

WWRF43

Intelligent Applications for a 5G Connected World

NPL, Teddington, UK 9-11 October 2019



Thanks to

WIRELESS WORLD
RESEARCH FORUM®

Our Hosts



WWRF Sponsor



WWRF Role and principles of operation

- Develop future vision of the wireless world
- Inform and educate on trends and developments
- Enable and facilitate the translation of the vision into reality
- Bring a wide range of parties together to identify and overcome significant roadblocks to the vision

- Global
- Open to all
- Covers every platform
- Not
 - standards body
 - research funding body
 - A typical research conference
- Based on membership
- All can attend meetings and make contributions



Membership



- Manufacturer
- Network operator
- Industry organization
- Academic institute
- Research organization



- Africa
- Americas
- Asia
- Europe



Grades of Membership

- Sponsor members (€12,000)
 - Member of SB, acknowledged in meeting and promotion material
- Full members (€1,200)
 - Full voting rights, academic members free registration and student travel grants
- Associate members (€250)
 - Full rights, available to SMEs (<250 employees)
- Individual members (€100)
 - Available to academics from developing countries, and individual experts, consultants, etc.



How does WWRF work?

- Hold two meeting per year
 - as well as the WWRF 5G Huddle and other special and invited sessions
- Take input from our members and meeting participants
- Put the results together and bring out a vision of the future research challenges
- Promote the vision through publication and working with global and regional partners



WORKING GROUPS

WGA/B

User Needs & Requirements; Services, and Devices, in a Wireless World.

Promoting a secure communications environment across multiple Socio-Economic settings based on user needs and requirements.

WG HF

High Frequencies (mmWAVE and THz) Radio Communications Technologies

Higher frequency radio communication technologies are expected to enable the vision of wireless transmissions towards the region of 1 Tbit/s. Improved channel modelling and the design of appropriate waveforms, baseband processing, medium access control (MAC) schemes and antenna array configurations are addressed.

VIP Water

Vertical Industry Platform - 5G for smart water management

A discussion platform about water management and study of the communication requirements, to assess whether 5G can take us faster and further than existing ICTs.

VIP RAIL

Track-to-Train communications

The focus identifying the potential benefits and hurdles for the future adoption of what today is known as 5G by rail transport systems worldwide. Security, reliability, IoT and dependability are playing a focal role in future radio communication systems for efficient train operations and safety.

WGC

New directions in communication architectures and Technologies

Guiding the mobile industry in the use of software, virtualization and cloud computing in future networks (both wireless and wired) by developing end-to-end network architectures, identifying the specific requirements and issues and addressing them by providing solutions that are practical and business driven.

WGD

Radio Communication Technologies

Advanced radio technologies and spectrum issues are investigated, to optimise the design of the air interface, medium access and heterogeneous multi-user, multi-RAT systems and identify trends and impact the wireless evolution towards 5g and beyond.

WG WAI

AI for Wireless Communications

Artificial Intelligence applied to the wireless communications domain is referred to as Wireless Intelligence (WI). This will be in all sub-systems within the wireless ecosystem. WI is expected by the market to not only reduce operational expenditures (OPEX), but also to increase user quality of experience (QoE) as well as help the introduction of new value chains in an increasingly competitive and complex business environment.

VIP CV

Connected vehicles

Focuses on research that looks five to ten years ahead in order to meet the requirements of the automotive and transport industries based on the next generation wireless technology.

VIP EMW

Ehealth, mobile health and wearables

Developing an e/m-Health and wearables vertical industry paradigm to expose the requirements of such systems to be 5G-enabled



What is WWRF?

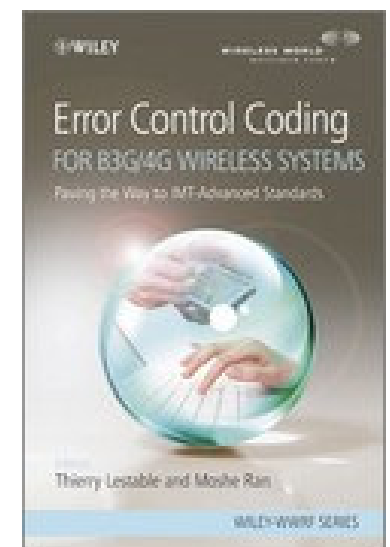
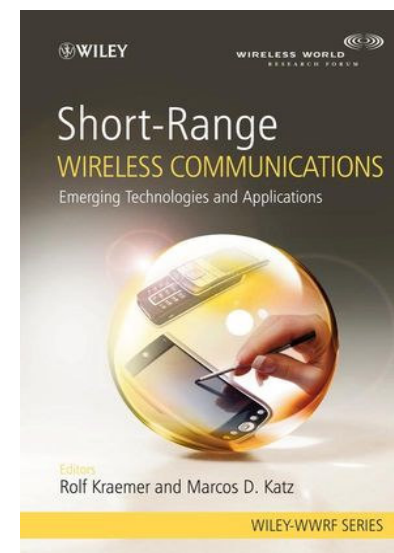
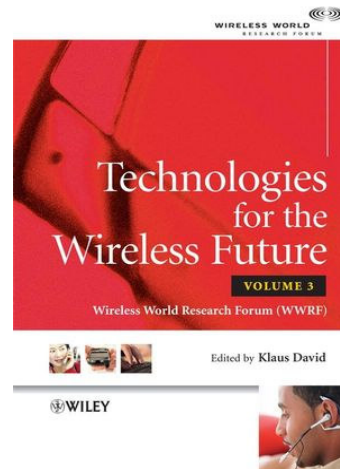
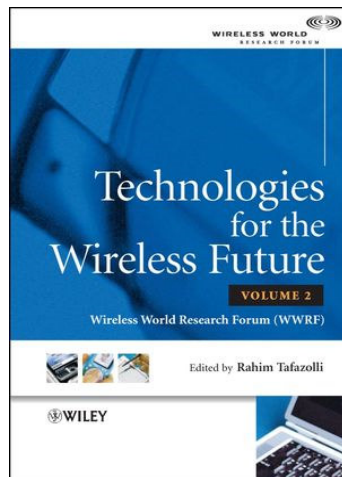
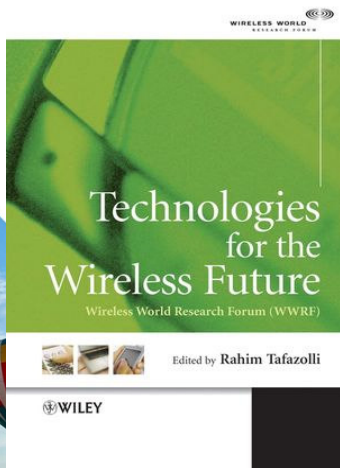
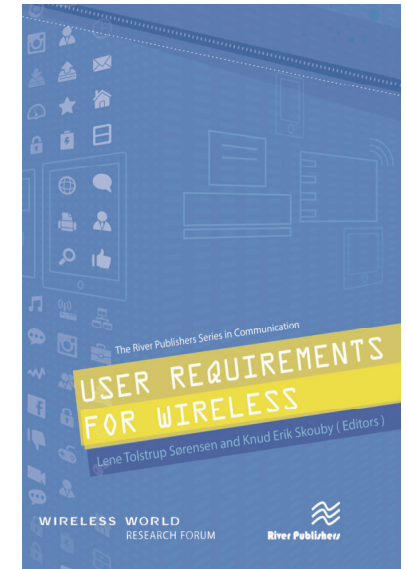
- Founded in 2001
 - Through WSI an EU-funded research landscaping project
- Based in Switzerland
- Independent and owned by its members
- Promoting visions of the wireless future



WWRF outputs

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- WWRF Outlook – published version of White Paper
- WWRF Library – proceedings of each meeting
- WWRF – Wiley and River book series



Outlooks to look out for

- Published in 2019
 - Artificial Intelligence in the Wireless Arena
 - Connected vehicles
- In development
 - 5G business models
 - 5G and the water industry
 - Millennial users in a 5G context
 - Cybersecurity challenges in the Wireless World
 - Ehealth enabled by 5G and machine learning
 - Network slicing
 - High speed rail services and 5G
 - Thz communications and system architectures
 - 6G/Beyond 5G



VT Magazine

- WG leaders to recommend papers
- Call for papers for next issue, deadline mid-August

New working groups

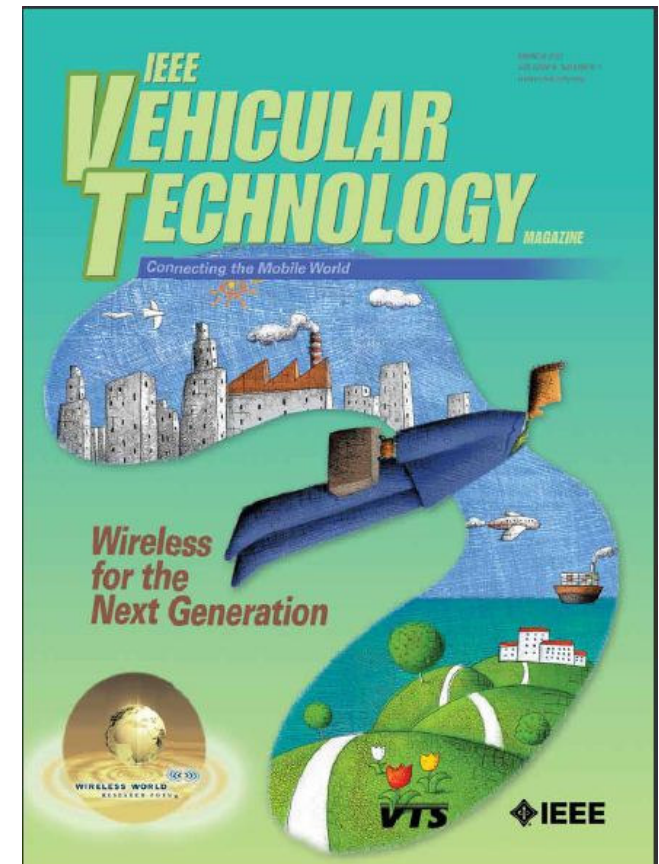
- B5G – white paper planned to deliver in October
- Security – see WGA/B



Publications

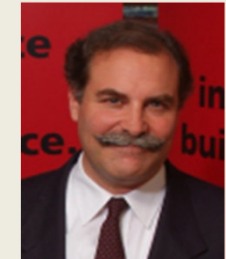
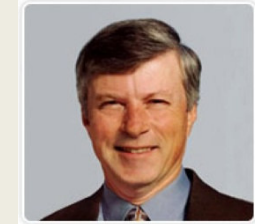
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WWRF continues cooperation with IEEE Vehicular Technology Society. Selected papers from each WWRF Conference appear in the next available issue of the IEEE VT Magazine



WWRF Fellows

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New Fellow

- Dr Vino Vinodrai
 - Former Treasurer of WWRF
- Nominations open for new fellows in 2020



Liaisons with Global 5G activities

- Future Forum
- NGMN
- ITU WP5D
- ETSI
- 3GPP
- GTI
- 5GPPP



WWRF is looking beyond 5G

First discussed '6G' in 2016

Recent workshop identified the major technology challenges and relevant application and usage scenarios for systems B5G

1. Technology enablers/new air interface

- THz Communications
- Large/massive antenna processing
- Molecular Communications

2. New architectures/system concepts: machine learning, AI

3. New deployment concepts (e.g. islands of BB, ..)

4. New apps/use cases (virtual reality, ..)

5. New and critical challenges: Connecting the unconnected, coverage, society impact, 'endless' battery life, cost of new technologies,..



WWRF: Fostering 5G and Beyond Innovation Ecosystem

- An international “networking platform” between industry and academia
- Long experience in collaboration with research, regulatory and vision developers across continents
- Regular and active collaboration with ITU – contributions made to several WP 5D and WP 5A events
- Active in 5G space from 2012 onwards through WWRF meetings, international workshops and Special Sessions organization
- 5G Huddle events around the globe (5 such event organized so far)
- Academic and industry members (of WWRF) actively working together in the framework of the WWRF IMT 2020 Evaluation Group
 - Performance evaluation of PHY and MAC through simulations is aimed at.



Access to meeting papers

- <https://www.wwrf.ch/wwrf43.html>
- Username: wwrf-43
- Password: ?lonDon19



Highlights of this meeting

- Plenary sessions
 - Vertical industries
 - WWRF participation in IMT-2020 evaluation process
 - Special workshop on
- Working Groups
- Elections for non-executive Steering Board members
- Social programme

