The Smart Way to Manage a Large Research Project

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With 3 or 4 years to complete your PhD, you might think you will have plenty of time to **explore all thoughts and ideas**. But time goes fast and you need to learn to manage a large research project.

You've got plenty of time and good brains.

Let's be realistic. [1] You finished your undergrad studies. You have been chosen for this PhD. You must be smart. You can handle this.

Yes, this PhD looks like a monster, but you have 3 or 4 years to tame it. Plenty of time, you think. After all, you accomplished tough goals during your life. This is not going to be different.

Fast-forward a year and a half, the monster is not tamed and you are a year and a half closer to the end. This PhD is becoming more complex than the **LHC**.

You are not alone. There are a large number of students needing more time to complete their degre [1] es. Both in natural sciences and humanities, students need contract extensions.

Delaying a PhD is not rare, but it is undesirable.

Setting up a system to manage your project, to help you keep on the path while roaming through the forest, is as critical to success as your analytical capabilities. Unless you have experience in **project management**, this **skill** is something you will learn while working as a researcher.

We don't want you to learn only by trial and error. This is why we give you some tips on how to manage a large research project and take your research onto the fast lane.

While there are seemingly as many methods to **manage a large research project**, the general ideas of a solid system are the same.

Split And Plan Like A Sir

One of the most important aspects of managing a project is splitting it up in doable tasks and **managing their timing**. Planning consists of the following subtasks:

- *Identifying the tasks* that need to be carried out.

A large research project, like a PhD or a project that will last several years, should be split in smaller research projects. For each research project, the main tasks typically are: **literature review**, **development of theory**, **experiments**, **analysis of results** and verification of theory and then **reporting** the results.

- **Splitting the main tasks** into their respective subtasks.

For laboratory experiments are: preparing the setup, ordering the required elements and products, preparing the measurement, setting up a system to check and process these measurements, carrying out the experiments, cleaning up and dismantling the setup and finally storing all raw data in an organized way.

- Considering how much *time* each task takes.

Quantifying the amount of time you need for each subtask, is difficult in the beginning. For a first overview of the project and the main tasks, you can think in terms of weeks/months. Once you narrow down to the level of subtasks, **experience** and personal circumstances will determine how many hours you need for each small subtask.

- Determining which tasks run *simultaneously*.

Juggling tasks is an essential part of managing a large project.

If you want to do laboratory experiments, you can't walk into the lab on the very day your planning says you start your experiments without any previous planning, ordering of materials and negotiating your lab space and time. Similarly, reporting your results can start early on, by **writing** overviews, summaries and critiques of the **literature** you **processed**.

- Assess the *consequences* if a task takes more time.

Which other subtasks are affected when something early **in the chain** is delayed? Can you move something forward in your planning while a delay occurs? How much extra time can you spend on a subtask without missing a **series of deadlines**?

- Allow some *air to breathe*.

From an engineering point of view, safety factors are always necessary on **your time** and cost budgets. A rule of thumb is to consider 20% of extra time for your tasks. We are all human and we make mistakesBy the same token: make sure you plan time off for **your holidays** and to recharge your batteries.Keep in mind as well that minor tasks will come along the way: **teaching responsibilities**, supervision of students, **preparing for conferences**,…

Checkpoints To Evaluate Progress In Your Research Project

Continuing the ideas to manage a large research project, regular checkpoints are an important aspect of a successful planning. You need to check regularly if you are doing good progress and if you are still running on schedule. This will keep you motivated.

These checkpoints can take different shapes, depending on the characteristic of the project: for a solitary PhD project these help to **keep you motivated**, while for a large European research project checks help to keep the whole team on track.

A few examples of checkpoints you can build into your planning are the following:

- **meetings with your supervisors**
- gatherings with a group of fellow students (for example ~~**intervision groups**~~, or "**shut up and write**" groups)
- progress presentations for your funding body
- progress presentations for a small group of peers
- paper **deadlines**
- due dates of reports
- personal deadlines for subtasks
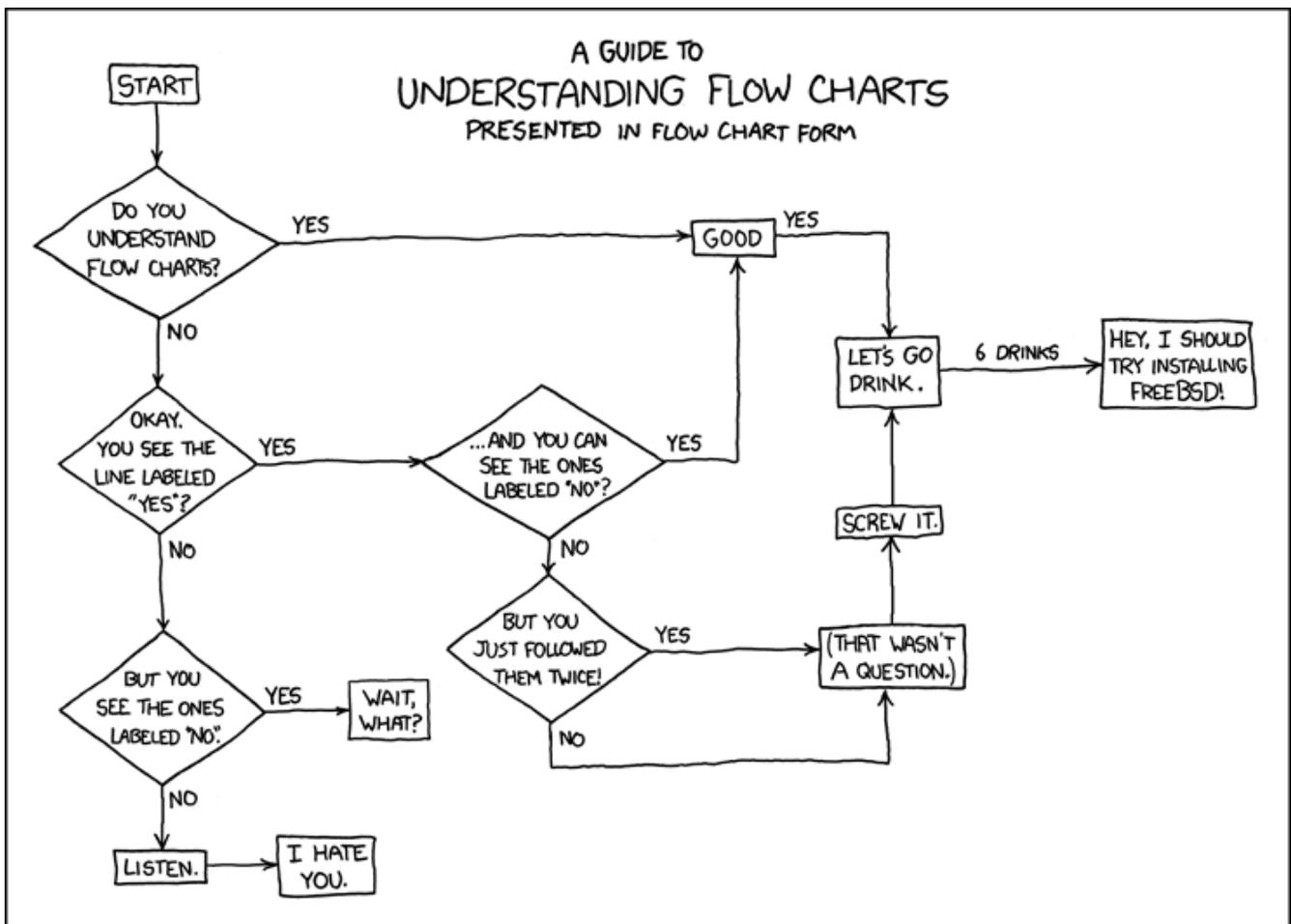
Exploring Your Data Jungle

Besides the amount of time that needs to be planned and scheduled to manage a large research project, you will also have to deal with a large number of files: both on your computer and in your **physical archives** (unless you managed to go completely **paperless**).

To find your information when you need it, it is necessary you start structuring your files (digital and analog) early in the process. The worst you can do is to keep all files on your desktop, and to keep all prints on piles on your desk. Don't pile your information, **structure and file it**!

Here are some ideas on how to keep your information searchable:

- have a clear tree structure for your files and folders
- arrange your printed papers in alphabetical order by first author
- keep a **digital archive** for your papers
- add project codes to smaller projects and keep an overview file