**Plan driven versus agile development elaborated through concrete methods**

Both of these types of development are good for the specific types of projects. Plan-driven development mostly aims for perfection, planning everything ahead, lots of documentation, it is usually split in phases and every phase has to be done and “singed off” before the next one begins. In agile development the processes are planned incrementally starting from the most important ones and new ones added as the development continues. The priority is to do the current increment and to release working functionality of software quickly so it could be used in practice but still keep working on the rest of the software. Agile manifesto principles clearly describe the differences between plan-driven and agile development [agile manifesto].

The progress of the plan-driven development is measured by the plan which was made from beginning, however in agile development progress is not that visible to be measured as the software grows by adding new functionality and the requirements change very often. To address this issue Schwaber, Beedle and Rubin proposes to use the Scrum agile method to provide a framework for organizing agile projects and, to some extent at least, provide external visibility of what is going on [Schwaber and Beedle 2001; Rubin 2013].

When changes has to be made in plan-driven development it is expensive as the previous phases and documentation has to be modified. In agile development the changes are done all the time as the customer is closely involved in development by using informal communications rather than formal meetings with written documents.

Waterfall model is typical plan-driven development which is split in five phases [waterfall model]:

* Requirements definition
* System and software design
* Implementation and unit testing
* Integration and system testing
* Operation and maintenance

As mentioned before every next phase can begin after previous is done.

[Incremental approach](http://istqbexamcertification.com/what-is-incremental-model-advantages-disadvantages-and-when-to-use-it/) is typical agile development where the processes of specification, design and implementation are interleaved [Incremental development]. According to agile development techniques Extreme Programming (XP) is one of the most significant methods in agile development [XP]. In contrast to waterfall model XP practises different approaches of development. Here are some of them:

* requirements definitions are simple user stories
* test-first development which means that tests are done before implementation
* pair programming which lets the team members to help and teach each other and maintain the same principles instead of working separately and following the plan
* constant refactoring which can be made by any team member

**Not done yet……………………**

[agile manifesto] Software Engineering, 10th edition, Ian Sommerville, Page 76. ,http://agilemanifesto.org/

[Schwaber and Beedle 2001; Rubin 2013] Software Engineering, 10th edition, Ian Sommerville, Page 85.

[waterfall model] Software Engineering, 10th edition, Ian Sommerville, Page 47.

[Incremental development] Software Engineering, 10th edition, Ian Sommerville, Page 49.

[XP] Software Engineering, 10th edition, Ian Sommerville, Page 77.