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# Abstract

Erie Insurance currently works with its agents to help them display the dangers of distracted driving to their policy holders. This can often be very difficult for agents to do since the user is not able to experience the consequences of distracted driving for themselves in a safe way. In order to help solve this problem for the agents, we are creating a virtual reality experience to demonstrate how distracted driving can affect the policy holder. This virtual reality experience will utilize the Unity 3D engine and the Google Cardboard SDK to give the policy holder different scenarios in which they will have to make decisions influencing their outcome. This virtual reality experience will allow the policy holder to better understand how they can influence dangerous driving activities as well as to help stop them.

# Report Revision History

# Problem Statement

## Business Background

Erie Insurance is a Fortune 500 insurance company employing thousands of people. Erie Insurance has been a figure in the insurance world for 90 years, and currently serves over 4 million customers in 13 states. They utilize and manage smaller agencies to deal directly with customers, selling them auto, home, life, and business insurance.

With the rise of technology, distracted driving has become more of a risk than ever before. As Erie Insurance is invested in protecting people, they are taking the initiative in informing families about the dangers of driving while distracted.

## Needs

Currently, it is very difficult to display the dangers of distracted driving to a younger generation in a way that engages them. Erie Insurance is seeking an innovative solution in order to solve this problem.

## Objectives

This project aims to utilize virtual reality technology to create an immersive experience that engages users of all ages. The application will be easily distributed to agents around Erie's footprint and will effectively capture the younger audience.

# Requirements

## User Requirements

### Glossary of Relevant Domain Terminology

Virtual Reality (VR) – A simulation of a three dimensional environment

Cardboard – Google’s SDK created for smartphone devices

Headset – A head mounted device that displays virtual reality devices

### User Groups

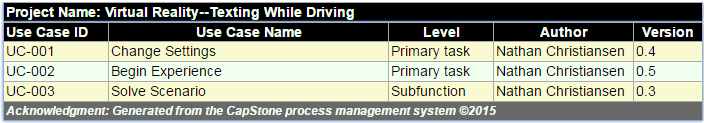
User – Any person engaging in our experience

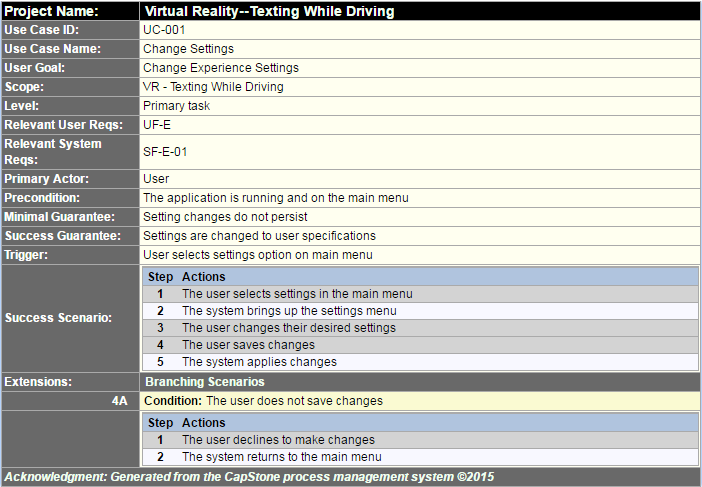
### Functional Requirements

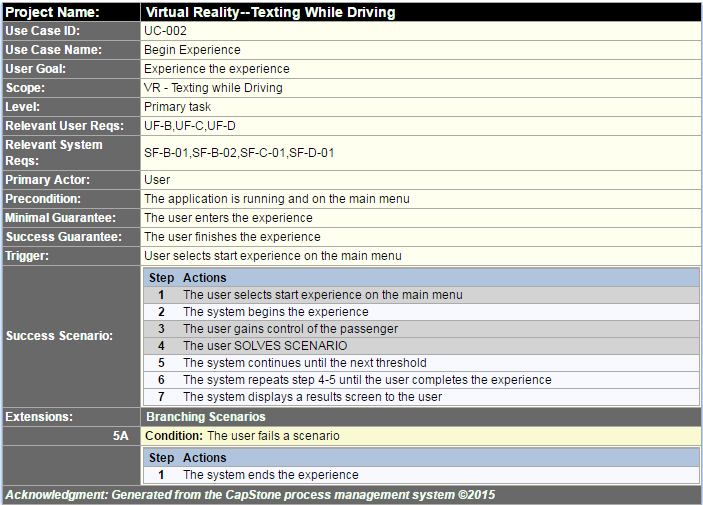
#### Project Scope (Use Case Diagram)

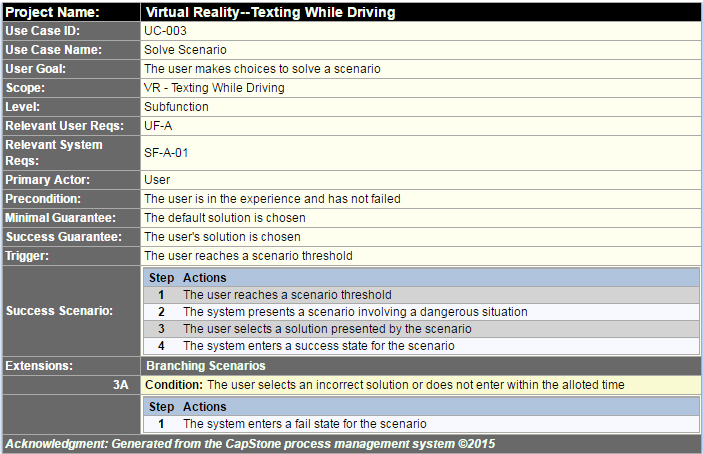


#### User Scenarios

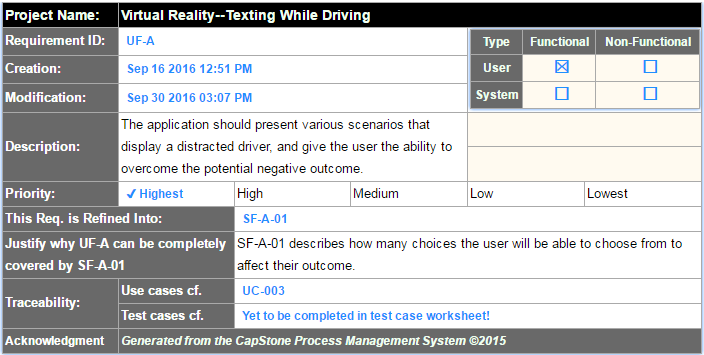


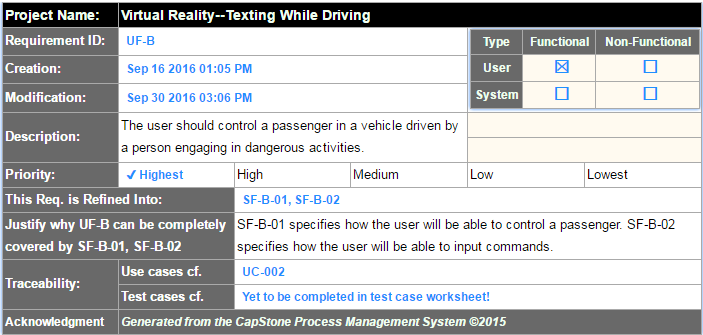


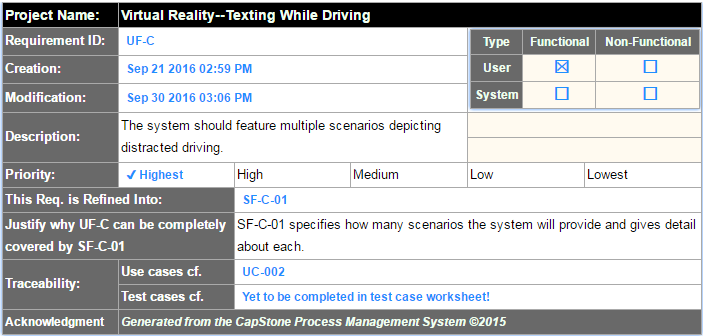


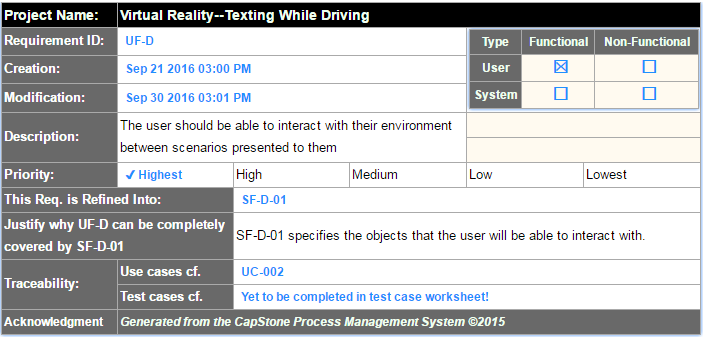


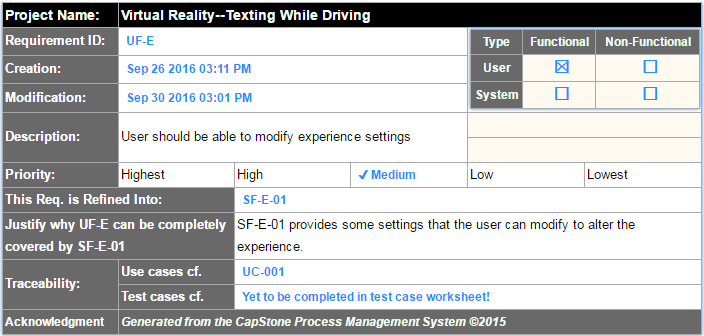
#### List of User Functional Requirements







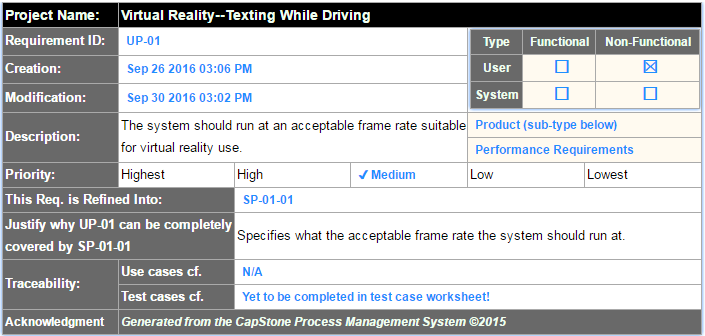




### Non-functional Requirements

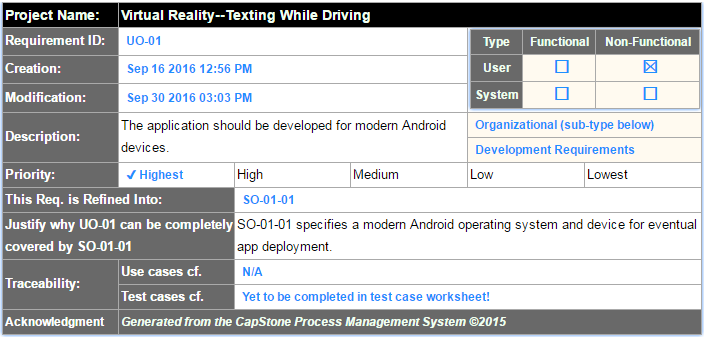
#### Product: Usability Requirements

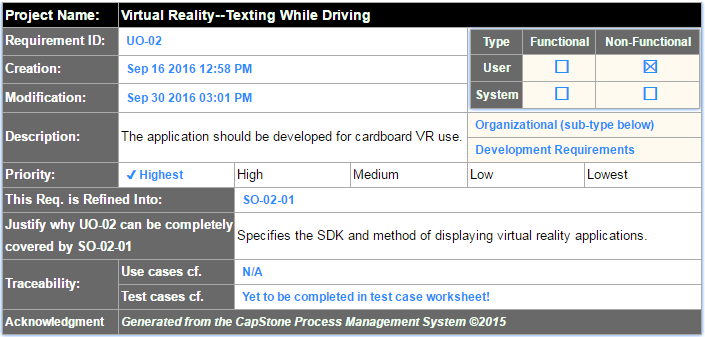
#### Product: Performance Requirements

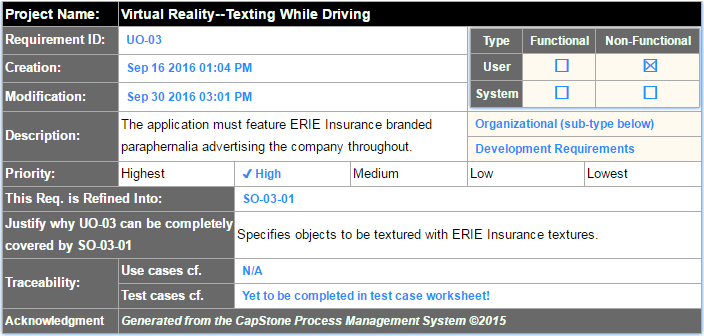


#### Product: Dependability/Security Requirements

#### Organizational: Development Requirements







#### Organizational: Operational Requirements

#### Organizational: Environmental Requirements

#### External: Safety/Security Requirements

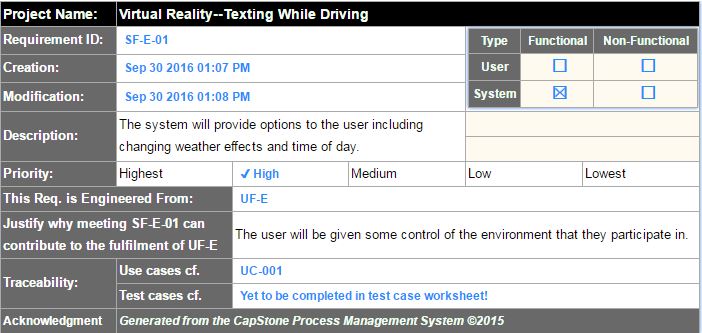
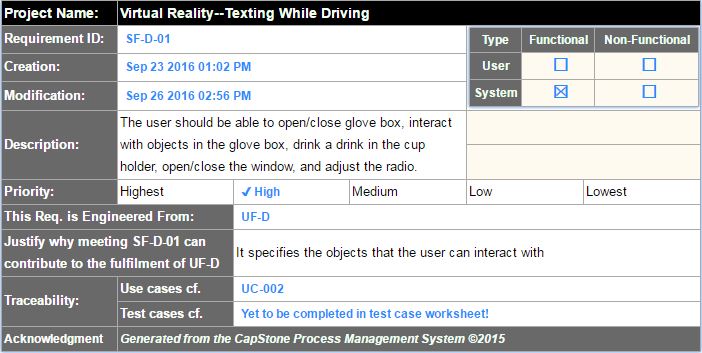
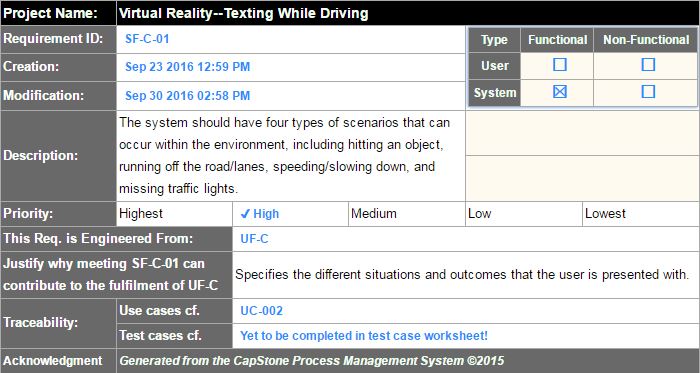
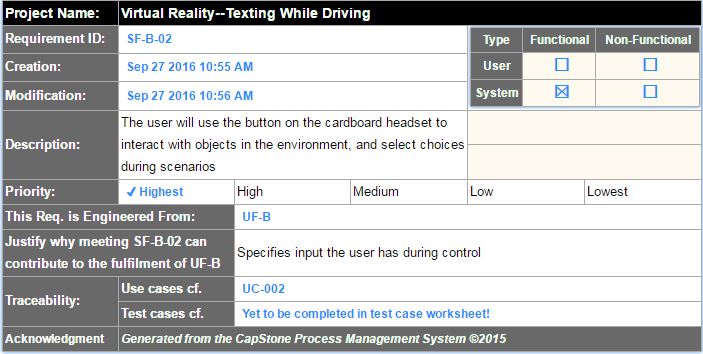
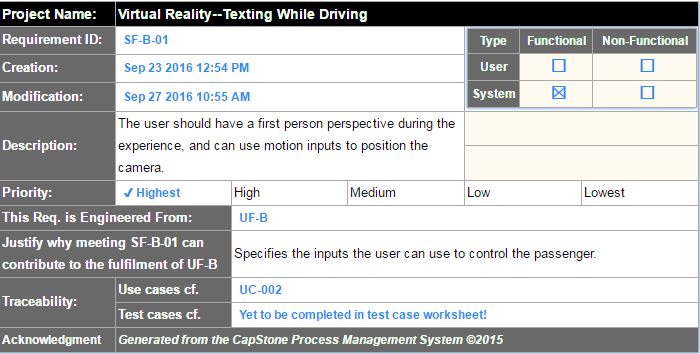
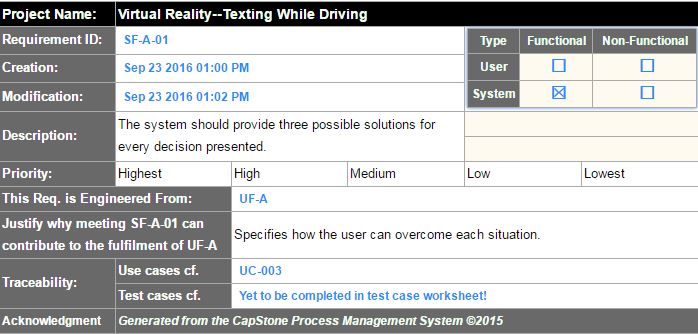
#### External: Cultural and Social Requirements

#### External: Political Requirements

## System Requirements

### Functional Requirements

#### List of System Functional Requirements



#### System Behavior



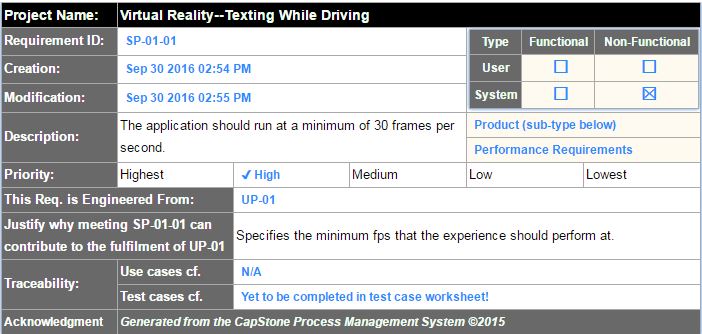


#### Data Requirements

### Non-functional Requirements

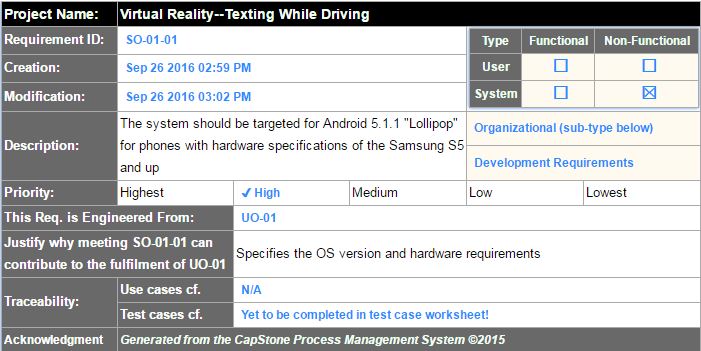
#### Product: Usability Requirements

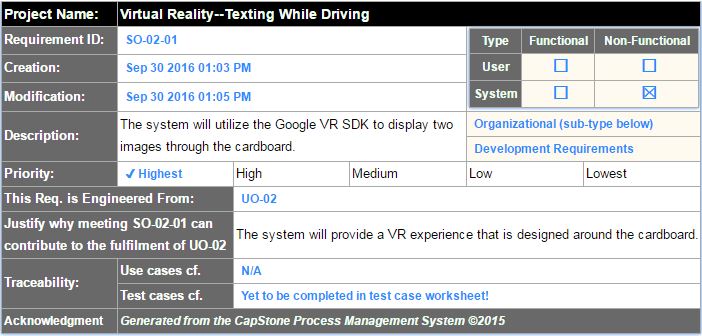
#### Product: Performance Requirements

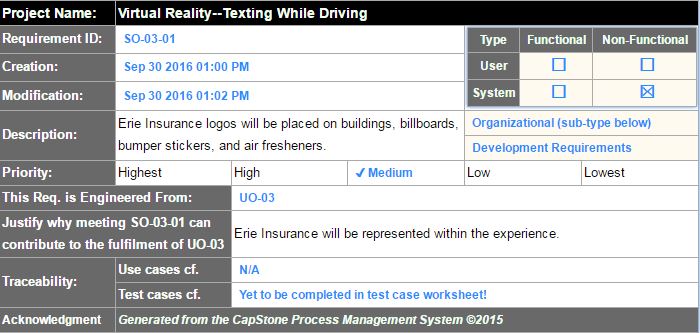


#### Product: Dependability/Security Requirements

#### Organizational: Development Requirements







#### Organizational: Operational Requirements

#### Organizational: Environmental Requirements

#### External: Safety/Security Requirements

#### External: Cultural and Social Requirements

#### External: Political Requirements

## Requirements Trace Table



# Exploratory Studies

## Relevant Techniques

We will be taking advantage of the prototype software development model.

## Relevant Packages/Products

We will be utilizing various free and store-bought assets found in the Unity asset store.

## Broader Impacts

This virtual reality experience has the potential to help minimize distracted driving. Minimizing distracted driving means that there will be less accidents, less injuries, and less deaths because of distracted driving. Since the application runs on the Android operating system, which is used by millions of people every day, this application has the potential to reach a large number of drivers and passengers.

# System Design

## Architectural Design

## Structural Design

## User Interface Design

## Behavioral Design

## Design Alternatives & Design Rationale

# System Implementation

## Programming Languages & Tools

We are implementing our project using Unity, which takes advantage of C# for creating scripts.

## Coding Conventions

We will be using Microsoft C# coding conventions.

## Code Version Control

We are utilizing Git and Github to keep track of all changes.

## Implementation Alternatives & Decision Rationale

## Analysis of Key Algorithms

# System Testing

## Test Automation Framework

### Steps for Installing Test Framework

### Steps for Running Test Cases

## Test Case Design

### Acceptance Test Cases

### System Test Cases

### Integration Test Cases

### Unit Test Cases

## Test Case Execution Report

### Unit Testing Report

### Integration Testing Report

### System Testing Report

### Acceptance Testing Report

# Challenges & Open Issues

## Challenges Faces in Requirements Engineering

## Challenges Faced in System Development

## Open Issues & Ideas for Solutions

# System Manuals

## Instructions for System Development

### How to Set Up Development Environment

### Notes on System Further Extensions

## Instructions for System Deployment

### Platform Requirements

### System Installation

## Instructions for System End Users

# Conclusion

## Achievement

## Lessons Learned

## Acknowledgment

# References