

Creating a Metrics Program

Step 1: Document the Software Process

Step 1 is to document current development procedures so that a company standard exists for all projects.

A software development process is simply the procedures that are followed to transform specified requirements into a software product. The objective of this step is to document these procedures so they can be applied consistently across projects. One of the benefits of a metrics program is that it forces a company to focus on how it develops software. There are always areas of the software development process that can be improved.

However, before improvements can be made to the development process, the process has to be identified. The best way to do so and to ensure that everyone is following that same process is to write it down. Many organizations do this in a corporate Quality Plan document. While this level of formalization is not required to use metrics, it certainly helps.

Another important reason for formally documenting the development process is the ability to compare data collected across various projects. To do this accurately, projects must be developed using consistent methods and procedures.

If the process is already documented, the measurement team may want to review the documentation for accuracy and to ensure that it is current.

The following procedures can be used either to document the software development process, or as a reference when reviewing existing process documentation.

Note that this is just one method of producing such documentation; other methods are equally useful. What is important is that the process be documented.

Procedures for Documenting the Process

- 1. Break the development effort into a set of major phases and list them in the order they will be performed.**

Begin the process documentation by describing the major phases of software development. Throughout this 8-Step program these phases are referred to as *activities*. Typical activities include Identify Requirements, High Level Design, Detailed Design and System Test.

- 2. Describe the inputs to each activity.**

Each activity should have a well-defined set of inputs, which are typically a subset of the outputs from preceding activities. Inputs include design documents, contracts, software, test reports, etc.

- 3. Describe the work that is performed in each activity.**

Decompose each activity into a detailed set of tasks which define how the outputs are to be produced. For example, a design activity could have tasks such as designing the user interface, designing the database structure, and preparing or reviewing a design document.

- 4. Describe the outputs from each activity.**

Each activity should have a defined set of outputs. Outputs include documents, software, reports, and any other items which are listed as inputs to a subsequent activity.

5. Determine the verification criteria for each activity.

Devise a set of verification criteria for each activity to ensure that the activity is complete, and that the work is in line with stated quality objectives. Sample verification criteria include the following:

- a list of documents to be reviewed and signed off
- a list of software to be coded and placed under configuration control
- a list of approvals to be obtained
- confirmation of code walkthroughs
- acceptable test status
- a list of documentation to be produced and reviewed

Now add details to the document describing project support tasks (such as defect resolution and tracking, configuration management, changes to software requirements, deviations from the stated process, or software estimation).

Actions Required for Step 1

1. Determine if a description of the software development process exists. Look for documents such as a *Quality Plan*, *Development Plan*, or *Project Plan*, which may contain descriptions of the process or the key process areas.
 2. If a description of the development process does exist, determine if it is being followed consistently throughout the company.
 - If it is being followed, then Step 1 is complete.
 - If it is not being followed, then update the process description to reflect the actual process the company is using.
 3. If a software development process description does not exist, meet with development managers to determine how the software is being developed.
 - Document the findings in a *Quality Plan*, other document, or with interoffice memos/email. Either follow the steps outlined in the preceding section “Procedures for Documenting the Process” or select a method that will work best for the company.
 - Review the work with the development managers to ensure that all agree on how software development should be carried out in the organization.
 4. Have senior management state that everyone must follow the documented process. Finally, gain the support of the development teams.
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Step 1 Example Process

Buddicorp Systems has hired you to find solutions to their existing quality and schedule problems. You begin creating a metrics program.

A quick investigation turns up an internal document describing the software development process. The document was written a while ago, and is now considerably out of date.

The project teams no longer adhere to the guidelines presented in the document, and develop software as they see fit. This is in response to having unrealistic development deadlines placed on them by a company trying desperately to get its products to market more quickly.

You decide to redo the development process document so that it reflects the way software is currently being developed. You conduct interviews with the project managers and come up with a representative process.

The process must be established as a company standard, so you document it, and then distribute the new process description for approval. Knowing that people will have concerns, you schedule a meeting to discuss the document, and gather suggestions. After a few modifications, you have a process that everyone supports.

Note: It is not uncommon to encounter resistance when establishing a formal development process. This is when you call upon the metrics program sponsor to step in and indicate that management is committed to the program, and that a formal development process will be adopted across the organization.

With the process in place, you can now focus on establishing the goals for your metrics program.