

Heuristic Evaluation of [Let's Dance]

1. Problem

Let's Dance is an application that lets choreographers set and edit formations and transitions. It can then export a video of the final blocking and view the blocking in AR, allowing them to visualize the dancers in a 3D space.

2. Violations Found

1. H4 Consistency and Standards / Severity 1 / Found by: A, C

The mechanism for going back to the homescreen on the "Name" page and the "Overview" page is different. One is a button in the top left labeled home, and one is a back arrow on the bottom of the screen. Took more issue with back buttons themselves, less so the difference.

Fix: Add a "HOME" button during the create process.

2. H10 Help and Documentation / Severity 3 / Found by: B, C, D

Uploading a song on iOS as an .mp3 is an extremely difficult and confusing task. Files are not supported as well as a computer, for example. There needs to be a clear way to get the sort of data that you are looking for.

What will the interface for choosing a song look like? Does it have to be in Apple Music or Spotify? Files? This will be a tradeoff between technical feasibility and flexibility of use. Feasibility is somewhat outside the scope of this class, but because I have heard you express interest in continuing this project beyond class, it is a point to consider.

Fix: Add some explanation of how to get an mp3 onto an iPhone, or integrate with 3rd party service

3. H3 User Control and Freedom / Severity 2 / Found by: A, C

The interface to delete dancers is fairly confusing. Tapping on already placed dancers transforms all of them into X. How do you get out of this deletion mode if you entered by accident? What if you want to move a dancer instead of delete?

Fix: Add a button for "deletion mode" which makes it easy to toggle and clear what the outcome will be

4. H5 Error Prevention / Severity 4 / Found by: A, C, D

After creating your initial formation, you exit thinking that everything is good to go. However, when you go to make a transition, it notifies you that you need to label your dancers, something that was not an option when creating the formation.

Fix: Make a way such that you can label the dancers from the create page itself, instead of getting the false sense of completion after saving the formation. OR Automatically assign a number to each dancer, and give the option to manually assign names later.

5. H4 Consistency and Standards / Severity 4 / Found by: A, C, D

Closely linked to the previous violation, how does labeling the dancers work? Does this need to happen for all of the formations, or only the first one? Is the reason why this comes after the first create page because you need some baseline of people to label?

Fix: Make the process of labeling dancers more clear. It feels like a late addition to the functionality of the app, probably find a way to make it more fundamental to the workflow.

6. H6 Recognition over Recall / Severity 4 / Found by: A, B, C, D

There is potential for confusion when working with certain combinations of dancers. If some of them have the same initials, it can be difficult to keep track of which is which, which places additional mental load on the user

Fix: Consider using unique colors, numbers, or some other identifier, along with initials for each of the dancers to give an even stronger way to differentiate between dancers.

7. H10 Help and documentation / Severity 3 / Found by: B, C

It is unclear why the preview functionality needs to be in portrait mode, instead of landscape. Is there a design choice of why this is the case? In many usage scenarios, having the phone in landscape would provide a much larger field of vision and be very helpful

Fix: Consider explaining the use of the vertical FOV, or enable horizontal to use more real estate.

8. H4 Consistency and standards / Severity 1 / Found by: C

When clicking on formation 2, it displays an edit screen for a different formation (it shows the original inverted trapezoid, instead of the inverted pentagon). I think this is just a mistake in wiring up the InVision prototype, but is a confusing transformation nonetheless.

Fix: Link to the proper formation in the prototype.

9. H3 User control and freedom / Severity 3 / Found by: C

No good way to escape the dialogue when giving a name to a dancer. Should have a way to escape re-labeling a dancer if it was an accidental action

Fix: Provide a back button during the label dancer phase.

10. H3 User control and freedom / Severity 4 / Found by: C

It is not immediately clear how to edit the name of a single dancer. Does that require re-labeling all of the dancers? Or can going to the label screen and selecting only one overwrite all of the others?

Fix: Make it more clear how to edit a single dancer.

11. H2 Match between system and the real world / Severity 4 / Found by: C

When adding transitions between different formations, the paths drawn are linear. For some use cases, this is all good, but very often dancing requires more intricate transitions. Is there a way to draw more complex paths, that also have some sort of rigidity to them?

Fix: Make it clear how to generate more complex formations by drawing the individual paths for each of the dancers themselves

12. H7 Flexibility and efficiency of use / Severity 2 / Found by: C

This might be more of a feature add for advanced users. Having a way to automatically extrapolate potential paths, given the symmetry of a formation, would be a strong addition for power users. For example, in a symmetric formation, it is likely that pairs of dancers on the opposite sides of the axis of symmetry may have the same movements, so it would make sense to auto-suggest the same path for the undrawn pair (also would make cleaner overall)

Fix: Have some way to probabilistically extrapolate possible paths for dancers

13. H8 Aesthetic and minimalist design / Severity 1 / Found by: C

Have a slider for selecting the number of seconds for each transition, would make it simpler and easier than having a keyboard

Fix: Think about how the input would be easiest for the user, especially with respect to fractions of a second as well.

14. H3 User control and freedom / Severity 2 / Found by: C

There is no clear way to remove a mistakenly placed transition. The only way that could work right now is to go into the transition itself and remove each of the individual movements (also something that is not clear how to do)

Fix: Have a way to delete entire transitions on either the main flow screen or the transition page itself

15. H2 Match between system and the real world / Severity 3 / Found by: C

It is not clear what happens when I click on the bottom bar of the screen what action I am performing. It might be more clear in a real model, where I can actually drag stuff around, but in this iteration it is slightly spooky and unclear of what action I am performing.

Fix: Make it more apparent how the bar represents the data, and make the message more clear on the implications of making an edit

16. H8 Aesthetic and minimalist design / Severity 2 / Found by: A, B, C

There is a small detail of Frame1 and Frame 2 on the edit transition page. However, it is unclear what role those play. Is it a toggle-able button, where you can opt to select one or the other? Or is it a representation of which dots are which? I think that making the colors significantly different would contribute to making the purpose of these words more clear.

Fix: Make the purpose of the frames in the corner more clear.

17. H10 Help and documentation / Severity 3 / Found by: A, B, C

It is unclear how to accomplish the second task, given the UI. It would be helpful to have some visualization of the flow of the music itself, to know where the transitions go with respect to the formations. I detail more about this in my recommendations paragraphs

Fix: Make the syncing of the music and the actual formations/transitions themselves more clear. Potentially use fine-grain scrubbing with graphic of sound waves.

18. H6 Recognition rather than recall / Severity 1 / Found by: A, D

In the Home screen, under All, there is no apparent sorting mechanism. This forces the user to remember where every choreography is located.

☒*Fix: Sort the choreo titles alphabetically.*

19. H2 Match between system and the real world / Severity 1 / Found by: D

Your app asks users to “upload” a song. Actually, nothing is being uploaded—this is a technical term that is not being used accurately, and can be confusing to first-time users. ☒

Fix: Change “upload” to “choose” or “select.”

20. H2 Match between system and the real world / Severity 1 / Found by: A, B, D

Each formation is referred to as a “frame.” It is unclear what “frame” means in this context, or how it is distinct from a “formation.”

Fix: Change “frame” to “formation.”

21. H2 Match between system and the real world / Severity 2 / Found by: D

The formation design interface assumes an infinite stage, but in reality, often stage is a constraint for where people can move.

Fix: Allow options to constrain the stage.

22. H1 Visibility of system status / Severity 1 / Found by: D

It’s hard to tell which of the three editing tools is selected. I’m not sure if the purple coloring on the dancer-dot is because it is the active tool or because it lays a purple dot.

Fix: Reduce opacity of inactive tools.

23. H5 Error prevention / Severity 3 / Found by: A

During the creation of a project, at the Upload a Song screen, the field looks like a text box you can type in, when in fact the desired user input is to click Upload. Users may attempt to click the text box to choose a song.

Fix: Remove the field and simply have an Upload button.

24. H4 Consistency and standards / Severity 3 / Found by: D

When editing a formation, you have both a Save and a Finish button. It is unclear why you would need both. Finish implies that the choreography is done. Also, not sure why it doesn’t auto-save.

☒*Fix: Eliminate Finish and Save buttons. Save is replaced by auto-save. Finish can be replaced by a back arrow in the top-left corner.*

25. H10 Help & Documentation / Severity 3 / Found by: B

At the Formation Setting screen, the user is expected to understand the different settings on the sidebar (i.e. adding circles is the same as adding dancers). However, I still don’t understand what the squiggly line nor the dotted rectangle mean. Moreover, the user is expected to hold down a user to delete them when I was hoping to drag a dancer to a trash icon.

Fix: Create a tutorial mode for a user’s first project explaining each setting available.

26. H8 Aesthetic and minimalist design / Severity 1 / Found by: D

When drawing in transition paths, the dark purple dots and gradient have insufficient contrast from the dark background. It is hard to see without straining the vision.

Fix: Make your dark purple lighter; change the gradient of the path such that it does not become dark until right before it reaches the next formation ghost.

27. H2 Match between system and the real world / Severity 2 / Found by: D

☒ Transition length is set in seconds. In my experience this should be in beats instead. Perhaps there are dancers who prefer time rather than beats though.

Fix: Give user the option to choose between time and beats for transition length.

28. H4 Consistency & Standards / Severity 2 / Found by: A

It is unclear if the play button in the Overview screen and the play button in the Preview screen will result in the same output; it seems like the Overview screen will go through the formations like a storyboard while the Preview screen will animate the transitions.

Fix: Consolidate both features to the Preview screen and allow users the option to switch between on-screen and AR previewing.

29. H2 Match between system and the real world / Severity 4 / Found by: A, D

The timeline that shows the overview of the formations implies that there are only a few formation changes throughout the whole song. Looking at dance practice videos online there can be even 7 or so formation changes in the first 30 seconds of a song, which would quickly overwhelm the timeline. The timeline you currently have can probably support just about 45 seconds or so of music.

☒ *Fix: Make the timeline scrollable so that it's easy to see multiple formations in a longer sound sample.*

30. H1 Visibility of system status / Severity 2 / Found by: A, D

In editing formation view, the location of the audience is labeled, but difficult to see. Actually, it took me more than an hour of interacting with the prototype before I noticed it. ☒ ☒

What's the natural view for a choreographer to set formations? Is the audience in the top or bottom? Perhaps a choreographer might want to place the audience at the bottom of the editing screen to get a better feel for how the audience would see the formations.

Fix: Add a gradient or other visual differentiator to the background to make it more clear that there's important information (location of the audience) there. Make location of audience adjustable.

31. H5 Error prevention / Severity 2 / Found by: A

In the Overview screen, the formation flags are small and seem to signal the ability to change the timing of formations. If this is the case, then the formation flags lack a level of precision required to scrub through the timeline accurately; if this is not the case, then the user might try to switch flags and not receive any output to dissuade them from doing so.

Fix: Make the flags bigger if this is the case; alternatively, if they're not meant to be interaction points, perhaps remove flags entirely and use colored regions on the play bar that are numbered.

32. H4 Consistency and standards / Severity 1 / Found by: D

When previewing the video of the full blocking, Back button is right next to Share. This is an unexpected location to place a back button. This is the case for both the AR and non-AR versions of the video.

Fix: Place Back or X button in upper-left corner of screen.

33. H2 Match between system and the real world / Severity 0 / Found by: D

In the AR video, all figures appear the same size. According to perspective, this looks a bit strange.

Fix: Make the figures height-proportional depending on how far back in the stage they are.

34. H7 Flexibility and efficiency of use / Severity 1 / Found by: D

In the AR view, currently there is no way to set the distance between lines in either direction on the grid. The lines might not match to what is desired.

Fix: Enable dragging lines closer/further from each other to adjust the dimensions of the grid.

35. H6 Recognition not recall / Severity 2 / Found by: A

In the Home screen, Recent dances are represented by the (starting?) formation in that dance; however, sets are more remembered by the songs that make them, the transitions between the formations, or when these formations were created.

Fix: Consider animating the previews of the sets, or showing the cover art of the songs the set is made up of. Also add the date and time of when these sets were last modified.

36. H6 Recognition not recall / Severity 3 / Found by: A

In the AR Preview mode, there doesn't appear to be a distinction between the dancers like there is in the birds' eye view perspective, which means choreographers must remember who is who in the formations. This can get very confusing very quickly, especially since the sprites in the AR view are all the same.

Fix: Label the AR figures, or else have the option for replacing their faces with a dancer's profile, or else color them differently.

37. H5 Error Prevention / Severity 4 / Found by: A

It is unclear what the rationale is in creating the formations of dancers and whether it starts with the formations themselves or the dancers we have. Once we start with the initial Formation Setting screen, does that initial screen set the maximum number of dancers available in the dance? What happens if, for example, the first screen has 5 dancers and the second has 6, and we are currently in the Transition Path screen?

Fix: There are numerous ways to approach fixing this problem. One way is to set the number of dancers at the very beginning of the piece, and ensure that all dancers are accounted for in the formation (on-stage/off-stage, where they are, etc.). Alternatively, there could be a bank of labeled dancers we can add to a new formation, or we already start from a previous formation and drag the dancers to their new positions.

38. H3 User Control & Freedom / Severity 2 / Found by: B

While arranging formation for a dance, no way to quit without saving. Requires save, then finish currently.

Fix: Add an exit button, which brings pop up that asks to save, or use finish button for equivalent functionality.

39. H3: User Control & Freedom / Severity 2 / Found by: B

Current screen design constantly forces user to switch back between vertical and horizontal orientation, potentially disorienting.

Fix: Design vertical and horizontal versions for each screen, allowing user to simply rotate when they desire more space (as is expected with the choreographing screen).

40. H10: Help & Documentation / Severity 1 / Found by: B

“Rotate phone to view in AR” message during preview, yet selecting play button automatically turns to AR. I understand from slide 35 that this was a limiting factor but right now help message becomes confusing since play button automatically turns to AR.

Fix: Recommend play button plays in regular mode, then rotating phone changes to AR, additionally consider adding a button to toggle to AR mode in case user forgets that they need to rotate after viewing preview in normal mode for awhile since the help message.

41. H4: Consistency & Standards / Severity 1 / Found by: A, B

Search icon button in home screen on the right is fairly unfamiliar.

Fix: Move icon to right, as is standard across most apps.

42. H6: Recognition not Recall / Severity 4 / Found by: B, C

After uploading a song the song name is never shown again, and cannot be found in any details.

Fix: Add a song name in the details of a dance (perhaps on the home screen a force touch would lead to details, length, song name, number of formations, etc.). Or from home screen clicking on a dance doesn't immediately take you to choreographing and editing. Could have detail page of dance with previously listed info. Consider your use case when a dance is done and the choreographer doesn't want to immediately jump into editing (can be overwhelming, but rather view key summary points of the dance they have created).

43. H6: Recognition not Recall / Severity 3 / Found by: B

Preview mode removes all of your formation flags and transition highlighted sections to the scrubber, user needs to therefore remember approximate time rather than jumping to key formations/transitions.

Fix: Leave formation flags in during preview, but limit editing capabilities.

44. H3: User Control & Freedom / Severity 2 / Found by: B, D

Consider that a user might want to have editing capabilities in preview mode, AR might inspire editing and would want to do in place.

Fix: Add edit mode within preview.

45. H7: Flexibility & Efficiency of Use / Severity 3 / Found by: B

Creating each formation from scratch each time is a major bottleneck to choreographing (assume choreographers often reuse formations and there are many standard formations).

Fix: Have a set of premade formations, as well as ability for choreographer to create their own presets, then either build in real time or select from presets while creating a full dance.

46. H4: Consistency & Standards / Severity 2 / Found by: B

When creating a transition, play button with scrubber as well as tools completely disappear. I would expect screen to look similarly to formation creation screen.

Fix: Include scrubber with ability to click on formation flags in order to switch and create transitions, instead of currently I believe toggling in upper left from frame to frame.

47. H3: User Control & Freedom / Severity 4 / Found by: B

Uploaded song can never be changed for a dance after it is created.

Fix: Add an edit button which can change song and overall time for the dance.

48. H1: Visibility of System Status / Severity 4 / Found by: B

There is no way to view the actual overall time or current time in the scrubber.

Fix: Understand you want minimalist design but consider when scrubbing adding a current time it's at appear and disappear with touch to that section.

3. Summary of Violations

Category	# Viol. (sev 0)	# Viol. (sev 1)	# Viol. (sev 2)	# Viol. (sev 3)	# Viol. (sev 4)	# Viol. (total)
H1: Visibility of Status		1	1		1	3
H2: Match Sys & World	1	2	2	1	2	8
H3: User Control			6	1	2	9
H4: Consistency		4	2	1	1	8
H5: Error Prevention			1	1	1	3
H6: Recognition not Recall		1	1	2	2	6
H7: Efficiency of Use		1	1	1		3
H8: Minimalist Design		2	1			3
H9: Help Users with Errors						0
H10: Documentation		1		4		5
Total Violations by Severity	1	12	15	11	9	48

4. Evaluation Statistics

Severity / Evaluator	Evaluator A	Evaluator B	Evaluator C	Evaluator D
sev. 0	0%			100%
sev. 1	33%	25%	17%	58%
sev. 2	40%	33%	23%	27%
sev. 3	27%	55%	29%	18%

sev. 4	55%	44%	29%	44%
total (sev. 3 & 4)	40%	50%	29%	30%
total (all severity levels)	37.5%	37.5%	35.4%	37.5%

***Note that the bottom rows are *not* calculated by adding the numbers above it.**

5. Summary Recommendations

I think your prototype has come a long way from your paper version, and I appreciate how you have integrated users' suggestions into your InVision prototype. Overall, I think that you can make changes that will add flexibility to the blocking process. I would recommend for you to choose a choreography that you like, and walk through how you would block that using Let's Dance—many of your strengths and weaknesses will come out this way.

As far as user interface goes, the main issues I had in navigating this prototype centered around user control (and the lack of freedom it provided in some areas while I was creating formations) as well as error prevention (in which it was unclear to me whether I was approaching formation creation based on the formations themselves or a set number of people I had).

Explaining this last problem more deeply, it's unclear to me what would occur if we attempt to create transitions between two formations with a different number of dancers. As of right now, the interface prioritizes the formations, with giving actual identity to the dancers being something that happens later. In fact, the creation process appears to be:

1. Create formations
2. Label dancers in the first formation
3. Link dancers from first formation positions to second formation positions

This is fine, but it relies heavily on the choreographer remembering how many dancers are in a piece or section; as the set gets bigger, it becomes much more unwieldy to use which can lead to greater potential for errors. Considering large nodes in general and large volumes of data can definitely help in what else needs to be optimized (i.e. how sets/formations are presented in the Home screen). Additionally, assuming a choreographer is using this app heavily, they would be severely bottlenecked by having to recreate formations in the formation screen. To solve this, I would highly recommend you add capabilities to save preset formations as well as offer some starting formations for a choreographer to work off of as inspiration.

From the robustness of the tools at the user's disposal, this app is geared towards an "expert" user. So your goal should be to get a new user to expert status as quickly as possible (hence a tutorial mode in the beginning) and offering tools to support that expert user. Consider specific additions like editing formations in the AR mode, which would resolve issues like awkward spacing that may arise from designing formations entirely in the graphic representation.

And very critically, consider how music works within this app. Your flow for uploading a song is extremely handwavey at the moment and will require really diving into the technical aspect of it to find the best solution (Apple Music, Spotify, etc.). Additionally, music is pushed completely to the background in the app, where it seems to me like music is key for dance. After uploading, you never see the song name again, the beats of the song, changing the song, timing, etc. I think fine-grain scrubbing is highly necessary for this “expert” user and would urge you to consider other specific features this user might want.

Lastly, aesthetic-wise, I’m sold on the purple, and for the most part it’s super clean and eye-catching. However, be careful with some UI elements that have low contrast or visibility. Addressing some of the optimizations above will help in further removing any extraneous bits of information/decluttering each screen. I’m really excited to see this developed into a hi-fi prototype!

Severity Ratings

- 0 - don’t agree that this is a usability problem
- 1 - cosmetic problem
- 2 - minor usability problem
- 3 - major usability problem; important to fix
- 4 - usability catastrophe; imperative to fix

Heuristics

H1: Visibility of System Status

- Keep users informed about what is going on

H2: Match Between System & Real World

- Speak the users' language
- Follow real world conventions

H3: User Control & Freedom

- "Exits" for mistaken choices, undo, redo
- Don't force down fixed paths

H4: Consistency & Standards

H5: Error Prevention

H6: Recognition Rather Than Recall

- Make objects, actions, options, & directions visible or easily retrievable

H7: Flexibility & Efficiency of Use

- Accelerators for experts (e.g., gestures, kb shortcuts)
- Allow users to tailor frequent actions (e.g., macros)

H8: Aesthetic & Minimalist Design

- No irrelevant information in dialogues

H9: Help Users Recognize, Diagnose, & Recover from Errors

- Error messages in plain language
- Precisely indicate the problem
- Constructively suggest a solution

H10: Help & Documentation

- Easy to search
- Focused on the user's task
- List concrete steps to carry out
- Not too large