

INTRODUCTION	XII
STUDY GOALS AND OBJECTIVES.....	XII
BACKGROUND	XII
INTENDED AUDIENCE.....	XIII
SCOPE AND FORMAT	XIII
METHODOLOGY AND INFORMATION SOURCES.....	XIV
AGGREGATED MARKETS.....	XIV
NEWLY EMERGING TECHNOLOGY	XV
AUTHOR'S CREDENTIALS	XVI
RELATED BCC, INC. RESEARCH	XVI
BCC ON-LINE SERVICES.....	XVII
INTERNET	XVII
EXECUTIVE SUMMARY	XVIII
<i>SUMMARY TABLE WORLDWIDE WEB SERVICES SALES BY SEGMENT,</i>	
<i>THROUGH 2007 (\$ BILLIONS).....</i>	<i>XVIII</i>
<i>SUMMARY FIGURE WORLDWIDE WEB SERVICES SALES BY SEGMENT,</i>	
<i>THROUGH 2007 (\$ BILLIONS).....</i>	<i>XIX</i>
WEB SERVICES OVERVIEW	1
WHAT ARE WEB SERVICES?	1
DEFINITION OF WEB SERVICES.....	2
INTERNET ACCESSIBILITY.....	2
PLATFORM- AND LANGUAGE-INDEPENDENCE.....	3
STANDARDIZED MESSAGING SYSTEM.....	3
MODULARITY	3
SELF-DESCRIPTIVENESS	4
DISCOVERABILITY	4
WEB SERVICES HISTORY	4
WEB SERVICES PREDECESSORS	4
Distributed Computing	5
Middleware	5
The Internet.....	6
RECENT GROWTH OF INTEREST IN WEB SERVICES	7
ARCHITECTURES AND TECHNOLOGIES	7
WEB SERVICES ROLES AND INTERACTIONS.....	8
<i>FIGURE 1 WEB SERVICES ARCHITECTURE</i>	<i>8</i>
Service Provider.....	8
Service Registry	8
Service Requester	9
TECHNOLOGIES	9
<i>FIGURE 2 SAMPLE WEB SERVICES PROTOCOL STACK</i>	<i>9</i>
Service Discovery Layer	9
Services Description Layer.....	10
XML Messaging Layer	10

Network Layer	11
Future Developments	11
WEB SERVICES APPLICATIONS	11
OPENING UP SOFTWARE APPLICATIONS.....	12
FACILITATING APPLICATION INTEGRATION.....	13
Reducing Time and Cost of Integration.....	13
Leveraging Legacy Applications	14
Enabling Dynamic E-Business.....	15
Integrating Mobile Services	16
Service Industry Automation.....	17
EMPOWERING SMALL AND MEDIUM ENTERPRISES.....	17
CONSUMER WEB SERVICES	18
INDUSTRY STRUCTURE	18
FIGURE 3 WEB SERVICES VALUE CHAIN.....	19
WEB SERVICE APPLICATION PROVIDERS.....	20
TABLE 1 WEB SERVICES APPLICATION PROVIDERS.....	21
Web Service Application Providers (Continued)	22
INFRASTRUCTURE PROVIDERS.....	23
TABLE 2 WEB SERVICES INFRASTRUCTURE PROVIDERS.....	23
TABLE 2 (CONTINUED)	24
INTEGRATORS/CONSULTANTS	25
TABLE 3 WEB SERVICES INTEGRATORS	25
WEB SERVICE END-USERS	26
FIGURE 4 WEB SERVICES END-USER SEGMENTS.....	26
Web Service End-Users (Continued)	27
MARKET SIZE AND SEGMENTATION	28
BACKGROUND	28
FIGURE 5 WEB SERVICES MARKET.....	29
MARKET SIZE.....	30
FIGURE 6 WORLDWIDE WEB SERVICES MARKET, 2000-2007 (\$ BILLIONS)	30
COMPARISON WITH OTHER MARKET PROJECTIONS.....	31
TABLE 4 WEB SERVICES WORLD MARKET PROJECTIONS COMPARED, THROUGH 2007 (\$ BILLIONS).....	32
SEGMENTATION	33
PRODUCT/SERVICE SEGMENT	33
TABLE 5 WORLDWIDE WEB SERVICES PRODUCT/SERVICE SEGMENTATION, THROUGH 2007.....	33
FIGURE 7 WORLDWIDE WEB SERVICES PRODUCT/SERVICE SEGMENTATION, 2002 AND 2007 (PERCENTAGE OF TOTAL SALES).....	34
END-USER SEGMENT	34
TABLE 6 PRINCIPAL WORLD WEB SERVICES END-USER SEGMENTS, THROUGH 2007 (\$ BILLIONS).....	35
FIGURE 8 PRINCIPAL WORLD WEB SERVICES END-USER SEGMENTS, 2002 AND 2007 (PERCENTAGE OF TOTAL WEB SERVICES MARKET).....	35
SIZE/TYPE OF END-USER	36
TABLE 7 WEB SERVICES WORLD MARKET BY SIZE/TYPE OF USER, 2002 AND 2007 (\$ BILLIONS).....	36

FIGURE 9 WEB SERVICES WORLD MARKET BY SIZE/TYPE OF USER, 2002 AND 2007 (PERCENT OF TOTAL MARKET).....	37
GEOGRAPHICAL SEGMENTS	37
TABLE 8 WEB SERVICES GEOGRAPHICAL MARKET SEGMENTS, 2002 AND 2007 (\$ BILLIONS).....	38
FIGURE 10 WEB SERVICES GEOGRAPHICAL MARKET SEGMENTS, 2002 AND 2007 (PERCENTAGES OF TOTAL WEB SERVICES SALES)	38
MARKET INFLUENCES	39
TABLE 9 NEAR-TERM WEB SERVICES MARKET INFLUENCES	39
TABLE 9 (CONTINUED)	40
TABLE 10 LONG-TERM WEB SERVICES MARKET INFLUENCES.....	41
SHORT-TERM INFLUENCES.....	42
Short-Term Market Drivers	42
Recovering Corporate IT Spending	42
FIGURE 11 GROWTH TRENDS IN GLOBAL IT SPENDING AND GLOBAL ECONOMIC OUTPUT, 1999-2007 (ANNUAL GROWTH RATES)	43
Recovering Corporate IT Spending (Continued).....	44
FIGURE 12 GLOBAL IT SPENDING TRENDS BY FUNCTIONAL SEGMENT, 2002-2007 (AVERAGE ANNUAL GROWTH RATES)	45
Growing Burden of Legacy Applications.....	46
Escalating Systems Integration Costs	46
TABLE 11 TRENDS IN GLOBAL IT SERVICES EXPENDITURES, THROUGH 2007 (\$ BILLIONS)	47
FIGURE 13 TRENDS IN GLOBAL IT SERVICES EXPENDITURES, 2002-2007 (\$ BILLIONS)	47
FIGURE 14 INTEGRATION COSTS AS A PERCENT OF TOTAL IT SPENDING, 2002 AND 2007	48
Users' Lack of Experience with Web Services Technologies.....	48
Short-Term Market Inhibitors	48
Users' Lack of Experience with Web Services Technologies.....	48
Conflicting Claims and Hyperbole about Web Services	49
Slow Progress in Codifying Web Services Standards.....	49
Security Issues	50
Shortage of Viable Web Services Business Models	50
Lack of Consumer Interest	51
Limited Awareness of Web Services Outside U.S.	52
LONG-TERM INFLUENCES.....	52
Market Drivers	52
Development of Ubiquitous Internet Infrastructure.....	52
FIGURE 15 GLOBAL INTERNET CONNECTIVITY BY REGION, 2002.....	53
TABLE 12 PROJECTED GROWTH OF INTERNET USE WORLDWIDE, THROUGH 2007 (NUMBER OF PERSONS ACCESSING THE WEB)	54
FIGURE 16 PROJECTED GROWTH OF INTERNET USE WORLDWIDE, 2002 AND 2007 (NUMBER OF PERSONS ACCESSING THE WEB)	54
TABLE 13 GROWTH IN GLOBAL WIRELESS USERS, THROUGH 2007 (MILLIONS).....	55

FIGURE 17 GROWTH IN GLOBAL WIRELESS USERS, 2002 AND 2007 (MILLIONS)	55
Mergers and Acquisitions	56
FIGURE 18 GLOBAL M&A TRANSACTIONS COMPLETED, 2000-2007 (\$ BILLIONS).....	56
FIGURE 18 (CONTINUED).....	57
E-Business Trends	57
FIGURE 19 WORLDWIDE B2B E-BUSINESS TRENDS, 2000-2007 (\$ BILLIONS).....	58
FIGURE 20 PROJECTED TRENDS IN E-BUSINESS-RELATED IT SPENDING, 2001, 2002 AND 2007 (\$ BILLIONS).....	59
FIGURE 21 TRENDS IN REGIONAL DISTRIBUTION OF E-BUSINESS, 2002 AND 2007.....	60
Business Process Integration	60
FIGURE 22 GLOBAL BUSINESS PROCESS INTEGRATION EXPENDITURE, 2002 AND 2007 (\$ BILLIONS).....	61
Market Inhibitors	62
Integrators' Need to Adjust Their Business Model	62
DETAILED SEGMENT PROJECTIONS	63
PROJECTED INCREMENTAL SALES BY PRODUCT/SERVICE SEGMENT	63
TABLE 14 PROJECTED WORLDWIDE WEB SERVICES MARKET BY PRODUCT/SERVICE SEGMENT, THROUGH 2007	64
TABLE 15 MARKET PROJECTION METHODOLOGIES AND ASSUMPTIONS	65
WEB SERVICES INFRASTRUCTURE	65
TABLE 16 PROJECTED WORLDWIDE MARKET FOR WEB SERVICES INFRASTRUCTURE SOFTWARE, THROUGH 2007 (\$ MILLIONS)	66
Middleware Market Trends	66
FIGURE 23 PROJECTED WORLDWIDE BASELINE SALES OF MIDDLEWARE, 2002- 2007 (\$ BILLIONS).....	67
FIGURE 24 POTENTIAL IMPACT OF WEB SERVICES ON WORLDWIDE BASELINE DEMAND FOR MIDDLEWARE, 2002 AND 2007 (\$ BILLIONS).....	68
Web Services Platforms and Development Tools	69
FIGURE 25 PROJECTED GLOBAL MARKET FOR WEB SERVICES APPLICATIONS AND DEVELOPMENT PLATFORMS/TOOLS, 2002 AND 2007 (\$ BILLIONS).....	69
WEB SERVICES APPLICATIONS	70
TABLE 17 PROJECTED GLOBAL MARKET FOR WEB SERVICES APPLICATIONS, THROUGH 2007 (\$ BILLIONS)	70
Business Applications	71
Web Services-Enabled Versions of Existing Business Software	71
TABLE 18 BASELINE BUSINESS SOFTWARE GLOBAL SALES BY TYPE OF APPLICATION, THROUGH 2007 (\$ BILLIONS).....	72
FIGURE 26 BASELINE BUSINESS SOFTWARE GLOBAL SALES BY TYPE OF APPLICATION, 2002 AND 2007 (\$ BILLIONS).....	72
Web Services-Enabled Versions of Existing Business Software (Continued).....	73
FIGURE 27 PROJECTED INCREMENTAL IMPACT OF WEB SERVICES ON GLOBAL BASELINE BUSINESS APPLICATION SALES, 2002 AND 2007 (\$ BILLIONS).....	74
Unique or Purpose-Built Web Services Applications for Business	74

Unique or Purpose-Built Web Services Applications for Business (Continued)	75
<i>FIGURE 28 PROJECTED TRENDS IN GLOBAL ENTERPRISE P2P NETWORKING APPLICATIONS, 2002 AND 2007 (\$ MILLIONS)</i>	76
<i>FIGURE 29 PROJECTED MARKET FOR UNIQUE WEB SERVICES APPLICATIONS, 2002-2007 (\$ BILLIONS)</i>	77
Consumer Applications	77
<i>TABLE 19 PROJECTED INCREMENTAL DEMAND FOR CONSUMER WEB SERVICES, 2002 AND 2007</i>	78
Web Services-Enabled Versions of Existing Software	78
Unique Web Services	79
PROFESSIONAL SERVICES	79
<i>TABLE 20 PROJECTED MARKET FOR WEB SERVICES-RELATED INTEGRATION AND CONSULTING SERVICES, THROUGH 2007 (\$ BILLIONS)</i>	80
MARKET SHARES BY END-USER SEGMENT	81
<i>TABLE 21 WEB SERVICES MARKET BY END-USER SEGMENT, 2002 AND 2007</i>	82
MARKET SHARES BY SIZE/TYPE OF END-USER	82
<i>TABLE 22 WEB SERVICES MARKET BY SIZE/TYPE OF END-USER, 2002 AND 2007</i>	83
MARKET SHARES BY REGION	84
<i>TABLE 23 WEB SERVICES MARKET SHARES BY REGION, 2002 AND 2007</i>	84
Market Shares by Region	85
DISTRIBUTION CHANNELS	86
APPLICATION SERVICE PROVIDERS	86
<i>TABLE 24 WEB SERVICES ASPs</i>	87
SERVICE BROKERS	88
<i>TABLE 25 WEB SERVICE BROKERS</i>	89
USER REQUIREMENTS, COMPETITION, AND MARKET LEADERS	90
USER REQUIREMENTS	90
INTEGRATION AND SUPPORT NEEDS	91
FUNCTIONALITY	91
UPGRADABILITY	91
SCALABILITY	92
SUPPLIER REPUTATION	92
PRICE	92
SECURITY	92
RELIABILITY	93
<i>FIGURE 30 WEB SERVICES USER REQUIREMENTS</i>	93
<i>FIGURE 30 (CONTINUED)</i>	94
COMPETITION AND MARKET LEADERS	95
WEB SERVICES INFRASTRUCTURE	95
<i>FIGURE 31 INFRASTRUCTURE MARKET SHARES, 2001 (PERCENT OF TOTAL MARKET SEGMENT)</i>	96
Web Services Infrastructure (Continued)	97
WEB SERVICES APPLICATIONS	98

FIGURE 32 WEB SERVICES APPLICATIONS MARKET LEADERS, 2002.....	99
Consumer-Oriented Web Services Applications.....	99
Business-Oriented Web Services Applications.....	100
INTEGRATION AND OTHER PROFESSIONAL SERVICES	100
FIGURE 33 WEB SERVICES-RELATED PROFESSIONAL SERVICES MARKET LEADERS, 2002	101
CONCLUSIONS: WEB SERVICES AND THE FUTURE OF THE	
SOFTWARE INDUSTRY	102
WEB SERVICES' IMPACT ON WORLDWIDE SOFTWARE SALES	102
FIGURE 34 WEB SERVICES IMPACT ON WORLDWIDE SOFTWARE MARKET, COMPARATIVE MARKET SIZE, 2002 AND 2007 (\$ BILLIONS).....	103
WEB SERVICES IMPACT ON TOTAL SOFTWARE INDUSTRY REVENUES	104
FIGURE 35 PROJECTED IMPACT OF WEB SERVICES ON SOFTWARE INDUSTRY REVENUES, 2002 AND 2007 (\$ BILLIONS)	105
WEB SERVICES IMPACT ON THIRD-PARTY INTEGRATORS AND CONSULTANTS.....	105
FIGURE 36 POTENTIAL WEB SERVICES REVENUE IMPACT ON THIRD-PARTY INTEGRATORS AND CONSULTANTS, 2002 AND 2007 (\$ BILLIONS).....	106
IMPACT OF WEB SERVICES ON THE STRUCTURE OF THE SOFTWARE INDUSTRY	106
BROADER IMPORTANCE OF WEB SERVICES.....	107
BROADER IMPORTANCE OF WEB SERVICES (Continued)	108
APPENDIX: KEY WEB SERVICES VENDORS.....	109
WEB SERVICES INFRASTRUCTURE	109
BEA SYSTEMS, INC.	109
CAPE CLEAR SOFTWARE, INC.	109
FUJITSU, LTD.	110
HEWLETT-PACKARD	110
INTERNATIONAL BUSINESS MACHINES CORP. (IBM).....	111
IONA TECHNOLOGIES PLC	111
PLUMTREE SOFTWARE, INC.....	112
SEEBEYOND	112
SUN MICROSYSTEMS, INC.	113
SYBASE INC.	114
TIBCO SOFTWARE, INC.	114
VITRIA INC.....	115
WEBMETHODS, INC.	115
WEB SERVICES APPLICATIONS.....	116
MANUGISTICS INC.....	116
MICROSOFT CORP.....	116
SAP AKTIENGESELLSCHAFT.....	117