Acknowledgements

There are many people who deserve my thankfulness for their part in the completion of my thesis work, and it would be not possible to bring up them all in a small number of paragraphs. There are quite a lot of people in particular, however, who I wish to recognize specifically. First of all I would like to thank Parampita Parmatma, the continuous source of inspiration and knowledge. I would like to express my deep and sincere gratitude to my advisor, Prof. Dr. Shrikant K. Bodhe, who is most responsible for helping me to complete this thesis. His wide knowledge and logical way of thinking have been of great value for me. He was always there to meet and talk about research ideas, to proof read and markup my papers, and to ask me good questions to help me to think through my research. Without his encouragement and constant guidance, I could not have finished this thesis.

I am grateful to Dr. Rajan Saxena, Vice Chancellor, and Dr. M. N. Welling, Pro-Vice Chancellor, Dr. S. Y. Mhaiskar, Dean, Faculty of Engineering and Dr. D. J. Shah, Ex-Dean, Mukesh Patel School of Technology Management and Engineering, NMIMS (Deemed-to-be-University), for their help, guidance and consistent encouragement during my research work.

I wish to express my sincere thanks to Shri Amrish Patel, President, SVKM, and Shri. Mohan Awate, Additional CEO, SVKM, Shri Bharat Sanghvi, Trustee, Dwarkadas J. Sanghvi College of Engineering, Vile-Parle, Mumbai for giving me the support to carry my research. I am also thankful to Mr. Ashish Apatel, Controller of Examination, NMIMS, Mrs. Alka Shukla, Deputy Registrar-Examination, Mr Sachin Arondekar Co-ordinator Ph.D. MPSTME.

Thanks are due to Dr. Alam Shaikh, Dr. Ketan D. Shah, Dr. Sanjay Patil, Dr. Uday Sutar, Prof. Vinod Chede, Prof. Ravi Terkar, Prof. R. B. Waghmare, Prof. D. S. Kurule, Prof. M. B. Limkar, Prof S. S. Thakur, Prof D. K. Chitre, Prof A. D. Bhoi, Mr. Prasad Dalvi, Ms. Jyoti Chougule Patil, Ms. Vrushali Patil, Priyanka Ratna Nalam, Sandeep Dhende, Farhan, Rohit Sharma and Prof. V. B. Gaikwad Prof. Varsha Vahane for their intellectual help and group spirit during the research work.
I wish to express my special thanks to Mr. P. T. Deshmukh, CEO, TPCT, Dr. Deven Shah, Principal Terna Engineering College, for their help and guidance. I express my explicit thanks to Trupti, Amruta, Sneha, Mahesh, Vaishali and Rohit for their cooperation to complete our research ideas.

I am very much thankful to Mr. Manoj Kokate, Mr. Asaram, Shinde, Mr. Janardan Tambe and all the teaching and non-teaching staff members of Electronics Engineering Department, of Terna Engineering College, Nerul, Navi Mumbai, who helped me directly and indirectly to finish my work.

I express my special thanks to Mr. Yogesh Naik Sr. Manager (Network planning and optimization), Nokia Siemens Networks, Mr. Hemant Katkkar R and D Head, Falcon Electro-Tek Pvt. Ltd. for providing me, the important guidance, the required facilities and encouragement throughout this work.

Special thanks go out to my brothers Dattatraya, Shivkumar and sister Jayashree, as well as my wife’s family, Shrishailya Hogade; Anita Surve has forever been ready to provide a listening ear or a helping hand.

The utmost of all gratitude goes to my wife Sayujyata she forever did all that she could to encourage, love, and support me. All the way through my research work, she has always been the one to rebuild my confidence during times of discouragement. In short, she is the best friend that I’ve ever had.

Lastly, I would like to thank my beloved daughters Swaranjali and Srushti, for their love and all sacrifices they have made for me. Without their positive, kind and silent support, this work would neither have been possible nor could it have been completed.

Balaji Gundappa Hogade

February 2013

Mumbai