Developing 5G Markets and Business Models

WWRF: 5G Huddle - Towards a global 5G vision
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GISFI in a nutshell

- Indian standardization body active in area of Information and Communication Technologies (ICT), related application areas, such as energy, telemedicine, wireless robotics, biotechnology

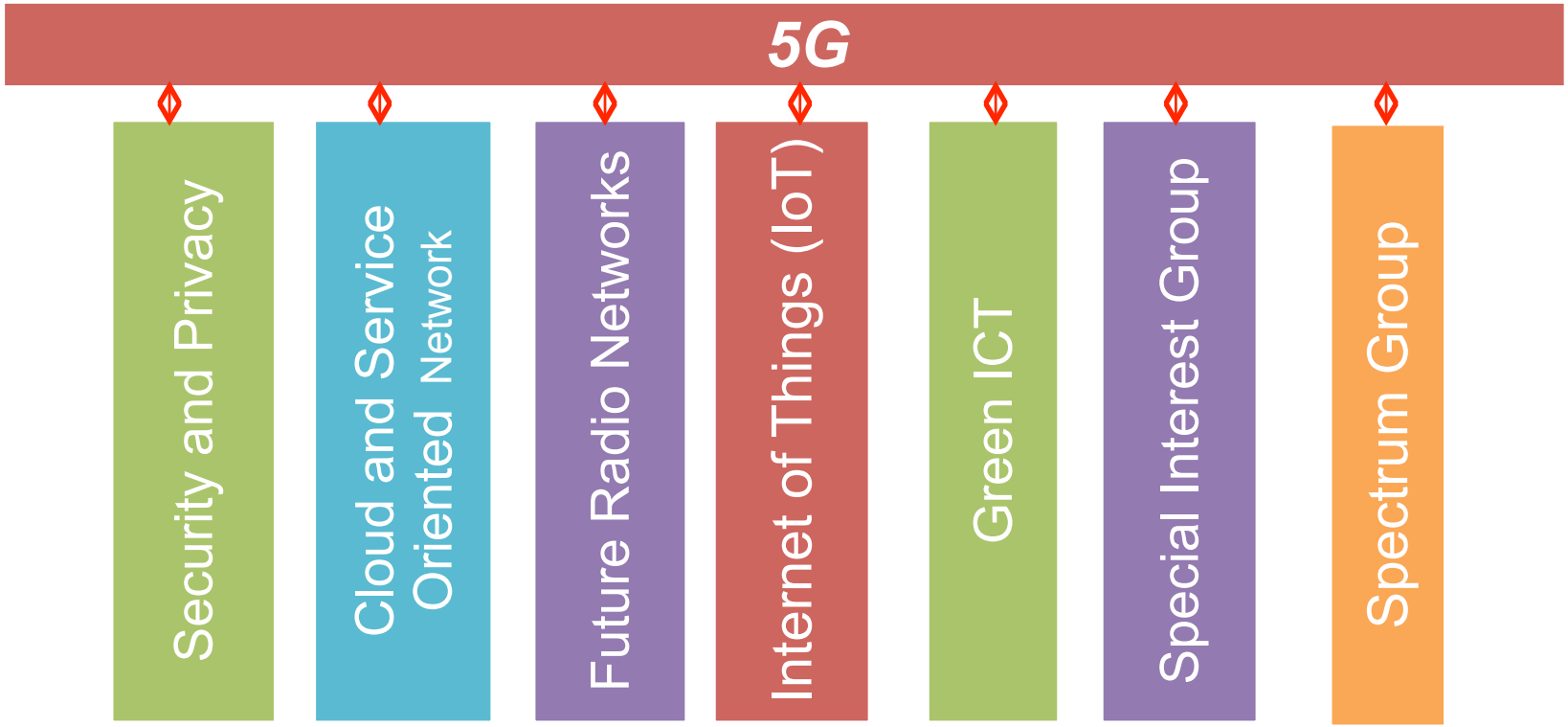
- Recently conducted first in-depth brainstorming workshop under the theme **5G Standardization: WISDOM**

- GISFI is celebrating its 5th anniversary this year

  - Approved by Indian Government (DoT)
  - Contributing to Indian standards via TEC, TRAI, ...
  - Focuses on Indian indigenous requirements
  - Indian capacity building via Ph.D. programmes
  - Strong relationships with Indian academia
  - Relationships with SDOs (ITU-T, ARIB, ETSI, OMA, TIA, TTC, WWRF, ...)

GISFI in a nutshell

GISFI, focusses on 5G through the its working and special interest groups



5G: History of Initiatives

Year	5G Initiative	Entity	Country
2008 February	WISDOM: Wireless Innovative System for Dynamic Operating Megacommunications [1]	Keynote Speech: IEEE Conference on Cognitive Radio and Advanced Spectrum Management CTIF, Aalborg University	Denmark
2008 November	5G through WISDOM [2]	CTIF, Aalborg University	Denmark
2008 November	5G systems based on Beam Division Multiple Access [3]	South Korea IT R&D department	South Korea
2012 May	First 5G System [3]	Samsung Electronics	South Korea
2012 October	5G Research Centre [3]	University of Surrey	UK
2013 November	Research on 5G systems [3]	Huawei Technologies Co. Ltd	China

[1]Ramjee. Prasad, (2008, February). Keynote Speech – Wireless Innovative System Dynamic Mega communications (WISDOM), in IEEE CogART'08: First IEEE InternationalWorkshop on Cognitive Radio and Advanced Spectrum,: http://www.wikicfp.com/cfp/servlet/event.showcfp?eventid=2104&copyownerid=538
[2] R. Prasad.(2008, November). Convergence towards Future, CTIF Workshop[online].Available:
[3] 5th generation mobile networks, Wikipedia [online], http://en.wikipedia.org/wiki/5G (Accessed: 25 January 2014)

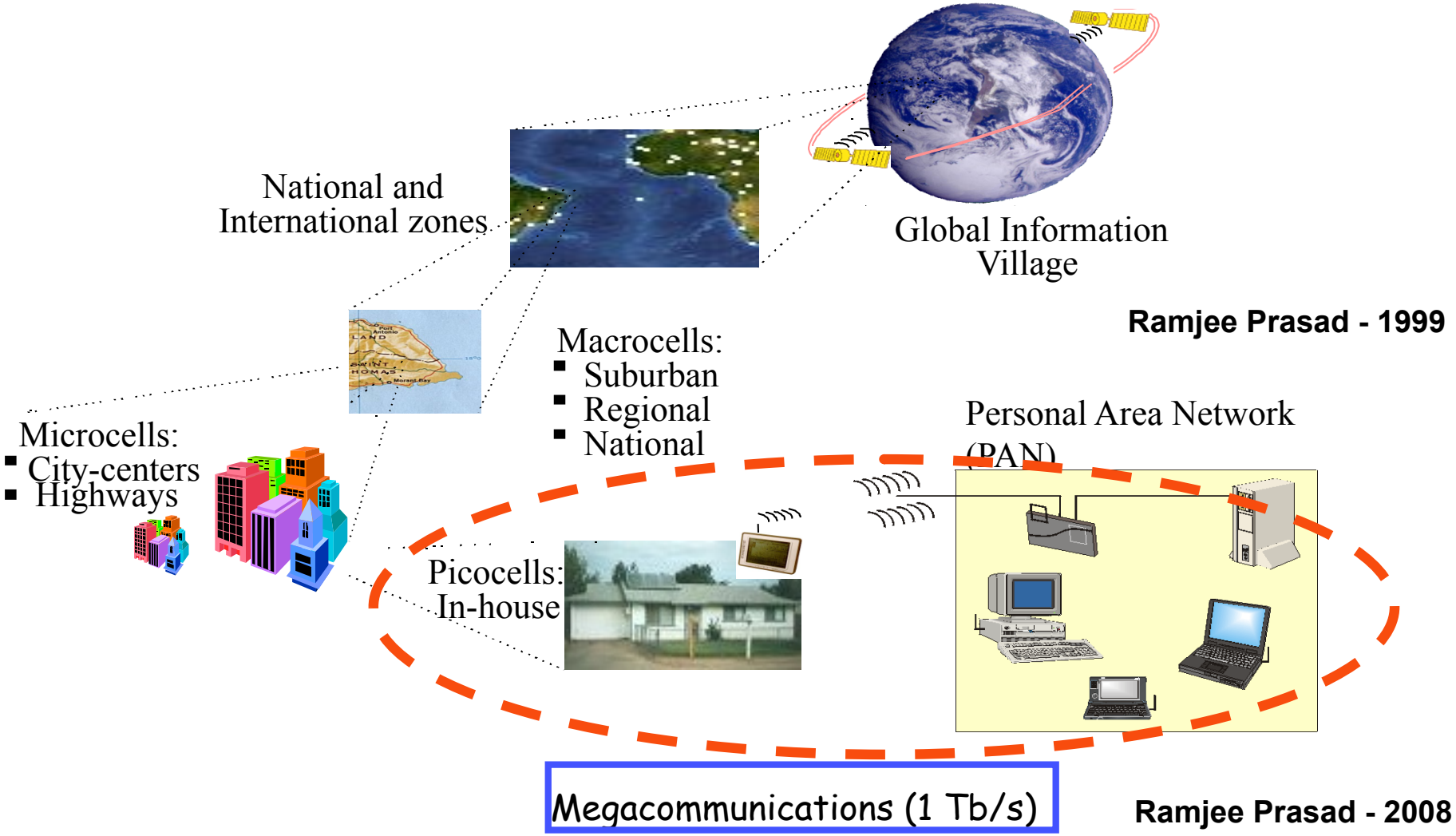
WISDOM

- WISDOM is an evolution towards a new communication connectivity era, offering frequencies up to Tera-Hertz and data rate up to Tbps.

- WISDOM exploits the 4G infrastructure and leads the wireless communication towards the realization of true 5G systems.

- Tangible products software and hardware components for operators, vendors & service providers.

Global Information Multimedia Communication Village (GIMCV) based on WISDOM



WISDOM – 5G : Business Opportunity

- Unification of pico, micro and macro cells
- Opportunities in controlling unified underlying intelligent core network
- Mm waves, beam forming and massive MIMO - IPRs
- Maximising utility of Internet of Things (IoT) Cyber Physical System (CPS) implementations
- Encash REAL communication possibility instead of just ‘digitized’ comm –**Human Bond Communication**

WISDOM – 5G : Business Opportunity

- New applications based on very high speed mobility and navigation : Using Communication, Navigation, Sensing and Services (**CONASENSE**[1])

- Utilizing new service models
  - Anything as a Service
  - Things as a Service
  - Sensing as Service

1 CONASENSE: Vision, Motivation and Scope. Journal of Communication, Navigation, Sensing and Services (CONASENSE),

WISDOM – 5G : Business Opportunity

- Mobile devices as a universal communication and interaction devices, especially with complete unification of access technologies

- Designing, adapting to fast emerging and disappearing disruptive technologies would be key for flourishing business

Security Challenges 5G

- Disappearance of network borders
- Large scale international cyber disputes – Cyber Wars
- Spectrum related security challenges
- Narrowing / undefinable difference between legitimate and illegitimate activities due to myriad of communicating devices
- No legal mechanisms governing machine to machine interactions

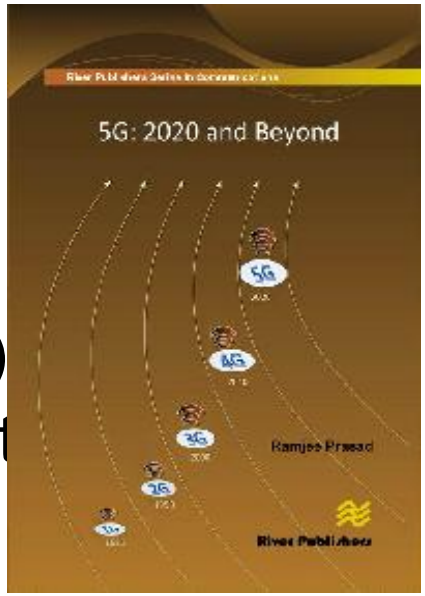
Security Challenges 5G – Possible Mitigation Mechanism

- Unique ID: A given mobile device is recognized in a manner that differentiates it from other devices then requirements for authentication and authorization could be avoided, and unlawful activity controlled

- Privacy by Design: Designing of network components and the operational core network in WISDOM 5G with privacy and security as fundamental objectives, and not as afterthought could ensure reliable privacy and security

Reference

5G: 2020 and Beyond



Topics broadly covered in this book are:

- Wireless Innovative System for Dynamically Operating Mega Communications (WISDOM)
- Millimeter Waves and Spectrum Management
- Cyber Security
- Device to Device Communication

River Publishers (http://riverpublishers.com/book_details.php?book_id=252)