Bremen

CG
VR

CGVR Lab

UE5 Projects w/ Teams & git

UNREAL
ENGINE

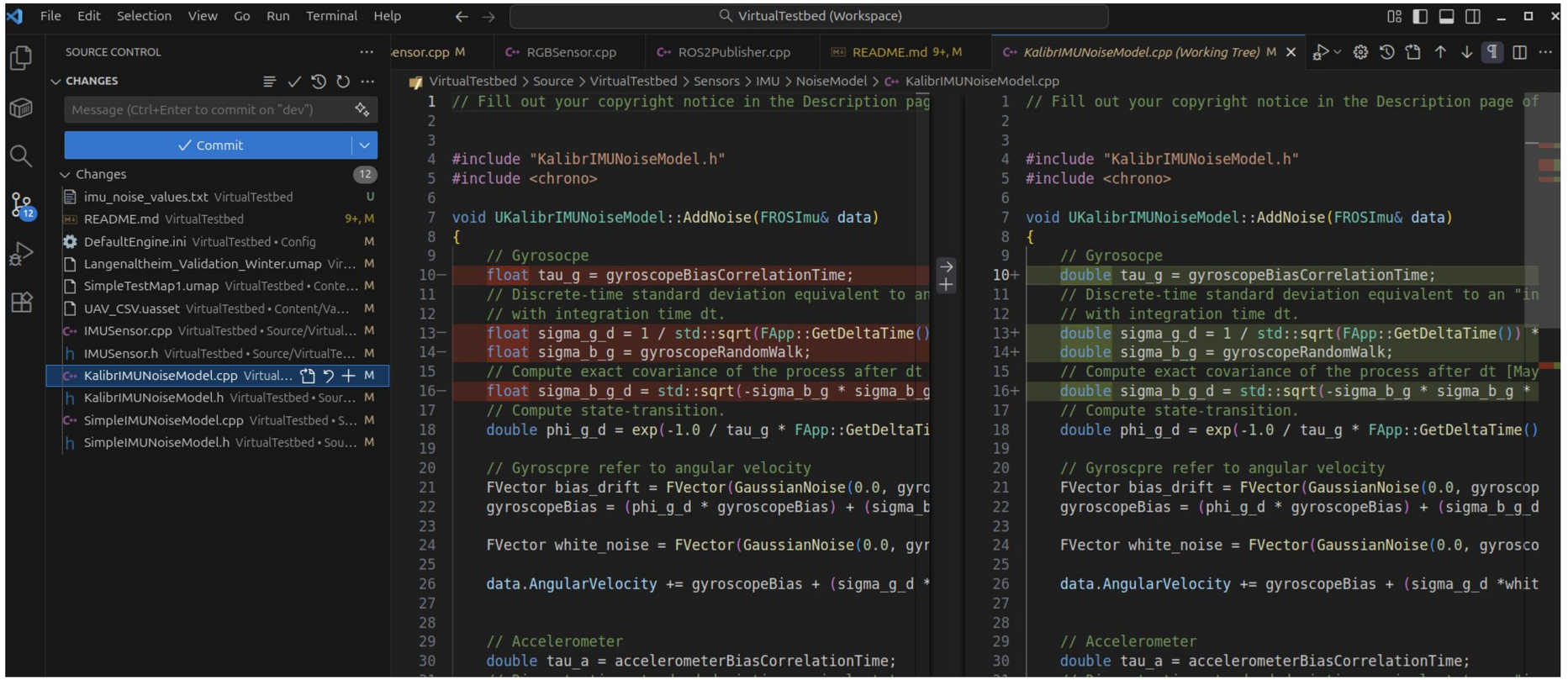
git

Motivation

- Unreal Engine projects are also software projects, so having Version Control (VC) is a necessary tool for maintenance and integration of changes.
- Unreal uses both text files (e.g. C++-files) and binary files (`.uasset` for all Unreal assets, e.g. blueprints) which all need to be tracked.
  - Tracking changes for binary files is very difficult.
  - Resolving merge conflicts is also difficult.
  - —> Need special workflows.

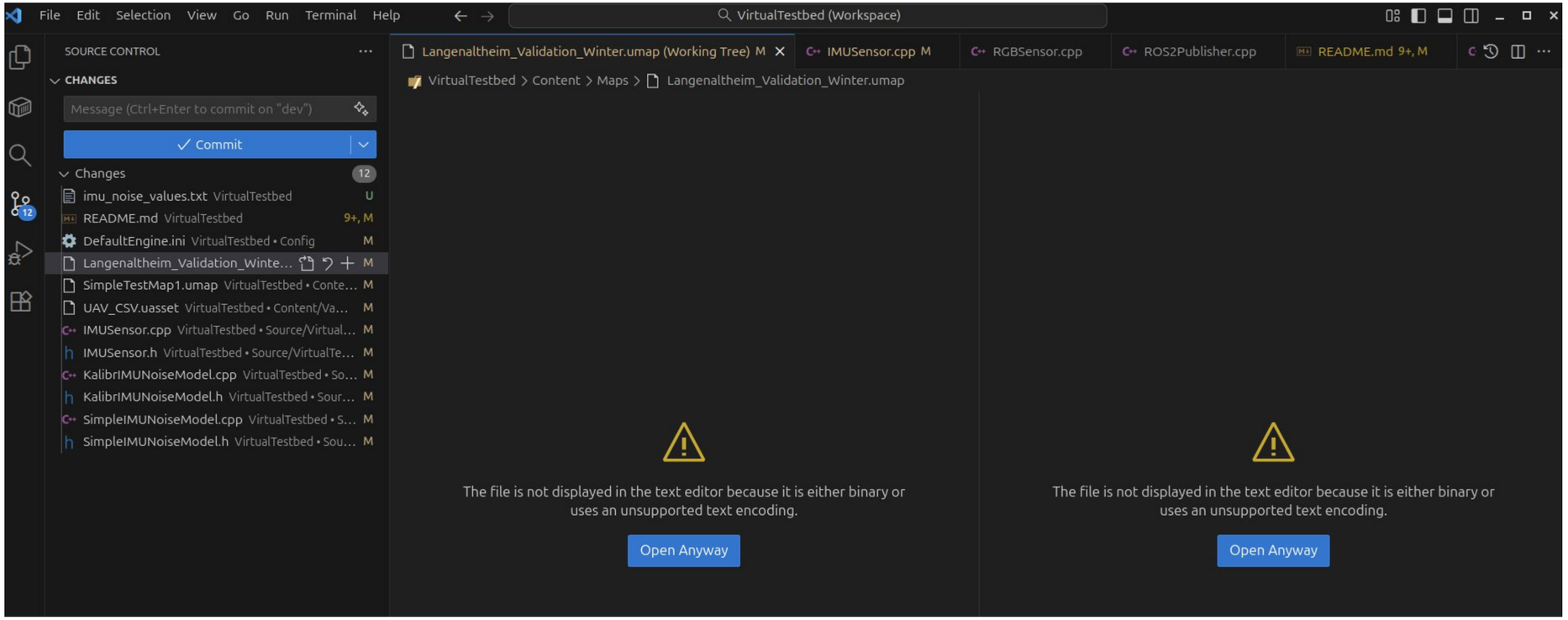
VCS for Text Based Files

- Works just like on any other project, so no issues here.



VCS for Unreal Assets (uassets)

- Tracking detailed changes for `.uasset` files (stored as binaries) is more or less not possible with the standard version of git.
  - Can only detect that a file has changed and upload the newer version.



VCS for Unreal Assets (uassets)

- Tracking detailed changes for `.uasset` files (stored as binaries) is more or less not possible with the standard version of git.
  - Can only detect that a file has changed and upload the newer version.
- Usually game developers use other VCS for tracking changes for Unreal assets, e.g. Perforce.
  - However, these options are proprietary and the free tier is usually quite limited.

Git Large File Storage (LFS)

- Since the asset files can become quite large, it is necessary to use Git LFS.
- Most public git providers (GitHub, GitLab) have a file size limit of 25-100 MB, and limits for the repository size for the free tiers (e.g. 2 GB for GitHub).
- GitLab Uni-Bremen has much higher limits for students, so no worries on that end.

Git Large File Storage (LFS)

- Installation: https://git-lfs.com/
  - Install regular git with its command line extension beforehand.
- Setup:
  - After installation run: `git lfs install`
  - Navigate to the folder of your project.
  - Then specify all file types to be tracked with LFS:
    `git lfs track "*.<file type>"`
  - For UE5 this can for example be `.umap`, `.uasset`, `.dll`, `.lib`, `.fbx`

Possible Workflows… (unfortunately)

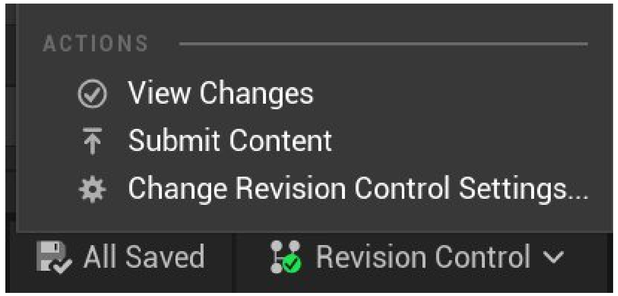
- Work on branches.
  - In case of a conflict, sometimes a simple solution can just be to copy a file to another location and then back, once the conflict has been resolved.
- Coordinate who works on what asset and perhaps at what time.
- Regularly reincorporate remote changes.
- Clone the repository twice (yes, really…)
  - In case of a conflict, integrate remote changes (can discard local changes in that repository, given they are present in the second repository) and manually re-add your local changes from the second repository.
- Or use one of the plugins on the next page.

Plugins

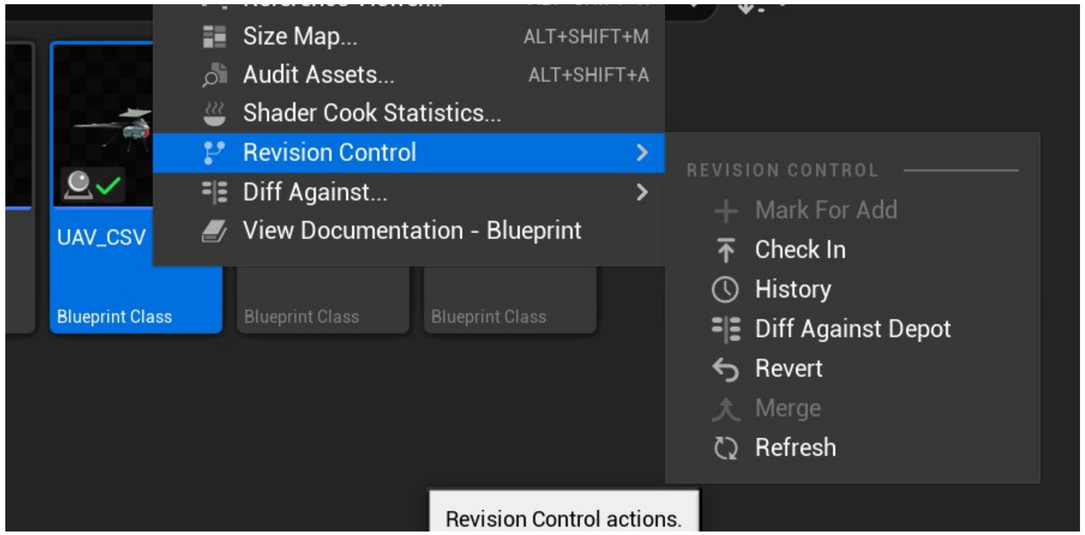
- UE5’s integrated git plugin
  - Poorly documented, but should be able to do many things such as viewing changes, committing, and pulling changes.
- Community UE5 git plugin (https://github.com/ProjectBorealis/UEGitPlugin)
  - Supports file locking -> no two people can work on the same file simultaneously.
  - We have not tested it, yet.
- UE5’s Multi-User Editing (https://dev.epicgames.com/documentation/en-us/unreal-engine/getting-started-with-multi-user-editing-in-unreal-engine)
  - Fairly new; Also not tested by us, yet.

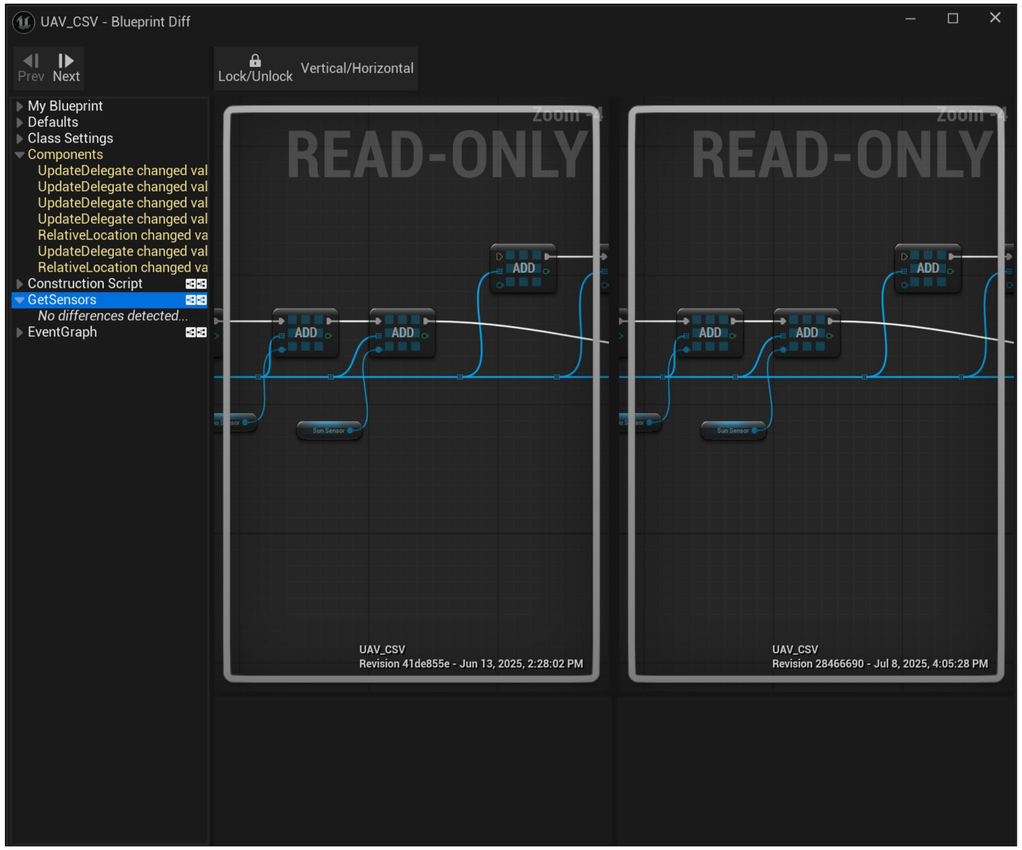
UE5 Integrated Git Plugin

- Activate it on the bottom right.



- Changes can the be loaded and viewed per asset:





- Other functions such as merge seem to be available as well.

Additional Resources

- Set up UE5 with git (Youtube)
- How to Handle Merge Conflicts in UE5 – Diversion (Link)
  - ~10 min read