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

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

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.
**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.

**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 to the party for the duration of the process.

**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

**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.

**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.

**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.
Key concept of ISO/IEC 12207: Approach to baselining

- Standard differentiates between items and configuration items. 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.

ISO/IEC 12207 processes

- Primary
- Supporting
- Organizational

ISO/IEC 12207 processes: Supporting processes

- A supporting process supports another process as an integral part with a distinct purpose:
  - Documentation
  - Configuration Management
  - Quality Assurance
  - Verification
  - Validation
  - Joint Review
  - Audit
  - Problem Resolution
- But fundamental responsibility remains integral to the primary process.

ISO/IEC 12207 processes: Primary processes

- Primary processes are executed by parties who initiate or perform major roles in the software life cycle:
  - Acquisition
  - Supply
  - Development
  - Operation
  - Maintenance

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
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.)