DevOps
Software Architecture

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## Question

Who has heard of *DevOps*?

## Question

Who has used *DevOps*?

# The larger story

Server Config Config Management

Application Config Config Files

Provisioning Infrastructure Code

Building Continuous Integration

Deployment Continuous Deployment

Testing Automated Tests

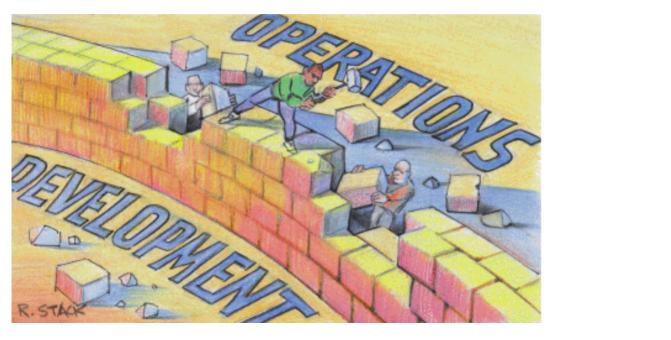
Database Administration Schema Migration

C---if--ti--- B-b--i--- D-i---

Specifications Behaviour Driven Development

# Question

What is *DevOps*?



What is DevOps? [Senapathi et al., 2018]

• A combination of software development and IT operations skills

IT operations skills

respect, and trust

• A combination of *software development* and

• A *cultural movement* that enables rapid

characteristics: open communication,

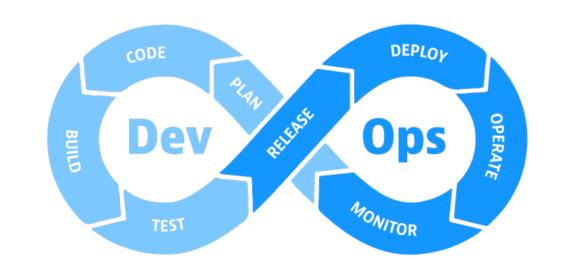
incentive and responsibility alignment,

development with four defining

Important
Continuous \*

#### $Also\ Important$

If it hurts, do it more often



# Tooling

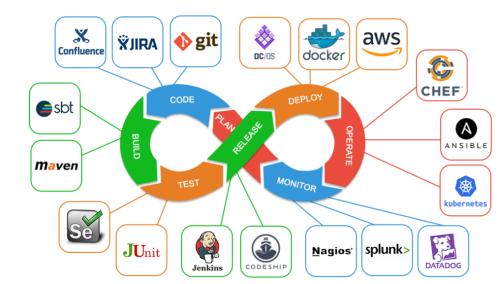
- 1. Continuous development
- 2. Continuous integration
- 3. Continuous testing
- 4. Continuous deployment
- 5. Continuous operations6. Continuous monitoring
- 7. Continuous feedback

#### Small Group Discussion

Describe the tools you have identified for the Continuous \* practices.

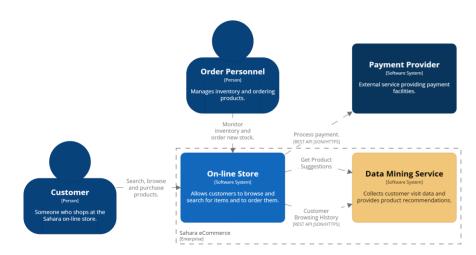
#### Class Discussion

Summarise the tools identified by each group and the practices they support.



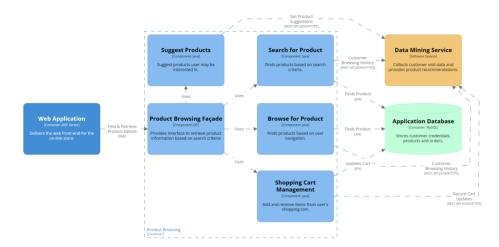
# Today

Design a DevOps pipeline for *Sahara* 



#### [System Context] On-line Store

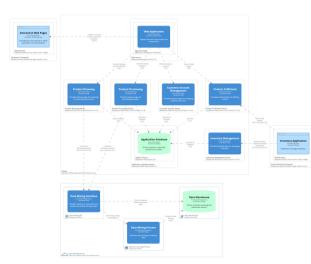
Friday, 18 March 2022, 23:38 Australian Eastern Standard Time



#### [Component] On-line Store - Product Browsing Sunday, 20 March 2022, 21:51 Australian Eastern Standard Time

Survey, 20 March 2022, 21.31 Australian castern standard fille





1. What *types of tools* would be required?

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- 2. Which *specific tools* would you choose?

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- 3. On which type of *computing infrastructure*

- would you deliver the system?

- 1. What *types of tools* would be required?
- 2. Which *specific tools* would you choose?
- 3. On which type of *computing infrastructure*
- would you deliver the system?
- 4. What parts of the deployment and
  - operations processes could be *automated*?

#### Discussion

Present the DevOps pipelines that you have developed to the rest of the class.

# Challenge 1: DevOps in Practice

Do the seven necessary  $\underline{DevOps}$   $\underline{practices}$  map perfectly to the  $\underline{enablers}$  in the article by Senapathi  $\underline{et}$   $\underline{al}$  [Senapathi  $\underline{et}$   $\underline{al}$ , 2018]?

# Technological Enablers

- Build automation
- Test automation
- Deployment automation
- *Monitoring* automation
- Recovery automation
- Infrastructure automation • Configuration management for code and
- infrastructure
  - *Metrics* automation

References

57–67. ACM.

[Senapathi et al., 2018] Senapathi, M., Buchan, J., and Osman, H. (2018). DevOps capabilities, practices, and challenges: Insights from a case study.

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