

Accessible Play: Towards Designing a Framework for Customizable Accessibility in Games

The rapid growth of video games as a prevalent form of entertainment in the 21st Century has accentuated the need for enhanced accessibility in the gaming sphere. However, a significant portion of the population with disabilities remains excluded due to prevailing accessibility barriers within the gaming landscape. Despite some strides in recognizing the importance of accessibility in game design, there remains a pressing necessity for further advancements in this domain.

Our research endeavors to develop an accessibility-focused framework for game designers, to empower them to effectively design new, customizable accessibility options that cater to players' diverse needs. To create this framework, we analyzed accessibility features in games spanning a diverse range of genres and platforms, including PC, Console, Mobile, and Virtual Reality.

The research methodology included three pivotal phases:

Phase 1: Mapping Games on IPM

The initial phase involved an extensive analysis of existing games with accessibility features. A diverse range of games from different genres and platforms was selected for analysis. The Interactive Process Modelling (IPM) framework was utilized to map the accessibility features that players can customize for each game. We mapped 28 games in total.

About the IPM: Within the context of games, the IPM illustrates how various aspects of a game are perceived, reasoned about, and ultimately changed as a result of player interaction. This model represents each step of reasoning, change, and feedback as a distinct abstract function, namely an action function, a transition function, and an observation function, respectively. In addition to these three functions, the IPM incorporates elements such as an initial state, potential observations, actors, potential actions, and potential states. Figure 1 provides a visual representation of a simple IPM model (with only one target object). Meanwhile, to show an example, Figure 2 and Figure 3 illustrate the accessibility options of the PC version of *The Stanley Parable: Ultra Deluxe* mapped using IPM software we created. You can learn more about the mapping process by reading our work-in-progress paper here: <https://dl.acm.org/doi/10.1145/3573382.3616075>.

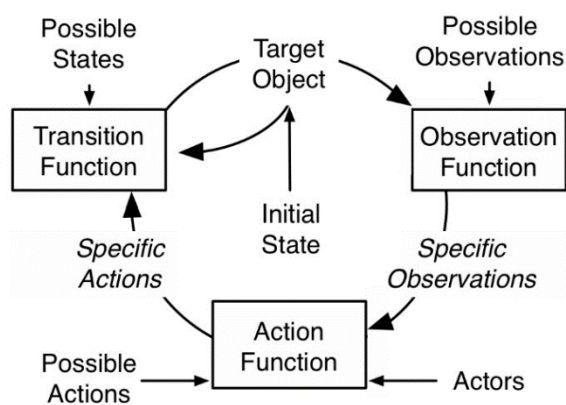


Figure 1: An interactive process with boxes representing functions and labeled arrows representing data. Italicized text represents the data that only arises while the process executes.

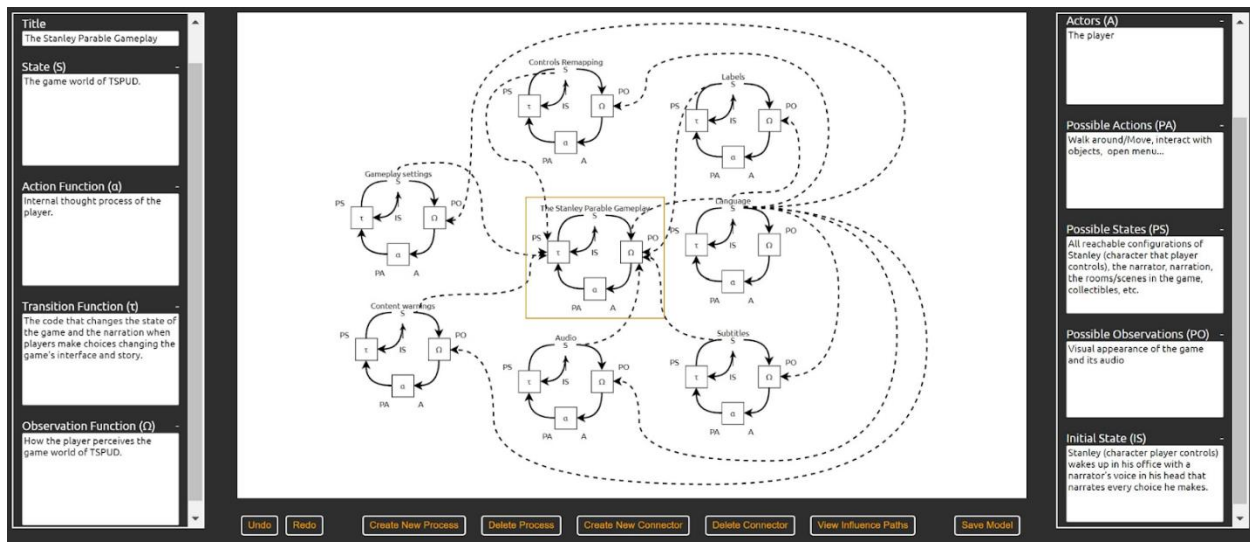


Figure 2: Our software for creating IPM models, with our model of The Stanley Parable: Ultra Deluxe in the middle. The orange box shows that the game’s core process has been selected, and data for its functions and elements are thus shown at either side.

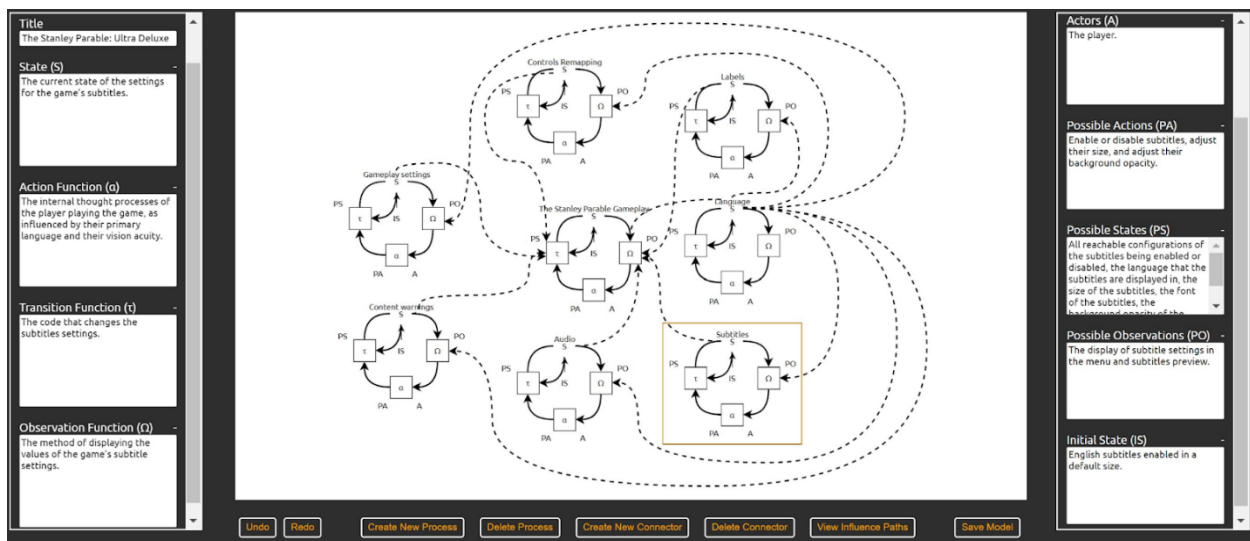


Figure 3: Another view of our model of The Stanley Parable: Ultra Deluxe, with the orange box now showing that the ‘Subtitles’ process has been selected. The data for its functions and elements appear to either side.

Mapping existing games this way revealed insights such as differences across platforms or game genres related to what accessibility features are included, as well as how each feature is integrated into the game.

Phase 2: Interviews

In this phase, we did semi-structured interviews with gamers with disabilities as well as game designers. We have so far conducted interviews with 10 gamers with one or more disabilities that adversely affect their ability to play video games on any platform (PC, Console, Mobile, VR). This helped us gain insights into the challenges that gamers with disabilities face when playing games, as well as what accessibility

features would benefit the community. Additionally, we have interviewed 1 participant who has worked as a game designer and an accessibility consultant to help game studios implement accessibility features in their games. This interview helped us understand what tools and processes are currently being used in the industry to increase accessibility, as well as what the main challenges are in implementing accessibility features. We are planning to continue with our research and keep interviewing more game designers and gamers with disabilities to capture a multitude of perspectives and experiences. Once the interviews have been completed, we will use thematic analysis to identify any key themes and patterns in the interviews, and the results from the analysis will summarize the current landscape of accessibility options in games, including their design, benefits, and limitations.

Phase 3: Analysis and Creating the Framework

The final phase aims to synthesize insights gained from both the mapping process and interviews to create the accessibility-focused framework. A triangulation process will be utilized to identify patterns, recurring themes, and discrepancies, forming the core principles of the framework. Thus, the fusion of mapping data and interview insights will guide the framework's development in a holistic manner, bringing together the practical possibilities we see in existing games and the real experiences of both game designers and gamers with disabilities. This framework will serve as a practical guide and resource for game designers, facilitating the incorporation and enhancement of customizable accessibility options in their games effectively.

Ultimately, the research aims to significantly contribute to the discourse on accessibility and inclusivity in gaming for individuals with disabilities. The work-in-progress paper for this research is slated for publication in CHI PLAY '23.