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

Jacob Archambault

September 3, 2024

Outline

Outline

Outline

DevOps challenges: developers and inquirers

- Overwhelming amount of toolchain growth

DevOps challenges: developers and inquirers

- Overwhelming amount of toolchain growth
- added complexity

DevOps challenges: developers and inquirers

- Overwhelming amount of toolchain growth
- added complexity
- doesn't feel like I'm going faster or solving problems.

DevOps challenges: developers and inquirers

- Overwhelming amount of toolchain growth
- added complexity
- doesn't feel like I'm going faster or solving problems.
- Meaning of DevOps is opaque

DevOps challenges: developers and inquirers

- Overwhelming amount of toolchain growth
- added complexity
- doesn't feel like I'm going faster or solving problems.
- Meaning of DevOps is opaque
    - CI/CD pipeline management

DevOps challenges: developers and inquirers

- Overwhelming amount of toolchain growth
- added complexity
- doesn't feel like I'm going faster or solving problems.
- Meaning of DevOps is opaque
  - CI/CD pipeline management
  - Docker, Kubernetes, Terraform

Challenges for DevOps today | For developers and enquirers
A short history of DevOps | For business
Common challenges

DevOps challenges: developers and inquirers

- Overwhelming amount of toolchain growth
- added complexity
- doesn't feel like I'm going faster or solving problems.
- Meaning of DevOps is opaque
  - CI/CD pipeline management
  - Docker, Kubernetes, Terraform
  - Identity and access permissions

DevOps challenges: developers and inquirers

- Overwhelming amount of toolchain growth
- added complexity
- doesn't feel like I'm going faster or solving problems.
- Meaning of DevOps is opaque
  - CI/CD pipeline management
  - Docker, Kubernetes, Terraform
  - Identity and access permissions
  - AWS, Azure, Google Cloud

Outline

DevOps challenges: business

- DevOps engineers are among the highest paid positions outside of management

DevOps challenges: business

- DevOps engineers are among the highest paid positions outside of management
- Not using DevOps technologies poses a flight risk

DevOps challenges: business

- DevOps engineers are among the highest paid positions outside of management
- Not using DevOps technologies poses a flight risk

Outline

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

- increased operating costs from hiring more experienced
  developers

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

- increased operating costs from hiring more experienced developers
- added unnecessary complexity in our dev stack

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

- increased operating costs from hiring more experienced developers
- added unnecessary complexity in our dev stack
- restricted the freedom of developers to actually get stuff done

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

- increased operating costs from hiring more experienced developers
- added unnecessary complexity in our dev stack
- restricted the freedom of developers to actually get stuff done
- forfeited ownership of our infrastructure

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

- increased operating costs from hiring more experienced developers
- added unnecessary complexity in our dev stack
- restricted the freedom of developers to actually get stuff done
- forfeited ownership of our infrastructure
- rebranded our operations team

Outline

DevOps: its beginning

- Velocity Conference 2009: John Allspaw and Paul Hammond, "10+ Deploys Per Day: Dev and Ops Cooperation at Flickr"

DevOps: its beginning

- Velocity Conference 2009: John Allspaw and Paul Hammond, "10+ Deploys Per Day: Dev and Ops Cooperation at Flickr"
- Patrick Debois DevOps Days 2009, Ghent, Belgium

Outline

Goldratt's theory of constraints

- Increase: throughput

Goldratt's theory of constraints

- Increase: throughput
- Decrease:

Goldratt's theory of constraints

- Increase: throughput
- Decrease:
    - operating costs

Goldratt's theory of constraints

- Increase: throughput
- Decrease:
  - operating costs
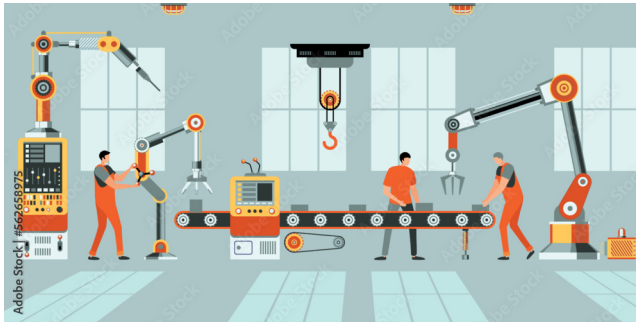 - inventory

Goldratt's theory of constraints

- Increase: throughput
- Decrease:
    - operating costs
    - inventory
    - scrap

Goldratt's theory of constraints

- Increase: throughput
- Decrease:
    - operating costs
    - inventory
    - scrap
- 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

- 'If you have four groups working on a compiler, you'll get a 4-pass compiler' - The New Hacker's Dictionary, 1996

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]

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.
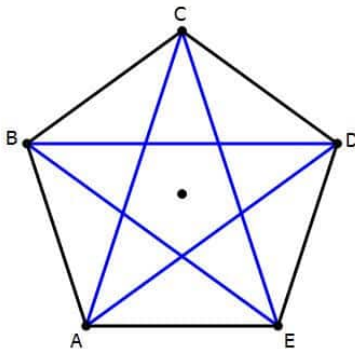
1975: The Mythical Man Month, Fred Brooks

- number of direct communication paths for n individuals= $n(n-1)/2$
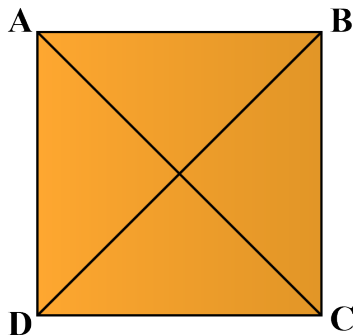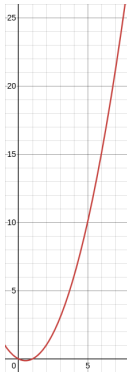
1975: The Mythical Man Month, Fred Brooks

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

1975: The Mythical Man Month, Fred Brooks

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

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