Hear it from the expert - Twelve tips on how to prepare an ERC grant proposal

Prof Andreas Zeller, a professor for Software Engineering at Saarland University in Germany, received an ERC Advanced Grant in 2011. Here he shares his advice on how to be successful in the competition for one of Europe's most perstigious research grants.

This article has been taken from Prof Zeller's blog with his kind permission.

Andreas Zeller is a full professor for software engineering at Saarland University in Germany. His research concerns the analysis of large software systems abd their development process; his students are funded by companies like Google, Microsoft, or SAP. In 2010, Prof Zeller was inducted as Fellow of the ACM for his contributions to automated debugging and mining software archives. In 2011, he received an ERC Advanced Grant for work on specification mining and test case generation.

In 2011, I have been lucky to obtain an ERC Advanced Grant. The European Research Council (ERC) is a EU institution that promotes *high quality research* in Europe. It funds individual investigators in any field of research – and it does so substantially: With up to 3.5 Million Euros, an ERC grant is Europe's highest research funding for individuals – and a very coveted prize: Only about 12% of proposals get funded, so competition is fierce.

Since I got my grant, other applicants have asked me again and again for hints and samples on how to prepare a proposal. Of course, there is no single recipe for success, but there were a few points which I found useful in preparing my proposal. While specific for ERC proposals (and from a computer scientist perspective), these tips should generalize for several other high-profile funding programs.

The Process

1.   Understand the process.

The ERC publishes a *Guide for Applicants* as well as a *Guide for Reviewers*. Both should be your bible; at all times, ask yourself how your proposal will stand according to the criteria and the process listed. Find out what your panel is, who the chair will be, and which past members have been on the panel. Your proposal will need to win all of them.

2. Start many, many months before the deadline.

Unless your story is a winner straight from the inception, you will need lots of time for refining and revising the main idea and the many problems. In my case, I started writing the proposal 18 months before the deadline; although 6 months would have been okay, too, refining for another 12 months helped the proposal a lot.

3. Reserve several weeks for writing.

You will need lots of time for collecting data, shaping the story, and checking the references. Consider a 2–3 week retreat for the writing alone, plus appropriate time for polishing. Let your friends and family know when you'll be back.

4. Get plenty of feedback.

Your proposal will first be reviewed from people in your discipline, but not necessarily from people in your speciality. It may also be that your proposal will have to stand against proposals from totally different disciplines. Hence, your story must appeal to readers *no matter what discipline and speciality they're from.* Discussing your ideas and your proposal with as many people as possible and as diverse as possible will help. In my case, I had the proposal reviewed by 12 internal and 12 external people, and used every possible invited talk to present some sketches of the main ideas. (Such presentations not only help you to make your ideas explicit, but will also lobby for your ideas, and get feedback from the audience.)

5. Rely on local expertise.

ERC projects are huge, and thus involve substantial budget and resource planning. If your university has support for EU and/or ERC proposals, rely on their expertise. (If you have a colleague who is already funded by the ERC, check with her or him as well, of course!)

Your Achievements

6. Sell yourself.

Your proposal will be assessed on two criteria. 50% is your project, and it will be up to you to come up with a great idea. 50%, however, is your past achievements, and you will have to work hard on these. What you need is *irrefutable evidence for impact and excellence.* That is, *facts* on awards, services, papers, talks, students, tools; lasting impact in academia and industry; your quality as networker and advisor; and, last but not least, your *ability to shape and create research fields*. Play by numbers: acceptance rates,

citations, downloads. Check the list of past grantees, their numbers and achievements to get an idea of what you're up against.

7. Have unique selling points.

"So, you're Brad Pitt? That don't impress me much." When you're surrounded by supermen (and you will be), just being another superman is not enough. So:
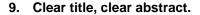
- ➢ Don't just say: "I am an ACM Fellow". But say: "I am the first ACM Fellow from Spain", or "I am the youngest European ACM Fellow in concolic testing". Replace "European", and "concolic testing" by the most general feature you can find; and replace "ACM Fellow" by your most prestigious designation. (Hint: In my case, 6 out of 7 reviews began with "The applicant is an ACM Fellow", as if this would disperse all doubts on my abilities; so *go* for such designations as you can.)

- ➢ Don't just say: "Best Paper Award". But say: "First Best Paper Award for a Debugging Paper written on a one-legged stool". Exercise: generalize as above.

- ➢ Don't just say "700 citations". Also say: "Most cited testing paper since 1999".

- ➢ Avoid any claim that cannot be independently verified.

Coming up with such selling points is hard work; bibliographic query tools are your friends. Again, reserve lots of time for this work. (I spent two days googling and digging through the CVs of all European ACM Fellows, for instance; and a successful colleague of mine even has managed to get temporarily banned from Google Scholar.) Selling yourself this way is hard; if you need to take a shower by the end of the day, that's fine. But remember that every selling point you can come up with this way makes it harder for detractors to dismiss your achievements, and it makes it easier for champions to sell them to others. In the end, it will have to be clear that you are the only person on earth who can save the world from this terrible, important problem.

Your Project Plan

8. No risk, no fun.

The ERC funds *high-risk, high-gain* projects. This means that there *have* to be substantial risks of failure (otherwise, others would have done this before). However, your specific research plans should help to mitigate these risks and thus bring the high gains promised. Focus on *novelty* (why is this new?) and *potential impact* (why is this needed?). Avoid standard cliches from your discipline ("If only everybody had used this formal method from the start, the Ariane failure could have been prevented..."); come up with fresh, real stories and insights instead.

9. Clear title, clear abstract.

The reviewer should get interested in your proposal after a short glimpse of ten seconds. The message has to be in the title, in the abstract, in the figures, in the diagram, in the examples. (Yes, *please* have a diagram that conveys the approach! And *please* have an example, too! All these are weapons in the hands of your champions.) If you fear the message could be too complex, try again. If you think the message sounds too trivial to you, it could start to be understandable for the rest of us. (If, after simplification, your approach no longer sounds as cool as before, don't hide this with words, but go back to the drawing board.)

10. Have a clear structure and plan.

You're a seasoned researcher, so you know how to organize things, don't you? Now all you need to do is to put this in writing: tasks, dependences, milestones, evaluations, and measurable success criteria. The point of this exercise is not for the ERC to ask you to follow the plan by the letter once the project starts; the point of this exercise is for the reviewers to see that you can organize things.
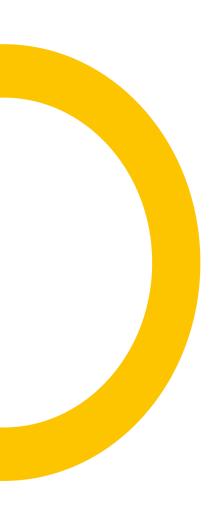
11. Get to the point.

The length of an ERC proposals is clearly limited, and that's a good thing. Get to the point quickly. Use a clear language: No buzzwords, no yada yada, no lingo. If your project on "Examining the security interoperability of cloud business process models" cannot be motivated in plain English, don't expect the computer science panel chair to pitch it against "Curing cancer once and for all".

12. Polish. Polish. Polish.

And polish again. With an ERC grant, you're applying for the highest individual funding one can get in Europe. Do your homework.

None of these tips guarantees success. What they do, though, is to prevent *misunderstandings.* If the reviewer does *not* get the point about you and your proposal, you will lose despite being great, and that sends you back to the drawing board. If the reviewers *do* get the point about your project and your past achievements, though, then it's a fair game: If you are better than the others, you win; and if you are not, you lose. Even if you're Brad Pitt, it's perfectly okay to lose against George Clooney. If you win, though... well, that's great and totally worth it, as I can tell from first-hand experience :-)

ERC Opportunities in Brief

The ERC supports **excellence** in frontier research through a bottom-up, individual-based worldwide competition.

The ERC provides **support to individual scientists**, not research networks or institutions and covers **all scientific disciplines**.

Grants are awared for up to 5 years with maximum proposal budgets ranging from €1.5 million to €3.5 million.

Researchers from anywhere in the world can apply for ERC grants provided the research they undertake will be carried out in an [EU Member State] or [Associated Country].

There are 3 main types of ERC grants:

- **Starting Grant** (StG) for researchers 2-7 years after award of PhD.

  Call now open. Deadline: 3 February 2015

- **Consolidator Grant** (CoG) for researchers 7-12 years after award of PhD.

  Call now open. Deadline: 12 March 2015

- **Advanced Grant** (AdG) for established research leaders.

  Currently no open call.

- Additionally, ERC grant holders can apply for top-up funding (**Proof of Concept Grant**; PoC) to explore the innovation potential of their research results.

  Call now open. Deadlines: 5 March 2015, 28 May 2015, 1 October 2015