

Reconfigurable antenna system for wireless local area networks



Goal

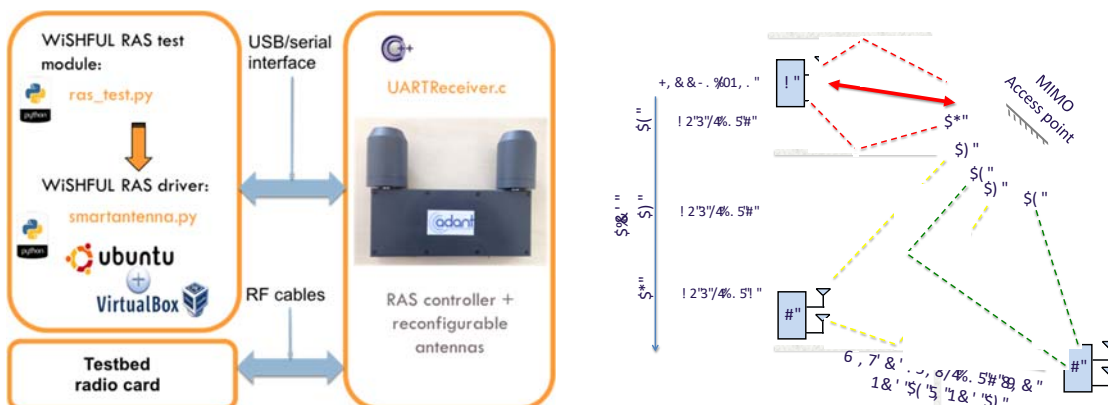
The goal of the extension is to design and implement reconfigurable antenna system for scientific research purposes to include in some of WLAN testbeds and to interface it with the wishful framework. Availability of reconfigurable antennas integrated with testbeds will allow experimenters to conduct advanced research in the area of reconfigurable antenna for wireless local area networks

Main challenges

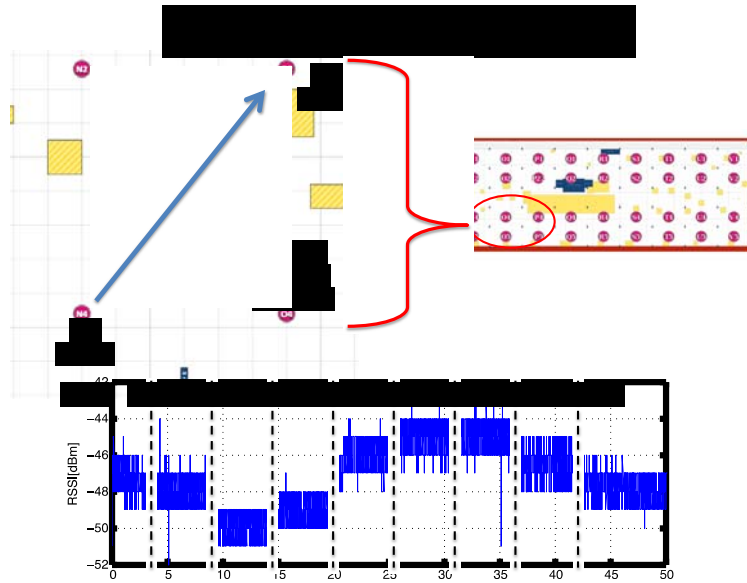
To design a modular and scalable system that allows integration with different testbeds and that it is integrated with the WISHFUL framework while providing sufficient speed in reconfiguring the antenna system.

Description of extension

Reconfigurable antenna system composed of antennas capable of radiating with an omnidirectional radiation mode and multiple selectable directional radiation modes and antenna drivers that allow to specify which antenna configuration to set within the WISHFUL framework



Main results



Measured variability in RSSI by looping among nine different configuration of the RAS at 5 GHz while the node equipped with reconfigurable antennas is monitoring the RSSI of a neighboring link.

Conclusions:

The RAS developed as part of this extension is a modular antenna system composed of reconfigurable antennas working at 2.4 GHz or at 5 GHz, controllers with USB and serial connections for interfacing the antennas with the selected testbeds and new local UPIs compatible with the WISHFUL framework that allow to change the configuration of the smart antenna system remotely. The RAS has been successfully installed on w-iLab2 testbeds and used to show the capabilities of the smart antenna system to dynamically affect the RSSI/throughput of a wireless link.

Feedback: Thanks to the software tools and hardware provided to us by WiSHFUL, Adant was able to add to the existing testbeds a reconfigurable antenna system that will broaden the availability of the beam switching antenna technology in the scientific community and will open up opportunities for further research and dissemination.