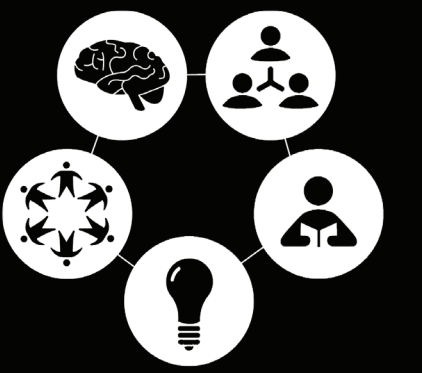# The Trajan Puzzle Project

An Exercise in Design Thinking

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Superimposition of the Basilica Ulpia next to the Museums of Imperial Fora, floor plan of the museum, and photograph from the excavation with the "Nerva" head fragment & museum storage photos.

1. Define & Empathize

1. 2017 is the 1900th deathday anniversary of the Emperor Trajan. **The Museums of Imperial Fora** in Rome commissioned our **Duke Dig@lab** to produce a **permanent exhibit** for the general public around fragments from the **Basilica Ulpia** (the largest basilica of the ancient world.)

The Emperor Trajan and the Museums of Imperial Fora. The museum is situated in the heart of Rome and has an average of 100,000 visitors of all ages and nationalities per year.

2. Ideate & Collate

2. Our solution centers around a **Legionnare's path** through the museum space. It touches upon many of the 40,000 architectural fragments stored in the museum archives and involves **digital techniques** to produce **analogue outcomes** offering **narrative, tangible, sustainable, multilayered individual and collective experiences.**

Archival photography for photogrammetric analysis and blueprints from Andrea Carandini's "Atlante di Roma Antica".
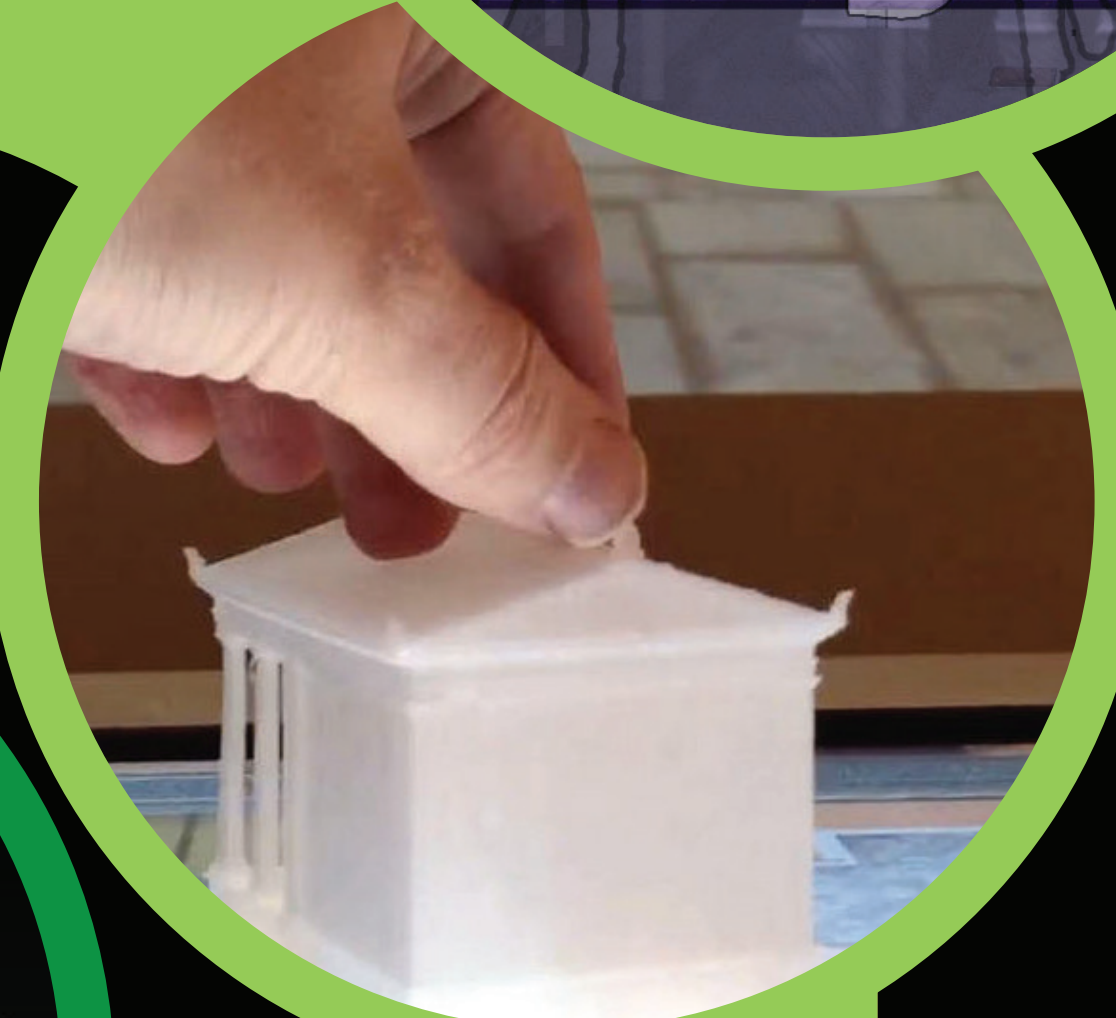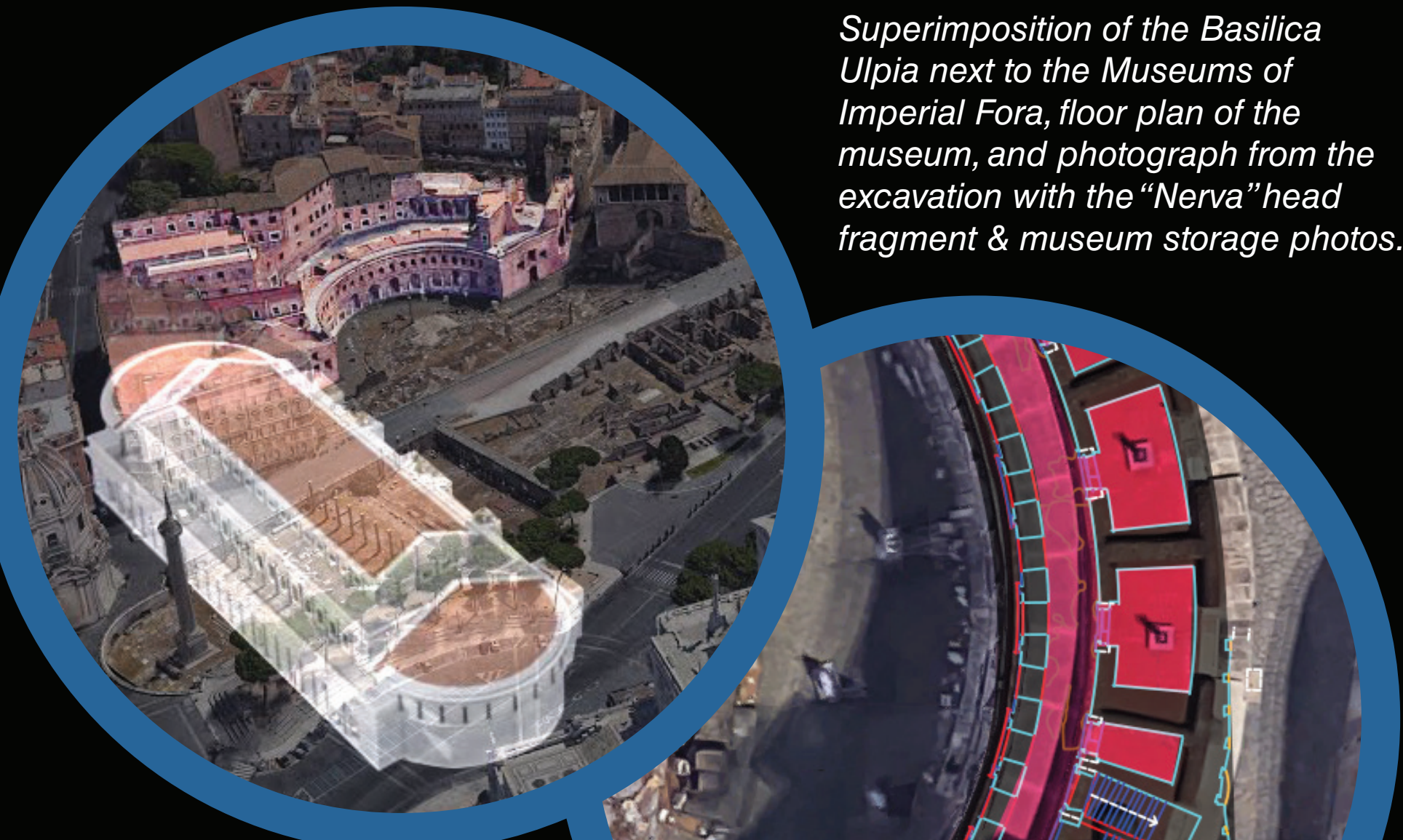
3D Mesh generated from photogrammetric data of the "Nerva" head fragment and drawing of the Sphinx Frieze through comparative research of similar contemporaneous sculpture, (ie Griffon Frieze of the Trajan Fora and the Lanuvium Sphinx at the British Museum.

3. Build & Prototype

3. The exhibits include a full **room anamorphic installation** based on the principle that different perspectives offer new viewpoints; an **autostereoscopic holographic display** providing context to frieze fragments throughout the basilica; and a **tangible table** by which users are encouraged to play with an archaeologists puzzle, which fragments belong where?

Renderings of Hologram table, Anamorphic installation, and TITA (Tangible Interactive Table for Archaeology.)

4. The **Emperor Trajan** had an immense and rich life, his conquests took Rome to its **peak of expansion** and his construction projects provided for **infrastructure innovation and development** which **transcended time and place**. Our exhibit draws on the rich story of his life and times to offer new **perspectives**, **intimate and sociological**, on **history, culture, and our collective human experience**.

4. Iterate & Implement

A view from the Museums of Imperial Fora. All that remains of Trajan's magnificent fora are ruins and the Trajan's Column on the left.

Digital modeling and sculpting work in progress and prototypes via Autocad, Z-brush and 3DS Max. (Architectural rendering by N. Danelon, Figurative rendering by J. Liu.)
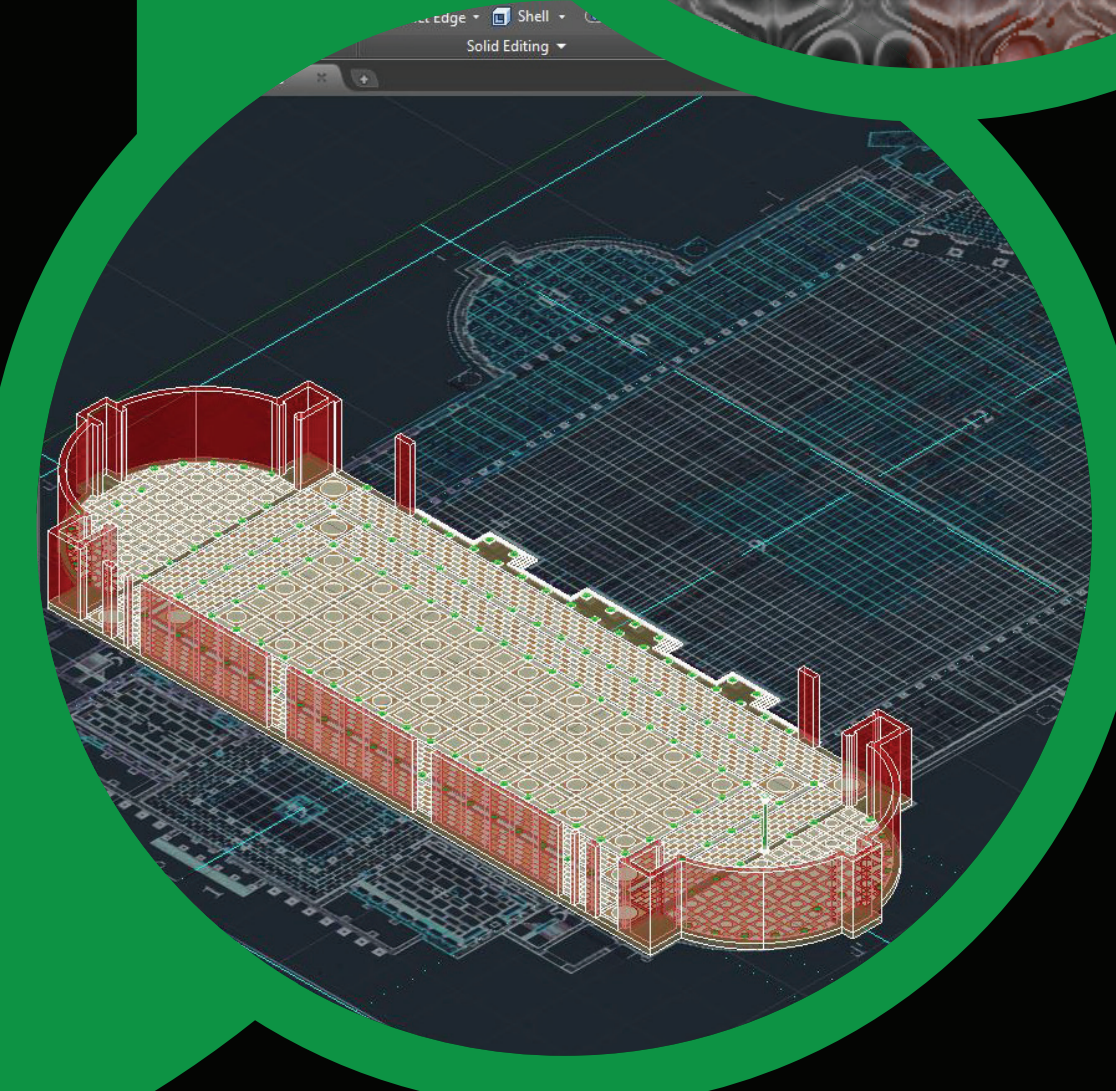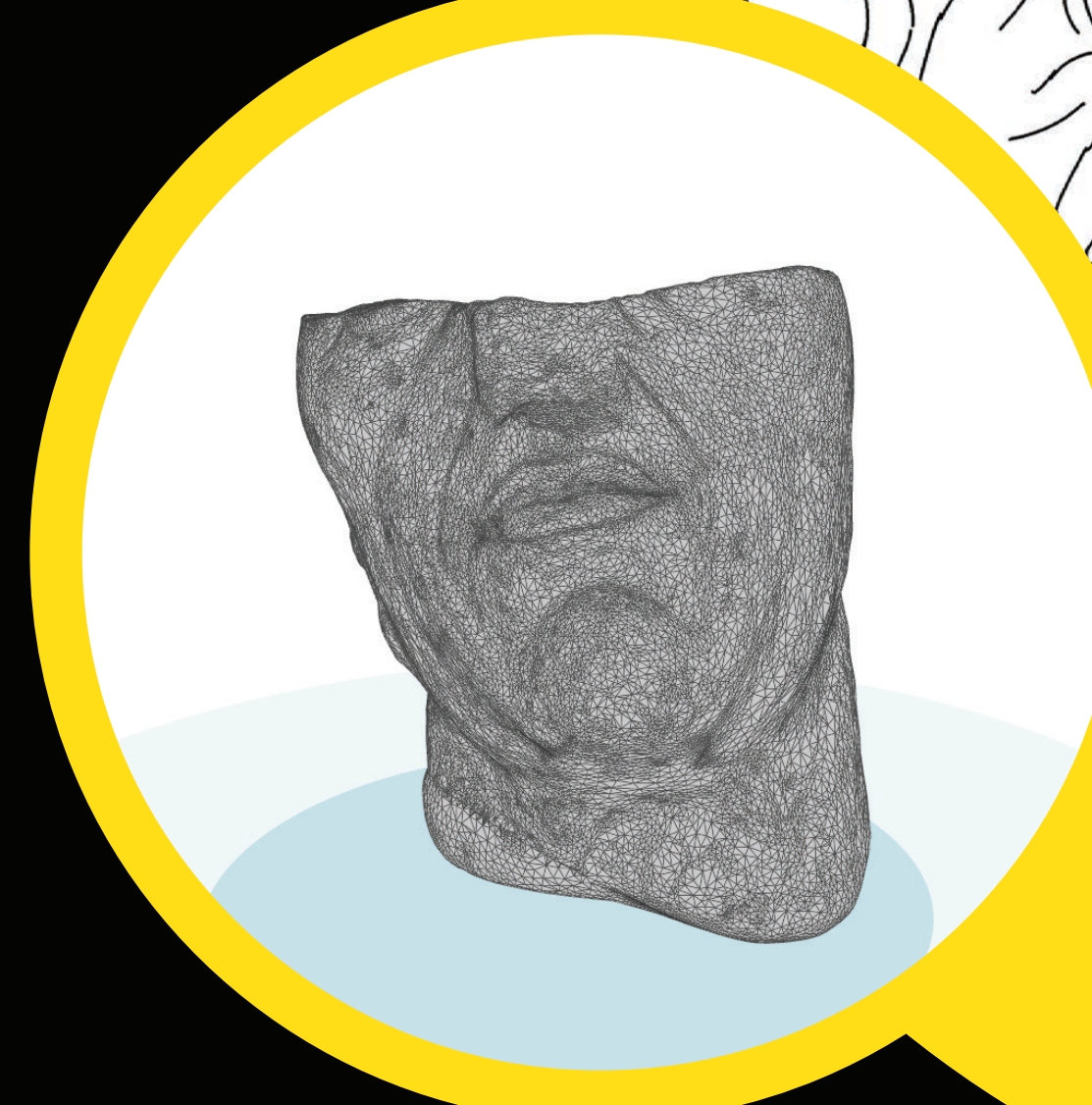
(Re)iterate

(4) Throughout **2016 and 2017**, our team designed and built **mulitple prototypes of different materials, sizes, even concepts** to hone in on **feasibility and sustainability** of ideas and implementation.

3d Print and global illumination of "Nerva" head and Basilica Ulpia interior.