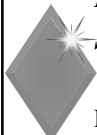


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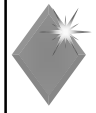


IEEE/EIA 12207 Software Life Cycle Processes

Prepared by:
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The MITRE Corporation
January 1998

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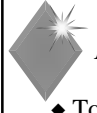


Unit 2 - ISO/IEC 12207

- ◆ *History*
 - ◆ Purpose of 12207
 - ◆ History of 12207
- ◆ Key concepts
- ◆ ISO/IEC 12207 processes

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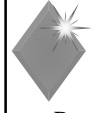


Purpose of 12207

- ◆ To establish a common framework for the life cycle of software
 - ◆ Acquire, supply, develop, operate, and maintain software
 - ◆ Undertakes broader scope than previous standards
 - ◆ Manage, control, and improve the framework
 - ◆ Recognizes that software is part of a system and that a project is part of an enterprise
- ◆ To establish a basis for world trade in software

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Motivations for 12207

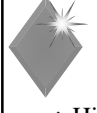
Previous standards ...

- ◆ ... focused on the single contract or project in isolation
- ◆ ... described a single monolithic process
- ◆ ... failed to encourage investment in the discipline and capitalization of processes
- ◆ ... induced 20-50% added costs in documentation and formal reviews

Adapted from a slide by Perry DeWeese

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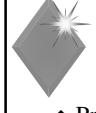


Unit 2 - ISO/IEC 12207

- ◆ History
- ◆ Key concepts
- ◆ ISO/IEC 12207 processes

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Key concept of ISO/IEC 12207: Process/activity/task hierarchy

- ◆ Processes are subdivided into cohesive *activities*
- ◆ Activities are subdivided into *tasks*
- ◆ You may think of tasks as being the *specifications* for the execution of an activity
- ◆ A task may be a self-declaration of intent, a requirement, a recommendation, or a permissible action

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Key concept of ISO/IEC 12207: Processes and parties

- ◆ Identification of processes is based on two principles:
 - ◆ **Modularity**: Processes should be cohesive and should have *low coupling* to other
 - ◆ **Responsibility**: Each process should be executable by a *single party*
 - ◆ A particular *organization* may become the party responsible for executing a process

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Key concept of ISO/IEC 12207: Continuing responsibilities

- ◆ The activities and tasks of a 12207 process are not steps to be performed
- ◆ 12207 does not require that the activities and tasks are to be performed in any particular order
- ◆ The activities and tasks of 12207 are **continuing responsibilities** whose execution is assigned for the duration of the process

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Key concept of ISO/IEC 12207: Categories of processes

- ◆ **Primary**
 - ◆ Acquisition, Supply
 - ◆ Development, Operation, Maintenance
- ◆ **Supporting**
 - ◆ Processes used as “subroutines” by other processes
- ◆ **Organizational**
 - ◆ Processes inherent to the organization and “instantiated” by the project
- ◆ Also, a special **tailoring** process

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Key concept of ISO/IEC 12207: Integral evaluation

- ◆ Evaluation is not a distinct process or activity
- ◆ Evaluation is treated as an **internal, integral** task of many activities in the standard
- ◆ In general, the evaluations have stated purposes and stated criteria
- ◆ Other processes may supplement internal evaluations: Verification, Validation, Joint Review, Audit, Quality Assurance, Improvement

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Key concept of ISO/IEC 12207: Temporal issues

- ◆ The standard does not specify a life cycle **model**, e.g. waterfall, spiral, etc.
- ◆ The standard does not place ordering dependencies or time dependencies on the tasks → that is the job of the chosen life cycle model and the project plan
- ◆ Tasks may be iterated, repeated, recursively invoked, etc

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Key concept of ISO/IEC 12207: Approach to documentation

- ◆ The standard requires some outputs to be documented
- ◆ The standard does not prescribe format, media, or content of the documentation
- ◆ The Documentation Process permits the user to make these decisions

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Key concept of ISO/IEC 12207: Approach to baselining

- ◆ Standard differentiates between *items* and *configuration items* (CI). The CM process can handle both, but the latter are handled more rigorously
- ◆ A **baseline** is a formally approved version of a CI. Baselines (as clarified by the IEEE/EIA version) are established by the primary processes, not by the CM process

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Unit 2 - ISO/IEC 12207

- ◆ History
- ◆ Key concepts
- ◆ *ISO/IEC 12207 processes*

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ISO/IEC 12207 processes

- ◆ Primary
- ◆ Supporting
- ◆ Organizational

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ISO/IEC 12207 processes: Primary processes

- ◆ Primary processes are executed by parties who initiate or perform major roles in the software life cycle:

◆ Acquisition	◆ Development
◆ Supply	◆ Operation
	◆ Maintenance

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ISO/IEC 12207 processes: Supporting processes


- ◆ A supporting process supports another process as an integral part with a distinct purpose:

◆ Documentation	◆ Validation
◆ Configuration Management	◆ Joint Review
◆ Quality Assurance	◆ Audit
◆ Verification	◆ Problem Resolution

- ◆ But *fundamental responsibility* remains integral to the *primary* process

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ISO/IEC 12207 processes: Organizational processes


- ◆ Organizational processes inherently exist outside the scope of the project but *instances* of them are employed by the project:

◆ Management
◆ Infrastructure
◆ Improvement
◆ Training

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ISO/IEC 12207 processes: Tailoring process

- ◆ A special case
- ◆ The tailoring process is used to tailor the standard for usage on a particular project
- ◆ Tailoring permits deletion of any process, activity or task
- ◆ (Tailoring is discouraged in the IEEE/EIA adaptation of the standard.)

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