Team 4 - Check-Points

First Check-Point: 5/10/16

Deliverables:

1. Construct base platform and skirt
    a. LOBBYIST must be: battery powered, able to hover for at least 30 sec
2. Establish radio communication
    a. PAC should be able to pair with LOBBYIST and turn ON/OFF lift fan and thrust fans (no steering required)
3. Finalized Altium schematics, current statecharts & images of CAD
    a. Circuits can be in breadboard state at this point

Test Plan:

For deliverable #1:

1.1 Place untethered LOBBYIST on the ground, turn power ON
- ❏ LOBBYIST must not hover at this point

For deliverable #1 & #2:

2.1 Turn PAC power ON, request pair (broadcast) with LOBBYIST's unique ID
- ❏ LOBBYIST must give indication of successful pairing
- ❏ Hover fan must turn ON

2.2 PAC must remain in control of LOBBYIST until PAC decides to unpair
- ❏ PAC must be able to turn lift fan and thrust fans ON/OFF using any input method

For deliverable #3:

3.1 Written deliverables
- ❏ Schematics, statecharts, and CAD images should be in team folder

Second Check-Point: 5/16/16

Functionality (in addition to First Check-Point):

1. Full communication protocol implemented with PAC and LOBBYIST
    a. LOBBYIST must have hovering and steering mechanisms installed
    b. LOBBYIST must have electromechanical indication that it is searching for controlling interest
2. PAC should be able to control LOBBYIST using all three unique sensing modalities
    a. PAC form factor should represent (at least in prototype state) final desired version
3. LOBBYIST should be able to move a lawmaker
4. Electronics hardware:
    a. All circuits used in the PAC to demonstrate functionality must be on solderable protoboards, or embedded into the PAC form factor by this point
    b. All circuits used to demonstrate functionality on the LOBBYIST must be on solderable protoboards by this point (any functionality not required for this check-point may be on breadboard, e.g., debugging LEDs, DMC)

Test Procedure:

For deliverable #1:

1.1 Power ON PAC and LOBBYIST

- ❏ LOBBYIST should give electromechanical indication that it is searching for controlling PAC

1.2 Pair PAC with LOBBYIST using communications protocol

- ❏ LOBBYIST should indicate successful pairing & should begin to hover

For deliverable #2:

2.1 A member of the team will engage the PAC in its intended use case

2.2 Person controlling the LOBBYIST must must be able to wirelessly generate the following commands using the PAC:

- ❏ Move forward
- ❏ Move in reverse
- ❏ Turn left
- ❏ Turn right
- ❏ Turn hover fan OFF/brake

For deliverable #3:

3.1 Place LOBBYIST at one end of the field with several lawmakers in its path

3.2 PAC handler must maneuver LOBBYIST to push a lawmaker

- ❏ LOBBYIST must move at least one lawmaker from one end of the field to the other using as much time as needed

For deliverable #4:

4.1 Electronics hardware

- ❏ Verify that all circuits used to demonstrate functionality for current checkpoint are on solderable protoboards

Project Preview: 5/19/16

Functionality (in addition to Second Check-Point):

1. LOBBYIST must use credential badge to determine which hovercraft number it is
2. LOBBYIST should have a Display of Memory and Commitment (DMC) and must:
    - Be able to indicate which team is under control (Red/Blue)
    - Be able display to the audience an indication of the amount of time remaining until current PAC control time expires
    - Contain an electromechanical display indicating that communication with the PAC is currently active
3. PAC must be in final desired form factor
    - PAC must have method of choosing LOBBYIST (1-4)
    - PAC should display to the operator an indication of active communication with LOBBYIST
4. Interoperability between at least two team's LOBBYIST and PACs will be demonstrated
5. Electronics hardware:

- All electronics must be on solderable protoboards or embedded by this point

Test Procedure:

For deliverable #1:

1.1 Turn ON PAC and LOBBYIST

- ❏ LOBBYIST should indicate searching for pair electromechanically
    - ❏ No team indication should be given at this point

1.2 Pair PAC with LOBBYIST using communications protocol

- ❏ LOBBYIST gives indication of which number it was assigned using credential badge

For deliverable #2:

2.1 DMC requirements (upon successful pairing):

- ❏ LOBBYIST should indicate which team has control (Red/Blue)
- ❏ LOBBYIST should give indication to audience of the amount of time remaining until PAC control expires
- ❏ LOBBYIST should electromechanically demonstrate that communication with the PAC is currently active

For deliverable #3:

3.1 Person controlling PAC should use it in its full intended use case and form factor

- ❏ PAC flippers are placed over hands and helmet over head

3.2 PAC requirements (upon successful pairing)

- ❏ PAC must be able to choose LOBBYIST with correct badge (1-4)
- ❏ PAC must have method of displaying active communication with LOBBYIST

For deliverable #4:

4.1 A member of the team should be able to navigate the LOBBYIST using the PAC's input modalities and induce a lawmaker to pass through a revolving door

- ❏ Repeat test procedure with two other teams' PAC and LOBBYIST (lawmaker does not have to pass through revolving door for successful demonstration)
    - ❏ Operator must be able to steer the LOBBYIST left/right/forward using the PAC

For deliverable #5:

5.1 Electronics hardware

- ❏ Verify that all circuits are on solderable protoboards