Group 9 – Apocalypse Defense

Project 3: Evaluating without users

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Cognitive Walkthrough

Questions

- Effect: Will users be trying to produce whatever effect the action has?
- Visible: Will users see the control for the action?
- Recognition: Once users find the control, will they recognize that it produces the effect they want?
- Feedback: After the action is taken, will users understand the feedback they get so they can go on to the next action with confidence?

Cognitive Walkthrough

Use scenarios

1. Start playing a new game with the default map on Easy difficulty
2. Resume a saved game
3. Mute sounds
4. Upgrade tower
5. Exit game

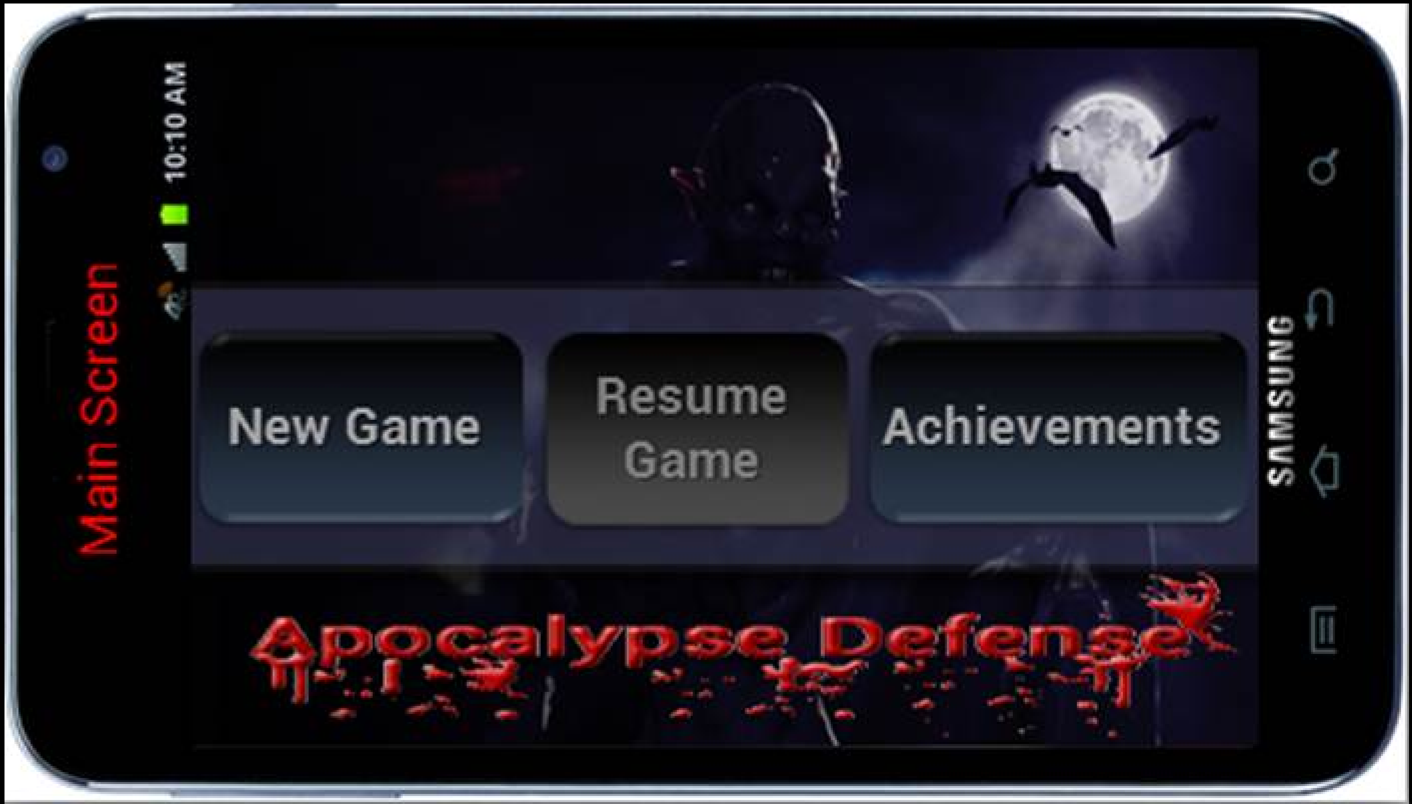
Start new game, easy, default map (1/5)

Decomposition

1. Tap "New Game" button
2. Tap "Easy" radiobutton if not already selected
3. Tap map
4. Drag tower to map and release when color halo is blue

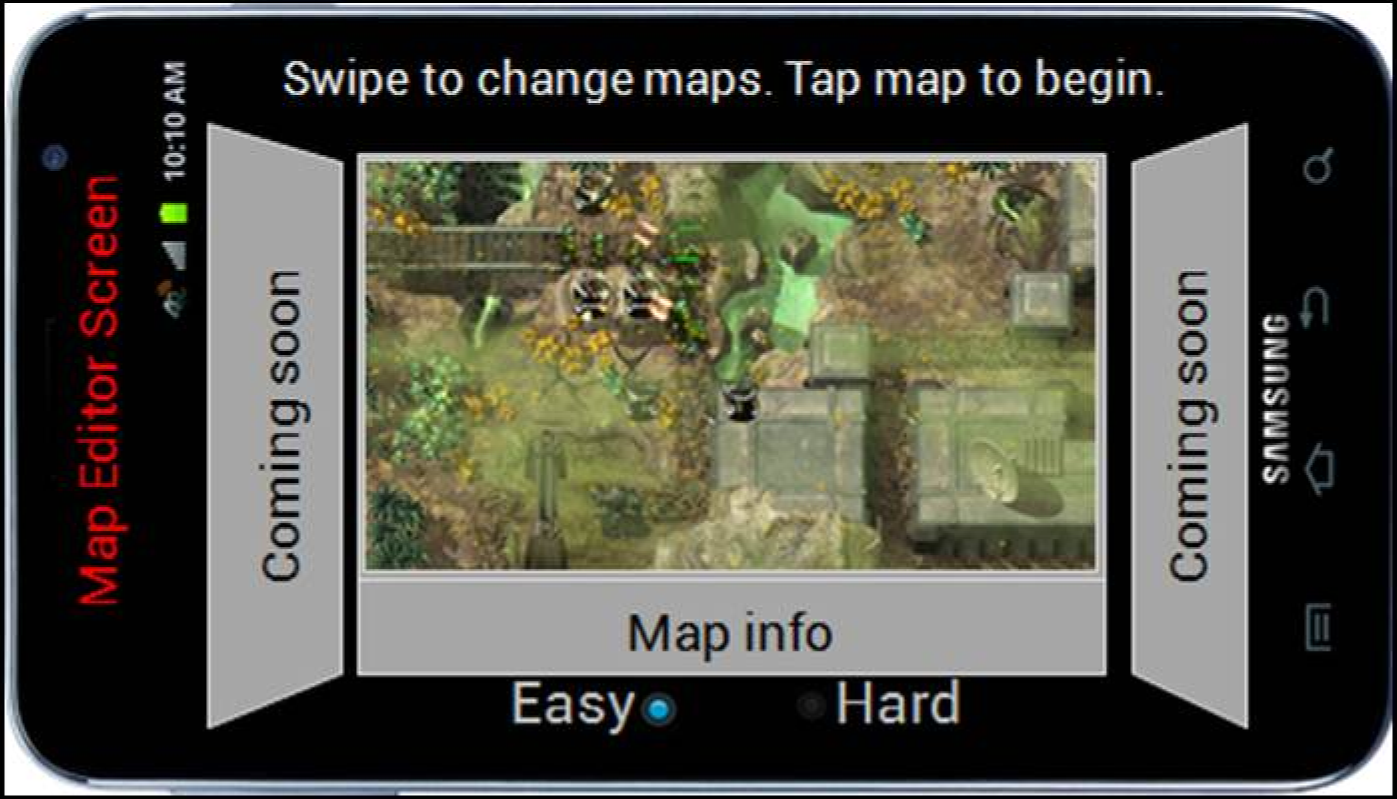
Start new game, easy, default map (1/5)

1. Tap "New Game" button
   - Effect: Yes, they want to start a new game
   - Visible: Yes, the button is large
   - Recognition: Yes, clearly labeled and affords tapping
   - Feedback: Yes, screen changes when tapped



Start new game, easy, default map (1/5)

2. Tap "Easy" radiobutton if not already selected
   - Effect: Yes, they want to set easy difficulty
   - Visible: Yes, but small and at the bottom
   - Recognition: **Maybe**; not labeled "Difficulty", but implied
     - Maybe label the difficulty radiobuttons. Defer until usability testing confirms.
   - Feedback: Yes, radiobutton blue dot moves

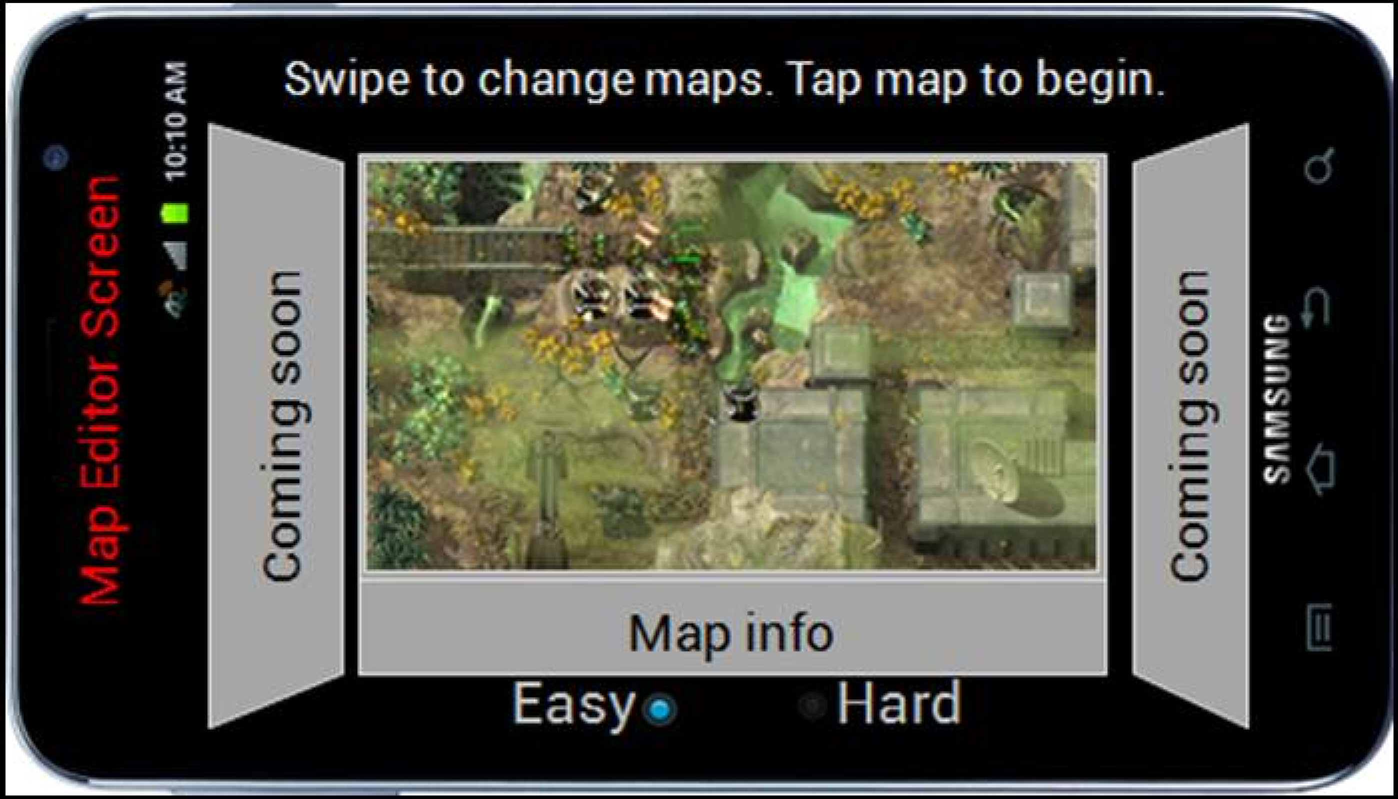


Swipe to change maps. Tap map to begin.

Easy ● ○ Hard

Start new game, easy, default map (1/5)

3. Tap map
   - Effect: No, but label says what to do
   - Visible: Yes, big image of a map
   - Recognition: **Maybe**; relies on user reading instructions
     - Maybe add button overlayed on map saying "Begin" to afford tapping the map. Defer until usability testing confirms.
   - Feedback: Yes, screen changes

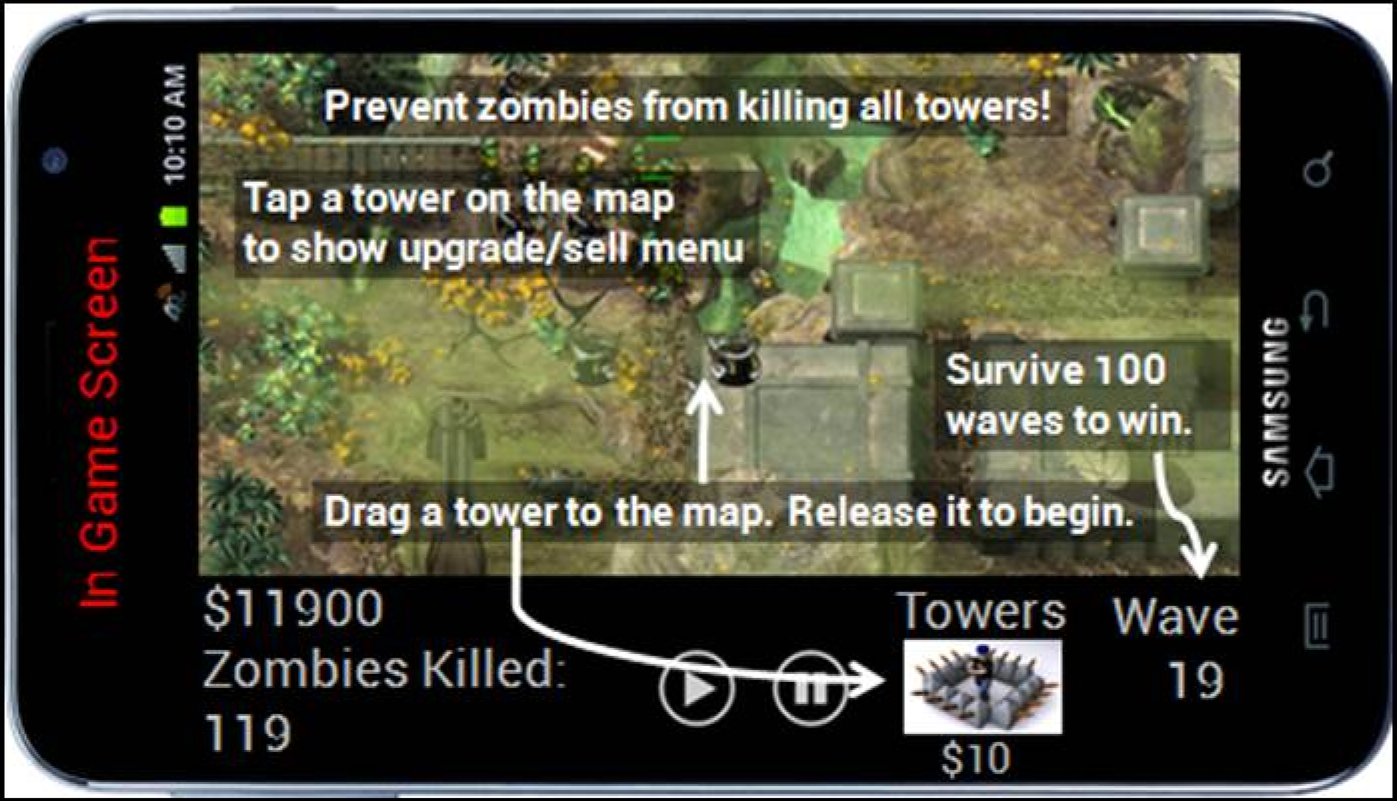


Swipe to change maps. Tap map to begin.

Easy ● ○ Hard

Start new game, easy, default map (1/5)

4. Drag tower to map and release when color halo is blue
   - Effect: No, but overlay instructions say so
   - Visible: Yes, prominent icon
   - Recognition: Yes, instructions say what to do and use arrows to identify
   - Feedback: Yes, overlay will disappear



Prevent zombies from killing all towers!

Tap a tower on the map to show upgrade/sell menu

Survive 100 waves to win.

Drag a tower to the map. Release it to begin.

$11900

Zombies Killed: 119

Towers

$10

Wave

19

Cognitive Walkthrough

Use scenarios

1. ~~Start playing a new game with the default map on Easy difficulty~~
2. Resume a saved game
3. Mute sounds
4. Upgrade tower
5. Exit game

Resume a saved game (2/5)

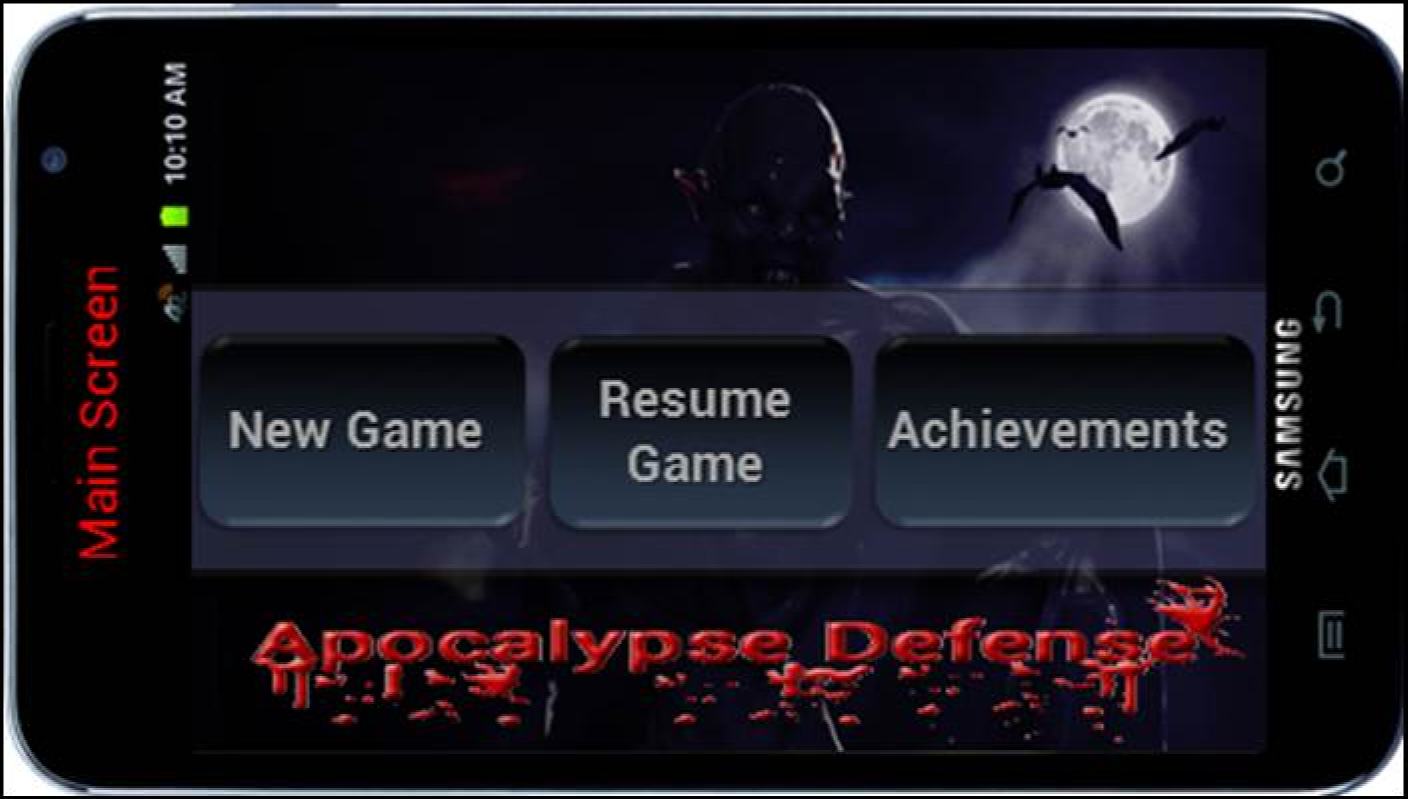
Decomposition

0. Precondition: A new game was in progress when application exited previously.

1. Tap "Resume Game" button

Resume a saved game (2/5)

1. Tap "Resume Game" button
   - Effect: Yes, they want to resume a game
   - Visible: Yes, obvious icon location
   - Recognition: Yes, obvious labeling
   - Feedback: Yes, screen will change and tower will be on map



Cognitive Walkthrough

Use scenarios

1. ~~Start playing a new game with the default map on Easy difficulty~~
2. ~~Resume a saved game~~
3. Mute sounds
4. Upgrade tower
5. Exit game

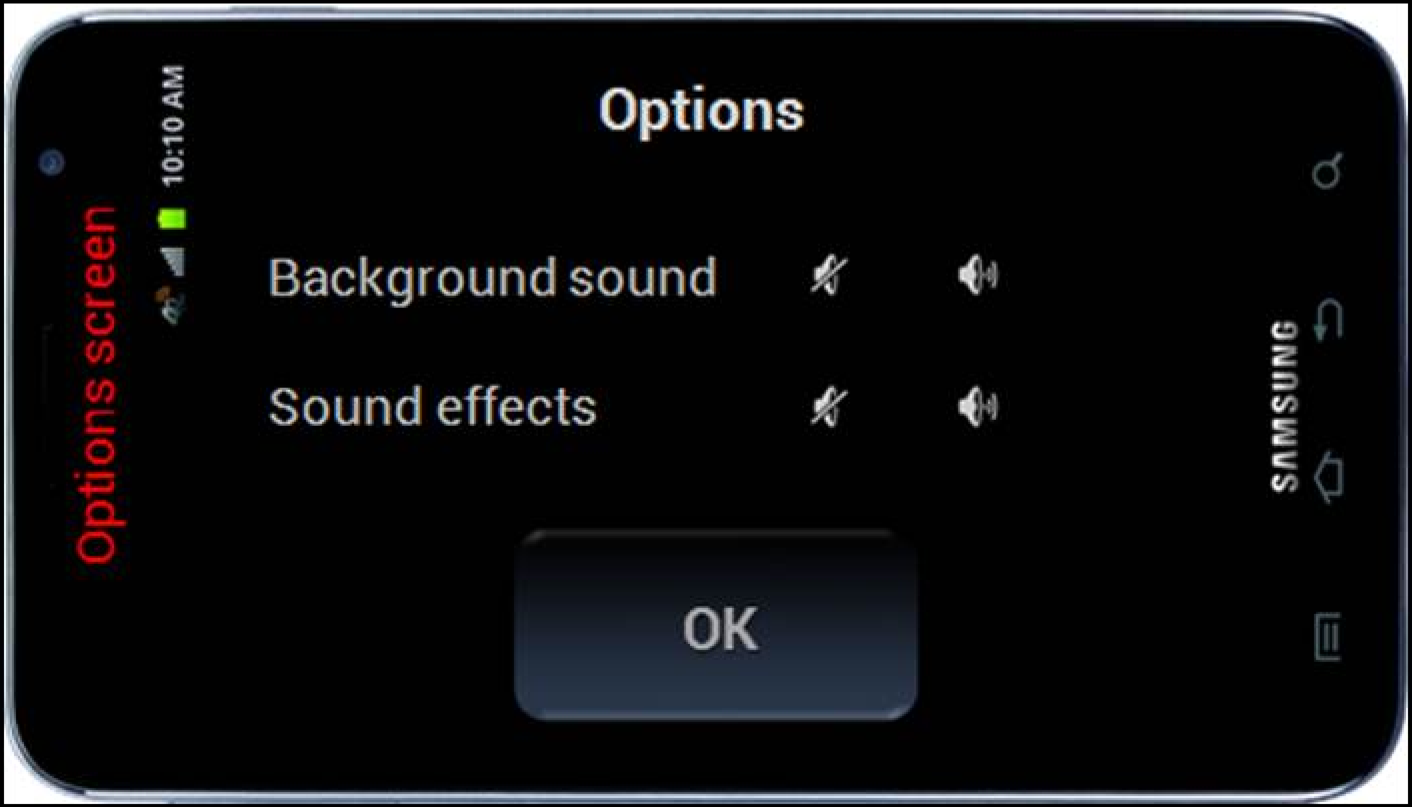
Mute sounds (3/5)

Decomposition

1. Tap android options button
2. If "Background sound" button shows soundwaves, tap it
3. If "Sound effects" button shows soundwaves, tap it

Mute sounds (3/5)

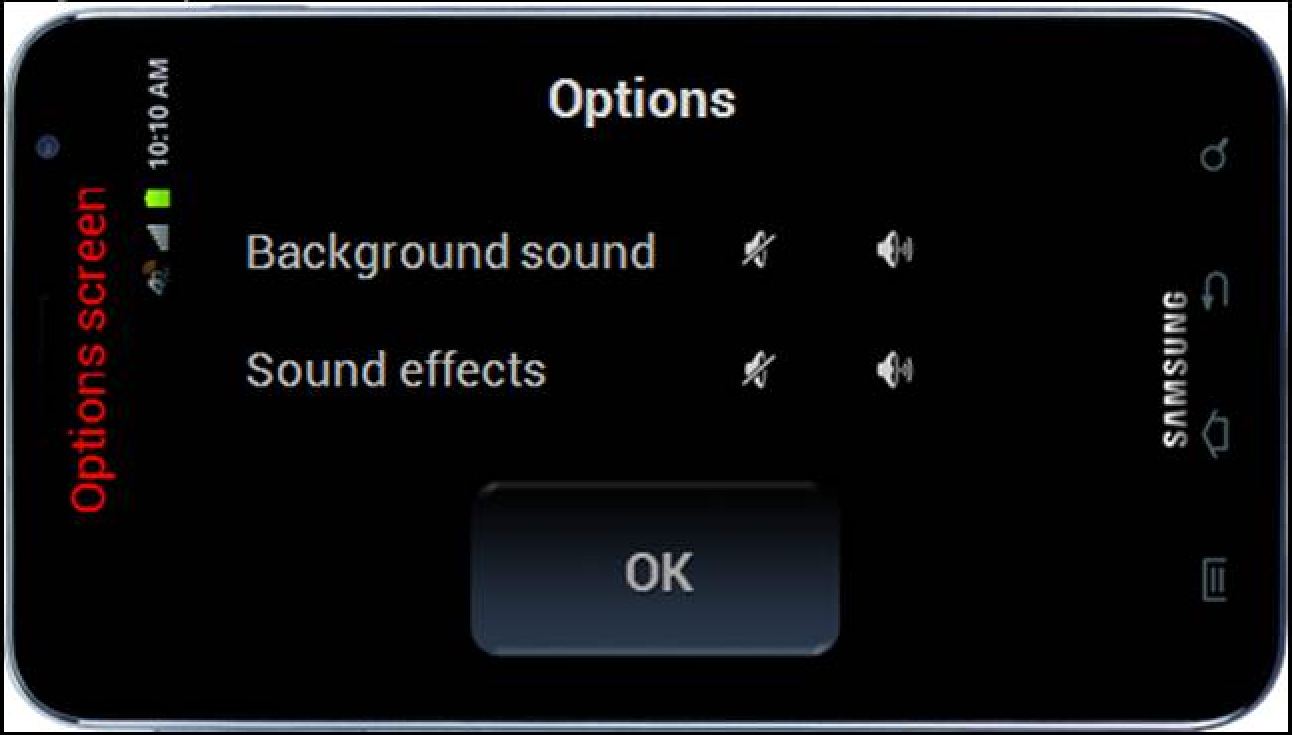
1. Tap android options button
   - Effect: Yes, users are familiar with android button opening options
   - Visible: Yes, button is standard and always visible
   - Recognition: Yes, users are familiar with options button
   - Feedback: Yes, screen changes



Options screen

Mute sounds (3/5)

2. If "Background sound" button shows soundwaves, tap it
   - Effect: Yes, user wants to disable sound
   - Visible: Yes, one of few icons displayed
   - Recognition: Yes, conventional icon
   - Feedback: Yes, icon changes
3. If "Sound effects" button shows soundwaves, tap it (same analysis)



Options

Background sound

Sound effects

OK

Cognitive Walkthrough

Use scenarios

1. ~~Start playing a new game with the default map on Easy difficulty~~
2. ~~Resume a saved game~~
3. ~~Mute sounds~~
4. Upgrade tower
5. Exit game

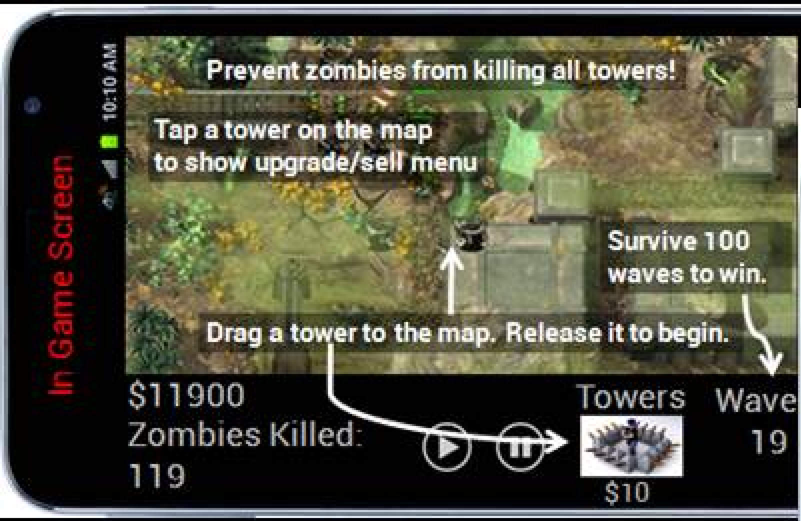
Upgrade Tower (4/5)

Decomposition

1. Tap desired tower (which is already placed on map)
2. Tap button with vertical chevron image ("hat")

Upgrade Tower (4/5)

1. Tap desired tower (which is already placed on map)
   - Effect: Yes, user read the tutorial overlay and wants to upgrade
   - Visible: Yes, all towers on map are visible
   - Recognition: Yes, tutorial said to tap tower to show upgrade/sell menu. Also follows convention for Tower Defense games.
   - Feedback: Yes, tower graphic glows blue



Prevent zombies from killing all towers!

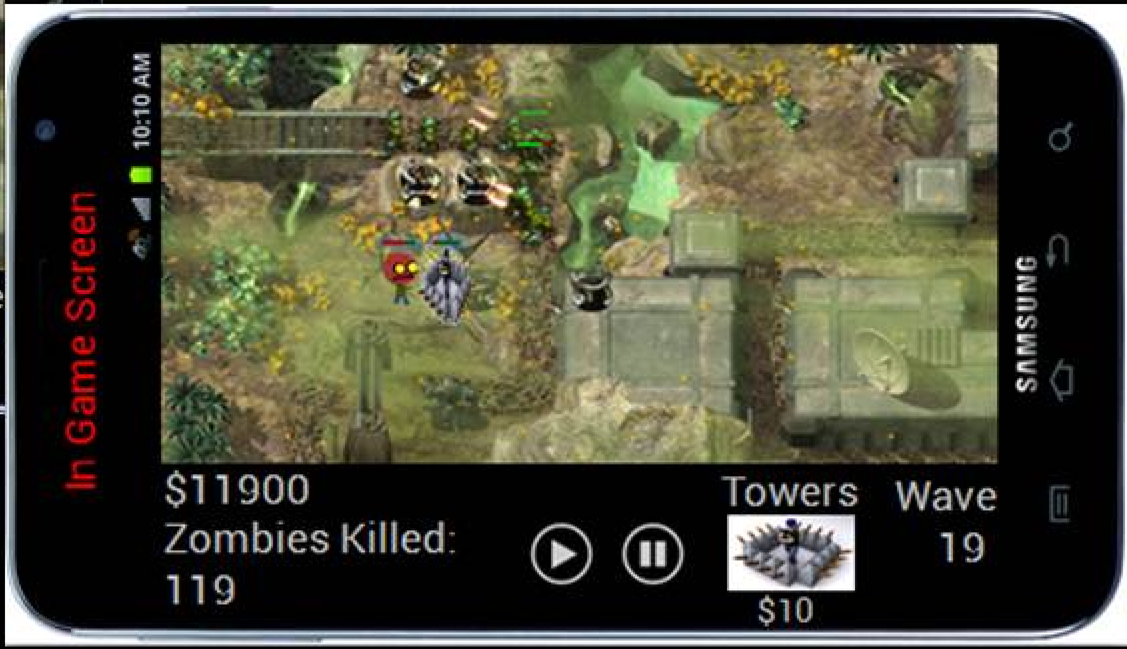
Tap a tower on the map to show upgrade/sell menu

Survive 100 waves to win.

Drag a tower to the map. Release it to begin.

$11900

Zombies Killed: 119

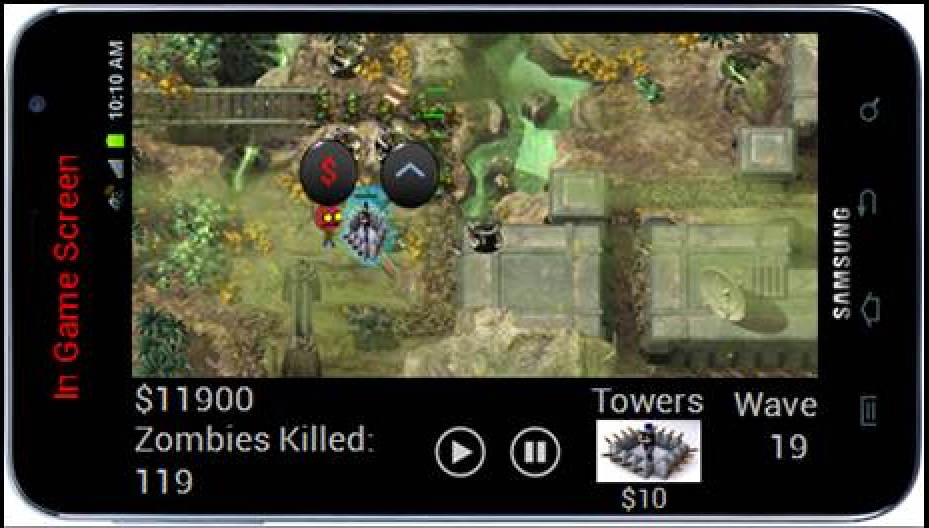


$11900

Zombies Killed: 119

Upgrade Tower (4/5)

2. Tap button with vertical chevron image ("hat")
   - Effect: Yes, user wants to upgrade
   - Visible: Yes, one of only two buttons. **But what if tower is at top of screen - where will menu be?**
     - Implement so that menu shows up above tower unless it would go off-screen.
   - Recognition: **Maybe**. The other button is a $, so the user might think, "I need to buy an upgrade" and tap that one.
     - Maybe add text labels saying "Sell" and "Upgrade." Defer until usability testing confirms.
   - Feedback: Yes, tower graphic changes; upgrade menu disappears; cash decrements



Cognitive Walkthrough

Use scenarios

1. ~~Start playing a new game with the default map on Easy difficulty~~
2. ~~Resume a saved game~~
3. ~~Mute sounds~~
4. ~~Upgrade tower~~
5. Exit game

Exit Game (5/5)

Decomposition

0. Precondition: User is playing game (in-game screen)

1. Tap android back button

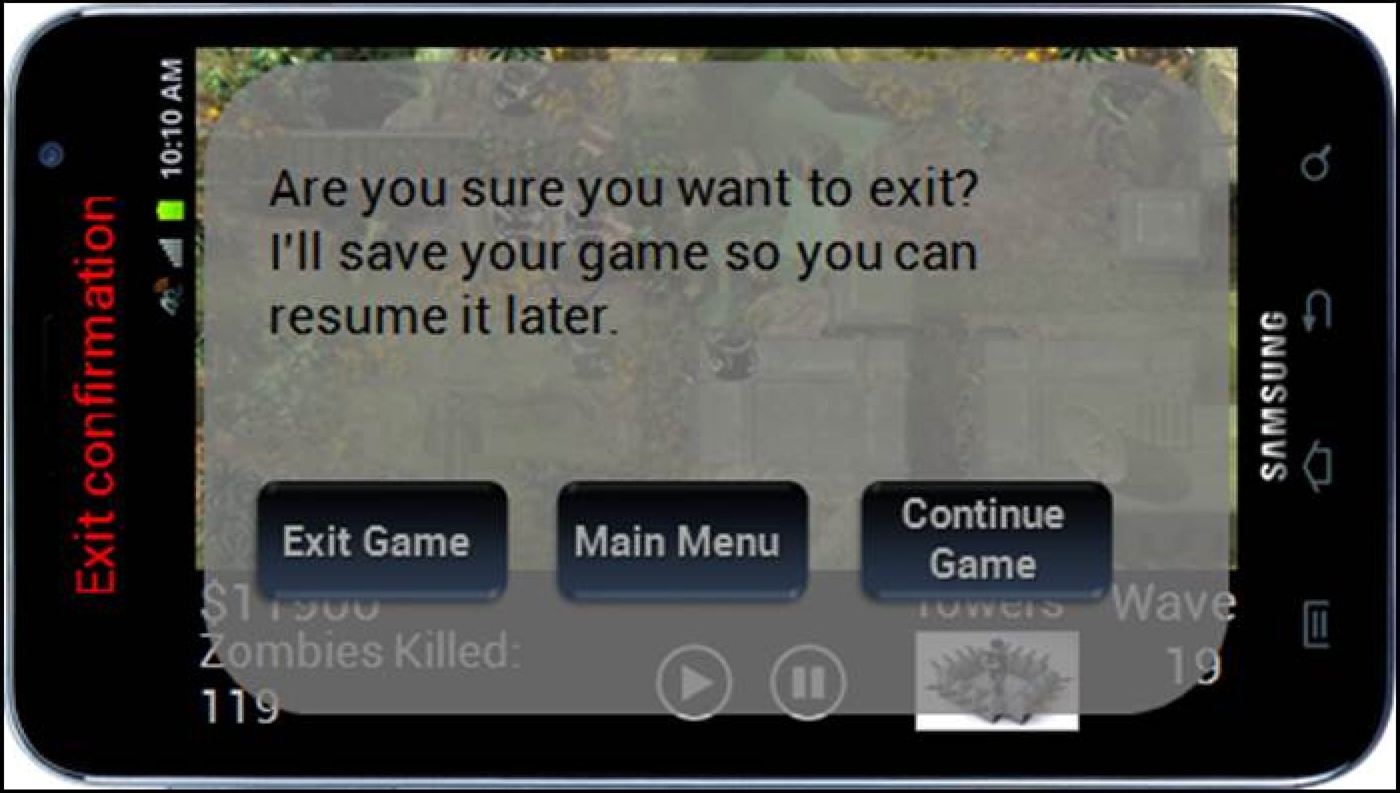
2. Tap "Exit Game" button

Exit Game (5/5)

1. Tap android back button
   - Effect: Yes, user wants to go "back" to android
   - Visible: Yes, hardware button is always displayed
   - Recognition: **Maybe**. The user might think that the options button would provide an exit ability rather than the back button.
     - Maybe add "Exit" button in options screen if usability testing confirms.
   - Feedback: Yes, confirmation screen will appear

Exit Game (5/5)

2. Tap "Exit Game" button
   - Effect: Yes, user wants to exit
   - Visible: Yes, one of few buttons
   - Recognition: Yes, labeled "Exit Game"
   - Feedback: Yes, android home screen will appear



Are you sure you want to exit? I'll save your game so you can resume it later.

Cognitive Walkthrough

Use scenarios

1. ~~Start playing a new game with the default map on Easy difficulty~~
2. ~~Resume a saved game~~
3. ~~Mute sounds~~
4. ~~Upgrade tower~~
5. ~~Exit game~~

Heuristic Analysis

Questions

1. Simple and natural dialogue
2. Speak user’s language
3. Minimize user’s memory load
4. Consistency
5. Feedback
6. Clearly marked exits
7. Shortcuts
8. Good error messages
9. Prevent errors

Heuristic Analysis

1/9: Simple and natural dialogue

Clicking to start a new game when there is an existing game pops up a dialog saying, "Starting a new game will replace the existing game" and gives me two options: "Keep existing game" or "Overwrite old game and start a new one." These choices make sense and feel natural. Sentences are concise and non-technical.

Heuristic Analysis

2/9: Speak user's language

Examples of sentences include "Starting a new game will replace the existing game" and "Swipe to change maps. Tap map to begin." These statements are simple enough for a new user to understand and relate directly to the application. Also, the design revolves around Android's standard icons, so it will feel comfortable to the typical user.

Heuristic Analysis

3/9: Minimize user's memory load

- Scoreboard after win/loss has all important statistics visible.
- The only stored items seem to be Achievements. Could include a high score screen with the stats after each win (on the scoreboard screen).
- When I sell a tower, do I need to remember how much it sells for? Maybe the sell icon should include a price. And how much is the upgrade?
- Will it be obvious how upgraded the towers are?
- The instruction overlay says that I need to survive 100 waves to win - maybe that can be included in the wave count label (e.g. Wave 19/100)

Heuristic Analysis

4/9: Consistency

- Dialogs and buttons seem consistent. Usage of android buttons is consistent with other apps. The style of the game is fairly different from other tower defense games.
- In-game, the label says "Towers," but in the scoreboard screen it refers to "Survivors defeated" - are they towers or survivors?

Heuristic Analysis

5/9: Feedback

Every button seems to change the screen in some way, so feedback seems sufficient.

Heuristic Analysis

6/9: Clearly marked exits

Well, the android home button is always present and always take the user back to the android home screen. Also, the back button always allows user to go back.

Heuristic Analysis

7/9: Shortcuts

Again, the android home button returns the user immediately to the android home screen without having to say, "Yes, I want my game saved." Also, resume game takes user back to the last game they played.

Heuristic Analysis

8/9: Good error messages

As in *dialogue*, there are messages like "Starting a new game will replace the existing game" and "Are you sure you want to exit? I'll save your game so you can resume it later." These are good messages.

Heuristic Analysis

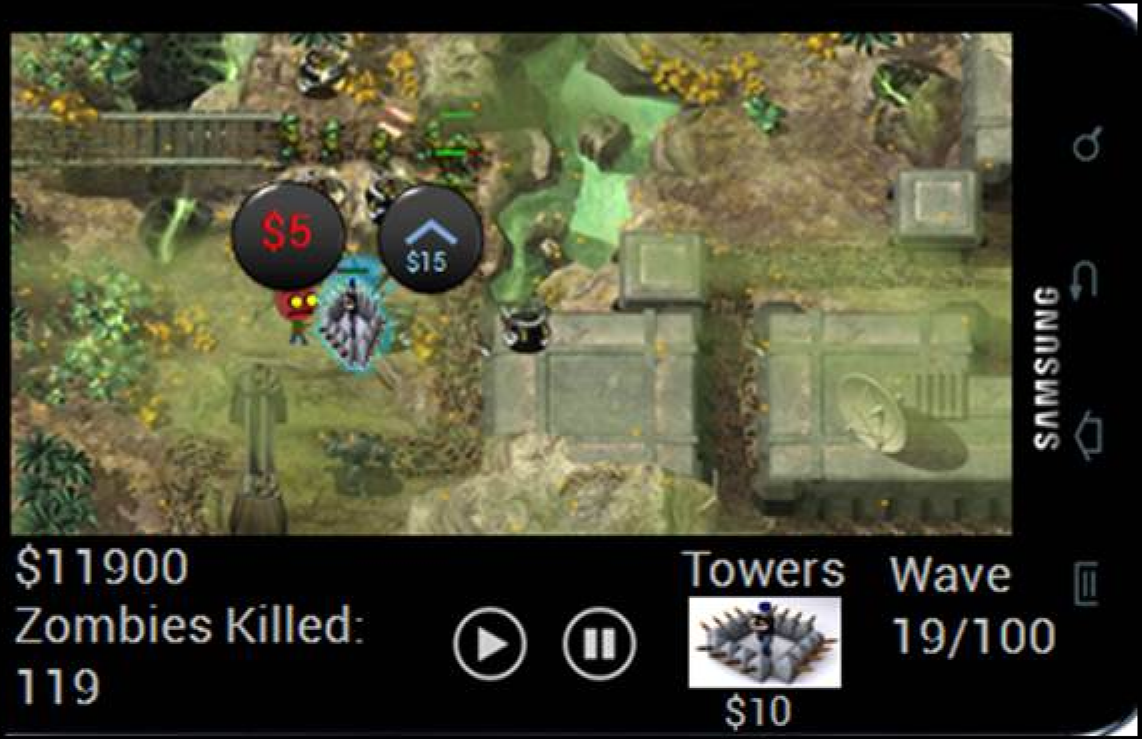
9/9: Prevent errors

- What happens user drags a tower and it gets placed where user didn't want it? Can she/he undo, or will it be necessary to sell at a loss to get the space back?
- What if user taps the wrong tower? Will she/he need to unselect to re-select the correct one? Maybe this should be under *shortcuts*.
- If user hits back button, they won't immediately leave the game, in case it was accidental. They will see a confirmation screen instead.

Heuristic Analysis

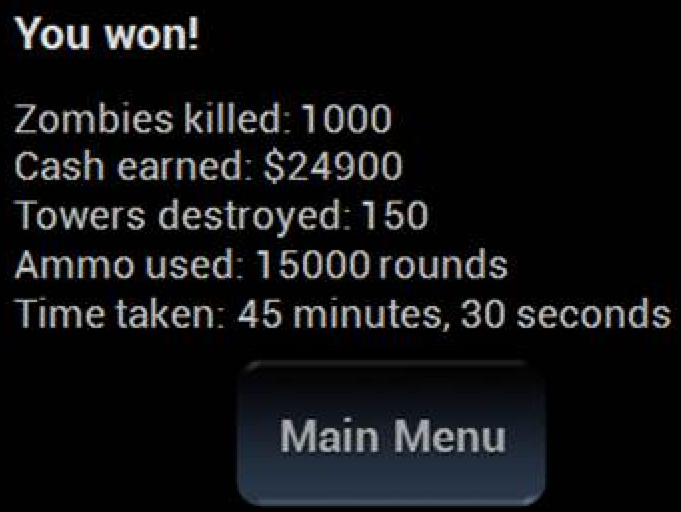
Changes

1. Sell and upgrade buttons should include price
2. Wave label should indicate total number of waves
3. Scoreboard screen should refer to towers



$11900
Zombies Killed: 119

Wave 19/100



You won!

Zombies killed: 1000
Cash earned: $24900
Towers destroyed: 150
Ammo used: 15000 rounds
Time taken: 45 minutes, 30 seconds