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The Integration of Wireless in Mississippi Municipalities

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Wireless technology is here to stay. Demand is high, and as a result, wireless has been integrated into municipalities for government and constituent access. A common form of wireless technology used to deliver broadband, Wi-Fi is faster than traditional models. Wi-Fi signals can reach distances from a 'few hundred feet' to over several thousand feet, acting in 'broad deployment' through hot-spots all over the world. Also, Wi-Fi is capable of providing broadband connections for home computers, business computers, neighborhoods, or municipalities.

Benefits of Incorporating Wireless in Municipalities

To develop better broadband access, many municipalities in the United States have chosen to provide their municipalities with Wi-Fi access to 'blanket' the entire area. Local governments realize the importance of Wi-Fi for their constituency, and have responded accordingly. Wi-Fi in municipalities, sometimes known as Muni-Fi, is provided to specific municipal areas at minimal or no cost for users. This is beneficial for businesses and consumers, providing municipal constituents with new platforms for economic opportunities. Municipal Wi-Fi is usually first integrated in the downtown area (Wi-Fi Municipal Services). An example of the trend of implementing Muni-Fi is Madison, Wisconsin. In 2006 Wireless Facilities, Inc. (WFI) set up a Wi-Fi network in Madison, collaborating with Madison Gas & Electric, and Cellnet, a technological communication company, to establish a wireless network in Madison's downtown area. Plans are in place to extend coverage throughout the entire city as part of Madison's "Healthy City" plan and the city government's intention "to provide Wi-Fi access to residents and to further strengthen the city's reputation as a highly-livable, business-friendly, technologically savvy community," (Networks Update, 2005, p.2).

Cities are driven to establish Muni-Fi networks for various reasons. One reason involves competition with other providers. The price of broadband in the United States has remained stable yet relatively high. Therefore the establishment of Muni-Fi creates a third competitive power to crack the DSL-cable "duopoly." Another reason is some cities wish to offer access to the Internet for the benefit of economically deprived neighborhoods. Leaders of the duopoly of cable and DSL usually target wealthy and middle classes, causing a broadband split (digital divide) based on economic position – something cities plan to end. Other reasons include municipal desires to have employees of local governments become more competent, along with offering improved services to residents. Many municipalities establish Muni-Fi networks because they are trying to save tax revenues by utilizing the wireless communication technology for city services (muniwireless.com).

In addition, Wi-Fi in municipalities is beneficial for people who live in rural areas. Mississippi's own experience demonstrates that rural areas are slow to be offered cable or phone companies' broadband access. Strides made in public safety are another positive for Wi-Fi in municipalities. Many small and medium-sized cities use Wi-Fi to integrate public safety practices such as emergency response mechanisms. To illustrate, the newly implemented Minneapolis, Minnesota Wi-Fi network helped emergency staff with communications during the infamous bridge collapse in August 2007 (Krause, 2007).

Muni Wi-Fi allows municipal workers to be more time efficient in their duties. Cocoa Beach, Florida, outfitted its police cars with new public safety applications, providing computers that can access national and state-level crime databases, software for dispatching, and 'real-time video.' By integrating these new technologies, police officers demonstrate efficiency in crime prevention and law enforcement activity. Wireless municipalities improve citizen safety and encourage public outreach by the use of tools made available by the wireless phenomenon (Gaylord, 2007).

Incorporation of Wi-Fi into municipalities is reshaping municipal purpose, improving government, and bringing the government and general public closer. Today, activists continue to praise how digital technologies such as the Internet are helping to improve society. Wi-Fi in municipalities is successful in many ways because it has altered lives for the better. Fostering a strong relationship between governments and constituents allows local government to improve services and better serve and satisfy citizens. Darrell West describes these principles in *Digital Government*, where he illustrates the importance of digital methods in public outreach and reaction. West states that technologies such as the Internet encourage a strong relationship between the "governors" and the "governed."

Rather than being stuck in a hierarchical world in which leaders send one-way messages to citizens, the interactive nature of the technologies creates the opportunity for public outreach on the part of government and better responsiveness by public officials to the wishes of ordinary folks (West, 2005, p.71). The Stennis Institute of Government conducted a study on the issue of bringing Wireless to rural Mississippi with the results suggesting that integration of Wireless would be a positive move for the state. As Wi-Fi has helped provide economic opportunities and a better life for citizens throughout the nation, it can afford Mississippi similar opportunities. Although many areas of Mississippi have broadband access, such as schools and libraries, many students do not have Internet access at home. Almost 100% of Mississippi's public schools have access to Internet services. However, the Mississippi Department of Education reported that 47.7% of students attending the state's public schools do not have right of entry to the Internet.

The digital divide in Mississippi demonstrates a seminal reason for tax-based investments in Wi-Fi. Students attend school where they access Internet services, but do not have home access to do school assignments. As a result, those students may have difficulty maintaining the same educational level as students with Internet access at home. The correlation between Mississippi's economically disadvantaged individuals and low residential concentration in rural areas is a factor explaining the dearth in the state's broadband services. Mississippi's status as the third poorest state in the nation explained its low Internet saturation in 2002. Actions are being taken to improve broadband measures, but these actions are not enough. Advances in the broadband infrastructure will benefit Mississippi government, business, industry, and its citizens.

According to Dr. Dan Brook, the head of Computer Applications and Services at Mississippi State University, there are currently three methods of obtaining wireless access in Mississippi. The first method is developed by large telecom cell companies as an addition to their cell phone service. Labeled as EVDO, this method is based on cellular technology. Services are more successful than dial-up or Direct TV/Data networks. Two examples of this method of delivery are the systems AT&T and Telepak Networks have in place. Both use closed systems and pay service networks. The second method of service is designed by small commercial "for-profit" companies that offer true Wi-Fi as a paid service. This method has produced some success within the state with systems servicing Tupelo and Jackson, while a major project is being implemented on the coast. The third method of service being utilized by communities, organizations, and local governments is the model similar to the Wi-Fi projects in downtown areas like in Madison, Wisconsin.

One aspect affecting the affordability and access of broadband in rural areas is delivery. No particular method of delivery is used more commonly than another in the Muni-Fi world. Examples of possible delivery methods include: direct satellite connection, wireless connection, cable, fiber, telephone line, or over an electrical line. Wireless access in Mississippi municipalities would make them more attractive when trying to attract industry and/or opportunities for economic growth. When analyzing the costs per square mile of integrating wireless into municipalities, it remains to be seen if it is economically feasible to implement.

JupiterResearch, an Internet research company, conducted a survey of 83 municipalities setting up wireless networks, finding that the average five-year cost of maintaining a wireless network was $150,000 per square-mile. Tropos Networks, which provides Wi-Fi to several government, private, and foreign markets, charges around $75,000 per square-mile. Philadelphia, Pennsylvania, received an estimate of $10 million for installing a Wi-Fi network— an average of just under $75,000 per square-mile in the 135 square-mile city. Philadelphia's estimated cost to run the network for the first two years was $5 million. Another feature of the cost is the complexity of the contract.

Miami Beach, Florida, with its 7.1 square-mile area, contracted with IBM for $5.2 million to design, deploy, and implement its wireless network, as well as operating and maintaining the network for six years after acceptance. The cost of integrating Wi-Fi into a municipality is high, with maintenance and operation just as costly. Municipalities must look closely at the benefits of a network to ensure they outweigh the costs.

Cost raises the serious issue as to whether Wi-Fi is worthwhile for Mississippi municipalities. With post-Katrina economic conditions and a possible recession looming, Mississippi municipalities would have to dig deep to find the fund-

ing necessary to integrate Wireless. After deciding to integrate a muni-wireless network, the municipality must select a model to implement. The objective of municipalities integrating Wi-Fi is to provide Internet for free or at a minimal cost, making the municipality more marketable when attempting to attract businesses and raise revenue. According to muniwireless.com, municipalities usually integrate wireless using one of four business models. The first model, which most municipalities prefer, involves a private corporation such as MetroFi or EarthLink placing a 'public tender' to compensate for expenses and build the network.

The second model, rarely been used in municipalities, involves city ownership and funding of the network, and is appropriate for cities rigorously utilizing the network for 'muni applications.' Corpus Christi, Texas established its own network at a cost of $25 million dollars, both owning and funding the network. Built by Northrop Grumman, the network offers admittance to wireless Internet, and provides an intriguing application of "wireless automated meter reading."

The third model is called the anchor tenancy model, and entails payment for the network to a private contributor with the city serving as an anchor tenant. Minneapolis, Minnesota currently partners with US Internet, paying the firm $2.2 million upfront costs, and signing a 10-year service contract for $1.25 million per year.

The fourth model is known as the free access model. This model implies that a municipality pays for and owns its own network along with providing free Internet access for citizens. This is a rare model because it is difficult for cities to fund. Using this model, cities hire private corporations such as EarthLink to construct a network and offer free and paid access. The free access option is supported by advertisements from "Google, MSFT as partners." St. Cloud, Florida successfully applied this model hiring HP to construct its network. Alternative models, which are community-specific, and tailored to the situation and structure of the local government and its environment, are available for municipal Wi-Fi (muniwireless.com).

Mississippi municipalities will need to determine the most cost efficient method for developing, setting up, and maintaining a wireless network. Municipalities can combine different models, utilizing a combination of user fees, advertisement fees, city funds, and possibly grants to fund any wireless integration project. Other possible options include debt-based funding (bonds and loans) or the use of annual operating funds. Municipalities need to consider the goal for the network, as the choice and amount of funding necessary differs based on breadth of use ranging from a single municipal application to the larger application of making wireless available to its citizens. According to muniwirless.com, a municipality needs to ask these questions when determining whether or not to set up a network:

- "Who will own and operate the network?"
- "Who will pay for the implementing of the network and its on-going management?"
- "Where will the funds come from?

The potential benefits of wireless municipalities are great, benefiting citizens of the state, as well as addressing economic development and community involvement.

Conclusion

Many municipalities have been successful with various wireless internet models, supporting the claim that it is possible to mold Muni-Fi to fit the needs of any municipality. The integration of Wi-Fi usage is very important for improving the "tomorrow" in technological advancement, especially with the ever increasing effect of globalization based on the Internet. By researching models appropriate for wireless integration in Mississippi municipalities, developing a needs application test and a funding source, the Mississippi legislature can aid citizens in developing a thorough understanding of broadband issues and assist with funding methodologies.

We urge the legislature to allow Mississippi to demonstrate the manner in which technological advancements can be used for economic growth. Two distinctly different Mississippi cities are examples: Southaven has undertaken a project providing affordable internet access to its citizens; and Amory has a free, open wireless network that the Gilmore Foundation put in place. The success of the Amory network has led to plans to expand the network to encompass Monroe County in the future.

If Mississippi can develop a plan and find a way to implement Wi-Fi in areas that have little access to the Internet, it will be a step toward a promising future for the state. Overall findings prove that wireless municipal movements are generally successful. Cities that have done their homework and proposed thorough plans have been successful in improving the efficiency of the government, encouraging economic development, and enhancing the overall quality of life for their citizens. We urge the legislature to consider an investment in Wi-Fi for our municipalities.

About the Authors

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Lydia Quarles is a Senior Policy Analyst at the John C. Stennis Institute of Government, Mississippi State University. She received her Juris Doctorate in 1975 from Cumberland School of Law, Samford University, and her MA and BA from Mississippi University for Women, in 1972 and 1971 respectively, in political science and communication. After over a dozen years in the private practice of law in Alabama and Mississippi, she joined the Mississippi Workers' Compensation Commission as an Administrative Judge in 1993. Eight years later, in 2001, she was appointed Commissioner of the agency. In 2006, she resigned to join the Stennis Institute.

Quarles remains active in bar work, and currently chairs the Women in the Profession Committee, a standing committee of the Mississippi Bar. She also serves as co-chair of the Mississippi Supreme Court's "Gender Fairness Implementation Study Committee" and acts as the Chief Operating Officer of the Workers' Compensation Section of the Mississippi Bar. She is a fellow of the Mississippi Bar Foundation, a recipient of the Mississippi Bar's Distinguished Service Award, a member of the Mississippi School for Math and Science Foundation Board and a member of the MUW Alumni Board. Quarles was recently honored by the American Bar Association's Administrative Law and Regulatory Practice Section, receiving the Mary C. Lawton Award for lasting contributions to the Mississippi Workers' Compensation Commission in the areas of alternative dispute resolution and access for Hispanic workers. In 2004, Quarles was named one of Mississippi's 50 Leading Business Women by the Mississippi Business Journal; the Journal recognized her service to the State as a Commissioner as well as entrepreneurial skills developed in her property management business in Starkville, Spruill Property Management, LLC.

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Joanna Frederick is a graduate student at Mississippi State University, pursuing a Master's degree in Public Policy and Administration. After graduating from Cathedral High School in Natchez, Mississippi, she received her B.A. in communication with an emphasis in public relations from Mississippi State University in 2007. During her time as an undergraduate student, she was active in College Republicans, Student Association, Delta Gamma Sorority, and the Stennis-Montgomery Association. She served on the Executive Council for College Republicans for two years and established a promotional campaign to encourage students to get involved on campus called "Speak Up" during her time in the Student Association. She also spent one semester as an intern in US Representative Charles "Chip" Pickering's Washington, D.C. office. Joanna graduated with honors and was selected to the MSU Hall of Fame. Joanna is still active in the Stennis-Montgomery Association and has participated in the preparations of the 2007 gubernatorial and agriculture commissioner debates held on MSU's campus. She began working as a graduate research assistant to Lydia Quarles in the summer of 2007.

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