BITKOM AK Open Source, June 12 & July 3, 2024, Online

License Clearance made easy with the Open DALICC Framework

www.dalicc.net

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Website: www.dalicc.net
www.github.com/dalicc

In a nutshell ...

In Brief ...

- DALICC = Data Licenses Clearance Center
- open source project - non-profit association
- Code and data available under open licenses (MIT, CC-BY) @ www.github.com/dalicc
- Founded: 2022; spin off from a cooperative research project conducted by UAS St. Pölten
- Team: https://www.dalicc.net/dalicc-association/team/

Tassilo Pellegrini
CEO

Giray Havur
CTO

Sebastian Neumaier
CCO

Susanne Roiser
CFO

Markus Dörfler
CLO

Goals ...

- Increase awareness about licencing
- Provide tools for license and policy management
- Engage in community activities

Awards ...

- 2017 ... Winner of IMAGINE ICT Idea Contest
- 2019 ... Lower Austrian Innovation Award
- 2021 ... AWS Prototype Grant
- 2022 ... netidee Data Understanding Award

Daily routine of a developer ...

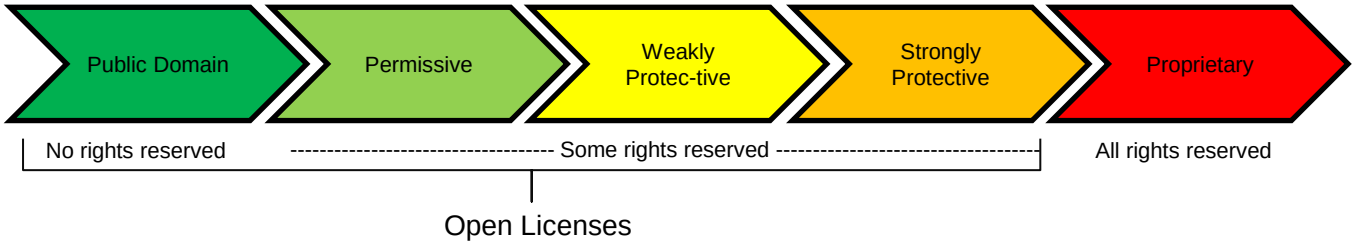
Open Licensing … not that straight forward!

Openness: normative approach

“Open means **anyone** can **freely access, use, modify, and share** for **any purpose** (subject, at most, to requirements that preserve provenance and openness).”

http://opendefinition.org/

Openness: pragmatic approach



(Not so) Simple examples that require clearing …:

- Can I use a picture licensed under CC-BY-NC in my OA publication available under CC-BY?
- I have created a new software containing some APACHE-licensed components? Can is publish this software under a GPL license?
- My dataset is compiled of three sources licensed under MIT, APACHE and ODBL? Can I derive a new dataset from this?
- What is the license for republishing?
- Do I need to attribute and how do I do it correctly?
- Can I impose conditional access obligations to ths work?

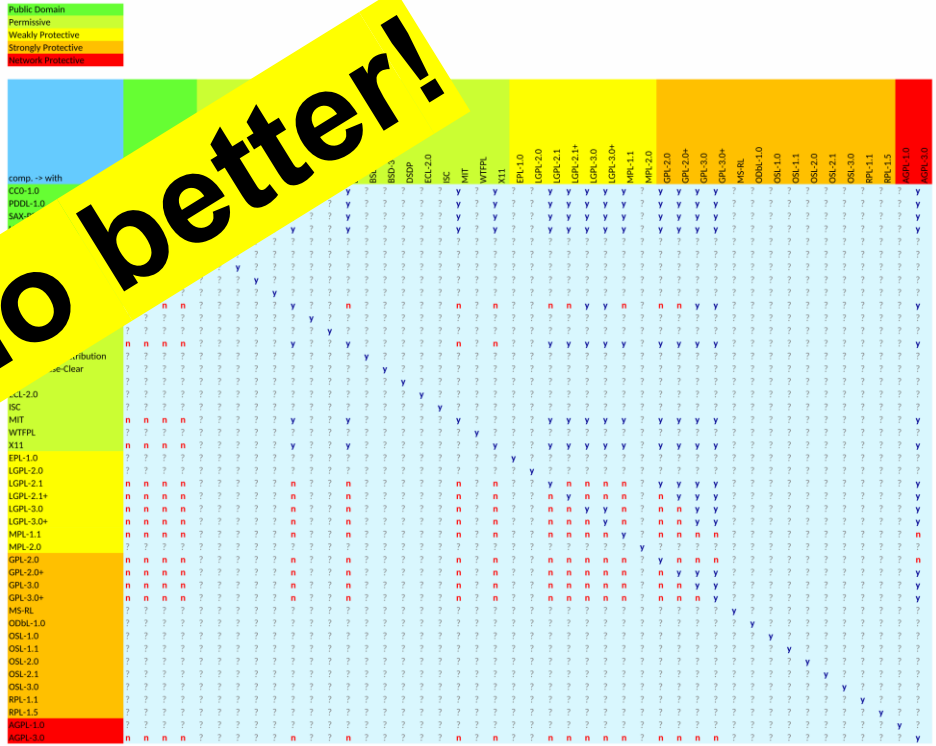
License Compatibility Matrix

DATA LICENSES CLEARANCE CENTER

Creative Commons

	PUBLIC DOMAIN	PUBLIC DOMAIN	BY	BY SA	BY NC	BY ND	BY NC SA	BY NC ND
PUBLIC DOMAIN	✓	✓	✓	✓	✓	✗	✓	✗
PUBLIC DOMAIN	✓	✓	✓	✓	✓	✗	✓	✗
BY	✓	✓	✓	✓	✓	✗	✓	✗
BY SA	✓	✓	✓	✓	✗	✗	✗	✗
BY NC	✓	✓	✓	✗	✓	✗	✓	
BY ND	✗	✗	✗	✗	✗	✗		
BY NC SA	✓	✓	✓	✗	✓			
BY NC ND	✗	✗	✗	✗				✗

Open Source



We must do better!

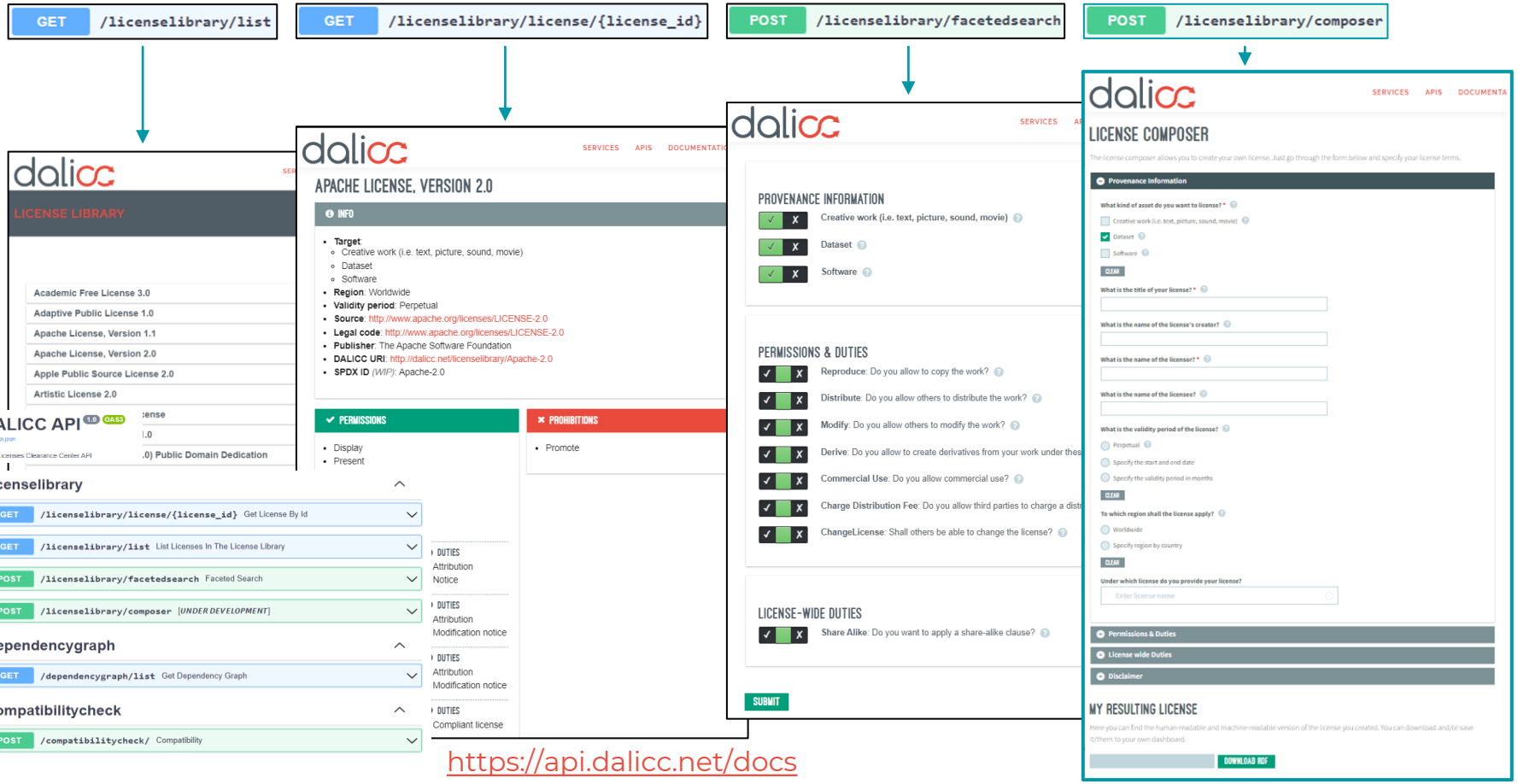
… and the plot thickens …

Who is DALICC for?

DALICC: Framework & Resources

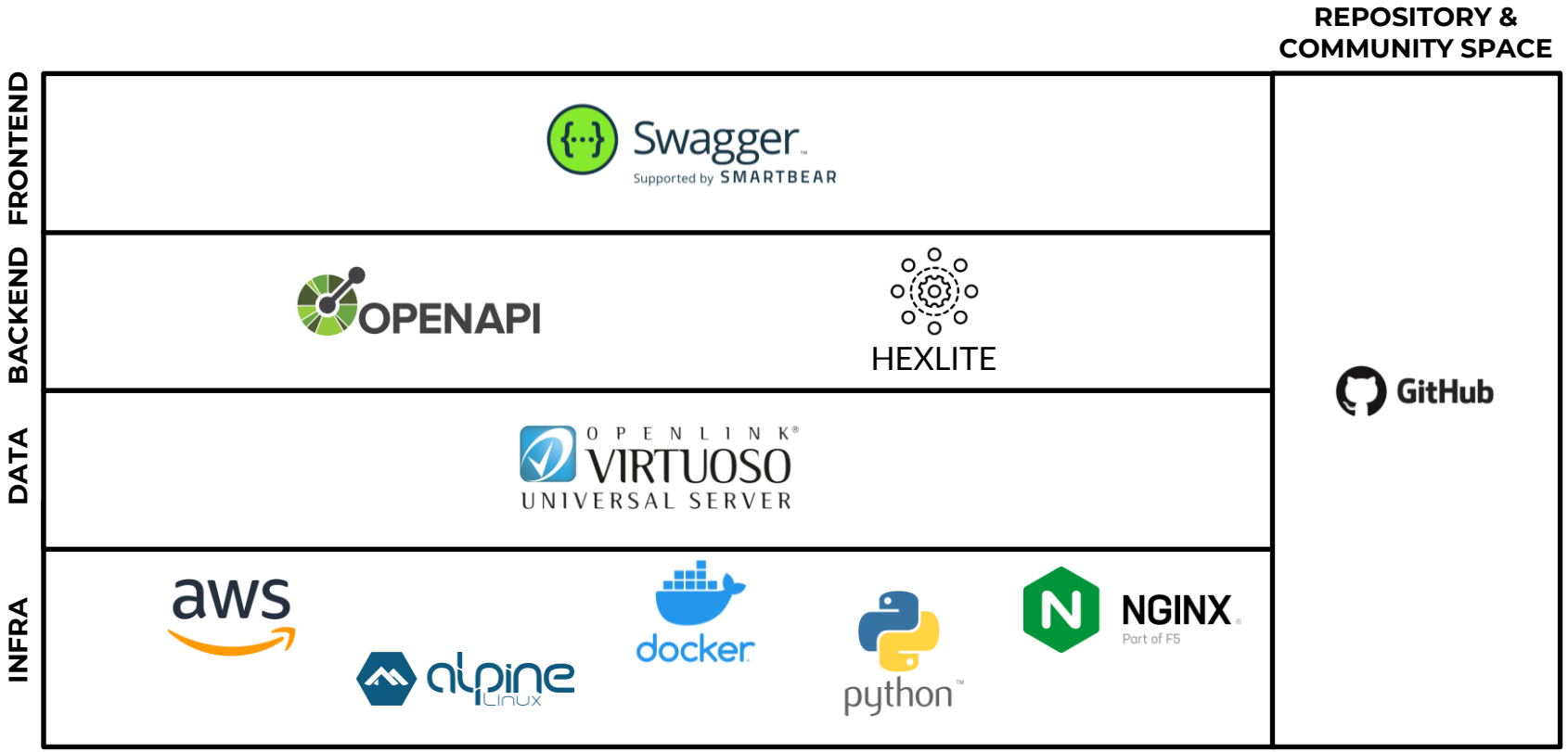
www.dalicc.net

Service UIs at dalicc.net



https://api.dalicc.net/docs

Technology Stack



Data Model
License Representation

My license

\+ Permissions

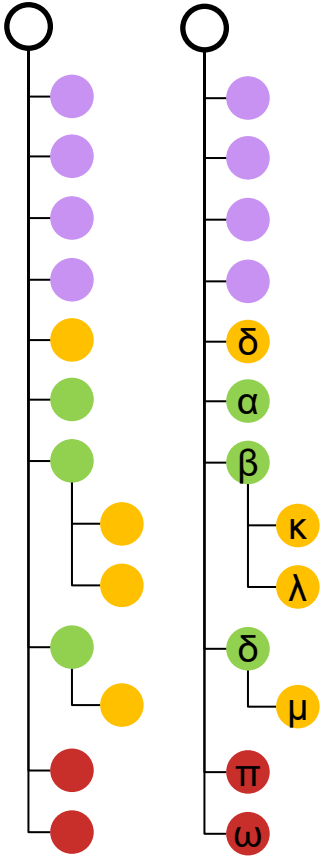
\- Prohibitions

! Duties

* Other data
(e.g., provenance)

URI: https://api.dalicc.net/web/license/Apache-2.0

My license



Vocabulary

ODRL
odrl: http://www.w3.org/ns/odrl/2/

CCRel
cc: http://creativecommons.org/ns#

Dublin Core
dcmitype: http://purl.org/dc/dcmitype/
dct: http://purl.org/dc/terms/

Schema.org
scho: http://schema.org/

opensource.org
osl: http://opensource.org/licenses/

FOAF
foaf: http://xmlns.com/foaf/0.1/

DALICC
dalicc: http://dalicc.net/ns#
dalicclib: http://dalicc.net/licenselibrary/

Semantic Interoperability!

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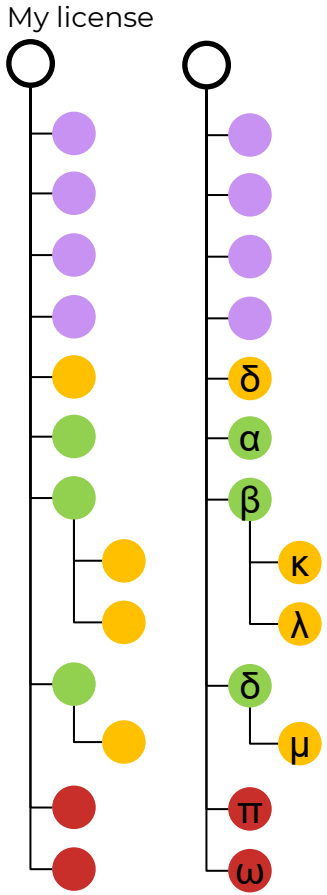


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dalicclib:myLicense a odrl:Set ;
  dct:title "My License" ;
  cc:jurisdiction dalicc:worldwide ;
  cc:license dalicclib:CC-BY_v4 ;
  dalicc:validityType dalicc:perpetual ;
  odrl:duty [ a odrl:Duty;
              odrl:action δ ],
  odrl:permission [ a odrl:Permission ;
          odrl:action α ],
  odrl:permission [ a odrl:Permission ;
          odrl:action β ;
          odrl:duty [ a odrl:Duty ;
                  odrl:action κ ],
          odrl:duty [ a odrl:Duty ;
                  odrl:action λ ] ],
  odrl:permission [ a odrl:Permission ;
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                  odrl:action μ ] ];
  odrl:prohibition [ a odrl:Prohibition ;
          odrl:action π ],
                    [ a odrl:Prohibition ;
          odrl action ω ] .
```

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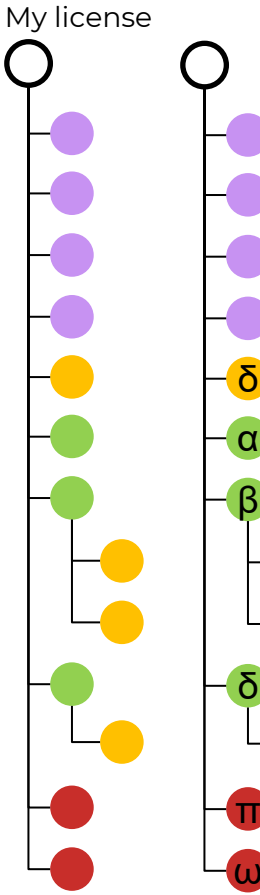

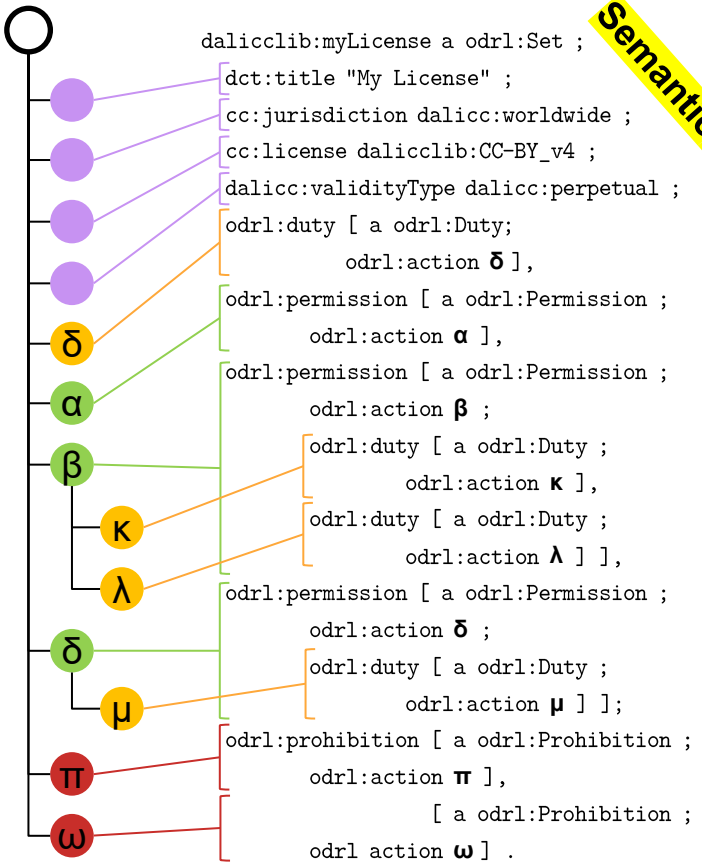


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Semantic Interoperability!

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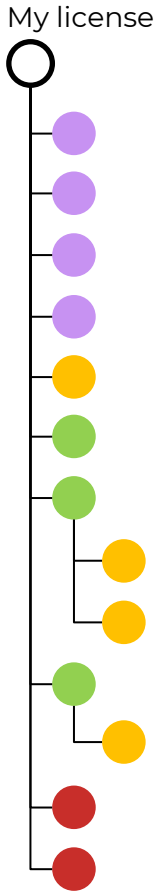
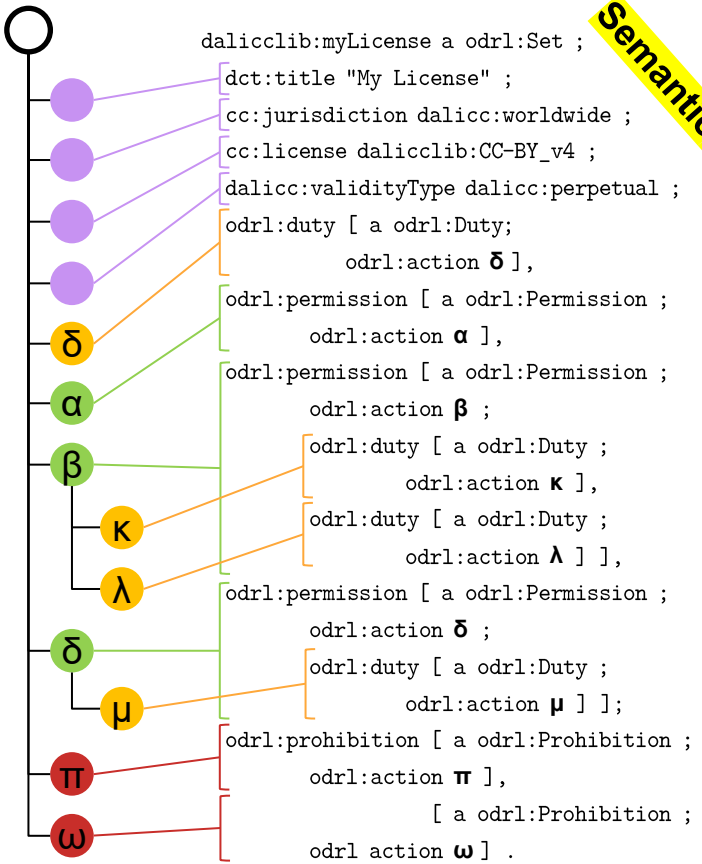
DALICC Vocabulary Documentation @
https://docs.dalicc.net/



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```
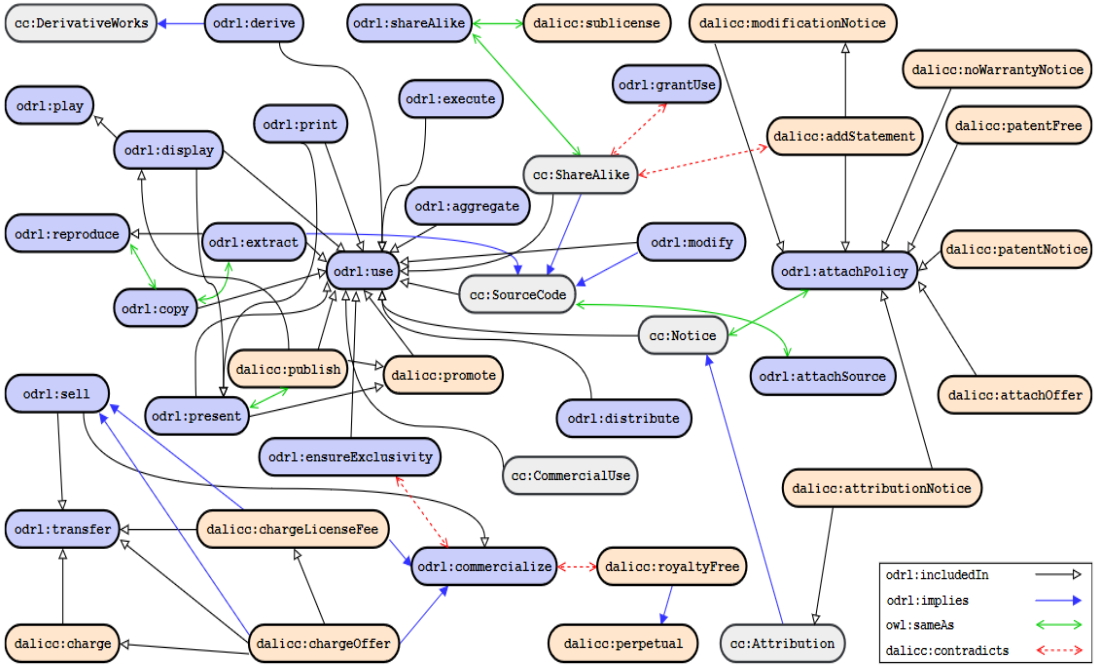

Semantic Interoperability!

Data Model
Dependency Graph

In **deontic reasoning** a **dependency graph** describes conditional relations between actions.

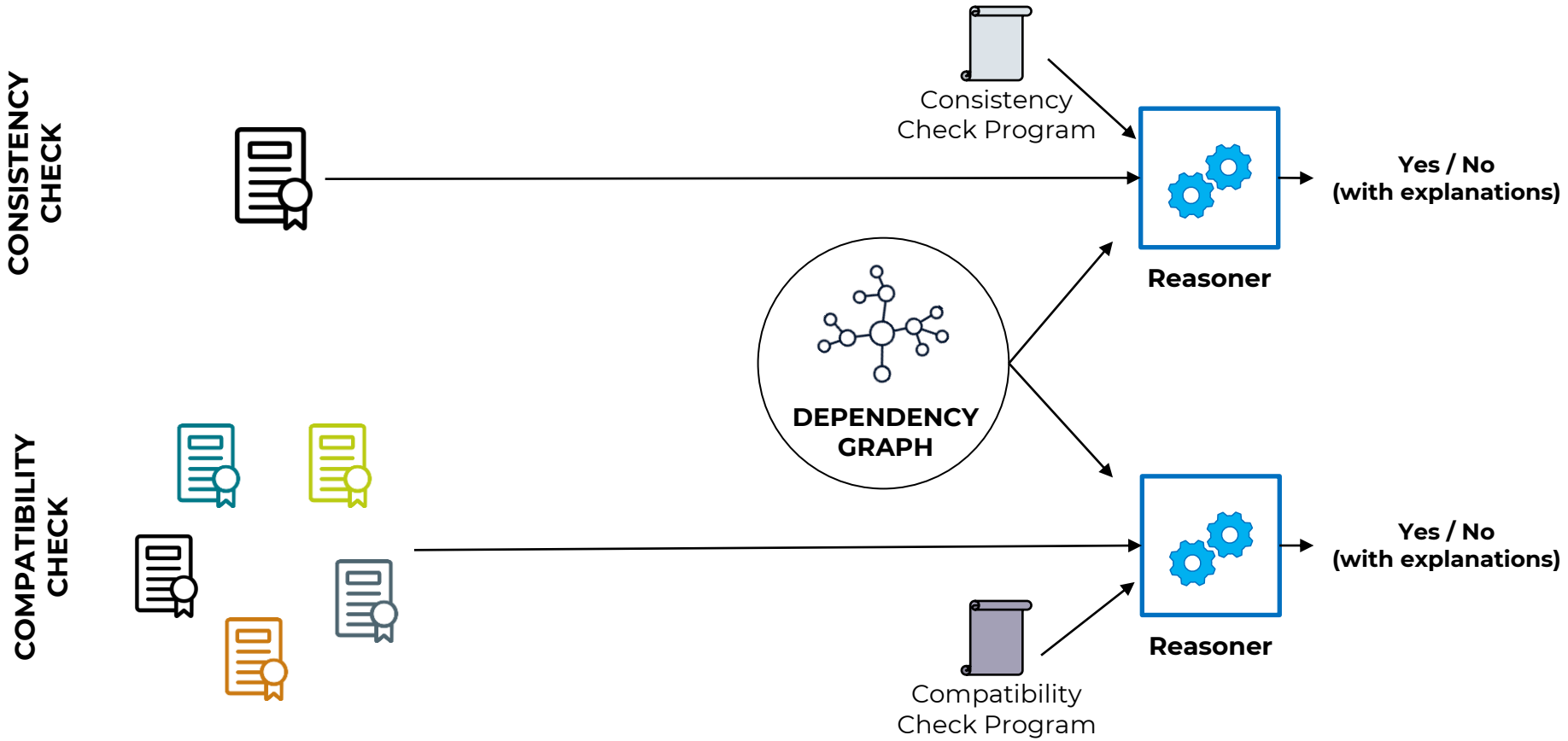


Data Model
Dependency Graph

Encoding the explicit and implicit semantic relationships between defined actions

1. ***hierarchical relationships between action***
   - **α** `odrl:includedIn` **β** : all Rules defined for β must also hold for α, but not necessarily vice versa.
     - e.g., `odrl:display odrl:includedIn odrl:present.`
2. ***implications derived from a specific action***
   - **α** `odrl:implies` **β** : a Prohibition of β conflicts a Permission of α, but not necessarily vice versa.
     - e.g., `cc:Attribution odrl:implies cc:Notice.`
3. ***equalities***
   - **α** `owl:sameAs` **β** : all Rules defined for β must also hold for α, and vice versa.
     - e.g., `odrl:copy owl:sameAs odrl:reproduce.`
4. ***contradictions between specific actions***
   - **α** `dalicc:contradicts` **β** : a Permission of β conflicts a Permission of α, and vice versa.
     - e.g., `cc:ShareAlike dalicc:contradicts dalicc:addStatement.`

Reasoning Tasks
Overview



DALICC: The road ahead ...

www.dalicc.net

Extending the License Library + Composer Functionality

Status Quo:

- Currently 344 (legally approved) open licenses in the library
- https://www.dalicc.net/license-library/

Next steps:

- Which licenses shall be added? (i.e. DANS / Dataverse)
- How can the process of license composition be eased, under special consideration of customized licenses?
- Shall non-IPR usage restrictions (i.e. GDPR, AI Act) become part of the licensing policy or should they be modelled and processed seperatelly?

Discussion Point 2
Supporting License Management for End Users

Status Quo:

- No user management currently available

Next steps:

- What end user functionalities are necessary and required for end user license management (i.e. attribution support service; geo-, time- & behaviour-related clauses)?
- What mechnisms can be applied to prevent fraudolent licensing and/or vadalising the system?
- What system can we build upon to combine conditional access with open licensing?

Discussion Point 4
Policy Reasoning Experiments + Collaborative Editing

Status Quo:

- Reasoner is in place & running
- https://api.dalicc.net/docs#/compatibilitycheck/compatibility_compatibilitycheck__post

Next steps:

- What can be done to improve / increase the expressivity of the license checking?
- Which (additional) integration scenarios shall we cover that address licensing issues?
- Is there a need for a rule editor for compatibility checks?
- What is the reasoner‘s potential beyond licensing policies?
- What could be an appropriate end user interface for the service and its output?

Discussion Point 3
Visualizing Licenses for better Literacy

Status Quo:

- Existing visualizations are nice, but expressivity is limited.
- https://www.dalicc.net/license-library/

Next steps:

- What are new and appropriate visualization to display licensing information in a user friendly manner --- especially to stimulate learning about licensing?
- What public awareness and story telling techniques can be applied to illustrate the practical relevance of automated license processing (i.e. in related areas such as sustainability data)?

Conclusion

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dalicc DATA LICENSES CLEARANCE CENTER
fh st.pölten

Learnings and Conclusions

(Hybrid) Licensing (open + closed) is a **strategic key competence** in digital business management – but it is still perceived as an orchid theme.

Due to **lack of machine-readability** existing license support systems fail to **close the gap between IPR management and access management** – fulfilling the (unholy) promises of DRM.

Improving on **semantic interoperability** is a key requisite to cater for truly **policy-aware systems** – a critical building block for industrial automation.

Machine-prcdessable licenses allow to **integrate usage rights into the broader context of distributed data management** – a precondition for connected dataspaces and large scale data infrastructures.

Let there be URIs:
https://api.dalicc.net/web/license/MIT

Thank you for your attention!

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giray.havur@fhstp.ac.at

Website: www.dalicc.net

Acknowledgments:

Between November 2016 - October 2018 DALICC was funded by the Austrian Federal Ministry of Transport, Innovation and Technology (BMVIT) under the program "ICT of the Future".

In 2021 DALICC is funded by the Austria Wirtschaftsservice Gesellschaft mbH (aws), the promotional bank of the Austrian federal government.

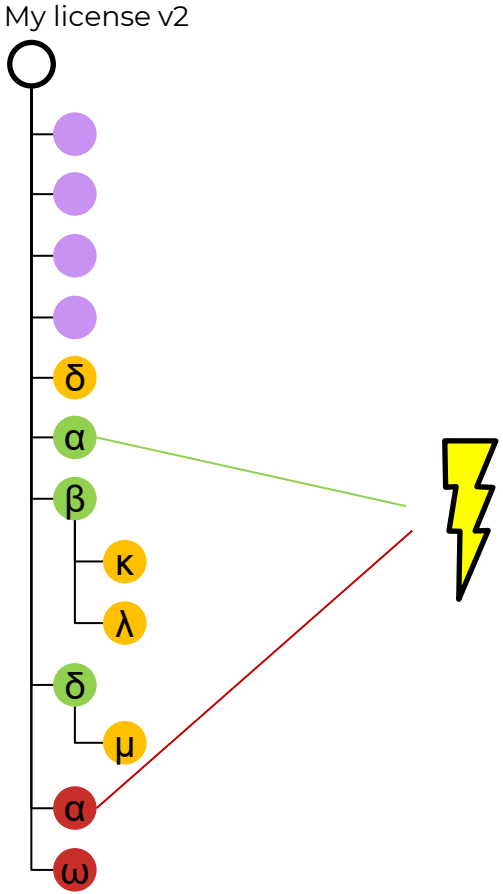
Since 01.01.2022 DALICC is funded by netidee Internet Stiftung.

Awards:

- 2017 … Winner of IMAGINE ICT Idea Contest
- 2019 … Lower Austrian Innovation Award
- 2021 … AWS Prototype Grant
- 2022 … netidee Data Understanding Award

Backup slides

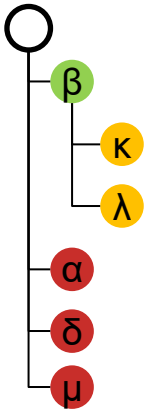
Reasoning Tasks
Consistency Check



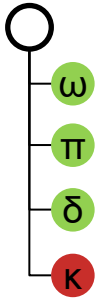
Reasoning Tasks
Compatibility Check

License-1

License-2



License-3

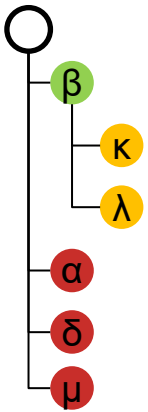


DERIVED CONFLICTS

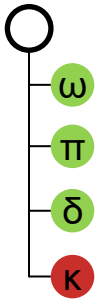
Reasoning Tasks
Compatibility Check

License-1

License-2



License-3



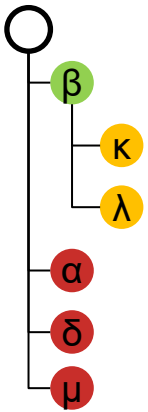
DERIVED CONFLICTS

L1, α permitted **x** L2, α prohibited
L1, δ obliged **x** L2, δ prohibited
L3, π permitted **x** L1, π prohibited

Reasoning Tasks
Compatibility Check

License-1

License-2



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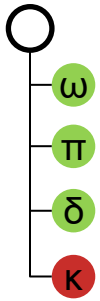

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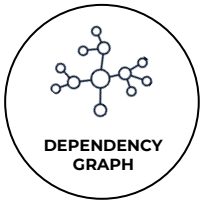

κ owl:sameAs **β**

Reasoning Tasks
Compatibility Check

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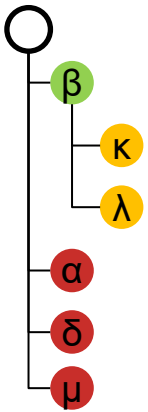
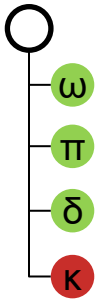
License-2



License-3



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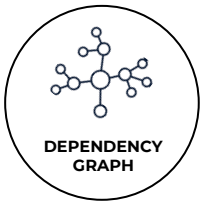

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Reasoning Tasks
Compatibility Check

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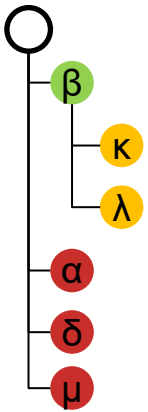

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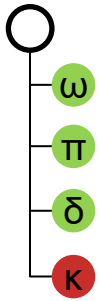

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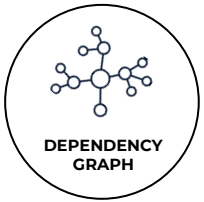
hierarchical relationships between action

- **α** `odrl:includedIn` **β** : all Rules defined for **β** must also hold for **α**, but not necessarily vice versa.
  - e.g., `odrl:display` `odrl:includedIn` `odrl:present`.



κ owl:sameAs **β**
ω odrl:includedIn **α**

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Compatibility Check

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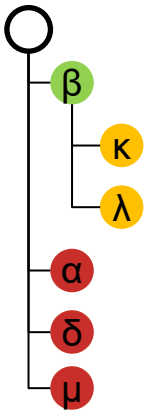
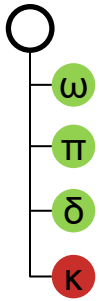
License-2



License-3



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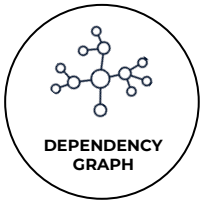

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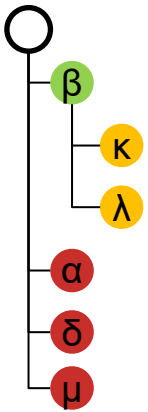
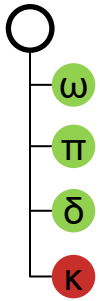
Reasoning Tasks
Compatibility Check

License-1

License-2



License-3

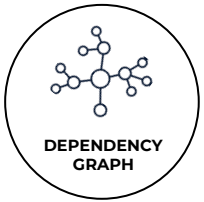


DERIVED CONFLICTS

L1, α permitted **x** L2, α prohibited
L1, δ obliged **x** L2, δ prohibited
L3, π permitted **x** L1, π prohibited
L2, β permitted **x** L3, κ prohibited

hierarchical relationships between action

- **α** `odrl:includedIn` **β** : all Rules defined for **β** must also hold for **α**, but not necessarily vice versa.
  - e.g., `odrl:display odrl:includedIn odrl:present.`



κ owl:sameAs **β**
α odrl:includedIn **ω**

Reasoning Tasks
Compatibility Check

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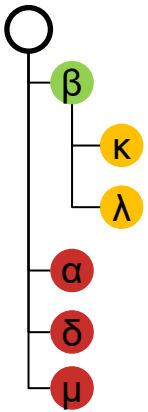
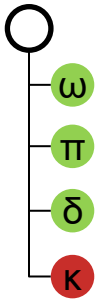


License-3



DERIVED CONFLICTS

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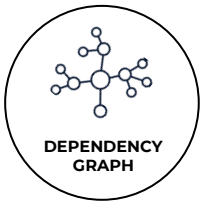
L1, δ obliged **x** L2, δ prohibited
L3, π permitted **x** L1, π prohibited
L2, β permitted **x** L3, κ prohibited

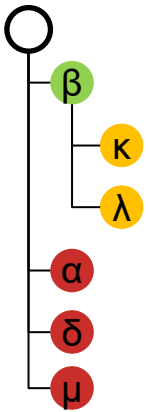


κ owl:sameAs **β**
α odrl:includedIn **ω**

Reasoning Tasks
Compatibility Check

License-1

License-2



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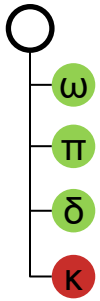

DERIVED CONFLICTS

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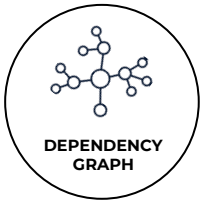
L1, δ obliged **x** L2, δ prohibited
L3, π permitted **x** L1, π prohibited
L2, β permitted **x** L3, κ prohibited

implications derived from a specific action

- **α** `odrl:implies` **β** : a Prohibition of **β** conflicts a Permission of **α**, but not necessarily vice versa.
  - i.e., a Prohibition of **α** is not in conflict with a Permission of **β**
  - e.g., `cc:Attribution odrl:implies cc:Notice.`



κ owl:sameAs **β**
ω odrl:implies **α**

Reasoning Tasks
Compatibility Check

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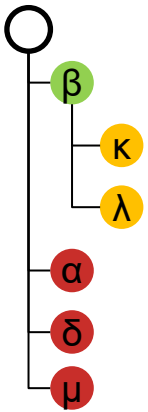

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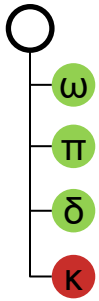
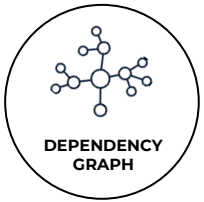


DERIVED CONFLICTS

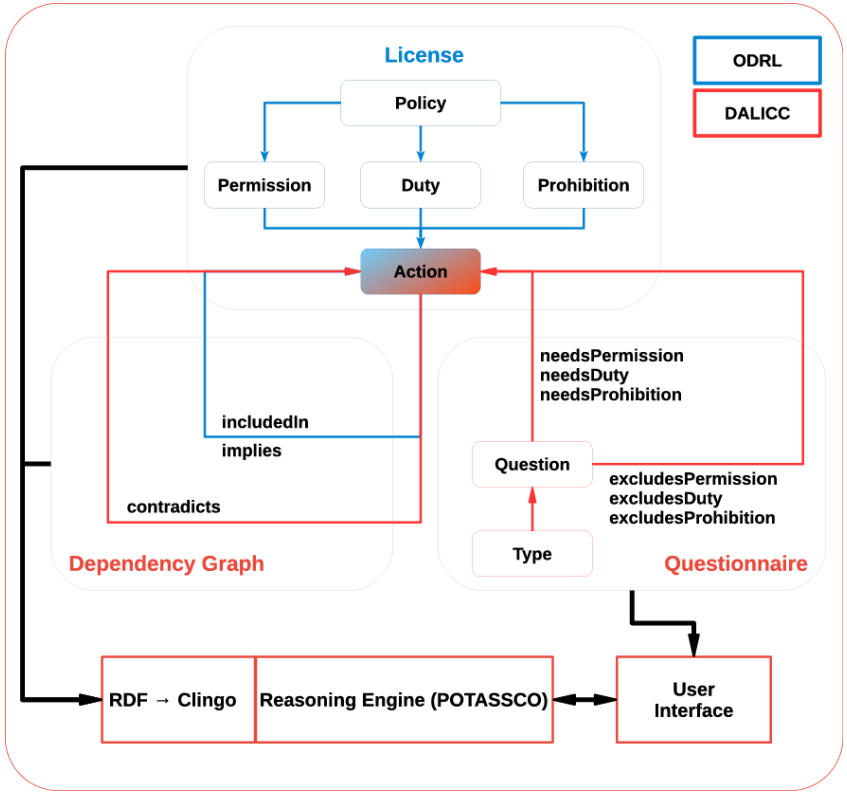
L1, α permitted **x** L2, α prohibited
L1, δ obliged **x** L2, δ prohibited
L3, π permitted **x** L1, π prohibited
L2, β permitted **x** L3, κ prohibited
L3, ω permitted **x** L2, α prohibited

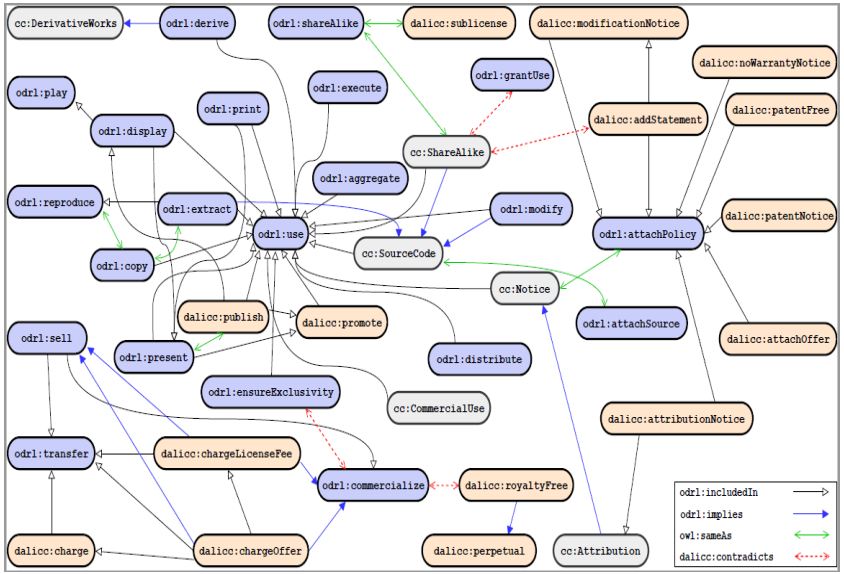


κ owl:sameAs **β**
ω odrl:implies **α**

DALICC Knowledge Graph & Architecture

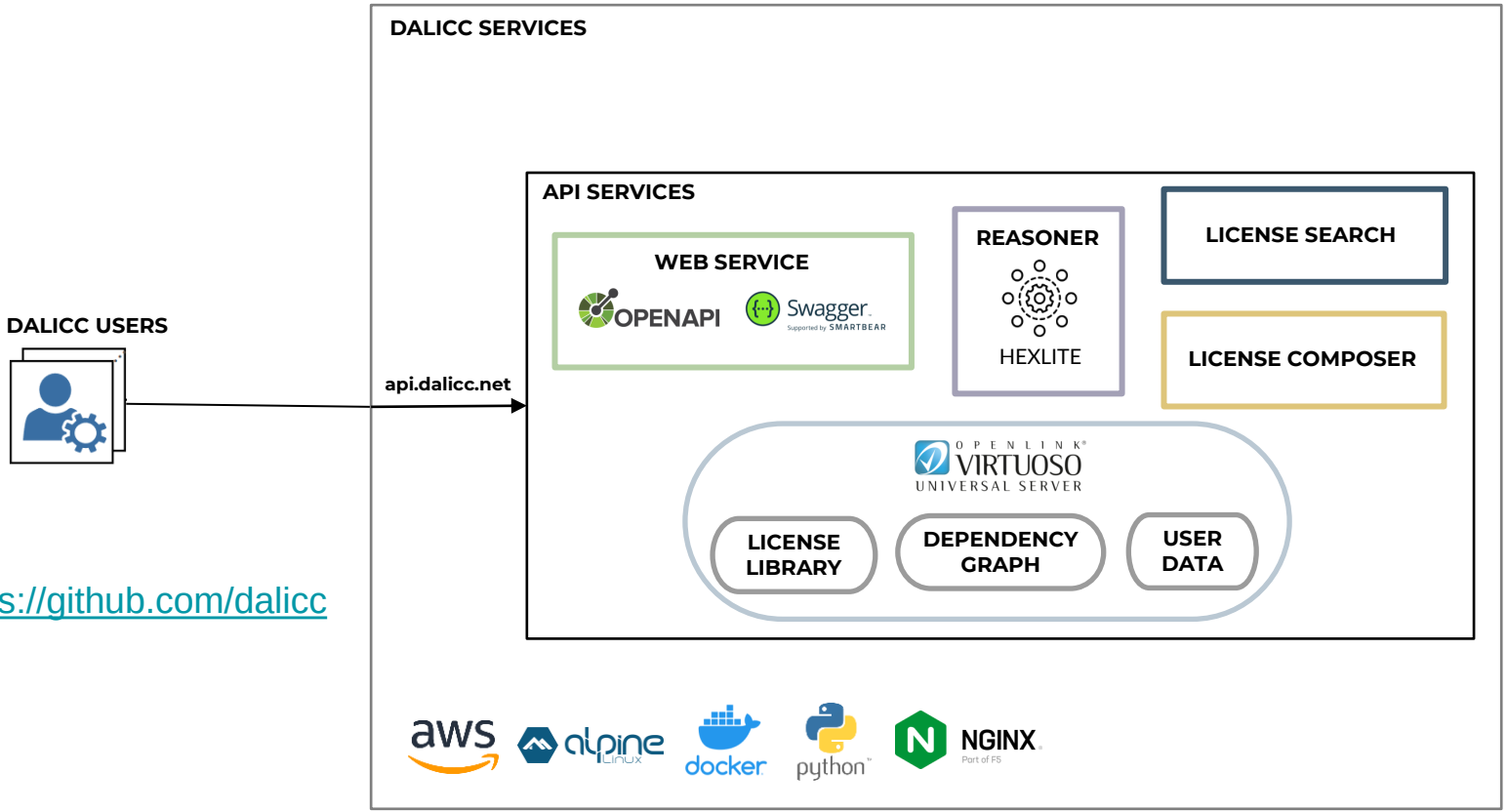
License „Ontology“





Dependency Graph

Framework



https://github.com/dalicc

Service Portfolio

License Library (incl. Search): Allows a user to find and select from available licenses.

License Composer: Allows a user to create customized licenses.

License Negotiator: Checks compatibility, detects conflicts and supports conflict resolution.

License Annotator: Provides machine-readable and human-readable versions of licenses.

License Dashboard: Allows a user to manage his license portfolio and licensing projects.

Legal Audits: Get a legal audit of your licensing project!

Maintenance: New features, updates, performance improvements & security

Developer Community: Extensions and PlugIns

Knowledge Base: Learning material and educational resources