Software Development Process

Team Alpha Helix

Version 3.0

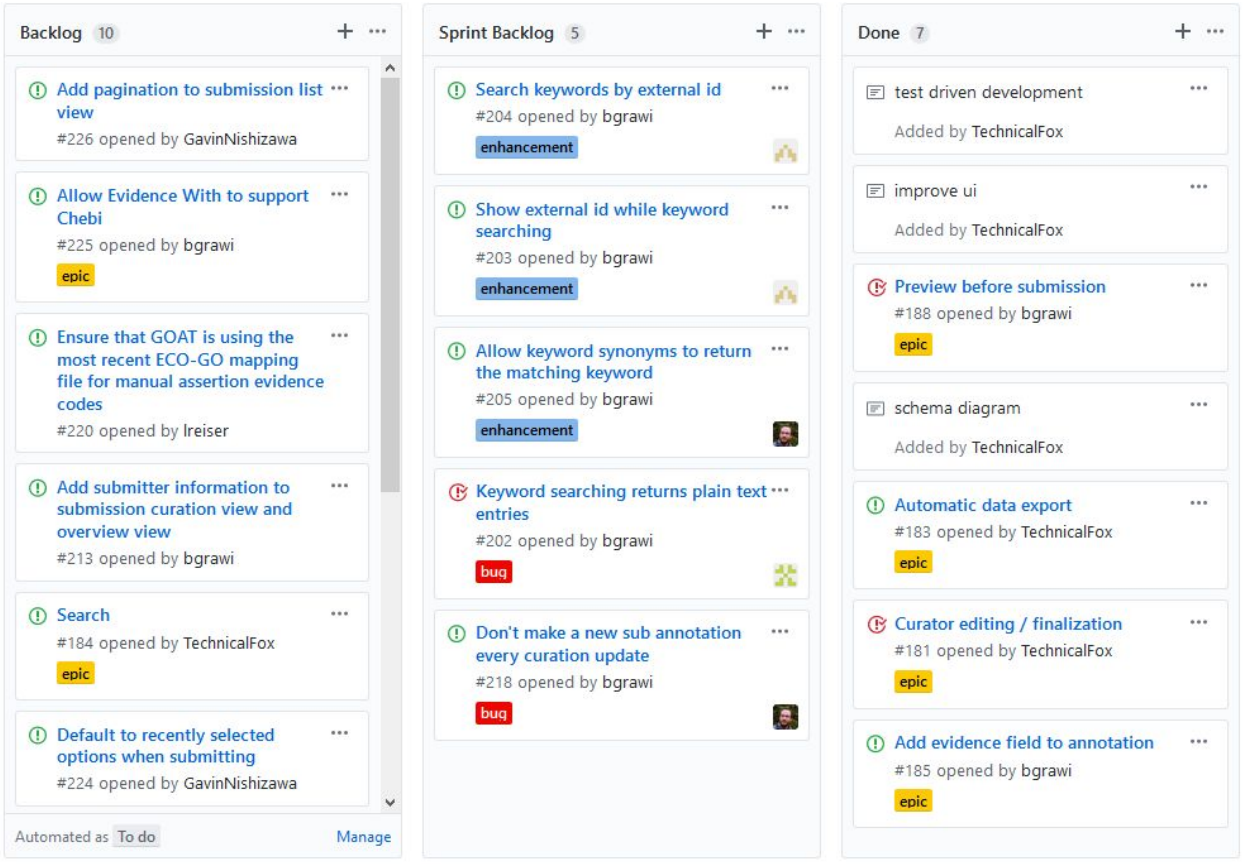
Document Version History

Version #	Implemented By	Revision Date	Reason
1.0	Arron	9/18/2017	Initial document creation
1.1	Gavin	9/25/2017	Added Project and Sprint Backlogs
1.2	Arron	10/17/2017	Added Sprint 2 and Sprint 3
2.0	Arron	1/23/2018	Update of process and new sprints
2.1	Arron	3/14/2018	Added Sprints 6-9 and Spring Roadmap
3.0	Arron	5/1/2018	Finalized document

Process and Scheduling

For the Phoenix Bioinformatics project, Team Alpha Helix is utilizing a modified Scrum methodology. We use two week time periods for sprints, consisting of user stories taken from the project backlog, and some sprints set aside for fixes and code health.

In our modified Scrum, the first step of the development process is to break down the project requirements into user stories, which are high level representations of desired functionality and features from a user perspective. These user stories follow the pattern of "As a user, I would like to X to accomplish Y". These user stories are then added to a backlog of requirements for the entire project, known as the project backlog. The user stories in the project backlog are treated as "epics": large tasks that represent a full feature or task to be done, which may need to be further broken down into actionable items. These epics are then slated for prioritization by the sponsor.

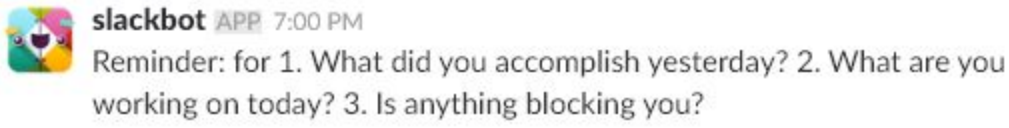


Rather than utilizing the project board for discovered or suggested issues that are found during working sessions or sponsor discussion, we just use the issues board, and prioritize them from there with labels. Non-epic stories do not move into the project board, as the project board is used as the visualization of what major feature progress is being made.

With user stories created and added to one of the boards, we use time during our weekly sponsor meeting as planning. During this time, we discuss in-progress issues with the sponsor, receive feedback on completed work, and commit to work for the following weeks. Each issue is discussed with the sponsor to obtain more information that can be used to generate acceptance criteria and clarify misunderstandings. This constant cycle of information and clarification helps to mitigate the lack of some formal processes for quantifying and organizing tasks, which we skip in order to focus more on the code.

When a sprint is started, user stories are selected from the project backlog to be added to the sprint backlog, which contains the in-progress stories to be completed during the current sprint. These user stories are the focus of the two week sprint, and if needed, further information can be elicited about the requirements from the sponsor during the weekly meetings. There is usually one focal epic, with various issues or code health tasks as supplementary work. If all tasks are completed before the end of the sprint, new tasks can be taken on based on priority and time remaining in the sprint. If all tasks are not completed by the end of the sprint, they will be carried over into the next sprint, or put back in the backlog for later.

The working process of the team is designed to reduce the need for in-person work while still ensuring a baseline of quantity and quality of work per person. To this end, one tool we have integrated is a daily stand-up, performed electronically, with the aid of a reminder in the team Slack channel. This reminder prompts us every day to update our progress from the previous day, our plans for the current day, and any blockers preventing work from progressing. We have also planned to each dedicate 10 hours per week to the project, as a hard minimum but also a soft maximum. This is to help prevent overworking as much as underworking, and avoid long late nights spent working on the project.



Project Roadmap

Spring Semester

Spring semester sees the team having to set aside a portion of our effort to a multitude of SE department deliverables, particularly in the final few sprints of the semester. As such, the team has developed a tentative plan for the final sprints to reflect the time needed to work on this documentation while winding down on coding for the project and working towards a stable product to deliver at the final meeting.

Sprints 6-10

These five sprints, taking place over the first 10 weeks of classes (plus break), represent the bulk of the programming work that will be done for the project this semester, as they represent the time frame where we are free to focus solely on project concerns and not worry too much about the SE deliverables. That said, there are some deliverables that need to be addressed during this time period, namely the Project Poster, which is due the day before the end of sprint 10.

The MVP the team is attempting to meet by the end of sprint 10 includes various updates to existing systems (such as term searches and data export), as well as the ability to send submission notifications, and updates to usability and user friendliness across the whole system.

Sprint 11

This sprint will be a tentative feature-freeze, where the team does not commit to any new functionality additions or overhauls. At this point, focus will be shifted to primarily bug fixing and documentation, barring a major feature being not-quite-complete at the time of the freeze. Primary documentation concerns to be addressed at this time include the creation of the final presentation for the project, as well as comprehensive updates to the project documentation on the Github wiki, to allow both Phoenix and potential future senior project teams to easily get up and running and understand how the system works.

Sprint 12

This is the final sprint of the semester, and is tentatively planned to be a complete code-freeze. Other than minor bug-fixes, there will be no more changes to the system during this sprint, so that the team can focus on both ensuring the stability of the delivered product, and put the finishing touches on the project documentation.

Project Backlog

ID: 186 - Saving in-progress submissions
As a Researcher, I want my changes to be saved automatically so that if I leave the page or close my browser, the information will be there the next time I visit the page.

ID: 184 - Search
As a Researcher, I want to search for gene annotations related to any plant.

ID: 183 - Automatic data export
As an Administrator, I want a data dump of the database to be created and stored on the server such that it is accessible by the desired external systems.

ID: 180 - Submitter notification
As a Researcher, I want to be notified via email when a submission I have created is finalized by a curator.

ID: 181 - Curator editing and finalization
As a Curator, I want to edit submissions before finalizing them, after which they are viewable to the public.

ID: 188 - Preview before submission
As a Researcher, I want to review the data I am about to submit, so that I can verify that it is correct before doing so.

ID: 182 - User data export
As an Authenticated User, I want to export data from the database so that I can have it downloaded to my device.

ID: 189 - View list of submissions
As a Researcher, I want to see all of my past submissions, each indicating their current status.

Fall Sprint Backlog

Sprint 1

Sprint 1 will be our first sprint, focusing on the features surrounding the “evidence with” field. Since this is the first sprint, there may be some onboarding time delays as we become more familiar with working on the project. The primary focus of sprint 1 is the user story #185, “Add evidence field to annotation”.

ID: 185 - Add evidence field to annotation
As a Researcher, I want to annotate with supporting evidence for certain annotation types.

Sprint 2

Sprint 2 will be our second sprint, focusing on the features surrounding the “preview submission” page. The primary focus of sprint 2 is the user story #188, “Preview before submission”. Additionally, there is ongoing work to be done in implementing the “evidence with” field, as well as planned work to be done towards a UI redesign for the site.

ID: 188 - Preview before submission
As a Researcher, I want to preview my finalized submission to confirm correctness before submitting.

Sprint 3

Sprint 3 will be our third sprint, focusing on the features required for creating a “curation view” page. The primary focus of sprint 3 is the user story #181, “Curator editing and finalization”. Additionally, there is ongoing work to be done in implementing the “evidence with” field, as well as further changes to the site UI.

ID: 181 - Curator editing and finalization
As a Curator, I want to edit submissions before finalizing them, after which they are viewable to the public.

Sprint 4

Sprint 4 will be our fourth sprint, focusing on the features required for creating a "curation view" page. The primary focus of sprint 4 is the user story #181, "Curator editing and finalization". Additionally, there is ongoing work to be done in implementing the "evidence with" field, as well as further changes to the site UI, and process improvements to implement.

ID: 181 - Curator editing and finalization
As a Curator, I want to edit submissions before finalizing them, after which they are viewable to the public.

Sprint 5

Sprint 5 will be our fifth sprint, focusing on the features required for creating a "curation view" page and implementing data export. The primary focus of sprint 3 is the user stories #181 and #182, "Curator editing and finalization" and "User data export". Additionally, there is ongoing work to be done in implementing the "evidence with" field, as well as further changes to the site UI.

ID: 181 - Curator editing and finalization
As a Curator, I want to edit submissions before finalizing them, after which they are viewable to the public.

ID: 182 - User data export
As an Authenticated User, I want to export data from the database so that I can have it downloaded to my device.

Spring Sprint Backlog

Sprint 6

Sprint 6 will be our first sprint of the spring semester. As break was not used as working time, the sprint tasks are somewhat light, and being used as reacclimation while still completing necessary features. The primary focus of sprint 6 is updates to the keyword search functionality, which is not well represented by any of the “epic” stories in the backlog. Planned additions are the ability to search by synonym, and showing the external ID for the keywords when searching.

Sprint 7

Sprint 7 will be the second sprint of the spring semester. The primary goals for the sprint are general improvement of code health, and the expansion of the search system for ontology terms (namely the ability to search terms by synonyms). Also planned for this sprint is research of continuous integration tools, and some adjustments to the data export system.

Sprint 8

Sprint 8 will be the third sprint of the spring semester. The primary goals for the sprint are the integration of continuous deployment tools, and the expansion of the Evidence With data structure to support conditional linking of multiple evidences (in the form of an AND/OR relationship). Also planned for this sprint is the ability to allow basic users who are not logged in to perform data export downloads.

Sprint 9

Sprint 9 will be the fourth sprint of the spring semester, and will include the break week for time tracking purposes. The primary goals for the sprint are the addition of submitter information tags to the curation review pages, and the repair of the broken unit tests to ensure continuous integration builds can pass properly. Also planned for this sprint is improvements to the submission validation system, and some bug fixes.

Sprint 10

Sprint 10 will be the fifth sprint of the spring semester. The primary goals for the sprint are creation of a compact setting for the read-only views and creation of draft saving functionality for submissions. Also planned for this sprint is further improvement of the validation system.

Sprint 11

Sprint 11 will be the sixth sprint of the spring semester. The primary goals for the sprint are creation of a GUI for administration (primarily role editing), and set up of submitter email notifications. Also planned for this sprint is a redesign of the homepage and work on the installation guide.

Sprint 12

Sprint 12 will be the seventh and final sprint of the spring semester. The primary goals for the sprint are wrap-up tasks such as bug fixes and final documentation.

Fall Sprint Goal Completion

Sprint 1

The primary completed work during sprint 1 was adding frontend support for the “evidence with” field, as well as making updates to the database schema to provide a framework for supporting “evidence with” being submitted to the database. Other completed work includes fixing broken unit tests, and updating keyword mapping to account for needing to check evidence codes for needing “evidence with”.

Sprint 2

The primary completed work during sprint 2 was the start of a massive overhaul in the frontend code. The old, custom CSS styling was pulled out, and replaced with Bootstrap in order to make UI changes faster and more familiar. The submission preview page was also added in this sprint, as well as some refactoring of the “evidence with” code.

Sprint 3

The primary completed work during sprint 3 was a continuation of the UI updates and a large amount of effort focused on responding to user test feedback, mostly represented by many small UI changes in response to specific concerns or issues. Other efforts include further refactoring, and updates to the curation detail page.

Sprint 4

The primary completed work during sprint 4 was the completion of a basic frontend layout for the curation view. The curation detail page received an update to the UI, and the curation review page was created. There were also updates to the submission view, as well as more changes based on test feedback.

Sprint 5

The primary completed work during sprint 5 was adding backend support for the curation changes, creating a functional curation feature able to review and submit data to the database. There were also ongoing efforts in refactoring the codebase to be better laid out and extensible.

Spring Sprint Goal Completion

Sprint 6

The primary completed work during sprint 6 was triage of our Github issue board, and assignment of priority tags and story labels to many of the issues on the board. An update to the search functionality was also completed that allows searching via external IDs.

Sprint 7

The primary completed work during sprint 7 was the expansion of search functionality to allow searching for terms by their synonyms as well as their correct names. There was also work done on the data export to allow currently collected evidence with data to be exported in the interim time before completion of an update to evidence with data storage. Additionally, research was done into continuous integration tools and implementations.

Sprint 8

The primary completed work during sprint 8 was the expansion of evidence with data storage to reflect the relation between multiple saved evidences, and an update to the data export to reflect this relation. Another major task completed this sprint was the implementation of continuous integration tools, set up to run a build on pull request in Github, which allows us to keep the master branch up to date with new data without having to manually deploy. There was also a new page added to the site where users can download data export files, even when not logged in.

Sprint 9

The primary completed work during sprint 9 was an overhaul of the keyword search and sorting for terms, and adding in a default list of ECO terms to be displayed on the field dropdown. The team also made various improvements to validation messages across the submission page, to better communicate to users what mistakes are being made.

Sprint 10

The primary completed work during sprint 10 was the creation of a compact view for annotations on the review page for submissions, as well as finalizing draft saving for in-progress submissions. Other completed work included updates to the GAF export file code to better match standards and make the file update nightly rather than creating a new file every night.

Sprint 11

The primary completed work during sprint 11 was the creation of a GUI for the administrator role management, and the addition of email notifications on submission and curation completion to keep the original submitter informed. Additional work completed includes adding a readme to the export download page, and creating a full compact read-only view rather than only compacting annotations.

Sprint 12

The primary completed work for sprint 12 is finalized documentation for all aspects of the project. At the close of the project, all documentation and project artifacts are ready to be handed off for the sponsors and any future teams to pick up and work with.