

# The ELIXIR Software Management Plan

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Fotis Psomopoulos (*INABICERTH, ELIXIR-GR*)  
Eva Martin del Pico (*BSC, ELIXIR-ES*)

Workshop on machine-actionable Software Management Plans

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# ELIXIR Tools Platform Task force - Software Best Practices

- Improving the **quality** and **sustainability** of **research software** by producing, **adopting**, **promoting** and **measuring** information standards and best practices applied to software development life cycle.



Eva Martin del Pico  
Spanish National  
Bioinformatics  
Institute (INB)|BSC |  
ES



Fotis Psomopoulos  
Centre for Research &  
Technology Hellas  
(INAB|CERTH) | GR



Allegra Via  
National Research  
Council of Italy  
(Sapienza  
University) | IT

Manthos Pitoulis (Hub), Matúš Kalaš (NO), José María Fernández (ES), Dimitrios Bampalikis (SE), Leyla Jael Castro (DE), Renato Alves (DE)

# The ELIXIR Software Management Plan

Towards a unified approach to software development and management in ELIXIR

- Similarly to Data Management Plans, SMP is an **awareness** tool.
- think in advance about the software that will be developed
- think about most important parts of software project
- think about roles and responsibilities in software project
- use it as a guide for everyone involved in the project

## Design Principles behind this SMP

- Focused on Life Sciences
- Minimal set of questions
- Applicable to even very small software projects
- In the context of FAIR
- First step / a pilot, with the goal of raising awareness within the ELIXIR community and collecting two rounds of feedback that was incorporated in the final version

# Who, when & how of SMPs

- PI submitting project proposals
  - thinking ahead about software development and management practices
- Project Manager, checking the development process
  - is there a license?
  - is project available online?
- Research Software Engineer / Coding Researcher
  - use SMP as a playbook
  - use SMP as a checklist

# ELIXIR Software Management Plan Questions

## Software Management Plan - version 1.0

1) Accessibility / License

2) Documentation

3) Testing

4) Interoperability

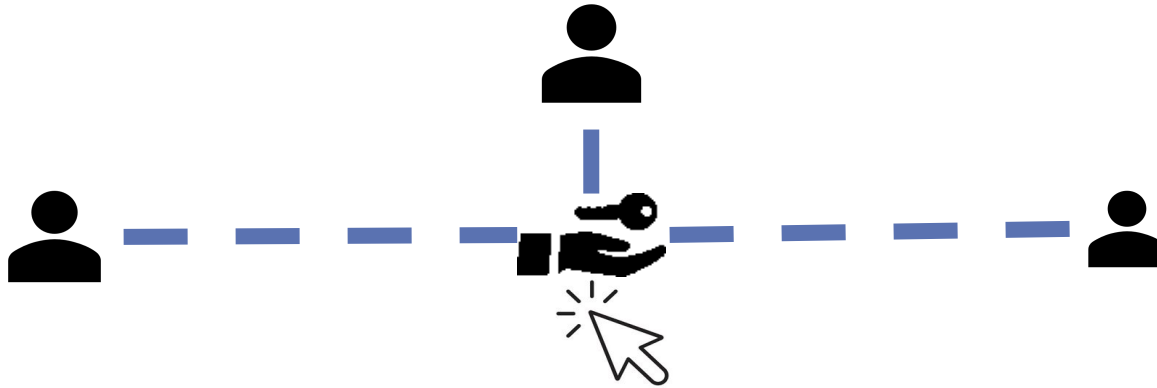
5) Versioning

6) Reproducibility

7) Recognition

*Alves, Renato, Dimitrios Bampalakis, Leyla Jael Castro, José M. Fernández, Jennifer Harrow, Mateusz Kuzak, Eva Martin, et al. 2021. "ELIXIR Software Management Plan for Life Sciences." BioHackrXiv. October 25. doi:10.37044/osf.io/k8znb.*

# Software Management Plan | Accessibility / License



1. How can the software be **accessed by third parties**?
2. Software without a **license** cannot be used by others. Does your software have a license?
3. If yes, what is the **license** of your software?

# Software Management Plan | Documentation



- 1) What **type of documentation** is available, provided with the software and delivered under the same conditions? Please provide a **URL** (when available).
- 2) Is the **purpose** of the software stated in the documentation?
- 3) Does the documentation describe **how to**
  - **test** the software
  - **use** the software
  - **build** the software
  - **deploy** the software
  - **install** the software

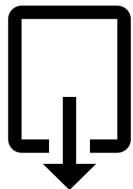
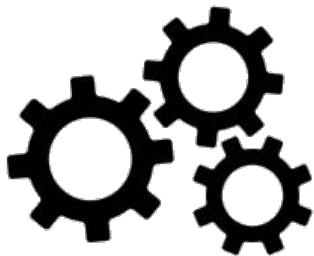
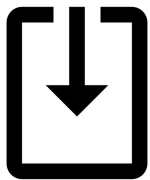


# Software Management Plan | Testing



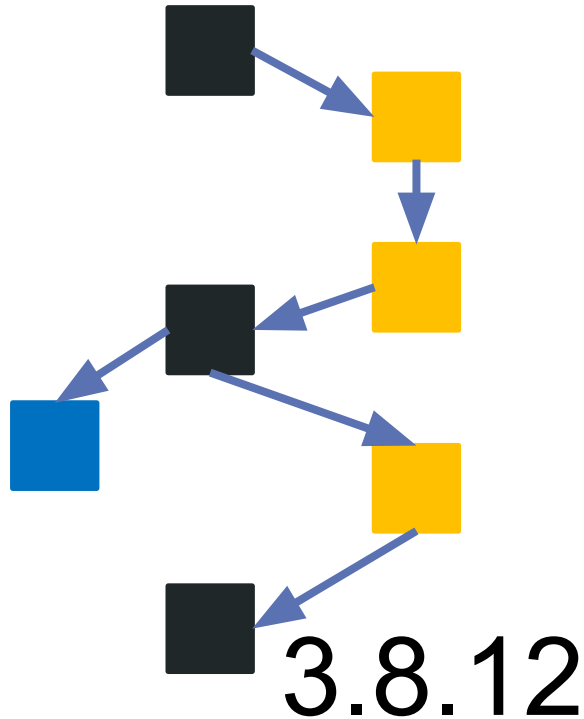
1. What type of **testing** do you use?
  - a. None
  - b. Unit
  - c. Integration
  - d. Functional
  - e. End-to-end
  - f. Linting
  - g. Regression
  - h. Frontend - GUI
  - i. Other (e.g.)
2. Are **sample data** and/or parameters that can be **used to test** the software available with the source code?

# Software Management Plan | Interoperability



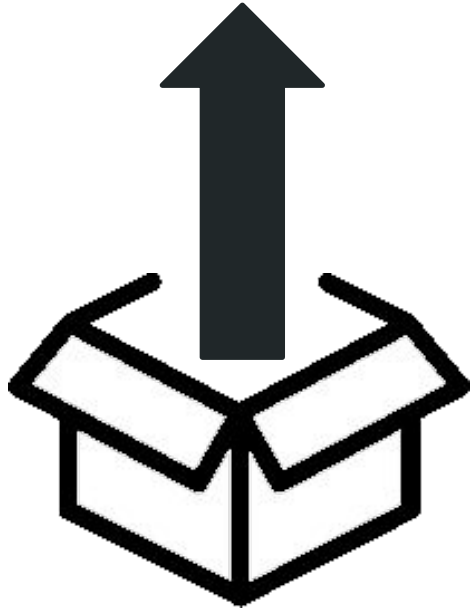
1. Do you use existing and standard input/output formats?
  - a. If yes (either all, or partial), please select the standards you are using from the list.
  - b. If it's not listed, please use the FAIRsharing registry to provide both name and URL.
  - c. If it's not listed in FAIRsharing, please provide a name and a URL that is as machine actionable as possible.

# Software Management Plan | Versioning



1. Do you use a **version control system**?
2. **What** version control system do you use?
  - a. Git
  - b. Mercurial
  - c. Subversion
  - d. CVS
  - e. Other
3. Do you use **Semantic Versioning**?

# Software Management Plan | Reproducibility



1. Do you provide **releases** of your software?
2. How do you define language-specific **dependencies** of your software and their version?
3. How do you **capture the environment** (operating system, system-level libraries) necessary **to run** the software?
4. Do you provide **input and output examples** that can be used to **reproduce** the functioning of your software? If yes, **where** can they be found?
5. Do you state how to **report bugs and/or usability problems** by the software user(s)?

# Software Management Plan | Recognition

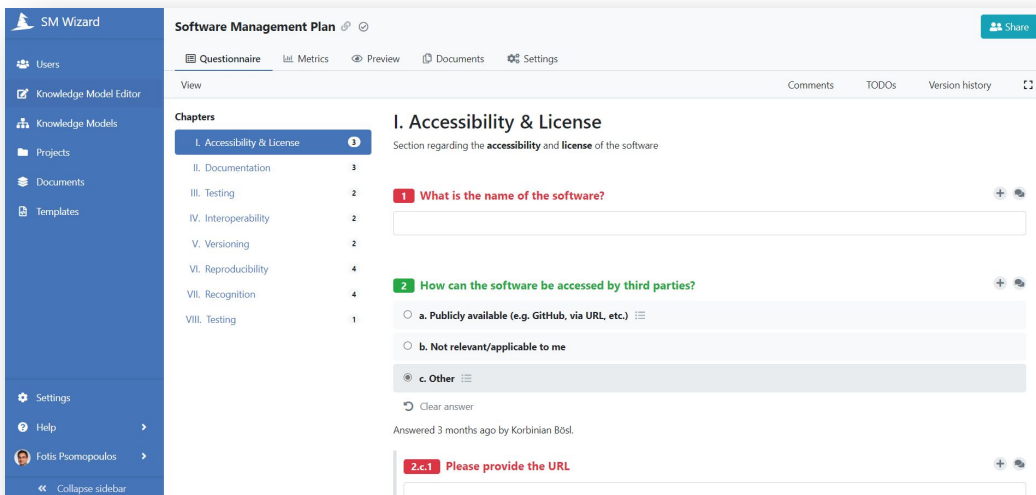


1. Do you include **citation** information (e.g. citation.cff, codemeta.json or bibtex)?
2. Do the releases have a **persistent global unique identifier**
3. Does the citation information contain **ORCIDs** of (at least one of) the authors
4. Is the software registered in a **domain-specific registry**
  - a. If yes, please list the corresponding registries (Name and URL for each)

# Next steps

1. Improve the current version of the Software Management Wizard, to (semi) automatically scrape SMP-relevant information from a target repository (such as GitHub)
  - Demonstrate a (semi)automated interface for capturing and validating SMP info
2. Produce version 2.0 of the SMP, aiming for a convergence of the OpenEBench and the current SMP 1.0 metrics
  - After connecting the SMW to the OpenEBench tools, identify which components of OpenEBench could be further added to the SMP (and vice versa)
3. Work towards Machine-actionability in SMPs
  - leverage the existing metadata tools

# First Implementation – The Software Management Wizard



Many thanks to the DSW team!

Try it out! Go to <https://smw.ds-wizard.org/>  
(you can use the LS AAI to connect)

- A user-interface, based on the DSW framework
- Streamlining the questions, and structuring possible responses (WiP)
- Export the SMP in various formats (incl. PDF, HTML, JSON etc)

Thank you for your attention!

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