Open Source projects

Explaining why longevity of digital assets need openness

Bitr. Prof. Björn Lundell, Ph.D.
Software Systems Research Group
Informatics Research Group
University of Skövde, Sweden
bjorn.lundell@his.se

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Open Source software (OSS) ...

➢ ... is software that is licensed under a recognised Open Source licence

www.opensource.org/licenses

➢ More than 30% of the companies get over 40% of their income from OSS related services or software

Hauge et al. "Adoption of Open Source in the software industry", In Open Source Development, Communities and Quality: IFIP – The International Federation for Information Processing, Volume 275, Springer, pp. 211-221.

➢ "Most of today's innovative products and solutions are developed on the basis of free and open source software"

Ebert, C., (2008) "Open Source software in industry", IEEE Software, Vol. 25(3)

Challenges for maintenance and preservation of digital assets go beyond PREFORMA

➢ Companies often need to **preserve** and **modify** their **software systems** and **digital assets** for **more than 30 years**, sometimes even more than 70 years

➢ **Maintenance** and support contracts **for proprietary licensed** software are provided for (up to) **10 years**

➢ **Digital assets** (files) **outlive proprietary software** in any maintenance scenario

➢ **Tools** used for the initial creation of digital assets **will not be available** during the complete life-cycle for many systems (for companies and public sector organisations)

➢ Healthy OSS projects **outlive** proprietary software

➢ OSS **communities** can **outlive** OSS projects

Peer-reviewed research results from (several) research projects...

We need healthy Open Source communities ...

> ➢ "A need for **long-term accessibility** of information, both for use and reuse, implies that an organisation needs to ensure that maintenance of the information can be guaranteed **independently of the system** which was **used to generate the information**."

> ”Why do we need Open Standards?”, Lundell @ EURAS 2012

PREFORMA will utilise best practices from community based Open Source projects. Therefore, for each OSS project ...

> ➢ All developed software will be provided under **both** Mozilla Public License "**MPL v2.0 or later**" *and* under GNU General Public license 3.0 "**GPLv3 or later**"

> ➢ All synthetic files developed for the file format *and* all digital assets associated with the Open Source project will be provided under the Creative Commons (CC) license **Attribution-ShareAlike 4.0 International** (CC BY-SA 4.0)

Important to respect community values ...

> "It is important to thoroughly **understand how each community works** and act according to its 'informal rules'. From a corporate perspective, it is clear that the big challenge is to properly understand this and handle the difficult balance between the shorter-term corporate goal and the longer-term goal of establishing a mutualistic relationship with Open Source communities."

Lundell et al. (2010) Open Source in Swedish companies: where are we?,
*Information Systems Journal, **20**(6)*

Open Source development ...

- ➤ **Development** of OSS components will be conducted in OSS projects **on open platforms** (e.g. GitHub or equivalent)
  - ➤ Hosting is free (no cost) for public open-source code

- ➤ OSS components will be provided both **during** and **after** the PREFORMA project ("GPLv3 or later" *and* "MPLv2 or later")

- ➤ Each OSS project utilises **established work practices** for community based open source projects, which include requirements concerning:
  - ➤ iterative development with frequent releases ("nightly builds")
  - ➤ proactive involvement in OSS communities (respecing values)
  - ➤ provision of executables for download (beyond usage via web)
  - ➤ feedback and bug reports on forums, user mailing lists, etc.
  - ➤ Several concurrent releases are kept on the platform, including: *development version*, *stable version*, and *deployed* (LTS) *version*

Establishing healthy OSS communities ...

> An organisation's strategy should include procedures for "Assessing the health of an Open Source product's ecosystem."

*Watson et al. (2005) The Evolution of Professional Open Source Software, MIS Quarterly Executive, **4**(3): 329-341.*

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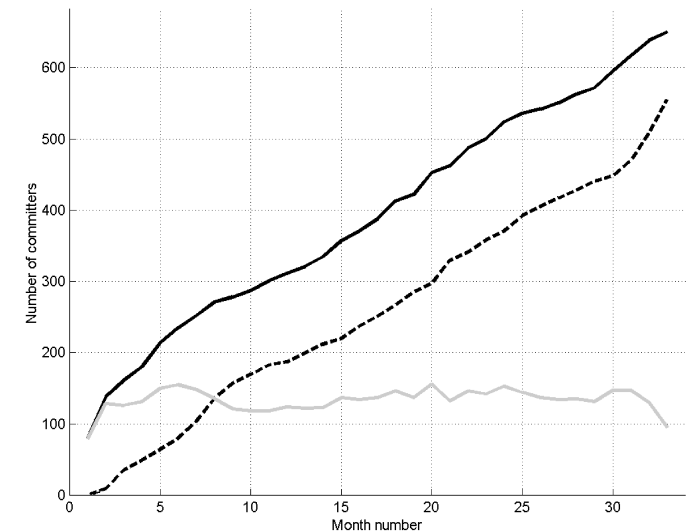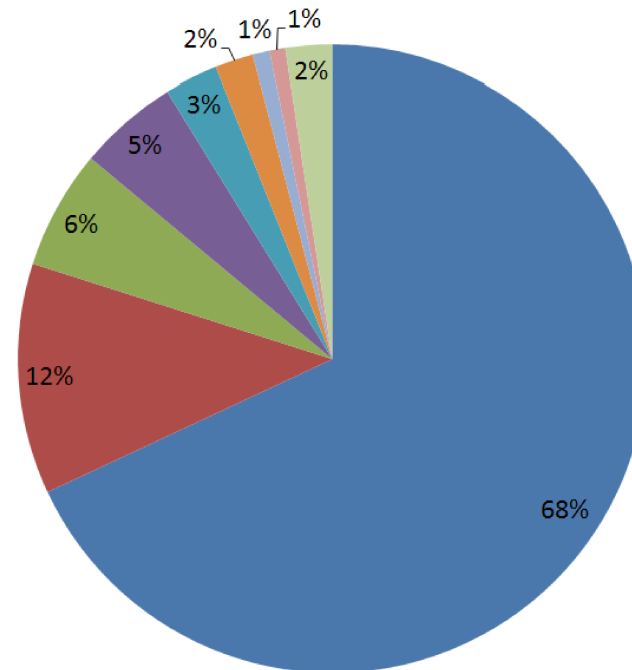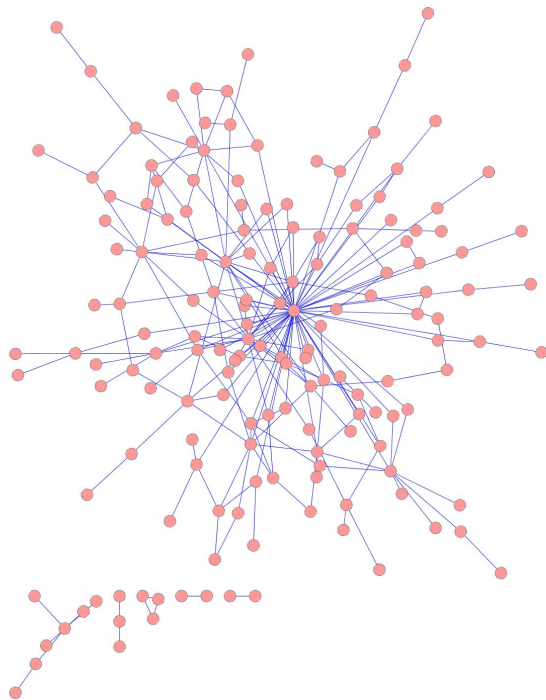
*Effective OSS implementations require improved specification of **standards** ...*

> "For most software standards the **formal specification** is **insufficient** and the actual standard may differ from across implementations. …
> the **formal specification** is **inherently incomplete** and the actual standard is defined both through the written specification and through actual implementations"

FLOSSPOLS (2005) "An Economic Basis for Open Standards", Deliv. D4 (http://www.flosspols.org/)

Therefore, related to each OSS project, PREFORMA will establish effective processes for improving standards ...

Interaction and active involvement with standardisation organisations

- ➢ Each contracted company will improve standards by
  - ➢ active involvement in further development of the standard
  - ➢ establishing effective processes for interaction between the OSS project (incl. provision of experiences from use of OSS componenets with synthetic and 'real' files from the OSS project) *and* relevant standards organisations
  - ➢ providing feedback to (other) software providers (which implement the file format)

- ➢ Users of the OSS conformance checker are expected
  - ➢ to engage in interaction with the OSS project for provision of feedback related to use of software and synthetic files (e.g. by becoming active on the user mailing lists; forums; issue / bug trackers, etc.)

➢ "Open Source software **communities** can **outlive** Open Source software **projects**."

Gamalielsson, J. & Lundell, B. (2013) Sustainability of Open Source software communities beyond a fork: How and why has the LibreOffice project evolved?, The Journal of Systems and Software, Vol. 89, pp. 128-145, http://dx.doi.org/10.1016/j.jss.2013.11.1077

➢ Community commitment & choice of Open Source licenses may significantly affect long-term maintenance of digital artefacts

Lundell & Gamalielsson (2011) Towards a Sustainable Swedish e-Government Practice: Observations from unlocking digital assets, In eGov 2011

➢ OSS projects with **healthy ecosystems** can be an appropriate way to address risks related to lock-in and **long-term maintenance of commodity software**

van der Linden et al. (2009) Commodification of Industrial Software: A Case for Open Source. IEEE Software, Vol. 26(4), pp. 77-83

Some references (2/2) ...

➢ "A need for **long-term accessibility** of information, both for use and reuse, implies that an organisation needs to ensure that maintenance of the information can be guaranteed **independently of the system** which was **used to generate the information**."

> Lundell, B. (2012) Why do we need Open Standards?, In Orviska, M. and Jakobs, K. (Eds.) Proceedings 17th EURAS Annual Standardisation Conference 'Standards and Innovation', The EURAS Board Series, Aachen, ISBN: 978-3-86130-337-4, pp. 227-240.

➢ "Company commitment and choice of software licenses affect longevity of tool support for different file formats"

> Lundell et al. (2011) Towards a Sustainable Swedish e-Government Practice: Observations from unlocking digital assets, In 16th EURAS Annual Standardization Conf.

➢ On the importance of healthy Open Source communities

Gamalielsson, J. & Lundell, B. (2013) Sustainability of Open Source software communities beyond a fork: How and why has the LibreOffice project evolved?, The Journal of Systems and Software, Vol. 89, pp. 128-145, http://dx.doi.org/10.1016/j.jss.2013.11.1077

Contact: bjorn.lundell@his.se