From,
Shubhojeet Ghosh,
No. 51, 9<sup>th</sup> Main,
Maruthi Layout, BTM 1<sup>st</sup> Stage,
Bangalore – 560029
Karnataka

Date: July 26, 2013

To,
Shri. B P Singh
Deputy Controller of Patents and Designs,
Head of Rajiv Gandhi National Institute of Intellectual Property Management and Patent Information System,
Plot No 03, Opposite to State Board office ,
Hislop College Road, Civil lines ,
Nagpur , PIN 440001


**Subject: Comments on the Draft Guidelines for Computer Related Inventions**

I would like to commend the Office of the Controller General of Patents, Designs & Trade Marks ("CGPDTM") for publishing and inviting comments on the Draft Guidelines for the Computer Related Inventions ("Draft Guidelines"). With respect to the Draft Guidelines, I would like to submit the following comments:

**Background**

The rationale behind the patenting system is to nurture technological progress. Technological progress is nurtured when, an inventor discloses the invention publicly and earns the right to exclude others for a limited period of time, from making use of the invention and using said right to exclude others an inventor may receive remuneration in the form of royalties from an entity making use of the invention.

The relevant provisions under the Patent Act, 1970 in force:

2(1)(j) as "Invention" means a new product or process involving an inventive step and capable of industrial application;

2(1)(ja) "inventive step" means a feature of an invention that involves technical advance as compared to the existing knowledge or having economic significance or both and that makes the invention not obvious to a person skilled in the art;

2(1)(ac) states that "capable of industrial application", in relation to an invention, means that the invention is capable of being made or used in an industry;"

3(k) a mathematical or business method or a computer programme *per se* or algorithms;

For computer related inventions *inter alia* sections 2(1)(j), 2(1)(ja), 2(1)(ac) and 3(k) decides the patentability as discussed in the Draft Guidelines

**'Inventive Step' in case of computer related invention**

A computer is defined by a device which can store, process and output data according to a set of instructions provided and said "set of instructions" is called a computer program. All programs are implementations of one or more algorithms, where an algorithm is a set of logical steps or in plainly speaking a recipe for processing data or computing.

Under Section 2(1)(j) a computer program qualifies to be a "process" and also is "capable of industrial application" as per section 2(1)(ac).

An approach to test whether a computer program has an "inventive step" should be based on the problem the computer program solves, the process used to solve the problem and performance of the computer program compared to the state-of-the-art.

The complexity of solving a problem using a computer is measured based on the computational complexity theory. Computer complexity theory determines the difficulty of solving a problem as the time and memory required as a function of the number of inputs provided to a state-of-the-art computer program. The time and memory as function of number of inputs is represented using the big O notation. Now if a computer related invention is reduced to practice and since the number of inputs is predetermined; an automated test for performance can be measured and compared to the performance of the state of the art computer program.

Therefore, determining the novelty and obviousness of computer related inventions is measurable and objective; whereas novelty and non-obviousness of an invention in other subject areas are not quantifiable, unpredictable and subjective in nature. Moreover, it is more convenient for the examiner to conduct a prior art search in case of computer programs or computer algorithms as compared to invention in other subject matters because it is easily available and well documented in electronic form.

Impact of technical advance in software has economic significance which has been clearly demonstrated by the success of lossy audio compression technology. Recent developments of speech compression has reduced the bandwidth of a voice channel to about 1200 bits/sec (codec2) which can be used to transmit and receive approximately 2-4 voice calls over wireless using the same bandwidth of a single voice call using the GSM standard.

**'*per se*' under Section 3(k)**

Section 3(k) states computer programs *per se* as non-patentable subject matter. The guidelines recite that a program tied to a specific machine (not a general purpose computer) might be patentable. Since for most invention the computer program holds the critical or inventive step for an invention and in view of the current hardware manufacturing trends all chips can be construed as a general purpose computer connected to various input output devices. It is not clear from the guidelines what constitutes to be patentable subject matter and non-patentable subject matter.

**Challenges to Innovation and Section 3(k)**

Infringement is a part of a lifecycle of a patent. An example would be a method of controlling a robotic drill head drilling holes on a circuit board the shortest route the drill head follows should be found to maximise efficiency. Finding the shortest path is a classic "travelling salesman problem" in computer science parlance. Computing the solution of travelling salesman problem becomes impracticable with only a handful of holes as the input. Now there are a variety of solutions known in the art where the solutions (algorithms) provide one of the better paths if not the best path most of the time. The performance of the algorithms are determined by the number of times it finds one of the better paths in a given sample space as a percentage. Advancement in technique would be an algorithm or a computer program which can find one of the better paths faster or with better percentage of finding one of the best paths or both.

In light of the Draft Guidelines and precedent set by *Diamond vs. Diehr* the above optimized process of drilling holes is patentable, because it involves hardware which is not a software program *per se* as it involves hardware such as a robotic arm a drill and along with that let us assume it has novelty and is non-obvious and has unexpected results over the state of the art.

However, the same patentable technique of finding the shortest path can be used in finding the shortest route to be followed by a diplomat who is flying to 20 different cities by a software program to compute the most economical way the diplomat can achieve this and such a program would not infringe upon the claims of the inventor who devised the method of finding the shortest path for the drill head. However, finding one of the shortest paths by the diplomat and the drill head is solved using the same central idea. Since patents are manifestation of ideas and patent rights are limited to the claims. It would be prejudicial to the patentee who invents a better method (algorithm or computer program) as his claims would be limited and tied to the robotic arm with the drill head.

This prejudice would make the inventor keep his invention secret and hence would defeat the purpose of having a patenting system in place and the culprit would be section 3(k) of the Indian Patents Act or similar acts in force in other countries.

Patenting policies should be formulated by giving due consideration of the progress and the nature of technology, economic considerations as well as legal considerations such that the rationale behind the patenting system is not defeated.

A radical solution to such a problem would be to enact laws for computer related inventions under the *sui generis* clause of the Patent Co-operation Treaty (WIPO) and limit the term of protection or bring in checks and balances, such that having broad applications are not abused and not impede the progress of technological development. Along with transparent claim drafting regulations and focus on stringent testing of the claims for novelty and non-obviousness based on proven improvement in performance as performance of any program algorithm can be benchmarked with mathematically unlike inventions in other subject areas. A temporary stop gap would be amending section 3(k) in lines with section 3(d) of the Indian Patents Act which would allow if and only if computer related inventions (pharmaceutical composition) having "enhanced efficacy" in solving a problem (disease),

analogically extending Section 2(a)-(f) and bring software based inventions into the ambit of sections 84, 91, 92, 92 A (compulsory licensing) of the Indian Patents Act.

To sum up the interpretation of section 3(k) in the directive of provided by the patent office can be arrived at in a concise manner and that is: An alleged invention where the alleged novelty and the alleged non-obviousness is solely attributable to a computer program used in a method or system is not patentable subject matter. In Indian Patent Act parlance: An alleged "invention" [Section 2(j)] where the "new invention" [Section 2(l)] and the "inventive step" [Section 2(ja)] are solely contained in a computer program are "not inventions" [Heading of Section 3].