Research Methodology for PhDs

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Session 13-1 Topics

- Research Project Enablement:
  - -Specific character of a research project
  - -Types of research projects
  - -Planning approach - Kanban

What a Project Is

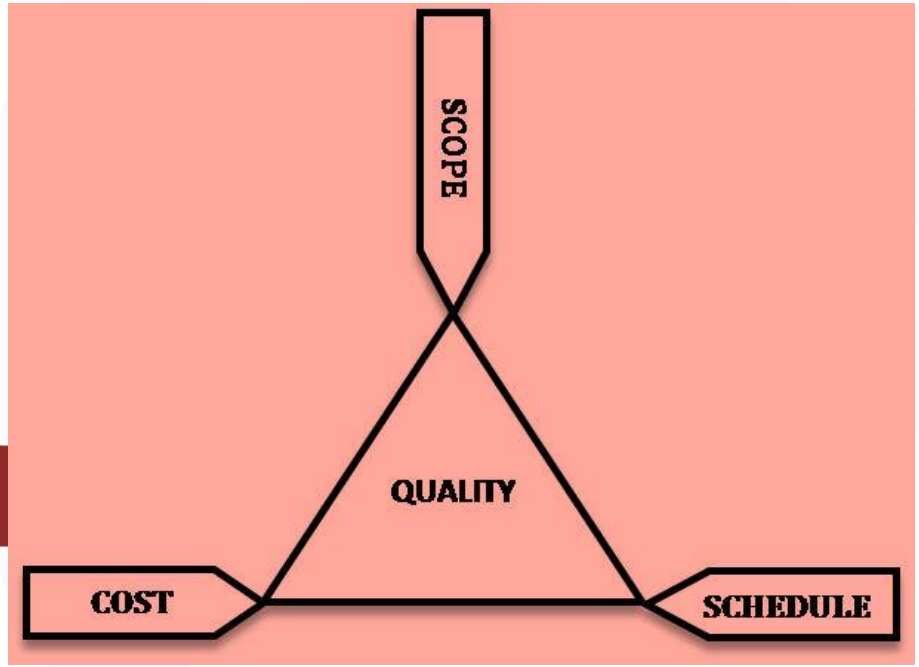
A project is temporary in that it has a defined beginning and end in time, and therefore defined scope and resources.

- And **a project is unique** in that it is not a routine operation, but a specific set of operations designed to accomplish a singular goal. So a project team often includes people who don't usually work together – sometimes from different organizations and across multiple geographies.

Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.

- It has always been practiced informally but began to emerge as a distinct profession in the mid-20th century.

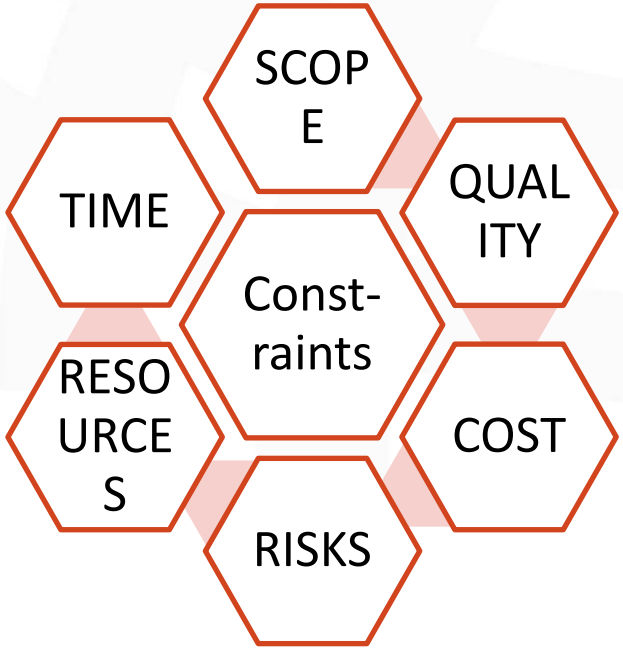
Iron Triangle of a Project constraints



Choose 1 or 2 constraint

If you change one constraint at least one another changes

Goals of Project Value Management



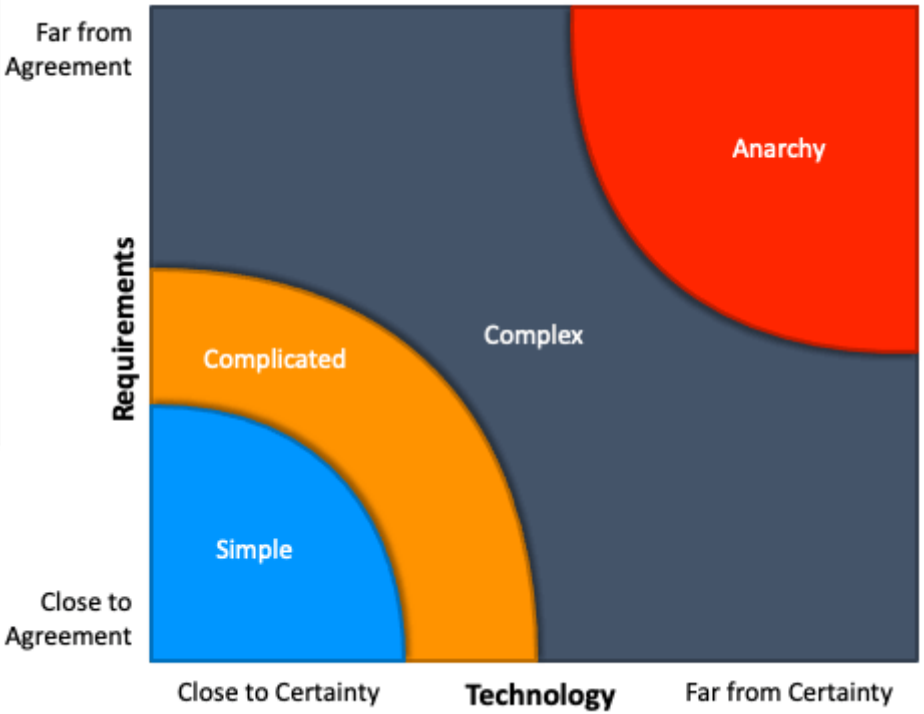
Main Challenges in Projects

- VUCA world
  - Volatile
  - Uncertain
  - Changing
  - Ambiguous
- Fast changes
- Changing environment
- Shared multi-cultural teams, customers and markets
- National barriers
- Different time zones

Cynefin


Complex
Probe-Sense-Respond
Emerging Practice
Complicated
Sense-Analyze-Respond
Good Practice
Obvious
Chaos
Act-Sense-Respond
Novel Practice
Obvious
Sense-Categorize-Respond
Best Practice

Stacey Model

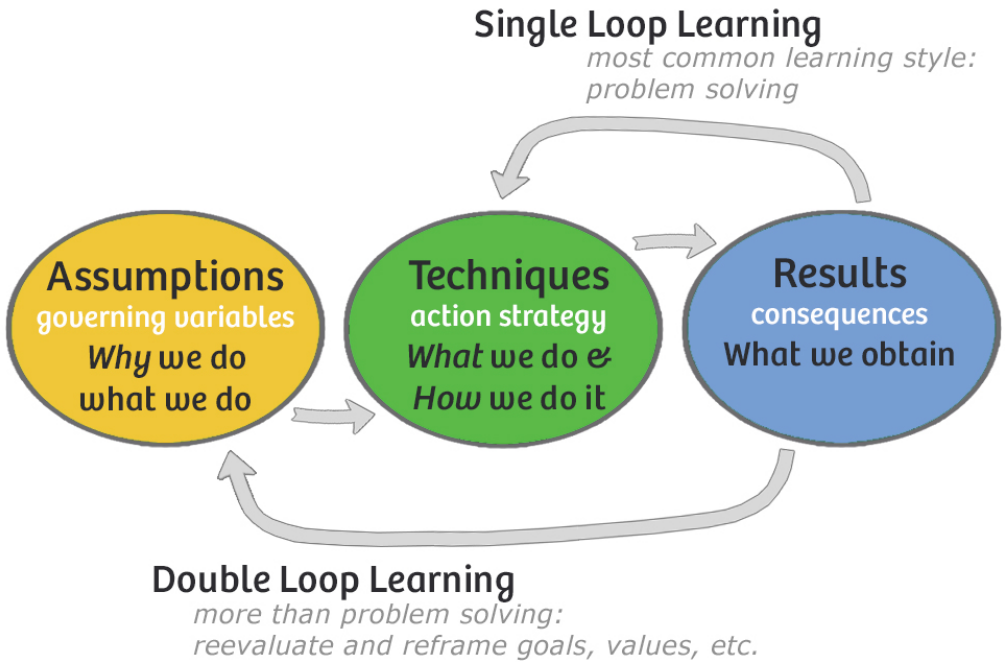


Specific Features of a Research Project

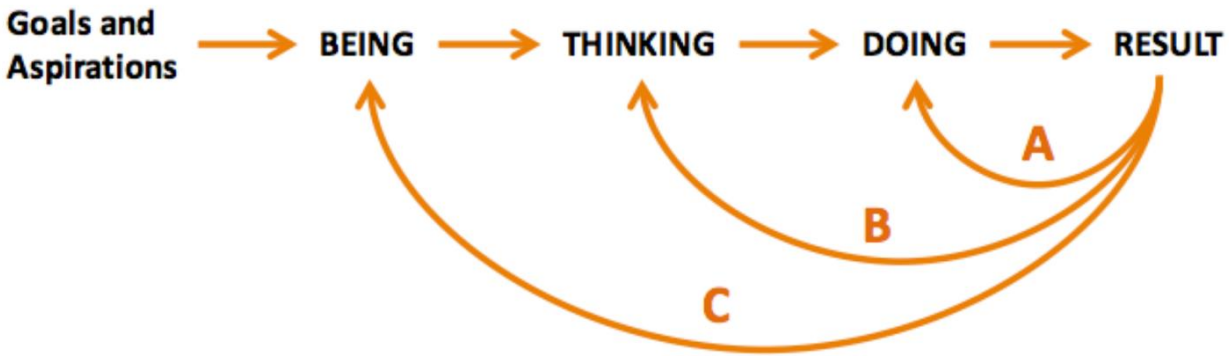
- You are the sponsor and the project manager. Avoid conflicts
- You are flexible, but work individually
- You plan, you control, you decide
- There is no a stable team
- Any collaborators are your “virtual team”
- The goal and objectives are flexible, ambiguous at early stages

Learning & Improvement Cycles

Learning & Improvement Cycles. Double/Triple Loop



Learning & Improvement Cycles. Triple Loop

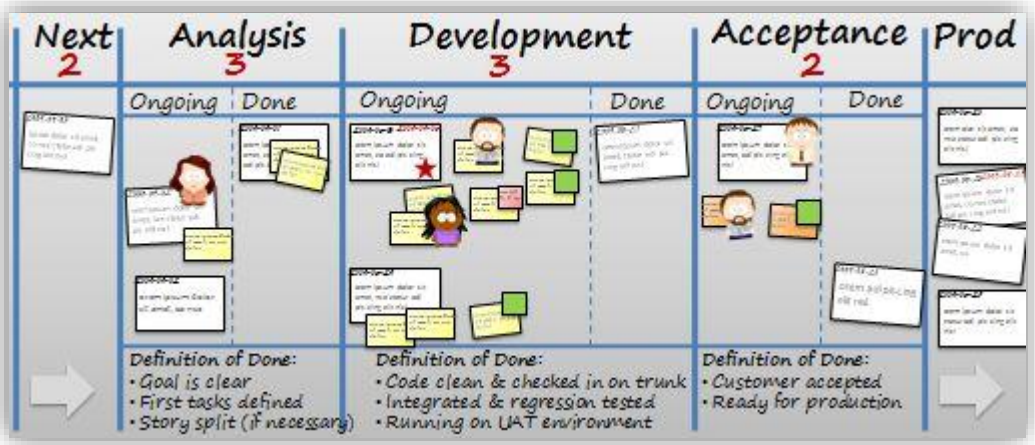


What is Kanban as a methodology

Definition:

The Kanban Method is a means to design, manage, and improve flow systems for knowledge work. The method also allows organizations to start with their existing workflow and drive evolutionary change. They can do this by visualizing their flow of work, and stop starting and start finishing

A general term for systems using the Kanban Method is flow – reflecting that work flows continuously through the system instead of being organized into distinct timeboxes



Kanban Principles

- Service Delivery Principles

- Understand and focus on your customers' needs and expectations
- Manage the work; let people self-organize around it
- Evolve policies to improve customer and business outcomes

- Change Management Principles

- **Start with what you do now** – Understand current processes as they are actually practiced and respect existing roles, responsibilities and job titles.
- **Agree to pursue improvement through evolutionary change**
- **Encourage acts of leadership at every level**

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Visualize

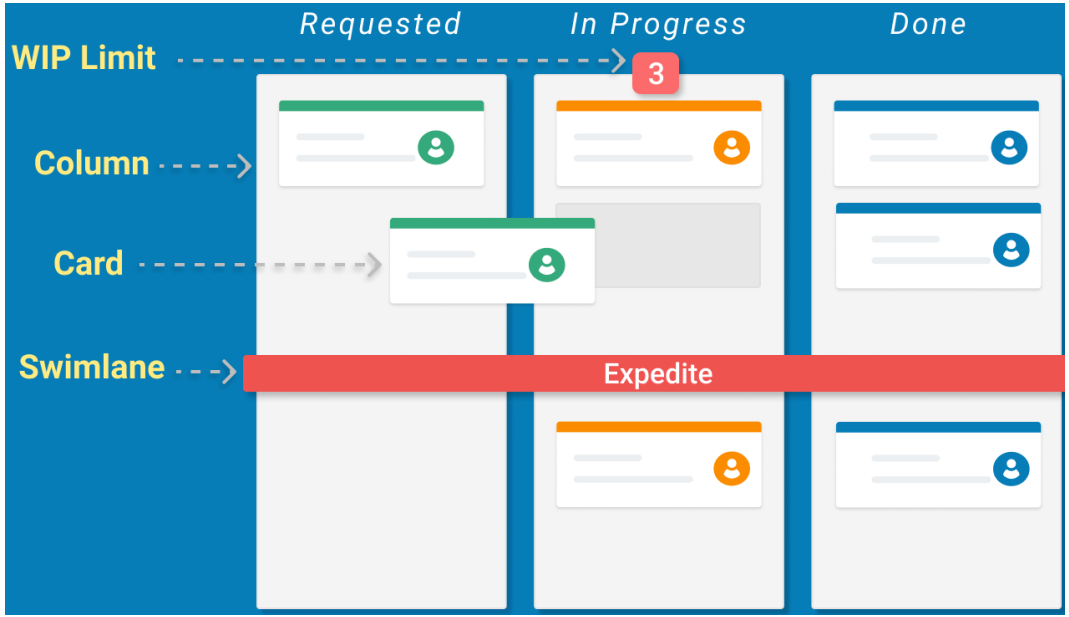
Kanban systems use mechanisms such as a kanban board to visualize work and the process it goes through. In order for the visualization to be the most effective, it should show

- where in the process a team working on a service agrees to do a specific work item (commitment point)
- Where the team delivers the work item to a customer (delivery point)
- Policies that determine what work should exist in a particular stage
- WIP Limits
- Limit work in progress

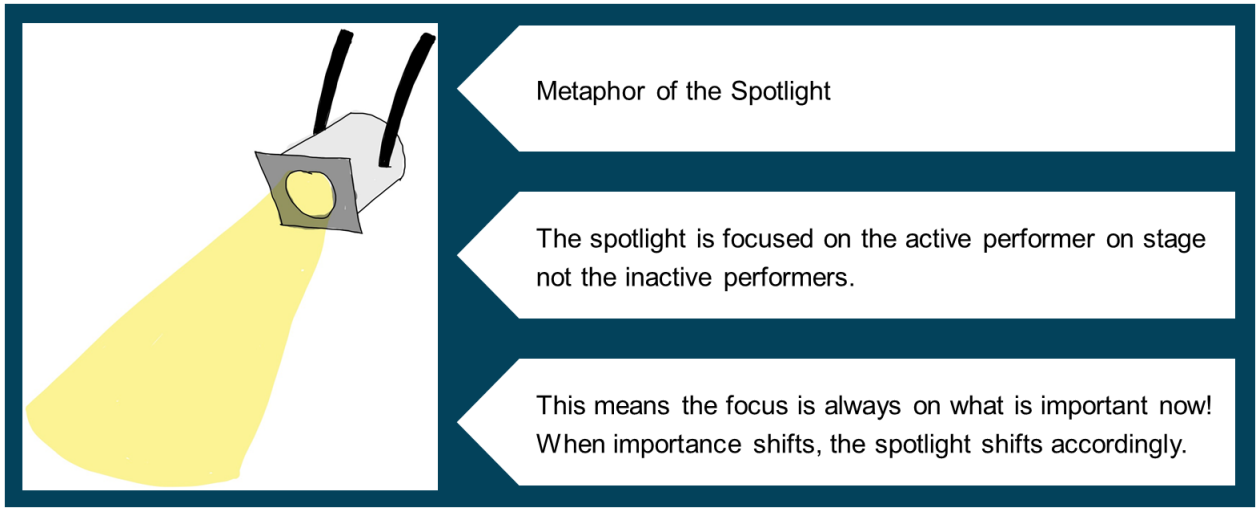
When you establish limits to the amount of work you have in progress in a system and use those limits to guide when to start new items, you can smooth out the flow of work and reduce lead times, improve quality, and deliver more frequently.

Kanban Board

A Kanban board (or signboard) is a tool for workflow visualization
The workflow should be visualized on a whiteboard or a digital analog



Spotlight



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Identify Blockers

Blocker is a task, which blocks further actions. Kanban board helps to identify blockers

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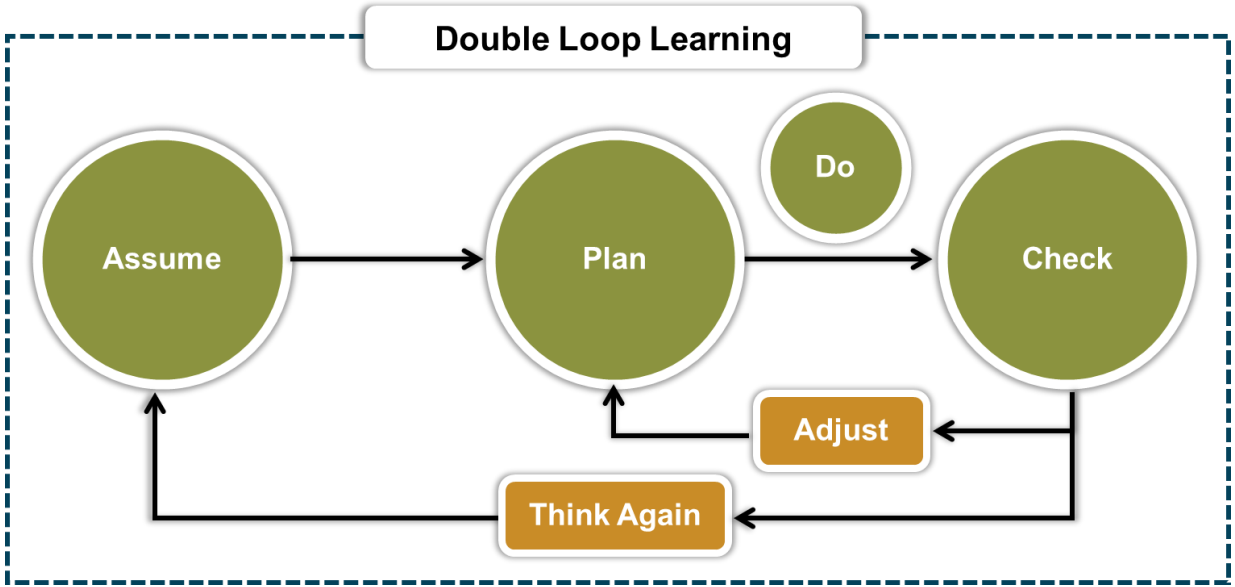
Example of a Loop



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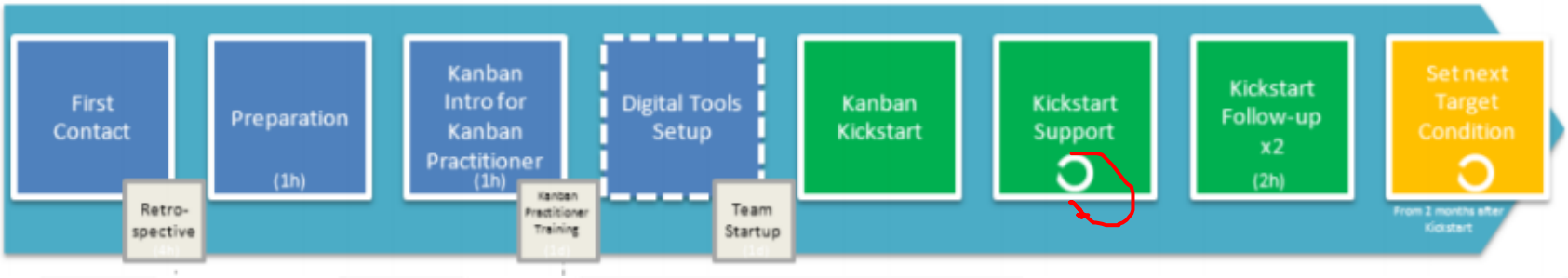
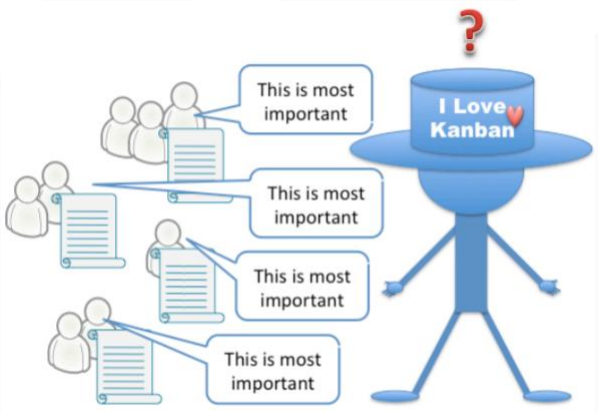
Kickstarting Process



Excerpt from “Kanban-Kick-start-Field-Guide-v1”

Step 2 – Identify your sources and prioritize



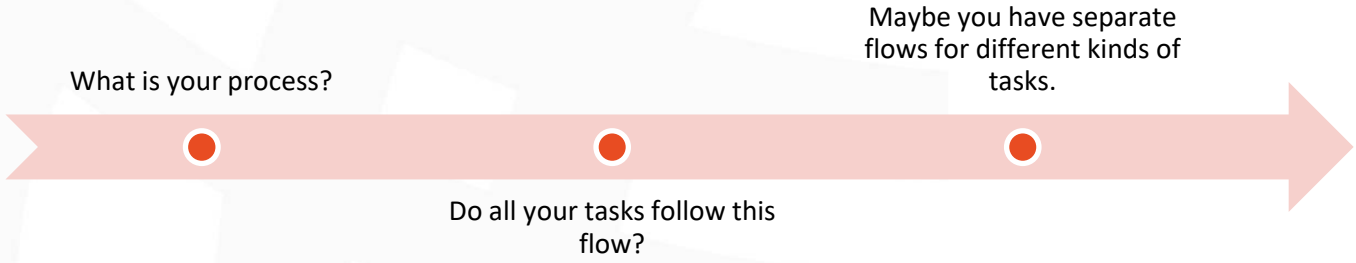
1. You have one owner for all queues who decides the prioritization independent of the source queue. This is similar to Scrum's product owner.

2. You have one owner for each queue and those owners decide the prioritization together. It is important that prioritization disputes are handled outside the team.

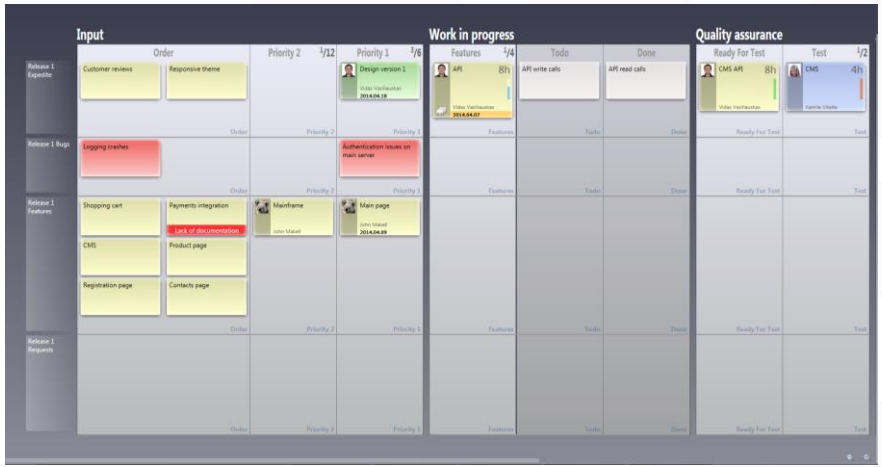
3. You have one owner for each queue and a predefined percentage of how much work to take from each queue.

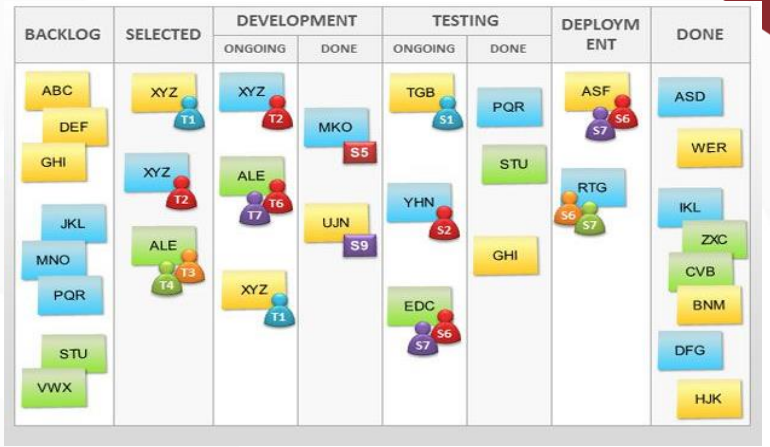
4. You use an algorithm to decide which task to take next. The rule can be to prioritize according to severity or by cost of delay.

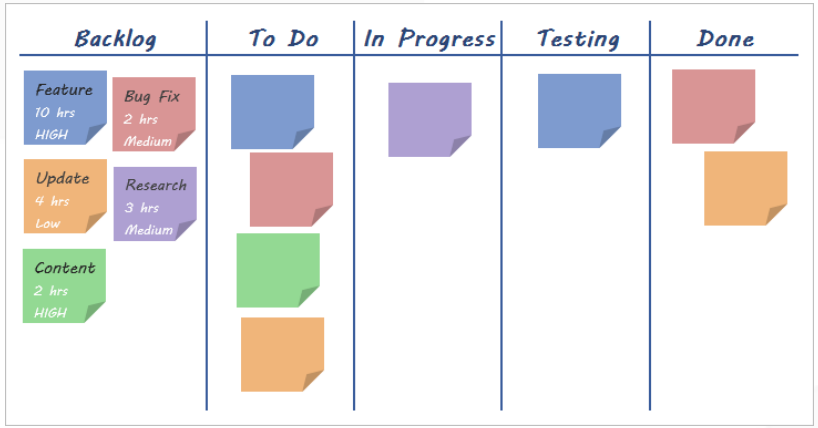
Step 3 – Find your process



Step 4 – Design Your Workflow Board







Step 5. Define Limits
Step 6. Define Roles

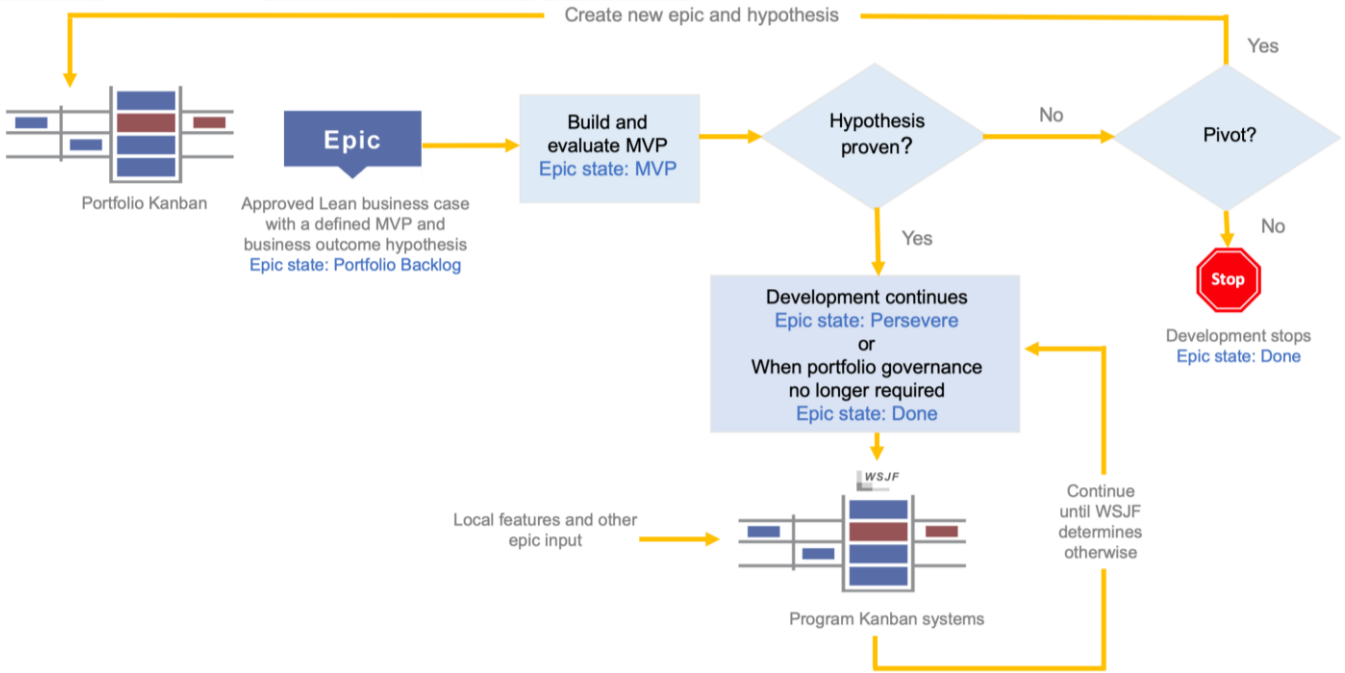
- Duration of a feedback loop
- Number of tasks in backlog
- Duration of a task in a backlog

Which roles do you need?	What are their responsibilities?	Will there ne conflict of interests?	What is the value of a role?

Step 8 - Set up your principles and policies

- 1. Find and fix failures early. The cost of fixing an error grows exponentially over time.
- 2. Keep it small and simple. Cost grows exponentially over growth of complexity. Work in small groups, with small batches and short release cycles. This has been shown to not just improve flow but also improve quality.
- 3. Upstream: make sure you get what you need to do your work. Downstream: make sure to help the next step to get a good start.
- 4. Right from me. What ever you get (from upstream), make sure the work you deliver has good quality.
- 7. Good quality is cheaper than bad quality.
- 8. Optimize the whole, not the sub-parts
- 9. Long term thinking
- 10.Respect people
- 11. Eliminate waste, stress and unevenness
- 12. Delete everything in the product backlog that is older than 3 month. If it's been there for that long it's probably not so important anymore.

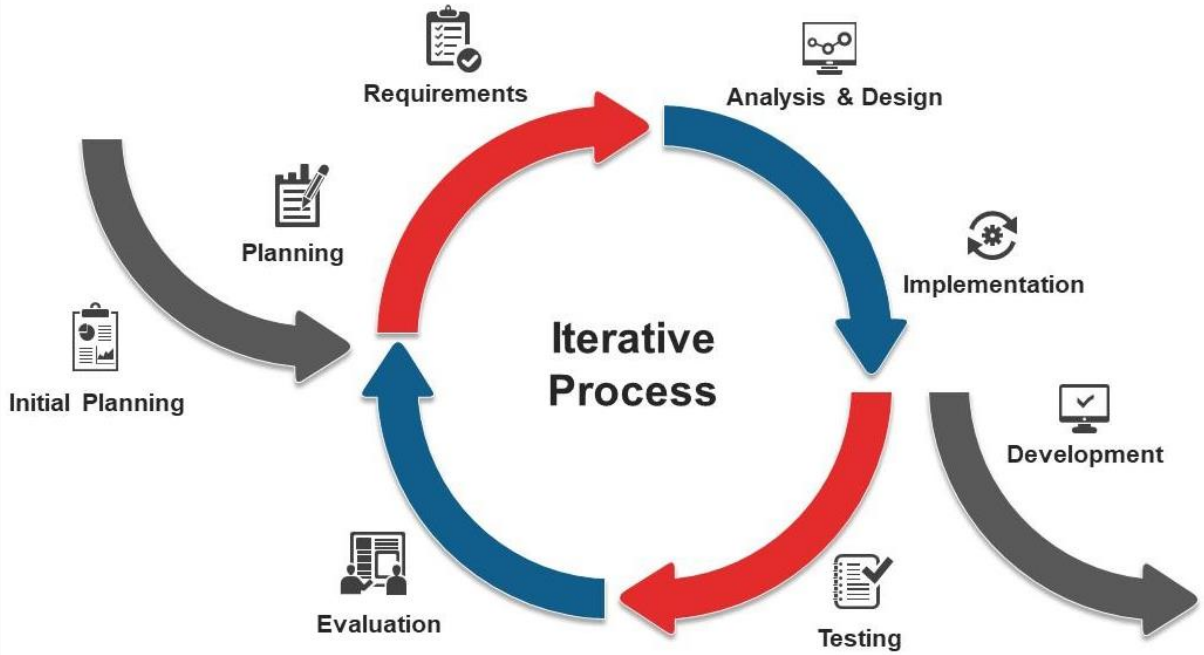
Lean Startup Cycle



Session 13-2 Topics

- Research Project Enablement:
  - -Planning approach – Iterative
  - -Control and validation of project progress
  - -keep the focus
  - -ongoing adjustments in research projects

Iterative Project Approach



Iterative Approach Example

An iterative process is a technique you can use to improve a product, process, initiative, idea, or design.

Your team starts by creating the first version of the product, testing it, and identifying necessary adjustments.

Then you repeat the process, implementing the changes you identified in the previous round.

Each iteration refines the product, bringing it closer to your desired result.

Iterative Project Approach

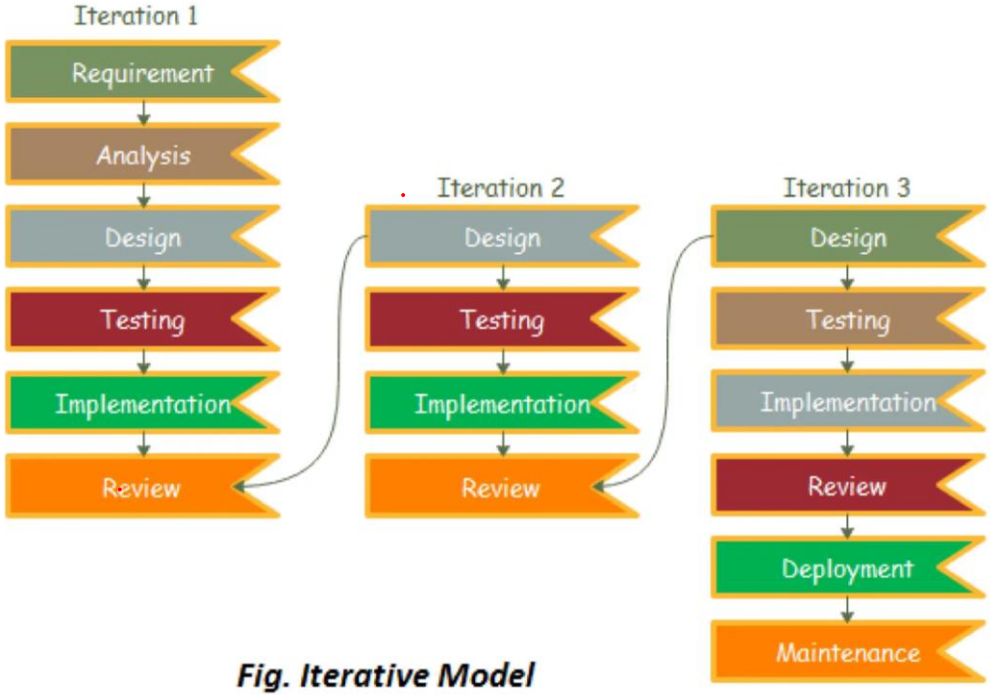


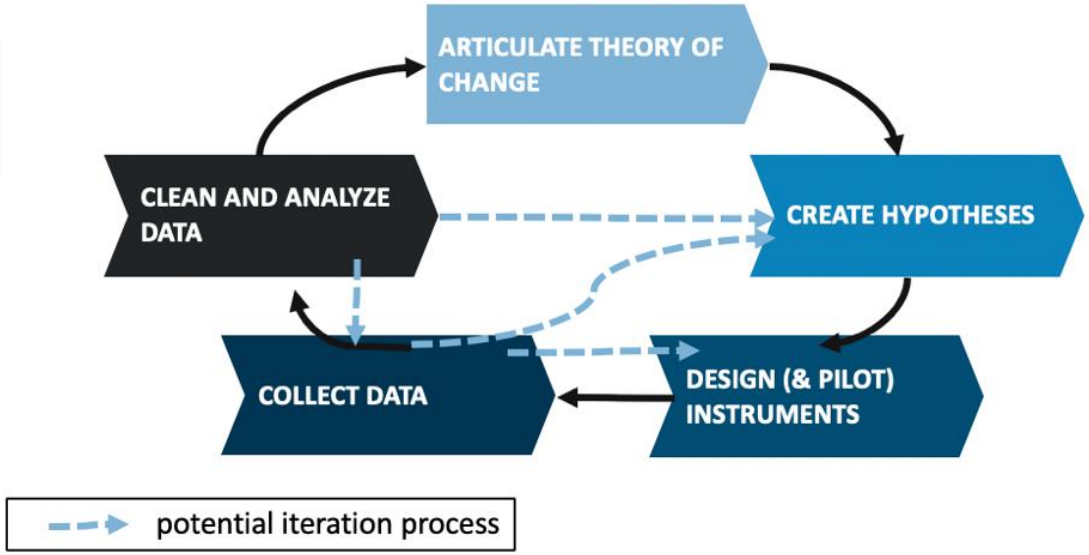
Fig. Iterative Model

Iteration Results in a Research Project

Berkowitz's (1997) following characterization of qualitative analysis is apt:

- a loop-like pattern of multiple rounds of revisiting the data as additional questions emerge, new connections are unearthed, and more complex formulations develop along with a deepening understanding of the material.
- Qualitative analysis is fundamentally an iterative set of processes.

Multiple Iteration Loops in a Research Project



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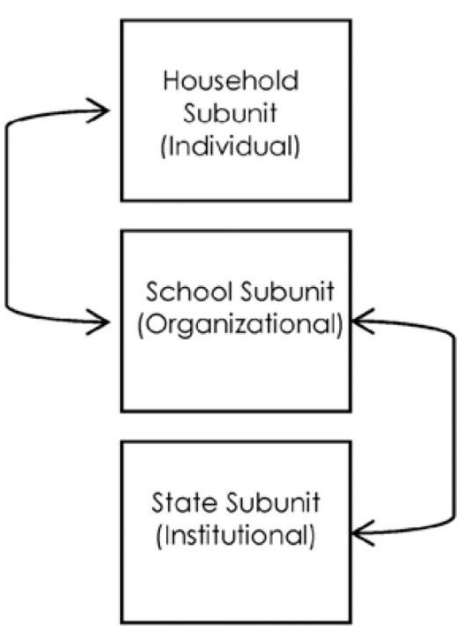
Keep Focus and Re-Focus by Iterative Approach



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Tips for Scheduling

Prioritize:	Create a schedule:	Allow time reserves:	Break down big goals into smaller ones:
• Start with the most important and difficult tasks so that by the time you defend, you have key results ready. Prioritize those aspects that require more time and effort.	• Use electronic planners as discussed previously, or specialized project management software. This will help you not only keep track of the deadlines but also visualize the entire research process.	• unforeseen circumstances can arise at any time, so it's best to leave a small margin of time for each stage. This will help avoid panic and stress associated with unexpected delays.	• Big goals can feel intimidating, so break them down into smaller tasks to make it easier to track progress and stay motivated.

Progress Control in a Research Project
Types of Milestones

- Research Area is defined
- The Scientific institution and/or Supervisor are assigned
- Journal publication
- Conference presenting
- Research topic(-s) defined/refocused
- The dissertation draft(-s) is(are) ready for review
- The dissertation is approved for the defense
- Presentation is ready
- Defense passed!

Control Tools. Formal or Tangible

Timelines	Grading	Volume of data collected	Number of publications	Number of references
• Your plan milestones • Learning plans		• Number of interviewees • Number of responses in surveys • Share of relevant participants • Number and duration of observation periods		

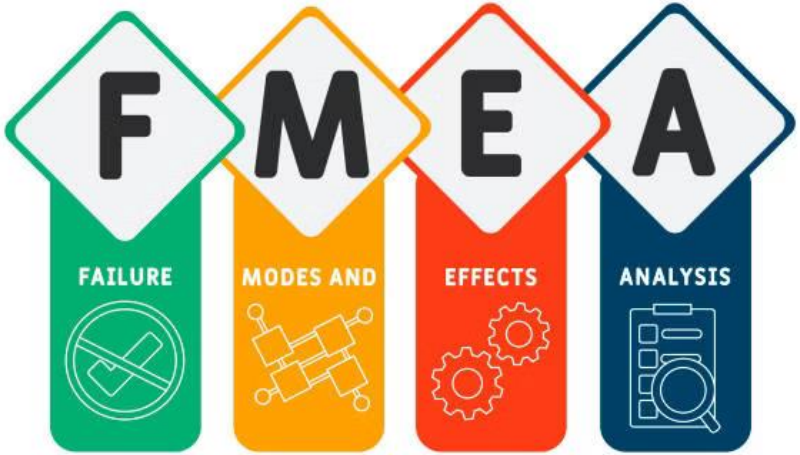
Control Tools. Qualitative, Intangible

Feedback	External sources analysis
• Supervisor • P2P article reviews • Conference discussions • Informal discussions	• Conferences • Articles and Proceedings • Secondary public databases

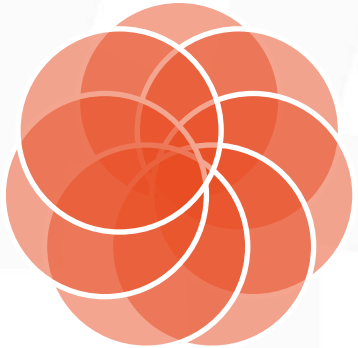
The Most Typical Errors

- Insufficient information base
- Use of false information
- Errors in calculations
- Weak argumentation
- Excessive copying and quoting
- Violation of the structure of the document
- Failure to comply with the volume

Fast Failures



Big Picture of a Research Project



Dissertation Ready

Thank You!
Read the Recommended Readings
You're welcome with your discussions and questions in VLE!

Think & prepare your own draft Kanban Backlog

Please note, that since the recordings are done, some Readings may become unavailable. Inform us immediately in VLE, so we can offer substitutions