|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Agile Methods | When has invented | Who has invented | Advantages | Disadvantages |
| Kanban | 1940 | Taiichi Ohno | Improved efficiency,  Increased  Productivity | no timeframes in Kanban |
| Scrum | 1986 | Jeff Sutherland | Focus on Quality, Good Sprint planning | Segmentation of project |
| Extreme Programing | 1993 | Kent Beck | simplicity of the written code, | Relatively large time investment |
| Lean Development | 1993 | Robert Charette | Easily scalable methodology, | Dependent on the development team’s ability |
| Crystal | 1991 | Alistair Cockburn | Crystal requires frequent deliveries | Lack of pre-defined plans |
| Feature Driven Development (FDD) | 1997 | Jeff De Luca | customer-centric, iterative | not ideal on smaller projects |

**1) Kanban**

Originating from the Japanese language, the translation of the word ‘Kanban’ is “visual board or signboard” and is connected to the concept of “just in time”! Initially, the Kanban concept was introduced as a lean manufacturing system and slowly drove its way to agile software development teams. This method uses visual methods for developing and managing projects.Projects through Kanban are overseen with the help of the Kanban Board, which is divided into columns to depict the process flow of the software development. This helps in increasing visibility teams as the teams can see the progress through every stage of development and prepare for the upcoming tasks to deliver the product “just in time”!..

**2) Scrum**

One of the most popular agile methodology examples is the agile scrum development methodology, which is depicted by various cycles of development. Similar to Kanban, Scrum breaks down the development phases into stages or cycles called ‘sprints’. The development time for each sprint is maximized and dedicated, thereby managing only one sprint at a time.Scrum and agile methodologies focus on continuous deliverables, and thus this method lets designers adjust priorities to ensure that any incomplete or overdue sprints get more attention.Scrum Team has exclusive project roles such as a scrum master and a product owner with constant communications on the daily scrum where the activities are harmonized to devise the best way to implement the sprint.

**3) Extreme Programming (XP)**

Extreme Programming (XP) is a methodology that emphasizes teamwork, communication, and feedback. It focuses on constant development and customer satisfaction. Similar to scrum, this method also uses sprints or short development cycles. This is developed by a team to create a productive and highly efficient environment. Extreme Programming technique is very supportive in a situation of constant and varying demands from the customers. It motivates the developers to accept changes in the customer’s demands, even if they pop-up in an advanced phase of the development process. In Extreme Programming, the project is tested from the initial stages by collecting feedback that progresses the output of the system. This also presents a spot check to implement easily any customer requirements.

**4) Lean Software Development**

This agile methodology is based on seven principles:

* Deleting what doesn’t matter- Anything that doesn’t add value is removed from the project
* Quality development- The discipline and control of the number of residuals created are essential to quality development
* Knowledge creation- The team is driven to document the entire infrastructure to preserve this value in the future
* Defer commitments- This point encourages the team to focus less on planning and anticipating ideas without first having a prior and complete understanding of the business requirements
* Delivery promptly- Providing value to the customer as quickly as possible
* Respecting the team- two essential points are communication and conflict management
* Optimize the whole- To create a flow of true value, the development sequence must be perfected enough to remove errors from the code  
  Using this lean methodology, development time and resources are optimized. This method is easily scalable and adaptable to projects of any size

**5) Crystal**

Introduced by Mr. Alistair Cockburn, one of the monumental persons in formulating the Agile manifesto for software development, Crystal is a group of smaller agile development methodologies comprising of Crystal Yellow, Crystal Clear, Crystal Red, Crystal Orange, and more. Each has its peculiar and exclusive framework that is characterized by factors such as system criticality, team size, and project priorities. Depending on the nature of the project or system criticality such as Comfort (C), Essential Money (E), Discretionary Money (D), and Life (L), the kind of crystal agile methodology is chosen.Similar to other methodologies of Agile, Crystal also addresses prompt delivery of software, regularity, less administration with high involvement of users, and customer satisfaction.

**6) Feature Driven Development (FDD)**

Several industry-recognized best practices are incorporated into this iterative, customer-centric, and incremental agile method. Its primary goal is to consistently produce working software in a timely fashion.Lifecycle stages include developing an overarching model of the project; creating feature lists; planning by feature; designing by feature; and finally building by feature. Using this five-step process, large project teams will be able to move their products forward at a steady pace.