

Kanban Simulation

Dr. York Rössler

Trento, September 2024



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York Roessler



York Roessler

Dr. York Rössler



Experience

- Managing Director EGERIA CONSULTING
- Previously: Mercedes-Benz, zeb, Siemens

Education

- Doctoral Program, Friedrich-Alexander-Universität Erlangen-Nürnberg
- Master in Business Administration, Friedrich-Alexander-Universität Erlangen-Nürnberg and American University, Washington, D.C., USA
- Advanced Project Management Program, Stanford University, Stanford, CA., USA

Certifications

- Accredited Kanban Trainer
- Team Kanban Practitioner
- Kanban Management Professional
- Scrum Master
- Scrum Product Owner
- PMP (Project Management Professional), PMI (Project Management Institute)
- PMI-RMP (Risk Management Professional), PMI (Project Management Institute)
- PRINCE2 Practitioner

Teaching Assignments at Universities

- Universidad de los Andes, Bogotá, Colombia
- Universidad EAN, Bogotá, Colombia
- Universidad Externado, Colombia
- CESA, Bogotá, Colombia
- Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany
- Unitec, Tegucigalpa, Honduras
- Hochschule Harz, Germany
- Hochschule Aalen, Germany
- Universidad Peruana de Ciencias Aplicadas, Lima, Peru
- Universidad de Pamplona, Pamplona, Colombia
- Universidad Militar Nuevo Granada, Bogotá, Colombia
- Universidad Tecnológica de Bolívar, Cartagena, Colombia
- Universidad Icesi, Cali, Colombia

Languages

- Spanish: fluent
- English: fluent
- German: native

Agenda

- 1. Introduction to Kanban**
- 2. Kanban Simulation**
- 3. Statistical Analysis**
- 4. Debriefing of the Simulation**

Kanban and Kanban

Industrial Kanban

- Physical Work Items
- Factory plants
- TPS, Toyota, Taiichi Ohno
- 40/50s

Kanban for knowledge work

- Intangible Work
- "Office work"
- Created in the 2000s
- Agile (in many cases)

” *Kanban is a way of seeing work.*

Andy Carmichael

Who created Kanban?



- David J. Anderson
- First experiments with Kanban 2004 at Microsoft
- First Kanban implementations: Corbis, Microsoft and Yahoo

Who is responsible for the Kanban method?



You know Kanban already....



What is Kanban?

A Method...

... to manage knowledge work.

... with
Principles and Practices, ...

... to guide you in managing and improving work

... using
Kanban Boards...

... Visualizing your work and its flow.

... and
Kanban Systems...

... Controlling the work in progress to ensure work flows smoothly by ensuring work on an item starts only when there is both customer demand and system capacity

A product that has been developed using
Kanban



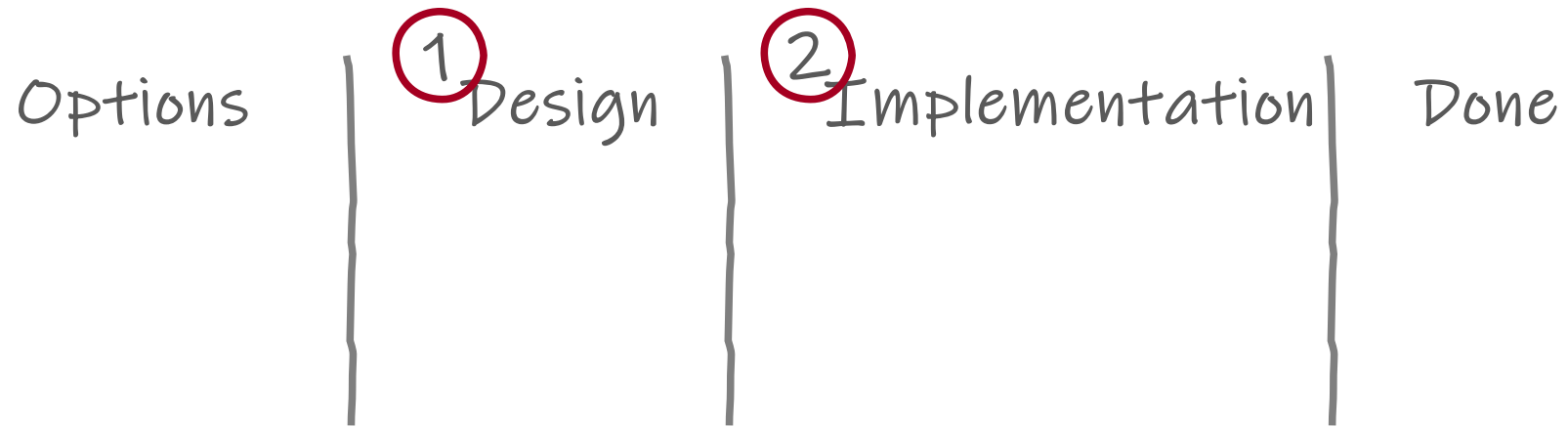
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Important advice

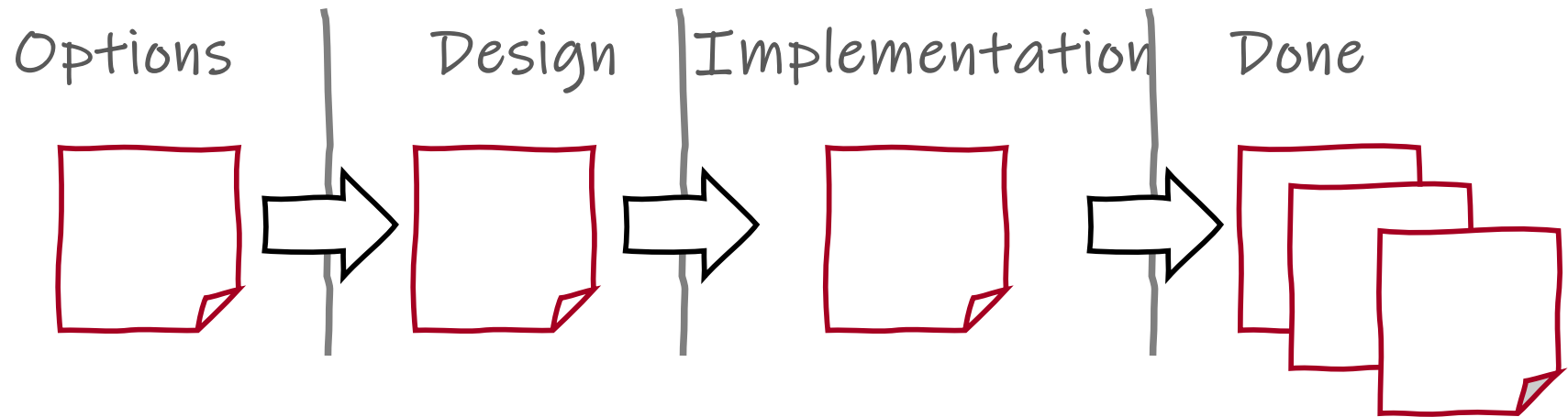
- Please listen carefully to my explanations
- Please let me explain the whole simulation before asking questions
- Please do not modify the simulation
- Don't panic even if the rules seem too difficult. After having played the first 2 rounds everything becomes easy.

The Board shows you a process consisting of 2 steps.

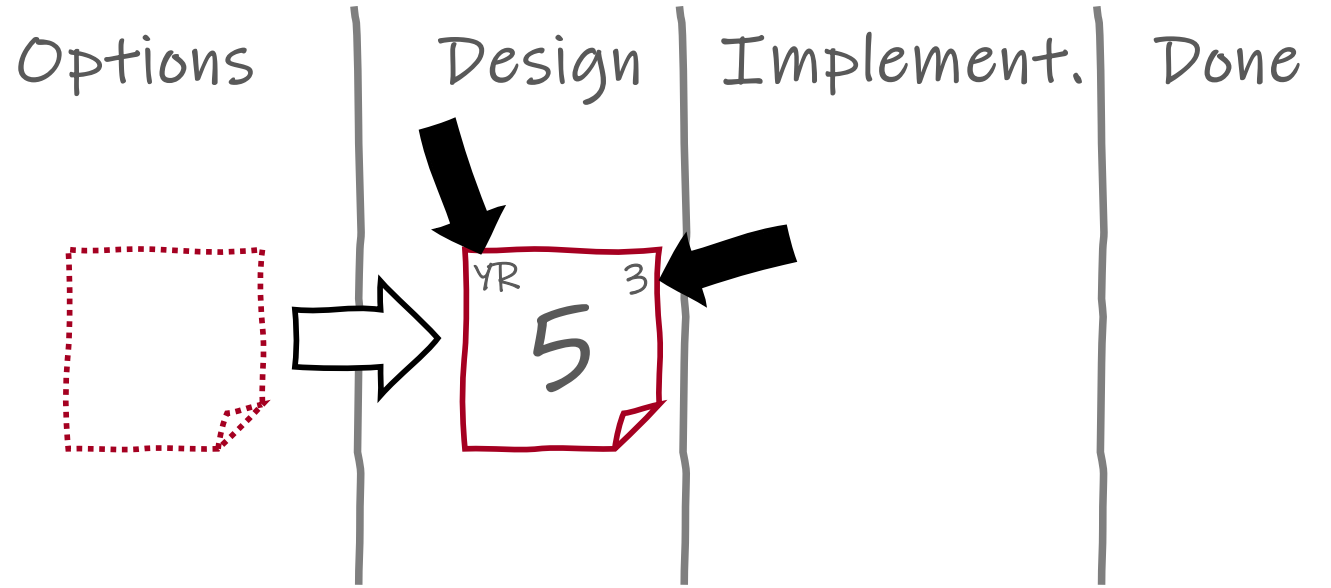


(Of course, there can be more than 2 steps and steps can have different names)

Tickets are moved from left to right over the board
Goal: move as many tickets as possible from
"Options" to "Done"



When starting a ticket, please note initials of the owner and the start date



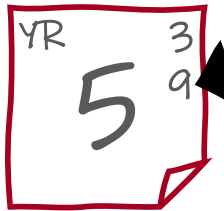
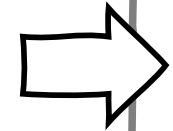
When completing
a ticket, please
note the end date

Optionen

Design

Implement.

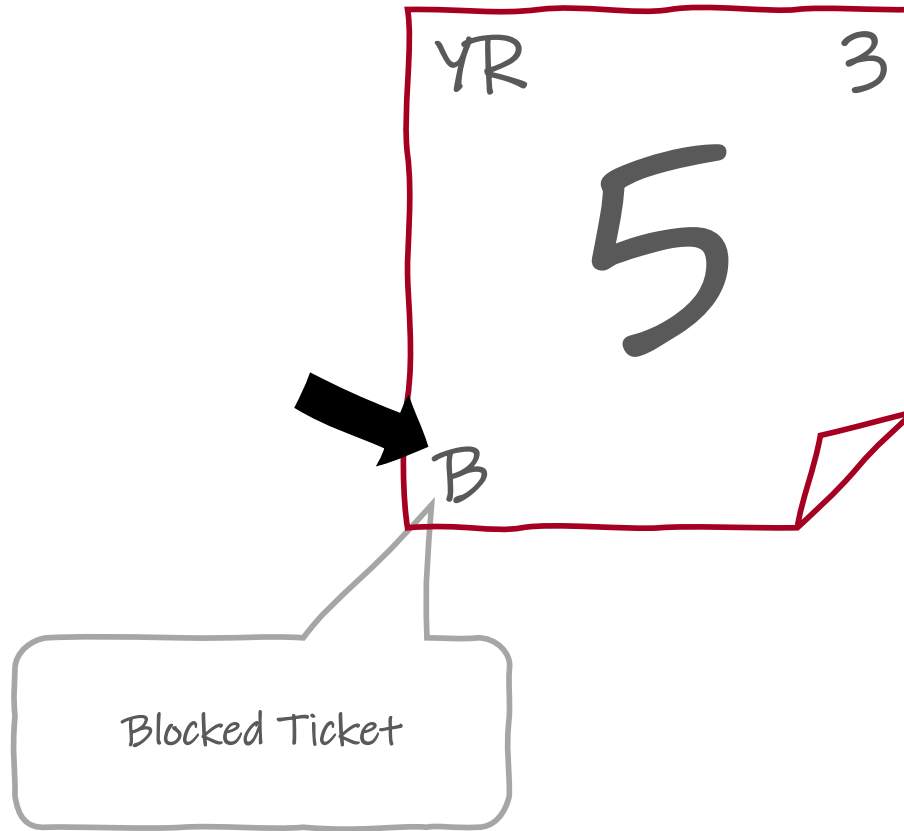
Done



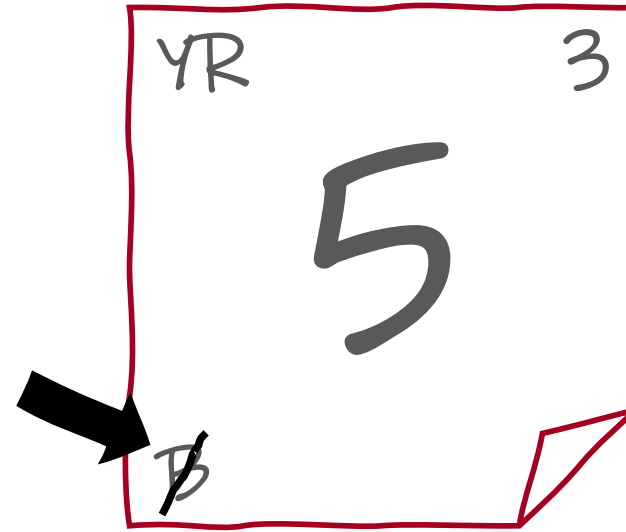
How to note the dates

- We simply count the days: 1, 2, 3 ... 40, 41
- In real world Kanban Boards you use of course the regular date format such as July, 23

When a tickets
gets blocked,
please note "B"



When a ticket gets
unblocked, please
cross out "B"



A Ticket can get
blocked and
unblocked several
times

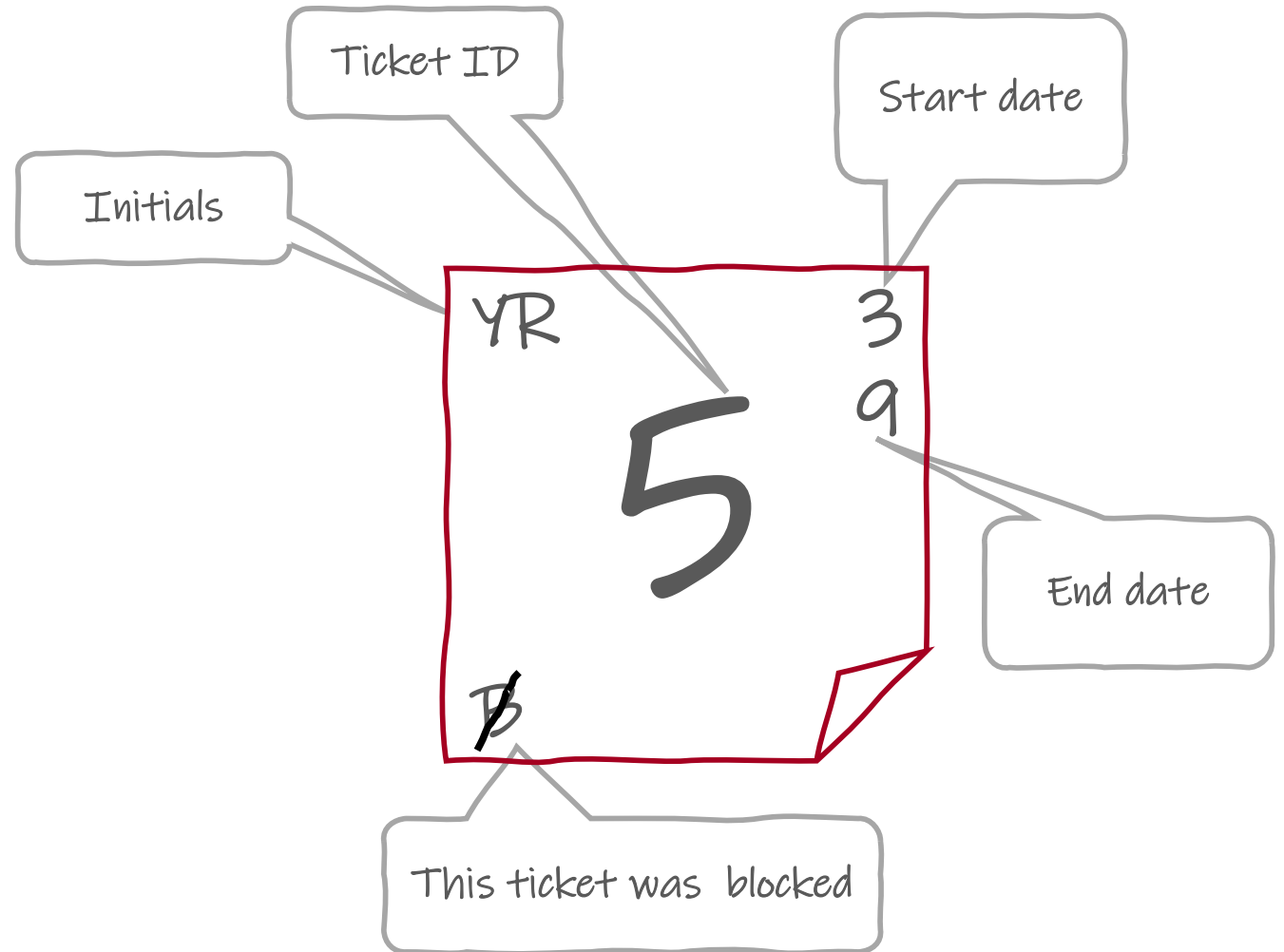


How do we treat blocked tickets?

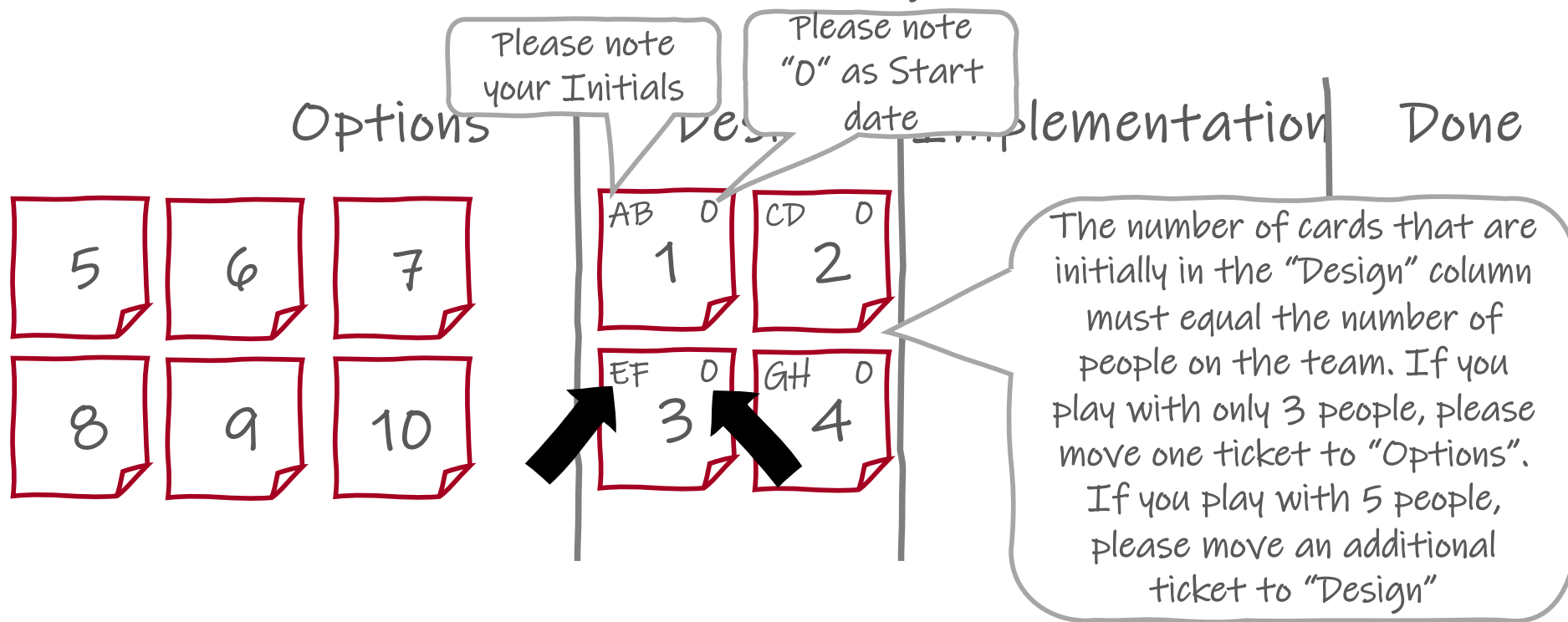
- When a ticket is blocked it may no be moved
- Before moving it, it needs to be unblocked.
- I show you later how to block and unblock tickets

What is a blocker in real work?

Information on a ticket



For each person working on a Board there is already one ticket in the workflow which has been started on day "0"

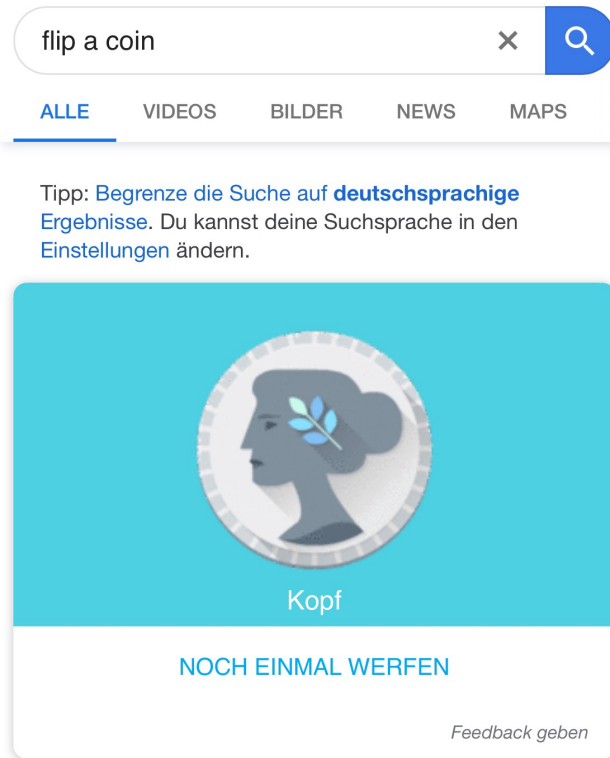


Daily Agenda

We have a daily agenda that consist of 3 steps. Going through the 3 steps means having completed 1 day of work. We need to run through approximately 40 days of work.


Daily Agenda

- ① Each team member flips a coin at the same time and shows the result to the team mates (heads or tails)



Meaning

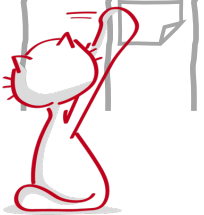
Heads



Optionen | Design | Impl. | Fertig

Pull a new ticket into the workflow


OR



Optionen | Design | Impl. | Fertig

Move a ticket that is already in the workflow one column further

OR



Optionen | Design | Impl. | Fertig

Eliminate a blocker (but don't move the ticket)


Tails



Optionen | Design | Impl. | Fertig

Block any of your own tickets

AND



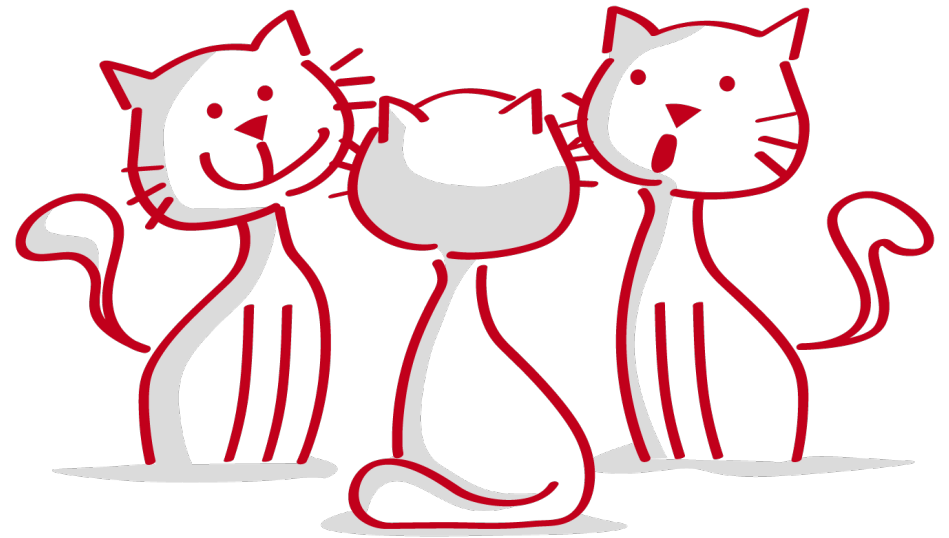
Optionen | Design | Impl. | Fertig

Start a new ticket (don't forget initials and start date)

Why do we flip a coin? To what does
the coin-flip compare in real life?

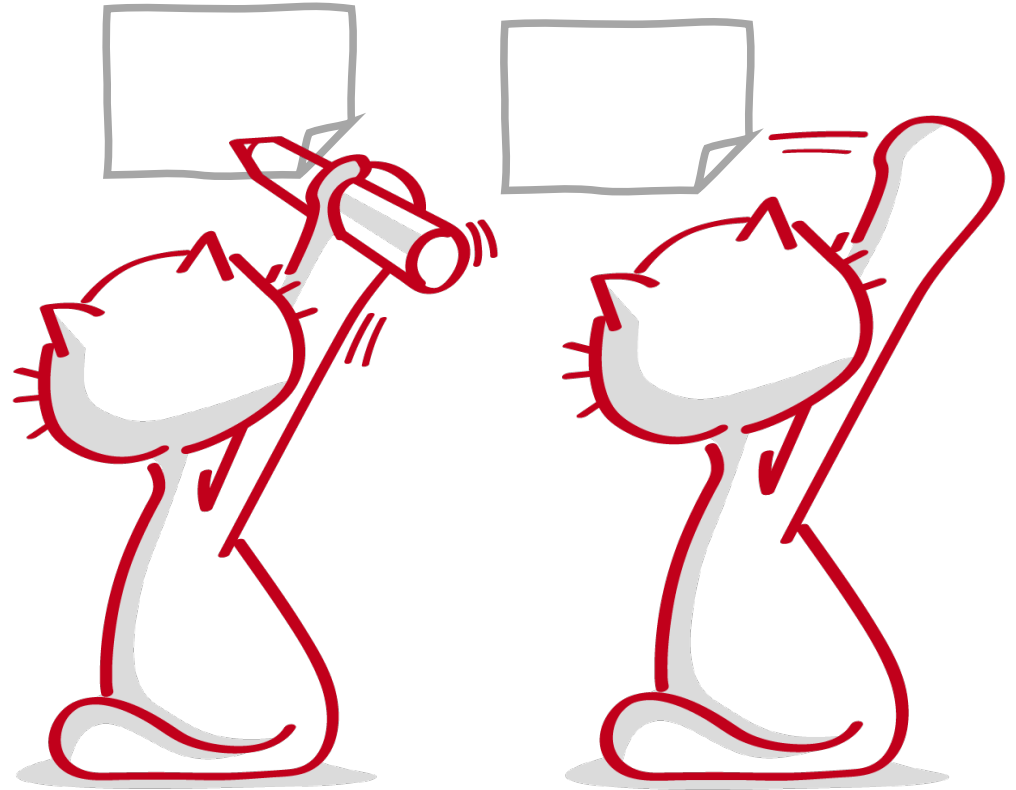
Agenda

- ② Daily Stand-up:
discuss the moves
with your
teammates



Agenda

- ③ Action: move tickets, start tickets, completed tickets, note dates, etc.



FAQ

May I help my teammates?

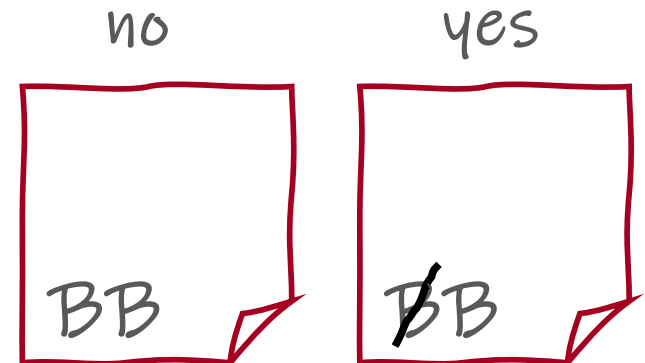
If you got „heads“ and cannot act on your own tickets (and only then!!!), you may help a teammate. This rule does not make sense right now as there is no such situation!

Can I block tickets of others?

No.

Can a ticket have more than one blocker?

No.



FAQ

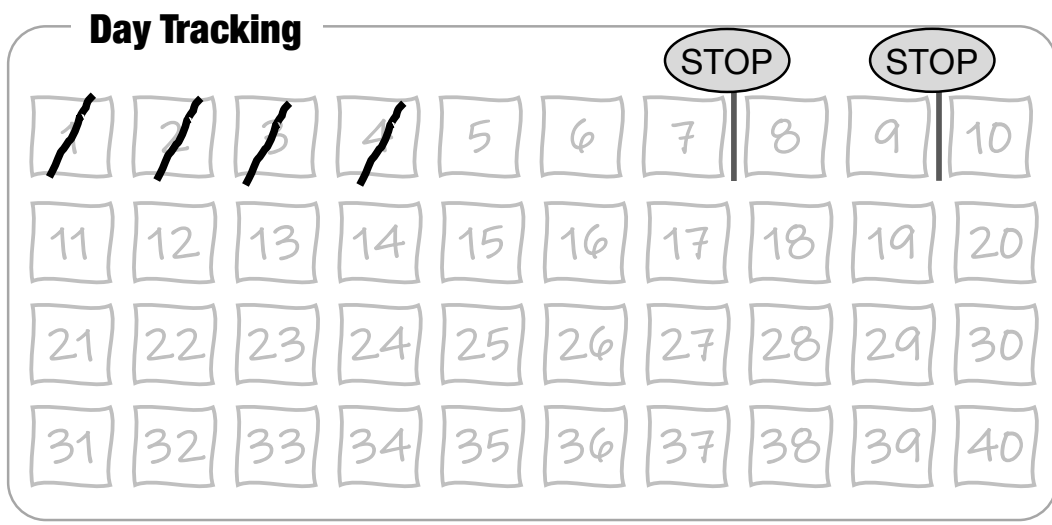
Can tickets in „Options“ or „Done“ be blocked?

No, only tickets in the workflow can be blocked.

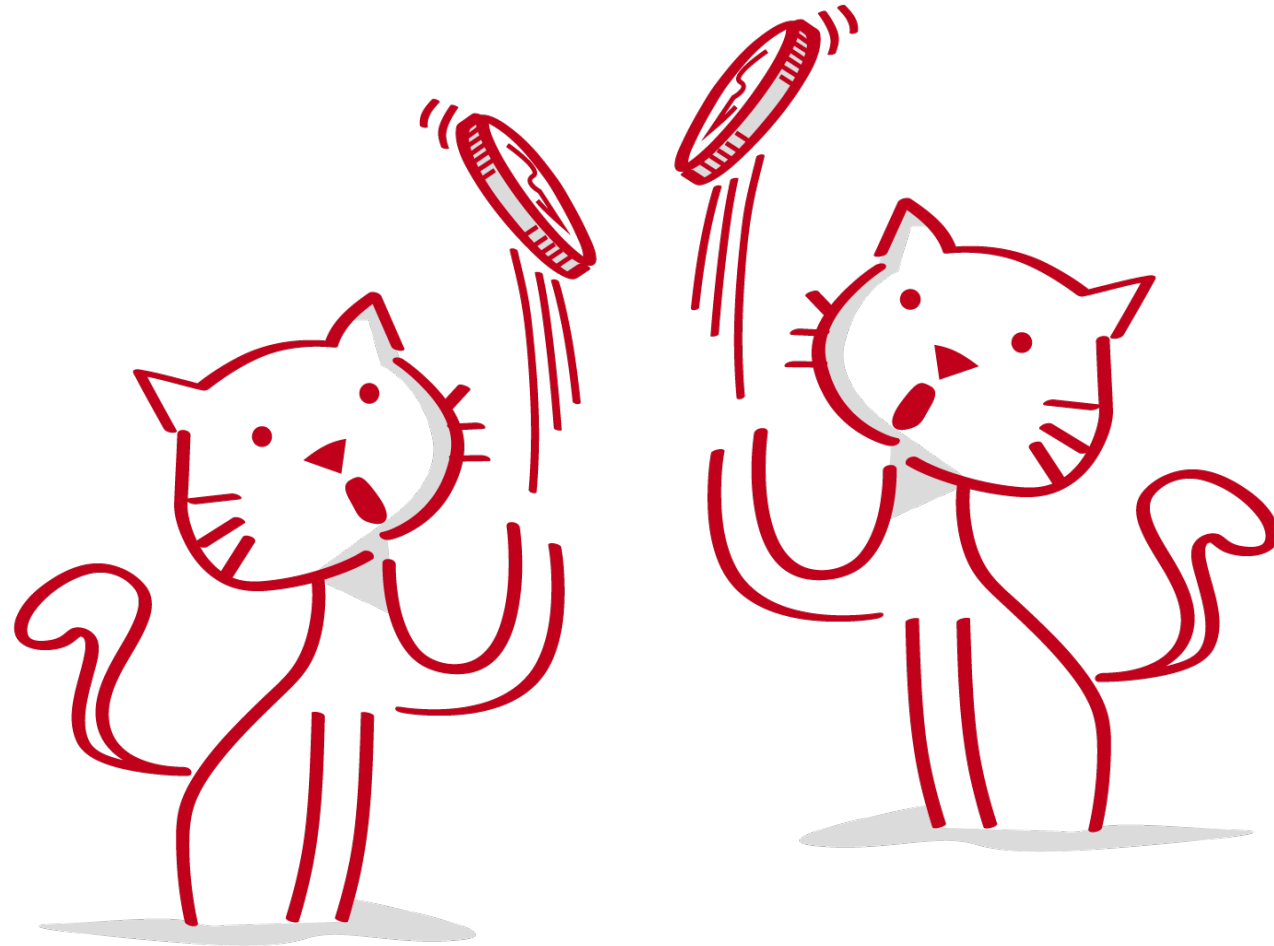
What do I do if all my tickets are blocked and I get „tails“?

Just start a new ticket. Do not block a ticket of others.

Last advice (1): One person in each team needs to track the date



Last advice (2): Please flip the coin at the same time (not one after another)



Please run the simulation until day
7. Then stop and wait for
instructions.

Let's reflect on what has
happened so far:
What will happen if we go on like
that?

Change of rules:

We are facing less blockers!

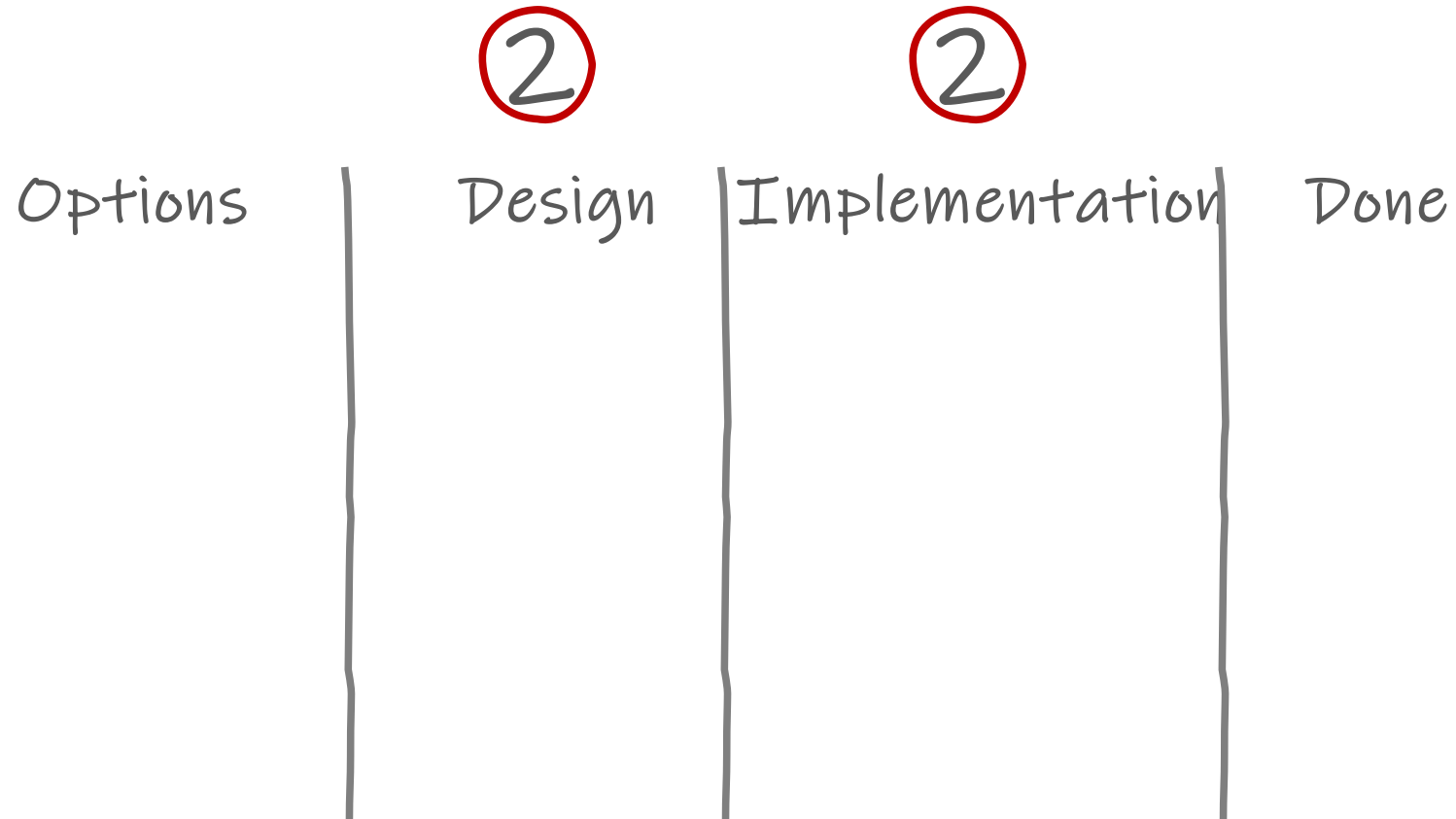
When you toss „tails“ just toss again. This rule remains unchanged until the end of the simulation.

Please run the simulation until day 9. Then stop and wait for instructions.

Change of rules:

We introduce a WIP Limit of 2 (per column, not per person)

Please note "2" on top of each column



FAQ 1

What happens to the 75/25 rule?

It stays in place.

May I move tickets leftwards?

no, all tickets that are currently in the workflow, stay there.

What do I do when tossing "tails" and WIP limits are maxed out or exceeded? Do I have to start a new ticket?

WIP limits are overriding all other rules and necessarily have to be complied with. Only when bringing down the number of tickets below 2 you have to start new tickets again when tossing "Tails"

FAQ 2

What do I do when I toss „Tails“, all my tickets are blocked and all WIP Limits are maxed out or exceeded (I neither can start nor block a ticket)?

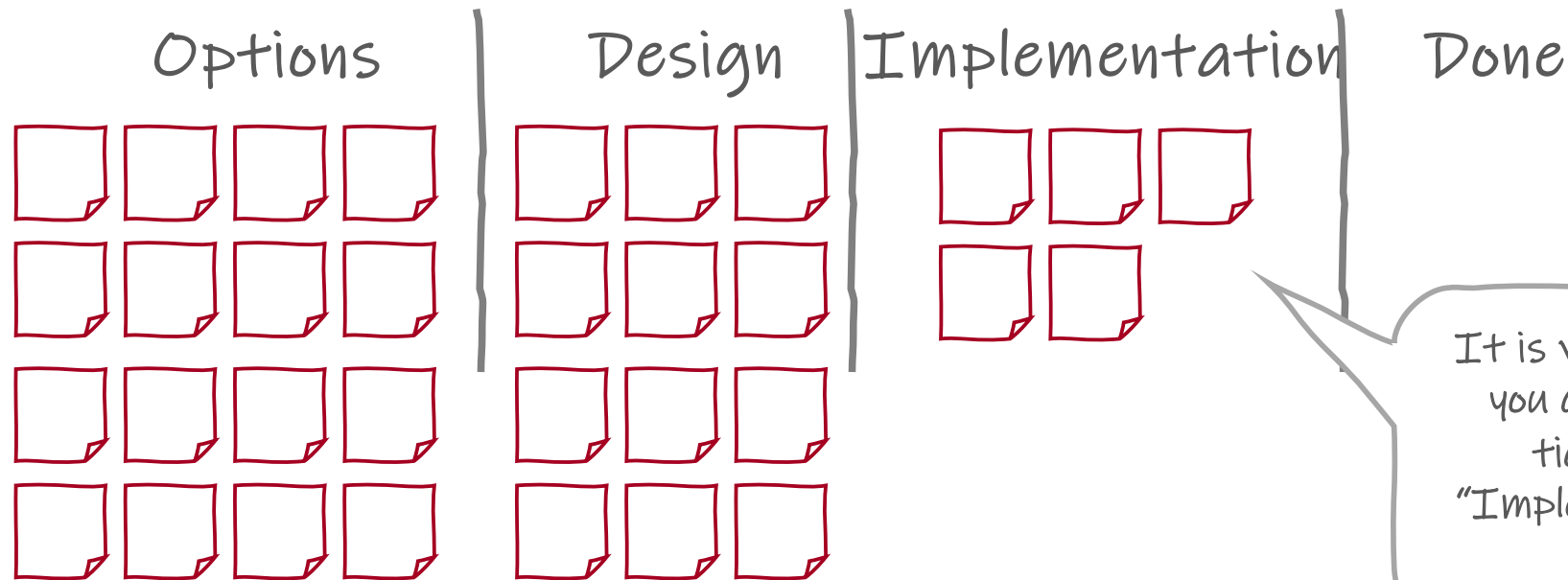
You need to take of that day.

Please note "2" on top of each column

Once you have less than 2 tickets in "Design" you can start again new tickets

2

2



It is very likely that you can only move tickets from "Implementation" to "Done"

Please don't forget....

1. The rule that you can help others when you are unable to act is still in place (and now it makes a lot of sense)
2. Please don't forget the daily standups!

Please keep playing at least until day 40. If not receiving any other instruction, please also keep playing after day 40.

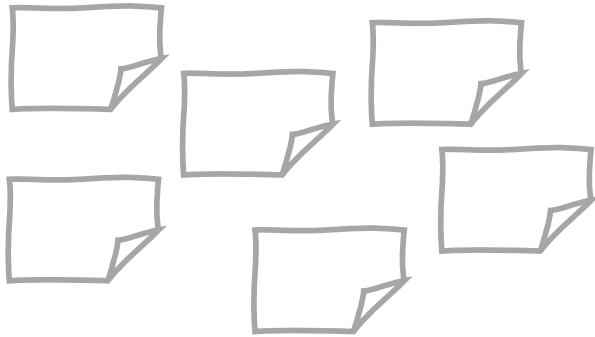
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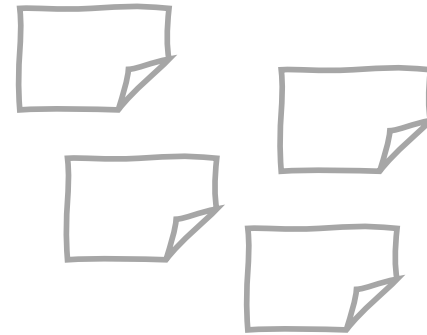
Step 1: Sort tickets by Start Date

Sort all finished tickets into 2 columns!

Start Day 0 to 9

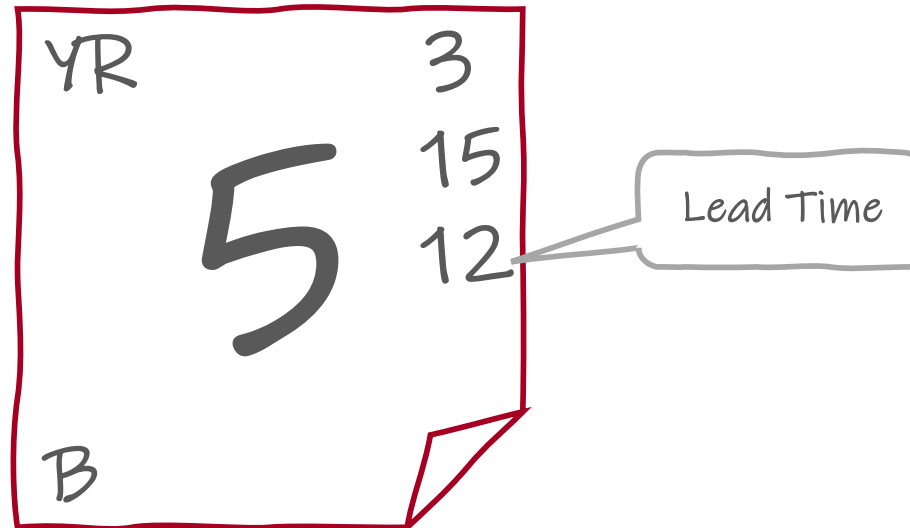


Start from day 10 onwards



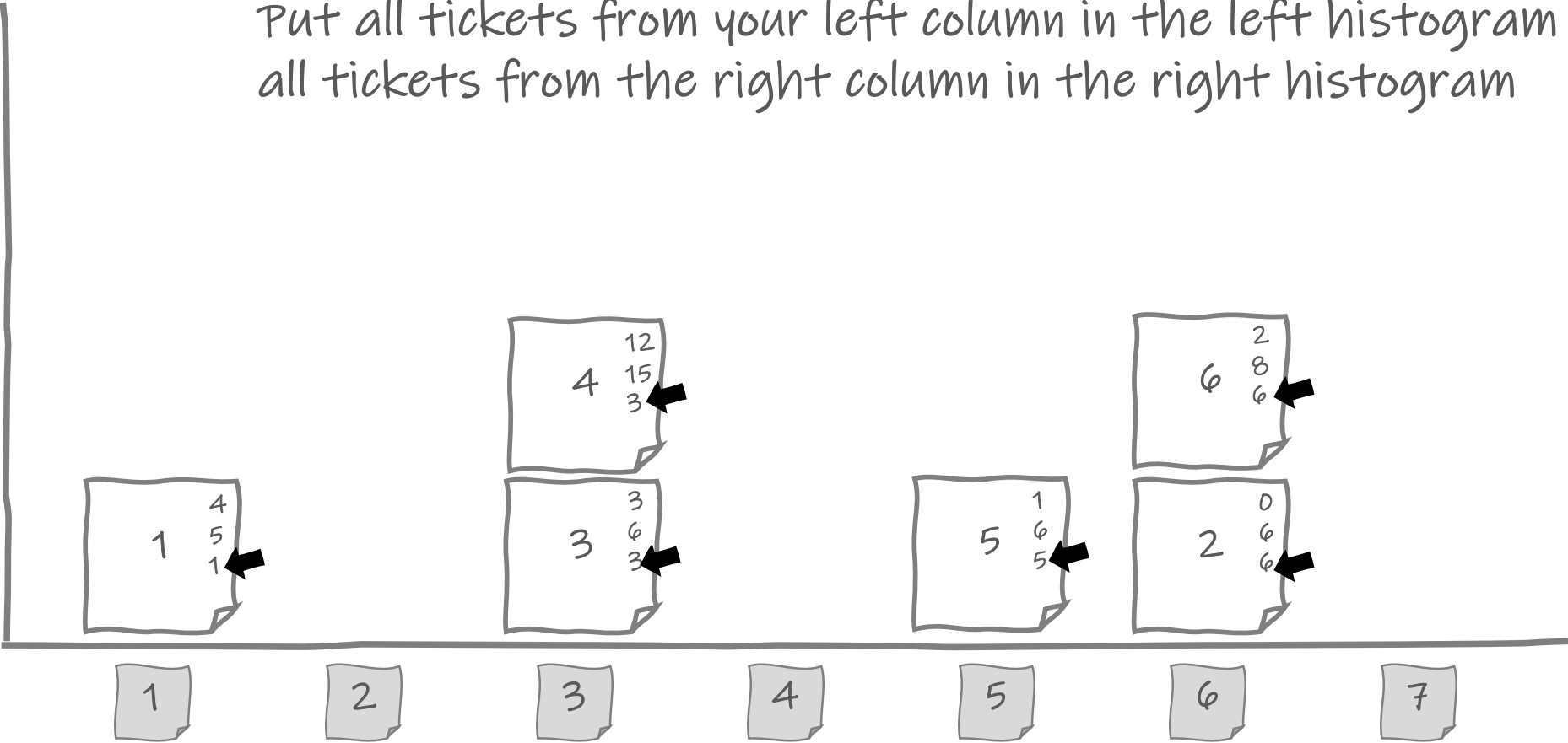
Step 2: calculate Lead Time for each ticket

Lead Time = Finish Date - Start Date



Step 3: Histogram

Put all tickets from your left column in the left histogram and all tickets from the right column in the right histogram



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How much sense did the daily standups make before and after the introduction of WIP Limits. Did you notice any difference in the way you were communicating?

Insight 1

WIP limits make us a team!

What are your observations regarding lead time when working with and without WIP limits? Was work completed faster?

Ok, Lead Times went down dramatically. Is that good or bad?

Why did we become faster?

Insight 2

Quality and Lead Times are not inversely proportional (short lead times do not mean bad quality). More focus can even improve quality.

What is the essence of "Agility"?

Insight 3

“Agility” doesn’t just mean working faster.

Agility is a strategy for surviving in an uncertain, rapidly changing environment.

The essence of agility is inspection and adaptation (empirism).

What is a precondition to inspection
and adaptation?

Where does feedback come from?
Who provides valuable feedback?

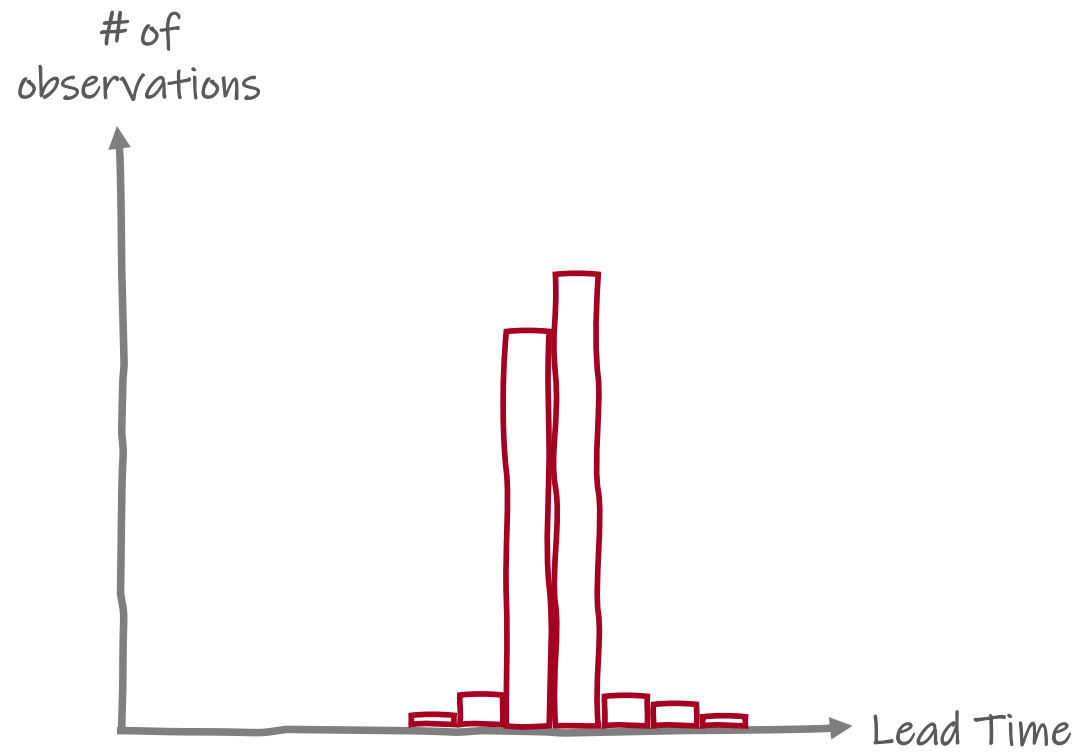
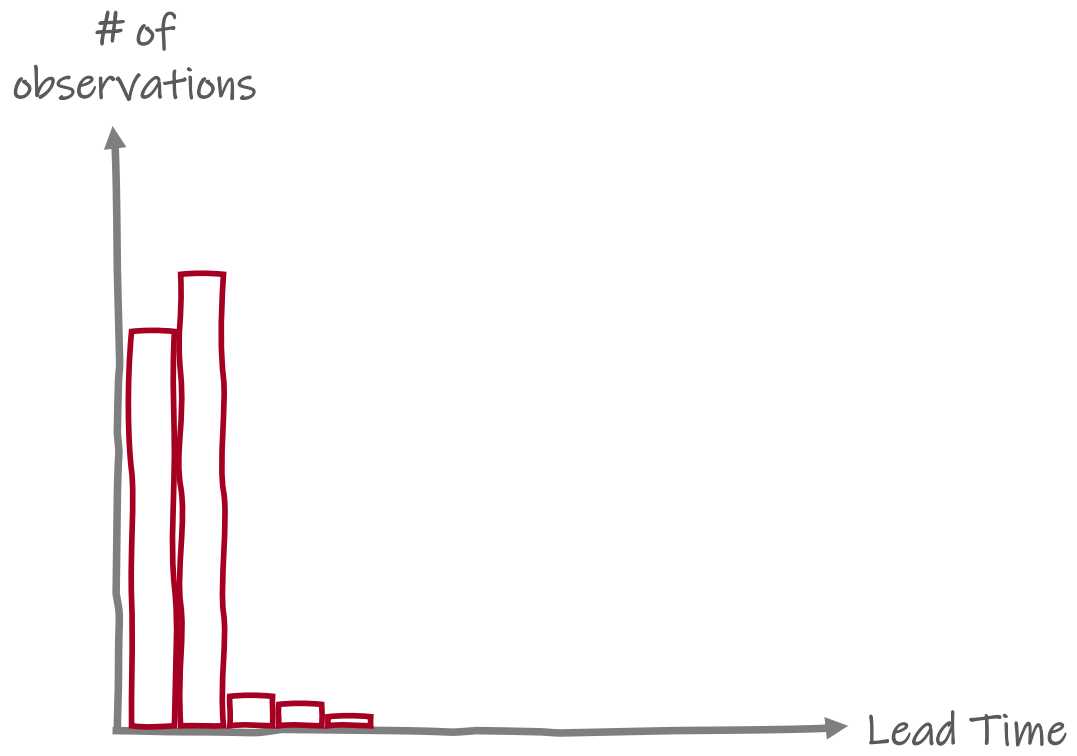
Insight 4

In a fast-changing environment short lead times are quite important:

- **Time-to-market, MVP, incremental deployment**
- **Customer expectations, performance of competitors**
- **Feedback!!!**

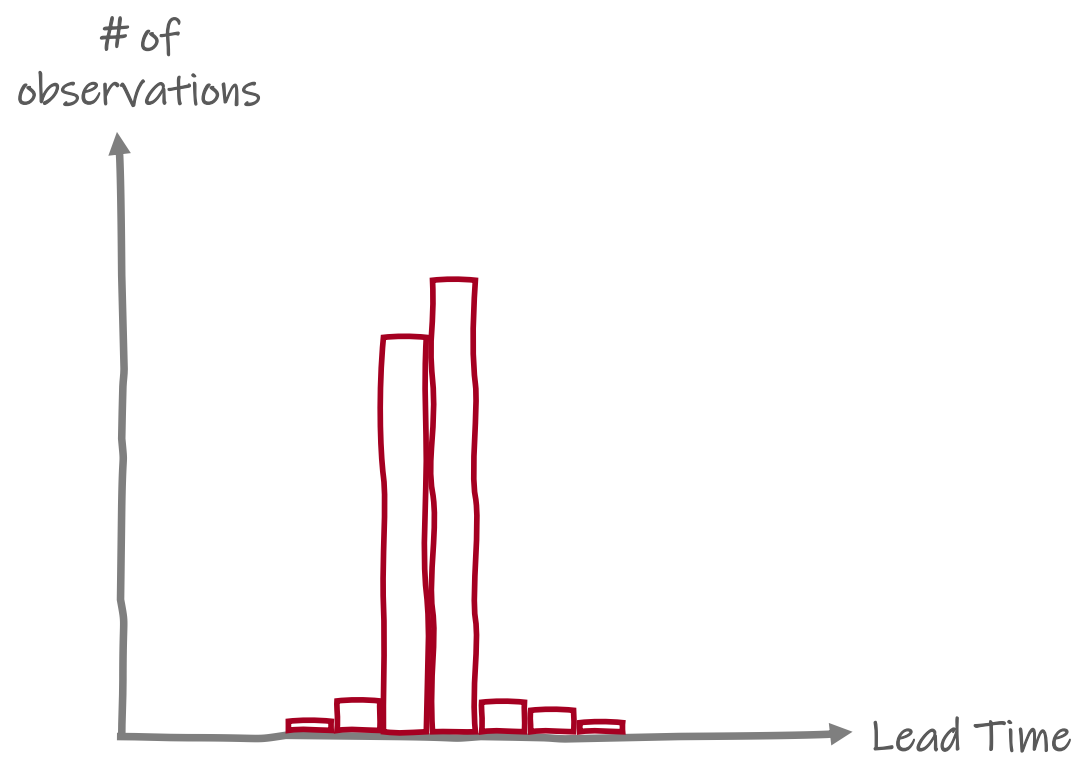
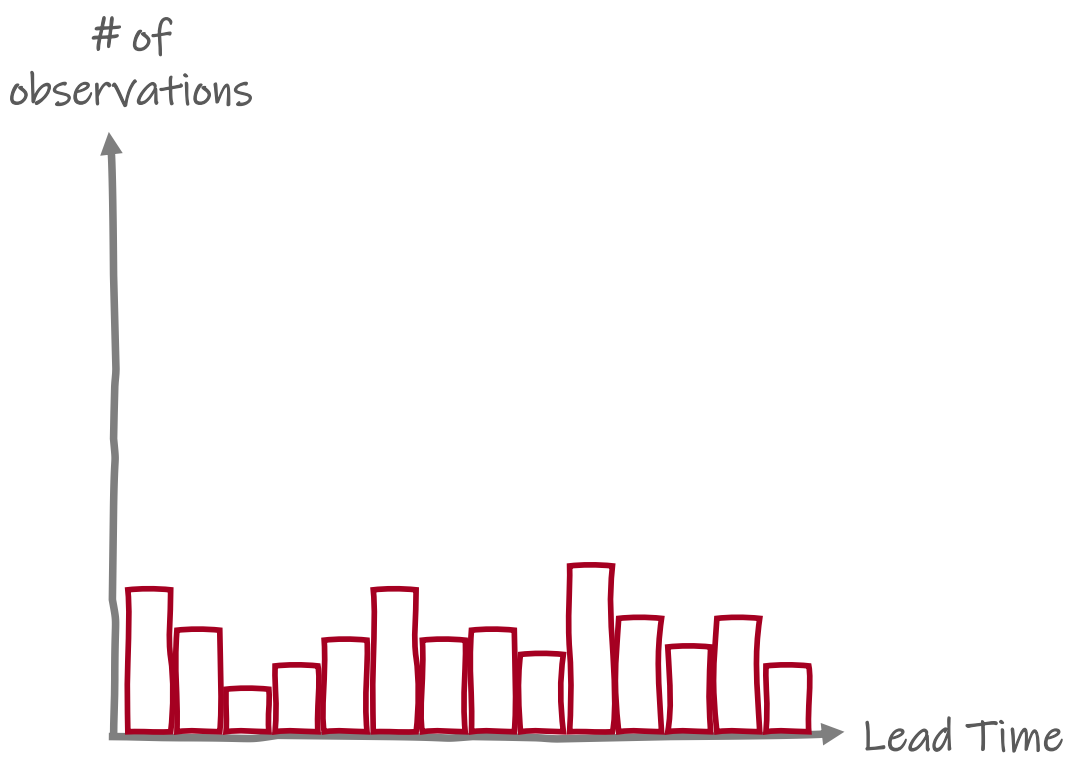
Short Lead Times are great but
don't forget about...

Which Lead Time Distribution is better? Left or right?

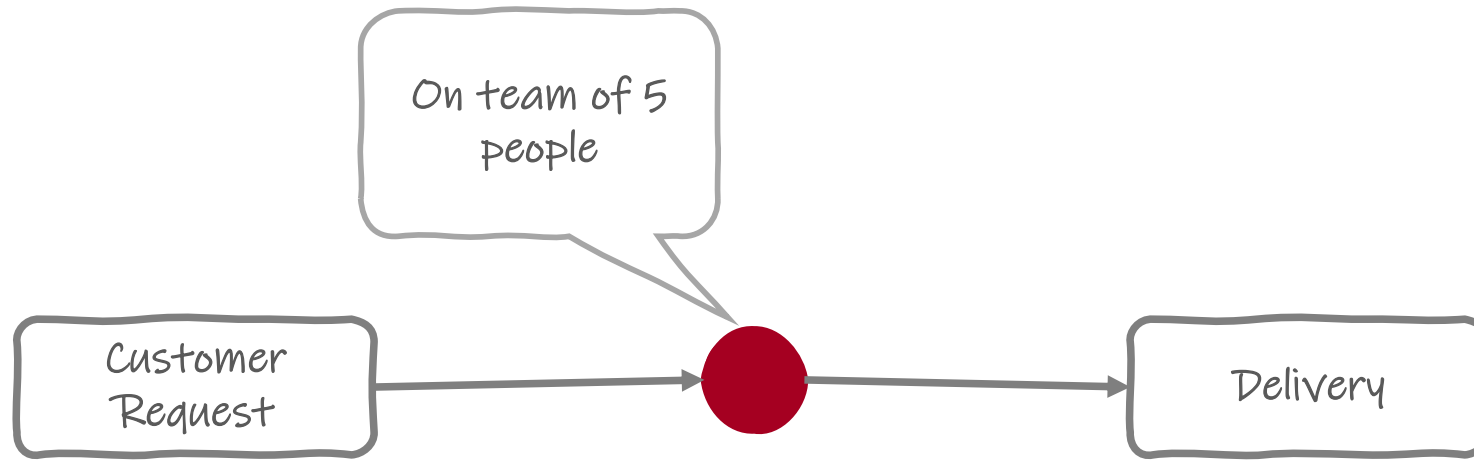


Which Lead Time Distribution is better? Left or right?

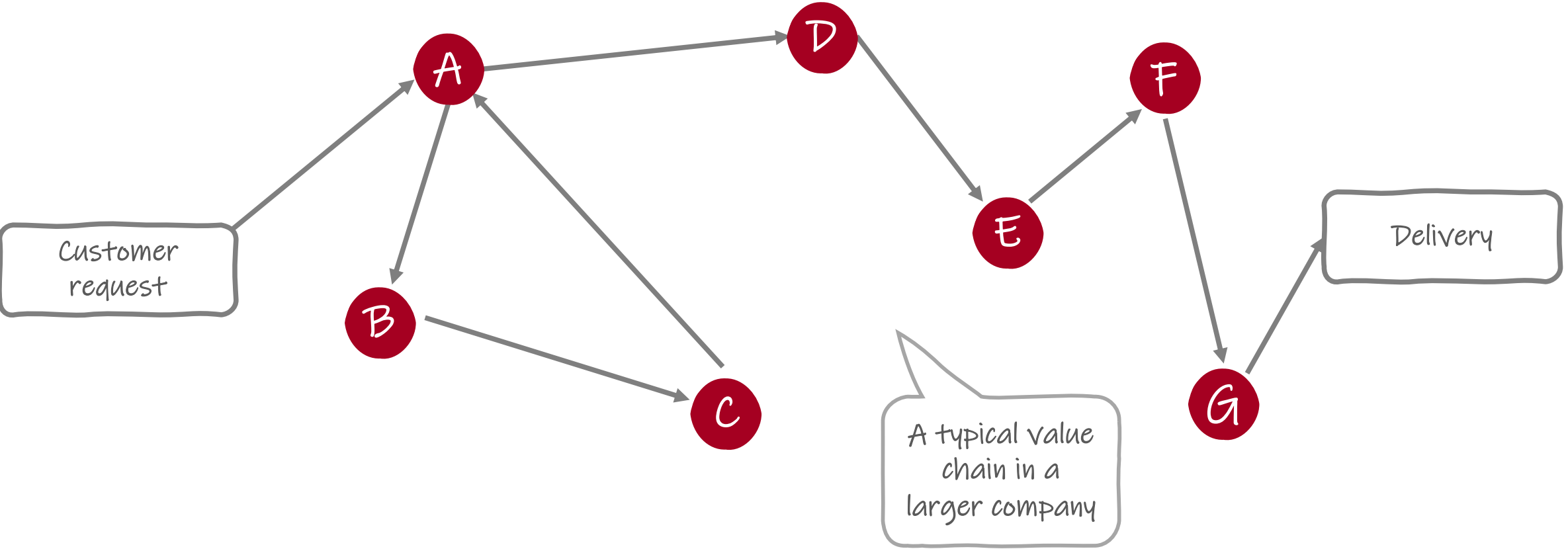
Without WIP limits



A startup (or very small) company



A medium-sized or large company



Insight 5

- **Only WIP limited systems are stable and predictable.**
- **Only in WIP limited systems SLAs make sense and promises to the customer can be kept**
- **If all who are included in a value chain behave unpredictable, the result is chaos.**

After introducing the WIP limits,
did anyone of you have to quite for
a day? Does that happen in real
life?

Paradigm of our corporate world

If all are a 100% busy, we are fast, efficient and getting things done. We only need to maximize resource usage and everything will be fine!

Maximizing resource utilization



...that's how Microsoft Project and Oracle Primavera work



Insight 6

- **Fully loaded systems are slow, unstable, unpredictable, and have long response times (Eg. Hard Drive).**
- **Counterintuitive: If all are a 100% „busy“, we don't become faster but rather slower!**
- **We should not manage resource utilization but rather the flow of work!**

Insight 7

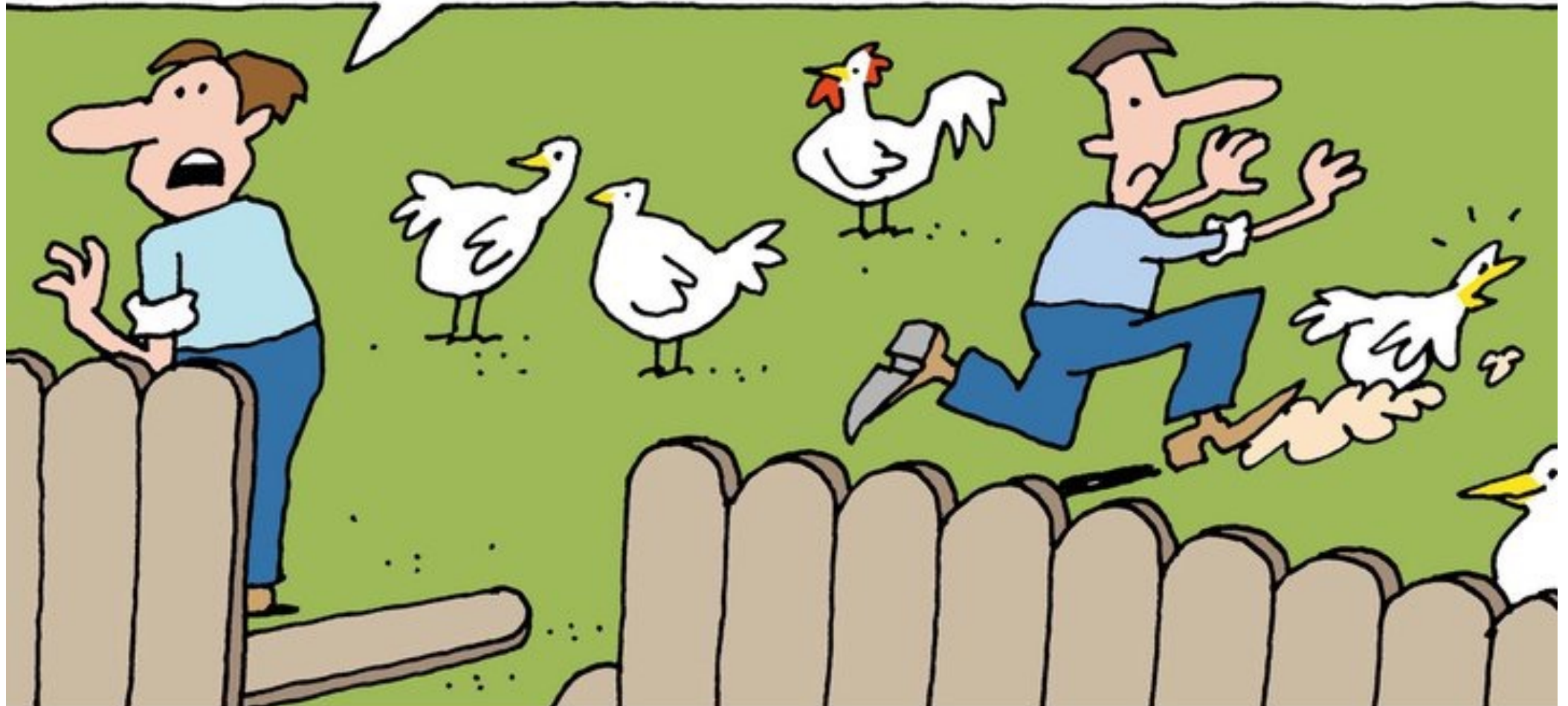
In Kanban we have another attitude towards human beings: Manage the work, not the workers!

No human being deserves to be managed!

People are led instead of being managed!

What do we do with the Slack?

We don't have time to fix the fence, we are too busy catching the chicken!



Insight 8

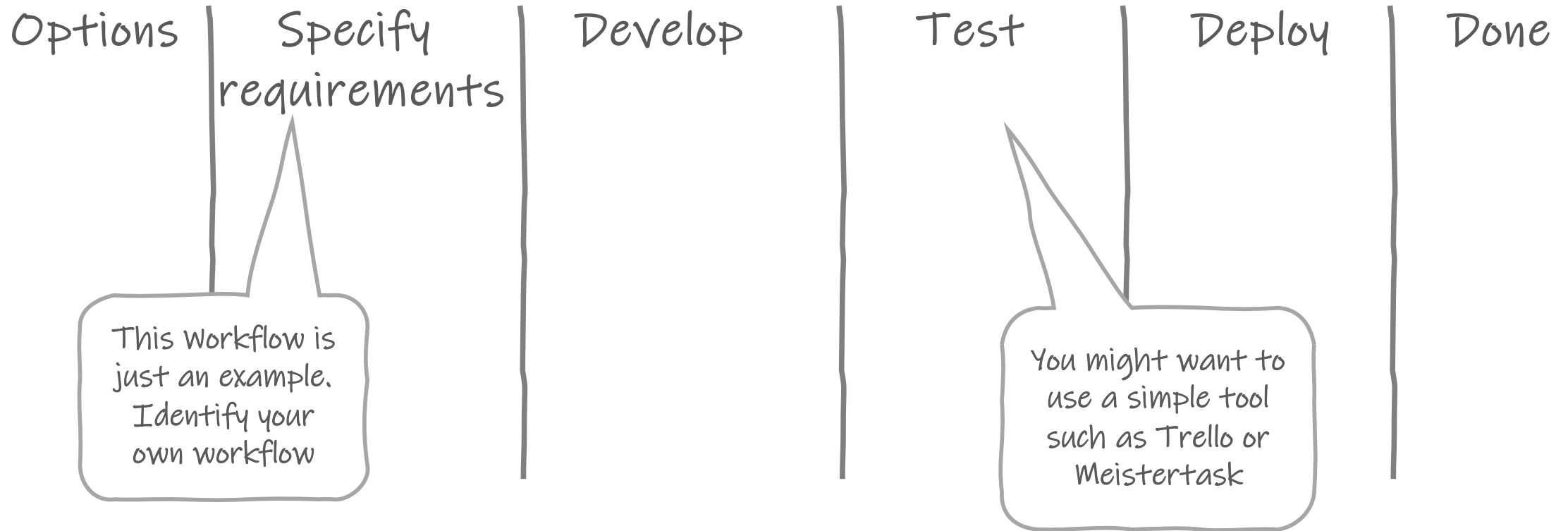
- **Slack is the ultimate weapon of productivity!**
- **Slack enables us to also work on the system instead of only working in the system.**

18.00 - 19.30 S

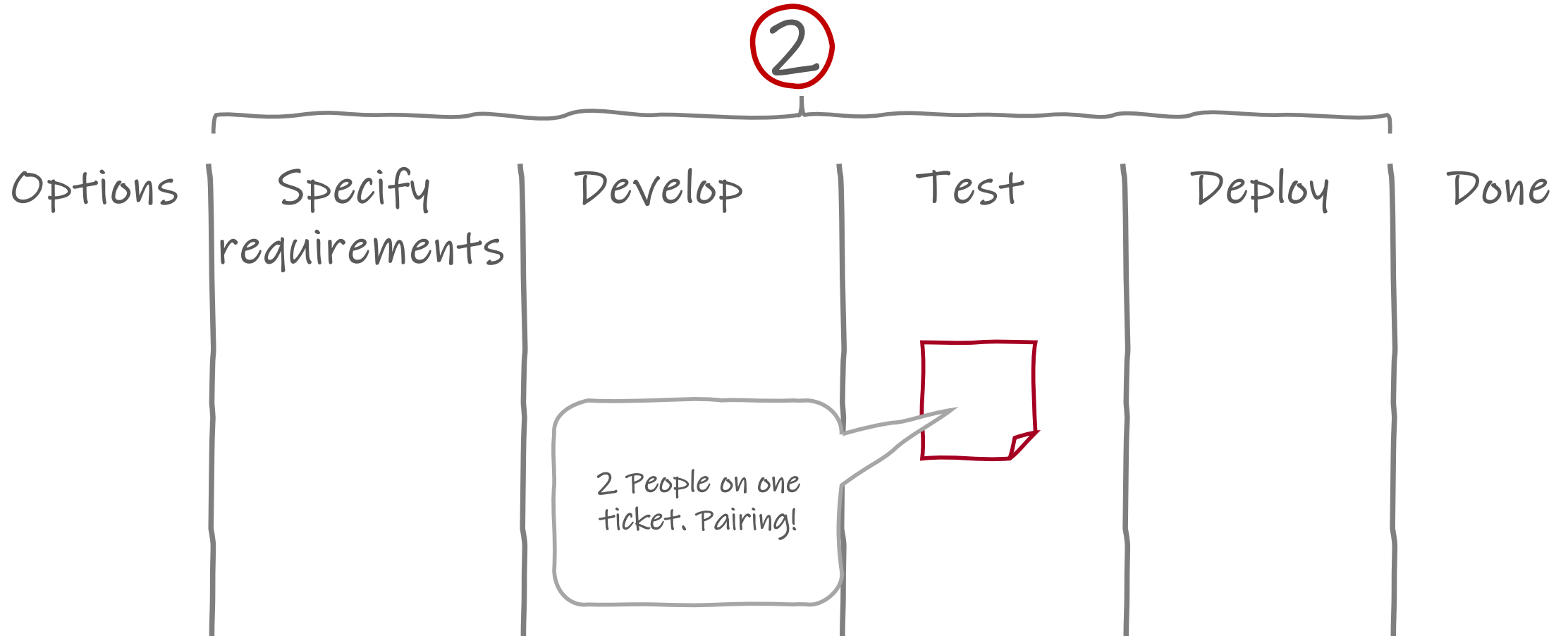
19.30 midday

How can we apply that to your
current university project?

Visualize the workflow

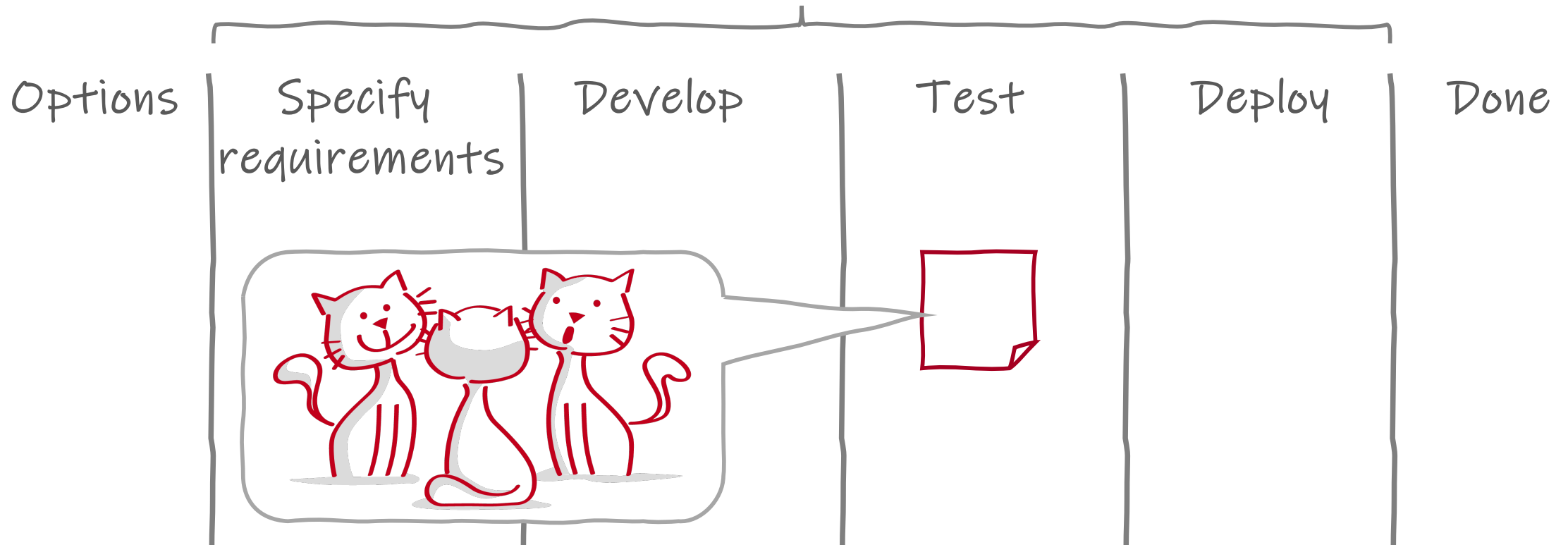


Apply WIP Limits for faster results and to enforce team-work (less tickets than team members)

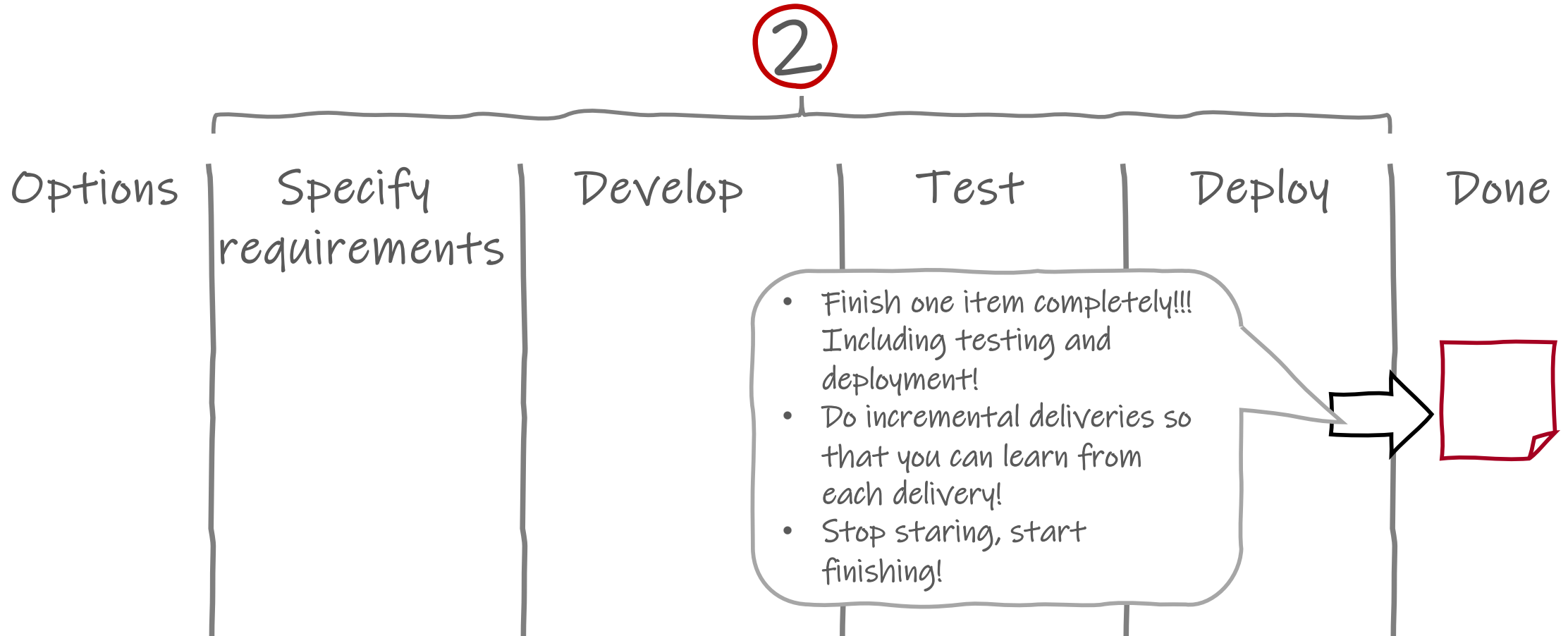


Do Stand-up meetings in a high frequency to coordinate work. Focus on workflow, not on people!!!

②



After having finished your first work item, discuss the feedback and learn from it! Inspect & Adapt!



Good Luck with your project and
Happy Kanban!



Dr. York Rössler

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Practitioner, CSM, CSPO, PSPO I

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