Patents and Intellectual Property

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How do you protect the intellectual property of the iphone?

Intellectual Property

- Trademarks
- Designs
- Patents
- Trade secrets
- Copyright

Effects of IPR Legislation

- Keeping the infringing products off the market (production, offering, sales and use is prohibited). Infringing products will be destroyed.
- Replacement of commercial damage.
- Royalties, if license is granted

Trade Marks

- Logos, names etc. are protected if they are regularly used.
- The Consenec logo is protected. It is illegal to change or modify the logo in any way, to combine it with other logos, with text or figures.
- Text or other logos have to have a minimum distance to the Consenec logo in printed documents.
- Logos have to be used regularly and consistently without modifications

Illegal: I am an employee of consenec

Consenec is a consulting company.
Each consultant at consenec
is an experienced top manager.

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Designs

- **Design patents protect industrial designs**
  - **Design of furniture, consumer goods (e.g. form of Coca Cola bottle).**
  - **Mask work, layout patterns.**
- **Copying is not allowed.**
- **Examples:** **Form and design of iPod**
  Designer furniture
- **A design patent is easily obtained, but is often easy to circumvent.**

Trade Secrets

- **Knowledge which has been acquired independently and which is not patented may be used and patented.**
- **If knowledge has been used before the priority date of a third party patent, then its use can continue (but only in the factory where it has been traditionally used. Sales may be restricted to the country of the factory (the law differs from country to country).**
- **The use of illegally acquired knowledge is a crime.**
- **Illegal acquisition or possession of Trade Secrets is a crime.**

Patents

US constitution, article 1, paragraph 8:

"The Congress shall have the power [...] to promote the progress of Science and useful Arts, by securing for a limited time to Authors and Inventors the exclusive right to their respective writings and discoveries“

“Everything which can be invented, has already been invented”

Charles Duell
Head of the US Patent Office, 1899

Patents: Give and Take

Inventor:

The inventor **gives** to the public information on his invention. In return, he **obtains** from the public a limited monopoly of use for his invention.

Public:

Gives to the inventor a limited monopoly for the use of his invention, but **obtains** in return information about his invention.

Consequence

- A patent must be written such that the public is able to realize the invention. A patent thus not only contains the inventive idea, but also means and procedures to bring the ideas to practical use.
- But: There is no need to actually realize the invention in practice.
- The patent must clearly state what is claimed for protection.

What is protected by a patent?

- Production for commercial use (production of samples for internal testing or R&D is allowed).
- Offering and marketing.
- Sale.
- Use.

Effect of a patent

Assume you obtain a patent for a conical mug with handle. Your competitors have older patents protecting the properties “conical” and “handle”.

Does the patent allow you to produce mugs within the claims of your patent (combination of conical shape and handle)?

Possession of a patent gives no right to produce the object protected by the patent. It blocks third parties from producing such objects.

Dependent patents

- Today it is virtually impossible to obtain a patent which does not depend on many other patents.
- Consequences:
  - Decreasing value of isolated patents
  - Increasing value of patent portfolios
  - Highly increased value of IPR portfolios consisting of patent portfolios, know how, mask sets, blueprints, designs, software, trade secrets etc.

What is an Invention?

- New idea which leads to an increased functionality, lower cost or other improvement of a product or process.
- Understanding the cause - effect relation is not required. Even if an invention is based on an incorrect theory, it still is patentable, if it leads to an improvement.

Zellers uncertainty relation:

The product of intellectual brilliance and patent value is constant.

Steps towards a patent
1. Invention disclosure

- Give the name(s) of the inventor(s).
- Describe the problem to be solved (including drawbacks of the existing solution).
- Describe the state of the art.
- Present the new inventive idea.
- Describe the advantages if the new idea is applied.
- Describe ways to realize the new idea (it is enough to show a principle way, it is not required to actually realize the idea).

2. Patent review board

A group of experienced people is reviewing the invention disclosure and taking decisions about further actions.

Possible outcomes:

- Apply for a patent.
- Publish or apply for a patent, but never pay the invoices.
- Postpone the decision.
- Keep the invention secret.
- Do not pursue further.

Criteria for Patent Application

- Good chances of obtaining patent.
- Patent infringements are detectable in the sold product.
- Patent concerns a strategic business field.
- Good chances that patent will be used.

Invention Disclosure: Timing

- Document as early as possible
  - *What counts is the new idea, the implementation can be done later*
- No self-censuring by the inventors
  - *The assessment of the economic value is done by the patent board and not by the inventor. Often intellectually brilliant ideas are quite useless from a patent point of view, whereas trivialities can lead to strong patents.*
- Correct naming of the inventors

Inventors

- Inventors are the people who have made intellectual contributions to the invention
  - No professors, supervisors, managers etc. which were not directly contributing to the invention
  - No people with purely supporting activities.
- A wrong or incomplete list of inventors can kill a patent.
- There is no need to include the requirement for correct naming of inventors in a contract.

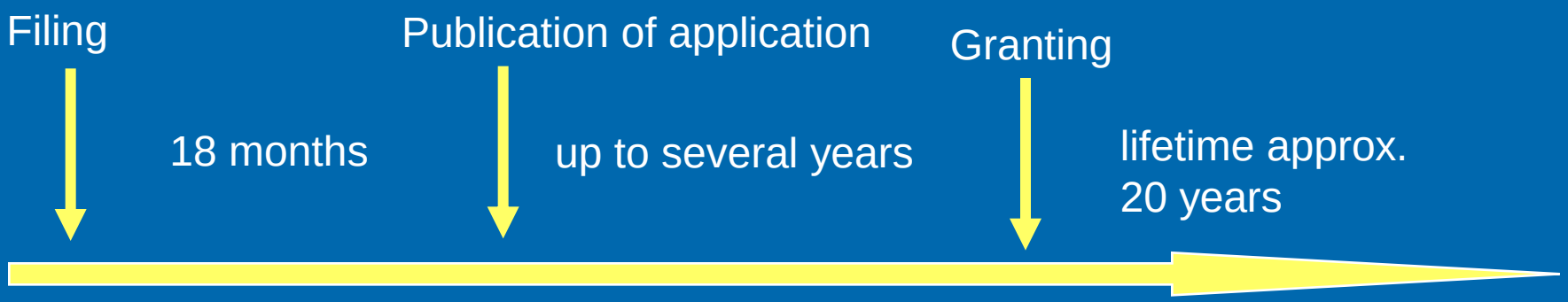
State of the Art

- State of the Art is all knowledge which is published or otherwise known **WORLDWIDE.**
- Publications include
  - Professional and scientific journals, presentations at conferences, daily press, any documents which are publicly accessible.
  - Public oral presentations.
  - Informations to others outside your organization, unless a nondisclosure agreement exists.
  - Informations to suppliers.
  - Published patents (also own patents!).
- All forms of commonly used knowledge.

Nondisclosure Agreement (NDA)

- Any communication to the outside requires a NDA.
- This applies also for the scientific community
- Important also in contacts with suppliers and customers.
- Universities (problem is naïvity and not bad intentions).
- Important: Nondisclosure Agreement should be signed by the involved people, not by high rank managers.

Patent process flow



Priority is defined with respect to filing Date. (ex. USA)

Becomes state of the art

Only granted patens can be attacked

Timing of patent filings

Standard comment in university projects:

„We will file for a patent at the end of the project, when we have reached a complete understanding of what is going on“.

(Then you discover that your stupid competitor, having an absurd interpretation of what is happening and lousy measurements to support it, has filed a patent and stolen your idea).

Basic Concepts of IPR Law

- State of the Art
- Priority Date
- Patent Claims
- Inventive Step

What is required to obtain patent protection?

Assume we live in the stone age an that you run a pottery. Civilization has reached the beer age. The mug shown to the left is state of the art. The patent on it has expired.

You invent a new and improved mug which has a handle and you file for a patent.

What is required to obtain a patent?

- Novelty
- Inventive Step

What is required to obtain patent protection II?

Assume your competitor has two patents, one on a conical mug, the other on a cylindrical mug with handle. You file a patent for a conical mug with handle.
Will your patent be granted?

Novelty:
The combination conical + handle is new.

Inventive step (compared to state of the art):

If your competitors patents have not been published, then neither “handle” nor “conical” are state of the art.
Patent will probably be granted.
If the patents have been published, then “handle” and “conical” are state of the art. The pure combination lacks inventive step.
No patent because of lack of inventive step.

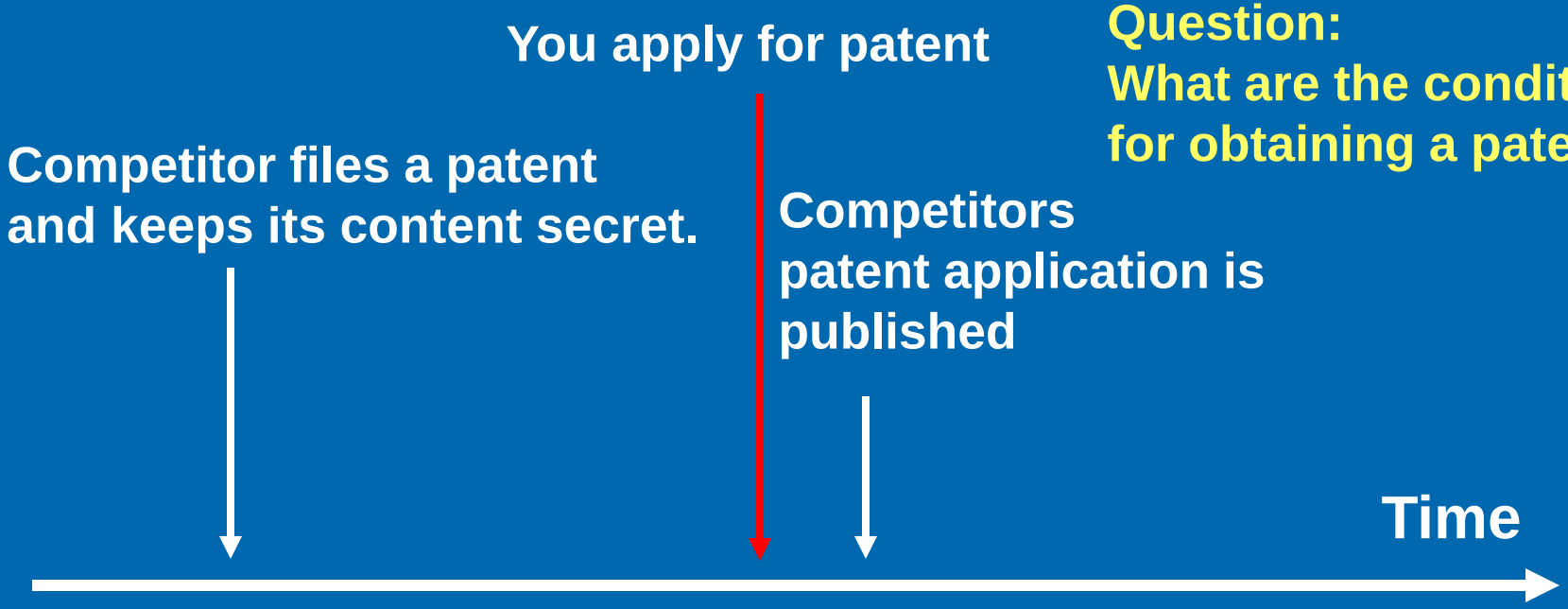
Inventive Step

- A patent has to have sufficient Inventive Step with respect to the State of the Art. Being new is not enough.
- “Distance” from State of the Art
  - Is the solution of the problem (once it has been posed) obvious for an expert in the field?
- Difficult to quantify.
- No relation to scientific originality.
- Simpler, if State of the Art is mature.

Example: Twisted Nematic Liquid Crystal Display

- Basic invention by Schadt and Helfrich within a joint project of Roche and BBC (now ABB) in the early 1970ies.
- The Japanese Patent Office rejected the patent due to lack of inventive step.
- The Japanese Patent office granted a patent to Seiko for a dot in a watch LCD display, which blinked every second.
- Based on a Supreme Court decision in Japan the basic LCD patent was granted 6 month before it expired (after 20 years).
- The observation of a technician at BBC (now ABB), that using polarizers of different strenght allows a better brightness – contrast compromise, lead to a patent which was granted worldwide without any problem and granted substantial license income.

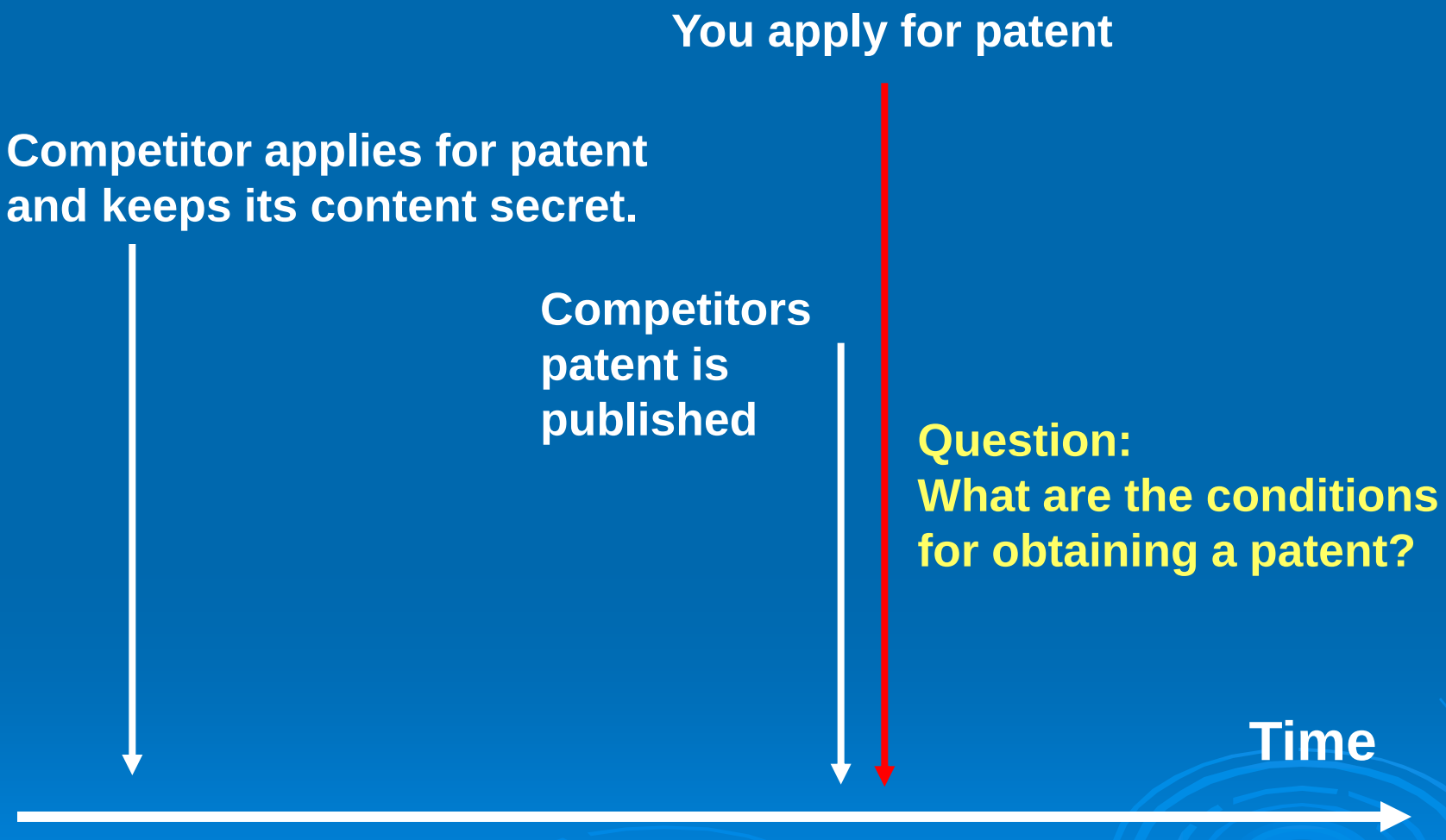
Inventive Step vs. Novelty



Novelty: Includes unpublished patent applications.

Inventive Step: Only published or otherwise known work counts.

Inventive Step vs. Novelty



Basic Elements of a Patent

- Patent application
  - Description of the invention (has to be such that the expert in the field is able to realise the invention)
    - Technical field
    - State of the Art
    - Problem to be solved
    - Solution of the problem (= Invention)
    - Embodiments (ways to realize the idea)
  - Claims (define exactly the areas to which the monoply should apply)
  - Drawings
  - Abstract

Structure of Claims

- Preamble
  - A
  - B
  - .....
- Comprising
- Claims
  - a
  - b
  - .....

Mug comprising a handle

Example

Claims for a cylindrical mug with handle

What is claimed is:

Preamble

claimed property

1. A ceramic object, comprising a surface which is topologically non-simply connected.

2. A ceramic object according to claim 1 comprising one or several open containers.

3. A ceramic object according to claims 1 and 2 comprising at least one container with circular,rectangular or polygonal cross section.

4. Etc.

15. A mug according to claims 1 - 7, comprising one or several handles

16. A cylindrical mug, comprising a handle

Patent Claims

State of the Art.

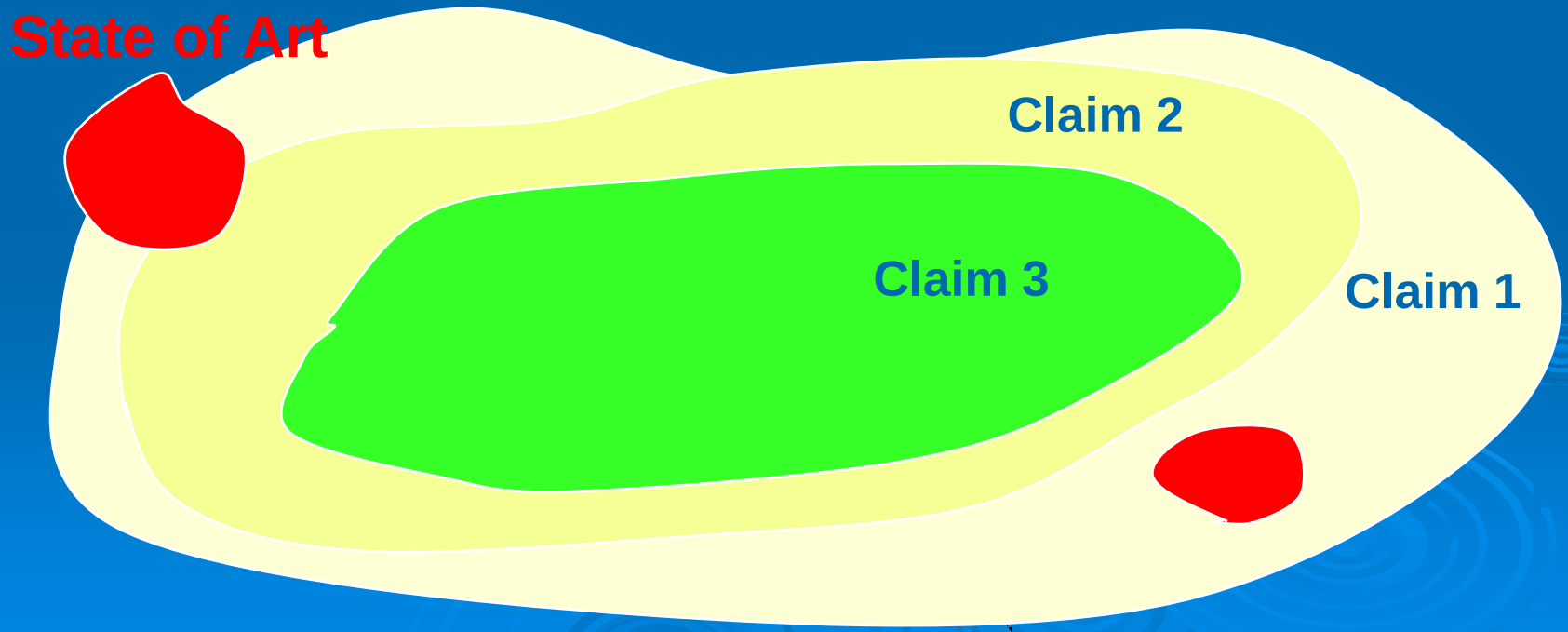
Claim too narrow, easy to circumvent, insufficient protection.

Claim too wide, includes state of the art and thus will fail.

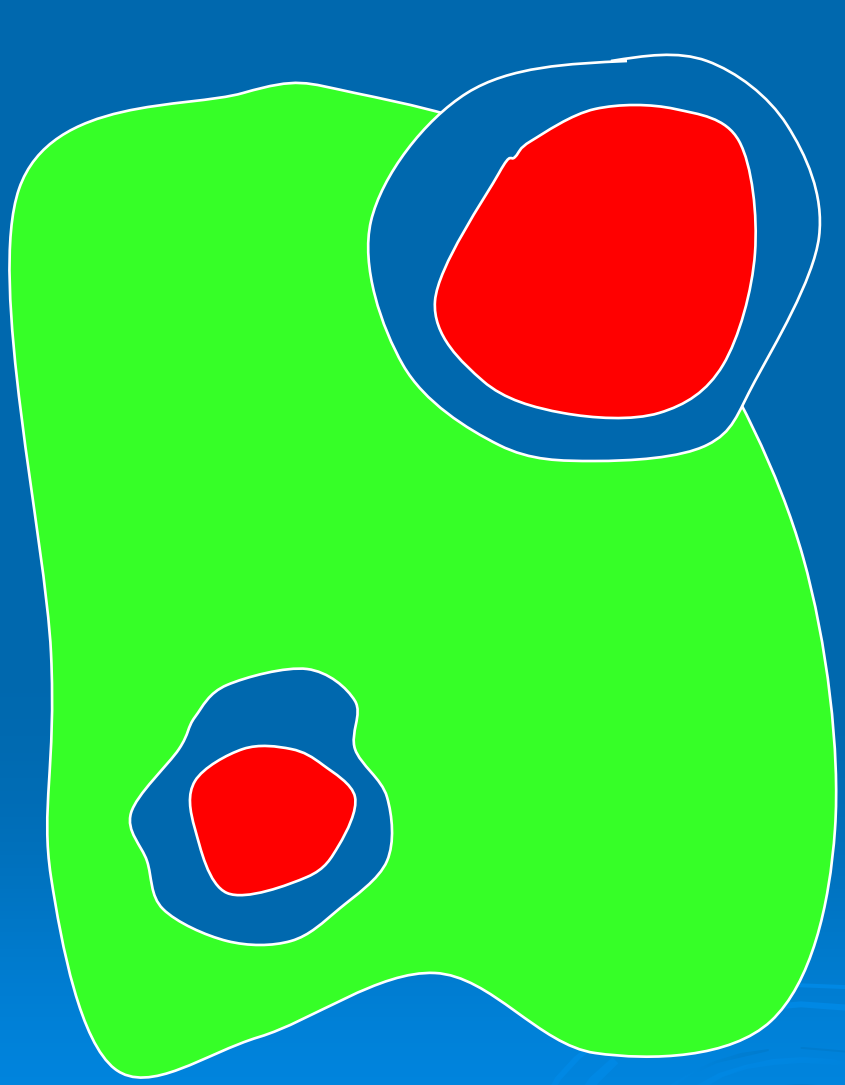
Patent Claims

- Onion principle

  Start with wide claims, then sequentially narrow down. In this example claims 1 and 2 would have to be dropped, but claim 3 would survive



Projecting out



State of the Art

Claim

Examples:

Molecule of the form
$H_{2n+2}C_{n+1}OHX$
with X = CN, NH_3, OOH
unless n < 6 and X = CN
and unless n = 12 and X = OOH

Mug of any form except conical comprising a handle.

Patent Infringement

- Direct Infringement
  - ➔ A claim is infringed if the attacked products has all the properties A,B,....(Preamble) and a,b,c,.... (Claim) of the claim
- Indirect Infringement
  - ➔ A claim is infringed if the attacked object differs in one or more properties of the claim but if the different properties perform the the same functions as the claimed functions

    (e.g. if a claim involves thinning a wafer by grinding with diamond paste, then we cannot circumvent the claim by using SiC paste instead)

Dependent patents

You obtain a patent on the combination conical + handle.

A has patent on a conical mug.

B has patent on a mug with handle

Who is allowed to produce/sell what?

	Conical mug	Conical mug with handle	Mug with handle
A	o.k	Infringes with your patent	Infringes with patent B
B	Infringes with patent A	Infringes with your patent	o.k.
You	Infringes with patent A	Infringes with your patent	Infringes with patent B

Who owns an Invention or a Patent?

- Switzerland:

  In Switzerland all IPR belongs to the employer and not to the inventor.

  Universities typically have remuneration schemes for inventors.

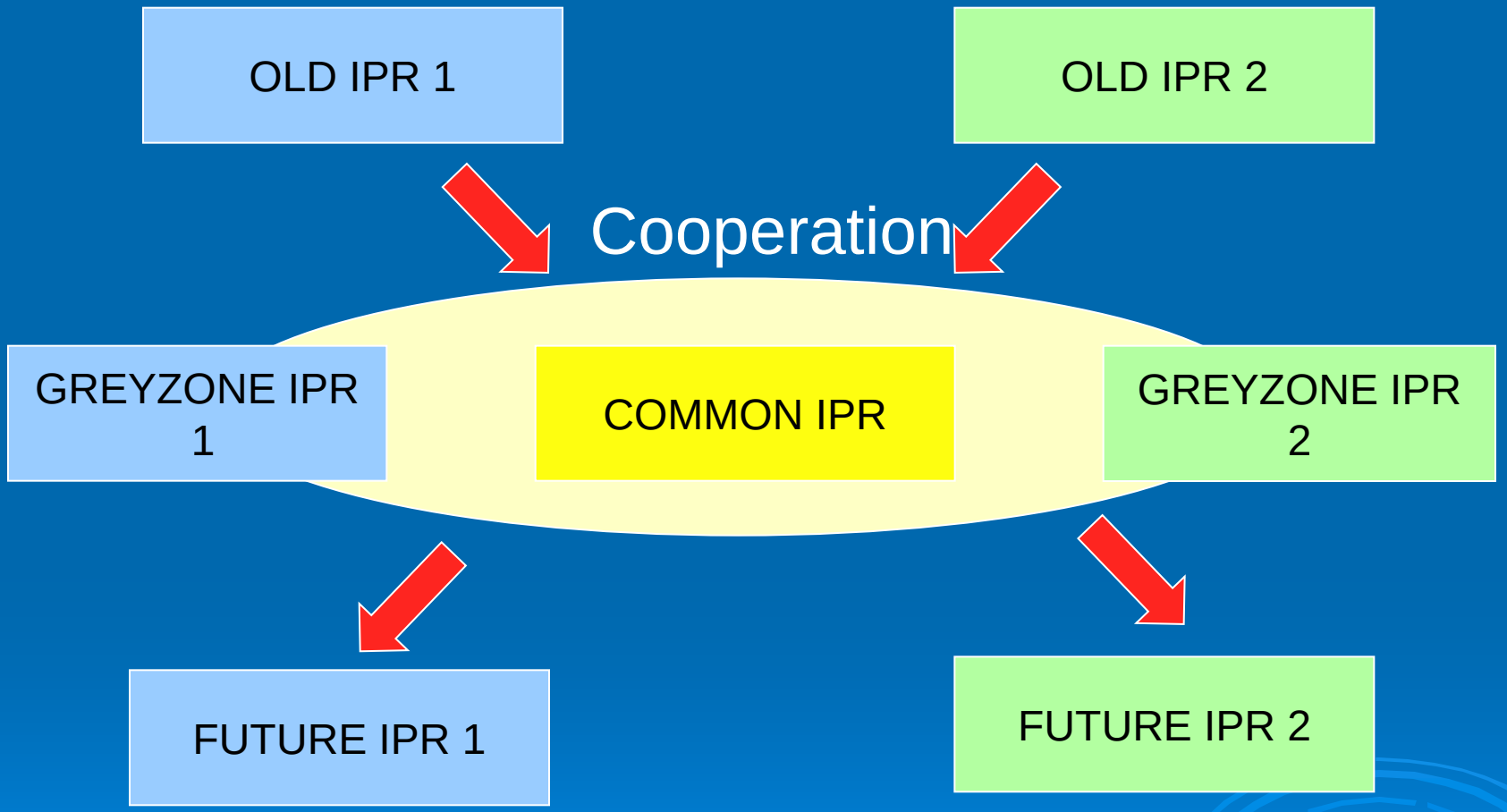
- Other countries

  The rules vary from country to country. In Sweden the inventor owns a large fraction of IPR, in Germany the fraction depends on several factors in a complex manner. In those countries the inventors have to be remunerated by law.

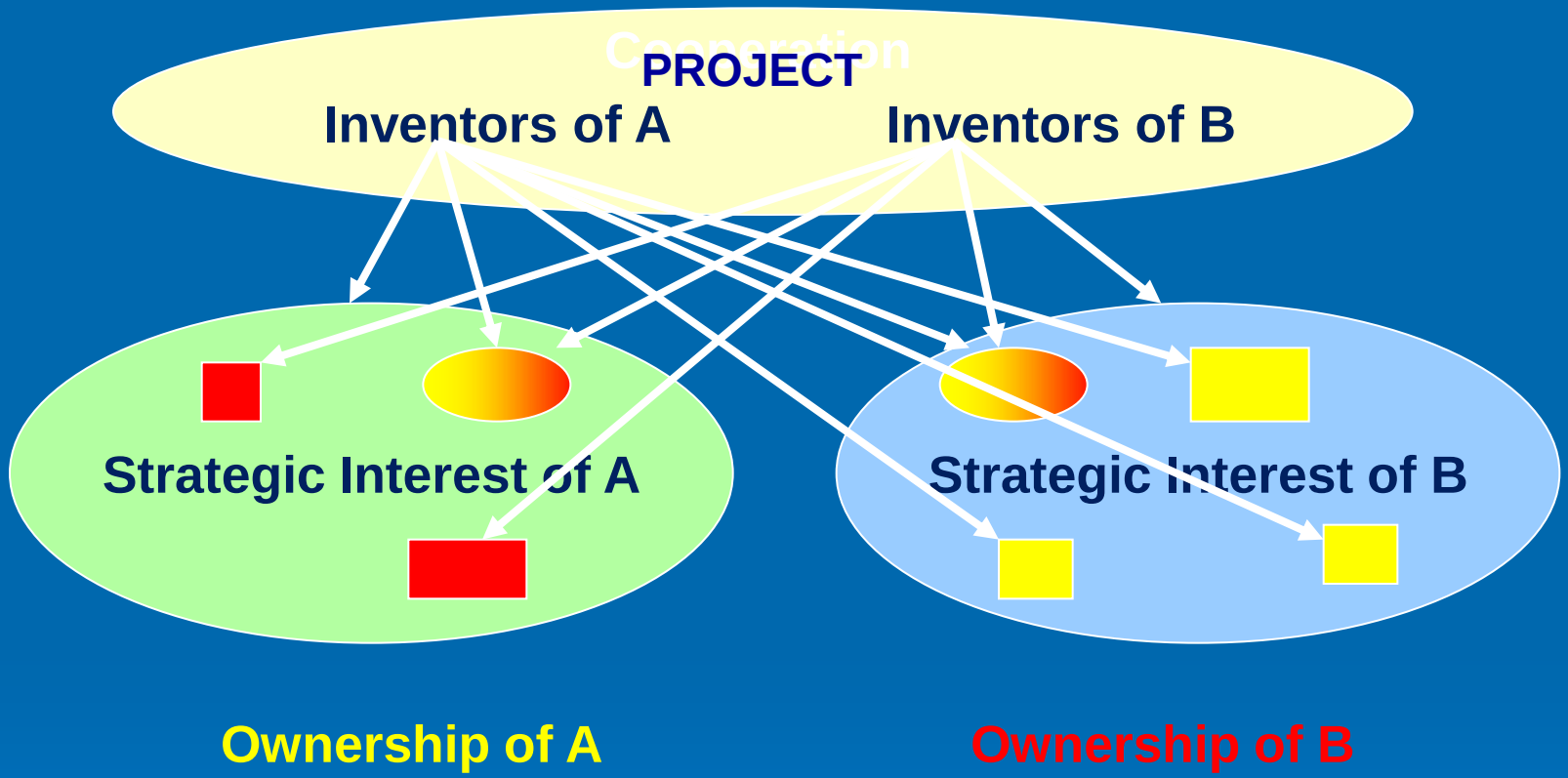
Ownership and Right of Use

- The patent owner is named in the patent. He is responsible for all payments and for managing and defending the patent.
- The patent owner can assign the Right of Use to anybody, either against a license fee or free of charge.
- Sharing ownership is close to impossible, sharing right of use is much easier.
- In cooperation contracts the partners normally negotiate first the right of use of the IPR.
- After this has been settled, the patent ownership is no longer very important.

University – Industry Cooperations: What are we talking about?



Mistake No. 1: Split Ownership according to inventors



This works fine as long as a) no real cooperation occurs or b) no inventions of value are made (sad to say, it works fine in many cases).

Mistake No. 2: Joint Ownership

- Joint ownership and management of a patent is close to impossible and invariably leads to conflicts.
- Splitting the Right of Use is easy and logical.
- Industry:
  - Needs complete control of right of use in its core business area.
  - Does not need control outside this area.
- University:
  - Needs complete control of right of use outside industry core business area.
  - Needs freedom of action to enter future cooperations.
  - Wants to collect royalties on background knowledge.

Mistake No. 3: Negotiate IPR contract during the project execution

- In Switzerland, in projects with federal funding, it is mandatory that the IPR contract is signed before project start.
- No check is released until a copy of the signed contract is submitted.

Recommended for Uni – Industry cooperations

- Industry owns patent, bears all cost and manages it (defending claims, pursuing infringing parties).
- Right of use is split between Uni and Industry.
- Not negotiable items:
  - Uni has to keep the freedom to enter cooperations outside the core business of the Industry.
  - Industry has to have exclusive control within ist core business.

Patent search

All sites are free of charge

- http://ep.espacenet.com/advancedSearch?locale=en_EP
  European Patent Office Search
- http://patft.uspto.gov/
  US Patent Offfice Search
- http://www.google.com/patents
  Google Patent Search

Head of European Patent Office: „80% of all R&D projects are a waste of money, because their potential results are already patented“.

This is true, but the conclusion is wrong.

Group Work

Assume you have invented the Swiss Army Knife.

Assume that prior art consists of standard knifes of this form:

Formulate claims for this invention
(remember the structure: preamble comprising claim