

Fixed Mobile Convergence: Evolving Business Strategies and Market Trends

2nd Edition

©2007 Informa UK Ltd.

All rights reserved.

The contents of this publication are protected by international copyright laws, database rights and other intellectual property rights. The owner of these rights is Informa UK Ltd, our affiliates or other third party licensors. All product and company names and logos contained within or appearing on this publication are the trade marks, service marks or trading names of their respective owners, including Informa UK Ltd. This publication may not be:-

- (a) copied or reproduced; or
- (b) lent, resold, hired out or otherwise circulated in any way or form without the prior permission of Informa UK Ltd.

Whilst reasonable efforts have been made to ensure that the information and content of this publication was correct as at the date of first publication, neither Informa UK Ltd nor any person engaged or employed by Informa UK Ltd accepts any liability for any errors, omissions or other inaccuracies. Readers should independently verify any facts and figures as no liability can be accepted in this regard - readers assume full responsibility and risk accordingly for their use of such information and content.

Any views and/or opinions expressed in this publication by individual authors or contributors are their personal views and/or opinions and do not necessarily reflect the views and/or opinions of Informa UK Ltd.

AUTHOR

Paul Merry
(paul.merry@informa.com)

REPORT STAFF

Martin Hill, *Head of Portfolio, Global Markets*
Olivia Gibney, *Managing Editor*
Maria Mitchell, *Production Manager*
Marta Almansa, *Production Editor*
Shalia Mughal, *Production Editor*

HEAD OFFICE

Mortimer House
37-41 Mortimer Street
London W1T 3JH
Web site: www.informatm.com

SALES & CUSTOMER SERVICE

In UK/Europe:

Phone: 44 (0) 20 7017 5533
Fax: 44 (0) 20 7017 4783
Email: telecoms.enquiries@informa.com

In North America:

Phone: (1) 978 258 2500
Fax: (1) 978 258 2500
Email: colleen.barron@informa.com

Published in June 2007

ISBN: 978 1843 116 608

ABOUT THE AUTHOR

Paul Merry is a research analyst with Informa Telecoms & Media with nine years of research analysis experience. Paul has lead authored several reports across the Informa Telecoms & Media portfolios including *MVNO Strategies*, *Mobile Entertainment*, *Mobile Transactions in Europe* and *Global Mobile Prepaid Strategies*.

During his time as a research analyst Paul has authored and co-authored several strategic reports on the subjects of telecommunications, the Internet, Metropolitan Area Networks, billing and CRM and has undertaken a range of consultancy projects including the evaluation of business strategies, market potential of new technologies and economic modelling. He has also presented findings to top-level executives at events throughout the world.

Contents

CHAPTER 1	
EXECUTIVE SUMMARY	1
CHAPTER 2	
MARKET STATUS	17
Market drivers	17
FMC defined	19
FMC and convergence.....	19
<i>Figure 2.1: User position pre- and post-convergence in FMC</i>	20
The challenge of convergence	21
Problems of FMC definition	21
FMC for networks, devices and services – a ‘pragmatic’ definition.....	22
Top tier stack – generalised definition	23
Second tier stack – device-specific definition.....	23
Third stack – network-specific definition.....	24
Fourth stack – service-specific definition.....	25
Defining FMC attributes.....	25
<i>Figure 2.2: Hierarchy of FMC’s defining attributes</i>	25
Basic FMC usage scenarios	26
FMC voice usage models.....	26
<i>Figure 2.3: RAN and application layer role in FMC call event</i>	26
Application layer solutions.....	28
Usage models and sphere of influence	28
Mobile network operators	29
<i>Figure 2.4: Mobile network operator usage scenario</i>	29
Fixed network operators	30
<i>Figure 2.5: Fixed network operator usage scenario</i>	31
Hybrid operators.....	32
<i>Figure 2.6: Hybrid network operator usage scenario</i>	33
Broadband operators	33
<i>Figure 2.7: Broadband network operator usage scenario</i>	34
Other operators	35
CHAPTER 3	
FMC VALUE CHAIN PLAYERS	37
<i>Figure 3.1: Convergence roadmap from an FMC perspective</i>	37
Service providers	38
Pure mobile network operators	38
Opportunities and threats.....	38
Models of use	39
Other mobile FMC operators.....	40
Fixed network operators	40
Opportunities and threats.....	40
Models of use	41
Hybrid operators.....	42
Opportunities and threats.....	42

Models of use	43
Broadband operators	44
Opportunities and threats.....	44
Models of use	45
Other players.....	45
Specialist VoIP providers	46
MVNOs	47
<i>Figure 3.2: MVNO service evolution stages</i>	47
Commercial Wi-Fi providers	48
FMC service provider strategic positioning.....	48
<i>Figure 3.3: FMC value chain strategic positioning matrix</i>	49
Dominant pure mobile operators	49
Tier 2-3 pure mobile operators	50
Broadband service providers.....	50
Hybrid operators.....	51
Other players	51
Service support providers	52
Device and network manufacturers	52
Software application and hardware vendors	53
Network upgrade.....	53
BSS and OSS/software upgrade	54
OS vendor opportunities	54
Conclusion.....	55
Industry opinion	55
<i>Figure 3.4: The dominant value chain player type in 2012</i>	56

CHAPTER 4

STRATEGIC CONSIDERATIONS	57
FMC evolution	57
<i>Figure 4.1: Convergence roadmap from an FMC perspective</i>	57
FMC service evolution	58
FMC network evolution.....	59
<i>Figure 4.2: When will convergent networks reach mass-usage levels/domination?</i>	61
FMC device evolution	61
Corporate reorganisation for FMC players	63
Organisational change strategies.....	64
<i>Figure 4.3: Constraints and enablers for change management in relation to FMC</i>	64
Mobile operator attitudes to FMC	65
Opex and interconnection.....	65
Counter argument to the claims that FMC will reduce opex	66
Alternative voice platforms	66
MNO defined access	66
Softswitch solutions and FMC	67
IP network integration ROI	67
Vendor perspectives on the evolution of IP and FMC	67
Wi-Fi.....	68
Fixed mobile substitution (FMS)	68
Mobile operators' tacit support of FMC	69
Dual mode device issues	69

<i>Figure 4.4: Is a converged device (a device that fulfils all user requirements from entertainment to communication) required/desired by users?</i>	70
Developments conducive to FMC take-up	70
Effect of 4G.....	70
Naked DSL.....	71
<i>Figure 4.5: Network infrastructure and naked DSL</i>	71
Unbundling the local loop.....	72
Fibre to the home (FTTH) and fibre to the node (FTTN).....	74
CHAPTER 5	
TECHNICAL CONSIDERATIONS	77
Viability of WLAN FMC	77
<i>Figure 5.1: Fixed wireless versus cellular</i>	77
Historical fixed wireless voice solutions.....	77
DECT comparison with fixed wireless FMC.....	78
<i>Figure 5.2: Selected European historical DECT trials</i>	79
Requirements for successful use of FMC WLAN.....	80
Technical challenges and solutions of voice over Wi-Fi.....	81
Wi-Fi 802.11e standard.....	81
Wireless Multimedia Extensions (WME).....	81
Wi-Fi 802.11r standard.....	81
Wi-Fi 802.21 standard.....	82
Cost comparison – cellular versus fixed wireless.....	82
WLAN and Wi-Fi from the end user perspective.....	82
<i>Figure 5.3: Average length of commercial Wi-Fi session</i>	83
Challenges of unregulated fixed wireless.....	84
In-building cellular	84
Key attributes of in-building cellular solutions.....	85
Distributed Antenna Systems.....	85
Picocells and femtocells.....	86
Challenges and opportunities.....	86
Operator developments.....	89
<i>Figure 5.4: Dominant in-building cellular technologies by 2012</i>	90
Next generation mobile technologies	90
HSDPA.....	90
<i>Figure 5.5: Selected global HSDPA launches and trials</i>	91
HSDPA versus WiMAX.....	93
<i>Figure 5.6: Selected HSDPA capable handsets</i>	94
HSDPA pricing challenge.....	95
HSDPA and homezone propagation.....	95
WiMAX.....	95
WiMAX and voice.....	96
MNO reactions to WiMAX.....	96
WiMAX developments encouraging convergence.....	97
<i>Figure 5.7: 802.16m standard evolution</i>	97
UMA and IMS.....	97
Competitive environment.....	98
Long-term development of UMA.....	98
IMS usage models.....	100

Proprietary solutions.....	101
Naked SIP	102
General device strategies.....	102
<i>Figure 5.8: Selected Wi-Fi devices, launched, planned and discontinued.....</i>	103
Handset vendor and operator relationships.....	107
FMC devices: a new handset segment	107
<i>Figure 5.9: Timescale for dual mode device prevalence.....</i>	107
<i>Figure 5.10: Consumer and enterprise FMC handset expectations</i>	108
Network and access considerations.....	109
3GPP Long Term Evolution (LTE).....	110
<i>Figure 5.11: UMTS evolution.....</i>	110
<i>Figure 5.12: LTE position in cellular network evolution</i>	111
Air interface.....	111
CHAPTER 6	
SERVICE APPROACH AND PROVISIONING STRATEGIES	113
Commercial viability of VoIP.....	113
<i>Figure 6.1: VoIP market approaches – defensive and offensive</i>	114
Commercial example: Skype.....	115
Commercial strategy	115
Skype for enterprise use	117
Approach to content and services	118
Challenges for FMC services beyond voice	118
<i>Figure 6.2: Are these challenges being adequately tackled by those value chain players involved with them?</i>	119
Off-net open access	119
Triple and quadruple play	120
Consumer and enterprise FMC services	121
Consumer FMC services.....	121
Enterprise FMC services	122
Pricing and service bundling.....	123
Fixed pricing anomalies	123
Pricing as an incentive to take up FMC.....	124
<i>Figure 6.3: Likelihood of flat rate pricing</i>	125
Handset pricing.....	125
Advertising/subsidising.....	126
CHAPTER 7	
REGIONAL DEVELOPMENTS	127
Europe	127
<i>Figure 7.1: Selected European country broadband household forecasts versus European total, 2007-2012</i>	128
Germany	128
UK.....	131
<i>Figure 7.2: Ofcom 1800Mhz low-power auction bidders</i>	132
France	133
North America	135
<i>Figure 7.3: North American broadband household forecasts, 2007-2012</i>	135

US	136
<i>Figure 7.4: Vonage patent infringements</i>	138
Canada	138
Latin America	141
<i>Figure 7.5: Selected Latin American country broadband household forecasts versus Latin American total, 2007-2012</i>	141
Brazil	142
Mexico	144
Asia Pacific	145
<i>Figure 7.6: Selected Asia Pacific country broadband households forecasts versus Asia Pacific total, 2007-2012</i>	146
China	146
Japan	149
South Korea	152
India	154
Middle East and Africa	156
<i>Figure 7.7: Selected MEA broadband household forecasts versus MEA total, 2007-2012</i>	157
Egypt	157
South Africa	160
CHAPTER 8	
CASE STUDIES	163
Pure fixed line operator: BT Fusion	164
Background	164
<i>Figure 8.1: BT Wireless launches and market strategy</i>	165
Service details	165
Market focus	166
Devices/hardware	167
Pricing	168
Strategic analysis	168
Pure mobile operator: 3 UK X-Series – a convergent service approach	171
Background	171
<i>Figure 8.2: 3's WCDMA network rollout</i>	171
Service details	172
Market focus	172
Devices/hardware	173
<i>Figure 8.3: X-Series devices, launched and planned</i>	174
Pricing	175
<i>Figure 8.4: X-Series subscription models</i>	175
Strategic analysis	175
Hybrid operator: AT&T	177
Background	177
Service details	178
<i>Figure 8.5: Selected AT&T telecommunication and broadcast services</i>	178
Market focus	179
Devices/hardware	179
Pricing	180
<i>Figure 8.6: Selected unity pricing plans</i>	181
Strategic analysis	181

Manufacturer: Ubiquisys	184
Background	184
Network/hardware/service solutions	184
Devices	185
Pricing/manufacture costs	185
Market focus	185
Strategic analysis	186

CHAPTER 9

BUSINESS OPPORTUNITIES AND CHALLENGES	191
Market indicators	191
<i>Figure 9.1: Expected completion of network rollout</i>	191
Operator opportunities and challenges	192
Mobile operators	192
Analysis of FMC service opportunities and challenges for mobile operators	195
<i>Figure 9.2: Reduced opex FMC routed cellular call</i>	197
Tier 2-3 mobile operators	200
Fixed operators	201
Analysis of FMC service opportunities and challenges for fixed operators	202
Hybrid operators	204
Analysis of FMC service opportunities and challenges for hybrid operators	205
Broadband operators	206
Analysis of FMC service opportunities and challenges for broadband operators	208
Other players	210
<i>Figure 9.3: Global MVNO service segments, 3Q06</i>	210
Customer opportunities and challenges	211
Consumer	211
Advantages and opportunities	211
Challenges and threats	211
Enterprise	212
Advantages and opportunities	212
Challenges and threats	212
Convenience	213
Consumer sector analysis	213
Enterprise sector analysis	215
<i>Figure 9.4: Selected PBX providers and proprietary protocols</i>	217
Customer business models	217
Choosing the appropriate customer segment	217
Customer proposition	218
Service opportunities	219
<i>Figure 9.5: Commercial FMC service launch</i>	219
<i>Figure 9.6: Launched service's customer targets</i>	220
<i>Figure 9.7: Service development by 2012</i>	221
VoIP	222
<i>Figure 9.8: In your opinion, what percentage of global cellular traffic will migrate to fixed (including fixedwireless Wi-Fi)?</i>	222
<i>Figure 9.9: FMC service revenue generation as a percentage of total revenues in 2010 and 2015</i>	223
Enterprise use of VoIP	223
<i>Figure 9.10: FMC enterprise service revenue generation as a percentage of total FCMC revenues</i>	

in 2010	224
Commercial models of VoIP.....	228
Figure 9.11: Global Wi-Fi hot spot distribution	229
Figure 9.12: Regional Wi-Fi usage, 2006.....	229
Figure 9.13: Top countries for Wi-Fi use and average session length. 2006.....	230
Skype	230
Content partnerships and advertising	231
FMC services and the DRM challenge.....	232

CHAPTER 10

FORECASTS	235
FMC forecasts' methodology and definitions.....	236
FMC subscribers.....	236
Definition	236
Forecasting methodology.....	237
Figure 10.1: FMC primary indicators	238
FMC revenue forecasting methodology.....	239
Top-line figures and analysis.....	239
General assumptions.....	239
Early inflection points – global analysis	241
Figure 10.2: Total FMC voice business and consumer subscribers, 2007-2012	241
Regional analysis	243
Figure 10.3: Total FMC voice subscribers by region, 2007-2012.....	244
Figure 10.4: Total FMC voice revenues by region, 2007-2012.....	245
Regional market indicators.....	246
North America.....	246
Figure 10.5: North American FMC voice subscribers, 2007-2012.....	246
Figure 10.6: North American FMC voice revenues, 2007-2012.....	247
Latin America	249
Figure 10.7: Latin American FMC voice subscribers, 2007-2012.....	249
Figure 10.8: Latin American FMC voice revenues, 2007-2012	250
Asia Pacific	250
Figure 10.9: Asia Pacific FMC voice subscribers, 2007-2012.....	250
Figure 10.10: Asia Pacific FMC voice revenues, 2007-2012.....	252
Europe.....	253
Figure 10.11: European FMC voice subscribers, 2007-2012.....	253
Figure 10.12: European FMC voice revenues, 2007-2012.....	254
Africa and the Middle East	255
Figure 10.13: Africa and the Middle East FMC voice subscribers, 2007-2012	255
Figure 10.14: Africa and the Middle East FMC voice revenues, 2007-2012.....	256
Business and consumer forecasts.....	257
Figure 10.15: Business and consumer FMC voice subscriber forecasts by business and consumer, 2007-2012	258
Figure 10.16: Business and consumer FMC voice revenue forecasts by business and consumer, 2007-2012	259

APPENDIX

INFORMA TELECOMS & MEDIA FMC INDUSTRY SURVEY 2007	261
--	------------

