Welcome and Introductions -- Ashutosh Dutta
Initiative Overview/Background -- Ashutosh Dutta
Working Group Reports
- Web Portal/Content Development -- James Irvine
- Publications -- Geoffrey Li/Chih-Lin I
- Education -- Rulei Ting/Ravi Annaswamy
- Community Development -- James Irvine/Alex Wyglinski
- Roadmap -- Mischa Dohler/Chi-Ming Chen
- Standards -- Alex Gelman/Paul Nikolich
- Industry Engagement -- Meng Lu/Michael Condry
- Conferences/Events -- Ashutosh Dutta/Latif Ladid
Discussion and Wrap-Up -- Ashutosh Dutta
IEEE 5G Initiative Overview

Ashutosh Dutta, Co-Chair
Gerhard Fettweis, Co-Chair
Harold Tepper, Senior Program Director

17 November 2016
- Foster collaboration and connect technical & business communities to IEEE 5G experts and resources
- Establish IEEE as a Thought Leader and essential to the 5G community
- To be recognized as the go-to resource for engineering and technology professionals in industry, academia and government working on 5G
- Develop and promote valued programs, products and services for the 5G community
- Present a single IEEE face/voice to the 5G marketplace
- Be a true global 5G initiative capturing the needs of all global regions
- Create a neutral platform/forum where those interested in 5G can engage and collaborate
- Be the catalyst for IEEE cross-society activities on 5G
IEEE, like many other organizations, believes that 5G ecosystem is rather large and will cover many different areas:

- Not only an evolution of LTE
- New services, new technologies, new frequencies (6 GHz and mm-wave), new industries, new business models
- Multi connectivity across bands & technologies
  - carrier aggregation with integrated MAC across sub- 6GHz & above 6GHz, 802.X and macro cells (legacy)
  - carrier aggregation for mission-critical resilience via multi-connectivity
- “Rethinking” of fundamental areas used in previous ‘Gs’ (cell architectures, antennas, core networks, etc. -- Is it appropriate to continue to use the word “generation”?)
Emerging applications such as SDN/NFV, IOT, M2M, eHealth are some key drivers for 5G

Helps to build a neutral environment involving operators, vendors, academics, regulators, and users to identify problems and propose solutions

5G is disruptor and creates opportunities for startups and entrepreneurs

IEEE can drive the ongoing industry efforts with an all inclusive approach
- Establish and grow a vibrant global 5G Technical Community that binds heavily with the IEEE
- Identify standardization opportunities and standardization gaps related to 5G
- Facilitate the development of 5G technical architectures
- Develop 5G products: Conferences, Publications, Education, Training, etc.
- Leverage IEEE’s value and platform for 5G industry-wide consensus development
- Help create a vibrant 5G ecosystem (e.g., policy) toward 2020 and beyond
- Develop a future roadmap for the anticipated paradigm shifts (evolutionary and revolutionary)

- Participation by over 30 volunteers and IEEE staff representing 12 Societies/OUs
  - Communications
  - Computer
  - Solid States Circuits
  - Signal Processing
  - Vehicular Technology
  - Technology and Engineering Management
  - Instrumentation & Measurement
  - Intelligent Transportation
  - Microwave Theory and Techniques
  - Standards Association
  - Educational Activities
  - Future Directions

Identified Working Groups and Projects for 2016/2017
2016 Milestones

- **Initiative Launch**
  - Convoked 2 day kick-off workshop in late Aug.
  - Attended by over 30 volunteers/staff representing 12 societies/councils/OUs

- **Working Group Formation**

- **5G Summits**
  - Conducted 6 summits across the world: US, China, Germany, India, and Denmark

- **Roadmap (Workshop at Globecom)**
  - Launched Technical Working Groups including Standardization Building Blocks, Mobile Edge Cloud, Massive MIMO and Millimeter Wave

- **IEEE 5G Web Portal**
  - Launched new portal on 6 October 2016

- **IEEE 5G Newsletter**
  - Named Editor-in-Chief, Managing Editor and Assistant Managing Editor

2017 Plans

- **5G Summits (www.5gsummit.org)**
  - Continue to conduct summits on a global basis

- **Roadmap**
  - Develop and publish an IEEE 5G Roadmap modeled after the ITRS Roadmap

- **Publications**
  - Launch an IEEE 5G Newsletter with original content focused on a broad audience

- **Web Portal/Content Development**
  - Refresh the portal on a regular basis with original content including written Q&As, interviews, opinion pieces and podcasts

- **Community Development**
  - Establish and build a global, engaged IEEE 5G Community through a broad range of channels including Collabratec, Twitter and LinkedIn

- **Education**
  - Introduce a series of webinars and tutorials

- **Standards**
  - Inventory, update and track 5G related standards activity across industries
Workshop on IEEE 5G Initiative Roadmap
8 December 2016 9:00am-4:00pm
Click here to contribute to the workshop

What's New
5G's Role in the Internet of Things - Live Webinar
Thursday, 17 November 2016

Feature Article
Millimeter Waves Travel More Than 10 Kilometers in Rural Virginia 5G Experiment
A key 5G technology got an important test!

Technology Spotlight
User-Centric Networks will Drive New Architectures
UCNs will have a broad and significant impact on how networks are developed

Useful Links
- IEEE 5G Summit
- Infographic: On the Road to 5G

IEEE TRIVIA
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IEEE International 5G Summit

- Princeton, New Jersey
  - Tuesday, May 26, 2015
- Toronto, Canada
  - Saturday, Nov. 14, 2015
- Santa Clara, California
  - Monday, Nov. 16, 2015
- Patna, India
  - Tuesday, March 29, 2016
- Aalborg, Denmark
  - Friday, July 1, 2016
- Austin, Texas
  - Wednesday, August 3, 2016
- Dresden, Germany
  - Thursday, September 29, 2016
- Tianjin, China
  - Saturday, October 29, 2016
- Berlin, Germany
  - Wednesday, November 2, 2016
- Seattle, Washington
  - Saturday, November 5, 2016
- New Delhi, India
  - December 2, 2016
- Lisbon, Portugal
  - Thursday, January 26, 2017
- Kuwait City, Kuwait
  - March, 2017
Steering Committee Co-Chairs (A. Dutta, G. Fettweis)

Staff Program Director (H. Tepper)

Major Project: 5G Roadmap

Education Track
- Education Working Group
- Publications Track
- Publications Working Group
- Web Portal/Content Dev. Track
- Web Portal/Content Dev Working Group

Conferences / Events Track
- Conferences / Events Working Group

Standards Track
- Standards Working Group

Branding /Marketing Track
- Branding/Marketing Working Group

Community Development Track
- Community Development Working Group

Industry Engagement Track
- Industry Engagement Working Group

Project A

Project B
- Define, develop and manage portfolio of offerings/activities including:
  - eLearning Modules
  - Tutorials
  - Webinars
  - Podcasts
  - Google Hangouts

- Define, develop and manage portfolio of offerings/activities including:
  - eNewsletter
  - Journal, Transactions
  - Magazine
  - Supplements to other publications
  - Special issues in other publications

- Determine, source and manage content placed on portal
  - Ensure that portal is refreshed on a continuous basis

- Manage Initiative events
  - Conferences
  - Workshops

- Determine and manage participation in other events
  - Patron
  - Exhibitor
  - Panelist
  - Keynote
- Manage portfolio of activities including:
  - New projects
  - Roundtable program for industry leaders
  - Engagement with SDOs and other external organizations

- Rebranding
  - Logo development
  - Marketing
    - Competitive positioning
    - Visibility
    - Messaging
    - Collateral

- Establish and grow a broad IEEE 5G Community including:
  - IEEE Technical Community
  - Collabratec
  - Twitter
  - LinkedIn
  - Facebook
  - FlipBoard

- Drive engagement with industry including:
  - Partnerships
  - Training
  - Career Development
Roadmap Project
(M. Dohler, C-M. Chen)

Standardization Building Blocks
(P. Nikolich)

Millimeter Wave
(T. Lee)

Mobile Edge Cloud
(M. Simik, C. Buyukkoc)

Massive MIMO
(A. Dutta, G. Fettweis)

Applications Services
(R. Annaswamy)

Security
(A. Dutta, M. Dohler)
Seeking volunteers

- Broad range of opportunities
  - Technical Areas – Massive MIMO, mmWave, Mobile Edge Cloud, Security……
  - Functional Areas – Publications, Education, Roadmap, Content/Community Development…..

Contact us directly

- Ashutosh Dutta, Initiative Co-Chair: ad37@caa.columbia.edu
- Gerhard Fettweis, Initiative Co-Chair: Gerhard.Fettweis@tu-dresden.de
- Harold Tepper, Initiative Senior Program Director: h.tepper@ieee.org
First IEEE 5G Summit

A successful event
5G Summit Highlights
Industry Speakers/Panelists

- Airbus Group
- Alcatel Lucent
- Altera
- Amdocs
- AT&T
- Bell Canada
- Cadence
- China Mobile
- Ciena
- Deutsche Telekom
- Ericsson
- Facebook
- Google
- Huawei
- IBM
- Integrated Device Technology
- Intel
- Keysight Technologies
- National Instruments
- NEC
- Nokia
- NTT DOCOMO
- Qualcomm
- Rohde & Schwarz
- Samsung
- Sprint
- Telecom Italia
- Telefonica
- Telus
- T-Mobile
- Toshiba
- Toyota
- Volkswagen
- XILINX