Software Development Methodologies

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Lecture 5

Integrated Methodologies: EUP

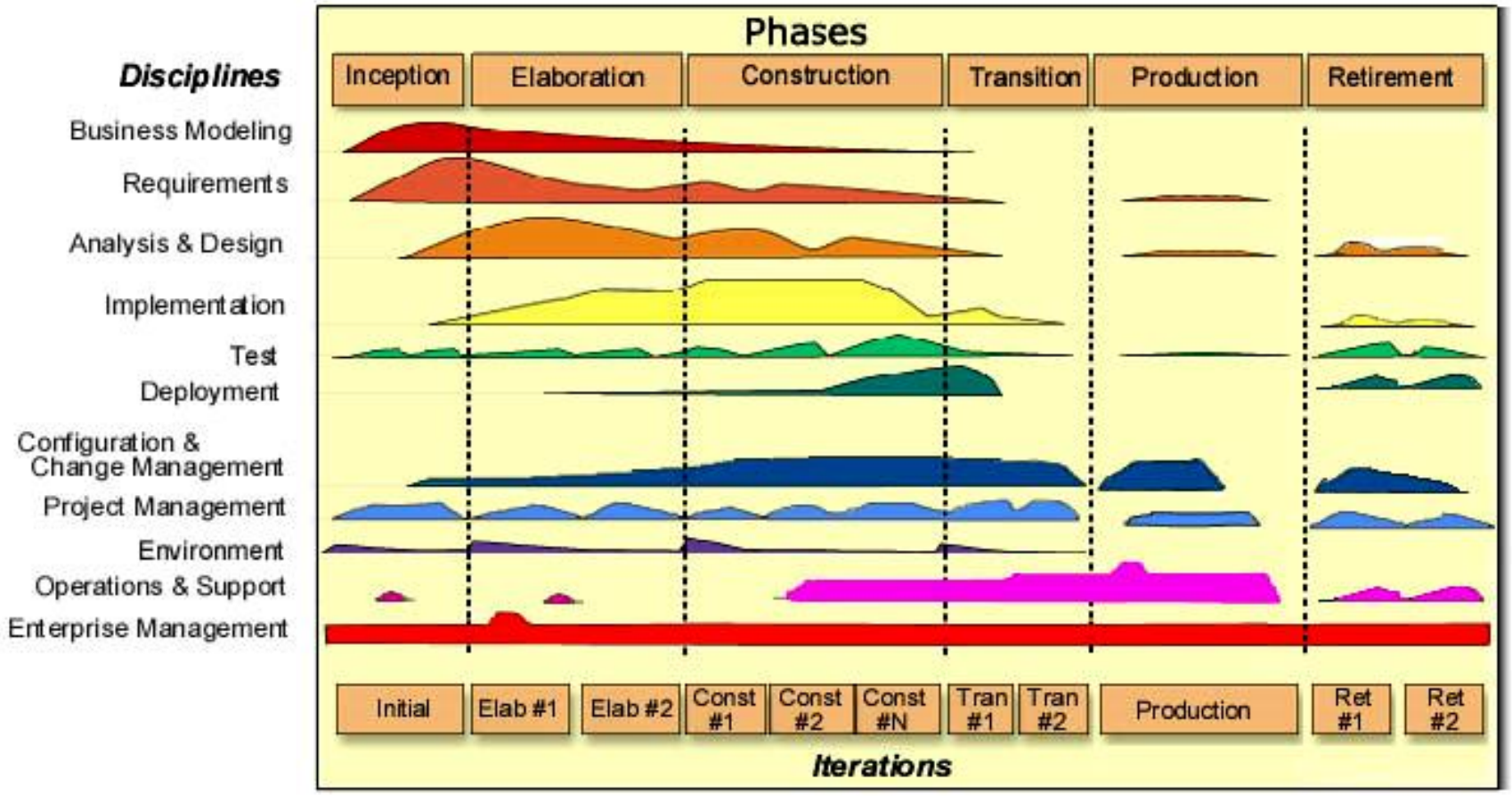
Enterprise Unified Process (EUP)

- Introduced by Ambler and Constantine in 2000 as an extended variant of RUP
- A revised and refactored version was introduced in 2005
- Motivated by the belief that RUP suffers from serious drawbacks:
  - RUP does not cover system support and eventual retirement.
  - RUP does not explicitly support organization-wide infrastructure development.
  - The iterative nature of RUP is both a strength and a weakness, since the iterative nature of the lifecycle is hard to grasp for many experienced developers.
  - Rational's approach to developing RUP was initially tools-driven; hence the resulting process is not sufficient for the needs of developers.

Enterprise Unified Process (EUP)

- Extends RUP by adding two new *phases* and two new *disciplines*, one of which was further broken down into seven disciplines in the 2005 version of the methodology
- Extends the activities in some of the old disciplines of RUP
- Whereas RUP advocates adherence to UML, EUP makes use of some older modeling notations too; e.g. the use of Data Flow Diagrams for business modeling.
- EUP stresses that use cases are not enough for modeling the requirements; consequently, use cases in EUP do not have the pivotal role they have in RUP.

EUP: Process – Disciplines in Iterations and Phases



[Ambler et al. 2005]

EUP: Process – *Production* Phase

- Focus is on keeping the software in production until it is either replaced with a new version (by executing the lifecycle all over again), or retired and removed.
- There are no iterations during this phase.
- Somewhat similar to the maintenance phase in the generic lifecycle, in that it is mainly concerned with the operation and support of the system.
- Unlike classic maintenance, any need for changing the system (even a bug fix) will result in the reinitiation of the development cycle.

EUP: Process – *Retirement* Phase

- Added in 2002 as the sixth phase
- Focus is on the careful removal of a system from production, either because it is no longer needed or is being replaced. This typically includes:
  - Identification of the existing system's coupling to other systems.
  - Redesign and rework of other systems so that they no longer rely on the system being retired.
  - Transformation of existing legacy data.
  - Archival of data previously maintained by the system that is no longer needed by other systems.
  - System integration testing of the remaining systems to ensure that they have not been broken via the retirement of the system in question.

EUP: Process – *Operations and Support* Discipline

- Concerned with issues related to operating and supporting the system

- Spans several phases, not only the production phase:
  - During the *construction* phase, and perhaps as early as the *elaboration* phase, the development of operations and support plans, documents, and training manuals is initiated.
  - Artefacts are enhanced and perfected during the *transition* phase, where the discipline will also include the training of the operations and support staff.
  - During the *production* and *retirement* phases, the discipline covers classic maintenance activities.

EUP: Process – *Enterprise Management* Discipline

- Concerned with the activities required to create, evolve, and maintain the organization's cross-system artefacts, such as:
  - Organization-wide models (requirements and architecture)
  - Software process
  - Standards
  - Guidelines
  - Reusable artefacts
- Broken down into seven disciplines in the 2005 version of the methodology

EUP: Process – *Enterprise Management:* Seven Disciplines

- Added in 2005, these disciplines prescribe enterprise management activities in a more fine-grained fashion:

1. Enterprise Business Modeling
2. Portfolio Management
3. Enterprise Architecture
4. Strategic Reuse
5. People Management
6. Enterprise Administration
7. Software Process Improvement

EUP: Strengths and Weaknesses

- ***Strengths***
  - Same benefits as RUP
  - Addresses enterprise-level issues
  - Maintenance is a phase in its own right.
  - Attention is given to post-mortem activities when retiring the project (in the form of a new *Retirement* phase).
  - Not strictly adherent to UML; other modeling languages such as DFDs are also used.

EUP: Strengths and Weaknesses

- ***Weaknesses***
  - Like RUP, EUP is
    - very complex
    - encumbered with a prohibitive number of models
    - suffering high potential for model inconsistency
    - confusing as to the process used
    - hard to customize
  - EUP has added further complexity to RUP by adding two new phases and two new disciplines.
  - Adding the maintenance phase is not sufficient, since any change needed will result in a restart of the development process.

References

- Ambler, S. W., Nalbone, J., Vizdos, M. J., *The Enterprise Unified Process: Extending the Rational Unified Process*. Prentice-Hall, 2005.