



**University
of Victoria**

Graduate Studies

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

of

YI YUN ZHAO

BSc (East China Normal University, 2013)

**“A Framework for Collaborative Applications using a Client-Server Network
With Supernodes”**

Department of Computer Science

Friday, December 18, 2015

11:00 A.M.

Engineering and Computer Science Building
Room 468

Supervisory Committee:

Dr. Yvonne Coady, Department of Computer Science, University of Victoria (Supervisor)
Dr. Sudhakar Ganti, Department of Computer Science, UVic (Member)

External Examiner:

Dr. T. Aaron Gulliver, Department of Electrical and Computer Engineering, UVic

Chair of Oral Examination:

Dr. Claire Carlin, Department of French, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies

Abstract

Think Together is a collaborative mobile platform for professional meetings or presentations with rich media content. However, the unique features, such as individual action layers for each user and session replay, create several challenging bottlenecks which require alteration of the original implementation. This thesis proposes an alternative framework for communication to address these bottlenecks. In addition, we built a simulator to analyze and evaluate our proposed framework to enable the application to scale to more users, revealing trade-offs in terms of efficiency and productivity performance. Unlike testing on real devices, the simulator enables more power and flexibility without the limitation of resources. However, the extent to which results such of these are practical in the real work, to product managers, is an open question. The outcome of the investigation indicates various behavior patterns that help us to identify and improve the implementation of the product. We therefore further analyze the relationship between the practices and tools used for research with those used by a modern product manager. We demonstrate how several key characteristics of these roles constitute a significant overlap, in particular for products developed by agile teams.