Building a Theory of Software Teams Organization in a Continuous Delivery Context

42nd IEEE/ACM International Conference on Software Engineering (ICSE 2020) - Poster Track

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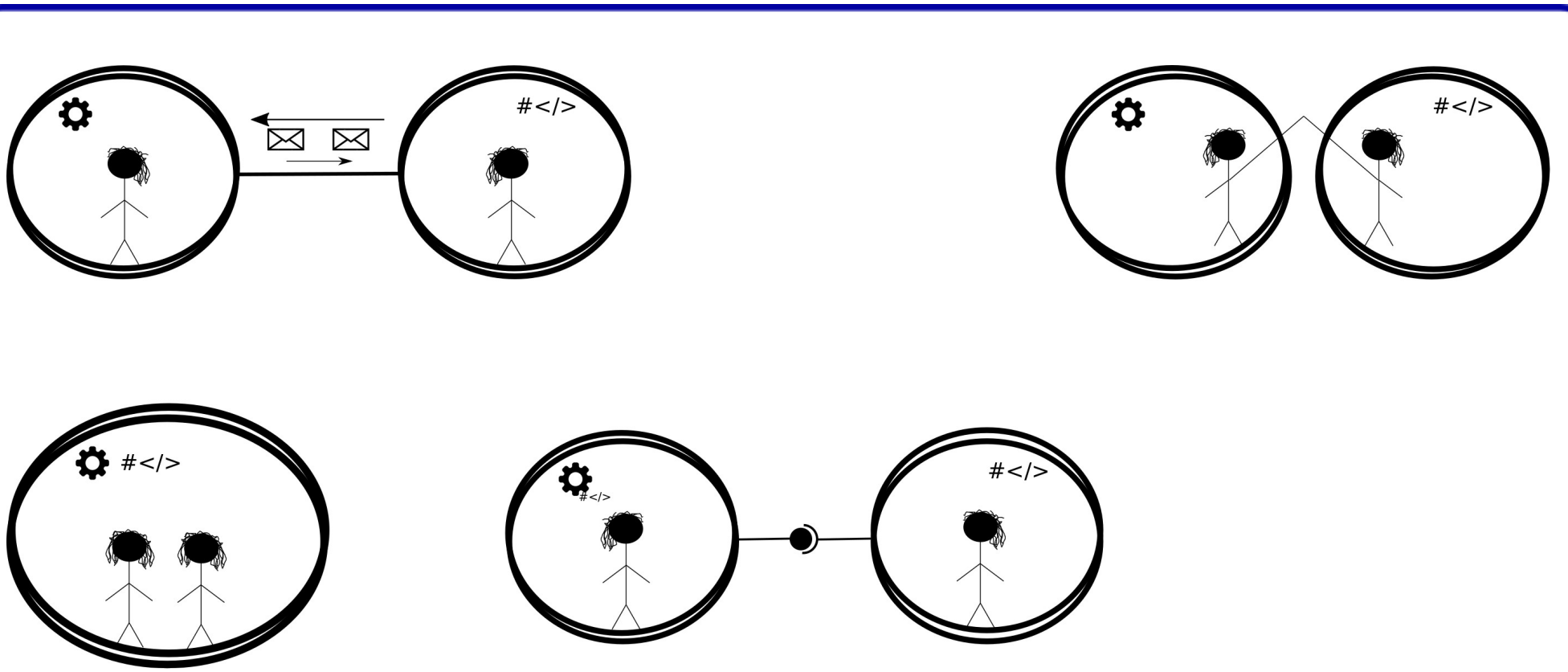
A taxonomy



J. Humble, J. Molesky,
Why enterprises must adopt DevOps to enable continuous delivery,
Cutter IT Journal 24 (8) (2011)

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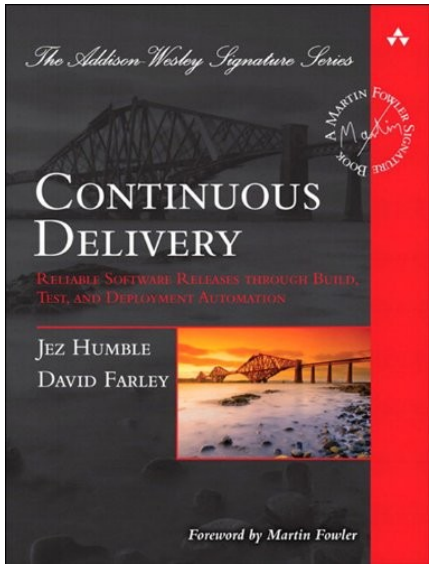
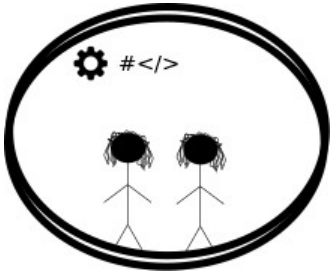


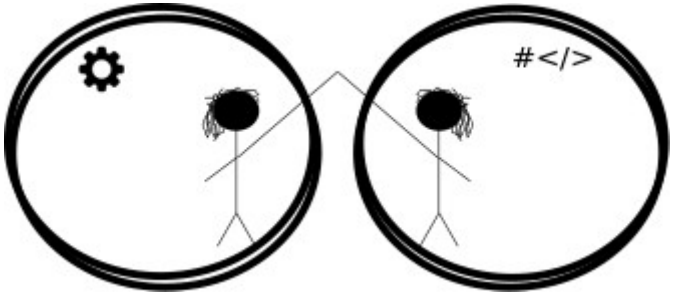
Why enterprises must adopt DevOps to enable continuous delivery

- Advocates cross-functional teams



Why enterprises must adopt DevOps to enable continuous delivery

- Advocates cross-functional teams
- Practices for strengthening the collaboration among devs and ops



Why enterprises must adopt DevOps to enable continuous delivery

- Advocates cross-functional teams
- Practices for strengthening the collaboration among devs and ops
  - Ops attending agile ceremonies

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- Advocates cross-functional teams
- Practices for strengthening the collaboration among devs and ops
  - Ops attending agile ceremonies
  - Devs contributing to incident solving

Why enterprises must adopt DevOps to enable continuous delivery

- Practices for strengthening the collaboration among devs and ops

- Does celebrating such practices make sense in a cross-functional team?

Confusion

Confusion

Collaboration among areas

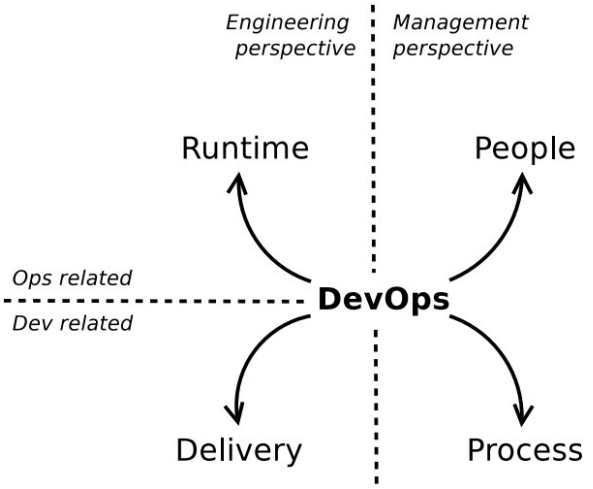
Confusion

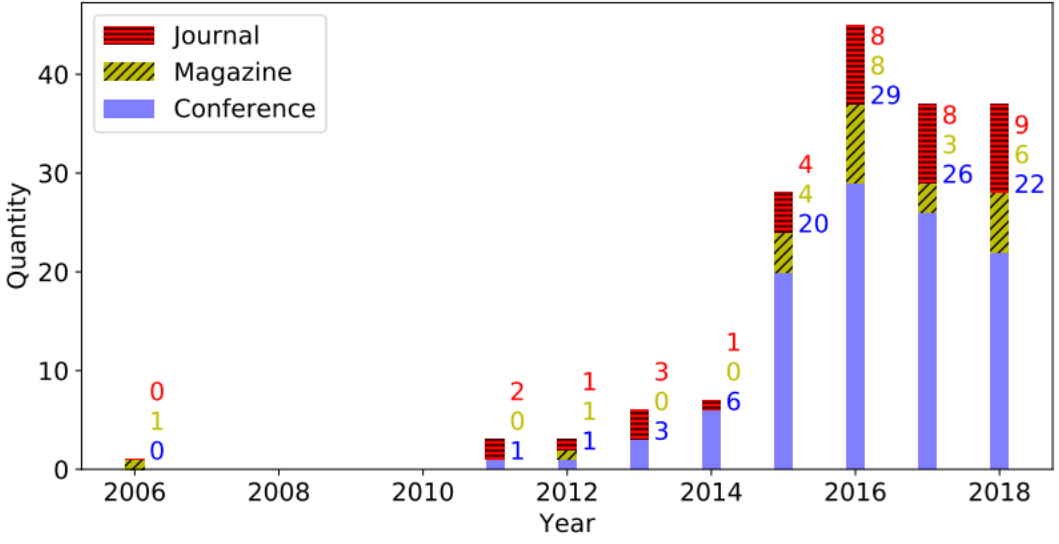
Collaboration among areas

vs

Devs and ops in the same team

L. Leite, C. Rocha, F. Kon, D. Milojicic, P. Meirelles,
A survey of devops concepts and challenges,
ACM Computing Surveys 52 (6) (2019)



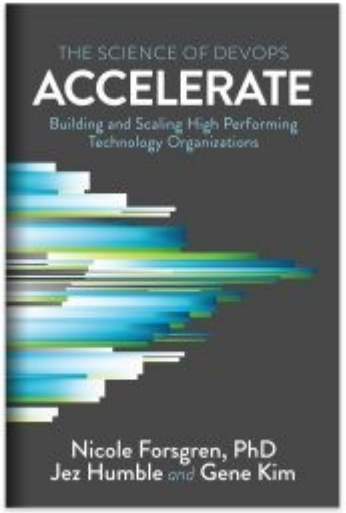


Research question

Which organizational structures are software-producing organizations adopting for managing IT technical teams in a continuous delivery context?

Delivery performance

- Frequency of deployment
- Time from commit to production
- Mean time to recovery



N. Forsgren, J. Humble, G. Kim, Measuring performance, in:
Accelerate: The Science of Lean Software and DevOps: Building and Scaling High Performing Technology Organizations,
IT Revolution Press, 2018

Participants and their organizations

Roles

9 Developer
3 Development manager
2 Infrastructure manager
2 External consultant
1 Infrastructure engineer
1 Executive manager
1 Enabler team member
1 Designer

Countries

11 Brazil
4 USA
3 Globally distributed
1 Germany
1 France

Genders

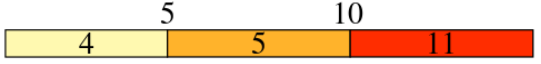
13 Man
7 Woman

Organization type

17 Private for profit
2 Governmental
1 Private nonprofit

Employees in the organization

Years since graduation



Domains

IoT, finances, defense, public administration, justice, real estate, education, Internet, big data, research, cloud, games, mobility, office automation, software consulting, support to software development

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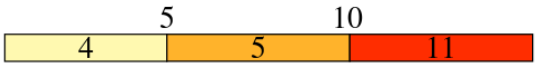

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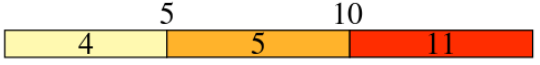

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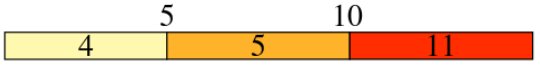

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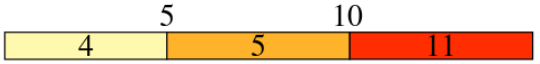

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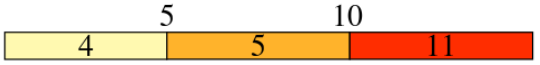

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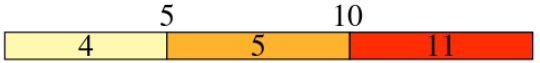

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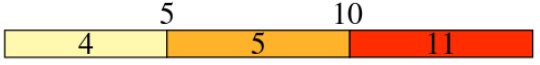

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Methodology

B. Glaser, A. Strauss.
The discovery of grounded theory: strategies for qualitative research.
Aldine Transaction. 1999

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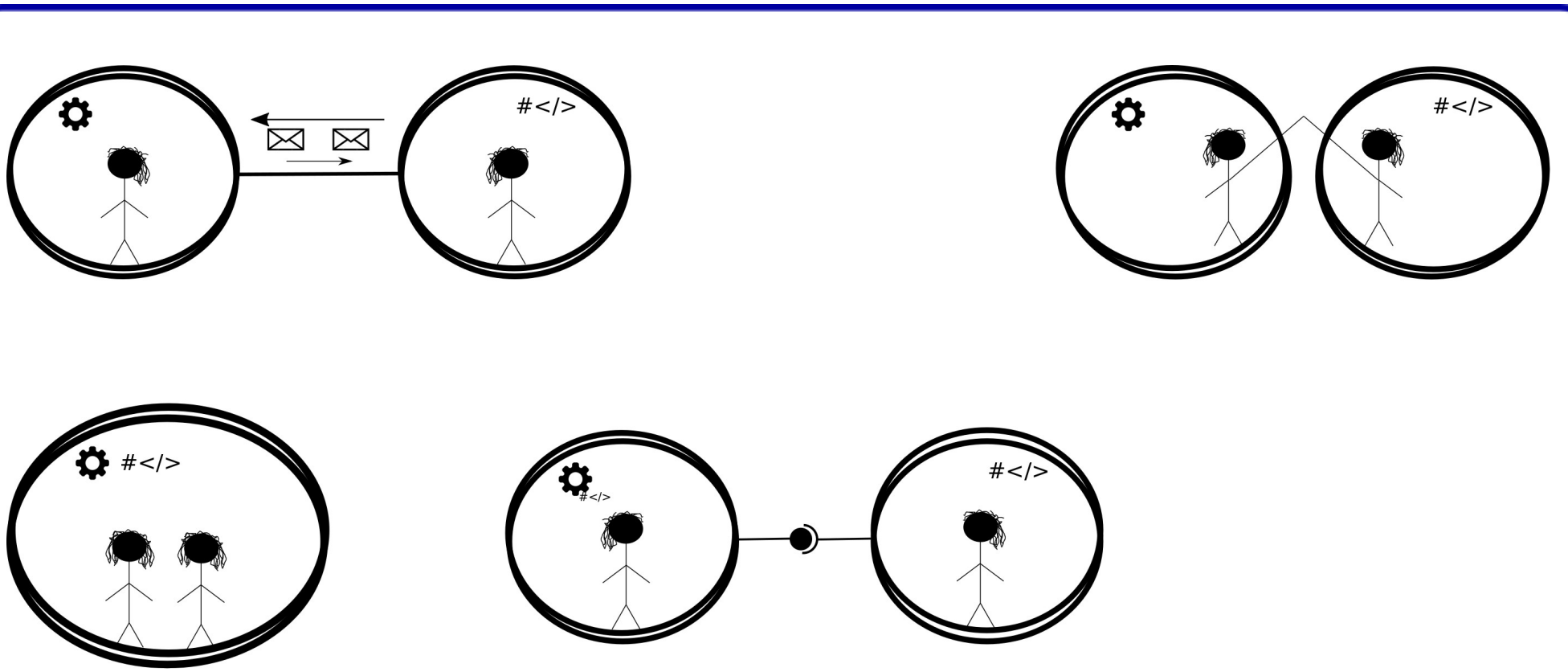
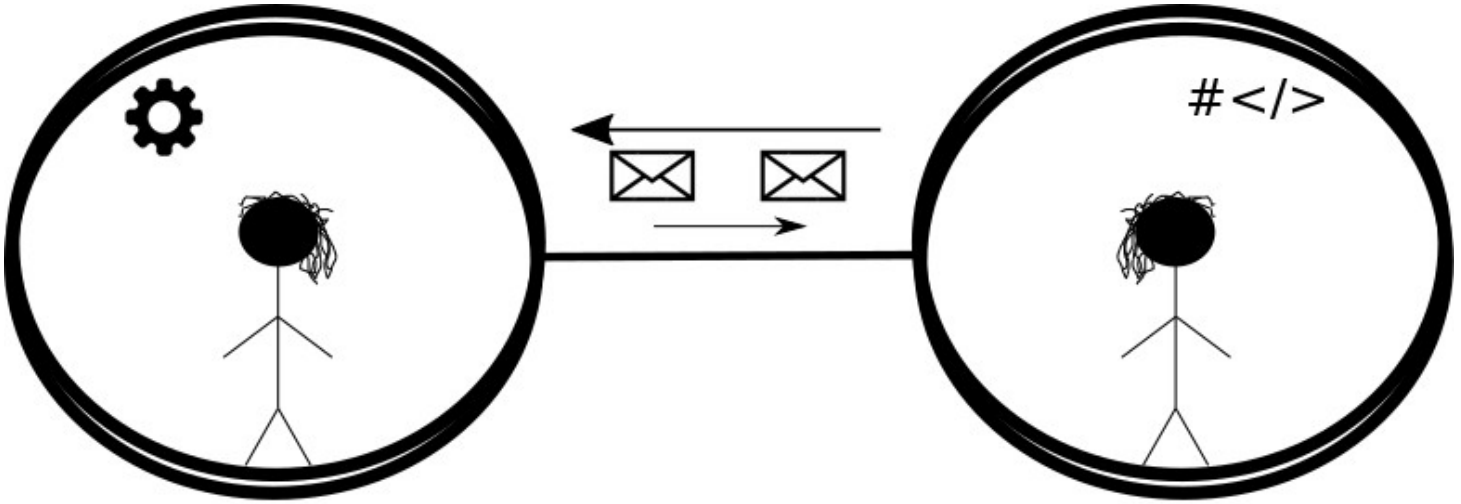
P. Ralph,
Toward methodological guidelines for process theories and taxonomies in software engineering,
IEEE Transactions on Software Engineering 45 (7) (2019)

Our taxonomy

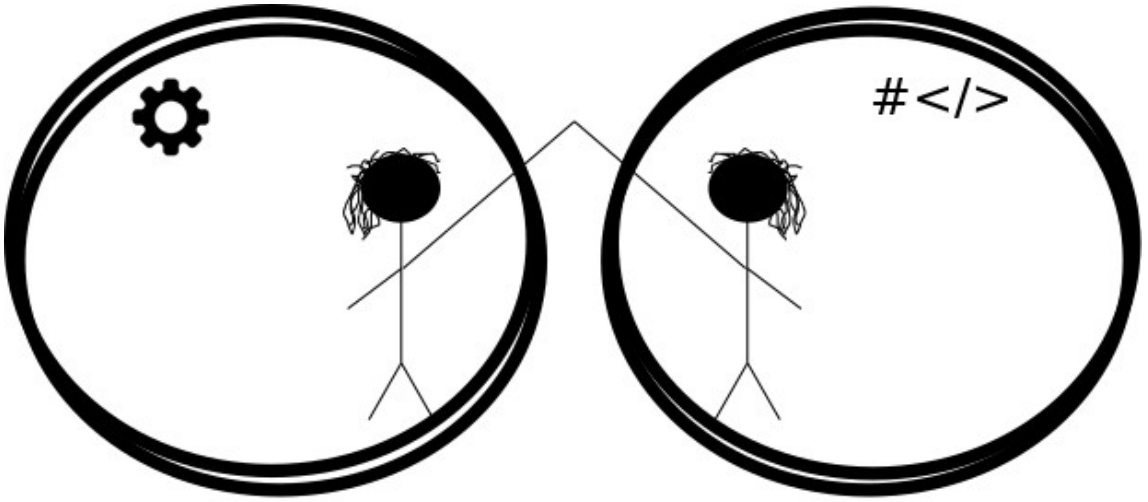


1 Siloed departments



4 interviewees
0 high performers

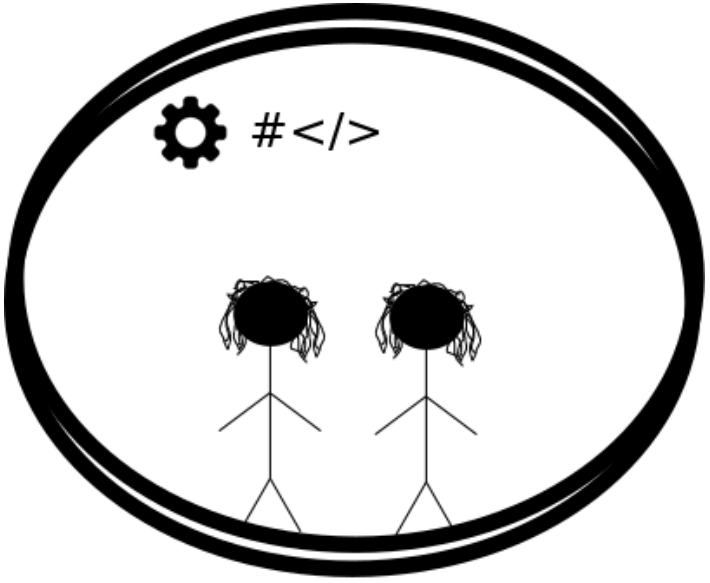
2 Classical DevOps



5 interviewees
2 high performers

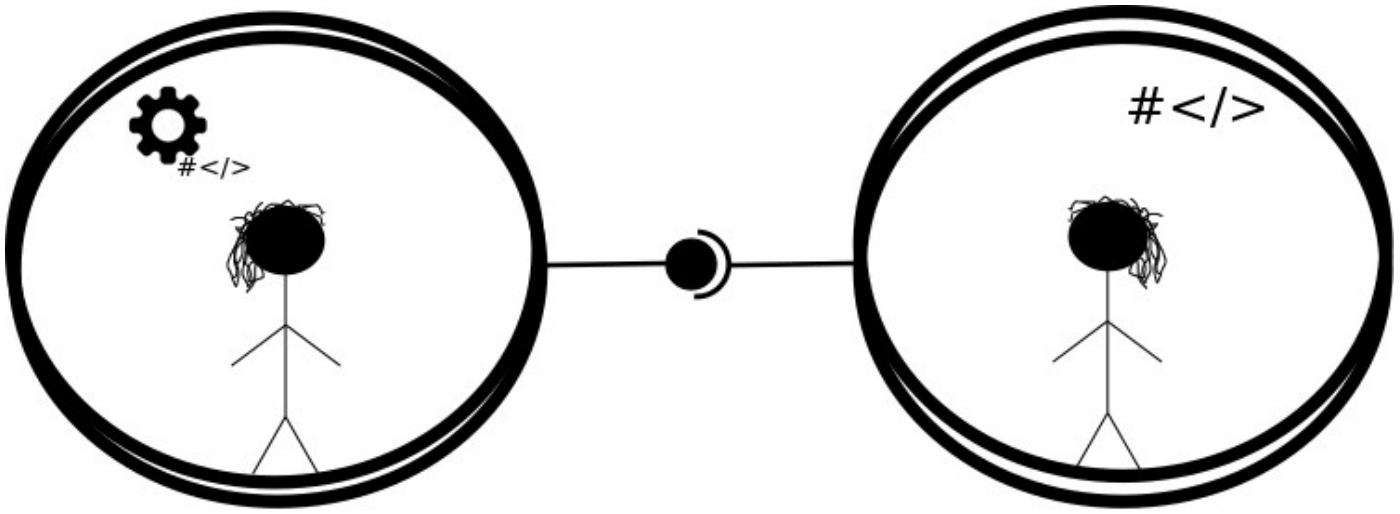
W. P. Luz, G. Pinto, R. Bonifácio,
Adopting devops in the real world:
A theory, a model, and a case study,
Journal of Systems and Software 157 (2019)

3 Cross-functional teams



2 interviewees
1 high performer

4 Platform teams



3 interviewees
3 high performers

Transitions

Siloed departments => Classical DevOps
2 interviewees 0 high performers

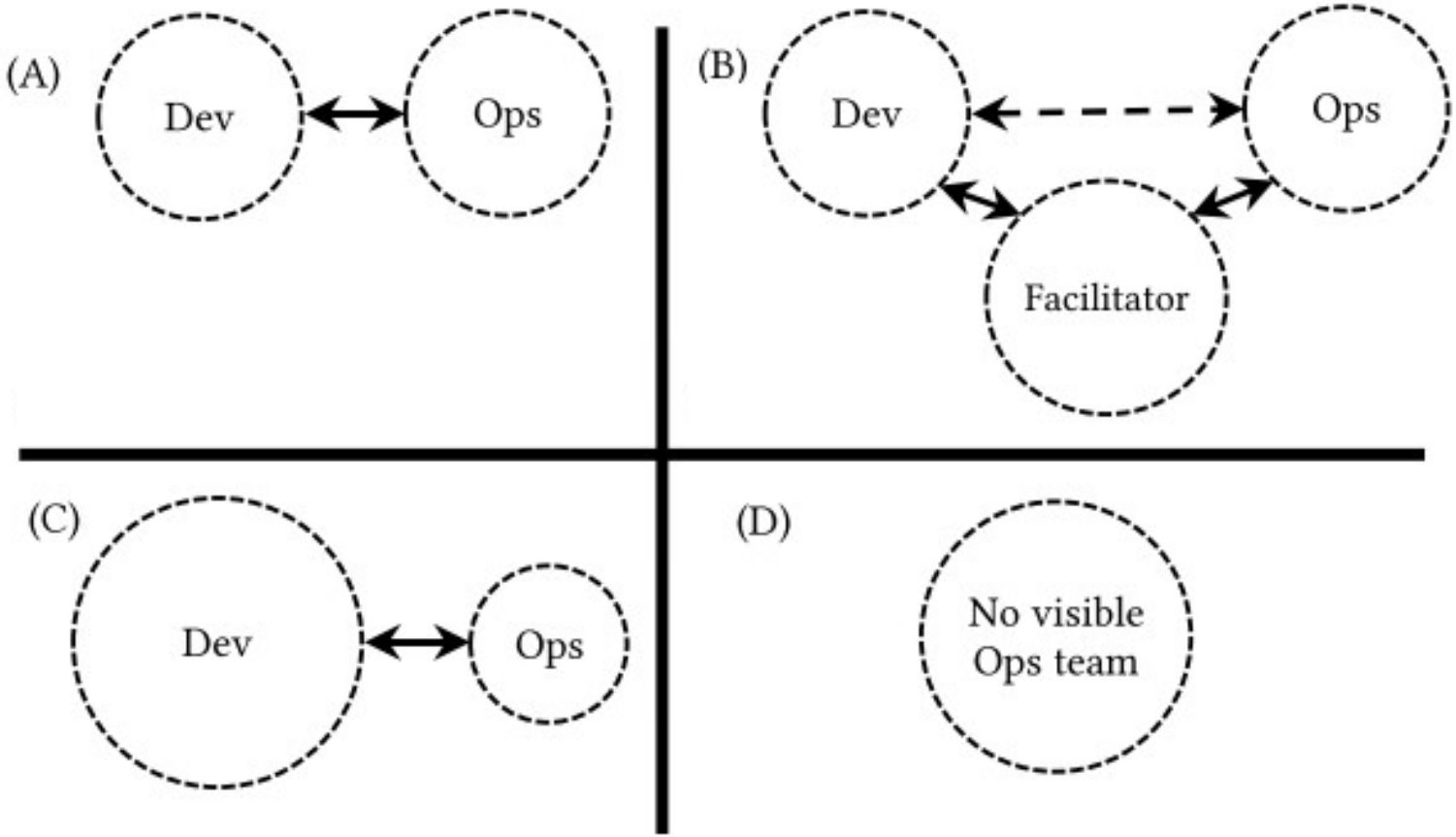
Siloed departments => Platform teams
2 interviewees 1 high performer

Classical DevOps => Platform teams
1 interviewee 0 high performers

Cross-functional teams => Platform teams
1 interviewee 0 high performers

M. Shahin, M. Zahedi, M. A. Babar, L. Zhu,
Adopting continuous delivery and deployment: Impacts on team structures, collaboration and responsibilities, in: EASE'17, ACM, 2017

Shahin *et al.*'s structures



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1. Distinguishes classical DevOps and cross-functional teams

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\+ Considers delivery performance

Ongoing work

- More interviews

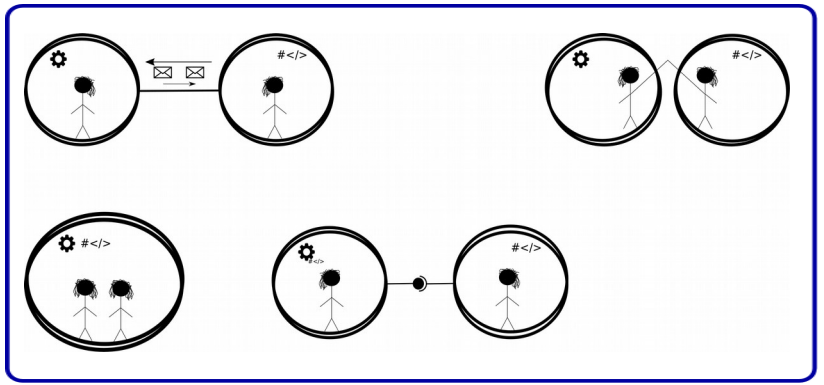
Ongoing work

- More interviews
- Discovering sub-patterns

Ongoing work

- More interviews
- Discovering sub-patterns
- Feedback

ccsl.ime.usp.br/devops



Which organizational structures are software-producing organizations adopting for managing IT technical teams in a continuous delivery context?

Benefits

1. Distinguishes classical DevOps and cross-functional teams
2. Highlights the platform team

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