*Florida International University*

*School of Computing and Information Sciences*

CIS 4911 - Senior Capstone Project

Software Engineering Focus

Feature Document

User Story #799

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# **User Story – Add spatial mapping**

* As a developer I would like to use HoloLens’ spatial mapping capabilities to generate a 3d mesh that the user can then draw and place holograms on.

*Acceptance Criteria*

* Dynamically create a 3d spatial mesh the room that HoloLens is in
* Allow users to place holograms along this mesh
  + Mesh is a boundary; holograms should not be able to pass (or clip) through it
* Mesh update rate should vary
  + Need hard time limit
  + Update when user places a new hologram/canvas to paint on.
  + Update on a gesture or voice command

**Use case #799 – Add spatial mapping**

Dynamically create bounds and surfaces that the user/player can subsequently draw on in future builds.

*Details*

Actor: User, Developer

Pre-conditions:

* *“Holo-paint”* installed on HoloLens
* Facing a direction with a wall at least 5m away (to start)

*Description*

Begins whenever a user starts the program

Ends when a user is able to see the boundaries when they select a hologram.

User can gaze around the room to watch the spatial boundaries grow.

*Post-conditions*

With physical boundaries of the room now mapped, it will be possible in later builds to draw on this mesh, and interact with it further.

*Decision Support*

Frequency

* + Often
  + HoloLens needs a 3d map of the space it’s in for augmented/mixed reality features

Criticality

* High
* Without a 3d spatial map, many of HoloLens’ features are unable to operate properly. Additionally, user experience is diminished.

Risk:

* Medium
* Spatial mapping is an expensive operation to constantly run, recommended to stay above 60fps for a comfortable user experience.
* Performance improvements are needed

*Constraints*

Physical device required

*Usability*

*Performance*

Spatial mapping is an expensive process to run. Needs optimizations to increase framerate back to >60fps.

*Supportability*

Application only works on HoloLens.

**Class Diagram**

