**BTS Challenge**

Design a mechanism to allow multiple cell-phone towers to communicate with each other.

Each cell-phone tower antenna (A) can transmit only on certain frequencies (F1, F5 etc.).

Also, every tower can only “send” or “receive” at one time. It cannot simultaneously do both.

The mechanism should ensure the discovery of neighbors and the common frequency band which

can be used to communicate. Once the towers have achieved the capability to communicate with its select neighbors, further communication would be driven based on user input. A bit-stream is taken as user input by a particular tower with a particular destination. The correctness of the bit-stream is verified at the destination.

Develop a mechanism between towers to communicate and incorporate statistics to reflect successful transmission, throughput, losses and retransmission details. Factor-in a lossy medium of communication between the towers, factor-in drops, errors and deal with timeouts and retransmissions.

Provide a mechanism to simulate various conditions.

**Input: tower.txt**

A file with following contents:

A1: F1,F3

A2:F5,F6

A3:F1,F5

Etc. A1:F1,F3 – Represents that tower A1 can communicate in frequency F1 and F3

During demo, explain the rationale behind design choice.