Notice of the Final Oral Examination
for the Degree of Master of Science

of

TREVOR RAE

BSc (McMaster University, 2018)

“Design Requirements to Improve Adoption of Continuous Development Services”

Department of Computer Science

Wednesday, April 22, 2020
2:00 P.M.
Remote Defence

Supervisory Committee:
Dr. Daniela Damian, Department of Computer Science, University of Victoria (Supervisor)
Dr. Neil Ernst, Department of Computer Science, UVic (Member)

External Examiner:
Dr. Daniela Constantinescu, Department of Mechanical Engineering, UVic

Chair of Oral Examination:
Prof. Jeff Barnett, School of Health Information Science, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies
Abstract

The adoption of Continuous Development presents many challenges to users and organizations. The complexity of Continuous Development adoption is partially attributable to the diversity of the challenges faced, including technical challenges, cultural challenges, compliance regulations, and lack of understanding. In this thesis, I worked with industry partner IBM to improve their Continuous Delivery Pipeline offering to overcome adoption challenges faced by their users. Following Hevner's Three Cycle Design Science Methodology, my research had two distinct stages: Characterizing Continuous Development Adoption Challenges and Creating Design Requirements to Aid Organizations Offering Continuous Development Services. Both stages necessitated involvement from both academic literature and industry collaboration with IBM. Industry collaboration included interviews, surveys, developer forum analysis, and collaboration with IBM's "Continuous Delivery" teams. The design requirements I developed in this thesis addressed cultural, technical, compliance, and knowledge gap adoption challenges that were identified during the problem characterization stage. When tested within the Continuous Development community, feedback indicated that my design requirements would add value to users' development process, enabling their Continuous Development adoption. This thesis provides a foundation of empirical research for future study and a set of guidelines for industry practitioners.