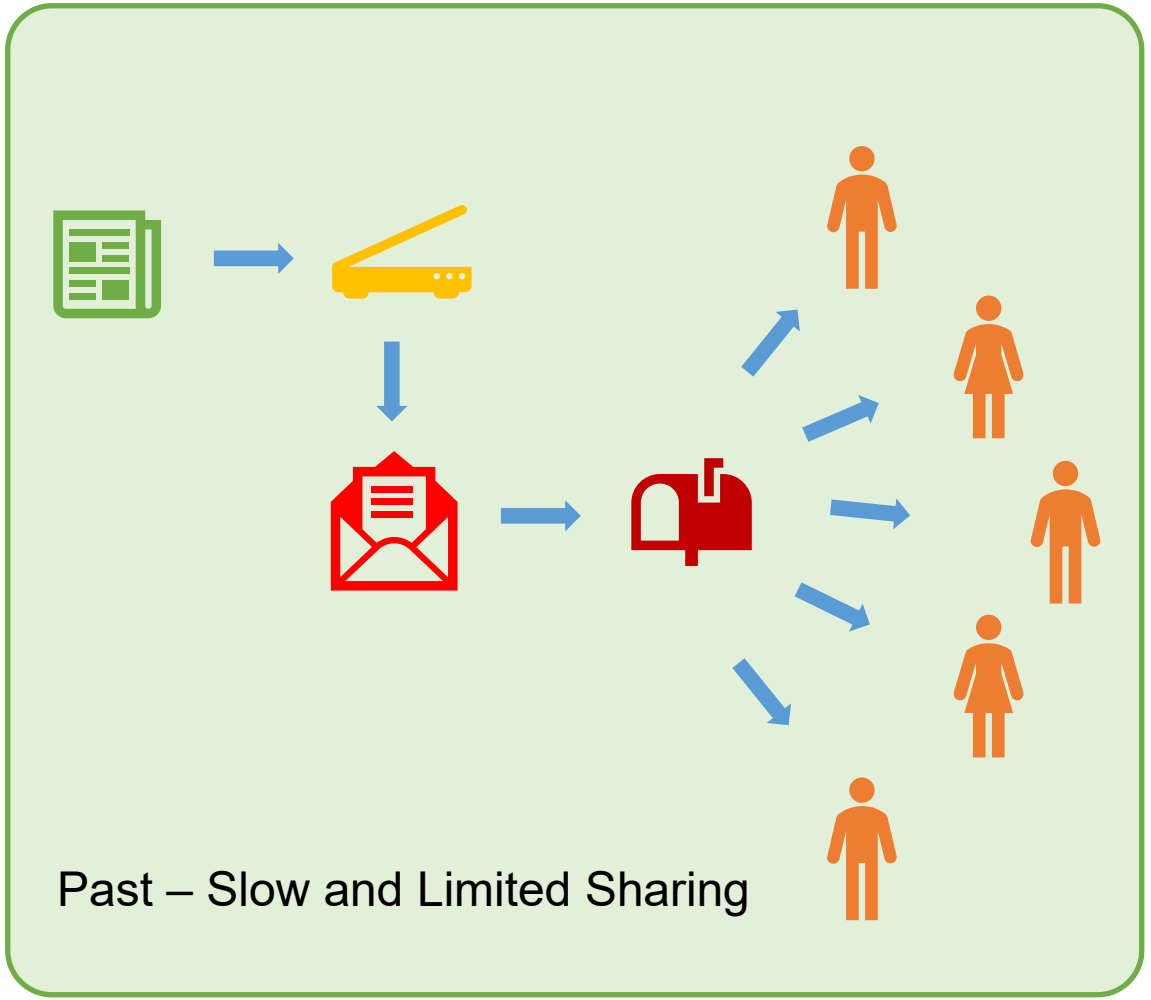
Digital Ethics and Data Privacy

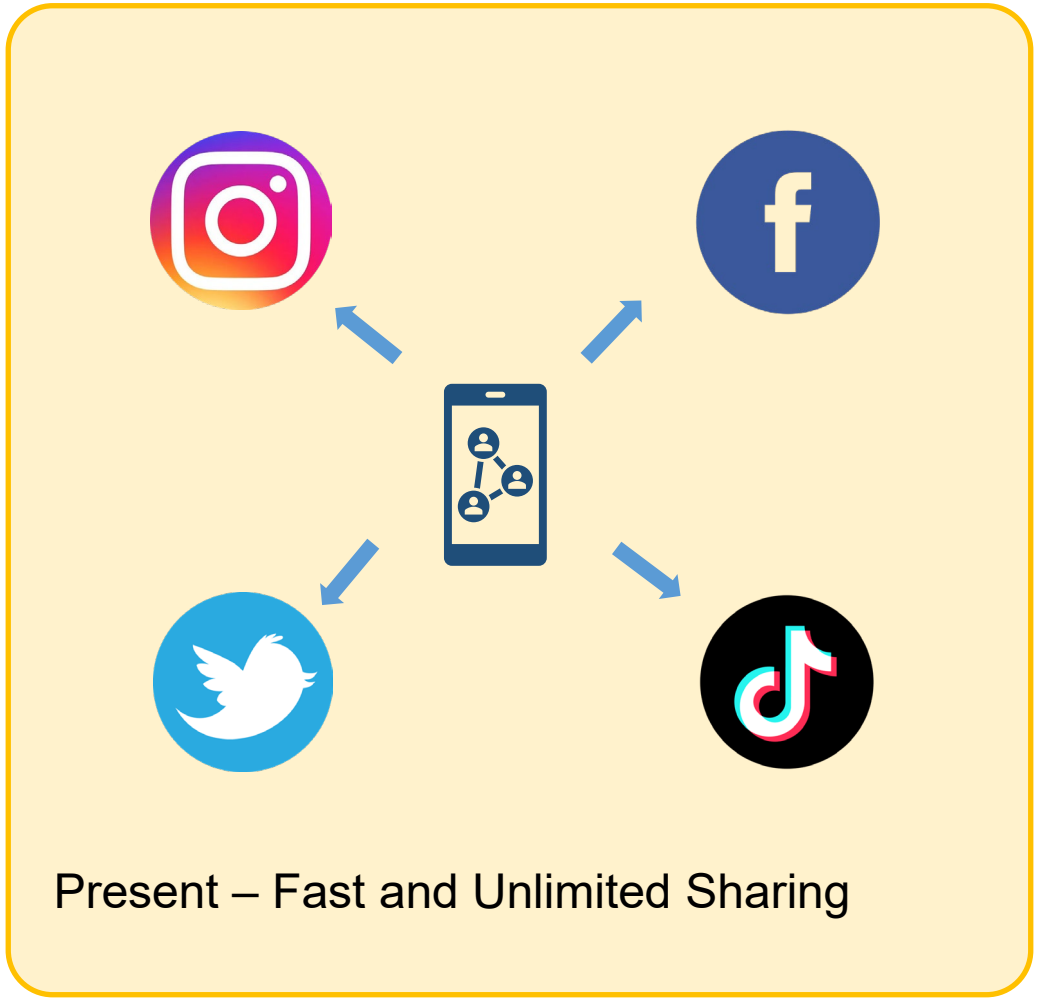
Topic 9: Digital Intellectual Property Rights

Topic Objectives

- Understand the basics of ***intellectual property rights*** in the digital realm.
- Identify ***key challenges*** to intellectual property rights posed by digital technologies.
- Identify ***subsistence of intellectual property*** in the technology ecosystem.
- Apply concepts such as ***copyrights*** and ***trademarks*** to protect intellectual properties.
- Discuss the ethical implications of ***copyright infringement*** and ***piracy***.
- Explore ***legal protections*** and ***measures*** for digital intellectual property.

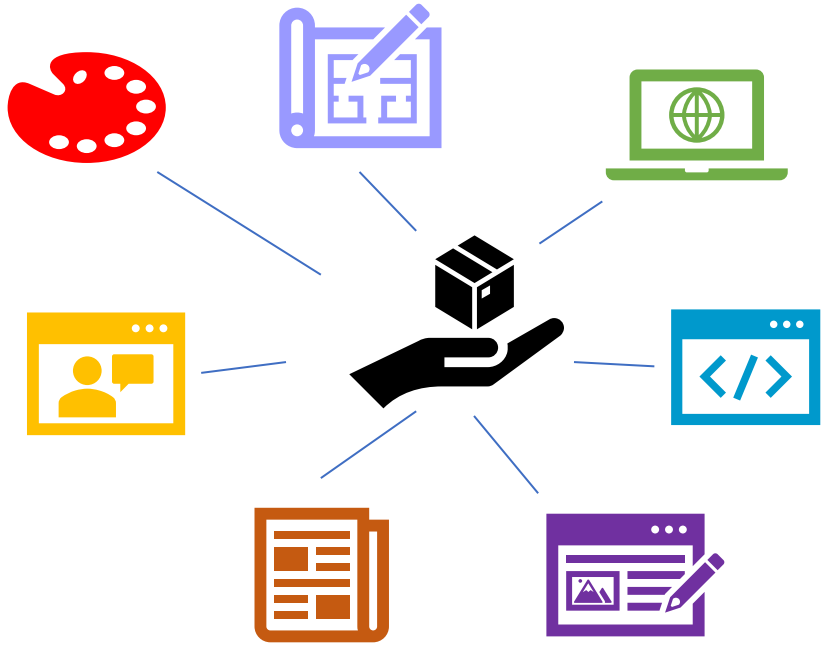
Information Sharing in a Connected World

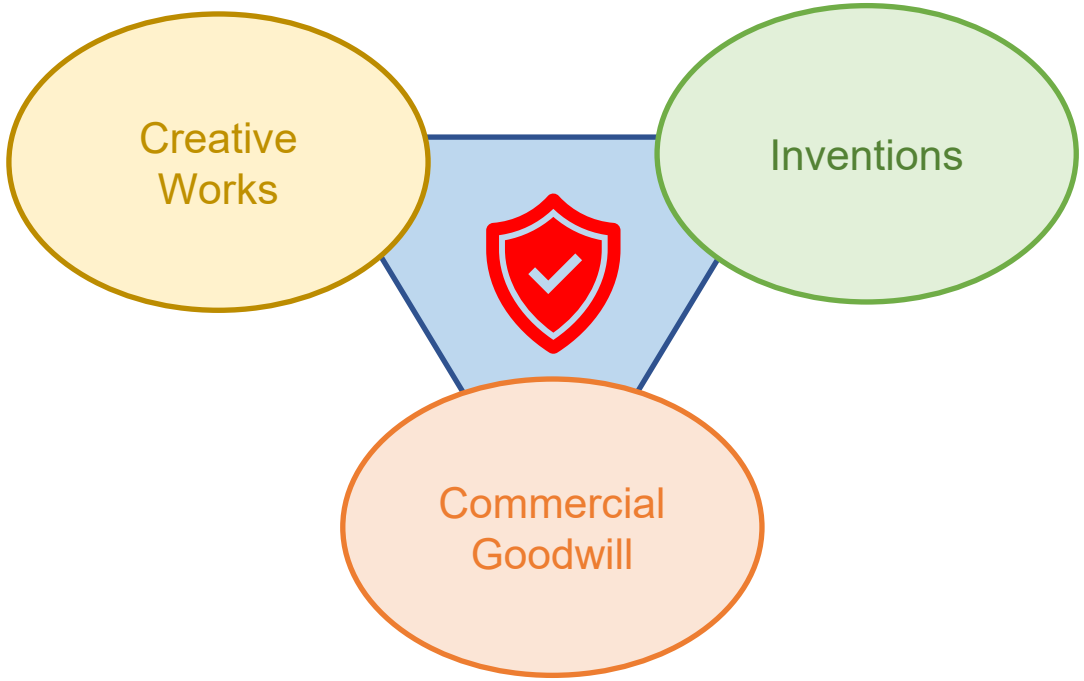




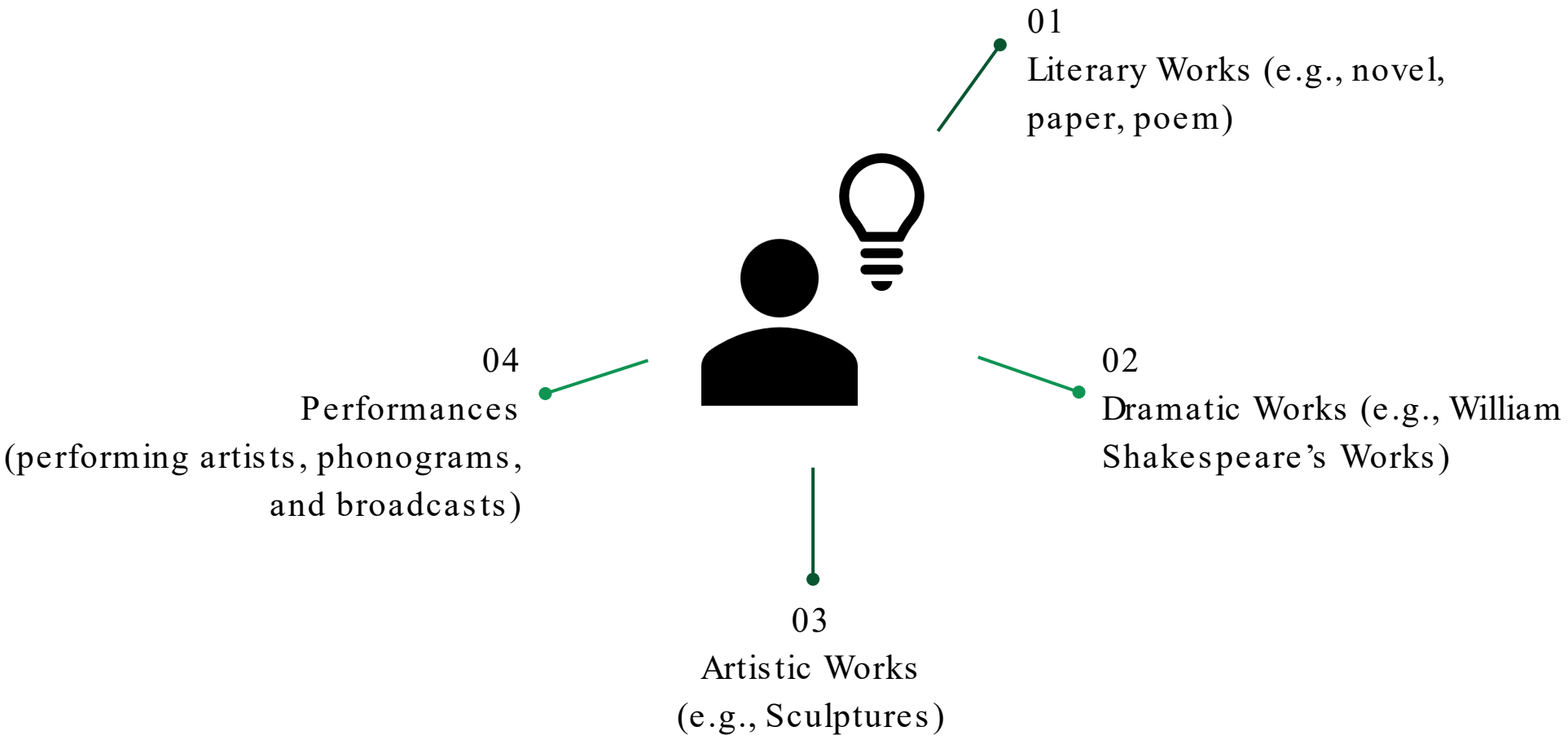
What is Intellectual Property?

- **Intellectual Property** is any unique asset that you create and use as part of your business, such as artwork, designs and website content to blog posts, inventions, articles, brand names, product names, business names, software, etc.





Subject Matters of Intellectual Property



Types of Intellectual Property Rights

	Type of IP Rights		Method to acquire IP Rights
01	Copyright (literary work, arts, music, performance, software)	Lifetime + 70 years	© • By writing something. • Perfected by declaration.
02	Patent (inventions, technology)	20 Years	® • By application, examination and grant.
03	Trademark (marks of a registered business such as term, symbol, slogan)	10 Years	™ • By registration.

Copyright Example Question

On January 2009, the photograph on the right (with “HOPE”) on which Fairey allegedly, based the design (on the left), was revealed by the Associated Press as one shot by freelancer Mannie Garcia — with the freelancer demanding compensation for its use in Fairey’s work.

Question:

Was there a breach of copyrights by Fairey (Right), for referencing Mannie Garcia photo (Left)?

Photograph: Mannie Garcia – 2006 (via The New York Times); Poster: Shephard Fairey – 2008 (via Wikipedia)

Answer

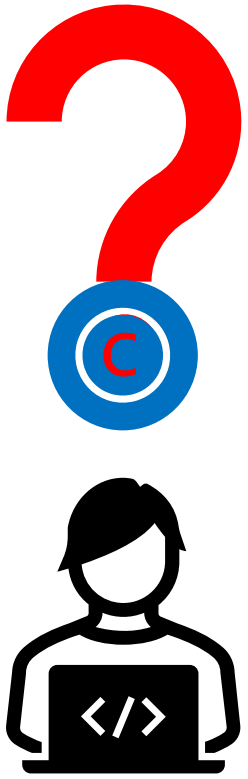
- Yes there is. Since the original image can be classified as an artistic work (as a picture of Mr. Obama), then it subsists in copyright, thus an infringement of copyrights.

Protection with Copyright

- What are some examples you can think of, that can be a type of copyright in the technology world?

- Copyright can be acquired by writing something - perfected by declaration. There is no need for any official registration or application to have copyright.

- For example, when you take the CS1010 module (or any other programming modules), you would need to declare your name if you wrote a piece of code.

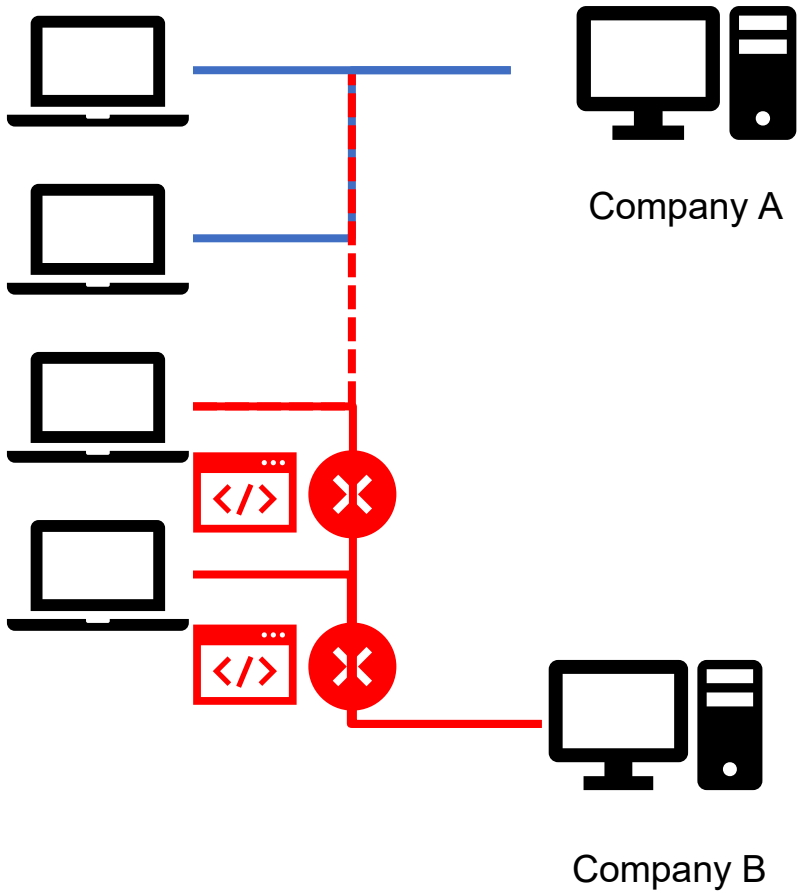


Patent Example Question

Company A in SG has a patent for a gambling application that is installed from the web, which could communicate with their own servers. Company B introduces an injectable software and supplies it to A's consumers. The injectable software is loaded illegally onto the system's containing A's software. This then redirected traffic from A's servers towards B's servers which are located in the Netherlands.

Issue: By 'supplied persons in SG with injectable software', does this counts as subsisting in patent infringement?

Question: Is there a patent infringement?



Answer

- Yes there is. Since B is denying A's customers access to A, but instead draws them to B, this forms as an infringement of the patent.

- Why? Because people who would like to gamble on A's application would now be re-directed to B's application. Then A would have lost 'an amount of customers' to B.

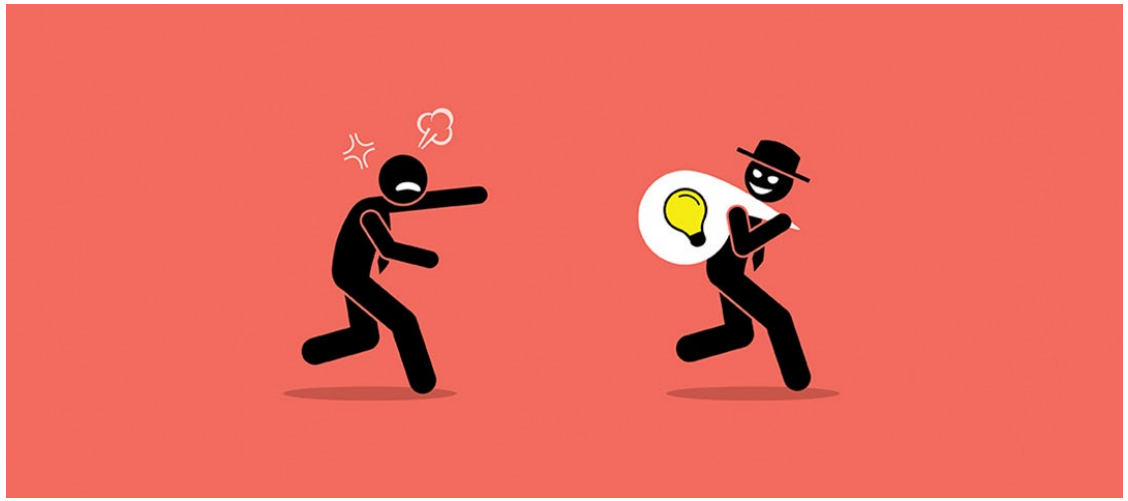


Image Source: Johnsonmartinlaw.com

Preventing IP Rights Infringement

Implementing clear policies and procedures within the company to ensure that all employees understand and comply with IP laws and regulations.

Always credit the owner or author of an origin of work.

Do not steal revenue or gain profit by free-riding on others' works

Do not plagiarise works, regardless of whether permission has been granted

From Physical to Software Protection

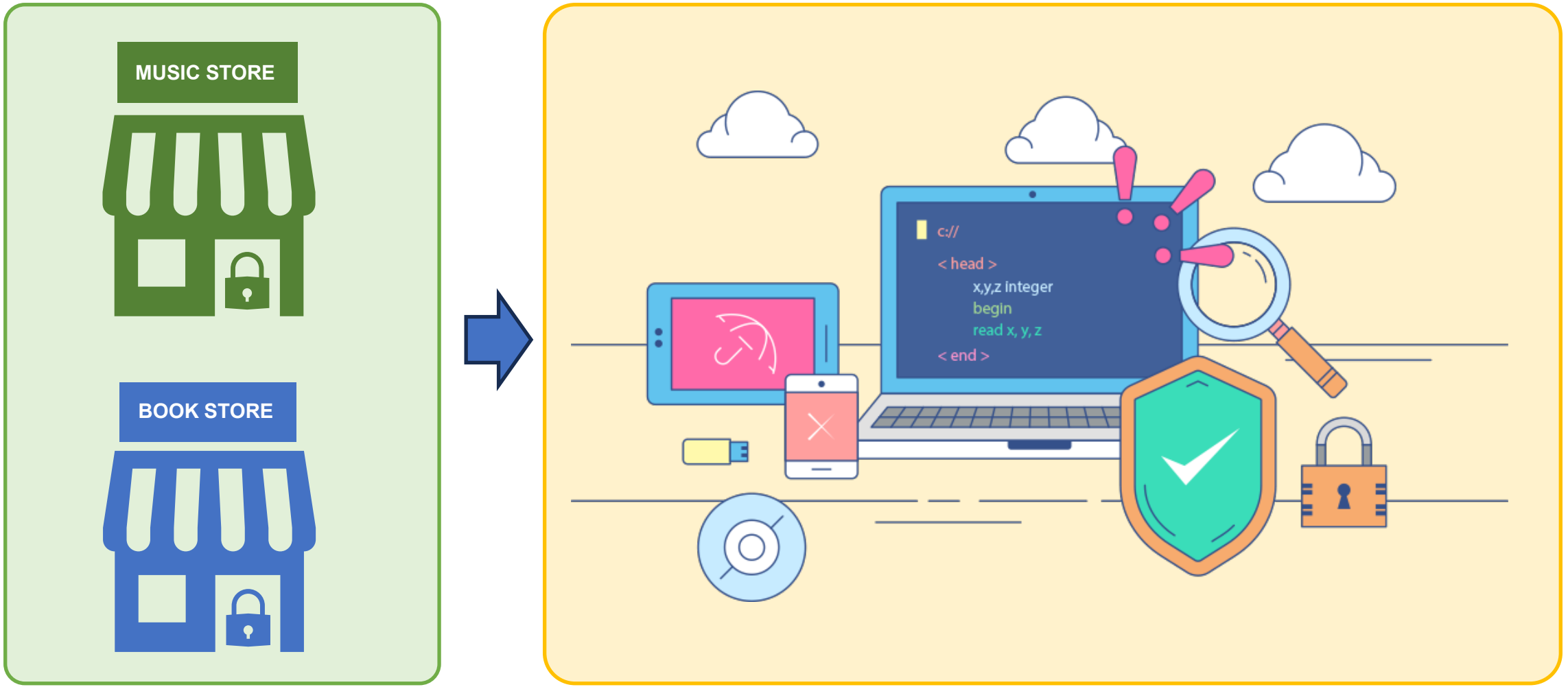


Image Source: qsoftvietnam.com

Intellectual Properties of Software

- With fast growing domains in the following software:
  - Artificial Intelligence (AI)
  - Big Data
  - Internet of Things (IoT)
- It is essential to understand how IP rights such as copyright and patents can protect your work as a software developer in the IT domain in time to come.

Intellectual Properties of Software

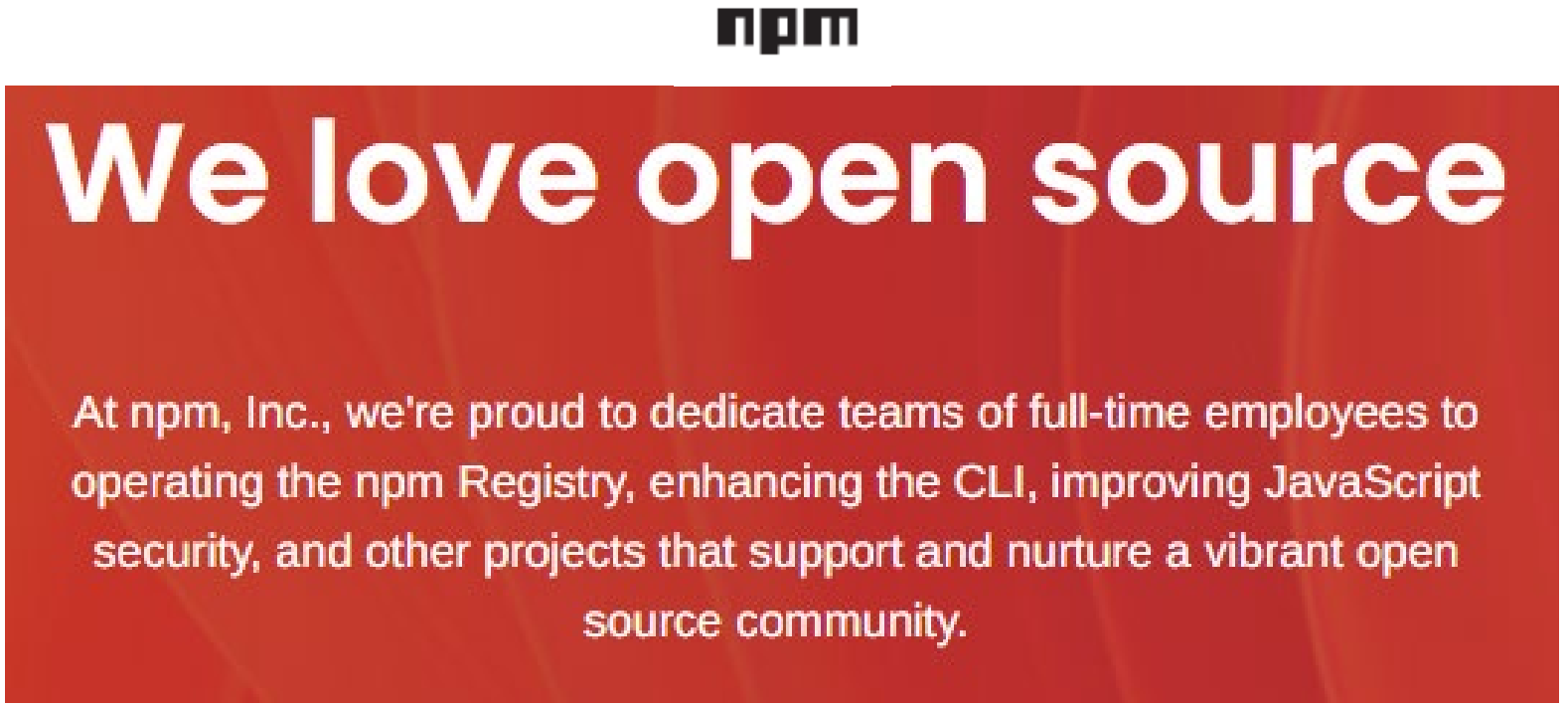
- Why is it hard to copyright/patent software?
  - Complex technology problems.
  - Software is both the process and the product
- Software can be created/used in manufacturing processes, created/distributed using manufacturing methodologies, or created/used/distributed entirely outside a manufacturing context
- Software patents are not generally read (or written) by those skilled in the art.

Areas For Open Source/Shared Domain

One alternative to using other author's works would be to consider Creativecommon.org, a website that features many facets of information for users to collaborate and apply for use!

Areas For Open Source/Shared Domain

In programming, especially JavaScript environments, npm is a open-source shared library of many extensive tools and capabilities for developers to plug and play! This helps users automatically credit the authors original codes.



IP of Software through Copyright

In General …

- Your software is protected as literary work.
- You must show forms of **Originality**:
  - The work originates from your intellectual creation
  - Ensure it is not copied the work from another; and
  - Prove that substantial amount of skill, labor and judgment is used in creating the work (Your software/project/code)
- Lastly, put it into tangible forms: reduced to writing or some other 'material form' such as RAM, CD, DVD, etc.

IP of Software through Patent

In General …

- Unlike typical patents which focuses on patenting designs and products, software is different.
- As mentioned, Software is both the process and the product. This makes it hard to determine the following:
  - Whether the work in question, is a process, and therefore cannot be patented
  - Or if it is a product, which can then be patented.

New Software Patent Example Question

Imagine you invent a new data storing device for properties (i.e., buildings and structures), that is able to store and transfer data from one medium to another without the need of a connection.

That is, you created a new micro-computer capable of having computer executable instructions for performing a method comprising 3 functions:

- Maintaining a DB identifying real property buyers and the corresponding real property interests
- Scanning an electronic listing service
- Controlling a printer to print a report

Issue: Devices such as a USB drive and a patent for it already exist.

Question: Can you patent your design?

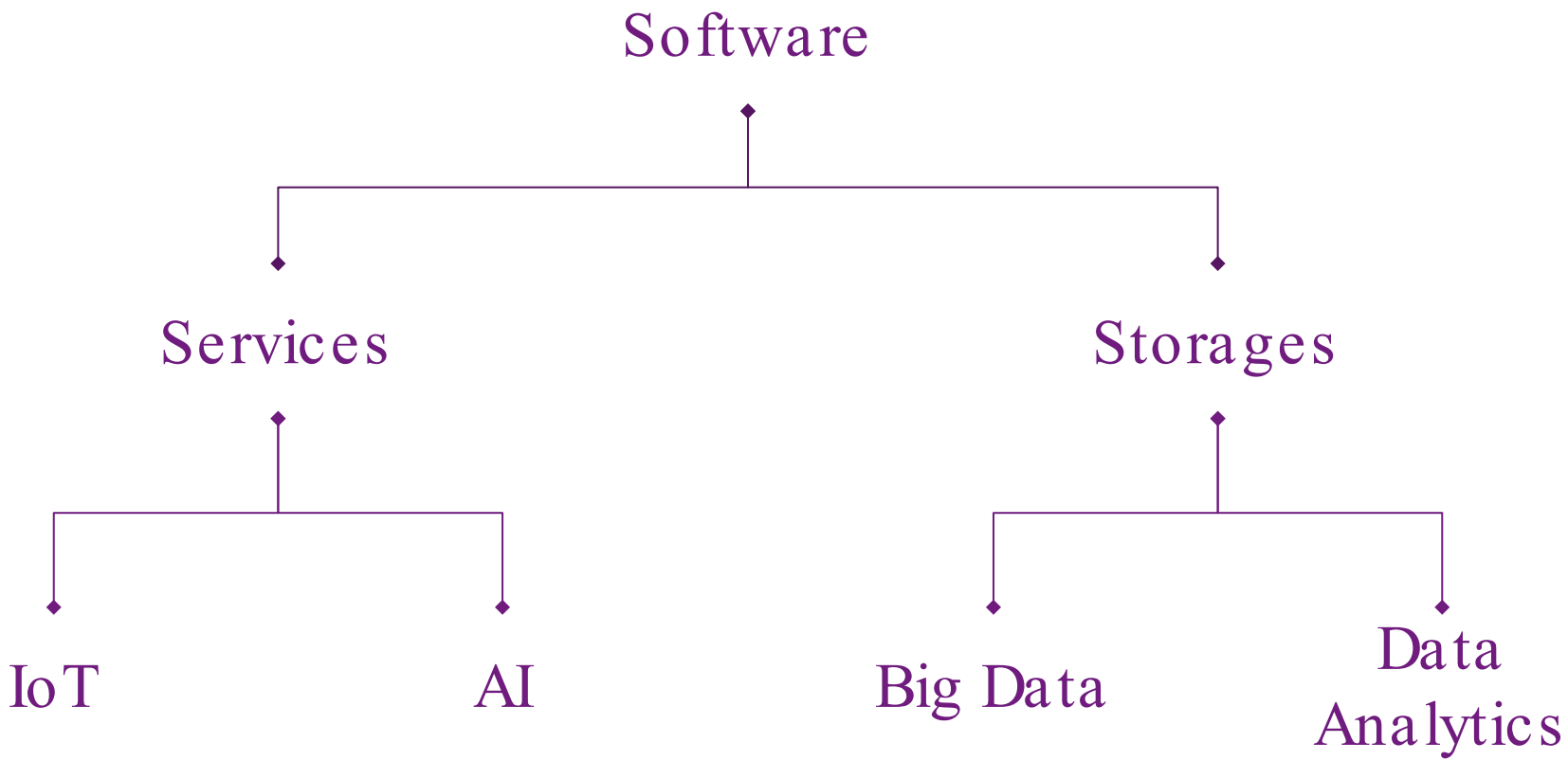
Answer

- Yes you can patent your design. Since the USB drive patent (By IBM) is meant for storing and retrieving data only, your works does not infringe that patent.

- Action:
  - Ensure tangibility of your product.
  - Prove that your product is not a *process*.

Since the software for your product lies in the hardware of your device, you can prove that it is not a process.

Areas of Focus for Software IPs



Copyright Protectable Elements of Computer Software

- Preparatory materials (Database design, schema, wireframes)
  - Flowcharts, diagrams, layout of menus
  - Screen displays (UI)
  - Reports & Manuals
- Computer programs (e.g., individual programs including source code and object code, and compilation of programs)
- Databases and other works (e.g., structure, contents, reports, displays, etc)

Copyright In Terms of IoT & AI

Protectable Items of Softwares:

1. Architecture of the project (codes, repository arrangements)
2. Proprietary Regression Model (AI)
3. Complex code logics (Unique recursions, ADTs)
4. Specific **compilations** and **arrangements** of codes.

Unprotectable:

1. Basic syntax (if, for, while, do-while)
2. Basic know-hows (I.e., declaring variable if there's only 1 way)

Copyright In Terms of Big Data & DA

Protectable Items of Big Data & Data Analytics (DA):

1. Databases structure
2. Data contents and arrangements of these contents and,
3. The reports/works generated to display the reports.

Unprotectable:

1. Basic Displays of information (I.e., if the data only has 1 column, and 1 way of presenting it, having others display it the same way is not an infringement of copyright.

How To Protect Your IPs In Copyright

1. Identify which parts of your core features are your USPs (Unique Selling Points) then mark them as trade-secrets.
2. Trade-secrets are often kept private and not exposed as open-source to the public.
3. Ensure that your code-base is secured or placed in a secure domain.
4. When developing, make sure to document the project into a tangible form, to meet the subsistence threshold of Copyrights.
5. If you are able to produce the protectable items of Copyrights for softwares, you can deem Copyright ownership of your software, and request for accreditation when other users consume your software.

Patent Protectable Elements of Computer Software

- **Inventions** are patentable (UK Patents Act 1949 s.101)
  - "Invention" means **any manner of new manufacture** and **any new method or process of testing applicable to the improvement or control** of said manufacture.
- In Singapore S13(1)
  - Patent can be applied if your invention satisfies all the following conditions:
    1. the invention is new;
    2. it involves an inventive step; and
    3. it is capable of industrial application.

Patent In Terms of Softwares (AI, IoT, Big Data & DA)

Protectable Items of Softwares:

1. Whichever **patentable invention** you wish to apply for, you have to prove the 3 precursors;

   1) your invention is new,

   2) it involves an inventive step and

   3) it is capable of industrial application.

   Therefore, inventing something can be easily achievable. However, patenting it takes effort for the proprietor, you, to **prove**.

Unprotectable:

1. The presentation of information

   (similar to the database copyright)

Proving Patentability of Invention

Proving newness (novelty):

- As the inventor, you will need to assess that your invention has not been anticipated by any prior inventions. Official patent organisations typically will, at the date of the invention, assess if any other inventions made public would 'imply' your invention.

Proving Inventive Steps

- As the inventor, you must be able to produce documentations, blueprints, artifacts that can prove your inventive efforts taken to derive your invention.

Proving The Industrial Usage

- This step is easiest, you will have to show that your invention, has industrial use.

Filing for Patent Application (Singapore)

1. Submit your patent application
2. **Date of Filing Checks** & preliminary examinations
3. **Publication** (The check for **novelty** is done here)
4. You file for request of search. Here, patent committees will search internationally and locally for existing patents and determine whether any of these would have led to the anticipation of your product.
5. You can **request for a grant of patent.**

Upon patent grant, you have control over usage of your patented invention. Here, you can restrict usage should you require, or grant usage to whoever else that may need your patented invention.

Q & A


NUS
National University
of Singapore
School of
Computing