

How to open source your code properly

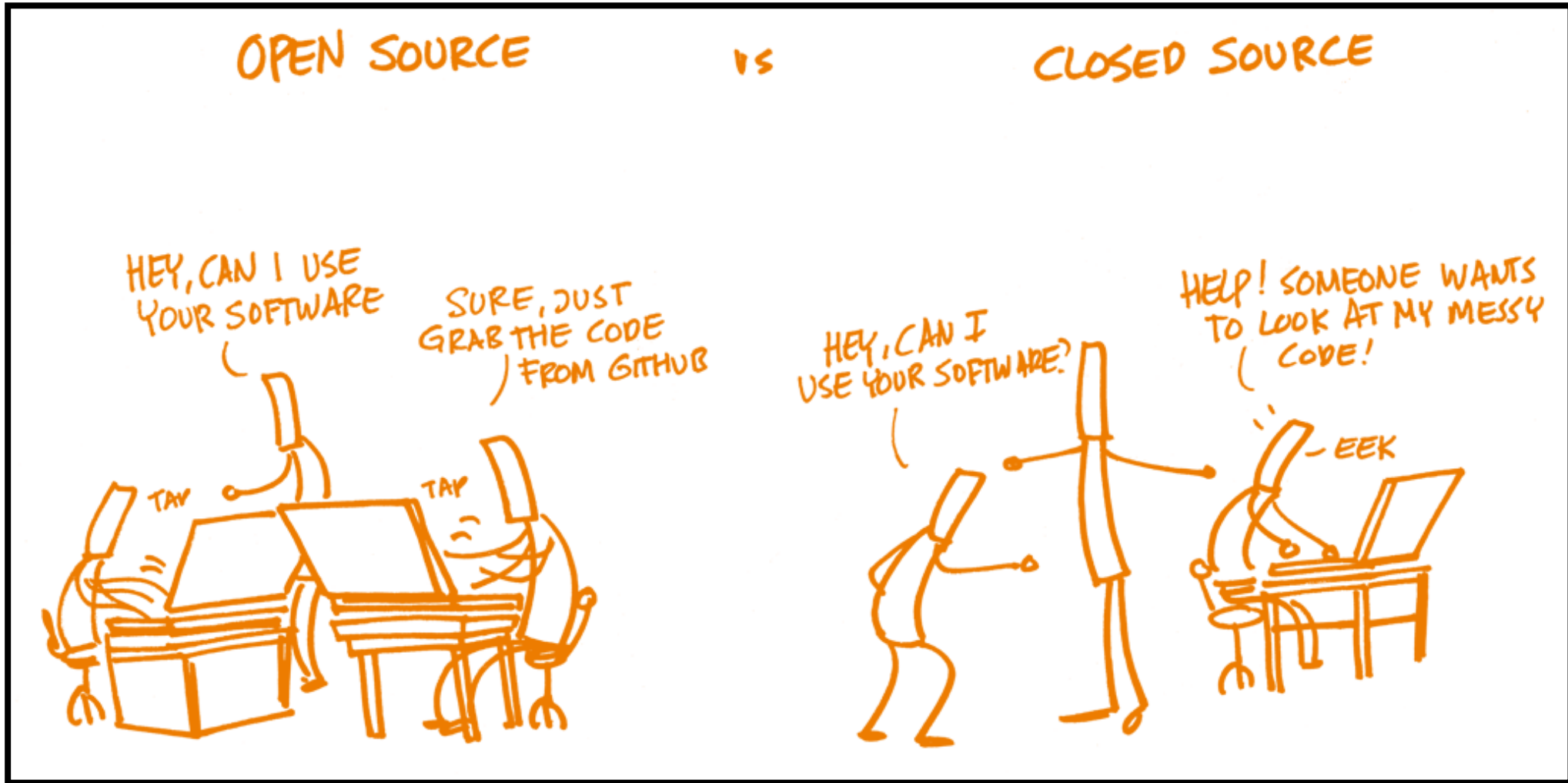
Bornhack 2021

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Knowledge for Tomorrow





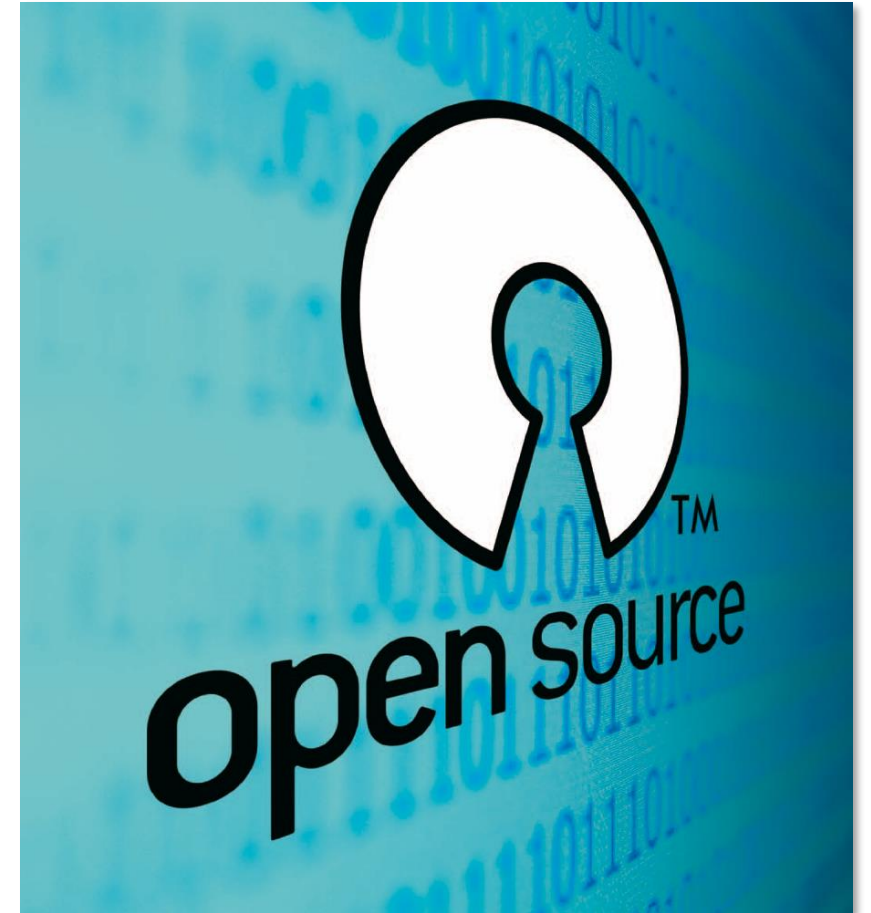
Definition „Free Software“ Free Software Foundation (FSF)

Free software is a matter of the user's freedom to run, copy, distribute, study, change and improve the software.



Use Cases of Open Source Software (OSS)

- Using OSS
- Publishing Software as OSS
- External contributions to your OSS
- Contributing to OSS



Legal basis

Relevant laws

Copyright (DE: Urheberrecht) – Copyright protection of software (§§ 69a ff. UrhG)

- Object of protection ([§ 69a UrhG](#))
 - Computer programs are protected in any form (both source and object code)
 - Ideas and principles of the program are not protected
- Acts requiring approval ([§ 69c UrhG](#))
 - Permanent or temporary reproduction
 - Translation, editing or other revision
 - Distribution

Contract law

- *"The entrepreneur has to provide the customer with the work free of material a* ([§ 633 Abs. 1 BGB](#))
- *"The work is free from defects in title if third parties cannot assert any or only the rights assumed in the contract against the purchaser in relation to the work“* ([§ 633 Abs. 2 BGB](#))

Legal consequences of copyright infringement regulated by civil law and criminal law

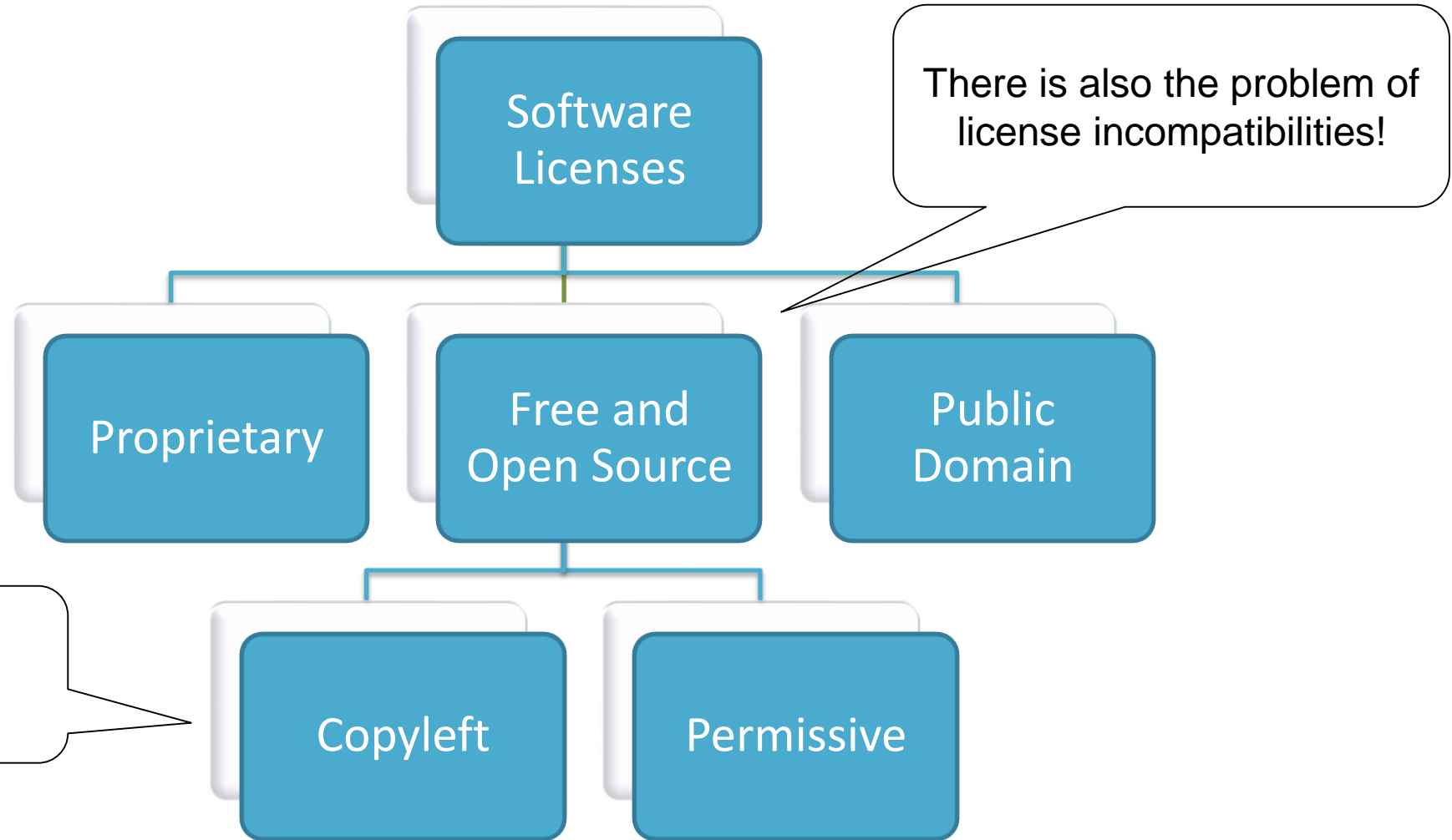


Publishing Software as OSS Process

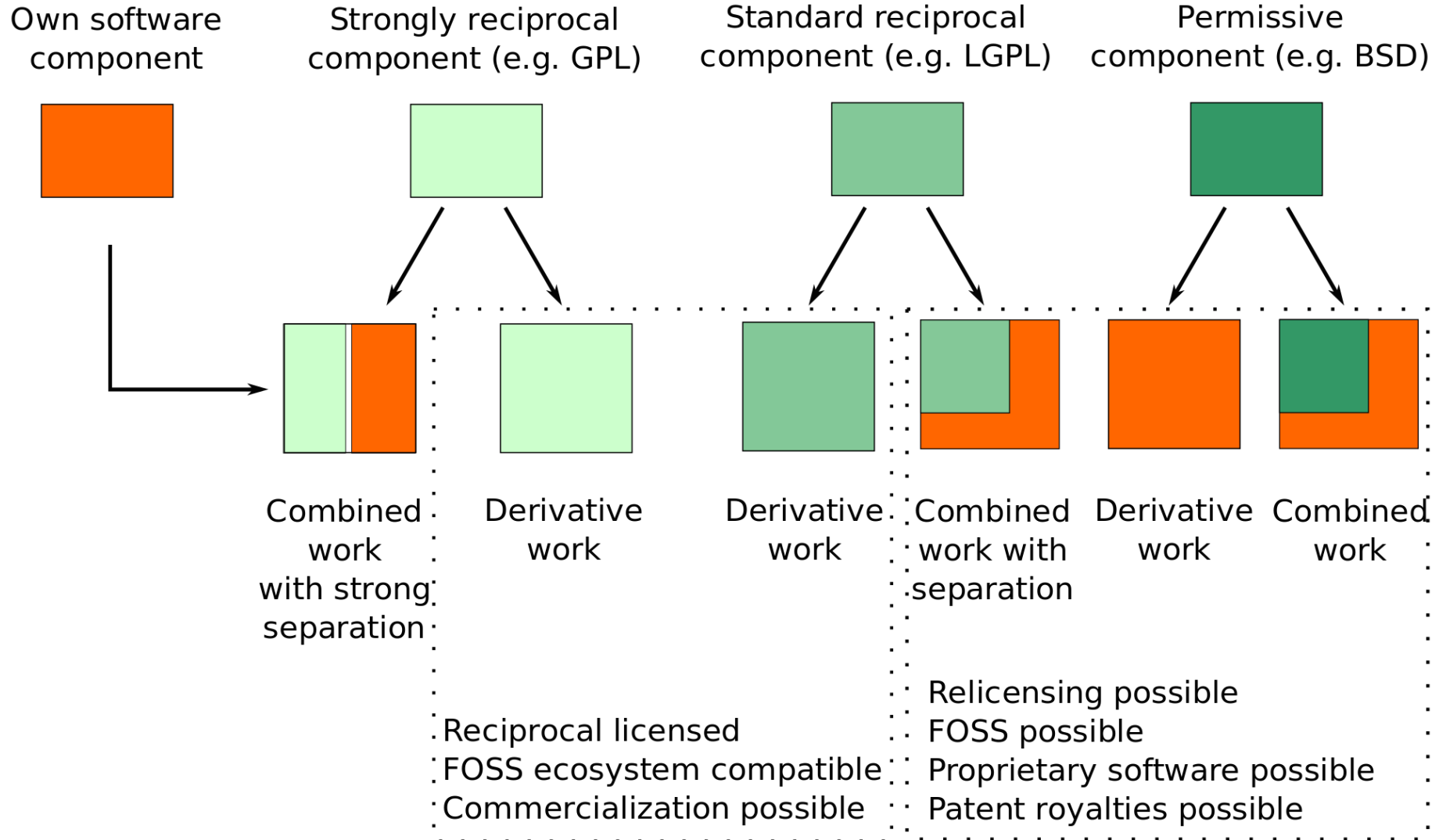
1. Get permission of your organization
2. Determine legal requirements and resulting tasks
 - a. Identify entitled contributors
 - b. Clarify export restrictions of the software
 - c. Check funding conditions
 - d. Analyze license terms of third party code
 - e. Cost and benefit assessment



Software Licenses



Combining Modules under Different Licenses



Using Third Party Code

Factors to consider

- License of third party code
- Integration of third party code (loose coupling, linking, source code)
- Distribution of
 - third party code (shipping, instructions)
 - software (binary, source code)



Publishing Software as OSS Process

1. Get permission of your organization
2. Determine legal requirements and resulting tasks
 - a. Identify entitled contributors
 - b. Clarify export restrictions of the software
 - c. Check funding conditions
 - d. Analyze license terms of third party code
 - e. Cost and benefit assessment
3. Determine details of publication and implement preparatory tasks
 - a. Define license terms, form of publication and support strategy
 - b. Prepare software for publication
 - c. Check the requirements for publication and release the software
4. Publish software



Prepare your code

Minimal generic recommendation

- Manage your code using a **version control system**
- Apply a **basic coding style**, strive for a **modular design**, **avoid code duplication** and **over-engineering**
- **Automate creation of an executable, usable version**
- **Provide essential documentation:** software purpose, user and developer information, constraints and central concepts, known problems and ideas
- **Internal release: test** your software and assign a proper **release number**
- **Public release:** check the **open source guidelines**

The DLR Software
Engineering Guidelines:
rse.dlr.de



Minimal License Checklist

Choose a license

- Make sure that you comply with restrictions resulting from licenses of third-party dependencies

Prepare your code

- Add the license file to your repository (=> LICENSES directory)
- Add a copyright/license information to **all** your source files
- Document your third-party dependencies including their licenses



Add the License File

Adapt the copyright hint

```
MIT License Copyright (c) 2013 German Aerospace Center (DLR)
```

```
Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:
```

```
The above copyright notice and this permission notice (including the next paragraph) shall be included in all copies or substantial portions of the Software.
```

```
THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
```

Do not change the license text!



Add Copyright and License Hints to Source Files

```
1  # .SPDX-FileCopyrightText: .2013 .German .Aerospace .Center .(DLR)
2  # .SPDX-License-Identifier: .MIT
3
4  """
5  This module is the central entry point of the application.
6  It initiates input methods, calculations, and the logging
7  capabilities.
8  """
9
10
11
12 import .argparse
13 import .configparser
14 import .logging
```

Copyright hint

License hint via SPDX tag

REUSE Software Initiative:
<https://reuse.software/>



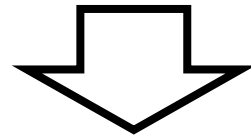
Document Dependencies

Install

The script requires Python ≥ 3.6 and uses the libraries [pandas](#) (*BSD 3-Clause License*) as well as [matplotlib](#) (*Matplotlib License*).

Please clone this repository and install the [required dependencies](#). We suggest that you install them in a virtual environment.

The script has been used on CentOS 7 and Windows 7 with Python 3.6.6.



 **requirements.txt** 32 Bytes 

```
1 matplotlib==3.0.0
2 pandas==0.23.4
```



Prepare your code

Possible Implementation

Git repository which contains code, examples, build script, and documentation

- Releases correspond to tags
- Release package download

The screenshot shows a GitHub repository page. At the top, there are navigation links: Files (369 KB), Commits (20), Branches (3), Tag (1), Readme, Changelog, and Contribution guide. Below these are buttons for 'Add license' and 'Set up CI'. A search bar with 'Find file' and 'History' buttons is visible. A commit by 'Schlauch, Tobias' is shown, committed 9 minutes ago. Below the commit is a table of files and folders.

Name	Last commit
examples	Adds examples.
src	Provide initial version.
CHANGES.md	Adds the change log.
CONTRIBUTING.md	Adds information on how to contribute.
README.md	Fixes typos.
setup.py	Adds a build script for creation of the dist...

- Examples provide reference input values and results

- Code is broken into small functions
- Coding style recommendations applied

- Build script for packaging and installing
- Release numbers follow semantic versioning approach
- CHANGES.md explains user-understandably major changes



Prepare your code

Possible Implementation (cont.)

<https://gitlab.com/hifis/hifis-workshops/make-your-code-ready-for-publication/>

it provides the following features:

- Reading sample values from command line and CSV (Colon Separated Values) files.
- Calculation of average, variance, and standard deviation.
- Configurable logging of results and interim results.
- Easy integration of new input sources
- Extensible by easily adding new calculations

SampleCalculator targets **scientists** who want to easily perform such calculations as part of their workflow and **Python developers** who want to integrate the functionalities into their software. We implemented as we have not found a suitable, zero-dependency alternative.

The current version is only an initial alpha version which is **NOT** suited for production use. Particularly, it is not sufficiently tested with large data sets. It requires **Python >= 3.4** and has been only tested on **Windows 7** so far. However, it should basically work on operating system.

How can I install it?

- Make sure that you use Python >= 3.4
- Download the [latest package](#)
- Extract it to a directory

README.md: main documentation

CONTRIBUTING.md: contributor information

- Explanation of the software purpose (what?, for whom?, why?)
- Overview of the main features
- Important usage constraints and conditions

- Basic installation and usage information
- Future plans and ideas



Recommendations

- Know who has the exploitation rights
- When accepting external contributions, either
 - create CLA or
 - ensure you selected the correct license
- When using third party code – check license early
 - Prevent copy left licenses (i.e. GPL)
 - Ensure license compatibility
- Use a standard OS License
- Make your code usable for others!

All of this makes OSS sound scary, but it's not better when proprietary licenses get involved!



Questions?

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@caha42

#WIRROCKENSOFTWARE