Ash Grove in 3D: Exploring Archaeology through Story Maps and XR

Geography and Geoinformation Science

Alisa Pettitt
apettitt@gmu.edu

Sven Fuhrmann
sfuhrman@gmu.edu

Project Objective

Develop **accessible, interactive, and immersive 3D deep maps** blending varied quanitative and qualitative data from archaeological investigations at Fairfax County's Ash Grove Historic Site

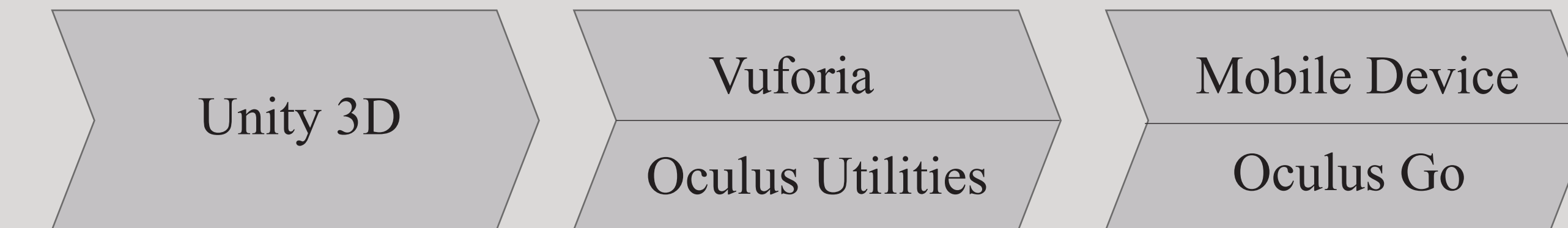## Why Story Maps and XR Applications?

Story Maps are excellent accessible tools for sharing spatially-infused data layers. XR technologies offer novel and immersive ways to visualize data. Both provide interactive elements and presented solutions for crafting accessible, interactive, and immersive experiences on Ash Grove.

Ash Grove Historic Site

Archaeological work was completed at Ash Grove Historic Site, a Fairfax County Park located in Tysons, Virginia containing a 18th century manor home constructed by Thomas Fairfax the 6th of the county's founding Fairfax family. This work was completed prior to the initiation of the county's Resident Curator program, a program that places curators in select county historic homes.

Methods for Developing 3D Deep Map Displays: Story Maps and XR Applications

Step 1: Assemble Different Data Types

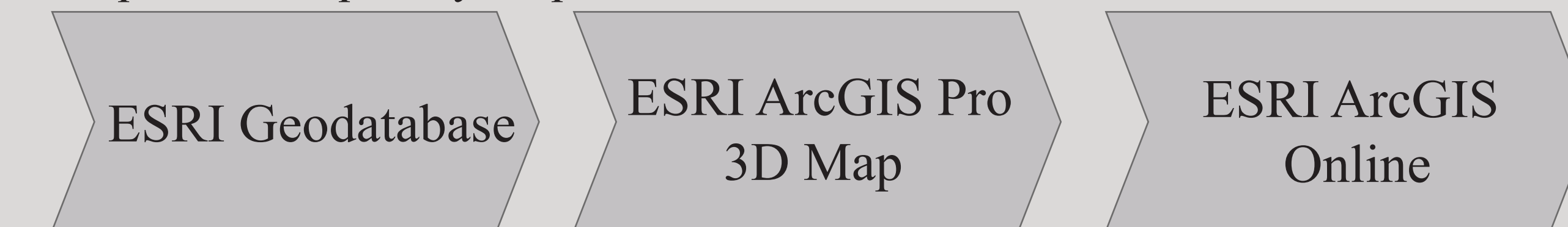Step 2: Develop XR Application in Unity 3D

| Unity 3D | Vuforia | Mobile Device |
| Vuforia Oculus Utilities | Oculus Go |

XR Applications
- AR Application
- VR Application

Step 2: Develop Story Map with ESRI Products

| ESRI Geodatabase | ESRI ArcGIS Pro 3D Map | ESRI ArcGIS Online |

ESRI Story Map with 3D Scenes

To best share exciting archaeological discoveries and histories of Ash Grove researchers looked for platforms to connect data layers and showcase 3D data.

Cellar Feature

Pig Mandible

Porcelain Bowl

Oil Lamp

Ice Skate

Results: Ash Grove XR Applications

Ash Grove Virtual Reality

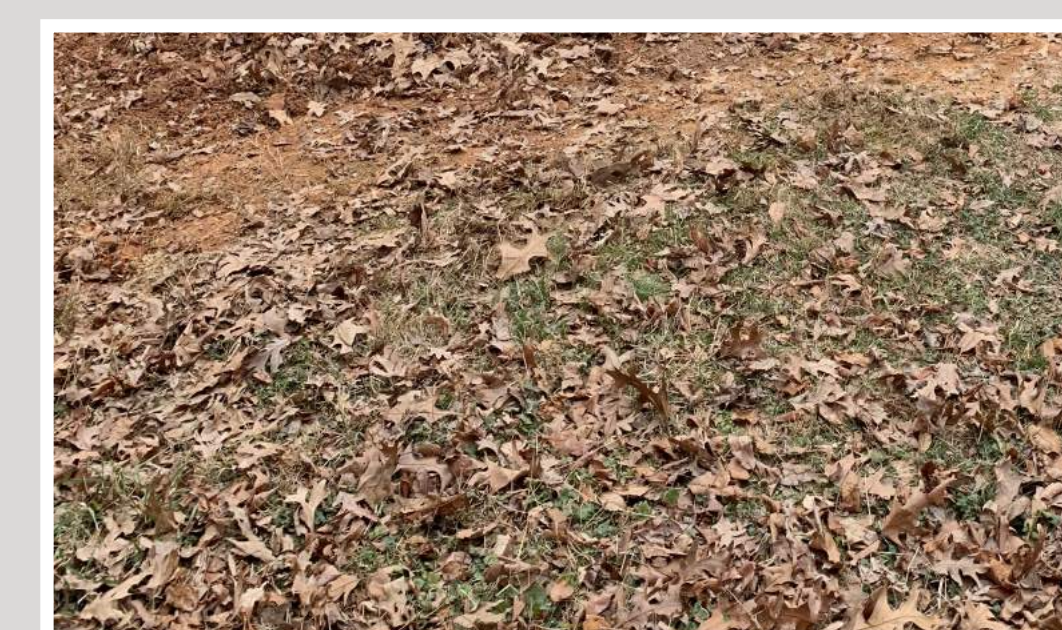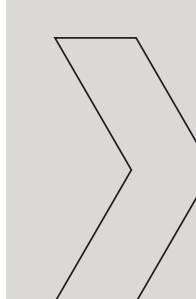Immersive VR in Oculus Go allows application users to explore virtual Ash Grove

Ash Grove Augmented Reality

Image of south yard at Ash Grove where cellar is located subsurface

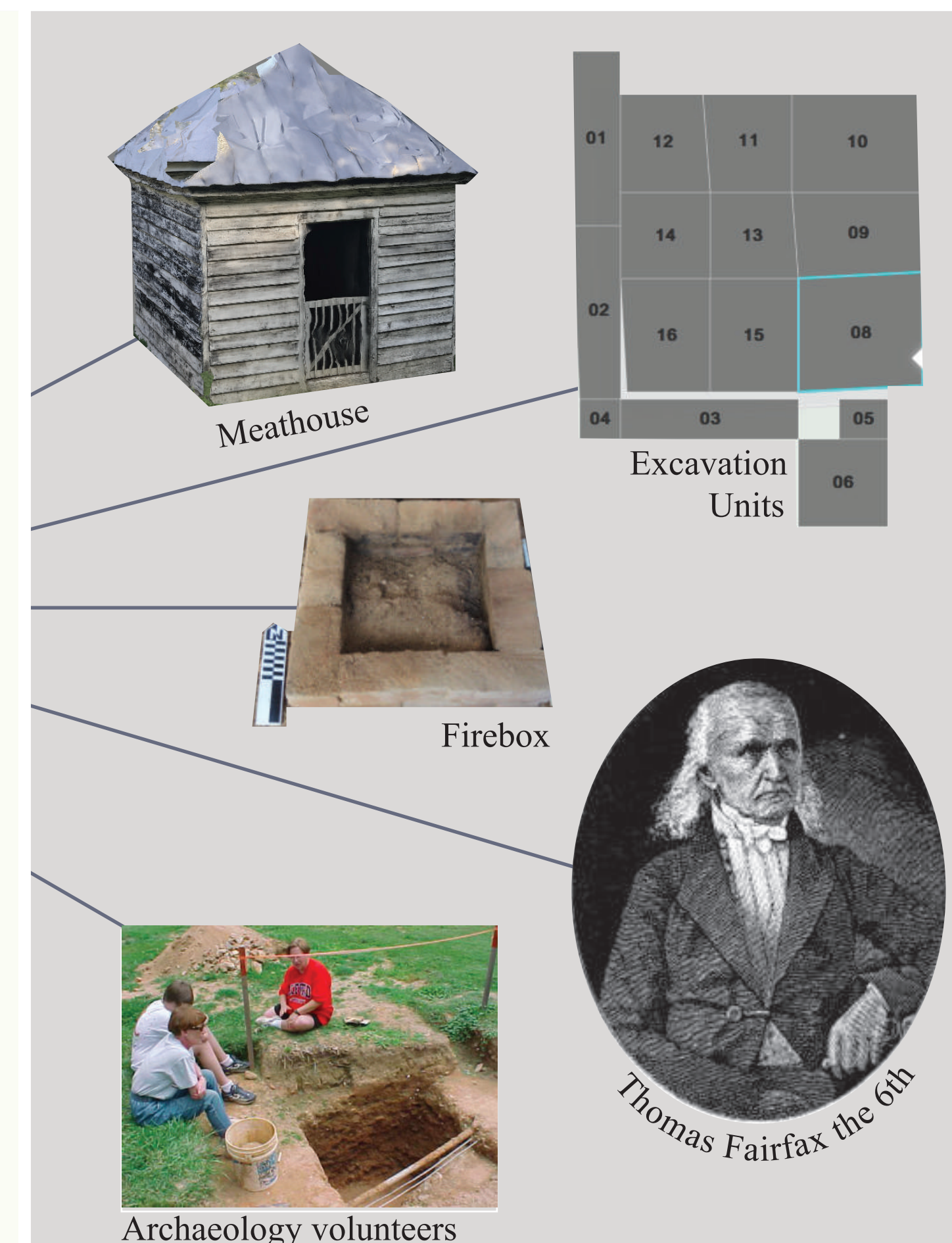AR Application reveals subsurface cellar in mobile device

Results: Ash Grove Story Map

Ash Grove

Ashgrove Historic Site, a Fairfax County Park located in Tysons contains one of Fairfax county's few extant 18th century manor homes, constructed by Thomas Fairfax of the county's founding Fairfax family and occupied by the Fairfax until 1851.

The Federal style manor home at Ash Grove Historic Site is a 2.5 story center hall house, this property currently listed in Fairfax County's Resident Curator program. In addition to the home several other early extant structures remain on the property including a kitchen and meathouse just east of the main house.

Ash Grove is a significant historic site in Fairfax County. Archaeological studies and intensive background research have aided in revealing the hidden histories of this park. This story map will highlight archaeological investigations and findings from this research and detail histories tied to the people who have lived and worked at Ash Grove Historic Site.

Meathouse

Excavation Units

Firebox

Thomas Fairfax the 6th

Archaeology volunteers

Story Maps and XR Applications are important platforms for developing multilayered **accessible, interactive, and immersive 3D deep maps**. Ash Grove Historic Site is one example of a successful implementation of 3D Archaeology in Story Maps and XR.