Measurement Information Specification
Component Status
Version 3.0

Information Need Description	
Information Need	
Questions Addressed	Are components completing development activities as scheduled? Is the planned rate of completion realistic? What components are behind schedule?
Information Category	Schedule and Progress
Description	The Component Status measure counts the number of hardware or software components that complete a specific activity. A comparison of plans and actuals helps assess the status of development progress. Early in the development activity, planning changes should be expected. Later in the process, an increase in the planned number of components that are scheduled for a specific activity may indicate unplanned or excessive growth.

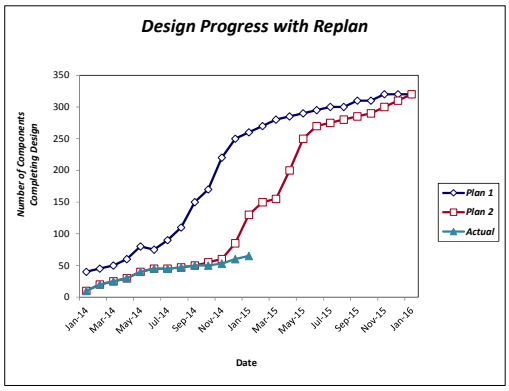
Measurable Concept	
Measurable Concept	Work Unit Progress

Entities and Attributes	
Relevant Entities	
Attributes	

Base Measure Specification	
Base Measures	• Total number of components • Number of components completed successfully
Measurement Methods	
Type of Method	
Scale	
Type of Scale	
Unit of Measurement	
Categorization	• Increment • Type of activity or process
Typical Aggregation Structure	• Component
Typically Collected for Each	• CI or equivalent

Count Actuals Based on	• Completion of component reviews, inspections, or walkthroughs • Successful completion of specified test • Release to configuration management • Resolution of action items

Derived Measure Specification	
Derived Measure	
Measurement Function	

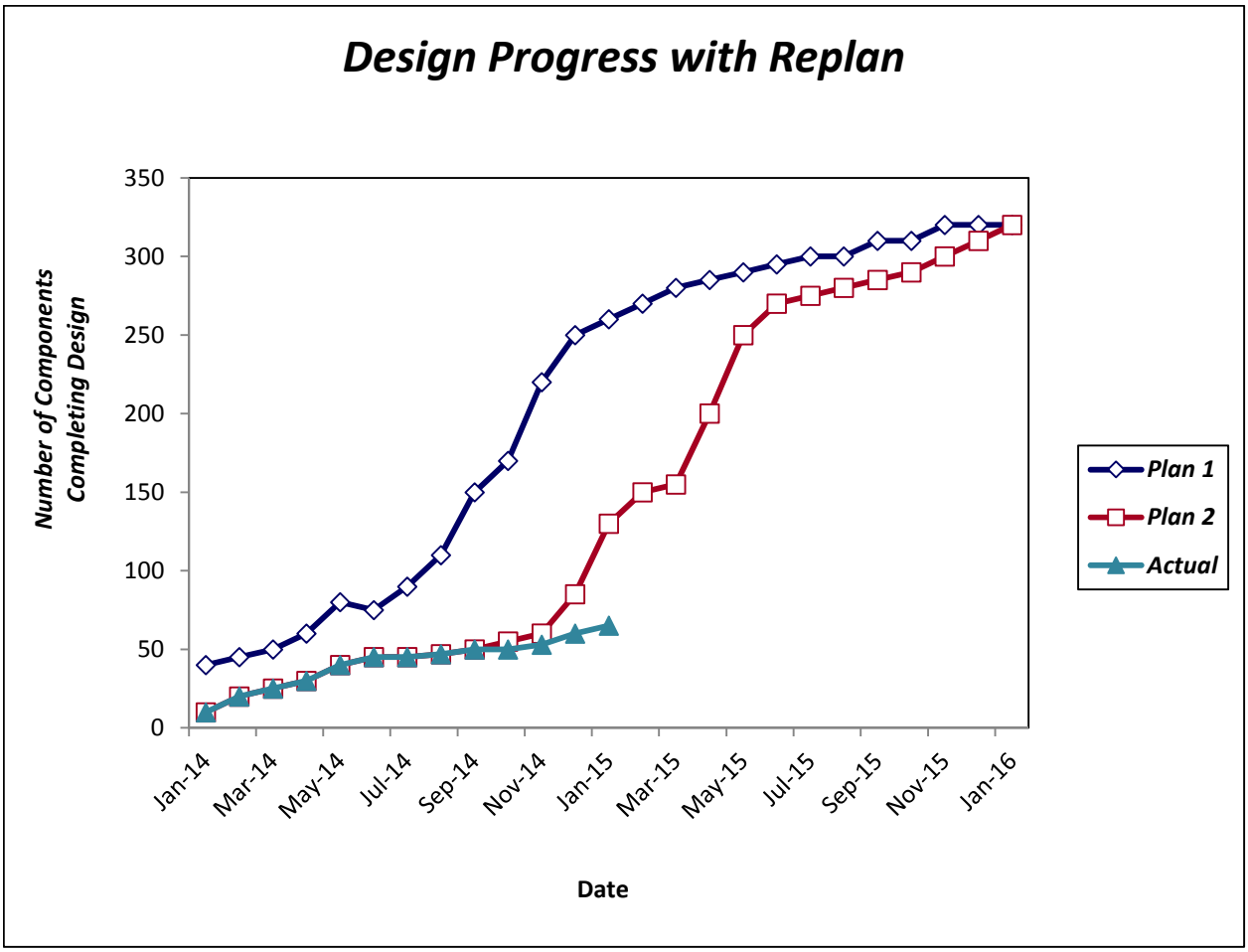
Indicator Specification	
Analysis guidance and examples	Analyzing component status helps identify or predict schedule slips by comparing the number of work units or components completing a project phase to the number planned for completion to date. In the example in Figure 5-14, design progress is graphed with a line chart depicting cumulative measures for the original plan (Plan 1), the current plan (Plan 2), and the actual components designed to date. Each point is calculated by adding the number of components allocated for the reporting period to the corresponding cumulative total from the last reporting period. The figure shows that design progress was behind the original plan at the end of August 1999, resulting in a replan of the overall activity. Actual design progress has remained fairly close to the new plan (Plan 2). The plan line, however, requires a significant increase in the completion rate over the next few months, raising concern about the feasibility of the plan. Major changes in the rate of progress should be investigated. Once an actual trend line is established, it is difficult to modify the rate of completion. A 10-percent cumulative deviation, or 20-percent-per-period deviation from the plan usually is viewed as significant. 
Analysis Model	
Decision Criteria	

Indicator Interpretation	

Data Collection Procedure (for each Base Measure) ***Complete this section for each base measure listed on the previous page.***	
Frequency of Data Collection	
Responsible Individual	
Phase or Activity in which Collected	
Tools Used in Data Collection	
Verification and Validation	
Repository for Collected Data	

Data Analysis Procedure (for each Indicator)	
Frequency of Data Reporting	
Responsible Individual	
Phase or Activity in which Analyzed	
Source of Data for Analysis	
Tools Used in Analysis	
Review, Report, or User	

Additional Information	
Additional Analysis Guidance	**Additional Analysis** A more detailed analysis is usually required when actual progress lags behind planned progress. For example, an additional indicator showing progress by subsystem may identify which components are most behind. Staffing levels, experience levels, changes in scope, and quality problems may all contribute to a lack of progress and should be investigated. **Lessons Learned** To accurately assess component status, measures must be based on objective exit criteria (such as checking a component design into the configuration management library). Criteria should be documented. • Progress can be measured for individual processes such as preliminary design, detailed design, implementation, component test, and CI test
Implementation Considerations	
Project Application	• Usually used on medium to large projects.
Process integration	• Easier to collect if formal reviews, inspections, or walkthroughs are included in the development process. • Data is sometimes available from configuration management systems or development tools. • Data is generally available if there is a mature and disciplined development process. • Component status during test activities requires a disciplined testing process with separate tests per component(s) allocated to defined test sequences. • Component status during test activities can be applied for each unique test sequence, including "dry-runs." • Component status during system test activities is generally one of the more difficult Work Unit Progress measures to collect since most integration and test activities are based on requirements or functions instead of components. • For software components, the most common unit is a source code component.
Usually Applied During	• Requirements Analysis (Estimates) • Design (Estimates and Actuals) • Implementation (Estimates and Actuals) • Integration and Test (Estimates and Actuals) • Operations and Maintenance (Estimates and Actuals)
Alternatives Include	


Design Progress with Replan
Number of Components Completing Design
350
300
250
200
150
100
50
0
Jan-14
Mar-14
May-14
Jul-14
Sep-14
Nov-14
Jan-15
Mar-15
May-15
Jul-15
Sep-15
Nov-15
Jan-16
Date
Plan 1
Plan 2
Actual