

# Preface

The human component of information systems use is an often overlooked, but extremely important factor. The end user has to deal with all the problems with the systems and understand how to utilize all the components of a given system in order for the entire operation to be optimized. Many organizations are looking to the end user when designing and implementing new systems, but in order to understand what role these end users can and should play, organization heads and project managers need to have access to the latest information regarding the human factor in information systems development and management. This timely new book provides the most up-to-date reporting on research and practice in the fields of end user computing and human computer interaction. From geographic information systems to online catalogs, the chapters in this book cover a wide range of topics related to end users and provide practical as well as theoretical guidance on how to best incorporate the human factor into design and management decisions. The authors from a wide variety of organizational and cultural backgrounds, and experts in their field share their insights in the following chapters.

Chapter 1 entitled, “Towards User-Oriented Control of End-User Computing in Large Organizations” by Neil McBride of DeMontfort University and A. Trevor Wood-Harper of the University of Salford (United Kingdom) and the University of South Australia concentrates an IT-oriented view with an alternative user-oriented view. The chapter advocates a shift in End User Computing research away from the technology and the IT issues towards the political, social and cultural issues associated with the users. The chapter proposes a dynamic model for EUC in which the progression of EUC within an organization is visualized as a series of inference loops.

Chapter 2 entitled, “Online User Interaction with Electronic Catalogs: Language Preferences Among Global Users” by Aryya Gangopadhyay and Zhensen Huang of the University of Maryland-Baltimore County (USA) describes a bilingual electronic catalog that can be used by online retailers for selling products and/or services to customers in either English or Chinese. The chapter reports on three separate usages of the catalog: browsing, direct search and exact matches. The authors test the efficiency of usage by measuring time spent as well as studying the path followed by the user in retrieving information in all of the above scenarios.

Chapter 3 entitled, “End Users as Expert Systems Developers?” by Christian Wagner of City University of Hong Kong (China) discusses the differences associated with end user development, both in terms of design quality and knowledge content. The chapter is based upon an analysis of 25 expert systems written by non-professional developers. The report of the analysis within the chapter reveals significant quality and size limitations that indicate limited feasibility of end user expert system development.

Chapter 4 entitled, “Designing End-User Geographic Information Systems” by Lawrence West, Jr. of the University of Central Florida (USA) identifies the concepts most needed for end user geographic information systems (GIS) use and suggests remedial efforts to reduce the burden of system operation and improve data integrity. The chapter presents useful guidelines and offers approaches, which make extensive use of metadata storage. These approaches may be implemented as tools in GIS software provided to end-users.

Chapter 5 entitled, “Hypermedia Document Management: A Metadata and Meta-Information System” by Woojong Suh and Heeseok Lee of Korea Advanced Institute of Science and Technology (Korea) identifies metadata roles and components necessary to build a metadata schema. The authors propose a meta-information system, Hyperdocument Meta-Information systems (HyDoMiS), that performs three functions, metadata management, search and reporting. The authors indicate that this system will help to implement and maintain hypermedia information systems effectively.

Chapter 6 entitled, “An Adaptive Probe-based Technique to Optimize Join Queries in Distributed Internet Databases” by Latifur Khan of the University of Texas at Dallas, Dennis McLeod and Cyrus Shahabi of the University of Southern California (USA) discusses an experiment that consisted of two servers running the same DBMS connected to the Internet. The authors discuss how a static query optimizer could choose an expensive plan by mistake due to its lack of knowledge about the run time environment, inaccurate statistical assumptions in size estimation or neglect of the cost of remote method invocation. The authors present a probing mechanism with an adaptive technique that offers a more cost effective approach than the static query optimizer.

Chapter 7 entitled, “Strategies for Managing EUC on the Web” by R. Ryan Nelson of the University of Virginia and Peter Todd of the University of Houston (USA) examines which strategies organizations are using to maximize the benefits of the Web for end users while mitigating the inherent risks. The authors surveyed individuals from 12 organizations and report the results of their survey in this chapter. The results indicate that organizations are doing an adequate job of establishing roles, standards, and mechanisms; however, their efforts for resource allocations, development management and maintenance are lacking.

Chapter 8 entitled, “Exploring the Measurement of End User Computing Success” by Conrad Shayo of California State University of San Bernardino, Ruth Guthrie of California Polytechnic University of Pomona and Magid Igarria of Claremont Graduate School (USA) explores the literature on EUC success measurement and discusses the main issues and concerns researchers face. The authors offer recommendations to optimize success measurement including using unobtrusive measures of success, taking into account contextual factors, using well-defined concepts and measures and seeking a comprehensive integrated models that incorporate a global view.

Chapter 9 entitled, “Constructive Design Environments: Implementing End-User Systems Development” by John Gammack of Murdoch University (Australia) develops the case for centering definitions and process-flows on end users in their active situations. The chapter examines the potential for basing integrated information systems development upon the constructive and evolutionary processes in client context. The chapter considers case studies and representative situations at the levels of full application design, workflow definition and enterprise wide-development.

Chapter 10 entitled, “An Information Systems Design Framework for Facilitating TQM Implementation” by Nazim Ahmed of Ball State University and Ramarathnam Ravichandran of Design Systems (USA) provides a framework for information systems design for total quality management (TQM) implementation. The framework consists of three phases: tasks, analyses of communication effectiveness, and appropriate IS component inventories. The authors then apply their framework to a hypothetical example of a large manufacturing firm.

Chapter 11 entitled, “Methodology of Schema Integration for New Database Applications: A Practitioner’s Approach” by Joseph Fong of City University of Hong Kong, Kamalakara Karlapalem of Hong Kong University of Science and Technology and Qing Li and Irene Kwan of Hong Kong Polytechnic University (China) presents a practitioner’s approach to integrating databases and evolving them to support new database applications consisting of a joint bottom-up and top-down approach.

Chapter 12 entitled, “CMU-WEB: A Conceptual Model for Designing Usable Web Applications” by Akhilesh Bajaj and Ramayya Krishnan of Carnegie Mellon University (USA) proposes a three-dimensional classification space for Web applications, consisting of a degree structure of pages dimensions, a degree of support for interrelated events dimension and a location of processing dimension. The chapter then proposes a usability design metric for Web applications. The authors use CMU-Web, a conceptual model used to design Web applications as a way to measure these dimensions.

Chapter 13 entitled, “The Effects of Using a Triangulation Approach of Evaluation Methodologies to Examine the Usability of a University Website” by Dana Smith, Zhensen Huang, Jennifer Preece and Andrew Sears of the University of Maryland-Baltimore County (USA) report on the results of a study used to evaluate the current University of Maryland Baltimore County Web in order to identify problems to be addressed in the redesign project. With the analysis of the results collected from gathering test data, observing users and interviewing individuals from the campus, the authors were able to identify problems that could be addressed. Furthermore, the authors demonstrated the value of using a triangulation approach to devise these results.

Chapter 14 entitled, “Adaptive Web Representation” by Arno Scharl of Vienna University of Economics (Austria) classifies hypertext applications into three categories of information and their corresponding interface representation: context of documents, primary navigational system comprising links between and within the documents and supplemental navigational systems such as indexes, trails or guided tours.

Chapter 15 entitled, “Usability: Changes in the Field – A Look at the System Quality Aspect of Changing Usability Practices” by Leigh Ellen Potter of Griffith University (Australia) examines traditional usability testing and compares it to user-centered design practices focusing on the resultant quality of the information system. The author examines the literature surrounding each approach and offers comparisons to a case study of a large Australian organization utilizing both measures. The chapter reports the experiences of developers and users within the organization and discusses the perceived quality of systems developed using both approaches.

Chapter 16 entitled, “Facilitating End User Database Development by Working with Users’ Natural Representations of Data” by Valerie Hobbs and Diarmuid Pigott of Murdoch University (Australia) presents two case studies in which the first stage of the development process was completed entirely by the end user, making use of their own understanding of the dataset, the problem domain and the tools that were familiar to them. An IT expert then facilitated the conversion of the dataset to a relational database with the participation of the end users. The chapter reports on the benefits of this method of database development.

Chapter 17 entitled, “User Developed Applications: Can End Users Assess Quality?” by Tanya McGill of Murdoch University (Australia) investigates the ability of end users to assess the quality of applications they develop. The chapter confirms that there are differences between the system quality assessments of end user developers and independent expert assessors. The results suggest that end users with little experience might erroneously consider the applications they develop to be of high quality. The authors then discuss the implications of their findings.

Chapter 18 entitled, “Toward an Understanding of the Behavioral Intention to Use a Groupware Application” by Yining Chen and Hao Lou of Ohio University (USA) provides an illustration of expectancy theory, using the case of a groupware application. The chapter shows that expectancy can be applied early in the design phase of systems development to provide a better indication of a user’s intention to use a groupware application. The authors then discuss ways to maximize systems success.

Understanding human factors in information systems design and management is essential to achieving and maintaining optimal information systems. The chapters in this book represent the best research currently available on end users and human computer interaction. They address the critical issues of what role end users should play in database development, whether or not end user perceptions of their own developments are accurate and how to motivate users to implement specific practices. The chapters represent university and university settings and cover topics ranging from Web site usability to groupware use. These chapters will prove essential to academics, researchers and practitioners alike who will benefit from the insightful theoretical discussion as well as practical examples and useful case studies illustrating the concepts discussed. This book is a must-have for all those interested in understanding and applying the most up-to-date research and practice in end user computing and human computer interaction.

IRM Press  
January 2002

