Basic Electronics Communication and Multimedia Equipment Servicing

Level - II

Learning Guide # 15

Unit of Competence: Implement Maintenance Procedures

Module Title: Implementing Maintenance Procedures

MO Code: **EEL BEC2 MO215 09 19 LO2**

TTLM Code: **BEC2 LG215 0919 V1**

LO2: Revise Practices, where Appropriate

Instruction Sheet	Learning Guide #15

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics –

- Functions of equipment and software
- Service-level agreements
- Monitor and review maintenance operations.
- Design improvements to maintenance procedures.

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to –

- Identify functions of equipment and software
- Monitor maintenance procedure and improve designs of maintenance procedure.

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described in number.
3. Read the information written in the information "Sheet ----, Sheet ---, and Sheet --".
4. Accomplish the information "Sheet ---, Sheet ----, in page _____.
5. Try to answer self-check, you can ask your trainer for correction. If you finished answering the Self-check, take correction or explanation from your trainer if it is not clear.
6. If you scored a satisfactory evaluation proceed to "Information Sheet 2". However, if your rating is unsatisfactory, discuss with your trainer for further instructions or go back to learning operation sheet-----------.
7. Submit your accomplished Self-check. This will form part of your training portfolio.
8. Read the information written in the "Information Sheet 2". Try to understand what are being discussed. Ask you Instructor for assistance if you have hard time understanding them.
9. Accomplish the "Self-check 2" in page_____.
   Ask from your teacher for correction (key answers) if any.
10. Read the information written in the "Information Sheets 3. Try to understand what are being discussed and ask you teacher for assistance if you have hard time understanding them.

11. Accomplish the "Self-check ---------" in page _____.
12. Ask from your teacher the key to correction (key answers) or you can request your teacher to correct your work. (To get the key answer only after you finished answering the Self-check 3).
13. If you scored a satisfactory evaluation proceed to "Operation Sheet 1" in page_____, however, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity #1.
14. Read the "Operation Sheet 1" and try to understand the procedures discussed.

Information Sheet #1	Monitor and review Maintenance operation where appropriate

Review by Maintenance and other qualified inspectors to ensure they contain adequate content and are in compliance with applicable regulations and safe practices. While Maintenance is encouraged to provide guidance and advice to Maintenance Organization in the preparation of their manuals, the development and production of an acceptable manual is solely theresponsibility of the Maintenance Organization.

- **Initial Review**.

Before the initial certification of an applicant, a comprehensive review of the applicant's Maintenance Organization Manual and other user manuals must be conducted by the PMI and other qualified inspectors. In addition, those items in the Maintenance Organization
Statement of Compliance that require the Maintenance Organization to develop a policy statement, system,method, or procedure, must be addressed.

- Review of Changes to Manuals.

After initial certification the PMI should review each revision or proposed revision to a manual. Inspectors should not limit this review to a strict consideration of the change itself but should also consider the impact of the change on the Maintenance Organization overall manual system and type of repairs.

- Periodic Review of Manuals

Each PMI is responsible for developing a surveillance plan for the Maintenance Organization Manual system. At least one portion of the Maintenance Organization maintenance control manualshould be reviewed annually, and the entire maintenance control manual should be reviewed over a period of 1 to 3 years (depending on the complexity of the Maintenance Organization).

Information Sheet #2	Identify Problem areas including failures to meet **service-level agreements**, and consider changes to maintenance procedures.

A problem can exist for some time without causing an incident but a single problem can also cause multiple different incidents. Likewise, a single incident may result from a combination of problems that would not separately cause an incident. Incidents may be resolved, meaning that service is restored, without discovering the problem responsible. However, without detecting the root source of an incident, there is no assurance that it will not recur.

There are three basic methods to solve problems

✓ The Good Idea Approach. You are somehow inspired and have a "good idea" which you attempt to develop and defend against all criticism. This approach often leads to failure since there is usually a closed mind to other ideas. Bad news is ignored until it is too late.

✓ The Scientific Method. Begin by stating a theory or hypothesis. Collect data and analyze it to determine if the theory/hypothesis is true or false. Not really a relevant method for design problems since it involves the search for truth rather than the search for an answer.

✓ The Systems Approach. Three separate activities: problem definition, development of alternatives, and evaluation.
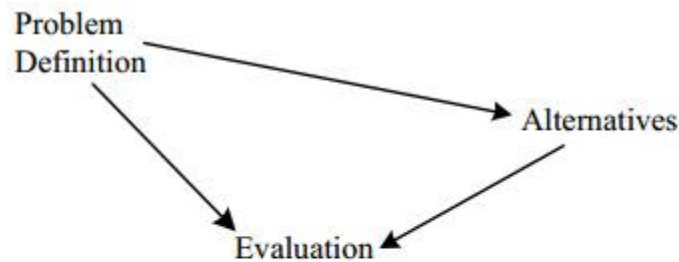
Don't define problems as solutions; i.e. build a better mousetrap.

Don't reject alternatives prematurely.

Don't evaluate until problem and alternatives are clearly defined.

Service Level Agreements (SLA)

A service-level agreement (SLA) defines the level of service you expect from a vendor, laying out the metrics by which service is measured, as well as remedies or penalties should agreed-on service levels not be achieved. It is a critical component of any technology vendor contract. This agreement is to ensure that the proper elements and commitments are in place to provide consistent electronics service support and delivery to the Customer(s) by the of Service Provider(s).

Three types of options for structuring SLA

- ✓ Service-based
- ✓ Customer-based
- ✓ Multi-level or Hierarchical SLAs

Application Service Provider (ASP)

An Application Service Provider(ASP) is a third party organization that provides access to applications to multiple customers over network based on rental or lease contracts. It deploys and manages application software, system hardware, and networking at a centralized facility on behalf of the customers. An ASP may be a commercial entity, providing a paid service to customers or, conversely, a not-for-profit or government organization supporting end users
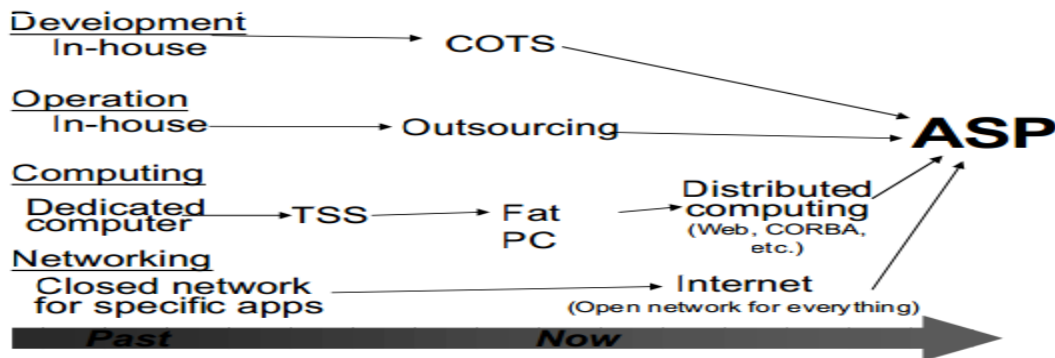
Pure ASPs focus on application services

• Full service providers, example US internetworking ,Breakaway Solutions

• Service aggregators, example. Corio ,Future link

Some application vendors are trying to become ASPs

A vendor is the last entity in the chain that brands a product and sells it directly to end users or through a channel. A vendor may design and manufacture its own products, assemble complete systems from components produced by others, or procure products from an original equipment or contract manufacturer.

Vendors are a part of the supply chain: the network of all the individuals, organizations, resources, activities and technology involved in the creation and sale of a product, from the delivery of source materials from the supplier to the manufacturer, through to its eventual delivery to the end user

An Internet service provider (ISP)

An Internet service provider (ISP) is a company that provides customers with Internet access. Data may be transmitted using several technologies, including dial-up, DSL, cable modem, wireless or dedicated high-speed interconnects.

 ISPs also provide their customers with the ability to communicate with one another by providing Internet email accounts, usually with numerous email addresses at the customer's discretion. Each ISP is different in that the company provides a different type of connectivity protocol and speed. Most ISPs are cable or DSL, but other options are available for small, rural areas. It's important to analyze your individual needs before deciding on an ISP.

Dialup

Although it's painfully slow, dialup access is still a necessity for small, rural areas. ISPs offer dialup access in these areas. A dialup ISP requires the user to have a modem for Internet access. The user dials a phone connection using a telephone number, connects to a remote server, and uses the telephone connection to browse websites.

DSL

DSL is normally offered by the local phone company. DSL is a technology that uses the "extra" signals not used by telephone signals. These "extra" signals make DSL usage available even during times when the phone is ringing or people are using the telephone access. DSL uses a DSL router that connects using a telephone cable to a phone jack.

Cable

Cable is offered by the local cable company in the user's neighborhood. Cable Internet access is available by connecting a cable router to the computer and connecting to a designated jack. Cable ISPs are usually faster, especially in areas where there is not much usage. Cable connections are shared by neighbors, which differs from DSL, so cable access speed is dependent on the amount of traffic from other neighborhood users.

Wi-Fi Access

Wi-Fi is wireless Internet access. It's used by laptops and offered freely by many hotels and coffee shops. Wi-Fi can also be installed in the home for people who have desktops and laptops networked. Wi-Fi is not as quick as DSL or Cable, but it's a more convenient ISP service.

Satellite

Satellite access is offered for people who are not able to receive DSL or Cable options. Satellite access is very quick download speeds, but upload speeds are used through a modem, which is very slow. This type of ISP connection is used by people in very rural areas who have no other broadband connection.

Improvement is the process of a thing moving from one state to a state considered to be better, usually through some action intended to bring about that

Information Sheet #4	Design Improvements and implemented to maintenance procedures.

better state. The concept of improvement is important to governments and businesses, as well as to individuals.

4 Steps to Maintenance Improvement

To improve maintenance performance and reduce costs in the coming year. Here are some maintenance resolutions to consider to improve your maintenance operations in the year to **come.**

1. Plan

Develop a plan. Monthly, quarterly, and yearly process improvements and measurable goals will help keep a maintenance department moving forward. Perhaps you want to reduce your equipment downtime or reorganize all of your assets. Develop a plan and timetable, and execute it against defined benchmarks.Establishing goals for the year go hand-in-hand with developing the annual budget. Be sure to include new equipment needs, staff training, and any new initiative requirements to meet your goals.

2. Update

If your company is still relying on spreadsheets or the even old-fashioned pen-and-paper methods to track assets and work orders, this resolution is especially important to you. The time has come streamline your maintenance operations through the use of a computerized maintenance management system

(CMMS).There are many advantages to upgrading to a CMMS. These advantages include efficient work order management, preventive maintenance scheduling, access to real time maintenance information, ability to analyze reports on work orders, assets, labor usage, and parts and inventory for possible improvement.

3. Maintain

All assets require a certain amount of upkeep. In order to preserve an asset, specific procedures must be put in place. A robust CMMS will help you schedule preventive maintenance and gather data to document and report on actual asset life.

Reduce downtime, conserve assets, and decrease repair costs. If any equipment was prematurely replaced last year or if there was an increase in breakdowns, a preventive maintenance strategy will guarantee operational improvements.

4. Measure

Start by setting certain benchmarks in order to measure maintenance performance and determine results. Key Performance Indicators (KPI) allow for operational analysis so goals can be set and monitored.

Self Check #1	Written Test

Name: _____   Date: _____

Time   Start: _____   Time   Finish: _____

Instruction: Answer all the questions in the space provided correctly, if you have some clarification regarding the test just raise your hand and ask the assistance of the teacher.

I.   Multiple Choice Question (2 points each)

1. The process of storing the copy of your data in the safe place or a process of copy hard disk data in to other storage device?

       A. Backup data   C. ROM

        B. Hard disk   D. Explanation slot

2. A computer program that help you to protect your computer from virus?

       A. Antivirus   C. Application software

       B. Virus   D. Operational software

3. --------------- defines the level of service you expect from a vendor, laying out the metrics by which service is measured, as well as remedies or penalties should agreed-on service levels not be achieved

A.SAL   B.SMN   C.SLA   D.none

Part II. Give the short answer.

1. Defined the following terms.

   a.   Dialup
   b.   DSL
   c.   Cable
   d.   Wi-Fi Access
   e.   Satellite

Note: **Satisfactory rating –5 points   Unsatisfactory - below 5 points**

You can ask your teacher for the copy of the correct answers.

Answer Sheet

Scored

Part I.

    1. _____

    2. _____

Part II.

    1. _____

      _____

      _____

      _____

      _____

      _____

      _____

      _____

Operation Sheet #1	Assembling & Disassembling of a Pc

Operation Title: - Assembling & Disassembling of a Pc

Purpose: -

- o The trainee's will be able to keep the procedures.
- o The trainee's will be able to create back up for documents.
- o The trainee's will be able to perform assembling &disassembling a pc properly.

Conditions or situations for operation: - Have a clean workspace with all necessary tools and equipment

Equipment, Tools &Materials: - Maintenance room, computer, CD, Maintenance tool kit, table, chair etc.

Procedure: - 1. Disassembling the PC

- ✓ Detach keyboard and mouse from the back of the computer
- ✓ Detach monitor
- ✓ Detach serial and parallel devices
- ✓ Detach network cables, speaker cables, Modem phone line
- ✓ Detach power cable.
- ✓ Remove system case
- ✓ Detach internal power cables from storage device
- ✓ Remove hard device and other storage devices.
- ✓ Remove adapter cards
- ✓ Remove power cables from system board
- ✓ Remove CPU
- ✓ Remove RAM & Remove cables from system board
- ✓ Remove screws holding system board in place
- ✓ Remove system board

Procedure: - 2. Reassembly the PC

- ✓ Installing system board(Motherboard)
- ✓ Mounting the motherboard in the case
- ✓ Installing CPU, heat sink & the power lead for the cup fan.
- ✓ Configure the motherboard jumper. Refer to the Mb manufacturer manual.

- ✓ Installing (Memory) RAM
- ✓ Connecting the power supply
- ✓ Installing the drives (HDD, Floppy & CD-Rom)
- ✓ Connecting I/O &other cables to the motherboard
- ✓ Connect the floppy, HDD & CD-ROM IDE/SATA cable to the motherboard.
- ✓ Installing Additional Expansion Cards.

Precautions:-

- ➢ Take ESD precautions.
- ➢ Document everything (backup).
- ➢ Power all devices and disconnect them from the main power supply.

Quality Criteria:-

- ➢ The trainee's use safety for documents &components.

The trainee's make assembling &disassembling the pc with proper procedure.

LAP TEST #1	Practical Demonstration

Name: _____Date: _____

Time   started: _____Time   finished: _____

Instructions: You are required to perform the following individually with the presence of your teacher.

1. Assemble and disassemble the system unit
2. Assemble the RAM & ROM, show the steps
3. From the computer how to disassemble the hard drive &then find the fault of the hard drive
4. Show how to disassemble the computer case system
5. From the system steps of flashing system on your computer

- ➤ *Your teacher will evaluate your output either satisfactory or unsatisfactory. If unsatisfactory, your teacher shall advice you on additional work. But if satisfactory, you can proceed to the next topic.*