

# **REPORT ON STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME (SIWES) TRAINING PROGRAMME**

**AT**



**The Nigerian Airspace Management Agency (NAMA)**

**NAMA Headquarters,**

**Murtala Mohammed International Airport**

**P.M.B. 21084, Ikeja, Lagos**

**Phone: +234(01)7618376, 2120512, 7767185, (0709)8001337**

**E-mail: info@namahqtr.net**

**BY**

**NAME: KOYA TEMITOPE ABAYOMI**

**MATRIC NO: ACU/597**

**PROGRAMME: INFORMATION COMMUNICATION TECHNOLOGY**

**FROM: MAY - OCTOBER 2009.**

**AJAYI CROWTHER UNIVERSITY, OYO.**

**FACULTY OF SCIENCE**

**DEPARTMENT OF PHYSICAL SCIENCES.**

**BEING A REPORT SUBMITTED TO THE SIWES CO-ORDINATOR IN  
PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE STUDENT  
INDUSTRIAL WORK EXPERIENCE SCHEME.**

## **DEDICATION**

I dedicate this report first and foremost to Almighty God who has been there right from the beginning to this very point. Special dedication also to my ever supportive parents, for their relentless support and compassion towards me during the course of my six months SIWES training.

To God is the glory.

## **ACKNOWLEDGMENT**

With a deep sense of appreciation, respect and gratitude, I want to say a big thank you to my parents, brothers, sisters and other relatives and non relative friends for their caring attitude and support from the beginning of my pursuit for B.Sc degree in Information Communication Technology to this point.

I also want to express my appreciation to my immediate supervisors, Mr. Ifeanyi Ogochukwu, (ICT Manager, NAMA) and Mrs. Onusi (Information Technology Services Manager (ITSM), NAMA), for their intellectual support during our work together.

Not forgetting the other ICT Department Management team of, Mr Femi Opeyori, Mr Ernest Aigbangbe, Mr. Charles Ibe, Mr Emmanuel Adeniran and my other IT colleagues.

My sincere appreciation also goes to everyone that has been by me all this while. A Big thanks!!!

***KOYA TEMITOPE ABAYOMI***

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# CHAPTER ONE

## INTRODUCTION

SIWES was established by ITF in 1973 to solve the problem of lack of adequate practical skills preparatory for employment in industries by Nigerian graduates of tertiary institutions.

The Scheme exposes students to industry based skills necessary for a smooth transition from the classroom to the world of work. It affords students of tertiary institutions the opportunity of being familiarized and exposed to the needed experience in handling machinery and equipment which are usually not available in the educational institutions.

Participation in Industrial Training is a well-known educational strategy. Classroom studies are integrated with learning through hands-on work experiences in a field related to the student's academic major and career goals. Successful internships foster an experiential learning process that not only promotes career preparation but provides opportunities for learners to develop skills necessary to become leaders in their chosen professions.

One of the primary goals of the SIWES is to help students integrate leadership development into the experiential learning process. Students are expected to learn and develop basic non-profit leadership skills through a mentoring relationship with innovative non-profit leaders.

By integrating leadership development activities into the Industrial Training experience, we hope to encourage students to actively engage in non-profit management as a professional career objective. However, the effectiveness of the SIWES experience will have varying outcomes based upon the individual student, the work assignment, and the supervisor/mentor requirements. It is vital that each internship position description includes specific, written learning objectives to ensure leadership skill development is incorporated.

Participation in **SIWES** has become a necessary pre-condition for the award of Diploma and Degree certificates in specific disciplines in most institutions of higher learning in the country, in accordance with the education policy of government.

Operators - The ITF, the coordinating agencies (NUC, NCCE, NBTE), employers of labour and the institutions.

Funding - The Federal Government of Nigeria

Beneficiaries - Undergraduate students of the following: Agriculture, Engineering, Technology, Environmental, Science, Education, Medical Science and Pure and Applied Sciences.

Duration - Four months for Polytechnics and Colleges of Education, and Six months for the Universities.

The following are some of the objectives of SIWES:

1. SIWES will provide students the opportunity to test their interest in a particular career before permanent commitments are made.
2. SIWES students will develop skills in the application of theory to practical work situations.
3. SIWES will provide students the opportunity to test their aptitude for a particular career before permanent commitments are made.
4. SIWES students will develop skills and techniques directly applicable to their careers.
5. SIWES will aid students in adjusting from college to full-time employment.
6. SIWES will provide students the opportunity to develop attitudes conducive to effective interpersonal relationships.
7. SIWES will increase a student's sense of responsibility.
8. SIWES students will be prepared to enter into full-time employment in their area of specialization upon graduation.
9. SIWES students will acquire good work habits.
10. SIWES students will develop employment records/references that will enhance employment opportunities.
11. SIWES will provide students the opportunity to understand informal organizational interrelationships.
12. SIWES will reduce student dropouts.
13. SIWES Students will be able to outline at least five specific goals with several staff members by comparing performance with job duties and develop a draft plan with staff to accomplish performance needs, supervision plan and rewards.
14. SIWES Students will be able to develop a draft agency or project budget and will be able to identify methods of obtaining revenue to support the budget.
15. SIWES Students will be able to provide tools to use in prioritizing tasks of an assigned project and create with staff a tentative schedule for completion based on these tasks.

16. SIWES Students will be able to develop a model policy that gives current front-line leaders the permission and expectation to work with other staff on conflict resolution and explain how this works to current front line leaders.
17. SIWES Students will be able to describe different skills leaders can use to Foster commitment and collaboration with both internal and external constituents.

The 6 months Students Industrial Work Experience Scheme (SIWES) which is a requirement for the completion of my course of study, Information Communication Technology, was undertaken at the Nigerian Airspace Management Agency (NAMA) Headquarters. The Agency also has branches at a regional office, the local airport, the international airport in Lagos and all functional airports in Nigeria. The Agency's function is to manage the Airspace, as the name implies. The Agency occupies the control towers at the airports, where the Air Traffic Control Officers manage the inflow, outflow and guidance of airplanes around the country's airspace.

I was an Industrial Attaché (IT) at the Information & Communication Technology (ICT) Department.

The Industrial Training was based on working with Personal Computers, servers, printers, laptops, switches, routers, hubs and computer peripherals. The installation, repair, preventive maintenance and also auditing of these devices were part of my job description.

## CHAPTER TWO

### NIGERIAN AIRSPACE MANAGEMENT AGENCY

The Nigerian Airspace Management Agency (NAMA) P.M.B. 21084 has its headquarters located opposite the domestic terminal of the Murtala Mohammed Airport Ikeja with outstations/ branch offices located in all the various airports in the country.

#### **BRIEF HISTORY OF NAMA:**

On August 31<sup>st</sup> 1995, the Federal Government announced the restructuring of the aviation industry through the merger of the former Nigerian Airport Authority (NAA) and the Federal Civil Aviation Authority (FCAA) to form a new organization called the Federal Airport Authority of Nigeria (FAAN) via decree No. 9 of 1996.

With effect from 1<sup>st</sup> of January, 2000, another restructuring took place; FAAN was de-merged to give birth to Federal Airport Authority of Nigeria (FAAN), Nigerian Airspace Management Agency (NAMA), and the Nigerian Civil Aviation Authority (NCAA). The old staff of FCAA and its function(s) was moved to NAMA, which now became an organization of its own via the decree No.48 of 1999. The organization operationally took effect from 1<sup>st</sup> of January 2000.

NAMA was charged with the responsibility of ensuring Aircraft safety within the Nigerian airspace as well as the provision of facilities for safe take-off and landing of any aircraft. These facilities include Distance Measuring Equipment(DME),Instrument Landing System(ILS),Non Directional Beacon(NDB),Very high Omni directional Radio range(VOR),Radio Directing And Ranging(RADAR) etc. Provision of these facilities must be in line with the International Standard And Recommended Practices (ISARP) as stated by the International Civil Aviation Organization (ICAO).

***Vision of NAMA:*** To promote the safety and economic well being of our airspace. To make the airspace rank amongst the best, in Africa and indeed the world over.



***Some functions of the organization include***

- To provide safe and functional air traffic services that will meet international standards.
- To increase air traffic control (ATC) capacities in order to manage increasing air traffic volumes and at the same time reduce delays.
- To provide ATC services in the country, including visual and non-visual aids, aeronautical telecommunication services, to enable public transportation, private business and military aircraft fly as far as practicable and safe as possible.
- Ensure an effective co-ordination in the use of the Nigerian airspace in line with established standards and procedures.
- Provision of adequate facilities and personnel for efficient airspace management services and effective security of navigational aids outside the airport parameters.
- Installation and effective maintenance of air navigational facilities in all the airports and air routes
- Restructuring of the routes for positive area airways control.
- Provision of total radar coverage for Nigeria's airspace.
- Liaise with international organizations for improvement of air navigation services.
- To hold meetings with the Armed Forces on Nigeria's international obligation as they relate to civil and military co-ordination.

***The Organizational Structure of NAMA***

The Organizational structure of NAMA has the Federal Ministry of Transport, State Ministry for Air Transport as its supervisory body, to whom the Board is responsible. The Managing Director is a member of the board and he reports to the board. The structure of the organization is in a form where there are 22 Airports in the country and each airport is headed by an Airspace Manager who is responsible to the Managing Director. Each Airport has its staff responsible to the Airspace Manager.

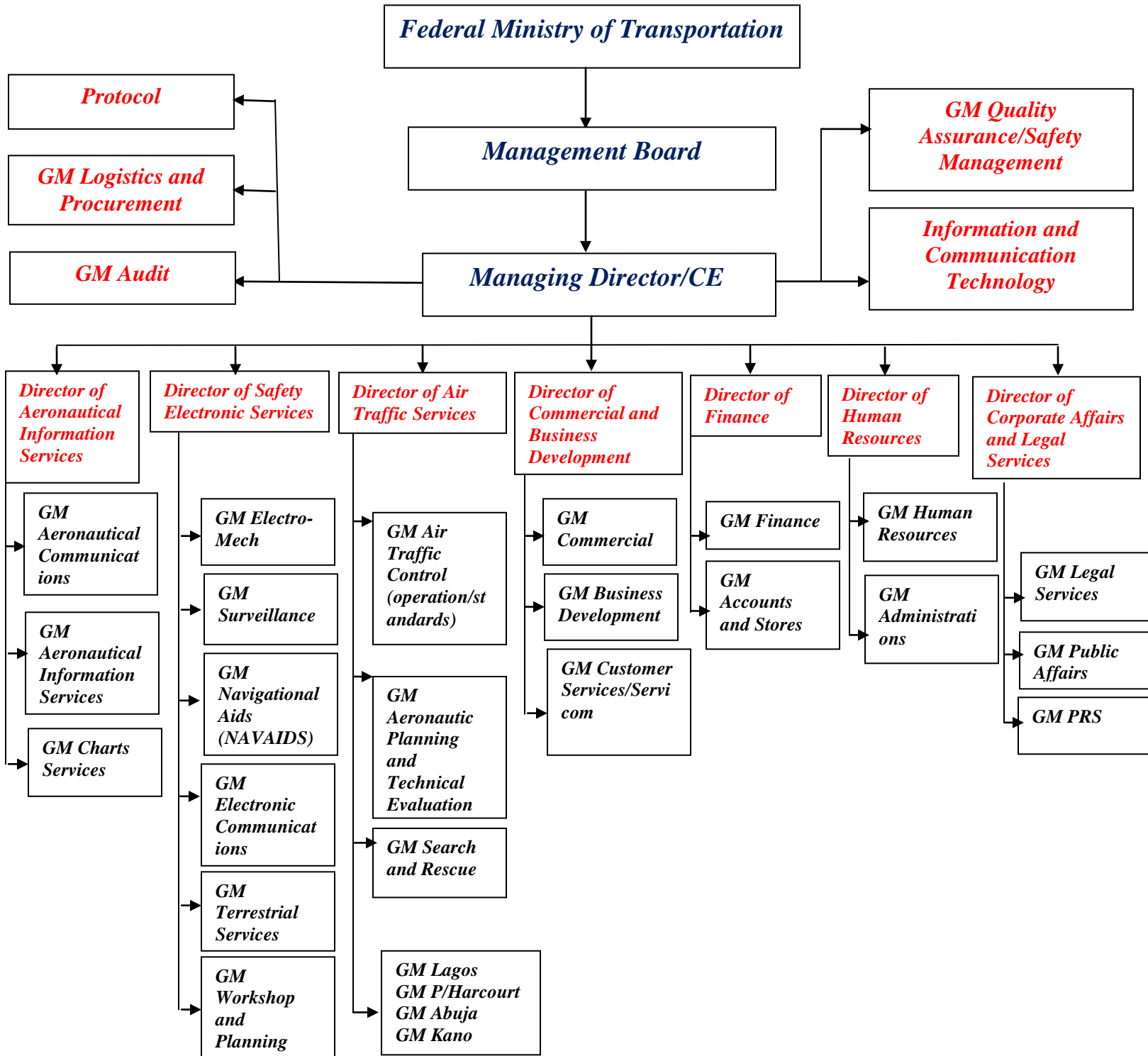
There are seven (7) Directorates with the Executive Directors responsible to the Managing Director. These Directorates of the organization are:

1. Directorate of Human Resources (DHR)

2. Directorate of Finance (DOF)
3. Directorate of Air Traffic Services (DATS)
4. Directorate of Safety Electronics Services (DSES)
5. Directorate of Corporate Affairs/Legal Services (DCALS)
6. Directorate of Aeronautical Information (DAIS)
7. Directorate of Commercial and Business Development (DCBD)

Other service departments are: Audit, Information and Communication Technology (ICT), Quality Assurance and Safety Management, Planning/Project Management, which are directly under the supervision of the Managing Director.

# ORGANIZATIONAL STRUCTURE OF THE NIGERIAN AIRSPACE MANAGEMENT AGENCY



## CHAPTER THREE

### ACTIVITIES AT ICT DEPARTMENT

Most of the departments in Nigerian Airspace Management Agency rely on information and this information can be passed on more reliably and faster through the use of computer systems and other computer accessories like the internet, intranet e.t.c. Thus there is the need to have a department or a section within the organization that will see to the procurement, distribution, installation, and overall maintenance of these computer systems and their related accessories. This is where the ICT department of NAMA comes into play.

The ICT department is located directly under the Managing Director (MD) and is headed by the ICT Manager. The ICT department is further divided into 4 arms:

**Helpdesk:** This part of the ICT department acts as a call centre. Users in the organization call the Helpdesk when they have any challenge with their computers. The Helpdesk receives user's calls, logs the calls in a CALL SHEET and forwards the challenge to the appropriate arm of the department that will resolve the call. After the call is resolved, the person who resolves this call must get in touch with the Helpdesk, informing them that the challenge has been resolved.

**Network Communications (Netcom):** This arm of the department is involved in resolving challenges that are related to computer networking within the Agency. This concerns the local intranet and internet connections. It also manages the connections between the Agency's headquarters, regional office, local and international airports.

**Business Operations Support (BOS):** This arm of the department is involved in resolving challenges that are related to the hardware and software components of the computers used within the Agency. The BOS handles procurement and installation of new computer systems, repair of existing computer systems and preventive maintenance of the computer systems.

**Training Centre:** this arm of the department is responsible for training the agency's staff and IT student on utility programs that are relevant for business operations in the agency. Staffs and IT students are trained to use the computer. They also train staffs on how to use some dedicated systems/workstations and new

programs for the day to day running of the agency. The training centre is the venue for software development and engineering, the dissemination of knowledge and ideas based on the world of the ever growing and improving software and hardware architecture.

ICT department has an office which is the helpdesk where you can find the ICT manager, Information Technology Service Manager (ITSM) and a handful of IT students.

The BOS and NETCOMS arms of the department are situated in the central workshop with two supervisors overseeing the activities going on there. This is where the repair, maintenance and general fixing of computers, computer resources and networking. Here the IT student, under the supervision of two IT personnel, resolve problem that are brought in from other departments. When this is done, the status of the problem (either it is resolved or work is still in progress) is logged down both at the helpdesk and in the workshop. Logging down these cases is done for record purposes. This will enable the ICT department know which problems are predominant in the organization, which user need to go for IT courses and in general try to find solution to lingering problems. Then the computers and/or it peripheral are taken back to their various users. Also there are cases where these problems do not need to be brought to the workshop and can be resolved in the various offices in which the complaints come from.

## CHAPTER FOUR

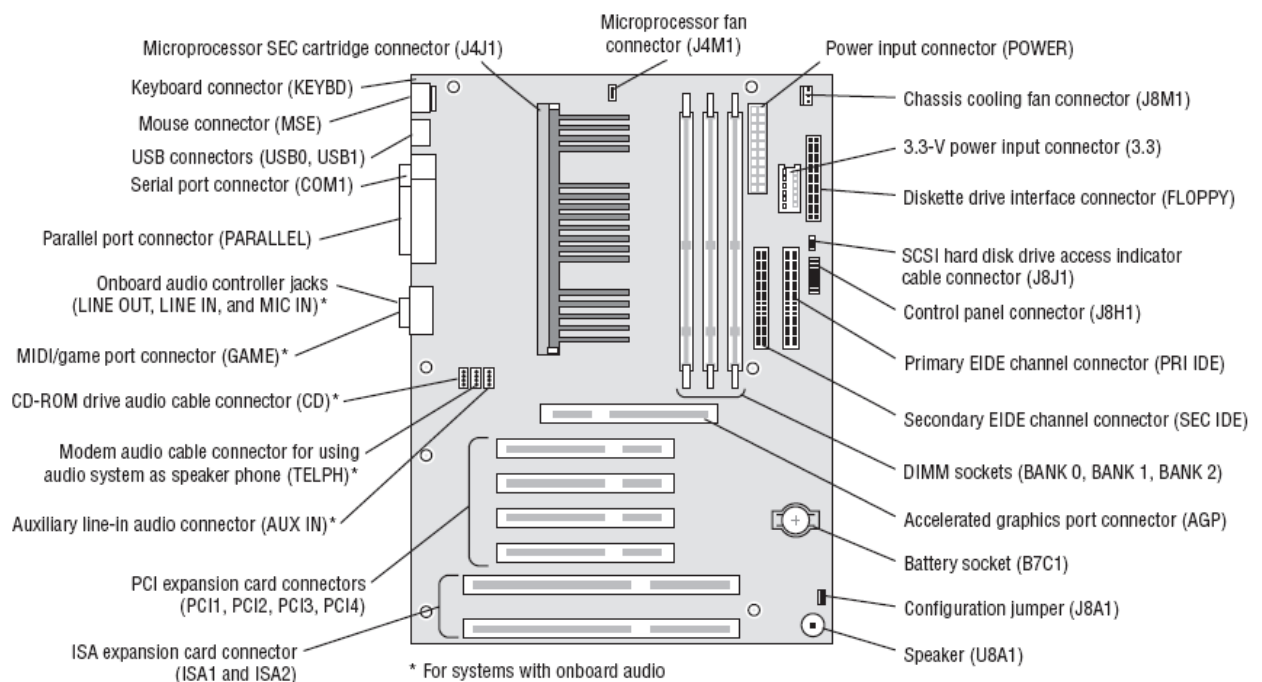
### SKILLS AND KNOWLEGDE ACQUIRED

Then I was assigned to the BOS arm of the department, were I was taught on the identification various component of computer hardware, e.g. hard disk, floppy diskette, random access memory (RAM), removing and replacing of these hardware components, installation of various software, how to connect various devices (printers and scanners) and other computer peripherals.

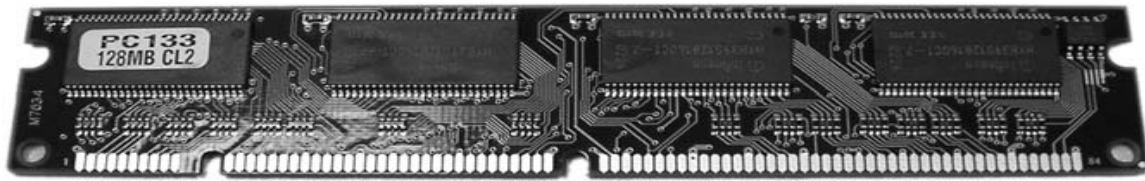
Some of the computer components that I familiarized myself with includes:

- **The Motherboard:** this is a thin flat piece of circuit board (usually of green or gold color). Everything in the Computer connects, directly or indirectly, to the motherboard. It contains a number of special sockets that accepts various component of the computer.

#### Components on a motherboard



- **RAM:** The random access memory stores programs and data currently being used by the CPU. It is measured in bytes, which is measured in megabytes where you have millions of bytes of RAM. The average PC usually has between 32 megabyte/128 megabyte to 1 gigabyte of RAM (modern PCs may have several megabytes). The RAM has a socket that allows it to be placed on the motherboard.



A picture of a typical PC RAM

- **Floppy drive:** The floppy drive enables you access floppy diskettes. There are two types of floppy drives; 3.5 inch floppy drive and the, (rarely used) 5.25 inch floppy. The floppy drive connects to the computer via a 34-pin ribbon cable which in turn connects to the motherboard (floppy controller). They also have power cables that connect to the “power pack”.
- **Hard drive:** Hard drives stores programs that are not currently being used by the CPU. Like the RAM, hard drive capacity is measured in megabytes. A typical PC hard drive stores much more data than the RAM and thus can range from 500 megabytes (in very old systems) to more than 75 to 100 gigabyte. Like every other component of the PC, the hard drive has connectors called the EIDE cables. They also have power cables.



A hard disk

- **DVD/CD ROM Drive:** The DVD/CD ROM drives enables access to DVD and CD ROMs. Some PC's come with recordable and or rewritable CD and DVD. They also need power supply via the power cable.
- **Connectors:** These connectors (often called ports) allows for connection of other components of the computer. We have the DB (printers, monitor), DIN (keyboard, mouse), Centronics (printer), RJ (network interface card, modem), BNC (network interface cards), Audio (speakers, headphones) and USB (keyboards, mouse, printers, disk drives etc) connectors, each with its own type of device that it connects to the computer.
- **Cooling system:** Cooling system consist of the two or more fans. One fan for the system (CPU), and one for the processor. The CPU will operate more reliably and will have a longer life span if the cooling system is working properly.
- **Power supply:** The power supply distributes power to the motherboard and other component in the CPU.



I was also shown how to format a hard disk, installing and configuring operating system on a formatted system, downloading and installation of necessary drivers and installation of other application software.

I was placed under the supervision of Mr. Charles Ibe.

In the following month, I was assigned to the NETCOM arm of ICT department under the supervision of Mr. Emmanuel Adeniran, where I learnt different networking topologies, worked with different networking devices like the hubs, switches, routers and network printers. I got to know how to solve some networking problem both on the intranet and the internet. I was also able to identify various component used to develop network connections, like the modem and network cards.

Among the other things I learnt were

- How to terminate network (twisted pair) cables and how to connect computers to the local area network.
- How to troubleshoot various networking problems, like when a user has connectivity problem, inability to log on to his or her user account etc.
- Configuration of wireless connection on laptops and desktops.
- Configuration of switches, hubs and routers.
- How to lay network cables.
- How to install network printer and add it to a system.
- Adding systems to a domain and creating of network between computers and other peripherals.

- I also learnt about different types of server like the dynamic host configuration protocol (DHCP) server, domain name system (DNS) server, domain controllers and print server file server.

My supervisor was very patient with me being new the field. He was always ready to assist me in different challenges encountered.

During the rest of my stay in NAMA I switched between the BOS and the NETCOMs arm of the ICT department.



Fig. I A Hub



Fig. II A Switch

A hub is a device that acts as a central connection point for computers on a network. Every computer plugs into the hub.

A switch, such as the one shown in Figure II, performs all of the same basic tasks as a hub, but the switch uses a set of internal logic circuits to establish a dedicated, logical path between the two PCs. This provides for more efficient data transfer without collision which occurs in the hub.

They both have ports for RJ-45 connectors which computers use to connect to the network.



Fig.III A Network Adapter

The Network Adapter is the source through which the computer connects to the network as well as all other computers on the network.

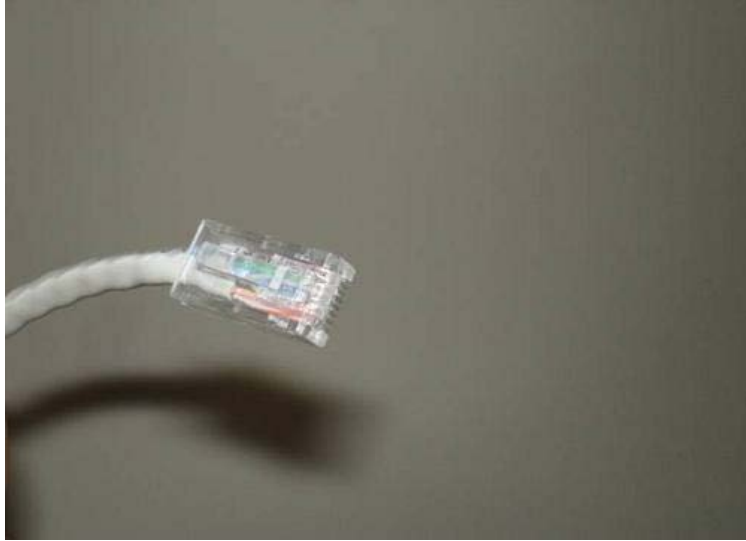


Fig .IV

A network (Ethernet) cable with an RJ-45 connector terminated at the end.

The Ethernet cable are network cables containing eight wires with different colours. These wires are arranged and “terminated” according to the type of connection needed.

We have the straight ended terminated cable, for connecting devices that are dissimilar (e.g computer to hub/switch, switch to hub etc)

We also have the cross ended terminated cable, for connecting devices that are the same (e,g computer to computer, switch to switch, hub to hub etc)

The colors of the wires are green, orange, blue and brown. Four of these wires have these colors in full while the remaining four have the colors but with stripes of white along it.

For straight ended cables, the color code is:

White/Orange (i.e. orange color striped with white) followed by full Orange, white/green-blue, white/blue-green, white/brown-brown.

For cross-ended cables, we have:

White/green-green, white/orange-blue, white/blue-orange, white/brown-brown.

All these wires are arranged in line and inserted into the RJ-45 connector which is then held in place (crimped) by a crimping device.

## **CHAPTER FIVE**

### **PROBLEMS ENCOUNTERED AT WORK PLACE**

Challenges that I was confronted with at the helpdesk were mainly centered on poor inter-personal relationship between the IT students. This was put in check via the intervention of our superiors through discussion and meeting. Also, when users call in, some of them are either rude and talk impolitely, or most do not even know how to table their complaint. So I was told to try and be patient and understanding with some of these users.

At the workshop, the major problems were due to the fact that the software we use was outdated. And there was a problem getting genuine software and applications for users. As such we resulted in purchasing substandard software or downloading them from the internet, which takes a lot of time.

There was also a time when the number of IT students at the workshop was small and this resulted to some students being overworked. More students were however brought on during the course of my stay.

One of the major points in my IT was that we were divided into groups and given project topics on which we were to source for materials either from the internet or libraries after we are to deliver a presentation and this really afforded us the opportunity to gain things which the staff(s) will not be able to teach us due to the nature of their job.

## **CHAPTER SIX**

### **RECOMMENDATION**

For subsequent trainees being taken up by the company, I strongly recommend a more stringent supervision of their training program, especially by the Human Resources Department. This will go a long way in ensuring that trainees do not lose focus and will constantly remind them that their services to the company remain valuable.

Also I suggest ITF should liaise with some companies where they will take up students for industrial training. This will help students who find it difficult to find attachments or who end up in companies where they do nothing.

## CHAPTER SEVEN

### CONCLUSION

This industrial training has afforded me the basic practical and theoretical knowledge that I may not have gotten from the lecture room. It also gave me the opportunity to have a feel of what it would be like after graduation when I start working.

After my internship with NAMA:

- I can effectively handle the demands a help desk of any Organization I find myself in future.
- I can effectively assist in the administration of a company's computer network system, Both LAN and WAN.
- I can carry out repair works on computer systems and accessories, which includes printers and scanners.

Other benefits include:

**Good working ethics:** As a result of the close working relationship I had with the ICT manager, I have been able to imbibe good working ethics. These ethics includes been able to handle situation with little or no help, being able to provide solutions to lingering problems, etc.

**Career Path:** I have been able to use this training to explore various avenues available at my disposal career-wise. It has given me the opportunity to have a look into the future and assess my readiness for employment or entrepreneurship.

Finally the internship has bridged the gap between academic theory and practical and has built a good degree of confidence especially in my abilities to perform. It has also given me a first-hand experience of the entire information and communications technology industry

I can confidently say that the experience gotten from this training was a worthwhile experience.