A

TECHNICAL REPORT

ON

STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME (SIWES)

AT

LADOKE AKINTOLA UNIVERSITY OF TECHNOLOGY,

ICT CENTER, OGBOMOSO, OYO STATE

BY

OGUNDIRAN, Victor Isreal

220143

SUBMITTED TO:

DEPARTMENT OF COMPUTER SOFTWARE ENGINEERING

WEB DEVELOPMENT

SQI COLLEGE OF ICT, OGBOMOSO

IN PARTIAL FULFILMENT FOR THE NATIONAL DIPLOMA IN COMPUTER SOFTWARE ENGINEERING WEB DEVELOPMENT

SEPTEMBER, 2023

CERTIFICATION

This is to certify that I, **OGUNDIRAN Victor Isreal** with matriculation number **220143** in the Department of Computer Software Engineering, Web development, at Soft Quest Incorporated College of ICT (SQI), Ogbomosho wrote this **SIWES report** on completion of his Industrial Training Experience at Ladoke Akintola University of Technology (LAUTECH).

..... **.....**

SIWES Supervisor **Date**

Mr. Okunade Isreal

..... **.....**

SIWES Coordinator **Date**

Mr. Timothy Micheal

..... **.....**

Head of Department (HOD) **Date**

Mr. Odekomaya Oluwaseyi

DEDICATION

I dedicated this study to the unwavering support and guidance of my family, whose encouragement has been a constant source of inspiration throughout this journey.

Additionally, I extend my heartfelt dedication to the dedicated mentors and colleagues at the company where I completed my SIWES program, whose expertise and encouragement have enriched my professional growth.

ACKNOWLEDGEMENT

I would like to express my sincere gratitude to a multitude of individuals and institutions whose contributions have been instrumental in the successful completion of this report.

First and foremost, I am deeply thankful for the guidance and unwavering support of my academic advisors and mentors at SQI College of ICT. Their invaluable insights and encouragement played a pivotal role in shaping my understanding of the SIWES program.

I extend my heartfelt appreciation to the management and staff of Ladoke Akintola University of Technology (LAUTECH), where I completed my SIWES program. Their warm welcome, mentorship, and the opportunities they provided for hands-on learning have been transformative for my professional development.

I would like to acknowledge my family for their constant encouragement and understanding during this journey. Your belief in my abilities has been a driving force throughout my academic and practical endeavors.

Finally, I wish to express my gratitude to all my peers and colleagues who shared their knowledge, experiences, and insights, contributing to a rich and collaborative learning environment.

Thank you all for your invaluable contributions to this endeavor.

ABSTRACT

This report provides insights into the SIWES program's objectives, the organization's background, projects undertaken, working experiences, and lessons learned. Through this SIWES experience, I have gained practical knowledge, skills, and valuable insights into the field of Networking, paving the way for future academic and professional growth.

TABLE OF CONTENTS

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION TO SIWES

The Student Industrial Work Experience Scheme (SIWES) is an accepted skill programmed which forms part of the approved academic standards in the degree programmed for Nigerian Universities. In 1974, the Federal Government of Nigeria introduced the national policy on Industrial training, called the Students, Industrial Work Experience Scheme (SIWES). This programmed is under the umbrella of the Ministry of Education through the Industrial Training Fund (ITF), was designed to help students acquire the necessary practical education/experience in their fields of study and other related professions.

This is an effort which was created in order to bridge the existing gap between the theory taught in the classroom and practice of science, agriculture, medicine, engineering, technology and other professional programmed in the Nigerian tertiary institutions. This programmed is aimed at exposing the students to the use of various machines and equipment's, professional work methods and ways of safeguarding the work areas in industries as well as other organizations and parastatals. The programmed was established basically to impact elaborate practical understanding to students with respect to their various disciplines.

It is also intended that the student through a process of relation to academic knowledge and practical industrial application would understand the underlying principles and become better focused and acquire the practical applications towards excellence in his or her discipline. The Students Industrial Work Experience Scheme (SIWES) programmed involves the student, the Universities and the industries. This training is funded by the Federal Government of Nigeria and jointly coordinated by the Industrial Training Fund (ITF) and the National Universities Commission (NUC).

1.2 OBJECTIVES OF SIWES

1. To provide students with industrial skills and needed experience while the course of study.
2. To create conditions and circumstances, which can be as close as possible to the actual workflow.
3. To prepare specialists who will be ready for any working situations immediately after graduation.
4. To teach students the techniques and methods of working with facilities and equipment that may not be available within the walls of an educational institution.
5. To give students the ability to try and apply the given knowledge.

1.3 BENEFITS OF SIWES

1. It exposes student to more practical work methods and techniques.
2. It provides students with an opportunity to apply their theoretical knowledge in real life situation.
3. It strengthens the link between the employer, university, and industrial trust fund (ITF).
4. It also prepares the student for the labor market after graduation

CHAPTER 2

BACKGROUND HISTORY OF LAUTECH

2.1 ABOUT LAUTECH

The ICT Center at Ladoke Akintola University of Technology (LAUTECH) is a state-of-the-art facility dedicated to providing cutting-edge information and communication technology services to the university community.

Information and Communications Technology (ICT) refers to all equipment and applications that involve communications such as computers, cell phones, televisions, radio and satellite systems as well as the various services and applications associated with them such as video conferencing and distant learning.

LAUTECH Information and Communication Technology Centre (LICTC) developed from the lowly beginning of what was initially named Computer Centre. It inherited most of the infrastructure and services of the said Computer Centre as well as some of the headaches of the old structure. The Centre now operates with the following units:

LAUTECH Information and Communications Technology (ICT) Centre was established in 2006 during the tenure of Prof. A. M Sala, the second substantive Vice-Chancellor of the University. ICT activities started then with the establishment of a Steering Committee, headed by Prof Oluremi Alabi.

2.2 LAUTECH VISION

To be a centre of academic excellence for the advancement of technology in meeting socio-cultural needs of the society.

2.3 LAUTECH MISSION

To provide suitable condition for the advancement of knowledge through research and learning; produce self-reliant graduates, apply technology-driven knowledge to creativity and positively impact on the global environment and be epitome of integrity and service.

2.4 LAUTECH PHILISOPHY

The philosophy of the ICT Centre is to minimize service disruptions to the computing environment and promote system reliability.

2.5 SERVICES RENDERED

The ICT Center at LAUTECH offers a wide range of services, including:

- **Network Infrastructure:** We maintain and expand the university's high-speed network infrastructure to ensure seamless connectivity across the campus.
- **Computer Labs:** We manage well-equipped computer labs for students and faculty members, providing access to essential software and resources.
- **Technical Support:** Our team offers technical support and assistance to students, faculty, and staff on various IT-related issues.
- **Email and Collaboration Tools:** We provide email services and collaboration tools to facilitate communication and teamwork.
- **Website Development:** We design, develop, and maintain the university's official website and other web-based platforms.
- **Cybersecurity:** Ensuring the security of the university's digital assets is a top priority. We implement robust cybersecurity measures to protect against threats.
- **Training and Workshops:** We organize training sessions and workshops to enhance digital literacy and promote the effective use of technology.

2.6 CONTACT INFORMATION

You can reach us at:

- **Address:**
  Old Oyo/ Ilorin Rd, 210214, Ogbomosho, Oyo-State, Nigeria
  Ladoke Akintola University of Technology,
  P.M.B 4000, Ogbomoso,
  Oyo State, Nigeria.
- **Phone:**
  +(234)-8067624977, +(234)-8067624952
- **Email:**
  support@lautech.edu.ng
- **Website:** https://lict.lautech.edu.ng/

Figure 2.7.1: OUTER VIEW OF LAUTECH ICT CENTER

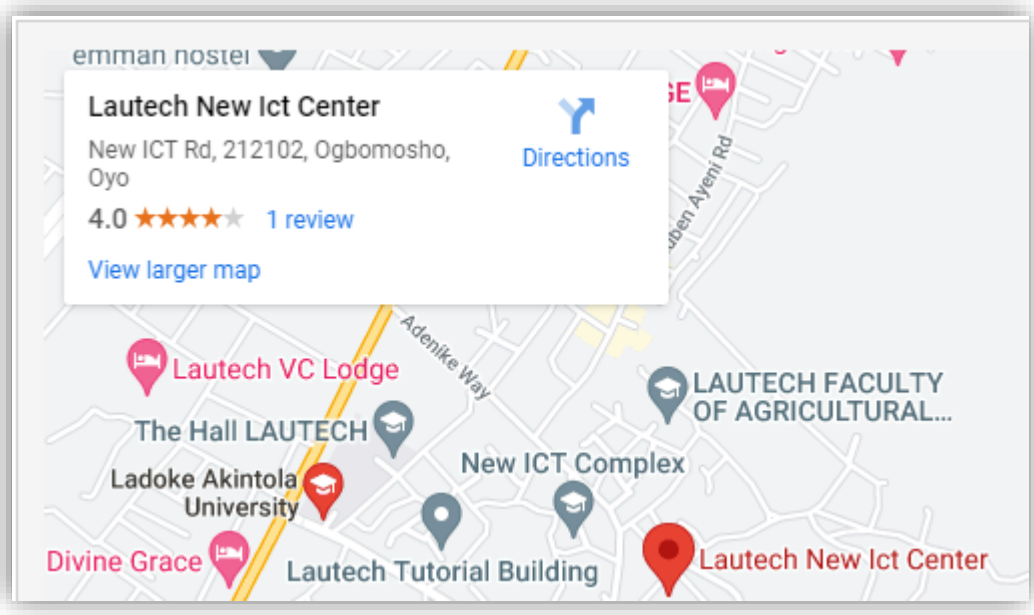


Figure 2.7.2: GOOGLE MAP VIEW OF LAUTECH ICT CENTER

2.7 PARTNERS

1. **Osun State College of Education, Ila-Orangun**
2. **PAN African College of Education, Offa and Lagos State**
3. **Federal College of Dental and Theraphy College, Enugu**
4. **Institute of Social Work, Nigeria (ISOWN), Lagos**
5. **Standard Trust Educational Consultancy, (STECO) University of Ibadan**
6. **Living Spring College of Innovation and Technology (LISCOTECH), Osogbo**
7. **Ajayi Polytechnic, Ikere Ekiti**
8. **The College of Education, Ilorin**
9. **MONA Institute of Hospitality and Tourism, Abuja**
10. **African Institute of Health Professionals, (AIHP), Abuja**
11. **Mayday College, Ibadan/Awe**
12. **Heritage College of Management and Technology, Okinni, Osun State**
13. **Oyo State College of Advanced Nursing and Midwifery, Ibadan**
14. **Federal Cooperative College, Ibadan**
15. **Winners Model College, Osogbo**

Figure 2.8.1: LAUTECH ICT CENTER PARTNERS

CHAPTER 3

THE PROCESS, COMPONENTS & DESCRIPTION

3.1 OVERVIEW OF TRAINING

I acquired a large range of skills during the process of my industrial training. I was introduced to networking generally which was something I had no experience on. I also got to work with other students from other universities and made friends with a couple of them. The major things I learnt from the training includes:

- How to troubleshoot LAN network.
- How to terminate ethernet network cables.
- How to configure LAN network.

I also acquired social and functional skills which includes:

- Ability to work with a team.
- Ability to identify and solve problems.
- Enhanced communication skills.

3.2 LAN NETWORKING

A local area network (LAN) is a collection of devices connected together in one physical location, such as a building, office, or home. A LAN comprises cables, access points, switches, routers, and other components that enable devices to connect to internal servers, web servers, and other LANs via wide area networks.

A LAN can be small or large, ranging from a home network with one user to an enterprise network with thousands of users and devices devices in an office or school.

The rise of virtualization has also fueled the development of virtual LANs, which enable network administrators to logically group network nodes and partition their networks without a need for major infrastructure changes.

For example, in an office with multiple departments, such as accounting, IT support, and administration, each department's computers could be logically connected to the same switch but segmented to behave as if they are separate.

3.2.1 BENEFIT OF LAN NETWORK

- The advantages of a LAN are the same as those for any group of devices networked together. The devices can use a single Internet connection, share files with one another, print to shared printers, and be accessed and even controlled by one another.
- LANs were developed in the 1960s for use by colleges, universities, and research facilities (such as NASA), primarily to connect computers to other computers. It wasn't until the development of Ethernet technology (1973, at Xerox PARC), its commercialization (1980), and its standardization (1983) that LANs started to be used widely.
- While the benefits of having devices connected to a network have always been well understood, it wasn't until the wide deployment of Wi-Fi technology that LANs became commonplace in nearly every type of environment. Today, not only do businesses and schools use LANs, but also restaurants, coffee shops, stores, and homes.
- Wireless connectivity has also greatly expanded the types of devices that can be connected to a LAN. Now, nearly everything imaginable can be "connected," from PCs, printers, and phones to smart TVs, stereos, speakers, lighting, thermostats, window shades, door locks, security cameras--and even coffeemakers, refrigerators, and toys.

3.2.2 SETTING UP THE LAN NETWORK

- Determine the number of computers you want to connect. The number of computers you're connecting will determine the type of network hardware you'll need
- Determine your network layout. If your installing a permanent LAN solution, you'll want to keep cable length in mind. CAT5 Ethernet cables should not run longer than 250 feet. If you need to cover larger distances, you'll need switches at regular intervals, or you'll need to use CAT6
- Obtain the network hardware. To create a LAN, you'll need a router and/or a network. These pieces of hardware are the "hub" of your LAN, and all of your computers will be connected to them.
- Connect your modem to the WAN port on the router. This port may be labeled "INTERNET" instead. This will provide internet access to every computer that is connected to your LAN.

- Connect the switch to a LAN port on the router. If you're using a network switch to connect more computers, connect it to one of the LAN ports on the router. You can use any open port on the switch to make the connection. When connected, the router will provide IP addresses for every computer that is connected to either device.

3.2.3 CONNECTING THE PC

- Find the Ethernet port on your PC. You can usually find this on the back of your desktop tower, or along the side or back of a laptop.
- Plug one end of an Ethernet cable into your computer. Make sure you're using an Ethernet cable (RJ45), not a telephone cable (RJ11).
- Plug the other end of the cable into an open LAN port. This can be any open LAN port on either the router or the switch, depending on your LAN setup.
- Test out your network (router only). If you're using a router, your work is complete. Once all of the computers are connected to a LAN port, they will be assigned IPs automatically and will appear on the network. If you set up your LAN for gaming, you should be able to start your LAN game and have each computer connect.
- Enable file and printer sharing. You won't be able to access resources on a networked computer until file and printer sharing is enabled.

3.2.4 ASSIGNING IP ADDRESS (NO ROUTER)

- Right-click on your network connection. You'll see this in your System Tray. If you are connecting your computers through a switch with no router, you'll need to assign each computer on the network its own individual IP address. This process is handled automatically if you're using a router
- Click “Open Network and Sharing Center”.
- Click the “Ethernet” link at the top of the window. You'll see this next to "Connections.
- Click “Properties”.
- Click “Internet Protocol Version 4 (TCP/IPv4)”. Make sure you don't uncheck it, just highlight it.
- Click “Properties”.
- Click the “Use the following IP address” radio button.
- Type {192.168.1.50} into the IP address field.
- Type {255.255.0.0} into the Subnet mask field.
- Type {192.168.0.0} into the Default gateway field.

- Click “OK”. This will save the settings for that computer. This computer is now configured on your network with a unique IP address.
- Open the “Internet Protocol Version 4” properties on the next computer. Follow the steps above on the second computer to open the Internet Protocol Version 4 (TCP/IPv4) Properties window.
- Click the “Use the following IP address” radio button.
- Type {192.168.1.51} into the IP address field. Notice that the final group of numbers has incremented by 1.
- Enter the same values for “Subnet mask” and “Default gateway”. These values should be the same as they were on the first computer (255.255.0.0 and 192.168.0.0 respectively).
- Give each additional computer a unique IP. Repeat these steps for each additional computer, incrementing the IP address by 1 each time (up to 255). The "Subnet mask" and "Default gateway" fields should be the same on each computer.

3.3 HOW TO TROUBLESHOOT LAN NETWORK

- Check the hardware to make sure it’s connected properly, turned on, and working.
- Use ipconfig to check the network configuration.
- Use ping and tracert to check network connectivity.
- Perform a DNS check to determine server issues.
- Check on virus and malware protection.
- Review database logs.
- Check for local connectivity issues by checking cables, devices, switches, and routers for proper functioning.
- Rectify the duplicate entry of IP address by typing "ipconfig" in the command prompt.
- Perform a DNS check by using the command “nslookup” to determine server issues.

3.4 HOW TO TERMINATE AN ETHERNET CABLES

- Measure and cut the cable to the desired length using a wire cutter.
- Strip the outer insulation of the cable.
- Untwist and arrange the wires.
- Insert the wires into the RJ45 connector.
- Crimp the connector.
- Repeat for the other end.

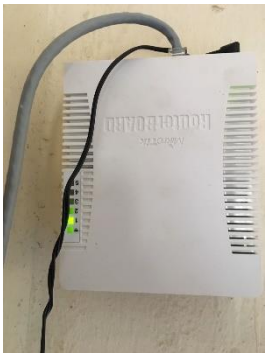
- Test the cable.

3.5 TOOLS AND EQUIPMENT USED IN LAN NETWORKING

- **Ethernet Cable:** To physically connect devices in a network. Common types include Cat5e, Cat6, and Cat7 cables.
- **Patch Cables:** Short Ethernet cables used to connect devices to switches, routers, or patch panels.
- **Crimping Tool:** To attach connectors (RJ-45 connectors) to Ethernet cables.
- **Cable Tester:** To verify the integrity and connectivity of network cables.
- **Network Switch:** To connect multiple devices within a local area network (LAN) and manage data traffic efficiently.
- **Router:** To connect different networks (e.g., LAN and the Internet) and route data between them.
- **Access Point (AP):** To provide wireless connectivity to a wired network, expanding the network's reach.
- **Modem:** To convert digital data from a computer into analog signals for transmission over analog communication lines (e.g., DSL, cable) and vice versa.
- **Laptop:** Laptops are versatile devices used by network administrators and professionals to configure, monitor, and troubleshoot networks. They can run network management software, connect to network devices for configuration, and perform various network-related tasks.
- **Scissors:** Scissors are used for cutting and trimming Ethernet cables (RJ45 cables) and fiber optic cables. Precise cutting is essential to ensure proper connectivity.
- **Cutter:** Cutters, like wire cutters or cable cutters, are used to trim and strip the protective covering of network cables, exposing the wires for termination.
- **RJ45:** RJ45 connectors are commonly used for terminating Ethernet cables. They allow network cables to be connected to devices like switches, routers, and computers.
- **Fibre Optic:** Fiber optic cables are used for high-speed data transmission over long distances. They are vital for building high-capacity, long-distance networks, such as internet backbones.
- **Fiber optic cleaver:** is used to cut the fiberglass for fusion splicing, also ideal for preparing fiber for pre-polished connectors to make a good end face. So it is very important in the fiber splicing process, and it usually works together with the fusion splicer to meet the end needs.

- **Splicing Machine:** A splicing machine is used to join or splice fiber optic cables together with precision. It ensures low signal loss and maintains the integrity of the optical signal in fiber optic networks.
- **Cotton Wool:** Cotton wool or swabs may be used for cleaning fiber optic connectors and components to remove dust and contaminants that can degrade the optical signal.
- **Methylated Spirit (Methanol):** Methylated spirit is often used as a cleaning agent for optical components, especially when cleaning fiber optic connectors. It helps ensure a clean and clear optical signal by removing impurities.
- **Optical Signal:** Optical signals are the data transmitted through fiber optic cables. They carry data using light pulses and are crucial for high-speed and long-distance communication in fiber optic networks.
- **Hubs:** Hubs (though somewhat outdated) are network devices used to connect multiple Ethernet devices in a LAN.

Networking Tool Box



Router board

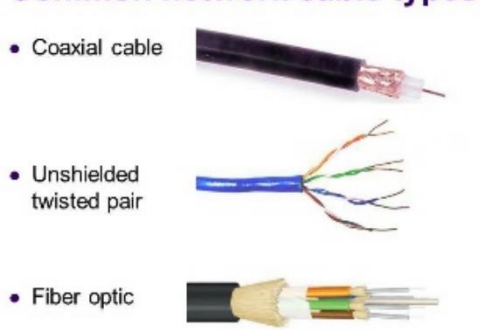
Connected RJ45

RJ45

Switch

Controller

Cutter



Crimping Tool

Solar Charger

Network cables

Solar Battery

Figure 3.5.1: TOOLS FOR NETWORKING

3.6 PROBLEMS ENCOUNTERED

- It was so difficult for me a while to understand the networking process as it was not something I was not thought at school.
- Adapting to the work environment and the fast-paced nature of tasks posed initial difficulties.
- I deal with technical issues, communication gaps, and time constraints.

3.7 PROBLEMS SOLVED

- I actively engaged with my colleagues and supervisors to seek guidance and solutions.
- Time management strategies were developed to meet project deadlines effectively.
- Technical challenges were overcome through research and seeking assistance from experienced team members.

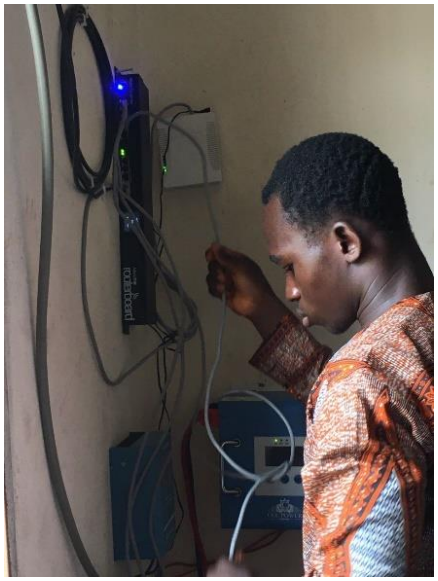


Figure 2.8.2: I AND ONE OF COLLEAQUE HANDLING A ROUTERBOARD

CHAPTER 4

CONCLUSION AND RECOMMENDATION

4.1 CONCLUSION

In conclusion, my SIWES experience at Ladoke Akintola University of Technology (LAUTECH) has been an enriching journey that bridged the gap between theory and practice, offering me valuable insights into the world of Information and Communication Technology (ICT). This report has chronicled the various facets of my SIWES experience, from the background of LAUTECH to the projects undertaken, challenges faced, and lessons learned.

SIWES has proven to be an indispensable component of my academic and professional growth, allowing me to apply classroom knowledge in real-world scenarios. It has highlighted the importance of mentorship, problem-solving, and adaptability in the ever-evolving field of ICT.

As I reflect on this journey, I am grateful for the support of my family, mentors, and colleagues, as well as the guidance of SQI College of ICT and LAUTECH. The recommendations offered in this report aim to further enhance the SIWES program, ensuring its continued relevance and effectiveness in preparing students for their future careers.

In closing, SIWES has been a transformative experience, equipping me with practical skills, knowledge, and a deeper understanding of the ICT industry. I look forward to applying these insights in my future endeavors, knowing that SIWES has played a pivotal role in shaping my academic and professional path.

4.2 RECOMMENDATION

The experience and knowledge acquired at LAUTECH ICT and the entire scheme itself has been a success so far. But nevertheless, I recommend that:

- Implement a more structured mentorship program during SIWES to facilitate closer interaction between students and experienced professionals. This will provide students with valuable guidance and practical insights, further enriching their learning experience.
- Encourage a diverse range of projects during SIWES to expose students to various aspects of their field. This ensures a well-rounded skillset and prepares them for a broader spectrum of challenges in their future careers.
- Allowance should be paid to students during their training to aid them in any of their financial problem.

REFERENCES

https://smartbukites.com/siwes-report/#:~:text=Additional%20Specifications%20for%20SIWES%20Report%3A,-Generally%2C%20the%20paper&text=Font%20is%20Times%20New%20Roman,12%2C%20except%20where%20otherwise%20stated.&text=Line%20spacing%20is%201.5.

https://www.google.com/search?sca_esv=566224941&sxsrf=AM9HkKkD30OfpqFg5gZ9wZw9mmQOPSzGiA:1695028034286&q=a+siwes+report+cover+page+template&tbm=isch&chips=q:a+siwes+report+cover+page+template,online_chips:internship+report:sM0A2ZKC0nE%3D&usg=AI4_-kTjJByEqBQT5AhZob3y8fcyxsPj9w&sa=X&ved=2ahUKEwi3tvi-57OBAxUTVqQEHWcMAfQQgIoDKAB6BAgYEBI&biw=1600&bih=827&dpr=1

https://lautech.edu.ng/aboutus

https://lautech.edu.ng/missionstatement#:~:text=To%20provide%20suitable%20condition%20for,epitome%20of%20integrity%20and%20service.