

Augmented Reality Game

Concept of Operations

COP 4331C, Fall, 2015

Team Name: Project Pals

Team Members:

- Eric Peralli - Eric.peralli@gmail.com
- Connor Heckman – Connor.heckman@me.com
- Clayton Cuteri – Cuteri.clayton@knights.ucf.edu

Version	Date	Who	Comment
V0.0	09/17/15	Connor Heckman	Original CONOPS
V1.0	09/17/15	Eric Peralli	Formatting Errors Fixed

Contents of this Document

- The Current System
- Needs
- User and Modes of Operations
- Operational Scenarios
- Operational Features
- Expected Impacts
- Analysis

The Current System

Most augmented reality applications on the smartphone market are navigation based (i.e., direction prompts displayed via the application or using the phone's camera to find discounts and offers at stores). We will be creating an action based augmented reality game (in the style of a first person shooter). There are precious few of these action based augmented realities games available on the current market, but the current system isolates users and has poor or nonexistent networking between application users.

Current System:

- Mostly single player based
- Simplistic UI
- Direct flow upon launching the app (lack of customizable modes)
- No tutorials, learn as you go
- Singular theme

The Proposed System: Needs

- Networking between users of the application
- Heads up display while in game
- Indirect flow, menu to allow for customization of experience (light settings)
- Tutorial for new players upon download
- Multiple themes for a diverse experience
- Scoreboards and achievement type system
- Variety of enemies per theme (progressing difficulty)

The Proposed System: Users and Modes of Operation

There will be one type of user, and several modes of operation. The different types of modes of operation are the different styles of gameplay, which includes a tutorial mode, single player mode, and multiplayer mode. The tutorial mode will teach users the fundamentals of the game. The single player will allow players to play the game without sharing and competing scores with other players. The multiplayer mode will incorporate score sharing capabilities.

Mode of Operations:

- Tutorial
- Single player operation (no networking)
- Multiplayer (competitive mode)

The Proposed System: Operational Scenarios

- Tutorial Scenario – The user has launched the game for the first time, and the tutorial begins to play
- Single Player Scenario – The user has completed the tutorial and can now launch the game normally. In single player mode, the user is playing to increase their local score and unlock themes
- Multiplayer Scenario – The user has completed the tutorial and can now launch the game normally. In multiplayer mode, the user is playing to increase their global score and unlock themes
- End Game Scenario – The user has exited the application
- Collision problems
- Problems with networking interfering with single player

The Proposed System: Operational Features

Must Have:

- Networking between users of the application
- Multiple themes for a diverse experience
- Variety of enemies (rising difficulty/sense of progression)
- Scoreboards and some sort of achievement system

- Indirect flow, initial start menu for technical options

Would Like to Have:

- Heads up display while in game (health bar)
- Tutorial for new players upon download
- Social media status updates
- Challenges to issue between users

The Proposed System: Expected Impacts

- Increased customization of mobile games
- Larger interest in the commercialization of artificial reality devices

The Proposed System: Analysis**Expected Improvements:**

- Better focus on competition between users
- Larger target audience due to variety of themes
- Sense of progression achievement system
- Sense of community (social aspect)

Disadvantages:

- Singular platform
- Cyclical play, could become repetitious
- Active gameplay required (have to swivel camera around)
- Have to use public domain video game market

Limitations:

- Inability to integrate true multiplayer mode (no PVP)
- Network effect on enjoyment of game
- Hardware limitations

Risks:

- Limitation of market
- Obscures user perception

Alternatives and Tradeoffs:

- Avoiding the development fee in mac
- Trade security and quality of app store for numbers in google marketplace

Augmented Reality Game

Project Management Plan

COP 4331C, Fall 2015

Team Name: Project Pals

Team Members:

- Eric Peralli - Eric.peralli@gmail.com
- Connor Heckman – Connor.heckman@me.com
- Clayton Cuteri – Cuteri.clayton@knights.ucf.edu

Version	Date	Who	Comment
V0.0	09/17/15	Connor Heckman	Original ProjManag
V1.0	09/17/15	Eric Peralli	Fixed Formatting Errors
V2.0	9/18/15	Clayton Cuteri	Added PERT and Documentation Charts
V3.0	9/18/15	Connor Heckman	Added links to standards, added Online documentation

Contents of this Document

- Project Overview
- Reference Documents
- Applicable Standards
- Project Team Organization
- Deliverables
- Software Life Cycle Process
- Tools and Computing Environment
- Configuration Manager
- Quality Assurance
- Risk Management
- Table of Work Packages, Time Estimates, and Assignments
- PERT Chart
- Technical Project Metrics
- Plan for Tracking, Control, and Reporting of Progress

Project Overview

Team Project Pals is creating an action based augmented reality application for Android, complete with networking between players, and a high emphasis on player customization.

Reference Documents

- [Concept of Operations](#)

Applicable Standards

- Coding Standard: [Java Google Coding Standard](#)
- Document Standard: [Documentation Standards](#)
- Artifact Standard: [Artifact Size Standards](#)

Project Team Organization

Team Project Pals consists of three people, who share equal responsibility for all facets of the project. However, each member has a designated field that they specialize in, providing oversight for each branch of the project. Eric Peralli is our software development specialist who will manage edits to the source code. Connor Heckman is our web design specialist who manages the team's website and organization of the documentation. Clayton Cuteri is the documentation specialist who drafts and formats all aspects of the team's documentation. Our team meets twice a week in person and communicates via phone messaging and email.

Deliverables

Artifact	Due Date
Meeting Minutes	Weekly
Individual Logs	12/3/15
Group Project Management Reports	Weekly
ConOps	9/18/15
Project Plan	9/18/15
SRS	10/8/15
High-Level Design	10/29/15
Detailed Design	10/29/15
Test Plan	10/8/15
User's Manual	12/3/15
Final Test Results	12/3/15
Source, Executable, Build Instructions	12/3/15
Project Legacy	12/3/15

Software Life Cycle Process

Team Project Pals decided to use the Waterfall Software Development Method because our requirements are clearly defined, we have prior experience with the technology being used, and the entire team can focus on one development phase at a time.

Tools and Computing Environment

- Project Platform: Android
- Programming Language: Java and XML
- IDE and Libraries: IntelliJ IDEA, Android 5.0.1 (API 21)
- Compiler: Javac

Configuration Manager

- Source code is stored via GitHub.com
- Source code is updated using Git
- Updates to documentation and made via GitHub.com
- Online documentation is stored via Wordpress

Quality Assurance

Source code must be thoroughly commented, as well as reviewed and approved by each team member before being pushed. Team members must notify remaining members before updating online documentation. Deliverables must be completed and reviewed by all team members in person before submission.

Risk Management

Software:

- Some team members are unfamiliar with GUI operations in Java. To remedy this, during the requirement gathering and analysis phase, these team members will review Java GUI fundamentals via online lessons and tutorials.
- If there is an error in the source code that is missed by peer review, Git can be used to revert the changes that were pushed.

Scheduling:

- Group meetings are held at a fixed time and location every week, but a group member can miss one due to emergencies and prior commitments. If this happens, the absentee member must schedule a makeup meeting with the team to review the minutes of the prior meeting.

Documentation:

- In case of server crashes or connectivity issues, all online documentation is stored via GitHub and local hard drives.

Table of Work Packages, Time Estimates, and Assignments

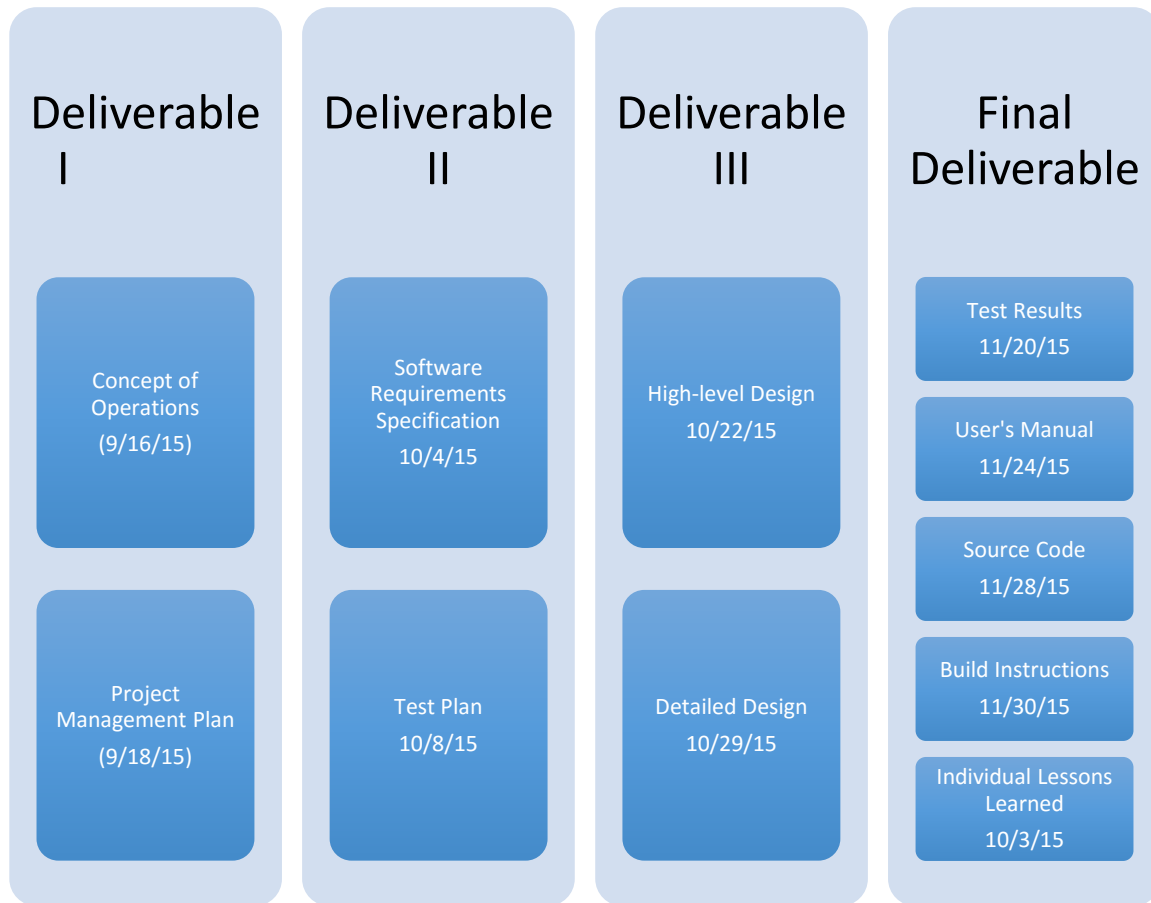
Work Package	Time Estimate	Assigned To
--------------	---------------	-------------

Online Documentation	36 Hours	Connor Heckman Clay Cuteri Eric Peralli
Updating Website	2 Hours per week	Connor Heckman
Checking Online Documentation Organization	1 Hour per week	Connor Heckman
Reviewing Most recent versions of online documentation	1 Hour per week	Connor Heckman Clay Cuteri Eric Peralli

Documentation	54 Hours	Clayton Cuteri Eric Peralli Connor Heckman
Document Drafting	2 Hours per Week	Clayton Cuteri
Document Review	2 Hours per Week	Clayton Cuteri Eric Peralli Connor Heckman
Deliverable Quality Assurance	2 Hours per Week	Clayton Cuteri Eric Peralli Conner Heckman

Software Development	70 Hours	Eric Peralli Clayton Cuteri Connor Heckman
Basic Gameplay	15 Hours	Eric Peralli
GUI Design	15 Hours	Clayton Cuteri Connor Heckman
Networking	20 Hours	Eric Peralli
Theme Visuals	20 Hours	Eric Peralli Clayton Cuteri Connor Heckman

PERT Chart



Technical Project Metrics

We will consider the Require Gathering and Analysis phase complete when we have completed the first version of the Concept of Operations, Project Management Plan, and Software Requirement Specification deliverables. We will consider the System Design phase complete when we have finished the first version of the Test Plan and High Level Design deliverables. We will consider the Implementation Phase complete when we have finished the first version of the Detailed Design and Source Code Deliverables. We will consider the Testing Phase complete when we have received the Test Results. We will consider the Development of System phase complete when we have finished the first version of the User's Manual. The Maintenance Phase of the Waterfall Software Development Method is not applicable to this project.

Plan for Tracking, Control, and Reporting of Progress

At the end of each weekly meeting, team members will compile an agenda for the next in-person meeting. All documentation and source code is available to edit and review online via Git and GitHub, provided the team member doing the editing has notified the

rest of their team beforehand. All changes made will be noted in version control. Time will be set aside before all in-person meetings so that the team can discuss issues, confusions, or risks incurred during the week.