Project Disney

Keep the Magic Alive.

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Our Vision

Through our research we found people complaining about the lines at Disney. This is such a problem that companies have developed software to assist people in planning their days around lines.

Disney has addressed this problem to a certain degree with the FASTPASS® system. This system allows guests to scan their ticket and then come back within a certain time window to ride the ride. When their FASTPASS® appointment time comes up the guest goes to the ride and waits in the FASTPASS® line. The FASTPASS® line is shorter than the regular line so the problem of waiting is diminished but the issue of boredom in line is still there. Even with the FASTPASS® system some guests may choose to stand in line. Hence, we chose to tackle the boredom of waiting in lines with attractions. Our system will entertain and distract people while they are waiting in line so they won't realize how long have been in line.

Guests waiting in line will have a series of screens to interact with. The screens and the place where people stand in the line are decorated based on the ride the people are waiting for. When a guest walks up to a screen they will see themselves with some sort of accessory related to the ride or as a character from the ride. As an example, for a ride based on Peter Pan, guests can see themselves reflected with a pirate hat or tinker bell wings on. In another screen they might see themselves as Peter Pan or Captain Hook. When the guest sees their image with an accessory on, they can move and see the accessory move with them. When the guest sees a character, they can move and see the character imitate their actions. As a guest moves through the line they approach different screens that have different characters or accessories.

While the people are interacting with the screens, they are engaged. This distraction should keep them from being conscious of how much time they have been in line.

Predispositions

1. Waiting in long lines decreases the fun and satisfaction of visiting Disney World.
2. People go to Disney World in groups and this interaction is an important part of the experience.
3. The primary theme of Disney World is of visiting a magical place where the story comes to life around you.

Constraints

1. **The interface must support group use.** Because visiting Disney is almost always a group activity, it is important the interface allow for this interaction and not have the effect of isolating anyone.

2. **The interface should not require more than a few minutes of interaction**. Lines for rides do not move continuously. Rather, they move in intervals every time the ride restarts and a new group of people get on. The amount of time between advancements depends upon the duration of the ride. In general, the attractions in Disney World with the longest waits range from 4 to 10 minutes in length, which roughly corresponds to the amount of time people will stand in one location. In order to succeed in conveying the experience and not impede the movement of the line, a stationary interface should not require more than a few minutes of interaction per user.

3. **The interface should be accessible and transparent with no learning curve**. Because of the incredible diversity of potential users in terms of age, background and nationality, accessibility is a big issue. Combined with the time constraint mentioned above, this means that the interface must be incredibly transparent so that it can be understood by anyone in a short time, from a child to a non-English speaker.

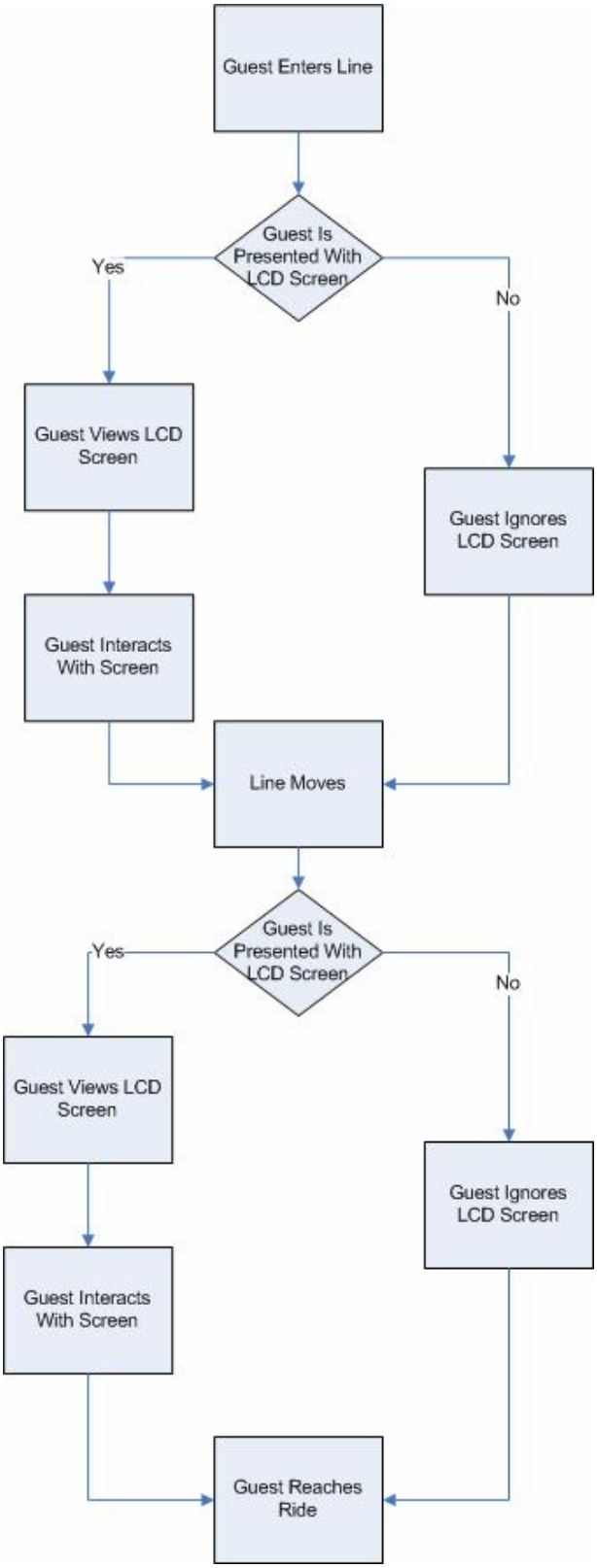
Design Message

"Keep the magic alive" The primary theme of Disney World (and especially of its central park, the Magic Kingdom) is of visiting a magical place where the story comes to life around you. We chose this design mantra because we are addressing the problem that the magic of the experience fades away while people are waiting in line for a long period. This message helps inform our design by reminding us that our goal is to always keep the user's experience engaging and full of wonder.

Functional Requirements

1. Capture attention and entertain, make the user forget they are waiting.
2. Allow the user to have fun and interact with their group
3. Build the story; immerse people in the theme or story of the ride.

Task Flow Diagram



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Personas

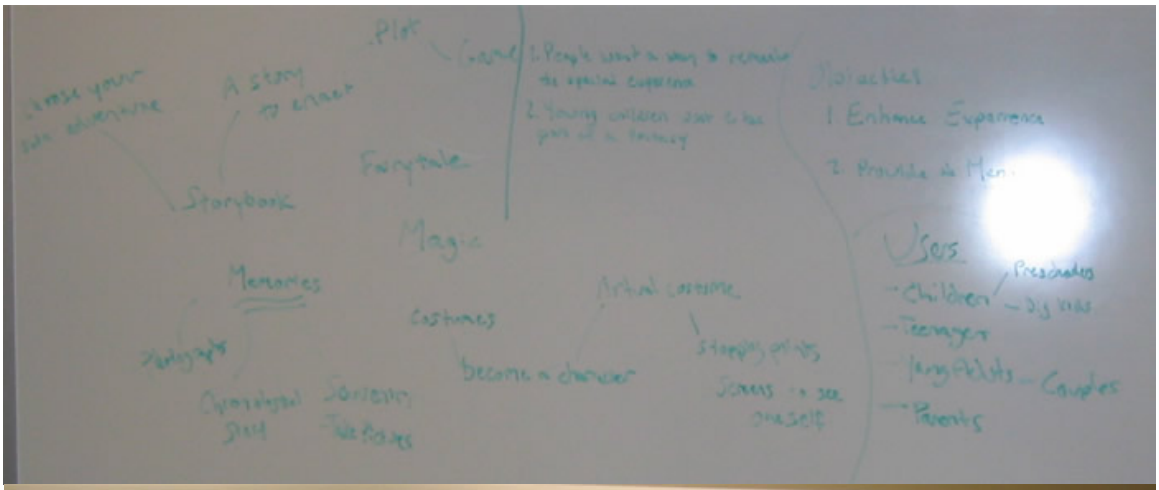
Kathy Hill

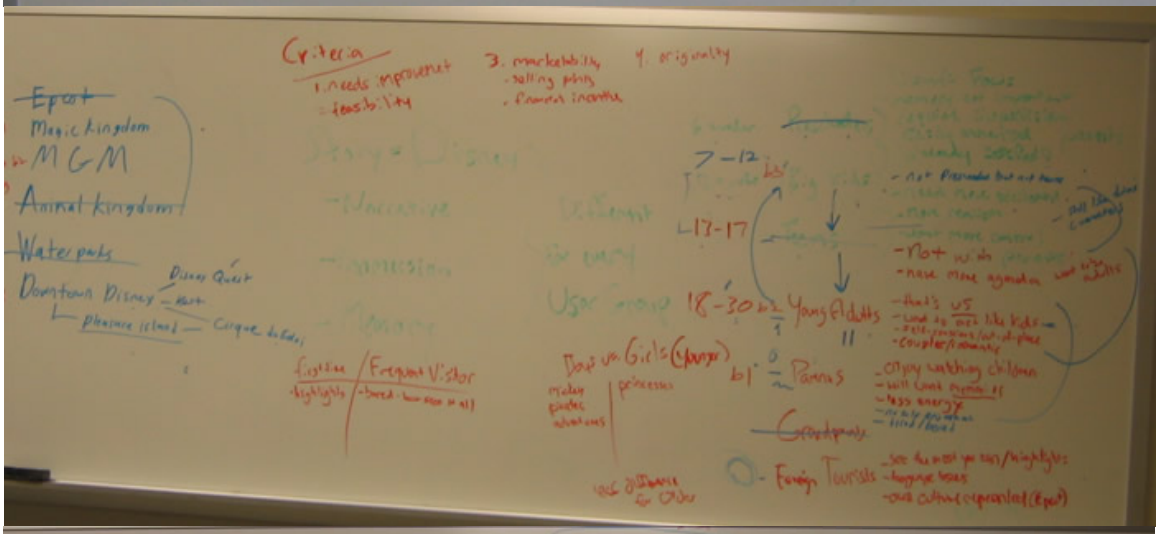
Kathy Hill is a 22 year old gregarious girl. She is studying Sociology in University of Florida and works part time in an Auto Insurance company near her school. Her day begins at 7 in the morning and finishes at 10 in the night. She struggles with her work and studies all day long but manages to get good grades. She has taken a foreign language course and is learning Greek. Even though she is busy most of the times she loves to party and hang out with her friends. Her roommate's birthday is coming up in a fortnight. Kathy wants to make it very special since her roommate is going away to England. She is planning to throw a surprise birthday party for her roommate in the Disney World. Though Kathy has been to Disney World several times, her roommate has never been there. Kathy is worried about the long lines but thinks that since she is going out in a big group they will enjoy themselves.

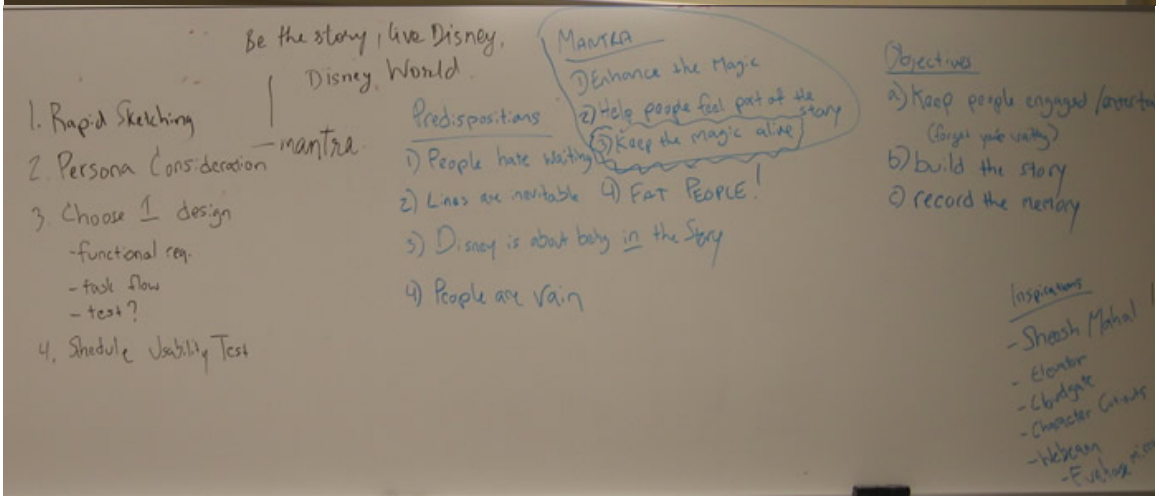
John Trevor

John Trevor is 11 years old. He stays with his parents at Seattle. His father works in a large IT company, and his mother is a doctor working in a hospital. John is studying in the 5^{th} grade at a public school. The classes interest him, especially math and computers, and he has been getting good grades. John is also interested in sport, baseball in particular. He gets to play it with the other kids in the neighborhood, and wouldn't miss a match on TV. The only other things on TV that compete with baseball for his attention are the cartoon shows. John loves cartoons, especially ones that have superheroes in them. Every evening, after he returns from school, a major part of his time is occupied with the TV. Though his parents are not very happy about it, they let him have his way, as he performs well at school and is active. On some weekends, the Trevor family travels to visit John's grandparents. On other weekends, they go to see movies or concerts or visit museums, taking advantage of the many things that Seattle has to offer. The family enjoys traveling, and last summer they had been on a trip to Europe. During Christmas this year the family has plans of traveling to the Disney world at Orlando. John heard so much about it, that he just can't wait to be there. His parents are happy for him, and glad that they will be getting a break from their own work, but they are apprehensive that their 3 day stay there might not be all that relaxing because of all the stories they've heard about waiting times at Disney World.

Design Progress







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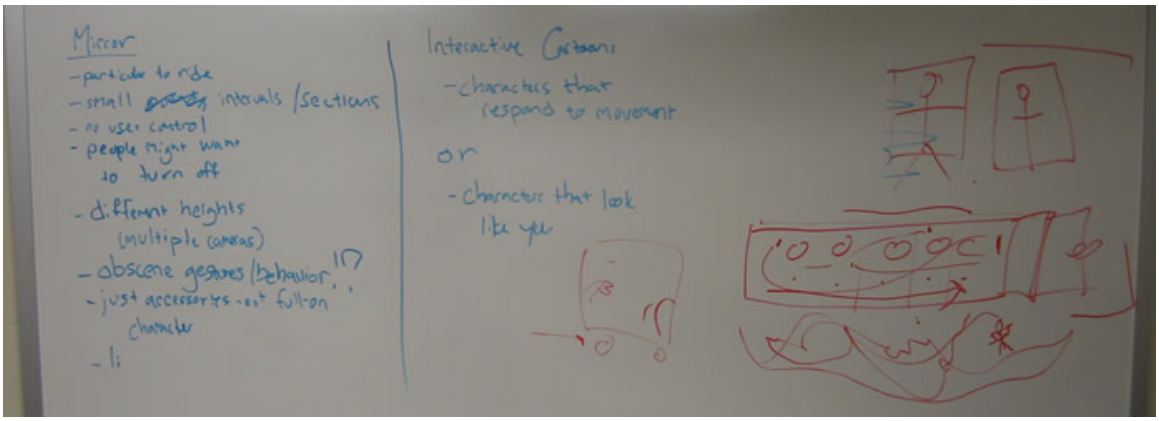

Sketches and Initial Mockup – see printed documents.

Usability Testing

Profile of the testers

Since the design seeks out to eliminate frustration of waiting in a line, the test subjects must have been to an amusement park before. This is to ensure that they can co-relate to their experience of waiting in a line.

The test would be conducted in

- In a group (to understand the group dynamics)
- Individually (to understand if a person is comfortable with the design)

Test Setup

To simulate our design, we set up a Logitech QuickCam Orbit MP with a Dell Inspiron 6000. This webcam can show a person's image as an animated 3D Avatar on screen. This avatar has the ability to imitate facial expressions and head movements. The webcam can also apply 2D accessories on a person's face on screen.

We refer to the LCD screen as "Mirror" here since it would be displaying a person's image after applying Avatar or accessory effect over it. The LCD Screen or "Mirror" would be built to merge with its environment and would not be jut out.

Our test aims to examine the experience of the Space Mountain ride with our design concept.

Testing Process

The user is presented with a scenario, and a set of tasks. He/she is then presented with a questionnaire designed to seek his/her responses on the experience of the interaction. The scenario, the set of tasks and the questions asked follow. We did a test on a group and individually, for the group each user is presented with the scenario and tasks with the other members of the group watching, and the questions are asked collectively at the end.

Scenario: You are at Disney World with your friends and on your way to the Space Mountain Ride. This is the ride where you get to blast into the outer-galaxy past shooting stars and other-worldly celestial satellites. But, before you undertake your journey, you have to wait in a line for your turn. It may take you from 30 to 60 minutes to get on the ride. You look to your side and see an LCD screen that looks like a "mirror".

Task 1: Interact with the Avatar.
Task 2: Interact with the Accessories.
Task 3: See the video of Space Mountain. (For people who have not been on the Space Mountain ride in Disney World)
http://video.google.com/videoplay?docid=6869399616004720005

Post Test Questionnaire:

1. Did you feel entertained by this?
2. Did you feel engaged by it?
3. Would you prefer to have this system present while waiting for the ride?
4. How much time would you prefer to spend with this display?
5. Did you feel uncomfortable or offended by what you saw?
6. Would you feel embarrassed in a large crowd where everyone is being reflected by the mirror?
7. Did you feel more engaged with the theme of the ride?
8. Which did you prefer, the display of yourself with accessories, or the display of the complete character?
9. Would you like to have a recording of your interactions with them once you leave the park?

Test Observations

- Individual Test: Justin is a 21 year old male who has been to Disney World twice but long time back. He has not been on the Space Mountain ride though. He went to Disney World as a kid and does not remember much about it. His responses are as follows:

    1. Yes, I feel entertained.

2. Yes, it is engaging.
3. I would prefer this to be in place. It is lot better to do something than stand in a queue.
4. I won't like to spend more than 5 minutes per display.
5. No, I was not uncomfortable
6. No embarrassment
7. No, I did not feel engaged with the theme.
8. I liked the accessory better than the avatar.
9. My family would like to keep the recording but not me.

Comments: Justin seems to like the idea of some engaging activity while waiting for the queue. He liked the accessories and avatars chosen for him by test conductor. He thought they went well with the Space Mountain theme. Though, Justin was worried about his footage being recorded.

Interpretation: User likes the idea of the "mirror". Though he is not embarrassed by the camera, he would mind the recording. For him, this design is transient; he is not attached too much to it to carry it home.

- Group Test: Hannah (19 years old), Breanne (19 years old) and Erin (18 years old). These 3 young girls are friends and therefore, ideal to test group dynamics. Since our camera has technical limitation of filming one person at a time, only one of them conducts the test while other two watch the results on the screen.

    1. Yes, we felt very entertained.
    2. Yes, we felt very engaged.
    3. Yes, it should be placed there while we are in queues.
    4. Same avatar or accessory should not be on the screen for a long time.
    5. No, we were not uncomfortable at all.
    6. We were not embarrassed by it.
    7. No, it does not make us feel part of the story more.
    8. We like both but we liked avatars more since they can match your facial expressions.
    9. Yes, we would like to take it home.

    Comments: The test observers noticed that the users were totally fixated by the idea. They enjoyed the activity a lot. They enjoyed watching their friend interacting with the system as well.

    Interpretation: This group of testers likes the idea very much. They try to test the system for more than it is capable of. They are so engrossed in the system, that in the real situation they might lead to the line being stuck up at the same place.

Conclusions

- Users prefer this system more than watching the movies which are generally looped.
- There is a possibility of the line being stuck up because visitors may want to keep looking at the screens. There should be a non interactive screen displayed when the line is moving to give the visitors a sense of movement and direction. Eg. A screen of fishes swimming in the direction of line movement, or a group of birds etc.
- The “mirrors” seem to have great potential for social interaction. Not only did users enjoy interacting with the “mirrors” but they enjoyed watching their friends as much. Therefore, a mirror can be positioned for a group as well.
- A “single mirror” (mirror meant to project one person’s image) should have one avatar or one accessory built in it. Since these mirrors enhance the group dynamics, people around the mirror would tend to look at each other’s reflection. Single character/attraction per mirror would also build up the suspense of the next mirror.
- An avatar should have more functionality built in. It should stimulate neck and face movements in a more detailed way. We noticed the users trying to do more actions than what the webcam provided.
- Generally, users try to wave when they catch their reflections on screen. Though avatars and accessories are focusing only faces, functionality for the appendages should be provided. A visitor should be able to see her hands and arms if she waves in the “mirror”. Her appendage movement should not obstruct the view of accessories or avatars. Eg. If the accessory is beard, and a visitor covers her mouth the projected beard should stay in place as a natural beard does.

Design Rationale

Given the growing number of visitors to Disney, waiting for your ride is a given. Disney already has in place a system where people can get a particular time slot in which they can take the ride without waiting very long, but the waiting is still there. Waiting for your rides can be tiresome and the magical experience Disney offers is affected. So instead of designing a way to reduce the waiting time, we decided to offer people something fun to keep themselves engaged while they are waiting. Our design message is *keep the magic alive.* We decided to concentrate on designing for the rides for they are the places where waiting is required the most.

Currently Disney has arrangements like playing its movies to people while they’re waiting to keep them occupied. But, the complaint about this arrangement is that after playing once, the movies repeat, and the people have little else to do. Our idea was to give people something new to do at every stage of their waiting, so that they are occupied. We came up with the idea of having screens that respond to the people. The inspiration for this

idea came from the mirrors placed in elevators of high-rise buildings in order to keep the people occupied with looking at themselves in the mirrors. Fun-house mirrors in which people can look at distorted images of themselves and character cut-outs in which people can stick their heads and limbs also provided inspiration.

To sustain the interest of the people, we need to provide them with different screens at every point of their wait. To have different screens, we decided to keep the screens integrated with the theme of the ride for which people are waiting. We decided to prepare people for the ride while they're waiting for it. For example, for a ride based on the Pirates of the Caribbean, the people walk through a corridor that is decorated like a scene from the movie, and an example screen would be one in which people can look at themselves with a virtual eye-patch placed on their eyes, helping them imagine themselves as pirates.

We wanted to give the people a way of identifying themselves with what is being shown on the screen. For instance if they are going on the pirates of the Caribbean ride, we wanted them to have the feeling of being a pirate. To make this possible, we came up with the idea that in the screens people can look at themselves in virtual avatars or with virtual accessories placed over their image. The eye-patch screen is an example of the screens with virtual accessories. An example of a screen with a virtual avatar is one in which the person standing before it can see a Disney character on the screen, which would mimic his face, mirroring its movements and expressions.

Cameras which are hidden from the view of the people will be placed at positions ensuring that the face of the person standing before the screen is monitored. The image captured in the camera will be used to create the display on the screen. The screen is activated when a person steps in front of it. When the screen is inactive, images that blend with the theme based surroundings are displayed on it. To indicate to the people that interaction is possible with the screen and to show them the area standing within which they would be able to activate the screen, we would have an image of footprints, designed keeping in mind the surrounding theme, on the floor in front of the screen.

We had to make the decision about whether the screen will show the accessories and avatars on the entire person or just his face. Keeping in mind the technology requirement of cameras and the issues like tracking limb movement that come into picture with a full body image, we decided to have the accessories and avatars only for the head. When a person is looking at the screen, only his face will be accessorized, the rest of the body will be displayed as it is. When there is an avatar on the screen, it is animated only on the face.

Keeping in mind the different heights of people, we decided that the screens will be placed at different heights so that people of all heights get to interact

with them. In a screen placed lower, tall people might not be able to look at their faces, and in this case we don't activate the screen. The screen will be activated only when a face is recognized, to add to the statement earlier that it would be recognized only when a person steps in front of it.

We considered people who might not want to look at themselves or who might not want others to look at their images while they're looking at a screen. But, a majority of the people who come to Disney would like to do things as a group, friends and families would have more fun, when they interact together. Considering both requirements, we decided to have a mix of the sizes of screens, some allow only one person to interact at a time, and others allow group interaction, in which all people before a screen have eye-patches on them for instance.

At each screen, we had to make the decision about whether there will be one single thing to do, or there will be several things that will be cycled. As indicated by the usability test results, with this system people might block the flow of the line, we decided that at each screen there will be a single thing that people standing before the screen will be able to do. Also, to facilitate the movement of the line when needed, the screens would stop working as "mirrors" and screensavers would play on them. These screen savers would indicate a movement and give a sense of direction like fishes swimming in direction of line or leaves blowing in a particular direction etc.

Since the main goal of the people waiting is to get on the ride and we didn't want people to block the flow by waiting at these screens, we decided that people shouldn't have to press any buttons nor do anything elaborate in order to interact with the screen. All they would have to do is to stand before it to look at themselves with virtual accessories or as a virtual avatar. With this kind of interaction, in which there is no language involved, the advantage is that it will cater to people irrespective of the language they speak.

Final Mockup

Refer the Flash file – see printed documents

References

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Complaints

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