

Highlights from the Workshop on Sustainable Software Sustainability 2019

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Data Archiving and Networked Services
DANS



Software
Sustainability
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Outline

- A Brief history of WOSSS
- WOSSS19
 - Agenda
 - Who attended
 - Topics
 - Development, FAIR, Deposition, Directories, Credit
- Feedback and Report
- Future of WOSSS



Image courtesy of Michael Renner

A Brief history of the WOSSS

- The Knowledge Exchange Workshop on Research Software Sustainability (Berlin, 2015)
 - Precursor of WOSSS -
http://repository.jisc.ac.uk/6332/1/Research_Software_Sustainability_Report_on_KE_Workshop_Feb_2016_FINAL.pdf - barriers, funding, national activities
- WOSSS17 - The Hague
 - 10.17026/dans-xfe-rn2w
 - FAIR for software, cultural sector, infrastructure, software seal of approval
- A related international effort: WSSSPE
 - <http://wssspe.researchcomputing.org.uk/>



Day 1 - 24 April 2019

12:00-13:00 Arrival & Lunch (Sponsored by SSI)

13:00-13:10 Welcome by the Local host (Peter Doorn, DANS)

13:10-13:20 Welcome by co-organiser (Neil Chue Hong, SSI)

13:20-13:30 Welcome by co-organiser (Carlos Martinez-Ortiz, NLeSC)

13:30-13:40 Goals and format of the workshop (Patrick Aerts)

13:40-13:50 Break-out session logistics explained (Shoaib Sufi)

13:50-15:00 Introductions to the "Preventing new legacy - part A" topics - 1

- Software development (Robert Haines)
- FAIR Principles for software (Anna-Lena Lamprecht)
- EOSC, FAIR & Software (Mario David)
- Software deposition routes (Cees Hof & Carlos Martinez Ortiz)
- Software Directories (Jurriaan Spaaks)

15:00-15:20 Break

15:20-16:50 Break-out discussion & writing sessions - 1

16:50-17:25 Reporting back from breakout sessions - 1

17:25-17:30 Wrap up and close Day 1

19:00-21:00 Workshop Dinner (sponsored by DANS)

Day 3 - 26 April 2019

09:00-09:05 Welcome to Day 3

09:05-09:50 Introductions to the "Policy & Quality" topics - 4

- Quality metrics (Carsten Thiel)
- A European Software Sustainability Infrastructure (Neil Chue Hong)
- The European Open Science Cloud (EOSC) landscape (Peter Doorn)

09:50-11:20 Break-out discussion & writing sessions - 4

11:20-11:40 Break

11:40-12:10 Reporting back from breakout sessions - 4

12:10-13:10 Lunch break (Sponsored by SSI)

13:10-14:10 Panel discussion on areas of future work in software development, legacy & policy.

Panelists - Neil Chue Hong, Carol Willing, Catherine Jones, Daniel S. Katz and Patrick Aerts, Chair - Shoaib Sufi

14:10-14:30 Workshop Report next steps (Shoaib Sufi)

14:30-14:50 The WOSSH (Patrick Aerts)

14:50-15:00 Wrap up and close WOSSH19

Day 2 - 25 April 2019

09:00-09:05 Welcome to Day 2

09:05-10:00 Introductions to the "Preventing new legacy - part B" topics - 2

- Software Heritage Archive (Roberto Di Cosmo)
- Citation and rewards systems (Daniel S. Katz)
- Containers (Carol Willing)
- Resourcing and planning (Kostas Kavoussanakis)

10:00-10:20 Break

10:20-11:50 Break-out discussion & writing sessions - 2

11:50-12:30 Reporting back from breakout sessions - 2

12:30-13:30 Lunch (Sponsored by SSI)

13:30-14:45 Introductions to the "Legacy & Recovery" topics - 3

- Legacy issues (Jamie Shiers)
- Heritage matters (Johan van der Knijff)
- Cultural sector issues (Jesse de Vos)
- Recovery issues and efforts (Wiel Seuskens)
- Re-use metrics (Stephanie van de Sandt)

14:45-16:15 Break-out discussion & writing sessions - 3

16:15-16:35 Break

16:35-17:15 Reporting back from breakout sessions - 3

17:15-17:30 Wrap up and close Day 2

17:30-19:00 Reception, finger foods (Sponsored by Netherlands eScience Centre)



- CERN, Switzerland
- CESSDA - Consortium of European Social Science Data Archives, Europe
- DARIAH | Digital Research Infrastructure for the Arts and Humanities, Europe
- Data Archiving and Networked Services (DANS), Netherlands
- Delft University of Technology (TU Delft), Netherlands
- Dutch Techcentre for Life Sciences, DTL/ELIXIR-NL, Netherlands
- ELIXIR Hub, Europe
- Elsevier, Publisher
- Federal University of Bahia, Brazil
- Friedrich Schiller University Jena, Germany
- German Aerospace Centre, Germany
- Ingenieurbüro Informatik, Austria
- Institute of Information Technologies and Learning Tools NAES, Ukraine
- NATO Communication and Information Agency, Belgium
- Netherlands eScience Center, Netherlands
- Oblivion Cloud Control, Netherlands
- SURFsara, Netherlands
- Science & Technologies Facilities Council (STFC), UK
- Software Sustainability Institute, UK
- SoftwareX, Journal
- The International Criminal Court, Netherlands
- University Medical Center Utrecht, Netherlands
- University of Bath, UK
- University of Bristol, UK
- University of Edinburgh, UK
- University of Illinois, USA
- University of Manchester, UK
- University of Namur, Belgium
- Vrije Universiteit Amsterdam (VU Amsterdam), Netherlands

Who attended WOSSS19

- 29 unique institutions / projects
- Representatives from:
 - Research Software
 - Cultural Heritage

WOSSS19 topics

Preventing New Legacy

- Development
- FAIR
- EOSC
- Deposition
- Directories
- Heritage Archive
- Citation & Reward
- Containers
- Resourcing & planning

Legacy and Recovery

- Legacy issues
- Heritage matters
- Cultural sector issues
- Recovery issues and efforts
- Re-use metrics

Policy and Quality

- Quality metrics
- A European Software Sustainability Infrastructure
- The European Open Science Cloud (EOSC) landscape

Discussions & Draft

- Software Development
- FAIR Principles for Software
- Software Deposition Routes and Software Directories
- Citation and rewarding systems
- Containers
- Archiving
- Resourcing and Planning
- Reuse metrics
- Legacy and Heritage
- A European Software Sustainability Infrastructure
- Future WOSSS



Software Development

Topic intro:

Credit: Rob Haines

- Intrinsic sustainability
 - Much best practice exists
- Extrinsic sustainability
 - Resourced
 - Active
 - Supported
- Fabulous Software does not sustain itself

Discussion focus:

- Prototypes used too much
 - Can become sustainability problem
- Re-factoring
 - Can sometimes introduce errors
- Education needed to
 - Write good code first
- Funding
 - Novelty beats sustainability 😞
- Understand your software risk
 - Being caught out by not sustainable code could be a problem.

FAIR Software

Topic intro: Credit: Anna-Lena Lamprecht

- FAIR needs metrics
 - A work in progress for software
- Many events coming up
 - Utrecht, London, Japan
 - The conversation continues ...

Breaking! doi.org/10.3233/DS-190026

Data Science -1 (2019) 1–23
DOI 10.3233/DS-190026
IOS Press

Towards FAIR principles
for research software

Anna-Lena Lamprecht ^{a,*}, Leyla Garcia ^b, Mateusz Kuzak ^{c,d}, Carlos Martinez ^e,
Ricardo Arcila ^f, Eva Martin Del Pico ^g, Victoria Dominguez Del Angel ^h,
Stephanie van de Sandt ⁱ, Jon Ison ^j, Paula Andrea Martinez ^k, Peter McQuilton ^l,
Alfonso Valencia ^{m,n}, Jennifer Harrow ^o, Fotis Psomopoulos ^p, Josep Ll. Gelpi ^q,
Neil Chue Hong ^{r,s}, Carole Goble ^t and Salvador Capella-Gutierrez ^{v,w,x}

Discussion focus

- Sustainable vs sustained
 - Developer vs community
- FAIR software
 - Term to improve recognition of software.
 - Part of original intent.
 - A useful baseline for sustainability
 - Includes identification, licenses, docs
 - Excludes community, integrity, longevity needs
 - Discussion focus on what FAIR *should* enable rather than what is *does enable*

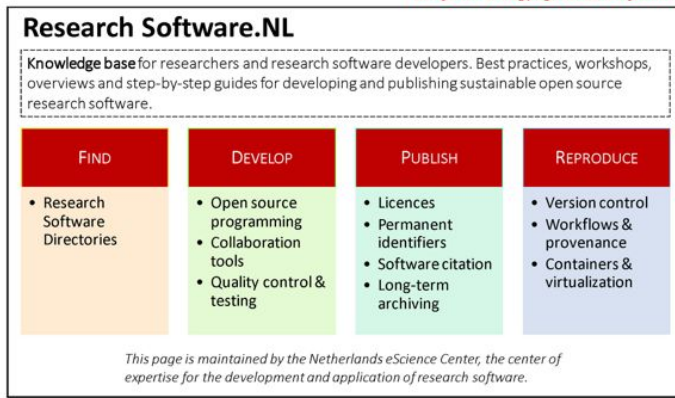
Software Deposition Routes

Topic intro:

Credit: Carlos Martinez Ortiz,
Cees Hof, Mustapha Mokrane

- The FAIR Software route
 - Storage, access, reuse, citation
- Open Science,
 - Accessibility, accountability, sustainability
- Vision - a tool:
 - Deposition of code/data
 - Metadata, persistent identification, repository choice

Wireframe landing page research-software.nl



Discussion focus:

- Metadata
 - What's a sensible minimum standard
 - Generic vs domain specific
- How to incentivise deposition
 - Quality repositories
 - Part of original intent.
- Who deposits
 - Person
 - Machine
 - Quality and curation considerations

Software Directories

Topic intro:

Credit: Juriaan H. Spaaks

- Description and Context
 - Allow others to judge usefulness
 - Domain, language, organisation, special
- Integrations
 - GitHub, Zenodo, Zotero -> does not add to submitter workload
- Impact
 - Shows where software is having an impact
 - Publications, projects, testimonials

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<https://research-software.nl/>

Research Software Directory

Encouraging the re-use of research software

The Research Software Directory aims to promote the impact, the exchange and re-use of research software. Please use our tools! [Read more](#)

Discussion focus:






No 'useless' extra work

- Directories need
 - Resources, ownership and governance.
- Metadata
 - Minimum standards
 - Involve the community to understand their needs
- Stakeholders must be involved
 - Funders, institutions, developers, users, librarians
 - Impact, portfolio, use, useful, usable
- Domain focus
 - Core features
- Finders and Findable
- Software Journals


Software Credit

Topic intro:

Credit: Dan S. Katz

- Citation Principles 
 - 2016: [10.7717/peerj-cs.86](https://doi.org/10.7717/peerj-cs.86)
- Implementation 
 - Principles not enough
 - 2017: to help implement principles
- Lots of interest 
 - Metadata, archives, domains
- Challenges 
 - More work than you we first thought
 - Software types, identify, competing citation systems (compatibility)
 - Social challenges - diverse groups
- Success? 
 - Should it just be declared / line drawn
 - Ideally funding /resources needed

Discussion focus:

- Learning from other domains
 - Credit for other than papers
- Credit for
 - Skills & ability of the developers
 - The software itself
 - How about maintenance/management?
- Research Software Careers
 - Nascent
- Challenges are not Specific to research software
 - San Francisco Declaration on Research Assessment[†] - <https://sfdora.org/> 
- A need to add Research Software & authors to the Research Graph
 - <https://www.openaire.eu/blogs/the-openaire-research-graph>

Legacy & Heritage

- Legacy — as technology evolves, legacy software needs to be updated
- Heritage — preserving software for historical reasons requires collaboration across institutions

Feedback and the report

- Feedback:

- 46 attended / contributed, feedback from 17 - 37% response rate
- 4.5 / 5 for usefulness and enjoyability
- Over 82% said 'Yes' to coming to a future edition - the rest said 'Maybe'
- Quote - *'Very good organization which lead to a productive workshop, congratulations!'*

- WOSSS19 Report:

- The draft report is somewhat delayed
- The goal is to have a draft available to authors by the end of the year
- Then in the first quarter 2020 to have a published version that will be publically available

The Future of WOSSS

- Hold every 2 years - e.g. WOSSS21?
- Some discussions around combining WOSSS + WSSSPE ?
- This might be coordinated with the new ReSA initiative



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