Indicators :-

- An Indicator is a metric (or) group of metrics that provides an understanding of the software process (or) software product (or) software project.

- There are two types of indicators. They are

  1. Management Indicator
  2. Quality Indicator.

1. Management Indicator :-

- It is a technical progress, financial status and staffing progress are used to determine whether the project is on budget and on schedule.

- The management indicator that indicates the financial status are based on earned value System.

2. Quality Indicators :-

- Quality Indicator is based on measurement of the changes occur in the software.

- Changes traffic and stability.

- Breakage and Modularity.

- Rework and adaptability.

- Mean time between failures and Maturity.
  ↓
  (MTBF)

Seven Core Metrices :-

- Metrics provides for managing the process.
- The most useful Metrics are extracted directly from the artifacts.
- There are Seven Core Metrices that are used in managing a modern process.

     1. Management Indicators

       - Work & Progress

       - Budgeted Cost & Expenditure

       - Staffing & Team dynamics.

     2. Quality Indicators.

       - changing traffic and scalability.

       - Breakage & Modularity.

       - Rework & adaptability

       - Mean time between Failures and Maturity

1. Management Indicators :-

a) Work & Progress :

- The metric measures the work performed over time
- Work is to complete a certain set of tasks.

b) Budgeted Cost & Expenditure :

- To maintain management control, measuring cost, expenditure.
- Financial performance can be measured by the Earned Value system.

c) Staffing & team dynamics :

- The metric measures the personal change overtime
- It involves staffing, additions and deductions.

2) Quality Indicators :-

a) Changing traffic and stability :
  - This metric measures the change traffic over time.
  - Stability is the relation between opened vs. closed software change orders.

b) Breakage and Modularity :
  - This metric measures the breakage per change over time.
  - Breakage is defined as average extent of change.

c) Rework and Adaptibility :
  - This metric measures the rework per change overtime.
  - Adaptibility is defined as Rework trend overtime.

d) Mean time between failures and Maturity :
  - MTBF is the average usage time between software faults.
  - Maturity is defined as MTBF trend Overtime.

Metrics Automation :-

- Software process control pannel (SPCP) is essential for managing against the plan.
- To Implement the complete SPCP, the following are necessary.

  - Metric Data Premivities - trends, comparision & progressions.

  - A graphical User interface.

- Metric collection agents.
- Metric data management server.
- Metric definition - requirements, implements, Assesments, design, etc.
- Actors - Monitor & Administrator.

- The basic operation of SPCP can be described by the ~~programming~~ following top-level Use case.
  - Start the SPCP.
  - Select a channel preference.
  - Select a value (or) Graph metric.
  - Select to super impose control.
  - Drill down to trend.
  - Drill down to point in time.
  - Drill down to lower levels of information.
  - Drill down to lower levels of indicators.

Pragmatic Software Metrics :-

- Measuring is useful but it doesn't do any thinking for the decision makers.

- It only provides data to help them to ask right questions, understand the context and make objecti-ve decisions.

- Because of highly dynamic nature of software projects, the measures must be available at any time.

1. It is considered as meaningful ~~and~~ by the customer, manager and performer.

2. It demonstrates quantifiable correllation.

3. It is objective and Unambiguous.

4. It displays trends.

5. It is natural by product of the process.

Process Automation:-

- Process Automation is defined as the use of software and technolgies to automate business processes and function.

- Process Automation, defined as Organisational goals such as producing a product, hiring an employee (or) providing Customer service.

- There are three levels of process. They are:

    1. Meta process level
    2. Macro process level
    3. Micro process level.

1. Meta process level:-

- The automation support for this level is called as Infrastruction.

- This level of process include as policies, procedure and practices associated with an Organisation.

    - Preffered tools

    - project Performance guidelines.

    - Micro process guideline

    - Macro process guideline, etc.

2. Macro Process levels :-

- This level of process includes policies, procedures associated with an Organisation. project.
- The automation support for this level is called Environment.

3. Micro Process levels :-

- This level of process includes policies, procedures, and process are associated with project team.
- The automation support for this level is called as tool.

  - Document Automation
  - Metrices Automation
  - Work flow automation.