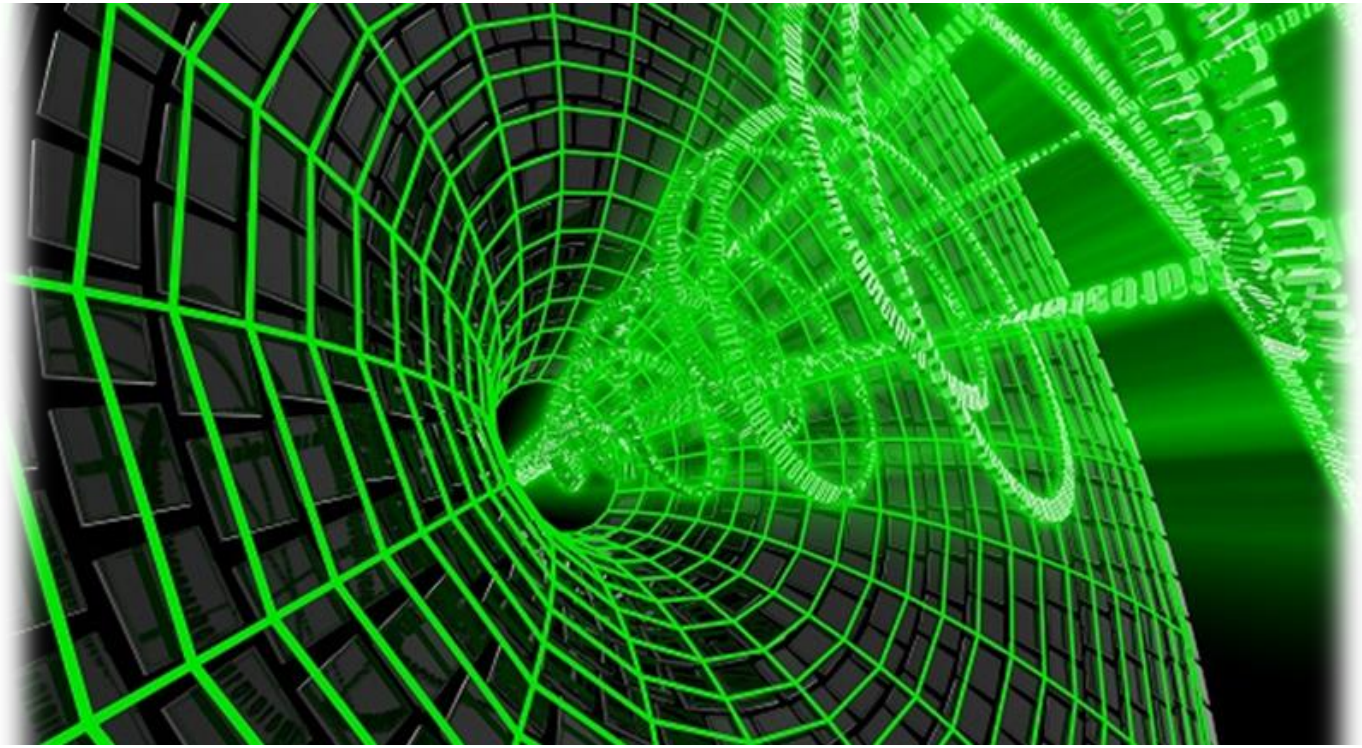
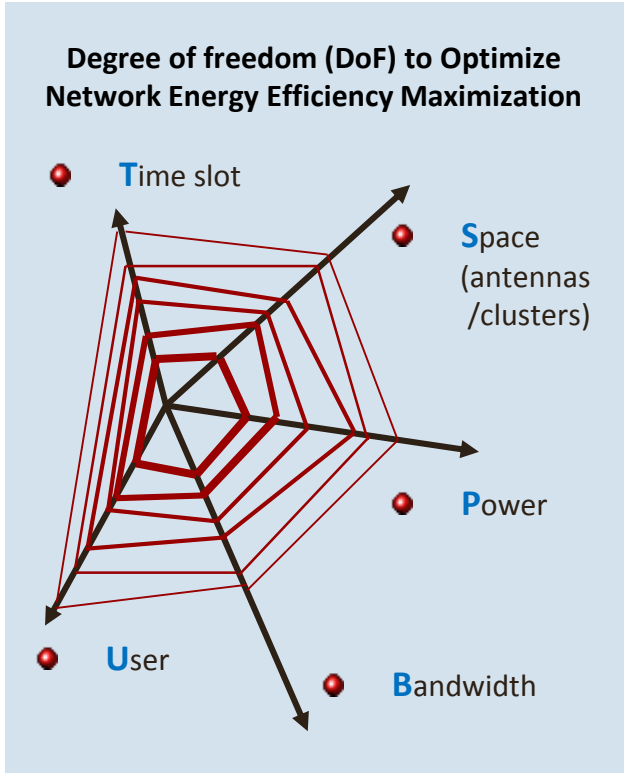
Green Transmission Technologies

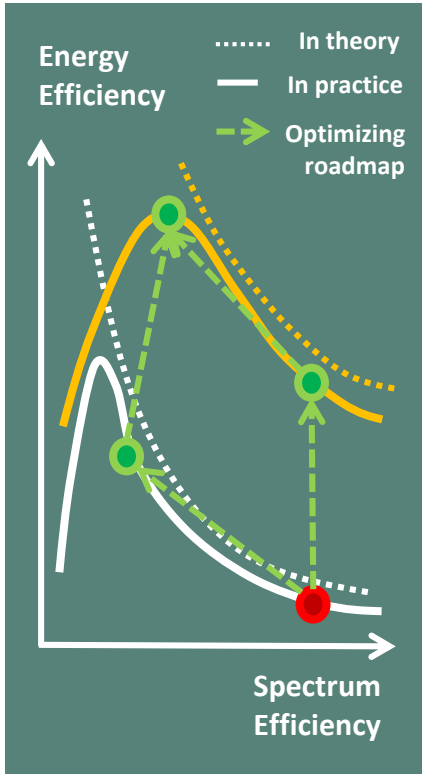


Green Transmission Technologies (GTT)

CHALLENGE AND BREAKTHROUGHS

- Fundamental tradeoff between Energy Efficiency and Spectral Efficiency
- Transmit power ≠ Total power. Need to account for baseband processing and RF chains in practical systems
- Radio resources (Power, Bandwidth, Time, Antennas) shared by a large number of users
- Interference degrades both energy and spectral efficiencies



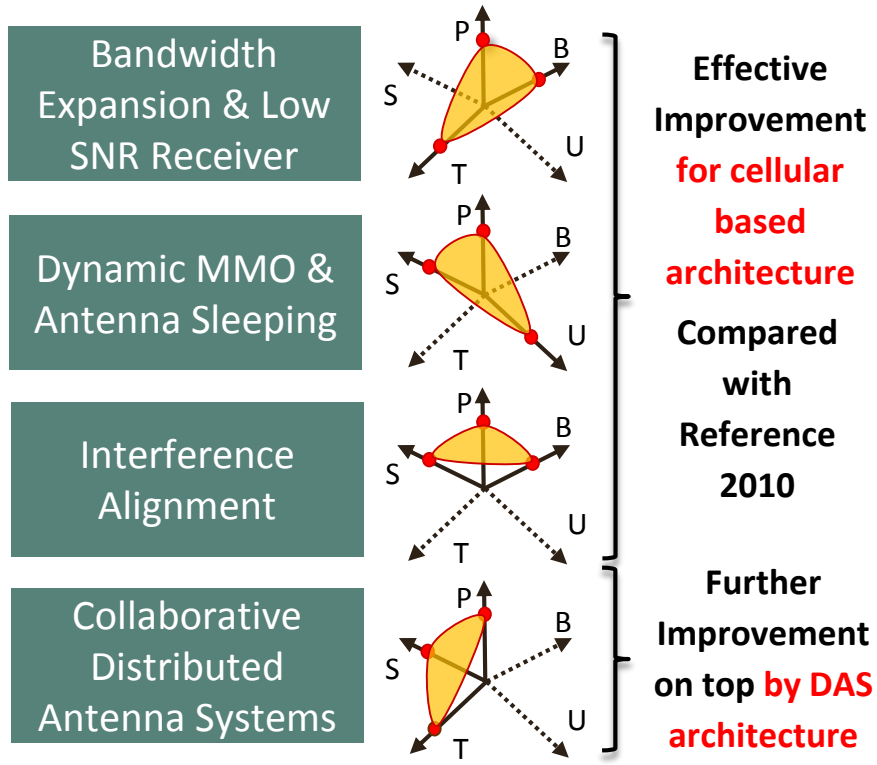


Optimization of Air Interface Resources Required for Maximum Energy Efficiency

Green Transmission Technologies (GTT)

KEY ACCOMPLISHMENT AND RESULTS

- Key Technologies being investigated
  - BW expansion and low SNR receivers
  - Dynamic MIMO + Antenna Sleeping
  - Interference Alignment
  - Collaborative Distributed Antenna System
- Complex optimization and smart integration required of PHY and MAC layer technologies
- System level simulations for maximum energy efficiency and optimal resource assignment



Energy Efficiency Improvement between 5200x and 7300x over 2010 Scenario and Further Gains are Achieved when Coupled to BCG Architecture