Cooperative Patent Classification (CPC) Tutorial
How you can use class searching for faster more accurate results

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Investigate, Collaborate, Innovate
Cooperative Patent Classification System (CPC) Tutorial

Background of CPC

The US and European patent offices maintained their own, well-developed patent classification systems called the USPC and ECLA respectively. In an effort to harmonize global patent searching and save costs maintaining two distinct systems, the US and European offices entered into an agreement in October of 2010 to develop a new system that would be adopted by both entities.

The new patent classification system is called the “Cooperative Patent Classification System” or CPC, and it is largely based on ECLA which itself is based on the International Patent Classification system (IPC), which is administered by the World Intellectual Property Organization. CPC and IPC look very much alike. The chief difference is that CPC contains about 100,000 additional subdivisions, meaning it is more detailed than CPC.

CPC was released in January of 2013. The transition for Europe was relatively easy since the new changes were comparatively small to the existing ECLA system. For the US it has been more difficult. The US expects to be fully transitioned to CPC by 2015. Other jurisdictions such as Japan and WIPO are also adopting CPC as alternate classification schemes. US Utility and Plant Patents are classified in CPC. US Design patents are not classified in CPC.

Goal of this Document

To teach you how the CPC is organized and how to search it, and more specifically, to search CPC using the AcclaimIP patent search and analysis tool. If you are not an AcclaimIP user, you'll still find the background information helpful.

Before you can search CPC you need to understand how it is organized and how patents are classified. I'll cover the following:

1. Hierarchical nature of CPC
2. Inventive vs. Additional Classifications
3. One to Many Ratio of Classes to Patents
4. Querying CPC in AcclaimIP
Hierarchal Nature of CPC

Like all patent classification systems, CPC is hierarchical. In some cases, patents are classified very deep in the hierarchy; up to 15 levels deep! In other cases a patent may be classified all the way up in the fourth level, the main group. The top four levels of the hierarchy are part of the classification code itself. As a result, you can query the upper portions of the classification hierarchy “naturally” just by entering in a partial CPC code.

I’ll show you some sample queries below, but first, let’s look a at a typical CPC code. G06Q30/0627 is shown in the table below along with its fully exposed hierarchy and class titles. This same representation of every class code in AcclaimIP can be viewed as a tooltip by hovering your mouse over a CPC class code.

Table 1 shows a typical CPC classification with class titles

<table>
<thead>
<tr>
<th>Level of Hierarchy</th>
<th>Code</th>
<th>Title/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section</td>
<td>G</td>
<td>PHYSICS</td>
</tr>
<tr>
<td>Class</td>
<td>G06</td>
<td>COMPUTING; CALCULATING; COUNTING</td>
</tr>
<tr>
<td>Subclass</td>
<td>G06Q</td>
<td>DATA PROCESSING SYSTEMS OR METHODS, SPECIALLY ADAPTED FOR ADMINISTRATIVE, COMMERCIAL, FINANCIAL, MANAGERIAL, SUPERVISORY OR FORECASTING PURPOSES; SYSTEMS OR METHODS SPECIALLY ADAPTED FOR ADMINISTRATIVE, COMMERCIAL, FINANCIAL, MANAGERIAL, SUPERVISORY OR FORECASTING PURPOSES, NOT OTHERWISE PROVIDED FOR</td>
</tr>
<tr>
<td>Main Group*</td>
<td>G06Q30 or G06Q30/00</td>
<td>Commerce, e.g. shopping or e-commerce</td>
</tr>
<tr>
<td>1 Dot ( . )</td>
<td>G06Q30/02</td>
<td>Marketing, e.g. market research and analysis, surveying, promotions, advertising, buyer profiling, customer management or rewards; Price estimation or determination</td>
</tr>
<tr>
<td>2 Dot ( .. )</td>
<td>G06Q30/0202</td>
<td>Market predictions or demand forecasting</td>
</tr>
<tr>
<td>3 Dot ( .... )</td>
<td>G06Q30/0204</td>
<td>Market segmentation</td>
</tr>
<tr>
<td>4 Dot ( .... )</td>
<td>G06Q30/0205</td>
<td>Location or geographical consideration</td>
</tr>
</tbody>
</table>

If you are familiar with the US Patent Classification System (USPC), then it may be helpful to recognize that CPC has two levels of its hierarchy that are broader than anything in the USPC—sort of like super-classes. CPC Sections and Classes don’t have “equivalents” to anything in the USPC.
For example, there are only nine sections in CPC, so a CPC section is more like a US “Technology Center.” A CPC Class is also very high level, and corresponds much more closely to a US “Art Unit” than it does to a US Class. US Technology Centers and Art Units are not classes at all; rather they are organizational structures along technology lines and are not attributed to patents themselves. As a general reference point, I think it is helpful to make the comparison.

A CPC Subclass and a US Class are roughly equivalent to each other in terms of their level of granularity. Similarly, the US Mainline Subclass is roughly equivalent to the CPC’s Main Group. Once you are into the dot levels, the level of detail of the hierarchy is roughly equivalent, although the CPC has more nodes than the USPC.

**Approximate Granularity of CPC Compared to USPC**

Table 2 shows approximate relationships between CPC and USPC

<table>
<thead>
<tr>
<th>CPC</th>
<th>USPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section</td>
<td>Technology Center (not attributed to patents)</td>
</tr>
<tr>
<td>Class</td>
<td>Art Unit (not attributed to patents)</td>
</tr>
<tr>
<td>Subclass</td>
<td>Class</td>
</tr>
<tr>
<td>Main Group</td>
<td>Mainline Subclass</td>
</tr>
<tr>
<td>1 Dot ( . )</td>
<td>1 Dot ( . )</td>
</tr>
<tr>
<td>2 Dot ( .. )</td>
<td>2 Dot ( .. )</td>
</tr>
</tbody>
</table>

In CPC, patents can be classified in the Main Group and below. Patents cannot be classified higher than the main group in the hierarchy. For example, there are no patents classified in G (a section) or G06 (a class) or G06F (a subclass). Patents are classified in children of these divisions.

**A good analogy is to think of physical addresses.**

Your address may be 1234 Congress Avenue, Austin, Texas, USA, North America, Northern Hemisphere, Earth. To give a valid address, you must get to the level of the street address at a minimum. You just can’t send a letter to Matt Troyer, North America. But the address hierarchy would be useful for if you were doing demographic analyses.

How many addresses are there on Earth? How about North America, how about just the US, or just Texas or Austin, or on Congress Avenue? Some addresses are more granular than the street number. 3rd floor, Suite 305, or Suite 305 Room 10, fourth
cube on the left, but your letter will never be delivered if you don’t have the minimum street number.

Similarly, patents have to be classified in the Main Group or lower, but the upper part of the hierarchy is useful for analyzing sets of patents.

The main group can be referenced in a query by its code, G06Q30, for example, but patents are not classified here either, but rather in the double-zero “equivalent” code for the main group, G06Q30/00.

What to remember:

No patents are ever classified directly, in Sections, Classes or Subclasses. The /00 Main Group designation is the highest level a patent may be classified in CPC.

Notice from Table 1, CPC’s hierarchy goes much deeper than just 4 levels. Below the Main Group, CPC uses a “dot-notation” to represent a class’s depth and the corresponding parent/child relationships with other classes.

Patents can be classified at any level of the hierarchy in or below the /00, so there are patents classified in the Main Group, the 1-dots, 2-dots etc.

95.5% of all nodes in the CPC classification system fall below the Main Group level or double-zero level, and into the dot notation. Getting this concept is important,
because if you want to isolate a technology for landscaping, for example, you’ll want to query the hierarchy below the main group and into the dot levels—below the naturally hierarchal part of the classification system.

With AcclaimIP, the entire CPC (and IPC/USPC) can be queried hierarchically, not just the top part of the hierarchy that is implied in the class code itself!

Example of “Naturally” Hierarchical CPC Queries

Since no patents are classified in the Main Group (excluding the /00s) or above, when you query part of a class code, AcclaimIP assumes you want to query the hierarchy. In other words, you can return patents in all classes beginning with the partial class code you indicate.

CPC is one of the field codes for “Cooperative Patent Classification.” There are other CPC field codes, but I’ll have more on that in another section.

- **CPC:G** → Finds all patents classified in the “G” section.
- **CPC:G06** → Finds all patents classified in the G06 class.
- **CPC:G06Q** → Finds all patents classified in the G06Q subclass.
- **CPC:G06Q30** → Finds all patents classified in the G06Q30 main group.

Remember the main group is a special case. The following query:

- **CPC:G06Q30/00** → Finds patents explicitly classified in the designated /00 main group and doesn’t include children subclasses.

Figure 2 The query is hierarchical, and returns almost 30,000 granted US patents because it returns all children classes.
Figure 3  Adding the /00 notation to the same Main Group query returns only 1611 patents explicitly classified in the /00 Main Group.

How to Read the Dot-Structure

Figure 4 below shows the class schedule for part of the G06Q30 Main Group “Commerce, e.g. shopping or e-commerce.” I’ll be using the same class throughout this article, but the same concepts are 100% valid for any part of the CPC classification system. G06Q30/00 has 110 children sub-classifications, most of which have their own children subclasses.

One-dot subclasses are parent subclasses of lower two-dot subclasses, which are in turn parent subclasses of lower three-dot subclasses and so on.
Notice how the titles at the dot levels are indented. I think the USPTO has done a good job of presenting the classification schedule online in a usable way. I encourage you to bookmark the following link so you can have a handy reference available. It will make your experience much better and your search experience more rewarding.

http://www.uspto.gov/web/patents/classification/cpc.html
How to Read the Dot Notation in the CPC Class Schedule.

You might want to take a minute to click the link above and get a sense for what a classification schedule looks like. You can drill into the class nodes starting at the section level, then continue until you get to a page that looks like Figure 3 above.

Referring to figure 3, let’s look at the first 1-dot subclass shown, G06Q30/01. Notice that it has four 2-dot children. All four of the 2-dot subclasses, are coordinate with each other. That is, they are at the same level and are immediate children of their 1-dot parent.

The G06Q30/0185 is a 3-dot subclass, and is a child of the 2-dot subclass that immediately precedes it in the CPC class schedule, G06Q30/018. By extension the /018 2-dot subclass is a child of the first 1-dot subclass that precedes it, G06Q30/01.

So for example, if you were interested in patents related to “customer relationship, e.g. warranty” then you’d want to look at the 1-dot class and all 5 children classes, because these subclasses all have to have the attributes of the 1-dot with some other details such as for service warranty or product recall etc.
How to Query the Hierarchy

Keeping with the same example, let’s assume we wanted to query all “Customer relationship e.g. warranty” patents. The hard way is to construct a query that looks like this:

\[ \text{CPC: (G06Q30/01 OR G06Q30/012 OR G06Q30/014 OR G06Q30/016 OR G06Q30/018 OR G06Q30/0185)} \]

You can see that it requires a lot of typing and will likely lead to mistakes and typos. Imagine wanting to find all e-commerce/marketing patents (shown in Fig 3 as well). You’d have to type in 104 different subclasses!

**Plus (+) Notation**

The alternative in AcclaimIP is to append your class code with the plus sign (+) and AcclaimIP will automatically add all patents in children subclasses.

\[ \text{CPC: (G06Q30/01+)} \rightarrow \text{Query automatically returns patents in children classes as well as the named class.} \]

It works at all levels of the hierarchy. If there are no children subclasses, then AcclaimIP returns patents in the class itself, which is the output you’d expect.

As a result, virtually all of your CPC Class queries should use the plus notation. Very often you won’t have time to reference the class schedule on the USPTO’s website. You don’t have to, you just have to know you want ecommerce/marketing patents, for example. And from scanning the tooltips on a few of the CPC classifications you’ll quickly see which class you need to query, and at what level you’ll want to query it.

**Some Horn Blowing**

If you know me, I don’t like to toot my own horn, but AcclaimIP is the ONLY patent analysis software program that let’s you query the entire CPC (and IPC and USPC) hierarchies. It is one of our innovations, and gives you the power to use classifications well. I can’t tell you how many users we have turned from the dark side with this one feature. They would rarely use, and not trust classification systems, because the other research platforms out there
are woefully inadequate for searching by class, and they never took the time to learn class searching. But Class searching combined with good keyword techniques always leads to better results.

**Inventive and Additional CPC Classifications**

To enhance the CPC system, or complicate matters, depending on your point of view, CPC classes are assigned to patents as either Inventive classes or Additional classes. Additional was formerly called (non-inventive) in the EPO’s now completely defunct ECLA class system.

AcclaimIP uses unique class codes so you can search for patents by Inventive only, Additional only, or either.

- **CPC:**G06Q30 → Finds patents classified by EITHER Inventive or Additional classifications.
- **CPCI:**G06Q30 → Finds patents classified ONLY by Inventive classifications.
- **CPCA:**G06Q30 → Finds patents classified ONLY by Additional classifications.

In AcclaimIP’s user interface Inventive classes are listed in bold text, and Additional classes are displayed in standard font. Similarly, in the USPC, “OR” classes are represented in bold font.

There is a big difference between CPC and USPC in the following respect, however.

In CPC, patents can be classified in one or MORE Inventive classifications. By contrast, in the US system, there is one Original (OR) and from zero to N Cross Reference (XR) classifications.

The limitation with the US system is that some of the cross-reference classifications are in fact, “inventive” and others are “not inventive,” but you don’t know which. The benefit is that searching by Primary US Classes you get a nice and tidy one-to-one relationship between patents and classifications.

The messy part of CPC, while valuable in other respects, is that you don’t get tidy one-to-one relationships when charting patents by CPC class.

Note that CPC classes that begin with the letter “Y” are “General Tagging” classes and never appear as “Inventive” classes. Y classes are always “Additional.”
Hot Links

Any blue link in AcclaimIP is a hot link and will execute a search. If you click either an inventive or additional class code, AcclaimIP will execute a standard CPC: search, which is the broadest one possible. Simply edit the code in the My Query window to CPCI: and click the Update Search button if you want to narrow your query.

Exporting CPC Codes:

When you export CPC codes they appear with their Inventive or Additional designations preceding the class code. For example:

I:G06F17/30011; I:G06F17/3069; A:G06F2216/11
I:G06F17/30619; I:G06F17/3069; A:Y10S707/99933
I:G06F17/30699; I:G06F17/3069; A:Y10S707/99937
I:G06F17/30011; I:G06F17/3069; A:G06F2216/11
I:G06F17/30702; I:G06F17/3069

Notice the I: or A: that precedes each class code exported. Notice too, that a single patent (row in this example) can contain more than one I: classification.

Charting by CPC Codes:

When running your charts, you can take any set and drill in visually into the classification system. In the Chart’s Refine panel, click the radio button to view the chart by finer and finer resolution.
Summary

The Cooperative Patent Classification System (CPC) is a great leap forward for patent researchers allowing you to search and landscape patents from multiple jurisdictions using a single high-quality system.

Humans classify patents, and mistakes can be made, but my experience is examiners do a remarkable job of accurately classifying patents. These folks work in their art units often for many years, and they get to know their relevant classes inside and out.

I hope you embrace classification searching. There may be a bit of a learning curve, but once you get started, you'll notice that you save time, and increase the accuracy of your analyses. In today’s world, you no longer have to learn multiple classification systems. CPC is the basis for all your current and future searches.

If you have any questions about CPC or about AcclaimIP’s specific implementation for searching it, call me anytime. You’ve got my number.

TTFN,

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