University of BRISTOL

Software Licenses and Data Protection in the Cloud

Cloud Computing 2019 – Lecture 03

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bristol.ac.uk

table d'hôte *[tablə.dot]*

- Open Source Software, Licenses and Data Protection

Admin

- Setup of AWS classroom

Schedule

- Week01 01/10/19 L01 Introduction and Overview (DC) [slides: COMSM0010_19_01.pdf]
- Week01 03/10/19 L02 The Programming Project (DC) [slides: COMSM0010_19_02.pdf]
- Week02 08/10/19 L03 Software Licenses and Data Protection in the Cloud (DS)
- Week02 10/10/19 L04 Cloud Economics (DC)
- Week03 15/10/19 L05 *aaS (DC)
- Week03 17/10/19 L06 Virtualization (DS)
- Week04 22/10/19 L07 Containerization (DS)
- Week04 24/10/19 L08 Kubernetes (DS)
- Week05 29/10/19 L09 Application Orchestration (DS)
- Week05 31/10/19 L10 Serverless (DS)
- Week06 05/11/19 L11 Scalable Software Architectures (DS)
- Week06 07/11/19 L12 Cloud APIs (DS)
- Week07 12/11/19 L13 Distributed File Systems (DC)
- Week07 14/11/19 L14 Devops (DS)
- Week08 *EXPLORE WEEK (no lectures)*
- Week09 26/11/19 L15 Hadoop (DC)
- Week09 28/11/19 L16 Spark (DC)
- Week10 03/12/19 L17 Cloud Databases (DC)
- Week10 05/12/19 L18 Graph Databases (DS)
- Week11 10/12/19 L19 Stream Processing (DC)
- Week11 12/12/19 L20 Cloud Security (DC)
- Week12 *REVISION WEEK (no lectures)*

What is open source ?

- A publicly accessible “x”
- modify and share
- opposite: proprietary" or "closed source"

Using a measuring syringe, measure out the oils into a glass or ceramic container. Keep the oils covered to avoid volatile fumes escaping.

20 g food grade freeze dried gum arabic (equivalent to 44ml)
40 ml water (low calcium / low magnesium)
1 drop vodka (optional)

Use a pestle and mortar to dissolve the gum arabic into the water, with optional 1 drop vodka which can aid hydrofelicity (the total quantity of vodka will be 0.0003ml per litre of cube-cola).

Place the gum/water mix in a high-sided beaker, Pyrex glass or stainless steel are best. Use a high-power drill (the greater the RPM the better) with a hand kitchen whisk attached; you may need to modify the handle of the whisk so it fits. Whisk the gum mixture at high speed while your colleague droppers the oils mix in steadily with the measuring syringe. Continue to whisk at high speed for several minutes, or until you can see the oils and water emulsify.

In a mortar and pestle, mix the citric acid into the water. This should dissolve easily. When it's clear, use a sieve to add the caffeine. Mix thoroughly, the caffeine will take 5-10 minutes to dissolve. The mixture may behave erratically, turning either white or clear for no apparent reason.

Add the citric/caffeine solution to the emulsion formula, passing it through muslin or jelly bag to remove any anomalies. This is your cola concentrate (total measurement 365ml / equivalent to 117L eventual cola).

To subdivide the concentrate into manageable quantities, please consult the following table. We do so for easy mailout and long-distance production into cola syrup with the local addition of sugar and water.

TABLE OF CUBE-COLA VALUES

Large _ 56ml makes 18ltr Cola
Small _ 28ml makes 9ltr Cola
MINI _ 14ml makes 4.5ltr Cola

The resulting mixture will be cloudy. Test for emulsification by adding a few drops of the mixture to a glass of water. No oils

MODIFIED HAN STIRRING STICKS A STRAINER

NUTMEG OIL CORIANDER OIL LAVE

4. Gum Arabic, 5. Sugar Beet, tion - Stokesly high st., meet.

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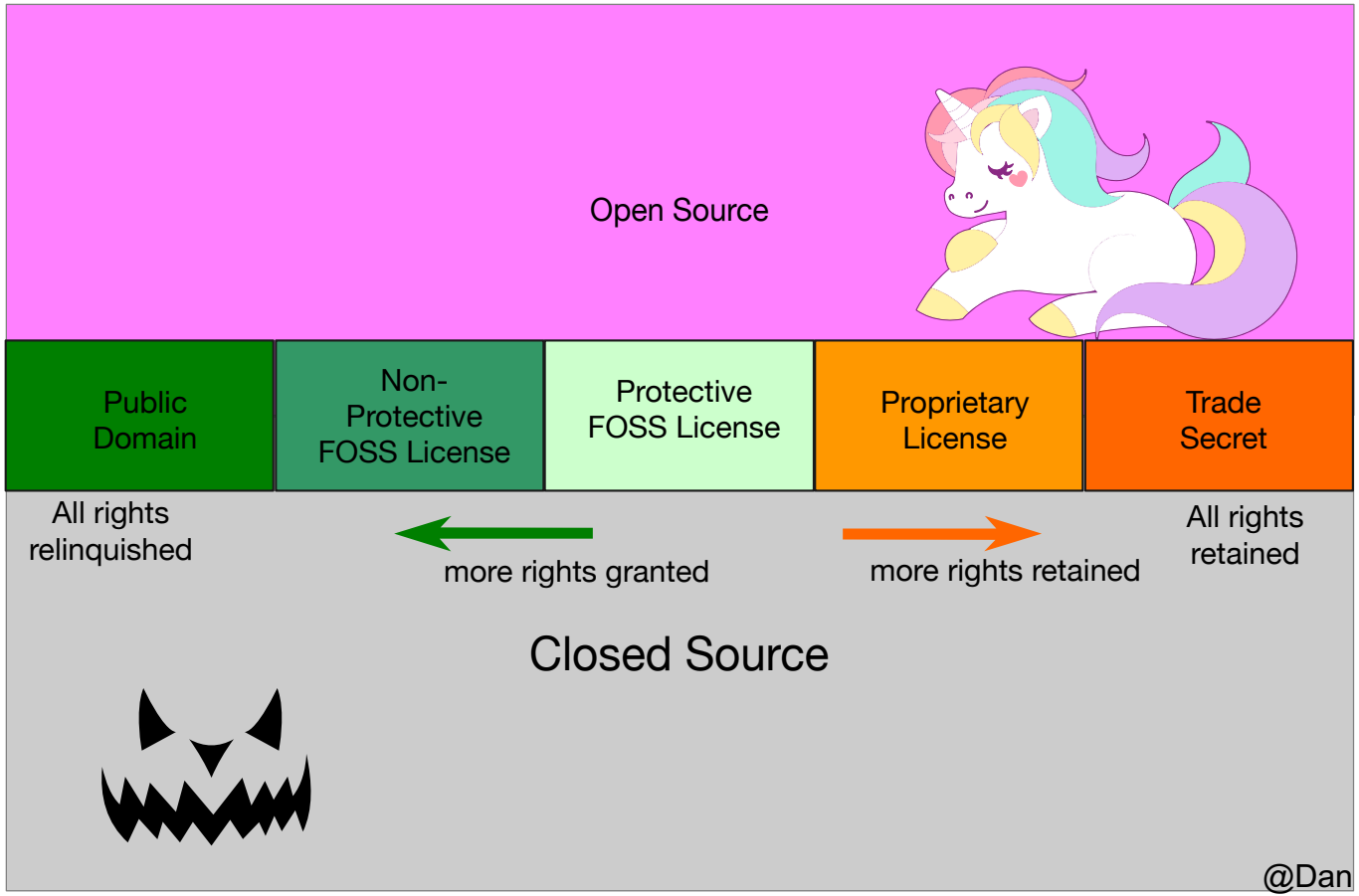
Cube-Cola Tea Towel

What is open source not?

- Legal relationship
- Software is protected as works of literature

→ copyright

→ license


Open Source
Public Domain
Non-Protective FOSS License
Protective FOSS License
Proprietary License
Trade Secret
All rights relinquished
more rights granted
more rights retained
All rights retained
Closed Source
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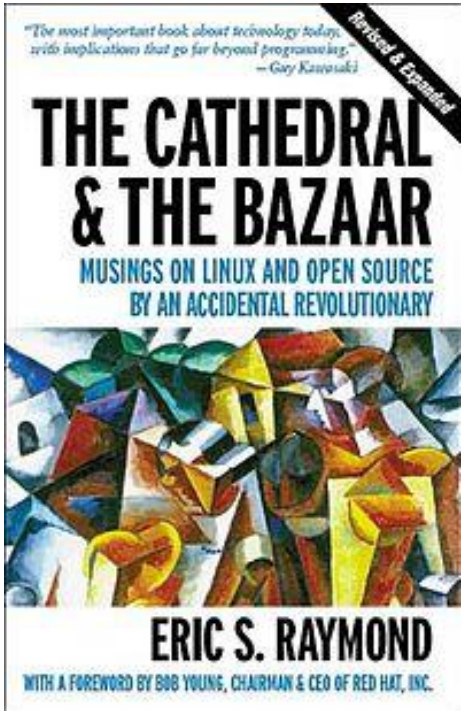
History

- Practice of (open) sharing for centuries
- Software, independent from hardware since 70s
- Universities
  - Richard Stallman in 1983 at MIT - GNU - Gnu is not unix
- 1989 – GPL
- 1991 – Python open source
- 1998 – open source term
  - Netscape Navigator source release
- Much of the web was built on open source LAMP stack

How does it work? 1 - quality

- Linux Kernel
  – rapid development due to open-source development
- Linus's Law
  “Given enough eyeballs, all bugs are shallow.”
- The Cathedral and the Bazaar
- Availability for public testing, scrutiny, and experimentation, increases rate of bug discovery



How does it work? 2 - network effects

- Tensorflow
- Google project
- Used by Dropbox, Airbnb but also the competition

- Contributions from community
- Show leadership

How does it work? 3 – brand building

- VCS
- Distributed
- Pull requests
- 2018 Microsoft bought GitHub for $7.5bn
- Open source strategy
  - 2012 Linux on Azure
  - 2014 .NET

GitHub

Licenses

What is it?

- legal instrument governing the use or redistribution of software
- they are not patents (protect inventions)
- A license protects a specific piece of software (“expression of an idea”)

Why you need a license

- without a license, the default copyright laws apply
- you retain all rights and no one may reproduce, distribute, or create derivative works
- everybody who contributes to your project also becomes an exclusive copyright holder
- To use the code, you must contact the author directly and ask permission.

Choose a license

- All include generic legal disclaimer of liability.
- Permissive
  - MIT – do anything (also called X11 or Exapt license)
  - Apache – like MIT but with more boilerplate (explicit patent license – good for business use)
- Copyleft ('viral')
  - GPLv2/3
- Look at your dependencies
  - Copyleft dependencies → follow their license: GPLv2/3
- https://choosealicense.com

MIT License

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Sustainable Free and Open Source Community

- Defines shared principles for developers and businesses

Quizz

- Name an Apache licensed software
- Can you sell Apache licensed software?

Open Source Projects and Companies

Linux	Red Hat, Ubuntu
Git	GitHub, GitLab
MySQL	Oracle
Node.js	Nodesource, Rising Stack
Docker	Docker
Hadoop	Cloudera, Hortonworks
Elasticsearch	Elastic
Spark	Databricks
Selenium	Sauce Labs, Browserstack
Vagrant	HashiCorp
Postgres	EnterpriseDB
Kafka	Confluent
Hbase	Cloudera, Hortonworks
Maven	Sonatype
Hive	Cloudera, Hortonworks
OpenShift	Red Hat
Kubernetes	Google

Business Models

- Fully Open Source product with pay-for-support
  - MySQL

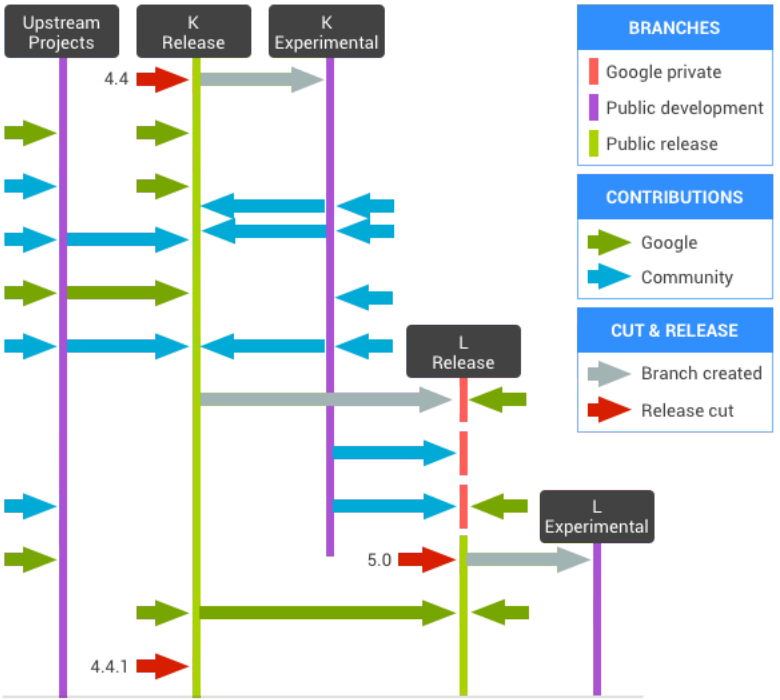
- Dual License –
  - MongoDB (to run as a service … a business model)
  - MySQL (commercial license needed to embed in non-free product)
- Open Core
  - Tight (essential functions are proprietary, e.g Elasticsearch)
  - Loose

Business Model – Software Product

- Red Hat
- Enterprise Linux
- development within a community
- subscriptions for the support, training, and integration services
- 100% open source
- Trademarks protect copies
- CentOs, Oracle Linux etc created versions without trademarks
- IBM for $34bn

Business Model – Open Core

- Android – AOSP
- Monetisation through
  - Ads in google apps
  - Play store



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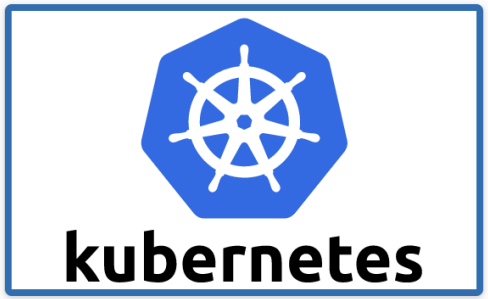
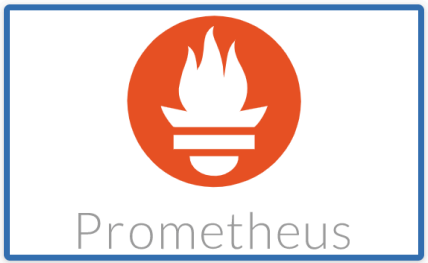
Busines Model - Foundation

- Contributions
  - Apache
  - CNCF
  - OpenStack
- Build services on top
- Different from Donation based model





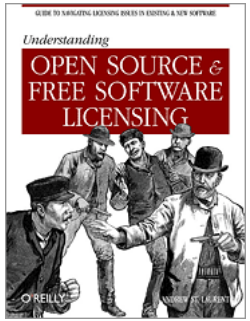
Apache Software Foundation

Fair Source and Dual Licensing

- Amazon is selling Redis as a service — that was the exactly the offering of Redis Labs: hosted Redis
  - Relicensed add-ons to prohibit
- MongoDB released ‘Server Side Public License" (SSPL) for MongoDB Community Server
  - Copyleft – requires source code of any additional software re-sellers include
- Tension between community developers and open source businesses

Further Reading

- Open Source Casebook
  https://google.github.io/opencasebook/
- **Sustainable Free and Open Source Communities**
  https://sfosc.org/
- https://opensource.com/
- O'Reilly **Understanding Open Source and Free Software Licensing**
  https://www.oreilly.com/openbook/osfreesoft/book/



Data Protection

PECR Privacy and Electronic Communications Regulations

- UK Privacy and Electronic Communications Regulations “Cookie law”
- Implements EU Privacy and Electronic Communications Directive 2002 – plan to repeal by ePrivacy Regulation

Cookie Law

- requires websites to get consent from visitors to store or retrieve any information on a computer, smartphone or tablet
- Information should enable users to understand the uses of cookies
- take into account the likely audience of the site when explaining
- Information about cookies must be accessible after consent
- information on how to revoke consent
- distinguish between first and third party cookies

Cookies and Related Technologies on This Site

FORTUNE

We and third parties use cookies or similar technologies ("Cookies") as described below to collect and process personal data, such as Cookie or

Functional Cookies

These cookies allow us to analyze site usage so we can measure and improve performance.

▼ Detailed Settings

NO YES

Example Purposes

- Remember your log-in details
- Remember what is in your shopping cart
- Make sure the website looks consistent

Company	Domain	Choice
AMP	cdn.ampproject.org	NO YES

AMP is an open-source library that provides a straightforward way to create web pages that are compelling, smooth, and load near instantaneously for users. Privacy Policy

Adobe Marketing

Privacy Policy

Powered by: TrustArc | TRUSTe

Last week: European Court of Justice

- Consent cannot be pre-selected
- Must include lifetime of the cookie

GDPR

- Law to govern privacy of all EU citizens around the world
- give control to individuals over their personal data
- Fines €20 million or 2% up to 4% of the total worldwide annual turnover, whichever is greater

Personal data

- "'[P]ersonal data' means any information relating to an identified or identifiable natural person ('data subject')."
- "[A]n identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person."

Common categories

- Biographical information
  – dates of birth, social security numbers, phone number and email address
- appearance and behaviour
  – eye colour, weight
- Workplace data and information about education
  – including salary, tax information and student numbers
- Private and subjective data
  – including religion, political opinions and geo-tracking data
- Health, sickness and genetics
  – medical history, genetic data and information about sick leave.

Rules

- No personal data may be processed without unambiguous and individualized consent from the data subject.
- The processing of personal data should limited to what is necessary for the purposes for which they are processed".
- Controllers of personal data need appropriate technical and organizational measures
  - Encryption, pseudonymization or full anonymization
- right to revoke this consent
- Declare any data collection and purpose for data processing, and state how long data is retained

International data transfer

- GDPR mainly applies to EU countries
- Restricts transfer of data outside of EU
- Some countries covered by adequacy decision 2019
  - Andorra, Argentina, Guernsey, Isle of Man, Israel, Jersey, New Zealand, Switzerland and Uruguay.
- USA (only for companies under EU-US Privacy Shield framework)
  - Government audited
  - Checklist of companies
  - Certain type of data
- SCCs
  - Legal instrument between sender and receiver to guarantee data protection
  - ICO tool

Questions?