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Continuous Integration with Jenkins, Docker and Compose

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Agenda

1. Introduction
2. Microservices Architecture
3. CI Workflow
4. Benefits of Docker and Compose in CI
5. Future Work

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Introduction

Oxford University Press and Oxford Global Languages

About me

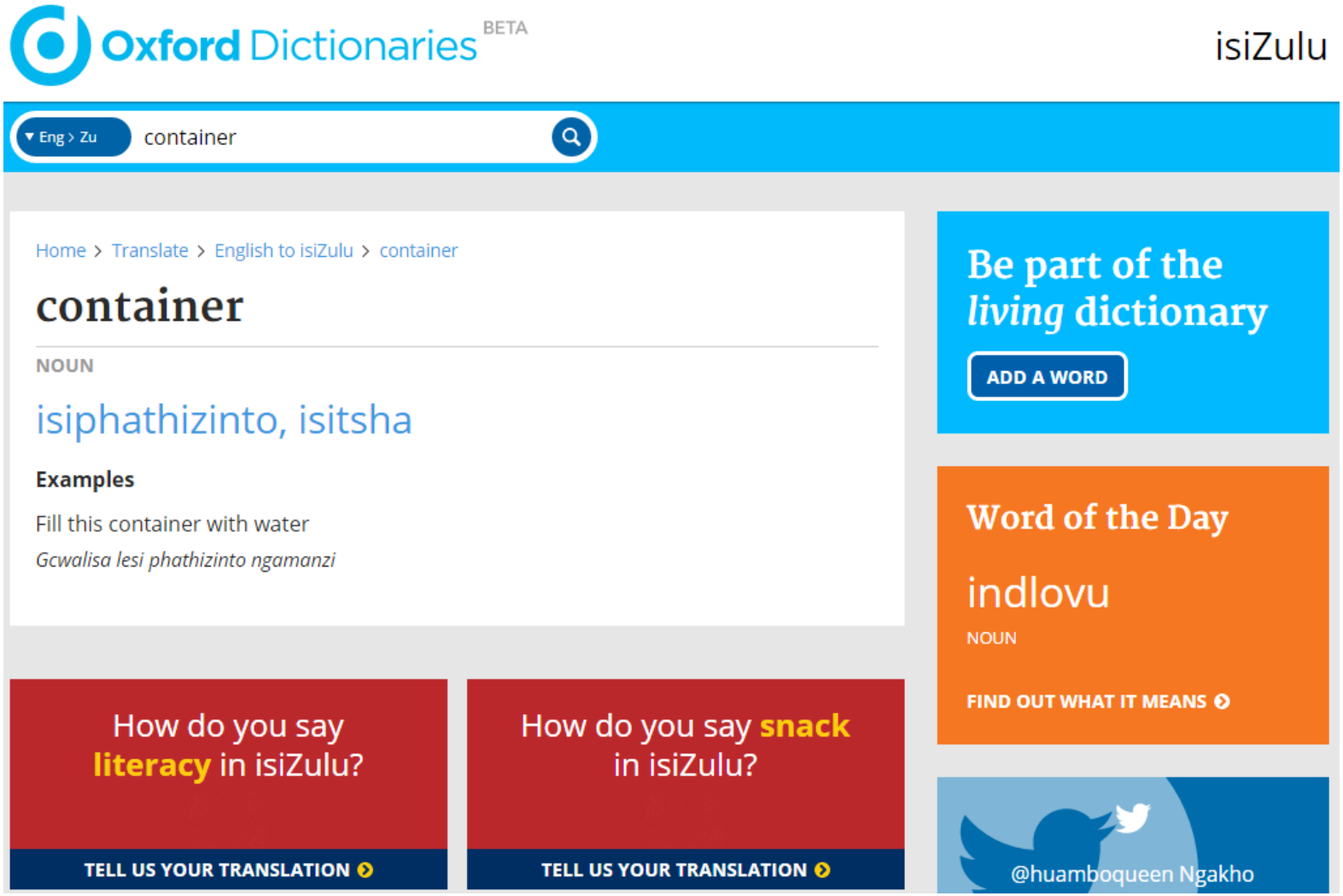
- I work as **Platform Tech Lead** at **Oxford University Press (OUP)**
- I deal with **system architecture and DevOps** (CI, Docker, AWS, deployment)
- I started using **Docker in November 2014** for developing language resources at OUP

About My Employer

- Oxford University Press (OUP) is a world-renowned **dictionary publisher**
- OUP launched the Oxford Global Languages (OGL) initiative to **digitize under-represented languages**
- In August 2015 OUP launched two African languages websites for **Zulu** and **Northern Sotho**

OXFORD
UNIVERSITY PRESS

Zulu and Nothern Sotho Language Websites
powered by Docker



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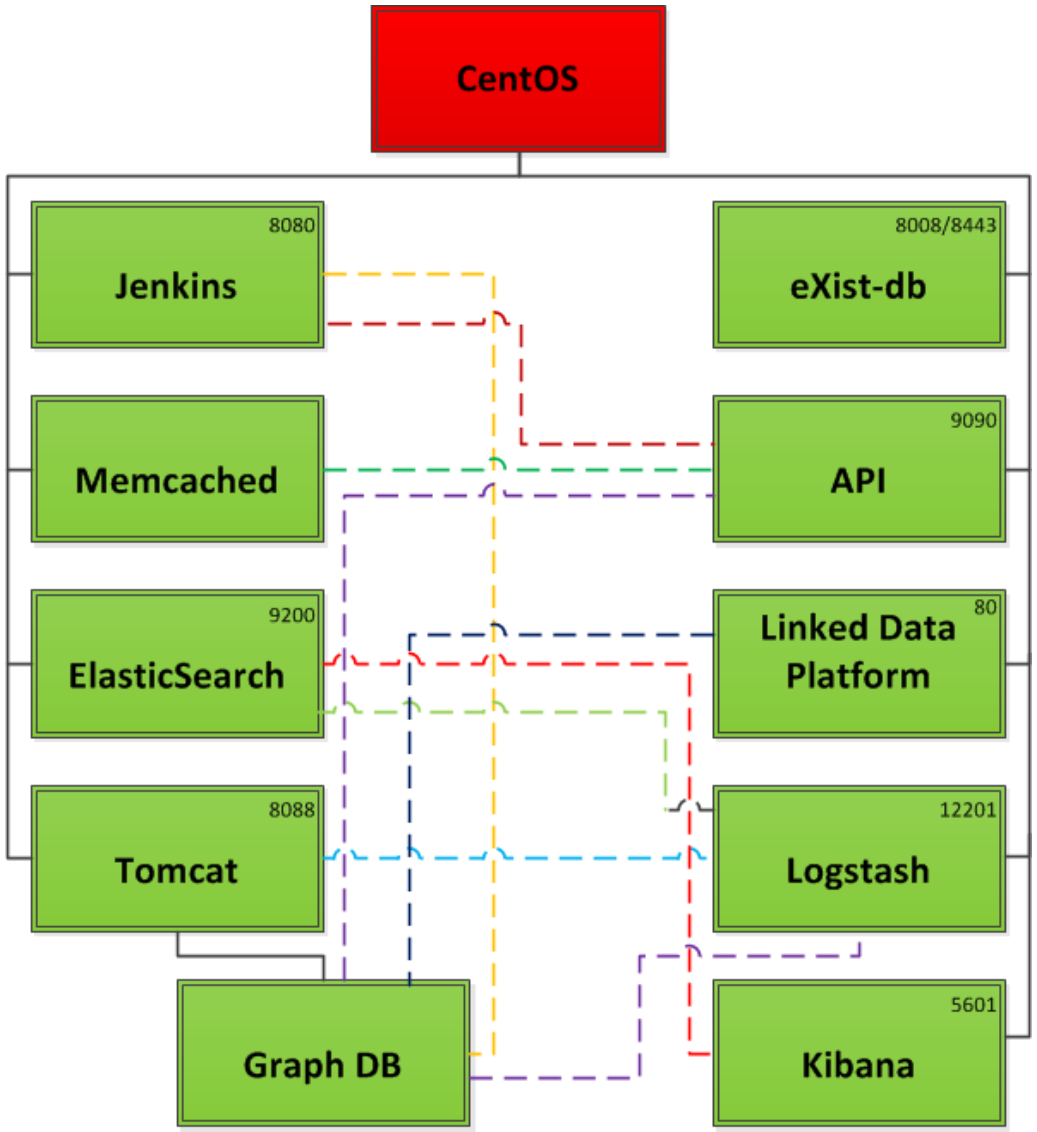
System Architecture

dev, staging & production environments

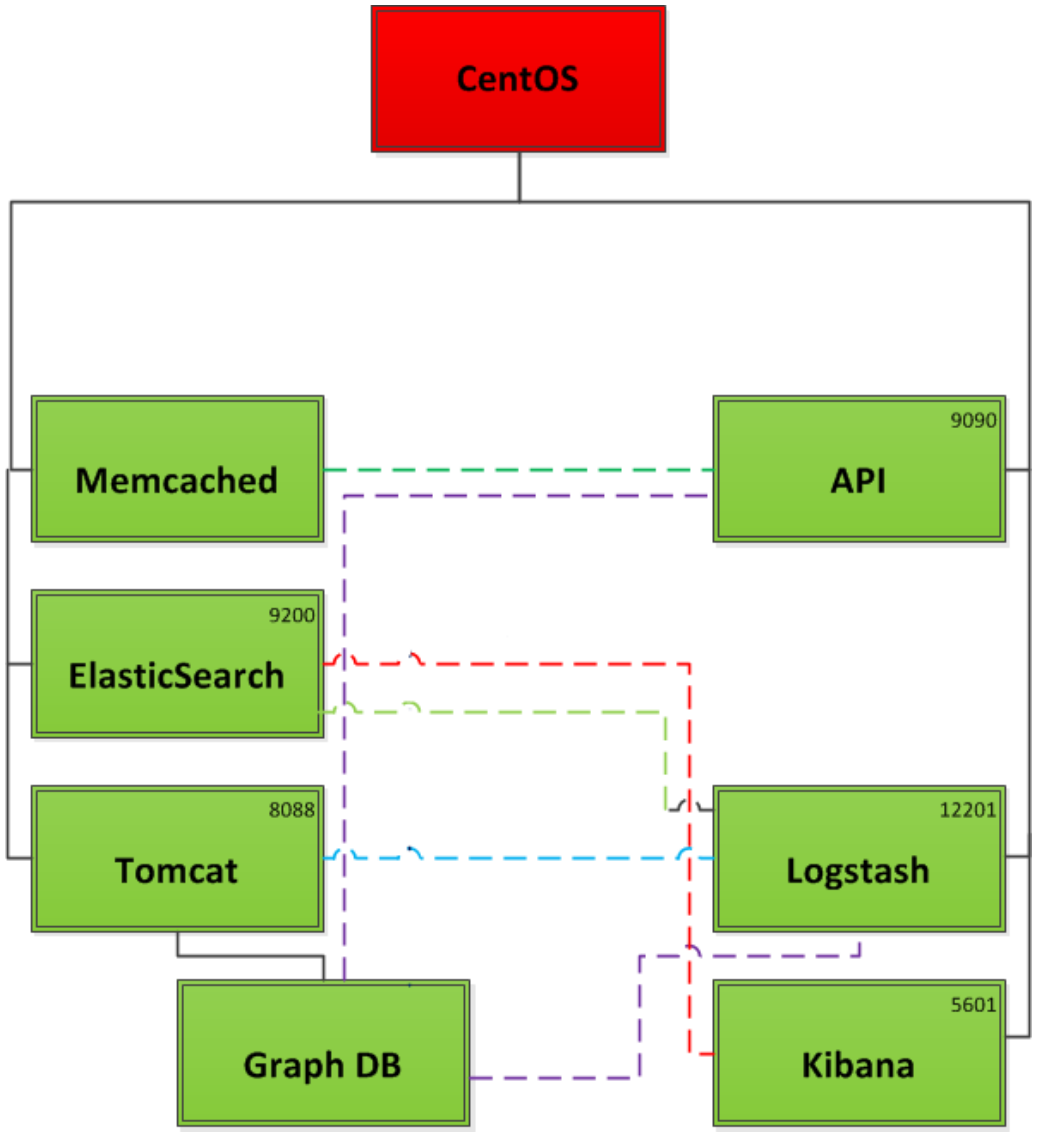
System Architecture Challenges

- We needed to **migrate** to more powerful servers and eventually to the cloud
- Some services were only needed for the **development environment**
- We wanted to put **system configuration under version control** and replicate it easily on new machines
- We wanted to **automate building processes**

Microservices Architecture
dev/staging environments



Microservices Architecture
production environment



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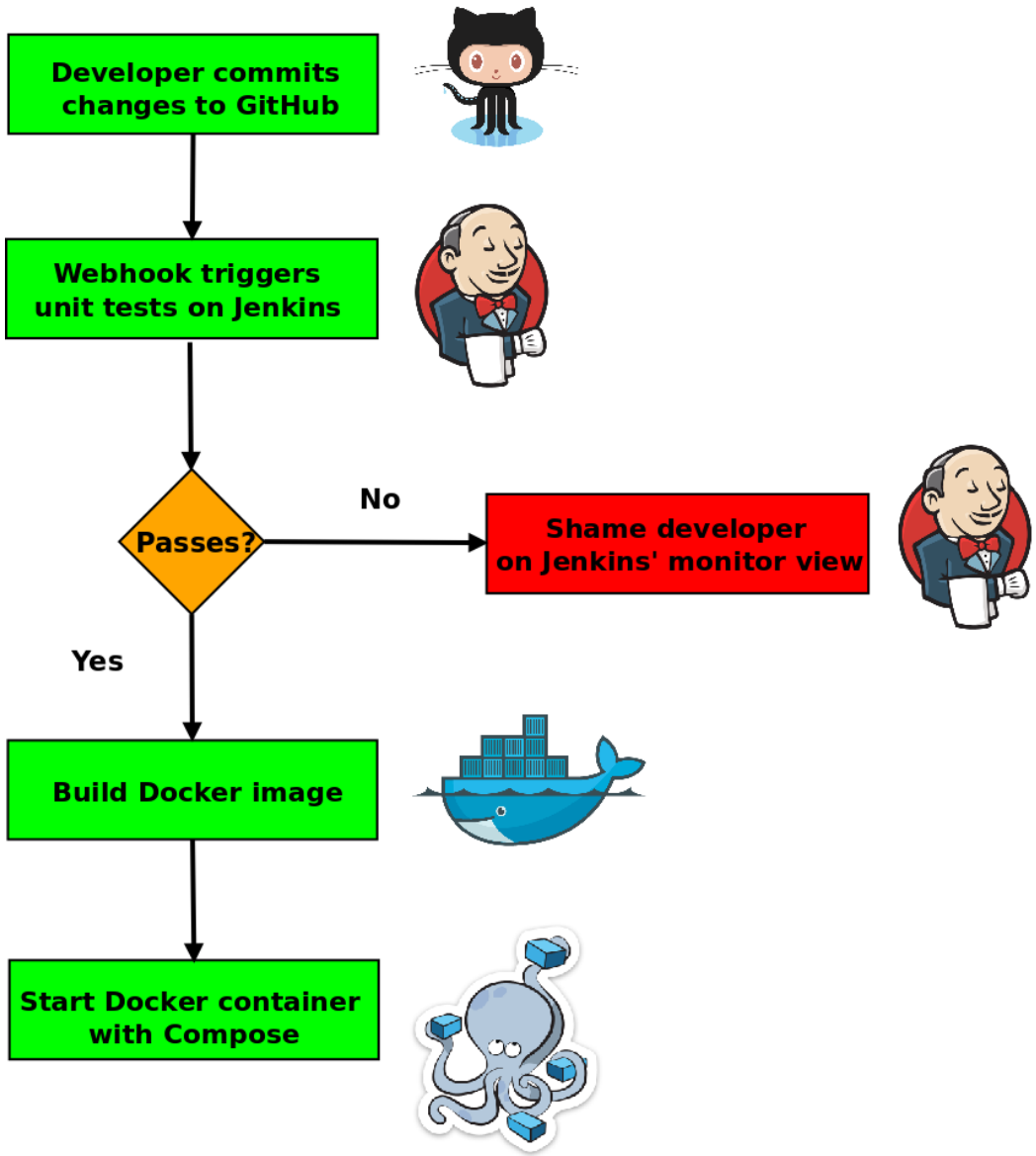
CI Workflow

Walkthrough

Continuous Integration Workflow



Walkthrough

I will show you:

- **Jenkins jobs** to run:
  - unit tests
  - Docker image build and container restart
- **Shell scripts** invoked by Jenkins
- **Docker Compose file**
- Simulation of
  - **successful build**
  - **unsuccessful build**

Demo

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Benefits of Docker

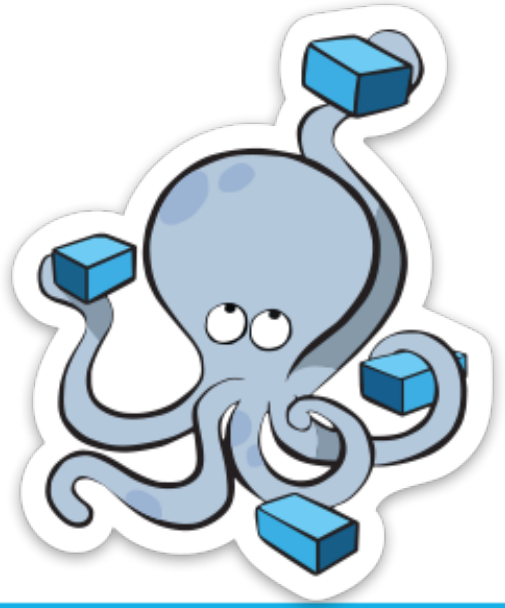
Docker & Compose in CI

Benefits of Docker

- Docker **isolates components** and allows their organic growth
- Docker facilitates the replication of **dev/staging/production environments**
- The system architecture is under **version control**
- Docker facilitates **blue/green deployment**

Benefits of Compose

- Compose facilitates the **orchestration of linked containers**
- Compose allows to have a **single script for all the environments**
- Developers can **start/stop/rebuild containers without any deep knowledge of Docker**



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Future Work

Future Work

- Deploy Docker containers in **master/slave architecture**
- Experiment with **Amazon EC2 Container Service (ECS)**
- **Automate, Automate, Automate!**

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Summary

Summary

I hope I managed to show you:

- How we use **Jenkins** to build and start applications running on Docker
- How we orchestrate containers with **Docker Compose** inside different environments
- How we automated our **CI workflow**

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Thank you!

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