Designing Collaborative Workspaces for Particular Complex Work Settings

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Certificate of Authorship/Originality

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

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List of Abbreviations

AAHL	Australian Animal Health Laboratory
BISi	Blended Interaction Space installation
CCEAD	Consultative Committee for Emergency Animal Disease
CSCW	Computer Supported Cooperative Work
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CVO	Chief Veterinary Officer
DAFF	Department of Agriculture, Fishery and Forestry
DSTO	Defence Science and Technology Organisation
EPR	Electronic Patient Record
HCI	Human Computer Interaction
HD	High Definition
JCSCW	Journal of Computer Supported Cooperative Work
LCD	Liquid Crystal Display
LIMS	Lab Information Management System
MDTM	Multidisciplinary Medical Team Meeting
NICTA	National ICT Australia
PACS	Picture Archive and Communication Systems
PC3	Physical Containment Level 3
PC4	Physical Containment Level 4
ViCCU	Virtual Critical Care Unit

Abstract

This research explores how new collaboration technology can be designed to enhance distributed collaboration in particular complex work settings. Collaboration in work environments increasingly involves complex interactions between individuals and teams working across geographical, institutional and professional boundaries. This research addresses the challenges of supporting real-time communication and information sharing between different teams and across variable local settings. These issues are explored within the context of developing collaborative workspaces which integrate sophisticated video conferencing and information sharing technologies in multi-display environments. This research aims to understand the characteristics of interactions that a collaborative workspace needs to support and how to design a collaborative workspace for collaboration across different local settings without compromising the integrity of local work practices.

The research issues were explored through three case studies in three work domains: multidisciplinary medical team meetings in two hospitals, collaboration in a national committee responsible for the emergency response to animal disease, and scientific collaboration across containment barriers in a biosecurity laboratory. Workplace studies were conducted in each of the studies. The case studies were research components of design-oriented projects carried out by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) with aims to inform the design of a collaborative workspace within each domain. The case studies are the empirical contributions of this thesis.

This research has shown that a set of socio-technical factors relating variations in local physical settings, information sharing practices and organizational contexts can influence the dynamics of collaboration across different local settings. The results highlight different kinds and levels of configuration work required in designing collaborative workspaces. These include the careful integration of physical settings with information sharing practices, the appropriate configuration of collaborative workspaces to enable diversity of local practices and the configuration of collaborative workspaces at an organizational level and in the context of coordinative practices. The results of the study have contributed to the development and deployment of an integrated

collaboration platform in a scientific laboratory and have demonstrated that a generic collaborative workspace can be extended by components developed in response to the specific requirements of the work of the local setting. A set of design guidelines has been developed that can be used to guide the design and development of collaborative workspaces which provide coherent collaboration environments across different already existing local settings while respecting the variations within local practices.