

Abstract of Dissertation presented to UFF as a partial fulfillment of the requirements for the degree of Master of Science (M.Sc.)

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The Brazilian government has been working to reduce social and digital exclusion rates by investing in a number of programs, such as the Connected Citizen – Computers for Everyone, Tele-centers, Digital Cities and the Brazilian Interactive Digital TV (IDTV) System, among others, each aiming at variable-sized groups of the population. Of those, Digital Cities and IDTV are the ones that can potentially reach a more significant number of Brazilians.

The Digital Cities program aims at providing free Internet access, as well as access to regional information sources such as the intranets of government agencies, research centers and universities, for instance. The Brazilian Interactive Digital TV (IDTV) System, on the other hand, aims at a greater interaction between the government and needy communities by offering them educational programs and access to government provided services, besides Internet access.

The Self-configurable wireless ad hoc networks have been considered an excellent alternative to the communication infrastructure required by both Digital Cities and Brazilian IDTV programs. The low cost of the transmission and reception units, the easy implementation and the possibility to reach wide areas depending on the technology used are some of the attributes that make such networks the most adequate option to those programs, besides the obvious technological advantage of not using cables.

This dissertation evaluates protocols designed for ad hoc networks and protocols designed for sensor networks when applied to Brazilian IDTV and Digital Cities, comparing their performances through simulations generated with the ns-2 (Network Simulator) in small, medium and large area scenarios.

The results of these experiments point to sensor protocols as the most promising alternative to traditional ad hoc network protocols for the infrastructure required by the Digital Cities and the Brazilian Interactive Digital TV (IDTV) programs, since their attributes are more efficient to point-multipoint and multipoint-point traffic.

Keywords: Digital Inclusion, Ad hoc Networks, Sensor Networks