Ethics of Scientific Conduct

Aimed at the researchers of the Institute of Mathematics of the Czech Academy of Sciences.

- " The training is aimed at the researchers of the Institute of Mathematics of the Czech Academy of Sciences. The cost of the training is covered from the OPVVV project CZ.02.2.69/0.0/0.0/18_054/0014664 Institute of Mathematics CAS goes for HR Award - implementation of the professional HR management "
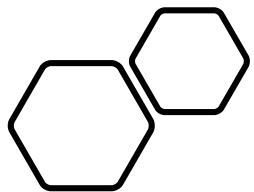
Today's programme

9:30 – 10:30 Copyright and authorship

Which results are covered by copyright?

Authorship and Co-Authorship

Author and his Employer

Plagiarism – difference between scientific plagiarism and copyright plagiarism

10:30 – 11:30 IP Rights to software

Computer programme as IP, rights to other elements of software

License and right to use the software

Adaptation and De-Compilation of a computer program

Open source software

12:00 – 13:00 Data and database rights

Rights to primary and secondary data

Database as IP

Protection of information

13:00 – 14:00 General responsibility towards society

Fundamental human right to knowledge and access to information

Duty to disclose publicly funded research

Open access vs Proprietory means of distribution

Open repositories, Open data, , Open-Access, Open-Source, Public Licenses

Copyright and Authorship

Copyrighted work

- Unique result

- Creative element

- Natural person

- Expressed in a way that can be percieved

➢ **Creative substance**

➢ **Objective expression**

Copyright

Moral rights to the work

- Part of your „personality" cannot be sold (in some European countries)
- right to claim authorship
- object to any distortion, modification of, or other derogatory action which would be prejudicial to the author's honor or reputation

Economic rights to the work

- Rights to benefits from your creativity
- Prevent anybody else to use work

What is copyrighted?

- It really depends on the nation
  - Harmonisation through international treaties
  - Berne Convention, WIPO Copyright treaties, WTO
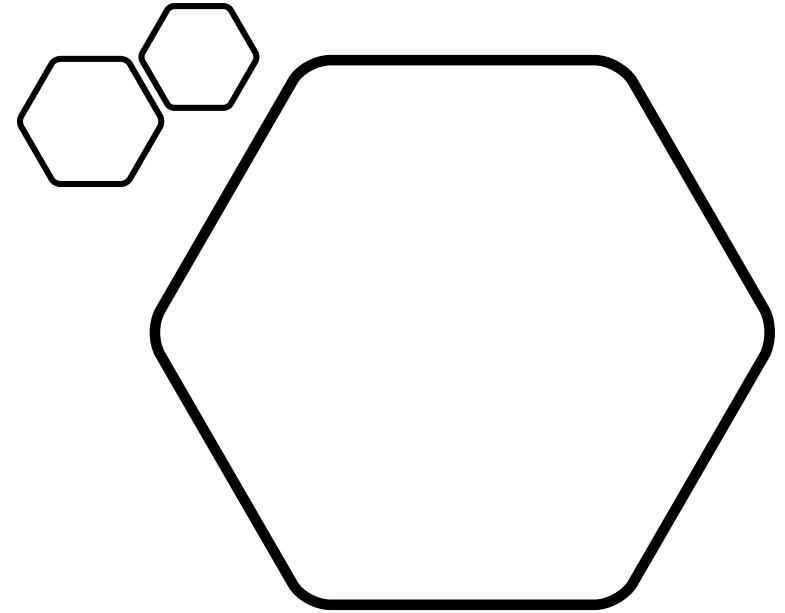
WIPO gives examples of what is protected in most countries

- literary works (novels, poems, newspaper articles)
- computer programs, databases;
- films, musical compositions, artistic works, drawings, photographs,
- architecture
- advertisements, maps, and technical drawings.
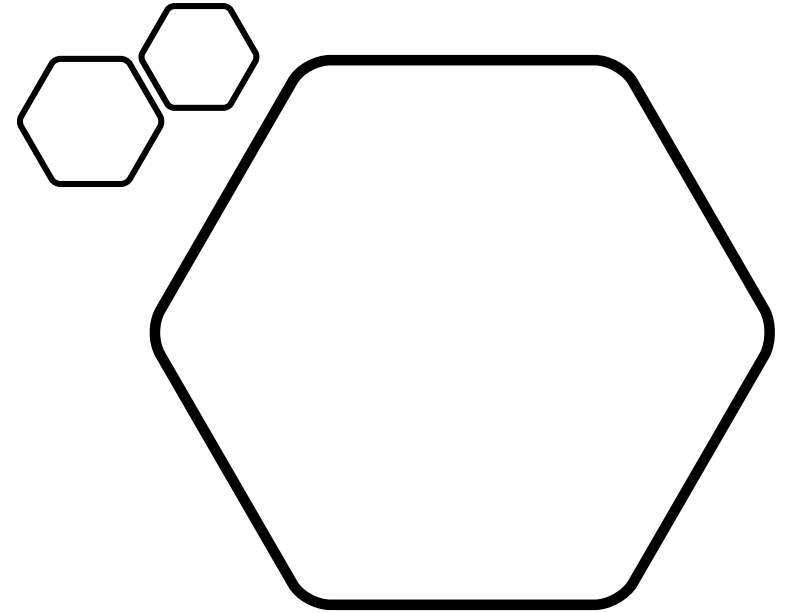
Berne convention (mother of all copyright treaties) – 1886

- **Minimum standards** of protection
  - works, protection must include "every production in the literary, scientific and artistic domain, whatever the mode or form of its expression"
- **National treatment**
  - Each state grants foreign works same treatment as national works
- Copyright is the **need to require authorisation** to „use" the work
  - „Use" is a technical term, has to be defined by law
  - Positive list of „uses" that require authorisation

What does it mean to „USE", (typical examples)

the right to translate,

the right to make adaptations and arrangements of the work,

the right to perform in public dramatic, dramatico-musical and musical works,

the right to recite literary works in public,

the right to communicate to the public the performance of such works,

the right to broadcast,

the right to make reproductions in any manner or form,

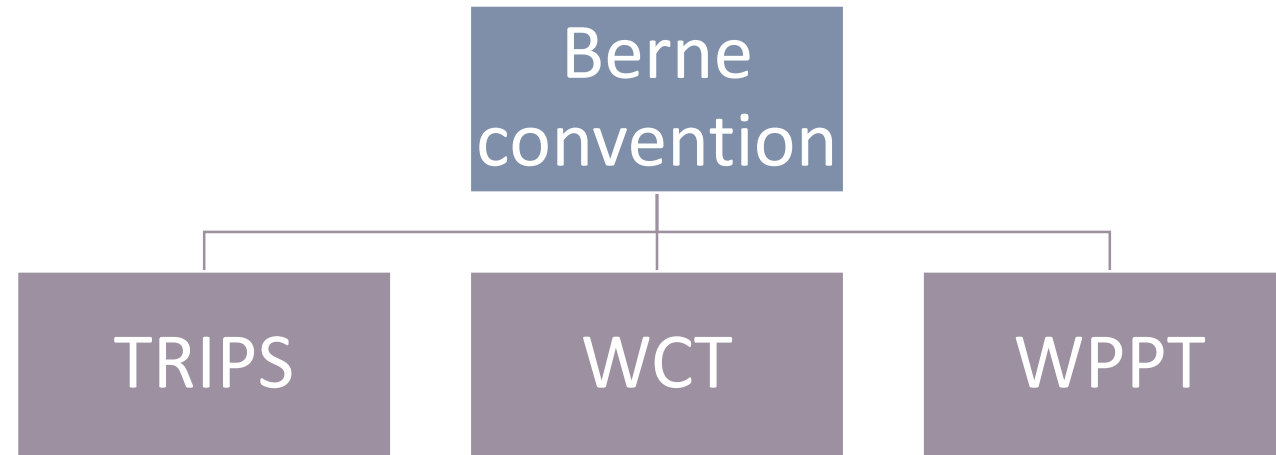the right to use the work as a basis for an audiovisual work

Summary

Each country has at least two „positive" lists:

- What is considered as „protected work"
- What is considered as „use"

Most countries have the third list

- Exceptions

International treaties

European framework

Directive 87/54/EC protection of semiconductor topographies

Directive 93/83/EEC satellite and cable

Directive 2001/84/EC on the resale right

Directive 2006/115/EC on rental right and lending right and on certain rights related to copyright

Directive 2011/77/EU on the term of protection of copyright and certain related rights

Directive 2012/28/EU on certain permitted uses of orphan works

Directive 2009/24/EC on the legal protection of computer programs

Directive 96/9/EC on the legal protection of databases

Directive 2001/29/EC on the harmonisation of certain aspects of copyright in the Information society

Directive 2019/790/EU on copyright and related rights in the Digital Single Market

Authorship

Author

- Originator – the one who gives existence
- Creative input + effort
- If two autors reach the same work independently the Copyright belongs to the first in line (usually).
- One work cannot have two authors, but can have co-authors

Co-Authors VS Collection of works

Co-Authorship means that the contributions to the final result cannot be percieved independently

- Both/all co-autors recieve equal rights to the final work

Collection of independent elements does not equal to co-authorship

- The person who collects many works can get a separate right to a collection

Collection of works (not co-authorship)

Rights of an employer/investor

Employee keeps Moral rights

Employer/Investor utilizes Economic rights

Authorship and Plagiarism

Academic and Legal perspective

What cannot be copyrighted

- Laws of nature (Discovery)
- Mathematical principles
- Abstract ideas
- Scientific theories
- Factual Information
- Anything that has not been expressed.

The fundamental difference

COPYRIGHT PROTECTS THE „EXPRESSION"

ETHICS PROTECTS THE „IDEA"

Who is the Author?

ACCORDING TO LAW – THE PERSON WHO WROTE (TYPED) THE TEXT

ACCORDING TO RESEARCH ETHICS- THE PERSON WHO HAD AN IDEA AND CONTRIBUTED EFFORT

What is Plagiarism?

ACCORDING TO LAW

USING SOMEONES WORK WITHOUT AUTHORISATION

ACCORDING TO RESEARCH ETHICS-

NOT GIVING CREDIT

Citation

Copyright

- Using (unsubstantial) part of someone's work
- It is allowed for research and teaching purposes
- Must be proportionate and not detrimental to the Author's interests

Research ethics

- Giving somebody credit for the contribution on which you build your research

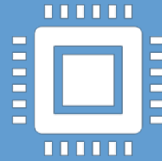# Right to software and computer programs

Module 2

Introduction to ……

Software

Software vs. Program

Software

Broader definition

Program, Data, Documentation,

Program

Machine language

Low level programming language (i.e. Assebler)

High level programming language

- Compiler

Coding, Programming, Engineering

System engineering

discipline concerned with Hardware and Software

Software engineering

discipline that is concerned with all aspects of software production

Programming

comprehensive process from formulation of a problem to executable programs

Coding

A specific activity during implementation of a program
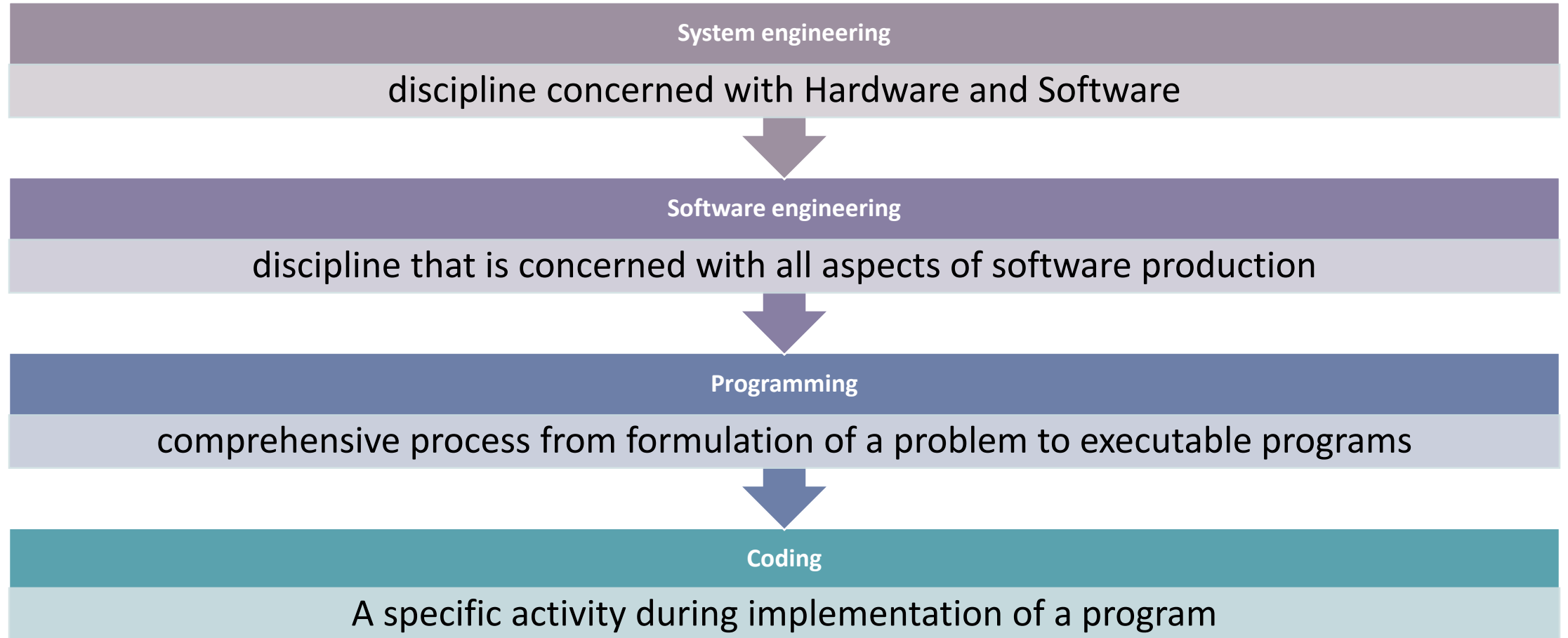
Required Legal tools

What does market need?

What to protect ?

- IDEA
- FUNCTION
- GUI
- BRAND
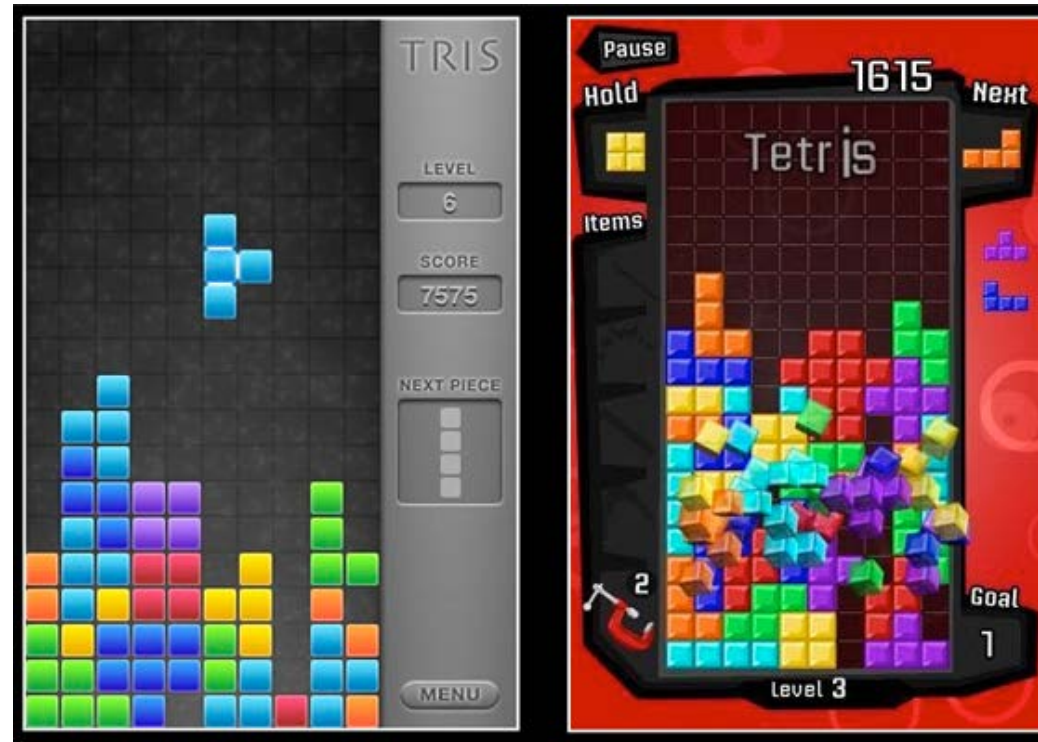
What to protect ?

- **IDEA**
- FUNCTION
- GUI
- BRAND

What to protect ?

- IDEA
- FUNCTION
- GUI
- BRAND
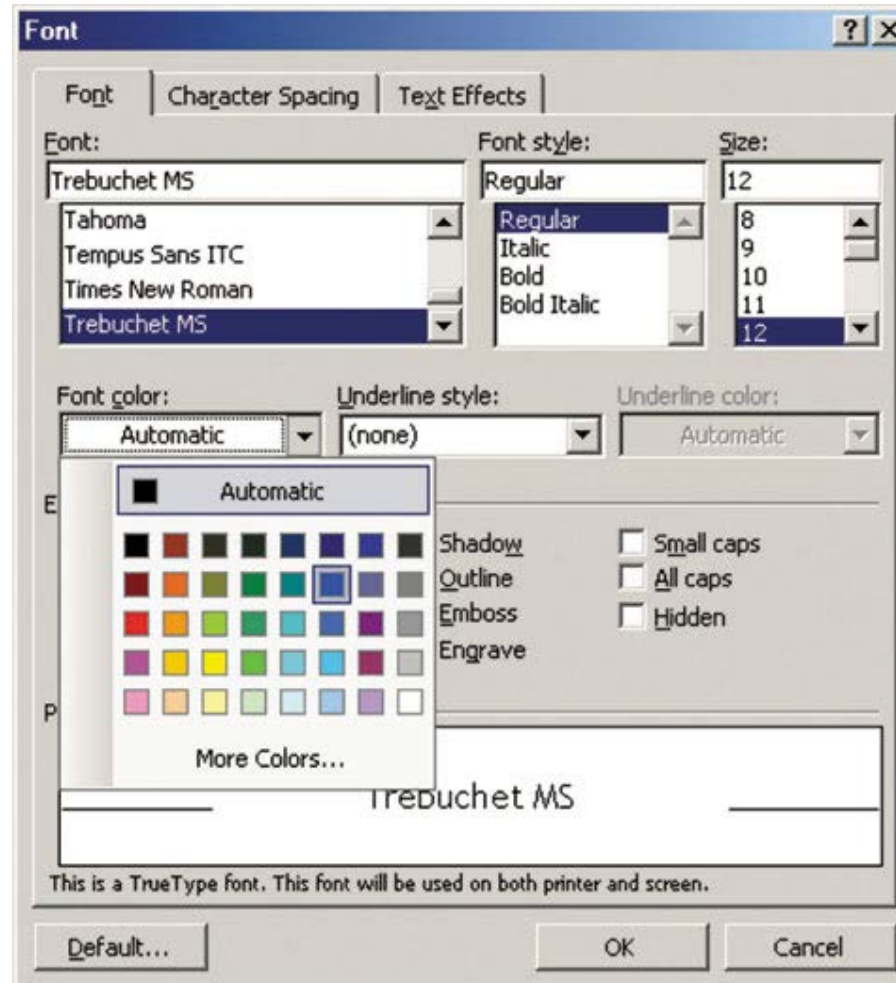
What to protect ?

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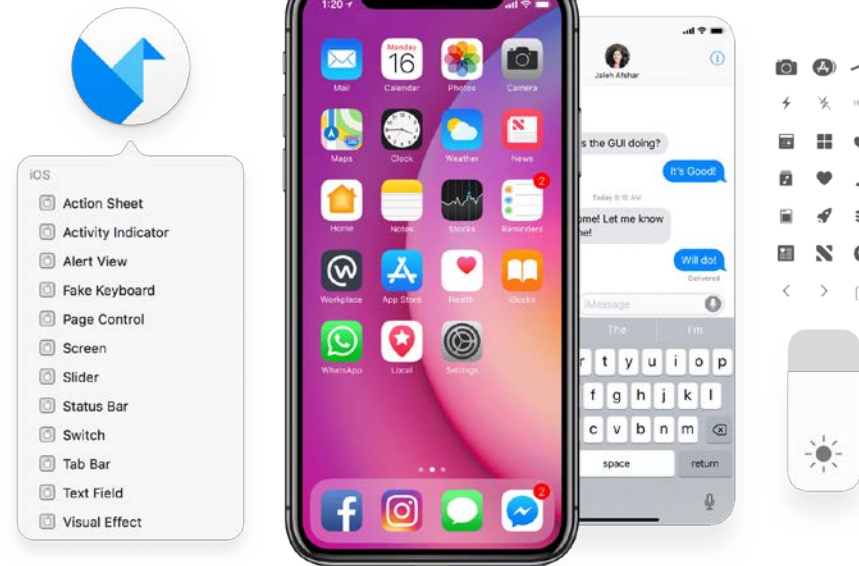
What to protect ?

- IDEA
- FUNCTION
- GUI
- BRAND

Main objectives:

Create a market

Sofware as a „product" or „service"
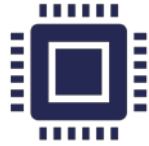
Renumerate software producers

Software as intellectual property

Promote rights of a customer/consumer

Software as a liability

Promote progress in creative art?

Software as a greater good

Software market

How to communicate value in a market?

- Trade secret
- Contract law
- Property
- Intellectual propety
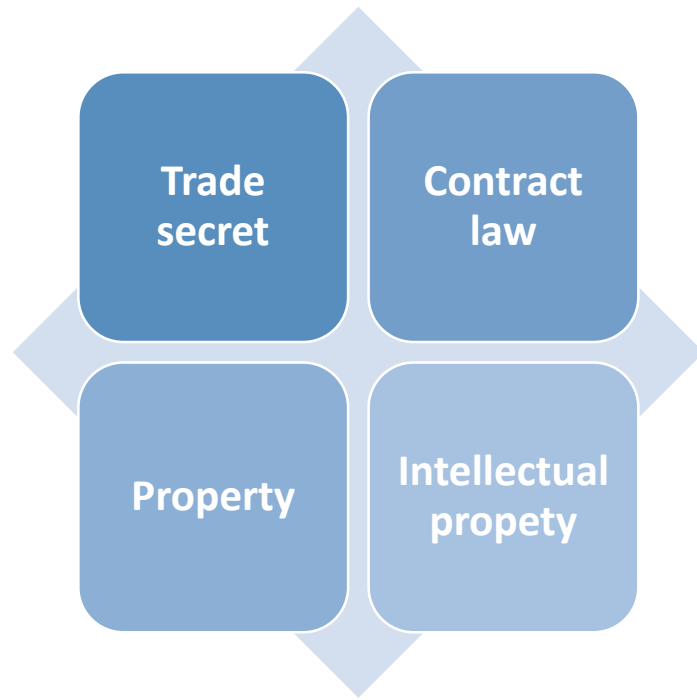
Further Issues

- Employee-employer relations
- Agency agreements

Remuneration of software producers

Incentive

- License fee vs. Salary
- Company vs. programmer

Protection of

- Code
- Graphic user interface
- Idea

Legal tools for producers

Copyright

Patent

Trade secret
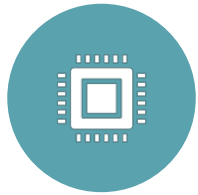
DRM – software protection tools?

Other specific IP rights?

Further questions

Protection of confidentiality and source code

Software patents

- Distinction between individual countries
- EU perspective

Free software concept and rules

Practical skills in contract writing EULA, SLA

Competition law perspective

Software Market

Generic copy/Service in cloud/Individual solution

Software Products

Generic products

Customized products

Four Fundamental activities

Software specification

Software development

Software validation (testing)

Software evolution (maintenance)

Computer programs Directive (EU)

computer program

shall include programs in any form:

- generic software
- customized software
- incorporated into hardware
- preparatory design work

Architecture of software
- law does not make this distinction

Platform software

Application software

User Written software
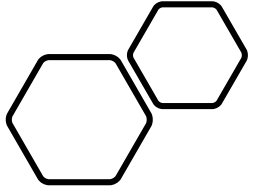
How is the program protected?

by copyright,

as literary works within the Berne Convention
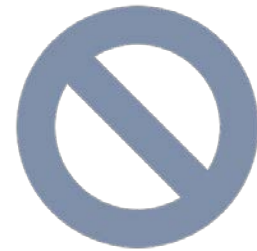
Applies to expression in any form

Copyright to computer program

What is protected?

YES	No

- the expression of a computer program
- Binary Code
- Source code

- Ideas
- Principles
- Logic,
- Algorithms
- Programming languages

- Originator – the one who gives existence
- Creative input + effort
- If two autors reach the same work independently the Copyright belongs to the first in line (usually).
- One work cannot have two authors, but can have co-authors

Original Work?
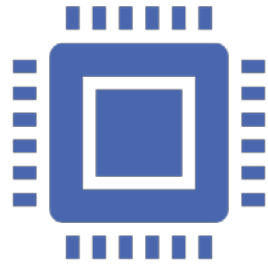
**A computer program shall be protected
if it is original**

no tests as to the qualitative or aesthetic merits

Author

Individual

Group

Company

Co-Authors VS Collection of works

Co-Authorship means that the contributions to the final result cannot be percieved independently

Both/all co-autors recieve equal rights to the final work

Collection of independent elements does not equal to co-authorship

The person who collects many works can get a separate right to a collection

Cooperation – Who owns the work ??

Joint cooperation	• Joint ownership
Collective work	• Usually the leading person
Employee	• Employer

What is the benefit of the authorship to a program?
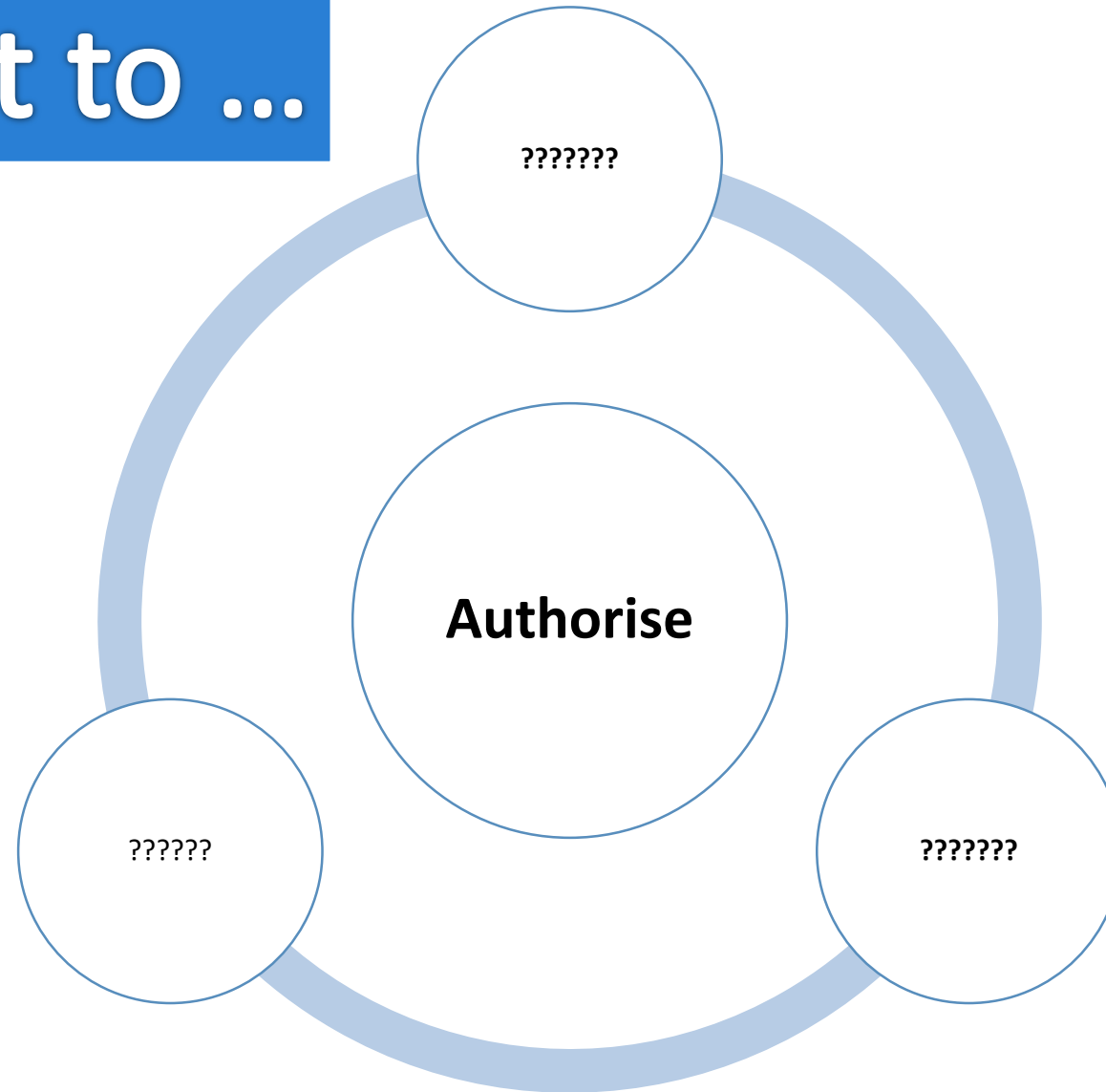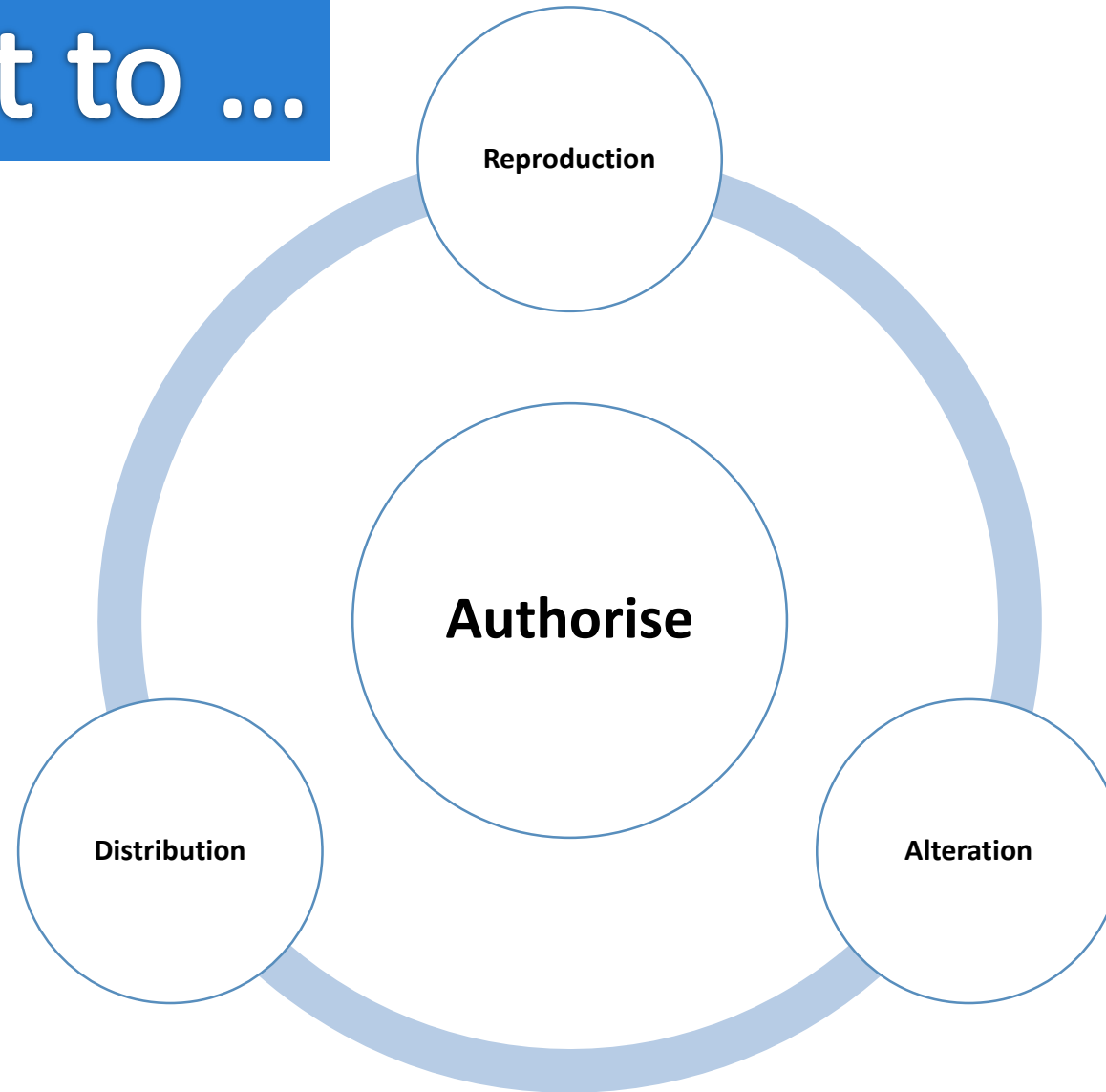
Rights for geeks – adapting the computer program to your needs

- The unauthorised adaptation is an infringement
  - Exemption - to achieve the interoperability with other program

- Back-up copy is permitted

- Right to observe, study or test the functioning of the program

Decompilation When it is permitted

Right to use a copy program
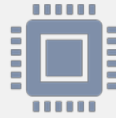
Needs it for interoperability

It is necessary (not available otherwise)
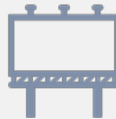
Not for purposes of creating similar product

Decompilation is possible when

- Right to use a copy program
- Needs it for interoperability
- It is necessary (not available otherwise)
- Not for purposes of creating similar product

Exhaustion of rights

- The first sale in the Community of a copy of a program by the rightholder … shall exhaust the distribution right within the Community of that copy,

- with the exception of the right to control further rental of the program or a copy thereof.

CASE LAW

SAS software - C-406/10

SAS software - C-406/10

- SAS INSTITUTE
  - developer of analytical software
  - Base SAS – enables users to write their own programs
- WPL
  - Competitor
  - Programmed something identical to Base SAS
  - the same inputs would produce the same outputs
  - Says it is OK to study programme
  - Says it is OK to emulate functionality

Argument of the SAS

- WPL did not have the right to acess the source code !
- WPL violated copyrights in manuals
- WPL copied certain „components" if not the whole program

Court of justice (SAS software)

- to accept that the functionality of a computer program can be protected by copyright would amount to making it possible to monopolise ideas, to the detriment of technological progress

- protection covers only the individual expression of the work and thus leaves other authors the desired latitude to create similar or even identical programs provided that they refrain from copying

- WPL did not make a decompilation, they reproduced functionality

Conclusion no. 1

- Neither the functionality of a computer program nor the programming language and the format of data files used in a computer program … constitute a form of expression of that program

- and

- as such, <u>are not protected </u>by copyright in computer programs <u>for the purposes of that directive.</u>

CJEU – Licence to explore

A licensee is entitled to observe, study or test the functioning of a computer program in order to determine the ideas and principles which underlie any element of the program.

It is enough to have a license to use

Does not need an expressed license to observe, study and test

Discussion

- If the functionality is not protected by software (comp. Programme directive), is it protected by something else?

Legal protection of data and databases

What is the difference
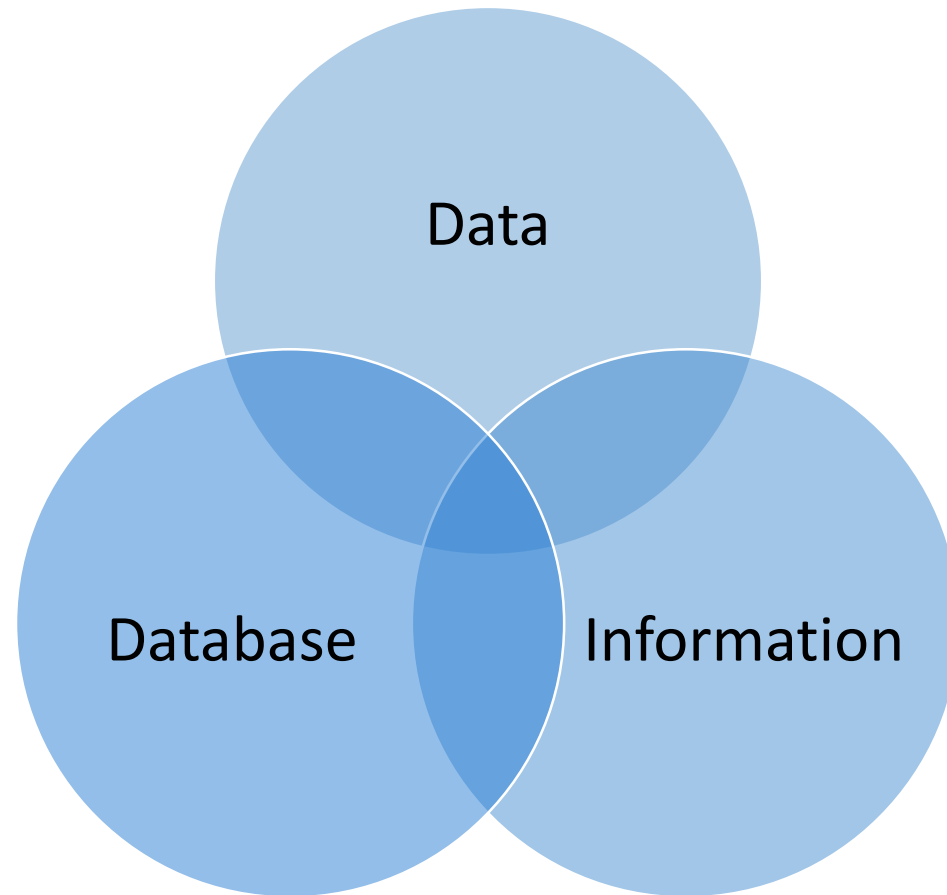
WHO OWNS THE DATA ?

? Is a very inaccurate question

✕ Ownership is possession of the storage medium — Does not grant the exclusive rights

? Better question is "who owns IP rights to the data"

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IP RIGHTS TO THE DATA

Database Authorship

Protects creative input to collection of the data

Sui generis database rights

Protects the investment

Database

da·ta·base (dā′tə-bās′, dăt′ə-) *Computer Science*
n. also **data base**
> A collection of data arranged for ease and speed of search and retrieval. Also called *data bank*.

tr.v. **da·ta·based**, **da·ta·bas·ing**, **da·ta·bas·es**
> To put (data) into a database.

database (ˈdeɪtəˌbeɪs)
n
> 1. (Computer Science) a systematized collection of data that can be accessed immediately and manipulated by a data-processing system for a specific purpose
> 2. (Communications & Information) any large store of information: *a database of knowledge.*

DATABASE – legal definition

1) Collection of independent elements

2) systematically or methodically arranged

3) Individually accessed

DATABASE AS A COPYRIGHTED WORK

What about …

Awarded by European regulation no **96/9/EC**

The aim was also to safeguard the investment of database makers

To ensure that the legitimate interests of users of information contained in databases were secured.

Creative input

Sweat of the brow?

Original

- Enjoy copyright protection
- Have creative element

Non-Original

- Lack creative element
- Require substantive investments to produce
- Need sui generis protection

What do we protect

Copyright to the database

Sui generis database right

Scope

This Directive concerns the legal protection of databases in any form.

- Electronic
- Non-electronic

Without prejudice to provisions relating to:

- the legal protection of computer programs;
- rental right, lending right and certain rights related to copyright in the field of intellectual property;
- the term of protection of copyright and certain related rights.

Databases which, by reason of the selection or arrangement of their contents, **constitute the author's own intellectual creation shall be protected as such by copyright**.

The copyright protection of databases provided for by this Directive **shall not extend to their contents** and shall **be without prejudice to any rights subsisting in those contents** themselves.

Author

- The author of a database shall be the **natural person** or group of natural persons **who created the base** or, where the legislation of the Member States so permits, the legal person designated as the rightholder by that legislation.

expression of the DB protectable by COPYRIGHT

The author of a database shall have the exclusive right to carry out or to authorize:

- temporary or permanent reproduction by any means and in any form, in whole or in part;
- translation, adaptation, arrangement and any other alteration;
- any form of distribution to the public of the database or of copies thereof.
- any communication, display or performance to the public;

Co-Authorship

Where collective works are recognized by the legislation of a Member State,

the economic rights shall be owned by the person holding the copyright.

In respect of a database created by a group of natural persons jointly,

the **exclusive rights shall be owned jointly.**

In addition, with respect to online materials, protected databases include:
(T. Alexander Kley - The European Database Directive In Perspective)

- collections of company registers,
- movie schedules,
- news articles and headlines,
- real estate information,
- job records and markets,
- financial information,
- poems, medical lexicons,
- weblinks,
- ticketing event data,

- advertisements,
- addresses, and sporting event information.
- websites in general, as collections of webpages, are presumptively protected under the Directive so long as there was substantial investment in their content.
- collections of self-help groups,
- public exhibition catalogues,

collective bargaining agreements, hit music titles, and magazines. F

- inally, in the case of electronic materials, protection may extend to collections of email addresses, demographic information, and map derivations.   ADV-Firmenbuch, Austrian Supreme Court (Oberste Gerichtshof) (Apr. 9, 2002).

Sui generis Rights

NON original databases

Right for the maker of a database which shows that:

substantial investment

- qualitatively and/or
- quantitatively

in either the:

- obtaining,
- verification or
- presentation of the contents

Content of the right

prevent extraction

- shall mean the permanent or temporary transfer of the contents of a database to another medium by any means or in any form

prevent re-utilization

- any form of making available to the public all or a substantial part of the contents of a database by the distribution of copies, by renting, by on-line or other forms of transmission.

Sui generis right can be exhausted

- The first sale of a copy of a database within the Community by the rightholder or with his consent shall exhaust the right to control resale of that copy within the Community;

Difference between original and non-original protection

Term of protection

Copyright

- Regular copyright

Sui generis right

- fifteen years from the first of January of the year following the date when the database was first **made available to the public** or

- 15 years after the **completion** (if never made public)

What about any update of the database ?

Commercialization

Sale/transfer	License
• Only sui generis.	• Sui generis right • Copyright

Computer program associated with the database

- Protection under this Directive shall not apply to computer programs used in the making or operation of databases accessible by electronic means.

Trade secret

Information with commercial value

Protected by law

Employees

Confidential information

Contractual clause

Non disclosure agreement

At the beginning of cooperation

Taksk no. 1: what is google search?

How google works

Google Search   I'm Feeling Lucky

You write a blog post, tweet, update a site, or otherwise add content to the web.

Google bots crawling the web come across your post.

Google bots follow links. If there are no links to your site, typically it will not get crawled deeply or regularly.

Google bots won't crawl your site if you tell them not to with a robots.txt

If links to your site have a nofollow tag, the google bots won't arrive from those links.

Google may also find your site by being pinged by blog software or xml sitemaps.

Page titles and link data are stored in one index used for broad and competitive searches.

On page content is stored in another index used for obscure and long tail searches.

Page content is stored in a reverse index.

Once crawled, the page is indexed within seconds.

When you search google you are not searching the active web, but Google's cache of it, which is constantly being updated.

Google estimates the domain and page's overall authority based on links.

The more links you have from higher authority pages, the greater your own pages' authority.

Google's Search Quality team and Webspam Team review and refine algorithms.

10,000+ remote testers rate the quality of their searches.

Pages are checked against editorial policies.

As long as they are not tagged 'nofollow'.

Google solicits spam reports from users.
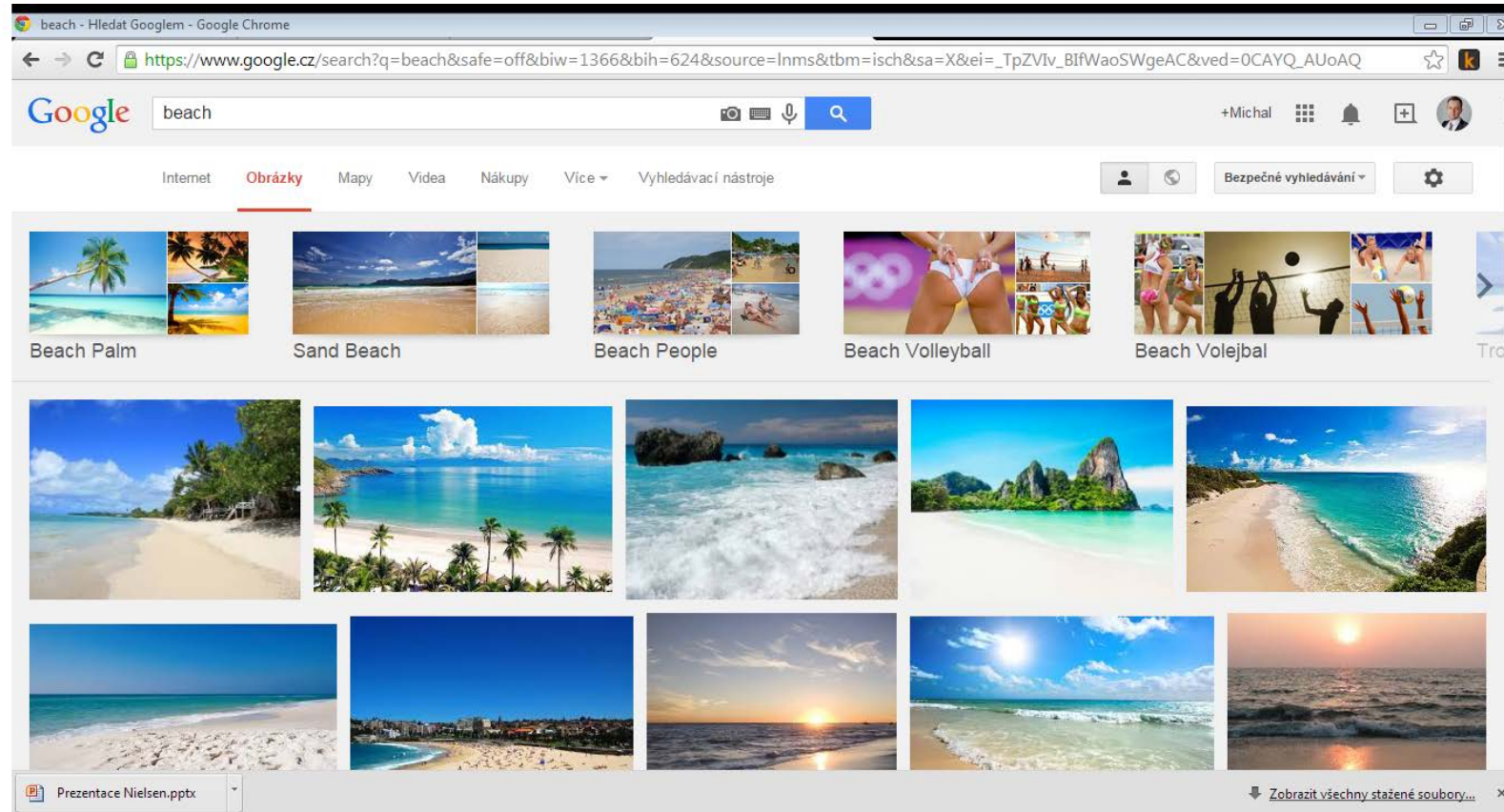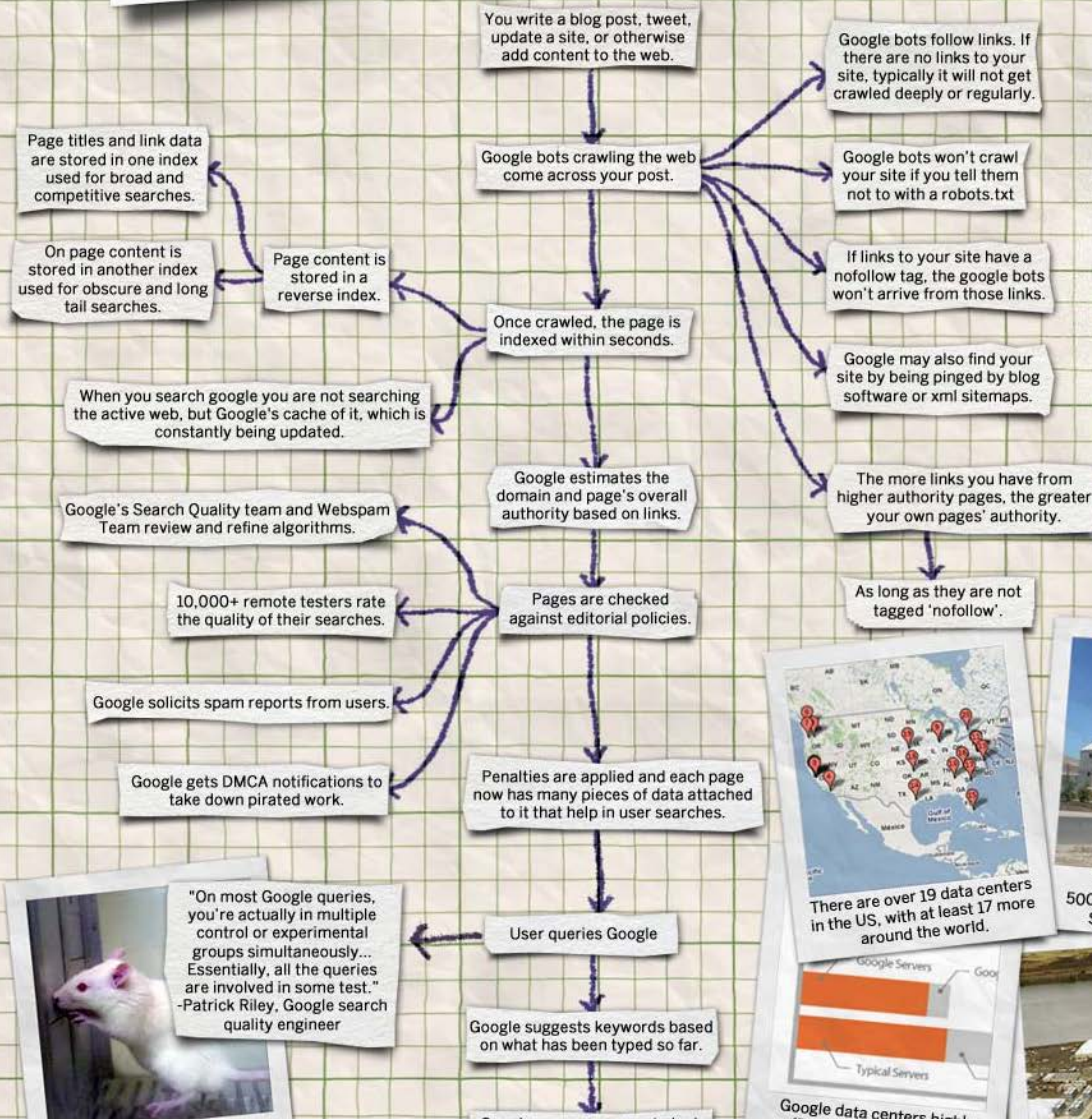
Google gets DMCA notifications to take down pirated work.

Penalties are applied and each page now has many pieces of data attached to it that help in user searches.

"On most Google queries, you're actually in multiple control or experimental groups simultaneously... Essentially, all the queries are involved in some test." -Patrick Riley, Google search quality engineer

User queries Google

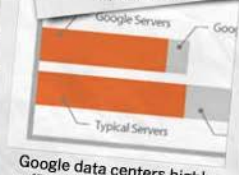Google suggests keywords based on what has been typed so far.

The official word
"The software behind our search technology conducts a series of simultaneous calculations requiring only a fraction of a second. Traditional search engines rely heavily on how often a word appears on a web page. We use more than 200 signals, including our patented PageRank algorithm, to examine the entire link structure of the web and determine which pages are most important. We then conduct hypertext-matching analysis to determine which pages are relevant to the specific search being conducted. By combining overall importance and query-specific relevance, we're able to put the most relevant and reliable results first."
-Google

Google is very secretive about its data centers. This is what we know so far.

There are over 19 data centers in the US, with at least 17 more around the world.

They can be up to 500,000 square feet and $600 million each.

Google Servers   Goo
Typical Servers

Google servers are housed in standard shipping containers that hold 1,160 servers each.

Google data centers high...

99

EXCEPTIONS

- The maker of a database which is made available to the public in whatever manner may not prevent a lawful user of the database from extracting and/or reutilizing insubstantial parts of its contents, evaluated qualitatively and/or quantitatively, for any purposes whatsoever.

Database and software

Almost every software contains certain database

- Files, libraries, data, fonts, images
- Could be either copyrighted if they are unique and expressed
- Could be protected by sui generis, if they are acommpanied by sufficient investment
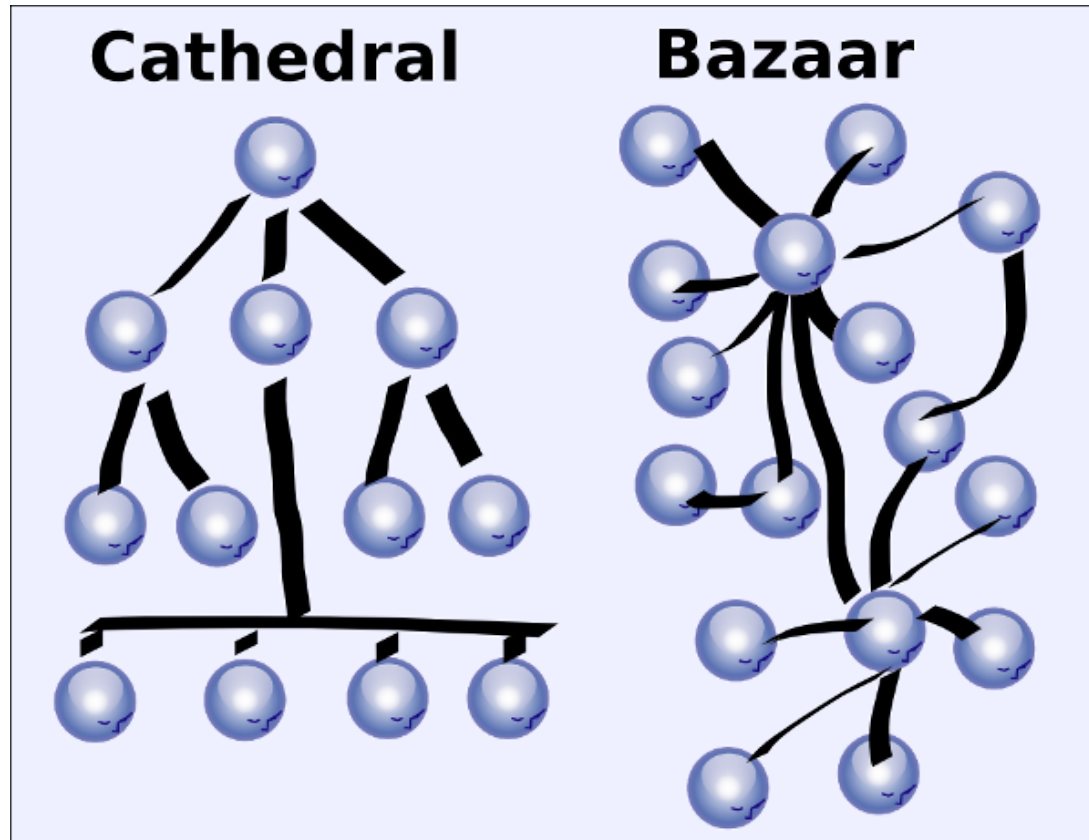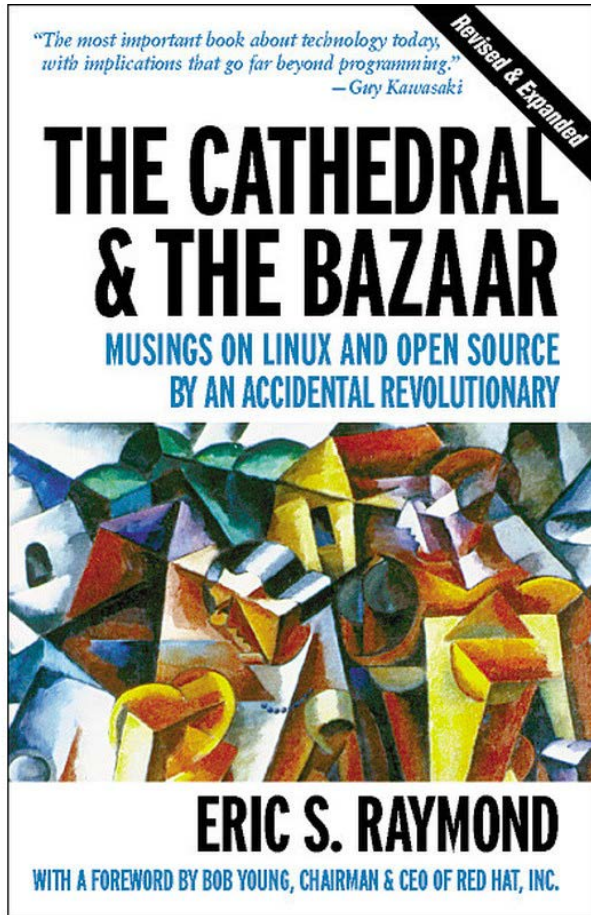
Future

- Big data applications, data analytics applications
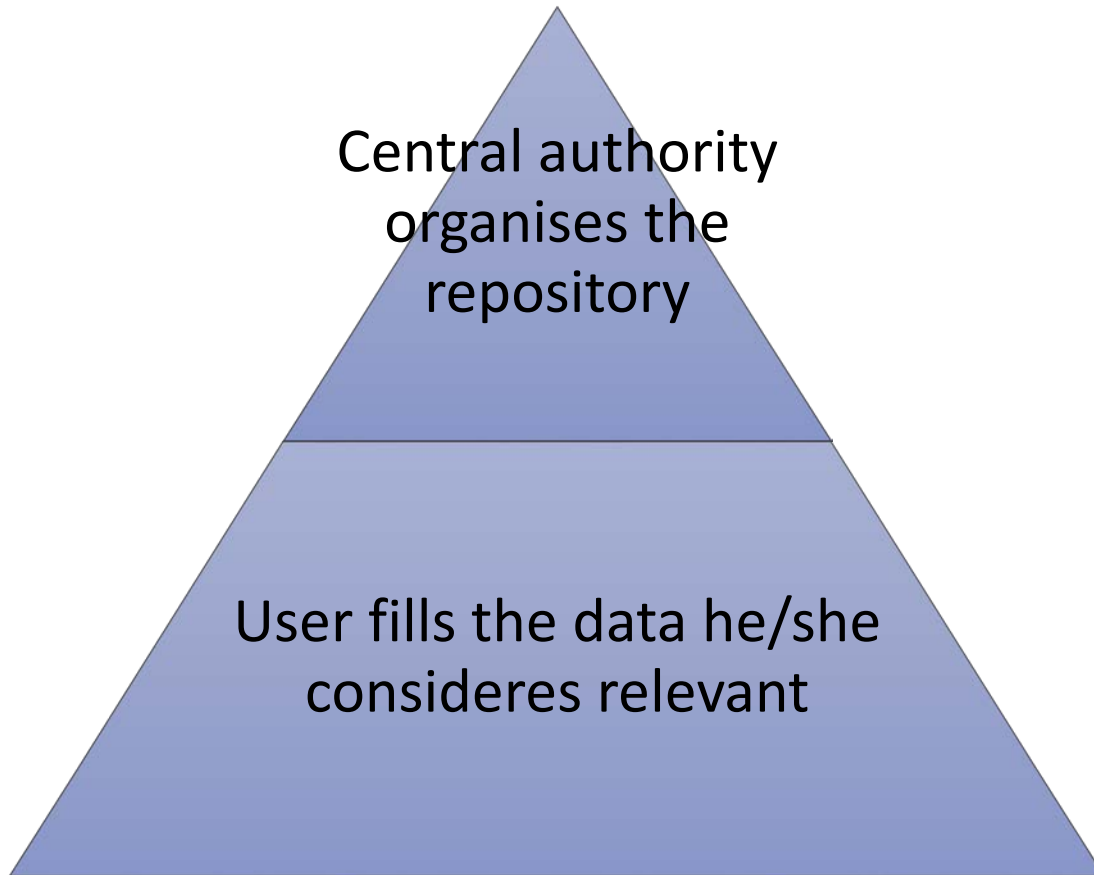
Questions

Module 4

Sharing your work and building on the works of others

How to share information and knowledge

The lessons for data-sharing infrastructure
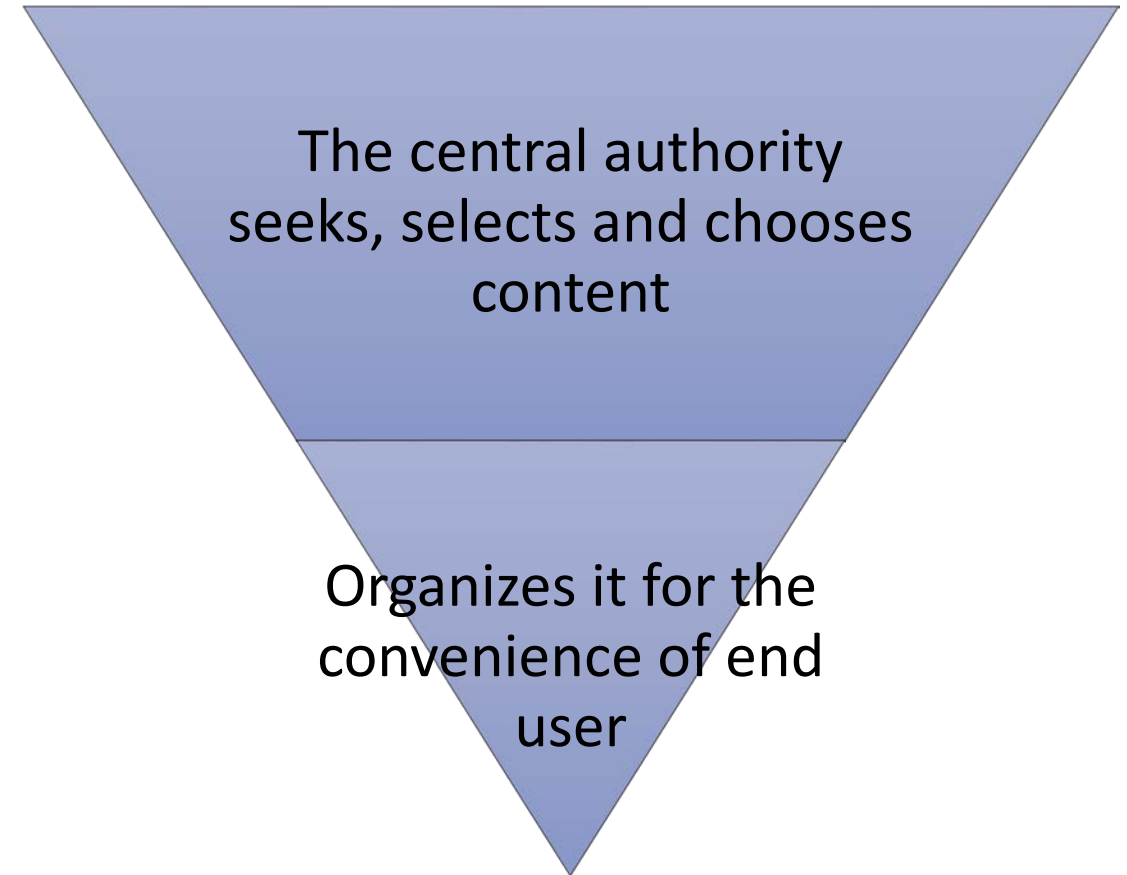
- BOTTOM UP

- TOP DOWN

Central authority organises the repository

User fills the data he/she consideres relevant

The central authority seeks, selects and chooses content

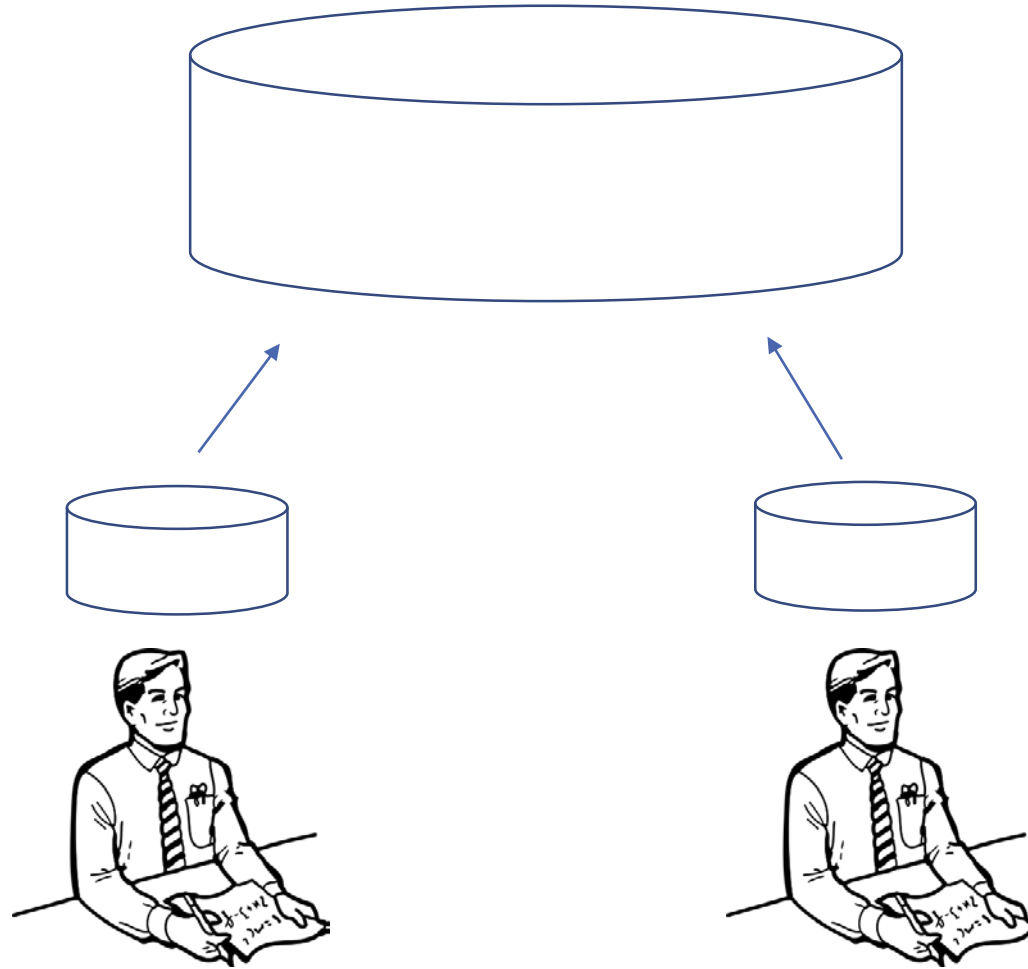Organizes it for the convenience of end user

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Data sharing design and law

IP law and DP law is predominantly based on the presumption of "top down" design

- It is easy to identify person with responsibility/liability
- It is easy to attribute "ownership"

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Bottom up approach is a challenge

Possible outcomes

1+1=1 – desired outcome – merging two databases into one „joint database "

1+1=0 – merging two databases without substantial investment might create dataset without „database right protection"

1+1=2 – mere process of merging two databases does not constitute a substantial investment or original element. Therefore the two database rights exist independently

1+1=3 – the newly created database gains protection but the two original databases are still protected

0+0=1 – ideal situation – the datasets which would not be protected individually are protected as a whole

The emergence of "bottom up" in IT brings us new tools, that we are still learning to use

- Safe harbor regimes
- Codes of conducts
- Free licenses

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Main legal issues in data-sharing

Intellectual property rights

- Authorship of database
- Sui generis database rights
- Rights to primary data (maybe in the future)

Data protection rights, Privacy

- GDPR, general privacy rules

Right to access to information

- Public sector information
- Knowledge rights
- Data-mining exceptions

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Right to know (?) and information access

There are other rights that have to be balanced towards "restrictive rights"
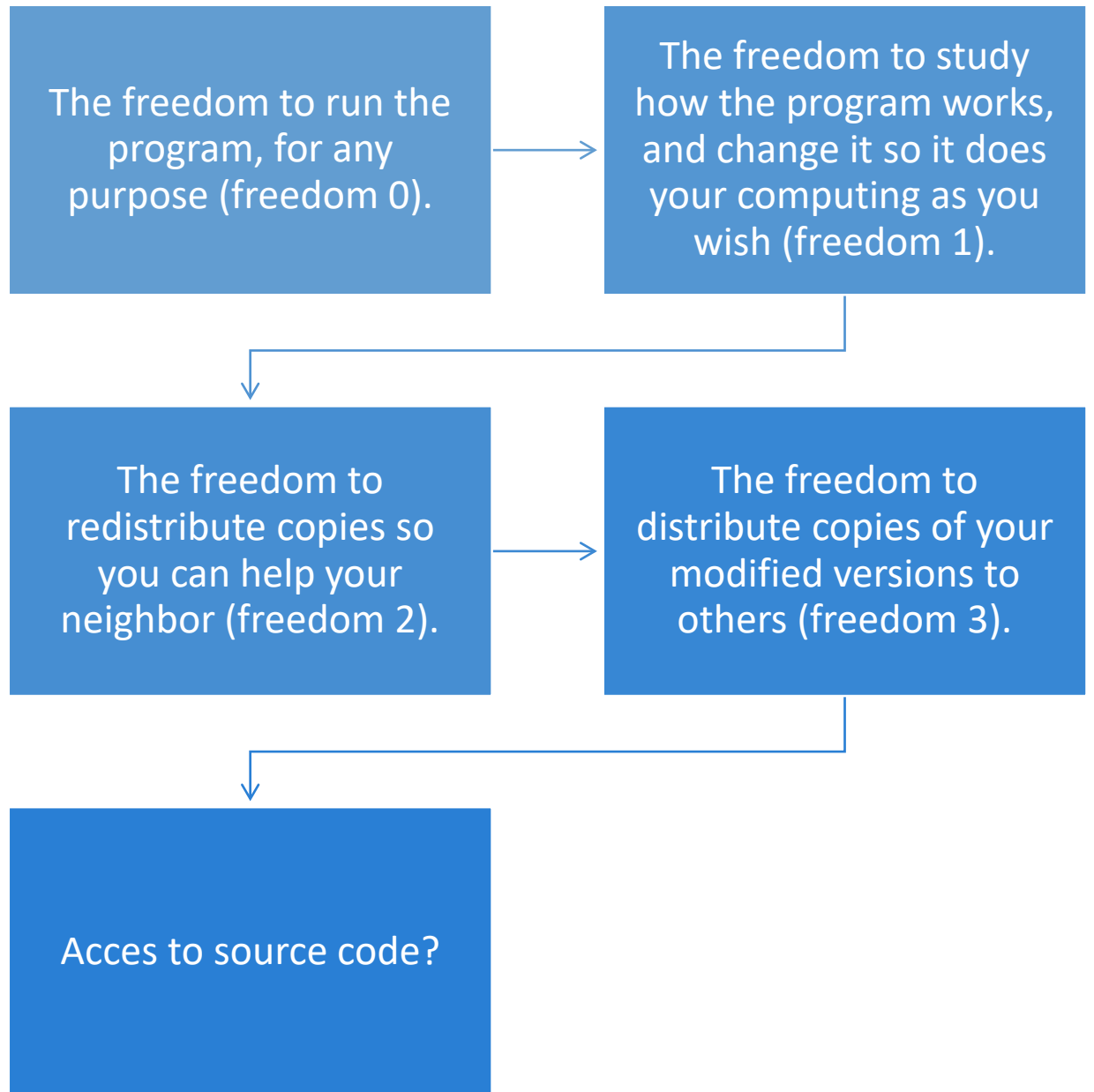
Freedom of speech

Freedom of information

Freedom of the arts and sciences

Transparency of public sector

It is not desirable to monopolize rights to mere information.

Free software

The freedom to run the program, for any purpose (freedom 0).

The freedom to study how the program works, and change it so it does your computing as you wish (freedom 1).

The freedom to redistribute copies so you can help your neighbor (freedom 2).

The freedom to distribute copies of your modified versions to others (freedom 3).

Acces to source code?

Open software

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- 3. Derived Works
- 4. Integrity of The Author's Source Code
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