Appendix 2: Detailed results of Sector Technologist Focus Groups

Education

Technology can present a threat for education. Consumers have many options for online education. It's always a struggle to make sure faculty members know how to use technology effectively in the classroom. Facebook, YouTube, and other social media can be big distractions. Students' personal digital devices can create security breaches and cause extra costs and work for IT departments, as well as distract students and teachers.

But the technologies can also create opportunities. Some faculty do very innovative things with technology—even if most do not—and students would like faculty to use more technology. Social media can be used as a tool for education, bringing new content, top experts, and diverse viewpoints into the classroom. "Bring Your Own Device" (BYOD) allows students to carry customized, personalized education resources with them wherever they go.

BYOD shifts the financial burden for the institution. Users pay for the frontend device. But BYOD increases costs for backend, security, and network access control. There is guidance in the form of device specifications, but schools need to share that information with parents so they know what is required. Schools have to implement a framework that delivers a consistent experience, and that separates and secures critical data. And, students' need ample network access. So, the costs even out in the end. In the meantime, BYOD impacts demographic: Schools still have to provide devices for those who can't afford them. A blended model is necessary.

Virtual assets allow schools to move quicker to keep technology current and provide more flexibility. Cloud computing extends this, allowing constant upgrades based on user feedback without the hassles of upgrading. It potentially reduces expenditures for on-going support, increases availability of resources, and supplements internal systems. Which alternative is reliable? Decision-makers and -influencers have to know a lot about who's providing the services. Cloud computing puts more stress on the internet connection; it's going to be more important to have fast, reliable connectivity.

While schools have a lot of technology and a lot of people who are good with it, many who are not. It will take a lot to get them digitally up to speed. Schools need deep expertise as well as broad technology knowledge. They need more backend experts as education is increasingly virtualized. It is difficult to find people who have skills at a reasonable price point.

Technology is often planned based on past needs rather than by looking ahead. Subjective measures of value such as student surveys can be of limited use because it can be hard for students to express what they expect or need. The number of calls when a resource is unavailable is an indicator of utilization, but that is still a limited, backward-facing measure. Schools use data tools for decision-making and

management, and have sophisticated instructional systems; they need something similar for technology planning. When analyzing network utilization, for example, technologists can't differentiate between instructional use and other use.

Too often what is considered optional may need to be to addressed in the early stage of the planning process in order to provide flexibility, performance, or lower costs in the long-term. Schools need a framework to guide technology acquisition and use, rather than "hurry to catch up with yesterday." It's about awareness and vision.

Look at how schools' tech plans fit the regional plan (and vice-versa). The investment in technology overall has shifted away from belief that technology is a black hole that never shows return on investment. Technologists can now show administrators what be can be done with technology. Students bring a lot of know how into the classroom along with their devices. They know a lot about what is available and how to use it, and are looking beyond what's available today. It is important to tap into students' ingenuity.

Government

Local government officials want information technology but everyone's struggling with budget challenges, which has become the norm in the last five years. Some taxpayer are looking at every single penny their local governments spend and asking, "Why do we need it if we haven't needed it so far?"

Open source is an alternative. The challenge is to have the personnel, etc., to implement, maintain, and run it. There is a tendency to view open source as free, but you have infrastructure, maintenance, education, etc., costs. The "cloud" is another cost-effective resources, but is a hated by some folks. Regardless, many departments going to hosted solutions and software as a service. The biggest concerns are about data security. Forward-thinking government leaders support projects like virtualization. Generally, local agencies are doing a hybrid solution, get as many things as possible to the cloud do everything else on virtual servers. Local governments have to maintain data for e-discovery, public information, etc., and the cloud can be good for this.

Investing in technology is not like buying a nice new shiny fire truck that everyone can see and you can use for public relations. Technology is typically ignored until no one can function. They see the cost but don't appreciate the benefits. For example, some governments are just now putting together a request to replace Windows XP because Microsoft has announced it will no longer support that version of Windows. Local government IT departments have to build on their strengths through personnel, and be extremely creative and innovative, to deliver with the resources you have. Government IT professionals simply do as much as they can, and focus on costs.

You get more bang for your technology bucks nowadays; it's still not cheap. After the initial investment you still have all of the warranties, software, support, and other costs that go along with it. Funding is always going to be an issue because decision-makers look at technology as a cost not a way to reduce costs and improve

business processes. Some administrators and department heads are pushing to lock things down. They want to use IT as personnel managers. For example, users don't get administrator rights on the desktop, or only in limited cases such as installing new GIS software.

Broadband is widely available but there are still last mile issues with getting the bandwidth to the customers that need it. Availability follows the telephone and cable companies' marketing strategies. The spots where there is no coverage are not necessarily just on the outskirts of the city. Telecoms ask substantial sums to connect locations where they have no infrastructure. Building out fire departments, for example, can be real challenge. There is almost no real broadband on the east side of Gordon County and northeast Bartow County, while Adairsville is covered.

Local governments need better, standardized solutions. For example, they need a better remote access solution because a recent audit by the Georgia Crime Information Center and FBI audit found that LogMeIn isn't sufficient. They also need VPN and wireless access solutions. Getting a policy that works for all departments can be a big challenge. Every department does stuff differently. Local governments need one main policy, building on State of Georgia policies, that can be customized to different departments.

Government technologists wish all the courts could get on one system. Everyone issues their own case numbers so we end up with multiple case numbers from various systems. Technologists want to get law enforcement and 9-1-1 on the same systems, so they don't have to fax back forth all day long. But these stakeholders are happy with what they have, and won't change. Public safety and related essential services are not going to be interoperable unless everyone is on the same system. You can meld it all together but it's a big upfront chunk of change

Local governments are addressing "Bring Your Own Device" one device at a time. There are a lot more iPads and similar devices. The policies and practices depend on the department, but generally the devices are only allowed for email or personal phone. Technologists generally push them to the guest network. If it's not local government owned and controlled, it doesn't go on the internal network.

The big issue is education of the users and lack of funding for additional employees. Agencies have expanded and have more users but have not added IT support personnel. One solution is to have a "power user" in every department who can act as a first line of support, but it can be difficult to find those people in most situations. Identify users who have a higher capacity to understand what we're doing, and work with them to make sure we're delivering the key services; users we can depend on to push out "here's what you should be doing and why," avoid locking down the system to stop users from doing things they have no business doing.

Healthcare

Healthcare organizations have know-how. They know how to align investment with business. Technologists guide decision-makers through a consistent, structured process to define requirements, regardless of the technology. But, some technology

decisions are not a question of business value because they are required by regulations.

Healthcare faces mandates from payers and regulators to implement certain technologies. The regulators provide incentives to implement technology, but they're also ready to levy penalties. Unfortunately, the funding available for these technologies is not nearly what it costs to implement them. Healthcare providers are also mandated to do measures, reports, and measures that add costs. Payments are tied to performance, and performance has to be measured and reported. This adds costs, too.

Some of the mandates have conflicting goals. Security, for example, is an issue because the government says to build infrastructure to share information freely, on one hand, but, on the other hand, don't ever let any of it be exposed or you can be fined, sued, or even thrown in jail. If data is exposed, regardless of how it happens, the liability falls on the organization that generated the data. It is expensive to meet both goals.

Some mandates require new technologies that may not be ready for prime time. It's good to be on the bleeding edge sometimes, but not when someone is behind you who are ready to penalize you. Implementing these new, unproven technologies can waste a lot of funding. Healthcare technologists are allowed to wait until there are better solutions. At the same time regulatory requirements push aside other technology investments that make more business sense. So, the mandates aren't just driving costs up, they are keeping healthcare providers from realizing other benefits from digital technologies.

Costs are going up and revenue is going down. Investments in technology are killing the bottom line. Healthcare providers have to do it otherwise they will be penalized and lose funding from payers. It's a threat rather than just a weakness.

There are four levels of expertise required by healthcare providers. At the lowest level of expertise are patients, who healthcare providers need to get to use online portals. The next level is the general knowledge of technology tools within the organizations, and how to use them to deliver and support healthcare services. At the second level are the internal technologists who have deeper knowledge of currently implemented technologies, how they're used, and what's needed. At the highest level are external consultants and vendors with deep expertise in particular technologies, who can help implement new systems. Technical knowledge flows from the top down, while practical knowledge flows from the bottom up.

There are certain things for which it is necessary to go outside of the organization to find expertise. Internally, people tend to know a little about a lot. For deeper technical expertise or additional guidance to implement new technology, for example, healthcare providers look to outside consultants. There's so much technology out there that is virtually impossible to know everything. Consultants fill this knowledge gap.

Healthcare providers have some difficulty recruiting technology talent because of the distance from Atlanta an a bit of a salary gap. That said, the region has a decent

talent pool and providers generally have an education budget for employees ($1,000 to $1,500 per employee to develop new skills). They are trying to find hybrid employees who understand analytics and technology, but also understand clinical processes and how technology impacts them. Healthcare technologists often have to work directly with doctors and nurses, and they need to understand the work. It can be hard to find people who have the technical and the clinical.

It can be difficult to educate existing employees on what they need to do with new technologies. They learn the basics that they need, but there's a lot more that would make them even more proficient. The technologies are emerging so fast that the timing and resources can be difficult to synchronize.

There is another level of knowledge because healthcare providers are required to electronically incorporate patients into a feedback loop. They need to be involved in the healthcare process via a web portal. Patients can ask questions of and send message to providers, get their health information and prescription refills, set up appointments, and track their health, symptoms, and vital signs for providers. Regulatory mandates requires healthcare providers have patient portals and to get their patients to use the portals. The healthcare providers in the Rome area got a challenge grant to give patients tablets for accessing the portal. Only about 10% of the participants in this pilot program actually sent information to their providers.

So, patients are users, too. Healthcare provider organizations have to encourage patients to make use of the portals. They have to educate patients and other "regular people" about how they can do things electronically whenever convenient. Many patients are elderly. Some patients don't have basic technology like email. It is a challenge to get them to embrace doing health-related tasks over the internet. It would be very helpful to have an educational component for average people, including how to access the portals via personal computers and smartphones.

Network infrastructure is not much of an issue, only for isolated locations and some patients. Northwest Georgia does relatively well in terms of general knowledge of technology due to healthcare resources and educational institutions. Whether we're turning out computer programmers and similar is another matter, but young people and second career people coming out of the technical college are pretty good.

The region is on par with a lot of areas in terms of technology. The region needs more complete cellular telephone and data service because healthcare is moving toward more mobile technologies. There's plenty of access to technology, but it's not enough to be an attractor. The healthcare assets in region and how they're interconnected are attractors that most other comparable places do not have. They could be useful for attracting companies in health IT and informatics, medical research, medical device manufacturing, and related industries.

Healthcare technology leaders feel that it's always good to understand what others are doing and to learn from them. This would be especially useful when it's necessary to implement something new and/or quickly. There are some professional networks in the state of Georgia that healthcare technologists participate in, and there are some cross-sector discussions, such as Rome Chamber's

Technology Square Table. These are good to learn about what other industries are doing with digital technologies, but healthcare technologist have a hard time making it to these meetings because of work demands.

Manufacturing

Manufacturing technology leaders generally agree with the regional digital technology SWOT analysis. They felt that technology tends to be looked at as something to control costs downward. The aspects of technology that can impact revenue are under-respected. Information technology is not known for revenue enhancement, although it can be used to increase market reach, productivity and sales.

On the infrastructure between Atlanta and Chattanooga, the region could expand on that and market it. The region could capitalize on high-tech on the shop floor because northwest Georgia has some of the most high-tech manufacturing facilities in the southeast. All of the manufacturers represented in the focus group are making major technology investments. For example, some are replacing their enterprise resource planning (ERP) systems, while others are just now going to ERP.

All are also growing their IT staff, and some have long-lived staff. Some manufacturers in the region have a process control group that deals with technology out on the floor, and have separate business network and controls networks. At other manufacturers, IT is responsible for automation. The manufacturers, particularly the smaller ones, have specialized generalists who have to cover a wide variety of roles. Several of the manufacturing technology leaders noted the difficulty finding combination skill sets, personnel who could work on "carpeted floor" of the office and shop floor.

The companies have had positions posted on Monster.com and Georgia Department of Labor. People from all over apply for these jobs but most lacked a critical skill set, particularly programmable logic controller (PLC) programming. At the same time, one of the challenges northwest Georgia has is retention. If manufacturers do recruit personnel from outside the region those employees can be hard to retain. It's hard to hold on to people who don't have roots in the region. It is better if employees grew up here in northwest Georgia.

But, young people don't realize the scale of opportunities the region and sector have in regards to high-tech jobs. Education institutions do not generally deliver very good candidates. Manufacturers have to grow their own specialized skills, particularly for web development, cloud computing, etc. Relationship between community and local education institutions can be a major issue because the skills they're producing may not always align with what the needs are. Manufacturers need help identifying people who potentially have some talent in IT. Manufacturers are going to have much larger demand, and supply is not going to meet that demand.

Generally, manufacturing technology leaders would welcome regional efforts to help them compete with markets like Atlanta for talent.

Manufacturers do have network access issues in some areas where major telecoms don't have points-of-presence. Dealing with the external folks, such IT infrastructure providers, getting work scheduled and done, getting IT infrastructure across rail ROW, makes getting network connections difficult.

More generally, manufacturing technology leaders recognized that some leaders might not feel good about admitting that they can learn more. Most of the technology leaders who participated in this focus group said they were willing to provide knowledge to non-profits and local governments. In fact most saw this as important extension of their corporate values.

Technology investment is a difficult decision if you don't understand what you're trying to get out of the solution. The manufacturing technology leaders said it is necessary to carefully map what you want to get from what you're buying. Develop an internal strategy: what are we trying to accomplish. Several of the manufacturers use "pace layering"—which distinguishes between systems of record, systems of differentiation, and systems of innovation—to set priorities for investment. The lexicon of Information Technology Infrastructure Library (ITIL) is important for manufacturers but as a practice ITIL is too cumbersome and not suited to any but the largest and most complex organizations.

It was pointed out that leaders have got to careful how they introduce things, because surprising people who consume things in a certain way can be disastrous. It is important have folks bought in from the beginning, as part of the decision-making process, before anything is implemented.

Small business

Focus group participants felt the SWOT analysis was reasonably accurate, particularly the workforce issue. The issue is that although leaders talk about the importance of a skilled workforce, and see lack of digital skills as a weakness, they aren't doing anything about it. Small businesses, participants agreed, aren't investing in their current workforce to better use technology. Small business people know it's important but are reticent to invest in workers to expand what they know.

When putting on seminars and workshops small business specialists sometimes have trouble with attendance because small businesspersons don't have the time to attend. They say. "I have to close up the shop to attend, that's customers and revenue I'm missing." They can't leave their offices, don't have the time to learn, and have done without the technology this long so don't see a need to learn about it. But they do not understand what the technology can mean to their businesses.

Smaller businesses just don't take advantage of digital technology. The technology needs of small businesses are across the board, including how to participate in a webinar. Many small businesses need help with basic technology applications like accounting. A lot of small businesses still don't take advantage of having a website, even though there are many free services. Their general attitude is that they, "don't know how, don't have time." One participant is going to require businesses to submit information online so it automatically goes to website, social media, and

email blast. This makes the communication and publication process so much easier, but many don't understand the value of it. They still depend on word of mouth.

When helping small businesses with technology specialists to do a lot of handholding. Small business persons rely on the specialists to tell them, "This is something you should pay attention to." Specialists have to inform our small business owners about what's happening in their own industry. This attitude puts pressure on specialists to convince the business owners of the value of technology.

Participants felt it was necessary to educate business owners to get them on the bandwagon. When approached about technology, participants noted, a lot of small businesses will say, "I don't know why you're asking me, I don't know much about technology." (This is exactly the response we got when approaching small business technology leaders about participating in this focus group.) And, small businesses don't want to be the one to say they're the underdog or at a disadvantage. They will do without rather than try to get some help. Small business specialists have to beg them to get help. The challenge is to make sure educators and other employers are involved in the discussion, encouraging and helping small businesses to learn about technology.

It takes some time to get them educated and working online, but it's going to help them in the long run. Others may have the time but may not be good communicators and not know how to word their messages for public display. In order to use online media, small businesses have to learn what to say and how to say it. They need marketing know-how. Even the clients that do build their own website have problems because reading their website content is often like reading a textbook about the business. Small business owners need have to have a vision of what the marketing should look like, and digital technology should be an integral of that vision.

Small business specialists want to build the local & regional technology capacity first. Atlanta tech companies can be seen as a threat. They could undercut the technology vendors in the region. Small businesses rely on Chambers to promote their products and services. That's tricky because any time you're talking about disruptive technologies you're talking about potentially displacing traditional vendors. How do you effectively present disruptive technologies without displacing existing service providers?

Participants saw a need to do a better job connecting local technology vendors with opportunities in the region. At the same time, regional stakeholders need to figure out more strategic ways to partner with technology vendors in Atlanta, Birmingham, and Chattanooga. Also, northwest Georgia needs to keep its local technology talent. The region, and small business leaders and specialists, need to make sure it's not experiencing a technology talent drain.

Costs are also an issue. For example, there are many companies in the region that provide high-speed internet, including local companies, but the costs are prohibitive. Small businesses can't justify the expense.

Do the small businesses understand why technology is important to their businesses? They need examples of other companies that have seen success with digital technology. Small business people have to realize, "It helps me to run my business more efficiently, and makes my life easier." The message has to be put this way in order for small businesses to get it. It's really all about educating, and efforts to help small businesses with technology can miss the mark on the educating part. Education is about what small businesses are willing to put the time into.

Small business specialists get caught up in their organizations and work, just like small businesses. They recognize need to learn the language of technology to be able to sell technology as an integral part of business. The specialists' clients and members look to the specialists to tell them how to run and market their businesses. It is necessary to hold small business persons' hands and walk them through the process of assessing and implementing digital technology. Small business specialists need to explain to decision-makers, "this is what you could be doing, what's out there." One approach is use scenarios, to say, "What if… what would you do?" It is also important to be collaborative, to say, "Let's work together so it works better for you." There are different levels of what they need to learn, but so few that will admit that they don't know and ask for the help so it can be hard to determine what level of information to provide or how to deliver it.

Small business specialists have to take a step back and think critically about their approach because, growing up around it, working with technology kind of second nature for them. If a specialist is going to speak to older generations he or she has to take a different approach to cover the full circle of how and why to get digital technology. Small businesses need to know where to start without feeling like they're being sold to. Many in the older generation can use computers, but kids are growing up with iPads and the way they work will be very different. How do we bring the older generation and younger generation together? There almost needs to be a third person in the middle to bridge the gap between young and old. One approach is for technology folks to be technology ambassadors to help small businesses assess needs and identify alternatives. Small business specialists need professional development to be technology translators. If they can use the technology make their jobs and lives easier then they can use that as an example. It's up to them to learn about what's coming around the corner and keep the small businesses informed.

Small business specialists and other economic development professionals need to be able to talk intelligently with technology-based businesses. They need to know the technology lexicon. Many entrepreneurs and innovators consider Chambers to be stodgy and behind the times. Small business specialists need to be able to communicate the needs of these businesses via the Chamber.

The small business specialists would like a primer or refresher on the state of the technology industry, and on new resources they could connect business to. They need general technology updates and information about emerging technologies that could benefit small businesses. How do economic development professional hone their skills to help small businesses? The specialists want to stay apprised on how

technology is being applied to economic development. Information for economic developers about how technology is impacting what development organization personnel do in their day-to-day lives would be valuable.

Tourism

Funding and know-how for digital technologies are critical issues in tourism. A lot of tourism assets are run by non-profits that don't have the budgets for technology. Technology is not a priority for tourism, even though it could have huge benefits. The potential impacts of the digital economy are huge for tourism. Tourism organizations need to be able to use digital technology and measure the impacts. They need to be able to understand the measures and what they mean (analyzing Facebook, for example). Having to deal with budgets and figure out what can and can't be done is difficult for many tourism professionals.

It's challenging for tourism organizations to figure out the technology they need and the cost of the technology. They need to make sure they build technology into their overall strategy. They can get it but often don't know how to use it, how to fit it to needs, or how to measure impacts. Convention and visitor bureaus are funded through hotel motel tax so return on investment and analytics are very important.

There are many different components to tourism. Each has its own needs for digital technology. From the convention and meeting side the infrastructure is very important because business travel means overnight stays and economic impact. Digital infrastructure is not so important for leisure travel. Online information is more important from the leisure travel perspective. Infrastructure is more important for business travel, apps more important for leisure travel.

The tourism industry needs to engage younger, future travelers and give them a way to engage with places they're traveling to. Tourism professionals can think like a traveler, look at what digital resources a tourism asset has, and consider whether it is tailored to tech-savvy. For example, does it provide the ability to share where you are via social media? Technology is important across the board for attracting and engaging visitors, from RFID badges for access control to mobile app for navigating the area. You can see from visitors' behaviors what they're interested in. You can use these insights to get them to come back and bring their friends.

Social media is a vital part of attraction, interacting with visitors, and promoting events. It can be very economical, particularly for after-hours. While social media is free, it can take up a lot of time. Tourism organizations have to make sure they are consistent and responsive in their use of social media.

Tourism professionals need to understand that if their going to implement a new technology, they really need to know what it is. They need to understand that there's a lot more out there to learn about, and that digital technology is continually evolving. Tourism professionals need to keep up to date. They need to know what is coming, how technology is advancing, and what works for different types of people.

Some tourism organizations have gone out, found the VARs (value-added resellers), and partnered with them to lower costs on hardware and software. If possible, it is

best to start with senior-level people in major corporations, figure out how to partner with those companies around mission, and consider how to extend their corporate reach with an office in the area. It is necessary to show these partners how the partnership can generate new, profitable business for them.

Tourism needs a digitally skilled workforce. Regional leaders have got to engage young people via colleges and high schools to create programs for technology. Tourism and other sectors can help the community at the same time getting a better workforce by providing real-world learning opportunities (Next Generation program in Dawsonville, for example).

The tourism community is super connected and works together as a family. Tourism organizations and professionals want to help other communities. There are a lot of partnerships and very grassroots tourism efforts, from all levels, small to large. Tourism professionals don't want to duplicate things. It is better to partner, to build on and replicate what others are doing. Partnerships are key. A partnership helps you grow. Why reinvent the wheel?

Connections and contacts around the region would be helpful. Training and education opportunities and programs about the digital economy and digital technology would also be good. Knowing about grants, development of infrastructure, and continued advocacy for tourism, including at the grassroots level for regional development, are all-important for tourism.