

MASTER THESIS Investigating Continuous Delivery as a Self-Service**STUDENT** Seif Al-Shakargi**SUPERVISORS** Lars Bendix (LTH) & Fredrik Stål (Softhouse)**EXAMINER** Ulf Asklund (LTH)

Designing a Self-Service for Continuous Delivery

Popular Science Article **Seif Al-Shakargi**

Continuous Delivery is an essential component in software development for a reliable and automated quality assurance process. This master thesis has researched a possible design of a Self-Service to easily set up and maintain CD in a cost-effective way, making it available to users without CD expertise.

The process of Continuous Delivery, CD, has today become an essential part of software development as well as a necessity in development teams, both small and big. With CD we can shorten the release cycle and deliver quality assured code to our customers. This is made possible by automating the steps in the development process involving build, test, integration and delivery. The numerous tools available today can involve the whole CD pipeline or parts of it, which means it is your job to tie together the pipeline.

The challenge of introducing CD starts with setting up a CD pipeline, which may take a considerable amount of time and require expertise knowledge within this area. The resources required for this is not always available in smaller teams. This costly and complex implementation will also require maintenance once in use. At other times an implemented CD pipeline will not be properly maintained as the needed expertise is not available, which results in a non-functioning or disabled CD pipeline. The complexity does also lie in setting up an infrastructure for computing and storage capabilities to your CD system.

A new approach is suggested to tackle these difficulties to CD, by delivering it "as a Self-Service" to software development teams. Continuous De-

livery as a Self-Service, CDaaS, is abstracted and adjusted for use by developers without needing expertise. It is also directly usable in the same sense like Software as a Service tools, without needing to set up an infrastructure. The service provides the developers with guidelines, which helps the developers implement their own pipeline and processes.

This master thesis has researched a possible design of Self-Service by assessing a team, testing tools and interviewing experts. A requirement specification was developed by looking into usability, maintainability, infrastructure and cost aspects addressing expert related tasks.

A proof-of-concept design was drawn up for implementing the requirement specification, where the cloud is a central component as the necessary infrastructure can be provided on-demand without maintenance of it. A cost analysis based on a small team showed that the cost of using a service per month is comparable to a day's wage for a developer.

A validation of the design was made with Software as a Service tools, where the team implemented a pipeline. The end result was 3 out of 4 testers willing to maintain the pipeline based on the experienced difficulty with the tools.