

## Spectrum of Licenses

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## Making Sense of OSS Licenses

- What is similar among them?
  - Open Source Definition
- What is different among them?
  - reciprocity
  - sublicensing
  - patent grants
  - patent retaliation
- How can we compare them?
  - create a scale to measure degree of restrictions



## The Open Source Definition

1. Free Redistribution
  - including as component of other software
2. Source Code
  - included or available, in preferred form
3. Derived Works
  - modifications can be licensed the same



## The Open Source Definition

4. Integrity of Author's Source Code
  - may distribute derivative works, but might need name change or use patch files
5. No Discrimination Against Persons/Groups
  - nor can you give one company extra rights
6. No Discrimination Against Fields of Endeavor
  - cannot forbid use in particular industries



## The Open Source Definition

7. Distribution of License
  - all 3rd parties; no other required license
8. License Must Not Be Specific to a Product
  - same rights if extracted and used elsewhere
9. License Must Not Restrict Other Software
  - if simply distributed on same medium
10. License Must Be Technology-Neutral
  - cannot require “I accept” button



## Distinguishing 58 Licenses

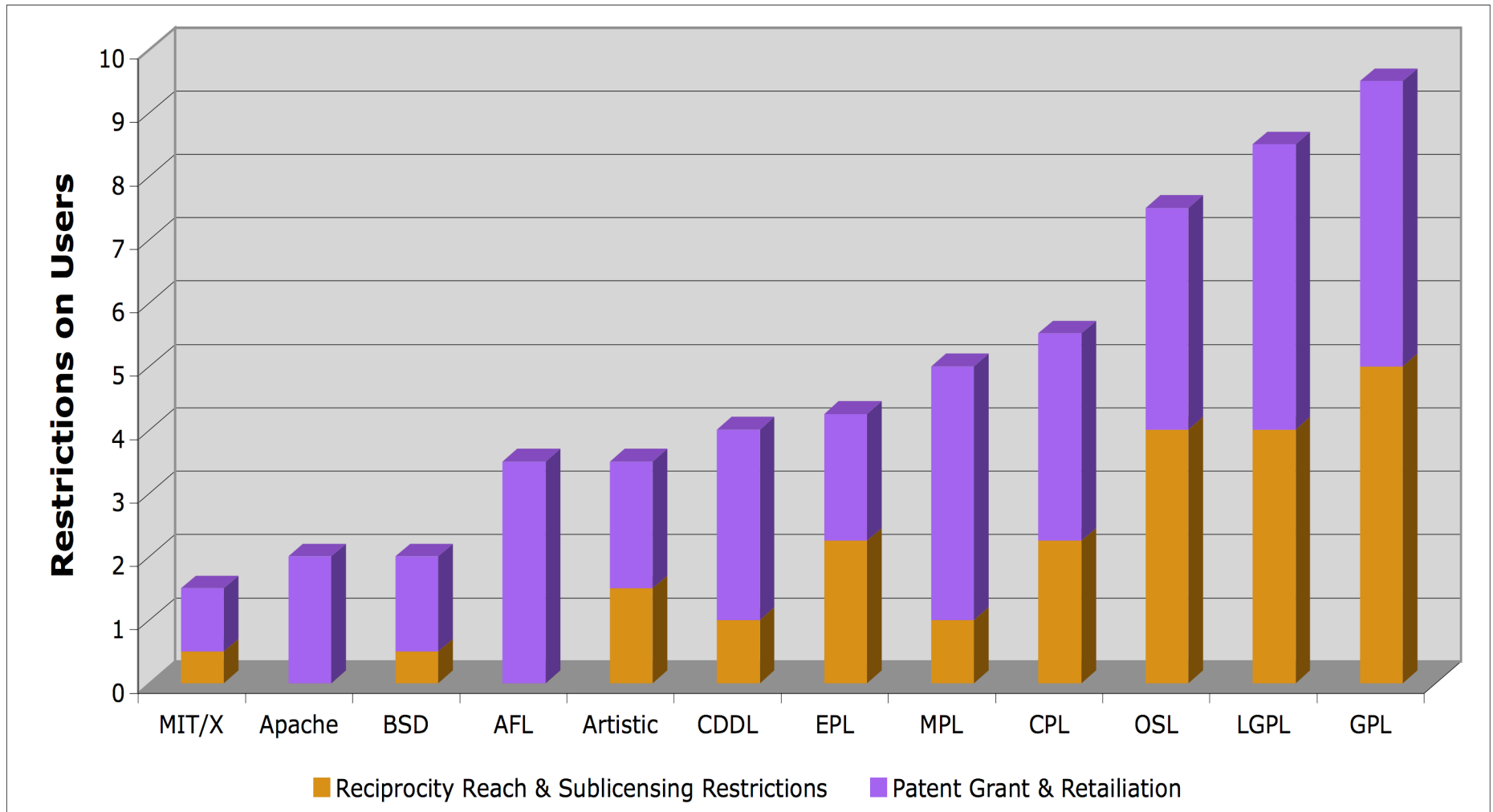
- Academic Free License (AFL)
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- Open Software License
- PHP License
- Python License (CNRI Python License)
- Python Software Foundation License
- Qt Public License (QPL)
- RealNetworks Public Source License V1.0
- Reciprocal Public License
- Ricoh Source Code Public License
- Sleepycat License
- Sun Industry Standards Source License (SISSL)
- Sun Public License
- Sybase Open Watcom Public License
- University of Illinois/NCSA Open Source License
- Vovida Software License 1.0
- W3C License
- wxWindows Library Licence
- X.Net License
- zlib/libpng License
- Zope Public License



## Comparing All in One Graph

and now for a preview of  
the result of the next 30 minutes...





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## Definitions

- License
  - permission to commit an otherwise unlawful act
- Sublicense
  - grant of portion of rights received
- Reciprocity
  - requirement to license distribution of derivative works under the same license as the original work
- Patent Retaliation
  - termination of grants as a result of patent action



## Distinguishing Features

- Must provide complete source or ability to get it
  - MPL, CDDL, CPL, EPL, OSL, etc
- Prohibition on charging royalties on derivative works
  - GPL, LGPL
- Requirement to note modifications to each version
  - Yes: GPL, LGPL, Apache, MPL, CDDL, Perl, AFL, OSL
  - No: CPL, BSD, MIT, EPL
- Can impose new license restrictions on modified copies
  - Yes: MPL, CDDL, CPL, EPL, Apache, Perl, MIT, BSD
  - No: GPL, LGPL, AFL, OSL



## Distinguishing Features

- Degree of reciprocity
- Sublicensing options
- Patent Grant
- Patent Retaliation



## Reach of Reciprocity

0: none

1.0: file reciprocity

1.5 module *restrictions*

2.0: module reciprocity

-or- (file reciprocity + hosting impact)

3.0: derivative reciprocity

4.0: (derivative reciprocity + container *restrictions*)

-or- (derivative reciprocity + hosting impact)

5.0: container reciprocity



## Sublicensing Options

- 0: explicit rights to sublicense under other agreements
- 1.0: implicit ability to sublicense under other agreements
- 3.0: source:same license; binary:other agreements
- 4.0: sublicense source/binary under same terms;  
no royalties allowed
- 5.0: no sublicense; direct license from author



## Patent Grant

0: explicit patent grant

1.0: implicit, not well-defined

2.0: no patent grant



## Patent Retaliation

- Key aspects of patent retaliation clauses:
  1. what triggers the termination of rights?
  2. which rights are terminated?
- Institution of patent litigation is typical trigger, but
  - against whom and for what?



## Patent Retaliation

1. Patent Litigation Trigger:
  - a. against anyone for the work  
(or a Contribution incorporated within the Work\*)
  - b. against anyone for anything based on the work
  - c. against the contributor for the work
  - d. imposition of conditions contradicting license
  - e. against the contributor for any software  
(or any hardware or device\*)
  - f. against the contributor for anything,  
if the contributor didn't sue first





## Patent Retaliation

### 2. Results in Termination of:

- v. patent grants from the contributor being sued
  - w. copyright & patent rights from contributor being sued
  - x. patent grants from any contributor
  - y. the right to distribute the work
  - z. the entire license
- (or the just the rights to 'modify and run the Program'\*)



## Triggers and Results

AFL,OSLv2.1+:	a -> z
Artisticv2beta15:	a -> z
Apachev2:	a*-> x
EPL,CATOSL:	a -> x
CPL,IPL,Lucent:	a -> x + e -> v
MPL,SPL,Nokia,Richoh:	c -> w + e*-> v
Reciprocal:	c -> w + a -> z
Motosoto:	c -> w
CDDL:	c -> z
Apple,Sybase,Real:	f -> z
GPLv2,LGPLv2.1,OCLC:	d -> y
GPLv3dd1:	d -> y + b -> z*



## Patent Retaliation: Trigger

- 0: None
- 1.0: against contributors for work
- 2.0: against anyone for work
- 3.0: any restrictions on royalty-free distribution
- 4.0: against contributor for any software
- 5.0: against contributor for any software, hardware, or device



# Patent Retaliation: Termination

0: None

1.0: Loss of patent grants from contributor

2.0: Loss of patent grants from all contributors

4.0: May not distribute

5.0: Loss of all copyright and patent rights



## Note about Calculations

- Patent Retaliation score = average of:  
*litigation trigger* score  
&  
*termination details* score
- When two different retaliations in same license  
total score =  $\log_2 (2^{\text{score1}} + 2^{\text{score2}})$
- However, the following may warrant a score of 0, rather than 2:
  - removing rights for claims against users of the work



## Analyzing a Dozen Licenses

1. GPL
2. LGPL
3. Artistic License v1
4. CPL
5. EPL
6. Apache License
7. MPL
8. CDDL
9. BSD
10. MIT
11. AFL
12. OSL



## GPL v2

- Reach: **5**
  - reciprocity covers container/derivative works
- Sublicense: **5**
  - no sublicense; license granted from original author upon each distribution
- Patent Grant: **1**
  - no explicit patent grant, but license implies one
- Retaliation: **3.5**
  - no distribution unless everyone can distribute RF



## LGPL v2.1

- Reach: **4**
  - covers containers/derivative works, but only restricts (does not require reciprocity) of licenses
- Sublicense: **5**
  - same as GPL
- Patent Grant: **1**
  - same as GPL
- Retaliation: **3.5**
  - same as GPL





## Artistic v1

- Reach: **1.5**
  - provided you either make it “Freely Available” or rename non-standard executable
- Sublicense: **1**
  - distribute in aggregate with other programs as part of a larger (possibly commercial) distribution
- Patent Grant: **2**
  - none
- Retaliation: **0**
  - none



## CPL v1.0

- Reach: **2.5**
  - “do not include additions to the Program which:  
(i) are separate modules of software distributed in conjunction with the Program under their own license agreement, and  
(ii) are not derivative works of the Program.”
- Sublicense: **3**
  - may sublicense object code under other agreements if license includes notices and disclaimers



## CPL v1.0 (continued)

- Patent Grant: **0**
  - explicit grant for contribution and combination
- Retaliation: **3.3**
  - patent litigation against *a Contributor* with respect to *a patent applicable to software*:
    - then Contributor licenses terminate
  - patent litigation against *any entity* alleging that *the Program itself* infringes Recipient's patent(s):
    - then rights granted under Section 2(b) terminate



## EPL v1.0

- Reach: **2.5**
  - same as CPL
- Sublicense: **3**
  - same as CPL
- Patent Grant: **0**
  - same as CPL
- Retaliation: **2**
  - only second part of patent retaliation clause
  - very similar to Apache License



## Apache License v2

- Reach: **0**
  - not reciprocal
- Sublicense: **0**
  - “may provide additional or different license terms and conditions of Your modifications”
- Patent Grant: **0**
  - explicit grant for contribution and combination
- Retaliation: **2**
  - very similar to EPL



## MPL v1.1

- Reach: **1**
  - file-based reciprocity
- Sublicense: **3**
  - redistribute executable under own terms
- Patent Grant: **0**
  - explicit patent grant for “contributor version”
- Retaliation: **4**
  - lose Contributor’s patent & *copyright grants* if assert claim against Contributor for work
  - lose Contributor’s patent grants if assert patent claim against any “software, hardware, or device”



## CDDL v1.0

- Reach: **2**
  - same as MPL 1.1 + “or otherwise make available”
- Sublicense: **3**
  - same as MPL 1.1
- Patent Grant: **0**
  - same as MPL 1.1
- Retaliation: **3**
  - lose *all* patent & *copyright grants* if assert claim against any *contributor* for the work



## BSD

- Reach: **0**
  - not reciprocal
- Sublicense: **1**
  - no mention of sublicense, but often assumed
- Patent Grant: **1.5**
  - no patent grant, just the word “use”
- Retaliation: **0**
  - none





## MIT

- Reach: **0**
  - same as BSD (not reciprocal)
- Sublicense: **1**
  - “sublicense” is explicit, sublicense flexibility is implicit
- Patent Grant: **1**
  - not explicit terms, but use of words “use” and “sell”
- Retaliation: **0**
  - same as BSD (not reciprocal)



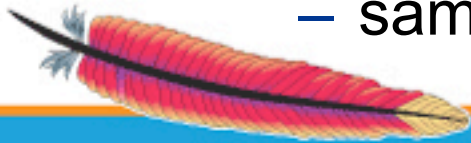
## AFL v2.1/3.0

- Reach: **0**
  - not reciprocal
- Sublicense: **0**
  - “any license of your choice that does not contradict the terms and conditions”
- Patent Grant: **0**
  - explicit grant for the work
- Retaliation: **3.5**
  - termination of entire license if sue any licensee



## OSL v2.1/3.0

- Reach: **4**
  - reciprocal: distribution = *“use...of the Original Work or Derivative Works in any way such that [it] may be used by anyone other than You”*
- Sublicense: **4**
  - may only sublicense under same terms
- Patent Grant: **0**
  - same as AFL
- Retaliation: **3.5**
  - same as AFL



ApacheCon

# The Big License Bar Graph



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## Simplified Calculations

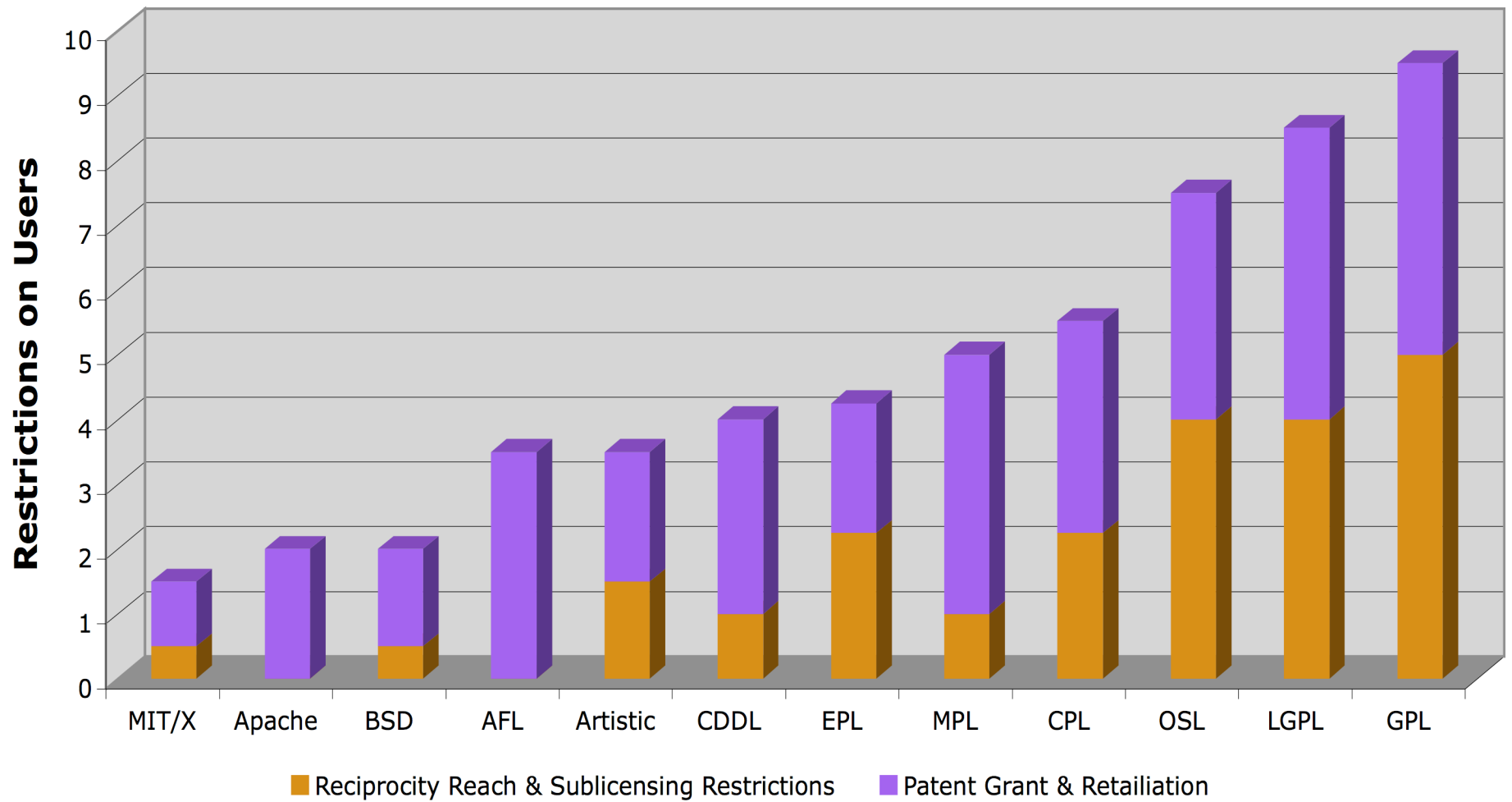
### Reciprocity Reach & Sublicensing Restrictions

- 0: No reciprocity & explicitly flexible sublicensing
- 0.5: No reciprocity & flexible sublicensing
- 1.0: File reciprocity & source sublicensing restrictions
- 1.5: Module restrictions & minor src/bin sublicensing restrictions
- 2.0: Module reciprocity & source sublicensing restrictions
- 3.0: Derivative reciprocity & src/bin sublicensing restrictions
- 4.0: Derivative/hosting reciprocity & src/bin sublicensing restrictions
- 4.0: Container restrictions & no sublicensing/royalties permitted
- 5.0: Container reciprocity & no sublicensing/royalties permitted

### Patent Grant & Retaliation

- Sum grant & retaliation scores (still  $\geq 0$  &  $\leq 5$ )





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## Questions?

- [cliffs@apache.org](mailto:cliffs@apache.org)

