

The effects of systems engineering in software development

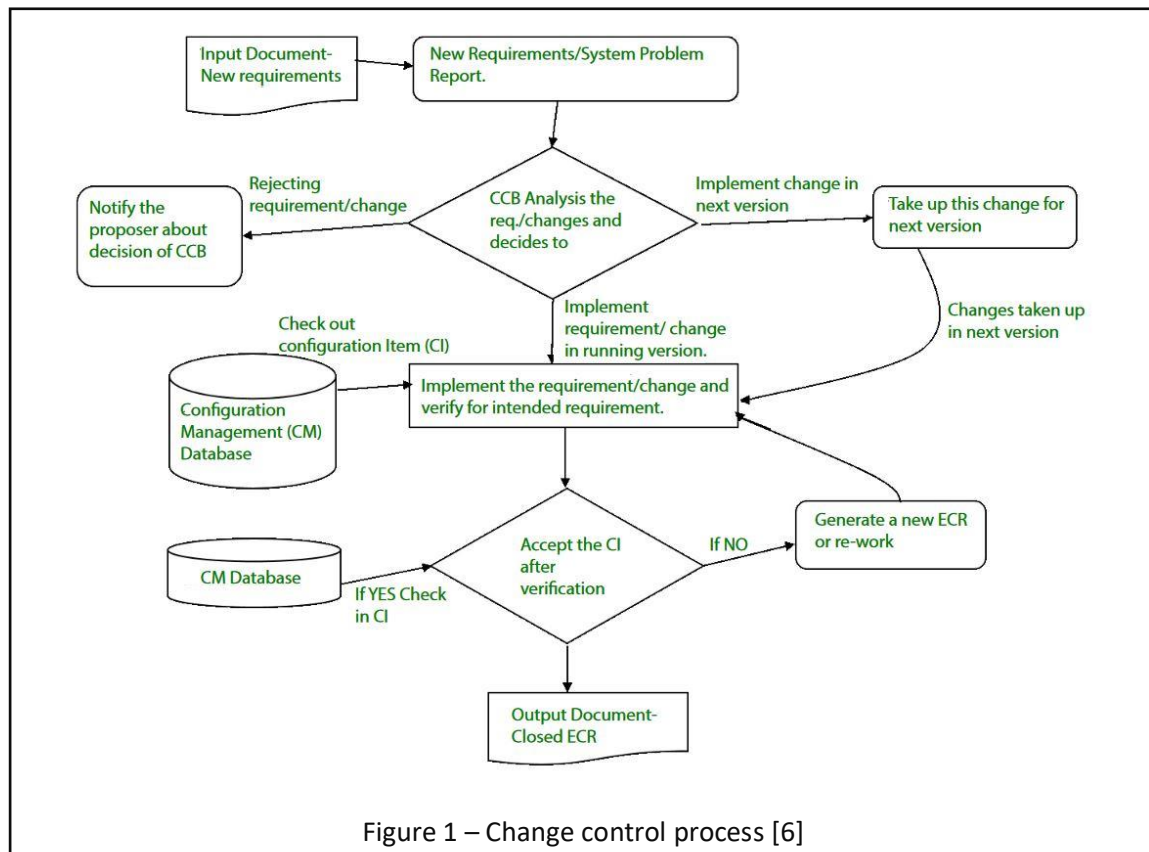
In this short summary I will be exploring various important system engineering processes which could be used in software development, the benefits and what effects it will have if implemented.

Stakeholder Analysis is a system engineering method which should be adapted to software development. [1] Stakeholder analysis consists of identifying all key (primary and secondary) stakeholders who have interest or is affected by the project. It allows us to predict issues that could disrupt the project, manage negative stakeholders and communication planning during the project planning phase. A software project is only successful if the customers i.e. stakeholder is happy with the outcome, by identifying and managing the stakeholder's expectations and involvement, we give an opportunity to them to express ideas or concerns during the development of the project, it gives them a sense of responsibility and will also opens up learning opportunities for both the project team and stakeholders.

Another important process in system engineering that could be adapted to software development is Functional Decomposition. [2] Functional Decomposition takes a complex process and breaks it down to smaller simpler parts. This allow developers to identify complex or high risk area of the project, identify all parts of the project before coding as things not thought of until late in the project is the main cause of project failure suggested in research by [3] Capers Jones and also it allows many to work on the same project at the same time. When implementing this, we should be vary of breaking down projects too far or not enough, also check if any of the parts could be implementing using existing libraries before breaking it down even further and review with the client to ensure the scope of the project is correct.

Configuration management is another system engineering method that should be adapted to software engineering. [4]It is a process to manage and control changes in the code, other documents in the project life cycle and maintaining consistency of the product's performance. [5] Without CM source code will be fragmented and developments cannot be made without breaking major parts of the project, scaling the project up will be nearly impossible as it will be difficult to organize the work of individual developers. The benefit of implementing this includes multiple team members working on the same project which is continuously updating in different geographical locations, control costs when making changes to the system, [6] creating versions of existing product to build new products, controlling changes (see figure 1) and logging/reporting any changes.

To conclude, there are many other system engineering methods that could be implemented, such as requirement engineering – defining and documenting requirements, Interface specification – mechanism which allow subsystems to communicate with each other and requirements. I recommend companies to research into system engineering process that could be implemented into software development for better workflow, higher efficiency and higher customer satisfaction.



Sources:

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