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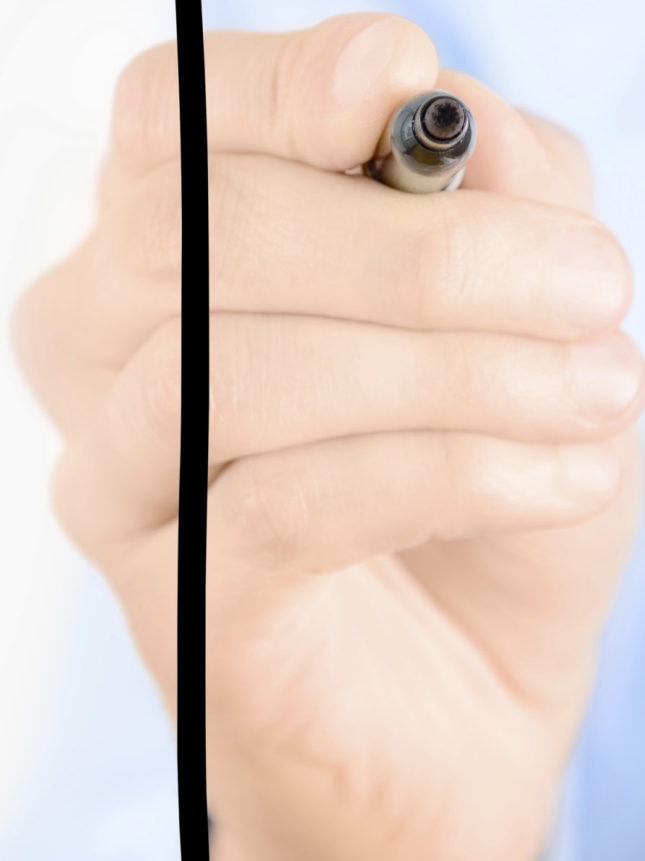
Waterfall vs. Agile

Which Method is Best for Your BI Needs?

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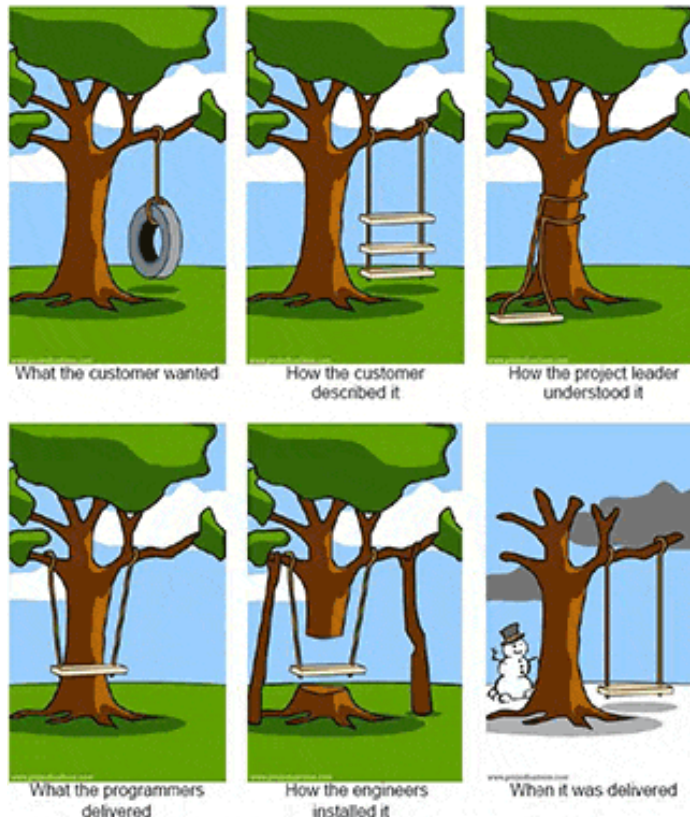
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Waterfall vs. Agile Methodology

Since the 1970s, businesses and projects have followed a very formulaic plan, utilizing a simple flowchart that started from point A to point B. However, project managers realized how unrealistic it is to follow this restrictive flowchart, better known as "Waterfall" methodology. A new formula for completing a project was needed to solve the problem of not being able to proceed in different sectors of the project, unless the step preceding it was completed.[1]

One should not disregard the Waterfall method completely. It provides discipline for following each task in a project within the schedule. Also, everything that a vendor plans out with a client will end up as promised, leaving no room for surprises. On the downside, while the clients believe everything that is planned will be transferred into the final product, the possibility of aspects getting lost in translation exists. Additionally, clients might not know what they want up front and might need more time to see how the project unfolds. For these reasons, a client's needs and intentions should be extensively understood at the early stages of the project.[1]

An alternative methodology to the Waterfall method is the Agile method, which is used to anticipate and deal with obstacles that may appear at any stage of a project. It should be noted that any directional changes in a project via the Agile method are possible and do not significantly hinder the process of development. The big question is, "Which method is better than the other?"

Waterfall Method in Depth

A significant number of companies have been making the switch from the Waterfall method to the Agile method because projects in the preliminary planning stages do not always yield the same results that were promised during the execution process. A diagram below paints a clear picture of what could go wrong with the Waterfall method:

There is very little room for compromise and error since you are following a strict, one-way path to reach the result of the project. Bill Templeton is a mobile software consultant and former business development director of Zi Corporation. He states that the Waterfall method is the most appropriate approach to take when vividly defined sets of tasks and objectives exist, as long as they are fully comprehended by the development team. There must also be no possibility of change during the process of the project, and a tight budget for its completion must exist. Templeton emphasizes that, if there is a possibility of change, an alternative method should be considered.[2]

Advantages of the Waterfall Method

Project managers should not avoid considering the Waterfall method for future projects completely. There are advantages to take into account when planning to pursue a new project. They are:

- The Waterfall method prompts engineers to detect potential project failures, which avoids any costly and time-consuming repairs. Each stage of the project should be completed painstakingly before proceeding to the next step, assuring quality in the project.

- The Waterfall method focuses on documentation, making it easier for people to transfer knowledge and allowing new members of the project to understand the project.[2]

Disadvantages of the Waterfall Method

In recent times, the Waterfall method has received its fair share of criticism. The most notable objection is that customers are not fully aware of what they want and can only articulate their goals as the project progresses. Here are a few disadvantages of the Waterfall model:
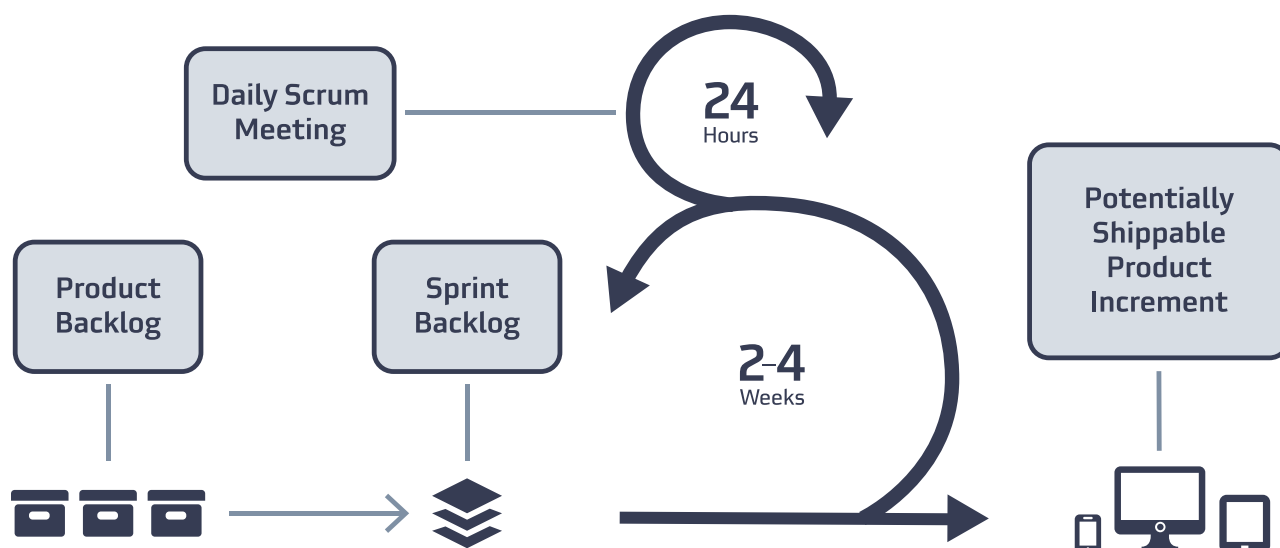
- An unrealistic demand to formulate and ensure an error-proof plan at the beginning of the project exists.

- The Waterfall method is based on the assumption that plans can be translated into real products.

- The Waterfall method hints at a clear division between programmers, designers and testers, which in most software firms is not efficient.[2]

The question that project managers may have is, "Do the disadvantages outweigh the advantages?" If the answer is yes, depending on the project/product development itself, other solutions will likely be considered—namely, the Agile method.

Agile Method in Depth

If there is any credit to be given to the Waterfall method, it is for acting as the catalyst for the inspiration to develop the Agile method. The Waterfall method encountered many problems, such as being unable to deal with unpredictable failures. Due to these problems, the Agile method was created to help developers and engineers deal with such obstacles.[2]

With the Agile method, a team working on a project is given the opportunity for any directional changes, which is not possible with the Waterfall method. Also, once a component of a project is completed, additional development stages can still take place within that component, enabling managers to deliver products on time and not go over budget. Companies such as Google and Lockheed Martin have adopted the Agile methodology and do not seem to be reverting back to the Waterfall method. Below is a diagram of an Agile method that paints a clearer image of how it works:

The Agile Workflow

Advantages of the Agile Method

Dan Woods, of Forbes magazine, points out that the Agile method is useful for project managers who feel uneasy about building an entire project at once. This method provides the ability to start building smaller, useful parts for users, who will then provide feedback for what is heading in the right direction and what could be improved. Here are additional advantages to the Agile Method:

- Using incremental steps of two to four weeks leads to feedback that allows for requirements to be tested and adjusted.

- The quality increases within Agile projects due to developers using a working system that aids them in detecting errors sooner, rather than at the end of each stage.[1]

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Disadvantages of the Agile Method

Just like the Waterfall method, the Agile method is not perfect and has cons that may cause developers and project managers to think twice before fully embracing it. Listed below are some of the disadvantages that Agile faces:

- It is difficult to lay out the requirements of the software development life cycle at the beginning.

- There is a lack of emphasis on necessary designing and documentation.

- The project can easily get sidetracked if the client does not represent their ideas clearly.

- Only Senior Programmers are capable of making decisions needed during the development process.[2]

Waterfall vs. Agile:
Which One to Choose?

When planning out a project, potential errors and directional changes should be anticipated to make it easier to decide whether to pursue a project via the Waterfall method, the Agile method, or even both.

Steve Hardin, VP of Software Development for IT Business Edge (ITBE), revealed that ITBE uses a hybrid approach that combines the aspects of both the Waterfall and Agile method of development. Hardin explains that not one approach is always going to be the ideal one. The Director of Firefox made similar remarks, being quoted to have said, "...we're not tied to any specific development model. We're tied to what is effective." [2]

In conclusion, it may seem at first glance that the Agile method is the best way to complete a project. However, with project development having an intricate nature that is rarely cut-and-dry, it may be best to use a hybrid method similar to what IT Business Edge and Firefox implement. In the end, the decision between the two methodologies is based upon whether or not potential errors can be forecasted, along with the importance of including documentation and budgeting. With those aspects in mind, project managers can decide which method is best suited for their project.

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Endnotes

[1] "Understanding the pros and cons of the Waterfall Model of software development." February 19, 2007.http://www.builderau.com.au/strategy/designprinciples/soa/Understanding-the-pros-and-cons-of-the-Waterfall-Model-of-software-development/0,339028846,339273696,00.htm (accessed June 2, 2011).

[2] "Choosing the Right Development Approach: Agile vs Waterfall." http://developer.motorola.com/docstools/articles/ft_February_09/ (accessed June 2, 2011).