Comparison of Software Process Model under the Software Engineering

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Abstract- A software development process, also known as a software development life-cycle (SDLC), is a structure imposed on the development of a software product. Similar terms include software life cycle and software process. It is often considered a subset of systems development life cycle. There are several models for such processes, each describing approaches to a variety of tasks or activities that take place during the process. Some people consider a life-cycle model a more general term and a software development process a more specific term. For example, there are many specific software development processes that 'fit' the spiral life-cycle model. ISO/IEC 12207 is an international standard for software life-cycle processes. It aims to be the standard that defines all the tasks required for developing and maintaining software.

I. INTRODUCTION

Software Engineering

The seminal definition: Software engineering is the establishment and use of sound engineering principles in order to obtain economically software that is reliable and works efficiently on real machines.

The IEEE definition: Software Engineering: The application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software; that is, the application of engineering to software.

- More and more, individuals and society rely on advanced software systems. We need to be able to produce reliable and trustworthy systems economically and quickly.
- It is usually cheaper, in the long run, to use software engineering methods and techniques for software systems rather than just write the programs as if it was a personal programming project. For most types of system, the majority of costs are the costs of changing the software after it has gone into use.

Software Process Models

- A software process model is an abstract representation of a process. It presents a description of a process.
- When we describe and discuss processes, we usually talk about the activities in these processes such as specifying a data model, designing a user interface, etc. and the ordering of these activities.
- Process descriptions may also include:
  - Products, which are the outcomes of a process activity;
  - Roles, which reflect the responsibilities of the people involved in the process;
  - Pre- and post-conditions, which are statements that are true before and after a process activity has been enacted or a product produced.

II. MAJOR SOFTWARE PROCESSES

Major Software Processes

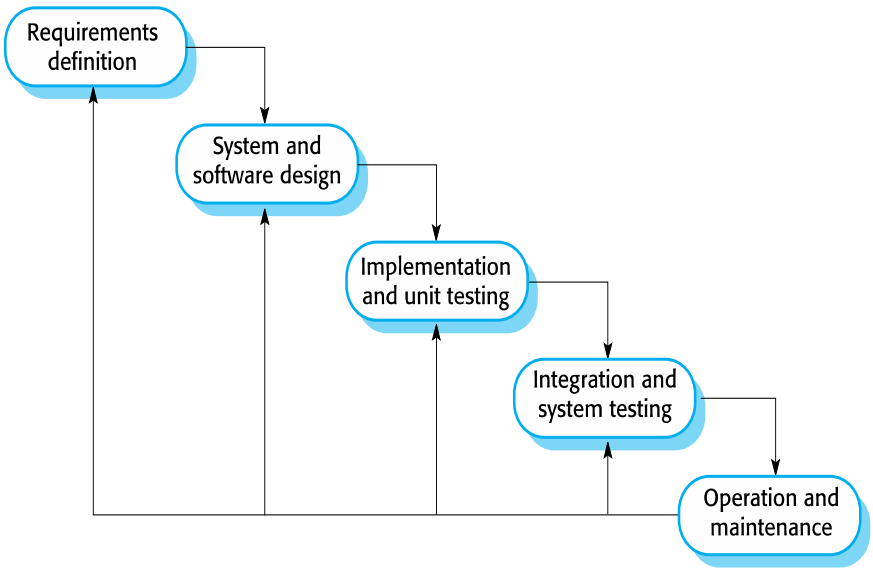
Plan-driven and agile processes

- Plan-driven processes are processes where all of the process activities are planned in advance and progress is measured against this plan.
- In agile processes, planning is incremental and it is easier to change the process to reflect changing customer requirements.
- In practice, most practical processes include elements of both plan-driven and agile approaches.
- There are no right or wrong software processes.

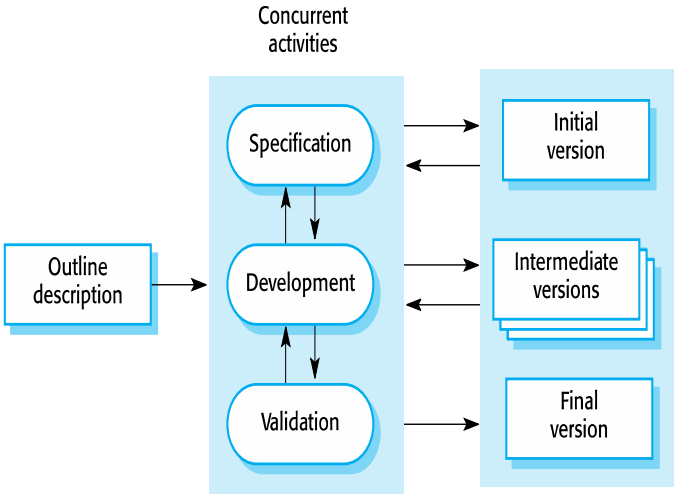
Software Process Models

- The waterfall model
  - Plan-driven model. Separate and distinct phases of specification and development.
- Incremental development
  - Specification, development and validation are interleaved. May be plan-driven or agile.
- Reuse-oriented software engineering
  - The system is assembled from existing components. May be plan-driven or agile.

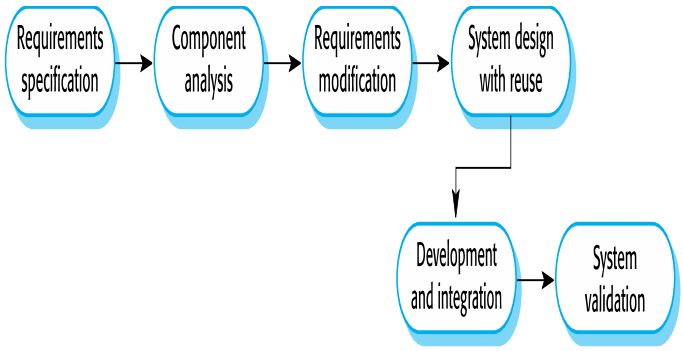
- The waterfall model



- Incremental development



- Reuse-oriented software engineering



IV.CONCLUSION

There is no best software development model. Depending on the size of the program definition and the time constraints on the project a certain model may be better than another. I prefer the reuse-oriented software engineering model.

IV.ACKNOWLEDGEMENT

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REFERENCES

[1] Stellman, Andrew; Greene, Jennifer (2005). Applied Software Project Management. O'Reilly Media. ISBN 978-0-596-00948-9.
[2] IEEE magazine article "Why Software Fails" John C. Reynolds, Some thoughts on teaching programming and programming languages, SIGPLAN Notices, Volume 43, Issue 11, November 2008, p.108:
[3] Jalote, Pankaj (2002). Software project management in practice. Addison-Wesley. ISBN 0-201-73721-3.

[4] Murali Chemuturi, Thomas M. Cagley Jr. & (2010). Software Project Management: Best Practices, Tools and Techniques. J.Ross Publishing. ISBN 978-1-60427-034-1
[5] Resources on Software Project Management from Steve McConnell: http://www.construx.com/Page.aspx?nid=22
[6] Resources on Software Project Management from Dan Galorath: http://www.galorath.com/wp/category/project-management