**RoboWars**

**Final Report**

**Draft #1**

**SYSC 4907  
April 7th, 2011  
Project #34  
  
Alexander Craig - 100741774  
Alexander Dinardo - 100737587  
Steven Legere - 100735141  
Mike Wright - 100741876  
  
Supervised by Cheryl Schramm**

Contents

[1 – Introduction (Alex Craig) 4](#_Toc287955138)

[2 - The Engineering Project (Steve Legere) 4](#_Toc287955139)

[2.1 Health and Safety 4](#_Toc287955140)

[2.2 Engineering Professionalism 4](#_Toc287955141)

[2.3 Project Management 4](#_Toc287955142)

[2.4 Individual Contributions 4](#_Toc287955143)

[2.4.1 Project Contributions 4](#_Toc287955144)

[2.4.2 Report Contributions 5](#_Toc287955145)

[3 – Background and Terminology 5](#_Toc287955146)

[3.1 – Android Operating System (Steve Legere) 5](#_Toc287955147)

[3.2 – LEGO Mindstorm NXT 2.0 (Mike Wright) 5](#_Toc287955148)

[3.3 – Augmented Reality (Alex Dinardo) 5](#_Toc287955149)

[4 – Overall System Architecture (Alex Craig) 5](#_Toc287955150)

[5 – Server Implementation 5](#_Toc287955151)

[5.1 – User and Robot State Management and Data Propagation (Alex Craig) 5](#_Toc287955152)

[5.2 – Live Media Streaming (Alex Craig) 5](#_Toc287955153)

[5.3 – Virtual World Model Implementation (Alex Dinardo) 5](#_Toc287955154)

[6 – Robot Client Implementation 5](#_Toc287955155)

[6.1 – LeJOS and Modifications (Mike Wright) 5](#_Toc287955156)

[6.2 – Dead Reckoning and Dot-Grid Error Correction (Mike Wright) 5](#_Toc287955157)

[7 – Android Client Implementation 5](#_Toc287955158)

[7.1 – Android Libraries and Application Layout (Steve Legere) 5](#_Toc287955159)

[7.2 – OpenGL Rendering (Steve Legere) 5](#_Toc287955160)

[8 – Testing 5](#_Toc287955161)

[8.1 – Server Side Testing (Alex Dinardo) 5](#_Toc287955162)

[8.1.3 – Unit Testing (Alex Dinardo) 5](#_Toc287955163)

[8.1.4 – Integration Testing (Alex Dinardo) 5](#_Toc287955164)

[8.2 – Robot Client Testing (Mike Wright) 6](#_Toc287955165)

[8.3 – Android Client Testing (Steve Legere) 6](#_Toc287955166)

[9 – Conclusion (Mike Wright) 6](#_Toc287955167)

[Appendix A – Use Cases 6](#_Toc287955168)

[Appendix B – Use Case Realizations (Sequence Diagrams) 6](#_Toc287955169)

[Appendix C – Schedule Gantt Chart 6](#_Toc287955170)

[Appendix D – Class Diagrams 6](#_Toc287955171)

# 1 – Introduction (Alex Craig)

* Introduce problem area
* Problem motivation (goals)
* Problem statement
* Proposed solution
* Accomplishments
* Report overview

# 2 - The Engineering Project (Steve Legere)

## 2.1 Health and Safety

* Not terribly relevant

## 2.2 Engineering Professionalism

## 2.3 Project Management

* Phased incremental lifecycle
* Heavy emphasis on design work before beginning implementation
* Three stages of development with time scheduled for testing for each phase
* Discuss and reference Gantt chart

## 2.4 Individual Contributions

### 2.4.1 Project Contributions

### 2.4.2 Report Contributions

# 3 – Background and Terminology

## 3.1 – Android Operating System (Steve Legere)

## 3.2 – LEGO Mindstorm NXT 2.0 (Mike Wright)

## 3.3 – Augmented Reality (Alex Dinardo)

# 4 – Overall System Architecture (Alex Craig)

# 5 – Server Implementation

## 5.1 – User and Robot State Management and Data Propagation (Alex Craig)

## 5.2 – Live Media Streaming (Alex Craig)

## 5.3 – Virtual World Model Implementation (Alex Dinardo)

# 6 – Robot Client Implementation

## 6.1 – LeJOS and Modifications (Mike Wright)

## 6.2 – Dead Reckoning and Dot-Grid Error Correction (Mike Wright)

# 7 – Android Client Implementation

## 7.1 – Android Libraries and Application Layout (Steve Legere)

## 7.2 – OpenGL Rendering (Steve Legere)

# 8 – Testing

## 8.1 – Server Side Testing (Alex Dinardo)

### 8.1.3 – Unit Testing (Alex Dinardo)

### 8.1.4 – Integration Testing (Alex Dinardo)

## 8.2 – Robot Client Testing (Mike Wright)

## 8.3 – Android Client Testing (Steve Legere)

# 9 – Conclusion (Mike Wright)

# Appendix A – Use Cases

# Appendix B – Use Case Realizations (Sequence Diagrams)

# Appendix C – Schedule Gantt Chart

# Appendix D – Class Diagrams