[SORSE] Scrum for research software projects, and what to do when the team has left

Report of Contributions

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Contribution ID: **1** Type: **not specified**

My project expired and my team left, so let's rewrite all the software from scratch

Tuesday, January 26, 2021 2:00 PM (30 minutes)

Peano is a framework for large-scale simulations using dynamically adaptive Cartesian grids. It is used today for Earthquake and Black Hole simulations, for example. The fourth generation of the software is currently under development.

Peano's development as well as the push behind ExaHyPE, a solver engine built upon Peano, always has been shaped by the ambition to implement state-of-the-art numerics. In our field, this implies multiscale algorithms where others work with "flat" data structures, dynamically changing data structures where others rely on something static, writing multi-numerics/multi-physics codes where others focus on one thing, supporting hybrid architectures where others commit either to GPGPU- or CPU-only, and so forth.

In this talk I briefly categorise the software and present application areas. After that, I focus on the software's genesis. Peano has started off as a collection of codes for solving incompressible fluids, yet spread out into many application areas, it has been shaped (and misshaped) by dozens of core developers, and it has grown repeatedly into a state that made it hard to maintain and extend further. Therefore, each generation has become a complete rewrite—also as we tried to bring in new, fancy numerics every time.

I will explain which software design patterns we use today in our framework in an attempt to deliver software that is fast, maintainable and usable for all the different communities involved. With our complex agenda, it is basically impossible to find developers among PhDs, academics or RSEs that master all areas of relevance. So we need a strict separation of concerns (and flaws) which materialises in our code as the Hollywood Principle: Don't call us, we call you. In short, we take a lot of freedom away from developers how they can realise things. Instead, we force them to focus on what they want to do.

Presenter: Dr WEINZIERL, Tobias (Durham University, UK)

Session Classification: Talk

Contribution ID: **2** Type: **not specified**

Applying Scrum to Research Software Projects

Tuesday, January 26, 2021 2:30 PM (30 minutes)

Background
Scrum is a modern, agile and widely used software development methodology. Rather than trying to set requirements in stone at the beginning of a project, Scrum embraces the idea that requirements will change during all software projects. It takes an iterative, incremental approach and focuses on regular delivery of working software to customers. Can it be applied to research software projects and if so what are the best approaches?

Focus of the Talk
In this talk I will give an introduction to the Scrum methodology covering the main roles, workflow and artifacts. I will then talk about how we have applied Scrum to research software projects in my team over the past 10 years. I will cover:

- How to apply Scrum to research software projects
- Who should take on which roles within a research project
- What has worked well and what not so well
- How we have evolved our approach over time

Learning Outcomes / Benefits
Attendees will gain a basic understanding of the Scrum methodology and learn how to apply it research software projects.

Target Audience
Anyone involved in the development of software in a research focused environment. This could include developers, project managers, team leaders as well as customers / collaborators who want to get software developed.

Presenter: MACHIN, Matt (University of Manchester)

Session Classification: Talk