**Imperial Visualisations: working in partnership**

Welcome to the Imperial Visualisations community! We are excited that you are planning to create interactive visualisations for use in your STEMM lecture courses – they form an excellent learning tool to enhance students’ understanding of abstract concepts.

All our visualisations are created in staff-student partnerships. What does ‘working in partnership’ mean? There are three guiding principles of partnerships which we value particularly, and which set them apart from mere student participation or a student-supervisor style relationship.

1. The partnership is based on mutual respect and draws its strength from **equally valuing the expertise of staff and students**. Staff are experts in teaching as well as in their subject-specific domain; students have the expertise of being learners. During the project, the students are likely to develop expertise in coding in Javascript and HTML.
2. A partnership means a **joint ownership of** both **the development process** and **the final visualisation.** Therefore both staff and student(s) contribute to the decision-making of how to work on the visualisation as well as the functionality and the look of the visualisation.
3. The responsibility for the visualisation and its development is **shared**, **but not equal**. It is up to the staff and student(s) involved in the partnership to jointly define exactly who is responsible for what, in particular during the design process. Generally there is an expectation that the student is responsible for the coding process, and the staff member is responsible for the correctness of the final product (e.g. the Physics / Maths / descriptions etc).

**The development process: from initial idea to implementation**

The development of the visualisations follows 6 essential steps, which are outlined below. Each of the steps are described in more detail in the appendix.

Connect with our community! We use **Slack** for team communication, **Trello** for keeping track of visualisations in development, and **Github** for sharing code.

After checking ‘version 1.0’ for correctness, the staff partner **approves** the visualisation. It will then be **uploaded** to the website. Optional extensions can initiate a new design phase.

Once all the functionality has been coded up, the visualisation is sent for **peer-review**. This will lead to further improvement and development, before sending it for **staff review**.

This is the **programming** phase. With the aid of a visualisation template the student(s) will code up the ‘version 1.0’ functionality in Javascript / HTML / CSS.

Before any coding starts, there needs to be a clear plan for ‘version 1.0’ of the visualisation. This requires defining **learning objectives** and creating a **design sketch**.

During this phase students will start developing the many new skills required to develop visualisations, such as code-sharing on **Github** and programming in **Javascript / HTML / CSS**.

There have been purposefully no timelines included, as this will differ for each visualisation. The students are working on this project as an extracurricular activity. It is therefore important that there is no pressure for them to deliver during busy times - their academic work should always be given priority! Conversely, academic staff often work under strong time pressure, and cannot be expected to make themselves available at all times.

Throughout the entire process, experienced staff and students are on hand to discuss and help the development of the visualisations. Our community meets every Wednesday in term time from 12 pm in our drop-in Code & Crisps sessions – this is a great opportunity for staff and students to come in, have a chat, and have a go at developing your visualisation.

If you have any further questions, feel free to get in touch with Caroline Clewley at [c.clewley@imperial.ac.uk](mailto:c.clewley@imperial.ac.uk). We hope that you will enjoy the process and that your final visualisations will prove to be of good use!

**Appendix: the development process in detail**

1. ***Connect*** 
   1. **Github:** we store and share our visualisations code on Github. This is our repository (Physics): <https://github.com/Imperial-visualizations/Physics-Visualizations>. It is highly recommended you create a Github account and fork the Physics Visualisations repository so you have your own copy of all the existing code.
   2. **Slack**: Our workspace on Slack is at: <https://impviscodecrisps.slack.com>. If you have not got an invitation link to the workspace yet, you need to request one by contacting Caroline Clewley. Slack is most effective if you download it to your computer and/or phone, and set the notifications so that you will be alerted when a new message is posted (this can be done separately for each channel or private message). Once you have started developing a visualisation, it is recommended to create a private channel for all the partners to discuss the visualisation development. The main open channels to monitor are:
      * #drop-in sessions: for news and info about Code & Crisps drop-in sessions;
      * #learning\_materials: for links to useful material in order to learn the relevant programming skills;
      * #visualisation\_ideas: for posting new ideas for visualisations, plus the invitation link to edit the Trello board of visualisations in progress.
   3. **Trello**: We keep track of our visualisations in progress at <https://trello.com/b/mR6L3TtH> (anyone can view this, but to edit it you need to follow the invitation link on Slack). Each visualisation is represented by a list with its status, staff partner, student partner, department / course, and description. To create a new visualisation list, it is best to copy an existing list and edit the details. The status needs to be updated as the visualisation progress and is colour coded:

Green: Looking for student partner(s)

Yellow: Looking for staff partner(s)

Purple: In development

Dark blue: Under review

Light Blue: Being improved (further development after review)

Navy: Live (uploaded to website)

When you click on the status, you will also see a check list for each phase of the development process: these need to be ticked off as they are completed.