

ASTRON Open Source Policy

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Distribution list:

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Document history:

Revision	Date	Chapter / Page	Modification / Change
0.1	28-09-2017	-	Creation
0.2	08-02-2018		Reviewed by committee
0.3	12-02-2018		Incorporated comments
0.4	12-02-2018		Edited format
0.5	13-02-2018		Incorporated comments
0.6	22-02-2018		Unified procedures and added remarks for MT
0.7	08-03-2018		Incorporated Gert Kruithof' s review comments
0.8	04-04-2018		Incorporated amendments from Lourens Veen (Netherlands eScience Center) maintaining compatibility with current GPL licensing conditions
1.0	05-07-2018		Decided on license to use, incorporated it. Document ready for distribution to MT
1.1	06-07-2018		Updated list of authors and distribution list
1.2	02-10-2018		Streamlined definition and hence refactoring. Also processed comments by reviewers.
1.3	09-10-2018		Several minor improvements to readability
2.0	23-08-2022		Major Revision. Largest changes: <ul style="list-style-type: none"> - Expand the number of accepted licenses from 1 to 4; - Improve description of OSC mandate; - Add papers to citation notice; - Better match to common practice at ASTRON.

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1 Definitions

The definitions used in the remainder of this policy are described below.

ASTRON open source policy	The set of rules defined in this document. In this document, this is also referred to as this policy.
ASTRON project manual	A collection of document templates related to project management, which is effective within ASTRON to ensure project quality.
ASTRON software product	Software product developed under ASTRON copyright.
Committee	The ASTRON open source committee
DOI	Digital Object Identifier; a unique ID for a digital object, such as a software release.
Citation notice	A file in the repository that states what the steps should be to appropriately cite the authors when using or extending an ASTRON software product.
Line manager	Person who directly manages other employees and operations of a group while reporting to a higher-ranking manager.
Project	A temporary endeavour undertaken to create a unique product, service or result, carried out in accordance to the ASTRON project manual.
Project manager	The person responsible for managing a given project.
Software product	Deliverable source code or firmware.
Valorisation	The impact that research results (software products in the scope of this policy) have on industry and society.
ASTRON MT	The ASTRON management team.

2 Motivation

The goal of this policy is to provide the ASTRON organisation with the guidelines that support the openness of the software developed by employees of our institute. The main goal of this is to stimulate sharing of software and making citation possible. This is important from a perspective of open science, and making the software developed at ASTRON more visible to the outside world.

3 Purpose

The ASTRON open source policy implements the above two objectives of *acknowledgement* and *justification* by providing several procedures. This policy also sets the boundaries within which ASTRON software products shall be released under one of the open source licenses listed in this Policy.

All ASTRON Software Products shall adhere to this policy by default. Note that topics like open access (to publications), open data and open source hardware are explicitly not part of this policy.

4 Policy Statements

4.1 List of accepted licenses

The following list specifies licenses that are to be preferred and considered compatible with the goals of this policy with respect to openness. Should substantial software be developed in or outside a project that is not published under one of these licenses, the license of this software is considered incompatible and the person responsible for the development should follow the procedures for an incompatible license as described in this policy. A choice for a license may be based on practical choices (e.g. compliance with GPL 2.0 software, see below), consistency with similar software or different opinions on openness. This policy does not rank the accepted licenses in any way, but does restrict the choice to a few of the most common options to stimulate consistency.

Default licenses are:

- The GNU Public license (GPL), version 3.0
- The Lesser GNU Public License (LGPL), version 3.0
- The Apache License, version 2.0
- A dual Apache 2.0 and GPL 3.0 license

Of these licenses, the Apache license is the most permissive, and allows software to be modified and used commercially, as long as any license/author notices of the original software are preserved. It is considered incompatible with GPL version 2 software. Therefore, if a software package makes use of (L)GPL version 2.0 libraries (e.g. Casacore or FFTW), it cannot use the Apache 2.0 license. Because several (astronomical) packages are published under the GPL 2, this license might not always be sufficient. For those cases, one of the other three options should be considered.

The GPL 3.0 is less permissive compared to the Apache 2.0 license. With this license, derived products must be published under a compatible license, which makes it more difficult to use commercially. It can be chosen if Apache 2.0 is (for any reason) considered too permissive.

For libraries, the LGPL version 3.0 can be considered. This license gives more (commercial) freedom for other packages to reuse your software by linking it into derived products. However, publications of modified source code are required to be published under a LGPL compatible library.

4.2 Supporting Measuring Valorisation

Making source code publicly available under an open source license is in line with the basic thought behind NWO's Open Science policy¹ which states that:

“Open Science is the movement that aims at more open and collaborative research practices in which publications, data, software and other types of academic output are shared at the earliest possible stage and made available for reuse. Open Science leads to greater scientific and societal impact. NWO's aim is to ensure that all the research it funds is openly accessible to everyone.”

In addition to this, this policy supports that the valorisation of ASTRON software products (the research results mentioned above) is measurable by stimulating citation of usage where possible. Therefore, ASTRON software products should clearly describe their preferred method of citation, for example by adding a citation notice (see A.3).

It is not possible to be aware of all uses of software. For example, when using open source licenses there is no legal way to ask users of software (that do not publish the code or write papers) to notify the authors of their use. Requesting users to make ASTRON aware of their use is impractical for highly used software (and in general is likely ignored by casual users). Valorisation is therefore only possible through publication metrics or indirect metrics such as number of downloads.

4.3 Principles

This policy encompasses the following principles:

- i. An open source license applies to all ASTRON software products. This is in accordance with the NWO open science policy.
- ii. If a software product is developed by ASTRON in a collaboration with external parties, an agreement shall be signed that defines software product ownership and contains the choice of source code license for that collaboration.
- iii. By default, ASTRON is the owner of code that is written by its employers (for which ASTRON resources are used). Deviations are possible, but should be clearly documented.
- iv. All substantial ASTRON software products developed within projects shall be made publicly available through ASTRON. As a rule of thumb, “substantial” is defined as approximately at least 1000 lines of code and that is usable for multiple applications.
- v. For each substantial ASTRON software product, generating a DOI or writing a scientific paper that describes the software product is recommended. Optionally, a DOI can be generated for each released version of the software. The project manager is responsible for generating this DOI. When the software is relevant to the field of astrophysics, we recommend to additionally register the software in the Astrophysics Source Code Library (ASCL, <https://ascl.net/>).
- vi. Every ASTRON software product should be accompanied by a README that notifies potential users of the preferred way to cite the product. Software that is not described in a publication are asked to be cited with the DOI of that ASTRON software product.
- vii. Every ASTRON software product shall provide the full license text.

¹ <https://www.nwo.nl/en/open-science>

- viii. Each of the source code files of an ASTRON software product shall contain a copyright header, referencing the license.
- ix. Source code files that have been authored by an ASTRON employee and are hosted in a source code repository shall be committed under an e-mail address that identifies the employee, preferably their ASTRON e-mail address.
- x. Compliance with this policy shall be an explicit statement in the project plan. When it is deemed necessary to deviate from this policy, a request for advice must be sent to the committee and must have been answered before the deviation is implemented. The committee answers such a request at least within 10 working days. If the software owner and the committee disagree over the deviation, the ASTRON MT has the final say.

4.4 Responsibilities

The MT is responsible for this policy and is informed and advised on open source matters by the committee. The MT mandates the committee to allow deviations from this policy (as initiated by the project manager), *but the committee does not have the mandate to stop deviations*. When the committee disagrees with a deviation, the MT has the final say.

The committee will publish on ASTRON's intranet an annual report about project consultations and decisions.

4.5 Exceptions to this Policy

All projects that create ASTRON software products should adhere to this policy. Requests for exceptions shall be filed with the committee according to section 4.3, point x.

5 Procedures

5.1 ASTRON software products developed *within* projects

This procedure describes when this policy plays a role in the development of an ASTRON software product that is developed within a project.

1. By default, the project manager explicitly states to follow this policy in section "Open Data / Open Access / Open Source" of the Project Management Plan.
2. At the start of a project or when a new ASTRON software product is started, the project manager determines if there are reasons to NOT adhere to this policy. At that moment, The committee is consulted as described by sections 4.3 and 4.4.
3. The project manager has the responsibility that a copy of the chosen license (see A.1) and the citation notice (see A.3) are added to each ASTRON software product of the project.
4. The project manager has the responsibility that the copyright header from this policy (see A.2) is added to each source code file of every ASTRON software product of the project.
5. As part of project closure, the project manager verifies that the policy was correctly followed by filling in the checklist in the project review template.

5.2 Development of ASTRON software products outside of projects

Not all ASTRON software products are developed as part of a project as defined by the ASTRON project manual. For this category, this policy distinguishes between:

- a) extending an existing ASTRON software product that originally was a project deliverable.

- b) developing or extending an ASTRON software product outside of project context.
- c) extending an existing non-ASTRON software product.

5.2.1 Extending an existing ASTRON software product outside a project

Examples hereof are extensions to the existing LOFAR, WSRT, and APERTIF software suites, and LOFAR pipelines. It will generally concern production code that has already been released to the public.

The procedure for extending an ASTRON software product that was originally developed in a project is in the spirit of the above procedure as described in Section 5.1, with the following exceptions and remarks:

- The line manager takes the responsibilities of the described project manager.
- Actions 1, 2 and 5 can be skipped, because the ASTRON project manual is not followed.
- Actions 3 and 4 should follow the license already applied for the software product. The decision to deviate from this policy for a specific project is also valid for the continuation of the development of the code after the project has ended. Also for development efforts that started before this policy was in place, the development should continue using the current license.
- When the contribution to an external software project becomes substantial (see earlier definition), and the license is not one of the licenses accepted in this policy or less restrictive, the work on this project should be considered as having an incompatible license and the line manager should follow the procedure of 4.3 point (x).

5.2.2 New ASTRON software product outside a project

Examples hereof are astronomer's scripts or software which are not used in production, but are made publicly available (Github, Gitlab, email, etc.). The procedure for this type of ASTRON software product, which is not directly related to a project, is again in the spirit of the procedure in paragraph 5.1, with the following exceptions and remarks:

- The line manager takes the responsibilities of the described project manager.
- Actions 1 and 5 can be skipped, because without a project, no formal starting and closing moment is available.
- Similar to 5.2.1, for substantial contributions to software with an incompatible license the line manager should follow the procedure of 4.3, point (x).

5.2.3 Extending non-ASTRON software products

If the work to extend a non-ASTRON software product happens within a project, section 5.1 should be followed.

If the work happens outside project scope, the procedure of 5.2.2 is followed.

6 Related Policies

NWO open science statement, <https://www.nwo.nl/en/open-science>

Appendix A License and citation notice

A.1 License text

The full text for the licenses are available from the following locations:

- Apache 2.0 license: <https://www.apache.org/licenses/LICENSE-2.0.html>
- GPL 3.0: <http://www.gnu.org/licenses/gpl-3.0.html>
- LGPL 3.0: <http://www.gnu.org/licenses/lgpl-3.0.html>

Place a copy of the full license (plain) text in the root of your software repository in a file with the name **LICENSE.txt**. In the case of dual GPL 3.0 + Apache 2.0 licensing, add two files: **LICENSE.Apache-2.0** and **LICENSE.GPL-3.0**, and add the following text to a **README** file in the toplevel of your project:

This software is published with two licenses: GPL 3.0 and Apache 2.0. Users can choose which of these two licenses applies to them.

A.2 License header text

The following text fragment may be placed in comments at the top of each source code file, or in the header of each source code file, if the declarations and implementations are separated (e.g. in C/C++):

```
// Copyright (C) <year> ASTRON (Netherlands Institute for Radio Astronomy)
// SPDX-License-Identifier: <license>
```

Replace <year> by the current year. Replace <license> by GPL-3.0, LGPL-3.0 or Apache-2.0. For dual licensing, use “GPL-3.0 or Apache-2.0”.

This placement is *optional* and not required by law to make your code fall under the license. The benefit is that if single files of your project get separated from the repository, the license is still clear. The downside is that it requires annually updating the header of files (which is easy to forget).

A.3 Citation notice

Place the following next to the **LICENSE.txt** file in a separate file called **NOTICE**:

```
Citation Notice version 1.0

This Citation Notice is part of the <Product> software suite.

Parties that use this Software for papers and/or publications are requested to refer to
the DOI(s) or papers that correspond(s) to the version(s) of the Software used:

<List of DOIs / Papers in the format: Lastname, A. B. et al (2022), MNRAS, 230, 4 >
```

In the above text, replace <Product> by the actual software product name, e.g. LOFAR software suite or *DP3* and the list of DOIs / papers by the DOIs / papers of the ASTRON software corresponding to the package (i.e. of the package and of possible previous packages from which it was derived). Optionally, if the package is registered with the ASCL, the ASCL-id can be included.

In addition, it is suggested to add a citation notice to your **README** file at the root of the repository, the code documentation and/or on-screen output. We list two such example notices as an example:

Option i):

If you use <Software product name> for scientific work, please cite the appropriate paper(s): <list or link to bibtex>

Option ii):

If you use (part of) this software please attribute the use to ASTRON as indicated in the file NOTICE in the root of the source code repository.