Iterative- and Incremental model

Iterative model

To avoid the bottlenecks of the waterfall model, an iterative model was introduced. In the model under consideration, the process is very straightforward: specific steps in a specific order, moving from point A to point B, and the result is the final product.

In the iterative model, the first version of the product is made, it is reviewed, it is decided whether the right path has been chosen. A new iteration begins: the product is improved, it is reviewed, it is decided whether the right path has been chosen. A new iteration begins… until the product is ready:

In the iterative model, the entire process is divided into several stages (here and further – iteration), each iteration lasts 2-6 weeks. At the beginning, the more critical part of the software is prepared, essentially following the same steps as in the waterfall model. During the next iteration, the software is improved, creating new functionality or improving what was done previously. Iterations are multiplied until the project is completed. When the software is ready, it is put into use. The results of the risk analysis are taken into account to better guide the process. The iterative model can be shown as follows:

Advantages of the iterative model

Since you can start quite quickly, the first results will also come quickly, which helps the business (customer) better understand whether the project is going in the right direction. This also makes risk management easier. The project is easily measurable, which is why it is suitable for large clients for whom precise management of a large budget is important. Theoretically, it is possible to launch several iterations in parallel, which speeds up the process of reaching the finished product. Learning from mistakes – you can avoid risks and errors discovered during the

previous iteration. The iterative model is flexible – it is possible to change the initial requirements during the project.

Disadvantages of the iterative model

Due to its flexibility, this model requires very strong and continuous project management. Managing the work resource is more difficult and requires more manpower than the waterfall model (in the waterfall model, the analyst has a stable and continuous job at the beginning of the project, later only a supporting function, then he can be directed to another project, etc.). Problems can arise in architectural design if the team working on the project is not very foresightful or experienced. Risk analysis requires additional manpower and is expensive.

When to use an iterative model?

1. There is a general picture of what you want to achieve. Smaller tasks can be specified later.
2. The project is large. If there is a risk that the project will take a long time, it is worth adopting an iterative model, as it allows for parallel iterations: it minimizes the risk that the software needs/requirements will change by the end of the project.

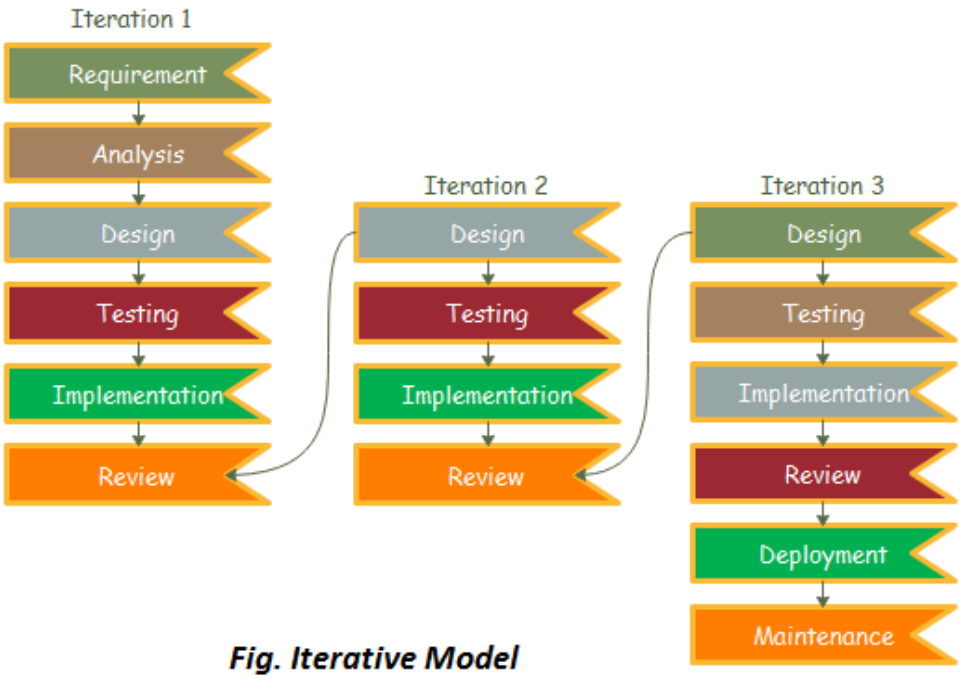


Fig. Iterative Model

Incremental model

In incremental model the whole requirement is divided into various builds. Multiple development cycles take place here, making the life cycle a “multi-waterfall” cycle. Cycles are divided up into smaller, more easily managed modules. Incremental model is a type of software development model like V-model, Agile model etc.

In this model, each module passes through the requirements, design, implementation and testing phases. A working version of software is produced during the first module, so you have working software early on during the software life cycle. Each subsequent release of the module adds function to the previous release. The process continues till the complete system is achieved.

Advantages of Incremental model

1. Generates working software quickly and early during the software life cycle.
2. This model is more flexible – less costly to change scope and requirements.
3. It is easier to test and debug during a smaller iteration.
4. In this model customer can respond to each built.
5. Lowers initial delivery cost.
6. Easier to manage risk because risky pieces are identified and handled during it’d iteration.

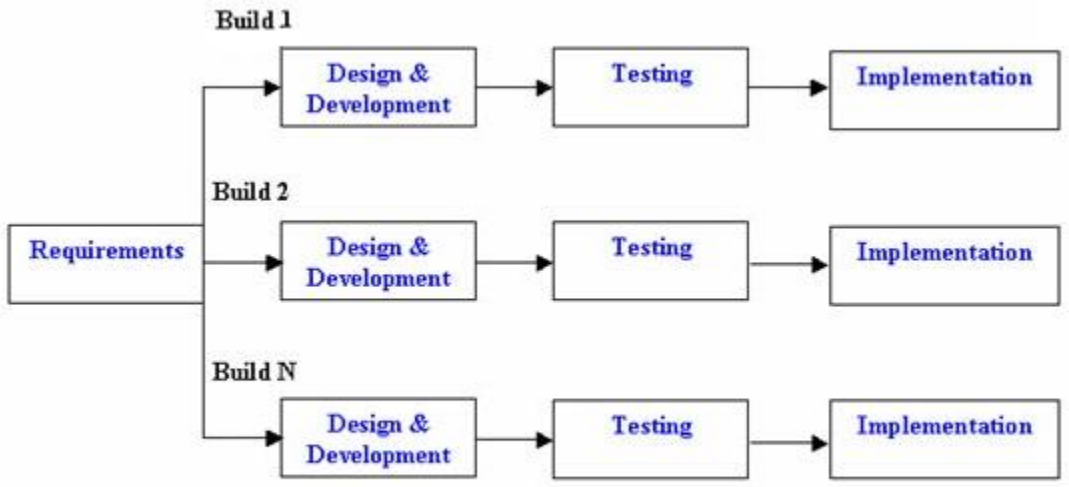
Disadvantages of Incremental model

1. Needs good planning and design.

2. Needs a clear and complete definition of the whole system before it can be broken down and built incrementally.
3. Total cost is higher than waterfall.

When to use the Incremental model

1. This model can be used when the requirements of the complete system are clearly defined and understood.
2. Major requirements must be defined; however, some details can evolve with time.
3. There is a need to get a product to the market early.
4. A new technology is being used
5. Resources with needed skill set are not available
6. There are some high risk features and goals.



Incremental Life Cycle Model