

Management Challenges for DevOps Adoption within UK SMEs



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Agenda

1. Background and Case Study Overview
2. Methodology
3. Initial Findings
4. Future Research
5. Conclusion

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Background and Case Study Overview

An Overview of the Research and
Case Study Organisation



What is DevOps?

- Portmanteau of “Development” and “Operations”
- Culture of Collaboration through the Harmonisation of two business functions
(Loukides, 2012; Tseitlin, 2013; Walls, 2013)
- Difficult to define (Smeds et al, 2013; Dyck et al, 2016)

Working Definition:

“DevOps is a continuous improvement methodology that uses a set of tools, streamlined and automated processes, and empowered, multi-disciplinary teams to deliver, operate and inform business outcomes.”

Case Study

Organisation

- UK Based SME with approximately 200 employees.
 - Norfolk, United Kingdom
- Non-technology company
 - Acknowledge technology as a critical component in business model

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Methodology

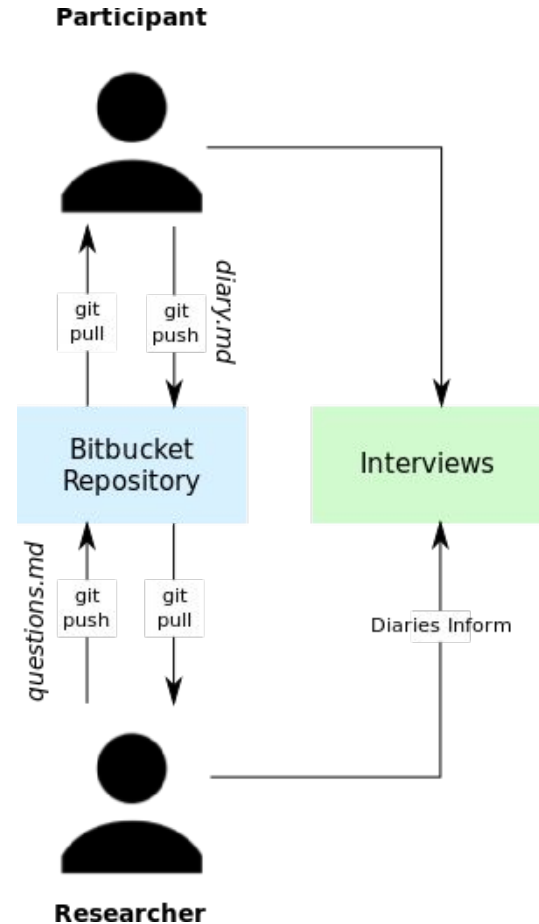
Diary Study with Semi-Structured
Interviews

Diary Study

With periodic, Semi-Structured Interviews

Just agreed to extend to one year.

Plan to recruit 2nd organisation.





Participants

- 12 in total:
 - Head of Group Operations
 - Software Development Manager
 - Business Analyst
 - Test Analyst
 - Systems Administrator (x 2)
 - Software Developer (x 6)

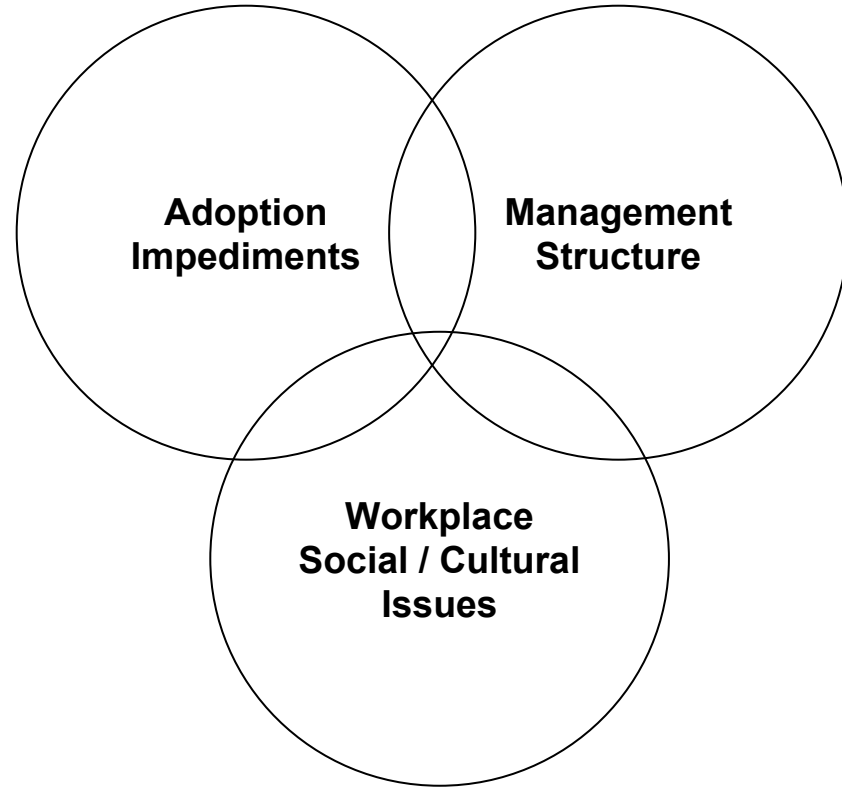
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Initial Findings

DevOps is as much a social
phenomenon as a technical one

Influencing Factors of DevOps Adoption

- Three factors identified:
 - Adoption Impediments
 - Management Structure
 - Workplace Social/Cultural Issues





Adoption Impediments

- Necessity of maintaining a legacy system and code base that is disliked
- Change of Software Development approach
- Ability to learn and acquire new skills and to use new tools



**Adoption
Impediments**

Adoption Impediments

“It (legacy system) development was “just something” and “not even being waterfall”

“It (legacy system) eats into people’s time, it breaks up the continuity of working, mindsets, branching strategies... the whole lot”

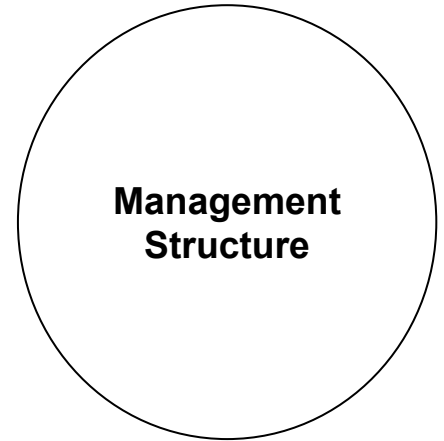
“At the moment our release process is quite laborious because there is a lot of manual processes in place. I think we're a long way off because we haven't really looked into the automation side of things”

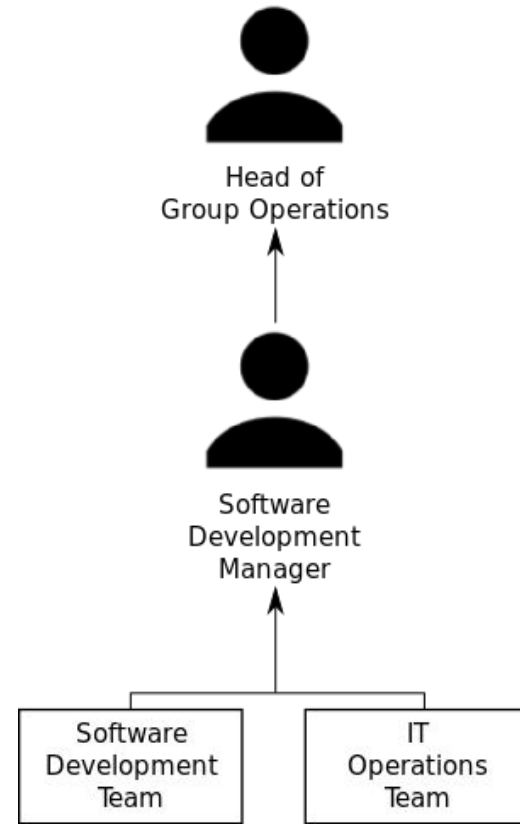
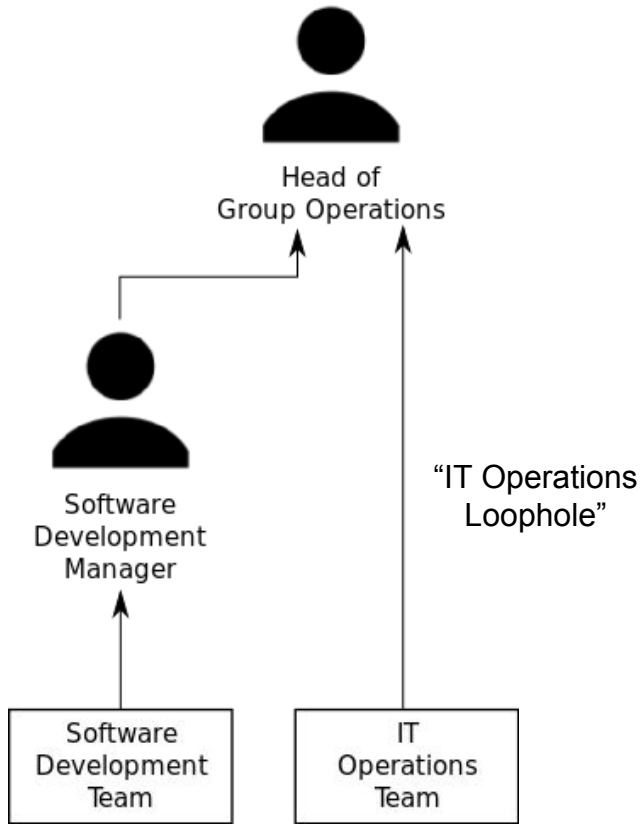
“Scheduling sprints for the new system while at the same time the legacy system creeps in, this knocks back our estimates.”



Management Structure (1)

- Hierarchical structure (relatively flat)
- “IT Operations Loophole”
 - Software Development Manager given remit to develop new system and adopt DevOps
 - IT Operations can “bypass” directly influencing Head of Group Operations
 - Creates management issues for Head of Group Operations





Current (left) and proposed (right) management structure at the case study organisation

Management Structure

“Head of Group Operations plays a role of erm... <pause> ...sorting out disagreements between Dev and Ops basically.”

“They (Software Development Manager and SysAdmin B) both report to me. I report to the CEO. It's quite a flat structure. We have regular meetings (the three of us) but we also have a bi-monthly management meeting which covers progress on the new system.

“There is room to go, and I think some of that potentially is down to the two main characters who don't always see eye to eye. But... that's down to us to manage. They need to communicate where they're at and what's expected of other people. If you start making assumptions, then things go wrong.”

“I can't think of anything without a destructive sense. I think the onus is on me to get a better working relationship with SysAdmin B...”

“I'm not technically versed, I use the words common sense and laymans terms in language. I don't use big fancy words in anything I do”



Social/Cultural Issues

- Issues around methodological expertise and change
 - Traditional and Agile methods
- Conflict
 - Software Development Manager and SysAdmin B
 - Dev and Ops teams
- Resentment of others working on the new system

**Workplace
Social/Cultural
Issues**

Workplace Social/Cultural Issues

“There could be barriers for any developers, test managers, anybody that’s worked in a waterfall approach or old school flavour.”

“There are still silos of Dev and Ops”

“There is a bit of resentment... like I’m not actually on the new project, and everyone else is getting to do this new, exciting stuff and we’re stuck doing this legacy VB code, which no one really likes.”

“DevOps blurs the line... the responsibilities are fuzzy, they could be either (Dev or Ops) camp.”

“We’ve said... can you guys (Ops) help? What can we do? We’d like your help. But there was nothing really”

“We include them (Ops) in demos at the end, well we include SysAdmin A in them, and I think the Head of Group Operations is trying to get SysAdmin B to attend them as well.”

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Future Research

...because the fun never stops!

Job Crafting | Definition

“The physical and cognitive changes individuals make in the task of relational boundaries of their work”

Wrzesniewski and Dutton (2001, 179)



Job Crafting (1)

- The active shaping of task and relational boundaries by employees
- Three types proposed:
 - Task Crafting
 - Relational Crafting
 - Cognitive Crafting



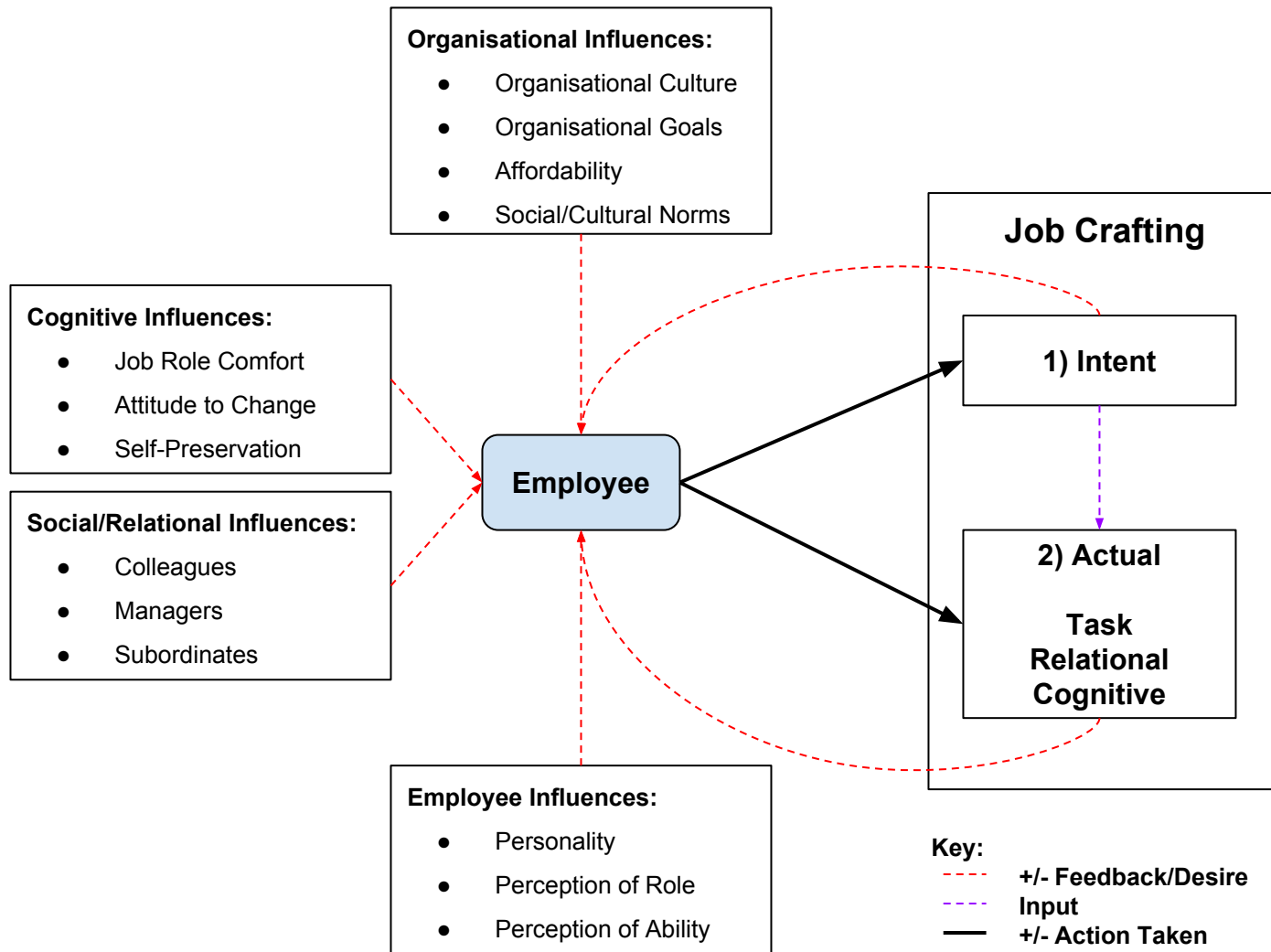
Job Crafting (2)

- We seek to apply this theory to examine how employee tasks and interactions change as a result of DevOps in our case study organisation
- Good methodological fit as Job Crafting is often studied over a period of time



Job Crafting - Early Indicators

- The business has incentivised learning relevant skills into the bonus system.
- Software developers in particular are engaged in task and relationship crafting.
- Notion of “unconstructive crafting” where crafting occurs, but with negative effects.



Initial model to illustrate the job crafting process as observed with DevOps adoption at our case study organisation.

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Conclusion

Bringing it together



Conclusion

- DevOps is an interdisciplinary topic
 - Would greatly benefit from further business management and/or psychology research attention
- Adoption is difficult for established organisations
 - Inherent change
 - Management structures
 - Social/Cultural issues
 - Legacy system maintenance is a potential threat

Any Questions?