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DevOps Process Implementation

Computing in DevOps

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## **Introduction**

Shinty Software is a software service provider company that has been in the market for over 20 years, the company is undergoing company modernization and restructuring of their product and services which aims to bring them back to the market by modernizing its internal processes.

## **DevOps Company Modernization**

A new structured DevOps culture and process will be implemented at Shinty Software to bring together the development and operations of the company, this new culture and process will adopt agile practices to avoid team frustration and will enable flexible DevOps practices for immediate optimizations that will rely on automation to deliver faster, better, quality, and reliable software.

This new DevOps process will aim for cooperation and collaboration of employees, company management and stakeholders, the DevOps process will enable development and operations teams to experiment and innovate early, granting them a better level of trust and flexibility to respond to business needs quickly and to deliver production-ready software to enhance the company time-to-market.

Diagram, timeline

Description automatically generatedShinty Software DevOps process implementation will follow a continuous approach that focuses on the company’s continuous improvement as demonstrated in the below flow diagram:

The DevOps implementation will include six steps:

1. Synergy: This stage will initially rely on the communication and collaboration of the manager and its important engineer assets, Jalen, and Ren, who will work towards creating an environment of shared knowledge, daily stand-ups will be created with the purpose to update everyone on current task states, but also by making it visible the difficulties and blocks that may rise.
2. Road Planning: The engineering team will be able to identify the company’s requirements by including top managers and stakeholders in a product roadmap meeting that will focus on aligning the business requirement and customer feedback to deliver valuable products and services required at specific and early stages.
3. Framework: A version control management tool will be implemented to help streamline the entire software development process, standardizing code best practices, and allowing the team to commit every code small change and new feature early.
4. Automation: In this stage, an automated pipeline will enable the code that was merged to the version control tool to be built and automated tested in a test environment first to avoid code bugs and errors ensuring the software quality and readiness to deliver.
5. Implementation: A infrastructure as code approach will be implemented in this stage enabling the engineering team to consistently release and continuously deploy safely to production environments based on the company’s needs.
6. Operation: Configured and provisioned production environments will be deployed and ready to have the software successfully deployed, the engineering team will also monitor these production environments to detect any system and security errors, and any misconfiguration that can impact the team’s productivity but also to make sure that SLAs are being achieved to enhance the customer agreements and satisfactions.

## **Legacy Code Modernization**

Diagram

Description automatically generatedShinty Software DevOps implementation also focuses on the modernization of legacy code projects, this modernization will aim at an incremental approach that will provide code best practices, and business agility by lowering the maintenance cost, higher performance, and scalability in the long run.

This modernization approach will refactor, restructure, and optimize (7 Options To Modernize Legacy Systems, 2019) the code and will be applied in stages to successfully deliver an improvement in the code quality and usability.

## **Code Implementation**

The first stage will focus on an audit executed by Ren, from the engineering team, who will review the code to understand and identify the current state and its value, comments and outputs will be implemented to provide recommendations that will be integrated into future development releases.

The second modernization stage will aim to break down the legacy code into different files and scripts, and analysis will be executed to generate a list of the current functions, dependencies and intra-module coupling (Ovaska, 2021) that are required to fully understand the code coupling and its complexity, a code break down example would split the current PowerShell script into separated files, see Appendix, Figure 1.

The third modernization stage will modularize critical code by breaking it into small chunks (Beningo, 2020), which will be implemented over several software releases, reducing the function complexity, and separating and isolating application code from the infrastructure code speeding up the development process.

Graphical user interface, text, application, email

Description automatically generated

Finally, in the last stage, the use of version control management tools along with continuous integration tools will benefit team collaboration and efficiency as they progress in this modernization process. Using a version control management tool, the team will be able to branch off the main repository giving them more flexibility to implement small changes more frequently, an automated pipeline will also be implemented, using a continuous integration tool to build and test it in development environments first, and after successful and completed pipelines run, the code will be ready to be implemented back to the main repository and deployed to production environments.

## **Conclusion**

As has been demonstrated in this paper, Shinty Software will go through a restructuration of its process but also its culture, the whole concept of implementing a DevOps process is to bring people together (Freeman, 2019) a common cause to improve communication, encourage collaboration but most import at Shinty Software people engagement, when collaborators are fully engaged and motivated enough, they will further participate by implementing their ideas and suggesting innovation (Technologies, 2017) that adopts an agile and flexible practice.

The DevOps process implementation will help Shinty Software’s immediate optimizations by delivering faster, better, high-quality products and services but also more reliable software. The six-step plan will enable the engineering team, Jalen, and Ren, to feel more connected and safer in an environment that focuses on shared knowledge, the innovation that one brings along with the vast experience and expertise of another will grant the team the skillset to achieve the company’s goal.

The Road Planning stage allows the company’s top management, stakeholders, and customers to define clear business requirements and customer needs aiming at the improvement of the software delivery, but also allowing the engineering team to set clear and achievable tasks that can be completed in a short sprint.

However, to achieve this new plan, their legacy code will also go through modernization, which Ren will lead, restructuring and refactoring along with code best practices which will allow the team to maintain the code at a lower performance cost, however, in an efficient way and at a higher performance, the implementation of new frameworks, tools and a mindset of automation is highly important, Jalen will oversee the set-up and configuration of all required tools for the team.

A version control management system will enable the team to commit their changes early and test them in a development environment before deploying to production, conferring them the security and safeness required to release a workable and reliable product, continuous improvement and monitoring will be aligned with the operation stage enabling the team to oversee product and service delivered in customers environments (Team, n.d.), enhancing the ability to act fast and quickly when issues are detected, therefore, customer satisfaction will be feasible.

In the final analysis, the DevOps process implementation and code modernization will lean not only on the effort of the team but also on the top managers and customer feedback, taking everything into account, with everyone aligned in achieving the same company goals, it will empower better communication, collaboration, improved performance and efficiency in the development stage, product quality at a lower cost, faster time to market and company innovation.

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Mara Lima GitHub Repository

<https://github.com/L00177676/devops_shinty_software>

## **Appendices**

A screenshot of a computer

Description automatically generated with medium confidence

Figure - Restructured Code