# Milestone Two Narrative – Software Design & Engineering

Artifact description. My artifact is an Animal Rescue dashboard built with Python, Dash, Plotly, and MongoDB. The first version lived in a single notebook I wrote for CS 340 in July 2024. It showed dogs that fit different rescue roles and plotted their locations on a Leaflet map.

Why it belongs in the ePortfolio. I picked this project because it hits the full stack: UI, back‑end, database, and deployment. During the enhancement I broke the monolithic notebook into three focused modules (UI, data layer, entry point), put MongoDB in a Docker container bound to port 27018, and wrote a short README that lets anyone stand the app up with four commands. Those actions show I can refactor legacy code, use containers, and write clear developer docs.

Course‑outcome coverage. The refactor meets the software‑design outcome I selected in Module One. It also touches the communication outcome because the README, docstrings, and setup guide are concise and accurate. Algorithms and database outcomes are planned for the next two artifacts (dictionary lookup refactor and index benchmark).

Reflection. The hardest bug was a port clash on Windows where another local Mongo service masked the container. The fix was to expose the container on 27018 and hard‑code that URI. That issue reminded me to test on clean machines and document every assumption. I also learned that small modules shorten the feedback loop: hot‑reloading the UI took one second versus thirty in the original notebook. The final product is easier to run, easier to read, and ready for interview demos.