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| General Information | |
| Use Case Name\Number : 001  Subject Area : RC Car Driving  Description : User wants to drive the RC Car | Responsible Analyst : Sanchez |

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| Requirements/Feature Trace | |
| **REQ#** | Requirements Name and / or Short Description |
| 1 | This use case traces to the full Network section, driving the RC utilizes all networking components |
| 2 | This use case traces to each controller requirement |
| 3 | This use case traces to each video requirement |
| 4 | This use case traces to each sensor requirement |

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| Revision History | | |
| Author | **Date** | **Comments** |
| Sanchez | 10/15/14 | Initial draft of first use case |
| Sanchez | 10/27/14 | Revising draft of use case |
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| **Insertion Points in other Use Cases** | | |
| Use Case Name | **Use Case Number** | **Step Inserted After** |
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| **Actors** | | |
| **Actor Name** | **Person/System** | **Brief Description** |
| Driver | Person | The driver is the user who controls the RC car |
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| **Pre-Conditions** | |
| # | Description |
| 1 | RC Car server system is properly connected |
| 2 | Oculus Rift is connected to the client PC system |
| 3 | Xbox controller is properly connected to the client PC system |
| 4 | A wireless connection exists within the vicinity |
| 5 | The system has been started |

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| **Start Stimulus** |
| The user initiates all systems and begins the connection to the RC from the client station |

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| **Use Case Main Course Steps** | | | |
| **Number** | **Description** | **Adds/Alt Name/Number** | **Bus Rule#** |
| 1 | System displays ready screen |  |  |
| 2 | User presses the Start Driving button |  |  |
| 3 | System begins wireless connections |  |  |
| 4 | System begins camera stream |  |  |
| 5 | System begins controller stream |  |  |
| 6 | System prompts user to put on Oculus Rift headset |  |  |
| 7 | User puts on Oculus Rift headset |  |  |
| 8 | System prompts user ready to drive |  |  |
| 9 | User begins driving RC |  |  |

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| **Exception Conditions** | | |
| **Exception Situations** | **Action(s) on Exception** | **Adds\Alt UC #** |
| RC unexpectedly disconnects | Attempt an auto-reconnect with a 60 second timeout, suggest options to user if timeout occurs |  |
| Steering wheel unexpectedly disconnects | Prompt the user to check batteries and controller wires, offer Retry and Cancel options to user for reconnection test |  |
| Oculus has no image | Prompt user to check all connections, check Oculus display mode, and system monitor configurations, offer Show Demo Scene button |  |
| All connections good, but no RC response from controls | Server checks if controller daemon is running on client and server, if running prompt user to check wire connections |  |

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| Post-Conditions | |
| **#** | **Description** |
| 1 | User is driving the RC car |
| 2 | User sees the live feed through the Oculus Rift head mounted display |

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| **Candidate Objects** | | |
| **Class/Object Name** | **Descriptions** | **Possible**  **attributes** |
| RCCar | Client interface to the control of the RC car | Speed, steering angle |
| ConnectionManager | Handles the high-level aspects of client/server networking | ClientSocket, VideoStream, ControlStream |
| OculusManager | Controls, manipulates, and displays the video feed to the Rift | LeftEyeStream, RightEyeStream |
| ApplicationManager | Maintains the lifecycle of the business managers through the application | OculusManager, ConnectionManager, RCCar |

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| **Assumptions** | | | | | |
| **#** | **Assumption** | **Date**  **Raised** | **Raised**  **By** | **Date**  **Verified** | **Verified By** |
| 1 | User can operate a standard motor vehicle | 10/27/14 | Sanchez | 10/27/14 | Sanchez |
| 2 | User is over the recommended age for Virtual Reality viewing | 10/27/14 | Sanchez | 10/27/14 | Sanchez |
| 3 | Server system is in good working condition | 10/27/14 | Sanchez | 10/27/14 | Sanchez |
| 4 | RC Car is in good working condition | 10/27/14 | Sanchez | 10/27/14 | Sanchez |

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| **Issues** | | | | | |
| **#** | **Issue** | **Date**  **Raised** | **Raised**  **By** | **Date**  **Verified** | **Verified By** |
| 1 | Video stream may have high latency/delay | 10/27/14 | Sanchez |  |  |
| 2 | Video and control streams may not be synchronized | 10/27/14 | Sanchez |  |  |
| 3 | User may be adversely affected by the Oculus Rift | 10/27/14 | Sanchez |  |  |
| 4 | Network video stream will be affected by packet loss, causing video hiccup | 10/27/14 | Sanchez |  |  |
| 5 | Camera feeds may desync | 10/27/14 | Sanchez |  |  |

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| **Other Comments** | | |
| **Author** | **Comment** | **Date** |
| Sanchez | Project has multiple research issues remaining | 10/27/14 |
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| Frequency of Execution |
| **Frequency:**  2 Minimum: 1 Maximum: 3 Average: 2 (OR)Fixed:  **Per:** Hour:Day:  Week:  Month:  Other: |

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| **Timing Information** | | | | | | | |
| **#** | **At/**  **Between** | **Step(s)** | **Timing**  **Unit** | **Minimum** | **Average** | **Maximum** | **Comments** |
| 1 | At | 3 | ms | 250 | 250 | 500 | Initial connection sync |
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| **Volume Information** | | | | | | |
| **#** | **Step #** | **Unit of**  **Measure** | **Minimum** | **Average** | **Maximum** | **Comments** |
| 1 | 3 | Bytes | 100 | 500 | 1000 | Handshake communication |
| 2 | 4 | Kilobytes | 800 | 1200 | 2000 | Video frame data stream(x2) |
| 3 | 5 | Bytes | 50 | 100 | 250 | RC Car control data stream |
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| **Alternate Course General Information** |
| Alternate Course Name:  Alternate Course Number:  Parent Use Case Name:  Parent Use Case Number:  Description:  Reason for Execution: Non Exception:  Exception:  Exception #: |

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| Insertion Point |
| Step Inserted After |
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| Pre-Conditions | |
| 1. |  |
| 2. |  |

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| Alternate Course Steps | | | |
| **#** | **Step Description** | **Adds Use Case #** | **Business Rule(s)#** |
| 1. |  |  |  |
| 2. |  |  |  |
| 3. |  |  |  |
| 4. |  |  |  |

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| Post-Conditions | |
| 1. |  |
| 2. |  |