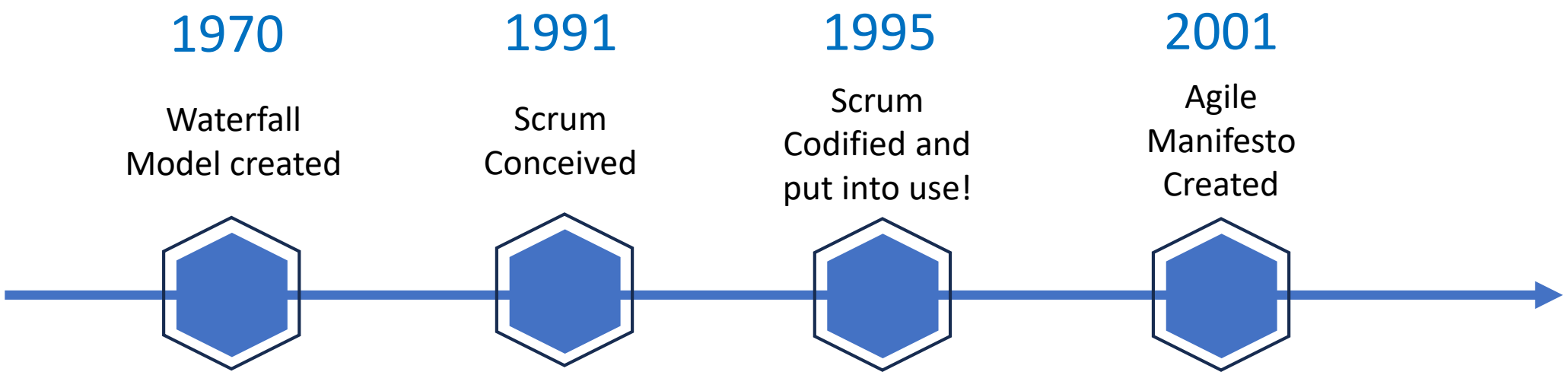
Software Engineering

From Waterfall to Agile

Waterfall to Agile



SOFTWARE ENGINEERING

Report on a conference sponsored by the

NATO SCIENCE COMMITTEE

Garmisch, Germany, 7th to 11th October 1968

Chairman: Professor Dr. F. L. Bauer

Co-chairmen: Professor L. Bolliet, Dr. H. J. Helms

Editors: Peter Naur and Brian Randell

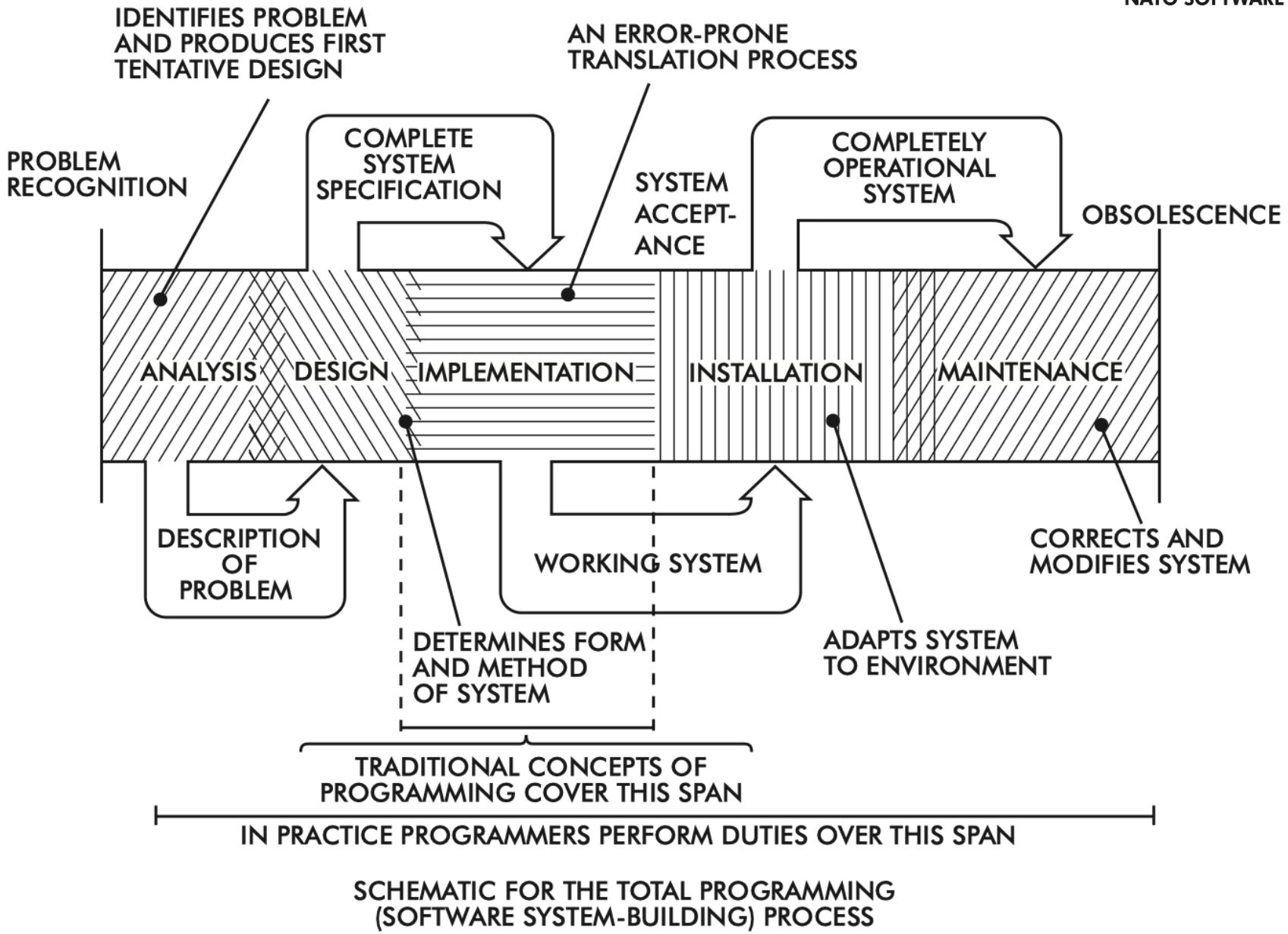
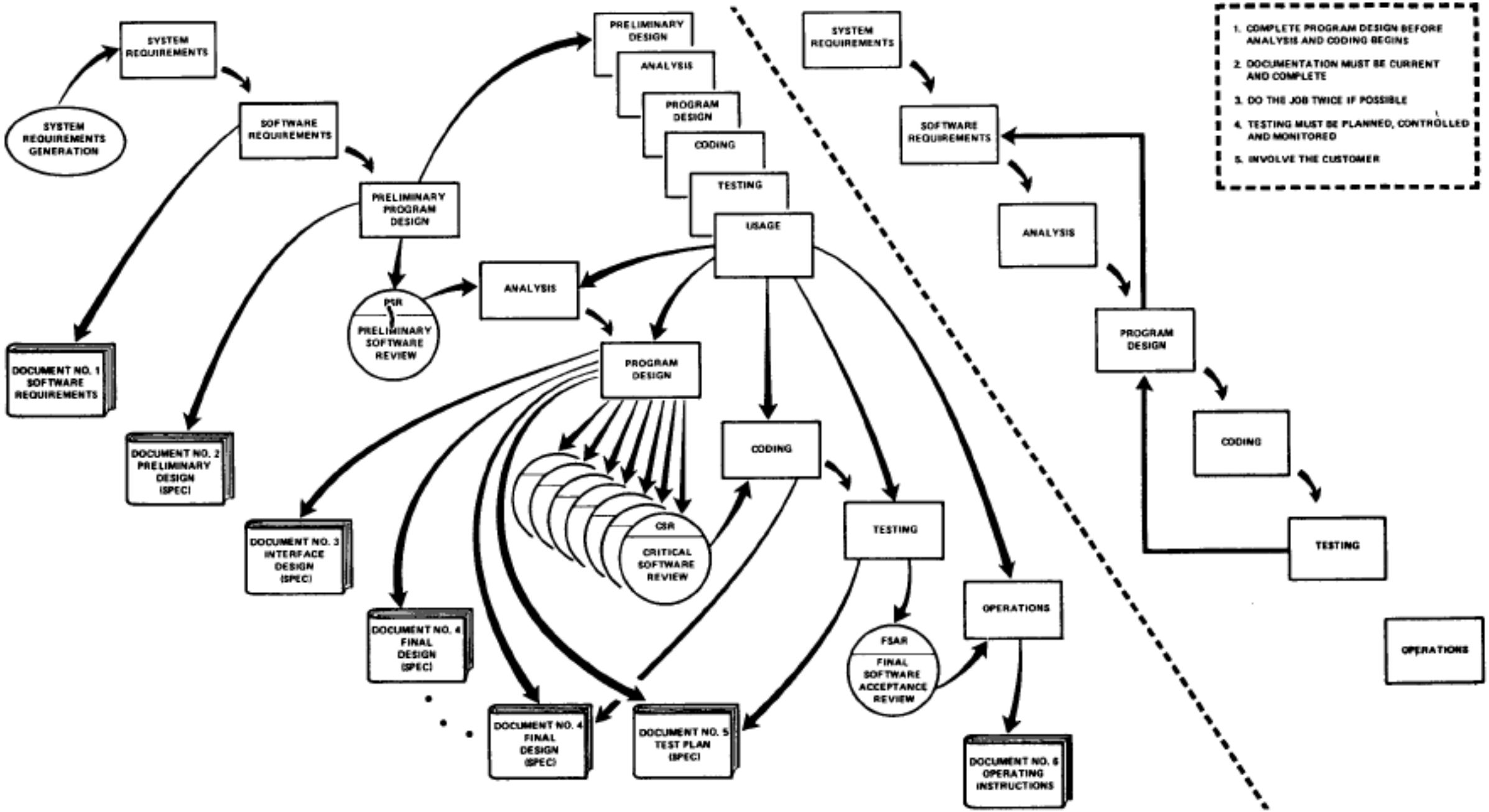
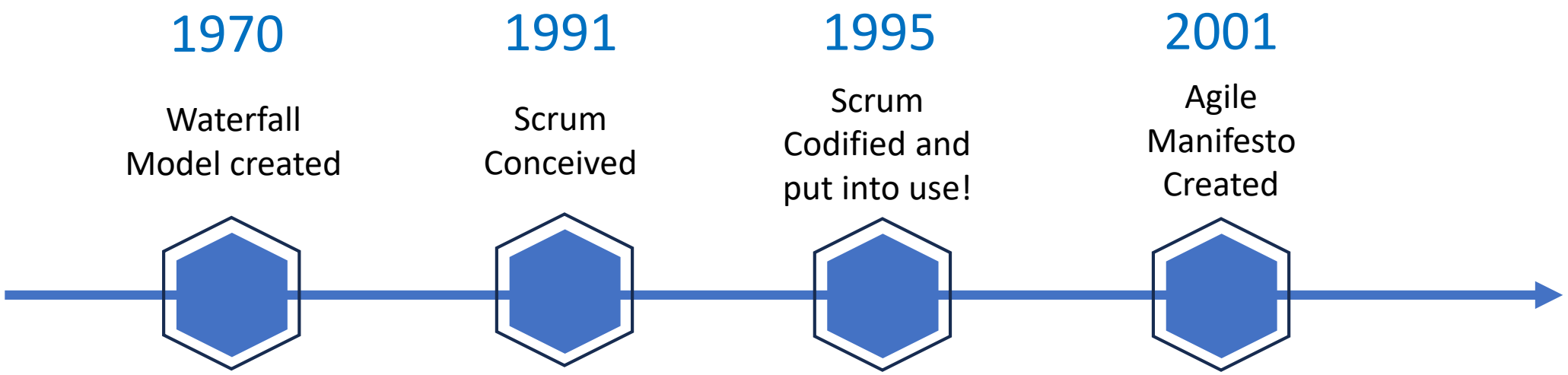


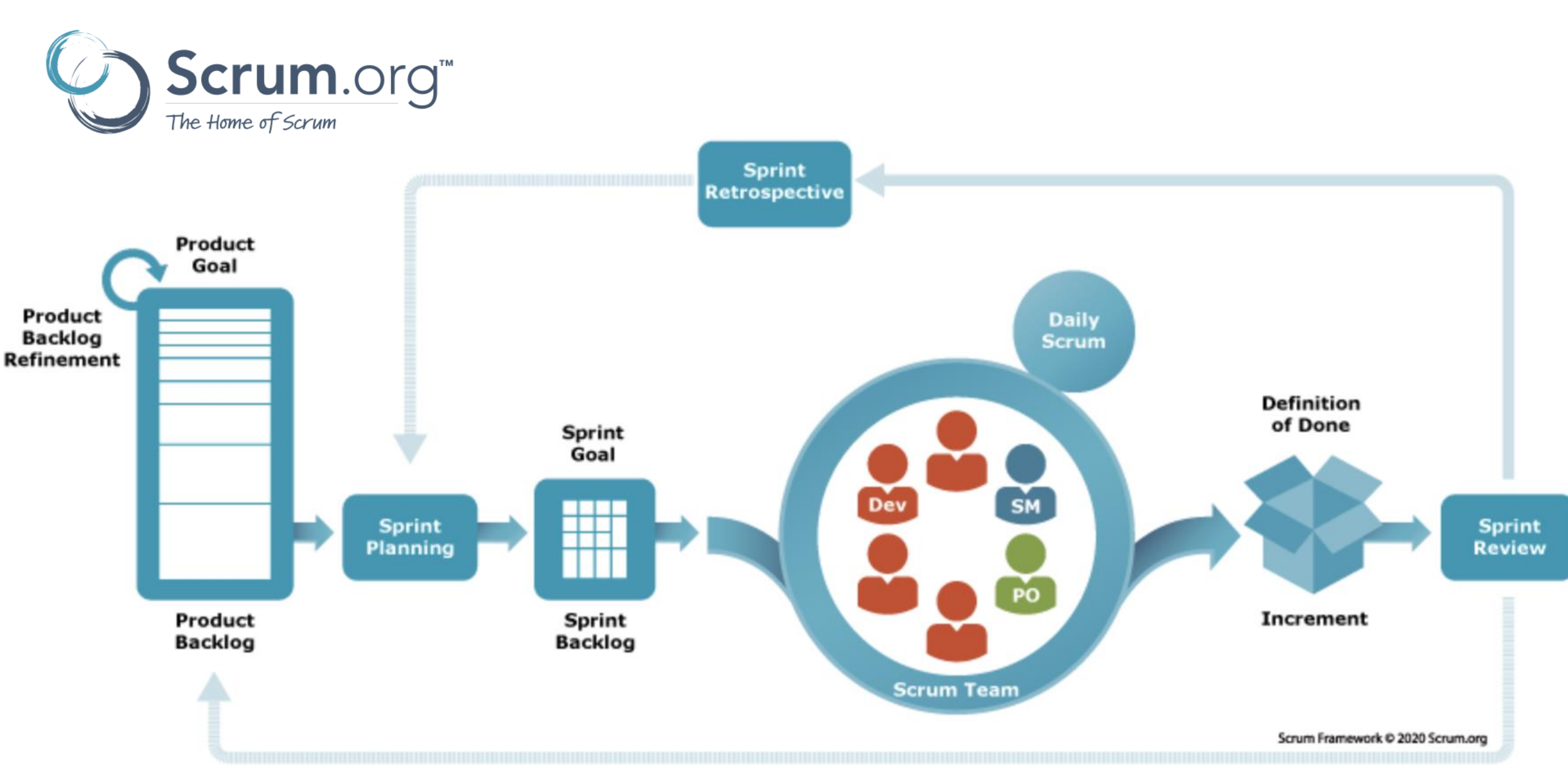
Figure 2. From Selig: Documentation for service and users. Originally due to Constantine.



1970 Winston W. Royce's Final model, published in 'Managing the Development of Large Software Systems'

Waterfall to Agile





Ken Schwaber and Jeff Sutherland 1995 - https://www.scrum.org/resources/what-scrum-module

Manifesto for Agile Software Development

We are uncovering better ways of developing
software by doing it and helping others do it.
Through this work we have come to value:

Individuals and interactions over processes and tools
Working software over comprehensive documentation
Customer collaboration over contract negotiation
Responding to change over following a plan

That is, while there is value in the items on
the right, we value the items on the left more.

Kent Beck	James Grenning	Robert C. Martin
Mike Beedle	Jim Highsmith	Steve Mellor
Arie van Bennekum	Andrew Hunt	Ken Schwaber
Alistair Cockburn	Ron Jeffries	Jeff Sutherland
Ward Cunningham	Jon Kern	Dave Thomas
Martin Fowler	Brian Marick	

Beck et al. 2001 - https://agilemanifesto.org

Principles behind the Agile Manifesto

1. Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.

2. Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.

3. Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.

4. Business people and developers must work together daily throughout the project.

5. Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.

6. The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.

7. Working software is the primary measure of progress.

8. Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.

9. Continuous attention to technical excellence and good design enhances agility.

10. Simplicity--the art of maximizing the amount of work not done--is essential.

11. The best architectures, requirements, and designs emerge from self-organizing teams.

12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

Beck et al. 2001 - https://agilemanifesto.org

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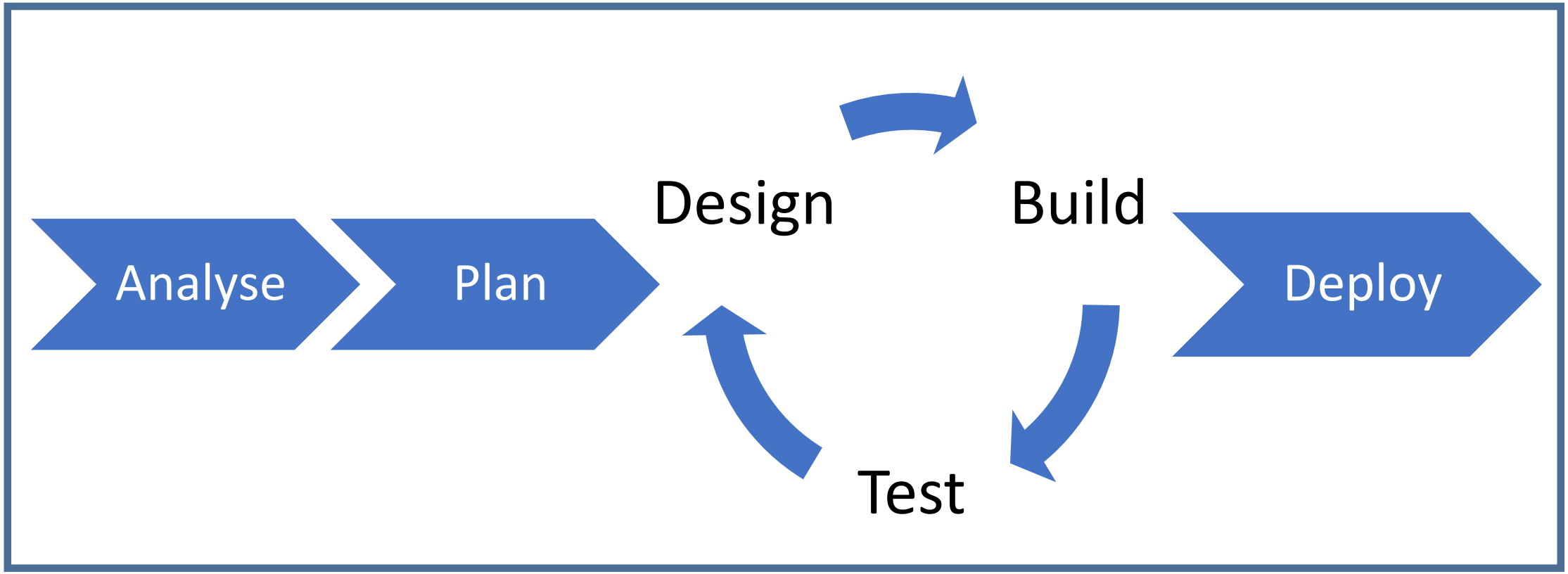
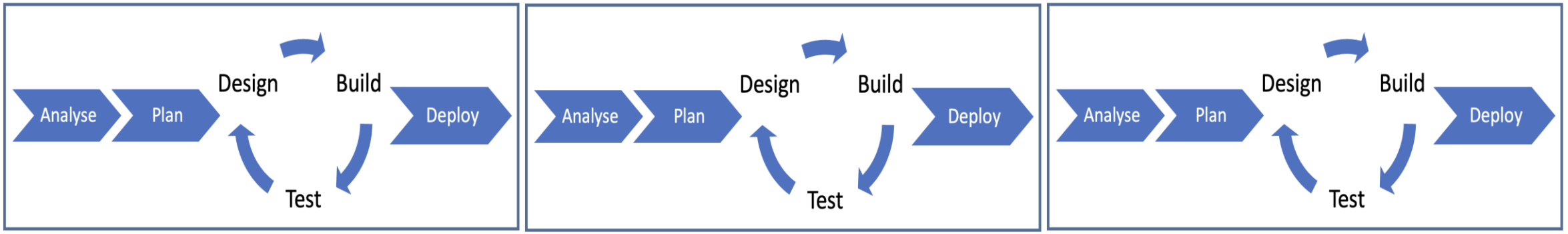
Implementation: a typical ‘sprint’

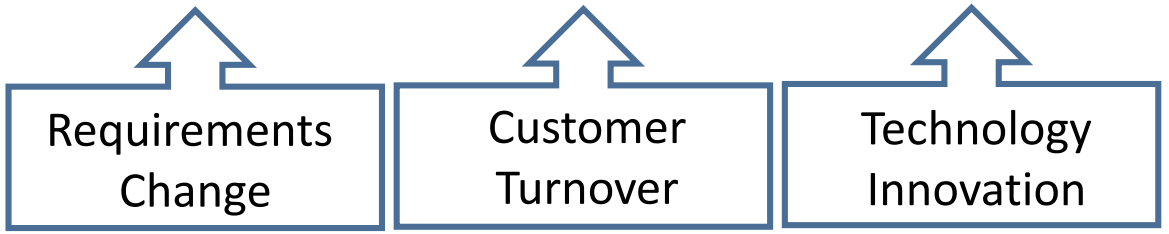


Waterfall

Agile



Project Timeline



Assignment task

Your task is to form a group (recommended minimum of two members, maximum of four) to:

- Collaborate and develop a game in a language and framework of your choice.
- Document the development stages of your game by making regular commits to your combined GitHub repository.
- Present (as a group) your game concept and a live demonstration of how your game can be played.

Guidelines and advice

Basic requirements for the development of Game:

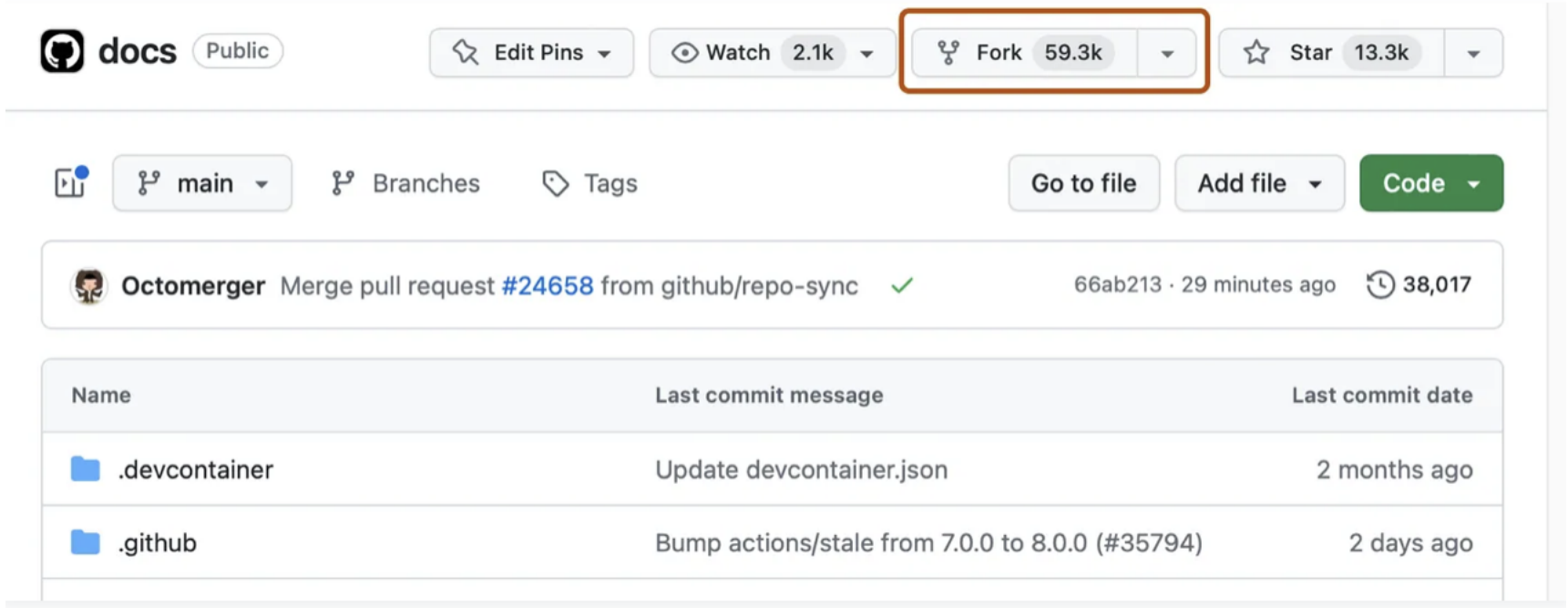
- Select a suitable Object-Oriented Programming language (e.g. Python, Java, C#, C++, JS etc) and framework (PyGame, Greenfoot, MonoGame, Unity etc).
- Create a 2D game with a minimum of one level.
- The playable character should have some form of attribute (health, energy, magic, strength etc) level which can increase or decrease.
- The playable character should be able to collect and store items and then use items.
- There should be some form of 'opposition' (e.g. enemies, time limit, reduction in energy as player moves around the level etc.) that makes the objective of the game more challenging to achieve.


GitHub


What is
GitHub?

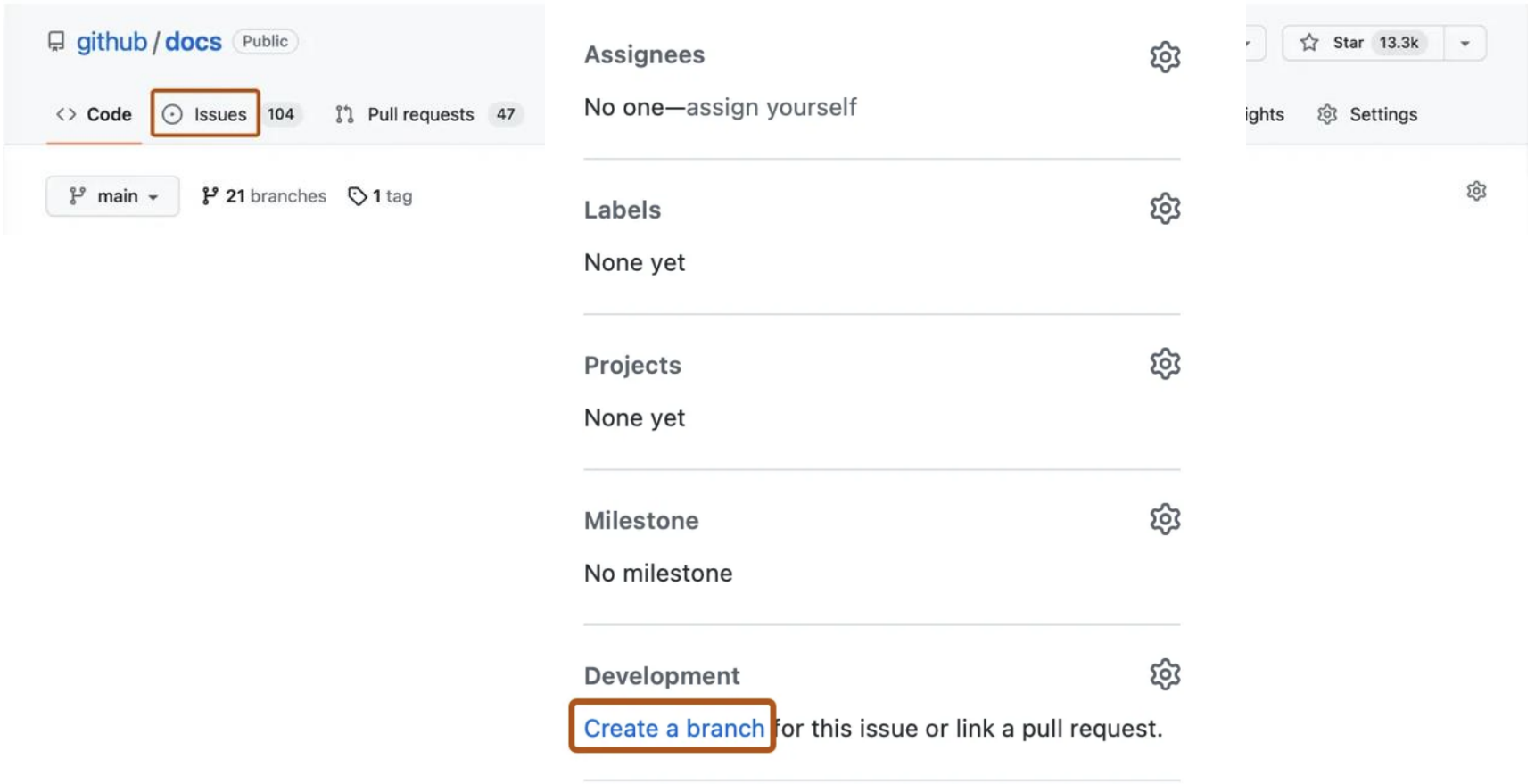
Forking or branching?

Forking: Creates a copy of the entire repository



https://docs.github.com/en/get-started/quickstart/fork-a-repo

Branching: portion of the repo (branch of a tree) to isolate work on an issue



https://docs.github.com/en/issues/tracking-your-work-with-issues/creating-a-branch-for-an-issue