

****Response to Call for Participation****

Future Wireless Cities Workshop

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Summary: The City of Ammon, Idaho operates a Software Defined Infrastructure (SDI) that includes: Software Defined Networking (SDN) technologies from end to end including a virtualized fiber optic premise device. As a US Ignite community member Ammon was awarded a National Science Foundation EAGER grant in partnership with the University of Idaho to research and develop 'network slicing for emergency communications' and recently won the National Institute of Justice's Ultra High Speed App Challenge. The City was also an active participant in the NTIA & FCC Model City Workshop held April 15-16, 2015 in Washington DC. This white paper submission and our desire to participate in the workshop stems from our experiences to date in SDI and our need to advance the commercial development and adoption of SDN technologies.

Desired Research Support: Our SDI and wireless experience shows significant deficiencies in the ability of most wireless networking technologies to provide SDN or network virtualization directly to a wireless edge device.

For example, the City maintains a 1Gbps wireless network with the County in support of several governmental and emergency services. These various services require differing bandwidths and priorities. The wireless networking technology used to support the 1Gbps connection is IEEE 802.11x compliant or 'WiFi'. This wireless technology is capable of supporting SDN only when bridged which requires specific SDN equipment at each end of the 'bridge'. In practical terms this means that the wireless connections within our SDI cannot support SDN functions, but instead can only pass them.

As end user network access increasingly migrates to wireless the inability of many of the commonly adopted wireless technologies to support SDN technologies in the same manner as wireline technologies will disrupt the commercial adoption of SDN and its resulting ecosystem. Therefore, these shortcomings must be addressed and present areas for research and development.

Wireless technologies that support SDN in the same manner as wireline technologies so that SDN functionalities may be agnostic to the network media need to be further researched and developed. Hardware standards for wirelessly connected edge devices capable of supporting SDN aware applications and services need to be researched and developed as well.

Additionally, as radio frequency is a limited and valuable resource, next generation wireless devices should also support the research and development of software defined frequency sharing in a live environment.

Infrastructure Requirements: The operator infrastructure required to support a wireless testbed for SDN and other next generation technologies must be able to support SDN from end to end in a live production environment with real world use cases and end users. Additionally, the infrastructure should include both wireline and wireless equipment along with all supporting facilities. This will allow for easy implementation of required experimentation to the edge as part of the already existing SDI. The City of Ammon already owns and operates an SDI and invites research and development of wireless SDN technologies, including frequency sharing experimentation, using City facilities, operations and residents.

Workshop Attendance Request: With this white paper the City of Ammon requests an invitation to attend and participate in the Future Wireless Cities Workshop planned for Washington DC on February 2-3, 2016. We would like to use the opportunity to share our current state of SDI development, ongoing work and future vision, particularly as it relates to wireless access. As a nonacademic, tax supported entity with a limited budget we would require travel reimbursement in order to attend.