

ACCESSIBILITY IN GAMES

Background

- Gaming is the biggest entertainment industry by revenue.
- Bigger than the movie and music industry combined!
- Over 2 billion gamers across the world. That is 26% of the world's population [1]

Problem & Motivation

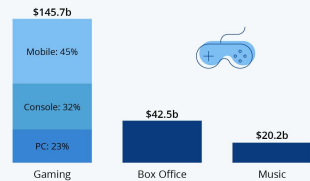
- A billion people experience some form of disability, 15% of global population [2]
- According to PopCap Games Research, this figure rises to 20.5% among gamers.
- Disabled gamers have more video game engagement than casual gamers overall

The Proposed Approach

- The main focus for the project is to put more emphasis in accessibility for games
- Integrate video game accessibility features to lower barriers to access faced by people with disabilities ("Color Switch" Game)
- Accessibility barriers considered: Visual, Motor, and Cognitive Impairment

Gaming: The Most Lucrative Entertainment Industry By Far

Global revenue of selected entertainment industry sectors in 2019



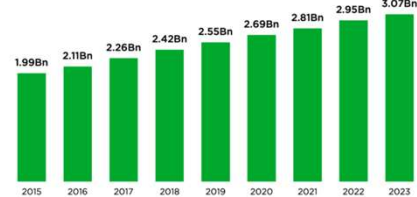
Sources: Newzoo, Comscore, IFPI

statista



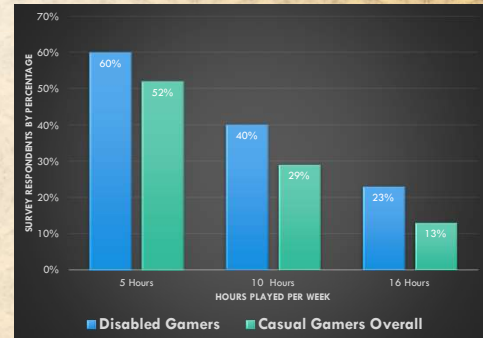
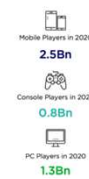
2015-2023 Global Players

Forecast Toward 2023



Source: ©Newzoo | 2020 Global Games Market Report

+5.6%
Total Players CAGR
2015-2023



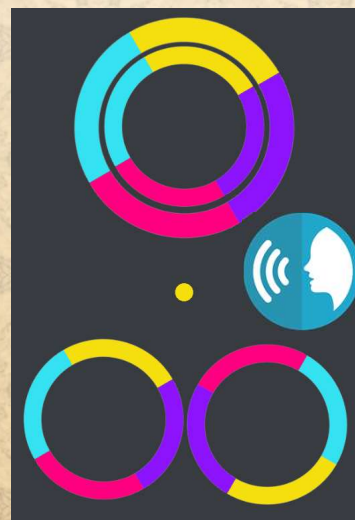
Aim & Objectives

AIM: TO DEVELOP A UNITY GAME WHICH INCORPORATES ACCESSIBILITY FEATURES TO HELP FACILITATE THE EXPERIENCE AND CHALLENGES ENCOUNTERED BY PLAYERS WITH ACCESSIBILITY ISSUES.

OBJECTIVES:

- 1) Explore a set of common gaming accessibility barriers including visual, motor, hearing, and cognitive impairments and investigate established audio-visual techniques that are used to assist players facing such accessibility barriers..
- 2) Develop separate, individual unity prototypes or mini-simulations focused on each selected accessibility barrier..
- 3) Develop a Unity game that integrates all accessibility techniques into the main game loop.
- 4) Analyse and evaluate how well the integrated accessibility features satisfy established accessibility guidelines in gaming such as "game accessibility guidelines" and "includification"
- 5) Analyse and evaluate the scalability of the integrated accessibility features in terms of its impact on the game's performance.

Implementation Progress



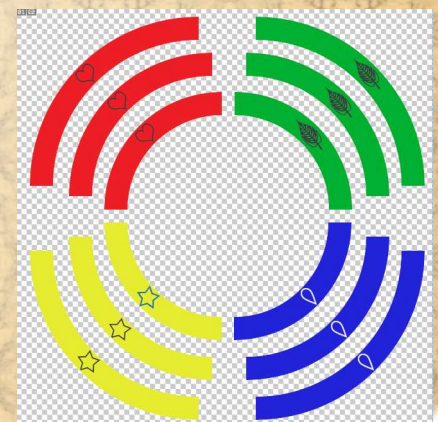
Directions for Future Work

✓ Solution for **Motor Impairment** Accessibility Barrier

- Replace Stimuli: Allow player to use voice commands as an alternative over mouse & keyboard

✓ Solution for **Visual Impairment** Accessibility Barrier

- Replace Stimuli: Add simple shapes that the user can use to associate with certain colours



✓ Solution for **Cognitive Impairment** Accessibility Barrier



- Enhance/Reduce Stimuli: Give user the option to increase/decrease game speed

Future Development outside of Project Scope:

- (1) Include user-swappable colour themes/palettes
- (2) Due to technological limitation (delayed system response), Unity Speech Recognition can be replaced with a more efficient Speech Recognition Software/System.