DATE: June 15, 2021

CURRICULUM VITAE – DR. MIKKO VALKAMA

1. PERSONAL DATA

Name:	Mikko Erik Valkama
Gender:	Male
Date and Place of Birth:	November 27, 1975, Pirkkala, Finland
Citizenship:	Finnish
Home Address:	Siitakekatu 15, FI-37130 Nokia, Finland
Telephone:	+358-40-8490756
E-mail:	mikko.valkama@tuni.fi
ORCID:	https://orcid.org/0000-0003-0361-0800

2. EDUCATION AND DEGREES

December, 2001:	*Dr.Tech.* (*with honors*), Department of Information Technology, Tampere University of Technology, Tampere, Finland.
January, 2000:	*M.Sc.* (*with honors*), Department of Electrical Engineering, Tampere University of Technology, Tampere, Finland.

3. CURRENT POSITION

Employer:	Tampere University (TAU, formerly Tampere Univ. Technology, TUT), Tampere, Finland
Title/Position:	Full Professor (Communications Engineering) at TAU Head of Department of Electrical Engineering, TAU

4. PROFESSIONAL HISTORY

- Oct. 2008 - Full Professor, TAU / TUT
- Jun. 2005 - Oct. 2008: Docent (Adjunct Professor), TUT
- Aug. 2004 - Jun.2005: Senior Researcher, TUT
- Dec. 2001 - Aug. 2004: Post-Doc Researcher, TUT & San Diego State University (SDSU, USA)
- Jan. 2000 - Dec. 2001: Researcher, TUT
- May 1999 - Jan. 2000: Research Assistant, TUT

5. CAREER BREAKS

- no breaks, but proud father of 4 healthy boys (Tuukka, Veikka, Joona and Onni; born 2009, 2014, 2016, 2019) ☺

6. RESEARCH FUNDING (only those listed where I am the Principal Investigator and responsible leader)

Academy of Finland:

- "Research Infrastructure for Future Wireless Networks – 6G", 01.07.2020 - 30.11.2021, decision number: 338224, funding: 350 000 EUR
- "Energy-Efficient Radio Access: Methods and Optimization", 01.09.2020 - 31.08.2024, decision number: 332361, funding: 388 981 EUR
- "Ubiquitous Localization, Communication, and Sensing Infrastructure for Autonomous Systems", 01.01.2020 - 31.12.2022, decision number: 328214, funding: 167 767 EUR
- "Research Infrastructure for Future Wireless Communication Networks", 01.01.2019 - 31.12.2021, decision number: 319994, funding: 280 000 EUR

- "Massive MIMO: Advanced Antennas, Systems and Signal Processing at mm-Waves", 01.09.2015 - 31.08.2019, decision number: 288670, funding: 245 795 EUR
- "Fundamentals of Ultra Dense 5G Networks with Application to Machine Type Communication", 01.02.2015 - 31.12.2017, decision number: 284694, funding: 100 000 EUR
- "In-band Full-Duplex MIMO Transmission: A Breakthrough to High-Speed Low-Latency Mobile Networks", 01.09.2012 - 31.08.2016, decision number: 259915, funding: 348 242 EUR
- "Digitally-Enhanced RF for Cognitive Radio Devices", 01.09.2011 - 31.08.2015, decision number: 251138, funding: 727 048 EUR
- "Understanding and Mitigation of Analog RF Impairments in Multiantenna Transmission Systems", 01.01.2007 - 31.12.2010, decision number: 116423, funding: 142 700 EUR

Total Academy funding volume: **2 750 533 EUR**

Business Finland (earlier Tekes, the Finnish Funding Agency for Technology and Innovation):

- "5G VIIMA", 1.1.2019-30.04.2021, Dnro: 6487/31/2018, funding: 620 400 EUR
- "5G FORCE", 1.1.2019-31.03.2021, Dnro: 6479/31/2018, funding: 485 528 EUR
- "RF CONVERGENCE" , 1.1.2019-31.03.2021, Dnro: 5558/31/2018, funding: 271 200 EUR
- "Wireless for Verticals (WIVE)", 1.1.2017 - 31.12.2018, Dnro: 4931/31/2015, funding: 360 000 EUR
- "5G Transceivers for Base Stations and Mobile Devices," 1.1.2016 - 31.12.2018, Dnro: 2807/31/2015, funding: 351 000 EUR
- "TAKE-5: the Fifth Evolution Take of Wireless Communication Networks", 1.10.2015-30.9.2018, Dnro: 1971/31/2015, funding: 316 000 EUR
- "WiFiUS: Future Small-Cell Networks using Reconfigurable Antennas", 1.2.2015 - 30.4.2017, Dnro: 2366/31/2014 , funding: 93 000 EUR
- "5G Networks and Device Positioning", 1.1.2015 - 30.4.2017, Dnro: 3955/31/2014, funding: 76 800 EUR
- "Energy-Efficient Wireless Networks and Connectivity of Devices - Systems", 1.5.2013 - 31.8.2015, Dnro: 242/31/2013, funding: 190 000 EUR
- "Energy-Efficient Wireless Networks and Connectivity of Devices - Densification", 1.5.2013 - 31.8.2015, Dnro: 193/31/2013, funding: 167 000 EUR
- "Parallel Acceleration", 1.5.2013 - 31.8.2015, Dnro's: 124/31/2013 and 338/31/2014, funding: 61 774 EUR
- "Enabling Methods for Dynamic Spectrum Access and Cognitive Radio", 1.1.2011 - 30.4.2015, Dnro's: 110/31/2011 and 2695/31/2012, funding: 436 533 EUR
- "WiFiUS: Cross-Layer Modeling and Design of Energy-Aware Cognitive Radio Networks", 1.1.2013 - 30.4.2015, Dnro: 2053/31/2012, funding: 140 000 EUR
- "Full-Duplex Cognitive Radio", 1.1.2013 - 30.4.2015, Dnro: 2060/31/2012, funding: 147 000 EUR
- Internet of Things (IoT) SHOK, funded by Tekes and participating companies, 1.1.2012 - 31.3.2016, Dnro: 2929/31/2011, funding: 1 962 361 EUR
- "WiFiUS: Reconfigurable Antenna Based Enhancement of Dynamic Spectrum Access", 1.1.2012 -30.4.2014, Dnro: 2712/31/2011, funding: 140 000 EUR
- "Energy and Cost Efficiency of Wireless Access", 1.9.2010-31.12.2012, Dnro: 760/31/2010, funding: 320 000 EUR
- "Advanced Techniques for RF Impairment Mitigation in Future Wireless Radio Systems", 1.1.2008- 31.12.2010, Dnro: 3363/31/07, funding: 500 000 EUR

Total Business Finland / Tekes funding volume: **6 638 596 EUR**

Wireless Communications and Radio Systems industries

- Substantial amount of direct funded projects with e.g. Nokia, Nokia Bell Labs, NSN, Intel, Qualcomm, RF360, Huawei, Renesas Mobile, Elektrobit/Bittium, Broadcom, Cassidian, Airbus, Saab, Microsoft and mobile operators

Total industry funding volume: **4 304 042 EUR**

Other example significant projects

- "Empowering Heterogeneous Aviation through cellular Signals (EMPHASIS)", 1.2.2018-31.1.2020, European Commission H2020 programme. Funding: 210 000 EUR.

- "Wireless Communications Technologies", 1.1.2013-31.12.2016, funded by Austrian Competence Centre in Mechatronics (ACCM), Austria. Funding: 182 407 EUR.
- "Wireless Transceivers", 1.1.2010-31.12.2012, funded by Austrian Competence Centre in Mechatronics (ACCM), Austria. Funding: 158 400 EUR.

7. LEADERSHIP AND SUPERVISION

- Responsible professor and leader of a research group with 2 full professors, 1 associate professor, 1 assistant professor, 1 university lecturer, 7 post docs, 24 doctoral students and 5-10 research assistants

Ph.D. Theses Supervised (as responsible supervisor, see http://www.tut.fi/tutcris => Researchers => Mikko Valkama):

- Orod Raeesi, "Analysis and Mitigation of Channel Non-Reciprocity in TDD MIMO Systems," Ph.D. thesis, Tampere University, 2019.
- Mona Aghababaeetafreshi, "Software Defined Radio Solutions for Wireless Communications Systems," Ph.D. thesis, Tampere University of Technology, 2018.
- Dani Korpi, "Full-duplex wireless: Self-interference modeling, digital cancellation and system studies," Ph.D. thesis, Tampere University of Technology, 2017.
- Mahmoud Abdelaziz, "Reduced-complexity Digital Predistortion in Flexible Radio Spectrum Access," Ph.D. thesis, Tampere University of Technology, 2017.
- Aki Hakkarainen, "I/Q Imbalance in Multiantenna Systems: Modeling, Analysis and RF-Aware Digital Beamforming," Ph.D. thesis, Tampere University of Technology, 2017.
- Mulugeta Fikadu, "Performance Analysis, Resource Allocation and Optimization of Cooperative Communication Systems under Generalized Fading Channels," Ph.D. thesis, Tampere University of Technology, 2016.
- Simran Singh, "Time-Interleaved Analog-to-Digital-Converters: Modeling, Blind Identification and Digital Correction of Frequency Response Mismatches," Ph.D. thesis, Tampere University of Technology, 2016.
- Janis Werner, "Directional Antenna System-based DoA/RSS Estimation, Localization and Tracking in Future Wireless Networks: Algorithms and Performance Analysis," Ph.D. thesis, Tampere University of Technology, 2015.
- Adnan Kiayani, "Modeling and Digital Mitigation of Transmitter Imperfections in Radio Communication Systems," Ph.D. thesis, Tampere University of Technology, 2015.
- Markus Allen, "Nonlinear Distortion in Wideband Radio Receivers and Analog-to-Digital Converters: Modeling and Digital Suppression," Ph.D. thesis, Tampere University of Technology, 2015.
- Syed Fahad Yunas, "Capacity, Energy-Efficiency and Cost-Efficiency Aspects of Future Mobile Network Deployment Solutions," Ph.D. thesis, Tampere University of Technology, 2015.
- Jaakko Marttila, "Quadrature Sigma-Delta Modulators for Reconfigurable A/D Interface and Dynamic Spectrum Access: Analysis, Design Principles and Digital Post-Processing," Ph.D. thesis, Tampere U. Technology, 2014.
- Ahmet Gokceoglu, "Performance Analysis and Mitigation of Nonlinear Distortion, IQ Imbalance and Phase Noise in Modern Radio Communication Disciplines," Ph.D. thesis, Tampere University of Technology, 2014.
- Nikolay N. Tchamov, "Circuit- and System-Level Design of OFDM Receivers in the Presence of Phase Noise," Ph.D. thesis, Tampere University of Technology, 2013.
- Stanislav Nonchev, "Fairness-Oriented and QoS-Aware Radio Resource Management in OFDMA Packet Radio Networks," Ph.D. thesis, Tampere University of Technology, 2013.
- Ville Syrjälä, "Analysis and Mitigation of Oscillator Impairments in Modern Receiver Architectures," Ph.D. thesis, Tampere University of Technology, 2012.
- Yong Fan, "Efficient VoIP Support in OFDMA-based Packet Radio Networks," Ph.D. thesis, Tampere University of Technology, 2012.
- Ali Shahed hagh ghadam, "Contributions to Analysis and Mitigation of Nonlinear Distortion in Wideband Radio Transceivers," Ph.D. thesis, Tampere University of Technology, 2011.
- Lauri Anttila, "Digital Front-End Signal Processing with Widely-Linear Signal Models in Radio Devices," Ph.D. thesis, Tampere University of Technology, 2011.
- Yaning Zou, "Analysis and mitigation of I/Q imbalances in multi-antenna transmission systems," Ph.D. thesis, Tampere University of Technology, 2009.

M.Sc. Theses Supervised: Approximately 140 MSc theses supervised at TUT/TAU during 2002-2021

- Names and titles available at www.tut.fi/tutcris

Ph.D. Theses Co-supervised at other universities:

- Zu Fu, "Digital Pre-distortion for Interference Reduction in Dynamic Spectrum Access Networks," Ph.D. thesis, Worcester Polytechnic Institute, Worcester, MA, USA, 2014. Co-supervisor and external examiner.
- Michael Grimm, "Dirty-RF Signal Processing for Mitigation of Receiver Front-end Nonlinearity," Ph.D. thesis, Technical University of Ilmenau, Ilmenau, Germany, 2014. Co-supervisor and external examiner.
- Sascha Burglechner, "Joint Distortion Compensation for Direct-Up-Conversion Transmitters", Ph.D. thesis, Johannes Kepler University Linz, Linz, Austria, 2012. Co-supervisor and external examiner.
- Jian Luo, "Enabling Techniques for Future Broadband High Speed Wireless Communications", Ph.D. thesis, Technical University of Berlin, Berlin, Germany, 2011. Co-supervisor and external examiner.

8. TEACHING AND PEDAGOGICAL COMPETENCE

- 25 cr of pedagogical studies completed successfully
- Degree Programme Head of Computing and Electrical Engineering (1.1.2014 – 31.12.2016), responsible for the whole degree programme at BSc and MSc levels
- Responsible professor of all Communications Engineering related study modules at TAU (1 BSc major & minor, 2 MSc majors & minors)
- Responsible teacher of around 10 individual courses in Communications Engineering field

9. EXPERIENCE IN ORGANIZING MEETINGS AND CONFERENCES

- Technical Program Chair in IEEE VTC Spring 2021 and IEEE SPAWC 2022, Publications Chair in IEEE SPAWC'07 conference, Tutorial Chair in CROWNCOM'14, Track Chair in IEEE VTC 2014 Fall, Track Chair in IEEE VTC 2016 Fall, Track Chair in ASILOMAR'18 and ASILOMAR'21
- Technical Program Committee (TPC) member in numerous IEEE conferences in wireless communications field

10. AWARDS, INNOVATIONS, PATENTS

- Dissertation Award of The Finnish Academy of Science and Letters, 2002.
- Dissertation Award of the Technical Foundation of the City of Tampere, 2002.
- Best M.Sc. Thesis Award in Finland, 2000, awarded by The Finnish Association of Graduate Engineers (TEK).
- Best Student Paper Award at Nordic Signal Processing Symp. 2004 (co-authored together with Zhanyun Duan, Tobias Hidalgo-Stitz and Markku Renfors).
- Best Paper Award at Wireless Telecommunications Symposium 2009 (co-authored together with Ville Syrjälä).
- Best Paper Award at The Fifth Advanced International Conference on Telecommunications 2009 (co-authored together with Stanislav Nonchev).
- Best Paper Award at IEEE Wireless Communications and Networking Conference (IEEE WCNC), 2014 (co-authored together with Xiaofeng Tao, Qimei Cui, et al.)
- Best Paper Award at IEEE Wireless Communications and Networking Conference (IEEE WCNC), 2018 (co-authored together with Alberto Brihuega and Lauri Anttila)
- Best Paper Award at International Symposium on Wireless Communication Systems (ISWCS), 2018 (co-authored together with Elena Peralta Calvo, Toni Levanen, Markku Renfors, Tero Ihalainen, Sari Nielsen and Man Hung Ng)
- Best Paper Award at IEEE International Conference on Communications (IEEE ICC), 2020 (co-authored together with Carlos Baquero Barneto, Sahan Liyanaarachchi, Taneli Riihonen and Lauri Anttila)
- Substantial contributions, in collaboration with companies, to numerous 3GPP standards and standard contributions during 2005-2020 related to HSPA, LTE, LTE-Advanced, LTE-Advanced Pro and 5G NR mobile radio networks
- Large number of invention reports related to HSPA, LTE, LTE-Advanced, LTE-Advanced Pro and 5G NR mobile radio networks

11. OTHER ACADEMIC MERITS AND POSITIONS OF TRUST

Ph.D. Theses Examined at other universities:

- Yue Li, "Complexity Reduction Techniques for Digital Predistortion of Radio Frequency Power Amplifiers," University College Dublin, Ireland, 2020. Reviewer and examiner.
- Zohair Abu Shaban, "Towards the Next Generation of Mobile Localization," The Australian National University, Canberra, Australia, 2018. Reviewer and external examiner.
- Arash Shahmansoori, "Localization with OFDM Signals in 5G Systems," Universitat Autonoma De Barcelona, Spain, 2017. Reviewer and external examiner.
- Ehsan Foroozanfard, "Antenna Cancellation Techniques for Full-Duplex Wireless Devices," Aalborg University, Denmark, 2016. Reviewer and examiner.
- Marta Gatnau Sarret, "Radio Resource Management for 5G Small Cells in Unpaired Spectrum," Aalborg University, Denmark, 2016. Reviewer and examiner.
- Le Wang, "On Providing Energy-Efficient Data Transmission to Mobile Devices," Aalto University, Finland, 2015. Reviewer and external examiner.
- Fernando M.L. Tavares, "Interference-robust air interface for 5G small cells – managing inter-cell interference with advanced receivers and rank adaptation," Aalborg University, Denmark, 2015. Reviewer and examiner.
- Atso Hekkala, "Compensation of transmitter nonlinearities using predistortion techniques - Case studies of envelope tracking amplifiers and radio over fibre links," Ph.D. thesis, University of Oulu, Finland, 2013. Reviewer and external examiner.
- Konstantinos Koufos, "Spectrum Access in White Spaces Using Spectrum Sensing and Geolocation Databases," Ph.D. thesis, Aalto University, Finland, 2013. Reviewer and external examiner.
- Johanna Vartiainen, "Concentrated signal extraction using consecutive mean excision algorithms," Ph.D. thesis, University of Oulu, Finland, 2010. Reviewer and external examiner.
- Esa Ollila, "Contributions to independent component analysis, sensor array and complex-valued signal processing," Ph.D. thesis, Helsinki University of Technology, Finland, 2010. Reviewer and external examiner.
- Timo Nihtilä, "Performance of advanced transmission and reception algorithms for high speed downlink packet access," Ph.D. thesis, University of Jyväskylä, Finland, 2008. Reviewer and external examiner.
- Fernando Hugo Gregorio, "Power amplifier nonlinearities in multiple antenna systems," Ph.D. thesis, Helsinki University of Technology, Finland, 2007. Reviewer and external examiner.
- Marius Sirbu, "Channel and delay estimation algorithms for wireless communication systems," Ph.D. thesis, Helsinki University of Technology, Finland, 2003. Reviewer and external examiner.

- Opponent and PhD Committee member in various doctoral dissertation defenses in Finland, e.g., Aalto University and University of Oulu, and internationally, e.g. Linköping University, Sweden; KTH, Sweden; Chalmers, Sweden; Aalborg University, Denmark; TU Berlin, Germany; TU Ilmenau, Germany; University of Calgary, Canada; Worcester Polytechnic Institute, USA

Other expert duties and positions of trust:

- Scientific evaluator for various international research projects, e.g. under European Commission, The Christian Doppler Research Association, Austria, and Qatar National Research Foundation
- Evaluator in multiple professor and other senior research faculty recruitment processes in Finland (Aalto University, University of Oulu) and internationally (US, Germany, Canada)
- Evaluator in multiple tenure track promotion processes in Finland (Aalto University) and internationally (Drexel University, US; Worcester Polytechnic Institute, US)
- Reviewer for numerous IEEE Transactions and Journals
- Steering Group member of Tekes/Business Finland 5thGear technology programme (1.1.2015 - present)
- Member of TUT Academic Board (konsistori), Jan. 2017 – Dec. 2018.
- Member of the new Tampere University Academic Board (konsistori), April 2018 – present.
- Degree Programme Head of Computing and Electrical Engineering, Tampere University of Technology, Finland. Jan 2014 . Dec. 2016.
- Faculty Council Member of the Faculty of Computing and Electrical Engineering, Tampere University of Technology, Finland. Jan. 2011 - Dec. 2016.

- Steering Group Member and Management Committee Responsible of COST IC0803 “RF/Microwave Communication Subsystems for Emerging Wireless Technologies (RFCSET)” and COST IC1004 “Cooperative Radio Communications for Green Smart Environments” European Research Networks.
- Board Member of Nokia Foundation

12. MEMBERSHIPS AND POSITIONS OF TRUST IN SCIENTIFIC SOCIETIES

- Senior Member of IEEE, Communications Society
- Member of EURASIP SAT on Signal Processing for Communications and Networking
- Editor, IEEE Communications Letters

13. SCIENTIFIC IMPACT

- Number of publications: 543 (Scopus), 468 (WoS, Core Collection)
- H-indices, as of June 2021: 38 (Scopus), 33 (WoS), 49 (GoogleScholar)
- Total citations, as of June 2021: 7316 (Scopus), 5046 (WoS), 11003 (GoogleScholar)