a partnership between educational institutions and industry.
- **Industry 4.0 Technologies.** There is a strong focus on cybersecurity due to government and Department of Defense requirements. However, there is a vulnerability that small and medium enterprises can fall behind fast regarding knowledge and adoption of other Industry 4.0 technologies, which are now becoming an expected part of company capability.
- **Role of Economic Developers.** The traditional role of Economic Development is changing with changing workforce trends and the arrival of Industry 4.0 technologies. Economic development professionals will need to think outside of the lens of traditional economic development going forward to embrace the new landscape of Industry 4.0 technologies
- **Partnerships are vital.** Partnerships between education, businesses and RAFB will provide the 'go to' group to trigger the 'Software Center of Excellence'. This partnership building must be intentional.

EcosystemInsight

ECOSYSTEM INSIGHTS:

- The focus group discussions highlighted the need to for a technological inventory as to where the Middle Georgia region currently stands in terms of innovation capability. There was universal agreement that the ecosystem needs further development.
- The regional reputation and appeal are also a high priority items. It was seen as critical to market and message the successes and good news stories about innovation in the region.
- Positioning the Middle Georgia region as a 'destination' which can attract talent is vital, and the region needs to better articulate its 'value proposition' in terms of livability and amenities.

The focus group discussions highlighted the strength of key cores within the regional ecosystem. This is the massive demand driver from the Robins Air Force Base, and the capacity to produce talent within the Higher Education Institutions. Connecting these elements is essential.

4.3 INDIVIDUAL NETWORK INTERVIEWS – EXPLORING SOLUTIONS

In order to further examine the themes generated by the Network Focus groups and begin to explore solutions to the regional ecosystem limitations, a series of zoom interviews were held with expert stakeholders. This provided practical and anecdotal information to supplement the findings from the survey and focus groups. Details of the expert stakeholders who were interviewed can be viewed in the Appendices. Key summarized outcomes from the interviews include:

- **RAFB plays a critical role.** It is recognized that RAFB is the key employer and anchor in the Middle Georgia region, and has an unmet demand for skills in Industry 4.0 technologies, especially the digital sciences and software engineering. New missions may be less 'people' intensive missions going forward, so it is important to create an innovation ecosystem outside of the base.
- **Innovation culture is required across the region.** There is a need for the regional economy to diversify innovation away from an over-reliance on the base, but obviously work on innovation needs to continue within the base. The base is unusual in comparison to bases across the US, as many of its employees come from the region, which highlights the need to build the capacity within the regional ecosystem. There needs to be a focus on building and celebrating a regional innovation culture, across all sectors and industries. There is the chance to stimulate cross-fertilization of ideas between sectors and across geographic areas.
- **Education Institutions are a critical building-block.** The Middle Georgia education system needs to continue to develop more Industry 4.0 courses to meet workforce needs looking out to the near future. This will help retain these talented people in the region, once industry connects with the educational institutions via internships, and beyond. Any competition between educational institutions is problematic, and there is a macro benefit in working together to produce the talent for the region, RAFB and emerging Industry 4.0 technologies.

EcosystemInsight

ECOSYSTEM INSIGHTS:

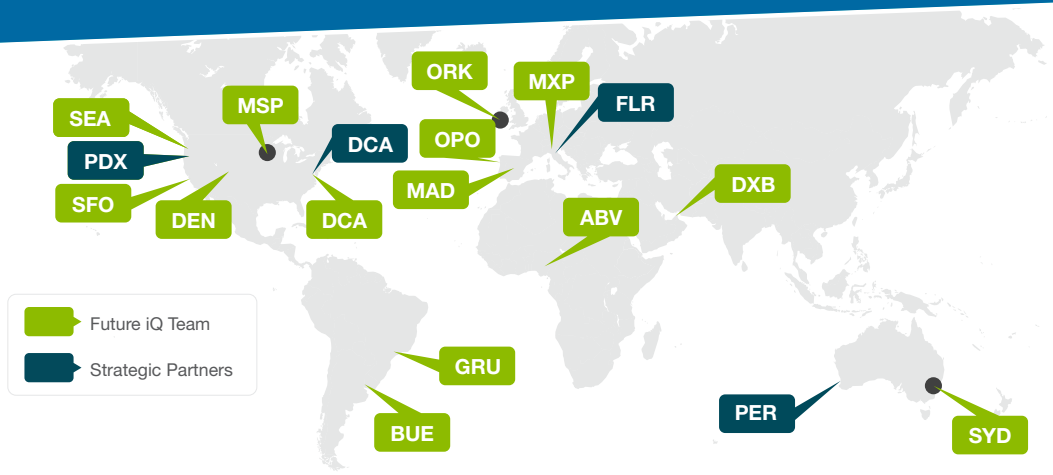
- The region has to build a substantial innovation ecosystem to become a viable 'Software Center of Excellence'. This will require imagining and building new connections, capacity and enthusing people.
- There is a need to focus on 'local' talent and recruit across the Middle Georgia region from post-secondary education institutions and even pull in first year college students. The region has to be seen as an exciting and viable destination for young talent or it will not be able to compete with the likes of Atlanta in attracting talent.

There is potential to package together a proposition to attract the remote worker and businesses into the region, as a place to live. There is a need to make the region more attractive for people to consider moving to a regional or smaller city setting.

5.0 CONCLUSION

Throughout the survey work, focus group sessions and the interviews; there was a clear consensus that there is strong desire to build the region's innovation capacity, but that the existing ecosystem is embryonic. The desire is strong, there are gaps within the ecosystem but there are opportunities and great interest in strengthening the ecosystem. To fulfil on the potential to shape the region as a 'Software Center of Excellence', a series of critical initial building blocks have been identified. These include:

- **Build the innovation ecosystem.**
    - Industry 4.0 technologies should be shared and diffused regionally and sideways, rather than vertically through organizations and industry. This can be done in part by Economic Development professionals, who may need to expand their knowledge of the new landscape of Industry 4.0 technologies as they work with businesses and industry across the region.
    - Innovation Centers and Partnerships need to contribute to the overall Middle Georgia Innovation Ecosystem. They need to connect to each other and to the entire region – including industry and educational institutions, if they are not doing so already. This will help break down silos of innovation and create an environment to connect talented people and break down cliques.
    - Partnerships are needed to strengthen the links between educational institutions, industry and Robins Air Force Base. Internships are to be encouraged through direct partnership with education and industry.
- **Place a deliberate focus on Industry 4.0 technologies**
    - Adopt and produce knowledge of Industry 4.0 technologies in the region especially for Cloud Computing, Software and Data Engineering and Cybersecurity, but also focusing on the emerging demand areas of Artificial Intelligence and 5G / Internet of things.
    - Improve and enhance the quality and content of Industry 4.0 technology training in the education system, from K-12 through to post-secondary educational institutions (Technical colleges and Universities).
    - Encourage an infrastructure that motivates entrepreneurship and a start-up mentality in the region.
    - There is a need for all educational levels to teach cutting edge technologies as this is the workplace of the future for many Middle Georgia students. This will help retain these talented people in the region, once industry connects with the educational institutions via internships, and beyond.
- **Promote existing innovation and the region's livability story**
    - Produce and market consistent messaging of good news stories regarding innovation in the region, both within the base and outside of the base. This will invigorate current innovators and encourage potential innovators, who may currently reside in the region or may move to the region. The messaging and marketing of innovation in Middle Georgia needs to be amplified.
    - Enhance the livability appeal of Middle Georgia as a potential destination for new workforce and innovators to move to the region. The region is currently attractive due to the price of living and real estate, in comparison to Atlanta. Macon has made a concerted effort to enhance its downtown appeal and encourage a creative community via maker spaces and have attracted millennials with accommodation such as loft apartments and recreational aspects such as new cafes/restaurants. Houston County's reputation for an excellent school system will only add to this attraction of young families.
    - The Middle Georgia Charette and Regional Planning initiative in 2018 forecasted that there would be a need for economic diversification within the Middle Georgia region, away from a reliance on the Robins Air Force Base. Innovation is the obvious progressive step to support the region, inside and outside of the base, and to encourage businesses and talent to move to the region. This will also help retain talent within the region.



6.0 ABOUT FUTURE IQ

Future iQ specializes in applying innovative tools and approaches to assist cities, organizations, regions and industries shape their economic and community futures. With nearly two decades of experience, the company has a global clientele spanning three continents.

To learn more about Future iQ, and our recent projects visit **www.future-iq.com** or by email at **info@future-iq.com**

For more details, and to access additional information about the Middle Georgia Innovation Project please visit **https://lab2.future-iq.com/middle-georgia-innovation/**

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8.0 FOR MORE INFORMATION

For more information about The Middle Georgia Innovation Project

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9.0 APPENDICES

9.1 NETWORK FOCUS GROUP ATTENDEES

9.1.1 ECONOMIC DEVELOPMENT FOCUS GROUP

Angie Gheesling, *Executive Director* - Development Authority of Houston County
Becky Lee, *Business/Industry Specialist* - Development Authority of Houston County
Matt Poyner, *Project Manager* - MGEA Works
Candice Scott, *Senior Project Manager* - Georgia Department of Economic Dev.
Mickey Daniell, *Regional Project Manager* - Georgia Power
Jim Lovett, *Regional Project Manager* - Georgia Power
Paul Todd, *MEP* - Central Georgia Technical College
Alan Barfoot, *MEP* - Central Georgia Technical College
Andrea Griner, *VP Economic Development* - Central Georgia Technical College
Mike Engel, *Dean for Aerospace, Trade and Industry* - Georgia Power

9.1.2 MILITARY AND DEFENSE FOCUS GROUP

Angie Gheesling, *Executive Director* - Development Authority of Houston County
Dan Rhoades, *Chief of Operations* - 21st Century Partnership
Jamie Cook, *STEM Outreach* - 21st Century Partnership
Amy Hudnall, *Director* - Center of Innovation for Aerospace Georgia Department of Economic Dev.
Danielle Little, *Communications Director* - RAFB
Jay Vizcarra, *Lieutenant Colonel* - RAFB
Bernard Lannan, *Chief Technology Officer* - RAFB
Maj. Trevor Miller, *78 ABW comptroller squadron commander* - RAFB
Melony Bagwell, *Director Strategic Initiatives* - RAFB

9.1.3 EDUCATION FOCUS GROUP

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Andrea Griner, *VP Economic Development* - Central Georgia Technical College
Dr. Jonathan Yerby, *IT Department Chair* - Middle Georgia State University
Dr. Govind Kannan, *Dean of the College of Agriculture* - Fort Valley State University
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Allen London, *Sr. Assoc - VP - Office of University Advancement* - Mercer University
Jeremy Barker, *Electrical & Computer Engineering Lab Technical* - Mercer School of Engineering (Personify 3D)
Doug Nation, *Principal Research Engineer* - Georgia Tech Research Institute
Anthony Choi, *Prof. of Electrical and Computer Engineering* - Mercer University
Dr. Amy Holloway, *VP for Academic Affairs* - Central Georgia Technical College

9.2 NETWORK INDIVIDUAL INTERVIEW PARTICIPANTS

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