



# Patent Search Training

# Topic Coverage

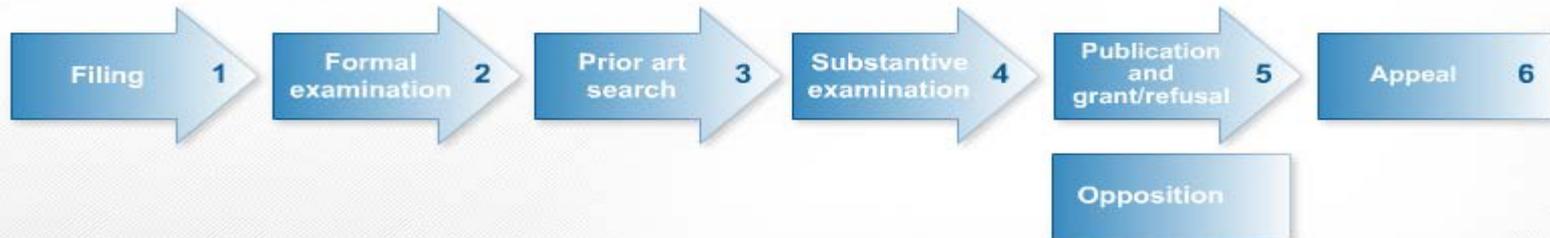
- Basics on Patents Information
- Types of patents
- Types of patent search
- Conducting a patent search
- Extracting most out of Patent Information

# Quick Recap - Patents

- Territorial in nature
- Three requirements (in general)
  - Novelty
  - Non-Obvious
  - Industrially applicable
- Right to exclude (Negative Right)
- Rich source of technology information
- Go through examination process before grant

## Getting a Patent

In many countries, you cannot simply register a patent by filling in the relevant forms and paying the necessary fees. In these countries, patents are only granted after a rigorous technical and legal examination. This examination includes a review of technical information available at the time the patent application was filed, which aims to determine whether the invention is new and inventive.



# SNAPSHOT OF A PATENT APPLICATION:



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**Jurisdiction** → **United States Patent** [19]

**Title** → **OPTICAL PACKET-SWITCHED TRANSMISSION NETWORK**

**Inventors** → **Johannes Jacobus Gerardus Maria Van Der Tol, Zoetermeer, Netherlands**

**Assignee** → **Koninklijke PTT Nederland N.V., Netherlands**

**Application number and filing date** → [21] Appl. No.: **08/808,310**  
[22] Filed: **Feb. 28, 1997**

**US and International classification** → [51] Int. Cl.<sup>6</sup> ..... **H04J 14/08**  
[52] U.S. Cl. .... **359/139; 359/123; 359/122; 370/471; 370/352**

**Reference cited** → [56] **References Cited**  
U.S. PATENT DOCUMENTS  
4,894,818 1/1990 Fujioka et al. .... 359/123

[11] **Patent Number: 5,900,957**

[45] **Date of Patent: May 4, 1999**

**Patent number and Grant date**

**Abstract**

R. B. Jenkins, et al, "Acousto-optic comparison switch for optical switching networks with analog addressing techniques", *Applied Optics*, vol. 31, No. 26, Sep. 10, 1992, pp. 5453-5463.

F. Masetti et al, "ATMOS (ATM Optical Switching): Results and Conclusions of the RACE R2039 Project", *ECOC '95*, Conference Paper No. 243, Sep. 1995, Brussels, pp. 1-8.

F. Masetti et al, "Optical Cell Processor For ATM Gigabit Photonic Switches", *ECOC '92*, pp. 301-304.

E. Park, et al, "Simultaneous All-Optical Packet-Header Replacement and Wavelength Shifting for a Dynamically-Reconfigurable WDM Network", *IEEE Photonics Technology Letters*, vol. 7, No. 7, Jul. 1995, pp. 810-812.

P. T. Poggiolini et al, "Performance Evaluation of Subcarrier Encoding of Packet Headers in Quasi-All-Optical Broadband WDM Networks", *Proceedings of SUPERCOMM/ICC '94*, May 1-5, 1994, New Orleans, pp. 1681-1686.

I. Glesk, et al, "All-optical address recognition and Self-routing in a 250 Gbit/s packet-switched network", *Electronic Letters*, vol. 30, No. 16, Aug. 4, 1994, pp. 1322-1323.

J. Spring, et al, "Photonic Header Replacement For Packet Switching", *Electronic Letters*, vol. 29, No. 17, Aug. 19, 1993, pp. 1523-1525.

*Primary Examiner*—Kinfe-Michael Negash  
*Attorney, Agent, or Firm*—Michaelson & Wallace; Peter L. Michaelson

[57] **ABSTRACT**

In an optical packet-switched network, provided with one or



# What does a Patent Application contain? basck™

In a patent application, there are various fields. They are:

- Specification
- Claims
  - Independent Claims
  - Dependent Claims
- Abstract
- Title
- Drawings

## Contents of a specification:

### **Title:**

The title must be short, specific and precise stating the invention.

### **Technical field:**

Technical field gives the related technical field of the invention to identify the area of technology to which the invention belongs.

### **Background information and prior art:**

Background information and prior art: Under this section, the motivation and reasons for carrying out the invention is mentioned. It also gives the technical problem which has not been addressed by any patent and provides a technical solution in general terms to overcome the problem It also provides some relevant prior art to distinguish the present invention with the prior art.

### **List of drawings**

List the drawings giving the figure number and a brief description of what the drawings illustrate. Remember to refer to drawings throughout the detailed description and to use the same reference numbers for each element.

# Contents of a specification:



## **Detailed description of the invention**

Describe your intellectual property in detail. For an apparatus or product, describe each part, how they fit together and how they work together. For a process, describe each step, what you start with, what you need to do to make the change, and the end result. For a compound include the chemical formula, the structure and the process which could be used to make the compound. You need to make the description fit all the possible alternatives that relate to your invention. You should aim to describe each part in sufficient detail so that someone could reproduce at least one version of your invention.

## **Working example:**

Give an example of an intended use for your invention. You should also include any warnings of commonly used in the field that would be necessary to avert failure.

## **Sequence listing:**

If relevant to your type of invention, provide the sequence listing of your compound. The sequence is part of the description and is not included with any drawings.

# What are the claim?

**Definition:** Claims are the part of the patent application where the inventor specifically states what their invention is and what it can do. Claims define the legal scope of a patent and define what can be protected by patent law. You could say that claims define the invention, what it is and what it does.

The "specification" part of a patent application must end with a claim or claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention. The claim or claims must conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description.

# Claim – Independent Vs. Dependent

- All patent claims are either independent or dependent.
- Independent claims stand alone, and do not reference any other claim.
- Dependent claims reference another claim and are proper subsets of their parents. Dependent claims provide fallback positions during prosecution and enforcement actions.

1. A chair having only two legs.
2. The chair of claim 1, further comprising at least one leg made of wood.
3. The chair of claim 2, wherein at least a portion of the chair is covered with a fabric.



# ABSTRACT OF A PATENT APPLICATION

- The abstract is a short summary of a invention.
- They should be written in a way to make the invention easily understood by those with a background in the field.
- The reader should quickly be able to get a sense of the nature of the invention so that they can decide whether they need to read the rest of the patent.

## **An abstract of a patent application should:**

described what your invention is say what your invention is used for describe the main components and how they work not refer to any claims, drawings and description

# Classification of patents



## Classification of patents

**A patent classification is a way the examiners of patent offices arrange patent applications**, disclosing inventions according to the technical features of the inventions. They arrange documents using a patent classification so that they can quickly find a document disclosing the invention identical or similar to the invention for which a patent is claimed. The same patent application may be classified in several classes.

Primarily there are three types of classifications:

- Co-operative Classification (CPC) – (New type collaborative patent class)
- International Classifications (IPC)
- United states patent classification (USPC)
- European Classification (ECLA)

The International Patent Classification (IPC) is divided into the following major sections. These are:

<i>Classifications</i>	<i>Technical fields</i>
<i>A</i>	<i>Human necessities</i>
<i>B</i>	<i>Performing operations; Transporting</i>
<i>C</i>	<i>Chemistry; Metallurgy</i>
<i>D</i>	<i>Textiles; Paper</i>
<i>E</i>	<i>Fixed constructions; Hydraulic engineering;</i>
<i>F</i>	<i>Mechanical engineering; Lighting; Heating; Weapons; Blasting</i>
<i>G</i>	<i>Physics</i>
<i>H</i>	<i>Electricity</i>

Here's a sample of how the IPC classification works:

Pencils with an automatic lead replacement are categorized according to the IPC as: B 43 K 21/02

**Section B** Performing operations; Transporting

**Class B43** Writing or drawing implements, bureau accessories

**Subclass B43K** Implements for writing or drawing

**Group B43K 21** Propelling pencils (projecting mechanisms for writing B43K 24/00; multiple-point writing implements B43K 27/00)

**Subgroup B43K 21/02** (point 1 Subgroup) writing-core feeding mechanisms

# Types of Patent Applications

- Provisional application
- Complete application
- Divisional application

## TYPES OF PATENT APPLICATIONS-

**a) Provisional Application:** This application is filed with the Patent Office, once an inventor gets an innovative idea and inventors wants to seek protection for the same. As the initiative, the inventor files an provisional application with the Indian Patent Office with the description of his innovative idea, along with the detailed write up and drawings, if available. Once, the application is filed, the inventors, starts working upon the invention, shall file the detailed description, along with the working examples of the invention within 12 months from the date of filing of provisional application.

**b) Complete application (Regular Patent Application):** The complete application comprises of the detailed description describing in detail, the invention, its working modes, working examples, best mode of example, abstract of the invention, drawings and the most important, the Claims which decide the scope of the protection of the invention.

**c) Divisional application:** Please note that a patent application should have only invention (i.e., inventive concept) in a single application. This is explicitly termed as “Unity of Invention”. More than 1 invention per application is strictly not allowed. If the application is filed having 2 inventive concepts, then in such cases, 1 inventive concept is retained in one application and an another application is filed for 2nd inventive concept (which is called divisional application) claiming priority from the parent application filed.

## What is a priority application

First Patent application filed with any country.

A patent application may claim a priority from another previously filed application, in order to take advantage of the filing date of information disclosed in that earlier application.

Claiming priority is desirable because the earlier effective filing date reduces the number of prior art disclosures, increasing the likelihood of obtaining a patent.

Once, patent application is filed, any filing of subsequent applications in other countries can claim the priority date from the earlier filed application.

# Advantage of claiming priority



- Can avoid any intervening reference.
- Avoid anticipation of our own application.

# Types of priority



- Convention priority
- Priority from International application

# Convention Priority

- Time limit to claim the priority from an earlier application is 12 months (*from the filing date of Provisional/Non-provisional application*)
- Time limit to file a Non-provisional application claiming priority from a Provisional application is 12 months.

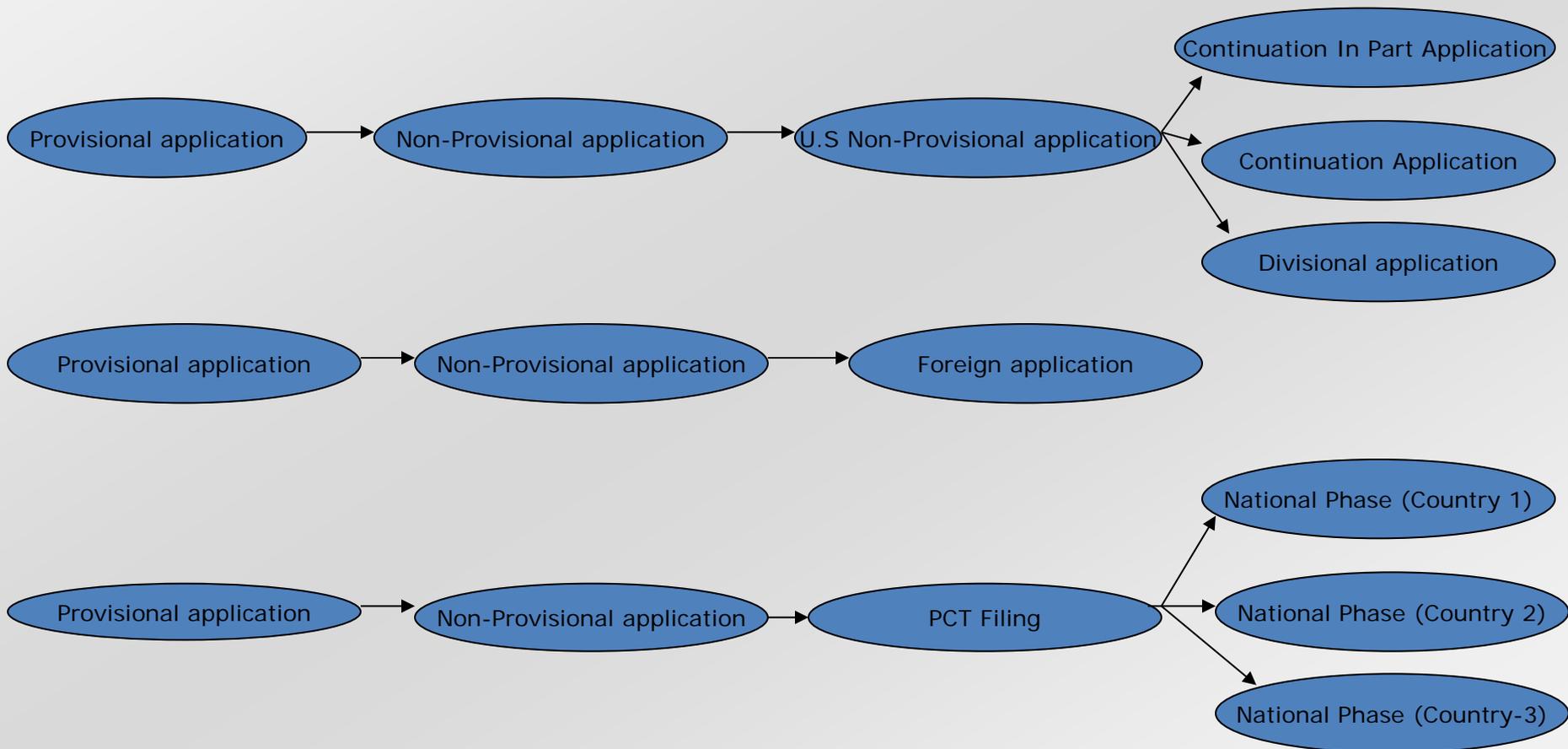
# Priority from International application

- International application are those application which are filed with the WIPO (World Intellectual Property organization)
- Time limit to enter into other countries as national stage entry is 30 to 31 months (depends upon law/regulation of each country)



# Different ways of flowing of applications in a priority chain

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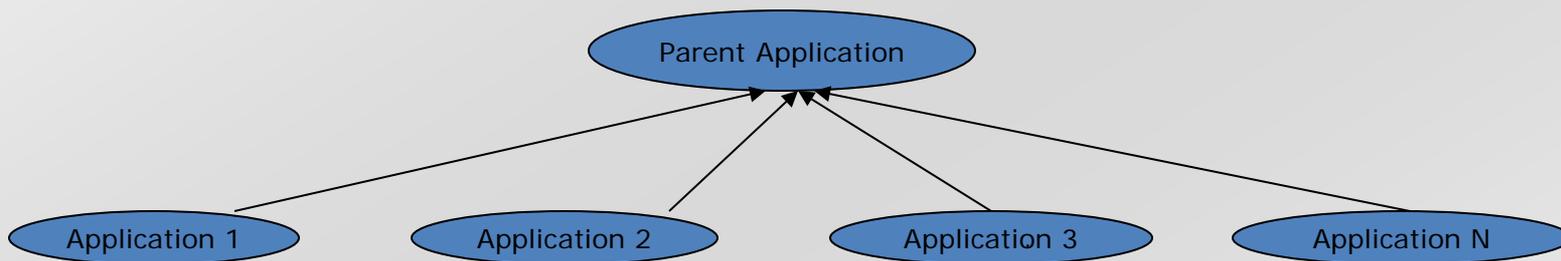




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## Many Application claiming priority from single application

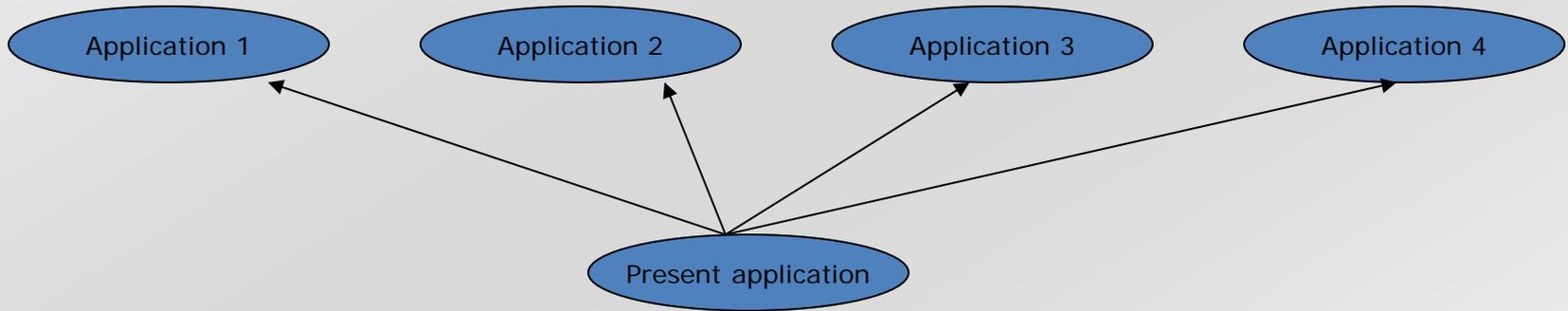
Claiming Priority from earlier application



*When Parent Application contains multiple inventions in the disclosure, Many subsequent applications can be filed for each invention separately claiming priority date from the parent application*

## Single application claiming priority from multiple applications

Claiming priority from multiple applications



Multiple priorities are claimed when the presently filed application use the application of prior application (own application) in order to avoid anticipation of our own invention.

# What is Patent Family

- A patent family is a group of patents which are all related to each other by way of the priority or priorities of a particular patent document
- All Patents related to each other by way of priority are termed as “Patent family”

A patent family is a set of either patent applications or publications taken in multiple countries to protect a single invention by a common inventor(s) and then patented in more than one country. A first application is made in one country – the priority – and is then extended to other offices.

### Definition 1: The simple patent family

All documents having exactly the same priority or combination of priorities belong to one patent family.

In this case, document D1 is the only document in family P1, D2 and D3 belong to family P1-P2, D4 belongs to family P2-P3, and D5 to family P3.

Document D1	Priority P1			FAMILY P1
Document D2	Priority P1	Priority P2		FAMILY P1-P2
Document D3	Priority P1	Priority P2		FAMILY P1-P2
Document D4		Priority P2	Priority P3	FAMILY P2- P3
Document D5			Priority P3	FAMILY P3

If all the priorities of two documents are the same, they are referred to as "equivalents". This definition is currently used in [Espacenet](#) for listing the documents under "also published as" on the bibliographic data view.

### Definition of the "extended" (INPADOC) patent family

All the documents directly or indirectly linked via a priority document belong to one patent family.

In the case shown below, documents D1 to D5 belong to the same patent family, P1.

#### FAMILY P1

Document D1	Priority P1		
Document D2	Priority P1	Priority P2	
Document D3	Priority P1	Priority P2	
Document D4		Priority P2	Priority P3
Document D5			Priority P3

As mentioned above, national application numbers, international application numbers and domestic relations are included in the family search.

In the "extended" (INPADOC) patent family it does not matter where you start the search. It can be an application number, a priority application number or a publication number.

# Various Dates

- Earliest Priority Date
- Priority Date
- Application Date
- Publication Date
- Earliest Publication Date
- Latest Publication Date

## Lag between Application & Publication

- There is lag of 18 months between application and first publication of a patent application.
- It is not possible to access patents which are confidential with patent office
- Some patents get published before 18 months in case applicant specifically request or under specific condition in each country

# Significance of patent Search

- For an inventor
  - Prior Art search helps save both time and money that he spends for the patenting process
  - For his invention to be patented it has to be novel and non obvious
  - Scope of the claims
- Organization
  - An organization must verify whether the product or process it intends to develop is similar to an invention that was patented or has a pending patent application.
  - Patent search helps the organization to find out if its intended invention has already been patented to somebody else
  - Licensing



# Patent Search

What, When, and How



# WHAT & WHEN

# Searches in industry

- The most common searches in industry can be broken down into:
  - Novelty (patentability)
  - Infringement (freedom of action, freedom to operate)
  - Validity & opposition
  - State-of-the-art
  - Alerting (current awareness)
  - Family & equivalent
  - Citation

# Search type 1: Patentability

- Subject matter search focused upon the specific details of an invention.
- Designed to establish whether an application for patent grant is likely to succeed.
  - May be carried out by applicant prior to filing *as well as* by patent office during examination
  - When done by applicant, results should be at hand as attorney is drafting the application.

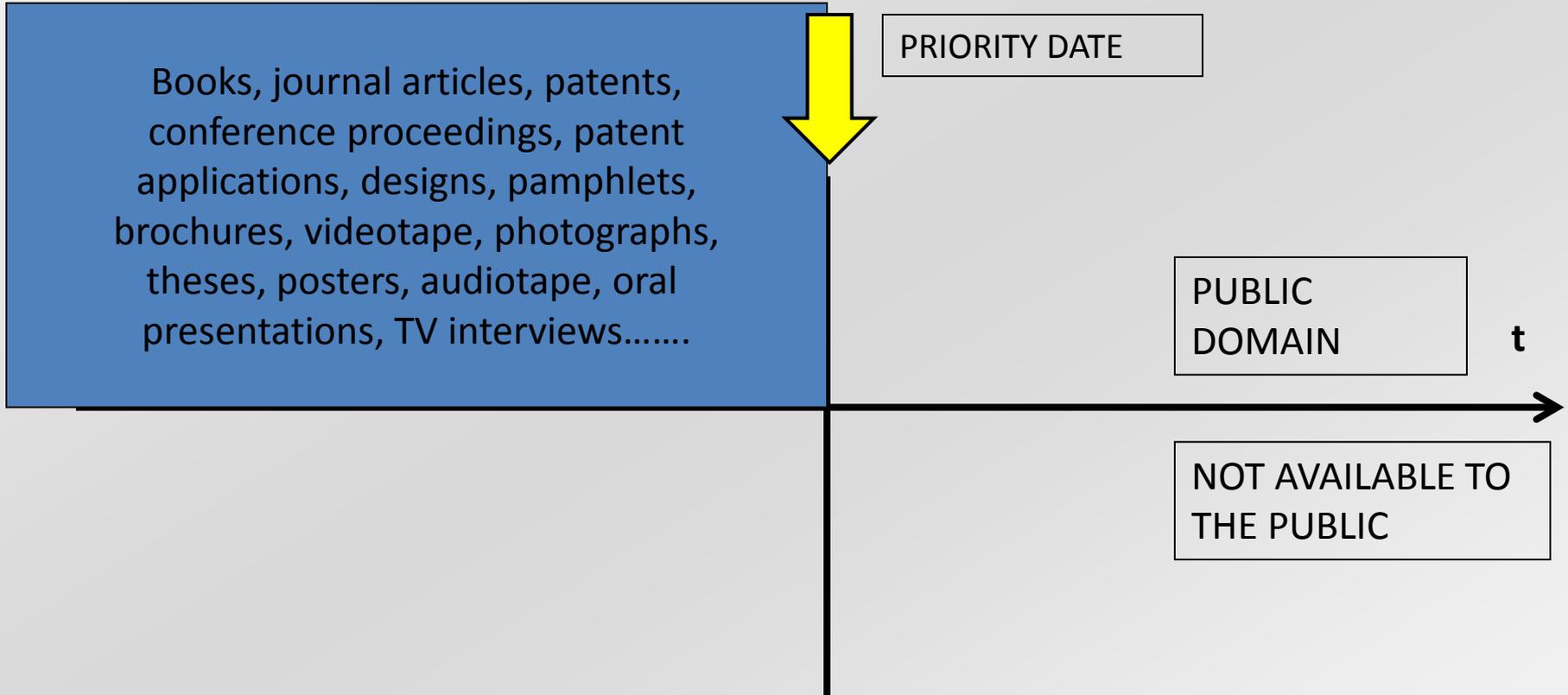
# Criteria for patentability

- United Kingdom Patents Act 1977, s 1(1):
  - *“A patent may be granted only for an invention in respect of which the following conditions are satisfied, that is to say -*
    - *(a) the invention is new;*
    - *(b) it involves an inventive step;*
    - *(c) it is capable of industrial application;*
    - *(d) the grant of a patent for it is not excluded by subsections (2) and (3) below...”*

# Novelty

- United Kingdom Patents Act 1977, s 2(1) and (2):
  - *“(1) An invention shall be taken to be new if it does not form part of the state of the art.*
  - *(2) The state of the art...shall be taken to comprise all matter...which has at any time before the priority date...been made available to the public (whether in the United Kingdom or elsewhere) by written or oral description, by use or in any other way.”*

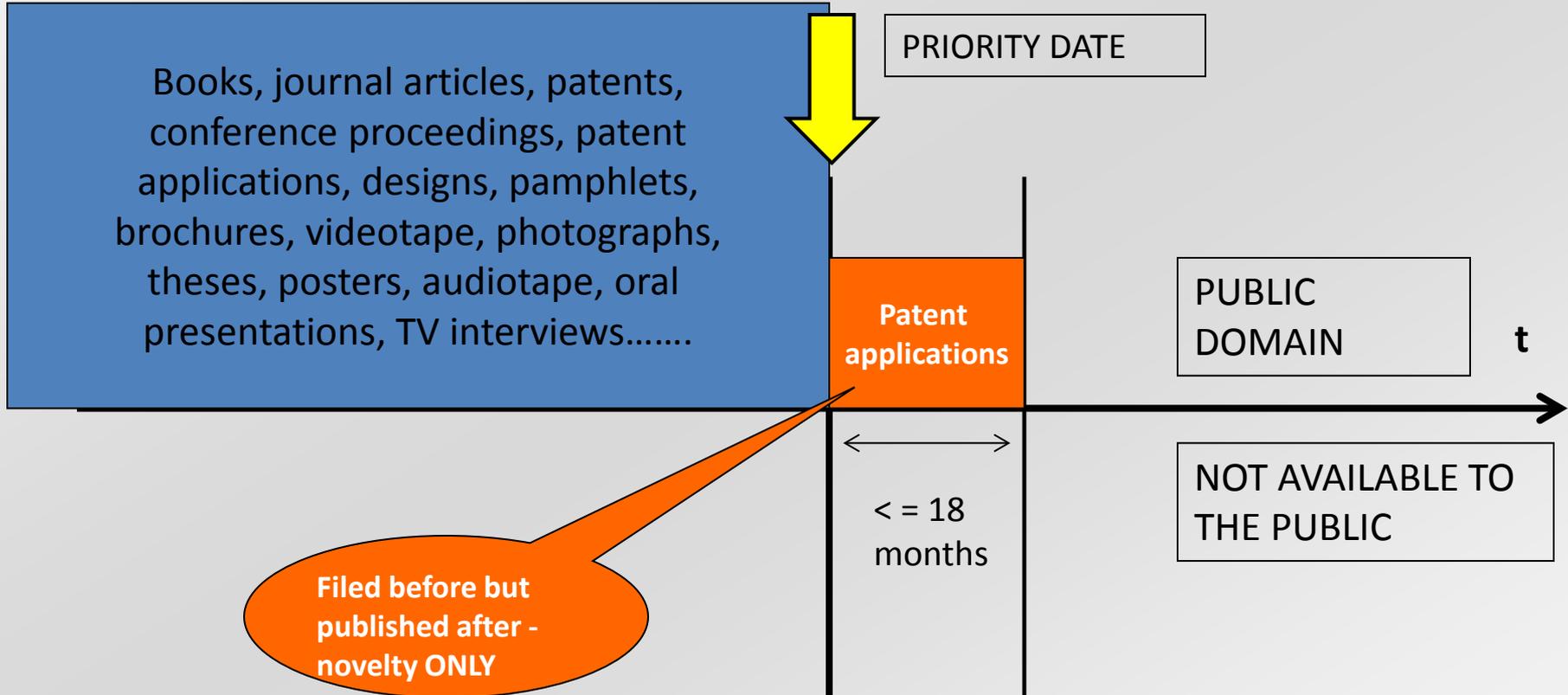
# State of the art (I)



# Novelty (II)

- United Kingdom Patents Act 1977, s 2(3):
  - *“(3) The state of the art in the case of an invention ... shall be taken also to comprise matter contained in an application for another patent which was published on or after the priority date of that invention [provided that] ...the priority date of that matter is earlier than that of the invention.”*

# State of the art (II)



# Inventive step

- United Kingdom Patents Act 1977, s 3:
  - *“An invention shall be taken to involve an inventive step if it is not obvious to a person skilled in the art, having regard to any matter which forms part of the state of the art by virtue only of section 2(2) above (and disregarding section 2(3) above).”*



# The implications for searchers

- Novelty:
  - a wide range of sources is required (many years, document types, languages)
  - a single ‘document’ must disclose all aspects of the invention (i.e. an exact hit)
- Inventive step:
  - one or more documents, taken together, may disclose certain aspects of the invention (i.e. an indirect hit)
    - must be able to identify ‘degrees of similarity’

# Patentability sources

- Requires :
  - multi-country source (essential)
  - multi-technology source (preferable)
  - detailed subject indexing and search features
    - especially if we are to be able to locate possible references showing lack of inventive step
  - patent and non-patent literature
    - in most countries, the state of the art is not limited to patents
  - rapid updating (up-to-date content)

# Search type 2: Infringement

- Also known as ‘freedom-to-operate’ or ‘freedom-to-practice’ searching
- Limited to specific jurisdiction(s) and to claims of valid, in-force patents only.
  - regional patent systems important
- Designed to avoid the possibility of infringing someone else’s patent, by engaging in activities which fall within their patent rights.

# Infringement sources

- Requires :
  - Single-country/regional sources
  - Multi-technology sources
  - Detailed subject search facilities
  - Ready access to exact text of claims
    - only claims are infringed, not disclosure
  - Links to legal status of retrieved records
    - you cannot infringe a patent which has lapsed or been revoked

## Search type 3: Validity & opposition

- Similar to the type 1 (Patentability) search, but limited to matter published before the priority date of a known patent.
- Designed to gather material for legal proceedings, questioning the validity of an opponent's patent
  - not new, no inventive step.
- May be conducted during official 'opposition period', or later when the patent becomes a nuisance!

# Validity & opposition sources

- Requires :
  - multi-country, multi-technology sources
  - extensive subject indexing (full-text is helpful)
  - patent and non-patent literature
  - search features allowing date limitation (useful)



## Search type 4: State-of-the-art/Landscape basck™

- Review of a defined subject area.
- Typically used to map out the major technologies and/or companies in a field, e.g. before starting a competing research programme.
- May retrieve records in the 1000's or 10,000's to provide the necessary baseline data for trend mapping

# Source requirements

- Requires :
  - Broad-based subject indexing (not necessarily as deep as for novelty)
  - Multi-country coverage (optional)
  - Good access to complete texts
    - the preamble of patents can serve as mini-reviews
  - Visualisation/statistical analysis capability (optional)
    - depending upon the scale of the search, this may merge into 'competitive intelligence' or 'results visualisation' techniques

## Search type 5: Alerting searches

- Ongoing awareness of new patents in specific industries or by specific companies.
  - often referred to as ‘watch services’
- Designed as an early-warning service to guide research programmes and avoid duplication of research
  - also good for “me-too” work

# Alerting searches

- Requires
  - Reliable high speed updating
  - Adequate broad-based subject capability (typically simple subject classifications)
  - Standardised record formats for quick browsing
- Very tempting to ‘leave to run’ once established, but actually needs to be maintained and updated
  - Revised strategy according to new subject requirements
  - Amended coding as classification is revised...

## Search type 6: Family & equivalent

- Identifies either
  - the geographic extent of patent protection (family) and/or
  - texts in preferred languages
- Questions of legal status under regional patent systems may arise
  - e.g. establishing patent protection in Germany requires a check of both German national patents and European Patents designating Germany

# Family & equivalent

- Requires :
  - Accurate and timely collation of family data
  - Intellectual added-value
    - for legal variations such as US-Re or non-Convention cases
  - Extensive time coverage
    - publication of family members may spread over many years
- Current family databases range from 40-90 countries, with variable timeliness
  - INPADOC, FamPat, PatBase most well-known
- Note: a ‘technical equivalence’ search may involve different types of IP right, not just patents

# Search type 7: Citations

- Analysing document clusters based on official patent search reports
- In support of other types of search (particularly validity) or as an exercise in statistical evaluation of competitors
- Provides an alternative subject-based route into the literature, but should be used with caution!

# Citations

- Requires :
  - complete data sets (not yet routinely available)
  - highly standardised data fields (e.g. assignee)
  - easy access to related files (for examination of subject) or statistical software (for analysis)

# Additional searches

- Inventor/Assignee Search
- Legal status checking
  - one by one : national status registers
  - in bulk : collated search files
- Most internet-based national registers offer only a very simple interface, using very limited search criteria
- If a legal status check is needed as part of a freedom-to-operate search, it is more convenient to use commercial sources.

# Summary

- A good patent searcher needs
  - to understand the ‘real’ question that the client is asking
  - to know a range of different sources for each different search type
  - to be able to formulate the question for the appropriate source
  - to know different patenting laws and procedures, in order to interpret search output
  - to communicate their results effectively to technical inventors and patent attorneys/agents



How



# Types of patent information source

- According to data type
  - ‘first level’ or ‘value-add’
  - abstracted or full-text
  - document-based or event-based
- According to search methodology
  - text
  - first-level classification / indexing
  - ‘value-add’ classification / indexing
- According to search engine
  - form-fill
  - command line

Comprehensiveness

Complexity

**A good search is a combination of exhaustive search and extensive search whereby a combination of a good search strategy used on a good and relevant database.**

# First Step

As you scope the search, your first step should be to compartmentalize the invention into discrete, searchable features by answering these questions:

- What problem does the invention solve?
- What is the invention?
- What does the invention do?
- What is the end result?
- What is it made of?

# Keyword Searching



- The same terminology may be used by different applicants to mean entirely different concepts
- The word-based search runs the risk of
  - retrieving large volumes of irrelevant information by using ambiguous terms, or
  - missing material by not using the latest ‘buzz-words’

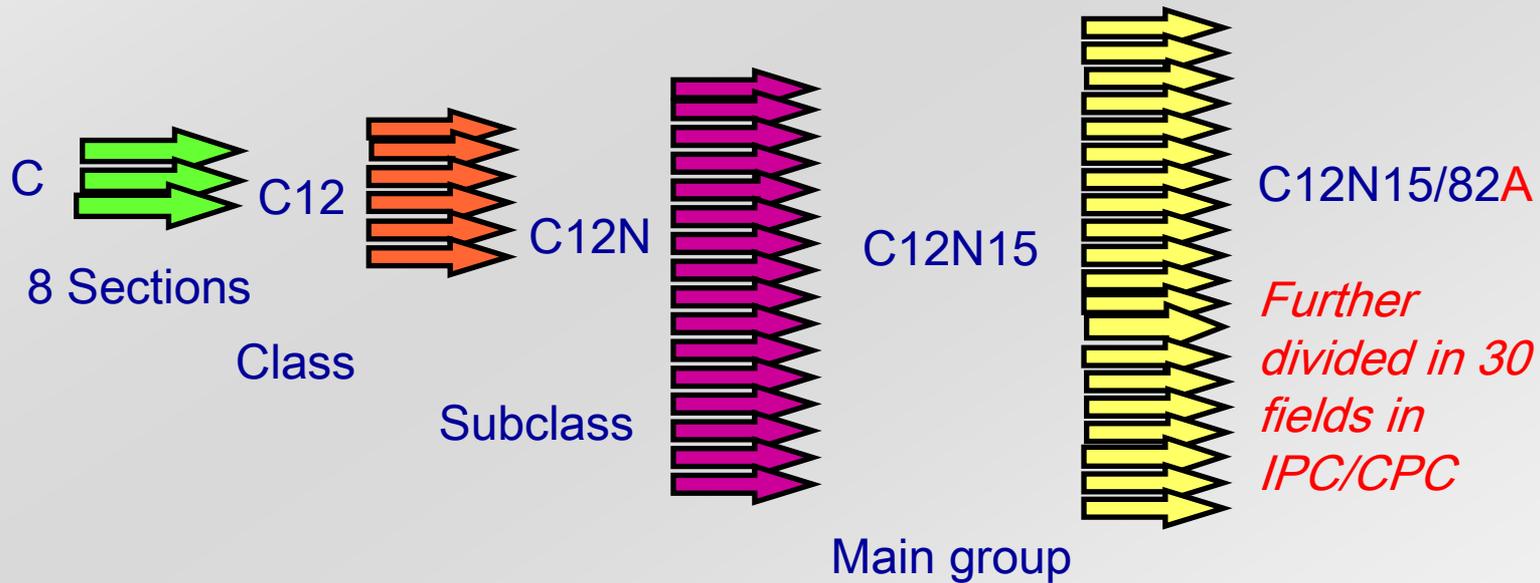
# Search Operators

- Boolean
  - AND
  - OR
  - NO
- Proximity Type (Specialized databases)
  - Same sentence (WS, S)
  - Same paragraph (WP,P,SAME)
  - Left-Right Ordered Proximity
  - Bidirectional unordered proximity
- Wildcards
  - Any match (\*/+)
    - mobil\* captures mobile, mobiles, mobility, etc.
  - Oneword -

# Keyword Identification

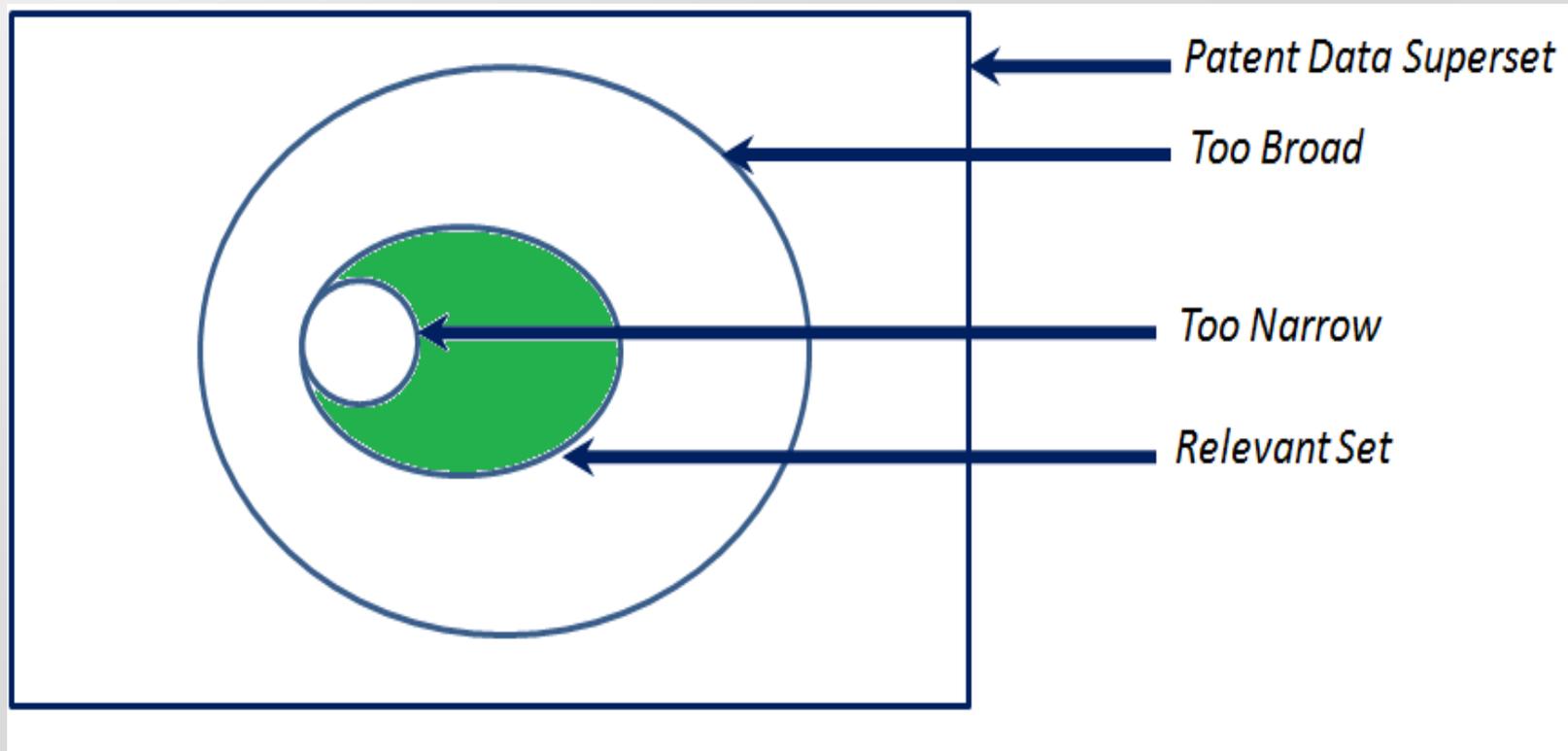
- For a 'mobile phone', a good searcher will search for terms 'mobile phone', 'cell phone', 'cellular phone', 'hand phone', 'portable telecommunication device', 'portable electronic device', 'handheld communication device', 'handheld electronic device', their plurals such as 'mobile phones' etc in a combination of Patent Title, Abstract, Claims and Full Specification. All of these terms/keywords form exhaustive type of search query, which means we have used all possible variations for 'mobile phone'.
- For the same idea a poor search doing too broad a search, will search only 'electronic device' in title, abstract or 'mobile phone' in full text, which will lead to a non-analyzable number of results and cannot be possibly analyzed to find the relevant patents.
- [www.visuwords.com](http://www.visuwords.com), Wiki, Google, patent documents, semantics, CAS , PubChem

# Patent Classification search IPC/CPC



[http://worldwide.espacenet.com/classification?locale=en\\_EP](http://worldwide.espacenet.com/classification?locale=en_EP)

<http://web2.wipo.int/ipcpub/#version=20130101&refresh=page>



# Live Search Demo

- Problem Statement:
  - Triterpenes and its application as:
    - Anti-biotic
    - Hair conditioner
    - Extraction method

# “GURU MANTRA”

- ✓ Always collapse search results by family
- ✓ Always use proximity operators
- ✓ Always restrict data with relevant dates
- ✓ Always use classification in combination of keywords
- ✓ Always research synonyms of keywords
- ✓ Always scan titles for determining relevancy



# Any Questions

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