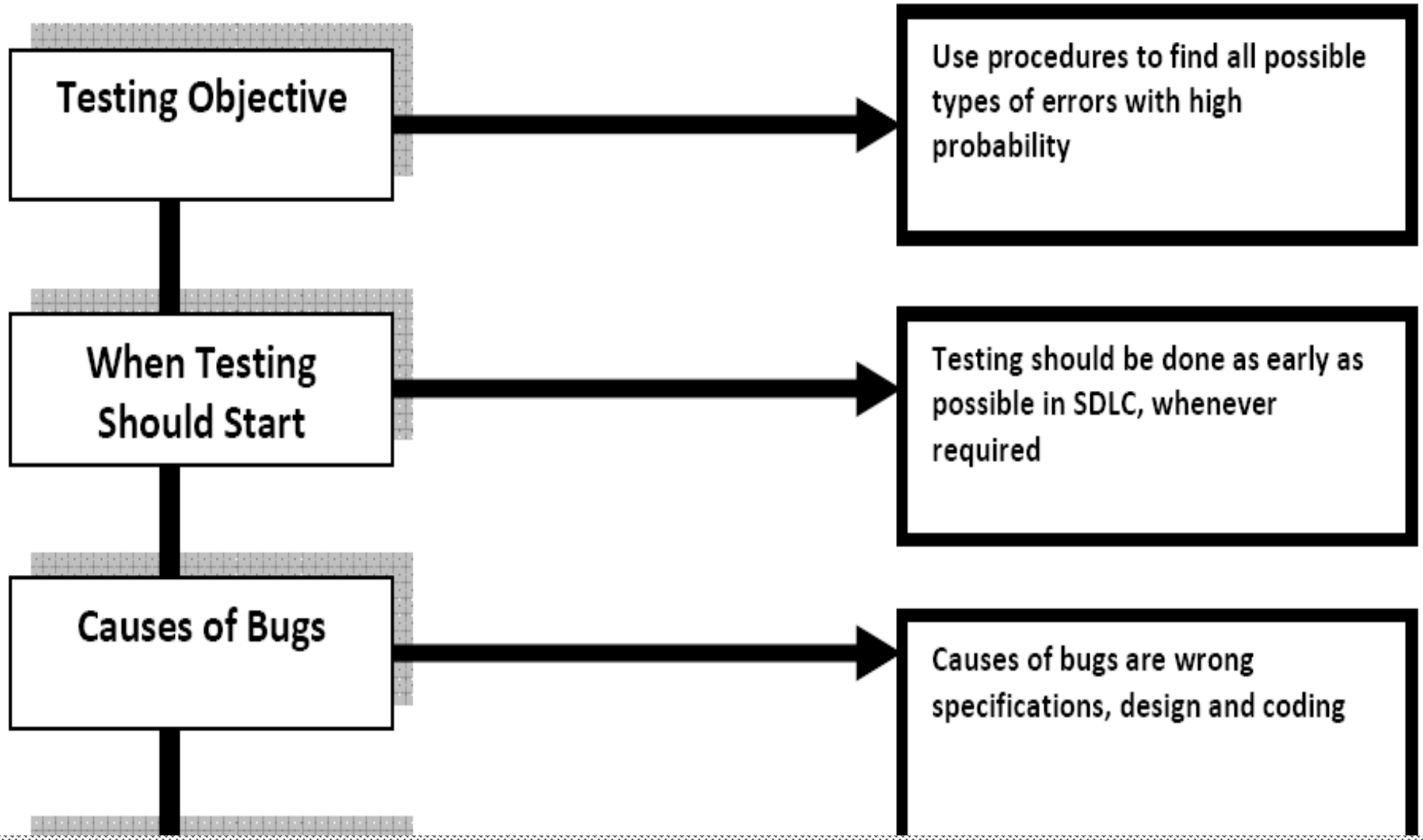
TESTING
General & Automated Control

Testing

- Testing is a process of executing a program with the **objective of finding an error.**
- A good test case is one that has a high **possibility of finding an undiscovered error.**
- A successful test is one that **finds out an undiscovered error.**
- A secondary benefit of testing is that it **demonstrates** that the software is working as stated in the specifications.

Testin

When Testing should start ?



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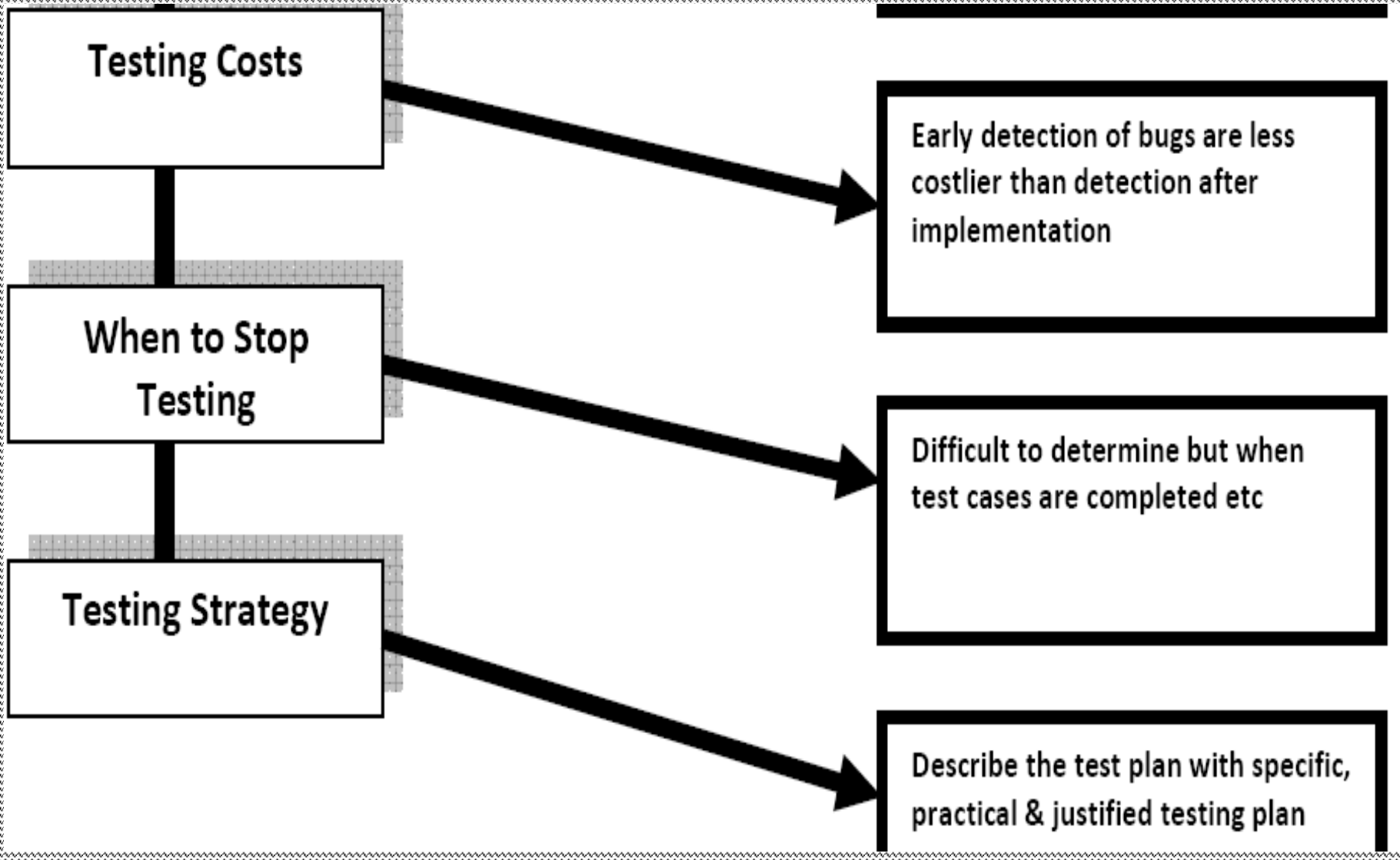
Testing Costs
When to Stop Testing
Testing Strategy
Early detection of bugs are less costlier than detection after implementation
Difficult to determine but when test cases are completed etc
Describe the test plan with specific, practical & justified testing plan

Causes of Bugs

- **Specification or Analysis: In many cases a specification isn't written, constantly changing or it is not** communicated well to the entire team. Planning of the software is **very important. If it is not done** correctly, bugs will be created.
- **Design: It refers to the process of system designing. It the system design is changed or not well** communicated, bugs will be created.
- **Coding errors: Coding means creation of programs by using particular programming language. It is** further classified in 2 different categories.
- **Syntax errors**
- **Exception errors**

WHEN TO STOP TESTING:

- **Deadlines** (release deadlines, testing deadlines.)
- **Test cases completed** with certain percentages passed
- Test budget **used up**
- Coverage of code/functionality/requirements reaches a specified point
- The rate at which **bugs are found is too small**
- Beta or **Alpha Testing period Ends**
- The **risk in the project is under acceptable limit**.

TYPES OF SOFTWARE TESTING

Static testing:

- The **verification activities** fall into the category of Static Testing.
- During static testing, users have a checklist to check whether the work they are doing is going as per the set standards of the organization.
- These standards can be for **Coding, Integrating & Deployment (operation).**
- **Reviews, Inspections & Walkthroughs are static testing methodologies.**

Types of Software Testing

Dynamic Testing:

- Dynamic Testing involves working with the software, **giving input values** and checking whether the output is expected one or not.
- These are the ***Validation activities.***

Types of Audit Tools

Audit Tools

Snapshots

- **Tracing a transaction** in a computerized system can be performed with the help of snapshots or extended records.
- **Examines** the way transactions are processed.
- **Selected transactions are marked with a special code that triggers the snapshot process.**
- Audit module record these transactions and their master file before and after processing.
- Snapshot data is **recorded in the special file** and reviewed by the auditor to verify that all processing steps have been properly executed.

Audit Tools

Snapshots Factors

- Locate the snapshot points.
- When the snapshot will be captured
- Report should be present in a meaningful way.

Audit Tools

Integrated Test Facility

- It is particular form of test data involving the establishment of a **"dummy" entity** through which data is processed.
- Once the dummy entity is established, the auditor can input **transactions** and process these using the client's system.
- The **output produced is compared with predicated results to determine** whether programmed procedures being tested are operating correctly.
- After the completion of testing **procedure it is necessary** for the user to delete the test transactions from the system.
- In order to perform effective testing the auditor should have a **detailed knowledge** of the complete system.

Audit Tools

System **C**ontrol **A**udit **R**eview **F**ile

- Uses **embedded module** to continuously monitor transaction activity and collect data on transaction with special audit significance.
- Data is **recorded** in a special audit file known as **SCARF file** or Audit Log.
- The auditor periodically **receives a printout** of the SCARF file, examines the information to identify any questionable transaction and perform any necessary follow-up investigation.

Audit Tools

Auditors uses **SCARF** to collect the foll. Inf.

- **Application System Errors**
  - SCARF provides an independent check on the quality of system processing and also indicates programming errors (application errors).
- **Policy & Procedural Variances (differences) –**
  - Organizations have to follow to the policies, procedures and standards of the organization and the industry to which they belong.
  - SCARF is used to check when variations have occurred.

Audit Tools

Auditors uses SCARF to collect the foll. Inf.

- **System Exceptions (Run Time Errors)**
  - SCARF can be used to monitor different types of application system exceptions.
  - For example, salespersons might be given some **flexibility in the prices they charge to customers.**
  - SCARF can be used to see how frequently salespersons override the standard price.
- **Snapshots records**
  - Snapshots records can be written into the SCARF file and printed when required.

Audit Tools

Auditors uses SCARF to collect the foll. Inf.

- **Profiling data**
  - Auditors can use embedded audit routines to collect data to build profiles of system users.
  - **Differences from these profiles indicate that there may be some errors or irregularities.**
  - **Performance Measurement - Auditors can use embedded routines that are useful for measuring or** improving the performance of an application system.

Audit Tools

Continuous and Intermittent Simulation

- It **embeds an audit module** in a DBMS.
- The CIS module **examine all transaction** that update the DBMS using criteria similar to SCARF.
- If a transaction has a special audit significance the module independently processes the data, records the result and **compares them with those obtained by DBMS.**
- If any discrepancies exist the details are written onto an audit log for **subsequent investigation.**
- The CIS may also prevent the **DBMS from executing the update process.**
- The advantage of CIS is that it does not require modifications to the application system and yet provides an **online auditing**

Continuous Audit

- Continuous audit or a detailed audit is an audit which involves a detailed examination of books of account at regular intervals i.e. one month or three months.
- The auditor visits clients at regular intervals during the financial year and checks each and every transaction.
- At the end of the year auditor checks the profit and loss account and the balance sheet.
- A continuous audit is not of much use to small firm as its accounts can be audited at the end of the financial year without much loss of time.

Benefits of Continuous Auditing

Easy to quick discovery of errors

- Errors and frauds can be discovered easily and quickly as the auditor checks the accounts at regular intervals and in detail. As a auditor visits the client after a month or two or so on, the number of transactions will be small and hence, the errors will be detected easily and quickly.

Knowledge of technical details

- Since the auditor remains more in touch with the business, s/he is in a position to know its technical details and hence can be of great help to her/his clients by making valuable suggestions.

Benefits of Continuous Auditing

Quick presentation of accounts

- As most of the checking works are already performed during the year, the final audited accounts can be presented to the shareholders soon after the close of the financial year at annual general meeting.

Keeps the client's staff alert

- As the auditor visits the clients at regular intervals, the clerks are very regular in keeping the accounts up-to-date. They will see that there is no in accuracy or frauds as it would be detected by the auditor at the next visit.

Benefits of Continuous Auditing

- It **reduces the cost** of the audit procedures by enabling auditors to test a larger sample (up to 100 percent) of client's transactions
- It **examine data faster** and more efficiently than the manual auditing
- It **reduces the amount of time** and costs auditors traditionally spend on manual auditing of transactions
- It **increases the quality of audits** by improving auditors understanding of client's business and its internal control structure.

Disadvantage of Continuous Auditing

Alteration of figures

- Figures in the books of account which have already been checked by the auditor at previous visit, may be altered by a dishonest clerk and the frauds may be committed

Disturbance of client's work

- The frequent visits by the auditor may disturb the work if the client and cause inconvenience to the latter.

Disadvantage of Continuous Auditing

Expensive

- Continuous audit is an expensive system of audit because an auditor devote more time. So, company needs to pay more amount as the remunerations of an auditor.

Queries may remain outstanding

- The audit clerk may lose the thread of work and the queries which s/he wanted to make may remain outstanding as there might be a long interval between two visits.

Extensive note taking

- Extensive note taking may be necessary in order to avoid any

Disadvantages of Continuous Audit System:

- Auditors should be able to obtain resources required from the organization to support
  - Development,
  - Implementation, Operation, and
  - Maintenance of Continuous Audit Techniques.
- Auditors need to have the knowledge and experience of working with computer systems.
- It is only possible to be used if auditors are involved in the development of new application system.

REVIEWING THE NETWORK

- ***The reviewer should identify the following:***
- Network Architecture
- Components of LAN
- Network Topology
- Uses or benefits of LAN.
- Function of LAN administrator
- Significant groups of LAN users
- The company's procedures and standards relating to network naming conventions and data security.
- LAN transmission media and communication devices such as Bridges, Routers and Gateways.

THANK YOU