



## PERSONAL DETAILS

Full Name: Marcos Daniel Katz  
Date of birth: 29.01.1962  
Place of birth: Salta, Argentina

**ME IN 100 WORDS:** I am an engineer, a researcher and a professor who enjoy creating new things and solving challenging technical problems. For 30 years, I have worked in leading industry, academia and research centers on many subjects of digital communications, particularly wireless and mobile communications. My most relevant technical areas of experience include analog circuit design, multiple antennas (beamforming, MIMO, etc.), synchronization, short-range communications, cooperative and cognitive communications, mobile clouds and visible light communications. Words that define me are: innovative, hardworking, cooperative, flexible, visionary, patient, future-oriented, enthusiastic and resourceful.

## EDUCATION

- 2002** Doctor in Technology (PhD), University of Oulu, Finland
- 1994** MSEE, University of Oulu, Finland
- 1986** BSEE, University of Tucumán, Argentina
- 1979** Technician in Electronics, Escuela Nacional de Educación Técnica No. 2, Salta, Argentina

## PROFESSIONAL EXPERIENCE (DETAILS IN NEXT PAGES)

- **Industrial Background:** 17 years of R&D experience in large telecom manufacturers (Nokia, Finland; Samsung Electronics, South Korea)
- **Applied Research Background:** four years working for Technical Research Centre of Finland (VTT)
- **Academic Background:** Seven years as Full Professor at Centre for Wireless Communications (CWC), University of Oulu, Finland. (**Current position**)

## PUBLICATIONS (SEE SEPARATE DOCUMENT FOR DETAILS)

- Books:** 6 (co-authored, co-edited) Published by Springer and Wiley. Three books also published in Chinese.
- Papers:** +150 (journal, international conferences, book chapters)
- Patents:** 54 (single-author and co-author) In areas of analog circuit design, synchronization, multiple antennas, cooperative communications, etc.)

## IMPACT (AS OF 1.12.2016)

- Citations: 3467
- h-index: 27

## LEADERSHIP POSITIONS

- **2006-2007** Elected Vice-Chair of Working Group 5 on Short-Range Communications of WWRF (Wireless World Research Forum)
- **2008-2011** Elected Chair of Working Group 5 on Short-Range Communications of WWRF (Wireless World Research Forum)
- **2006-2008** Technical Manager of EU FP6 Project WEIRD on applying WiMAX in a number of challenging scenarios ([www.ist-weird.eu](http://www.ist-weird.eu))
- **2006-2012** WWRF Board Member and WWRF Vision Committee Member
- **2011-2015** Member of the Management Committee of EU COST Action (IC 1101) on Optical Wireless Communications (Optiwise)
- **2003-2009** Team leader at Samsung Electronics (South Korea) and Technical Research Centre of Finland

## LANGUAGE SKILLS

- English:** Fluent
- Spanish:** Fluent (mother tongue)
- Finnish:** Fluent
- Hebrew:** Basic skills

### Work Address

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### Home Address

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Finland



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## PROFESSIONAL EXPERIENCE

### Full Professor, 12.2009 - Present

Centre for Wireless Communications, University of Oulu, Finland

- Leading and supervising research activities in the areas of cooperative and cognitive networking, efficient resource utilization, among others
- Developing the concept of Mobile Clouds, where a number of different resources can be shared, moved, summed up in a cooperative arrangement of wireless devices
- Scientific leader of national project Santa Clouds, on mobile clouds funded by Tekes (2011-2013)
- Responsible for EU Celtic Project Green-T, national projects ATLAS, COIN, SLAM and INDICO (Tekes)
- Work on Visible Light Communications (VLC). First experimental testbed (uplink and downlink) and first doctoral dissertation on VLC in Finland. Testbed on hybrid optical-radio wireless network with seamless handover.

### Chief Research Scientist, 05.2006 - 12.2009

Technical Research Centre of Finland (VTT), Oulu, Finland

- Leader of Cognitive and Cognitive Networks team (eight researchers: PhDs and graduate students)
- Co-responsible for Tekes' funded project COGNAC, on cognitive opportunistic networks
- Technical Manager of EU FP6 Project WEIRD on WiMAX ([www.ist-weird.eu](http://www.ist-weird.eu)) June 2006-May 2008
- Involved in several internal research projects at VTT, national projects as well as EU projects.
- Technical consultant in other research groups

### Principal Engineer; 01.2003 - 02.2006

Samsung Electronics, Suwon, South Korea

- Principal Engineer/Technical Adviser of the entire research group (approx. 100 engineers)
- Leader of MIMO Research Group (5 PhD's, 4 MSEE's)
- Research management/technical contributor in different technical areas, including MIMO-OFDM systems, spatial multiplexing, diversity techniques, multi-hop techniques, cognitive radio, synchronization, etc.
- Contributions to IEEE standards (IEEE 802.16e, 802.16f and 802.22), Wireless World Research Forum (WWRF), etc.
- Key contributor to developing company's 4G strategy. Main contributor (technical and editorial) in book "4G Roadmap and Enabling Technologies" by Y.K. Kim and R. Prasad (published by Artech House in 2006)
- Other research activities: 4G definition and strategic issues, optical wireless communications, cooperative techniques in wireless systems. Participated in development and organization of "Samsung 4G Forum" in years 2003-2005
- Main responsible for writing technical specifications for 4G Framework (proprietary multicarrier-based high speed wireless communication system)
- Negotiated and established several research outsourcing projects, mainly with European and North American universities
- Specified technical contents, goals, incentive program and other contractual conditions for a large-scale research project on 4G with Prof. Ramjee Prasad, University of Aalborg, Denmark
- Project Coordinator and Main Project Responsible from Samsung side in years 2003 and 2004. Work force: +15 researchers in Aalborg (11 full-time) and 10 in Samsung
- Responsible for activities in Work Package dealing with MIMO (channel measurements, modelling, etc.) in years 2004-2005.
- European FP6's MAGNET Project: Member of the Executive Committee during planning phase (2003)
- Appointed 4G Technical Expert from April 2003- April 2004 (annual distinction in Telecommunications R&D Center, Samsung Electronics)
- World Wide Research Forum (WWRF): active participation and contribution in working groups WG 4 (new radio interfaces) and WG5 (short-range communications). Co-author of white paper on Optical wireless communications included in WWRF's Book of Visions
- Elected WWRF Vice-Chair (WG 5) for 2006.
- Strategic Cooperation: Participation in meeting and technical discussions (4G, 3G evolution, etc.) with world-leader companies (DoCoMo, Ericsson, NEC, Nokia, Siemens, etc.)
- Produced several papers, standard contributions and patents
- Developed extensive networking relationships with academia in Europe and North America

### Research Scientist, 01.2001 - 12.2002

Centre for Wireless Communications, University of Oulu, Finland

- Research work mostly concentrated on several aspects of synchronization, including
  - Code acquisition in CDMA networks
  - Rake receiver code acquisition
  - Exploiting antenna arrays in synchronization: Proposal and study of a novel technique for synchronization: two-dimensional (delay-angle) code acquisition.
- Developed strong analytical and conceptual skills as well as knowledge of practical simulation tools (MATLAB)
- Published several technical papers in prestigious refereed journals and international conferences. Also two patent applications were filed and granted
- Supervision of several MS Thesis, review of journal and conference papers

### Senior Research Engineer, 05.1995 - 12.2001

Nokia Networks, Oulu, Finland

- Developing concepts and algorithms for base stations using adaptive antennas in TDMA (GSM, etc.) and CDMA (WCDMA, etc.) systems, including:
  - Beamforming and diversity techniques in base stations
  - Space Division Multiple Access (SDMA) techniques
  - Switched beams and fully adaptive arrays
  - Space-time coding
  - Spectrally efficient downlink diversity techniques

## PROFESSIONAL EXPERIENCE (CONT.)

- Load control in power amplifiers
- Research contact person between Nokia Networks and University of Oulu
- 25 patent applications (single- and co-authored) in the field of wireless communications and adaptive antennas were filed.

### Research Engineer, 06.1987 - 04.1995

Nokia Telecommunications, Haukipudas, Finland

- Analog circuit design for fast subscriber interfaces, including PDH and SDH systems (1.5/2/34/155 Mbps)
- Specification, design and testing of high speed twisted- and coaxial-cable PCM line interfaces
- Design of high-speed circuitry, including switching circuits, pulse transformers, PCB layout for fast circuits, etc.
- Close cooperation with IC manufacturers (EXAR, LevelOne, etc.) to develop and test new devices
- Development of testing benches according to standard requirements. Use of advanced measurement instrumentation including digital transmission analyzers, network analyzers, programmable signal generators, etc.
- Design using CAD tools (Mentor Graphics, Apla, etc.)
- Set-up of a small-scale transmission network where a proprietary Transmission Management System (TMS) was extensively tested
- Few patents applied in the field of analog circuit design were filed

### Teaching Assistant, 03.1982 - 02.1987

Laboratory of Experimental Physics, Universidad Nacional de Tucumán, Tucumán, Argentina

- Design of experiments for demonstrating and learning different basic principles of physics
- Guiding undergraduate students
- Developing methods for measurement physical parameters with minimum error

## ORGANIZER

### EVENTS ORGANIZED IN FINLAND

- **2016** European Wireless, 10-20 May, 2016, Oulu, Finland, **General Chair**
- **2014** First Int. Conference on 5G for Ubiquitous Connectivity, 26-27 Nov. 2014, Levi, Finland, **Organizing Committee Member**
- 30th WWRF meeting 23-25 Apr. 2013, Oulu, **General Chair**
- **2008** Communications Platform Seminar, Technical Research Centre of Finland, **General Chair**
- **2007** Communications Platform Seminar, Technical Research Centre of Finland, **General Chair**
- **2005** International Workshop on Convergent Technologies, 6-10 Jun 2005 Oulu, Finland, **Organizing Committee Member**
- **2004** International Workshop on Wireless Ad Hoc Networks, 31.05-3.06, Oulu, Finland, **Organizing Committee Member**

### ORGANIZED INTERNATIONAL EVENTS

- **2015** European Wireless, 20-22, May, Budapest, Hungary, **General Co-Chair**
- **2015** IEEE Workshop on Cognitive and Cooperative Wireless Networks (CoCoNet 7), 8-12 Jun, London, UK. **General Co-Chair**
- **2014** IEEE Workshop on Cognitive and Cooperative Wireless Networks (CoCoNet 6), 16-20 Jun, Sydney, Australia. **General Co-Chair**
- **2014** Panel Organizer and Chair: "Beyond 10G", panel at IEEE Wireless Communications and Networking Conference (WCNC), 6-9 Apr., Istanbul, Turkey
- **2013** IEEE Workshop on Cognitive and Cooperative Wireless Networks (CoCoNet 5), 9-13 Jun, Budapest, Hungary. **General Co-Chair**
- **2012** IEEE Workshop on Cognitive and Cooperative Wireless Networks (CoCoNet 4), 10-15 Jun, Ottawa, Canada. **General Co-Chair**
- **2010** IEEE Workshop on Cognitive and Cooperative Wireless Networks (CoCoNet 3), 23-27 May, Cape Town, South Africa. **General Co-Chair**
- **2009** IEEE Workshop on Cognitive and Cooperative Wireless Networks (CoCoNet 2), 14-17 Jun, Dresden, Germany. **General Co-Chair**
- **2008** IEEE Workshop on Cognitive and Cooperative Wireless Networks (CoCoNet 1), 8-12 Jun, Beijing, China. **General Co-Chair**
- **2008** Wireless Grids Workshop (collocated with GridNets), Beijing, China, **General Co-Chair**
- **2008** Panel Organizer and Chair: "Cognition and Cooperation: The Way Forward", PIMRC, 15-18 Sep., Cannes, France
- **2007** Panel Organizer and Panelist: "Cognitive and Cooperative Wireless Networks", panel at International Conference on Communications (ICC), 24-28 Jun., Glasgow, UK

## **ORGANIZER (CONT.)**

- **2006** Panel Organizer: "Cooperative Techniques for Future Wireless Networks", panel at PIRMC, 11-14 Sep., Helsinki, Finland
- **2006-2007** As a vice-chair of Working Group 5 of Wireless World Research Forum, I organized four international workshops at WWRF16– WWRF19 in Shanghai, Heidelberg, Espoo and Chennai
- **2008-2012** As a chair of Working Group 5 of Wireless World Research Forum, I organized nine international workshops in WWRF20-WWRF28 in Ottawa, Stockholm, Paris, Beijing, Penang, Kingston, Doha, Dusseldorf and Athens
- **2003-2005** Organized several company-internal international workshops and presentations at Samsung Electronics

## **TUTORIALS AND PRESENTATIONS**

- **2010** Tutorial on Cooperative and Cognitive Networks, PIMRC' 2010, Istanbul, Turkey, Sept., 2010
- **2009** Tutorial on Cooperative and Cognitive Networks, GLOBECOM' 09, Hawaii, USA, Dec., 2009
- **2004** Half-a-day tutorial: "Wireless Communications: Visions, Roadmaps and Enabling Technologies" in European Conference Wireless Technology (ECWT) Conference, Amsterdam, Netherlands, Oct. 13, 2004
- **2000-2015** Presented a large number of talks as a visiting scientist, professor and keynote speaker in industry and academia

## **TEACHING**

- **2011-2016** Responsible for the course "Mobile Telecommunication Systems" (5cu) at University of Oulu. The course includes exercises and practical laboratory work
- Organized several book exams
- Organized short-courses by visiting professors

## **REVIEWER AND EDITORIAL ACTIVITIES**

- Editor of Transactions of Internet and Information Systems (Korea)
- Editorial Board of Periodica Polytechnica Electrical Engineering and Computing Science Journal (Hungary)
- **2006** Guest Editor: Wireless Personal Communications, Springer, Special Issue on Cooperation in Wireless Networks
- **2000-2015** Served as a Technical Program Committee in tens of international IEEE conferences
- Project reviewer: Reviewed project proposals for Aalborg University (Denmark), Qatar National Research Fund, Tekes (Finland), University of Minnesota, etc. Also reviewed projects for industry
- Reviewer for numerous journals and conferences (IEEE and others)

## **OTHER PROFESSIONAL ACTIVITIES**

- **2008** Vice-chair of IEEE Vehicular Technology Society, Chapter Finland
- **2009** Chair of IEEE Vehicular Technology Society, Chapter Finland

## **ACADEMIC COOPERATION**

- Aalborg University, Denmark; Sharif University, Iran; Swansea University, UK; Tucumán National University, Argentina; Oxford University, UK; Boston University, USA; CTTC, Spain, Aalto University, Finland, Holon Institute of Technology, Israel, Limoges University, France, Tampere University of Technology, Finland, Eastern Finland University, Finland, Xiamen University, China, Ozyegin University, Turkey, Dresden Technical University, Germany, Learning and Educational Technologies (LET), University of Oulu; Centre fo Health and Technology (CHT), Open University, Netherlands; ETH, Switzerland, Yonsei University, Korea, Ben Gurion University, Israel; Centre for Internet Excellence, University of Oulu, Finland, Boston University, USA, Texas A&M, USA
- Participation in cooperation with Latin America Universities through FinCEAL (Developing Finnish Science, Technology and Innovation Cooperation between Europe, Africa and the Latin America and the Caribbean Region)
- Recent research visits: Oxford University, UK (five weeks, summer 2015), Xiamen University, China (five weeks, Autumn 2015)

## **INDUSTRIAL COOPERATION**

- Nokia (Finland), Samsung (Korea, UK), Intel (US), Disney (Switzerland), Huawei (Sweden), Bittium (former Elektrobit, Finland), EXFO (Finland), Valtavalo (Finland).

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- Nokia (Finland), Samsung (Korea, UK), Intel (US), Disney (Switzerland), Huawei (Sweden), Bittium (former Elektrobit, Finland), EXFO (Finland), Valtavalo (Finland).

## OTHER COOPERATION

- BusinessOulu (City of Oulu), Oulu Business School (University of Oulu)

## EXTRACURRICULAR

- Rotary member, responsible for international activities in our club (2014-2015)
- Hobbies: Photography, choir.

## REFERENCES

- **Frank Fitzek**, Professor, Dresden Technical University, Germany  
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