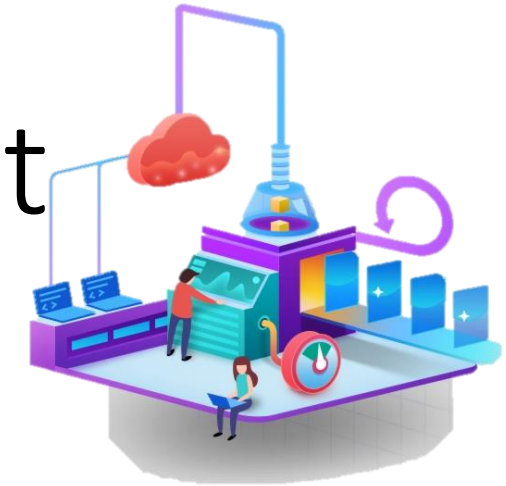
SWE316
New Methods of Software Development



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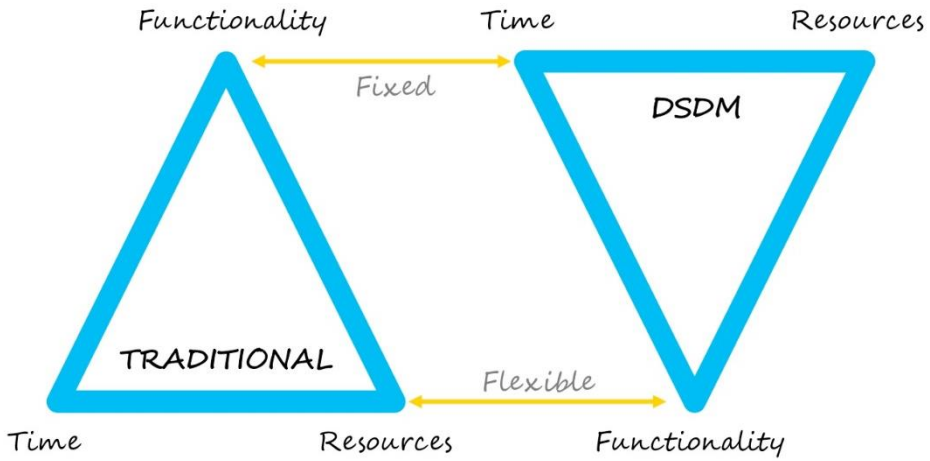
Dynamic Systems Development

- Since in 1994, DSDM, the Dynamic Systems Development Method, has gradually become the number one framework for rapid application development (RAD) in the UK.
- The fundamental idea behind DSDM is that instead of fixing the amount of functionality in a product, and then adjusting time and resources to reach that functionality, it is preferred to fix time and resources, and then adjust the amount of functionality accordingly



Core principles of DSDM

- **Focus on the business need.** DSDM teams work towards achieving projects that align with greater business objectives and exist within parameters that make sense for the business.
- **Deliver on time.** Prompt delivery is a vital part of DSDM projects, as one of the method's goals is to reap benefits early.
- **Collaborate.** DSDM teams involve all relevant parties and grant each other the means to give feedback and make decisions.

Core principles of DSDM

- **Maintain high quality.** DSDM teams set clear standards before beginning work and evaluate their progress regularly to ensure they're meeting these standards.
- **Build incrementally from firm foundations.** Teams strive to produce the right amount of work at the right time to ensure they produce work that aligns with their plans.
- **Develop iteratively.** Teams implement feedback promptly and adapt to ongoing changes in a project's specifications and needs.

Core principles of DSDM

- **Communicate continuously and clearly.** DSDM teams can use a variety of tools to provide written, verbal and visual updates to teammates, other departments, managers and interested parties.
- **Demonstrate control.** A team leader or project manager practices transparency to make all team members aware of changes, plans, progress, updates and goals.

Disadvantages

- Minimizes creativity: Because it encourages developers to work quickly, it may limit risk-taking. The focus on iterative development may allow professionals to revisit their work to infuse more unique, creative elements later.
- Demands structure: DSDM works best when teams have a reliable structure, full support from management and capable project managers to lead the project life cycle. You can implement more structure in your team before committing to DSDM to ensure its success.

Lifecycle

- DSDM typically includes the following five major phases:
  1. **Feasibility**
  2. **Business study**
  3. **Functional model iteration**
  4. **Design and build**
  5. **Implementation**

Feasibility

- During this stage, you can review the project's specifications to determine if it's realistic for your team to achieve.
- Consider if you can meet your goals with the budget, timeline and technology available to you.

Business study

- Once you know the project is technically possible, research the project from a business perspective.
- Review if it aligns with the organization's overall objectives, if it competes effectively with other organizations in your industry and if it meets the needs of potential users.
- You can supplement your plan with sensible details that align with business objectives.

Functional model iteration

- During this phase, you build a prototype that meets the specifications determined in earlier phases.
- It's important to test and evaluate the prototype to ensure it works as intended and contains all important functionalities.
- You can repeat this phase until you have an effective prototype on which you want to base your final product.

Design and build

- You can then refine your prototype to optimize its efficiency.
- During this time, you might design additional components to strengthen your project and address any issues.
- Test your product carefully to ensure it's responsive, functional and easy to use.

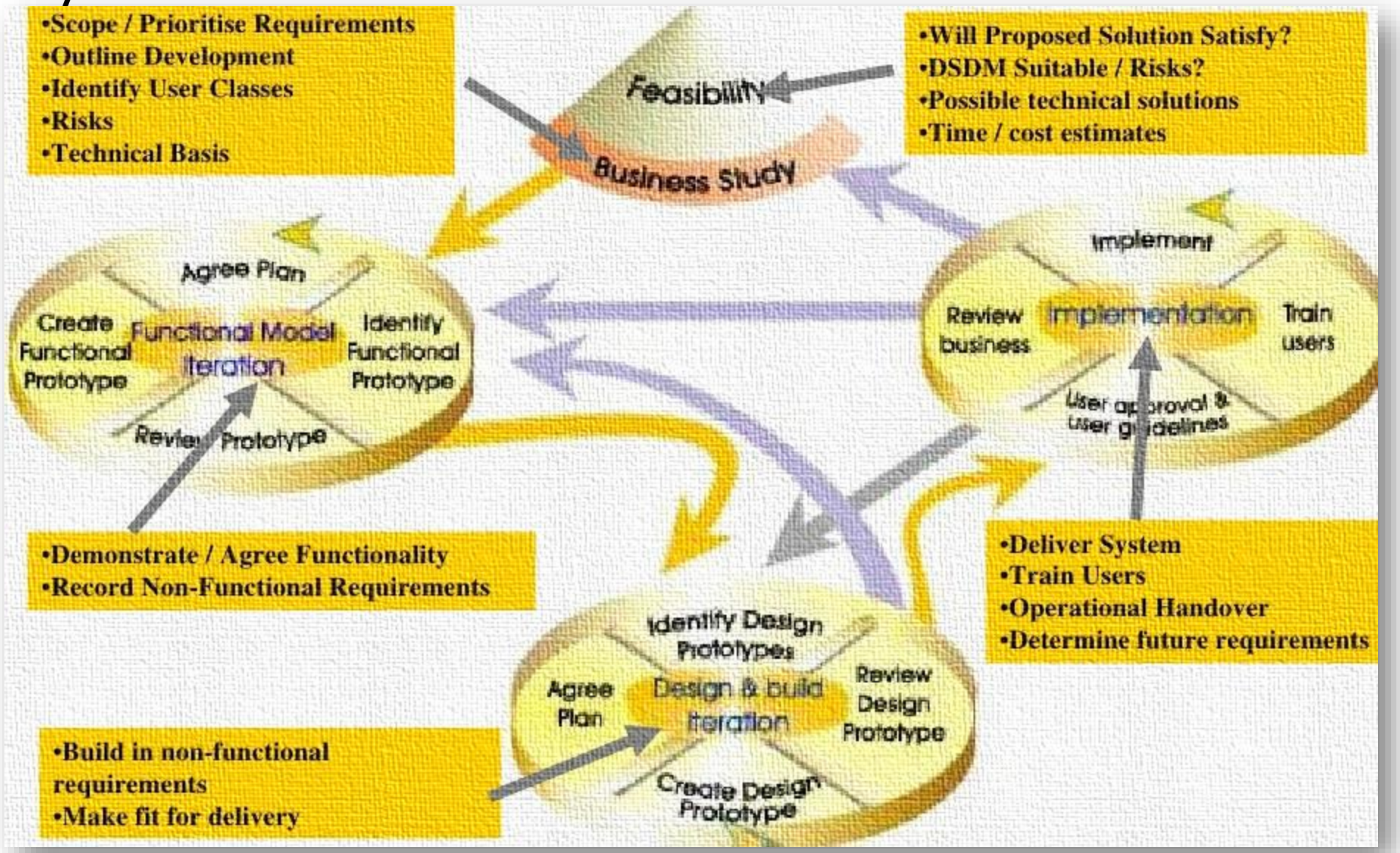
Implementation

- You then release your project into its operational environment to learn if it's effective.
- Users learn how to operate it, and they provide feedback.
- When you finish this stage, you know if the product is complete or if you have new challenges.
- Depending on the feedback you receive, you might return to a previous stage to adjust your system until it's successful.

Implementation

- At the end of this phase, there are **four possibilities**
  - Everything was delivered as per the user demand, so no further development required.
  - A new functional area was discovered, so return to business study phase and repeat the whole process.
  - A less essential part of the project was missed out due to time constraint and so development returns to the functional model iteration.
  - Some non-functional requirement was not satisfied, so development returns to the design and build iterations phase.

Lifecycle


•Scope / Prioritise Requirements
•Outline Development
•Identify User Classes
•Risks
•Technical Basis
Feasibility
Business Study
•Will Proposed Solution Satisfy?
•DSDM Suitable / Risks?
•Possible technical solutions
•Time / cost estimates
Agree Plan
Create Functional Prototype
Functional Model Iteration
Identify Functional Prototype
Review Prototype
Implement
Review business
Implementation
Train users
User approval & user guidelines
•Demonstrate / Agree Functionality
•Record Non-Functional Requirements
•Deliver System
•Train Users
•Operational Handover
•Determine future requirements
Identify Design Prototypes
Agree Plan
Design & build Iteration
Review Design Prototype
Create Design Prototype
•Build in non-functional requirements
•Make fit for delivery

Roles

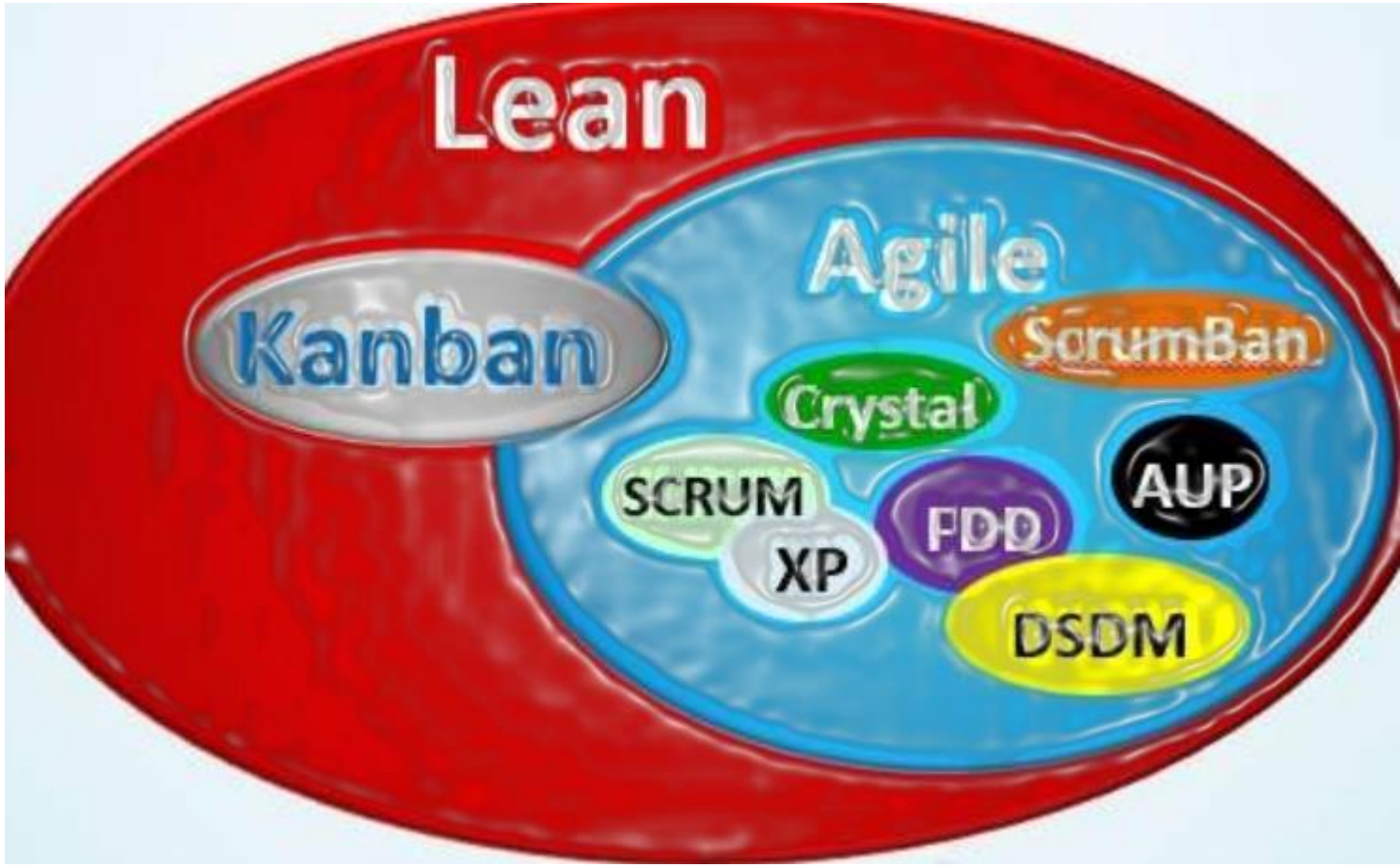
- Business Sponsor: The project champion, responsible for the business case and project budget
- Business Visionary: Represents the Business Sponsor by communicating the vision of the project and interpreting the needs.
- Project Manager: Responsible for the high-level coordination of the project
- Technical Coordinator: Ensures technical consistency and coherent (especially when there are multiple teams).
- Business Analyst: Facilitates the relationship between technical and business people, and between project level and team level.

Roles

- Technical Advisor: Gives teams ad hoc advice on technical aspects.
- Business Advisor: Gives teams ad hoc advice on business aspects.
- Team Leader: Responsible for coordination inside a team
- Solution Developer: Develop the product.
- Solution Tester: Test the product.
- Workshop Facilitator: Facilitates workshops!
- DSDM Coach: Helps use the DSDM method.

LEAN (Kanban)

- LEAN : Lean development practices are based on the Lean methodologies that have been used successfully in manufacturing processes.



Kanban

- Kanban is a method for managing knowledge work with an emphasis on just-in-time delivery while not overloading the team members.
- Kanban is an approach to incremental, evolutionary process and systems change for organizations.
- It comes from Japanese word, kanban is literally translated as signboard.

The Principles of Kanabn Board

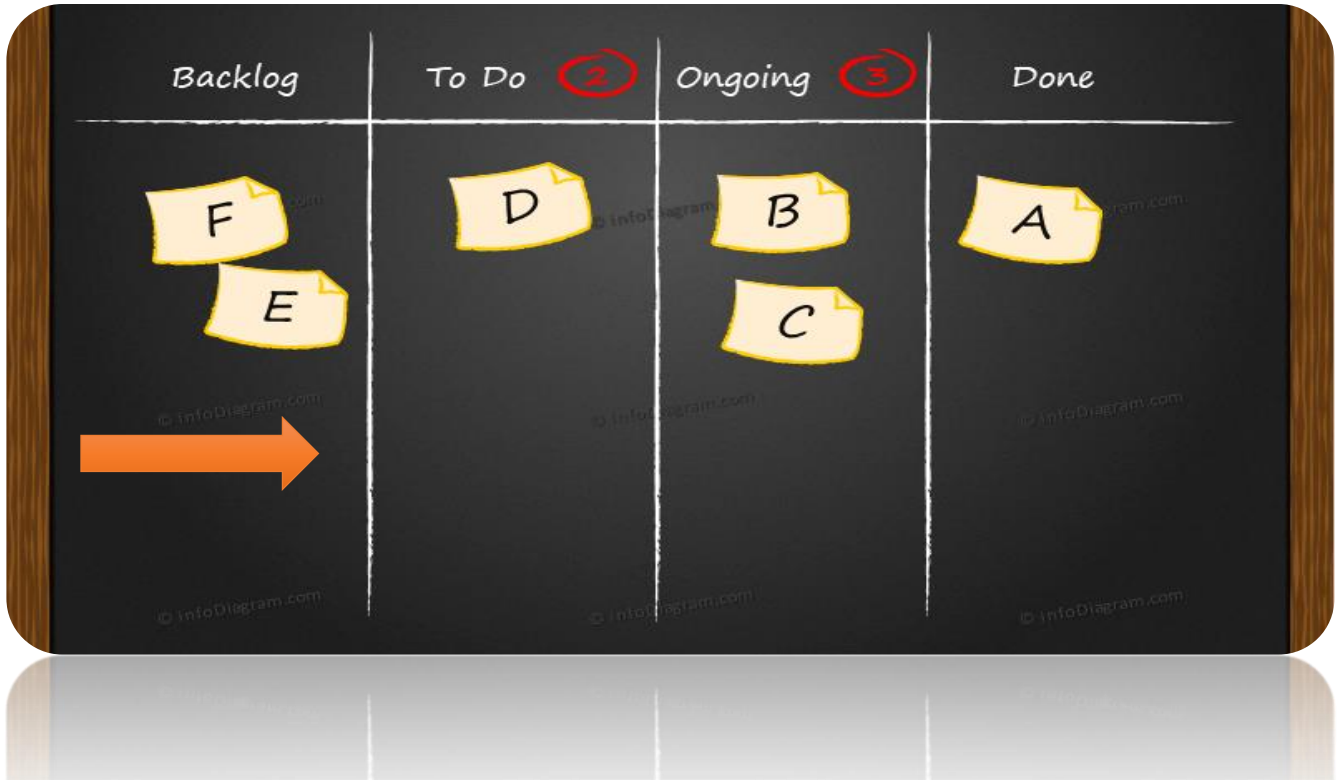
- Principle 1: Start With What Do want Now.
- Principle 2: Agree to Pursue Incremental, Evolutionary Change.
- Principle 3: Respect the Current Process, Roles & Responsibilities.
- Principle 4: Encourage Acts of Leadership at All Levels.

The 6 Practices of Kanban

1. Visualize the Workflow.
2. Limit Work in Progress.
3. Manage Flow.
4. Make Process Policies Explicit.
5. Feedback Loops.
6. Improve Collaboratively.

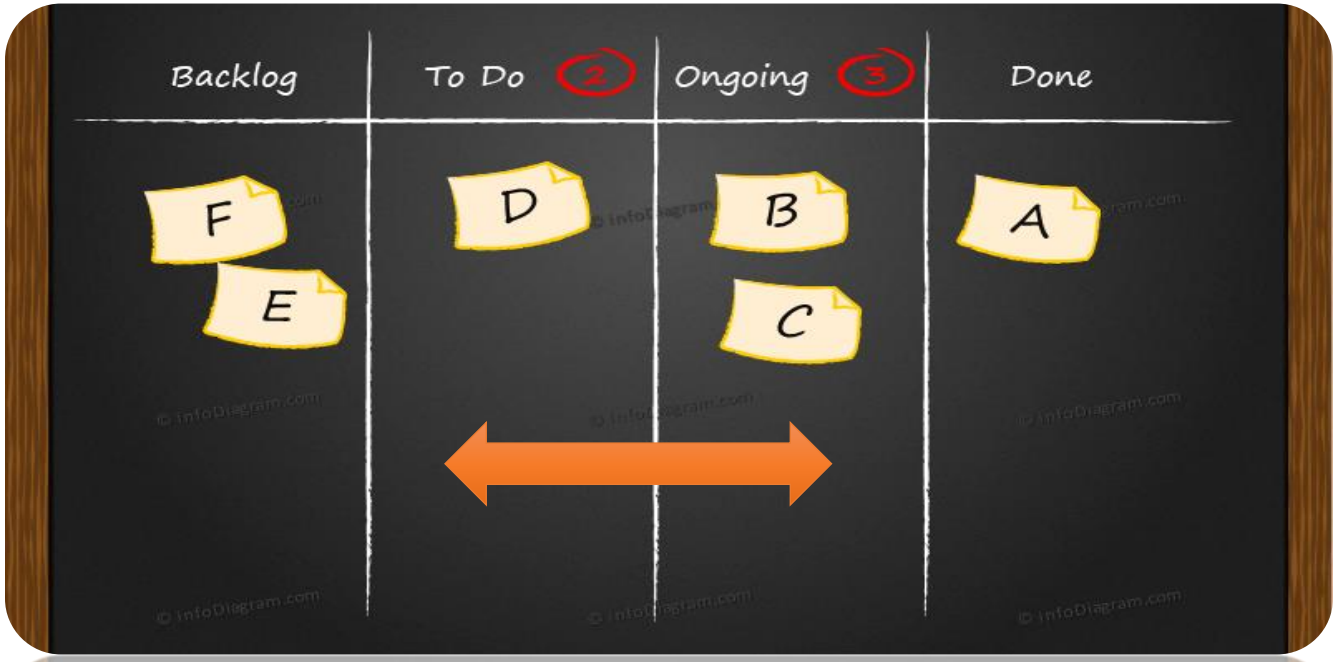
Visualize the Workflow

Visualizing workflows supports proper understanding of changes planned and helps to implement them according to this plan. A common way to visualize the workflow is to use a card wall with cards and columns. The columns on the card wall represent different states or steps in the workflow.



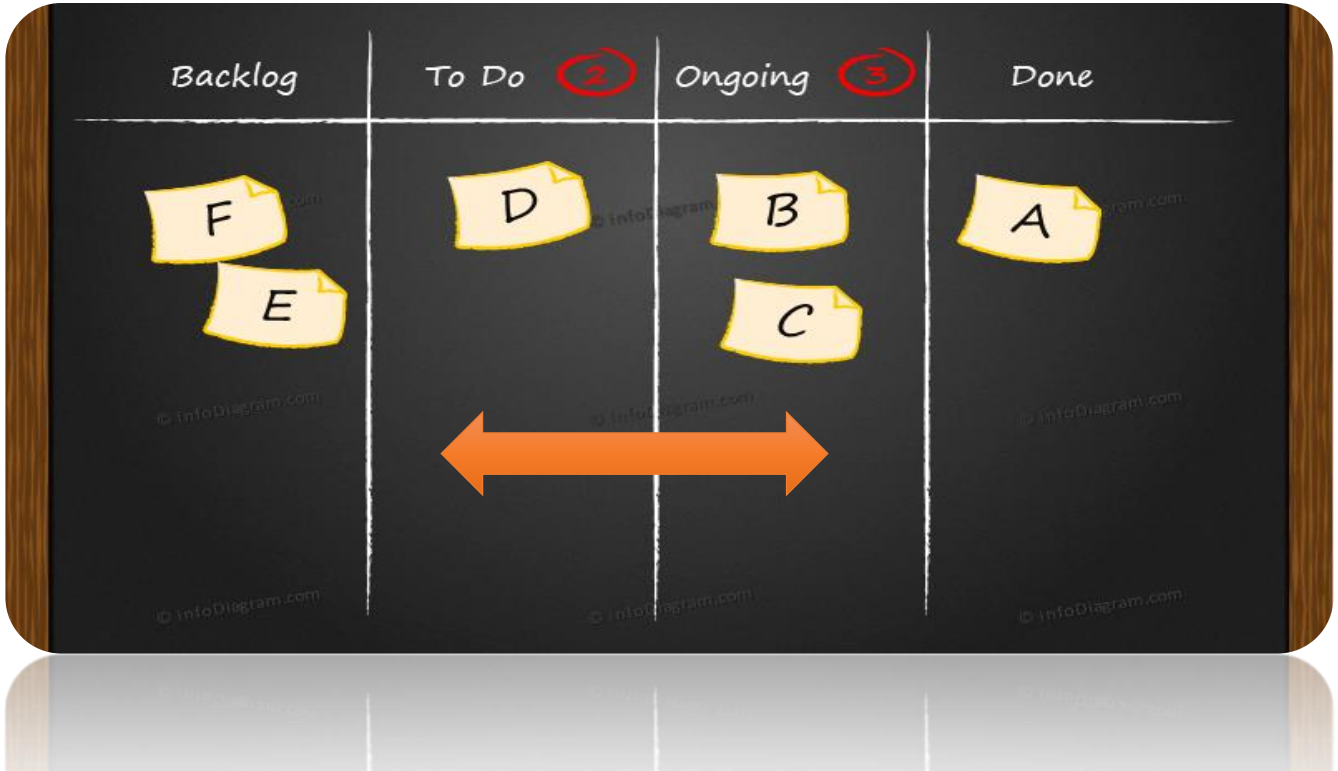
Limit Work in Progress

Limiting work-in-process implies that a pull system is implemented on parts or all of the workflow. The pull system acts as one of the main stimuli for continuous, incremental and evolutionary changes to the system. The pull system can be implemented as a kanban system. The critical elements are that work-in-process at each state in the workflow is limited and that new work is "pulled" into the new information discovery activity when there is available capacity within the local WIP limit.



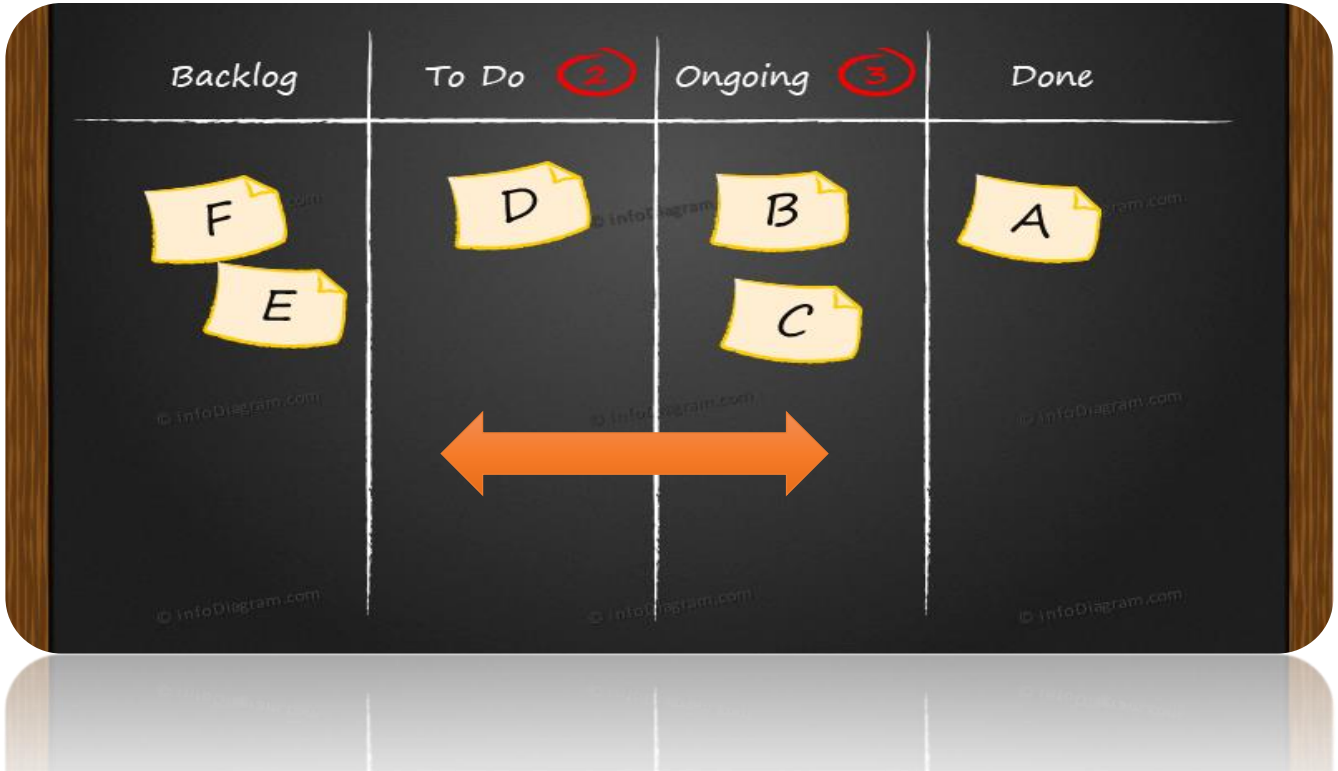
Manage Flow

Each transition between states in the workflow is monitored, measured and reported. By actively managing the flow the continuous, incremental and evolutionary changes to the system can be evaluated to have positive or negative effects on the system.



Make Process Policies Explicit

Until the mechanism of a process is made explicit, it is often hard or impossible to hold a discussion about improving it. Without an explicit understanding of how things work and how work is actually done, any discussion of problems tends to be emotional, anecdotal and subjective. With an explicit understanding it is possible to move to a more rational, empirical, objective discussion of issues.



Feedback Loops

The Kanban method encourages small continuous, incremental and evolutionary changes that stick. When teams have a shared understanding of theories about work, workflow, process and risk, they are more likely to be able to build a shared comprehension of a problem and suggest improvements which can be agreed to by consensus. Teams measure their effectiveness by tracking flow, quality, throughput, lead times and more. Experiments and analysis can change the system to improve the team’s effectiveness.

Improve Collaboratively

The way to achieve continuous improvement and sustainable change within an organization is through shared vision of a better future and collective understanding of the issues that need to be overcome..

The Positive and Negative Side of Kanban

Positive Side

1. Everyone is on the same page
2. Kanban reveals bottlenecks in your workflow.
3. Kanban brings flexibility
4. Team gets more responsive
5. focus on finishing work to boost collaboration and productivity
6. Easy access for remote team members
7. Flow analytics

Negative side

1. Outdated Kanban board can lead to issues in the development process.
2. Some time Kanban team make the board overcomplicate.
3. Lack of timing is another disadvantage because there is no timeframes are associated with each phase.


KANBAN Desk
Stories
To Do
In Progr.
Testing
Done !
US N° 10
US N° 11
12
US N° 8
US N° 9
US N° 7
US N° 5
US N° 6
US N° 1
US N° 2
US N° 4

THANK YOU!