cherenkov telescope array

Licensing Policy for CTA Software

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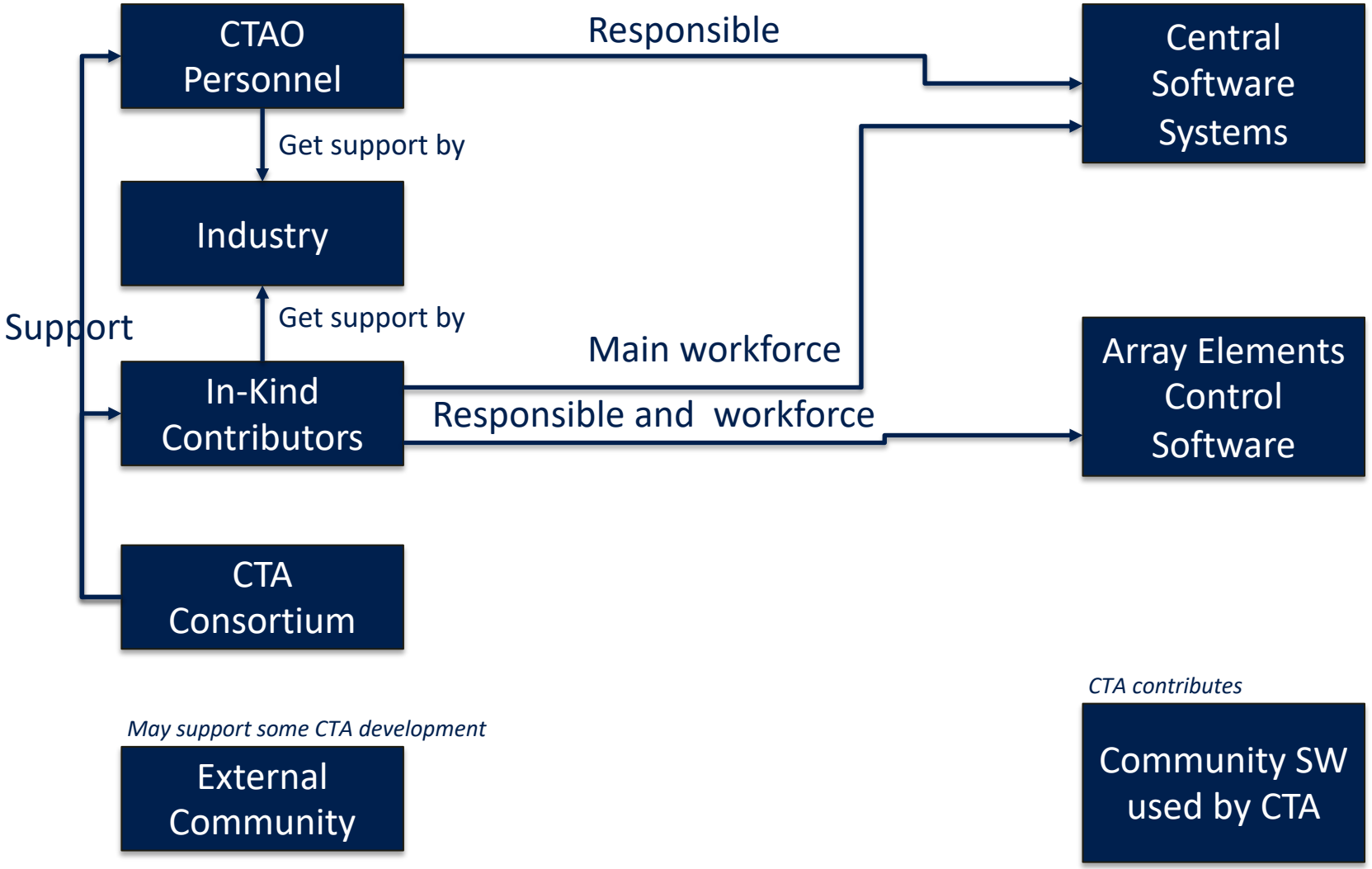

Why does CTAO and Contributors need a SW licensing policy?

- In the absence of any license, software work is under authors exclusive copyright by default.
- Unless including a license that specifies otherwise, “nobody” beyond the original author can copy, distribute, or modify the existing work without being at risk of take-downs, shake-downs, or litigation.
- Lack of license, or an inappropriate license in CTAO SW constitutes a risk for CTAO and its contributors.
- The usage of external software libraries with inadequate licenses constitutes also a liability for CTAO (future request of liabilities, litigations, …)

- A licencing policy is needed; when approved, any CTAO Contributor will be asked to follow this policy.

Types of CTAO Software

a) *Off-the-shelf software* purchased from external providers, such as Microsoft Office or Commercial OPC UA SDKs.

b) *Derived software* is any software that is based upon one or more existing software that has a license that allow modifications and derived works to be distributed under the same terms as the license of the original software.

c) *Bespoke software* is the custom or tailor-made software for CTA-s own purpose.

Types of SW Licenses (long story short)

- *Proprietary* or *closed* software: computer programs whose source code is not published.

- *Open source* code: released under a license in which the copyright holder grants users the rights to study, change, and distribute the software to anyone and for any purpose:
  - *Copyleft* License: code is free and requiring all modified and extended versions of the program to be free as well.
  - *Permissive* license: allow redistribution of the original or modified software and source code, including under a different licence.

Proposed policy (I)

CTA Observatory is adopting an Open Software Policy – pending of management confirmation.

Code exchange rules are clear:

- Clear way to transfer code to CTAO as IKC.
- Will allow and simplify the internal collaboration.
- Incorporate and tailor a wide base of open-source libraries.
- Better cooperation with users– code required for CTA data exploitation is made available freely.
- No legal departments need to be involved anymore in the items above.

Code is made publicly available:

- It is fair that the result of the effort from public funded projects is made open to the society.
- Visibility and reputation - people use your code (and like it), they get to know you and your organization.
- Makes the code being better: Potential, independent scrutiny by members of the open source community outside CTA will mean code tend to be of higher quality.

Things then come for free:

- A wide set of tools exist “for free” to those organizations who are using an open-source policy.

Proposed policy (II)

- *Bespoke software* by default, will use the *BSD 3-Clause "New" or "Revised" license.*
- *Derived software* will typically have a mixture of licenses, in order to comply with the base license and with our own license or requirements from third party libraries.
- The license *Off-the-shelf software* outside our control.
  - (Besides accepting or rejecting to purchase it depending on the license clause).
- Documentation: The CTA Observatory will always agree to a **Creative Commons Attribution 4.0 International License** for documentation, images associated to the code, etc.

- Any departure from this license must be discussed and agreed upon with CTAO prior to IKCs.

Copyleft vs permissive

Personal thoughts on why to license our software a permissive instead of copyleft?

	Copyleft (GPL, LGPL, …)	Permissive (BSD-3, MIT, APACHE 2.0, …)
Can others use and modify our software?	Yes, as long as the derived SW uses the same a compatible license and keep it public	Yes, certain restrictions may apply (e.g. in BSD-3, as long as they avoid the appearance that derived product is endorsed by the original developers)
Can others sell their modified software based on ours?	Yes, but entire source code must be made available (impractical)	Yes (no restriction)
Can be re-licensed?	No (in general)	Yes
Future compatibility issues	High probability, can be severe	Low probability
Philosophy	• free content should always be free • Enforce free information flow by regulation	• Information should be transferred freely independent of its use • Teach free information flow by example
Risk	• May not be able to combine SW in the future (even internally). • May not be able to re-license our own code. • Potential users/collaborators decreases.	Our SW may be uses to create a commercial product, and we will get nothing back.
Opportunities	Ensures us to get access to code derived based on our code.	Maximizes potential users and collaborators.
License text	Long, difficult to understand	Short, easy to understand

- Note: small differences exist among various copyleft and permissive licenses.
- One can set up a dual licensing scheme…

Copyright

- All CTAO software shall have a copyright notice.
- Derived software and bespoke software will normally be comprised of code modules that have a mixture of copyright attributions.
- Software which is created or modified by CTAO employees or handed as in-kind contribution shall include the following statement:

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Copyright [year] Cherenkov Telescope Array Observatory
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- Software which is handed as in-kind contribution shall include the following statement:

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Copyright [year] <contributor entity>
This software was provided as IKC to the Cherenkov Telescope
Array Observatory
```

- If code had an earlier copyright notice, then the previous Copyright statement is added below:

```
Original work Copyright (c) 2012 [Acme Corp]
Modified work Copyright [year] <contributor entity>
```

Contributing to CTAO SW: IKC and beyond

- The SW licensing and copyright conditions will be included in the IKC agreements.
- IKCs must undersign a *Contributor License Agreement.*

- Beyond IKCs, any developer who wishes to contribute to CTAO software, but that is not transferring ownership to CTAO must undersign a *Contributor License Agreement*
  - Applicable for e.g. Contributions to CTAO software which are not In-Kind Contributions nor performed by CTAO personnel.
  - not a copyright assignment, but a license agreement only, and does not change any usage rights to use the Contributions for any other purpose.

Proposed policy – When BSD-3 is not well suited

- There will be cases where BSD-3 is not practical at application level
  - Parts of the code is derived or using external GPL libraries.
  - In those cases we may need to license our software as GPL at application level – (with e.g. modules provided as IKC as BSD-3).

- CTAO may decide, for special cases, e.g. data processing pipeline code and science tools, to depart from BSD-3
  - Provide extra protection to science being reproducible.
  - LGPL v3 license could be considered.

Software and patents – some personal thoughts

- In theory, the software can be patented
- Software patents constitute a problem for everybody
- Patenting software is expensive
- The *European Patent Convention* claims that SW is not patentable
  - However the *European Patent Office* thinks otherwise
  - Very different w.r.t. situation in the US
- Using patented software is a liability for any organization using it (future sues for royalties, competitors etc.)
- Intellectual property should be only covered by Copyright
- We discourage our contributors to patent their software and we may even not be able to accept their contribution if this is the case
  - Each case shall be studied independently

Protection from patents: personal thoughts on Apache 2.0 license

Apache 2.0 is an alternative open-source permissive license that we considered instead of the BSD-3

Pros

- Covers patent grant by embedding a Contribution Level Agreement - “patent protection
- Used quite a lot in the community

Cons

- Much more complex text
- Some reduced compatibility
- It requires that in every change a notification stating what was changed (at the code and/or in a NOTICE file)

Notes on “patent protection”

- It is not clear up to what extent this extra protection is real in the of going to EU court.
- The risk won’t be on the CTAO side, but on the side of 3rd parties using our software (in case we would like to request royalties to them because we patented the code – that we won’t)
- What we need to ensure is that
  - Our contributors do not patent the code (or, if they do, we need to look into the details and the CLA).
  - Appropriate analysis of licenses for code or libraries we use in derived CTA – reject usage of those risky.

Acknowledgements

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