Designing innovative products -introduction-

Tech

- Sem 1: Innovation in project Management: Agile
- Sem 2: Innovation in UX/UI
- Sem 3: Innovative products with AI. Part 1
- Sem 4: Innovative products with AI. Part 2
- Sem 5: IoT and Cloud
- Sem 6: Data driven innovation
- Sem 7: Habit forming products

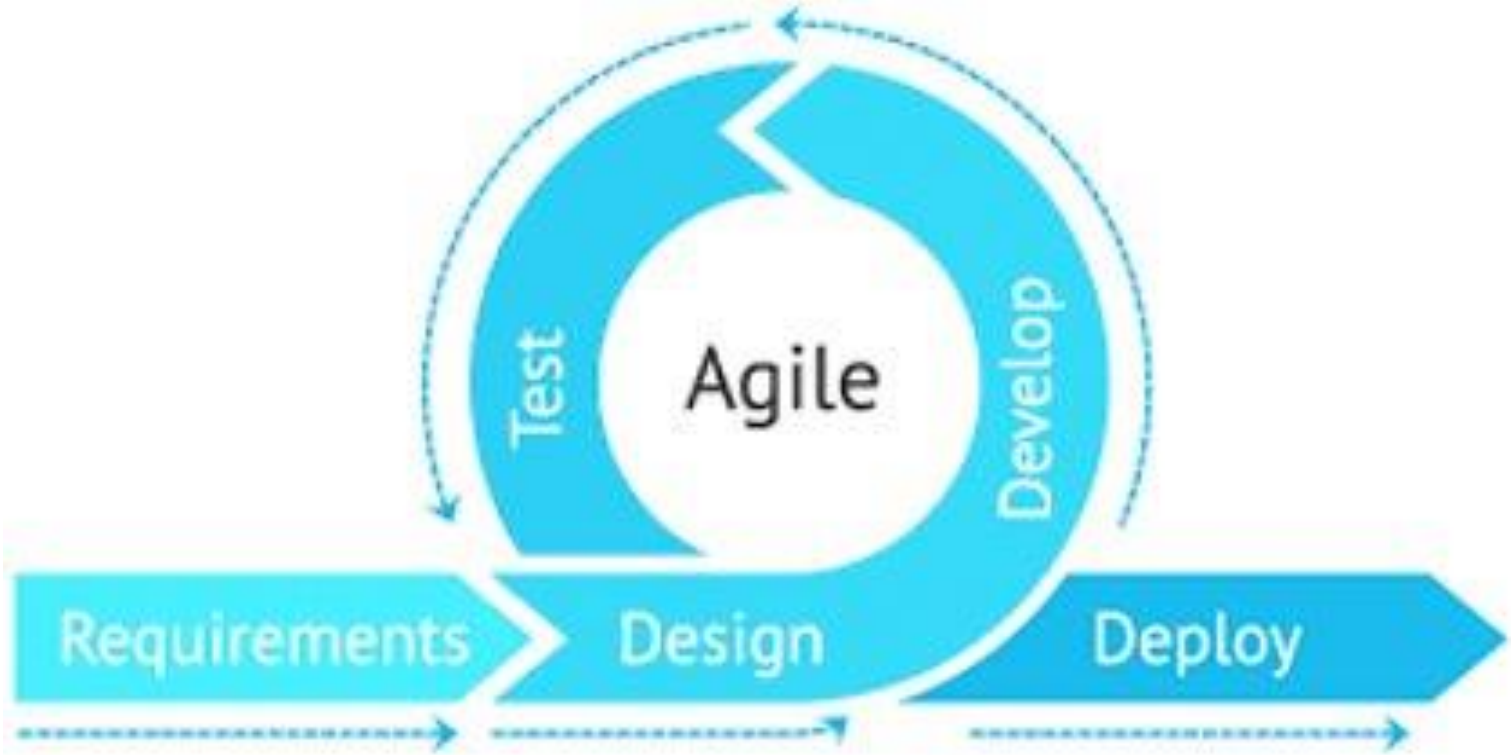
Business

- Sem 1: Market research, opportunities and needs assessment
- Sem 2: Customer segmentation, empathy map and persona
- Sem 3: Lean Startups Canvas
- Sem 4: Value proposition design
- Sem 5: Business Model Canvas design 1
- Sem 6: Business Model Canvas design 2
- Sem 7: Prototyping.Work Canvas

Before Starting

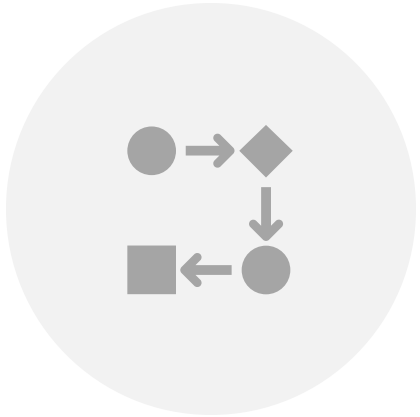
- **What is innovation?**
- **Product innovation** refers to changes that improve design, materials, feel, look, capacity, functionality, and overall user experience

Agile project management (APM)



Agile Project Management (APM)

AGILE PROJECT MANAGEMENT (APM) IS AN **ITERATIVE APPROACH** TO PLANNING AND GUIDING PROJECT PROCESSES.



IT BREAKS PROJECT PROCESSES INTO **SMALLER CYCLES** KNOWN AS SPRINTS OR **ITERATIONS**.

CONTINUOUS RELEASES ARE A FOCUS, INCORPORATING FEEDBACK WITHIN EACH ITERATION.

Waterfall Model Project Management

- The **Waterfall Model** is a sequential project management approach. It consists of distinct phases that follow a **linear** and **one-directional** flow.
- Phases include **Requirements**, **Design**, **Implementation**, **Testing**, **Deployment**, and **Maintenance**.
- According to a study by PMI, **56%** of projects used traditional — AKA Waterfall.

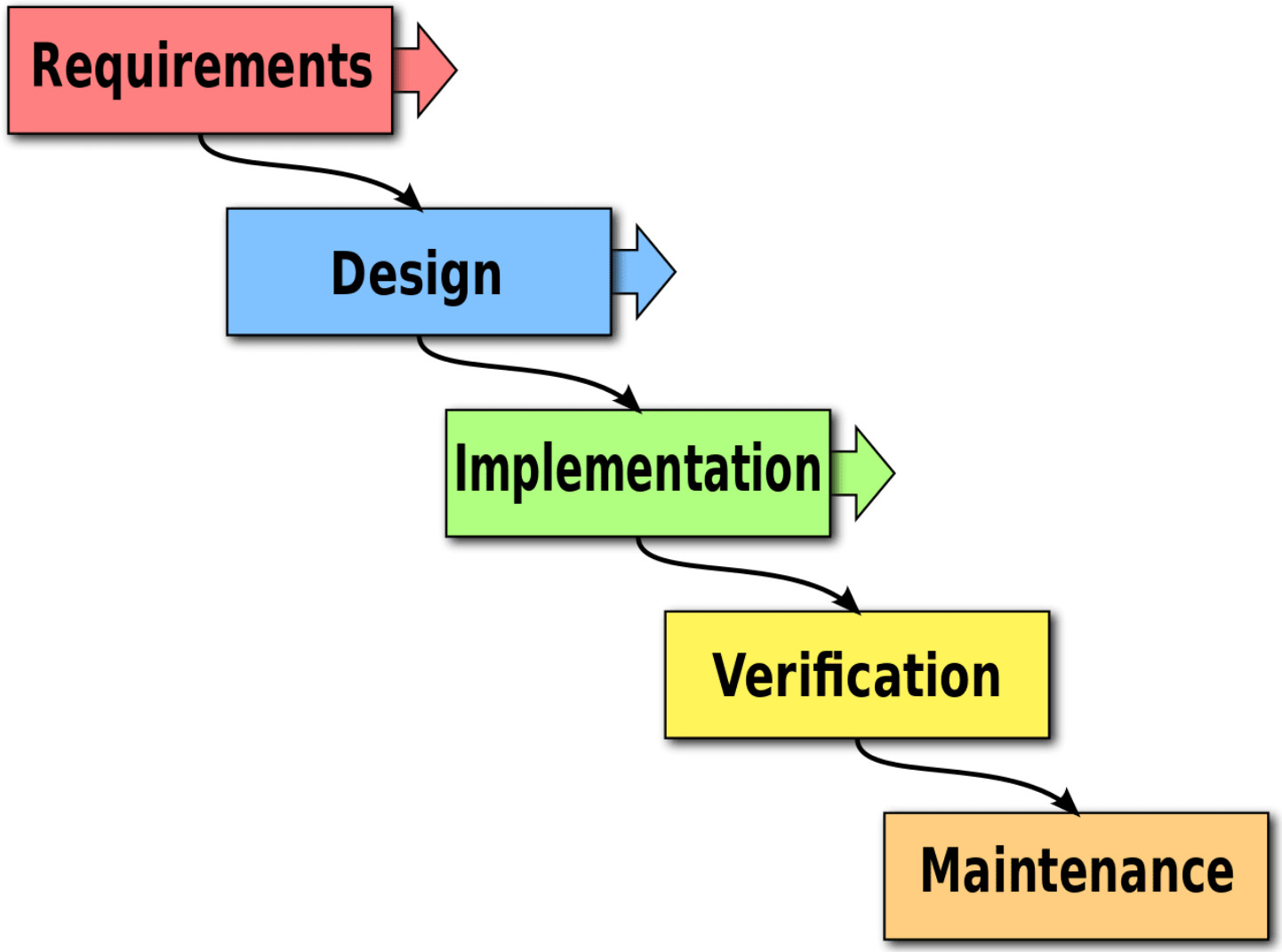


Image source: https://monday.com/blog/project-management/waterfall-methodology/

Agile workflow

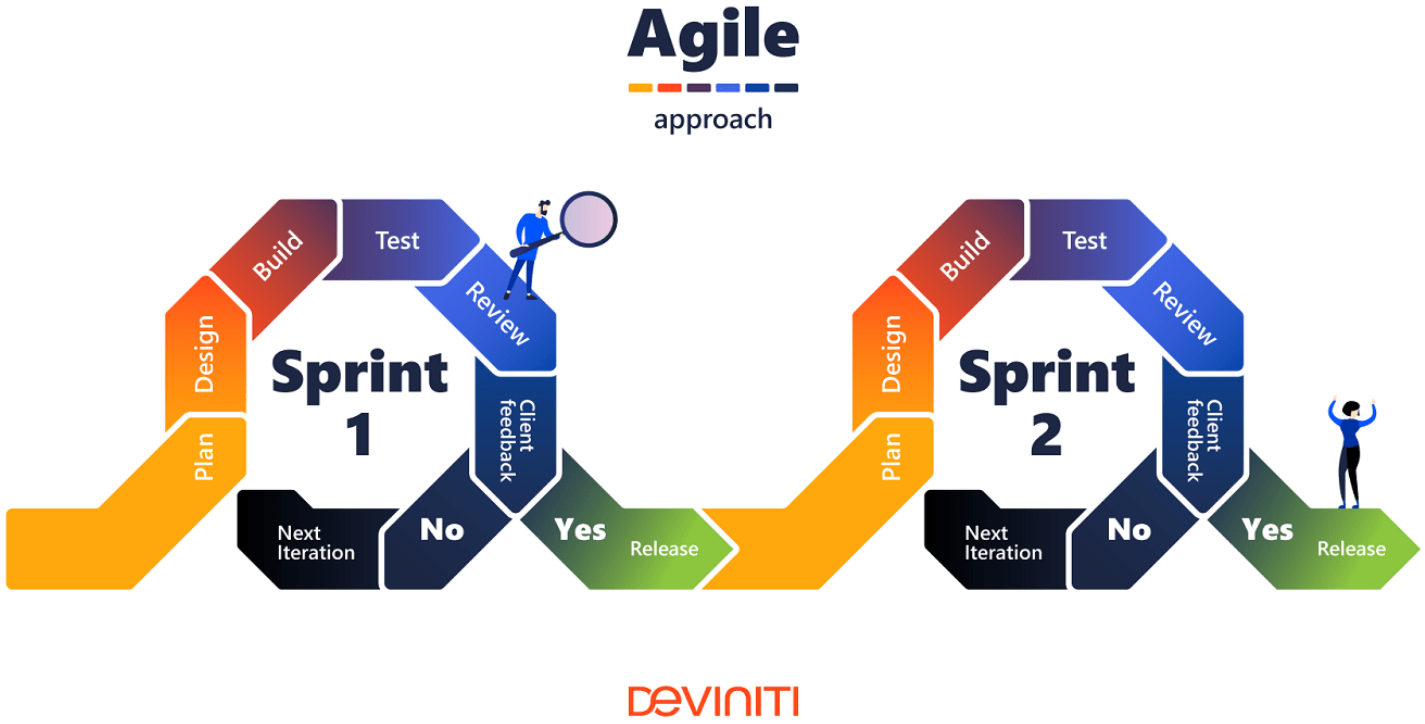


Image source: https://deviniti.com/blog/application-lifecycle-management/requirements-documentation-project-management-approach/

Agile vs Waterfall

	Waterfall	Agile
Implementation	Linear	Iterative
Timescale of detailed plans	Entire project	Typically 2–8 weeks
Stakeholder engagement	Mostly upfront	Throughout entire project
Team structure	Traditional hierarchy	Often more self-organized
Main benefit	Predictable, reliable outcome, and controlled process	Flexibility to adapt to rapidly changing markets

- Source: https://monday.com/blog/project-management/waterfall-methodology/

Benefits

Enhanced Autonomy: Project management empowers designers to focus on models that align with their individual strengths, resulting in increased freedom.

Optimal Resource Utilization: The approach facilitates swift deployment while minimizing resource wastage, ensuring efficient resource management.

Heightened Flexibility and Adaptability: Developers can more effectively adjust to changes and implement necessary modifications, showcasing greater adaptability.

Swift Problem Identification: The method enables rapid issue recognition, leading to quicker resolutions and improved project control.

Amplified User Collaboration: There is an increased interaction with users, fostering the development of products that align more closely with user requirements.

Contrasts with Traditional Approaches: Unlike conventional project management methods such as Waterfall, APM doesn't mandate highly defined goals and processes at the project's outset, emphasizing its distinctive approach.

Drawbacks

Variable Outcomes: Project outcomes may lack consistency due to the absence of well-defined initial approaches, potentially leading to deviations from the intended path.

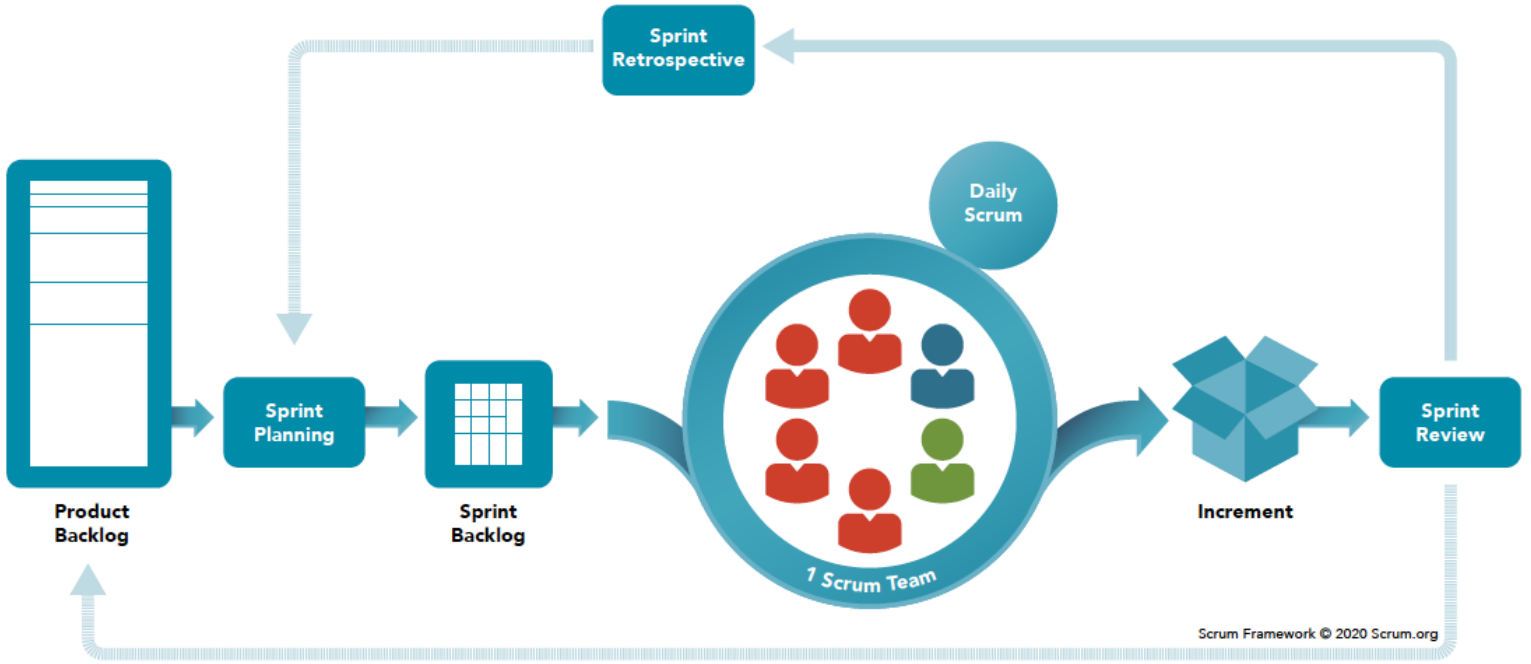
Ambiguous Progress Assessment: Projects that deviate from their intended trajectory can result in less predictable results, making it challenging to gauge progress accurately.

Time constraints. Agile management relies on making decisions quickly, so it isn't suitable for organizations that take a long time to analyze issues.

Communication Complexity: The need for ongoing collaboration among teams and end users can introduce communication difficulties, essential for crafting an optimal end product.

Scrum

- A **Product Owner** orders the work for a complex problem into a Product Backlog.
- The **Scrum Team** turns a selection of the work into an Increment of value during a Sprint.
- The **Scrum Team and its stakeholders** inspect the results and adjust for the next Sprint.
- ***Repeat***



Source https://www.scrum.org/resources/what-scrum-module

Lean

- A concept that emphasizes optimizing efficiency and **minimizing waste** in the software development - Minimum Viable Product (MVP) strategy
- **Eliminating the Waste:** To identify and eliminate wastes e.g. unnecessary code, delay in processes
- **Fast Delivery:** building products quickly that included a little functionality and launch to market and see the reaction
- **Amplify Learning:** ample code reviewing
- **Builds Quality:** test-driven approach, constant feedback
- **Respect Teamwork**: empowering team members, rather than controlling them
- **Delay the Commitment:** postponing irreversible decisions until all experiments are done
- **Optimizing the whole system:** break an issue into small constituent parts create unity among members, and inspire a sense of shared responsibility

Source https://kruschecompany.com/wp-content/uploads/2021/10/lean.png

Kanban

- Visual system used to manage and keep track of work as it moves through a process (pull system)
  - Implemented by Toyota in manufacturing (1950)

The 6 Core Kanban Principles

- **Start with what you do now:** understanding of the current processes and workflows
- **Agree to pursue incremental, evolutionary change:** advocates for small, incremental changes that build on each other
- **Encourage acts of leadership at all levels:** Anyone can take leadership and suggest improvements
- **Focus on customer needs and expectations:** understanding the needs and expectations of your customers
- **Manage the work, not the workers**: empowers people's abilities to self-organize around the work
- **Regularly review the network of services:** encourages team members to share their observations, ideas

Source https://upload.wikimedia.org/wikipedia/commons/b/b4/Abstract_Kanban_Board.svg

Milestones (week 3, 4):

- Decide the **working environment** and **setup** the project (create a “hello world” mobile/web/desktop/cloud application, or install the necessarily scientific tools for AI-models) **(2p)**
- Setup a **GitHub project** and add the teacher (@ileniTudor) as member. **(1p)**
- **Assign roles** to the team members (one member can have multiple roles) **(2p)**:
  - Tech: UI/UX, data scientist, backend/frontend developer, ...
  - Business: Project Manager, social media guru, marketing, market researcher …
- Define the **list of functionalities (backlog):** login, CRUD operations, notifications, AI-inference, backup, cloud storage, offline functionalities … **(4p)**
  - After hackathon
- Publish this doc in the MSTeams Assignment (one per team)

Bibliography

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