Getting Out of Quicksand, With DevOps!

Elektrobit

Roman Pickl
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DevOps Pro

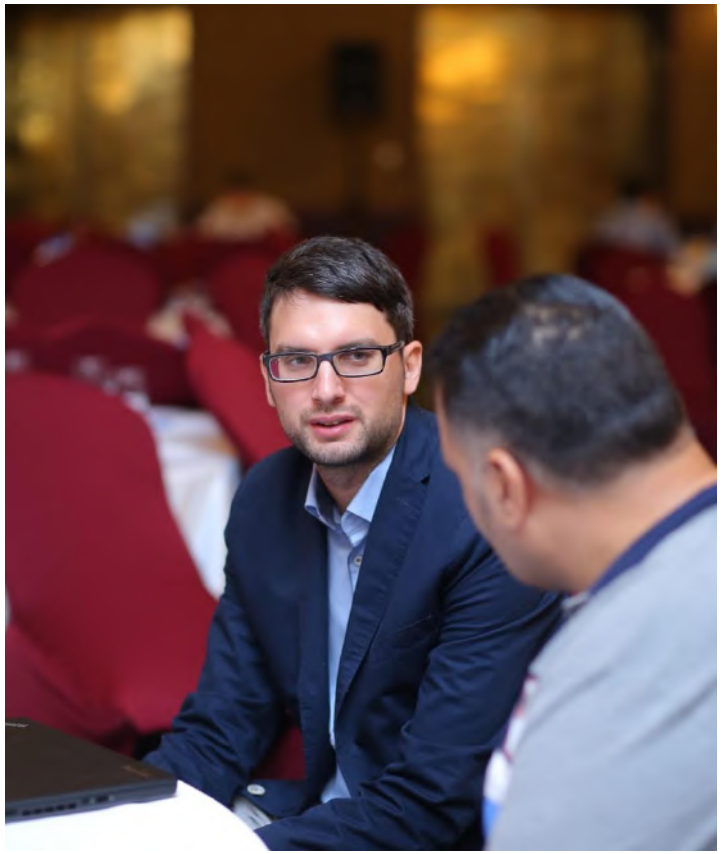
Join at Slido.com with

#devops2019

How did I end up here?

Roman Pickl (@rompic)

- Technical Project Manager @ Elektrobit
- Former CTO @ Fluidtime (now a Kapsch company)
- Loves CI/CD/DevOps
- Here to learn



Andrew Shafer, DevOpsDays Cairo 2018

"I don't have time to learn new things because I'm too busy getting things done!"

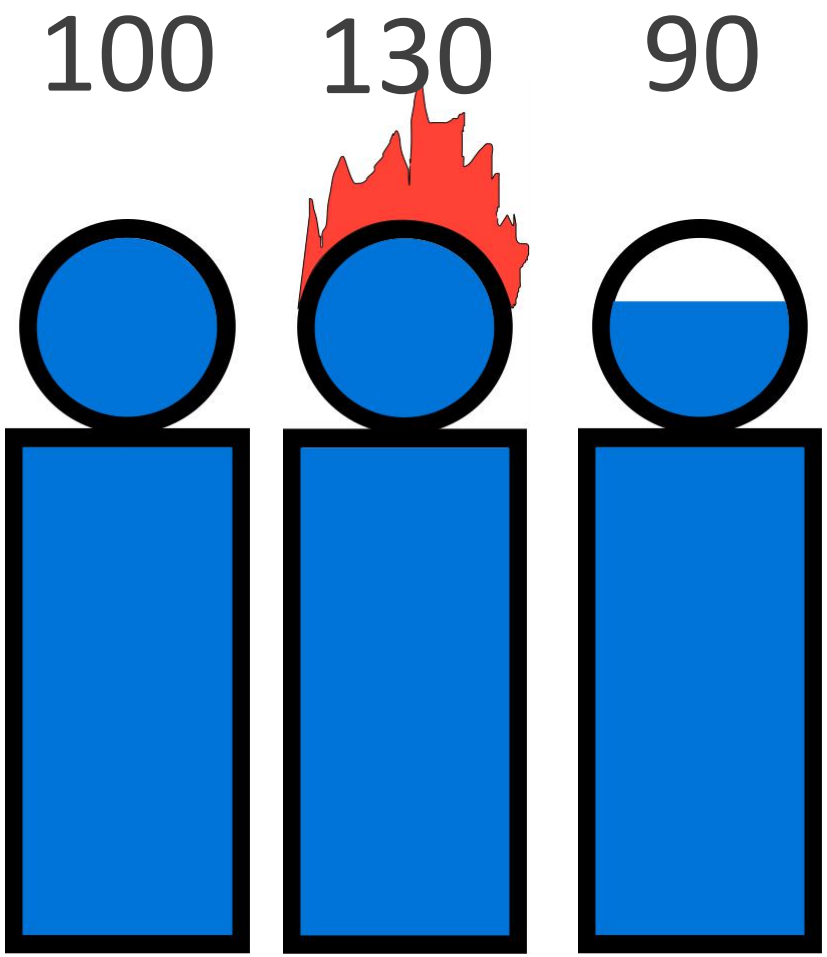
- least productive person in the world

https://youtu.be/BeNdum6u6eg?t=2081

Efficiency vs. Effectiveness

Tom DeMarco, 2001, Slack: Getting Past Burnout, Busywork, and the Myth of Total Efficiency

How the team currently looks like

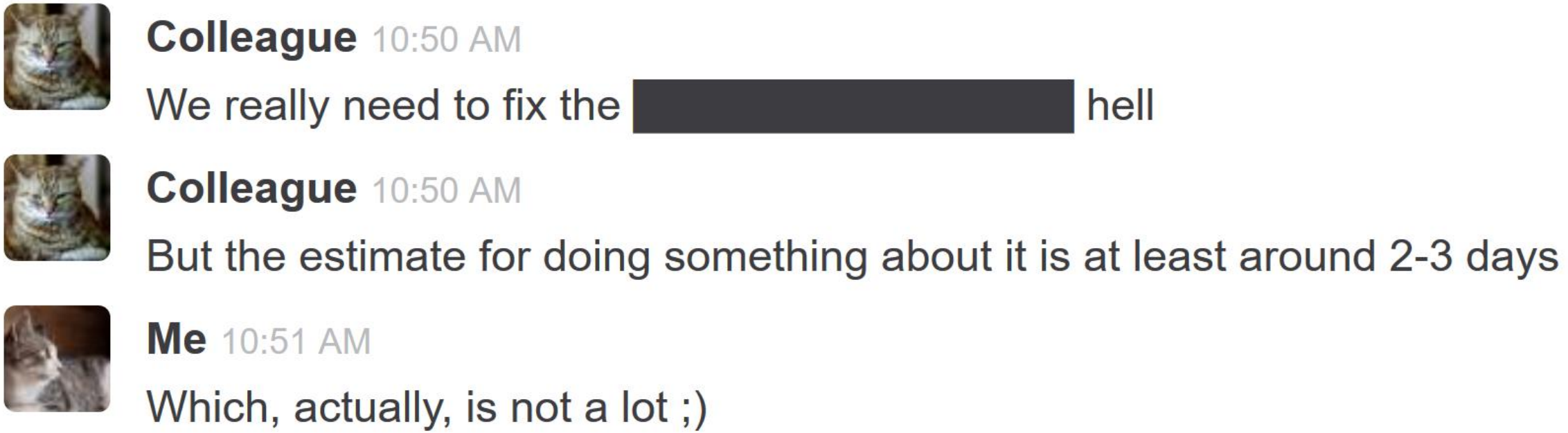


Symptoms of overload

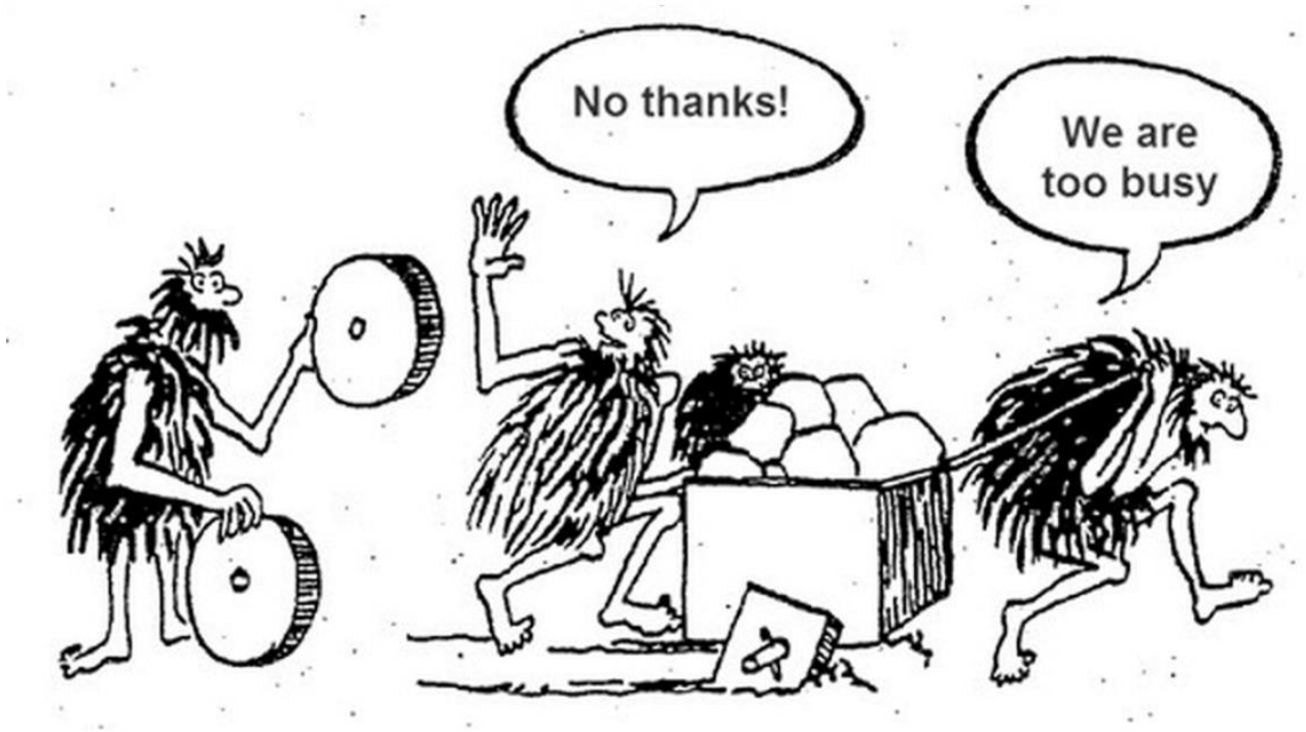
- Decreased team morale
- Working long hours / when sick
- More frequent illness
- Unhealthy tasks queue
- Imbalanced metrics
- …

It hurts …

… again and again

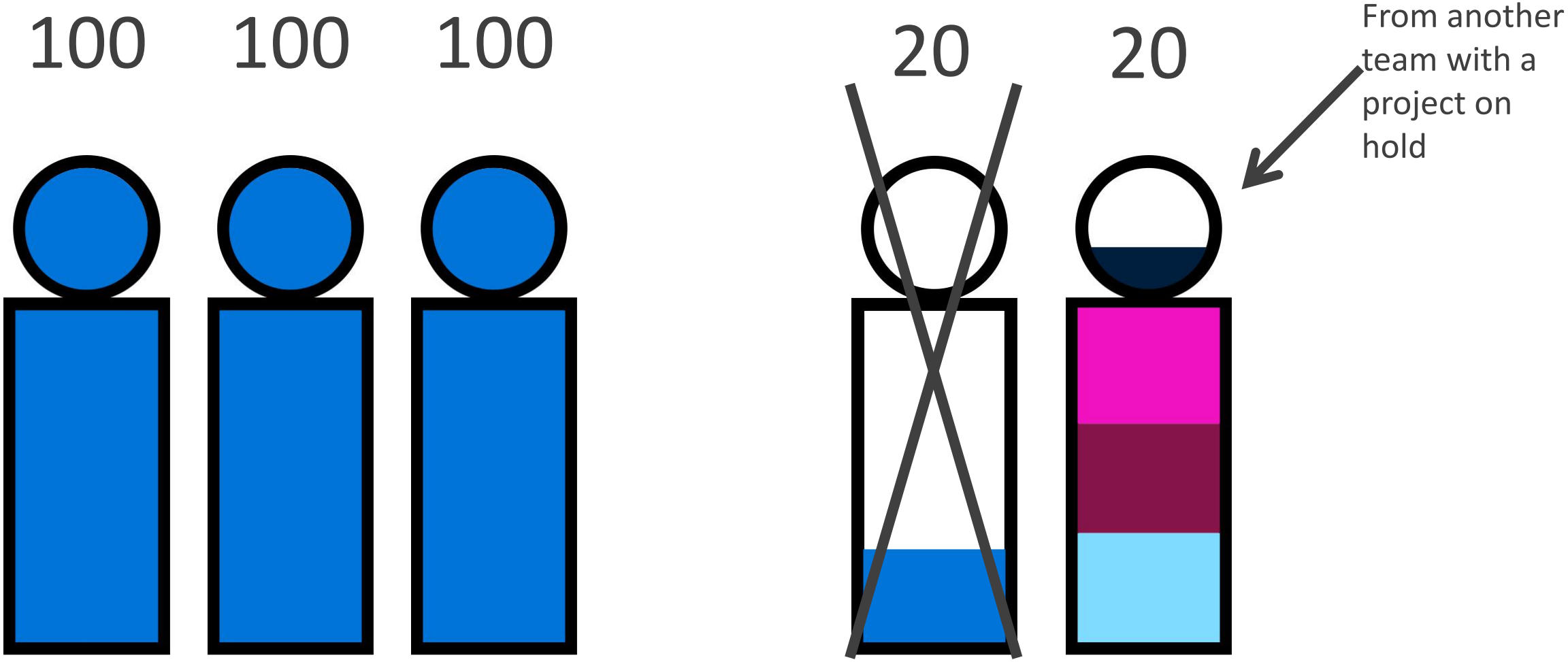


No thanks, too busy



Source unknown

What your manager thinks should be done



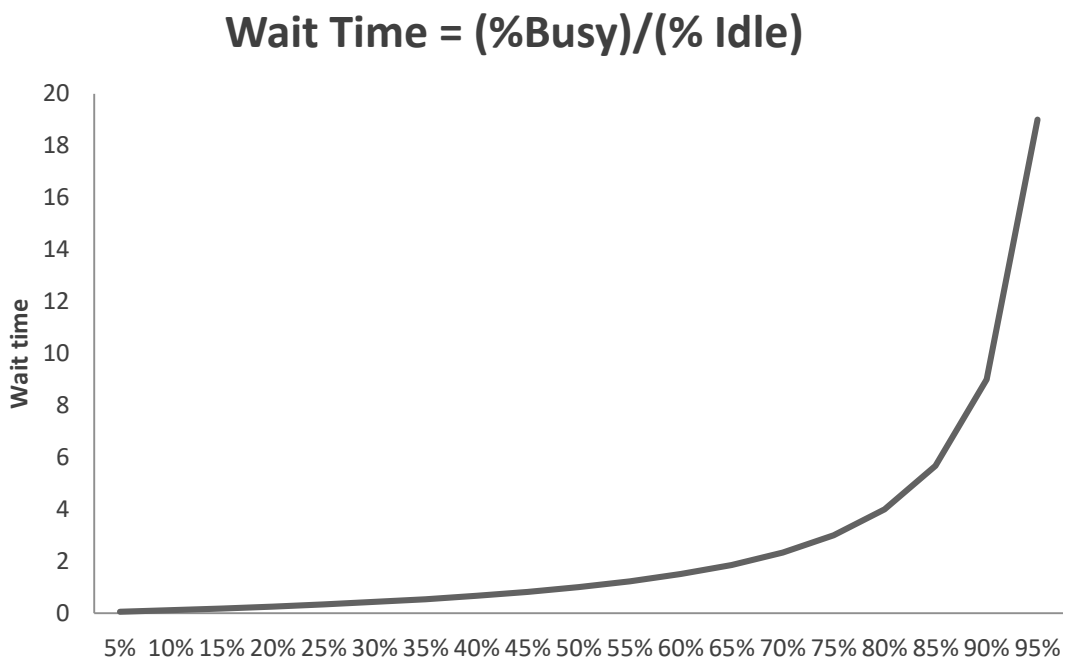
Queuing theory

- Different types of queues (e.g. G/G/1)
- Waiting Time:
  - Service time
  - Utilization
  - Variation in process and arrival
- Kingman Equation / approximation

$$\mathbb{E}(W_q) \approx \left(\frac{\rho}{1-\rho}\right)\left(\frac{c_a^2 + c_s^2}{2}\right)\tau$$

- Little's Law:
  - Avg. Lead Time = Avg. WiP / Avg. Throughput

→ Focus on throughput rather than utilization



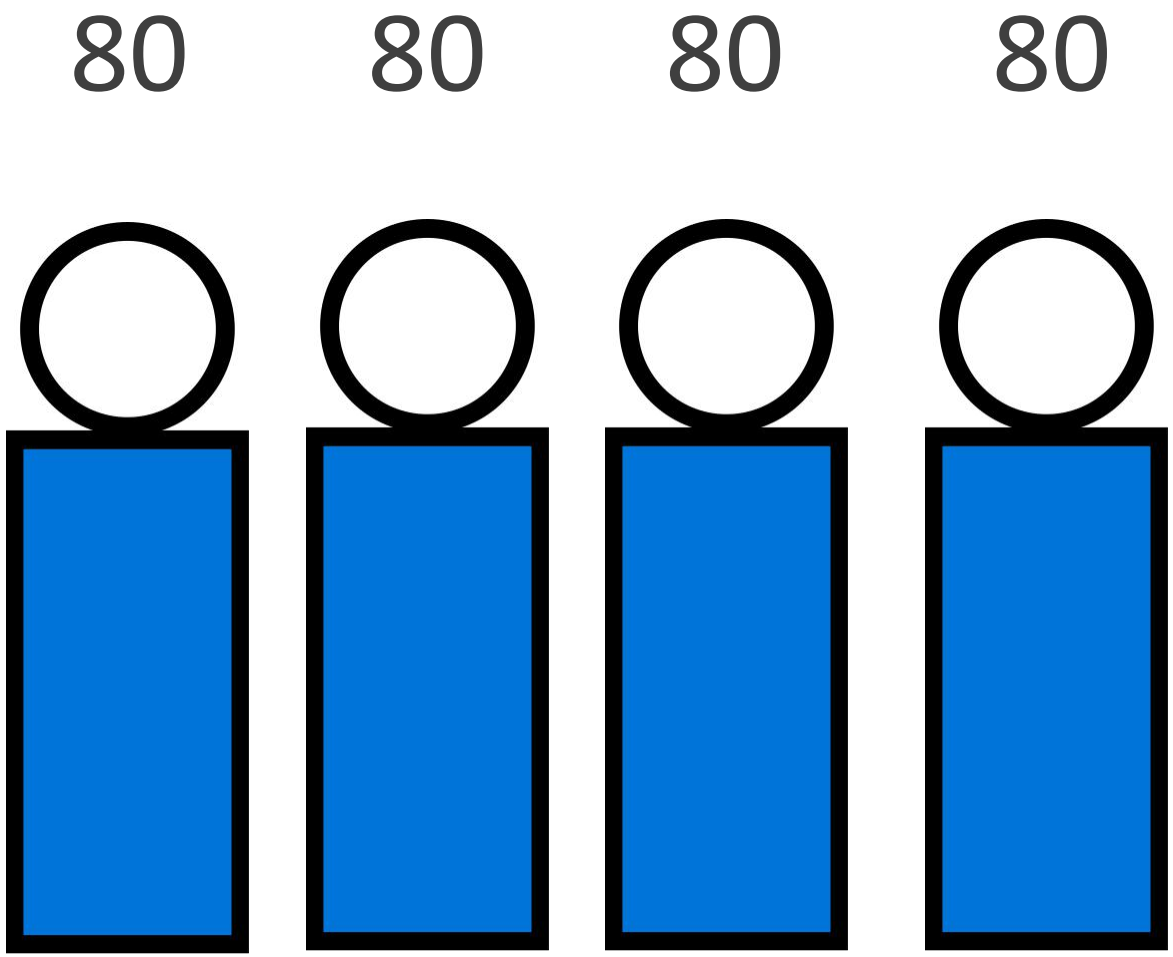
https://en.wikipedia.org/wiki/Kingman%27s_formula
https://less.works/less/principles/queueing_theory.html

Feels like quicksand

The more you fight it, the more it pulls you in.

Source: https://www.eaglecreek.com/blog/how-escape-quicksand

What you think should be done: hire more people



"slack is the missing ingredient required for all change"

Invest roughly a day per week to

- Spur innovation
- Rethink
- Practice new ways
- Master new skills
- Improve efficiency.

Scrum: sustainable pace

3Ms 15% time

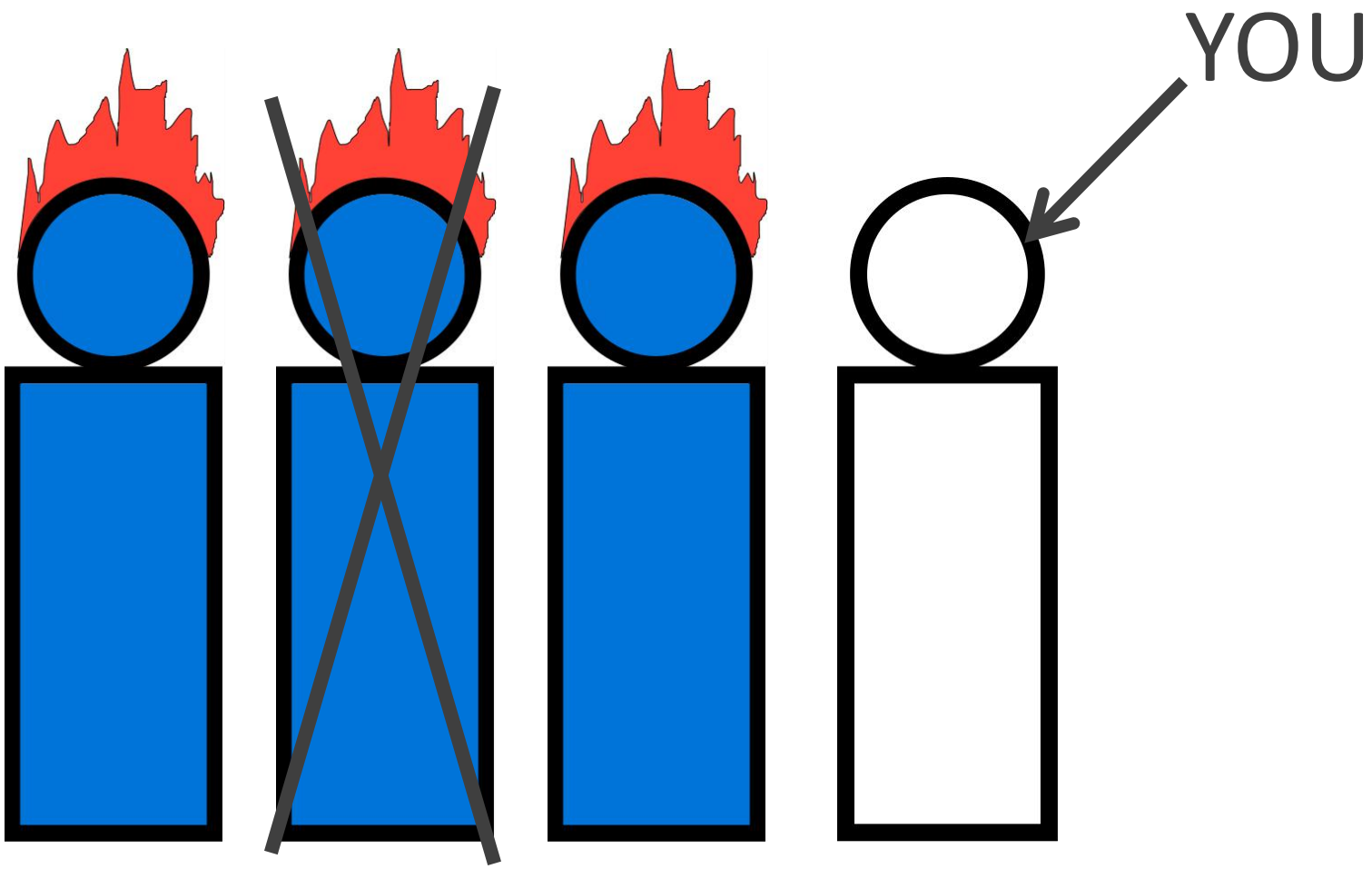
Google's 20% time

Hard limit on toil at Google SRE: 50%

#2 SRE principle: SREs must have time to make tomorrow better than today

What actually happens

„People under time pressure don‘t think faster“ - Tim Lister



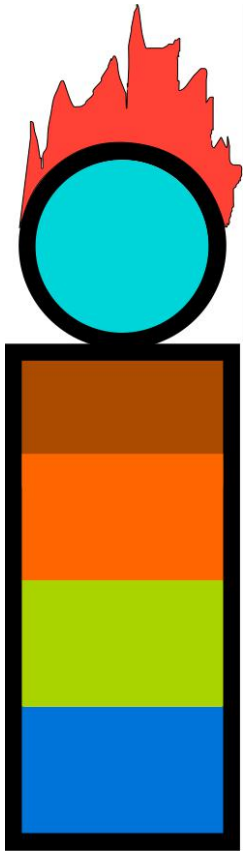
It sometimes takes a crisis

KC Green

Quantify the work: Activity Accounting

Time Spent	Elite	High	Medium	Low
NEW WORK	**50%**	**50%**	**40%**	**30%**
Unplanned work and rework	19.5%	20%[a]	20%[a]	20%[a]
Remediating security issues	5%	5%[b]	5%[b]	10%
Working on defects identified by end users	10%	10%[c]	10%[c]	20%
Customer support work	5%	10%	10%	15%

Medians reported because distributions are not normal.
[a] Significantly different when testing for differences using Tukey's post hoc analysis
[b, c] Not significantly different when testing for differences using Tukey's post hoc analysis



2018 Accelerate State of DevOps Report: https://cloudplatformonline.com/2018-state-of-devops.html

Measure

Flow time
- Lead time
- Cycle time

Frequency of deployment

Mean time to restore services

WiP is the biggest deterrent to flow

What is the biggest bottleneck?

Can we fix the bottleneck?

Ask why (5 times),

Hydrargyrum

XKCD - Compiling

https://xkcd.com/303/

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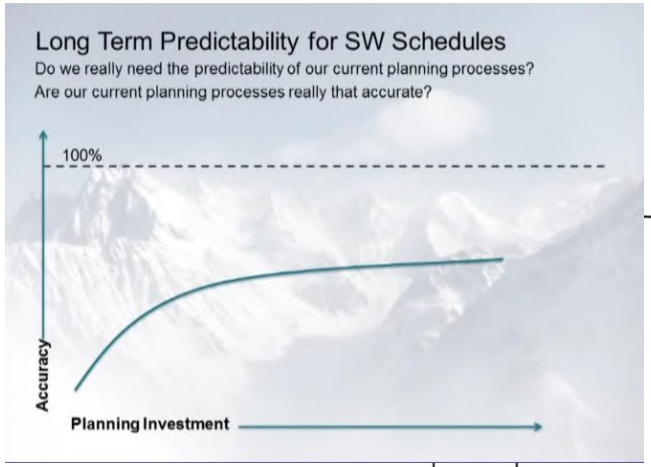
Lightweight Capacity Management

- Tendency to do more planning / estimation and more control
- Accept uncertainty and appreciate flexibility
- Decreasing marginal utility of each hour spend planning
- Every hour spent planning is an hour not delivering (as resources often overlap)
- Lightweight capacity planning
- Just-in-time approach
- Prioritize e.g. by cost of delay



		High-Level Estimate – FW Engineering Months												
Rank	Initiative	Component 1 (25-30)	Component 2 (20-25)	Component 3 (30-40)	Component 4 (30-40)	Component 5 (20-30)	Component 6 (20-30)	Component 7 (20-30)	Component 8 (15-25)	Component 10 (40-50)	Component 11 (20-30)	Component 12 (20-30)	Other teams	TOTAL
1	Initiative A			21			5	3		1				30
2	Initiative B	3							4				17	24
3	Initiative C		5							2	1	1		9
4	Initiative D							10		2	2	2		16
5	Initiative E					20						3	5	28
6	Initiative F	23							5	6			2	36
7	Initiative G									2				2
8	Initiative H											5		5
9	Initiative I												3	3
10	Initiative J		20	27			17			39	17	21	9	150
11	Initiative K			3	30		3		3	14			12	65
12	Initiative L									2				2
13	Initiative M	3						10		6	6	6		31
		29	25	51	30	20	25	23	12	74	26	38	59	401

A Practical Approach to Large-Scale Agile Development – Gruver, Young, Fulghum
Principles of Lean Product Managment by Jez Humble - https://youtu.be/cH6bnQzJojo?t=1083
"A Practical Approach to Large Scale Agile Development" - Gary Gruver at Spark 2013
https://www.youtube.com/watch?v=2QGYEwghRSM

Do less (at the same time)

- Reduce WiP
- Reduce batch size
- Reduce variability / increase predictability
- Do less
- Self service platform

- Eliminate before you try to automate

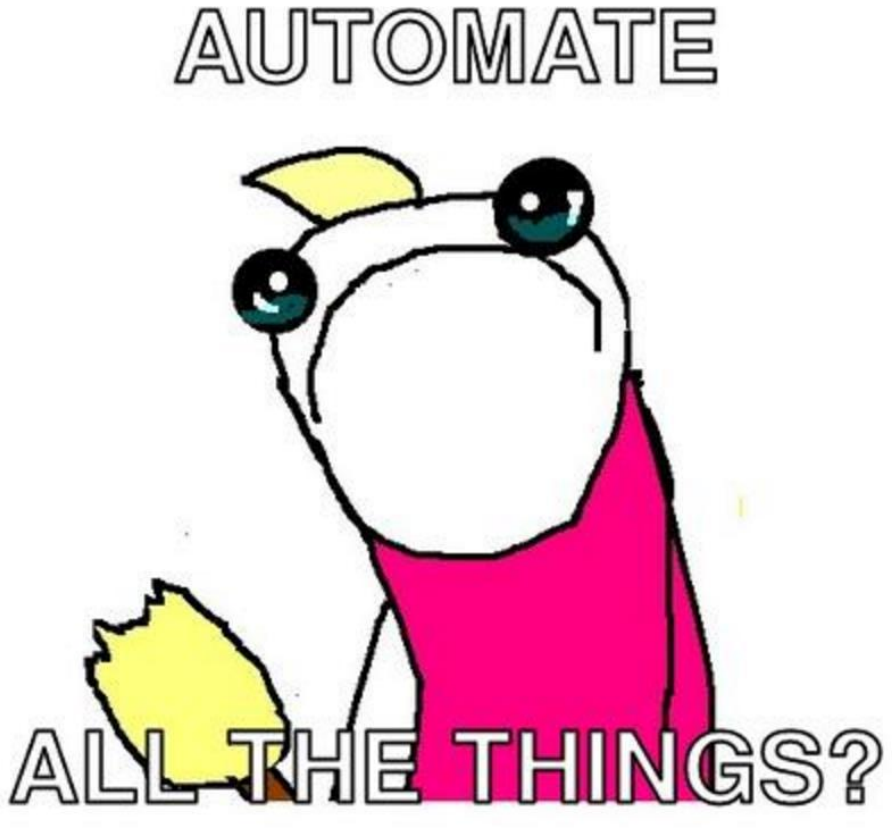
Less is More

Automate

- Make time to create automation
- Documenting the process and making it repeatable is the first step

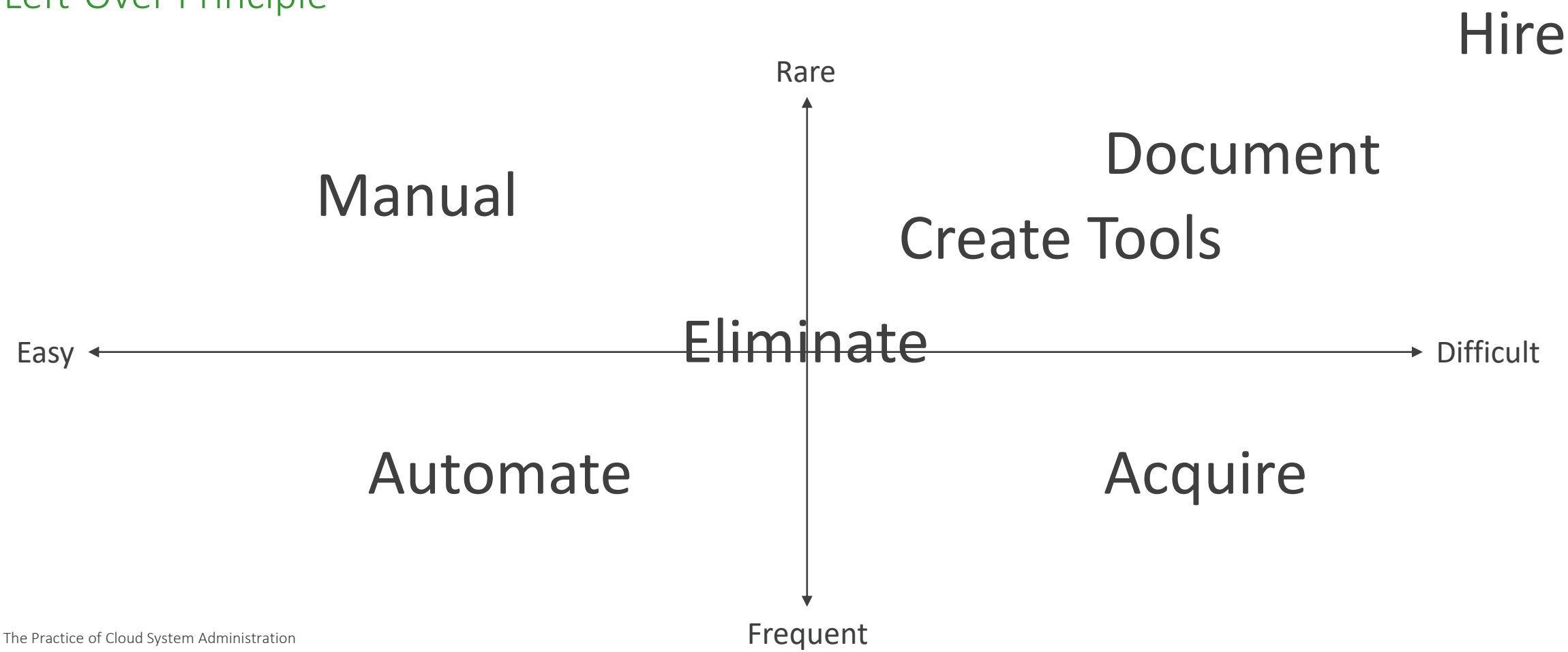
- Automate, eliminate or engineer out the drivers that are not key to the value proposition
  - New work – hard to automate
  - Triage work – automate for consistency
  - Repetitive work – automate

- Fix the biggest bottleneck first



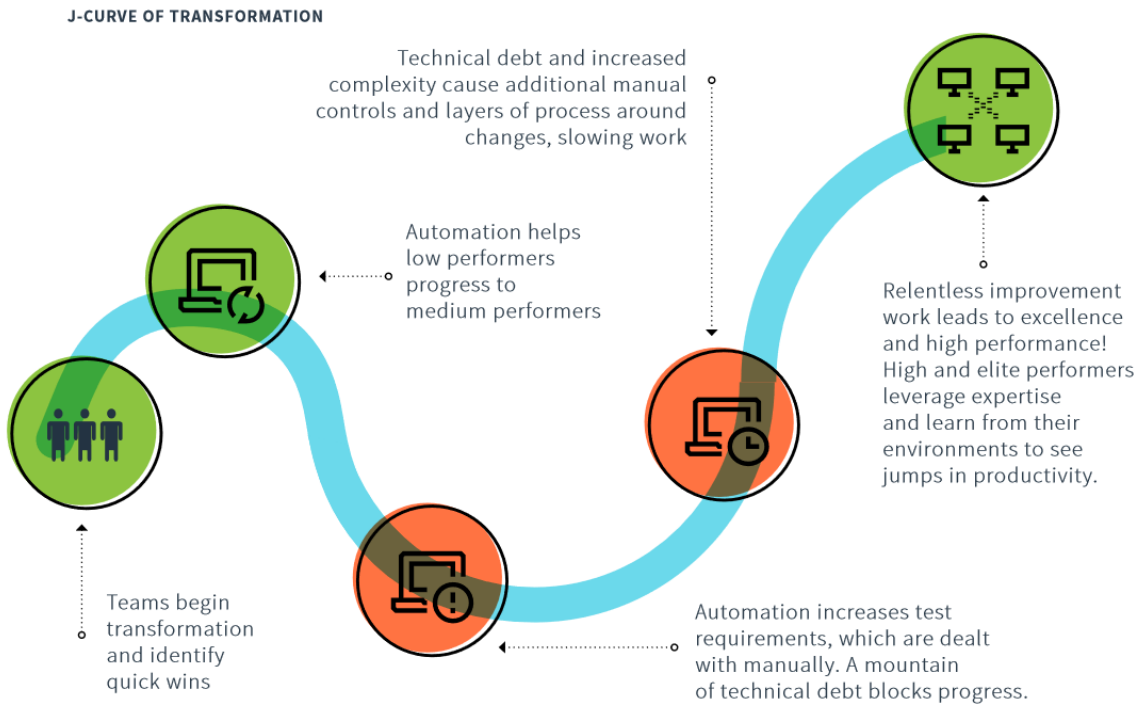
Picture: https://moduscreate.com/blog/automation-what-why-when/

Left-Over Principle



A word of caution

The paradox of automation



Demarco T, Slack: Getting Past Burnout, Busywork and the Myth of Total Efficiency, page 108ff
Forsgren N., Humble J., Gene K. Accelerate p. 12 ff
Accelerate State of DevOps Report 2018 p. 28ff

Virtuous circle

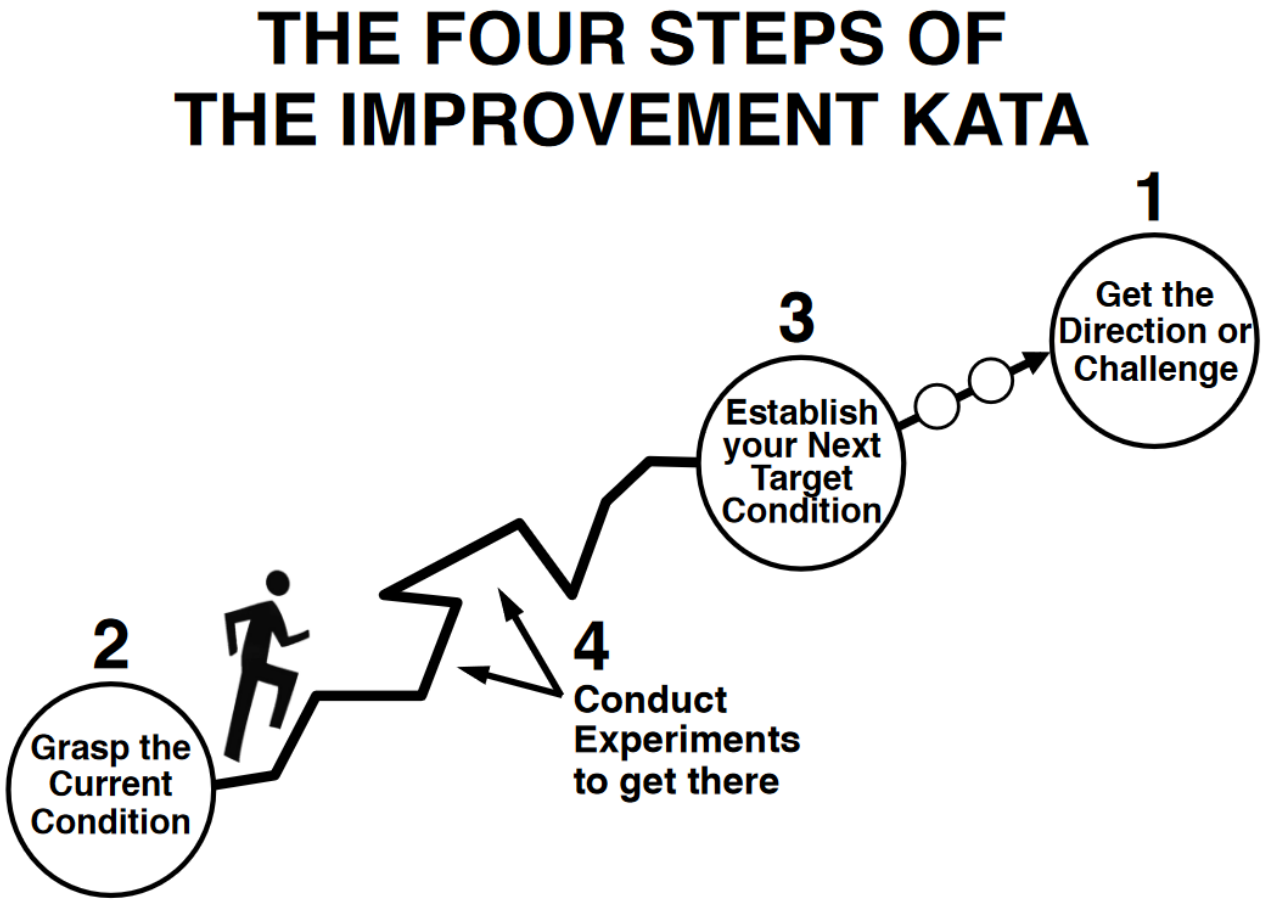
"Improving your software delivery effectiveness will improve your ability to work in small batches and incorporate customer feedback along the way"

"Lean product management practices positively impact software delivery performance, stimulate a generative culture, and decrease burnout"

"[…] software delivery performance drives Lean product management practices"

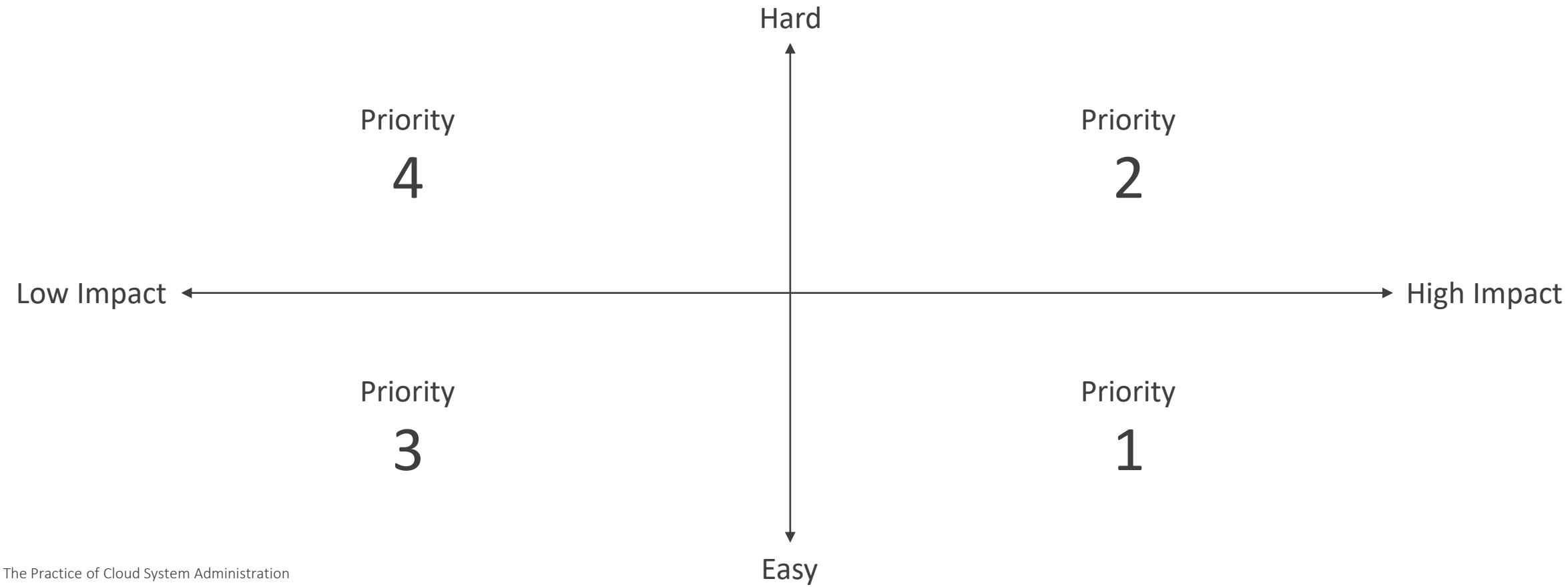
"[…] it becomes a reciprocal model or, colloquially, **a virtuous cycle**" – Accelerate

Improvement Kata

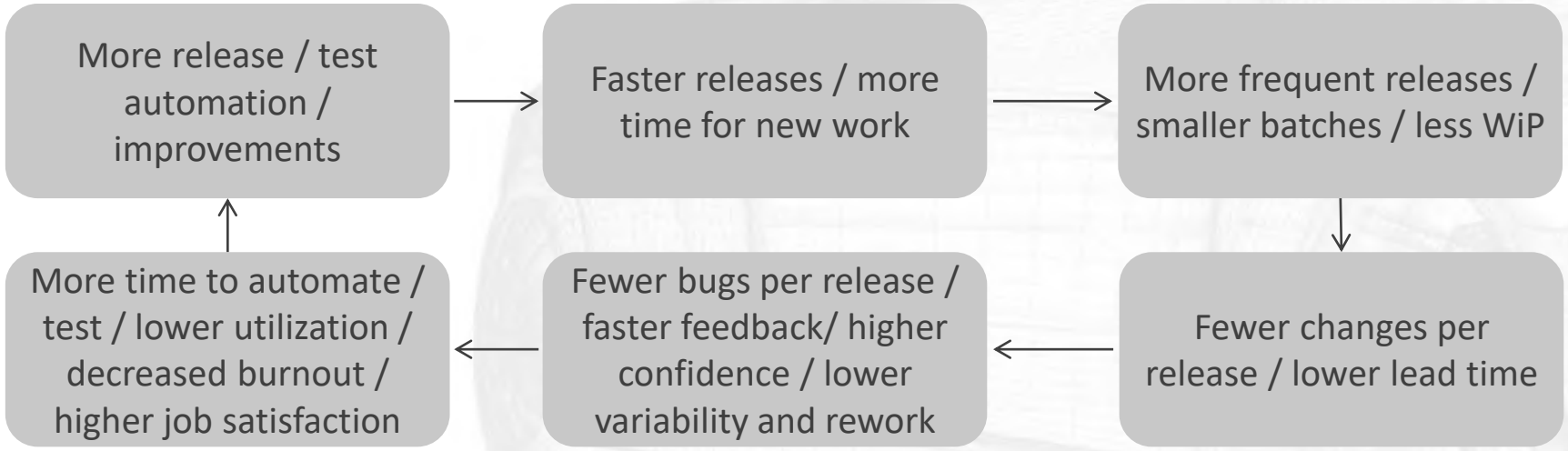


http://www-personal.umich.edu/~mrother/Homepage.html

Prioritization of Improvement

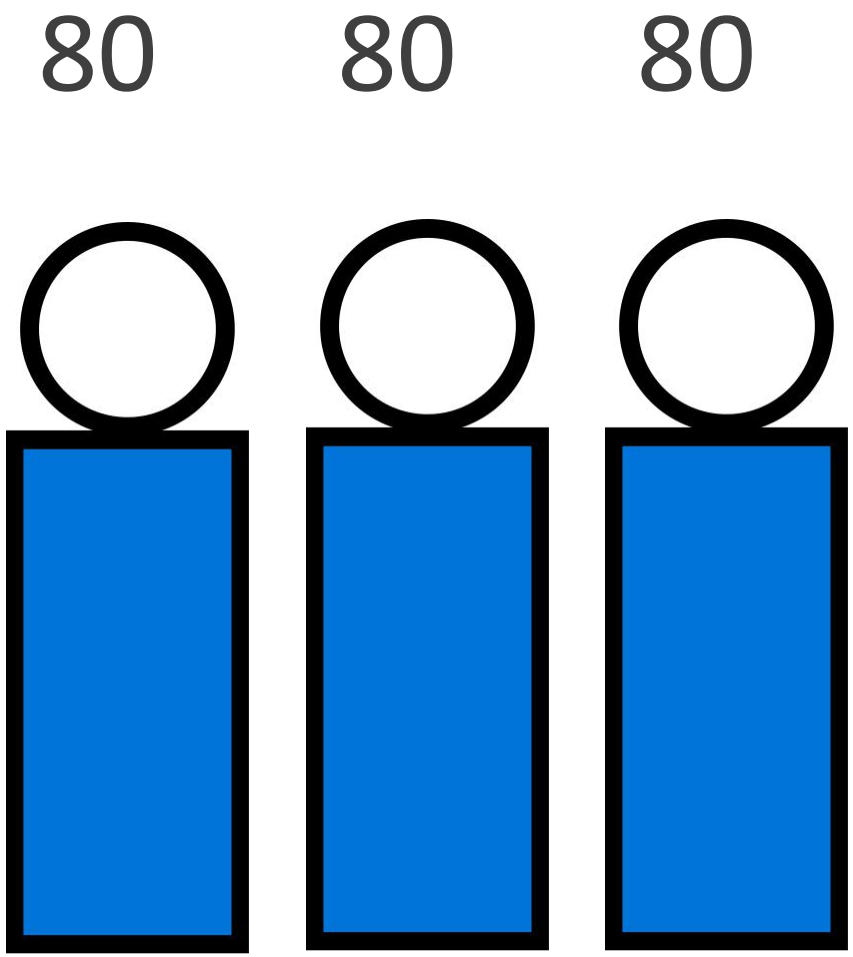


Virtuous Circle



Based on Virtuous Circle of CI/CD The Site Reliability Workbook

How it ended up working:



Spent 1 day a week to improve “something”

Created self service pipelines

Used Information radiators

Clear priorities and weekly goals

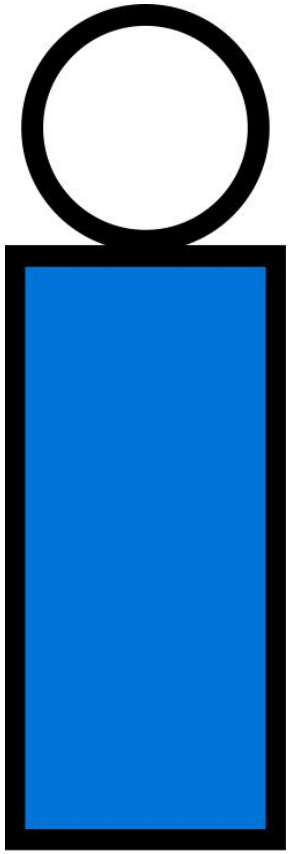
Conclusion

Crisis situations are opportunities for change

Often it takes fresh eyes or at least courage to see the problems

Get out of the quicksand, the sky is the limit

- Quantify the work and set goals
- Measure
- Less is more
- Automate the right things
- Establish a continuous improvement process
- Start a virtuous circle



Read these if you want to know more

Dominica DeGrandis – Making work visible

We don‘t let our servers get to 100% capacity utilization, so let‘s not do that to ourselves

Further references & information

- Daniel Vacanti: Little‘s (F)law: https://vimeo.com/52683659
- Håkan Forss, Queueing theory in software development - ALEBathtub 2011-06-30, https://de.slideshare.net/HkanForss/queueing-theory-in-software-development-ale-bathtub-2011-0630
- GOTO 2015 • Why Scaling Agile Doesn't Work • Jez Humble - https://www.youtube.com/watch?v=2zYxWEZ0gYg&feature=youtu.be&t=3003 (it often takes a disaster for lasting change)
- John Cutler – Too Busy to Improve https://anchor.fm/john-cutler/episodes/Too-Busy-To-Improve-for-Roman-e2ap3i
- 2018 Accelerate State of DevOps Report: https://cloudplatformonline.com/2018-state-of-devops.html
- Dominica DeGrandis - Making Work Visible: How to Unmask Capacity Killing WIP - https://www.youtube.com/watch?v=KR7Y8IUgyyA
- Keynote: Continuous Delivery Sounds Great By Jez Humble @ Agile India 2017 https://www.youtube.com/watch?v=SjVV3xuYKJs
- A Practical Approach to Large Scale Agile Development"- Gary Gruver at Spark 2013 https://www.youtube.com/watch?v=2QGYEwghRSM
- High-Performance Team, Management, and Leadership Behaviors and practices https://devops-research.com/assets/transformation_practices.pdf
- John Cutler - This feels like going faster vs. this actually makes us faster https://twitter.com/johncutlefish/status/1029757026895720449
- John Cutler – Slack vs. Blocked https://medium.com/@johnpcutler/slack-vs-blocked-16c294938b1
- Mike Rother - http://www-personal.umich.edu/~mrother/Homepage.html

Don’t wait and get in touch

Roman Pickl (@rompic)
roman.pickl@elektrobit.com
www.elektrobit.com