Sprint 3 retrospective

User Story	Task	Task Assigned To	Estimated Effort per Task (in hours)	Actual Effort per Task (in hours)	Done (yes/no)	Notes
#1	Map overlay	Everyone	15	18	yes	Initially Graphics Layer. Updated to Feature Layer
#2	Editable classification in map viewer	Andrei, Malina, Paula	7	9	yes	
	Display legend with layers list	Malina	2	4		Not planned initially, but found feature when trying to add option to edit (#2)
#3	Display church classifications on the map	Boris	4	9	yes	Had to reuse church images again when the implementation of map.js was changed
#4	Display CAPTCHAs on the map viewer	Georgi	2	2	yes	
#5	Add layers for maps	Andrei, Malina, Paula	4	5	yes	
#6	Improve tile retrieval	Andrei	3	6	yes	
#7	Deploy the server and database	Everyone	2	0	no	Deployed on heroku but not on faculty servers
#8	Configure Detecto	Boris	2	2	yes	Decided to proceed with detecto for object detection and Keras (from TensorFlow) for land use

#9	Identify individual tiles on the map and show coord.	Andrei, Malina, Paula	8	10	yes	
#10	ML training for land use	Andrei, Malina	15	2(Andrei) + 50 (Malina) + 4 (Georgi)	Yes	Tweaking parameters and layers took a very long time *still improving...* - Added training on Captcha
#11	Documentation	Everyone	20	35	yes	
#12	Get legends of all maps	Boris	2	1.5	no	Was searching for them but only found paid options
#13	Update version of ArcGIS and refactor	Malina	7	7.5	yes	
#14	Obtain information from the server about classified tiles	Georgi	8	8	yes	
#15	Test CAPTCHA	Paula	20	20	yes	
#16	Write frontend tests	Boris	6	7	yes	Used cypress to write them
#17	Test improvements	Andrei, Paula	4	7	yes	
#18	Update the database schema	Paula, Georgi	5	10	yes	Updated the schema twice to simplify
#19	Create training data for oil tanks and water tanks	Boris	4	2	yes	Only created training set for oil tanks

#20	Embed CAPTCHA code+example	Georgi	12	16	yes	CAPTCHAs can be embedded into any HTML form.
	CAPTCHA improvements	Georgi	0	6	yes	Unplanned, CAPTCHAs needed more functionality

User Stories

1. As a user, I want to be able to see overlays with building/land/water for the maps.
2. As a user, I want to be able to edit labels of tiles that I consider to be wrong.
3. As a user, I want to be able to see markers for the classified churches.
4. As a user, I want to be able to fill in CAPTCHAs.
5. As a developer, I want to be able to display layers that users can see.
6. As a developer, I want to be able to efficiently retrieve tiles that can be used from the tile server.
7. As a developer, I want to be able to have the server and database deployed and not running locally or on temporary servers.
8. As a developer, I want to be able to use TensorFlow for machine learning.
9. As a developer, I want to be able to get the coordinates of a tile I can click on, to be able to query the database for its properties.
10. As a developer, I want to be able to classify tiles using machine learning.
11. As a developer, I want to have thorough documentation for all the files that are part of the project and a Wiki with further explanations.
12. As a developer, I want to be able to display legends for the maps based on the current year.
13. As a developer, I want to be able to use features from the newer version of ArcGIS and have it working properly with previously written code.
14. As a developer, I want to be able to get information about a specific tile that is stored in the database. This is a requirement for issue #9.
15. As a developer, I want to be able to have the CAPTCHA system properly tested.
16. As a developer, I want to be able to have the front end of the application tested.
17. As a developer, I want to be able to improve the overall coverage of the tests.
18. As a developer, I want to be able to have an up to date schema.
19. As a developer, I want to create oil tank training data for an object detection algorithm.
20. As a developer, I want to be able to embed CAPTCHAs into different websites.

Main Problems Encountered

Problem 1: Deploying on Heroku

Description: At some point our project required to much memory and deployment the on Heroku servers was no longer possible

Reaction: We added some files to slugignore and the problem was temporarily fixed. However, the final product cannot be hosted on Heroku due to this memory issue. Therefore, it will be deployed on one of the university servers.

Adjustments from the previous Sprint Plan

- Continue testing as much as possible: we developed more unit tests, integration and system tests as well as smoke tests, end-to-end tests and user tests
- Write documentation: the code has been documented, both within code comments and with a Wiki which explains implementation details and design choices for all the components of the project.
- Add the remaining labels for the machine learning algorithm: churches were added and can now be seen on the website