DevOps as culture: what the history of DevOps can teach us about its implementation

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September 3, 2024

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DevOps challenges: developers and inquirers

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DevOps challenges: avoiding a worst-of-all-worlds scenario

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- added unnecessary complexity in our dev stack
- restricted the freedom of developers to get work done
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- rebranded our operations team

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Goldratt's theory of constraints

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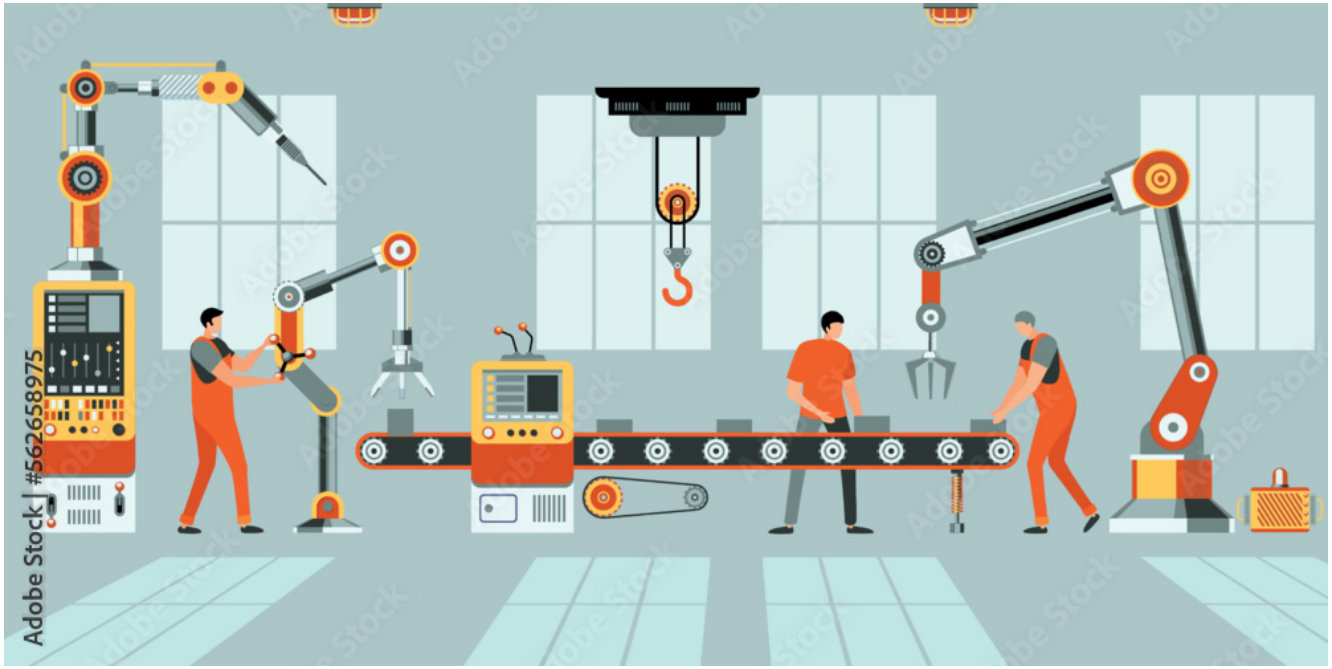
- Remove bottlenecks

Goldratt's theory of constraints (cont.)



1967: Conway's law

'Organizations which design systems [...] are constrained to produce designs which are copies of the communication structures of these organizations.' - Melvin Conway, 'How do Committees Invent?' Datamation, 1967

Conway's law: examples

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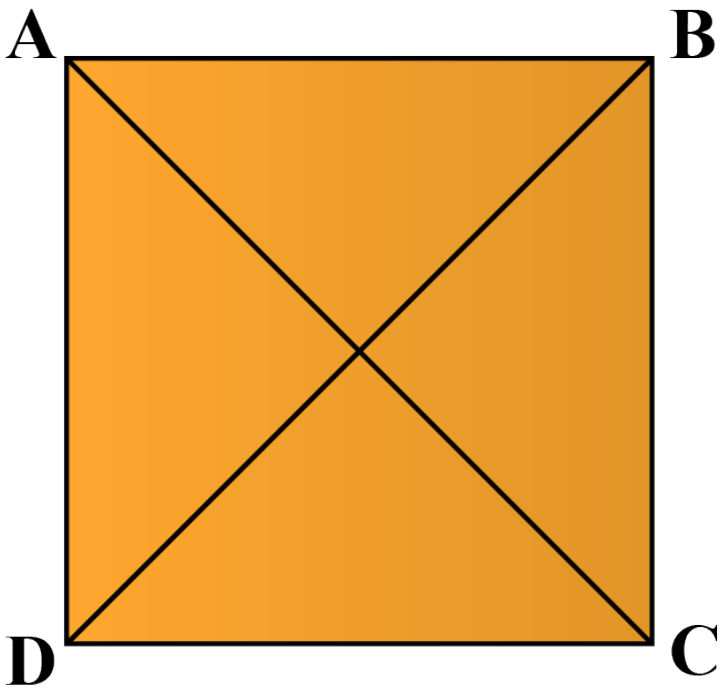
Conway's law: examples

- 'If you have four groups working on a compiler, you'll get a 4-pass compiler' - The New Hacker's Dictionary, 1996
- front-end [devs] business layer [backend devs] monolithic database [DBA team]
- a web api controller [manager] delegates most business logic to business classes [developers] which are part of the same in-memory process [team], while serving as a single entry-point for wider cross-network [cross-team] communication.

1975: The Mythical Man Month, Fred Brooks

- number of direct communication paths for n individuals= $n(n-1)/2$



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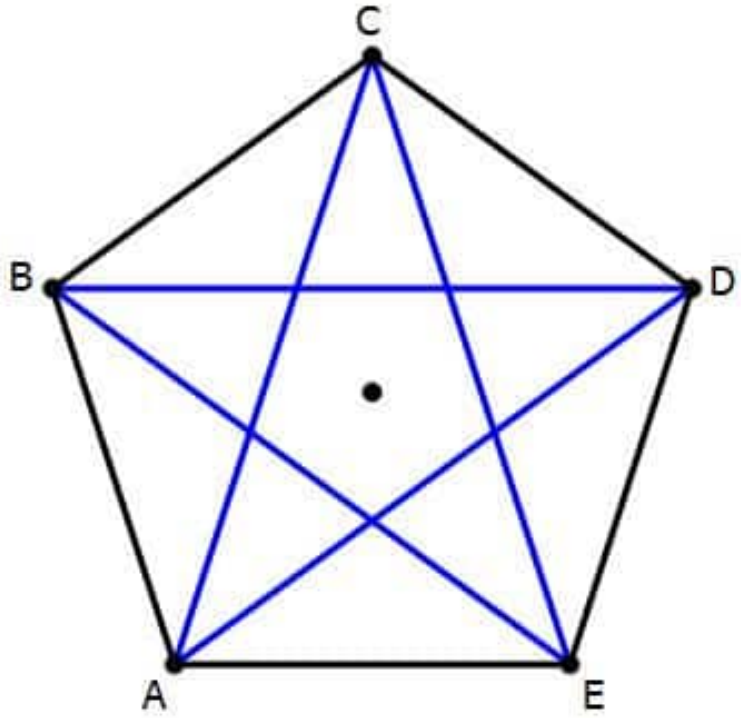

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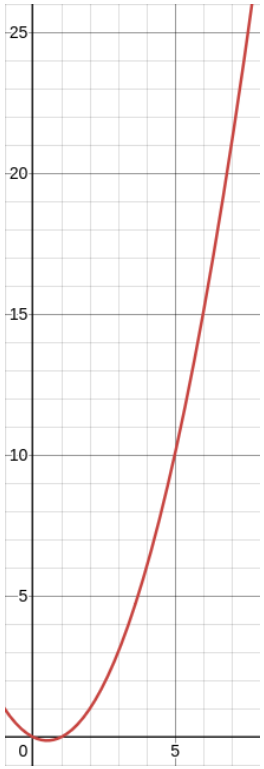

The Mythical Man Month, Fred Brooks (cont.)

- corollary: adding more people to a project can lead not only to diminishing returns on delivery speed, but to objectively less work being completed

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DevOps: its beginning

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- Patrick Debois DevOps Days 2009, Ghent, Belgium

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3. Uses *cluster analysis* to discover groupings - has no prior understanding of what counts as good or bad.

The State of DevOps Report: throughput metrics

1. lead time for changes

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1. lead time for changes
2. deployment frequency

The State of DevOps Report: stability metrics

1. change failure rate

The State of DevOps Report: stability metrics

1. change failure rate
2. mean time to restore

The State of DevOps Report: results

'Astonishingly, these results demonstrate that there is no trade-off between improving performance and achieving higher levels of stability and quality. Rather, high performers do better at all of these measures. This is precisely what the Agile and Lean movements predict, but much dogma in our industry still rests on the false assumption that moving faster means trading off against other performance goals, rather than enabling and reinforcing them.'
- Nicole Forsgren, Jez Humble, and Gene Kim, Accelerate (2017), p. 14

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anti-pattern 1: local optimization

- example 1: separate (DevOps, QA, operations, support) team

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anti-pattern 1: local optimization

- example 1: separate (DevOps, QA, operations, support) team
- leads to bottlenecks
- delays communication
- punishes untracked work (e.g. thorough code reviews/dev testing, helping blocked colleagues)

anti-pattern 1 solution

- cross-functional teams with ‘t-shaped’ employees

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- guild system

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anti-pattern 2: Gandalf vs. the Balrog

- change approval boards

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anti-pattern 2: Gandalf vs. the Balrog

- change approval boards
- pre-merge code reviews
- 'bridge-to-nowhere' pipelines
- these all increase lead time

anti-pattern 2 solutions: aggressively parallelize work

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- pair programming
- parallelized pipeline builds for ‘wide’ pipelines
- one build artifact for all pipeline stages
- share responsibility

Conclusion

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1. Reduce goal misalignment
2. stop people from waiting on each other
3. work in small batches
4. That's mostly it

Conclusion

'DevOps is whatever you do to bridge friction created by silos, and all the rest is engineering' - Patrick Debois, Puppet State of DevOps report 2021