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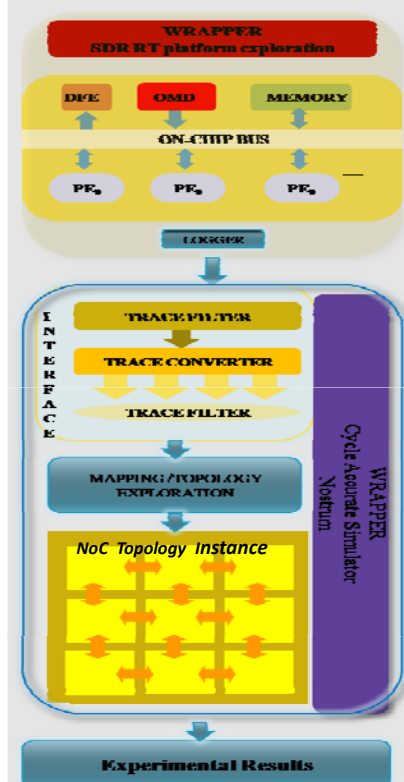
Abstract

- > The SDR system can dynamically adopt appropriate modes to get the optimal quality of the communication service [1]
- > The run-time resource management optimizations can reduce resource requests without affecting significantly the Quality of Service (QoS) and the interaction between user and application [2]
- > Our framework combined with a cycle-accurate NoC [3] simulation environment that enables the simulation of such complex, dynamic hardware/software SDR designs
- > The platform specifications are represented as a virtual architecture by a coarse-grain simulator described in SystemC
- > Key of our approach – our tool is supported by automatic wrappers which explore the SDR platform parameters and transmit the interconnection traffic in a cycle-accurate NoC simulator giving the opportunity to examine the impact of different topologies at the system bandwidth at execution time
- > This is work partially supported by the EC funded MOSART project <http://www.mosart-project.org/>

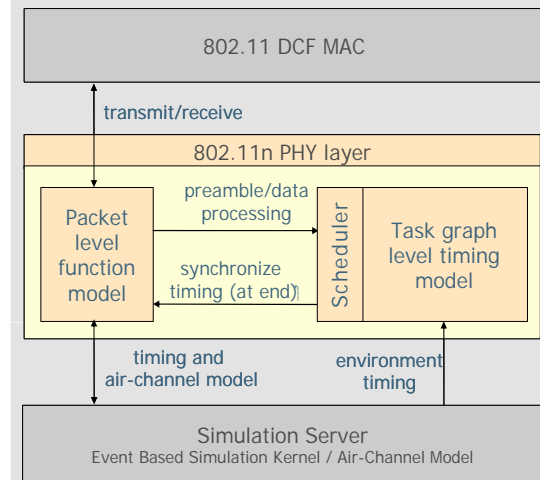
1. SDR exploration space

Pe_Fr (MHz)	Bus_Fr (MHz)	Modulation	#PE	#Antennas	Symbol rate (ns/OFDM_symbols)	Packet Size in Bytes
400, 600, 800	200, 400, 600	QAM16, QPSK, BPSK	2, 4, 6, 8	2, 4	1000, 1500, 2000	1000, 1500, 2000

2. Simulation Flow



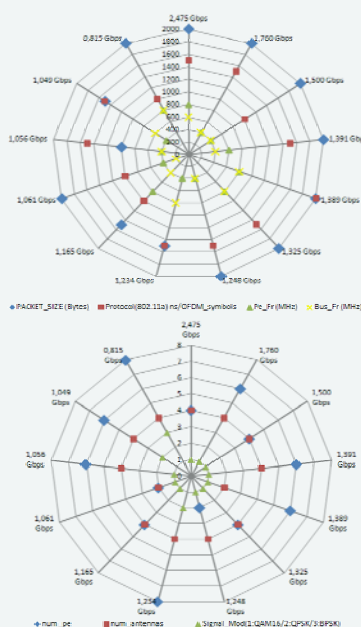
3. SDR Platform Components



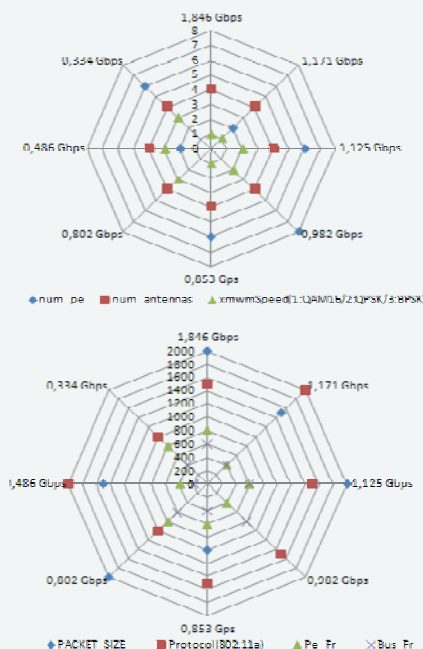
References

- [1] David L. Tennenhouse and Vanu G. Bose, "The Spectrumware Approach to Wireless Signal Processing," *Wireless Network Journal*, 2(1), 1996.
- [2] B. Bougard et al., "Cross-layer power management in wireless networks and consequences on system-level architecture," in *Signal Processing*, Vol. 86, No.8, p. 1792-1803, 2006.
- [3] A. Jantsch, "Models of computation for networks on chip," in *Proc. ACSD'06*, pp. 165-178, 2006

Simulation results of SDR platform parameters exploration on a 4x4 **2D torus** NoC



Simulation results of SDR platform parameters exploration on a 4x4 **1D torus** NoC



Simulation results of SDR platform parameters exploration on a 4x4 **Mesh** NoC

