IoT & Tangible Interaction Solution

(Domain - Gaming)

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Secondary Research

1. Digital Gaming

Digital gaming refers to video games played on electronic devices like computers, consoles (PlayStation, Xbox), mobile devices (phones, tablets), and online platforms.

The board game world is embracing the digital age! Classic favorites are being transformed into apps and online platforms, allowing players to enjoy them anytime, anywhere. These digital versions often replicate the original experience with added features like online play and automated rules.

2. Challenges in Digital Gaming

- **Technical Issues**: Bugs, glitches, crashes, and performance problems.
- **Security Concerns**: Hacking, cheating, data privacy, and piracy protection.
- **Content Creation**: Keeping content fresh, high-quality graphics and sound, balancing creative and technical aspects.
- **User Retention**: Maintaining player interest, encouraging regular engagement, and reducing churn.
- **Development Costs**: High development and maintenance costs, resource allocation, budget quality balancing.

- **Player Experience**: Ensuring intuitive gameplay, catering to diverse preferences, managing in-game toxicity.
- **Physical Interaction**: Adapting for big gestures can lead to pain and injuries. It's important for gamers to take breaks, stretch, and maintain good posture to avoid these issues.
- **Density and Inactivity**: Gaming can be very sedentary. If you're not balancing gaming with physical activity, it can lead to health issues like obesity and cardiovascular problems associated with inactivity. This can include an increased risk of heart disease, diabetes, and some cancers.
- **Loss of the physical experience**: Board games are about more than just the mechanics of the game. The tactile experience of handling components, the social interaction around a physical table, and the joy of seeing the board come to life are all part of the charm. Digital versions can't fully replicate these aspects.

3. Characteristics of board games

- **Objective and Winning Conditions**:
  Clear goals and ways to achieve victory that players strive for. This could be collecting resources, reaching a specific location on the board, or eliminating your opponents.
- **Rules and Gameplay**:
  Rules that dictate how a player can move, interact with other pieces, and ultimately achieve their objective.
- **Components**:
  Board games rarely involve a physical board that serves as the playing field. These might also be game pieces, cards, dice, or other elements that interact with information or special abilities, tokens or resources, and tokens to track progress.
  The quality and design of these components are important, as they contribute to the visual appeal and functionality of the game.

- **Rules and Strategy**:
  Well-defined sets of rules is essential for ensuring fair play and a smooth game flow. The rules should be easy to understand and navigate, with clear instructions on how to set up the game, take turns, and resolve any conflicts that might arise.
  Ideally, the rules should be relatively quick, allowing players to jump into the game without a long wait.

4. Impact of Digitalization

Positive Impacts:

- Increased accessibility: Digital board games can be played anywhere, anytime, with a wider reach. This makes it easier for players to connect with friends and family, even those with busy schedules, those who live far apart, or those who prefer to game from home.
- Wider variety of themes: The digital format allows for a much wider variety of themes compared to physical limitations. Players can explore fantasy worlds, historical simulations, or intricate strategies that might not be readily available physically.

Negative Impacts:

- Loss of the Physical Experience: Digital games lack the tactile experience of handling components, the social interaction around a physical table, and the joy of seeing the board come to life.

Target Audience

The target audience is for Working professionals or for people staying away from friends and family who don't get much time to meet up and play board games physically.

Age group - 15 yrs and above

Primary Research

User Surveys (Answers)

1. Peoples preference on online or offline gaming

2. Board games people like

3. Reason for digital gaming preference

4. Ratings for digital gaming experience

Research Insights (primary research)

- Most of the people prefer to play board games physically as it creates a bonding between the players
- Having physical game pieces create more interest in the overall gaming.
- Peoples preference depends on the place where they are playing the game like.
- If people have time to sit at one place and play they would always prefer physical board games

Persona

Empathy map

Problem statement

Digital board games lack the social interaction and physical presence of traditional games, hindering their ability to foster meaningful players and create shared experiences.

Solution Overview

Technological details

Internet of things (IoT)

There are **accelerometer sensors** on the tokens, **multi-touch sensors** on the table top screen, **Image tracker** to identify the tokens and **camera sensor** to capture the board game and the surroundings. The data from these sensors will be used in **AR**, the app also stores information about all the games, you can find people around to play on the app.

Tangible interactions

There are **accelerometer sensors** on the tokens and **multi-touch sensors** on the table top screen which help in **tracking the position** of game pieces on the board game. For example, if you physically move a token on the board, the accelerometer sensor will detect the movement and transmit this data to the game the tablet and where the other player can see a movement of your game piece on the board.

Augmented reality (AR)

What's cool about AR in this game is that we can use an AR overlay over the physical tokens which would be specific to the game. There is a image tracking system been used on the game board creating all your movements and interactions with the board game. Augmented reality adds a layer of digital information to the tokens and which would give a welcome experience of playing in a group.

Components

Working

Physical Game
Physical Game
Tablet
Tablet
Camera
Camera
Image Recognition
Image Recognition
Accelerometer
Accelerometer
Cloud
Cloud Computing
Cloud Computing
Cloud Computing