MSc Digital and Technology Solutions



SUBJECT: DIGITAL TRANSFORMATION LEADERSHIP

SUBJECT CODE: CETM68

Project Title: An Approach to Serverless ChatOps Automation within a Live Project and the Impact this has on Cross-Functional Teams

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Lecturer: Gavin McClary

Date: Monday, 24 January 2022

# Update:

<https://docs.aws.amazon.com/lex/latest/dg/slack-bot-association.html>

Potentially, I can use amazon lex

# Resources to review:

<https://victorops.com/blog/top-chatops-use-cases>

google search AWS CHATOPS USE CASES

https://www.plutora.com/ci-cd-tools/communication-chatops-tools

provision a ci/cd pipeline.

How well does the culture of ChatOps implement change and continuous improvement, and can tailor fit the ChatOps to improve our current project?

The research question is: “How well do Cloud technologies work with large datasets and databases versus legacy technologies, and which provides the most cost-effective approach for database and data-heavy architectures.”

The current File Prescription Payment Service (henceforth: FPPS) used by Health and Social Care of Northern Ireland (henceforth: HSCNI) is currently ran using legacy architecture and legacy technology.

As a result of this, the Database and Data Management teams are encountering increased service interruptions as demands on the system increases without the available necessary scalability. In addition, the FPPS database sizes are becoming increasingly larger, leading to performance complications and backup and recovery delays. Will moving to a Cloud based infrastructure help resolve these concerns?

# Overview

## Abstract do this at the end

|  |  |
| --- | --- |
|  | *Define the aims and objects of the project* |

* **Research problem**
  + Practical or theorhetical problem does the research respond to
  + Problem
    - Investivate, test, analyse, evaluate
    - Present or past not future.
* **Methods**
  + Indicate the research methods you’ve used to answer the research question
  + What you did
  + 1 or 2 sentance
  + Past tense
* **Key results or arguments**
  + Summarise the main research results
  + Past or present tense
* **Conclusion**
  + What is your answer to the problem or question
  + Clear understanding that the research has proved or continued

## Aim & Objectives

|  |  |
| --- | --- |
|  | *Define the aims and objects of the project* |

### What is the main aim of your project?

**Aims**

The aim of this project is to provide an implemented version-controlled chatbot and architecture utilising the AWS cloud-based services, serverless concepts, and instant messaging service for the chatbot to be implemented. Also, to provide an overview of the culture in ChatOps and the impact on cross-functional teams.

**The objectives to achieve this aim are:**

* Integrate a working version of a chatbot utilising AWS services such as AWS Lambda, AWS SNS. Amazon Lex, AWS Chatbot, and AWS CloudWatch.
* Design an architecture for each individual component lifecycle of the chatbot, including the serverless aspects using AWS Cloud.
* Ensure that security aspects are covered.
* Notifications and Monitoring

## Timetable

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| --- | --- |
|  | *Provide detailed information on the expected timetable for the project. Break the project into phases, and provide a schedule for each phase.* |

|  |  |  |
| --- | --- | --- |
|  | Description of Work | Start and End Dates |
| **Phase One** | Project Proposal Hand-in | 28thJanuary-11th February 2022 |
| **Phase Two** | Allocated Supervisor | 14th February 2022 |
| **Phase Three** | Project Planning & Refinement | 11th-25th February |
| **Phase Four** | Research and practical work, early drafts of research poster; evidence collation | 4th February– 15th July |
| **Phase Three** | Research Poster and Viva | 29th July 2022 |
| **Phase Four** | Practical Demonstration | 5th August 2022 |

## Budget

|  |  |
| --- | --- |
|  | *State the proposed costs and budget of the project. Also include information on how you intend to manage the budget.* |

|  |  |  |
| --- | --- | --- |
|  | **Description of Work** | **Start and End Dates** |
| **Phase’s** | All work should be carried out using AWS Free Tier – small charges may occur, but primarily it will be tried to kept to £0.00 | Whole project |
|  | **Total** | **£ 0.00** |

## Key Personnel

|  |  |
| --- | --- |
|  | *List the key personnel who will be responsible for the completion of the project, as well as other personnel involved in the project.* |

|  |  |
| --- | --- |
| **Client** | Angus Greenland (DXC) |
| **Sponsor** | Gavin McClary (University) |
| **Project manager** | Alan Heslop |
| **Team** | Alan Heslop |

## Research

|  |  |
| --- | --- |
|  | *This section focuses on what is it you are going to research – what is it you want to find out…* |

### What is your research question?

**How well do the integration and use of ChatOps implement change, continuous improvement, and culture? Also, can you tailor fit ChatOps to improve projects?**

### What is your purpose in reviewing literature - what are you expecting to find out and apply practically from your research?

If using chatOps is still concurrent in todays environment, and if team members are able to use this to dynamically shorten time and effort provisioning/monitoring.

### What are you hoping to find out through creating the practical element? How does it relate to your research question and focus?

I am hoping to find resistance where other teams/websites have stated the inefficiency in using chatbots (pros and cons) and then find research to show the automation benefits of chatbots.

## Practical Element

|  |  |
| --- | --- |
|  | *What is the main practical element you intend to create – how will you do that…* |

### What is the practical element going to be and what is it going to involve, do and be used for?

Integration within Slack/Teams using AWS (web hooks)

* Automate the things you find your team mates bugging someone to do
* Allow self provisioning by mostly anyone
* Develop trust in automation (example):
  + Setup Adhoc testing environments
  + Setup load testing environments
  + Query detailed analytics systems
* Using automation to deploy to CI/CD
  + A history log of anything that went wrong etc

### How are you going to design and develop it

* AWS Microservices
  + AWS Simple Notification Service
* Slack integration
* Slash commands toolsets
* Bring in richer data
* Markdown tables/formatting
* File attachments for logging

### What methods/approaches are you going to use?

* AWS SNS
* Cloudwatch Trails
* Slack
* JIRA

### What will the final outcome be – what do you hope to provide the client/sponsor?

I hope to provide the sponsor/client with a fresh outlook on the daily use of slack/teams automation. The ease of use of automation and being able to automate advanced methods; with at times no log. This brings in communication to the team as the whole team is able to see the result.

### What is the client/sponsor going to do with your practical element?

Potentially implement the use of the bot in a project; and report findings and usefulness. It will bring together communication.

### How will you evaluate the success of your outcome?

**Was the engineer able to return:**

* Logs
* Channel history

**Was the engineer able to:**

* Push CI/CD

## Learning and Development

|  |  |
| --- | --- |
|  | *Identify how this project relates to your MSc program, outlining the skills and knowledge required for the project and how the project will enable you to extend and improve these.* |

### What areas of knowledge / practical skills will you be demonstrating in your research and in creating the practical element?

* Cloud computing
* Communication methods
* CI/CD pipeline
* AWS Architecture
* Team/Channel hierarchy/architecture

### And what areas do the project enable you to further develop?

I am able to further develop in all aspects, this is an area I’ve not been introduced to before (chatops), and looking to integrate that with a tool I may not be 100% familiar with (AWS/Slack etc) may be a challenge which I need to overcome and go beyond and above.

## Research Ethics

|  |  |
| --- | --- |
|  | *Does your research involve people, e.g. interviews, focus groups, design workshops, policy discussions, user studies, evaluation, etc.?* |

## Abstract

|  |  |
| --- | --- |
|  | 100 words of abstract |

### What is the in-discipline challenge and research question of your project?

### Why are you doing this project e.g. the justification, relevance and importance?

I for one didn’t know about ‘chatOps’, and thought ‘chatbots’ were the same thing. I can see the advantages and freedom of being able to integrate this with day-to-day software.

### What are the practical element and expected outcome?

### What are the main results / findings you expect to get from your practical work and how this will help you answer your research question

# Approval and Authority to Proceed

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| Angus Greenland  (Project Client)  Date: \_\_\_\_\_\_\_\_\_\_\_\_\_ |  | Gavin McClary  (Project Sponsor)  Date: \_\_\_\_\_\_\_\_\_\_\_\_\_ |  | Alan Heslop  (Project Manager)  Date: \_\_\_\_\_\_\_\_\_\_\_\_\_ |

