



# Spectrum of Licenses

Cliff Schmidt

# 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



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# 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

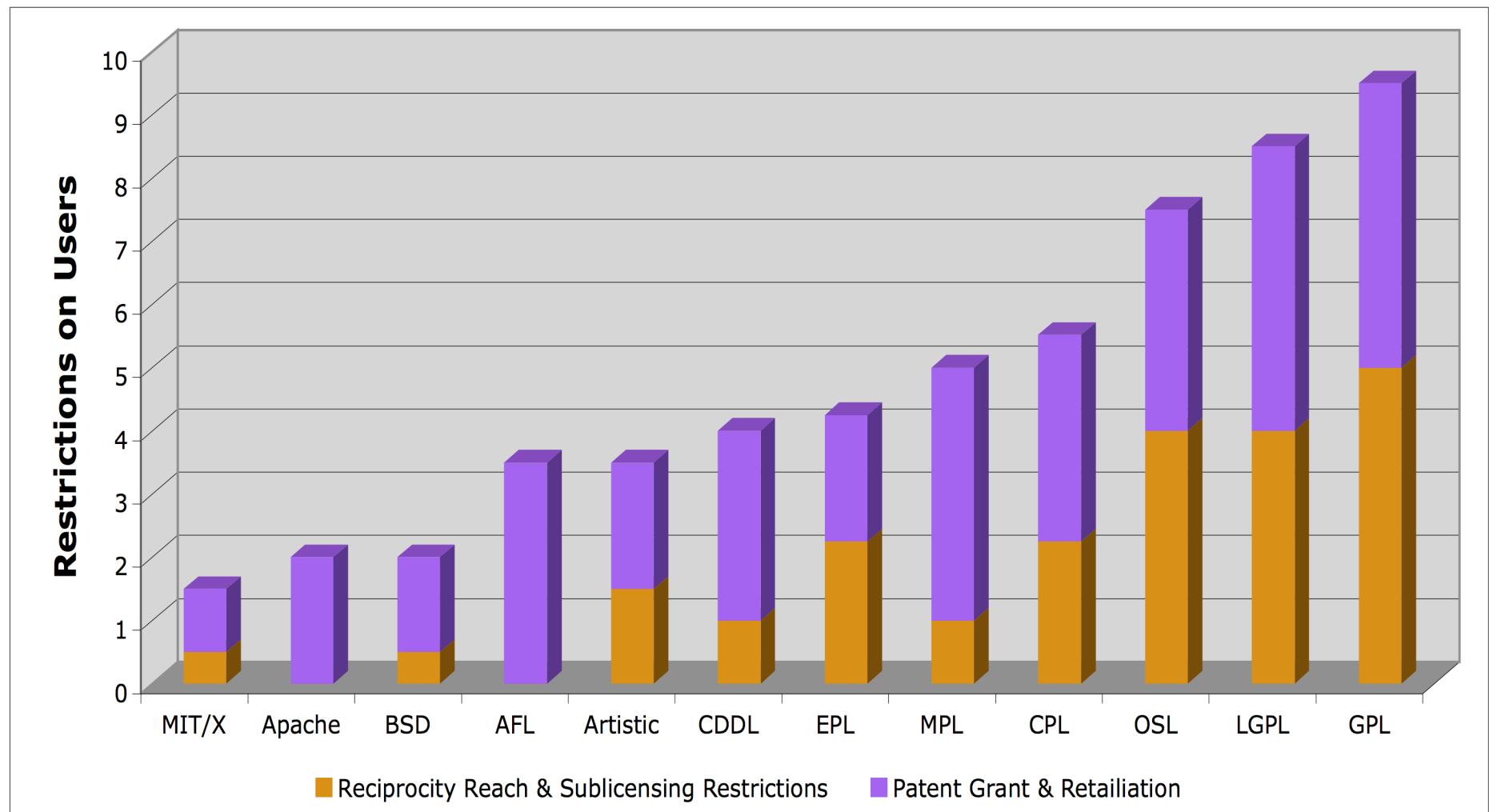
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- Python Software Foundation License
- Qt Public License (QPL)
- RealNetworks Public Source License V1.0
- Reciprocal Public License
- Ricoh Source Code Public License
- Sleepycat License
- Sun Industry Standards Source License (SISSL)
- Sun Public 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



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# 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



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# Patent Grant

0: explicit patent grant

1.0: implicit, not well-defined

2.0: no patent grant



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# 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?



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

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

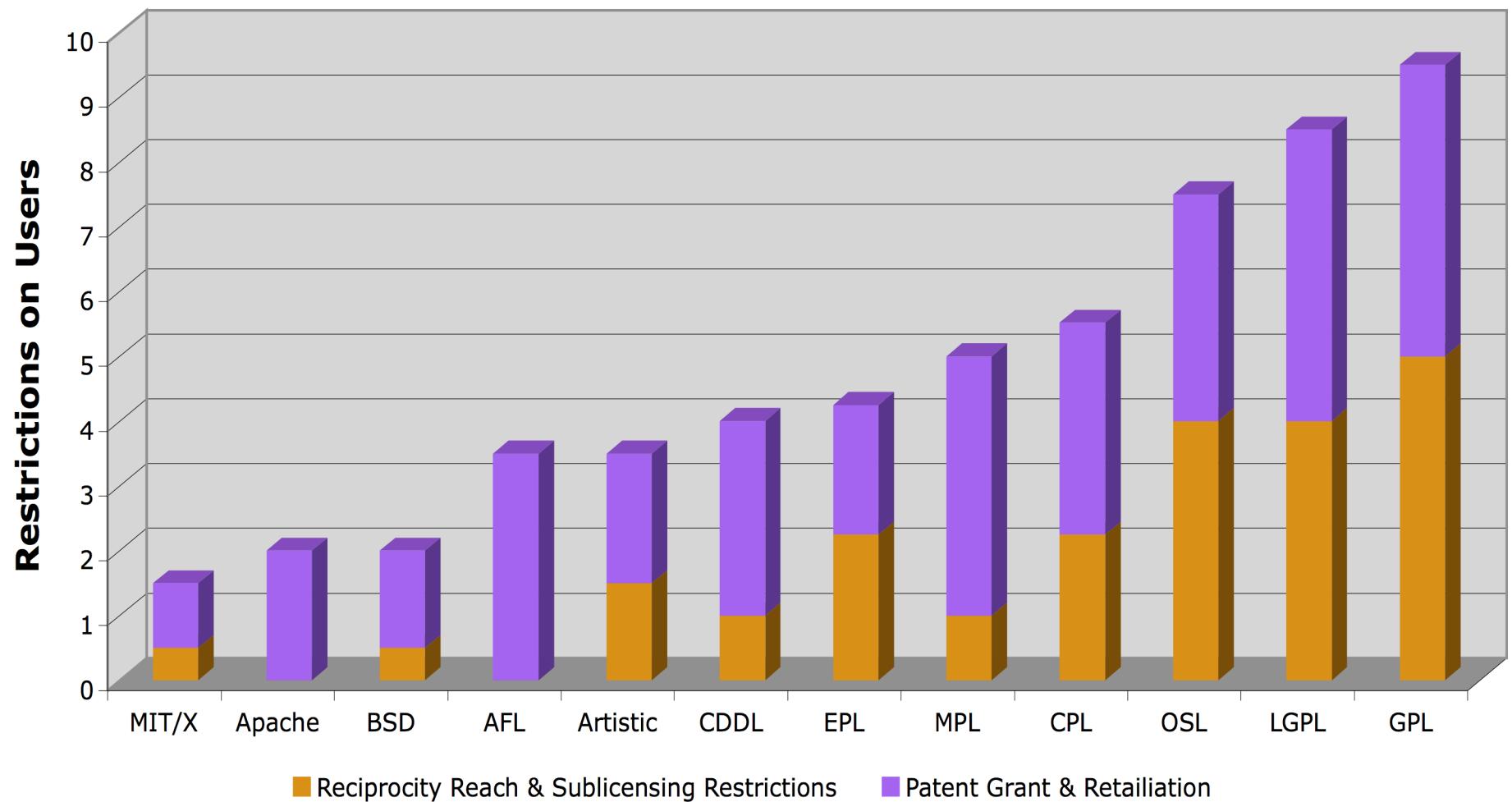
# The Big License Bar Graph



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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)