The Evaluation of Human Collaboration and its Supporting Technologies

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Statement of Originality

The work contained in this thesis, other than that specifically attributed to another source, is that of the author(s). It is recognised that, should this declaration be found to be false, disciplinary action could be taken.

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Dedication

To my darling wife –
beautiful to the eyes, heart, and mind.

Acknowledgements

- Jesus Christ, in whom life finds meaning and fulfilment, thank you for your unceasing love. Thank you, thank you, thank you!!!
- To my darling wife, Jacqui, thanks for your love, support, and encouragement. I love you so much.
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Preface

In the compelling movie "Dead Poet's Society", John Keating (played by Robin Williams) encourages his regimented students to make their lives extraordinary, to find their own voice – to "Seize the day". In one scene, he commandingly stands on the desk and says, "I stand upon my desk to remind myself that we must constantly look at things in a different way. You see, the world looks very different up here" [124]. This research does not involve people standing on desks (although we did occasionally to see our city skyline), but it does involve a fresh look at the world of collaboration and its evaluation.

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Abstract

The various research on collaboration extends to text-based chat, audio-conferencing, video-conferencing, forums, code inspections, 3D virtual worlds, tangible interfaces, the automation of link establishment and disestablishment, group decision support systems, and brainstorming. Moreover, this list is by no means exhaustive!

The eight essential ingredients are formulated to draw together these disparate contexts, approaches, and implementations by describing the constants and commonalities of collaboration. The ingredients, then, which are common to all collaboration sessions regardless of the underlying technology are: people; a shared space; time; a common objective; focus on the objective; common language; knowledge in the area of the objective; and interaction. There may be other aspects which affect collaboration, but these ultimately will be expressed in either one, or a combination of these ingredients.

Additionally, there is little consensus on the evaluation of collaboration and its supporting technologies. It seems that many researchers focus on their application without much thought on its accompanying evaluation method or how their evaluation fits with other approaches. The various approaches to evaluation fit into a layered understanding of collaboration, through the comparison of one layer's affects on another and/or through the examination of effectiveness, efficiency, and satisfaction of a particular layer. Furthermore, the analysis of various approaches are placed in a matrix, which can lead to the identification of 'gaps' in the evaluation research field and help to identify where an evaluation approach fits in.

In addition, a new method of evaluation is introduced on the basis of the eight essential ingredients, thus rendering it applicable to any collaboration session. Its technological independence and numerical results provide it with strong potential for improving collaboration and its supporting technologies.

To demonstrate the operation of the measure, a pilot study was conducted. The measure was found to be useful, but potentially quite expensive to implement. The expense, however, can be reduced through the automation of some of the aspects of the measure.