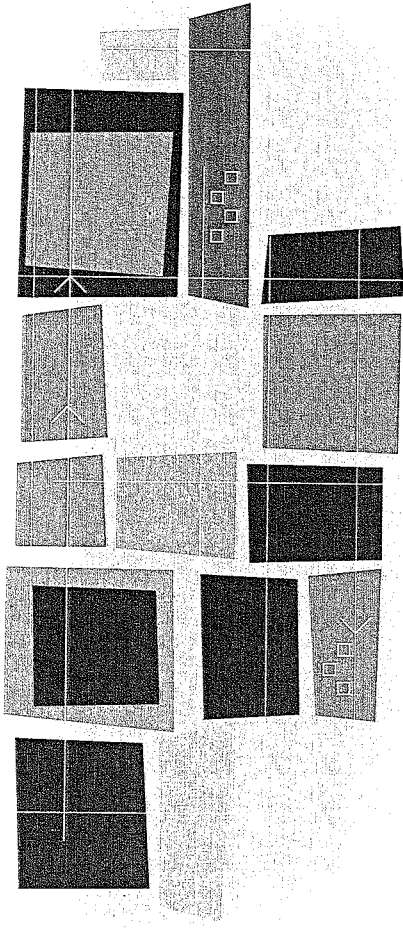


KENNETH C. LAUDON • JANE P. LAUDON

ESSENTIALS OF
MANAGEMENT INFORMATION
SYSTEMS

Managing the Digital Firm | SIXTH EDITION



ESSENTIALS OF MANAGEMENT INFORMATION SYSTEMS

Managing the Digital Firm

SIXTH EDITION

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Upper Saddle River, New Jersey 07458

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PART I Organizations, Management, and the Networked Enterprise 1

CHAPTER 1 Managing the Digital Firm 2

CHAPTER 2 Information Systems in the Enterprise 40

CHAPTER 3 Information Systems, Organizations, Management, and Strategy 74

CHAPTER 4 The Digital Firm: Electronic Business and Electronic Commerce 114

CHAPTER 5 Ethical and Social Issues in the Digital Firm 150

PART I PROJECT Analyzing Business Processes for an Enterprise System 188

PART II Information Technology Infrastructure 189

CHAPTER 6 Hardware and Software in the Enterprise 190

CHAPTER 7 Managing Data Resources 232

CHAPTER 8 Telecommunications, Networks, and Wireless Computing 264

CHAPTER 9 The Internet: Information Technology Infrastructure for the Digital Firm 296

PART II PROJECT Creating a New Internet Business 327

PART III Organizational and Management Support Systems for the Digital Firm 329

CHAPTER 10 Enterprise Applications and Business Process Integration 330

CHAPTER 11 Managing Knowledge in the Digital Firm 370

CHAPTER 12 Enhancing Management Decision Making for the Digital Firm 412

PART III PROJECT Designing an Enterprise Information Portal 442

PART IV Building Information Systems in the Digital Firm 443

CHAPTER 13 Redesigning the Organization with Information Systems 444

CHAPTER 14 Understanding the Business Value of Systems and Managing Change 484

CHAPTER 15 Information System Security and Control 520

PART IV PROJECT Redesigning Business Processes for Healthlite Yogurt Company 560

International Case Studies 563

Hands-On Guide to MIS 587

References 597

Indexes 617

Photo and Screen Shot Credits 637

PART I Organizations, Management, and the Networked Enterprise 1

CHAPTER 1 Managing the Digital Firm 2

1.1 Why Information Systems?, 4
The Competitive Business Environment and the Emerging Digital Firm, 4 • What Is an Information System? 8 • A Business Perspective on Information Systems, 10

WINDOW ON TECHNOLOGY: UPS Competes Globally with Information Technology, 11

Internet Connection, 15

1.2 Contemporary Approaches to Information Systems, 17
Technical Approach, 17 • Behavioral Approach, 18 • Approach of This Text: Sociotechnical Systems, 18

1.3 Toward the Digital Firm: The New Role of Information Systems in Organizations, 19
The Widening Scope of Information Systems, 19 • The Network Revolution and the Internet, 20 • New Options for Organizational Design: The Digital Firm and the Collaborative Enterprise, 22 • The Digital Firm: Electronic Commerce, Electronic Business, and New Digital Relationships, 26

WINDOW ON ORGANIZATIONS: A Brazilian Dime Store Becomes an E-Commerce Success, 27

1.4 Learning to Use Information Systems: New Opportunities with Technology, 29
The Challenge of Information Systems: Key Management Issues, 29 • Integrating Text with Technology: New Opportunities for Learning, 32

MAKE IT YOUR BUSINESS: 32

Summary, 33 • Key Terms, 34 • Review Questions, 35 • Application Software Exercise: Database Exercise: Adding Value to Information for Management Decision Making, 35 • Dirt Bikes U.S.A.: Preparing a Management Overview of the Company, 36 • Electronic Commerce Project: Analyzing Shipping Costs, 36 • Group Project: Analyzing a Business System, 37 • Case Study: Herman Miller: Information Systems at the Crossroads, 37

CHAPTER 2 Information Systems in the Enterprise 40

2.1 Major Types of Systems in Organizations, 42
Different Kinds of Systems, 43 • Four Major Types of Systems, 44 • Relationship of Systems to One Another, 49

2.2 Systems from a Functional Perspective, 50
Sales and Marketing Systems, 50 • Manufacturing and Production Systems, 51 • Finance and Accounting Systems, 52 • Human Resources Systems, 53

2.3 Integrating Functions and Business Processes: Introduction to Enterprise Applications, 53
Business Processes and Information Systems, 54

WINDOW ON MANAGEMENT: Employees Serve Themselves Online, 55

Enterprise Systems, 56 • Supply Chain Management and Collaborative Commerce, 59

WINDOW ON TECHNOLOGY: Diageo plc Collaborates in Real-Time, 62
Customer Relationship Management (CRM), 64 • Knowledge Management Systems in the Enterprise, 65

2.4 International Information Systems, 66
Forms of Global Business Organization, 66 • Internet Connection, 66 • Global System Configuration, 67

MAKE IT YOUR BUSINESS: 68

Summary, 68 • Key Terms, 69 • Review Questions, 70 • Application Software Exercise: Spreadsheet Exercise: Improving Supply Chain Management, 70 • Dirt Bikes U.S.A.: Expanding International Sales, 71 • Electronic Commerce Project: Conducting International Marketing and Pricing Research, 71 • Group Project: Exploring Private Industrial Networks, 71 • Case Study: Can Zara Keep up With Speed Chic, 71

CHAPTER 3
Information Systems, Organizations, Management, and Strategy 74

3.1 Organizations and Information Systems, 76

What Is an Organization?, 77 • Common Features of Organizations, 78 • Unique Features of Organizations, 80

3.2 The Changing Role of Information Systems in Organizations, 82

Information Technology Infrastructure and Information Technology Services, 82

WINDOW ON ORGANIZATIONS: E-Commerce French and German Style, 83
How Information Systems Affect Organizations, 84 • The Internet and Organizations, 87

3.3 Managers, Decision Making, and Information Systems, 88

The Role of Managers in Organizations, 88 • Managers and Decision Making, 89

WINDOW ON MANAGEMENT: Why War Games Can't Always Simulate the Battlefield, 93

Implications for the Design and Understanding of Information Systems, 94

3.4 Information Systems and Business Strategy, 94

What Is a Strategic Information System?, 95 • Business-Level Strategy and the Value Chain Model, 95 • Internet Connection, 98 • Firm-Level Strategy and Information Technology, 101 • Industry-Level Strategy and Information Systems: Competitive Forces and Network Economies, 102 • Using Systems for Competitive Advantage: Management Issues, 106

MAKE IT YOUR BUSINESS: 107

Summary, 107 • Key Terms, 108 • Review Questions, 109 • Application Software Exercise: Database Exercise: Using a Database for Strategic Business Development, 109 • Dirt Bikes U.S.A.: Performing a Competitive Analysis, 110 • Electronic Commerce Project: Configuring and Pricing an Automobile, 110 • Group Project: Identifying Opportunities for Strategic Information Systems, 110 • Case Study: How Much Can New Information Systems Help GM?, 111

CHAPTER 4
The Digital Firm: Electronic Business and Electronic Commerce 114

4.1 Electronic Business, Electronic Commerce, and the Emerging Digital Firm, 116
Internet Technology and the Digital Firm, 116 • New Business Models and Value Propositions, 117

4.2 Electronic Commerce, 122

Categories of Electronic Commerce, 122 • Customer-Centered Retailing, 123 • Internet Connection, 123

WINDOW ON TECHNOLOGY: Lightnin Lights Up with the Internet, 127

Business-to-Business Electronic Commerce: New Efficiencies and Relationships, 127 • Electronic Commerce Payment Systems, 130

4.3 Electronic Business and the Digital Firm, 132

How Intranets Support Electronic Business, 133 • Intranet Applications for Electronic Business, 134 • Business Process Integration, 136

4.4 Management Challenges and Opportunities, 138

Viability of Business Models, 139 • Business Process Change Requirements, 139

WINDOW ON ORGANIZATIONS: Can Online Brokers Survive in Europe?, 140
Legal Issues, 140 • Trust, Security, and Privacy, 141

MAKE IT YOUR BUSINESS: 142

Summary, 142 • Key Terms, 144 • Review Questions, 144 • Application Software Exercise: Spreadsheet Exercise: Analyzing a Dot-Com Business, 144 • Dirt Bikes U.S.A.: Developing an E-Commerce Strategy, 145 • Electronic Commerce Project: Creating an Online Storefront, 145 • Group Project: Performing a Competitive Analysis of E-Commerce Sites, 146 • Case Study: Can the Music Industry Change Its Tune?, 146

CHAPTER 5

Ethical and Social Issues in the Digital Firm 150

5.1 Understanding Ethical and Social Issues Related to Systems, 153

A Model for Thinking About Ethical, Social, and Political Issues, 153 • Moral Dimensions of the Information Age, 154 • Key Technology Trends That Raise Ethical Issues, 154

5.2 Ethics in an Information Society, 156

Basic Concepts: Responsibility, Accountability, and Liability, 157 • Ethical Analysis, 157 • Professional Codes of Conduct, 158 • Some Real-World Ethical Dilemmas, 158

5.3 The Moral Dimensions of Information Systems, 159

Information Rights: Privacy and Freedom in the Internet Age, 159 • Internet Connection, 163 • Property Rights: Intellectual Property, 166 • Accountability, Liability, and Control, 169 • System Quality: Data Quality and System Errors, 171 • Quality of Life: Equity, Access, and Boundaries, 172

WINDOW ON MANAGEMENT: Can the Spamming Monster Be Tamed?, 176

WINDOW ON ORGANIZATIONS: Offshore Outsourcing: Good or Bad?, 178

Management Actions: A Corporate Code of Ethics, 180

MAKE IT YOUR BUSINESS: 180

Summary, 181 • Key Terms, 182 • Review Questions, 182 • Application Software Exercise: Word Processing and Web Page Development Tool Exercise: Creating a Simple Web Site, 183 • Dirt Bikes U.S.A.: Developing a Web Site Privacy Policy, 183 • Electronic Commerce Project: Using Internet Newsgroups for Online Market Research, 183 • Group Project: Developing a Corporate Ethics Code, 184 • Case Study: Security Versus Privacy: Does Terrorism Change the Debate?, 184

PART I PROJECT: Analyzing Business Processes for an Enterprise System, 188

PART II Information Technology Infrastructure 189

CHAPTER 6

Hardware and Software in the Enterprise 190

- 6.1 Computer Hardware and Information Technology Infrastructure, 192
The Computer System, 192 • Computer Processing, 195 • Storage, Input and Output Technology, 196
- 6.2 Categories of Computers and Computer Systems, 200
Classifying Computers, 200 • Computer Networks and Client/Server Computing, 201 • Internet Connection, 201 • Network Computers and Peer-to-Peer Computing, 202
- 6.3 Types of Software, 203
System Software and PC Operating Systems, 204 • Programming Languages and Contemporary Software Tools, 207

WINDOW ON MANAGEMENT: The Case for Linux, 208

Application Software Packages and Productivity Software, 212 • Software for Enterprise Integration and E-Business, 217

6.4 Managing Hardware and Software Assets, 219

WINDOW ON TECHNOLOGY: Application Integration to the Rescue, 220
Hardware Technology Requirements for Electronic Commerce and the Digital Firm, 220 • Total Cost of Ownership (TCO) of Technology Assets, 221 • Rent or Build Decisions: Using Technology Service Providers, 222

MAKE IT YOUR BUSINESS: 224

Summary, 225 • Key Terms, 227 • Review Questions, 227 • Application Software Exercise: Spreadsheet Exercise: Evaluating Computer Hardware and Software Options, 228 • Dirt Bikes U.S.A.: Analyzing the Total Cost of Ownership (TCO) of Desktop Software Assets, 229 • Electronic Business Project: Planning and Budgeting for a Sales Conference, 229 • Group Project: Capacity Planning for E-Commerce and E-Business, 229 • Case Study: Zurich North America Hunts Down Its IT Assets, 230

CHAPTER 7

Managing Data Resources 232

7.1 Organizing Data in a Traditional File Environment, 234
File Organization Terms and Concepts, 235 • Problems with the Traditional File Environment, 236

7.2 The Database Approach to Data Management, 238
Database Management Systems, 238 • Types of Databases, 240 • Internet Connection, 241

7.3 Creating a Database Environment, 244
Designing Databases, 244 • Distributing Databases, 246 • Management Requirements for Database Systems, 247

7.4 Database Trends, 248
Multidimensional Data Analysis, 248 • Data Warehouses and Data Mining, 249
WINDOW ON MANAGEMENT: Data Reveal New Sales Opportunities, 252
Databases and the Web 252
WINDOW ON TECHNOLOGY: Web Access for Royal Bank Statements Pays Off, 255

MAKE IT YOUR BUSINESS: 256

Summary, 257 • Key Terms, 258 • Review Questions, 258 • Application Software Exercise: Database Exercise: Building a Relational Database for a Small Business, 258 • Dirt Bikes

U.S.A.: Redesigning the Customer Database, 259 • Electronic Commerce Project: Searching Online Databases, 259 • Group Project: Creating Company-wide Data Standards, 260 • Case Study: Database Woes Plague Homeland Security and Law Enforcement, 261

CHAPTER 8

Telecommunications, Networks, and Wireless Computing 264

8.1 The Corporate Telecommunications System, 266
Features of Contemporary Telecommunications Systems, 267 • Transmission Media, 270

8.2 Communications Networks, 275
Local Area Networks, 275 • Wireless Networks: Wi-Fi and Bluetooth, 276 • Wide Area Networks, 279

WINDOW ON ORGANIZATION: Is the World Falling for Wi-Fi?, 280
Broadband Network Services and Technologies, 281

8.3 Electronic Business and Electronic Commerce Technologies, 282
Electronic Mail and Groupware, 282 • Internet Connection, 282

WINDOW ON MANAGEMENT: Monitoring Employees on Networks: Unethical or Good Business?, 283

Voice Mail and Fax, 283 • Teleconferencing, Dataconferencing, and Videoconferencing, 284 • Digital Information Services, Distance Learning, and E-Learning, 285 • Electronic Data Interchange, 286

8.4 Developing a Business-Driven Telecommunications Plan, 287
Developing the Plan, 287

MAKE IT YOUR BUSINESS: 287

Implementation Issues, 288

Summary, 288 • Key Terms, 289 • Review Questions, 290 • Application Software Exercise: Spreadsheet Exercise: Analyzing Telecommunication Costs, 290 • Dirt Bikes U.S.A.: Using Telecommunications Technology to Reduce Corporate Travel Expenses, 290 • Electronic Business Project: Identifying Wi-Fi Hot Spots for Nomadic Computing, 291 • Group Project: Identifying Strategic Opportunities for Telecommunications Technology, 291 • Case Study: Will New Systems Keep Delta Flying?, 291

CHAPTER 9

The Internet: Information Technology Infrastructure for the Digital Firm 296

9.1 The Internet: Information Technology Infrastructure for E-Commerce and E-Business, 298
What Is the Internet?, 298 • Internet Technology and Services, 299

WINDOW ON MANAGEMENT: IP Virtual Private Networks Provide New Services and Savings, 304
Next-Generation Networks and Internet2, 305

9.2 The World Wide Web, 306
Searching for Information on the Web, 306

WINDOW ON TECHNOLOGY: Is Asking Jeeves the Answer for Novartis?, 309

Intranets and Extranets, 310 • The Wireless Web and Mobile Computing, 311 • Internet Connection, 312

9.3 Support Technology for Electronic Commerce and Electronic Business, 314
Web Servers and Electronic Commerce Servers, 314 • Customer Tracking and Personalization Tools, 315 • Web Content Management Tools, 316 • Web Site Performance Monitoring Tools, 317 • Web Hosting Services, 317

- 9.4** Management Issues and Decisions, 318
The Challenge of Managing Internet Computing and Digital Integration, 318 • *Some Solutions*, 320

MAKE IT YOUR BUSINESS: 320

Summary, 321 • Key Terms, 322 • Review Questions, 322 • Application Software Exercise: Spreadsheet Exercise: Analyzing Web Site Visitors, 323 • Dirt Bikes U.S.A.: Using Internet Tools to Increase Efficiency and Productivity, 323 • Electronic Commerce Project: Using Web Search Engines for Business Research, 324 • Group Project: Comparing Wireless Internet Access Systems, 324 • Case Study: Can Worldspan Fly with Online Travel?, 324

PART II PROJECT: Creating a New Internet Business, 327

PART III Organizational and Management Support Systems for the Digital Firm 329

CHAPTER 10 Enterprise Applications and Business Process Integration 330

- 10.1** Enterprise Systems, 332
How Enterprise Systems Work, 333 • *Benefits and Challenges of Enterprise Systems*, 336
- 10.2** Supply Chain Management Systems, 338
Supply Chain Processes, 338 • *Information and Supply Chain Management*, 339 • *Supply Chain Management Applications*, 341 • *Internet Connection*, 341
- WINDOW ON ORGANIZATIONS: Collaborative Logistics Pays Off for Land O'Lakes, 346

Benefits and Challenges of Supply Chain Management Systems, 347

- 10.3** Customer Relationship Management Systems, 349
Customer Relationship Management and Partner Relationship Management, 350 • *Customer Relationship Management Applications*, 350 • *Operational and Analytical CRM*, 353 • *Benefits and Challenges of Customer Relationship Management Systems*, 356

- 10.4** Enterprise Integration Trends, 358

WINDOW ON MANAGEMENT: Canadian Firms Show How to Succeed with Customer Relationship Management, 359

Extending Enterprise Software, 359 • *Service Platforms and Business Process Management*, 360 • *Enterprise Portals*, 360

MAKE IT YOUR BUSINESS: 362

Summary, 363 • Key Terms, 364 • Review Questions, 364 • Application Software Exercise: Database Exercise: Managing Customer Service Requests, 364 • Dirt Bikes U.S.A.: Identifying Supply Chain Management Solutions, 365 • Electronic Business Project: Planning Transportation Logistics, 365 • Group Project: Analyzing Enterprise Process Integration, 366 • Case Study: Enterprise Integration: The Pepsi Challenge, 366

CHAPTER 11 Managing Knowledge in the Digital Firm 370

- 11.1** The Knowledge Management Landscape, 372
Important Dimensions of Knowledge, 373 • *Organizational Learning and Knowledge Management*, 374 • *The Knowledge Management Value Chain*, 374 • *Types of Knowledge Management Systems*, 377

- 11.2** Enterprise-Wide Knowledge Management Systems, 378
Structured Knowledge Systems, 379 • *Semistructured Knowledge Systems*, 381
- WINDOW ON TECHNOLOGY: DaimlerChrysler Learns to Manage Its Digital Assets, 384

Knowledge Networks, 385 • *Portals, Collaboration Tools, and Learning Management Systems*, 387

- 11.3** Knowledge Work Systems, 388

Knowledge Workers and Knowledge Work, 388 • *Internet Connection*, 388

WINDOW ON MANAGEMENT: Managing Employee Learning: New Tools, New Benefits, 389

Requirements of Knowledge Work Systems, 389 • *Examples of Knowledge Work Systems*, 390

- 11.4** Intelligent Techniques, 392

Capturing Knowledge: Expert Systems, 392 • *Organizational Intelligence: Case-Based Reasoning*, 395 • *Fuzzy Logic Systems*, 396 • *Neural Networks*, 398 • *Genetic Algorithms*, 399 • *Intelligent Agents*, 400

11.5 Management Issues for Knowledge Management Systems, 402
Implementation Challenges, 402 • *Obtaining Value from Knowledge Management Systems*, 403

MAKE IT YOUR BUSINESS: 405

Summary, 405 • Key Terms, 407 • Review Questions, 407 • Application Software Exercise: Expert System Exercise: Building a Simple Expert System for Retirement Planning, 408 • Dirt Bikes U.S.A.: Identifying Opportunities for Knowledge Management, 408 • Electronic Commerce Project: Using Intelligent Agents for Comparison Shopping, 408 • Group Project: Rating Knowledge Network Systems, 409 • Case Study: Can Knowledge Systems Help Procter & Gamble Stay Ahead of the Pack?, 409

CHAPTER 12 Enhancing Management Decision Making for the Digital Firm 412

- 12.1** Decision-Support Systems (DSS), 415

MIS and DSS, 415 • *Types of Decision-Support Systems*, 416

WINDOW ON ORGANIZATIONS: Data Drive Customer Care at Intrawest, 418
Components of DSS, 419 • *DSS Applications and the Digital Firm*, 421

WINDOW ON TECHNOLOGY: A DSS Makes Subaru More Parts-Savvy, 423

Web-Based Customer Decision-Support Systems, 425

- 12.2** Group Decision-Support Systems (GDSS), 427

What Is a GDSS?, 427 • *Overview of a GDSS Meeting*, 428 • *How GDSS Can Enhance Group Decision Making*, 429

- 12.3** Executive Support in the Enterprise, 430

The Role of Executive Support Systems in the Organization, 430 • *Benefits of Executive Support Systems*, 431 • *Executive Support Systems and the Digital Firm*, 431

MAKE IT YOUR BUSINESS: 434

Summary, 435 • Key Terms, 436 • Review Questions, 436 • Application Software Exercise: Spreadsheet Exercise: Performing Breakeven Analysis and Sensitivity Analysis, 437 • Dirt Bikes U.S.A.: Analyzing the Impact of Component Price Changes, 437 • Electronic Commerce Project: Using a Web-Based DSS for Retirement Planning, 438 • Group Project: Designing a University GDSS, 438 • Case Study: Harrah's and Mohegan Sun: A Tale of Two Casino DSS, 438

PART III PROJECT: Designing an Enterprise Information Portal, 442

PART IV Building Information Systems in the Digital Firm 443

CHAPTER 13 Redesigning the Organization with Information Systems 444

13.1 Systems as Planned Organizational Change, 446
Linking Information Systems to the Business Plan, 447 • *Establishing Organizational Information Requirements*, 447 • *Systems Development and Organizational Change*, 450

13.2 Business Process Reengineering and Process Improvement, 452
Business Process Reengineering, 452 • *Steps in Effective Reengineering*, 453 • *Process Improvement: Business Process Management, Total Quality Management (TQM), and Six Sigma*, 455

13.3 Overview of Systems Development, 459
Systems Analysis, 459 • *Systems Design*, 460 • *Completing the Systems Development Process*, 461

13.4 Alternative Systems-Building Approaches, 464
Traditional Systems Lifecycle, 464 • *Prototyping*, 465 • *Application Software Packages*, 466 • *Internet Connection*, 466 • *End-User Development*, 467 • *Outsourcing*, 469

WINDOW ON MANAGEMENT: Outsourcing Moves into High Gear, 469

13.5 Application Development for the Digital Firm, 471
Object-Oriented Development and Component-Based Development, 471 • *Rapid Application Development (RAD)*, 472 • *Web Services and Service-Oriented Computing*, 473

WINDOW ON TECHNOLOGY: Web Services at Work, 476
 MAKE IT YOUR BUSINESS: 477

Summary, 477 • Key Terms, 479 • Review Questions, 479 • Application Software Exercise: Database Exercise: Designing a Customer System for Auto Sales, 479 • Dirt Bikes U.S.A.: Designing an Employee Training and Skills Tracking System, 480 • Electronic Business Project: Redesigning Business Processes for Web Procurement, 481 • Group Project: Preparing Web Site Design Specifications, 481 • Case Study: Celanese Recentralizes with a New Enterprise System, 481

CHAPTER 14 Understanding the Business Value of Systems and Managing Change 484

14.1 Understanding the Business Value of Information Systems, 486
Traditional Capital Budgeting Models, 487 • *Case Example: Capital Budgeting for a New Supply Chain Management System*, 489 • *Strategic Considerations*, 493 • *Information Technology Investments and Productivity*, 496

14.2 The Importance of Change Management in Information System Success and Failure, 497
Information System Problem Areas, 497 • *Internet Connection*, 498 • *Change Management and the Concept of Implementation*, 499 • *Causes of Implementation Success and Failure*, 499 • *Change Management Challenges for Business Process Reengineering (BPR), Enterprise Applications, and Mergers and Acquisitions*, 503 • *The Challenge of Implementing Global Systems*, 504

WINDOW ON ORGANIZATIONS: Global E-Commerce: Good and Bad News, 505

14.3 Managing Implementation, 506
Controlling Risk Factors, 506 • *Designing for the Organization*, 509

WINDOW ON MANAGEMENT: Overcoming User Challenges to Customer Relationship Management, 510

Managing Global Implementations, 511 • *"Fourth-Generation" Project Management*, 512

MAKE IT YOUR BUSINESS: 513

Summary, 513 • Key Terms, 514 • Review Questions, 515 • Application Software Exercise: Spreadsheet Exercise: Capital Budgeting for a New CAD System, 515 • Dirt Bikes U.S.A.: Analyzing the Return on a New System Investment, 515 • Electronic Commerce Project: Buying and Financing a Home, 516 • Group Project: Identifying Implementation Problems, 516 • Case Study: Cigna Stumbles with a New Customer Service System, 516

CHAPTER 15 Information System Security and Control 520

15.1 System Vulnerability and Abuse, 522

Why Systems Are Vulnerable, 522 • *Concerns for System Builders and Users*, 524

WINDOW ON ORGANIZATIONS: Credit Card Fraud: Still on the Rise, 525

WINDOW ON TECHNOLOGY: Smarter Worms and Viruses: The Worst Is Yet to Come, 527

System Quality Problems: Software and Data, 529

15.2 Creating a Control Environment, 531

General Controls and Application Controls, 531 • *Protecting the Digital Firm*, 534 • *Internet Connection*, 538 • *Developing a Control Structure: Costs and Benefits*, 541 • *The Role of Auditing in the Control Process*, 542

15.3 Ensuring System Quality: Software and Data, 543

Software Quality Assurance Methodologies and Tools, 543 • *Data Quality Audits and Data Cleansing*, 552

MAKE IT YOUR BUSINESS: 553

Summary, 553 • Key Terms, 554 • Review Questions, 555 • Application Software Exercise: Spreadsheet Exercise: Performing a Security Risk Assessment, 555 • Dirt Bikes U.S.A.: Developing a Disaster Recovery Plan, 556 • Electronic Business Project: Evaluating Security Outsourcing Services, 556 • Group Project: Analyzing Security Vulnerabilities, 556 • Case Study: Could a Missing Hard Drive Create Canada's Biggest Identity Theft? 557

PART IV PROJECT: Redesigning Business Processes for Healthlite Yogurt Company, 560

International Case Studies 563

Hands-On Guide to MIS 587

References 597

Indexes 617

Photo and Screen Shot Credits 637

CASE STUDY 2:

A Knowledge Platform for the Customer Contact Center of Union Investment

WALTER BRENNER, LUTZ M. KOLBE, AND ADRIAN BUEREN
University of St. Gallen (Switzerland)

"Can you help me?"

"Hello, could you please tell me why the stock price of my bond fund dropped so steeply on November 23rd?" asks Mrs. Jones, customer of Union Investment. "Sure Mrs. Jones, but it will take a few minutes. Can I call you back?" answers the Customer Contact Center (CCC) agent. She first checks out which funds the customer has in her account using a host application. Then she looks up information about the fund in a brochure on her desk. She figures out the solution of the enquiry and calls Mrs. Jones back. This is a typical customer enquiry of which Union Investment has to answer over 4,000 each day.

Founded in 1956, Union Investment is the third-largest German mutual fund company with assets exceeding USD 100 billion as of 2002. Union Investment offers public funds as well as restricted funds. The range of public funds encompasses equity funds, fixed income funds, money market funds, and mixed securities and property funds as well as open property funds. These products are distributed exclusively via partners in Germany in a co-operative of banks called the "Finanzverband". The Finanzverband consists of mostly medium-sized banks like the Sparda Bank or the Volks- und Raiffeisenbanken, which pool some of their resources in backend processes but are otherwise independent of each other.

Besides investment funds, Union Investment also offers services concerning the administration of deposits for more than 3.5 million customers across Europe. Union Investment has its headquarters in Frankfurt, Germany. It also has affiliates and branch offices in Germany, Luxembourg, Switzerland, Spain, Italy and Poland.

Up to the late 1990s, Union Investment only provided customer service to bank representatives and had no dedicated service department. Rather, some employees from the department "Product Information" were available by phone for bank representatives and handled this traffic besides their regular jobs. With the booming stock markets of the late 1990s, how-

ever, Union Investment experienced significant growth in the number of customers and deposits. As a consequence, the old structure couldn't cope with the increased volume of inquiries anymore. Management therefore decided to reorganize the company in 1999 not only to improve communication to banking representatives, but also to allow customers to contact Union Investment directly.

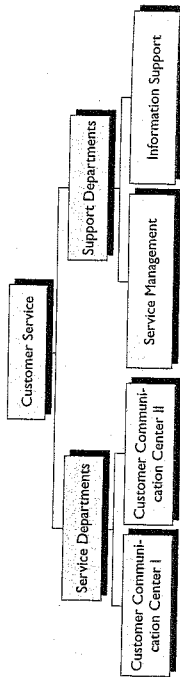
CUSTOMER SERVICE AT UNION INVESTMENT

THE CUSTOMER COMMUNICATION CENTER (CCC) – INTERFACE TO THE CUSTOMER

Union Investment aims at sustaining its competitive position by providing high-value customer service as well as attractive financial products of all sorts. Customers typically have a long-term financial portfolio strategy and quite different levels of financial markets expertise. Therefore, they not only expect a broad spectrum of products and services that fit their investment strategies, but also superior service. This service demand exists regardless of whether the customers turn to their local bank representatives or contact Union Investment directly as their mutual funds specialist.

To achieve a high level of service without sacrificing economies of scale, the organization is separated into two major units since the reorganization in 1999. One is concerned with the efficient execution of transactions ordered via the bank representatives while the other, the Customer Service unit, is concerned with providing superior service in the interaction with customers. Retail-customers can call Union Investment directly to resolve problems with their existing portfolio as well as to demand information on specialized products of Union Investment. The Customer Service unit consists of the Customer Communication Center (CCC), which processes all customer communication, and the supporting departments "Service Management" and "Information Support" (cf. Figure 1). In the beginning, the unit was made up mainly of employees of the former "Product Information" department.

FIGURE 1 Organizational structure of customer service at union investment



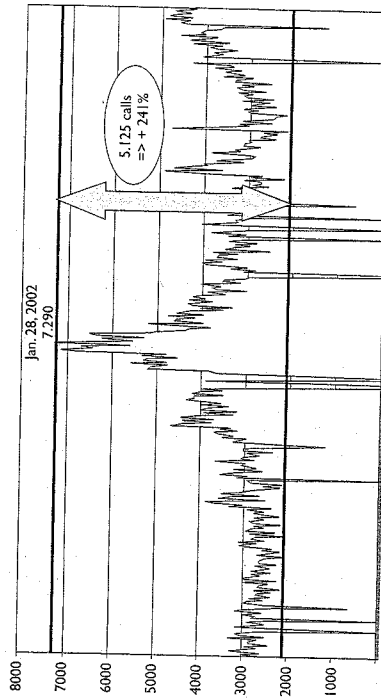
It is the Customer Service unit that is responsible for applying concepts of *Customer Relationship Management (CRM)* in order to increase customer focus and strengthen the competitive position of the company. As a consequence, it is of significant strategic importance. This especially applies to the CCC, which serves as the only interface to the customers of Union Investment. The communication consists primarily of over one million inbound telephone calls a year. Furthermore, the CCC has to manage increasing numbers of enquiries via other channels such as fax, email, or letter. The services of the CCC consist of the provision of solutions for customers having problems or requiring information on their status and past transactions.

The CCC I consists of 80 employees who cover the first level of customer support. The 40 employees of the CCC II cover the second level of support with more complex topics and process enquiries in the form of emails, letters, and faxes (about 6,000 a month). Most of the 90,000 monthly calls are received on the first level and can be escalated to the CCC II if necessary. Banking representatives may contact the second level directly with questions concerning specific topics. Service Management deals with reporting issues, complaint management and process design as well as application sup-

port to the CCC. Information Support provides knowledge to the CCC and resolves questions that agents can not resolve by themselves.

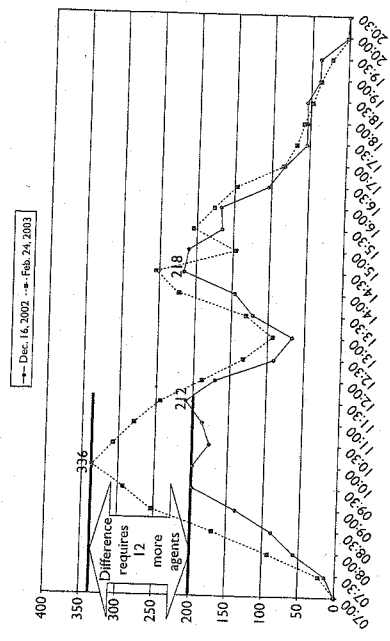
The CCC attempts to increase customer satisfaction by resolving as many enquiries as possible within the first contact (first call resolution rate), making it unnecessary for the customer to call again. If enquiries are resolved immediately, efficient means of escalation are used to reduce overall cycle time. This means that the required expertise needs to be located very quickly if the agent cannot answer the request herself. Keeping the service level constant is quite challenging as the call volume varies significantly during the day but also between different times of the year (cf. Figure 2, Figure 3). The high level of skills of the agents is helpful as each one can rapidly process questions concerning a wide array of topics, making a first call resolution more probable. However, this high skill level needs to be constantly renewed by training measures. Ideally, these training measures are offered electronically to enable agents to study them in off-peak hours. This way, agents who are not busy can still use their time productively and generate benefits to Union Investment by better serving customers later due to their improved skill level.

FIGURE 2 CCC Call daily call volume in 2002



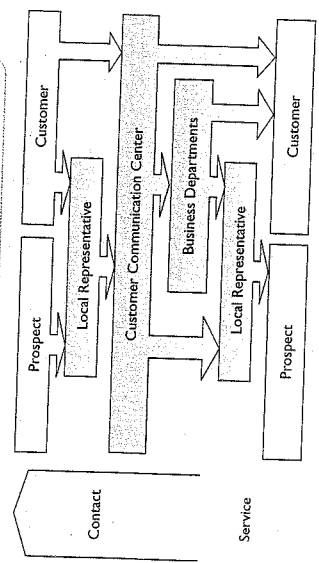
If further information about the company can be obtained at <http://www.union-investment.de>

FIGURE 3 CCC spread of call volume/half hour during the day



1. If the request can be handled by the agent solely based on her expertise, she can directly respond to the customer, thereby not requiring any further information sources.
2. If the agent is unable to resolve the issue without further information resources, she can try to find the answer in "real-time" in the web-based knowledge platform "HelpMe", in her email-file, or by escalating the call to a known expert within the CCC who is likely to know the answer. As in the previous case, the customer's issue is resolved instantly.
3. If the needed information cannot be retrieved in "real-time", the agent can engage in further research in "HelpMe". It not only offers short answers, but also information in the form of cases or background stories which serve as training measures to further deepen one's expertise. If the needed information cannot be found there, the agents have the possibility of calling the Information Support team, which will deliver the needed information. If necessary, the Information Support team contacts members of other parts of the organization, thereby serving as an interface between the CCC and the rest of the company. Once the answer is determined, it is forwarded directly to the requesting agent and included in "HelpMe" so that it can be accessed by the other agents. Finally, the agent forwards the answer to the customer or bank representative by phone or (e)mail.

FIGURE 4 Communication between Union Investment and its customers



Prior to the project described here, new information was usually sent first by email to deliver it as quickly as possible and create awareness for the news. In a second step, Information Support also published the information to "HelpMe" where it was available on demand. Therefore, CCC agents had two platforms from which to choose. This resulted in email becoming the preferred channel due to better functionality. For one, a full-text search could be applied to the email-file, which was not available in "HelpMe". And just as important was the ability to completely customize the information structure within the email file for faster retrieval. This made it more difficult for a central information repository to gain acceptance. When using email, however, each agent had a different level of information accessible depending on the time spent on the job. New agents started with no information and only developed their own collection slowly.

SUPPORTING THE CUSTOMER COMMUNICATION CENTER WITH KNOWLEDGE

The CCC agents all have a banking background and can be considered highly qualified. Nevertheless, they still need an effective information system to supply them with the required relevant, credible, and timely information. Before the 1999 reorganization, only a small number of employees were involved in answering phone enquiries. They all knew each other and were also aware of where to find information that was stored in disparate locations. But with the experienced explosive growth, management of Customer Service realized that this need required an extra department and created Information Support in 2001. Most of the members of Information Support were initially recruited from the CCC. Its scope of responsibility is essentially *knowledge management* and training within the Customer Service unit:

1. To provide information of all kinds to the CCC.
2. To resolve enquiries, which require information from other departments within Union Investment.
3. To evaluate and process knowledge from the customers in order to enable the organization to improve its processes.

Information Support consists of seven employees who are responsible for creating, editing, and publishing all content (or information) available to the CCC. Usually, this content is forwarded from other departments to Information Support, where it needs to be reformatted. Upon urgent requests from the CCC, Information Support researches information specifically for that case. Such information is directly passed on to the requesting agent and later published in "HelpMe". As the CCC forms the communication interface between Union Investment and its customers, Information Support forms the communication interface between the CCC and other parts of the organization.

To provide the needed information to the agents of the CCC, the users of the knowledge platform "HelpMe", there

needs to be supporting processes in place in the form of editorial and administrative processes. The *administrative process* is concerned with maintaining the technical infrastructure. Prior to the project, it encompassed such tasks as the manual administration of the navigational structure of the platform and the manual check of consistency concerning hyperlinks between different pieces of content.

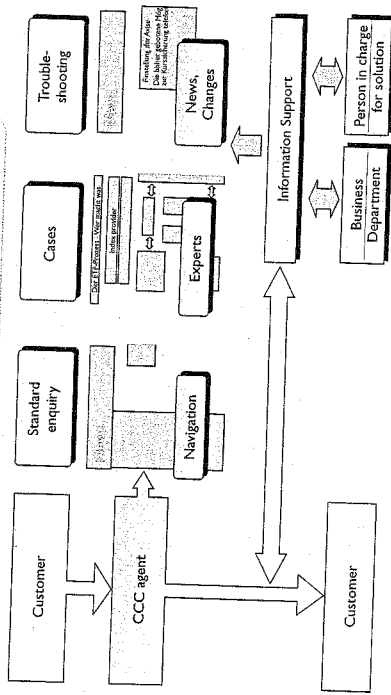
The *editorial process* for Content Management for the CCC consisted of creating, formatting, publishing, modifying and deleting relevant content. These elements were designed as follows:

- **Content Creation and Formatting** Although most of the required content already existed in written and electronic form in the organization, it was edited to meet the needs of the CCC agents. This was done in Microsoft Office applications, which are the familiar working environments of the editors in the Information Support team. In a second step, all content was converted into the HTML-format (Hypertext Markup Language). For this, the editors used a special HTML-tool. Since they were not Web technology experts, they had to acquire deep insights into HTML first. The manual formatting and converting was a laborious process, especially for spreadsheets and tables. For emails, the documents were sent as Office files without any conversion.
- **Content Publication** The publication process did not require any further approval. The editor could save the content to the appropriate folder of the file-server in "HelpMe". In a second step, the new content was inserted into the navigational structure.
- **Content Modification** Modifications were carried out either in the HTML-tool or in the Office application, depending on the degree of revision necessary. New versions of content could not just be inserted into the old ones because there was no separation of content and layout. When a new version of a spreadsheet needed to be published, it was converted as if it were a new document.
- **Content Deletion** Outdated content was removed from the platform by deleting the file and manually adapting the navigational structure.

INFORMATION SYSTEMS SUPPORTING CONTENT MANAGEMENT FOR THE CCC

With the creation of the Information Support department, management realized that adequate information systems would be crucial to support the knowledge flow to the CCC. Concerning the realization of Content Management Systems, a company-wide project was to provide a solution for different areas such as the intranet, the extranet and also the CCC knowledge platform. With this project in its early phase, all other developments on a departmental level were suspended. Yet, due to several organizational issues

FIGURE 5
Support of the service process at Union Investment



and rising pressure to reduce costs, the company-wide project was never completed. Since the problem of explosive growth in call volumes and CCC agents still persisted, Information Support decided to set up its own knowledge platform with very limited funds which became "HelpMe". As a consequence, this project did not have an official project status and because the IT department was not involved, they would not provide support in any way for this new solution.

"HelpMe" is a Web-based Content Management System (CMS) to deliver information to the agents in the CCC. This system provides opportunities for discovering information (navigation) as well as experts in certain topics (so-called yellow pages). Furthermore, it creates awareness for new items and changes in existing content by highlighting these at prominent positions on the platform (Figure 5). As a consequence, "HelpMe" is an important part of the service process at Union Investment.

Technically, "HelpMe" originally consisted of HTML-files stored on a local fileserver. From there, they could be retrieved with a standard Web-browser. In order to create and manage the navigational structure that linked those pages, a tool based on Microsoft Access was developed in-house. The HTML file corresponding to the navigational structure was recreated with this tool each time a document was inserted, moved, or deleted. Furthermore, hyperlinks between the different documents had to be checked manually with each deletion or revision of existing content. In contrast to the email files, there was no search function available in "HelpMe". This hampered retrieval, especially because the navigational structure had grown historically and was difficult to understand. Security and user management did not have to be specifically administered for "HelpMe" as the system was based solely on a file-server to which everyone in the CCC had access. As a consequence though, it was not possible to restrict access to certain areas or to personalize content, for example by CCC-level.

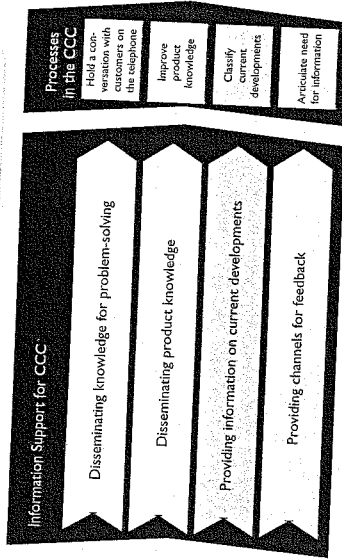
The platform had been programmed by a single employee of the Customer Service unit who had left the organization when the redesign took place, without leaving any documentation. Besides being published in "HelpMe", new information was always sent via email as well. These emails often included attachments of up to ten megabytes in size were sent to all CCC agents. This caused storage problems on one hand, as email files of all agents constantly grew and also caused significant traffic which put a strain on network bandwidth.

IMPROVING KNOWLEDGE FLOW—THE REDESIGNING OF "HELPMÉ"

WHY "HELPMÉ" NEEDED TO BE REDESIGNED

While solving the challenge of providing the CCC with knowledge for the customer to some extent, the original version of "HelpMe" required some improvements which would significantly increase usability and efficiency of the content management processes. So the Head of Information Support decided to launch a project to address these challenges of improving usability and retrieval in "HelpMe" as well as to streamline the costly content management processes. The project kick-off was in the summer of 2001. To improve the prior solution, the project team wanted to introduce a new technical infrastructure based on a standard software product which was implemented together with a conceptual redesign of "HelpMe". Since there were no experts in the field of knowledge management in the organization, some external consultants took part in the project to a lesser extent. For the most part, however, the members of Information Support gained expertise about knowledge management by themselves in the course of this project.

FIGURE 6
User processes are the basis for "HelpMe"



The redesign addressed the issue of complex structure by providing a new navigational structure based on the terminology of the CCC agents and implementing a search function. By concentrating the knowledge flow on the channel "HelpMe", redundancies to email were eliminated. For the editors and administrators, the redesign aimed at reducing the costs and time need for the costly content management processes. The new system was to simplify conversion, publication and revision of existing content and provide tools to better manage the navigational structure in "HelpMe".

At the same time, budgetary and organizational constraints needed to be complied with which meant that the software being selected should be one that was already used in-house, thereby reducing costs and integration efforts. By concentrating on the knowledge platform, the network infrastructure of Union Investment would also be relieved of a significant amount of traffic caused by emails with particularly very large file attachments.

To evaluate whether the goals had been achieved, the team proposed a system of performance indicators based on the user, editor, and administrator processes. This allowed an analysis of the changes achieved at the level of the CCC agents as well as the editors in Information Support. The most important criteria were high system performance to make content available quickly as well as high quality of content.

HOW "HELPMÉ" WAS REDESIGNED

To properly align the new CMS to the processes it was to support, the project team started with a process analysis. After the project was delayed for several months, the project team met for a two-day workshop in late January 2002 to analyze the processes of the users, editors and administrators using "HelpMe". During this workshop, the team also spent some time in the CCC, observing agents do their work and checking on how they use the different information

sources. Figure 6 shows how the different user processes can be supported by "HelpMe".

The process analysis was the foundation for deriving the requirements of the new technical solution in a requirements analysis. Each requirement was weighted to be "optional", "important" or "critical", depending on significance. Using metrics for each requirement, the team determined if the evaluated software solutions fulfilled these adequately, extensively or not at all. By aggregating the 29 requirements in a benefit analysis, the different products could be compared. For the comparison, points were assigned to the weights (1 point for optional, 5 points for important, 10 points for critical) and to the fulfillment of criteria (1 for "adequately fulfilled", 2 for "extensively fulfilled", 0 for "not fulfilled"). Figure 7 shows a snapshot of the benefit analysis for the part of the user processes. To avoid selecting a product which required extensive and costly customizing in order to fulfill the requirements, the project team created a benefit analysis for an "out-of-the-box and a "customizing" scenario.

Besides the requirements analysis, members of the project team were also able to use a live system based on the evaluated products. This proved whether the products could live up to their promises and enabled the simulation of a typical working scenario. Within the simulation some additional factors came up which the team simply hadn't considered when doing the requirements analysis.

Because of the limited budget, only those products would be evaluated that were already in use in other parts of Union Investment. The first system was Arago DocMe, a CMS which mainly focuses on supporting the editor in publishing information and administering the editorial structure, while not integrating its own web server and therefore not providing any functions to manage users or restrict access to the content via a web browser. DocMe was already used to manage the extranet and the Internet Website of Union Investment. The second system was

FIGURE 7 Snapshot of the benefit analysis "Out-of-the-box"

No.	Requirement	Importance	Arago DocMe	Pironet Probase	Lotus Quickplace
1	Requirements based on processes of users				
2	High system performance	critical	10	10	20
3	Structured navigation	critical	10	20	10
4	Sitemap (Overview of structure of HelpMe)	important	5	5	0
5	High-capacity search	critical	0	10	0
6	What's new functionality	critical	0	0	0
7	Consolidated display of relevant content with possibility to delve into details	critical	10	10	10
...

Pironet Probase. It too was already in use in the organization at a newly acquired subsidiary. It is a typical web content management system, meaning that it integrates the back-end for the editors and the Web server that controls access for the users via a Web browser. The third product was Lotus Quickplace of IBM. It was recommended by the external consultants as it focuses on managing rather than small amounts of content for users engaged in a common project and is easy to implement. This product, however, was not in use at Union Investment yet and would have caused significant costs since the IT outsourcing of Union Investment did not have the expertise required for running this application yet.

Since the benefit analysis yielded very close results, some *Knock Out-criteria* were developed to better differentiate the products. A product that would not fulfill all these criteria would be ruled out immediately. Examples for these criteria were a reliable search function, no limit of the size of documents or the securing of integrity in hyperlinks within the CMS.

With the *requirements analysis* and the *K.O.-criteria* to back up the decision, as well as the financial restrictions and the integration aspect, the Union Investment team members chose Arago DocMe.

To ensure that the requirements were implemented adequately, the project team developed a *system design draft* based on the selected software, that described in detail how the requirements were to be implemented. This document also served as a basis for the communication with the software supplier, Arago.

Besides selecting and customizing the software, the structure of the content needed to be determined to fit the preferences of the users when navigating. The project team developed a consistent three-level *navigation structure* that defines the most relevant business terms in a way they are understood within the organization.

With the use of templates, the 3,900 documents already present in "HelpMe" were migrated to the new structure. In parallel, the project team created the documentation of the customized settings in "HelpMe" and provided training sessions for users and editors to ensure a smooth transition.

The project lasted for about one year. One important reason for this relatively long project duration was the fact that the team was not fully dedicated to the project.

HOW THE NEW "HELPMÉ" CHANGED BUSINESS AND SUPPORT PROCESSES

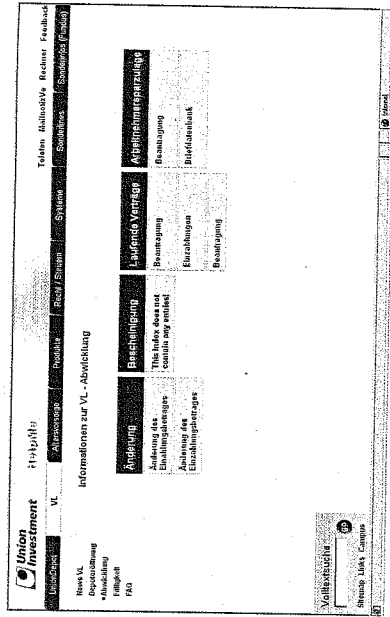
The goal of the new "HelpMe" was to ease the work of CCC agents and thereby enable increased performance. This was achieved by reducing cycle times necessary for the editors to publish information and facilitating access and retrieval.

The *user process* of the CCC agent is now better supported through improvements in search and navigation. The revised *navigation structure* facilitates the use of "HelpMe". It consists of three levels, of which the first level can always be accessed on the top bar and the others on the left side, depending on the context (cf. Figure 8). It helps the user find information where she assumes it can be found. If she cannot find the needed information in the navigational structure, the new search function offers an alternative to retrieve it quickly, for example, during a phone call. Since the new system also supports metadata for documents such as topic, author or publication date, agents can search specifically for these keywords in addition to just searching full text. This is quite crucial as agents only have a few seconds on the phone to find relevant answers. So in order to avoid impatient customers, the system needs to have a high performance but also provide a navigational structure that is intuitive to the users.

The knowledge flow now concentrates on "HelpMe", making it an important part of the working environment of each CCC agent. Email is no longer used to publish information. This way, it can be ensured that every agent has access to all information, regardless of the time spent on the job. Furthermore, only the most up-to-date version is available. The "What's new" function reminds the agents of revised content that they would otherwise not notice because they have memorized the old version already.

Within the *editor and administrator processes*, some of the time-consuming manual steps are now carried out or at

FIGURE 8 User interface of "HelpMe"



least facilitated by the system. *Templates* accelerate the conversion of content into a format that matches the need of the CCC agents and can be displayed in a Web browser. To support the editors, several templates for different types of documents (i.e., news, charts, reports, etc.) are available. These templates can be used in Microsoft Office applications and define the layout that helps to automatically convert the content into HTML. They improve the performance of the converter which can be customized specifically for these templates. They also make the use of style sheets possible for a centrally-managed layout. Thus, the editors do not need to redefine the layout and formats each time a document is created. The templates help the editors realize how the final result of their work will look in "HelpMe". Editors are now able to *publish and disseminate* content directly from the office application, similar to the way a file is stored on a local disk drive. The conversion is accomplished fully automatically by the CMS which also publishes the converted HTML files. This offers a great improvement in efficiency compared to the former system. The office applications are used to revise existing content as well, making the introduction of other applications unnecessary.

The *administrator* now uses a separate client. With this client, she can administer the navigational structure of the site to automatically include newly-added content. The administrator can also manage additional components like indices, which automatically create tables of contents for documents fulfilling certain criteria. Finally, the client can be used to manage user groups among the editors, although not among the users in the CCC.

DIVIDE AND CONQUER

With worsening economic conditions, Union Investment was reluctant to initiate large, enterprise-wide projects in

the area of knowledge management. In this regard, the new "HelpMe" can be considered as a pilot project to indicate potential benefits of such concepts. Although it was intended to effectively solve a problem within a specific business process, service management, the achievement was widely recognized upon completion. At the time of writing, other internal departments at Frankfurt, Germany, as well as subsidiaries of Union Investment in Switzerland and Luxembourg were eager to see how the solution works and to find out how they can use it for their own processes.

"We realize how important the provision of the right information to CCC agents is to keep customers satisfied and ultimately make Union Investment successful. Redesigning "HelpMe" was an important step to provide this information to our agents. Combined with our CRM-System, all the information needed is now available at the touch of a button, improving service and the performance of our CCC agents alike," notes Giovanni G., Head of Customer Service.

"HelpMe" is also a first step to introduce other knowledge management tools in the future that not only focus on the retrieval of knowledge contained in documents. As a significant amount of knowledge cannot be complicated and remains in the heads of employees, a possible next step could be to establish a skill management system to further improve the access to experts on certain topics. This would also make the management of competencies of CCC agents possible and indicate gaps on the department level. Finally, a challenging issue is the topic of delivering knowledge directly to the customers on the Internet and to also integrate mechanisms to support the knowledge flow back from the customers to Union Investment to enable continuous improvement in the future.

"Of course, we can help you."

"Hello, could you please tell me why the stock price of my bond fund dropped so steeply on November 23rd?" asks Mrs. Jones, customer of Union Investment. "Sure Mrs. Jones, just a second," replies the CCC agent. She first checks out which funds the customer has in her account using a host application. Then she looks up information about the fund in "HelpMe". "Mrs. Jones, the stock price dropped because on the date you mentioned, there was the yearly disbursement." "Oh, I completely forgot, thanks for the information."

CASE STUDY QUESTIONS

1. Evaluate the content management process before and after the project. What steps could be taken to improve knowledge flows besides the information supplied by the content management process?
2. Assess the change in information provided for the agent and the customer. What factors benefit Union Investment and how could they eventually affect its bottom line?

CASE STUDY 3:

Growing an Application from Collaboration to Management Support—The Example of Cuparla

GERHARD SCHWABE

University of Zurich (Switzerland)

ANALYSIS AND DESIGN

Just like in other towns, members of the Stuttgart City Council have a large workload: In addition to their primary profession (e.g., as an engineer at Daimler Benz) they devote more than 40 hours a week to local politics. This extra work has to be done under fairly unfavorable conditions. Only council sessions and party meetings take place in the city hall; the deputies of the local council do not have an office in the city hall to prepare or coordinate their work. This means, for example, that they have to read and file all official documents at home. In a city with more than 500,000 inhabitants they receive a very large number of documents. Furthermore, council members feel that they could be better informed by the administration and better use could be made of their time. Therefore Hohenheim University and partners* launched the Cuparla project to improve the information access and collaboration of council members.

A detailed analysis of their work revealed the following characteristics of council work:

- Since council members are very mobile, support has to be available to them any time and in any place.
- Council members collaborate and behave differently in different contexts: While they act informally and rather openly in the context of their own party, they behave more controlled and formal in official council sessions.
- A closer investigation of council work reveals a low degree of process structure. Every council member has the right of initiative and can inform and involve other members and members of the administration in any order.
- Council members rarely are power computer users. Computer support for them has to be very straightforward and intuitive to use.

When designing computer support we initially had to decide on the basic orientation of our software. We soon abandoned a workflow model as there are merely a few steps and there

is little order in the collaboration of local politicians. Imposing a new structure into this situation would have been too restrictive for the council members. We then turned to pure document-orientation, imposing no structure at all on the council members' work. We created a single large database with all the documents any member of the city council ever needs. However, working with this database turned out to be too complex for the council members. In addition, they need to control the access to certain documents at all stages of the decision-making process. For example, a party may not want to reveal a proposal to other parties before it has officially been brought up in the city council. Controlling access to each document individually and changing the access control list was not feasible.

Therefore, the working context was chosen as a basis of our design. Each working context of a council member can be symbolized by a "room." A private office corresponds to the council member working at home; there is a party room, where he collaborates with his party colleagues, and a committee room symbolizes the place for committee meetings. In addition, there is a room for working groups, a private post office, and a library for filed information. All rooms hence have an electronic equivalent in the Cuparla software. When a council member opens the Cuparla software, he sees all the rooms from the entrance hall (Figure 1).

The council member creates a document in one room (e.g., his private office) and then shares it with other council members in other rooms. If he moves a document into the room of his party, he shares it with his party colleagues; if he hands it on to the administration, he shares it with the mayors, administration officials, and all council members.

The interface of the electronic rooms resembles the setup of the original rooms. Figure 2 shows the example of the room for a parliamentary party. On the left hand side of the screen there are document locations, whereas, on the right hand side, the documents of the selected location are presented. Documents that are currently being worked on are displayed on the "desk." These documents have the connotation that they need to be worked on without an additional outside trigger. If a document is in the files, it belongs to a topic that is still on the political agenda. However, a trigger is necessary to move it off of the shelf.

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