

# Appendix D: Glossary

The glossary defines the basic terms used in CMMI models. Glossary entries are typically multiple-word terms consisting of a noun and one or more restrictive modifiers. (There are some exceptions to this rule that account for one-word terms in the glossary.)

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To formulate definitions appropriate for CMMI, we consulted multiple sources. We first consulted the Merriam-Webster OnLine dictionary (<http://www.m-w.com>) and the source models (i.e., CMMI v1.2, EIA 731, SW-CMM v2, draft C, and IPD-CMM v0.98). We also consulted other standards as needed, including the following:

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- ISO 9000 [ISO 2000]
- ISO/IEC 12207 [ISO 1995]
- ISO/IEC 15504 [ISO 2006]
- ISO/IEC 15288 [ISO 2002a]
- ISO/IEC 15939 [ISO 2002b]
- ISO 20000-1 [ISO 2005]
- IEEE [IEEE 1991]
- CobiT v. 4.0 [IT Governance 2005]
- SW-CMM v1.1
- EIA 632 [EIA 2003]
- SA-CMM [SEI 2002]
- P-CMM [Curtis 2001]

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We developed the glossary recognizing the importance of using terminology that all model users can understand. We also recognized that words and terms can have different meanings in different contexts and environments. The glossary in CMMI models is designed to document the meanings of words and terms that should have the widest use and understanding by users of CMMI products.

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Because CMMI for Acquisition was designed to apply to acquisition environments for both products and services, many of the terms in the glossary include both products and services in their definitions.

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acceptance criteria

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Glossary

The criteria that a **deliverable** must satisfy to be accepted by a user, customer, or other authorized entity. (See also “**deliverable**.”)

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### acceptance testing

Formal testing conducted to enable a user, customer, or other authorized entity to determine whether to accept a **deliverable**. (See also “unit testing.”)

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### achievement profile

In the continuous representation, a list of process areas and their corresponding capability levels that represent the organization’s progress for each process area while advancing through the capability levels. (See also “capability level profile,” “target profile,” and “target staging.”)

### acquirer

The stakeholder that acquires or procures a product or service from a supplier. (See also “stakeholder.”)

### acquisition

The process of obtaining products or services through **supplier agreements**. (See also “**supplier agreement**.”)

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### acquisition strategy

The specific approach to acquiring products and services that is based on considerations of supply sources, acquisition methods, requirements specification types, contract or agreement types, and related acquisition risks.

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### adequate

Interpret goals and practices in light of the organization’s business objectives. When using any CMMI model, practices should be interpreted in a way that works for the organization. This term is used in goals and practices in which certain activities may not be equally relevant in all situations. (See also “appropriate” and “as needed.”)

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### allocated requirement

Requirement that levies all or part of the performance and functionality of a higher level requirement on a lower level architectural element or design component.

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### alternative practice

A practice that is a substitute for one or more generic or specific practices contained in CMMI models that achieves an equivalent effect toward satisfying the generic or specific goal associated with it. Alternative practices are not necessarily one-for-one replacements for generic or specific practices.

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### amplifications

Amplifications are informative model components that contain information relevant to a particular discipline. For example, to find **amplifications** for software engineering, look in the model for items labeled “For Software Engineering.” The same is true for **amplifications for** other disciplines.

**appraisal**

In the CMMI Product Suite, an examination of one or more processes by a trained team of professionals using an appraisal reference model as the basis for determining, at a minimum, strengths and weaknesses. (See also “assessment.”)

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**appraisal findings**

The results of an appraisal that identify the most important issues, problems, or opportunities for process improvement within the appraisal scope. Appraisal findings are inferences drawn from corroborated objective evidence.

**appraisal participants**

Members of the organizational unit who participate in providing information during an appraisal.

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**appraisal rating**

As used in CMMI appraisal materials, the value assigned by an appraisal team to (a) a CMMI goal or process area, (b) the capability level of a process area, or (c) the maturity level of an organizational unit. A rating is determined by enacting the defined rating process for the appraisal method being employed.

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**appraisal reference model**

As used in CMMI appraisal materials, the CMMI model to which an appraisal team correlates implemented process activities.

**appraisal scope**

The definition of the boundaries of an appraisal encompassing the organizational limits and CMMI model limits within which the processes to be investigated operate.

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**appraisal team leader**

A person who leads the activities of an appraisal and has satisfied qualification criteria for experience, knowledge, and skills defined by the appraisal method.

**appropriate**

Interpret goals and practices in light of the organization’s business objectives. When using any CMMI model, practices should be interpreted in a way that works for the organization. This term is used in goals and practices in which certain activities may not be equally relevant in all situations. (See also “adequate” and “as needed.”)

**as needed**

Interpret goals and practices in light of the organization’s business objectives. When using any CMMI model, practices should be interpreted in a way that works for the organization. This term is used in goals and practices in which certain activities may not be equally relevant in all situations. (See also “adequate” and “appropriate.”)

**assessment**

In the CMMI Product Suite, an appraisal that an organization does internally for the purposes of process improvement. The word assessment is also used in the CMMI Product Suite in an everyday English sense (e.g., risk assessment). (See also “appraisal.”)

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### assignable cause of process variation

In CMMI, the term “special cause of process variation” is used in place of “assignable cause of process variation” to ensure consistency. The two terms are defined identically. (See “special cause of process variation.”)

### audit

In CMMI process improvement work, an objective examination of a work product or set of work products against specific criteria (e.g., requirements).

### base measure

A distinct property or characteristic of an entity and the method for quantifying it. (See also “derived measures.”)

### baseline

A set of specifications or work products that has been formally reviewed and agreed on, which thereafter serves as the basis for further development, and which can be changed only through change control procedures. (See also “configuration baseline” and “product baseline.”)

### bidirectional traceability

An association among two or more logical entities that is discernable in either direction (i.e., to and from an entity). (See also “requirements traceability” and “traceability.”)

### business objectives

(See “organization’s business objectives.”)

### capability level

Achievement of process improvement within an individual process area. A capability level is defined by appropriate specific and generic practices for a process area. (See also “generic goal,” “generic practice,” “maturity level,” and “process area.”)

Deleted: **capability evaluation¶**  
An appraisal by a trained team of professionals used as a discriminator to select suppliers, to monitor suppliers against the contract, or to determine and enforce incentives. Evaluations are used to gain insight into the process capability of a supplier organization and are intended to help decision makers make better acquisition decisions, improve subcontractor performance, and provide insight to a purchasing organization. (See also “appraisal” and “assessment.”)¶

### capability level profile

In the continuous representation, a list of process areas and their corresponding capability levels. (See also “achievement profile,” “target profile,” and “target staging.”)

A **capability level** profile may be an achievement profile when it represents the organization’s progress for each process area while advancing through the capability levels. Or, **it** may be a target profile when it represents an objective for process improvement.

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### capability maturity model

A model that contains the essential elements of effective processes for one or more disciplines and describes an evolutionary improvement path from ad hoc, immature processes to disciplined, mature processes with improved quality and effectiveness.

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**capable process**

A process that can satisfy its specified product quality, service quality, and process-performance objectives. (See also “stable process,” “standard process,” and “statistically managed process.”)

**causal analysis**

The analysis of defects to determine their cause.

**change management**

Judicious use of means to effect a change, or a proposed change, to a product or service. (See also “configuration management.”)

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**CMMI Framework**

The basic structure that organizes CMMI components, including elements of current CMMI models as well as rules and methods for generating models, appraisal methods (including associated artifacts), and training materials. The framework enables new disciplines to be added to CMMI so that they will integrate with the existing ones. (See also “CMMI model” and “CMMI Product Suite.”)

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**CMMI model**

A model generated from the CMMI Framework. (See also “CMMI Framework” and “CMMI Product Suite.”)

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**CMMI model component**

Any of the main architectural elements that compose a CMMI model. Some of the main elements of a CMMI model include specific practices, generic practices, specific goals, generic goals, process areas, capability levels, and maturity levels.

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**CMMI Product Suite**

The complete set of products developed around the CMMI concept. These products include the framework itself, models, appraisal methods, appraisal materials, and training materials. (See also “CMMI Framework” and “CMMI model.”)

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**common cause of process variation**

The variation of a process that exists because of normal and expected interactions among components of a process. (See also “special cause of process variation.”)

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**concept of operations**

(See “operational concept.”)

**configuration audit**

An audit conducted to verify that a configuration item, or a collection of configuration items that make up a baseline, conforms to a specified standard or requirement. (See also “audit,” “configuration item,” “functional configuration audit,” and “physical configuration audit.”)

**configuration baseline**

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**Glossary**

The configuration information formally designated at a specific time during a product's or product component's life. Configuration baselines, plus approved changes from those baselines, constitute the current configuration information. (See also "product lifecycle.")

### **configuration control**

An element of configuration management consisting of the evaluation, coordination, approval or disapproval, and implementation of changes to configuration items after formal establishment of their configuration identification. (See also "configuration identification," "configuration item," and "configuration management.")

### **configuration control board**

A group of people responsible for evaluating and approving or disapproving proposed changes to configuration items, and for ensuring implementation of approved changes. (See also "configuration item.")

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Configuration control boards are also known as change control boards.

### **configuration identification**

An element of configuration management consisting of selecting the configuration items for a product, assigning unique identifiers to them, and recording their functional and physical characteristics in technical documentation. (See also "configuration item," "configuration management," and "product.")

### **configuration item**

An aggregation of work products that is designated for configuration management and treated as a single entity in the configuration management process. (See also "configuration management.")

### **configuration management**

A discipline applying technical and administrative direction and surveillance to (1) identify and document the functional and physical characteristics of a configuration item, (2) control changes to those characteristics, (3) record and report change processing and implementation status, and (4) verify compliance with specified requirements. (See also "configuration audit," "configuration control," "configuration identification," and "configuration status accounting.")

### **configuration status accounting**

An element of configuration management consisting of the recording and reporting of information needed to manage a configuration effectively. This information includes a list of the approved configuration, the status of proposed changes to the configuration, and the implementation status of approved changes. (See also "configuration identification" and "configuration management.")

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### **continuous representation**

A capability maturity model structure wherein capability levels provide a recommended order for approaching process improvement within each specified process area. (See also "capability level," "process area," and "staged representation.")

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**contractual requirements**

The result of the analysis and refinement of customer requirements into a set of requirements suitable to be included in one or more solicitation packages, formal contracts, or supplier agreements between the acquirer and other appropriate organizations. (See also “acquirer,” “customer requirement,” “supplier agreement,” and “solicitation package.”)

Contractual requirements include both technical and nontechnical requirements necessary for the acquisition of a product or service.

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**corrective action**

Acts or deeds used to remedy a situation, remove an error, or adjust a condition.

**commercial off-the-shelf**

Items that can be purchased from a commercial supplier.

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**customer**

The party (individual, project, or organization) responsible for accepting the product or for authorizing payment. The customer is external to the project (except possibly when integrated teams are used) but not necessarily external to the project’s organization. The customer may be a higher level project. Customers are a subset of stakeholders. (See also “stakeholder.”)

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In most cases where this term is used, the preceding definition is intended; however, in some contexts, the term “customer” is intended to include other relevant stakeholders. (See also “customer requirement.”)

**customer requirement**

The result of eliciting, consolidating, and resolving conflicts among the needs, expectations, constraints, and interfaces of the product’s relevant stakeholders in a way that is acceptable to the customer. (See also “customer.”)

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**data**

Recorded information, regardless of the form or method of recording, including technical data, computer software documents, financial information, management information, representation of facts, numbers, or datum of any nature that can be communicated, stored, and processed.

**data management**

The disciplined processes and systems that plan for, acquire, and provide stewardship for business and technical data, consistent with data requirements, throughout the data lifecycle.

**defect density**

Number of defects per unit of product size (e.g., problem reports per thousand lines of code).

**defined process**

A managed process that is tailored from the organization’s set of standard processes according to the organization’s tailoring guidelines; has a maintained process description; and contributes work products, measures, and other process improvement information to organizational process assets. (See also “managed process” and “measure.”)

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**deliverable**

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An item to be provided to an acquirer or other designated recipient as specified in an agreement. This item can be a document, hardware item, software item, service, or any type of work product. (See also “acquirer.”)

### derived measure

Measure that is defined as a function of two or more values of base measures. (See also “base measure.”)

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### derived requirements

Requirements that are not explicitly stated in customer requirements, but are inferred (1) from contextual requirements (e.g., applicable standards, laws, policies, common practices, and management decisions), or (2) from requirements needed to specify a product or service component. Derived requirements can also arise during analysis and design of components of the product or service. (See also “product requirements.”)

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### design review

A formal, documented, comprehensive, and systematic examination of a design to determine if the design meets the applicable requirements, to identify problems, and to propose solutions.

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### development

In the CMMI Product Suite, not only development activities but also maintenance activities, Development projects that benefit from CMMI best practices, can focus on development, maintenance, or both.

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### development plan

A plan for guiding, implementing, and controlling the design and development of one or more products or services. (See also “product lifecycle” and “project plan.”)

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### discipline

In the CMMI Product Suite, the bodies of knowledge available when selecting a CMMI model (e.g., systems engineering). The CMMI Product Team envisions that other bodies of knowledge will be integrated into the CMMI Framework in the future.

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### document

A collection of data, regardless of the medium on which it is recorded, that generally has permanence and can be read by humans or machines. So, documents include both paper and electronic documents.

### enterprise

The full composition of a company. A company may consist of many organizations in many locations with different customers. (See also “organization.”)

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### entry criteria

States of being that must be present before an effort can begin successfully.

### equivalent staging

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A target staging, created using the continuous representation, which is defined so that the results of using the target staging can be compared to maturity levels of the staged representation. (See also “capability level profile,” “maturity level,” “target profile,” and “target staging.”)

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Such staging permits benchmarking of progress among organizations, enterprises, and projects, regardless of the CMMI representation used. The organization may implement components of CMMI models beyond those reported as part of equivalent staging. Equivalent staging is only a measure to relate how the organization is compared to other organizations in terms of maturity levels.

**establish and maintain**

This phrase means more than a combination of its component terms; it includes documentation and usage. For example, “Establish and maintain an organizational policy for planning and performing the organizational process focus process” means that not only must a policy be formulated, but it also must be documented, and it must be used throughout the organization.

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**evidence**

(See “objective evidence.”)

**executive**

(See “senior manager.”)

**exit criteria**

States of being that must be present before an effort can end successfully.

**expected CMMI components**

CMMI components that explain what may be done to satisfy a required CMMI component. Model users can implement the expected components explicitly or implement equivalent alternative practices to these components. Specific and generic practices are expected model components.

**findings**

(See “appraisal findings.”)

**formal evaluation process**

A structured approach to evaluating alternative solutions against established criteria to determine a recommended solution to address an issue.

**framework**

(See “CMMI Framework.”)

**functional analysis**

Examination of a defined function to identify all the subfunctions necessary to accomplish that function; identification of functional relationships and interfaces (internal and external) and capturing these in a functional architecture; and flow down of upper level performance requirements and assignment of these requirements to lower level subfunctions. (See also “functional architecture.”)

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**Glossary**

## functional architecture

The hierarchical arrangement of functions, their internal and external (external to the aggregation itself) functional interfaces and external physical interfaces, their respective functional and performance requirements, and their design constraints.

## functional configuration audit

An audit conducted to verify that the development of a configuration item has been completed satisfactorily, that the item has achieved the performance and functional characteristics specified in the functional or allocated configuration identification, and that its operational and support documents are complete and satisfactory. (See also “configuration audit,” “configuration management,” and “physical configuration audit.”)

## generic goal

A required model component that describes characteristics that must be present to institutionalize processes that implement a process area. (See also “institutionalization.”)

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## generic practice

An expected model component that is considered important in achieving the associated generic goal. The generic practices associated with a generic goal describe the activities that are expected to result in achievement of the generic goal and contribute to the institutionalization of the processes associated with a process area.

## generic practice elaboration

An informative model component that appears after a generic practice to provide guidance on how the generic practice should be applied to the process area. (This model component is not present in all CMMI models.)

## goal

A required CMMI component that can be either a generic goal or a specific goal. The word goal in a CMMI model always refers to a model component (e.g., generic goal and specific goal). (See also “generic goal,” “objective,” and “specific goal.”)

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## hardware engineering

The application of a systematic, disciplined, and quantifiable approach to transforming a set of requirements that represent the collection of stakeholder needs, expectations, and constraints, using documented techniques and technology to design, implement, and maintain a tangible product. (See also “software engineering” and “systems engineering.”)

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In CMMI, hardware engineering represents all technical fields (e.g., electrical or mechanical) that transform requirements and ideas into tangible and producible products.

## higher level management

The person or persons who provide the policy and overall guidance for the process, but do not provide the direct day-to-day monitoring and controlling of the process. Such persons belong to a level of management in the organization above the immediate level responsible for the process and can be (but are not necessarily) senior managers. (See also “senior manager.”)

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## incomplete process

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A process that is not performed or is performed only partially (also known as capability level 0). One or more of the specific goals of the process area are not satisfied.

**informative CMMI components**

CMMI components that help model users understand the required and expected components of a model. These components can contain examples, detailed explanations, or other helpful information. Subpractices, notes, references, goal titles, practice titles, sources, typical work products, amplifications, and generic practice elaborations are informative model components.

**institutionalization**

The ingrained way of doing business that an organization follows routinely as part of its corporate culture.

**integrated team**

A group of people with complementary skills and expertise who are committed to delivering specified work products in timely collaboration. Integrated team members provide skills and advocacy appropriate to all phases of the work products' life and are collectively responsible for delivering work products as specified. An integrated team should include empowered representatives from organizations, disciplines, and functions that have a stake in the success of the work products.

**Deleted: integrated product and process development¶**  
A systematic approach to product development that achieves a timely collaboration of relevant stakeholders throughout the product lifecycle to better satisfy customer needs.¶  
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**interface control**

In configuration management, the process of (1) identifying all functional and physical characteristics relevant to the interfacing of two or more configuration items provided by one or more organizations, and (2) ensuring that proposed changes to these characteristics are evaluated and approved prior to implementation. (See also "configuration item" and "configuration management.")

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**lifecycle model**

A partitioning of the life of a product, service, or project into phases.

**managed process**

A performed process that is planned and executed in accordance with policy; employs skilled people having adequate resources to produce controlled outputs; involves relevant stakeholders; is monitored, controlled, and reviewed; and is evaluated for adherence to its process description. (See also "performed process.")

**manager**

In the CMMI Product Suite, a person who provides technical and administrative direction and control to those performing tasks or activities within the manager's area of responsibility. The traditional functions of a manager include planning, organizing, directing, and controlling work within an area of responsibility.

**maturity level**

Degree of process improvement across a predefined set of process areas in which all goals in the set are attained. (See also "capability level" and "process area.")

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**measure (noun)**

Variable to which a value is assigned as a result of measurement. (See also “base measure,” “derived measure,” and “measurement.”)

**measurement**

A set of operations to determine the value of a measure. (See also “measure.”)

**memorandum of agreement**

Binding document of understanding or agreement between two or more parties. Also known as a “memorandum of understanding.”

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**natural bounds**

The inherent process reflected by measures of process performance; sometimes referred to as “voice of the process.”

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Techniques such as control charts, confidence intervals, and prediction intervals are used to determine whether the variation is due to common causes (i.e., the process is predictable or stable) or is due to some special cause that can and should be identified and removed. (See also “measure” and “process performance.”)

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**nondevelopmental item**

An item that was developed prior to its current use in an acquisition or development process. Such an item may require minor modifications to meet the requirements of its current intended use.

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**nontechnical requirements**

Requirements affecting product and service acquisition or development that are not properties of the product or service.

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Examples include numbers of products or services to be delivered, data rights for delivered COTS, nondevelopmental items, delivery dates, and milestones with exit criteria. Other nontechnical requirements include work constraints associated with training, site provisions, and deployment schedules.

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**objective**

When used as a noun in the CMMI Product Suite, the term *objective* replaces the word *goal* as used in its common everyday sense, since the word *goal* is reserved for use when referring to CMMI model components called *specific goals* and *generic goals*. (See also “goal.”)

**objective evidence**

As used in CMMI appraisal materials, documents or interview results used as indicators of the implementation or institutionalization of model practices. Sources of objective evidence can include instruments, presentations, documents, and interviews. (See also “institutionalization.”)

**objectively evaluate**

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To review activities and work products against criteria **that** minimize subjectivity and bias by the reviewer. An example of an objective evaluation is an audit against requirements, standards, or procedures by an independent quality assurance function. (See also “audit.”)

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**observation**

As used in CMMI appraisal materials, a written record that represents the appraisal team members’ understanding of information either seen or heard during appraisal data collection activities. The written record may take the form of a statement or may take alternative forms as long as the content is preserved.

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**operational concept**

A general description of the way in which an entity is used or operates. (Also known as “concept of operations.”)

**operational scenario**

A description of an imagined sequence of events that includes the interaction of the product or service with its environment and users, as well as interaction among its product or service components. Operational scenarios are used to evaluate the requirements and design of the system and to verify and validate the system.

**optimizing process**

A quantitatively managed process that is improved based on an understanding of the common causes of variation inherent in the process. The focus of an optimizing process is on continually improving the range of process performance through both incremental and innovative improvements. (See also “common cause of process variation,” “defined process,” and “quantitatively managed process.”)

**organization**

An administrative structure in which people collectively manage one or more projects as a whole, and whose projects share a senior manager and operate under the same policies. However, the word *organization* as used throughout CMMI models can also apply to one person who performs a function in a small organization that might be performed by a group of people in a large organization. (See also “enterprise” and “organizational unit.”)

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**organizational maturity**

The extent to which an organization has explicitly and consistently deployed processes that are documented, managed, measured, controlled, and continually improved. Organizational maturity may be measured via appraisals.

**organizational policy**

A guiding principle typically established by senior management that is adopted by an organization to influence and determine decisions.

**organizational process assets**

Artifacts that relate to describing, implementing, and improving processes (e.g., policies, measurements, process descriptions, and process implementation support tools). The term *process assets* is used to indicate that these artifacts are developed or acquired to meet the business objectives of the organization, and **that** they represent investments by the

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**Glossary**

organization that are expected to provide current and future business value. (See also “process asset library.”)

### organizational unit

The part of an organization that is the subject of an appraisal. An organizational unit deploys one or more processes that have a coherent process context and operates within a coherent set of business objectives. An organizational unit is typically part of a larger organization, although in a small organization, the organizational unit may be the whole organization.

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### organization’s business objectives

Senior management developed strategies designed to ensure an organization’s continued existence and enhance its profitability, market share, and other factors influencing the organization’s success. (See also “quality and process-performance objectives” and “quantitative objective.”)

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Such objectives may include reducing the number of change requests during a system’s integration phase, reducing development cycle time, increasing the number of errors found in a product’s first or second phase of development, and reducing the number of customer-reported defects when applied to systems engineering activities.

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### organization’s measurement repository

A repository used to collect and make measurement data available on processes and work products, particularly as they relate to the organization’s set of standard processes. This repository contains or references actual measurement data and related information needed to understand and analyze measurement data.

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### organization’s process asset library

A library of information used to store and make process assets available that are useful to those who are defining, implementing, and managing processes in the organization. This library contains process assets that include process-related documentation such as policies, defined processes, checklists, lessons-learned documents, templates, standards, procedures, plans, and training materials.

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### organization’s set of standard processes

A collection of definitions of the processes that guide activities in an organization. These process descriptions cover the fundamental process elements (and their relationships to each other, such as ordering and interfaces) that must be incorporated into the defined processes that are implemented in projects across the organization. A standard process enables consistent development and maintenance activities across the organization and is essential for long-term stability and improvement. (See also “defined process” and “process element.”)

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### outsourcing

(See “acquisition.”)

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### peer review

The review of work products performed by peers during development of the work products to identify defects for removal. The term *peer review* is used in the CMMI Product Suite instead of the term *work product inspection*. (See also “work product.”)

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**performed process**

A process that accomplishes the needed work to produce work products. The specific goals of the process area are satisfied.

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The measures of effectiveness and other key measures used to guide and control progressive development.¶

**physical configuration audit**

An audit conducted to verify that a configuration item, as built, conforms to the technical documentation that defines and describes it. (See also “configuration audit,” “configuration management,” and “functional configuration audit.”)

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**planned process**

A process that is documented by both a description and a plan. The description and plan should be coordinated, and the plan should include standards, requirements, objectives, resources, and assignments.

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**policy**

(See “organizational policy.”)

**process**

In the CMMI Product Suite, activities that can be recognized as implementations of practices in a CMMI model. These activities can be mapped to one or more practices in CMMI process areas to allow a model to be useful for process improvement and process appraisal. (See also “process area,” “subprocess,” and “process element.”)

There is a special use of the phrase *the process* in the statements and descriptions of the generic goals and generic practices. *The process*, as used in Part Two, is the process or processes that implement the process area.

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**process action plan**

A plan, usually resulting from appraisals, that documents how specific improvements targeting the weaknesses uncovered by an appraisal will be implemented.

**process action team**

A team that has the responsibility to develop and implement process improvement activities for an organization as documented in a process action plan.

**process and technology improvements**

Incremental and innovative improvements to processes and to process, product, or service technologies.

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**process architecture**

The ordering, interfaces, interdependencies, and other relationships among the process elements in a standard process. Process architecture also describes the interfaces, interdependencies, and other relationships between process elements and external processes (e.g., contract management).

**process area**

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A cluster of related practices in an area that, when implemented collectively, **satisfies** a set of goals considered important for making improvement in that area. All CMMI process areas are common to both continuous and staged representations.

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### process asset

Anything the organization considers useful in attaining the goals of a process area. (See also “organizational process assets.”)

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### process asset library

A collection of process asset holdings that can be used by an organization or project. (See also “organization’s process asset library.”)

### process attribute

A measurable characteristic of process capability applicable to any process.

### process capability

The range of expected results that can be achieved by following a process.

### process context

The set of factors, documented in the appraisal input, that influences the judgment and comparability of appraisal ratings.

These factors include but are not limited to (a) the size of the organizational unit to be appraised; (b) the demographics of the organizational unit; (c) the application domain of the products or services; (d) the size, criticality, and complexity of the products or services; and (e) the quality characteristics of the products or services.

### process definition

The act of defining and describing a process. The result of process definition is a process description. (See also “process description.”)

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### process description

A documented expression of a set of activities performed to achieve a given purpose.

A process description provides an operational definition of the major components of a process. The description specifies, in a complete, precise, and verifiable manner, the requirements, design, behavior, or other characteristics of a process. It also may include procedures for determining whether these provisions have been satisfied. Process descriptions can be found at the activity, project, or organizational level.

### process element

The fundamental unit of a process. A process can be defined in terms of subprocesses or process elements. A subprocess can be further decomposed into subprocesses or process elements; a process element cannot. (See also “process” and “subprocess.”)

Each process element covers a closely related set of activities (e.g., estimating element and peer review element). Process elements can be portrayed using templates to be completed, abstractions to be refined, or descriptions to be modified or used. A process element can be an activity or task.

### process group

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A collection of specialists who facilitate the definition, maintenance, and improvement of processes used by the organization.

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**process improvement**

A program of activities designed to improve the performance and maturity of the organization's processes, and the results of such a program.

**process improvement objectives**

A set of target characteristics established to guide the effort to improve an existing process in a specific, measurable way either in terms of resultant product or service characteristics (e.g., quality, performance, and conformance to standards) or in the way in which the process is executed (e.g., elimination of redundant process steps, combination of process steps, and improvement of cycle time). (See also "organization's business objectives" and "quantitative objective.")

**process improvement plan**

A plan for achieving organizational process improvement objectives based on a thorough understanding of current strengths and weaknesses of the organization's processes and process assets.

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**process measurement**

A set of operations used to determine values of measures of a process and its resulting products or services for the purpose of characterizing and understanding the process. (See also "measurement.")

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**process owner**

The person (or team) responsible for defining and maintaining a process. At the organizational level, the process owner is the person (or team) responsible for the description of a standard process; at the project level, the process owner is the person (or team) responsible for the description of the defined process. A process may therefore have multiple owners at different levels of responsibility. (See also "defined process" and "standard process.")

**process performance**

A measure of actual results achieved by following a process. It is characterized by both process measures (e.g., effort, cycle time, and defect removal efficiency) and product or service measures (e.g., reliability, defect density, and response time). (See also "measure.")

**process-performance baseline**

A documented characterization of actual results achieved by following a process, which is used as a benchmark for comparing actual process performance against expected process performance. (See also "process performance.")

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**process-performance model**

A description of relationships among attributes of a process and its work products that is developed from historical process-performance data and calibrated using collected process and product or service measures from the project and that are used to predict results to be achieved by following a process. (See also "measure.")

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**process tailoring**

Making, altering, or adapting a process description for a particular end. For example, a project tailors its defined process from the organization’s set of standard processes to meet objectives, constraints, and the environment of the project. (See also “defined process,” “organization’s set of standard processes,” and “process description.”)

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**product**

In the CMMI Product Suite, a work product that is intended for delivery to a customer or end user. The form of a product can vary in different contexts. (See also “customer,” “product component,” “service,” and “work product.”)

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**product component**

In the CMMI Product Suite, a work product that is a lower level component of the product. Product components are integrated to produce the product. There may be multiple levels of product components. (See also “product” and “work product.”)

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**product baseline¶**  
In configuration management, the initial approved technical data package (including, for software, the source code listing) defining a configuration item during the production, operation, maintenance, and logistic support of its lifecycle. (See also “configuration item” and “configuration management.”)

Throughout the process areas, where the terms product and product component are used, they are intended to include service and service component and should be interpreted in that way.

**product component requirements**

A complete specification of a product or service component, including fit, form, function, performance, and any other requirement.

**product lifecycle**

The period of time, consisting of phases, that begins when a product or service is conceived and ends when the product or service is no longer available for use. Since an organization may be producing multiple products or services for multiple customers, one description of a product lifecycle may not be adequate. Therefore, the organization may define a set of approved product lifecycle models. These models are typically found in published literature and are likely to be tailored for use in an organization.

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A product lifecycle could consist of the following phases: (1) concept and vision, (2) feasibility, (3) design/development, (4) production, and (5) phase out.

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**product line**

A group of products or services sharing a common, managed set of features that satisfy specific needs of a selected market or mission.

**product-related lifecycle processes**

Processes associated with a product or service throughout one or more phases of its life (e.g., from conception through disposal), such as manufacturing and support processes.

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**product requirements**

A refinement of customer requirements into the developers’ language, making implicit requirements into explicit derived requirements. (See also “derived requirements” and “product component requirements.”)

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The developer uses product requirements to guide the design and building of the product or service.

**product suite**

(See “CMMI Product Suite.”)

**profile**

(See “achievement profile” and “target profile.”)

**program**

(1) A project. (2) A collection of related projects and the infrastructure that supports them, including objectives, methods, activities, plans, and success measures. (See also “project.”)

**project**

In the CMMI Product Suite, a managed set of interrelated resources that delivers one or more products or services to a customer or end user. A project has a definite beginning (i.e., project startup) and typically operates according to a plan. Such a plan is frequently documented and specifies what is to be delivered or implemented, the resources and funds to be used, the work to be done, and a schedule for doing the work. A project can be composed of projects. (See also “project startup.”)

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**project manager**

In the CMMI Product Suite, the person responsible for planning, directing, controlling, structuring, and motivating the project. The project manager is responsible for satisfying the customer.

**project plan**

A plan that provides the basis for performing and controlling the project’s activities, which addresses the commitments to the project’s customer.

Project planning includes estimating the attributes of work products and tasks, determining the resources needed, negotiating commitments, producing a schedule, and identifying and analyzing project risks. Iterating through these activities may be necessary to establish the project plan.

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**project progress and performance**

What a project achieves with respect to implementing project plans, including effort, cost, schedule, and technical performance. (See also “technical performance.”)

**project startup**

When a set of interrelated resources are directed to develop or deliver one or more products or services for a customer or end user. (See also “project.”)

**project’s defined process**

The integrated and defined process that is tailored from the organization’s set of standard processes. (See also “defined process.”)

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**prototype**

A preliminary type, form, or instance of a product service, product component, or service component that serves as a model for later stages or for the final, complete version of the product or service.

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This model (e.g., physical, electronic, digital, and analytical) can be used for the following (and other) purposes:

- Assessing the feasibility of a new or unfamiliar technology
- Assessing or mitigating technical risk
- Validating requirements
- Demonstrating critical features
- Qualifying a product or service
- Qualifying a process
- Characterizing performance or features of the product or service
- Elucidating physical principles

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### quality

The ability of a set of inherent characteristics of a product, service, product component, service component, or process to fulfill requirements of customers.

### quality and process-performance objectives

Objectives and requirements for product quality, service quality, and process performance.

Process-performance objectives include quality; however, to emphasize the importance of quality in the CMMI Product Suite, the phrase quality and process-performance objectives is used rather than just process-performance objectives.

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### quality assurance

A planned and systematic means for assuring management that the defined standards, practices, procedures, and methods of the process are applied.

### quantitative objective

Desired target value expressed as quantitative measures. (See also “measure,” “process improvement objectives,” and “quality and process-performance objectives.”)

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The operational techniques and activities that are used to fulfill requirements for quality. (See also “quality assurance.”)¶

### quantitatively managed process

A defined process that is controlled using statistical and other quantitative techniques. The product quality, service quality, and process-performance attributes are measurable and controlled throughout the project. (See also “defined process,” “optimizing process,” and “statistically managed process.”)

### rating

(See “appraisal rating.”)

### reference

An informative model component that points to additional or more detailed information in related process areas.

### reference model

A model that is used as a benchmark for measuring an attribute.

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**relevant stakeholder**

A stakeholder that is identified for involvement in specified activities and is included in a plan. (See also "stakeholder.")

**representation**

The organization, use, and presentation of a CMM's components. Overall, two types of approaches to presenting best practices are evident: the staged representation and the continuous representation.

**required CMMI components**

CMMI components that are essential to achieving process improvement in a given process area. These components are used in appraisals to determine process capability. Specific goals and generic goals are required model components.

**requirement**

(1) A condition or capability needed by a user to solve a problem or achieve an objective. (2) A condition or capability that must be met or possessed by a product, service, product component, or service component to satisfy a supplier agreement, standard, specification, or other formally imposed documents. (3) A documented representation of a condition or capability as in (1) or (2). (See also "supplier agreement.")

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**requirements analysis**

The determination of product- or service-specific performance and functional characteristics based on analyses of customer needs, expectations, and constraints; operational concept; projected utilization environments for people, products, services, and processes; and measures of effectiveness. (See also "operational concept.")

**requirements elicitation**

Using systematic techniques, such as prototypes and structured surveys, to proactively identify and document customer and end-user needs.

**requirements management**

The management of all requirements received by or generated by the project, including both technical and nontechnical requirements as well as those requirements levied on the project by the organization. (See also "nontechnical requirement.")

**requirements traceability**

A discernable association between requirements and related requirements, implementations, and verifications. (See also "bidirectional traceability" and "traceability.")

**return on investment**

The ratio of revenue from output (product or service) to production costs, which determines whether an organization benefits from performing an action to produce something.

**risk analysis**

The evaluation, classification, and prioritization of risks.

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**risk identification**

An organized, thorough approach to seek out probable or realistic risks in achieving objectives.

**risk management**

An organized, analytic process to identify what might cause harm or loss (identify risks); to assess and quantify the identified risks; and to develop and, if needed, implement an appropriate approach to prevent or handle causes of risk that could result in significant harm or loss.

**risk management strategy**

An organized, technical approach to identify what might cause harm or loss (identify risks); to assess and quantify the identified risks; and to develop and, if needed, implement an appropriate approach to prevent or handle causes of risk that could result in significant harm or loss.

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Typically, risk management is performed for project, organization, or product or service developing organizational units.

**root cause**

A source of a defect such that if it is removed, the defect is decreased or removed.

**senior manager**

In the CMMI Product Suite, a management role at a high enough level in an organization that the primary focus of the person filling the role is the long-term vitality of the organization rather than short-term project concerns and pressures. A senior manager has authority to direct the allocation or reallocation of resources in support of organizational process improvement effectiveness. (See also "higher level management.")

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A senior manager can be any manager who satisfies this description, including the head of the organization. Synonyms for senior manager include executive and top-level manager. However, to ensure consistency and usability, these synonyms are not used in CMMI models.

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**service**

In the CMMI Product Suite, a service is a product that is intangible and non-storable. (See also "product," "customer," and "work product.")

**service level**

Current performance related to an agreed-on service level measure. (See also "measure" and "service.")

**service level agreement**

Written agreement that documents agreed-on performance targets for agreed-on service level measures. (See also "measure" and "service.")

**service level measure**

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Measure of service performance that can be used as a target for acceptable results or behavior. (See also “measure” and “service.”)

**shared vision**

A common understanding of guiding principles, including mission, objectives, expected behavior, values, and final outcomes, which are developed and used by a project.

**software engineering**

(1) The application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software. (2) The study of approaches as in (1). (See also “hardware engineering,” and “systems engineering.”)

**solicitation**

The process of preparing a package to be used in selecting a supplier. (See also “solicitation package.”)

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**solicitation package**

A collection of formal documents that includes a description of the desired form of response from a potential supplier, the relevant statement of work for the supplier, and required provisions in the supplier agreement.

**special cause of process variation**

A cause of a defect that is specific to some transient circumstance and is not an inherent part of a process. (See also “common cause of process variation.”)

**specific goal**

A required model component that describes the unique characteristics that must be present to satisfy the process area. (See also “capability level,” “generic goal,” “organization’s business objectives,” and “process area.”)

**specific practice**

An expected model component that is considered important in achieving the associated specific goal. The specific practices describe the activities expected to result in achievement of the specific goals of a process area. (See also “process area” and “specific goal.”)

**stable process**

The state in which all special causes of process variation have been removed and prevented from recurring so that only common causes of process variation of the process remain. (See also “capable process,” “common cause of process variation,” “special cause of process variation,” “standard process,” and “statistically managed process.”)

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**staged representation**

A model structure wherein attaining the goals of a set of process areas establishes a maturity level; each level builds a foundation for subsequent levels. (See also “maturity level” and “process area.”)

**stakeholder**

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**Glossary**

In the CMMI Product Suite, a group or individual that is affected by or is in some way accountable for the outcome of an undertaking. Stakeholders may include project members, suppliers, customers, end users, and others. (See also “customer” and “relevant stakeholder.”)

### standard (noun)

**Formal** requirements developed and used to prescribe consistent approaches to development (e.g., ISO/IEC standards, IEEE standards, and organizational standards).

Instead of using *standard* as an adjective in its common everyday sense, we use another term that means the same thing (e.g., typical, traditional, usual, or customary).

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### standard process

An operational definition of the basic process that guides the establishment of a common process in an organization.

A standard process describes the fundamental process elements that are expected to be incorporated into any defined process. It also describes relationships (e.g., ordering and interfaces) among these process elements. (See also “defined process.”)

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### statement of work

A description of work to be performed.

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### statistical predictability

The performance of a quantitative process that is controlled using statistical and other quantitative techniques.

### statistical process control

Statistically based analysis of a process and measures of process performance, which identify common and special causes of variation in process performance and maintain process performance within limits. (See also “common cause of process variation,” “special cause of process variation,” and “statistically managed process.”)

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### statistical techniques

An analytic technique that employs statistical methods (e.g., statistical process control, confidence intervals, and prediction intervals).

### statistically managed process

A process that is managed by a statistically based technique in which processes are analyzed, special causes of process variation are identified, and performance is contained within well-defined limits. (See also “capable process,” “special cause of process variation,” “stable process,” “standard process,” and “statistical process control.”)

### subpractice

An informative model component that provides guidance for interpreting and implementing specific or generic practices. Subpractices may be worded as if prescriptive, but they are actually meant only to provide ideas that may be useful for process improvement.

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**subprocess**

A process that is part of a larger process. A subprocess can be decomposed into subprocesses and/or process elements. (See also “process,” “process description,” and “process element.”)

**supplier**

(1) An entity delivering products or performing services being acquired. (2) An individual, partnership, company, corporation, association, or other service having an agreement with an acquirer for the design, development, manufacture, maintenance, modification, or supply of items under the terms of an agreement. (See also “acquirer.”)

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**supplier agreement**

A documented agreement between the acquirer and supplier (e.g., contract, license, or memorandum of agreement).

**sustainment**

The processes used to ensure that a product or service remains operational.

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Deleted: customers. Sustainment ensures that maintenance is done such that the product is in an operable condition whether or not the product is in use by customers or end users.

**systems engineering**

The interdisciplinary approach governing the total technical and managerial effort required to transform a set of customer needs, expectations, and constraints into a solution and to support that solution throughout its life. (See also “hardware engineering” and “software engineering.”)

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This approach includes the definition of technical performance measures, the integration of engineering specialties toward the establishment of an architecture, and the definition of supporting lifecycle processes that balance cost, performance, and schedule objectives.

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**system of systems**

A set or arrangement of systems that results when independent and useful systems are integrated into a large system that delivers unique capabilities.

**tailoring**

Tailoring a process makes, alters, or adapts a process description for a particular end. For example, a project establishes its defined process by tailoring from the organization’s set of standard processes to meet the objectives, constraints, and environment of the project.

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**tailoring guidelines**

Organizational guidelines that enable projects, groups, and organizational functions to appropriately adapt standard processes for their use. The organization’s set of standard processes is described at a general level that may not be directly usable to perform a process.

Tailoring guidelines aid those who establish the defined processes for projects. Tailoring guidelines cover (1) selecting a standard process, (2) selecting an approved lifecycle model, and (3) tailoring the selected standard process and lifecycle model to fit project needs. Tailoring guidelines describe what can and cannot be modified and identify process components that are candidates for modification.

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## target profile

In the continuous representation, a list of process areas and their corresponding capability levels that represent an objective for process improvement. (See also “achievement profile” and “capability level profile.”)

## target staging

In the continuous representation, a sequence of target profiles that describes the path of process improvement to be followed by the organization. (See also “achievement profile,” “capability level profile,” and “target profile.”)

## technical performance

Characteristic of a process, product, or service, generally defined by a functional or technical requirement (e.g., estimating accuracy, user functions, security functions, response time, component accuracy, maximum weight, minimum throughput, and allowable range).

## technical performance measure

Precisely defined technical measure of a requirement, capability, or some combination of requirements and capabilities. (See also “measure.”)

## technical requirements

Properties (i.e., attributes) of products or services to be acquired or developed.

## test procedure

Detailed instructions for the setup, execution, and evaluation of results for a given test.

## traceability

A discernable association among two or more logical entities such as requirements, system elements, verifications, or tasks. (See also “bidirectional traceability” and “requirements traceability.”)

## trade study

An evaluation of alternatives, based on criteria and systematic analysis, to select the best alternative for attaining determined objectives.

## training

Formal and informal learning options, which may include in-class training, informal mentoring, Web-based training, guided self-study, and formalized on-the-job training programs. The learning options selected for each situation are based on an assessment of the need for training and the performance gap to be addressed.

## typical work product

An informative model component that provides sample outputs from a specific practice. These examples are called typical work products because there are often other work products that are just as effective but are not listed.

## unit testing

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<#>Product architecture description¶  
<#>Allocated requirements¶  
<#>Product component descriptions¶  
<#>Product-related lifecycle process descriptions if not described as separate product components¶  
<#>Key product characteristics¶  
<#>Required physical characteristics and constraints¶  
<#>Interface requirements¶  
<#>Materials requirements (bills of material and material characteristics)¶  
<#>Fabrication and manufacturing requirements (for both the original equipment manufacturer and field support)¶  
<#>Verification criteria used to ensure requirements have been achieved¶  
<#>Conditions of use (environments) and operating/usage scenarios, modes and states for operations, support, training, manufacturing, disposal, and verifications throughout the life of the product¶  
<#>Rationale for decisions and characteristics (e.g., requirements, requirement allocations, and design choices)¶  
**technical requirements ¶**

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Testing of individual hardware or software units or groups of related units. (See also “acceptance testing.”)

**validation**

Confirmation that the product or service, as provided (or as it will be provided), will fulfill its intended use. In other words, validation ensures that “you built the right thing.” (See also “verification.”)

**verification**

Confirmation that work products properly reflect the requirements specified for them. In other words, verification ensures that “you built it right.” (See also “validation.”)

**version control**

The establishment and maintenance of baselines and the identification of changes to baselines that make it possible to return to the previous baseline.

**work breakdown structure (WBS)**

An arrangement of work elements, and their relationship to each other and to the end product, or service.

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**work product**

In the CMMI Product Suite, a useful result of a process. This can include files, documents, products, parts of a product, services, process descriptions, specifications, and invoices. A key distinction between a work product and a product component is that a work product is not necessarily part of the end product. (See also “product” and “product component.”)

In CMMI models, the definition of “work product” includes services, however, the phrase “work products and services” is used to emphasize the inclusion of services in the discussion.

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**work product and task attributes**

Characteristics of products, services, and project tasks used to help in estimating project work. These characteristics include items such as size, complexity, weight, form, fit, and function. They are typically used as one input to deriving other project and resource estimates (e.g., effort, cost, and schedule).

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