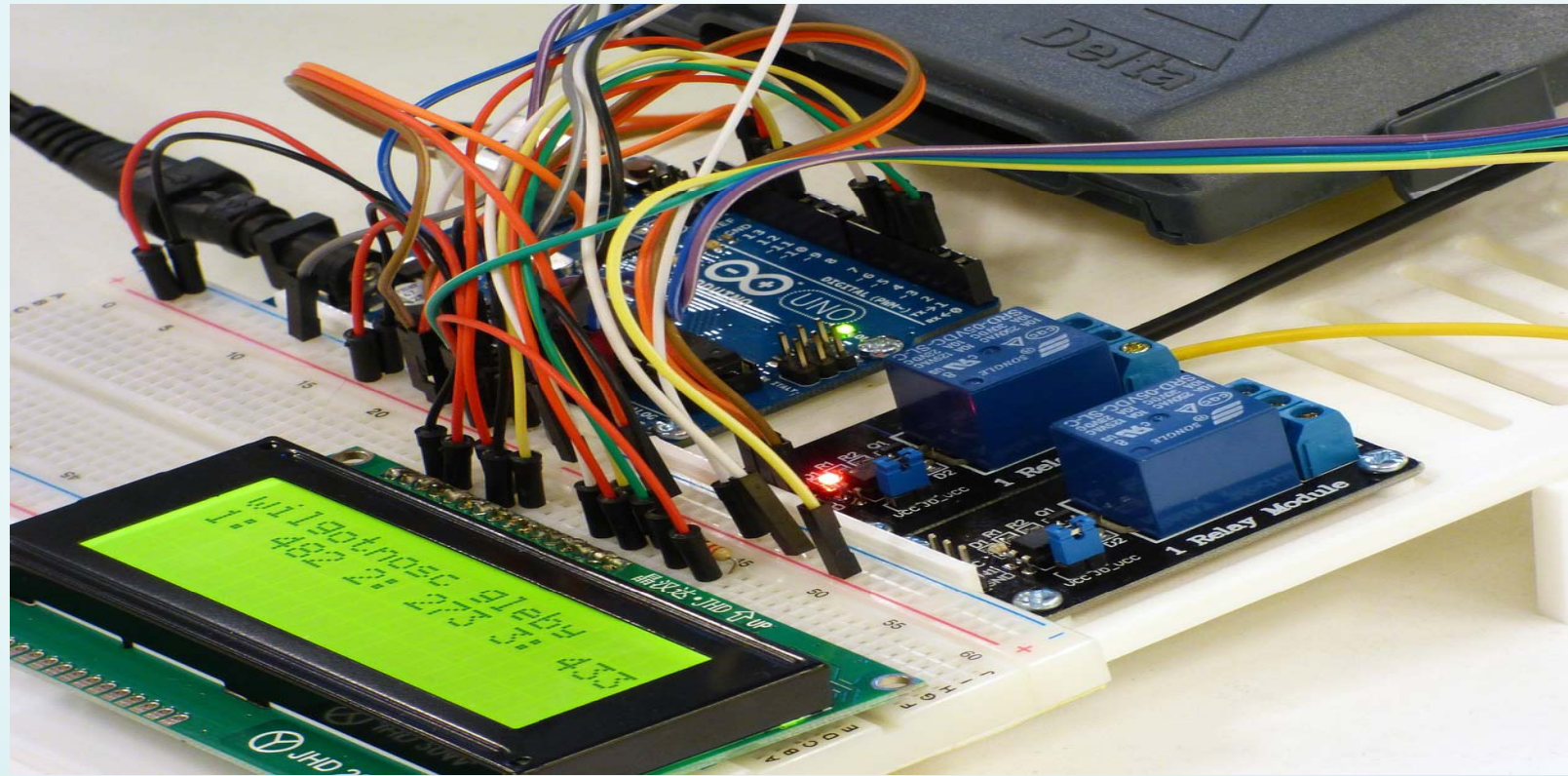# Software Maintenance

Characteristics of software maintenance

- Software maintenance is the general process of changing a system after it has been delivered.

- The change may be simple changes to correct coding errors, more extensiv changes to correct design errors or accommodate new requirements.
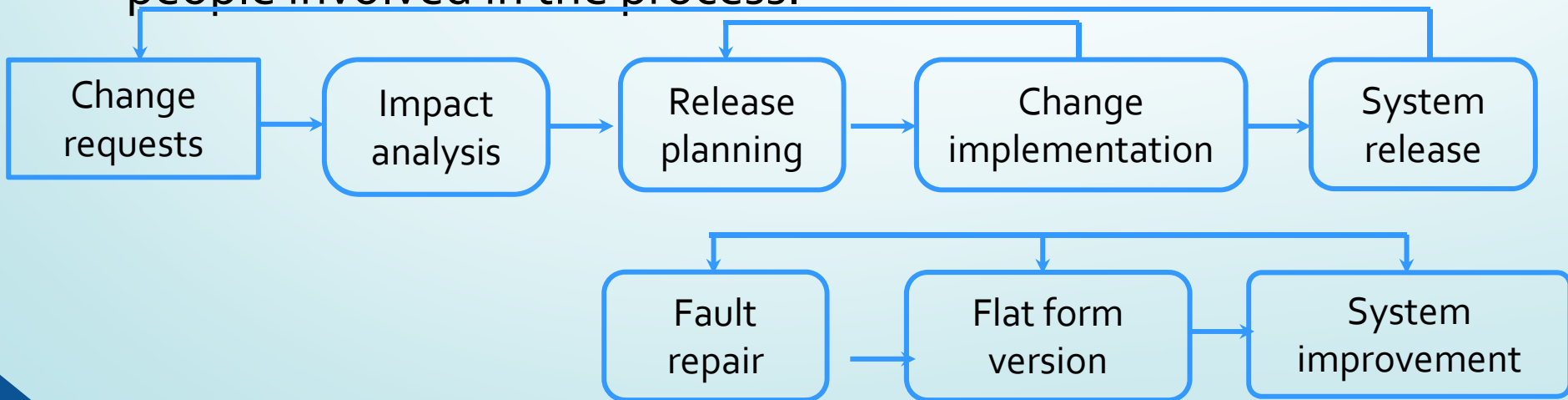
Types of Maintenance

- Maintenance to repair software faults

  - Changing a system to correct deficiencies in the way meets its requirements

- Maintenance to adapt software to a different operating environment

  - Changing a system so that it operates in a different environment (computer, OS, etc.) from its initial implementation

- Maintenance to add to or modify the system's functionality

  - Modifying the system to satisfy new requirements

- Example:

- Anti-Virus Software

  - don't usually have to update software, but must send virus definitions
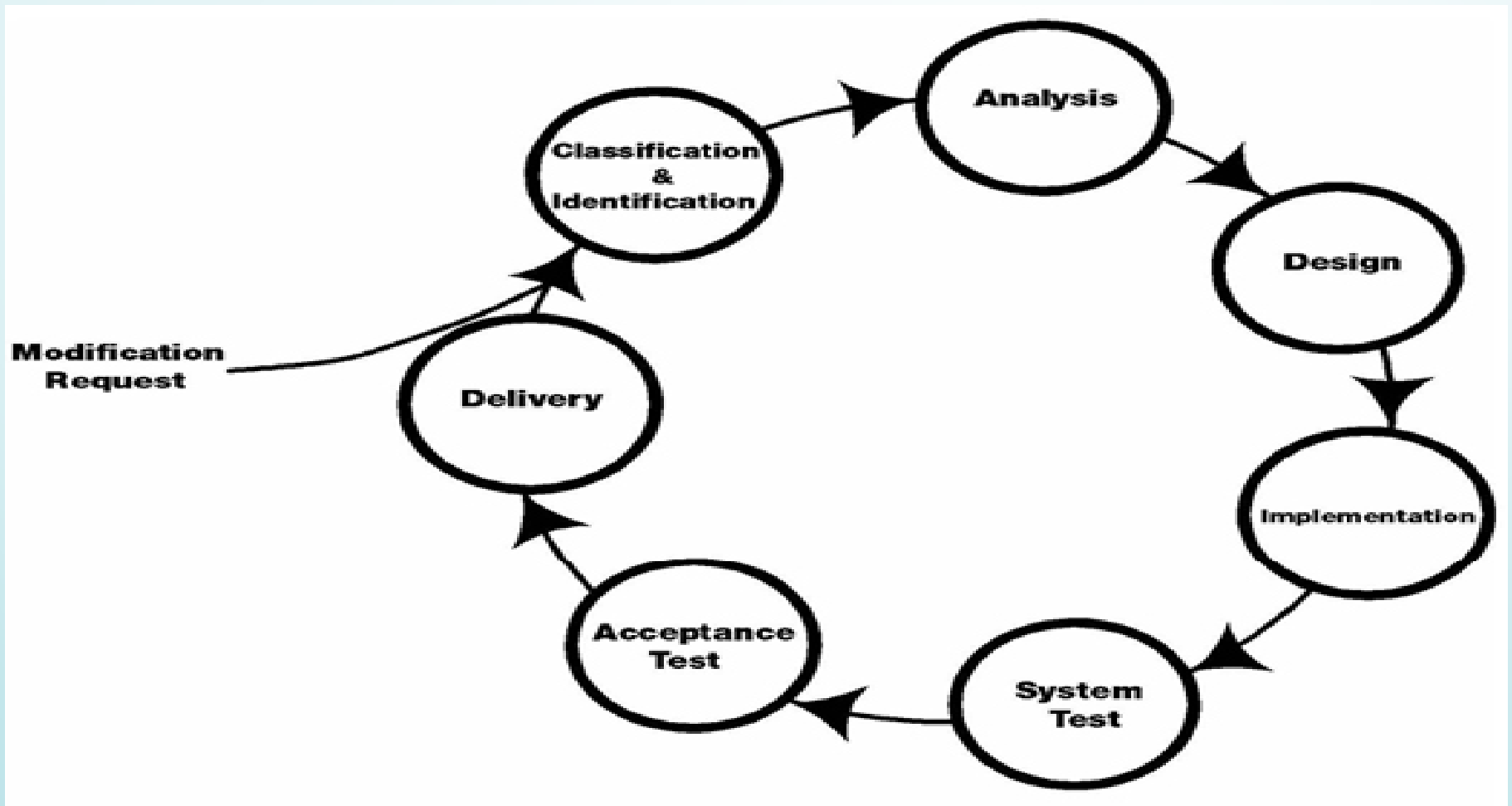
Continue

- Operating System
  - Microsoft, Apple, Linux/Unix
  - OS is core to use of computer, so it must be constantly maintained

The Maintenance Process

- Maintenance process vary considerably depending on the types of software being maintained, the development processes used in an organization and the people involved in the process.

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┌──────────────┐     ┌──────────────┐     ┌──────────────┐     ┌──────────────────┐     ┌──────────────┐
│   Change     │ ──▶ │   Impact     │ ──▶ │   Release    │ ──▶ │     Change       │ ──▶ │   System     │
│   requests   │     │   analysis   │     │   planning   │     │ implementation   │     │   release    │
└──────────────┘     └──────────────┘     └──────────────┘     └──────────────────┘     └──────────────┘

                          ┌──────────────┐     ┌──────────────┐     ┌──────────────┐
                          │    Fault     │ ──▶ │  Flat form   │ ──▶ │    System    │
                          │    repair    │     │   version    │     │ improvement  │
                          └──────────────┘     └──────────────┘     └──────────────┘
```

More

Estimation of maintenance Cost

- **Providing an effective tool for Software Maintenance:**

- **Using proper techniques in software development:**

- **Having the right people for the software maintenance:**

- **Considering future**

- To reduce maintenance costs and increase the longevity of HIS software determining the cost estimation factors is necessary, this can help to increase productivity and provide a native model to estimate the system maintenance cost. It will make the project manager able to estimate the real cost at any time in the system.

Software reverse engineering

- **Reverse engineering (RE)** is the process of find the technological principle of a device, object or system through analysis of its structure, function and operation.

  - Used in maintenance

  - Used to make a new device or program that does the same thing without copying anything from the original

  - Used to alter the original for a specific purpose

- **Software Reverse Engineering**
  - Also known as Reverse Code Engineering (RCE)
  - Or simply "reversing"
- Can be used for **good**…
  - Understand huge code

Assumption

- We assume that
  - Reverse engineer is an attacker
  - Attacker only has exe (no source code)
- Attacker might want to
  - Understand the software
  - Modify the software