

Wireless Protocol Design

Protocol Name:

Team Members:

Your semester long project is to design a wireless protocol from scratch. To help you decide on requirements and specific factors, you will need to fill out this page explaining the application selected for your protocol, as well as several of the design constraints and considerations that the given application will impose on your design. These are more theoretical than practical, as regardless of your choices here you will use an SDR to develop your protocol, meaning power, range, and speed are all constrained by the SDR. However, it demonstrates that your protocol is well thought out and would be useful in a real-world application.

Application:

(I.e. what purpose does this protocol serve? Who would use it, and what type of device?)

Priorities:

(What is most essential about your wireless protocol? What does it need to be able to do?)

Trade-offs:

(What is least essential to your wireless protocol? Where will you make sacrifices if you struggle to keep your priority requirements?)

Wireless Protocol Design: Decision Matrix

Since all the development you will do will be on an SDR, many of the design decisions and constraints are “built in” to your choice of SDR. However, there are still many pieces of your protocol that aren’t decided yet. Below you will find a decision matrix that lists several considerations that still need to be decided upon when developing your wireless protocol.

PHY Layer Decisions		
Pulse Shaping Method		
Modulation Scheme		
Error Detection		
Error Correction		
Carrier Frequency		
Full/Half Duplex		
LINK Layer Decisions		
Framing		
Header Values		
Error Handling		
Addressing		
Packet Length Constraints		
Handshake / Acknowledgement Process		
MIXED Decisions		
Multiple Access Control		
Synchronization & Framing		
MCS usage	Available Schemes	
	Indication of Scheme	