**SheRBA**

Sherlock’s Riddles of Biblical Archaeology

Technical Design Documentation

*Document Version: 0.1.0*

Technical Specifications and Platforms

**Software**

* Unity3D 5.6.1f1
* FFmpeg (more advanced encoding features)
* Adobe Encoder (simpler encoding interface)

**Source Control**

* GitHub via GitKraken 2.6.0

**Target Platforms**

* Windows 7+ (Primary focus)
* Android 4.4+
* iOS 5+
* MacOS Sierra
* HTML 5

Media Specifications and Formats

**Supported A/V Formats**

* Android
  + H.264 AVC
  + Baseline profile @ level 3.0 (Android 3.0+)
  + 4:2:0 chroma subsampling
  + MP4
* Windows
  + H.264 AVC
  + Baseline, Main, High up to level 5.1
  + 4:2:0 chroma subsampling
  + MP4

**A/V Encoding Specifications**

* Audio
  + Constant bitrate 160KB / sec
  + 48kHz sample rate
  + ACC-LC codec
  + Containers
    - MP3 for compressed audio only
    - WAV for uncompressed audio only
    - MP4 for compressed audio combined with compressed video
* Video
  + MP4 container
    - moov atom at front of file (Fast Start)
  + Framerate
    - Constant 30 fps
  + H.264 AVC codec
    - Non-interlacing
    - yuv420p color format (4:2:0 chroma subsampling)
    - Reference frames: 3
    - B-Frames: 2
    - Baseline profile @ level 3.0
  + Bitrate
    - Constant Rate Factor 28 (variable bit rate determined by encoder)
  + 1 audio track

Game Structure and Framework

* 2D using Unity’s Canvas API
* Users can interact with game play elements and menus via the touch screen on Android or iOS, or via their mouse cursor on Windows or MacOS.

**High Level Game Objects**

* Canvas
  + Unity Canvas where all other game play objects will be presented to the user.
* Level Manager
  + Overseer of all the core objects in play.
* Video Player
  + Container object for video files to play.
* Inventory
  + Data structure for evidence that is partitioned into different categories for Supporting, Opposing, or Irrelevant to the presented theory.
* Item
  + Polymorphic data object that represents various pieces of evidence that is sorted into the user’s inventory.

Game Flow and Data Management

**Scenes**

* Map
  + User may choose a destination or archaeological site to navigate to.
* Sherlock’s Study
  + Sherlock evaluates the evidence collected so far and determines what has been successfully sorted based on the given theory.
* Presentation
* A video or image slide show is presented to the user and evidence is given over the duration that is sorted afterwards to defend or dispute what has been given.

**Data Persistence**

* No data regarding game state is serialized and written to or read from disk.
* All game objects are contained within a single Unity scene.
  + There will be no scene transitions.
  + Different game play environments will be presented in the form of modules within Canvas that are switched on when desired.