

# Industry Outreach, Industry Summits, and 5G Initiative



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IEEE Communication Society  
Co-Chair, IEEE 5G Initiative

December 4, 2016

# Outline

- Industry Outreach Activities
- 5G Summits
- 5G Initiative
- Future Plans

# Industry Outreach Board

Board Meets today (Sunday) 3 PM – 4:30 PM – Fairchild West

- **Chair/Director** | [Ashutosh Dutta](#)

- **Committee Members**

Nirwan Ansari | Saurabh Sureka | Neelesh B. Mehta | Sonia Aissa | Christian Makaya | Rose Qingyang Hu | Priyadarsan Patra | Roger Piqueras | Komlan Egoh | Shiny Abraham | Titus Lo | Gerhard Fettweis | Koichi Asatani

- Ex Officio– VP Standards and Industry– Rob Fish  
Liaison – VP Member Relations - Stefano Bregni  
Liaison – Ian Wong, Chair ICEC  
Past Director - Stan Moyer

- Staff - Susan Brooks, Adam Greenberg, Ting Qian, Bruce Worthman, Munir Mohammed, Phyllis O’neill, Heather Ann Sweeny

# Industry Relevance of IEEE SWOT Analysis

## Strength vs. Weaknesses – By R8 in IEEE Section Congress

### Strengths

- Accessible and Affordable to Engineers
- Digital library is a valuable Technical Resources
- More relevant to research engineers than to commercial industry
- It is global
- Creator and owner of international standards
- Opportunity to co-operate with other standards bodies to create product
- Forum and global initiator of discussion and debate on relevant issues
- Professional Community to excite, motivate and energize action
- US Centricity provides access and awareness of US Technology development

### Weaknesses

- Increasingly Esoteric Publications
- How to track down industry related content/journals
- Insufficient industry relevant publications, particularly extracts
- Too much academic dominance
- Irrelevant to Industry must rebalance towards industry
- Must increase industrial content into conferences (e.g., product development, analyses results)
- IEEE Copyright requirement is draconian and not acceptable to Industry who will not relinquish to IEEE IPR
- US Centric

# Industry Relevance of IEEE SWOT Analysis

## Opportunities vs. Threats – By R8 in IEEE Section Congress

### Opportunities

- To create professional and vocational qualification and recognition
- Opportunities for individuals and companies to gain international recognition
- To provide industry relevant reviews of articles
- To identify problems and issues to be tackled
- To provide/facilitate industry experience for the students
- To encourage young people into Engineering
- Create IEEE STEM clubs to involve school children
- Create IEEE mentoring for professional development
- IEEE Sponsored Industry lectures and visits to schools and Universities
- To help develop engineers to compete with global competition threats
- Provide 6 month free subscription
- To get inputs of “why” and “why not” from IEEE newcomers to the Industry
- Recruit for IEEE actively at Industry Sites
- Create Global Job Opportunities
- Demonstrate that IEEE is special and desirable to join

### Threats

- Industry People are Too Busy
- Industry People have to be at work place not conferences
- Industry requires immediate and short terms returns
- IEEE could become irrelevant to industry

# Embracing Industry's Interests / Objectives

## Employee Development

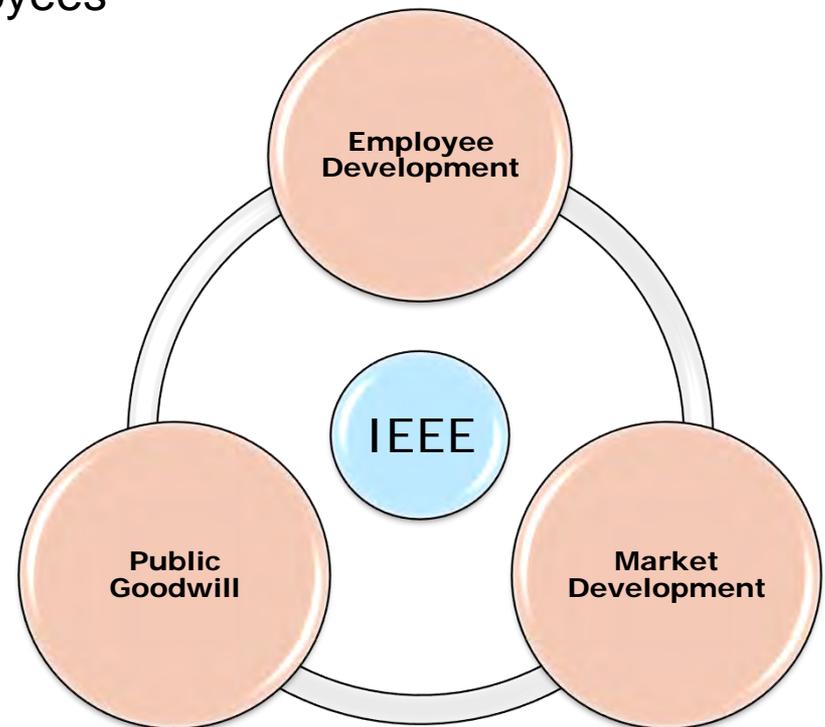
- Recruiting and retaining skilled employees
- Increasing technical proficiency
- Improving 'soft' and leadership skills

## Market Development

- Expanding brand recognition
- Increasing sales
- Making a profit

## Public Goodwill

- Supporting the local community
- Assisting government initiatives
- Contributing to philanthropic causes



# Integrating IEEE/ComSoC Objectives

## Member Development

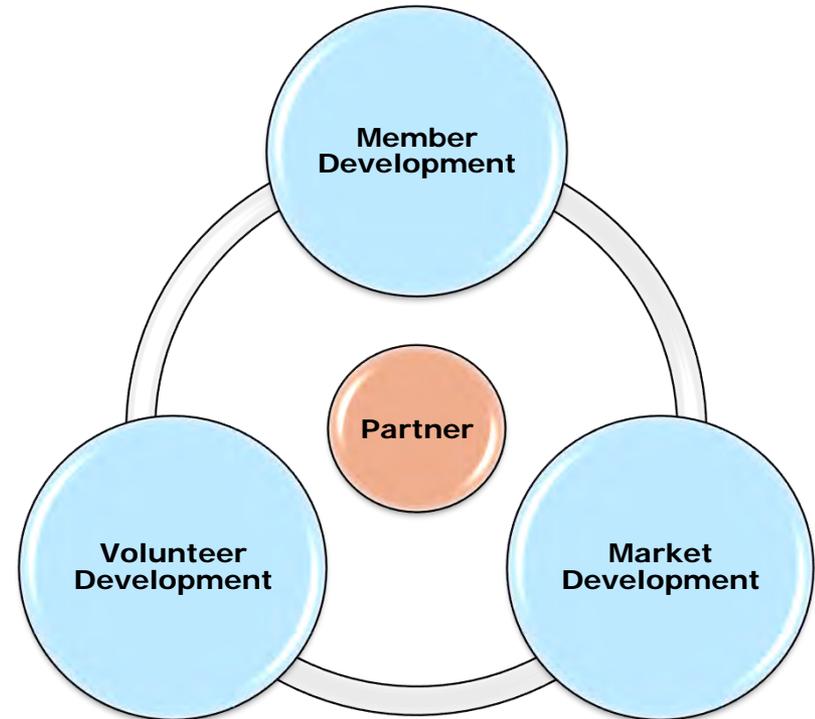
- Increasing technical proficiency
- Improving 'soft' and leadership skills
- Providing professional recognition
- Encouraging service to the public

## Market Development

- Expanding IEEE brand awareness in technical fields of interest
- Recruiting and retaining members

## Volunteer Development

- Recruiting and retaining talented individuals to lead IEEE
- Fulfilling IEEE's mission to the public



# Where Do Goals Intersect ?

## Industry

- Employee Development
- Market Development
- Public Goodwill

## IEEE/ComSoc

- Member Development
- Volunteer Development
- Market Development

# Mobilizing the Team

## Tools & Resources

- Developing an Industry-relations Volunteer support portal, and manual
- Developing Industry-focused messaging, and promotional fliers / brochures

## Peer-to-Peer Collaboration

- Creating a committee charter
- Dedicated e-mail alias, “Industry Relations Alert-All”
- Assembling the industry relations Volunteer team worldwide
- Establishing virtual collaboration tools, and scheduling periodic webcasts

## Reporting / Evaluation

- Developing a strategy / operations progress report, and disseminating periodically to the entire Industry-relations team worldwide



# Potential Supporting Materials

## Tools & Resources

- Industry-focused messaging, and promotional fliers / brochures
- Industry-relations Volunteer support portal, and manual

## Peer-to-Peer Collaboration

- Dedicated e-mail alias, “Industry Relations Alert-All”
- Assembling the industry relations Volunteer team worldwide
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## Reporting / Evaluation

- Developing a strategy / operations progress reporting framework, and disseminating periodically to the entire Industry-relations team worldwide

# 5G Summit Series – An Example

The screenshot shows the IEEE 5G Summit website with a dark blue header. The main title is "IEEE International 5G Summit". Below the title is a grid of 13 boxes, each representing a summit event. The background of the website features a colorful illustration of a city with people, a bus, and a house, with the text "CONNECTED HOUSE" and "CONNECTED PEOPLE" visible.

Location	Date
Princeton	Tuesday, May 26, 2015
Toronto	Saturday, Nov. 14, 2015
Santa Clara	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

# Snapshot of 2015-2016 5G Summits

Local Industry Event	Date	Participants		Industry Sponsors/ Exhibits	Speakers	ComSoc Sponsorship
		Onsite	IEEE.TV			
Princeton, USA	May 26, 2015	325	Recording Only	10	17	Financial co-sponsor
Toronto, Canada	November 14, 2015 (Saturday)	180	300	3	16	Financial co-sponsor
Santa Clara, USA	November 16, 2015	320	1027	15	18	Financial co-sponsor
Patna, India	March 29, 2016	180	N/A	11	18	Technical
Aalborg, Europe	July 1, 2016	150	N/A	4	29	Technical
Austin, USA (NI Week)	August 3, 2016	250	900	N/A	18	Co-sponsor (with NI)
Dresden, Germany	September 29, 2016	400	N/A	21	29	Financial co-sponsor
Tianjin, China	October 29, 2016	160	N/A	2	10	Technical
Berlin, Germany	November 2, 2016	150	N/A	3	23	Financial co-sponsor
Seattle, USA	November 5, 2016 (Saturday)	110	290	8	16	Financial co-sponsor
New Delhi, India	December 2, 2016	99	N/A	TBD	19	Technical

# Industry Speakers/Panelists

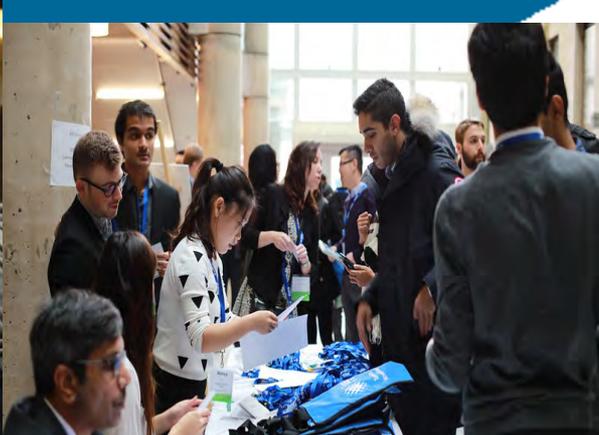
- ▶ Airbus Group
- ▶ Alcatel Lucent
- ▶ Altera
- ▶ Amdocs
- ▶ AT&T
- ▶ Bell Canada
- ▶ Cadence
- ▶ China Mobile
- ▶ Ciena
- ▶ Deutsche Telekom
- ▶ Ericsson
- ▶ Facebook
- ▶ Google
- ▶ Huawei
- ▶ IBM
- ▶ Integrated Device Technology
- ▶ Intel
- ▶ Keysight Technologies
- ▶ National Instruments
- ▶ NEC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

# First IEEE 5G Summit – Princeton University

- A successful event



# Toronto Summit



# Santa Clara Valley Summit



# Austin Summit



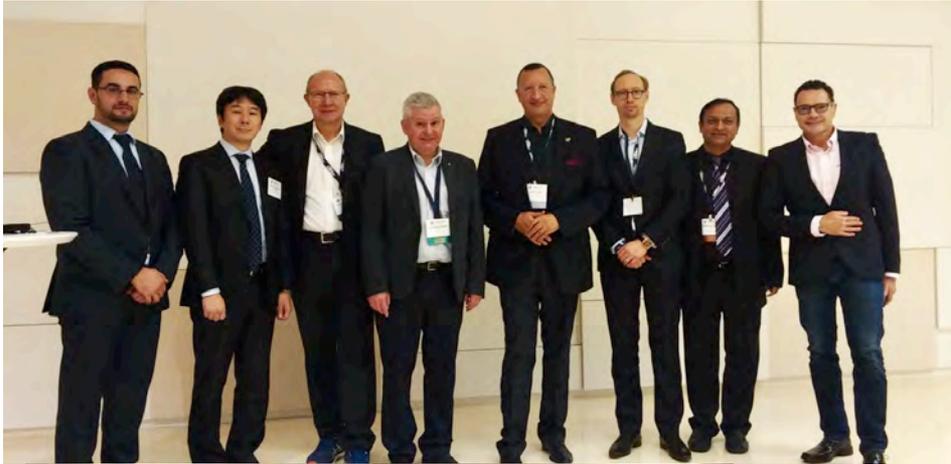
# Germany 5G Summit Dresden Highlights



# China 5G Summit



# Germany 5G Berlin Summit Highlights



# Seattle 5G Summit



21 11/5/17

# India IEEE 5G Summit Patna/Delhi



# 5G 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



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

Ashutosh Dutta and Gerhard Fettweis, Co-Chairs

Harold Tepper, Senior Program Director, [h.tepper@ieee.org](mailto:h.tepper@ieee.org)

## 2016 Milestones

### ■ Initiative Launch

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

### ■ 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 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](http://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

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, 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 are the IEEE ComSoc and IEEE logos.

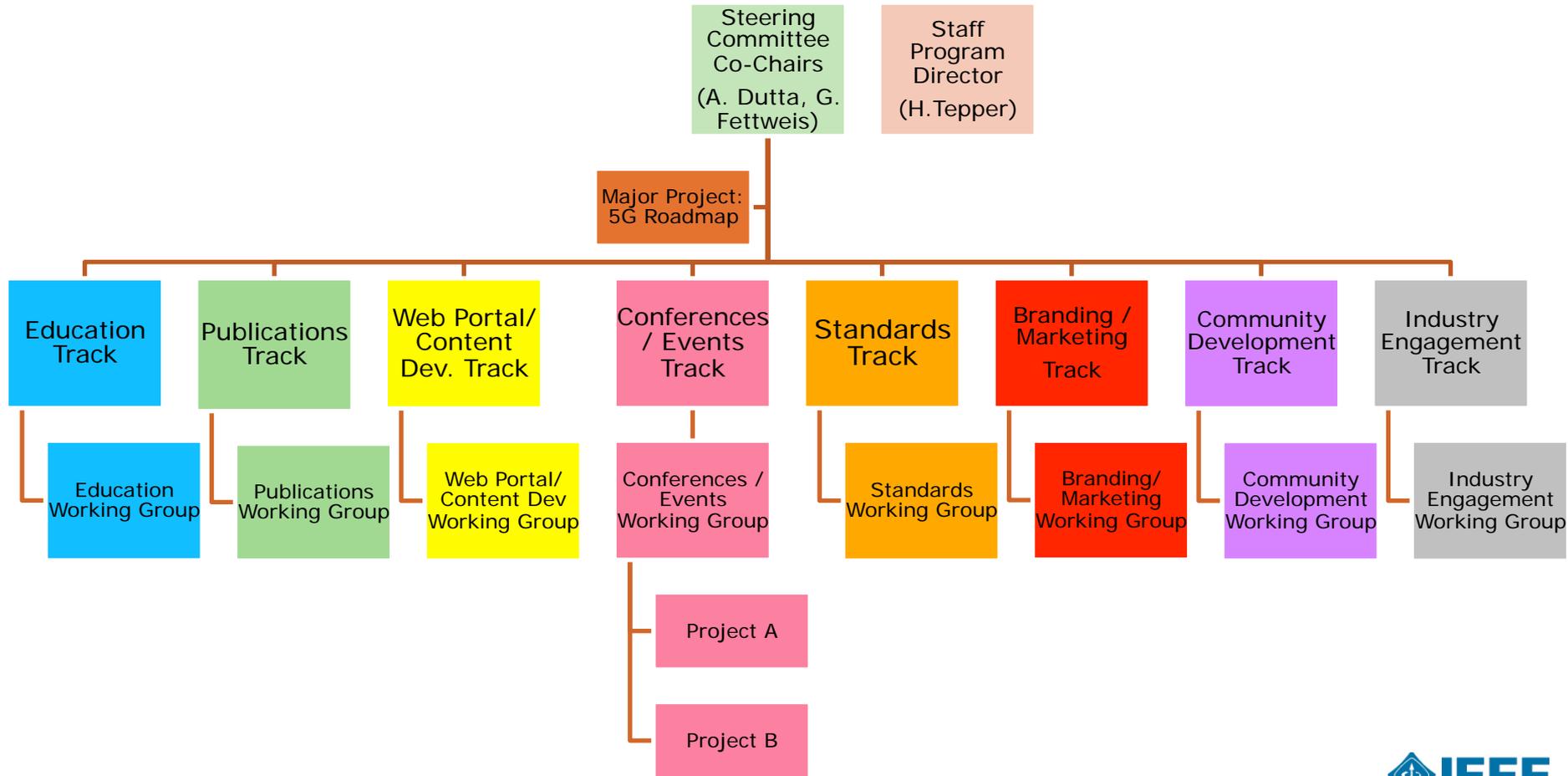
The central focus of the banner is a large text block: "Workshop on IEEE 5G Initiative Roadmap 8 December 2016 9:00am-4:00pm Click here to contribute to the workshop".

Below the banner is a row of five dots, with the first one filled green.

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.
- 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 camera on a tripod. 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 shows a network diagram with a central globe and various devices. 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 this is a "5G TRIVIA" section with the IEEE 5G logo and an "IEEE Collabratec Sign in now" button. At the bottom of this column 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)

- Manage portfolio of activities including:
  - New projects
  - Roundtable program for industry leaders
  - Engagement with SDOs and other external organizations

## Branding/Marketing WG

Ralph Irmer

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

## Community Development WG

(J. Irvine, A. Wyglinski)

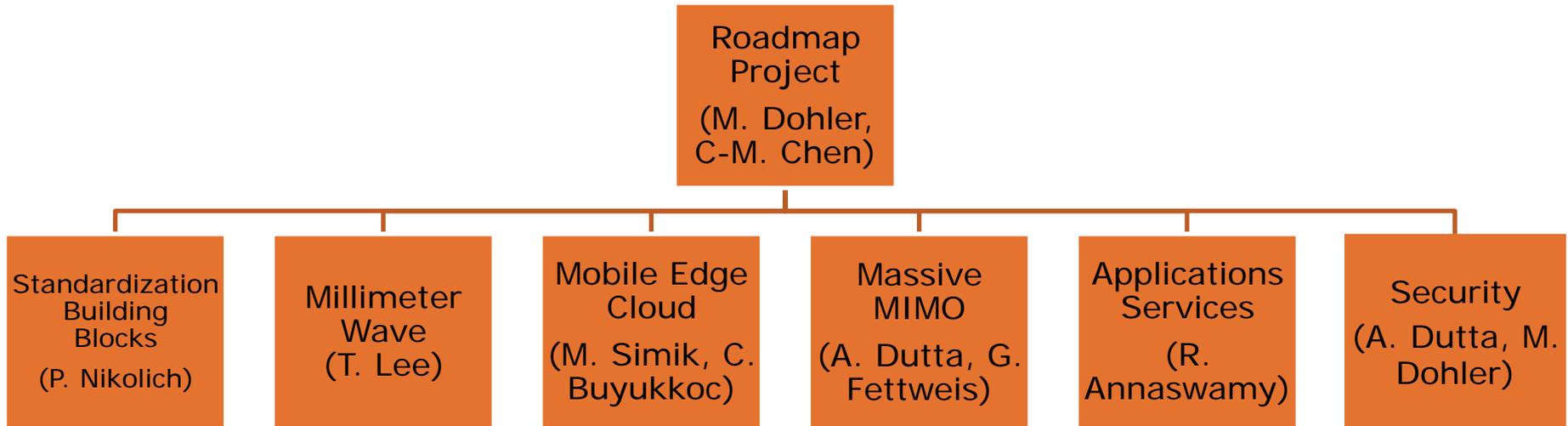
- Establish and grow a broad IEEE 5G Community including:
  - IEEE Technical Community
  - Collabratec
  - Twitter
  - LinkedIn
  - Facebook
  - FlipBoard

## Industry Engagement WG

(M. Lu, M. Condry)

- Drive engagement with industry including:
  - Partnerships
  - Training
  - Career Development

# Working Group Scope



# 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
  - Ashutosh Dutta, Initiative Co-Chair: [ad37@caa.columbia.edu](mailto:ad37@caa.columbia.edu)
  - Gerhard Fettweis, Initiative Co-Chair:  
[Gerhard.Fettweis@tu-dresden.de](mailto:Gerhard.Fettweis@tu-dresden.de)
  - Harold Tepper, Initiative Senior Program Director:  
[h.tepper@ieee.org](mailto:h.tepper@ieee.org)

# Future Plan

- Potential Future 5G Summits

China, Morocco, South Africa, Helsinki, Colombia, London, Japan, IMS-2017, China, Montreal, Detroit, Jamaica, Germany

- Come up with a plan, model and structure for 5G/IOT/Cybersecurity Summits in 2017
- Diversify High Impact Industry Day Summits into other areas e.g., IOT and Cybersecurity
- Continue to plan and collaborate for 5G Summit in IMS 2017
- Create a roadmap for 2017 5G Summits in collaboration with 5G initiative board
- Work with IEEE.TV and ComSoc Staff to formalize the recording aspect onsite
- Plan for Future Skillset Workshops in academic organization
- Industry Initiative with Startup Community
- Planned Webinars around Industry Day Tools with Chapter Chairs and Section Chairs
- Reach out to the C level executives of different industry verticals and introduce IEEE's industry initiatives and advantages to engage with industry members