

# Example of future of wireless networks report

[Technology](#), [Development](#)



## **Introduction**

The radio wireless spectrum has been the main medium of communication for many years. The military has extensively made use of this medium of communication. With the proliferation of wireless gadgets, there has been increased use of wireless networks. The radio spectrum has been criticized for its wastage of space and spectrum. There are sections which have been allocated to various functions. The most unfortunate thing is that there are some sections which have not been fully utilized. This probes for questions as to how these unused sections can be made use of productively. Another issue with radio spectrum is that it is not standardized. This is to say that if one moves from one country to another one, they will have to change their gadgets to read the wireless networks of that new country. Another issue is that there are no standards that are followed while developing the gadgets that are used to access the wireless networks. Each vendor comes with their own standards that are not universal. This paper will look at the future of wireless networks that are used by radio system and how they will transform so that they are accessed and used by anyone in any location.

## **Five major points**

The second issue is standards. this is a crucial issue when it comes to wireless networks and radio spectrum. there are many standards that have been developed by the many vendors that are in existence today. . This is the reason as to why there is disparity when dealing with wireless radio spectrum. presently, there are many alternatives that are followed by manufacturers to come up with software radios. This range of choices can be

best viewed by looking at the extreme ends where radios are seen in terms of their alternatives and are almost at the opposite ends (Partridge 2011, pp. 64).

The third important issue when it comes to wireless network radio spectrum is that of shifting from hardware radio to software radio. It has been argued that there will be an extensive use of software radios by 2020. This will be the most widely used technology in radio system. This will be unlike the battery-powered receivers which have been there and in use for a long time. The new radios will be plugged in radios like the ones that are found in base stations. With software radios, nearly all functions that are found in a radio system, from coding and the frequencies of the physical layer and media access layer will be determined and changed while in real-time by the software that have been installed and running in the radio (Partridge 2011, pp. 62).

Software radios have been predicted since 1990s where it was hoped that they would find importance and use in military operations. They would be used in the military. This technology is steadily taking on the radio technology that is used in the US military currently. The main obstacle which was experienced with the adoption of this technology is that it was costly and big in size. One software radio used to cost as much as \$100, 000. It was the size of a small refrigerator. This is changing because the size has greatly been reduced and goes for \$500 or less. This is becoming affordable for commercial use even in places where military operations is not seen (Partridge 2011 pp. 63).

There will also be a difference in how bandwidth is assigned. This means that

the software radio will be tasked with looking for idle spectrum to increase for PDAs which have requested for more bandwidth. This will therefore mean that the issue of idle bandwidth will no longer be the case.

The fourth issue mentioned is the procedure for constructing software radios.

There are two major ways of achieving this: the first alternative for constructing a software radio by way of radio engineers bringing together programmable components which are and mixing FPGAs, DSPs and even processors which are embedded. The software engineers will have to write code for the components so that they are programmable. The issues that come here is the extent and the method of mixing the FPGAs. There are also complications when mixing larger components. There are components like frequency filters which become difficult when dealing with larger systems.

The second method of designing the software radios is by use of highly configurable memorable chips. In this method, the programmers will just write code that will define the media access features, the protocols that will be used and the coding; this will be done at the registers used for configuration (Partridge 2011, pp. 64).

The last issue that is equally important is of the aspect of going greening by conserving power and the environment power and environmental conservation. One question to be asked here is whether the technology can be regarded as green. it is argued that software radios consume a lot of power and dissipates this power to the environment (Partridge 2011, pp. 64).

This is attributed to the fact that software radios make use of processors which dissipates a lot of heat. . The author gives a measure which can be taken to reduce this effect. One of the measures that have been proposed is

that of turning off radios when they are not in use. the author cautions that this is something which is easier said than done. The key issue here is that it is still difficult to have radios know that there is some other radio which is about to send something. If this would have been achieved, it would then be possible to have radios turn themselves on and off by doing this way, the radios will be intelligent and will be able to know if there is a radio which wants to send them something; this way, they will turn themselves on. This would help in reducing the heat that is dissipated from these radios. Research is still being done to find out if this is possible to have radios know that there is a radio which has been turned on (Partridge 2011, pp. 64).

### **How the will be radio applets**

It has been predicted that radio wireless spectrum protocols will be applets in the year 2020. This will be made possible by getting control of the spectrum and making sure that they are used effectively. The wireless spectrum will be formatted and stored in a common location, normally called the base stations so that anyone can access them by downloading. Anyone interested with the wireless protocols will access them wirelessly. This will be attained by ensuring that these protocols are standardized so that they can be used by any PDA. This will mean that all PDAs will recognize these protocols and that they will be common in all countries. At the moment, there are various vendors who manufacture devices do not follow any standard therefore rendering the protocols useless. With these protocols, they will be used and understood by any device. The wireless protocols that are in use lack standards to follow in various devices. With standards being developed for vendors, they will soon start to take notice of the standards

which they are supposed to follow.

Another way in which this will be achieved is through popularizing the wireless spectrum so that they are well developed. This will enable their use in wherever place they will be. . The radio systems that we have today make use of radio spectrum which has been allocated to a particular area. With the current standardization that is being seen in the radio engineering today, it will be possible to have a radio systems which will gain access to the wireless applications without having to be designed to be working for that device. All devices shall have been standardized and will be able to access the wireless network protocols that are stored at base stations thin that particular area.

Another important development which can aid the attainment of this vision is through standardization. Wireless standards and protocols are also not as standardized as such. This is also another major area of concern for the developers and software engineers. After this has been developed, it will then be possible and simple to have wireless protocols as applets by the stipulated date.

## **Researched exploration of the system**

This paper will look at two main areas out of the five areas that have been discussed so far. The two areas that are of interest to the researcher are the energy and environment conservation factor of software radios and development of standards to be followed.

## **Development of standards**

Given the fact that software radios are still new in the market, there are no standards that have been developed to aid its development and deployment. . this, therefore, calls for the software radio regulators to come up with standards which will guide in the development process of them. this calls for a need to come up with standards that will be followed when coming up with software radios. It has been discussed in this paper that there are two methods that are used in manufacturing software radios. The first is that of assembling FPGAs and DSPs and bringing together with processors which are embedded. There are issues that are associated with this process. With innovation and the availability of the processing power of the components, the ease of creating a new communication protocol is simple and engineers can come up with communication protocol without following any standard that has been defined.

Two international organizations have raised their voices in software radios; they have affected the way they are manufactured either directly or indirectly. The two organizations are the product standards and the air interface standards organization.

## **Product standards organizations**

Hardware components that are used in manufacturing software radios are regulated by different standards; these standards affect the way they are manufactured. These standards, however, cannot work perfectly well with software radio. . They are best designed for use in hardware components. There are many standards that have been developed to be used in regulating components. There has been standards development for the

components for SDR developed at very high rates. In the years of 1995 and 1996, PCI standard was in the lead in the manufacture of DSP cards, ADC and many processors; there were also many modules that were developed for open-architecture software radio. By the year 1999, compact PCI (cPCI) was the most favorite and on the other hand, PC-104 had a specific market. In the year 2004, the systems that were using DSP had a big and strong following. The analogue hardware standards have to be looked into as they help define standards that will interface with the antennae. There are other important standards that need to be looked closely into. These are the standards that are used to moderate and guide in the development of hardware components that are used in the manufacture of software defined radio. There are is a need to define standards that will guide the development and the manufacturing of a software radios and not the components alone.

### **Air interface standards**

Air interface standards are used to guide the development of channel modulation and frequency allocation. There are other functions which are also controlled: media access control and channel use. The ITU has a function that is used to address the radio part of the standards (ITU-R). The ITU also has a process that controls the telecommunications aspect (ITU-T). There is also the European Telecommunications Standards Institute (ETSI) which comes with radio standards that are used in Europe. Other standards that are followed are the Electronics Industries Association (EIA) and Institute of electrical and Electronics Engineers (IEEE) which sets regional standards that is used in the United States.



There has not been any standard that has been followed in the process of developing software radios. The development of software radio has not been following any given standard. This is because there is no standard that has been developed. This is because the field is still new and there are not many players. With this, there are various developments which do not follow any standard.

## **Environmental conservation**

A very important aspect of environmental conservation is whether the software radio components are biodegradable. Research is still underway to realize this; this is because if they consume less power, they will be easier to dispose than to recharge them. Computers and any device that uses processors have been blamed for the problems that are seen in climate change. The processors are known to emit a lot of heat to the environment. This heat is released to the environment and will therefore cause environmental damage. There are many server rooms that have been brought about by adoption of information and communications technology by many companies. As much as green environment is being advocated in server rooms and data centers, this should also be put into consideration. one important aspect of software radios is that of environmental conservation. It is important to come up with technologies that are friendly to the environment. At the moment, the issue of global warming is raging and one of the factors that has been said to be contributing to this is heat that is dissipated from processors. It is therefore raises eyebrows when software radios are being developed and yet it will degrade the environment and further worsen the global warming aspect of it. This will have to be

looked into more deeply as there is more concern for the environment. New processes should be regulated so that the environment is not affected. The analogue components that are integrated in the software radio dissipate a lot of heat. With this, there is a lot of heat that come from the green radio. They are not green to the environment. The issue of whether they are green comes up due to the fact that they make use processors which are known to dissipate a lot of heat.

It has been proposed that artificial intelligence should be employed to enable the software radio to turn itself on and off automatically basing on changes in the environment. There should be the use of knowledge management so that the software radio will be intelligent. This is in the quest to have software radio to recognize that another software radio is on and wants to send information. In having this information, they will turn on automatically and off if otherwise. This will help to reduce amount of heat which is dissipated to the environment. The traditional way would have been to turn off software radios if they are not in use; this is something which is easier said than done.

## **Reflective review**

There is less and inadequate literature to analyze the future and the possibility of having applets by the period stated. This is an interesting area as the current spectrum use is lacking in every sense of the word. It is interesting that the spectrum issue is finding review and attention now and yet it has been there for a long time. There has been underutilization of the radio spectrum and wireless networks. The standards which have been put in place have not been that careful with the way radio wireless spectrum is

utilized. Less was done regarding this issue. I am hopeful that with the standardization, there will be victory in this issue.

## **Conclusion**

### References

Kioe, TJ & Elden, GR 2003, Security in radio spectrum, Addison-Wesley Professional, New York.

Lodig, E 2002, Standards in the telecommunications industry, Artech House, New York.

Mitola, J 2000, Software radio architecture: Object-oriented approaches to wireless systems engineering, John Wiley and Sons, London.

Partridge, C 2011, 'Realizing the future of wireless data communications', Communications of the ACM, vol 54, no. 9, pp. 62-68.

Perao, J 2001, 'Software radio software antennas', Communications Magazine, vol 39, no. 2, pp. 166-173.

Reed, JH 2002, Software radio: A modern approach to radio engineering, Prentice Hall Professional, New York.