Project Management Methods

Crystal

Crystal is a family of methodologies invented by Alistair Cockburn. The methodologies are categorized based on "heaviness" and "hardness" like the density and hardness of a gem. The heaviness is how many people are working on the project and hardness is the potential damage suffered from failures. Crystal methods are built on a cooperative mindset that allows for experimentation and uses incremental reflection to refine processes. Individual workers can often establish their own techniques. Although crystal typically appears in the context of agile development, it will take on heavyweight properties where necessary. Crystal wasn't meant to be approached with the question "How should I manage?" Instead, the question it helps answer is "How can I start to think in making my own method?"
https://en.wikiversity.org/wiki/Crystal_Methods
See also, http://www.processmakesperfect.net/seven.pdf

Extreme Programming or XP

Extreme programming focuses on the quality of the coding process and meeting the wants of shareholders. XP avoids wasting time through collaboration techniques and an emphasis on simplicity. Pair programming is a typical practice of XP where two coders will work at the same computer; It allows them to think together and correct errors. Unlike Scrum, XP is more open to changes in the middle of a sprint. XP is often good for medium or small sized teams that already have good coding skills. Kent Beck initially created extreme programming with specific rules but has redefined it to be more philosophical.
https://www.agilealliance.org/glossary/xp/

Kanban

Part of the "lean" umbrella, Kanban is a process method of using virtual or physical cards, sticky notes, or other things to track ongoing tasks. As you complete an item you can have the satisfaction of moving it to the next place on the task board. I have found that Kanban works well with many other methodologies and it's good for people who want to have a visual or kinesthetic connection to their management. The cool thing is that people can stick a new task at the front end of your board without it feeling like so much of a burden.
https://www.youtube.com/watch?v=R8dYLbJiTUE

Lean

Lean is about improving processes to reduce waste. It challenges the Western claim that time, cost, and quality are three points on a triangle that can't be maximized at the same time.
Lean is often combined with Six Sigma, creating "Lean Six Sigma".
https://www.smartsheet.com/guide-to-lean-project-management
See also https://en.wikipedia.org/wiki/The_Toyota_Way

Prince2

Prince2 (PRojects IN Controlled Environments) is a body of knowledge for project management. It was designed in the realm of heavy methodologies, which require more planning and documentation, but there is also a Prince2 Agile for rapidly changing projects. It is mostly focused on delivering good products.
https://en.wikipedia.org/wiki/PRINCE2

Scrum

Scrum is a flexible and iterative method that was created for software development. The processes of planning, working, and delivering are organized into short periods called sprints. Stakeholders review the product in the end of each sprint, usually one to three weeks, to provide feedback and see what else might be needed. Scrum uses daily meetings to report progress and evaluate effectiveness. Like most agile systems, it works best if the stakeholders are willing to be involved in the process. With long term projects scrum is good because it is flexible; if it's a short project, scrum may also be an easy way to establish order.
https://www.youtube.com/watch?v=9TycLR0TqFA

Six Sigma

Six Sigma is a data-driven process for guaranteeing quality. Two heavy focuses are satisfying customers and increasing profits. A true Six Sigma process is one that works successfully within 4.5 standard deviations, which is 99.99966% or 1 defect per 294,118 opportunities. Because Six Sigma is so tight on process improvement it can slow down innovation, but it can work for any project if kept in perspective. Lean is often combined with Six Sigma because saving time, money, and energy while improving quality is a marketing claim that any project manager would like.
https://www.dummies.com/careers/project-management/six-sigma/
https://www.isixsigma.com/new-to-six-sigma/how-is-six-sigma-different/why-choose-six-sigma-over-kaizen/

V-Model

An adaptation of the traditional waterfall method, typically for software development. The model is shaped like a V and the bottom of the V contains the higher level of detail. Planning stages begin on the upper left, development or implementation happens at the bottom, and delivery occurs on the upper right. It is usually better for small, clearly defined projects when you want a simple layout to help organize them.
https://en.wikipedia.org/wiki/V-Model

Waterfall

Waterfall is a traditional and linear approach to project management. The project should be planned out from the beginning and each phase leads to the next. You can use waterfall if you won't need to go back to previous steps. This works well for clearly defined projects that have tried and true solutions and it can happen naturally when the people on the project have the experience to make everything come together. Waterfall is one of the options for managers who want precise goals, steps, and deadlines.
https://en.wikipedia.org/wiki/Waterfall_model

Additional citations

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https://en.wikipedia.org/wiki/Six_Sigma

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