The number of transistors per square inch on integrated circuits had doubled every year since their invention. Moore's law predicts that this trend will continue into the foreseeable future.[6] So it is very difficult to associate with a chip with Moore's law, because you have to change your old IC in every 18 months because the transistors are doubled in the newer version.

In Quantum Computation this problem can be eliminated via using a single register and take superposition of all states and store them in a single chip. This will create a massive speedup.

In quantum computing procedure we use probalistic superposition to access all the bit wise information in a single statement not like normal conventional computer, where all computations are based on truly measurement .

How to use computers which are acting on laws of quantum mechanics?

Of course then we need quantum algorithms. All quantum algorithms that are existing till date are trying to solve problems which in normal computer will take more time to solve

First quantum algorithm was proposed by Dauthes. In this algorithm Deuths proposed a system which will decide a function which is balanced or not in a single query. That is of course a speed up of normal conventional algorithms.

One another important quantum algorithm is Grover's search algorithm, in where we can search a unstructured data base containing N elements will take sqrt(N ) time, but in normal computer it will take O(logN) time for binary searching and n/2 time in average.

Other example is Shor's factorization algorithm. Factorization of prime is known as NP Complete problem. But the algorithm of Peter Shor proved that the factorization of prime can be done at polynomial time. That is a major invention.

Now a days scientist are trying to build quantum computers and then run quantum algorithms on them. If they can be on real life just like as we are using computers today, perhaps the world of communication and information will change as the world changed from DFT to FFT implementation .Now we can expect QFT in place of FFT , which will take complexity of O(logN), and then the communication world will change .

Algorithms for such a computer are discussed, especially those for finding the period of a function, and searching a random list. Such algorithms prove that a QC of sufficiently precise construction is not only fundamentally different from any computer which can only manipulate classical information, but can compute a small class of functions with greater efficiency. This implies that some important computational tasks are impossible for any device apart from a QC[2].