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Vista and Vortex: EarthSync

Real-Time Simulation of Environmental Data as Part of the 3D Data Visualization Course

Prof. Dr.–Ing Carolin Helbig

Group Nr. 2 (a. k. a. TriDimensional)

Adrian Häfner | Maximilian Heß | Seyedmasih Tabaei

Intermediate Presentation | 03.12.2024 | Winter Term 2024/25

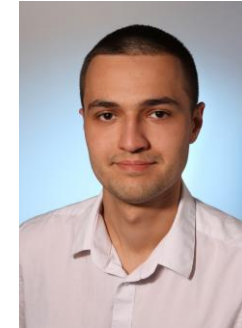# EarthSync Architects: Team Members | Remember ? 😇

Adrian Häfner
Visual Computing Student

Unity
API Management
Data Pre-Processing

Maximilian Heß (a. k. a. Max)
Visual Computing Student

Unity
3D-Modelling
Data Gathering

Seyedmasih Tabaei (a. k. a. Masih)
Computer Science Student

Unity (VR)
Software Architecture
Git Maintenance

EarthSync Data: Where?

Multiple weather data sources inspected

Documentation used
+
Application programming interface (API) inspected using their playgrounds, Postman API or self-written Python scripts

Open-Meteo   Tomorrow.IO   OpenWeather

Deutscher Wetterdienst

And a few more …

EarthSync Data: How?

Python Scripts   Websockets   Webhooks   Proxy Service   ZeroMQ

And many more options…

No over-engineering -> KISS

Proxy Service

Unity	HTTP Messages	Python Proxy Service	HTTP Messages	Weather Service

EarthSync Evolution: Key Milestones

1 Procedural Generation of Desired 3D Environments ✓

2 Data Gathering, Aggregation and Synchronization ℹ

Testing and documenting are both integrated in each step of development!

3 Visualizing Data in the 3D Environments

Flags Captured : Overview

Environment generated

Python script for data gathering written
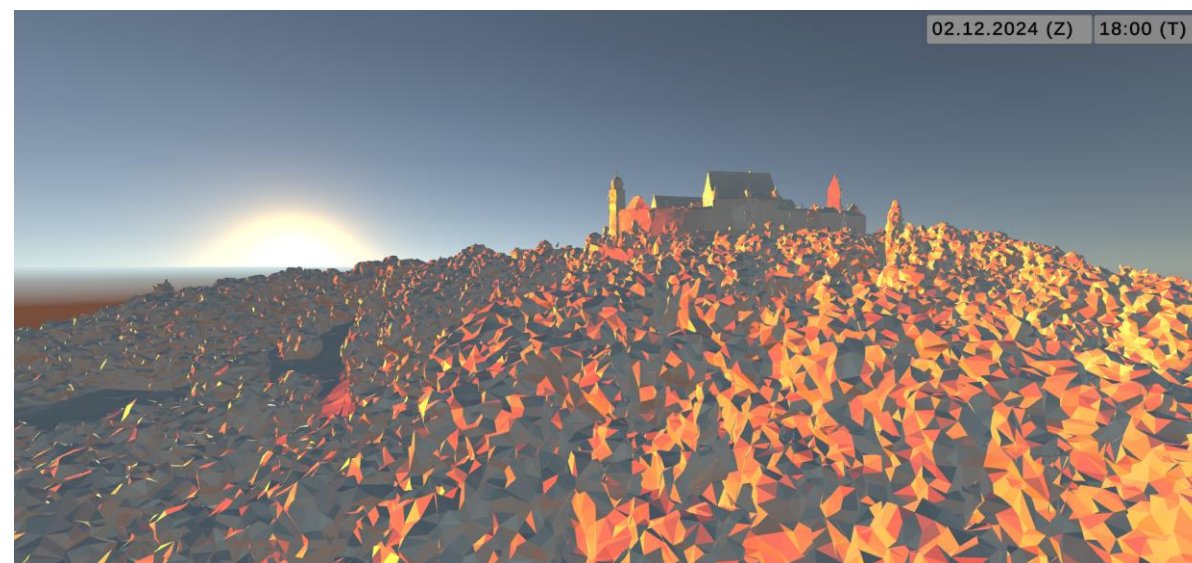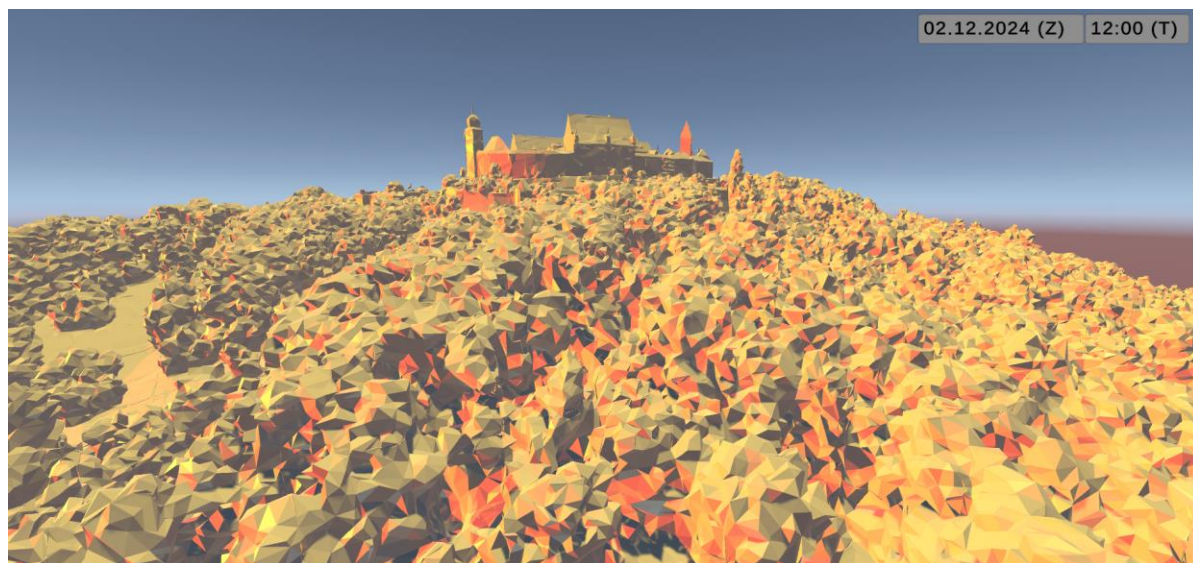
First set of static data gathered

Camera movement in Unity implemented (drone-like movements)

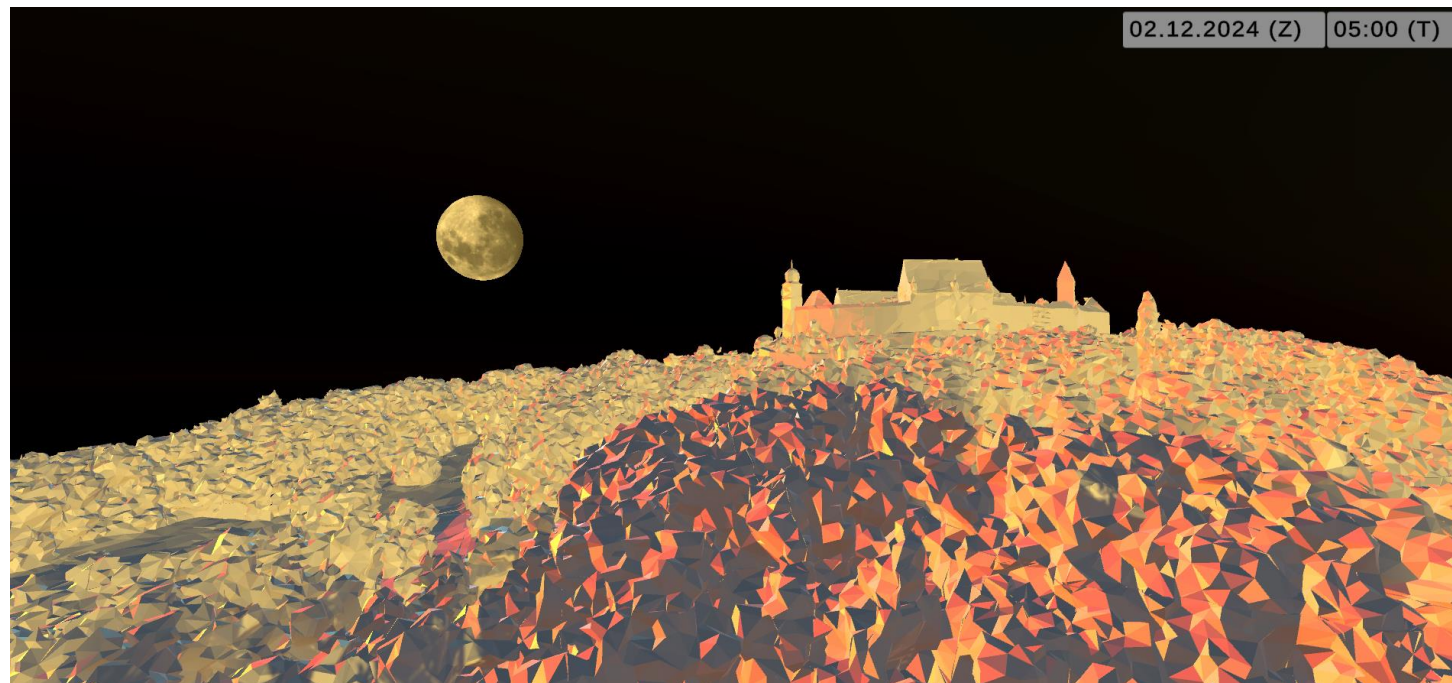Basic UI in Unity implemented

Day-Night switch in Unity integrated

Flags Captured : Unity Environment - 0

04.12.2024

Flags Captured : Unity Environment - 1
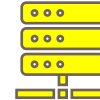
Hill to Climb: Wrap-Up

Adding rain effect in Unity

Adding snow effect in Unity

Adding future scenarios

Extending the user interface

Finishing implementation of the Python proxy server

Replacing hard-coded Python script call with a HTTP request

Test and Delivery

Echoes of EarthSync

Your Questions and Reflections

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Thank you for syncing with EarthSync!

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