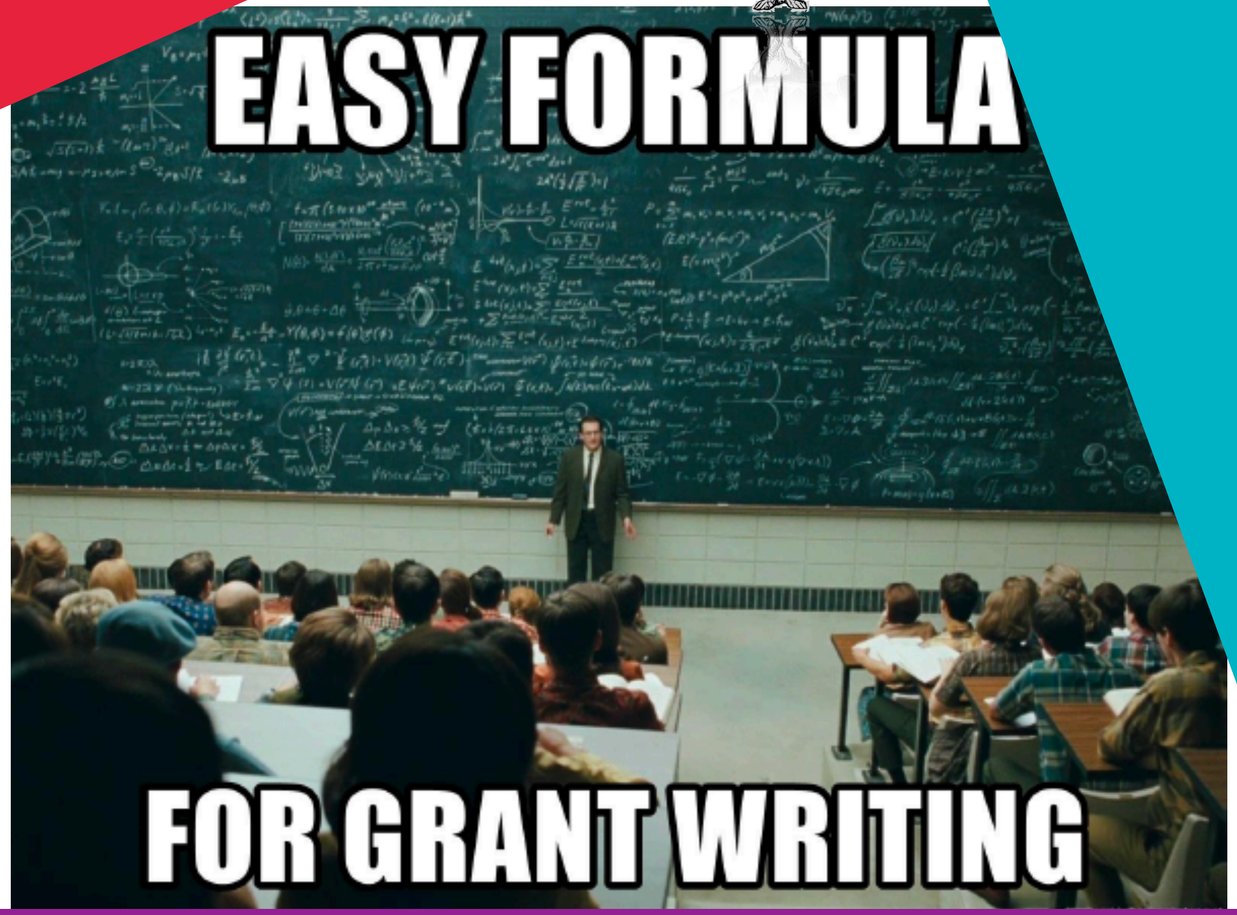
AN EXAMPLE



Nikhef

Knowledge utilisation

- Nowadays all the grants have this section and your first reaction will be: what a waist of time! .. well if you think so you are wrong
- The granting agency wants to know:
  - Who in science can profit from your research: i.e how this research will benefit your field and/or close by fields
  - How the society as a whole can benefit from this research

A few tricks

- Nowadays all the grants have this section and your first reaction will be: what a waist of time! .. well if you think so you are wrong

  - Your first reaction could be I write 4 lines just saying is great for fundamental science in my own field

All fine, if this is it you write so, but keep in mind: you compete with other great ideas and if your competitor has something to say here then he/she gets the grant

A few tricks

- What I like of knowledge utilisation is that it force you to think not exactly to your research but on how this can be useful in general

  - May be is not directly applicable to other fields but as example what about outreach?

As a working example: Do you use machine learning in your grant? .. then you can think to generalise the algorithm, create a proper web-tool to teach high-school students machine learning and data analysis

An example

- From an unsuccessful grant of mine

Total wordcount 2a1, 2a2, and 2a3: **1200**

2b. Scientific and/or societal impact of the proposed project (Knowledge utilisation)

This proposal focuses on experimental particle and heavy-ion physics, but in addition it has a direct impact on other research areas and an indirect societal impact driven by outreach activities.

Direct impact: The results of the proposed research will trigger major interest in the fields of theoretical physics and astrophysics and, indirectly, on detector technology. The diffusion and drag transport coefficients with their sensitivity to the QGP share and bulk viscosities over entropy ratios are a fundamental ingredient to constrain the theoretical models aiming to describe the hydrodynamical expansion of the plasma [38]. Moreover, a robust determination of the drag coefficient is one of the ingredients that could allow improving hydrodynamical simulations toward the determination of neutron starts equation of state [39]. Finally, the measurements I propose are recognized as key studies in setting the specifications for the development of the next generation Monolithic Active Pixel Sensors (MAPS) to be used in the upgraded ALICE experiment expected to be operative in 2032 [36]. In particular the spatial resolution and data-rate of the sensor are mainly driven by the needs of the heavy-quark analyses. My coordinating role of the Dutch activities on sensor development assures a direct connection and a quick dissemination of the results. All the aforementioned impacts can be reasonably expected to happen within 2030-2031.

- In the line of what the granting agency wants to know I always like to split this part in two sub-section: **Direct impact** and Indirect societal impact

An example

- From an unsuccessful grant of mine

Indirect societal impact in the form of outreach. As coordinator of the Hisparc outreach project [37] for the Utrecht region I recognize the fundamental importance of science outreach for the society as a whole. While this activity has been so far successful, the granting of this proposal will allow me to pursue a quite ambitious project. The idea is that simplified versions of the supervised and unsupervised learning algorithms developed in the framework of this proposal will be used as the cornerstone of a newly developed web interface based on Jupiter notebook. The aim is guiding high-school students in the discovery of machine learning and its application to fundamental science. The interface will offer the possibility to build algorithms and perform simple analyses on the public LHC data and it will be freely available. In order for the project to succeed it is important to make aware the schools of the new tool and to train the teachers on its usage. For this purpose, I will use the already existing network I built with my involvement in Hisparc to disseminate the new results among the Dutch high schools and I will organize two two-day symposiums with hands-in sessions dedicated to teachers. The first symposium is foreseen for 2026 and mainly aimed to receive feed-back from teachers. The second symposium will be held two years later, at the end of the project with the release of the final tool. While the discussion of the planning stops with the second symposium, I will keep

- In the line of what the granting agency wants to know I always like to split this part in two sub-section: Direct impact and **Indirect societal impact**

An example

- From an unsuccessful grant of mine
  - All nice right? But why I failed:

> expansion of the plasma [38]. Moreover, a robust determination of the drag coefficient is one of the ingredients that could allow improving hydrodynamical simulations toward the determination of neutron starts equation of state [39]. Finally, the measurements I propose are recognized as key

The “general” committee state that is not clear from this sentence the connection to gravitational waves … indeed more than the reference I should have added 2 words more ok “how to” (i.e what I wrote is more for an expert than for a “person” with a PhD in physics)

In conclusion

Your research is in fundamental science and it is good to state it helps your and related fields but in 99% of the cases if you think a bit you would realise that with the minimal additional effort it can have even a societal impact *(usually this minimal effort can grant you up to 20% additional points in your proposal score)*

…….. and you can do something that matters for society

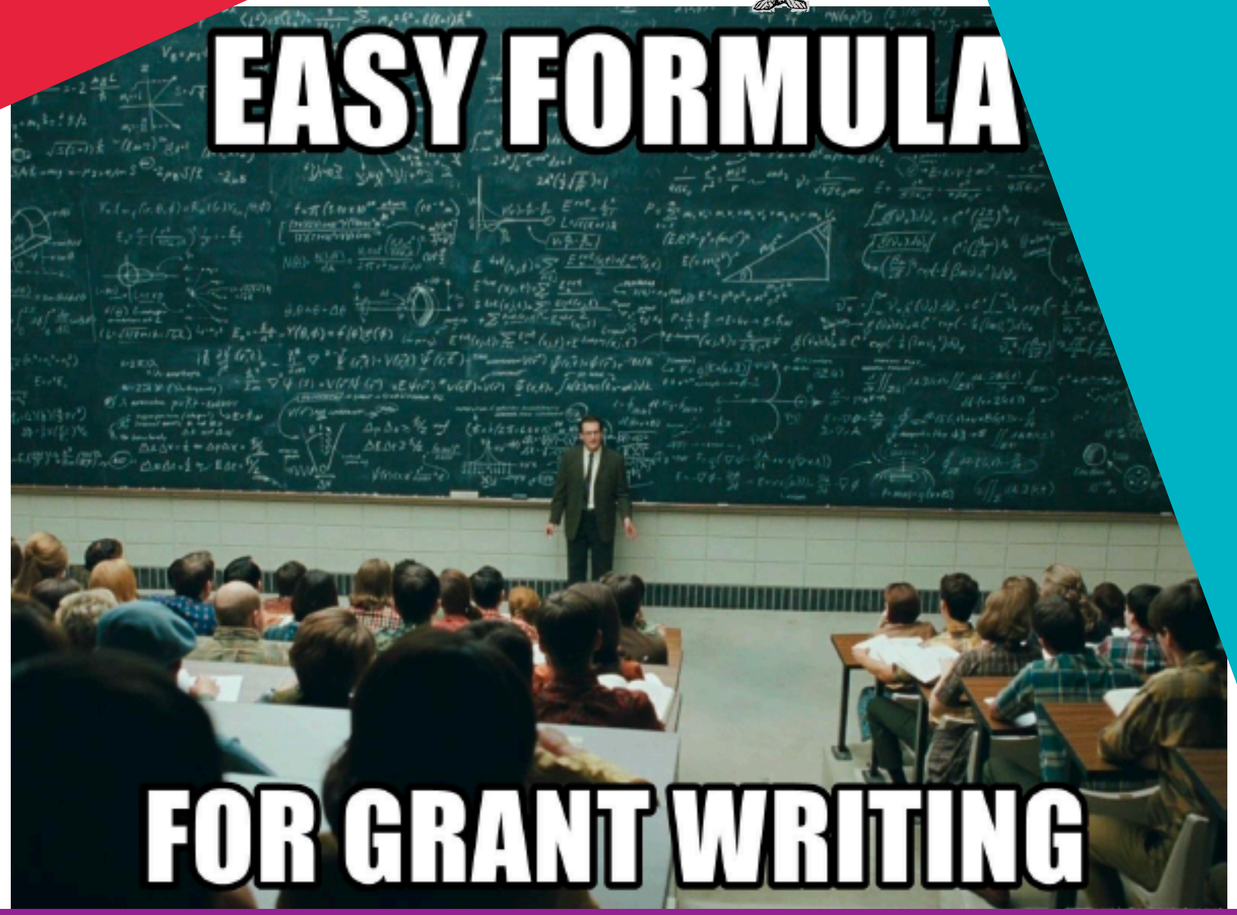
How do I put together my budget?

- It really depends on what you propose so I can give here only examples on what you do not have to do
- Take into account that at this step you will have quite some help from the granting officer of your institute

How do I put together my budget?

- Our working assumption is 800k grant and a PhD cost 260k for the 4 years … that means the grant runs for 5 years (4+1 to hire the PhD)

From here on see my calculation on blackboard



Nikhef