# Open Source and Creative Commons

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# What is "Open Source"?

- Literal: You get the source and may & can look at it

  — This is not the common meaning, however!

    - Example: You can also get the source code to Windows (in special situations):

      But it is still not "open source"!

- Commonly, but not necessarily legally:

  — Source code is available in human-readable and understandable form

    - Not: Decompiled code, assembler code, …

  — The software can be copied, distributed, and used freely

    - You can use it however you want and don't have to pay license fees

  — You can modify the software and distribute these modifications

# "Free Software" vs. "Open Source"

- Both are quite similar

- Free as in "free speech, not free beer"

  — Not necessarily free: E.g. the big Linux distributions

    • You pay for packaging, CDs, printed books, services, guarantees, etc.!

- Different aspects are important

  — Open Source: You can look into the source code

  — Free Software: You can do (almost) whatever you want with it

- Biggest problem: There is no official definition!

# Open Source Definition by the OSI (1)

- Free redistribution: Selling or giving away; alone or aggregated with other SW

  — No royalty or fee allowed

- Source code: Must be included; distribution as source or compiled allowed

  — Or well-known method for obtaining the source for no more than reasonable reproduction cost (preferably download via Internet)

  — No intermediate or obfuscated forms allowed

- Derived works: Modifications and derived works must be allowed

  — Includes distribution under the same license (=Copyleft!)

- No license needed: Rights must apply to all recipients of the program without the need for any written/… license (e.g. no NDA)

# Open Source Definition by the OSI (2)

- Source code integrity:

  — Possible restriction: No distribution of modified source code, only as patches (=diff)

  — Possible restriction: Derived works must have a different name or version number

- No discrimination: Every person or group may use it and for every purpose

  — Not: No use in business, for military use, by coloured people, Chinese nationals, …

  — Note: Other laws may still prevent this; just the license is not allowed to do it!

    - Example: Export restrictions to certain countries

- No packaging required: The rights must not be limited to a specific distribution

  — Extracting a part and adhering to the license → Distribute separately or in other distr.

# Open Source Definition by the OSI (3)

- No aggregation restrictions: Distribution in any kind of way and together with any kind of software

  — Not: Only open source software may be on the CD; download distribution only; …

  — Note: The GPL conforms to this

    - Applies to a "single work" only, i.e. libraries linked to a GPL software result in a single work; GPL + (unrelated) proprietary SW on a single CD is no problem!

- Technology neutrality: No requirement for any style of interface or technology

  — Example: Click-wrap-licenses → No distribution by FTP/CD-ROM/… possible

  — May not require a user interface when running

    - May also be used completely in the background

# Other "licenses"

- Public Domain ($\approx$ "Gemeinfrei"): Not an official definition, but commonly seen as a product without copyright restrictions

    — Copyright protection has elapsed (not yet for software) or was not reached ($\rightarrow$ trivial)

    — Ownership "disclaimed": You can do with it whatever you want; no restrictions at all

    — In AT and DE not completely possible – only in effect

        • Refrain from exercising your rights; but not legally binding unto you!

    — In the USA this is a legal option

- Shareware: You can test the software for free, but it is still proprietary software

    — If you want to use it longer/permanently, then you have to pay for it!

- AdWare: You don't have to pay for it in money, but in looking at advertisements

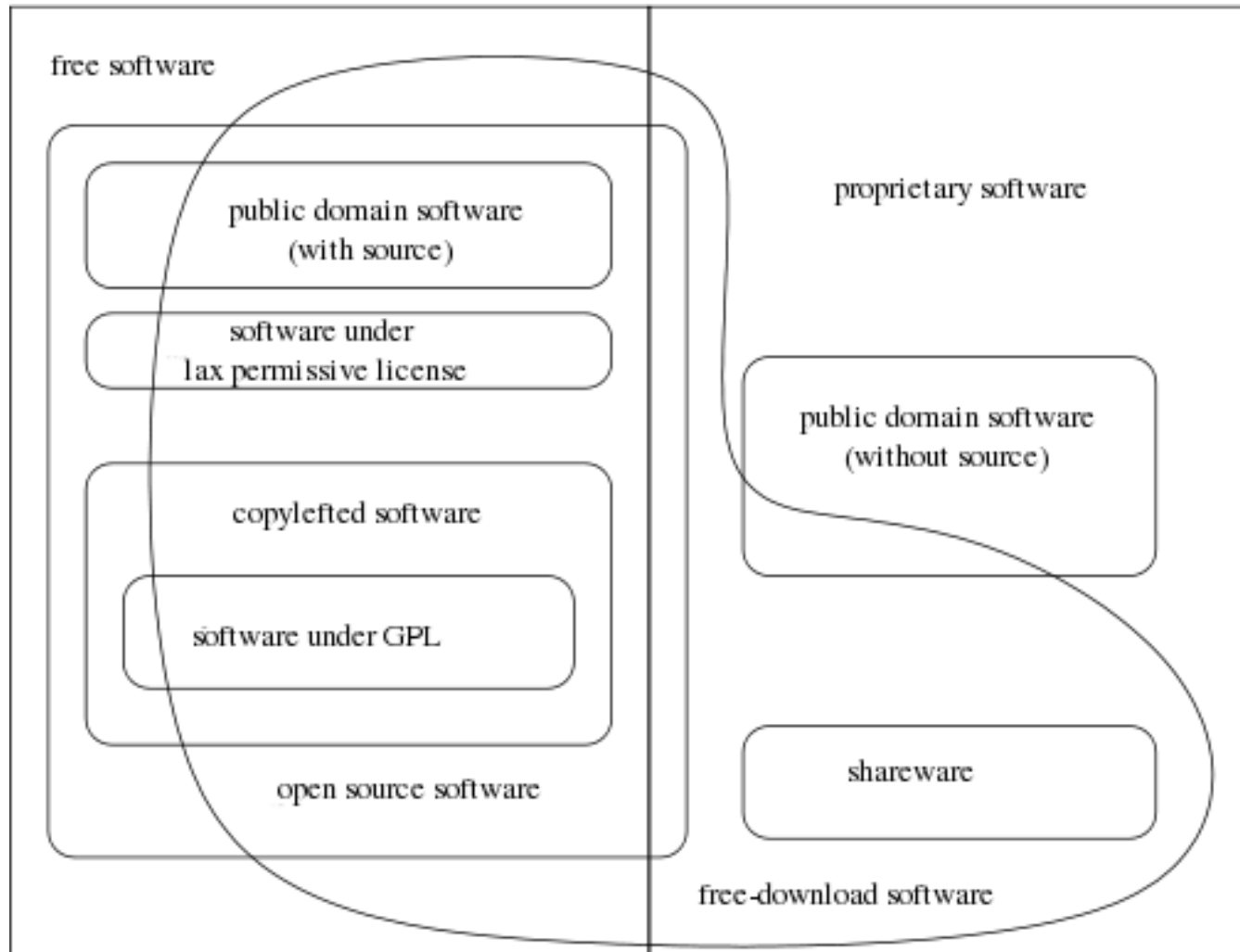    — Typically proprietary and closed source!

# "Copyleft" = ???

- Allusion to "Copyright": Right to copy → Right to copy is left to user

- One solution to the "problem" of modifications

  — If the original was free, any modified work based on it might be newly restricted

  — Copyleft shall ensure that what is free once, will remain free forever (="viral"!)

- "Strong" vs "weak" copyleft: GPL vs. LGPL

  — Strong: When using a copyleft song in a movie, the movie must be copyleft

  — Weak: Only when modifying the song, the song must be copyleft again, regardless of the license of the movie it is used in

  — Various "middle" grounds exist: No definition separation

- You may: Copy, modify, distribute, but must: Use same/compatible license

# Some important Open Source licenses

- GNU Public License (GPL)

  — Origin: Richard Stallman/Jerry Cohen for the GNU project

  — Most often used Open Source license!

- Library/Lesser GPL (LGPL)

  — Variant of GPL; a bit more free than the GPL

- BSD (original and new/simplified ones)

  — Origin: Berkeley Software Distribution; from the University of California at Berkeley

  — Main source: BSD Unix variant ($\rightarrow$ Mac OS X!)

- MIT

  — Origin: Massachusetts Institute of Technology (X Windows System)

# Diagram of licenses



free software

public domain software
(with source)

software under
lax permissive license

copylefted software

software under GPL

open source software

proprietary software

public domain software
(without source)

shareware

free-download software

Source: Chao-Kuei, http://www.gnu.org/philosophy/categories.html

# MIT license /X11 License

- Very simple and short

- Non-Copyleft: Can be used in proprietary software

  — But copyright notice and license must be included

- Disclaimer of warranty or liability

  — Complete; not possible in the EU/Austria to that degree

    • But: You get it for free, so liability can be reduced extremely

    • Not excludable in AT: Intentional harm, gross negligence

- "You can do with it whatever you want, but don't blame us if it doesn't work"

# BSD license

- Very simple and short

- Non-Coypleft

- Requirements:

  — Redistribution of source code must include copyright notice, conditions and disclaimer

  — Binary redistribution must reproduce copyright notice, conditions and disclaimer in documentation and/or other materials provided with the distribution

  — Neither the name of the distributor nor the contributors may be used for endorsing or promoting derived products

    • This clause is missing in the "free BSD license"

- Disclaimer of warranty or liability; like in MIT license

- "You can do with it whatever you want, but don't blame us if it doesn't work"

# BSD license – Old version

- Required attribution, i.e. that all advertising material and the software itself must display an acknowledgement

  — This made it incompatible to the GPL

- Problematic, as a much-changed SW would acquire a huge list of contributors!

# GPL v2

- Most widely used Open Source / Copyleft license

    — But it is often misunderstood in its legal consequences!

- Four basic freedoms:

    — Any use is allowed, including commercial one

    — Copies may be distributed in any form, including for money and gratis

    — The source code may be inspected and modified in any way

    — Modified versions may be distributed in any form

# GPL v2: What you don't have to do

- Publish/distribute any modified versions: You can keep them completely private!

    — Modify it and use this modification internally; no need to make it public

        • But: If a large company/subcompanies, you might have to publish it!

- Enter any contract, sign anything, send messages, etc.

    — No evidence of accepting it → You can always decline it

        • But then you don't have any rights → Copyright law forbids (almost) everything

- Give credit to the original creators or mention them anywhere

    — But see the license requirements later!

- Enforce the license

- Provide any warranty or support for the original or any modifications

# GPL v2: Restrictions (1)

- You receive a lot of freedom, but you have to comply with several provisions:
  - When distributing, you must distribute the source code along side it
    - Or on request send it for mere self-costs (=cost of copying & sending; no profit!)
      - Recipients can then distribute for free, if they want to!
      - Written offer valid for at least three years to any third party
    - This applies whether it's the original or a modified version
    - Offering access to freely copy the work (=webserver) → Putting the source in the same place is sufficient; need not be included in the download
  - You must include a copyright notice and a disclaimer of warranty in any distribution
    - Conspicuously and in appropriate form
    - Keep intact all references to the GPL

# GPL v2: Restrictions (2)

— You cannot change the license for modifications, it must again be the GPL

- But you can upgrade: From older to newer versions (i.e. GPLv2 → GPLv3)

- No additional restrictions possible

- No additional freedoms possible (e.g. making it BSD/MIT)

  - You can do this four your own contributions, but not the rest!

— You must include the GPL license itself in any distribution

— When you modify a file, you must put in a notice that you changed it and at what date

— Interactive programs must upon start show a copyright notice, a warranty disclaimer, that users may distribute the SW under the GPL, and how to view a copy of the GPL

# Typical file header

- Note: This is not a binding formula, just a suggestion!

*<one line to give the program's name and an idea of what it does.>*
Copyright (C) *<yyyy> <name of author>*

This program is free software; you can redistribute it and/or
modify it under the terms of the GNU General Public License
as published by the Free Software Foundation; either version 2
of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.  See the
GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program; if not, see <http://www.gnu.org/licenses/>.

# Typical interactive program start/About box

- Note: This is not a binding formula, just a suggestion!

*<one line to give the program's name and version.>,* Copyright (C) *<year> <name of author>*
*<Program name>* comes with ABSOLUTELY NO WARRANTY; for details
type `show w'.  This is free software, and you are welcome
to redistribute it under certain conditions; type `show c'
for details.

- "show w" and "show c" are just examples, they could also be "-h", "--help", a

  menu entry, web links, etc.!

- Additionally very common (but not required by the license!):

  — Installation program shows the whole GPL at the beginning

  — You must change a radio button from "I decline" to "I accept" to continue installing

# "Work based on the program" (WBOP)

- Problem: When is a modification/combination/… a WBOP ($\rightarrow$ must be GPL)?

  — Derived works: No problem, always included

  — Statically linked: Always

  — Dynamically linked (or shared address space): ??? FSF says yes, but not clear

    - Header/API is "integrated" into the program using it

    - Proprietary Linux graphics drivers?

    - Note: Dynamic linking by end-user is usually seen as not being a problem!

  — Webservices, socket/pipe/command line communication: Clearly not a WBOP

    - If clearly separate and not "intimately coupled", i.e. generally useful

- Mere aggregation is never a WBOP

  — Several programs on one distribution medium; CD-ROM, webserver directory, …

# GPLv2: "Source code"

- The preferred form of the work for making modifications

- Must be complete:

  — All modules: The "main" source code

  — All interface definitions: Header files, IDLs, …

  — All compilation scripts: Make files, project definitions etc.

  — All installation scripts

- Excluding anything normally distributed with the operating system or the development tools ($\rightarrow$ compiler, assembler, linker, …)

# "Dangers" of the GPL

- If not complying fully with GPL, all rights received are automatically terminated

  — In the USA this is disastrous: No curing is possible at all except through obtaining the explicit consent of all authors → You can stop distributing your modified version …

  — Continental law: You can always re-accept the license, but this works only from then on and only when complying fully

    - You still did distribute/copy/use/… illegally before!

  — Anyone who got the program from you and complies with the GPL is unaffected

    - Explicit provision; typically the complete "subtree" would suddenly become illegal!

- If you cannot fully comply with the GPL (laws, court decisions, …), then you cannot use the software at all: Everything or nothing

# GPL v3

- Aims:

  — Make it better compatible with international variations in copyright law

  — Take better care of software patents

  — Prevent "Tivoization"

    - You get source, can modify and compile it, but you cannot install it on the hardware, as it must be signed with a private key which is **not** distributed

      - This still complies with the GPLv2!

      - Public key is embedded within the hardware

- Use: Still very limited. E.g. Linux will probably be never "upgraded"

  — Some companies changed their licenses from "GPLv2 or later" to "GPLv2 only"

# LGPL

- Quite similar to the GPL, but with reduced Copyleft

  — Available as 2.1 or 3; similar to the matching GPL

- Main difference: Copyleft

  — When putting a library under GPL, every program using it must be under GPL

  — With LGPL, the software using it can be anything, including proprietary

- BUT: If you change the library → all these changes must be again under LGPL!

  — Viral only regarding itself and its modification, not "other" software

- Requires a clear delineation, what is "the library" and what is "something else"

  — In practice rather a small problem: Some (related) classes/modules/units/…

- Often used in proprietary software

# LGPL

- Basic idea: Better than no use of the software, make a concession to the developers of proprietary one

  — But if they find bugs or improve the library, they must share this with the public

    - Note: They typically distribute the result, so they really must "share"!

- Additional requirements:

  — LGPL itself must be added to the distribution

  — Copyright notice and warranty disclaimer

  — Changed files must carry notice of this fact and the date of change

- Optional: Library may be put under GPL

  — Irreversible from that point on for this derivation!

# LGPL: How to do it

- Link everything together and put the source code of the library alongside

  — Possible, but undesirable: You must enable the user to re-link your work together with a modified version of the library, i.e. make your source/object code available!

- Use dynamic linking: Preferable!

  — Users can replace the library, which's new version will then be used by your software

- When a function or table of data is provided by the application (other than as an argument), the library must work as far as possible when this data is absent

  — Prevent library from being completely dependent on some other (closed) source!

  — Example: A table used for fast calculation of square roots

    • If it is absent, the library must still calculate square roots, albeit perhaps slower

# Apache License 2.0

- Allows use, modification, and distribution

  — Modifications must be annotated (e.g. at beginning of file)

- Requires notice of this license and packaging it with the code

- Copyright notices may not be removed

- Non-Copyleft: Not even reduced one

  — But all contributions submitted to licensor for inclusion are under Apache 2.0 (unless explicitly stated otherwise)

- You may not call it "Apache" except with written permission

- Incompatible with GPLv2, but compatible with GPLv3

  — One-way only: Integrating Apache 2.0 code into GPLv3 code!

# Apache License 2.0

- Contains patent-related rules:

  — Perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable license for this work, but only for those patent claims licensable by the contributor that are necessarily infringed by their contribution alone or by combination of it with the Work

  — Beginning patent litigation against anyone alleging that the work or a contribution within the work infringes a patent → All patent licenses you receive through this license terminate immediately

    - "Retaliation": if you start a patent war, you loose all patent licenses yourself!

# Apache License 2.0

- Uncommon element: The "NOTICE" file. If present, special rules apply to it:

  — Any derivative work that are distributed must include a readable copy of its content

  — Anything no longer pertaining to the modified version can be removed

    • E.g. special notices regarding parts that were removed

- Way of inclusion:

  — NOTICE file, source code, documentation, display generated by the work where such third-party notices normally appear (e.g. about box)

- The content of the file is **informational only**

- Typical content: Attribution notices, copyright statements

  — Different license for your parts or the derived work as a whole, as long as they don't conflict with this license

# Enforcing Open Source licenses

- Enforcing in court is possible and has occurred in Germany and USA

  — It is a valid license/contract

  — But there are, at least in Germany, convoluted legal arguments necessary!

- Basic idea: The infringer has complete freedom to select

  - No communication → No evidence for author!

  — "I accepted the GPL": Then he is in breach of a license/contract

  — "I did not accept the GPL": Then he has no rights based on the GPL and must adhere to the "normal" copyright law → This grants him (almost) no rights at all

  — Result: Whatever he selects, he is in trouble!

  — Typical way out tried: Accept GPL, but argue that restrictions are illegal/unenforceable

  - This did not work in any of the known cases!

# Potential legal problems (1)

- Price regulation: The GPL demands that your license fee is exactly € 0,-

  — Price fixing is typically a problem, but here it seems not to be (favours consumers!)

- Loss of transactability ("Verkehrsfähigkeit") on violations

  — If someone high in the chain violates the GPL, all customers would suddenly and without doing anything be illegal → This would not be acceptable, as you cannot start actions against your distributor

  — This has been solved in the GPL: Anyone in compliance receives their rights directly from (all) the author(s), not from their distributor!

- General terms of contracts (AGBs)

  — Language: In computer science English is customary; but for the general public this could be a problem. Also regarding length & complexity (GPLv2 is long & complex!).

# Potential legal problems (2)

- Exclusion of liability (applies to MIT, BSD, … as well!)

  — Complete exclusion is legally impossible in Austria (Germany, …)

  — At least with regard to consumers, a reduced interpretation is not possible

    • Therefore the complete clause is voided!

  — Result: Legal liability applies

  — As you receive it for free (legally seen a "gift"):

    • Liability is reduced to intentional harm and gross negligence

    • Guarantees (Gewährleistung) for

      • Defects maliciously kept secret

      • Knowingly distributing it in violation of copyright of third parties

- Patents: See GPLv3 for this!

# Creative Commons (CC)

- Open source licenses are nice, but they are problematic if the work is not SW!

  — There exists also a GPL documentation license, but it is not in wide use

- Creative Commons is intended for various other kinds of creative work

  — Texts, images, films, music, …: Everything which is "copyright"

    - Therefore it also includes e.g. "public performance" (→ software ???)

    - But it is unsuitable for computer programs!

- CC is not a single license, but rather a set of them

  — Website includes a "generator": A form to select what you want, and the correct

    license is then selected and shown

# Creative Commons (CC)

- Basic idea: Very open + a selection of freely combinable restrictions:

— Attribution ("by"): Give the original author credit

  - Note: This is part of any version, i.e. no CC license is without attribution!

— No commercial use ("nc"): Only non-commercial use

— No derivative work ("nd"): Copy and use it freely, but don't modify it

— Share alike ("sa"): "Copyleft", i.e. all modifications must again be CC-sa

  - Cannot be combined with "nd", obviously!

# CC: How it is described

- Three forms exist

    — Human-readable (☺): In normal language

        • States what you can/cannot do

        • Not legally binding

    — Lawyer-readable: The full legal version

        • International and localized versions exist

        • Takes national legal specifics into account

    — Machine-readable: Metadata

        • E.g. for search engines or repositories
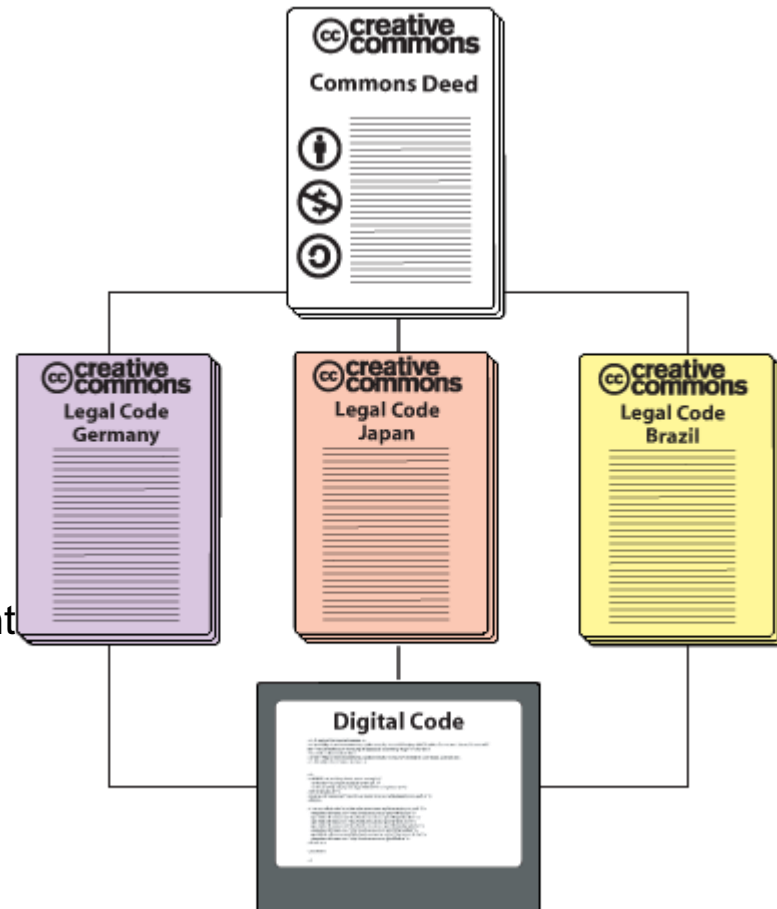
# Limitations of CC

- Work must be under copyright

  — Not suitable for trade marks, patents, design protection etc.

- License is non-revocable: If its under CC, then it stays there

  — If you make a modification, you can license this in any way

  — But the "original" will remain under CC (no "revocation" clause; but this is standard)

- Interoperability with other licenses unclear

  — What can you integrate and what not? How much would you have to pay?

- Different national versions might not be legally completely equivalent

- What exactly is "commercial use" (see also above: in different countries)?

  — Excludes all those, which are only trivially commercial (e.g. blog with Google-Ads)

# CC and Collecting Societies

- Austria: AKM; Germany: GEMA

  — As soon as you are a member, every future work you create "belongs" to them

  — You cannot put any work under CC anymore

  — But you can always terminate your membership

    • But then don't receive any money from them any more!

- Royalties can only be collected if under "nc"

  — Statutory or compulsory licenses

- Germany: "GEMA-Vermutung" (GEMA presumption)

  — It is legally presumed that any music requires paying the GEMA; no obligation must be proven, i.e. the authors/composers must state their name and not be members

    • Pseudonymous music under CC → You have to pay the GEMA!

# Different kinds of CC

- Attribution: Cite the original creator

  — Part of every CC license → Always necessary!

- Non-Commercial:

  — This does not allow "own costs" or anything like this → € 0,- !

  — This does not include the author!

  — You can still sell a license to someone (e.g. without "by" or "sa")

    - CC-by-nc-sa → Everybody can listen to the music freely (and gratis!)

    - Sell it to a company to use in advertisements

  — Royalties for statutory uses or to collecting societies are still required for users!

# Different kinds of CC

- No-derivative: The work may be used only in its original form

    — No modifications are allowed, except those required to exercise the rights granted

        • Insofar technically necessary for other media and formats

            • This would not be "modified work" in copyright anyway!

        • Note: At least in Austria modifications are always permitted, but they may not be published/performed/… in any way without permission of the original author!

- Share-alike: You must use a compatible license

    — The same license, a later version of it with the same license elements, a nationalized form of this license (this or later), or a compatible one (list on CC website)

    — List of further elements (add license, refrain from restrictions, keep notices intact, …)

# Requirements

- You must include the license or an URL to it in every copy or public performance

- No additional restrictions are allowed

  — This includes any technological measures to restrict the users exercising their rights!

- No sublicensing ($\rightarrow$ Everyone gets it directly from the author)

- All notices referring to license or disclaimer must be kept intact

- For adaptations: Original author may request that all credits to her be removed

- No distortion, mutilation, modification, or other derogatory action which would be prejudicial to the original author's honor or reputation

  — But this must be waived to the maximum extent possible under law!

  — You can then only request that the attribution to you is removed!

# Legal aspects of CC (1)

- Includes again a warranty disclaimer

  — If the purported author is not the real author (→ couldn't legally put it under CC!), you still infringe copyright!

  — Validity: See GPL above!

- Only CC-sa is "copyleft", all others allow use in proprietary or differently licensed works

  — Only this element will remain under CC

- Applies also to any "new uses" (e.g. CD, digital distribution) discovered later

  — This could be a problem, depending on national law

    • DE: 1966-2007: No transfer of rights for then unknown uses; now very complex

    • AT: Has always been possible

# Legal aspects of CC (2)

- Automatic termination upon breach

  — See GPL → You are then back to the basic copyright

    - People further down are not affected as long as they are in full compliance

- There is no requirement to distribute at all

  — Neither for the author nor any recipients

  — E.g. film: Is just shown in cinemas, but not given away/sold on DVDs, …

    - No requirement to distribute, but anyone can film the screen (→ CC!)

# Proper attribution

- Leave any copyright notices intact

  — Reproduce them in a way suitable to the medium (e.g. texts → end of film)

- Cite the author's name/screen name/alias/…

  — Nice (=not mandatory): Provide a link to homepage if published online

- Cite the works title or name

  — Nice (=not mandatory): Provide a link to original if published online

- Cite the specific CC license

  — Nice (=not mandatory): Provide a link to full license text (own page or CC homepage)

- Derivative works must be marked as such ("translation of …", "based on …", …)

  — What changes (files, paragraphs, …) need not be described or marked in any way

- Copyright holder may require: Specific name/pseudonym/organisation and URL

# Conclusions

- GPL and Creative Commons: Both are quite permissive

  — But there are some important restrictions which you must follow

  — If not, the consequences can be very severe!

- Software: GPL (use v2 or v3) or LGPL (if less copyleft is desired)

- Other kind of art: Creative Commons

  — Be careful with "nc", however!

- Trademarks, patents, utility patents, design protection: Nothing similar exists

  — Full licensing necessary

  — Similar licenses can be drafted!

- Take care of "interoperability" (copyleft can be very restrictive), permanence, and duration of copyright

# Thank you for your attention!

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# Links

- GPLv2: http://www.gnu.de/documents/gpl-2.0.de.html

  — GPLv3: http://www.gnu.org/licenses/gpl.html

- LGPLv2.1: http://www.gnu.de/documents/lgpl-2.1.de.html

  — LGPLv3: http://www.gnu.de/documents/lgpl-3.0.de.html

- Creative Commons Austria: http://www.creativecommons.at/

  — CC Lizenzgenerator: http://creativecommons.org/choose/?lang=de

- Working Paper on the legal implication of certain forms of Software Interactions (a.k.a linking)

  — https://wiki.fsfe.org/EuropeanLegalNetwork/LinkingDocument?action=AttachFile&do=get&target=software_interactions.pdf