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Software management plans in research software

14th August 2019, Best Practices for HPC Software Developers (Webinar) series.

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EPSRC Pioneering research and skills

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E·S·R·C Economic & Social Research Council

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Arts & Humanities Research Council

Science & Technology Facilities Council

MRC Medical Research Council

Supported by EP/H043160/1 & EP/N006410/1 & EP/S021779/1

The Software Sustainability Institute

Software Sustainability Institute

- A national facility for cultivating world-class research through software
- "**Better Software, Better Research**"
- Software code/processes/community reaches boundaries in its development that prevent improvement, growth and adoption
- Providing the expertise and services needed to negotiate to the next stage
- Programmes, events, policy and tools to support the community developing and using research software
- **We advocate for all things Research Software**

bit.ly/BetterSoftwareTshirt

Teams

Software
Helping the community to develop software that meets the needs of reliable, reproducible, and reusable research

Policy
Collecting evidence on and promoting the place of software in research & sharing with stakeholders

Outreach
Exploiting our platform to enable engagement, delivery & uptake

Training
Delivering essential software skills to researchers, partnering with institutions, doctoral schools and the community

Community
Developing Communities of Practice by supporting the right people to understand and address topical issues

Activities

Software
70+ project consultancies
200+ evaluations
4 surgeries

Policy
650+ RSEs engaged
2k signatures
13 issues highlighted

Outreach
170+ external contributors
20k unique visitors/month
6.5k followers (Twitter)

Training
200+ Carpentry workshops
5000+ learners, 190 instructors
80+ guides

Community
129 Fellows
25+ workshops organised

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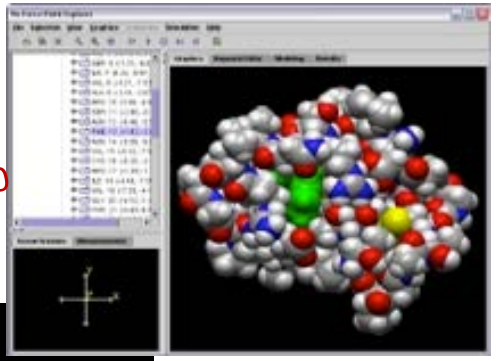
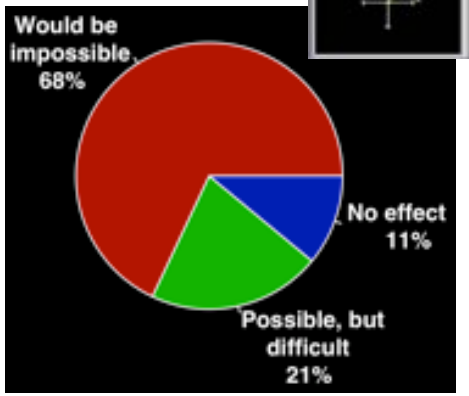
bit.ly/software-7-out-of-10





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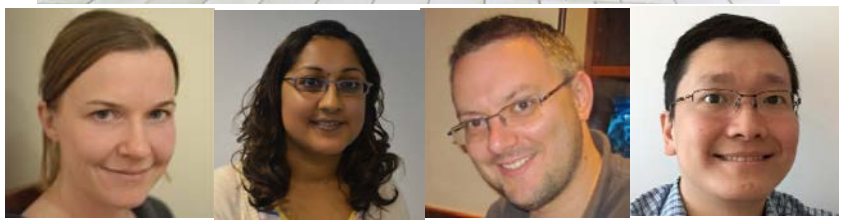

Types of Management Plans

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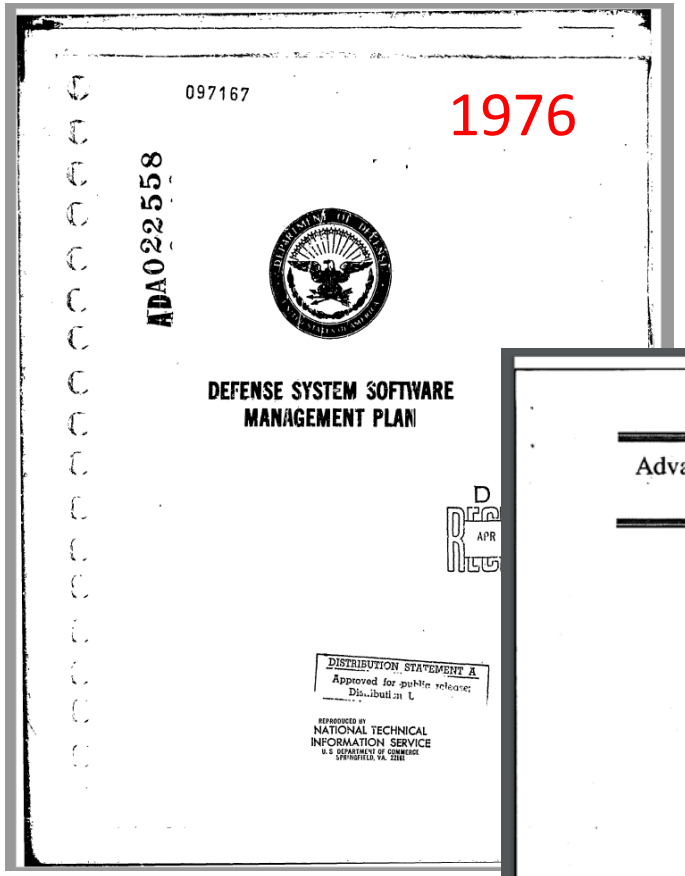
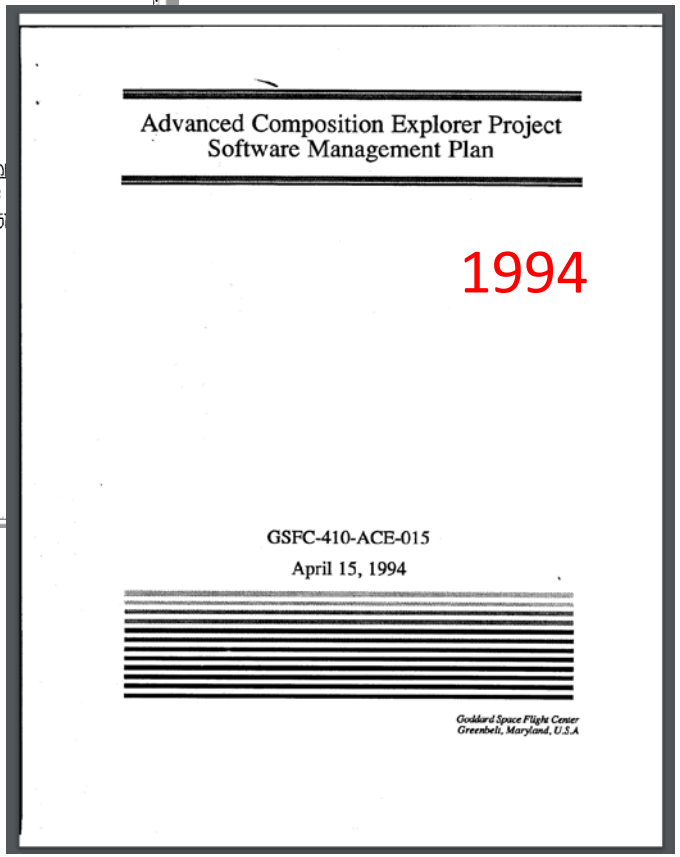
- Data Management Plans (**DMP**)
  - Where it all began - stating how you will manage the data produced on your project
- Software Management Plans (**SMP**)
  - How you will manage the software produced on your project
- Output Management Plans (**OMP**)
  - How you will manage data, software and other resources produced on your project

SMP: A history

- The idea of managing software outcomes is not new
  - Defense System Software Management Plan - 1976
    - Importance & costs of software
      - Acquisition, development, maintenance guidance
    - https://apps.dtic.mil/docs/citations/ADA022558
  - Advanced Composition Explorer Project - 1994
    - Contract, QA, Responsibilities, Scope
    - http://www.srl.caltech.edu/ACE/ASC/DATA/pdf_docs/SOFTWARE_MANAGEMENT_PLAN_ACE.pdf
  - Idea of Software Management Plans not necessarily new but also meant slightly different things to different people





Software Management Plan (SMP)

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What is it

- A statement of intent around how you will manage you research software

Why do we need it

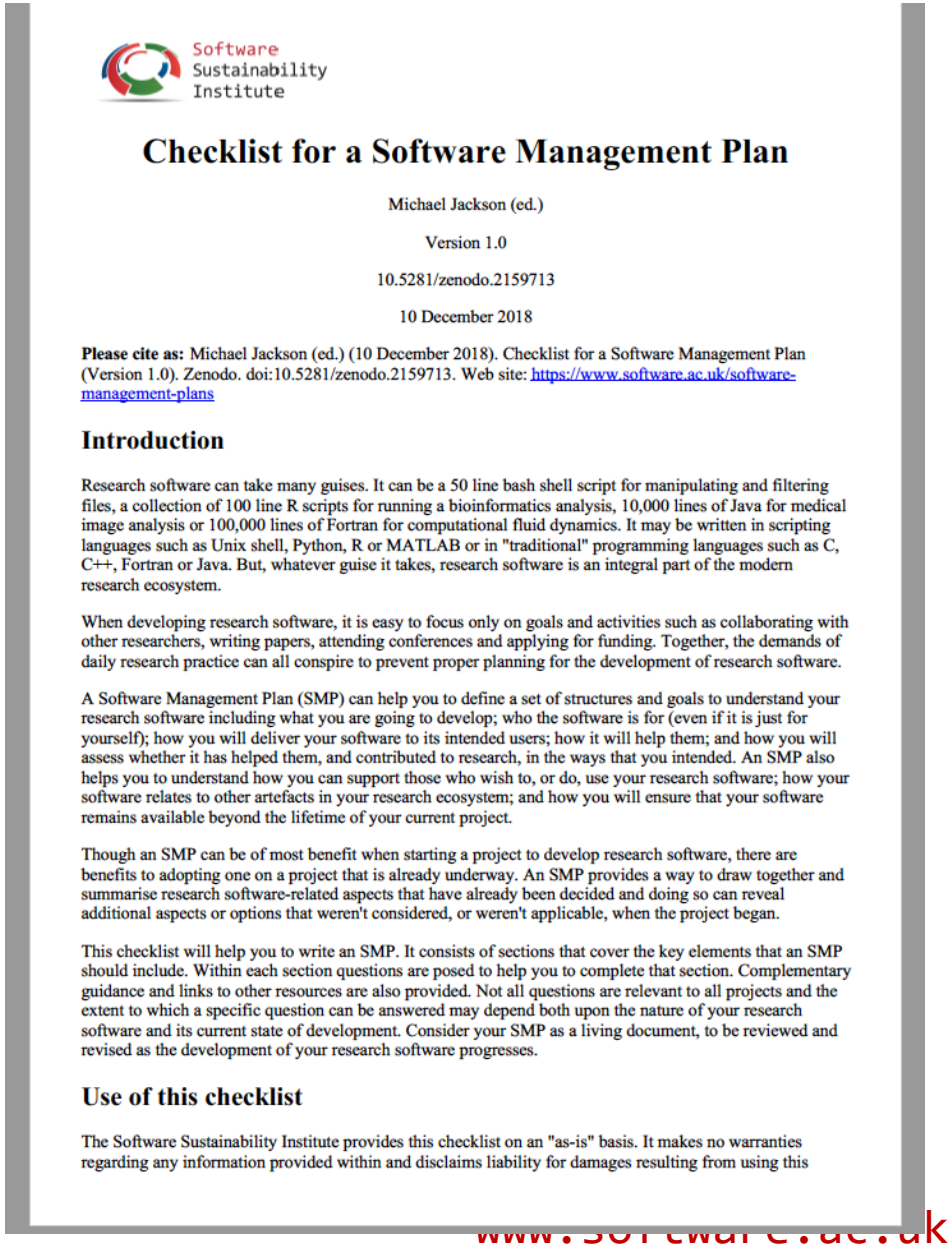
- The normal research process can squeeze out time/thinking for the proper management of software
  - Collaboration
  - Papers
  - Proposals
  - Meetings/conferences

SMP: What does it contain

- Describe what the software does / problem it solves
- Who the software is for (even if it's just for you)
- How you will make your software available
- How it will help you / other users
- How you will assess how it's helped you / others
- The level of support you are willing to offer
- How the software fits into the broader ecosystem of software in the problem space (e.g. what does it add)
- How you intend to make your software available beyond the life of the project

SMP: Guidance

- A checklist is available produced by the UK Software Sustainability Institute
  - Caveats
    - Not all questions relevant for all projects
    - Depends on nature of research software
    - Depend on state of development
- Checklist for a Software Management Plan - https://zenodo.org/record/2159713
  - (pdf, docx, md, odt)



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Checklist for a Software Management Plan

Michael Jackson (ed.)

Version 1.0

10.5281/zenodo.2159713

10 December 2018

Please cite as: Michael Jackson (ed.) (10 December 2018). Checklist for a Software Management Plan (Version 1.0). Zenodo. doi:10.5281/zenodo.2159713. Web site: https://www.software.ac.uk/software-management-plans

Introduction

Research software can take many guises. It can be a 50 line bash shell script for manipulating and filtering files, a collection of 100 line R scripts for running a bioinformatics analysis, 10,000 lines of Java for medical image analysis or 100,000 lines of Fortran for computational fluid dynamics. It may be written in scripting languages such as Unix shell, Python, R or MATLAB or in "traditional" programming languages such as C, C++, Fortran or Java. But, whatever guise it takes, research software is an integral part of the modern research ecosystem.

When developing research software, it is easy to focus only on goals and activities such as collaborating with other researchers, writing papers, attending conferences and applying for funding. Together, the demands of daily research practice can all conspire to prevent proper planning for the development of research software.

A Software Management Plan (SMP) can help you to define a set of structures and goals to understand your research software including what you are going to develop; who the software is for (even if it is just for yourself); how you will deliver your software to its intended users; how it will help them; and how you will assess whether it has helped them, and contributed to research, in the ways that you intended. An SMP also helps you to understand how you can support those who wish to, or do, use your research software; how your software relates to other artefacts in your research ecosystem; and how you will ensure that your software remains available beyond the lifetime of your current project.

Though an SMP can be of most benefit when starting a project to develop research software, there are benefits to adopting one on a project that is already underway. An SMP provides a way to draw together and summarise research software-related aspects that have already been decided and doing so can reveal additional aspects or options that weren't considered, or weren't applicable, when the project began.

This checklist will help you to write an SMP. It consists of sections that cover the key elements that an SMP should include. Within each section questions are posed to help you to complete that section. Complementary guidance and links to other resources are also provided. Not all questions are relevant to all projects and the extent to which a specific question can be answered may depend both upon the nature of your research software and its current state of development. Consider your SMP as a living document, to be reviewed and revised as the development of your research software progresses.

Use of this checklist

The Software Sustainability Institute provides this checklist on an "as-is" basis. It makes no warranties regarding any information provided within and disclaims liability for damages resulting from using this

SMP: Checklist Questions

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- What Software will you develop? - *greenfield, trademarks*
- Who are the intended users of your software? - *skill level, extensibility*
- How will you make your software available to your users? - *licensing, containers*
- How will you support those who use your software? - setting *expectations, issues, forums*
- How will your software contribute to research? - e.g. *novelty, speed, accuracy, ease*
- How will your software relate to other research objects? - *relating, FAIR Digital Objects, www.researchobject.org*

SMP: Checklist Questions … 2

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- How will you measure your software's contribution to research? - *citation, surveys (remember privacy)*
- Where will you deposit your software to guarantee its long-term availability? - *digital repositories (e.g. GitHub-Zenodo integration), identifiers, longevity*

Questions?

SMP: when to write one

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- Normally at the start of a project
  - Been Mandated in some (UK) funding calls:
    - EPSRC High End Computing (HEC) Consortia Call 2017 - https://epsrc.ukri.org/files/funding/calls/2017/hecconsortia2017/
    - Computational Science and Engineering: Software for the Future II - https://epsrc.ukri.org/files/funding/calls/2014/computational-science-and-engineering-software-for-the-future-ii/
    - Both cases as part of 'Pathways to Impact' set of document
      - *"is primarily for detailing the activities that will increase the likelihood of potential economic and societal impacts being achieved."*

SMP: when to write one … 2

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- During a running project
  - If you have not made one at the beginning
  - As a review or audit of software assets
  - Once known a more consistent approach could be taken
    - e.g. putting them under an organisation on GitHub rather than individual repos tied to staff
    - Consistency of documentation / licenses
    - A consistent approach towards credit

SMP: Living documents

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- Software Management Plan are living documents
  - The first one is your baseline
  - They should be revisited e.g. every 3-6 months or annually
  - They should be versioned
  - Project lead will ultimately be responsible for making sure they are implemented / used
- Software Evaluation can help!

Software Evaluation

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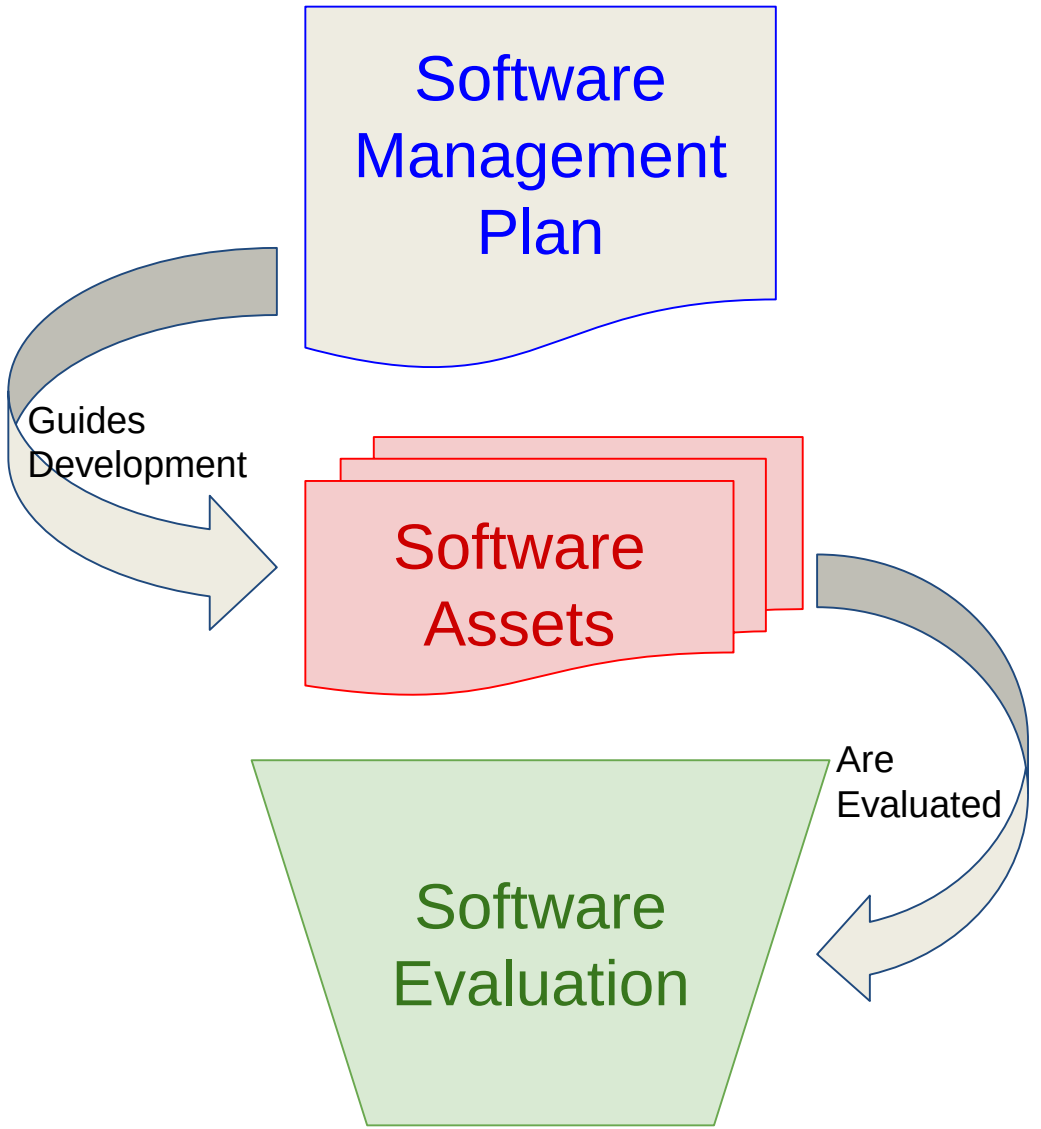
- Software Management Plans are an intention around what you PLAN to do
- Software Evaluation is about what you ARE DOING.
- Software Evaluation can thus help with delivering your SMP and adjusting it where necessary
  - Assess code quality
  - Usability
  - Overall Sustainability



Software Evaluation Approaches

https://www.software.ac.uk/resources/guides-everything/software-evaluation-guide

- Criteria-based (https://software.ac.uk/sites/default/files/SSI-SoftwareEvaluationCriteria.pdf)
  - Quantitative assessment:
    - Sustainability
    - Maintainability
    - Usability
    - Building
    - Installing
    - Testing
    - Documentation
    - Support
    - Portability
    - Contributor policy
    - Copyright
    - Licenses
  - Can inform high-level decisions on specific area for software improvement
  - Basis of Online Sustainability Evaluation (OES) - https://www.software.ac.uk/resources/online-sustainability-evaluation
  - **If you don't have an SMP the OES can be a great way to bootstrap one**

SE Approach … 2

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- Tutorial-based (https://software.ac.uk/sites/default/files/SSI-SoftwareEvaluationTutorial.pdf)
  - User/developer subjective experience of
    - learning
    - building
    - installing
    - configuring
  - Outcome: a practical guide for getting the software to work in the way it should **more about Quality** than Planning (e.g. SMP)
- In Either case (i.e. Criteria or Tutorial) judgement needed about what to include based on type of software, environment (e.g. open development) and personas of those doing assessment.

CHAOSS Metrics

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- The Recently (2019-08-08!) released CHAOSS Metrics are another way you could assess your software
- They are potentially more suited to larger pieces of software
- Which have started to have a community
- The Guidance is here
  - https://chaoss.community/metrics/

CHAOSS

Community Health Analytics Open Source Software Project

SSI participating via Director, Neil Chue Hong

THE LINUX FOUNDATION

- Working groups with Focus Areas
  - Common Metrics
    - Organizational Affiliation
  - Diversity and Inclusion
    - Event Diversity
    - Governance
    - Leadership
  - Evolution
    - Code Development
  - Risk
    - Business Risk
    - Code Quality
    - Licensing
    - Transparency
  - Value
    - Labor Investment
    - Living Wage
- Goal-Question-Metric format

Questions?

SMP: modern examples

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- Laurent Gatto (SSI Fellow), Open Science advocate and Group Leader at Du Duve Institute, Belgium
- Difference between DMP & SMP and the proliferation of plans and the need for Output Management Plans - https://lgatto.github.io/output-management·

Data	Software
Static	Dynamic
Meta-data	Documentation
Large	Small
QC	Testing
DMP	SMP
DB, public repo	Version control in public repo

SMP: Laurent Gatto example

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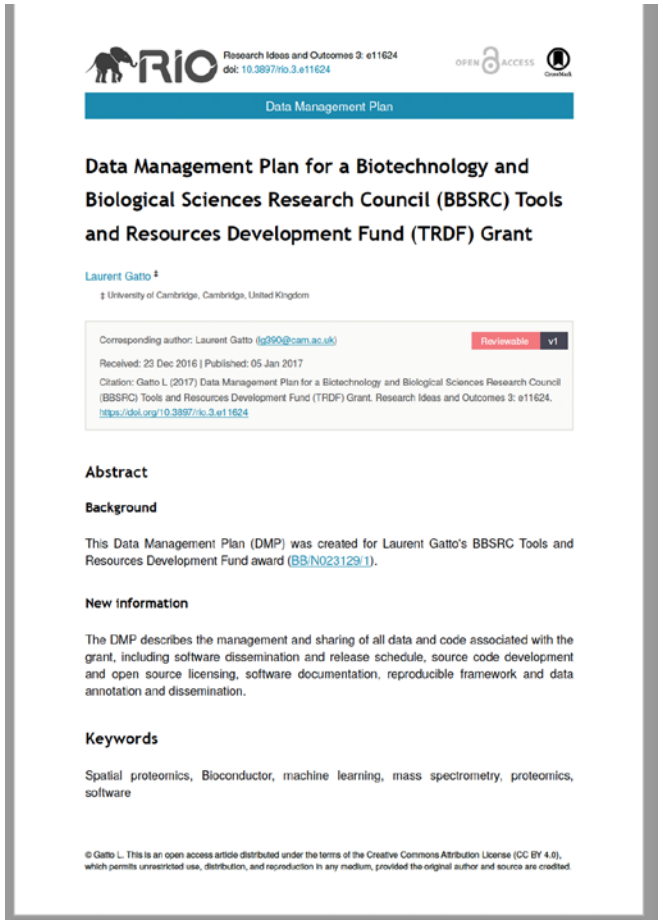
- An example of one from a funded project
- An Output Management Plan
  - Combine Software, Data and Materials
- Original wanted a DMP but included information about software
  - Dissemination - *BioConductor*
  - Release schedule
  - Development - *GitHub*
  - Licensing
  - Documentation
  - Reproducibility framework
- Not all things nailed down but a strong intention - it's a living document or should be.



RIO Research Ideas and Outcomes 3: e11624
doi: 10.3897/rio.3.e11624

Data Management Plan

Data Management Plan for a Biotechnology and Biological Sciences Research Council (BBSRC) Tools and Resources Development Fund (TRDF) Grant

Laurent Gatto ‡

‡ University of Cambridge, Cambridge, United Kingdom

Corresponding author: Laurent Gatto (lg390@cam.ac.uk)

Reviewable v1

Received: 23 Dec 2016 | Published: 05 Jan 2017

Citation: Gatto L (2017) Data Management Plan for a Biotechnology and Biological Sciences Research Council (BBSRC) Tools and Resources Development Fund (TRDF) Grant. Research Ideas and Outcomes 3: e11624. https://doi.org/10.3897/rio.3.e11624

Abstract

Background

This Data Management Plan (DMP) was created for Laurent Gatto's BBSRC Tools and Resources Development Fund award (BB/N023129/1).

New information

The DMP describes the management and sharing of all data and code associated with the grant, including software dissemination and release schedule, source code development and open source licensing, software documentation, reproducible framework and data annotation and dissemination.

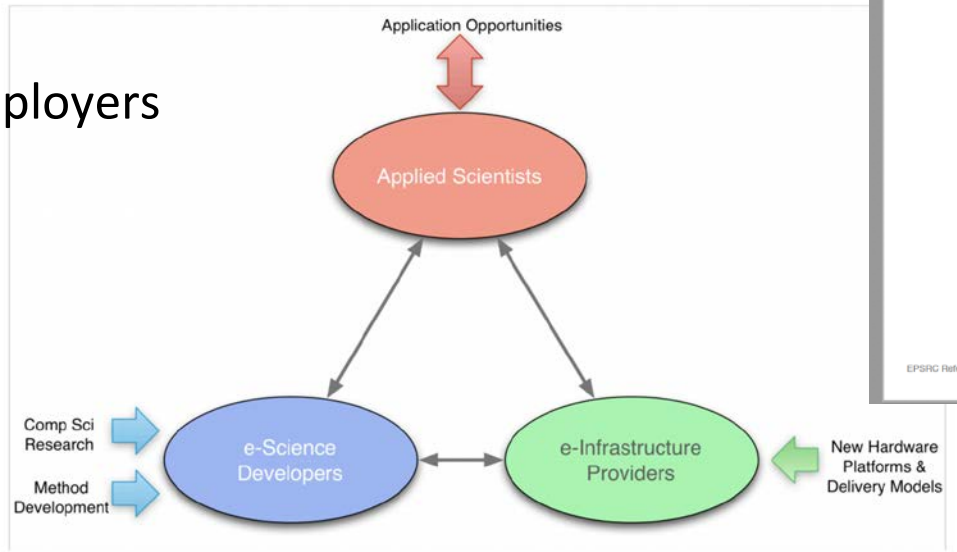
Keywords

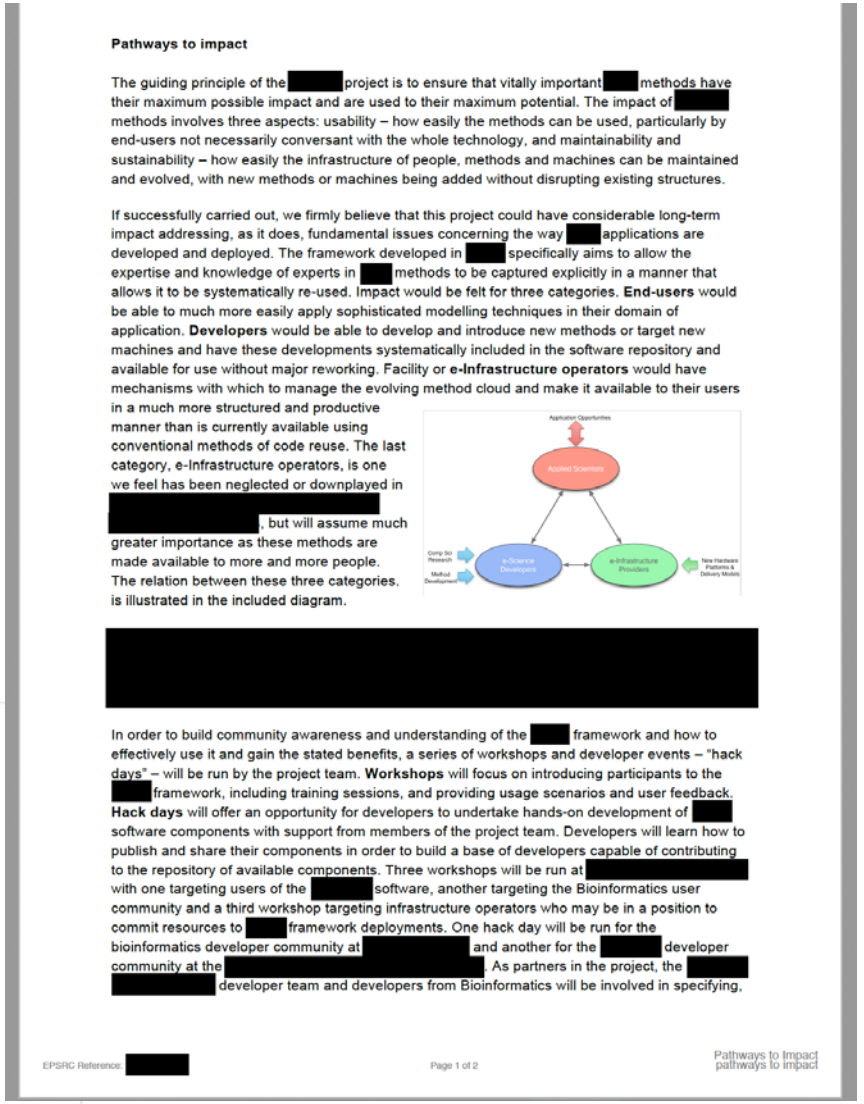
Spatial proteomics, Bioconductor, machine learning, mass spectrometry, proteomics, software

https://riojournal.com/articles.php?id=11624

SMP: private example

- SMP are part of grant proposals - usually (in the UK) part of Pathways to Impact
- So they are **not public**
  - Ideally there would be a repo of good ones event if redacted
  - SMPs check to see if the right things are being done, not new things, hence the could well be public.
- Software Management Features:
  - Training
  - Hackdays
  - Documentation
    - users, developers, deployers
  - GitHub
    - git, issues, wiki
  - Continuous Integration
    - Unit tests
    - Hudson CI
  - Extensions
    - Examples of use





Pathways to impact

The guiding principle of the [redacted] project is to ensure that vitally important [redacted] methods have their maximum possible impact and are used to their maximum potential. The impact of [redacted] methods involves three aspects: usability – how easily the methods can be used, particularly by end-users not necessarily conversant with the whole technology, and maintainability and sustainability – how easily the infrastructure of people, methods and machines can be maintained and evolved, with new methods or machines being added without disrupting existing structures.

If successfully carried out, we firmly believe that this project could have considerable long-term impact addressing, as it does, fundamental issues concerning the way [redacted] applications are developed and deployed. The framework developed in [redacted] specifically aims to allow the expertise and knowledge of experts in [redacted] methods to be captured explicitly in a manner that allows it to be systematically re-used. Impact would be felt for three categories. **End-users** would be able to much more easily apply sophisticated modelling techniques in their domain of application. **Developers** would be able to develop and introduce new methods or target new machines and have these developments systematically included in the software repository and available for use without major reworking. Facility or **e-Infrastructure operators** would have mechanisms with which to manage the evolving method cloud and make it available to their users in a much more structured and productive manner than is currently available using conventional methods of code reuse. The last category, e-Infrastructure operators, is one we feel has been neglected or downplayed in [redacted], but will assume much greater importance as these methods are made available to more and more people. The relation between these three categories, is illustrated in the included diagram.

[redacted]

In order to build community awareness and understanding of the [redacted] framework and how to effectively use it and gain the stated benefits, a series of workshops and developer events – "hack days" – will be run by the project team. **Workshops** will focus on introducing participants to the [redacted] framework, including training sessions, and providing usage scenarios and user feedback. **Hack days** will offer an opportunity for developers to undertake hands-on development of [redacted] software components with support from members of the project team. Developers will learn how to publish and share their components in order to build a base of developers capable of contributing to the repository of available components. Three workshops will be run at [redacted] with one targeting users of the [redacted] software, another targeting the Bioinformatics user community and a third workshop targeting infrastructure operators who may be in a position to commit resources to [redacted] framework deployments. One hack day will be run for the bioinformatics developer community at [redacted] and another for the [redacted] developer community at the [redacted]. As partners in the project, the [redacted] developer team and developers from Bioinformatics will be involved in specifying,

EPSRC Reference: [redacted]

Page 1 of 2

Pathways to Impact

Criticism of SMP's

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- It sounds like a proposal
- It's not specific enough
- Basic information is missing
- Size and type of data is missing
- Programming language used is missing
- Necessary infrastructure is missing!
- Exact licenses what are they!
- What's your preservation duration!
- Who are the people responsible?!
- It's easy to read but useless to me
- It's about principle but it's not machine actionable
- If this is a draft of the planning phase it's ok - but we want a living doc
- The more advanced the research the more information is needed!

Photo by Andre Hunter on Unsplash

Is it a wonder only the brave would share their SMP/DMP with comments like these!

Perfection is the enemy of the good (enough)

Imposter syndrome or **trolls should not stop you** from trying to improve and adopt better practices!

A more constructive approach:

- Equally applicable to DMP's
- SMPs are self regulated (a good thing - otherwise overbearing?)
  - Maybe useful for project which are contracts e.g. EU H2020
    - https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/data-management_en.htm
    - valid thing to ask at a review
      - **How are you keeping your SMP/DMP up to date?**
      - **How are you evaluating that you are following your SMP/DMP?**

Questions?

SMP: Funders perspective

- Wellcome Trust - https://wellcome.ac.uk/funding/guidance/how-complete-outputs-management-plan
  - Output Management Plan
    - Data and Software
    - Research Materials
    - Intellectual Property
    - Resources required for the above
  - Wellcome exists to improve health by helping great ideas to thrive, they are a politically and financially independent foundation in the UK that plan to spend £5B over the next 5 years.
  - In 2018 it was the 4th wealthiest charitable foundation in the world.

Examples of applications that require an outputs management plan

- studies producing whole genome/exome sequence data, whole genome genotype or other omics datasets generated at scale
- genome-wide or large-scale functional genomic studies in a specific organism
- longitudinal studies of patient and population cohorts
- clinical trials
- large-scale neuro-imaging studies
- development of viewers and annotation tools that allow visualisation and analysis of DNA, cells and other biological components
- computational models and simulations of neurological, physiological or other biological systems
- creation or development of a database, materials collection or other research resource.

NIH: DMP aka part of RSP

- The NIH in the US have many requirements around data sharing (effective 2003)
  - https://grants.nih.gov/grants/policy/data_sharing/
- Software Management has been mentioned in some calls.

Document	Mentions Software
FINAL NIH STATEMENT ON SHARING RESEARCH DATA (Feb 2003)	NO
Data Sharing Regulations/Policy/Guidance Chart for NIH Awards (Aug 2006)	NO
NIH Data Sharing Policy and Implementation Guidance (March 2003)	NO
Frequently Asked Questions - Data Sharing (02/16/2004)	Yes but in passing (30 - The sharing of materials, data, and software in a timely manner has been an essential element in the rapid progress that has been made in the genetic analysis of mammalian genomes.)

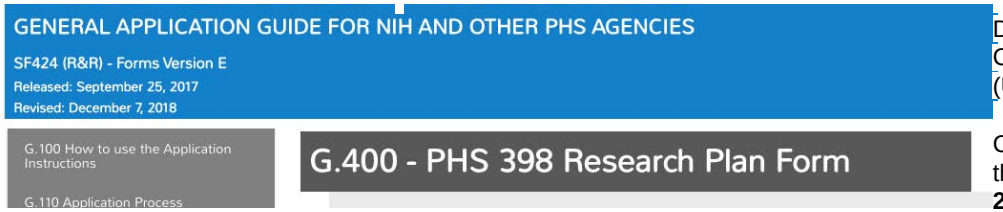
*"Are the data and **software management** and sharing plans adequate to make these resources available within the LINCS consortium and to the larger research community"*

Library of Integrated Network-Based Cellular Signatures (LINCS): Perturbation-Induced Data and Signature Generation Centers (U54), RFA-RM-13-013, **2013**

*"As appropriate, applicants should also describe data and **software management** and provenance, software development and testing practices, software toolkit development and deployment, application programming interfaces (APIs), and human subject data privacy and security protections."*

Development of a Knowledge Management Center for Illuminating the Druggable Genome (U54), RFA-RM-13-011, 2013

Centers of Excellence for Big Data Computing in the Biomedical Sciences (U54), RFA-HG-13-009, **2013**


GENERAL APPLICATION GUIDE FOR NIH AND OTHER PHS AGENCIES

SF424 (R&R) - Forms Version E

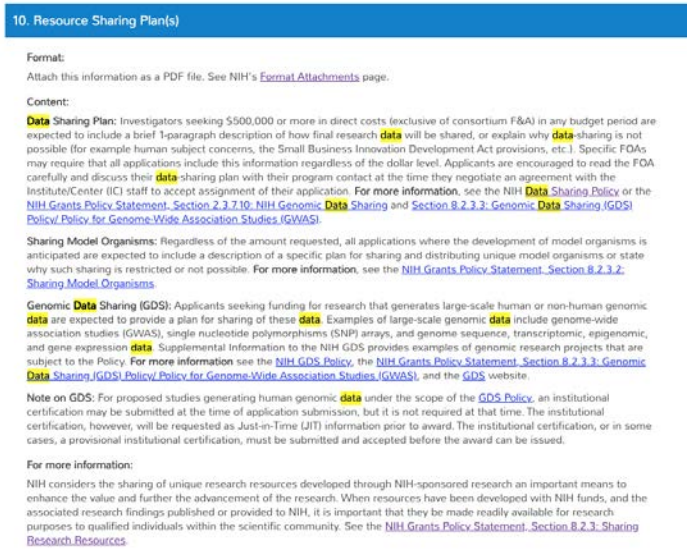
Released: September 25, 2017

Revised: December 7, 2018

G.100 How to use the Application Instructions

G.110 Application Process

G.400 - PHS 398 Research Plan Form


10. Resource Sharing Plan(s)

Format:

Attach this information as a PDF file. See NIH's Format Attachments page.

Content:

Data Sharing Plan: Investigators seeking $500,000 or more in direct costs (exclusive of consortium F&A) in any budget period are expected to include a brief 1-paragraph description of how final research data will be shared, or explain why data-sharing is not possible (for example human subject concerns, the Small Business Innovation Development Act provisions, etc.). Specific FOAs may require that all applications include this information regardless of the dollar level. Applicants are encouraged to read the FOA carefully and discuss their data-sharing plan with their program contact at the time they negotiate an agreement with the Institute/Center (IC) staff to accept assignment of their application. **For more information**, see the NIH Data Sharing Policy or the NIH Grants Policy Statement, Section 2.3.7.10: NIH Genomic Data Sharing and Section 8.2.3.3: Genomic Data Sharing (GDS) Policy/ Policy for Genome-Wide Association Studies (GWAS).

Sharing Model Organisms: Regardless of the amount requested, all applications where the development of model organisms is anticipated are expected to include a description of a specific plan for sharing and distributing unique model organisms or state why such sharing is restricted or not possible. **For more information**, see the NIH Grants Policy Statement, Section 8.2.3.2: Sharing Model Organisms.

Genomic Data Sharing (GDS): Applicants seeking funding for research that generates large-scale human or non-human genomic data are expected to provide a plan for sharing of these data. Examples of large-scale genomic data include genome-wide association studies (GWAS), single nucleotide polymorphisms (SNP) arrays, and genome sequence, transcriptomic, epigenomic, and gene expression data. Supplemental Information to the NIH GDS provides examples of genomic research projects that are subject to the Policy. **For more information** see the NIH GDS Policy, the NIH Grants Policy Statement, Section 8.2.3.3: Genomic Data Sharing (GDS) Policy/ Policy for Genome-Wide Association Studies (GWAS), and the GDS website.

Note on GDS: For proposed studies generating human genomic data under the scope of the GDS Policy, an institutional certification may be submitted at the time of application submission, but it is not required at that time. The institutional certification, however, will be requested as Just-in-Time (JIT) information prior to award. The institutional certification, or in some cases, a provisional institutional certification, must be submitted and accepted before the award can be issued.

For more information:

NIH considers the sharing of unique research resources developed through NIH-sponsored research an important means to enhance the value and further the advancement of the research. When resources have been developed with NIH funds, and the associated research findings published or provided to NIH, it is important that they be made readily available for research purposes to qualified individuals within the scientific community. See the NIH Grants Policy Statement, Section 8.2.3: Sharing Research Resources.

NIH default Resource Sharing Plan mentions Data and not software (2018)

https://instr.iastate.libguides.com/dmp/NIH

IOWA STATE UNIVERSITY University Library

*Software is not regarded as "data" but it is recognized that access to software and other tools may be necessary to to access and interpret the data (i.e. **they may need to be covered in your plan**).*

www.software.ac.uk

Institutional Perspective

Software Sustainability Institute

- Data Management Plans
  - UCL: https://www.ucl.ac.uk/library/research-support/research-data-management/policies/writing-data-management-plan
  - Cambridge: https://www.data.cam.ac.uk/
  - Stanford: https://library.stanford.edu/research/data-management-services
- Software Management Plans
  - Bristol: http://www.bristol.ac.uk/staff/researchers/data/writing-a-data-management-plan/writing-a-software-management-plan/
    - A note on commercialisation
    - Pointing to SSI advice
  - York: https://www.york.ac.uk/library/info-for/researchers/data/planning/
    - mainly about DMP's but mentions the SSI SMP template at DMPOnline
  - UCL: https://blogs.ucl.ac.uk/rdm/tags/sustainable-software/
    - SMPs in the context of software preservation
  - STFC: https://edata.stfc.ac.uk/page/policy
    - Infrastructure for supporting actions (e.g. deposition) of DMP and SMP

Advocacy for SMP

Software Sustainability Institute

- Making Software a First-Class Citizen in Research - https://software.ac.uk/blog/2018-11-28-making-software-first-class-citizen-research
  - http://wssspe.researchcomputing.org.uk/wssspe6-1/
  - Recognition of research software is lagging research data
  - The need for culture change around software credit (applies to data also)
  - Some recommendations:
    - 4OSS recommendations - https://softdev4research.github.io/recommendations/
    - SSI guidance - https://software.ac.uk/blog/2018-11-28-making-software-first-class-citizen-research
    - Netherlands eScience Centre Guide - https://guide.esciencecenter.nl/
    - EURISE Network Technical Reference - https://technical-reference.readthedocs.io/en/latest/
  - **Raised with the Head of the Netherlands funding agency at the eScience 2018 conference in Amsterdam at an open Q&A**

Type of Support	Data	Software
Institutional	Research Data Management	Research Software Engineer
Plans	Data Management Plans	Software Management Plans
FAIR	FAIR Data	FAIR Software?
Open	Open Data	Open Source?

Python tool for SMP

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- https://github.com/softwaresaved/software-management-plans
  - YAML file
    - Single source of ‘truth’
    - Questions
    - Full guidance
  - Python script
    - Produce full guidance doc (e.g. in .docx or .odt)
    - Produce a checklist
  - Example of use
    - Used to create the v 1.0 docs in Zenodo
  - Intended use
    - Adapted by service providers (e.g. DMPonline or DMPtool)
    - Adapted by institutions / funders / domains
  - Possible extensions
    - Push templates to Google Docs
    - Create GitHub issues
    - Push to service providers via their API

Tools for making DMP/SMP

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- UK main site:
  - https://dmponline.dcc.ac.uk
  - SMP's being made available on DMPonline
    - http://www.dcc.ac.uk/blog/software-management-plan-service-prototype-live (2015)
- US main site:
  - https://dmptool.org/
    - Does not serve SMP's specifically at this time
- 'Golden' examples
  - Does not exist as SMP often bundled in a private way
  - Good examples exist for research data / DMPs - useful by analogy
  - LIBER DMP Catalogue useful in this case - https://zenodo.org/communities/liber-dmp-cat
    - eight examples, various disciplines, reviews and highlights
- Future
  - 'Machine Actionability'

Take Home Messages

Software Sustainability Institute

- Data Management Plans are the most common type of plan
- Software Management Plans are starting to become more common/mandated
- There are moves to have combined plans in the form of - Output Management Plan
- The is an interplay between funders, institutions, tool/guidance providers and researchers
- Sustained culture change needed to move towards SMP/OMP
- Something is better than nothing … don't fear the trolls
- SMPs should be living documents
- Software Evaluation can help keep SMPs fresh or even bootstrap them
- You can comment on the SSI SMP guidance guidance via the GitHub project
- There is a need for an open repository of SMP's to help the community formulate their own - due to privacy/permission issues this does not exist yet cf. DMPs
- Primary benefit of this if for you!

Acknowledgements

- Mike Jackson, EPCC, Edinburgh, UK
- Neil Chue Hong, Director Software Sustainability Institute
- Sarah Jones Associate Director of Digital Curation Centre
- Giacomo Peru, Project Officer, Software Sustainability Institute
- Marta Ribeiro, former staffer at the Digital Curation Centre

Supported by the UK Research Councils through grants EP/H043160/1, EP/N006410/1 and EP/S021779/1 .
Additional project funding received from Jisc.

Arts & Humanities Research Council

BBSRC

EPSRC
Engineering and Physical Sciences Research Council

E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL

MRC Medical Research Council

NERC SCIENCE OF THE ENVIRONMENT

Science & Technology Facilities Council

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Questions

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