1. Record Nr. UNINA9910830799003321

Titolo	Opportunistic spectrum sharing and white space access : the practical reality / / edited by Oliver Holland, Hanna Bogucka, Arturas Medeisis
Pubbl/distr/stampa	Hoboken, New Jersey : , : Wiley, , [2015] [Piscataqay, New Jersey] : , : IEEE Xplore, , [2015]
ISBN	1-119-05724-8 1-119-05730-2
Descrizione fisica	1 PDF (xxxviii, 695 pages) : illustrations (some color)
Altri autori (Persone)	HollandOliver <1973-> BoguckaHanna MedeisisArturas <1970->
Disciplina	384.54/524
Soggetti	Radio resource management (Wireless communications) Radio frequency allocation
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index at the end of each chapters.
Nota di contenuto	-- LIST OF CONTRIBUTORS xi -- INTRODUCTION xv /Oliver Holland, Hanna Bogucka, and Arturas Medeisis -- ACRONYMS xxiii -- PART I FLEXIBLE RADIO HARDWARE AND SOFTWARE PLATFORMS SUPPORTING SPECTRUM SHARING 1 -- 1 The Universal Software Radio Peripheral (USRP) Family of Low-Cost SDRs 3 /Matt Ettus and Martin Braun -- 2 On the GNU Radio Ecosystem 25 /Thomas W. Rondeau -- 3 Wireless Open-Access Research Platform (WARP) for Flexible Radio 49 /Junaid Ansari and Petri Mahonen -- 4 A Dynamically Reconfigurable Software Radio Framework: Iris 81 /Paul Sutton -- 5 OpenAirInterface and ExpressMIMO2 for Spectrally Agile Communication 99 /Bassem Zayen, Florian Kaltenberger, and Raymond Knopp -- 6 CORAL Cognitive WiFi Networking System: Case Studies of Rural Applications in India 123 /John Sydor -- PART II PRACTICAL MECHANISMS SUPPORTING SPECTRUM SHARING 141 -- 7 Cooperative Sensing of Spectrum Opportunities 143 /Giuseppe Caso, Luca De Nardis, Ragnar Thobaben, and Maria-Gabriella Di Benedetto -- 8 A Machine-Learning Approach Based on Bio-Inspired Intelligence 167 /Dimitrios Karvounas, Aimilia

Bantouna, Andreas Georgakopoulos, Kostas Tsagkaris, Vera Stavroulaki, and Panagiotis Demestichas -- 9 Spectrally Agile Waveforms 191 /Alexander M. Wyglinski, Adrian Kliks, Pawel Kryszkiewicz, Amit P. Sail, and Hanna Bogucka -- 10 Aggregation of Spectrum Opportunities 221 /Florian Kaltenberger, Theodoros A. Tsiftsis, Fotis Foukalas, Shuyu Ping, and Oliver Holland -- 11 Policies for Efficient Spectrum Sharing 239 /Liljana Gavrilovska, Vladimir Atanasovski, and Gianmarco Baldini -- PARTIII REGULATORY SOLUTIONS FOR SPECTRUM SHARING 257 -- 12 International Regulatory Framework for Spectrum and Spectrum Sharing 259 /Peter Anker -- 13 Regulations for Spectrum Sharing in the USA 277 /Lee Pucker -- 14 UK Framework for Access to TV White Spaces 313 /Hamid Reza Karimi -- 15 Spectrum Sharing Using Geo-Location Databases 339 /Jeffrey C. Schmidt and Peter Stanforth -- 16 Novel Licensing Schemes 369 /Oliver Holland, Arturo Basaure, and Wataru Yamada. PARTIV SPECTRUM SHARING BUSINESS SCENARIOS AND ECONOMIC CONSIDERATIONS 391 -- 17 Economic and Game Theoretic Models for Spectrum Sharing 393 /Hamed Ahmadi, Irene Macaluso, Zaheer Khan, Hanna Bogucka, and Luiz A. DaSilva -- 18 Business Benefits of Licensed Shared Access (LSA) for Key Stakeholders 407 /Marja Matinmikko, Hanna Okkonen, Seppo YrjŠola, Petri Ahokangas, Miia Mustonen, Marko Palola, Vania Goncalves, Anri Kivimaki, Esko Luttinen, and Jukka Kemppainen -- 19 Initial Standardization of Disruptive Innovations in Radiocommunication Technology in Consortia 425 /Dirk-Oliver von der Emden -- 20 Spectrum as a Platform: a Critical Assessment of the Value Promise of Spectrum Sharing Solutions 453 /Olivier Rits, Simon Delaere, and Pieter Ballon -- PART V SPECTRUM SHARING DEPLOYMENT SCENARIOS IN PRACTICE 479 -- 21 TV White Spaces with Geo-Location Database Access: Practical Considerations and Trials in Europe 481 /Rogerio Dionisio, Jose Ribeiro, Jorge Ribeiro, Paulo Marques, and Jonathan Rodriguez -- 22 Developments and Practical Field Trials of TVWS Technologies 513 /Kentaro Ishizu, Keiichi Mizutani, Takeshi Matsumura, Ha-Nguyen Tran, Stanislav Filin, Hirokazu Sawada, and Hiroshi Harada -- 23 Cognitive Wireless Regional Area Network Standard 551 /Apurva Mody, Gerald Chouinard, Stephen J. Shellhammer, Monisha Ghosh, and Dave Cavalcanti -- 24 ETSI Opportunistic Spectrum Sharing Technology for (TV) White Spaces 605 /Markus Dominik Mueck, Naotaka Sato, Chen Sun, Martino Freda, Pekka Ojanen, Dong Zhou, Junfeng Xiao, Rogerio Pais Dionisio, and Paulo Marques -- 25 The IEEE Dynamic Spectrum Access Networks Standards Committee (DySPAN-SC) and IEEE 1900 Working Groups 631 /Oliver Holland, Hiroshi Harada, Ha-Nguyen Tran, Bernd Bochow, Masayuki Ariyoshi, Matthew Sherman, Michael Gundlach, Stanislav Filin, and Adrian Kliks -- 26 Spectrum to Unlash Machine-to-Machine Uptake 649 /Mischa Dohler and Yue Gao -- CONCLUSIONS AND FUTURE WORK 679 /Oliver Holland, Hanna Bogucka, and Arturas Medeisis. INDEX 689.

Sommario/riassunto

Details the paradigms of opportunistic spectrum sharing and white space access as effective means to satisfy increasing demand for high-speed wireless communication and for novel wireless communication applications This book addresses opportunistic spectrum sharing and white space access, being particularly mindful of practical considerations and solutions. In Part I, spectrum sharing implementation issues are considered in terms of hardware platforms and software architectures for realization of flexible and spectrally agile transceivers. Part II addresses practical mechanisms supporting spectrum sharing, including spectrum sensing for opportunistic spectrum access, machine learning and decision making capabilities,

aggregation of spectrum opportunities, and spectrally-agile radio waveforms. Part III presents the ongoing work on policy and regulation for efficient and reliable spectrum sharing, including major recent steps forward in TV White Space (TVWS) regulation and associated geolocation database approaches, policy management aspects, and novel licensing schemes supporting spectrum sharing. In Part IV, business and economic aspects of spectrum sharing are considered, including spectrum value modeling, discussion of issues around disruptive innovation that are pertinent to opportunistic spectrum sharing and white space access, and business benefits assessment of the novel spectrum sharing regulatory proposal Licensed Shared Access. Part V discusses deployments of opportunistic spectrum sharing and white space access solutions in practice, including work on TVWS system implementations, standardization activities, and development and testing of systems according to the standards. . Discusses aspects of pioneering standards such as the IEEE 802.22 “Wi-Far” standard, the IEEE 802.11af “White-Fi” standard, the IEEE Dynamic Spectrum Access Networks Standards Committee standards, and the ETSI Reconfiguration Radio Systems standards. Investigates regulatory and regulatory-linked solutions assisting opportunistic spectrum sharing and white space access, including geo-location database approaches and licensing enhancements. Covers the pricing and value of spectrum, the economic effects and potentials of such technologies, and provides detailed business assessments of some particularly innovative regulatory proposals The flexible and efficient use of radio frequencies is necessary to cater for the increasing data traffic demand worldwide. This book addresses this necessity through its extensive coverage of opportunistic spectrum sharing and white space access solutions. Opportunistic Spectrum Sharing and White Space Access: The Practical Reality is a great resource for telecommunication engineers, researchers, and students. Dr. Oliver Holland is Research Fellow at the Centre for Telecommunications Research at King's College London, United Kingdom. Prof. Hanna Bogucka is Professor at the Chair of Wireless Communications at Poznan University of Technology, Poland. Dr. Arturas Medeisis is Associate Professor and Chair of the Telecommunications Engineering Department at Vilnius Gediminas Technical University, Lithuania.