**UNIVERSITY OF WATERLOO**

Faculty of Mathematics

**The importance of Continuous Integration and practical guide to handle common obstacles when implementing Continuous Integration system**

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2A Mathematics

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**MEMORANDUM**

To: Alan Zych

From: Phat Tran

Date: December 16, 2016

Re: Work Report: The importance of Continuous Integration and practical guide to handle common obstacles when implementing Continuous Integration system

Dear Alan,

I have prepared the enclosed report “The importance of Continuous Integration and practical guide to handle common obstacles when implementing Continuous Integration system” for my 2A work report and for the Development Team. This report is part of the four required reports that I need to complete as part of my Bachelor of Computer Science Co-op degree requirements. It has not received an academic credit.

During my co-op term, my job is to develop custom web/mobile applications for the Development Team at Flynn. I also manage and improve test suites for web/mobile applications developed for Flynn.

The Faculty of Mathematics requests that you evaluate this report for command of topic and technical content/analysis. Following your assessment, the report, together with your evaluation, will be submitted to the Math Undergrad Office for evaluation on campus by qualified work report markers. The combined marks determine whether the report will receive credit and whether it will be considered for an award.

Thank you for your assistance in making this report.

*Phat Tran*

*(signature)*

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# **Executive summary**

This report attempts to analyze the overall effect of practicing continuous integration by considering its advantages and its disadvantages. In the last section of the analysis, it shows the possible strategies to overcome the common obstacles to maximize the benefits of this infrastructure.

# **Introduction**

With recent advancement in technology, people’s lives have been improved drastically. People spends more time than ever on various social media platforms like Snapchat, Instagram and consumes many technology-required services like Amazon and Uber. Billions of customers across the world that are served daily; thus, maintaining high service’s uptime is one of the most important concern of these tech giants. On another note, due to the advancement of technology, the entry barrier is extremely low so the market is highly competitive. Therefore, a strategy needs to be formed to improve product faster without compromising the availability to gain the advantage over other competitors.

In this report, we will analyze the pros and cons of CI practice and ways to overcome common roadblocks when setting up such infrastructure. Therefore, it is assumed that readers have a basic understanding of traditional development and deployment cycle though general definition of such process will be given, and comparison will be made against the given example.

# **Analysis**

## The traditional development process

### A quick recap

Put diagram of traditional development process

Explain the diagram

### Problems from the traditional process

## What is Continuous Integration?

### Definition of Continuous Integration

How this practice is defined depends on the standard of continuous integration (CI) one assume. Some people may say that CI means that whenever someone deploy changes to the codebase, there exists a system in place to compile the software and deploy it. Other may say that CI means that whenever a new change is introduced to the code repository, the system runs the new code changes through a set of pre-written unit tests to ensure that it’s working as expected. However, the most fundamental idea of CI that “continuous integration is a software development practice where members of a team integrate their work frequently” (Fowler, 2006). Therefore, whether the system compiles the software or runs tests on the new changes, as long as the newly-added code is being merged into the master codebase in a recurrent manner, it is considered CI.

### Implementation of Continuous Integration

As I say before, almost all tech giants employ this practice. it is considered CI.

## Benefits and Costs of CI

### Benefits

### Costs

## Overcome common roadblocks

### implement a daily undistracted work hours

In the discussion, the worst side effect of no-walls cubicles is the uncontrollable noise level. Another type of distraction can come from instant messaging and emails from coworkers. Generally, these two issues can be simply resolved by one wearing an earphones or other similar devices having an auto-responder email that states your current undistracted working hours. This ensure that your colleagues acknowledge your work schedule and lower their expectation. Your undistracted block, for example, can be a three-hour block in the morning from eight to eleven or it could be the first 45 minutes of every hour. The time template is different for every role. Management roles tend to have more in meetings while others do not have any at all such as contractors. Unless your job isn’t involved producing valuable, energy-intensive tasks, anyone can benefit from this work regime.

This could be quite difficult to pull off in the beginning especially if you don’t have a proven productive track record. Not everyone buys into the ideas and values of undisrupted work. It takes time for the majority to understand the importance of deep work in order to execute this strategy. However, if one manages to incorporate this tactic into his/her workflow, his productivity can surpass the majority of knowledge workers nowadays.

### pack all communication in one block of time

This method is the complement of the strategy above. When one has put in his daily amount of undisrupted work hours, he can now handle all communication tasks without building up excessive attention residue from jumping back and forth between work and peer interaction (Basu, 2016). If one’s job consists of an enormous amount of communications, it is also possible to insert them in between deep work sessions. For instance, taking the example above, say if the undisrupted work is the first 45 minutes of every hour, the last 15 minutes can be for responding to relatively urgent requests.

The important thing here is not the amount of time spent focusing on deep work, but rather the habitual cycle of working intensely on cognitively challenged tasks followed by low-intensity, low-effort activities. This is the ideal condition and the general goal is to convert all your working time into these small hard work-easy work cycles. It’s an ambitious goal, and the nature of working in an open office makes this goal seems impossible. With that being said, there is a last technique to deal with these unexpected stimuli.

### give way to distraction

This last method is to deal with unexpected interruption from boss and colleagues. Before jumping into the task with them, one should be able to identify the urgency of the tasks they assign. If it’s not as urgent, ignore it until the next easy-work block. If it is super important and has to be dealt with in a timely manner, one should stop whatever he/she is working on and immediately start this newly-assigned task immediately. However, pretend that this is a low-cognitive task and treat one’s current time block as an easy-half of the cycle. The key thing here is to ensure there is a distinction between energy consuming and low-level activities.

# **Conclusion**

In conclusion, despite many advertised benefits of open-concept office, it carries many productivity downsides. However, there are many tactics that one can deploy to fully take advantage of open office concept but still maintain one’s productivity. Thus, as an employee, it is important for one to equip the proper knowledge and work habits to excel in the workplace regardless of the work environment.

# **References**

Fowler, M. (2006, May 01). *Continuous Integration*. Retrieved from https://martinfowler.com: https://martinfowler.com/articles/continuousIntegration.html