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Practical-1

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Aim :- Study of 12 steps of software metrics.

Q. What are software metrics?

⇒ "Software metrics are The continuous application of measurement based techniques to the software developement process and its products to supply meaningful and timely management information, together with the use of the techniques to improve that process and its products".

Introduction to twelve steps:-

steps 1-4: define customer needs, select metrics that match them
steps 5-10: designing, tailoring metrics: definition, models, counting criteria, benchmarks and objectives, reporting mechanisms.
steps 11-12: implementation issues: collection, minimising impact of human factors.

Step 1:- Identify Metrics customers

Person/people that will use the metric Customers may include: functional management,

project management, software engineers/programers, tests managers/testers, specialists, customers/users.

Step 2:- Target goals

As Basili stated in the goal/question/metric approach.

This step selects one or more measurable goals (e.g., on-time delievery, delivering the software with required level of quality/performance, etc).

Step3:- Ask Questions

Define questions that needs to be answered in order to ensure goals are obtained.

Step 4:- select metrics

Select the metrics that provide the information needed to answer these questions, answers that give objectives to the selected metrics.

An individual metrics performs one of four functions:

1) Understand software process, product, services
2) Evaluate against established standards and goals.
3) control resources and processes.
4) Predict attributes of software

Step 5:- standard definitions

Either use standardized definitions or create your own (but make them explicit & clear).

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step 6:- choose a measurement function
i.e. how you are going to calculate the metrics.

"If we try to include of all the elements that affect the attribute or characteristics the entity, our model can become so complicated that it's useless. Being pragmatic means not trying to create the most comprehensive model".

step 7:- Establish a measurement method.
Define Base measures, units and how they are to be calculated.
e.g., sLOC is well-known and widely accepted, but there is no industry-accepted standard on how to count lines of code.
Once selected, ~~comminuc~~ communicate it so others won't misunderstand or misuse it.

step 8:- Define Decision Criteria
According to the ISO 15939 standard, decision criteria are the "thresholds, targets, or patterns used to determine the need for action or further investigation, or to describe the level of confidence in a given result.

step 9:- Define report mechanisms
This includes defining the report-format, data extraction and reporting cycle, reporting mechanisms, distribution and availability.

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step 10:- Determine additional qualifiers.

A good metric is a generic metric ; try to find other view on the metric.

step 11:- Collect data

The owner of the data is probably the best person for generating the data because:

1) data is collected as it is being generated.
2) anomalies are more likely to be detected.
3) no duplicates in data recording.

Data collection has to be automated, for repeatability, for reducing human factor errors and for price.

step 12:- The people side of the metric equation.

Conclusion :-

A metrics program that is based on the goals of an organization will help communicate, measure progress towards and eventually attain those goals. People will work to accomplish what they believe to be important. A practical, systematic, start-to-finish method of selecting, designing and implementing software metrics is a valuable aid.