MICHIGAN STATE UNIVERSITY

Alpha Presentation

Aircraft Assembly Line Simulator

The Capstone Experience

Team Boeing

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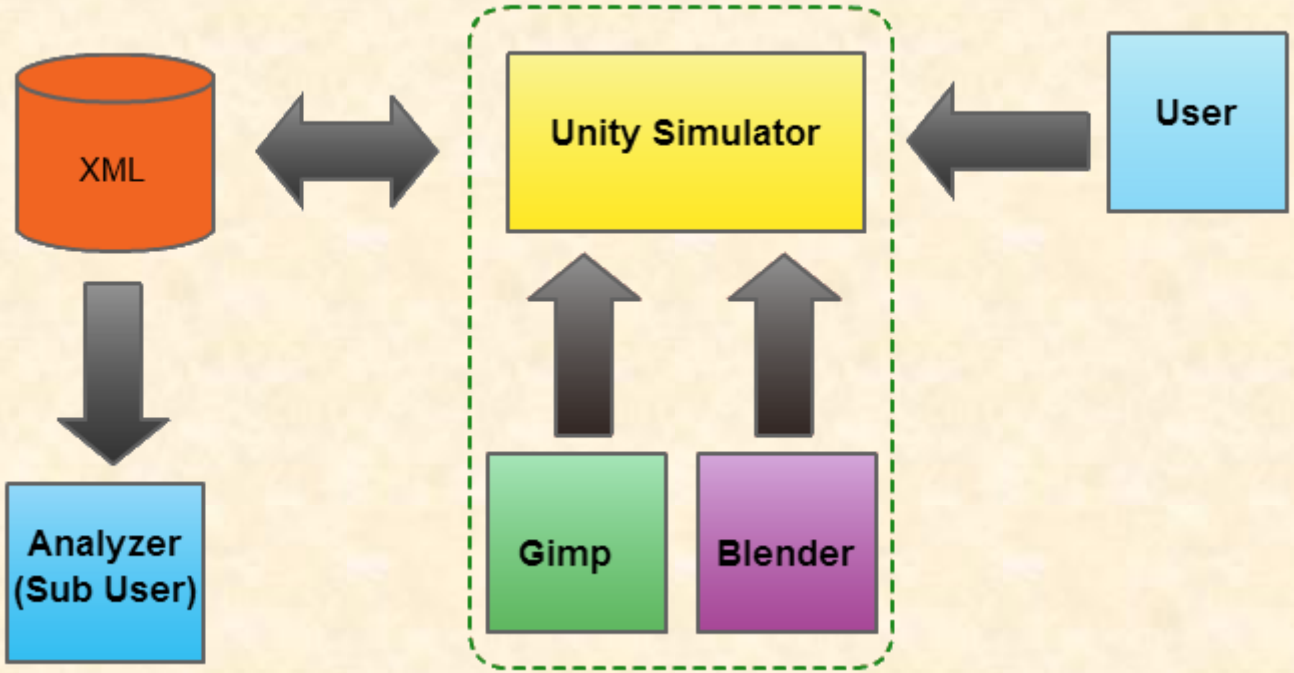
From Students…
…to Professionals

Project Overview

- Create a 3D simulation of a Boeing assembly line.
- Compile important data about the construction process.
- Use this data to optimize the design of the assembly line, improving safety and efficiency.

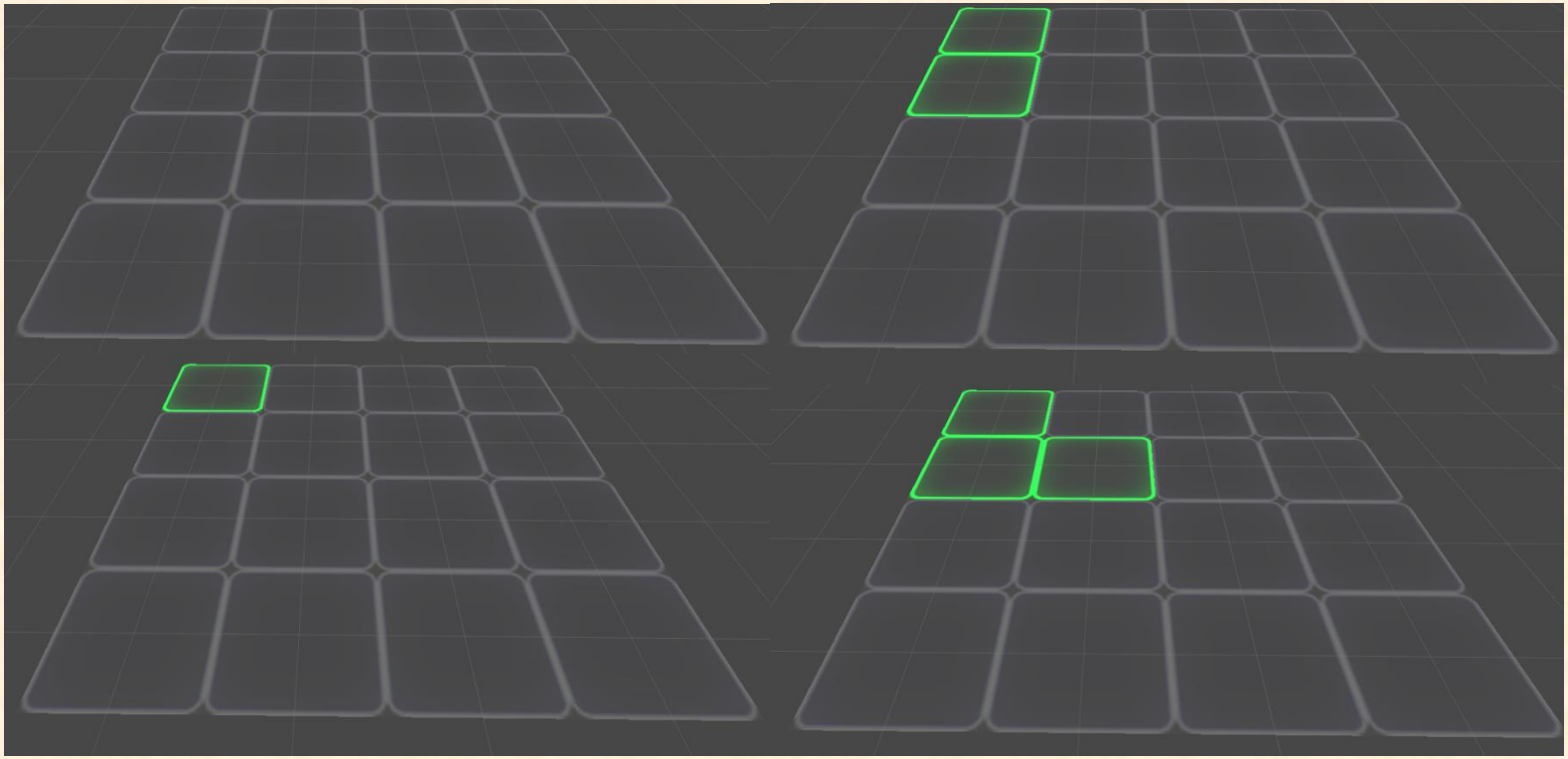
System Architecture



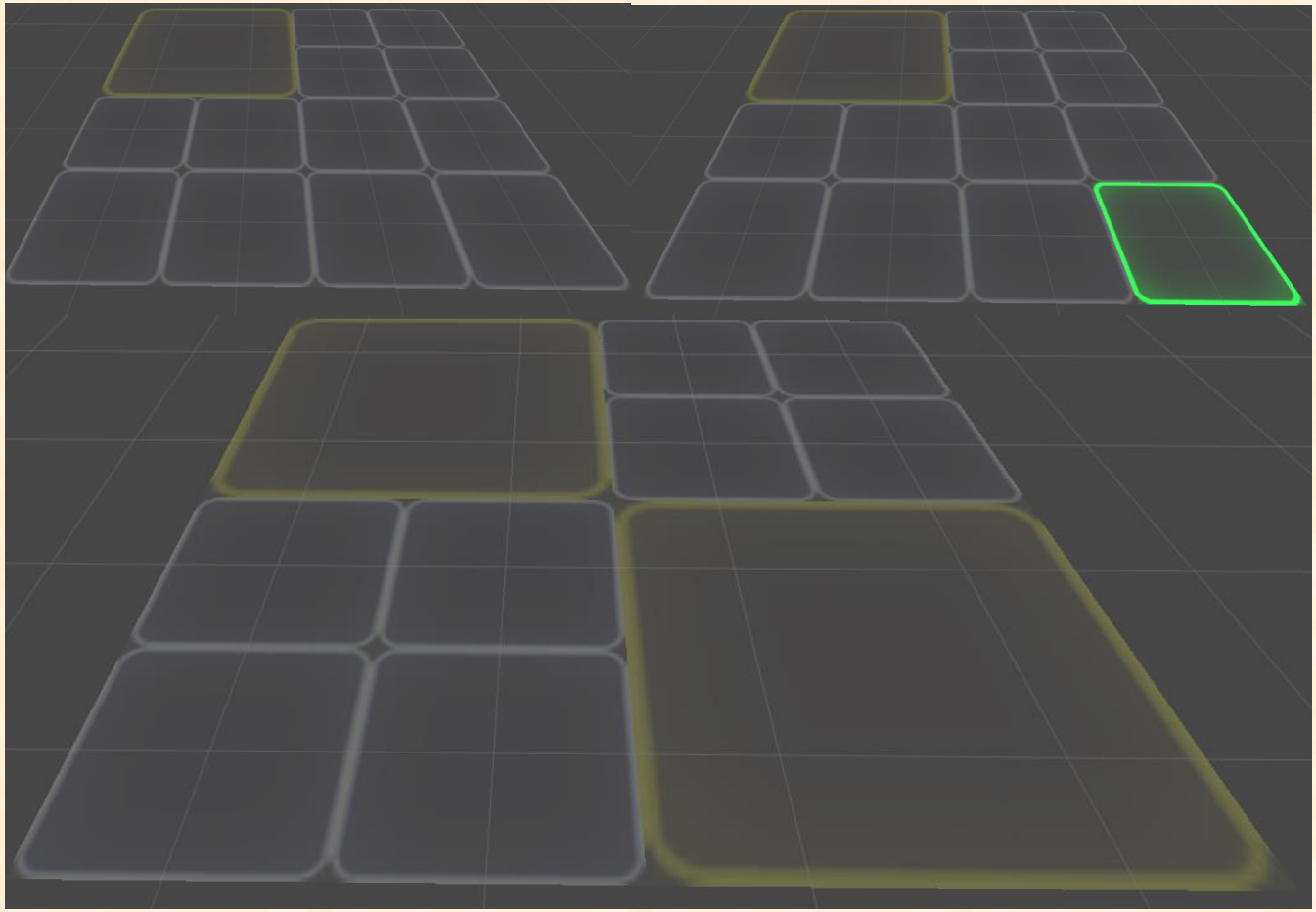
Title Screen

- "Load" button to load previous assembly lines

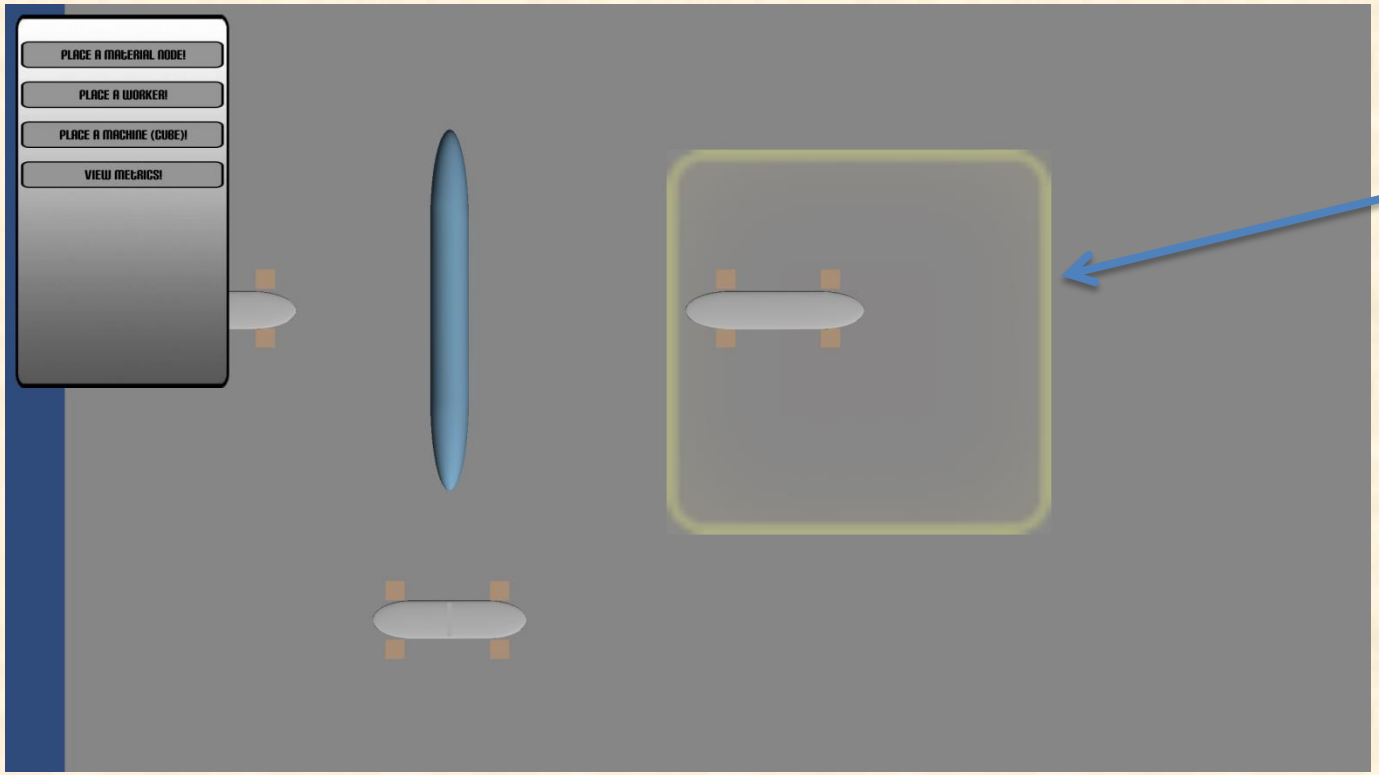
Grid System



Grid System

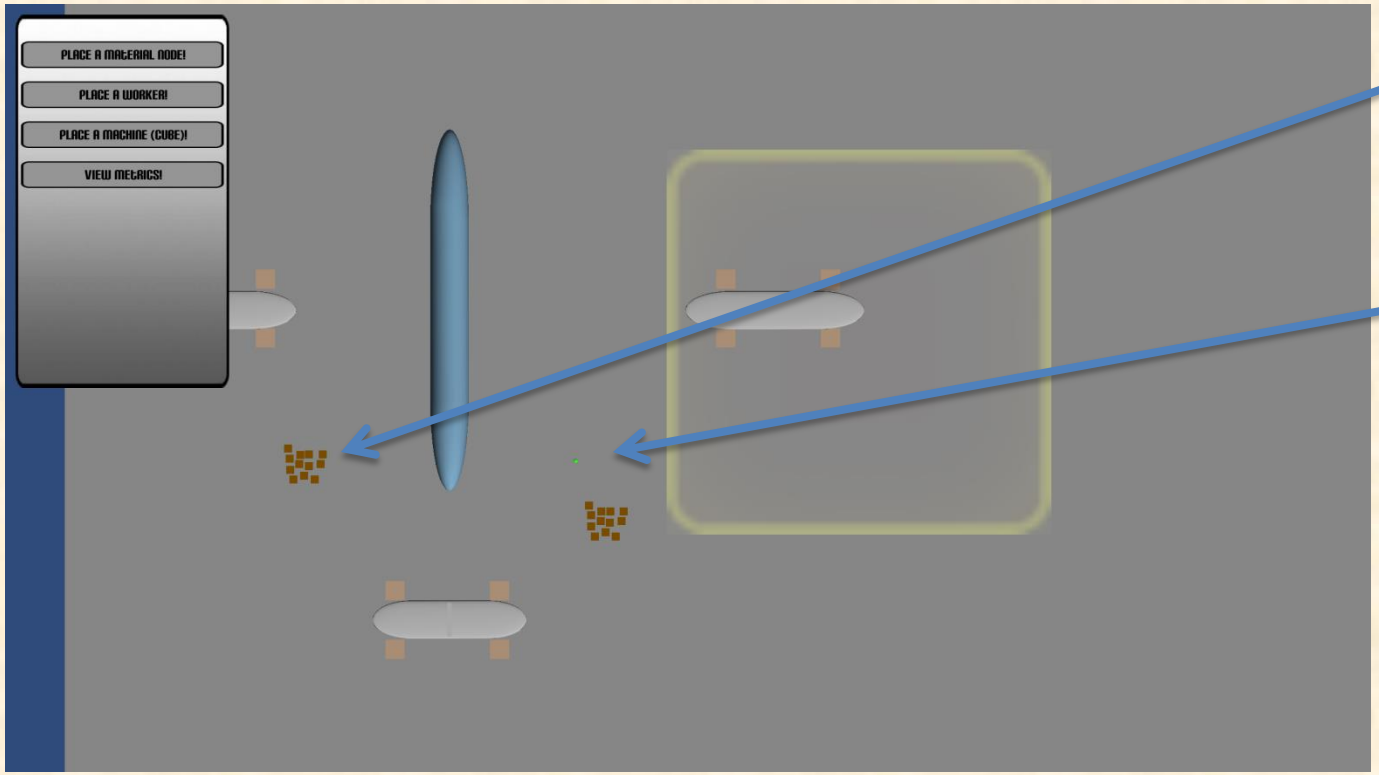


Asset Placement Screen



- Construction starts
- One zone has been instantiated

Asset Placement Screen

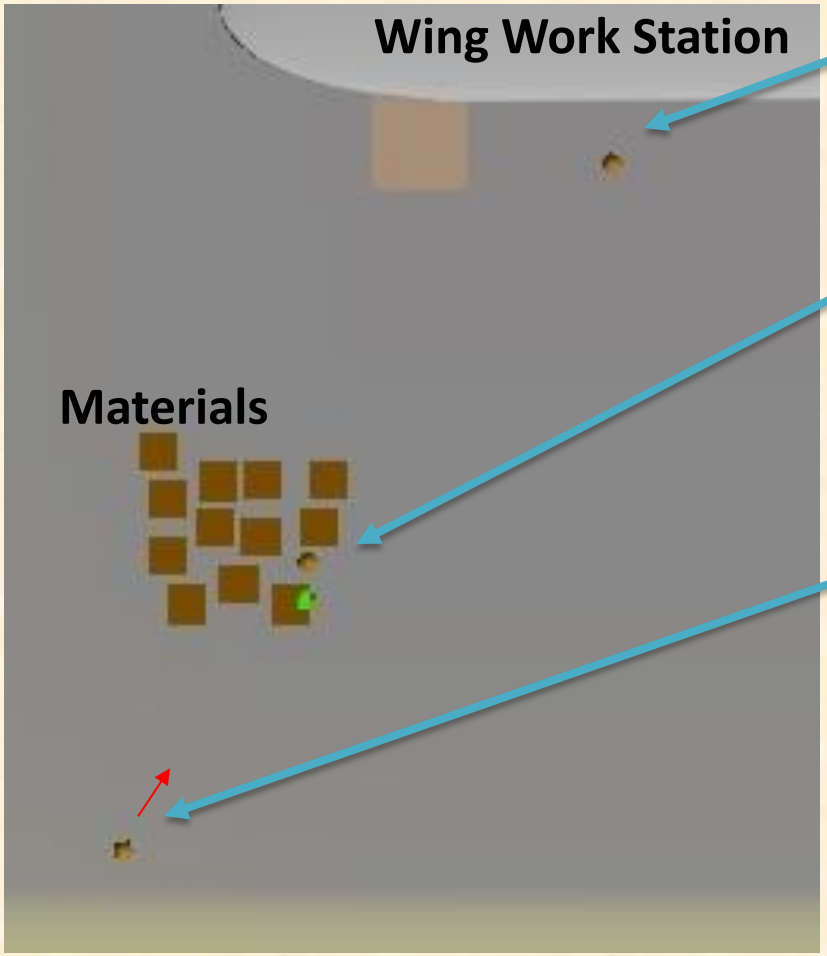


- Dynamic placement of material piles
- Dynamic place of workers

Metrics Screen

- Metrics Readout
  - Total workers
  - Total moving time in man hours
  - Average moving time per worker

Worker States



- Work State
  - Consumes a carried material
  - Progresses the wing's completion
- Pick Up Material State
  - Adds a material to the worker's possession
  - Allows worker to do work
- Walk to Material State
  - Not carrying any material
  - Cannot do work
- Other Worker States…
  - Go to the restroom
  - Go to the break room
  - Go to the cafeteria

What's left to do?

- Zone Managers
  - Currently each individual worker manages itself
- More Robust Metric Tracking
- More In-depth Aircraft Component Assembly Simulation
- Start/Pause Functionality
- Aircraft Transition Between Work Zones
- Add Robots and Machinery
- Saving/Loading