

# Software development best practices for Life Sciences - Kickoff meeting

Dec 14-15 from 14:00 to 14:00 - Staeten I & II, Exchange Avenue, Schiphol airport,  
Amsterdam

## Twitter HashTag

#SoftDev4LS

## Share folder (google drive)

<http://tinyurl.com/SoftDev4LS>

## Mailing list (all members)

- [software-development-best-practices-group@elixir-europe.org](mailto:software-development-best-practices-group@elixir-europe.org)
- <https://lists.elixir-europe.org/mailman/listinfo/software-development-best-practices-group>

## TOC

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# Goals

## Goals of this meeting

- Start the “software development best practices” working group
- Introduce and discuss the goals of the project
- Involve ELIXIR Node representatives and other Life Science Research Infrastructures with experience in software development best practices
- Plan together activities and outcomes

## Goal of the project/group

Define procedures to improve quality and sustainability of software development that could be adopted by ELIXIR and other biomedical Research Infrastructures

## Specific goals

- Develop guidelines and draft a white paper on best practices and quality assessment in software development
- Provide the methods and tools to assess software development best practices
- Develop an open source software guideline for Life Sciences

# Agenda

Please feel free to make suggestions and comment within this doc.

## Day 1

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 13:30 - 14:00 | Lunch (Staeten I&II)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 14:00 - 14:05 | <a href="#">Introduction and welcome</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 14:05 - 16:00 | <p>5' lightning talks</p> <p>Presentations from participants introducing themselves and their expertise in software development best practices and related topics of interest</p> <ul style="list-style-type: none"><li>• <a href="#">Ian Dunlop</a> - Manchester University</li><li>• <a href="#">Haydee Artaza</a> - TGAC</li><li>• <a href="#">Rob Hooft</a> - DTL</li><li>• <a href="#">Robert Pergi</a> - Czech Technical University</li><li>• <a href="#">Jiri Cerny</a> - Institute of Biotechnology, Academy of Sciences</li><li>• <a href="#">Radka Svobodova</a> - CEITEC, Masaryk University</li><li>• <a href="#">Thomas Van Parys</a> - VIB / UGent</li><li>• <a href="#">Harry-Anton Talvik</a> - University of Tartu</li><li>• <a href="#">Brett Olivier</a> - VU University Amsterdam</li><li>• <a href="#">Daniel Vaughan</a> - EMBL-EBI</li></ul> |

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|               | <ul style="list-style-type: none"> <li>• <a href="#">Jan Stourac</a> - Masaryk University</li> <li>• <a href="#">Mateusz Kuzak</a> - Netherlands eScience Center</li> <li>• <a href="#">Marco S. Nobile</a> - University of Milano-Bicocca</li> <li>• Angel Corpuz -</li> <li>• <a href="#">Jonas Hagberg</a> - BILS</li> <li>• <a href="#">Brane Leskošek</a> - UL</li> <li>• <a href="#">Neil Chue Hong</a> - SSI</li> <li>• <a href="#">Manuel Corpas</a> - TGAC</li> <li>• <a href="#">Rafael C Jimenez</a> - ELIXIR Hub</li> <li>• <a href="#">Feedback from those who could not attend</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 16:00 - 16:20 | Tea and coffee (Staeten I&II)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 16:20 - 16:40 | <a href="#">The ELIXIR/SSI proposal and collaboration on software development best practices for Life Sciences</a> - <a href="#">Rafael C Jimenez</a><br>15' presentation + 5' questions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 16:40 - 17:00 | <a href="#">Good practices for scientific software development</a> - <a href="#">Neil Chue Hong</a><br>15' presentation + 5' questions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 17:00 - 19:30 | <a href="#">Good practices for life sciences</a> - <a href="#">Neil Chue Hong</a><br>Group discussion - 4 groups based on high level practices <ul style="list-style-type: none"> <li>• Topics <ul style="list-style-type: none"> <li>○ High level practices</li> <li>○ Specific guidelines to adopt best practices</li> <li>○ Content and structure of guidelines</li> <li>○ Commission of guidelines to expert groups</li> </ul> </li> <li>• Outcomes <ul style="list-style-type: none"> <li>○ List of agreed best practices for ELIXIR</li> <li>○ Working groups and leaders to produce guidelines for how these practices should be implemented and adopted</li> <li>○ A plan for when each set of guidelines will be produced</li> </ul> </li> <li>• Notes from discussion sessions <ul style="list-style-type: none"> <li>○ <a href="#">Group 1 - Software Development</a></li> <li>○ <del><a href="#">Group 2 - Optimization</a></del></li> <li>○ <a href="#">Group 3 - Collaboration</a></li> <li>○ <a href="#">Group 4 - Product Management</a></li> </ul> </li> <li>• <a href="#">Prioritisation of Practices</a></li> </ul> <i>Exchange avenue available until 19:30</i> |
| 19:30 - 21:00 | Dinner (Restaurant)<br><i>Restaurant available until 21:00</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## Day 2

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| 09:00 - 09:15 | Tea and coffee available (Staeten I&II)<br><a href="#">Recap and introduction to parallel sessions</a> - <a href="#">Rafael</a><br>10' presentation + 5' questions |
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| 09:15 - 10:30 | Parallel sessions <ul style="list-style-type: none"> <li>• <b>Open source policy</b> - <u>TBC</u></li> <li>• <b>Metrics to measure quality in software development</b> - <u>Manuel Corpas</u></li> </ul> |
| 10:30 - 10:50 | Joint Tea and coffee (Staeten I&II)                                                                                                                                                                      |
| 10:50 - 12:45 | Parallel sessions - continue ...                                                                                                                                                                         |
| 12:45 - 13:30 | Joint reporting                                                                                                                                                                                          |
| 13:30 - 14:00 | Lunch (Foyer)                                                                                                                                                                                            |

### Open source policy

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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| 09:15 - 09:30 | How open source contributes to quality and sustainability - Mateusz Kuzak (eScience Center)<br>10' presentation + 5' questions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 09:30 - 10:30 | Open source policy - Mateusz Kuzak<br>Group discussion - 2 groups <ul style="list-style-type: none"> <li>• Topics <ul style="list-style-type: none"> <li>◦ SWOT analysis</li> <li>◦ A minimum, acceptable and respectful open source policy</li> <li>◦ Guidelines to help with choice of license and governance within ELIXIR software projects</li> </ul> </li> <li>• Outcomes <ul style="list-style-type: none"> <li>◦ <a href="#">Open source policy draft</a></li> <li>◦ License Guidelines draft</li> </ul> </li> <li>• <a href="#">Discussion Notes</a></li> <li>• <a href="#">slides</a></li> <li>• <a href="#">Reference List of materials and links</a></li> </ul> |
| 10:30 - 10:50 | Joint Tea and coffee (Staeten I&II)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 10:50 - 12:45 | Open source policy - continue ...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

### Metrics to measure quality in software development

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| 09:15 - 09:30 | Metrics standardisation, discovery and data collection - <u>Manuel Corpas</u><br>10' presentation + 5' questions                                                                                                                                                                                                                                                                       |
| 09:30 - 10:30 | Metrics to measure quality in software development - <u>Manuel Corpas</u><br>Group discussion - 2 groups:<br><a href="#">GROUP 1</a> , <a href="#">GROUP 2</a> <ul style="list-style-type: none"> <li>• Topics <ul style="list-style-type: none"> <li>◦ Defining metrics that can be used to measure the success of applying the best practices agreed on Day 1</li> </ul> </li> </ul> |

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|               | <ul style="list-style-type: none"> <li>○ Technical discussion about how to collect</li> <li>○ Impact/effort matrix on proposed metrics</li> <li>○ Selection of metrics and targets to start a pilot</li> <li>● Outcomes <ul style="list-style-type: none"> <li>○ List of metrics to start to work with in a pilot</li> <li>○ Proposal to collect metrics data</li> <li>○ <a href="#">F1000Research Paper</a></li> </ul> </li> </ul> |
| 10:30 - 10:50 | Joint Tea and coffee (Staeten I&II)                                                                                                                                                                                                                                                                                                                                                                                                 |
| 10:50 - 12:45 | Metrics to measure quality in software development - continue ...                                                                                                                                                                                                                                                                                                                                                                   |

## Venue

- Staeten I & II meeting room, [Exchange Avenue](#), Schiphol airport, Amsterdam, NL

## Accommodation

Attendees to book and pay for own accommodation and travel. Keep receipts for reimbursement.

Suggested accommodation:

- [citizenM](#)
- [Sheraton](#)
- [Mercure](#)
- [Hilton](#)

## Organisers

- The Software Sustainability Institute (Neil Chue Hong and Steve Crouch)
- ELIXIR Technical coordinators group (Rafael C Jimenez)
- ELIXIR UK (Manuel Corpas)

## Attendees

Please add your name if you plan to attend ...

**[ELIXIR node representatives and attendees](#)**

## Notes

- This meeting is prioritised for people with expertise in leading software development and best practices.
  - ELIXIR representatives to be proposed by ELIXIR technical coordinators
    - Ideally one person per Node
    - It can be someone not related to ELIXIR
  - Life Science Research Infrastructures
    - Ideally one or two people per Research Infrastructure
- Aiming at a capacity of max 30 people.
- Though we decided to have just one representative per Node, we have opened the group subscription to people with the right expertise willing to contribute.

## Reference documents

- Software development and open source best practices in ELIXIR
  - [ELIXIR proposal](#)
  - [Presentation](#)
- [Criteria-based Assessment - Software Sustainability Institute](#)
- [Best Practices for Scientific Computing](#) (base set of guidance for individuals developing code)
- [Minutes SSI/ELIXIR preparatory meeting 16 Sept 2015](#)

### Related events

- [Best practices in programming](#) (SIB course, 19-20 October)
- [Software Credit Workshop](#) (SSI workshop, 19 October)
- [National e-Infrastructure PDG Software Workshop](#) (SSI workshop, 16 October)

## Minutes/notes

Please help to collect notes and actions in this section

## Lightning talks

- Good to not keep it limited to ELIXIR, involve other RI's. Three people from ISBE are present.

### Rafa:

- Software is not main project result. By-product.
- Software is not written by software engineers, but converted biologists.
- Funding is inconsistent and makes people change software projects all the time

- This group can change that.
- The group should focus on functional and technical aspects. Not scientific or managerial.
- We need to keep in check the whole development life cycle
- Rafa likes the refcardz from DZone. Something like this would be great as target

#### Discussion:

- People are scared to be scooped, but this happens not very often in real life. It is much better to be open about what you will be working on.
- Is quality more important than functionality? Is it at odds with functionality?
- If you design it flexibly and well, it can be reused by others.
- We have to treat all code as if it is final. We never have time to rewrite our proofs of concept.
- If something is supposed to last, it needs to be done well. If it would be a real hack it would not need documentation and design, the problem is that many people think that it will be good for 5 minutes and still be working on it 5 years later.

#### Neal:

- Good practice (not best!)
- Evidence for TDD is neutral. There is no clear verdict. Same for many other practices.
- There is a lot of evidence, Neil worked with many others on a meta-analysis
- Best practice implies that the practice should always be the same. In truth, we have different good ways to do things, and sometimes we don't know what is the best way.
- Now writing new paper about the "good enough" practices. What I'd good enough for ELIXIR? What could we make other people do?

#### Discussion:

- Not much of the original best practices have changed in the last few years, they may need new references or have changed in detail.
- Code review is much easier if you work with more than one person on a project.
- There can/should not be a single automated standard that compares Amazon S3 with e.g. BioJS: they are doing wildly different things.

## Best practices

#### Discussions during the Back reports:

- It is hard to address all the different levels of software engineering experience.
-