Quality Assurance Guidelines
For Projects at the
UNT Health Science Center

Section 4.8
Process for Evaluating the Effectiveness and Efficiency Of Information Resources Projects

for

Low QA Focus Projects

(Optional)

V1.1 3/1/01

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1. PURPOSE OF THE PROCESS

This process is designed to help UNT-HSC determine the measures it needs to evaluate information resources (IR) project effectiveness and efficiency, and show how to set up an appropriate measurement process. The measures are intended to provide insight into the effectiveness and efficiency of IR projects, facilitating evaluation of project status and providing the basis for proactive project control.

This process can be applied to any kind of IR project (indeed, to any kind of project.)

2. SCOPE OF THE PROCESS

This process covers the development, implementation, and operation of project measures that apply to project progress, product quality, and/or process effectiveness for a project.

"As a process, performance measurement is not simply concerned with collecting data associated with a predefined performance goal or standard. Performance measurement is better thought of as an overall management system involving prevention and detection aimed at achieving conformance of the work product or service to customer's requirements. Additionally, it is concerned with process optimization through increased efficiency and effectiveness of the process or product. These actions occur in a continuous cycle, allowing options for expansion and improvement of the work process or product as better techniques are discovered and implemented."

The effectiveness and efficiency measures of an IR project "should reflect the purpose, objective, and goals of the system. The criteria by which a project is measured should address the business or service delivery requirements of the system to effectively assess its success." <u>The problems, risks and lack of information associated with the project's purpose, objectives and goals drive the identification of the measures needed by the project.</u> The Issues-Categories-Measures Table included in the templates to this guideline shows common areas of issues, related categories of measures, and examples of specific measures that are useful to address issues in those areas. The project manager is encouraged to view this table to see illustrative examples.

The activities in the measurement process may be done slightly differently for different types of projects. This process has been tailored for Low Focus projects, which represent a very high percentage of projects at the UNT Health Science Center. The table below identifies the characteristics of Low Focus projects:

Characteristic	Low Focus
Budget (with implied effort)	Less than $500,000
Organizations Involved	work group within agency
Time to Deliver	less than 6 months to operation
Impact on Agency	Minimal change, or extends systems now in use
Impact Outside Agency	Affects mostly internal operations of the agency
Technology	Standard, proven agency technology
Supplier Involvement	Good experience in the past working with this supplier
System Complexity	standalone system

In addition, templates and tables have also been tailored for the Low QA Focus type of project. In some case, templates and/or tables have been identified as optional.

2.1 Activities

The activities in this process may be done slightly differently for different types of projects. The following table is tailored for the Low QA Focus project.

Activity	Low QA Focus
Tailor measures	Usually confined to a small number of critical issues, such as schedule, risks, and/or budget performance
Apply measures	Generally used for monitoring project performance

2.2 Roles

These roles may be handled differently for different types of projects. The following table is tailored for the Low QA Focus project.

Role	Low QA Focus
Measurement Analyst	Done by Project Manager
Project Management	Serves as Measurement Analyst

2.3 Deliverables

These deliverables may be done slightly differently for different types of projects. The following table is tailored for the Low QA Focus project.

Activity Deliverable	Low QA Focus
Measurement Plan (section of the Project Development Plan)	May use only standard organization measures, with no measurement plan
Reported analysis results	Informal notes and email communication

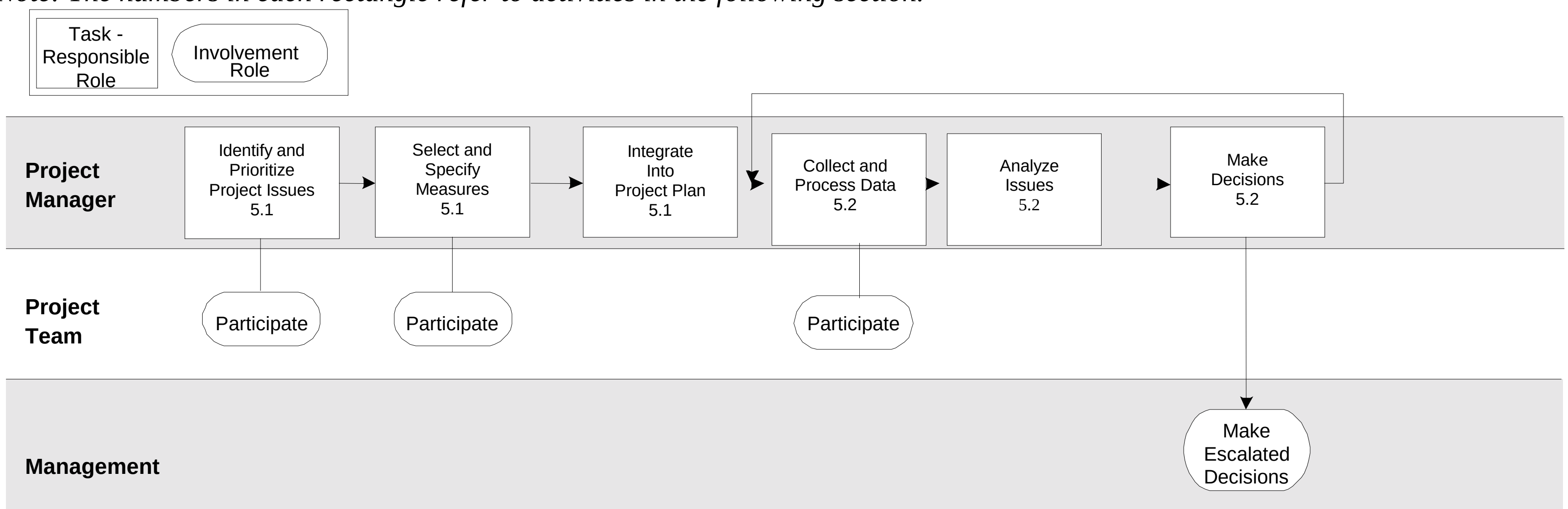
3. Roles in the Process

Those involved in project measurement include all affected by the issues to the project, who participate in identifying those issues and using the measurement results to handle them. In general, project team members provide the measurement data, which is processed by a measurement analyst, to generate results for those handling the issues and making decisions.

Role Names	Role Definitions
Management	• Uses measurement results to make organization-level decisions
Project Management	• Identifies and manages project effectiveness and efficiency issues • Uses measurement results to make project decisions
Project Team	• Uses measurement results in software engineering efforts • Provides measurement data

4. Graphical Overview of the Process

Note: The numbers in each rectangle refer to activities in the following section.



5. ACTIVITY DESCRIPTIONS

The following sections provide details on each activity: a description of the purpose, entry and exit criteria, and the sequence of tasks to be done. Tasks are shown along with the roles generally responsible and/or involved in those tasks. For the Low QA Focus projects, measures will be limited items that affect project performance such as schedule, staffing, and budgets. For more complex projects, there are several other approaches that can be taken when developing useful measures. The Goal-Question-Measure paradigm is commonly used for software systems. Practical Software Measurement (PSM) is another commonly used approach, which is well documented in publicly-available guidelines; thus, PSM is the approach used in this Guideline. (See References)

5.1 MEASURES

As a project team organizes its plan, it uses the tailoring process to identify its key issues (risks, problems, lack of information) and determine what measures to gather to help deal with those issues. Based on the project's objectives, constraints, risk analysis results, and other planning activities, the team identifies the project's key effectiveness and efficiency issues. As it considers measures to gather, the team attempts to define a set of measures that provides the greatest useful information at the lowest cost (see also *Process for Project Planning*.)

Purpose: To identify key issues and select a set of measures to handle those issues.

Entry Criteria:

- Risk analysis has been completed (see *Process for Analyzing and Managing Project Risk*)
- Project objectives, constraints and scope of work are clearly defined

Roles	Tasks
Project Manager, Project Team	• Identify and prioritize project issues - Review project risks, as well as organization risks that impact the project - Review project objectives and requirements, to identify any problems, items yet to be determined, open questions, or conflicts - Prioritize the set of project issues, selecting the top 2 to 3 as the key issues to handle
Project Manager, Project Team	• Select project measures to handle the key issues - Use the Issues Identification Worksheet to prioritize the issues - Identify the information needed for handling the issue, and the indicators (graphs, charts, tables) that would be useful for reporting that information

Roles	Tasks
	• Utilize the Measurement Specification Worksheet to document the measures that will be needed.
Project Manager	• Specify the measurement data requirements, identifying what information is to be gathered by whom at what point in the project • Specify the indicators to be used for reporting results - Identify activities to support measurement that need to be integrated into the project work breakdown structure

Exit Criteria:
- A measurement plan (as appropriate) had been developed

5.2 Apply Measures

As the project runs, the team uses this activity to gather the measures, analyze them, and use the results for decision-making. Risk and financial status information are also considered, along with results of the identified measures when making decisions. During analysis, additional questions may be raised and new issues identified, so this activity is iterative in nature.

Purpose: To collect and analyze the measurement data specified in the measurement plan, to provide objective information for project-level decisions.

Entry Criteria:
- Measurement Plan (section of the Project Development Plan, as appropriate) has been developed
- Project is executing, thereby creating measurement opportunities

Roles	Tasks
Project Team	• Provide data as defined in plan • Collect or access the data at the intervals agreed to in the plan, preserving anonymity of sources as appropriate • Verify accuracy and currency of the data • Process the data, to generate the agreed on indicators and reports
Project Manager	• Analyze results and address the project issues, using methods appropriate to the project need - Develop quality estimates - Analyze feasibility of Project Development Plan - Analyze performance against the Project Development Plan
Project Manager, Management	• Make decisions based on analysis - Review the issue or decision at hand - Review the measurement results and trends indicated - Determine best approach or decision, using the data - Define the required actions - Identify the expected results and relative cost/benefit of each

Roles	Tasks
	- Execute the actions and monitor the results

Exit Criteria: • The project is completed or terminated

6. Measures of the Measurement Program

Optional for Low QA Focus Projects

Measures that can be used to track and manage measurement activities include the following.

***Handling of Measurement Planning and Application* -** Track items such as the following:

- Effort required – compare the amount of measurement effort to what was expected
- Number of decisions traceable to measurement data; number of actions based on decisions that achieved desired outcome

Measures that are useful for handling project progress, product quality, and process effectiveness can be found in the Practical Software Measurement guidance. See the appendix on Additional Resources for how to locate that information.

7. Verification Activities

Optional for Low QA Focus Projects

During project effectiveness and efficiency measurement, the following verification activities are appropriate for management:

- Review the measurement assumptions and identified issues being used by the project manager and project team at the outset of measurement planning.
- Review drafts of project plan measurement sections as they are developed, to provide input and comments on selected measures, analysis approach and reporting strategy.
- Review the results of analysis, and particularly the decisions based on the analysis.

8. Document Control

Revision	Date	Description
1.1	3/01/01	First draft

A. References

Please see the following items, accessible separately:

- **Practical Software and Systems Measurement (PSM) –** provided are the 9 PDF files that comprise this document.

B. Supporting Templates

Please see the following items, accessible separately:

- **Issue Identification Worksheet – (Recommended) -** a template for identifying and prioritizing issues (problems, risks and lack of information,) with the rationale for the priority
- **Measurement Specification Worksheet for Data** – **(Recommended) -** a template to use in specifying the measures that will be used in the project
- **Example Measurement Specification Worksheet for Data – (Recommended) -** an example of a completed Measurement Specification Worksheet
- **Issues, Categories and Measures Table – (Recommended) -** generic classifications of issues, with their associated measurement categories and measures
- **Measures Tailoring Worksheet – (Optional)** - a template for use with the "Issues" items in this section. Facilitates identification of appropriate measurements for project issues
- **Software Measurement Plan Outline – (Optional)** an outline of topics for the Measurement Plan, generally incorporated as a section of the Project Development Plan

B. Supporting Checklists

Please see the following checklists, accessible separately:

- **Analysis Checklist for Estimation – (Optional)** - a checklist for use in evaluating the accuracy of a software Project Development Plan estimate
- **Analysis Checklist for Feasibility – (Recommended)** - a checklist for use in evaluating the feasibility of the Project Development Plan
- **Analysis Checklist for Performance – (Optional)** - a checklist for use in evaluating project performance against the Project Development Plan