



IEEE 5G Initiative Overview

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Initiative Goals/Objectives

- 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

5G Ecosystem

- 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”?)

Initiative Importance to Industry

- 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

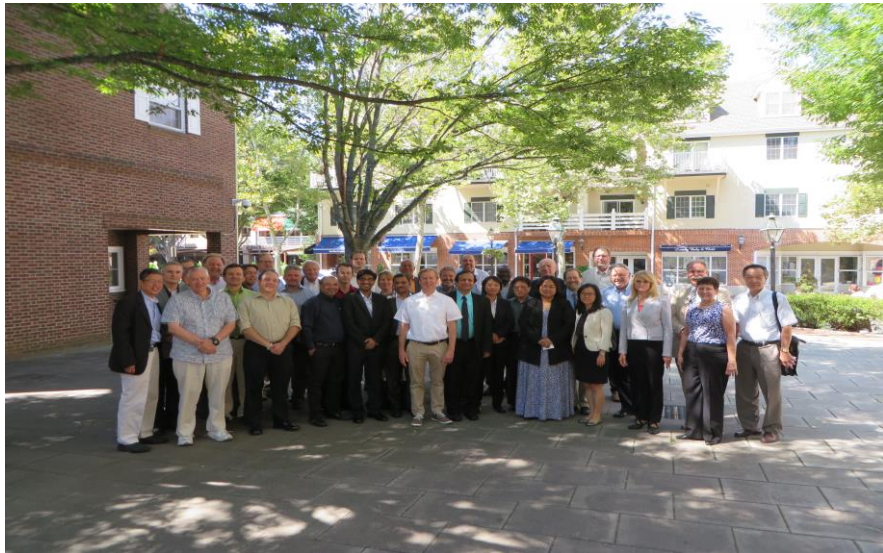
Initiative Importance to IEEE

- 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)

Recent Background

- Convened Kick-Off Workshop in Princeton, NJ on 29-30 August 2016
 - 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

IEEE 5G Initiative Kickoff Meeting Princeton, NJ August 29-30



The screenshot shows the IEEE 5G website homepage. At the top left is the IEEE 5G logo, and at the top right is the IEEE logo. Below the logos is a search bar with the text "Search IEEE 5G" and a "Search" button. To the right of the search bar are social media icons for GitHub, Facebook, Twitter, and LinkedIn, followed by a button that says "Join the IEEE 5G Technical Community".

A green navigation bar contains the following links: Home, About, What's New, Conferences, Education, Publications, and Standards.

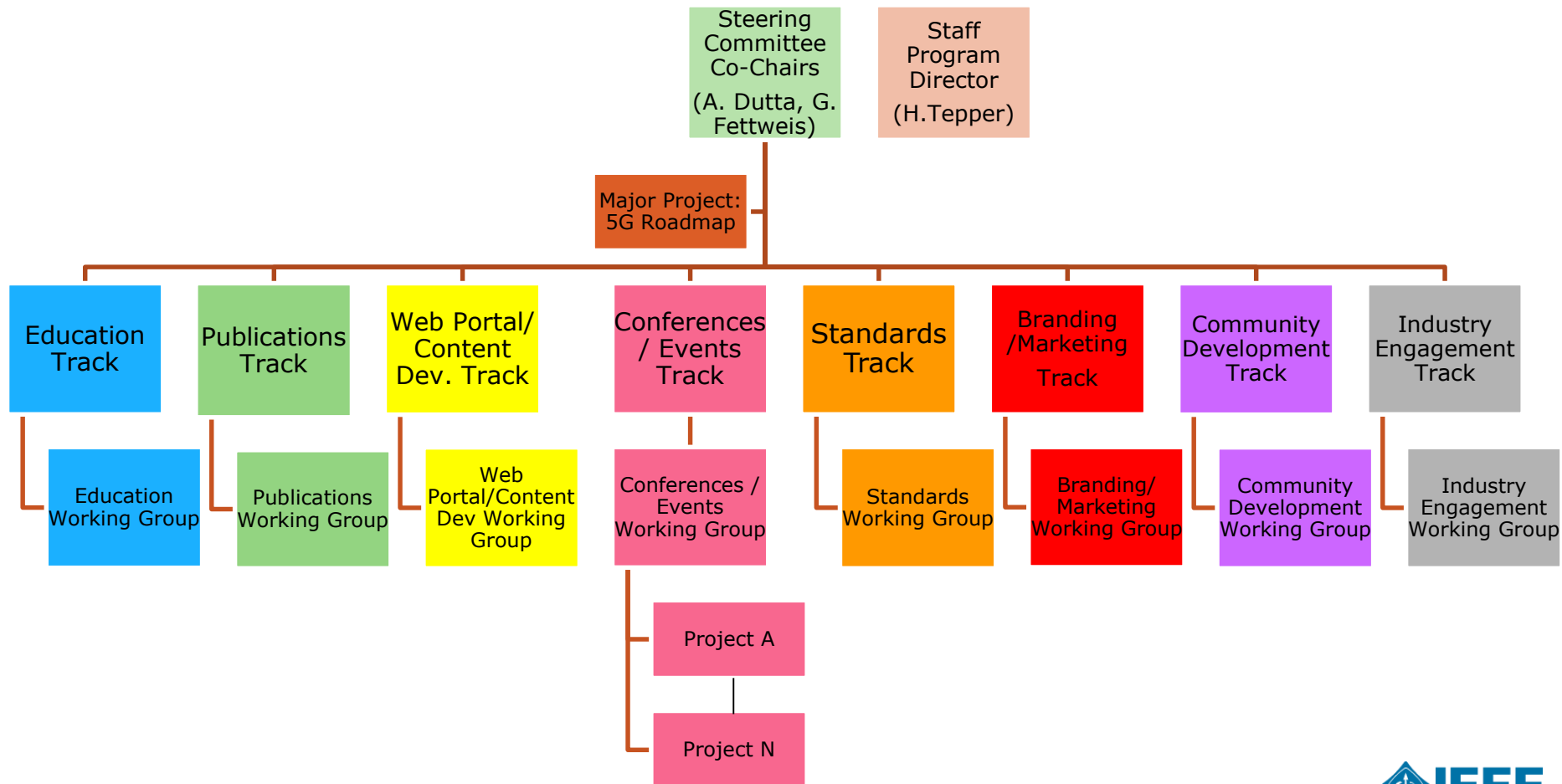
The main content area features a banner for IEEE GLOBECOM 2016, with the text: "IEEE GLOBECOM 2016 #IEEEGC16: Freedom through Communications 4-8 December 2016 // Washington, DC USA". To the right of this banner is the IEEE ComSoc logo.

The central focus is a large text block: "Workshop on IEEE 5G Initiative Roadmap 8 December 2016 9:00am-4:00pm Click here to contribute to the workshop". Below this text is a row of five green dots.

The page is divided into four columns:

- What's New:** Features a "5G's Role in the Internet of Things - Live Webinar" scheduled for Thursday, 17 November 2016. The image shows a person walking on a road towards a sunset.
- Feature Article:** Titled "Millimeter Waves Travel More Than 10 Kilometers in Rural Virginia 5G Experiment". The image shows two people in a field with a tripod-mounted antenna. Below the image is the text: "A key 5G technology got an important test".
- Technology Spotlight:** Titled "User-Centric Networks will Drive New Architectures". The image is a diagram of a network architecture. Below the image is the text: "UCNs will have a broad and significant impact on how networks are developed".
- Useful Links:** Lists "IEEE 5G Summit" and "Infographic: On the Road to 5G". Below the links is a "5G TRIVIA" section with the IEEE 5G logo and a "Sign in now" button for IEEE Collabratec. At the bottom of this section is a button that says "See our tech topics in".

5G Initiative Organization



Working Group Scope

Education WG

(R. Ting, R. Annaswamy)

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

Publications WG

(C-L. I, G. Li)

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

Web Portal/ Content Dev. WG

(J. Irvine)

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

Conferences /Events WG

(A. Dutta, L. Ladid)

- Manage Initiative events
 - Conferences
 - Workshops
- Determine and manage participation in other events
 - Patron
 - Exhibitor
 - Panelist
 - Keynote

Working Group Scope

Standards WG

(A. Gelman, P. Nikolich)

Branding/Marketing WG

Ralph Irmer

Community Development WG

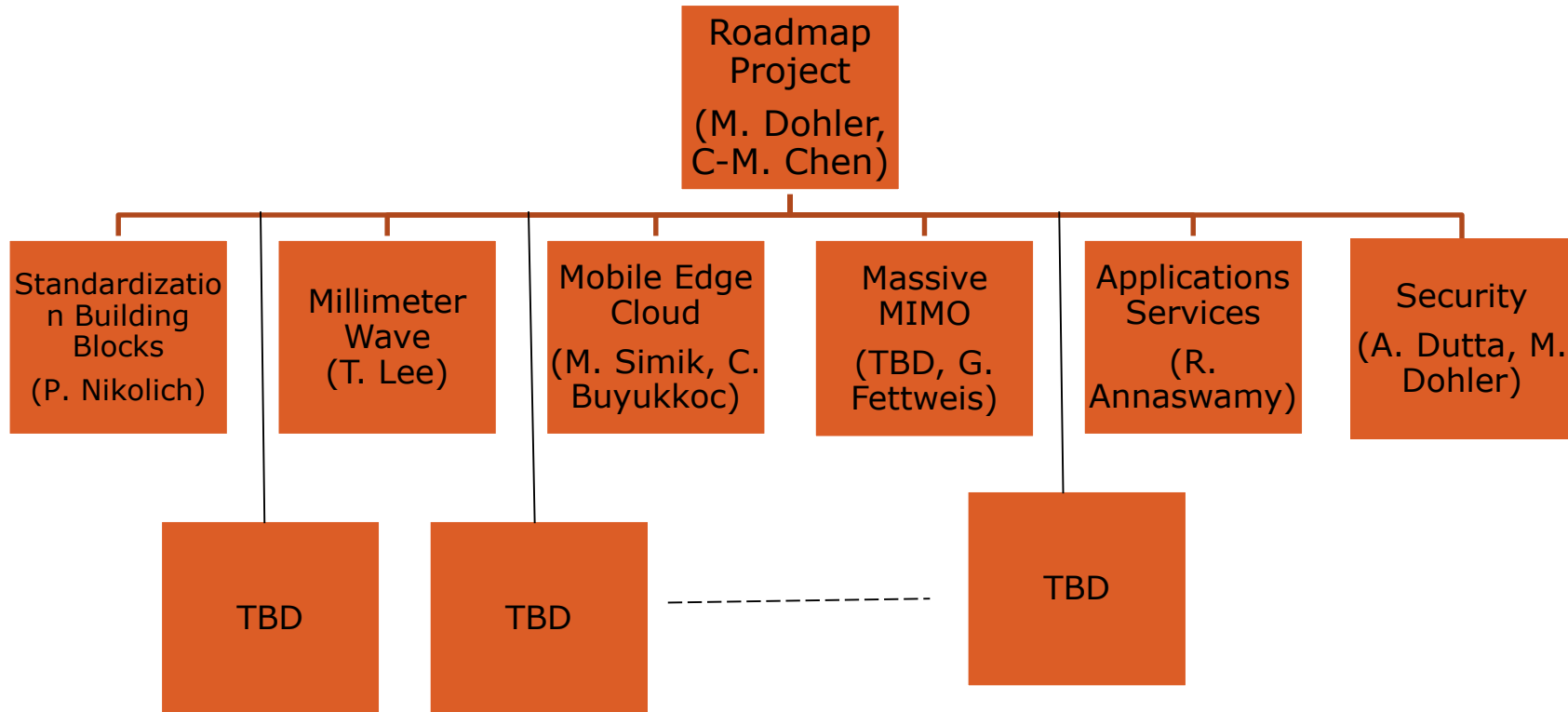
(J. Irvine, A. Wyglinski)

Industry Engagement WG

(M. Lu, M. Condry)

- 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
 - Collabratic
 - Twitter
 - LinkedIn
 - Facebook
 - FlipBoard
- Drive engagement with industry including:
 - Partnerships
 - Training
 - Career Development

Roadmap Working Group (Work in Progress)



5G Initiative (<http://5g.ieee.org>)

Summary of Activities

2016 Milestones

▶ Initiative Launch

- Convened 2 day kick-off workshop in late Aug.
- Attended by over 30 volunteers/staff representing 12 societies/councils/Ous
- Steering Committee Meeting Nov 17, 2016

▶ Working Group Formation

- Established volunteer led Working Groups to drive activity including: Web Portal, Content Development, Community Development, Standards, Education, Publications, Branding, Roadmap, Events and Industry Engagement

▶ 5G Summits

- Conducted 8 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

Get Involved!

- 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
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