# Master thesis research proposal

## Abstract

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## 1 Introduction

This document is a proposal for the research project I will conduct for my Master's thesis during the spring of 2016. It begins by listing core aims and objectives for the project in terms of what I seek to deliver. It then suggests a research approach to achieve this goal, and finally presents a brief project plan.

My overarching research question is how we can best compare several strategies for automating deployment in an environment with many teams and services, and pick or compose a strategy that suits the context.

My motivation for this project is. . . The problem is derived from my practise period module in the Master programme, where I identified automated deployment of microservices as a problem that has not yet been solved. . . .

Much work has already been done on the subject of both automated deployment and microservices (often referred to as Service-Oriented Architecture in the literature)

## 2 Aim and objectives

As mentioned in the previous section, deployment in a microservice context is a task that is both difficult and time-consuming. My **overall aim** for the research is to help simplify this process through three **key goals**:

1. Providing further insight into how implementation of automated microservice deployment;
2. Creating a framework for analysing different strategies for automated deployment in the future; and
3. Conducting an analysis of a few popular strategies for automated deployment.

In order to reach these goals, my **specific objectives** are:

1. Reviewing the existing literature on deployment automation (in this context commonly referred to as *continuous integration* or *continuous delivery*), the microservice architectural style in general, how they can be tied together;
2. Establishing relevance by learning which factors are important to the industry;

3. Developing an initial framework for analysing strategies based on the findings from the literature review (1) and the case study (2);
4. Testing, analysing, and comparing some popular deployment automation strategies using the framework from (3) to (a) simplify picking or composing a strategy and (b) validate and mature the framework.

## 3 Research approach

... through a preliminary case study at FINN.no, comprising interviews and document review;

I suggest triangulating two research strategies: a **case study** to establish knowledge of what the industry considers important, and a **design science research** (more specifically, design & creation) implementation project of some microservices and various strategies in order to analyse these.

### 3.1 Case study: What is important to FINN.no?

In order to find which factors are important to FINN.no, I will interview (at least):

1. Key members of the cloud migration team responsible for implementing containers to understand which efforts are being made,
2. The team lead for one of FINN's teams that has completely deviated from the company's standard way to do deployment,
3. The person responsible for the containerisation in order to uncover *why* the effort is made and *which factors* determine which strategy is selected.
4. A key member of the cloud migration team to polish and verify my findings.

### 3.2 Implementation through design science research

Based on the theoretical analysis framework built of factors derived from both existing literature and the findings in the case study

## 4 Project plan

## Potential titles

- A comparison of automated deployment strategies
- ???

| Milestone | Delivery | Partly busy | No work | Free time | |
|---|---|---|---|---|---|
| Meeting | Informal delivery | | | | |

| (week of) | Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|---|
| 11/01/2016 | Hello, thesis | | | FINN initial | Status + "research proposal" |
| 18/01/2016 | Lecture | | Interview guide | Status | FINN Reise and Cloud-IO |
| 25/01/2016 | Lecture | | | | Validated topic and started framework |
| 01/02/2016 | Lecture | | | | |
| 08/02/2016 | Lecture | | | | |
| 15/02/2016 | Lecture | | | | |
| 22/02/2016 | | | | | Finished case study and first version of framework |
| 29/02/2016 | Lecture + PJ3100 | | | | PJ3100 |
| 07/03/2016 | Oral status report + lecture | | | | PJ3100 |
| 14/03/2016 | Lecture | | | | |
| 21/03/2016 | | | The Gathering | The Gathering | The Gathering |
| 28/03/2016 | Easter Monday | | | | One strategy tested |
| 04/04/2016 | | | | | |
| 11/04/2016 | Lecture | | | | All strategies implemented & tested |
| 18/04/2016 | Lecture + PJ3100 | | | | PJ3100 |
| 25/04/2016 | Lecture | | | | Thesis draft + PJ3100 |
| 02/05/2016 | Lecture | | | | |
| 09/05/2016 | | | | | Complete thesis ready for final polish |
| 16/05/2016 | Delivered thesis | May 17th | | | |
| 23/05/2016 | Deadline | | | | |

Figure 1: Overall date-oriented project plan