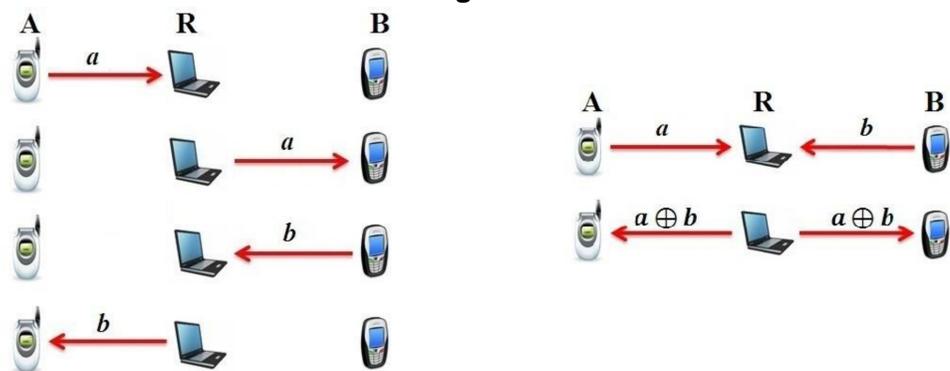


- In Industry 4.0, billions of devices will be connected to the cyber world.
- Network Coding is an advanced technology to improve throughput and robustness of many networks (Sensor Networks, Wireless Networks, Internet, ...) [1].
- In natural way, network coding implements information security by mixing received packets at the intermediate nodes.
- To counter the cyber-attacks, with network coding, the source can be distributed and stored at several servers, the eaves-droppers cannot catch the information, and the destination cannot recover desired information from mixed data if it does not know the other information. However, the security in network coding need improving on pollution and Byzantine attacks [2].

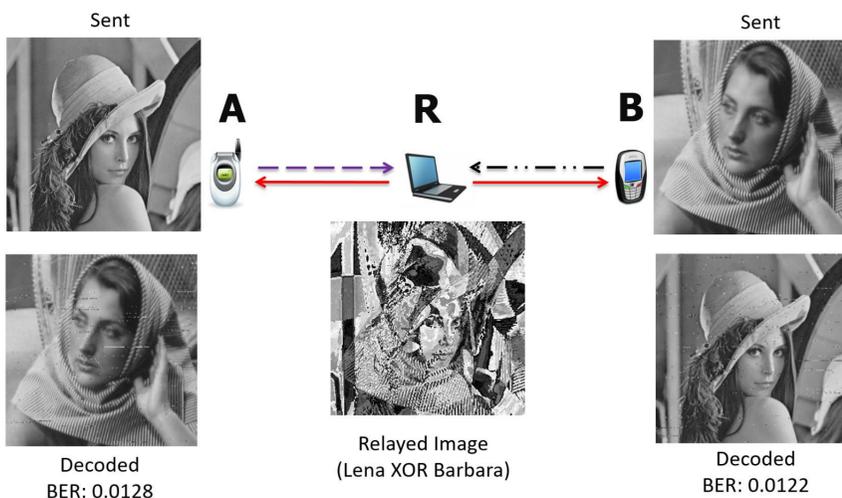
This work focuses on demonstrating of operation of 3-node, 4-node, and 5-node network coding models based on Software Define Radio implementation with BladeRF kit. The improvement of information security for network coding is continuously investigated in next phase.

Network Coding in Wired Networks

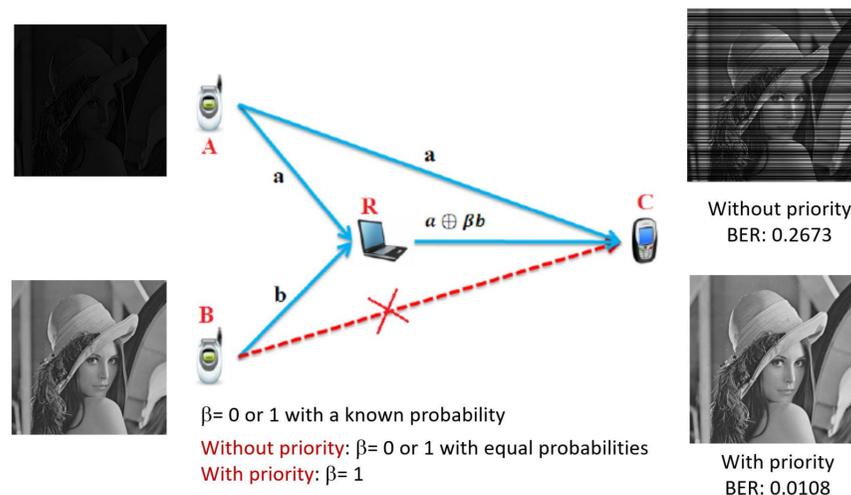


Network Coding in Wireless Networks

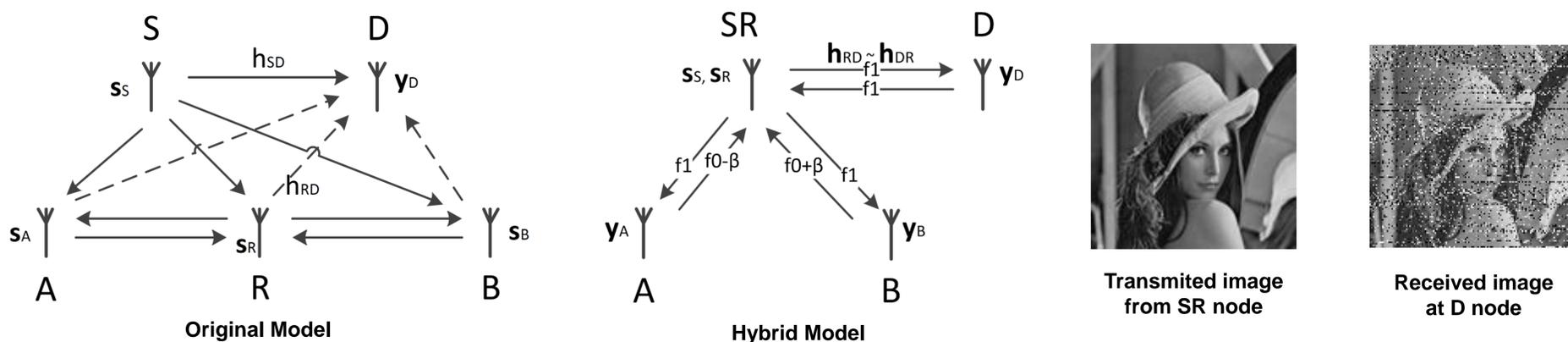
Two way Relay Model [3]



Joint Source-Network Coding Model [3]



Cognitive Network Coding Model



References:

[1] R. Ahlswede, N. Cai, S.-Y. R. Li, and R. W. Yeung, "Network information flow", Information Theory, IEEE Transactions on, vol. 46, no.4, pp. 1204-1216, 2000.

[2] Pouya Ostovari and Jie Wu, "Security and Privacy in Cyber-Physical Systems: Foundations, Principles and Applications", Chapter 11, John Wiley & Sons Ltd, 2018.

[3] Tran Thi Thuy Quynh, Tran Viet Khoa, Ly Van Nguyen, and Nguyen Linh-Trung, "Network Coding with Multimedia Transmission: A Software-Defined-Radio based Implementation", The International Conference on Recent Advances in Signal Processing, Telecommunications & Computing, Vietnam, March 2019.