ROV Game Playtest

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MI 841 ✦ Epic Quest 3

Purpose

Evaluate the usability of the Build Lab section of the ROV Game:

- Are the tools intuitive enough to figure out?
- Do the sound effects and music help?
- Do users have enough direction on what to do next?
- Is this something they want to use?

Product Evaluated

The ROV Game (working title) is an educational game/simulation for middle and high school students to design and pilot Underwater Remote Operated Vehicles.

It is Peter Guenther's Master's Project in MSU's Game Studies and Design program. Its Build Lab is about 75% done and was the focus of this study.
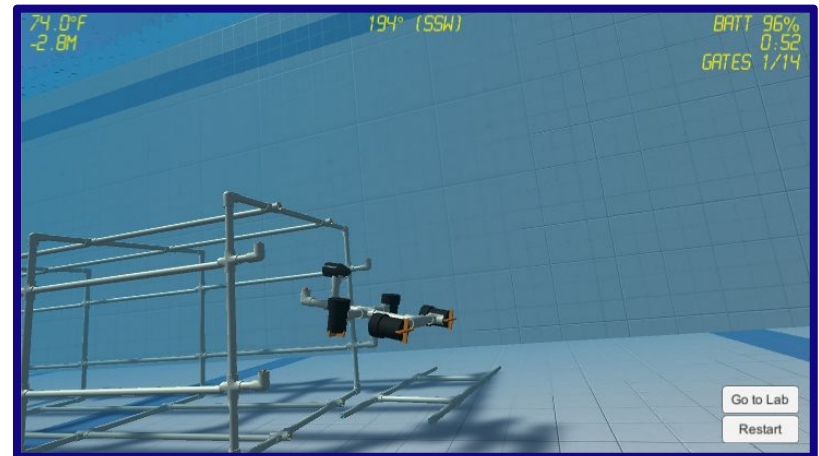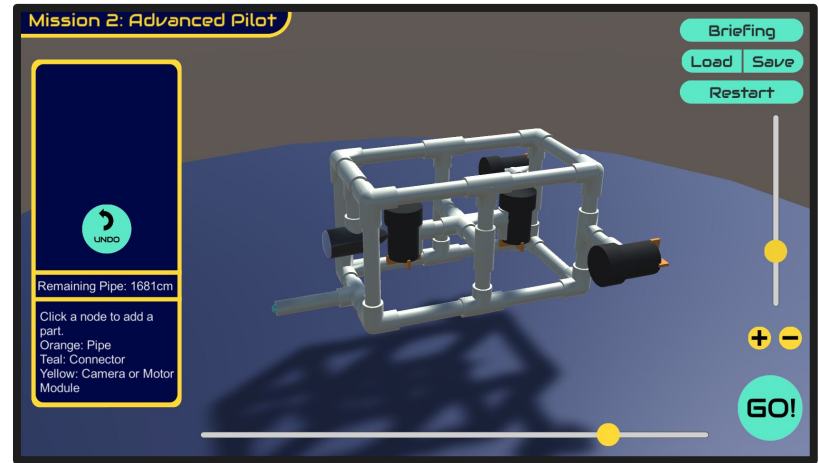
Product Evaluated

In the Build Lab, players create an ROV out of PVC pipes and fittings along with motor and camera modules.

It has a node-based construction system with a parts palette and prompts on the left side and sliders to control the camera view.
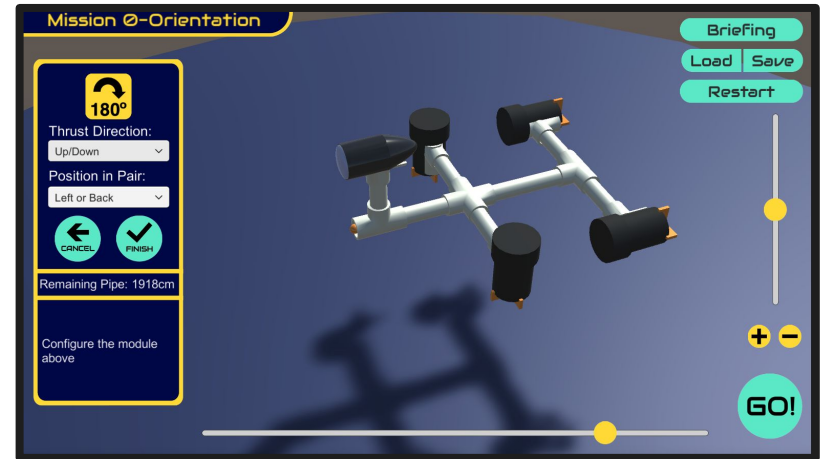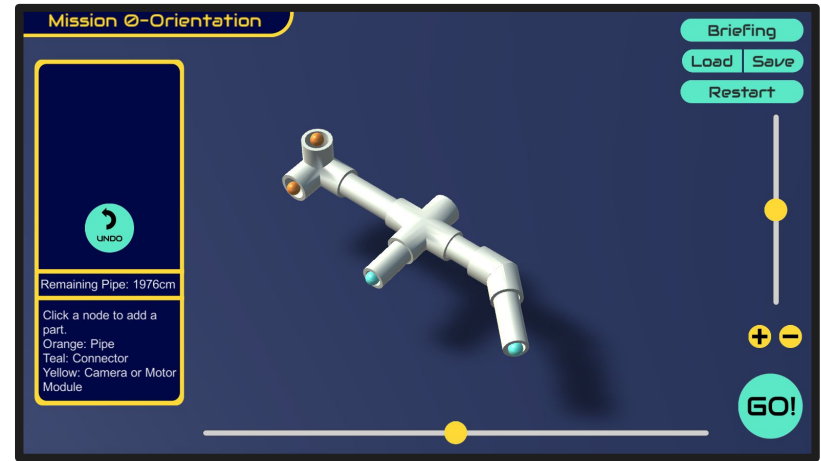
Sample

While the target audience is middle and high school students, to avoid using minor subjects this study selected 3 adults with recent high school robotics team experience.

| Pseudonym	Age Range	Gender	Connection to Robotics
Coach Chuck	Late 30s	Male	Non-ROV high school robotics coach
Coach Cody	Late 40s	Male	High school ROV & robotics coach
Alum Allen	Early 20s	Male	Recent graduate from non-ROV high school robotics

Observations
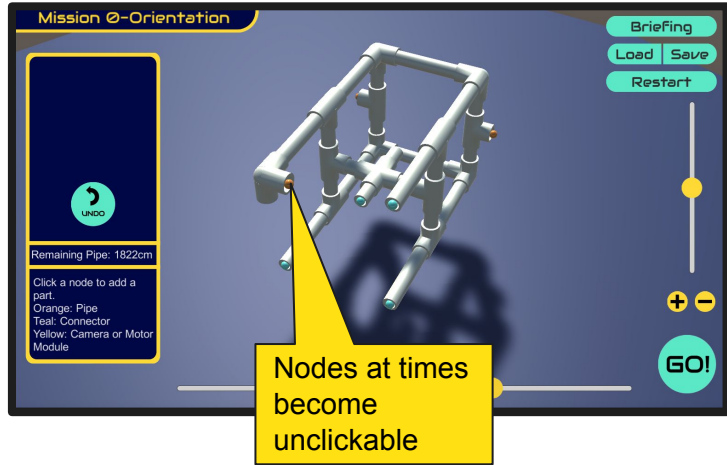
Description:

- Sometimes nodes don't respond to clicks
- For one user after saving, no node would respond for a prolonged period

Severity: SERIOUS

Recommendation:

- Find root cause of bug and remediate

Observations
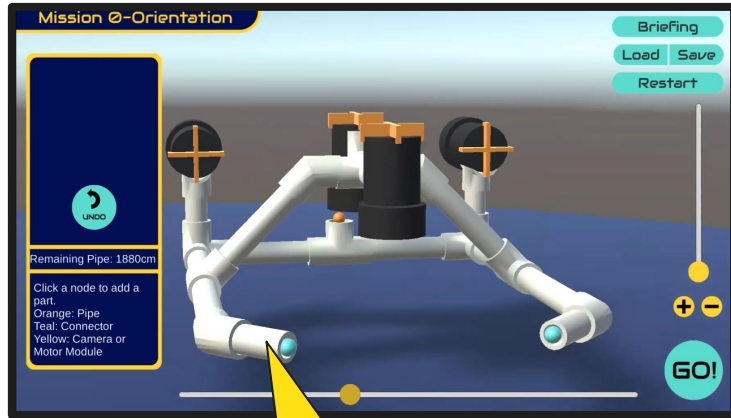
Users want to edit pipe lengths after placement without undoing and replacing
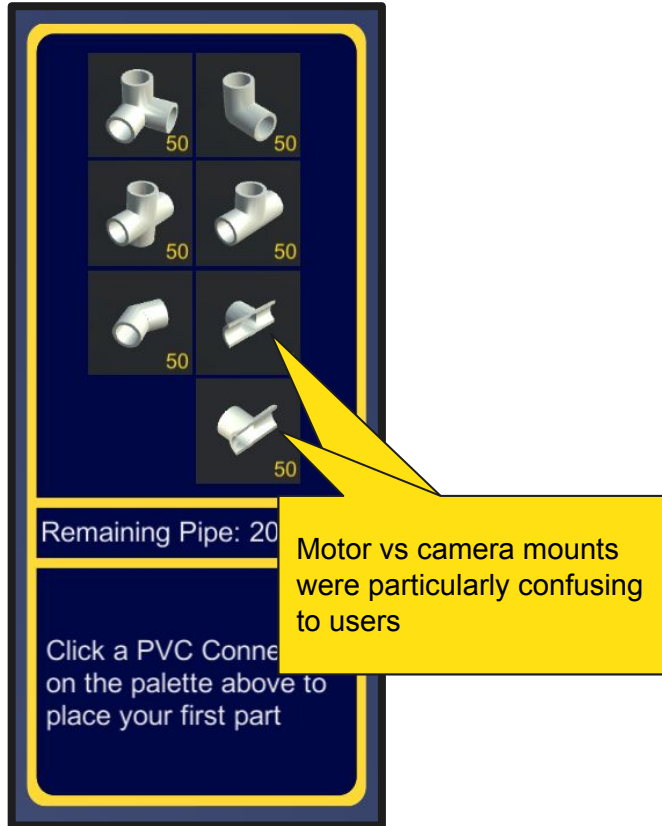
Description:

- Every user wanted to be able to click and edit pipe lengths after placement
- 2 out of 3 users wanted to rotate a fitting after placement

Severity: SERIOUS

Recommendation:

- Add feature for user to click on already-placed parts and edit
  - Length for pipes
  - Rotation for fittings
  - Delete

Observations

Motor vs camera mounts were particularly confusing to users

Description:

- It was very difficult for users to tell what the camera and motor mounts were in the Parts Palette
- Every user mentioned wanting mouseover tooltips

Severity: **SERIOUS**

Recommendation:

- Add mouseover tooltips to all parts in Parts Palette

Observations

The Position in Pair drop-down was especially confusing with the "Right or Forward" wording.
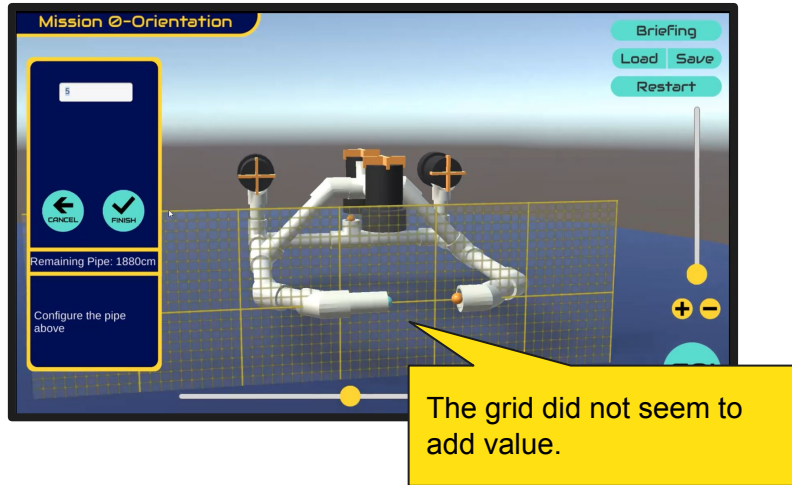
Description:

- The motor setup drop-downs were confusing initially to every user
- Every user was able to use them successfully, however.
- User reaction was mixed when asked to compare this to the Motor Setup Wizard prototype. Some would prefer it, others would rather stick to this.

Severity: MEDIUM-SERIOUS

Recommendation:

- Fix wording on Position in Pair drop-down; should say "Right or Front" not "Right or Forward"
- Do further testing of Motor Setup Wizard prototype and consider implementing here.

Observations
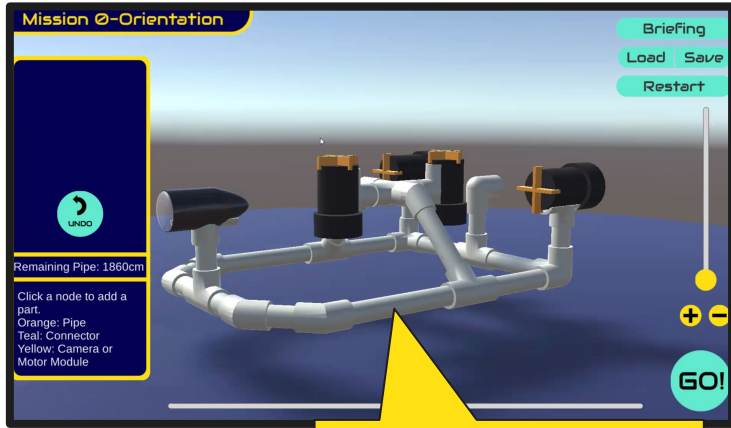

The grid did not seem to add value.

Description:

- The length grid's appearance was off-putting to one user and not particularly helpful to any of them

Severity: MEDIUM-SERIOUS

Recommendation:

- Clean up appearance–more transparency, higher-quality image
- Consider removing the grid entirely or including an option to show/not show

Observations

Mission 0-Orientation

Briefing
Load Save
Restart

UNDO

Remaining Pipe: 1860cm

Click a node to add a part.
Orange: Pipe
Teal: Connector
Yellow: Camera or Motor Module

GO!

Provide a parts list and build instructions of finished ROV
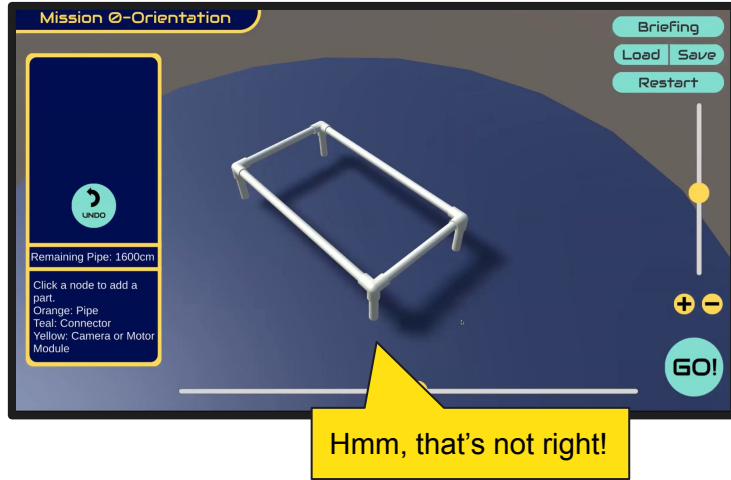
Description:

- Both coach participants saw an opportunity for additional features:
  - Parts list/Bill of Materials
  - Build instructions
  - Build animation

Severity: MEDIUM

Recommendation:

- Implement a parts list export or copyable parts list
- Allow user to export a picture of their design
- Export a GIF of the construction or add a feature to step-through the build after completion
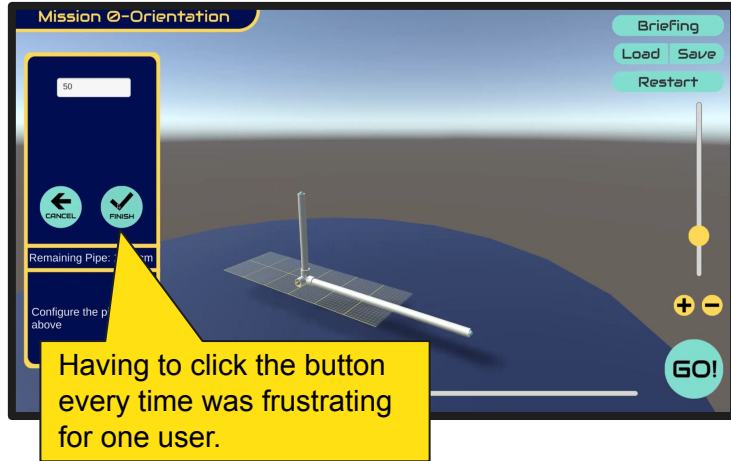
Observations

Description:

- For one user, when the Save completed, the ROV repositioned through the table
- Reloading it moved it back to a workable position, which is why this issue isn't rated more seriously

Severity: MEDIUM

Recommendation:

- Locate root cause and remediate

Observations

Having to click the button every time was frustrating for one user.

Description:

- One user didn't like having to click the Finish button after every pipe and fitting
- He suggested that if the user clicks elsewhere on the screen, the builder should know to move on

Severity: MEDIUM

Recommendation:

- Scope how difficult it would be to move on without the Finish button and implement if feasible

Observations
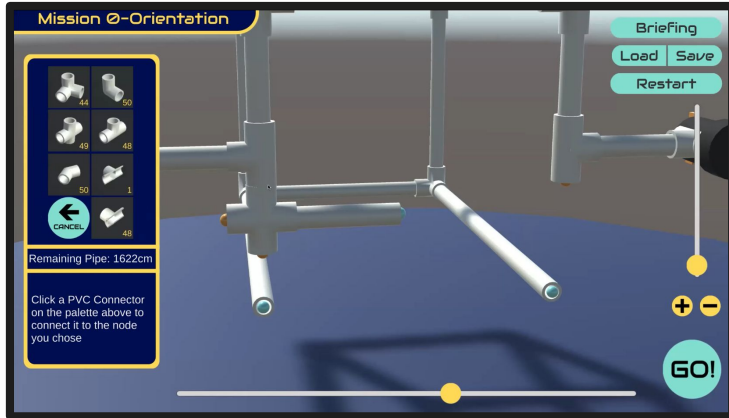
Description:

- Every user mentioned a desire to click-drag the mouse with either the mouse wheel or the right button to change the camera angle, rather than using the sliders
- Mouse wheel to zoom was also mentioned

Severity: MEDIUM

Recommendation:

- Investigate feasibility of click-drag camera controls and mouse-wheel zoom
- Implement if it's a reasonable lift

Observations
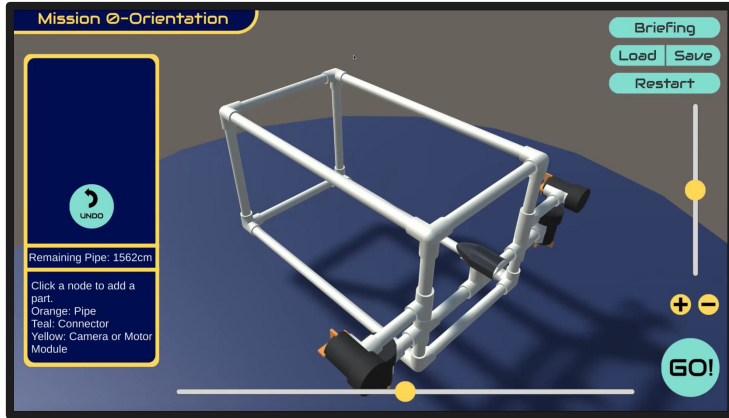
Description:

- One user created a very front-heavy ROV which was difficult to pilot
- Even when the flotation tuning step is implemented, some designs will need more than just floats
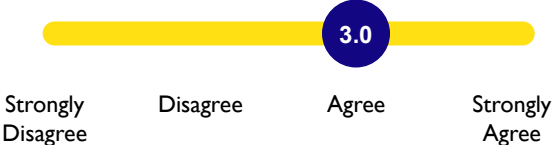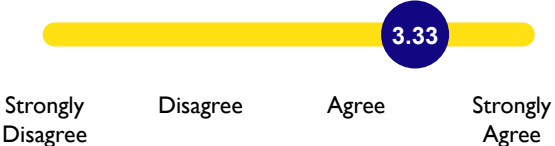
Severity: MEDIUM

Recommendation:

- Include the ability to add ballast to the frame in the flotation tuning step
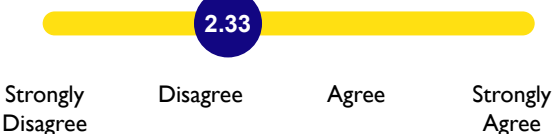
Post-Observation Survey Results

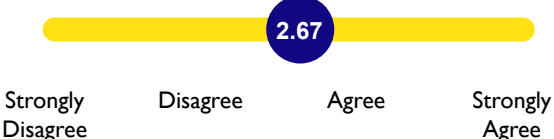The Build Lab in the ROV Game was easy to use.

3.0

Strongly Disagree | Disagree | Agree | Strongly Agree

The Build Lab in the ROV Game was attractive.

3.33

Strongly Disagree | Disagree | Agree | Strongly Agree

I knew what to do next at all times in the Build Lab.

2.33

Strongly Disagree | Disagree | Agree | Strongly Agree

Sometimes I didn't know what I wanted to do next in the Build Lab.

2.67

Strongly Disagree | Disagree | Agree | Strongly Agree

Sometimes I knew what I wanted to do, but wasn't sure how to use the Build Lab to do it,

2.67

Strongly Disagree | Disagree | Agree | Strongly Agree
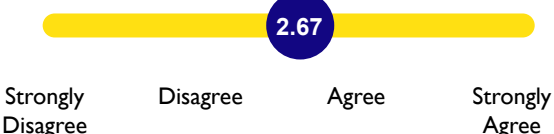
Post-Observation Survey Results

The sound effects provided helpful feedback in the Build Lab.

3.33

Strongly Disagree   Disagree   Agree   Strongly Agree
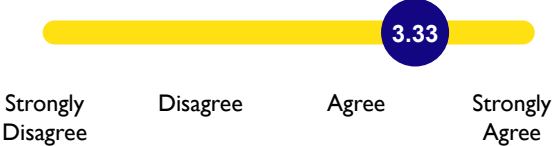
I enjoyed using the Build Lab.

3.67

Strongly Disagree   Disagree   Agree   Strongly Agree
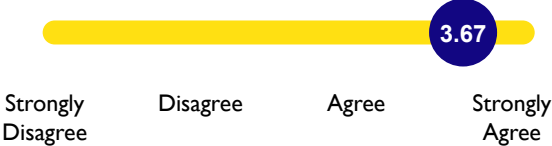
The music set a good atmosphere in the Build Lab.

3.33

Strongly Disagree   Disagree   Agree   Strongly Agree
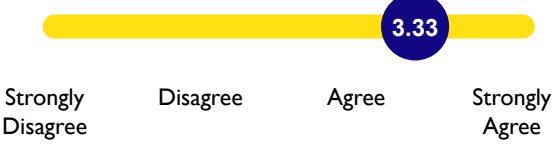
Overall, this looks like a game I would want to spend more time playing.

3.67

Strongly Disagree   Disagree   Agree   Strongly Agree
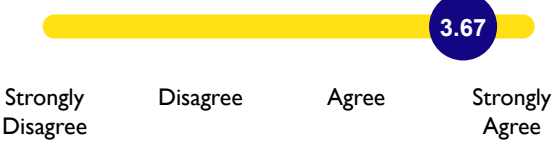
Post-Observation Survey Results

What did you like about the Build Lab?

Fun concept. I like that I can free-form build something from scratch. Seems like the options are limitless which can lead to some very creative builds.

Love the ability to prototype the ROV and see it in real time. It was nice that I was able to manipulate the individual parts to fit the angle that I wanted to use. It was also nice that I was able to mount both motors and cameras on the ROV and use these (like the camera) as the vantage angle seen while driving.

The HUD, although somewhat confusing with word choice, let me edit the pipes and engines exactly how i wanted!

What did you dislike about the Build Lab?

Limited viewing angles. Unable to edit individual components. Initially unclear how the motors worked.

Missing the ability to edit pieces after they have been placed on the ROV. Would love to be able to edit the length or corner piece after the fact. Would also love the ability to rotate the ROV in 3D with the right click of the mouse. Starting background music was too loud and distracting. Would love the ability to change the volume while in the build portion of the platform. [Note: the volume can be changed in the build portion and this user did.]

The rotation camera was a bit jittery, and I didn't understand the thruster wording for how it affected my controls very well

Post-Observation Survey Results

Are there any features you'd like to see added to the Build Lab?

Refer to feedback during Zoom.

As stated above, would love to be able to edit post build. Also, would love to be able to export the image of the completed build. So far, this looks great and has tons of promise.

If I could name my save files that would be fun!!!

Prioritized List of Recommendations

1. Find root cause of node click responsiveness issues and fix.
2. Allow user to click parts already in the build and delete, rotate, and edit length.
3. Add mouseover tooltips to all parts in Parts Palette.
4. Replace motor setting drop-downs with Motor Setup Wizard.
   - Fix Right/Forward wording if the Motor Setup Wizard isn't feasible.
5. Clean up sizing grid and include an option to turn it off.

6. Add export features:
   - Parts List
   - Design Snapshot
   - Instructions/Animation
7. Correct repositioning errors upon save.
8. Remove the Finish button if possible.
9. Replace camera sliders with mouse camera controls similar to CAD software.
10. Include the ability to add ballast in Flotation Tuning.
11. From survey comments: Add ability to name ROV designs.