Limiting WIP: Doing Less to Do More

Hunter Tammaro & Julie Wyman

As you enter, please sit in groups of six.

This will help our activity run more smoothly.

Thank you!
Limiting WIP: Doing Less to Do More

Hunter Tammaro & Julie Wyman
Work in Progress (WIP)

Any **partly finished** product or materials in an **incomplete** step of a process

Completed work in one process may be WIP to a higher-order process

WIP **does not provide any value** to a customer
First, some theory...
Improved quality

Better problem solving

Fewer errors

Lower stress

Increased productivity
Faster Delivery & Feedback

4 Parallel Efforts
WIP = 4

Value Returned

Time

1 Parallel Effort
WIP = 1

Value Returned

Time
Little’s Law

• Cycle time = \( \frac{WIP}{Throughput} \)

• Hard to sustainably increase throughput

• Not as hard to reduce WIP
Does your team determine its (Sprint) capacity based on 8 hours a day?

Less? More?
Utilization, WIP and flow
Too much WIP

Fully utilized, but spend most of the time waiting

Slow flow through the system

Slow to respond to change
On a software team

- Analysis (2 days)
- Development (5 days)
- Testing (1 day)
- Deploy (1 day)

Waiting for development (3 days)
Waiting for testing (6 days)
Waiting to deploy (4 days)

Total Active Time:

Total Waiting Time:
On a software team

- **Analysis** (2 days)
  - Waiting for development (3 days)

- **Development** (5 days)
  - Waiting for testing (6 days)

- **Testing** (1 day)
  - Waiting to deploy (4 days)

- **Deploy** (1 day)

**Total Active Time:** 9 days

**Total Waiting Time:** 13 days
Just enough WIP

Team members sometimes idle, but work almost always moving

Rapid flow through the system

Short response time reduces effect of impediments
Idle team members?!

• Remove blockers
• Help other team members
• Process improvement
• Address technical debt
• Improve your craft
• Take a walk to get some coffee
Slack time as a signal

WIP limits help individuals find ways to improve the flow of the **entire team**

Are there issues upstream in the process that can be resolved?

Are there issues downstream in the process?

Adjust WIP or team composition until **flow** is optimized
Setting WIP limits

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Ready</th>
<th>Analysis</th>
<th>Development</th>
<th>Validate</th>
<th>Done</th>
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- Just start...
- Observe
- Adjust from there

Cycle Time
Prove It!

“Plane Game”

https://growingagile.co.za/2015/02/aeroplane-game/
Practice Round

Compete to make paper airplanes in teams of six

One team member at each station

One team member times the construction of the colored plane

One team member times the entire round
Round 1

Work **as fast as you can** in a first-in-first-out basis

After 10 planes are completed and tested, use the worksheet to record:

- The time to make all 10 planes
- The time to make the colored plane
- The number of incomplete planes in progress
Round 2

This time, work with a **WIP limit of 1 per station**

E.g. Station 1 can’t start on the next plane until Station 2 takes their sheet

After 10 planes are completed and tested, use the worksheet to record:

- The time to make all 10 planes
- The time to make the colored plane
- The number of incomplete planes in progress
Discussion

In which round did you complete all 10 planes faster?
Which round took your team more time to make the colored plane?
In which round was there more waste?

In which round did you feel more stressed?
Which round felt more like how you work in real life?
Key Takeaways

Limiting WIP...

• Creates a better-quality product faster
• Leads to quicker realization of value and better feedback
• Improves the functioning of the team by making bottlenecks visible

Remember to...
focus on flow, not utilization
Additional Resources
“Multitasking is Evil”

https://agileconnection.com/article/multitasking-evil
Multitasking is Evil

Round 1

You are assigned three projects, which you will work one at a time.

Project 1: Write the numbers 1-15 in the 1st column.

Project 2: Write the letters Z->N in the 2nd column.

Project 3: Write the Roman numerals IV-XVII in the 3rd column.

Work column-by-column until you complete all 3 projects.

Write down the time you finish.
Multitasking is Evil

Round 2

You are assigned three projects, which you will work all at once.

Project 1: Write the numbers 1-15 in the 1st column.

Project 2: Write the letters Z->N in the 2nd column.

Project 3: Write the Roman numerals IV-XVII in the 3rd column.

Work row-by-row until you complete all 3 projects.

Write down the time you finish.
Discussion

- In which round did you complete your first project faster?
- Which round took you more time to complete all three projects?
- In which round did you make more mistakes?
- In which round did you feel more stressed?
- Which round felt more like how you work in real life?
Links

• Huffington Post article on multitasking with statistics

• Blog posts:
  • How to set initial WIP limits
  • How Scrum and Kanban approach WIP differently
  • Constraints in Scrum and Kanban

• Books:
  • Lean from the Trenches – Henrik Kniberg