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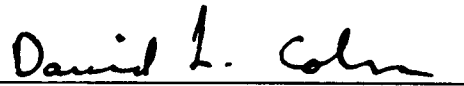REALIZING MOBILE COMPUTING PERSONAE

A Dissertation

Submitted to the Graduate School

of the University of Notre Dame

In Partial Fulfillment of the Requirements

of the Degree of

Doctor of Philosophy

by

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April 1995

UMI Number: 9527070

REALIZING MOBILE COMPUTING PERSONAE

Abstract

by

Michael Raymond Casey

The proliferation of computers has made it possible to do computer-related tasks in many places. At each place a user works, he or she runs applications, specifies preferences for them, and is allowed to access resources and files according to local rules. These elements, together with other mappings, can be referred to as a user's *computing persona*. Currently, implicit personae are created wherever users use machines, and their personae evolve as applications, preferences and resources change. This work outlines a method for making personae explicit, user-centric, and mobile, thus creating *mobile computing personae* and describes the underlying components needed to support this shift. First, this work identifies the important characteristics of a mobile file system. Second, a set of application-based checkpoint and restart protocols is proposed to allow migration between heterogeneous platforms. Next the design and implementation of a user-centric, disconnectable and reliable communications mechanism called *mobile sockets* is analyzed. A suite of mobile applications is then described that were built using a *structured memory library* as part of a *mobility toolkit* to show the feasibility of such an approach to mobility. Lastly, a *resource resolution protocol* is presented that simplifies the transition from one environment to another by providing the ability to find resources at new locations.

DEDICATION

This work is dedicated to my wife, Valérie, and our son, Alex. Their patience has allowed me to fulfill a dream, and their smiles kept me going. I would also like to thank my parents, Kevin and Meg, for their many years of support.

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