

Innovation and R&D

Patents and other tools for the protection of intellectual property


Knowledge as a public good and the information paradox

The economic value of an innovation lies in the innovative idea, i.e. in the pure knowledge embedded in the innovation itself.

This causes the so-called «information paradox»: a pure information can gain an economic value only if it is revealed, but in the exact moment when it is revealed everybody can use it with no costs, therefore it loses economic value.

This hinders the investors in its attempt to give an economic value to his idea, discouraging therefore an investment in innovation.

The innovative process output can in this case be considered a public good (non-excludability and non rivalness).




Knowledge as a public good and the information paradox (cont).

The public nature of information depends however from the innovation features.

If the innovation mainly embeds tacit, non codified, non visible and complex knowledge, it is not a public good anymore. It is in fact much more easily appropriable by the inventor, and more difficult to transfer.


Furthermore it is easier to protect from imitation process innovations, rather than product innovation, because they are less visible. In these cases it is less strategic to use intellectual property protection tools.

When, instead, innovation is mainly linked to pure and codified knowledge, the firm is forced to invest huge resources in the attempt to protect the innovation value or to give up with the innovative activity. Consequently, the society as a whole might be in a situation of shortage of new technologies, products or process that might improve the collective welfare. For these cases it is possible to use property rights protection tools.

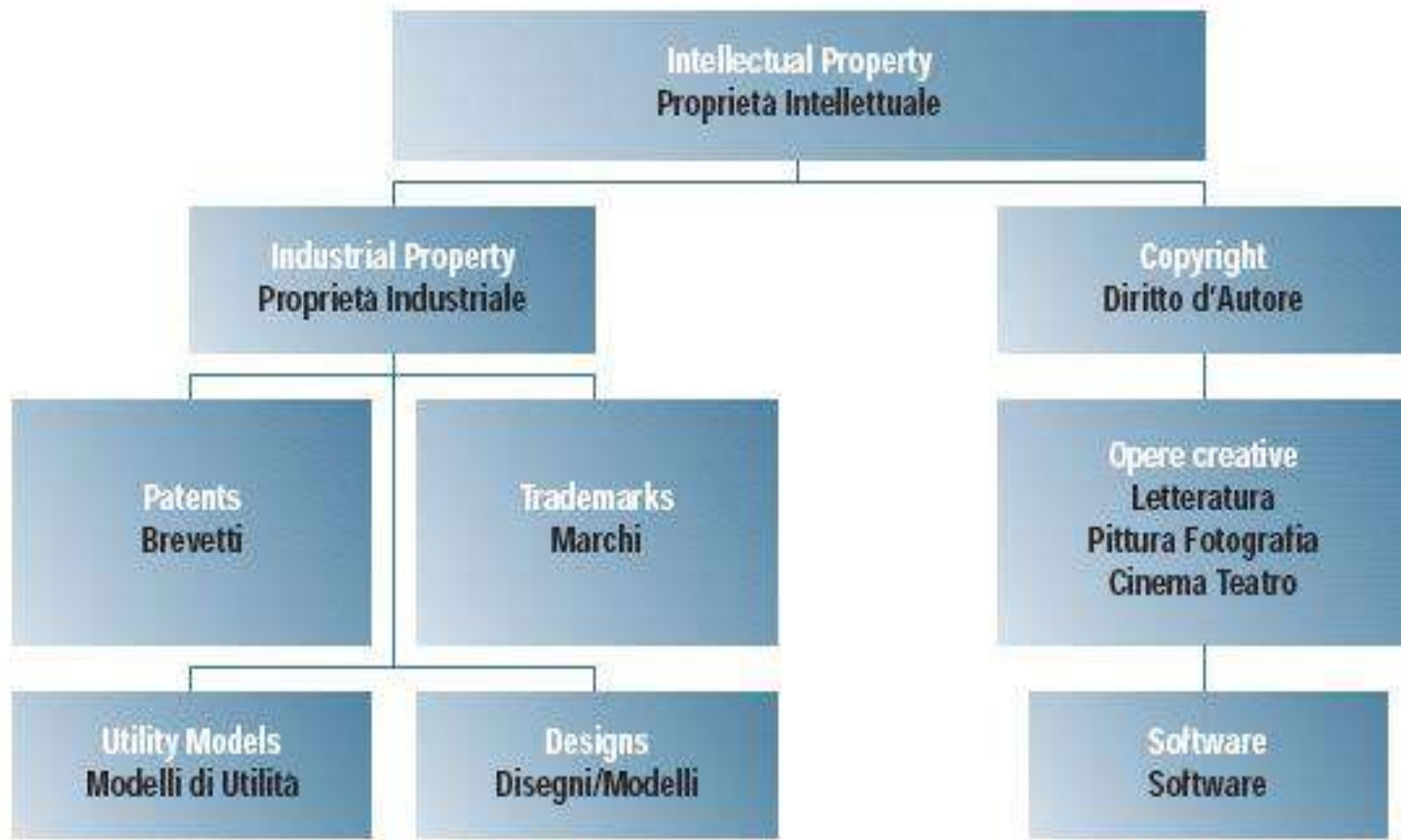


The protection of innovation

The innovator can protect himself by means of different tools:

- **Strategic appropriation mechanisms:** industrial secrecy, lead time reduction, control over complementary assets;
 - **Public intervention to stimulate innovation:** research funding, public research, public procurement, and so on.
 - **Intellectual property protection tools** (patents, copyright, brand, etc.). Their aim is to avoid innovation market failures due to its nature of public good. Given that such tools require a complete description of the intellectual activity results, they should also allow the maximum diffusion of the innovative process.
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Intellectual property rights



Intellectual property rights

The protection tool changes according to what you have to protect:

- **Technological content**: patents.
- **Creative or aesthetic content**: for example a book, a song, a picture, etc. ... In this case the innovation is protected by **copyright** (it enters into force automatically, no need for formal requests). It lasts up to 70 years after the author's death. It is however possible to register it formally, having in this way a public document testifying the copyright existence.
- **Technological content with a relevant creative component**:
 - **Utility models**: for innovation increasing the efficacy or the use comfort of a product. Duration: 10 years from deposit date, not renewable.
 - **Designs/models**: particular shapes or colours of a product where the creative component prevails. Duration: 5 years, renewable up to 25.

Intellectual property rights: the trademark

In order to be registered trademarks have to be distinctive, reproducible and legal. They cannot be commonly used marks, similar to already existing trademarks or able to create confusion at consumers' eyes. It is possible to protect words, graphics, images, letters, sounds, numbers, colours or shapes.



The protection lasts for **10 years**, but it can be renewed an unlimited number of times.

It is also possible for a company to acquire the exclusive right to use the trademark simply by using it, whether the trademark is registered or not (so-called **unregistered trademark** or de facto trademark), but with lesser juridical protection. The holder can prevent third parties from registering a trademark only if, through continuity of use, the trademark has attained a sufficiently widespread fame throughout the national territory.

If, however, the unregistered trademark only enjoys a **local fame**, others can register it, while those who have used the unregistered trademark will be able to continue to use it, notwithstanding the registration obtained by others, within the limits allowed by pre-use, i.e. locally.

Trademarks known abroad, if their fame has extended to Italy, preclude the registration of the trademark in Italy on the part of third parties.

“Vulgarisation” of trademarks

A trademark may lose its distinctive character when it becomes the common name for the products or services which it is intended to identify.

The logo for Nutella, featuring the word "nutella" in a bold, sans-serif font. The "n" is black, and the "utella" is red. Below the word, the word "FERRERO" is written in a smaller, black, sans-serif font.The logo for Aspirina, featuring the word "ASPIRINA" in a bold, black, serif font. The word is underlined with a green line.The logo for Walkman, featuring a blue stylized "W" icon followed by the word "WALKMAN" in a blue, sans-serif font.The logo for Scotch, featuring the word "Scotch" in a bold, yellow, sans-serif font. The word is set against a black rectangular background.The logo for Jeep, featuring the word "Jeep" in a bold, green, sans-serif font.The logo for Sottilette, featuring the word "Sottilette" in a white, serif font. The word is set against a blue rectangular background with a red border.

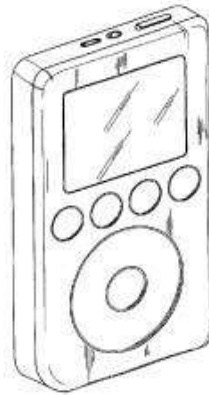
Advantage: it implies a superiority over competitors.

Disadvantage: the registered trademark owner may be forced to give up the exclusive use rights. In that case he cannot prevent others from the trademark use. Furthermore, there can be positive spillover effects over competitors (ex. if a consumer asks for a scotch roll, probably the seller will not give him the 3M one).

Intellectual property rights examples



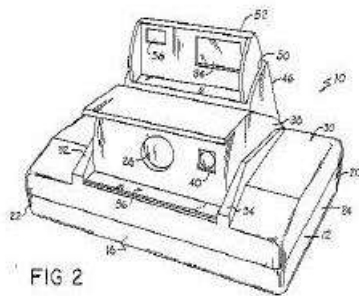
Coca-Cola®



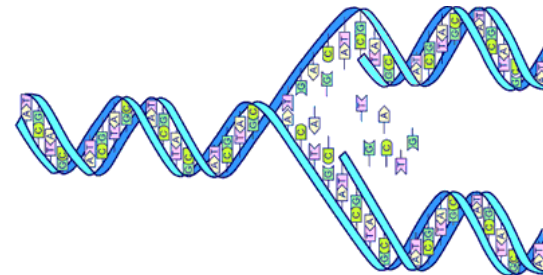
Apple® iPod®



Harry Potter



Instant camera



DNA sequencing

Patents: general features


The granting of a patents confers to the inventor a property right over the knowledge embodied in the invention. He can exploit, licence or sell it. In exchange for this exclusive right, the inventor have to disclose all the technical characteristics of the invention.

In the US the patent is granted to the person able to prove to be the first who had the innovative idea, in the rest of the world to who applies first.

The **duration** is 20 years and after this period everybody can reproduce the invention. The patent lapses if the fees are not paid in time or if it has not been sufficiently exploited in the two years after the granting.


Protection is limited in **space** (national boundaries or extra-national ones if the patent is granted by international bodies). The owner can prevent others from producing or selling the invention in the territories where the patent is valid.

As regards the **width** of the protected rights (a) process patents protect the process and only the products obtained by using that specific process, (b) with product patents, the product is protected regardless of the process used to produce it.




Patents: criteria

To be patented, an invention has to meet the following criteria:

- **newness:** the invention must not have been previously used, published or demonstrated in public (objective requirement)
 - **Non-obviousness:** the invention should not represent a trivial modification of something already known to reasonably informed specialists of the field (subjective requirement)
 - **Commercial application:** the invention has to have a practical application and it must be possible to reproduce it indefinitely
 - **Legality:** The invention has to comply with the law.
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What cannot be patented

1. Mental processes;
 2. Scientific discoveries;
 3. Artistic creations;
 4. Info presentations;
 5. Surgical or therapeutic methods (for a higher collective interest);
 6. Diagnostic methods for humans and animals;
 7. Races and essentially biologic processes to obtain them.
 8. Inventions contrary to the law, to the moral, to the “public order”
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The procedure in Italy

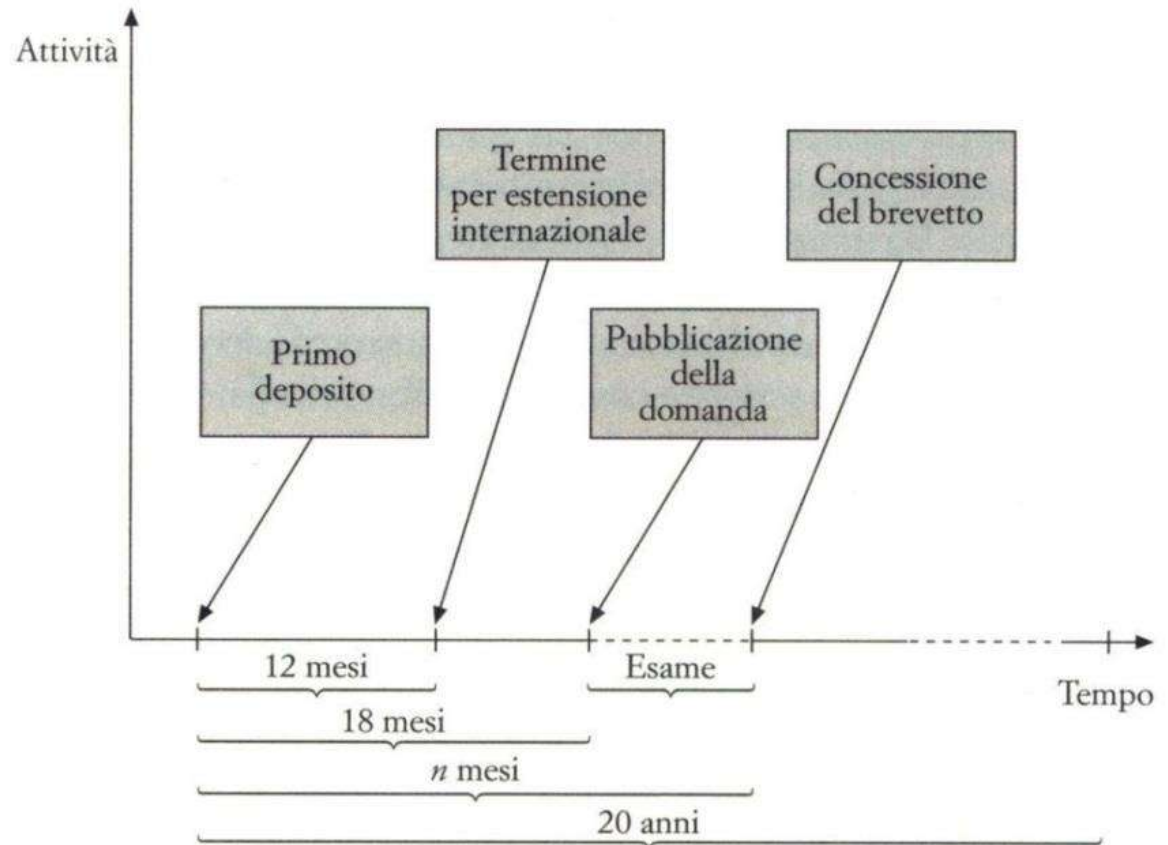
The patent has a national validity. It is therefore necessary to choose the countries where to apply, according to the places considered more strategic for the invention protection.

In order to obtain a patent in Italy, the procedure is the following:

- 1) The demand, including all technical details, is submitted to the Patent Office.
- 2) In that moment, the European Patent Office starts the **anteriority search** (free since 2007), which must conclude within 9 months from the submission.
- 3) All countries guarantee a 12 months period from the submission to extend the priority right to other countries with a **back date**.
- 4) After these first 12 months, the applicant still has 6 more months to extend the priority right to other countries, but **without back date** right and only if the invention has been kept secret in the meanwhile.
- 5) After 18 months from submission, the patent office **publishes** the patent and it is not possible to extend the submission to other countries. The office also starts to examine the application, to verify that it meets the criteria and to decide whether to accept or to refuse the patent request.

The procedure in Italy(cont.)

- 5) The final decision is usually taken after about 2–3 years from submission, and once it is communicated to the inventor, he has 2 months to possibly adjust the rejected demand.
- 6) Between the filing of the demand and its publication, the use of the invention by others is not illegal. The use becomes illegal after the publication.



The prior use right

According to the prior use right, those having used an invention in their own firm in the 12 months before the demand filing made by someone else, may continue to use it within the limits of the prior use (to be proved by the prior user).

It is possible to transfer such right only together with the firm in which the invention is used.

In other words, this protects those who have used a technical solution in their own firm (keeping it secret) that has then been patented by someone else.



The European patent

The **European Patent Convention (EPC)**, or Munich Convention, signed in 1973 and effective since 1977 rules the granting of European patents.

It **does not create** a single patent system for all of Europe, but only a single granting system.

The European patent is granted by the European Patent Office and it allows to obtain the patent in more European countries (designated in the application) with only one procedure.

The application (in English, French or German) has to be submitted to the European Patent Office in Munich, Berlin or the Hague, or to a national office. After the anteriority search there is the merit exam, that has to be requested by the inventor (also paying a tax), otherwise the application is considered invalid.

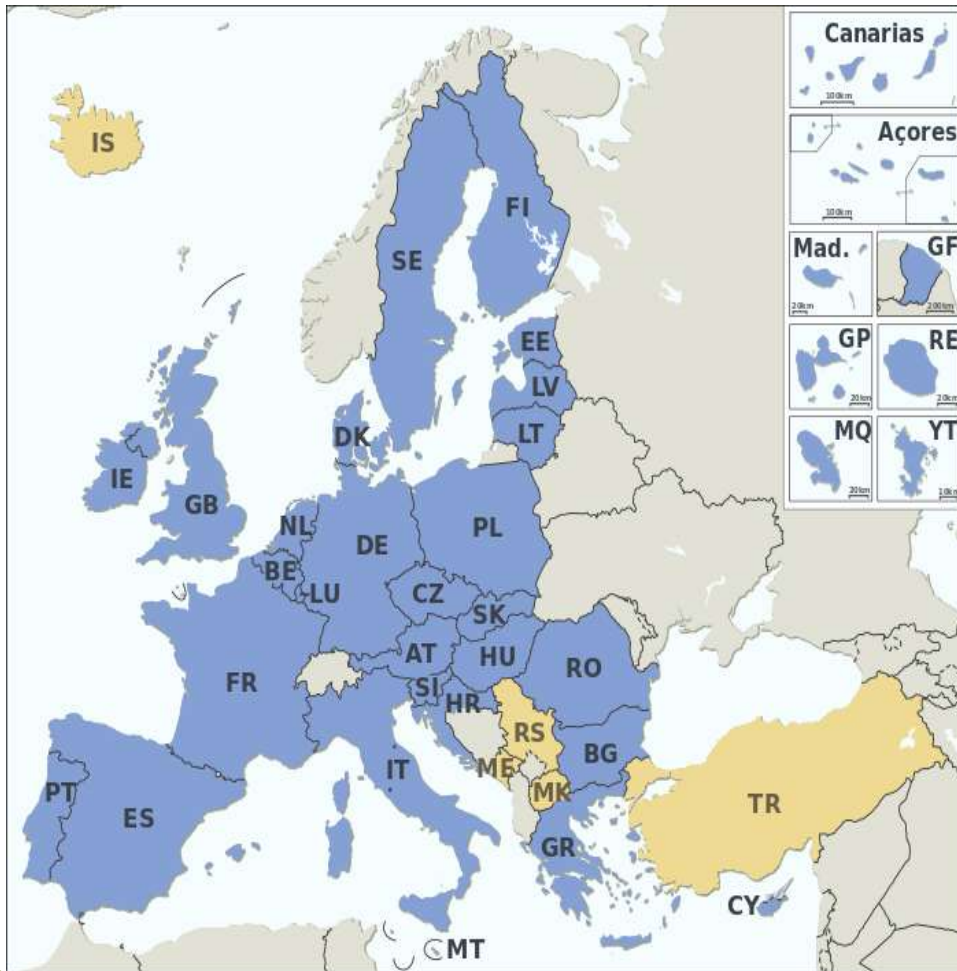
Within three months from granting, the procedure **has to be concluded** in each of the selected countries (or less), by submitting to the national offices the patent translated in the national language.

For **patent infringements**, one has to apply to the judicial system of each country where the infringements take place.

There is still **no Community patent** belonging to the Community legal order.



European Union 28 members



European Patent Organisation 38 members + 2 extension states




International patenting: the PCT (Patent Cooperation Treaty)

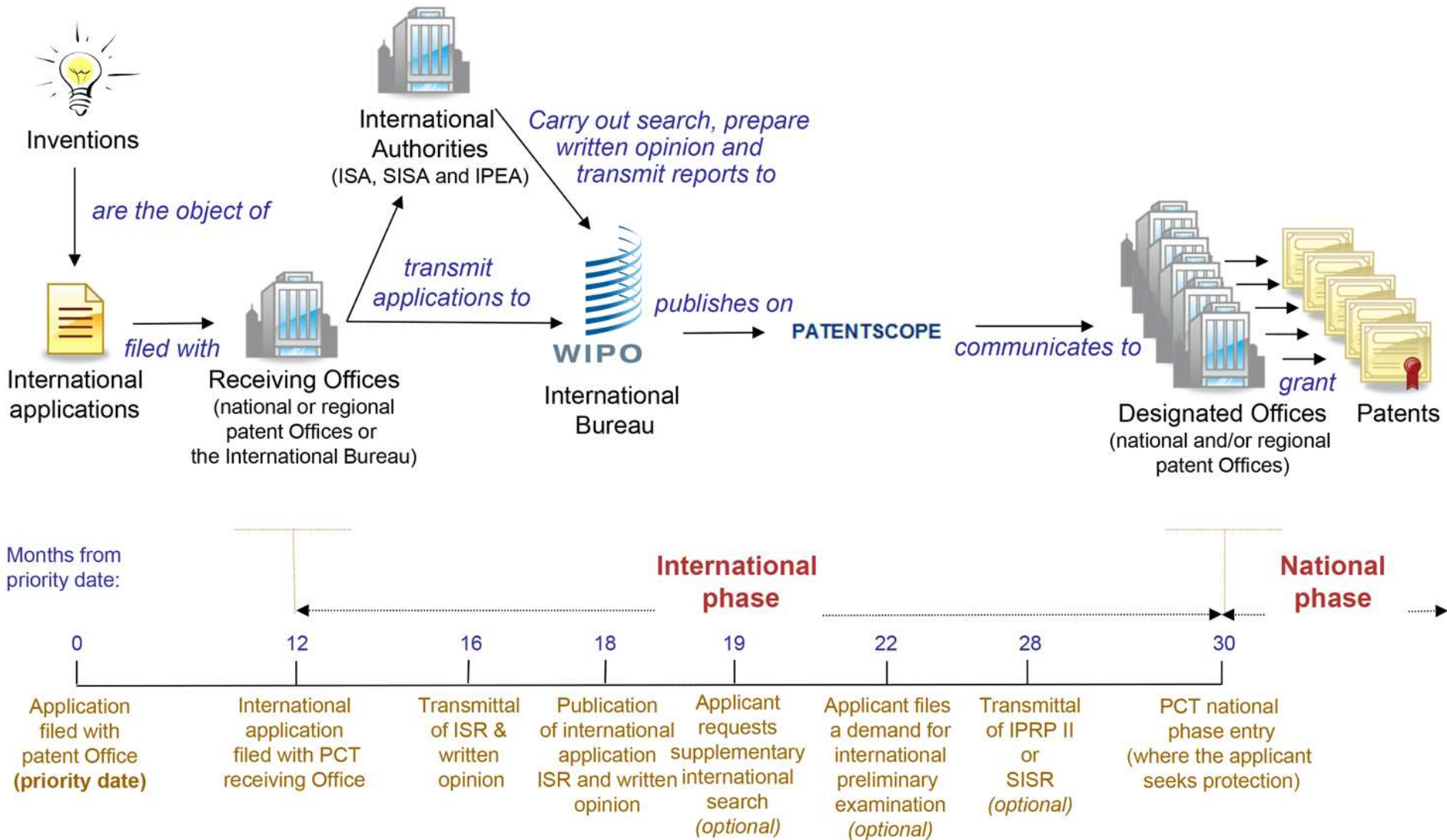
The PCT was concluded in 1970, amended in 1979, and modified in 1984 and 2001 (more than 140 countries included).

It is not a world patent. It provides applicant with an option to file national or regional applications for patents and utility models in the designated countries in the PCT application or at the European Patent Office.

After filing, the international application is subjected to an "international anteriority search". At the same time, a written opinion on patentability is prepared. After a few months they are both communicated to the applicant, who can then decide to withdraw the application or to **continue with the single national procedures**.



The PCT procedure



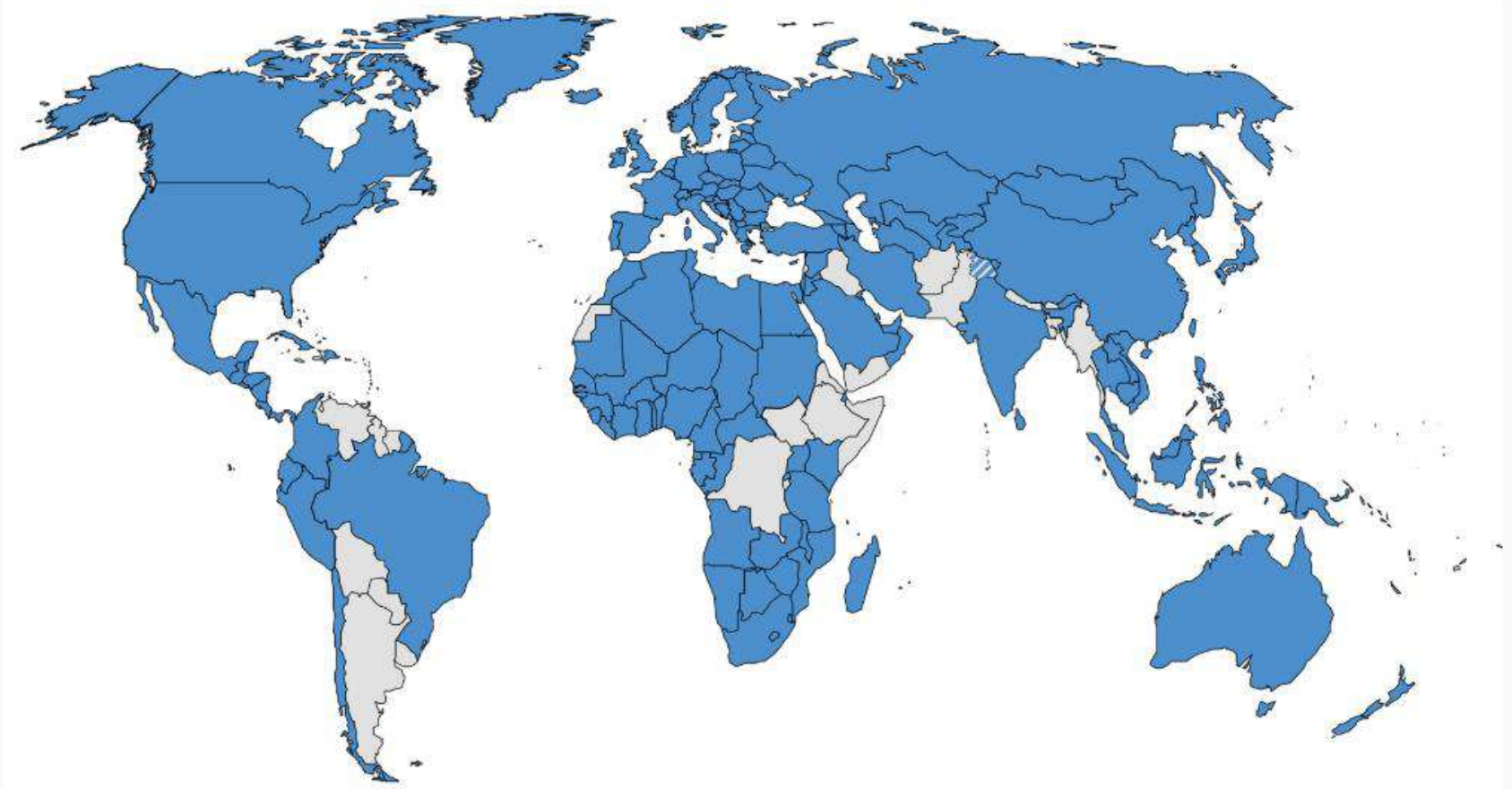
Source: WIPO

The PCT: advantages

- the applicant can postpone the decision on the geographical extension of the patent protection (and the associated costs) for up to **30 months** from the priority date;
- If the application follows the PCT form, it cannot be rejected for formal reasons in national patent offices of adhering countries;
- before filing a high number of national applications, the applicant will be provided with a written opinion on the novelty, inventive step and industrial applicability of the invention;
- during the preliminary examination it is possible for the inventor to interact with the examiner in order to amend the application;
- the invention is highlighted at world level;
- costs are relatively low because with only one filing the anteriority search is made over more than 100 countries, and English is enough.

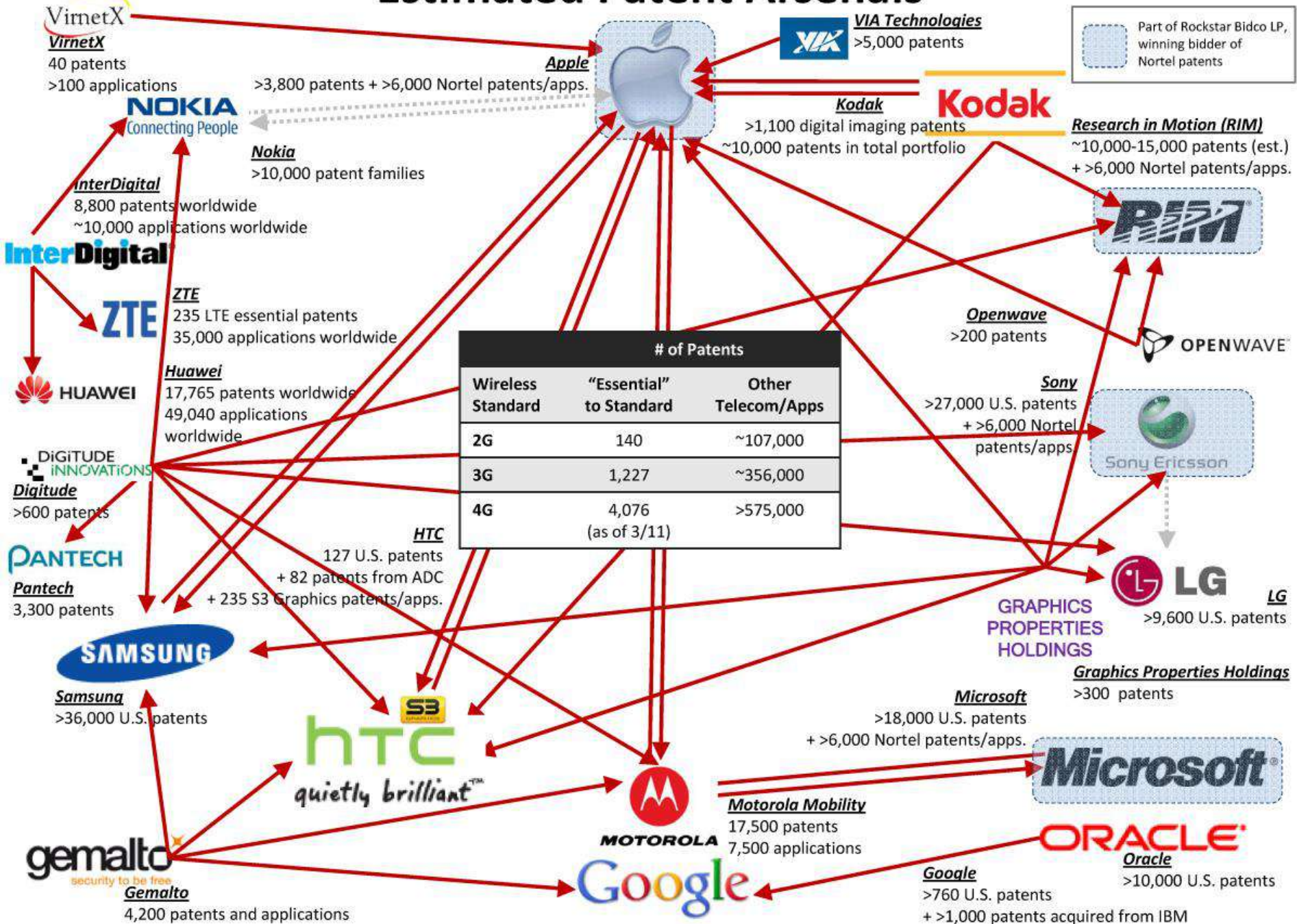
PCT adhering countries (2020)

The PCT now has 153 Contracting States

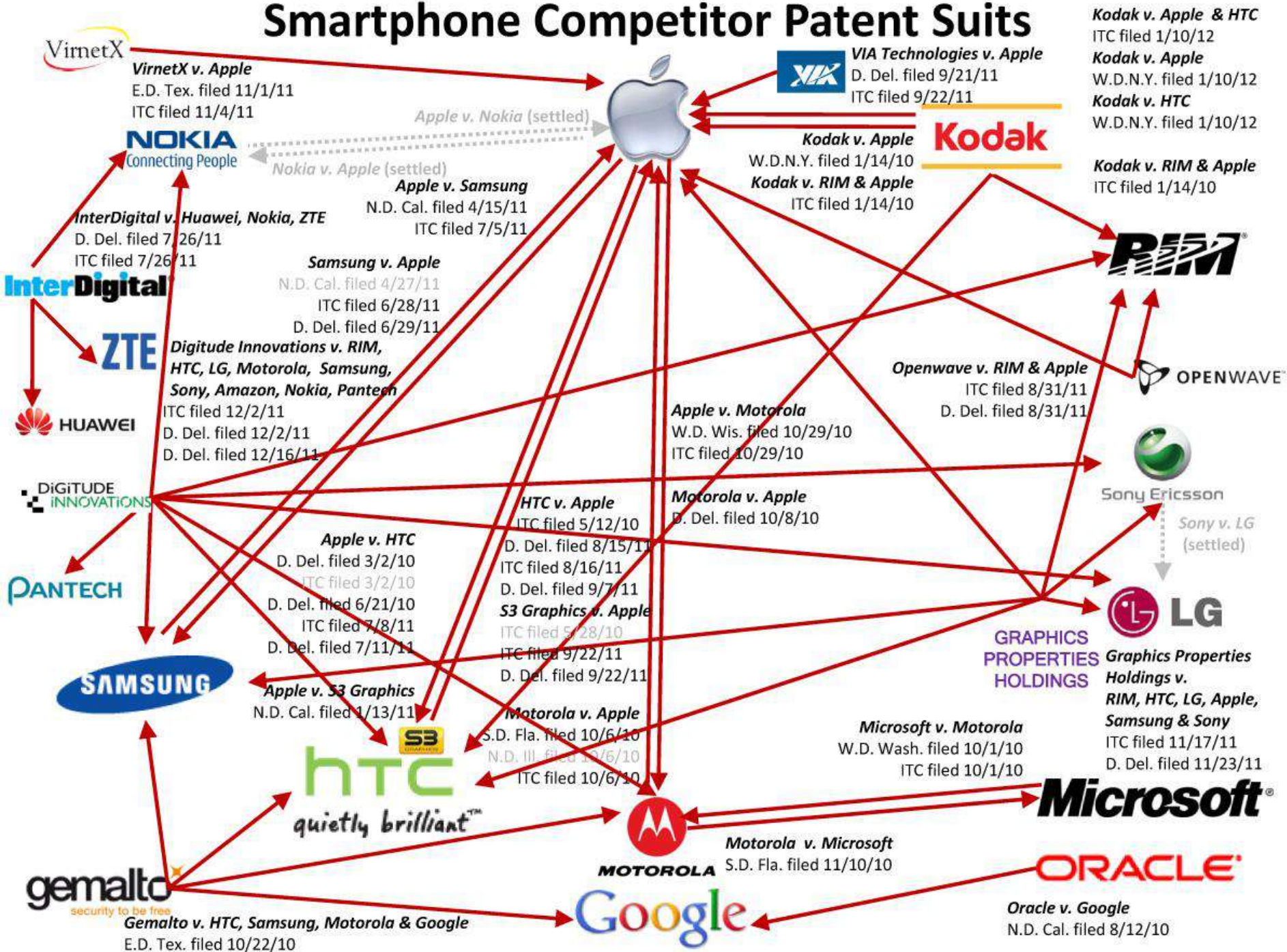


Source: WIPO

Estimated Patent Arsenals



Smartphone Competitor Patent Suits



A patent example



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office

February 15, 2007

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APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A
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APPLICATION NUMBER: 60/756,890
FILING DATE: *January 05, 2006*
RELATED PCT APPLICATION NUMBER: *PCT/US07/60119*

THE COUNTRY CODE AND NUMBER OF YOUR PRIORITY
APPLICATION, TO BE USED FOR FILING ABROAD UNDER THE PARIS
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Express Mail No. EV 533 716 225 US

COVER SHEET FOR PROVISIONAL APPLICATION FOR PATENT



Sir:

This is a request for filing a PROVISIONAL APPLICATION under 37 CFR 1.53(c).


| | | | | | |
|--|------------------|----------------|---|--|---|
| Docket Number | | 63266-5023-PR | | Type & plus sign (+) inside this box | + |
| INVENTOR(s) APPLICANT(s) | | | | | |
| LAST NAME | FIRST NAME | MIDDLE INITIAL | RESIDENCE (CITY AND EITHER STATE OR FOREIGN COUNTRY) | | |
| Ordling | Bas | | San Francisco, California | | |
| Forstall | Scott | | Mountain View, California | | |
| Christie | Greg | | San Jose, California | | |
| Lemay | Stephen | O. | San Francisco, California | | |
| Chaudhri | Imran | | San Francisco, California | | |
| TITLE OF THE INVENTION (280 characters max) | | | | | |
| Keyboards for Portable Electronic Devices | | | | | |
| MORGAN, LEWIS & BOCKIUS LLP CORRESPONDENCE ADDRESS :24341 | | | | | |
| ENCLOSED APPLICATION PARTS (check all that apply) | | | | | |
| <input checked="" type="checkbox"/> Specification | Number of Pages | 73 | <input type="checkbox"/> Applicant claims small entity status, see 37 CFR §1.27 | | |
| <input checked="" type="checkbox"/> Drawing(s) | Number of Sheets | 33 | <input type="checkbox"/> Other (specify) | | |
| METHOD OF PAYMENT (check one) | | | | | |
| <input type="checkbox"/> A check or money order is enclosed to cover the Provisional filing fees. | | | | Total Fee \$ 200.00 Amount: | |
| <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge the required filing fee to Deposit Account Number 50-0310 (order no. 63266-5023-PR). | | | | <input type="checkbox"/> Fee Transmittal Form is attached. | |

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

☒ No. ☐ Yes, the name of the U.S. Government agency and the Government contract number are:

Respectfully submitted,

Signature


Gary S. Williams
MORGAN, LEWIS & BOCKIUS LLP

Registration No.
(if appropriate)

31,066

Date

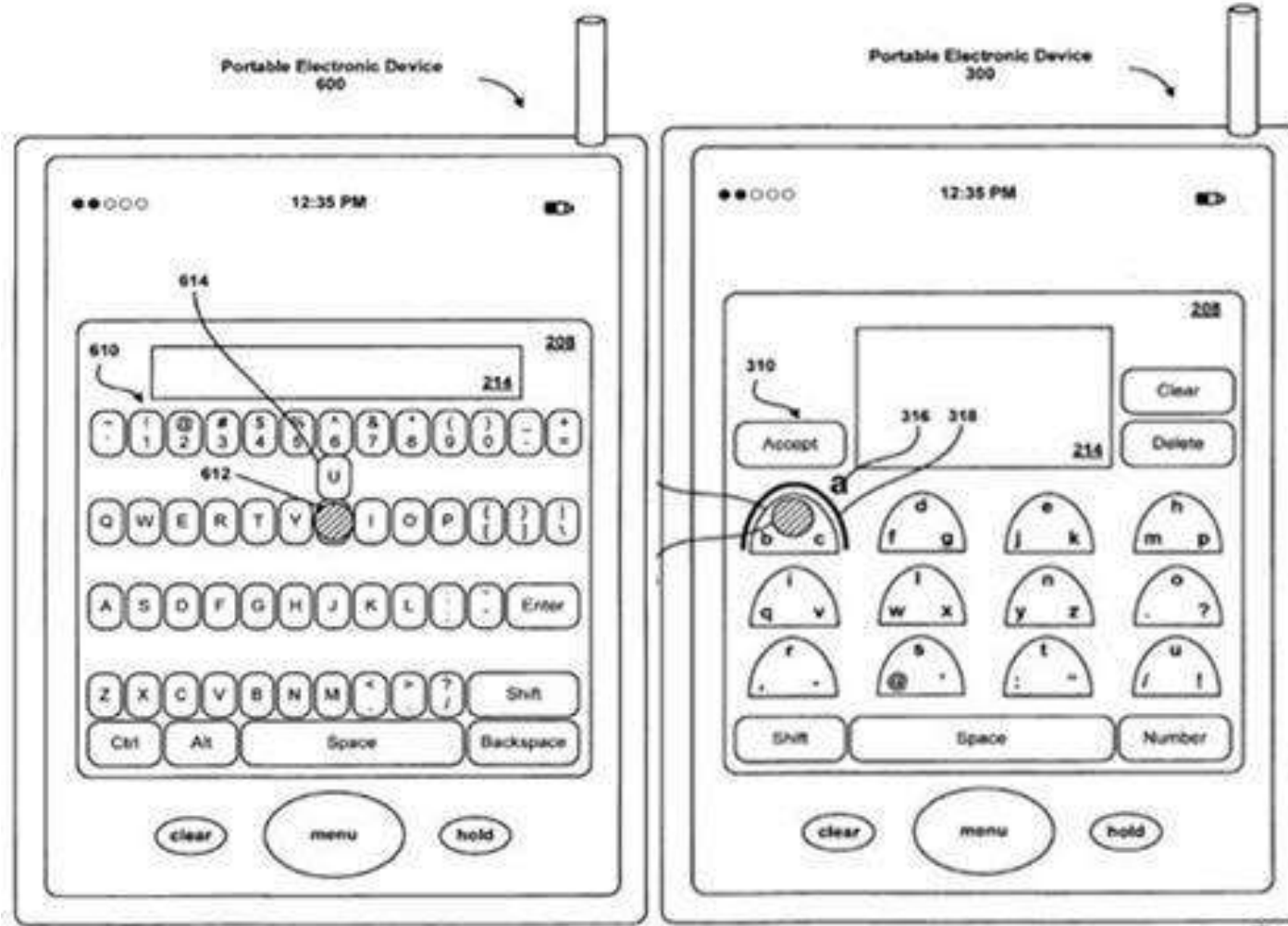
January 5, 2006

☐ Additional inventors are being named on separately numbered sheets attached hereto.

Total number of cover sheet pages

1

PROVISIONAL APPLICATION FILING ONLY



Patenting pros and cons

Pros

- ▶ Patents solve the information paradox and encourage innovative activity
- ▶ By forcing the applicant to disclose all the technical details, efforts duplications and resource wastes are avoided. *Inventing around* is also possible
- ▶ Innovation becomes tradable (markets for technology)

Cons

- ▶ Patents create a (temporary) monopoly that might discourage the owner's innovative activity
- ▶ Patents are possible only for selected industries, and this could cause distortions in the allocation of resources to the innovation activity, favouring sectors for which patenting is feasible
- ▶ Patents might protect innovation at the wrong stage in the process (at the end instead of the beginning)
- ▶ Patenting might discourage complex innovations requiring the exploiting of more than one patent for following innovations

Summary

- ▶ Information paradox
- ▶ Intellectual property rights
- ▶ Trademarks
- ▶ Patents

Reading list

- Chapter 17: 17.4, 17.5 (excl. 17,6) Lipczynski et al., 2013