

Guiding Domain Scientists in the World of Open Source Licensing

Carina Haupt, Andreas Schreiber

German Aerospace Center (DLR)
Department Intelligent and Distributed Systems
Berlin / Braunschweig / Cologne

ESA SW Product Assurance and
Engineering Workshop 2017



Wissen für Morgen



Free and open source software

*„Free as in ‘freedom’,
not as in ‘free beer’“*



Software development at DLR

Some numbers...

- More than 1500 employees develop software
- More than 150 Mio EUR personnel costs per year for software development
- DLR is one of the biggest „software houses“ in Germany

Characteristics

- „Developer“ often do not have any training in software development
- Huge amount of software projects
- Variety of used software technologies



Problems of the past

- Software with license issues was published
- License compatibility of used software was not fulfilled
- Colleagues did not know which open source license would suit best
- Colleagues did not know which requirements for the source code had to be fulfilled

1. Open-Source-Lizenzbedingungen haben grundsätzlich Rechtsgültigkeit, d.h. ein Verstoß gegen diese Bedingungen stellt eine Urheberrechtsverletzung dar.
2. Die unbefugte Weitergabe von Open-Source-Software an Dritte (z.B. i.R.v. Aufträgen) kann zu gravierenden Haftungstatbeständen führen. Das gleiche gilt, wenn im Rahmen von Drittmittel-Projekten verschwiegen wird, dass vom DLR entwickelte Software Open-Source-Komponenten enthält.
3. Open-Source-Software wirkt in der Regel inifizierend: Abhängig von den Lizenzbedingungen (z.B. GPL) kann bei einer engen Koppelung von selbst entwickelter Software mit von Dritten entwickelter Open-Source-Software der Effekt eintreten, dass die Lizenzbedingungen der Open-Source-Software für die gesamte Software gelten müssen.
4. Open-Source-Lizenzbedingungen sind untereinander teilweise inkompatibel, d.h., bestimmte Open-Source-Komponenten können nicht miteinander kombiniert werden, ohne gegen eine der Lizenzbedingungen zu verstoßen.





Developer vs. Licenses

Results of a current study:

*“... we conducted a survey that posed development scenarios involving three popular open source licenses (GNU GPL 3.0, GNU LGPL 3.0 and MPL 2.0) both alone and in combination. The 375 respondents to the survey, who were largely developers, gave answers consistent with those of a legal expert's opinion in 62% of 42 cases. **Although developers clearly understood cases involving one license, they struggled when multiple licenses were involved.**”*

Daniel A. Almeida, Gail C. Murphy, Greg Wilson, and Mike Hoyer. 2017.

Do software developers understand open source licenses?

In *Proceedings of the 25th International Conference on Program Comprehension (ICPC '17)*.

IEEE Press, Piscataway, NJ, USA, 1-11. DOI: <https://doi.org/10.1109/ICPC.2017.7>



Measures at DLR

Information and trainings

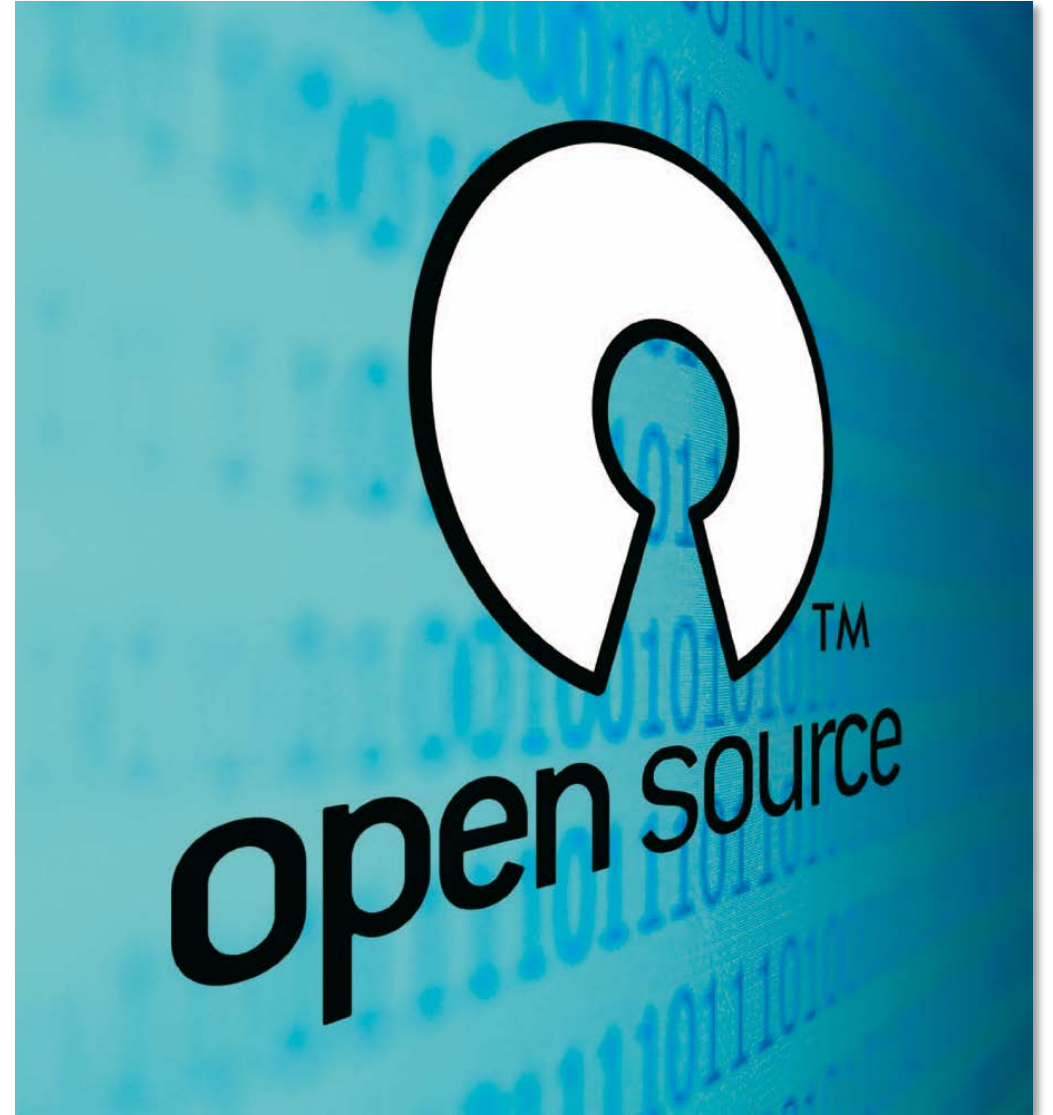
- Training on licenses
- Brochure

Knowledge exchange

- Wikis
- Knowledge-Exchange-Workshops

Consulting and support

- Recommended licenses
- Support



Information and trainings



Wissen für Morgen



Open source license training

„Legal aspects of open source usage“

- Official and regular training in the DLR education program
- Every DLR employee can participate
- Short training (currently about 4 hours)
- Run by two persons
 - Legal expert of DLR technology marketing (Dep. Licenses and patents)
 - Software engineer of DLR facility simulation- and software technology

Introduction to open source

Legal basics

Open source software

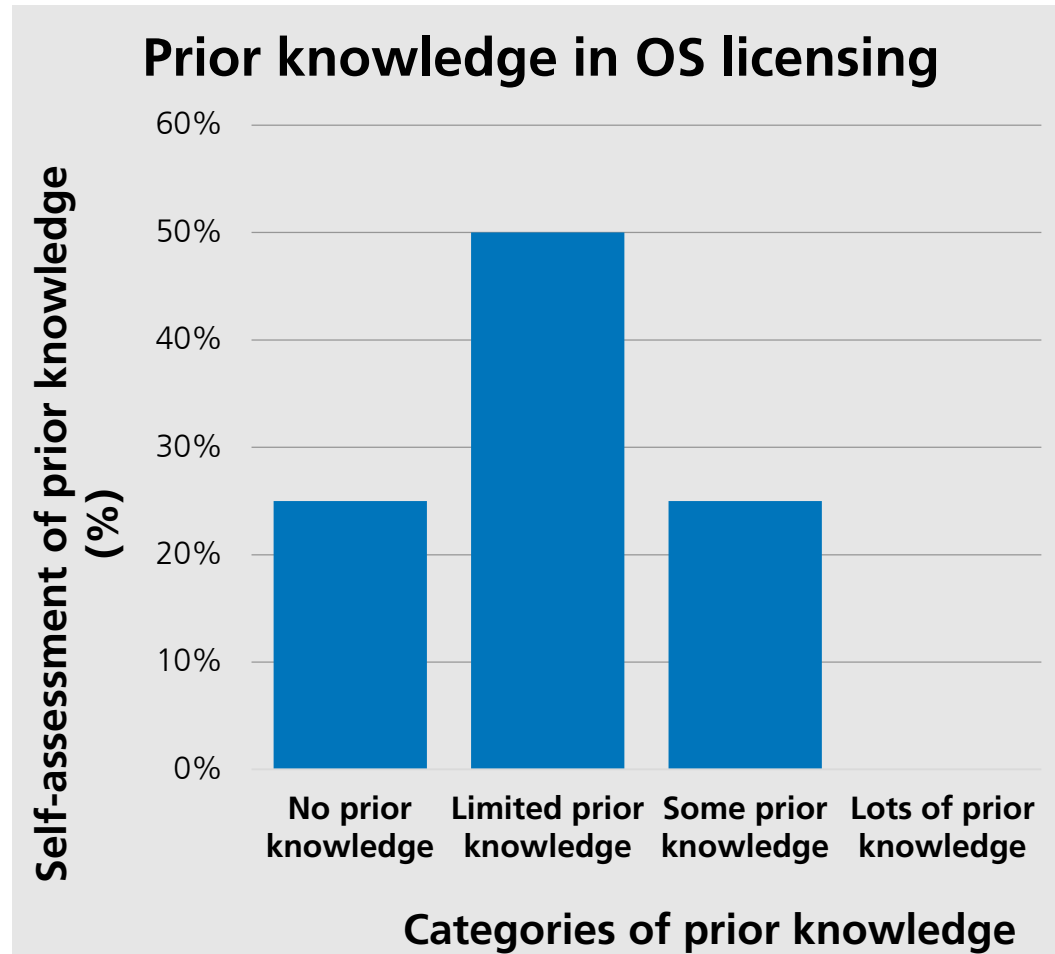
Selected open source licenses

Usage of open source software





Knowledge and expectations of participants



Query of expectations bevor the training (*extract*)

- To learn which aspects have to be taken in account in a project
- Get an overview over open source license models
- Learn how to use open source software in closed source projects
- Get to know examples from within DLR
- Learn the legal basics
- To learn and understand personal consequences for license violations



Open source brochure

Concept

- Basics about open source license law
- Developed by lawyers

Content

- Distribution of *unmodified* code
 - Distribution of *modified* code
 - Licenses
 - with strong copyleft
 - with weak copyleft
 - without copyleft
 - with special rights
- } **List of liabilities**



Open source brochure

Practical information

Check lists

Weitergabe veränderter Software

6 Lizenzen mit strengem Copyleft

GNU General Public License Version 2 (GPLv2)

- Mitliefern des Lizenztexts (siehe Merkbox 1, S. 10)
- Zugänglichmachung des Quellcodes (s.o. Merkbox 2, S. 10)
- Vollständiger korrespondierender Quellcode (s.o. Merkbox 3, S. 11)
- Urhebervermerk (s.o. Merkbox 4, S. 11)

Beibehalten der vorbestehenden Urhebervermerke (s.o. Merkbox 4, S. 11)
Anbringen neuer Urhebervermerke

Merkbox 11

Bei der Veränderung der Software sind vorbestehende Urhebervermerke beizubehalten (s.o. Merkbox 4, S. 11) und neue Urhebervermerke in den hinzugefügten Dateien anzubringen.

Wie gestalte ich einen neuen Urhebervermerk?

Im Header der Quellcode-Dateien ist der Vermerk „© [Jahreszahl], Deutsches Zentrum für Luft- und Raumfahrt e.V., author: /Name“ anzubringen.

- Disclaimer (s.o. Merkbox 5, S. 11)
- Änderungsvermerk

in den geänderten Quellcode-Dateien.

Merkbox 12

Wie gestalte ich den Änderungsvermerk?

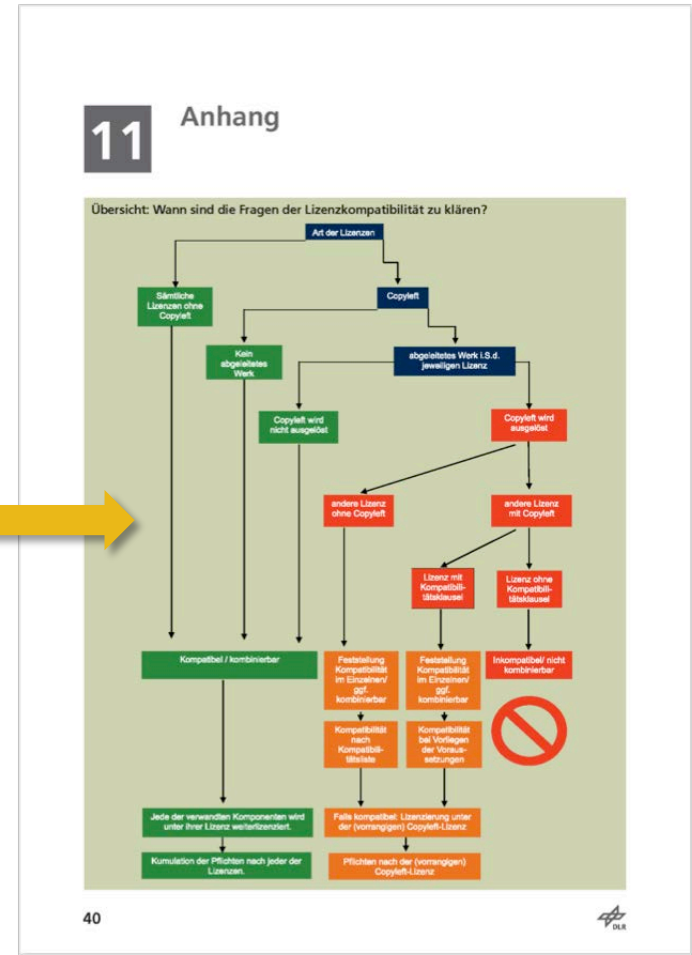
Der vorbestehende Urhebervermerk ist beizubehalten und ein kurzer Hinweis auf die hinzugefügte/geänderte Funktion mit Datumsangabe und Namensnennung des Deutschen Zentrums für Luft- und Raumfahrt e.V. sowie des Autors der Änderung.

Der Urhebervermerk kann dabei wie in Merkbox 11, S. 24 aussehen.

- Hinweispflichten bei interaktiven Kommandos

24

Decision tree



Knowledge exchange



Wissen für Morgen



DLR.Open Wiki

- About everything *open* related
- Categories
 - Topics
 - Tools
 - Literature
 - Q&A
 - Events
- Most information may also be found in the web, but also DLR specific information
- Single-Point-of-Information at DLR

The screenshot shows the DLR.Open Wiki page for 'Open Source'. The page is titled 'Open Source' and was created by Schlauch, Tobias, and last edited by Seth, Daniel on January 13, 2017. The main content area contains an introductory paragraph about Open Source Software (OSS) and a list of topics to be covered: Legal aspects of OSS licenses, Finding suitable OSS libraries, and Publication of OSS. Below this, there are sections for 'Subtopics', 'Internal Discussions / Workshops', and 'Further Readings'. The 'Subtopics' section lists 'Open Source Hosting' and 'Open Source Licenses'. The 'Internal Discussions / Workshops' section mentions a group discussion on OSS and Inner Source usage at DLR. The 'Further Readings' section lists a DLR-specific handbook, an internal course on legal aspects of OSS usage, and a general question section. On the right side, there is a blue graphic with the 'open source' logo and a list of contributors including Haupt, Carina, Scholz, Michael (TS-DAT), Schreiber, Andreas, Mühlbauer, Martin, Knodt, Uwe, Schlauch, Tobias, Seth, Daniel, Bender, Florian, Bachmann, Arne, Brommund, Katharina, Brunner, Sebastian, Naß, Andrea, Riener, and Heinz. Below the contributors list is a 'Related Information' section with links to News, Questions, Literature, and Events. At the bottom of the page, there is a comment box and a footer with the Atlassian logo and version information.





KnowledgeExchangeWorkshop (WAWs)

Concept

- Workshops for knowledge exchange between DLR employees (peer-to-peer)
- Each year an knowledge exchange workshop series for another topic is started
- Open to any DLR employee
- Up to 60 participants

Interactive program

- Short impulse lectures
- Personal introduction
- Lightning talks
- Discussions / working in small groups

WissensAustauschWorkshop

DLR.open

18. - 19. Oktober 2016 in Köln-Porz, Casino

Jetzt kostenlos anmelden

bis 21. September 2016
über das Bildungsprogramm
im Intranet

Kontakt:
Philipp Bergeron
4002

Mehr Details unter:
wissen.DLR.de/waw

Eine Initiative des
Wissensmanagements im DLR

DLR

Source Data Access
Science Education
Hardware Software

OPEN



Lessons learned from the KnowledgeExchangeWorkshops

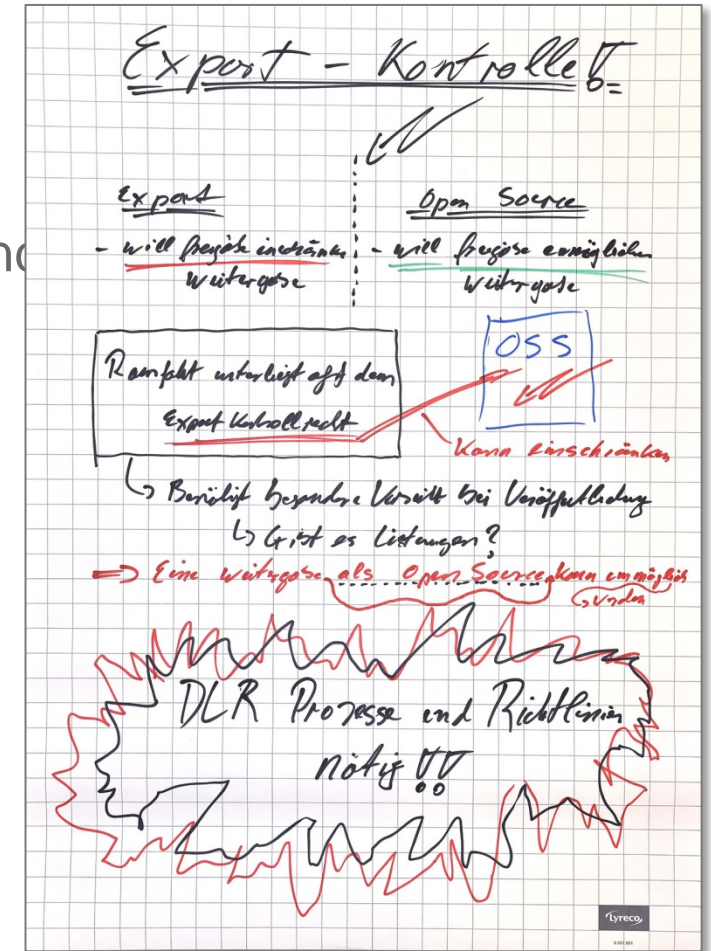
General findings

- Open source software is already widely spread at DLR
- Open source software mainly is used in the form of open tools and
- Own research software still mainly closed source
- Eager interest to publish own software

Critic of open source

- Missing opportunity to earn money
- Community build up is resources consuming
- Additional burden of time is demotivating

General DLR process to handle open source is missing



Consulting and support



Wissen für Morgen





Support for license questions at DLR

General question

→ Q&A section of the DLR.Open wiki

Individual help and support

- General license questions, property rights
→ DLR technology marketing
- Legal support for copyright or further legal questions
→ DLR legal department
- License compatibility, license selection, development
→ DLR simulation and software technology

Email as central point of contact

→ opensource@dlr.de

The screenshot shows the 'Ask a Question' page on the DLR Wiki. The page title is 'Ask a Question' and it is part of the 'Software Engineering' section. The main content area displays a question: 'Do you have a programming problem? You heard about a cool tool but you do not know whether it is useful in your situation? We might be able to help you! On this page you can easily ask your programming or software development related question!'. Below the question, there are instructions on how to ask a question, answer a question, or mark a question as answered. The page also features a 'Contributors' list, a 'Latest Questions' section, and a 'Question' table with columns for 'Question' and 'Status'. The table lists various questions such as 'I want to upstream a (small) patch, what form of signoff do I need from whom?', 'Was sollte an Mindestvorgaben für das Software-Testen etabliert werden?', and 'Perf Distribution für Windows im DLR'. The status of each question is indicated by a green 'ANSWERED' or yellow 'OPEN' label. At the bottom of the page, there is a comment section and a footer with the Atlassian logo and version information.



Recommended licenses at DLR

Default licenses, audited by DLR legal department

- Simplified BSD License
- Apache License 2.0
- Eclipse Public License 1.0



Key message

Our approach at DLR is based on

1. First offer targeted information to the employees
2. Afterwards provide time and space for peer to peer discussions and knowledge exchange
3. Only afterwards rely on a formal process and directions given „from above“

Feedback

- Positive evaluation of current actions
- Tips, hints and specific *action items* for further steps

Our approach is copied by others (Helmholtz-Community etc.)



A detailed rendering of a lunar lander on the moon's surface. The lander is a boxy, metallic structure with a grid-like pattern on its side, supported by four legs. A rover is positioned in front of it, and a large solar panel is partially deployed to the right. The background shows the rugged, cratered terrain of the moon under a dark sky.

Thank You!

Questions?

Carina.Haupt@dlr.de

www.DLR.de/sc/ivs