One-Way Ranging

- One aerial tag set to receive-only

- Multiple base stations

- One Reference Base Station hosting the master clock - periodically sends a timing synchronization message

Start-up phase

- RBS sends a start-synchronization message to all base stations and tag (in our implementation tag is still on the ground and can send pong messages verifying data reception)

Localization phase

- Tag is set to receive-only and moving

- Base stations remain stationary and continue to receive and transmit

- RBS continues to send time synchronization messages

- Tag locally calculates its position based on ToF calculations using its clock (synchronized from time sync messages) and localization signals from all base stations

Notes:

- Offsets are integral to localization calculations (crystal clock, receiver/transmitter latency, etc)

- Matlab can be a very useful simulation resource for designing the localization algorithm (see the MATLAB folder)