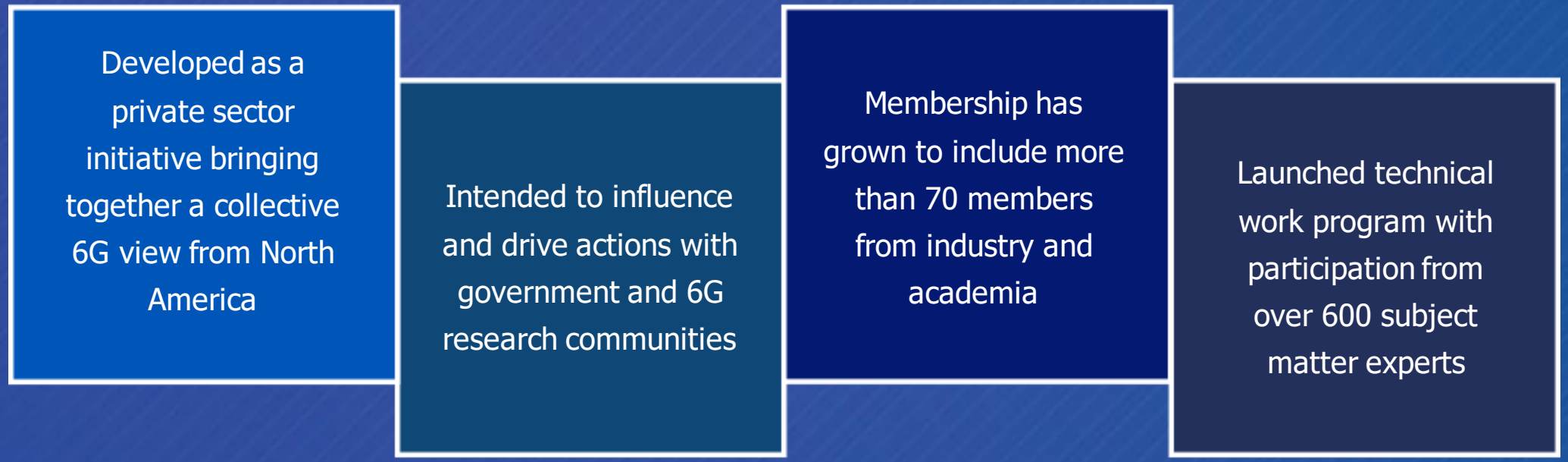
Academia's Role in Building a Foundation for North American Leadership in 6G and Beyond

October 2021

Laying the Foundation for 6G Innovation



ATIS launched the Next G Alliance in October 2020, building on its *"Path to 6G Call to Action"*

Founding and Full Members

Contributing Members

cohere technologies
Columbia University Data Science Institute
DEEPSIG
NTT docomo DOCOMO Innovations
everactive
FUTUREWEI Technologies
Georgetown University
imec
ITRI Industrial Technology Research Institute
Institute for the Wireless Internet of Things at Northeastern University
Johns Hopkins Applied Physics Laboratory
Mitacs
me mobile experience
motorola
Motorola Solutions
NC State University
NEC
Old Dominion University
Purdue University
Renesas
Rohde&Schwarz Make ideas real
Schneider Electric
spectralDSP
The University of Chicago
VDI
Virginia Tech

Foundational Goals

Next G Alliance Agenda

Private sector and government collaborate to position North America as the global leader for Next G technologies.

North American Model for Success

A comprehensive model built on the North American 6G technology developments, R&D needs, standards goals and market readiness.

6G Market Leadership

Strategies that will lead to rapid commercialization and adoption of Next G technologies across domestic and global markets.

North American 6G Vision

Developing a vision that spans multiple layers of the 6G ecosystem and drives North American leadership for the next decade (and beyond)

Membership

- Next G Alliance membership options include:

1) **Full Members**: (a) directly provide products, services (excluding patent licensing services), software or applications for use in U.S. commercial, private or government networks; or (b) operate communications networks and/or provide multimedia and/or cloud services in the North American market.
2) **Contributing Members**: (a) provide products, services, software or applications for use in U.S. commercial, private or government networks; or (b) operate communications networks and/or provide multimedia and/or cloud services in the North American market; or (c) **academic institutions**, research and development services and laboratories located in North America or affiliated with North American research activities.
3) **Government Members**: North American federal government departments, authorities, or agencies with expertise, knowledge, and a mission relevant to communication networks.

Note: Organizations included on the U.S. Department of Commerce Entity List and Denied Person's List are not eligible to participate in the Next G Alliance.

Next G Alliance Lifecycle Approach

Academic Participation: Academic View

Why Should Academic Institutions Participate?

- Academia will participate in the development of the National 6G Roadmap, first version anticipated in January 2022 with contribution-driven updates to continue in 2022. The Roadmap will facilitate R&D discussion, delivery, education, and advocacy to Congress, White House, NSF, NTIA, and industry.
- Academia can help push the 6G vision beyond an incremental improvement on 5G.
  - Leveraging academic research and IPR is of strategic value to North America
  - Opportunity for academics to ensure their IPR is incorporated in the next generation of standards
- Creating connections to research funding – participants are at the table with industry and government funding agencies.

Academic Participation: Industry / Government View

Incremental Innovation

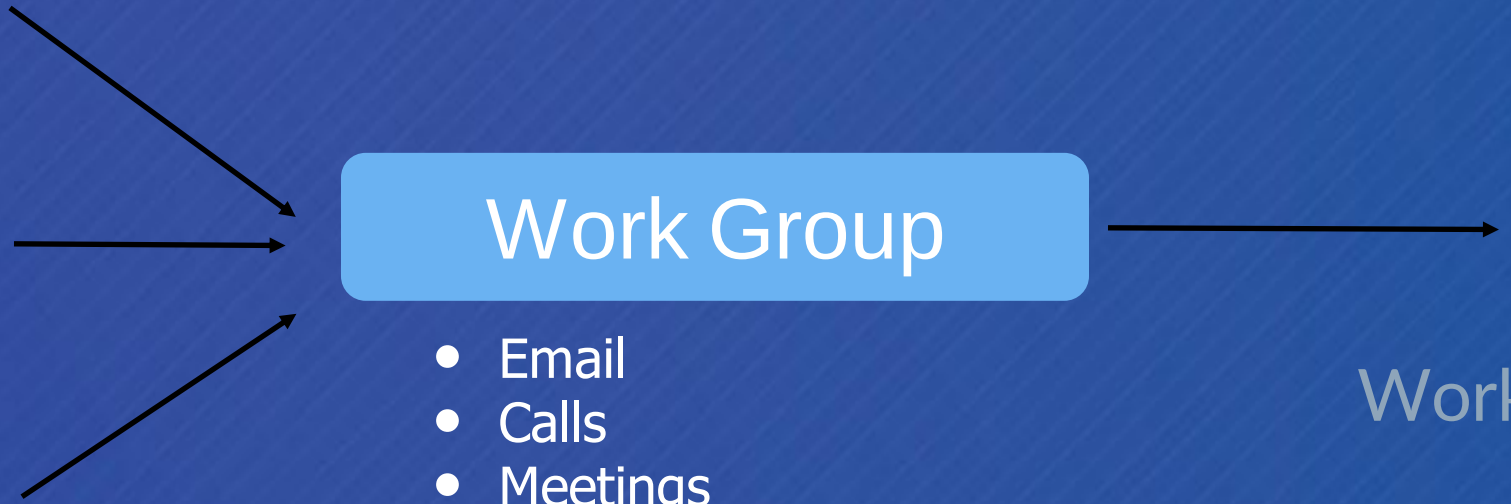
Expanded View of the Possible

Why the Academic Perspective is Critical

- Industry is looking for a fresh perspective on the realm of the possible
- Academia has a broad perspective on the future use of licensed, unlicensed, and shared spectrum
- Academic institutions have economists, social scientists and other non-wireless technology-specific expertise rarely found in industry that are essential to a more robust National 6G Roadmap

Academic Participation Model

Academic Participation Model



Academic Participation Model

- The Next G Alliance is contribution-driven:
  - Official contributions, which are incorporated in Next G Alliance work products, are written documents submitted to a shared work platform (ATIS Workspace)
  - Discussions in virtual meetings and over email are valuable
  - Only members are eligible to submit contributions
- The Contributing Member is the academic institution:
  - "All you can eat" model: once the institution joins the Next G Alliance, any professor, student and/or researcher from the institution may participate in Work Groups and submit contributions.
  - No restrictions on discipline: the Next G Alliance scope is vast. We welcome a wide range of expertise.

Next G Alliance Leadership

FULL MEMBER GROUP LEADERSHIP:

Chair
Andre Fuetsch
AT&T

CTO and President of AT&T Labs

Vice Chair
Jan Söderström
Ericsson

Head of Advanced Technology and Industry, US

STEERING GROUP LEADERSHIP:

Co-Chair
Devaki Chandramouli
Nokia

Head of North American Standardization

Co-Chair
Brian Daly
AT&T

Assistant Vice President – Standards & Industry Alliances

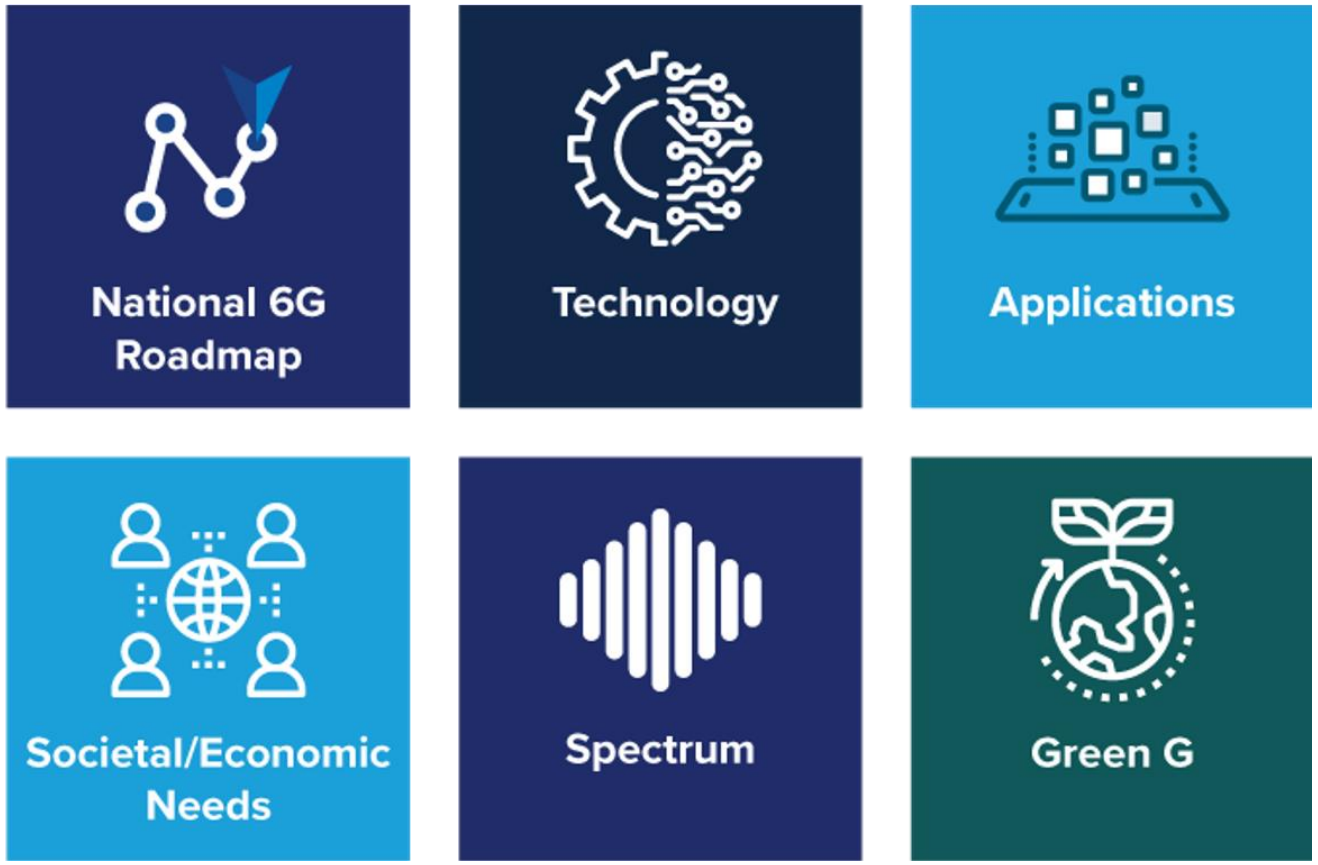
Co-Chair
Benoit Pelletier
VMware

Director – Edge and AI Ecosystems, Telco Cloud Business Unit

Organization

- The Full Member Group (FMG), composed of senior business executives, sets the strategy and direction for the Next G Alliance.
  - Each Full Member may appoint a representative (and alternate) to the Full Member Group.
- The Steering Group, composed of technology leaders and experts, oversees the implementation of the strategic direction established by the FMG.
  - Each Full Member may assign one voting representative to the Steering Group.
- The Working Groups will be created as necessary by the Steering Group to fulfill the mission of the Next G Alliance.
  - Each Full and Contributing Member may appoint representatives to Working Groups.

Technical Working Groups



Technical Working Groups

Leadership

Amitava Ghosh • Nokia • *Chair*

Marc Grant • AT&T • *Vice Chair*

Doug Castor • InterDigital • *Vice Chair*

National 6G Roadmap

Creating the 6G vision and mapping steps to achieve it.

The National 6G Roadmap will establish a vision for achieving North American leadership in the eventual commercialization of 6G. It will identify what is needed to drive North American leadership in a robust 6G global market, the steps to accomplishing this and their evolutionary path, as well as key milestones and their projected time frame. The work is driven by Next G Alliance Steering Group priorities.

Technical Working Groups

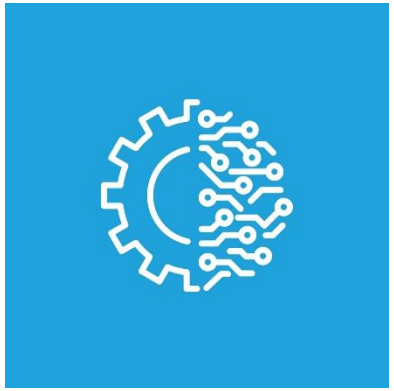
Leadership

Eddy (Hwan-Joon) Kwon • Qualcomm • *Chair*

Jeongho Jeon • Samsung • *Vice Chair*

Stephen Hayes • Ericsson • *Vice Chair*

NEXT G ALLIANCE



Technology

Defining the specific technologies needed to fulfill the vision in the National 6G Roadmap.

The Technology Working Group will address the key technologies comprising the National 6G Roadmap's technology layer. These include new air interfaces, network architectures, spectrum access, x-haul, trust/privacy/security platforms, 6G Mobile-Network-Cloud fabric and sensing technologies. Coordinating with the Next G Alliance Policy Committee, the Technology Working Group will engage with government agencies to initiate or expand upon development of critical Next G technologies; approach common stakeholder groups on how to fund them; and identify critical areas not yet addressed in promoting North American Next G leadership.

Technical Working Groups

Leadership

Ki-Dong Lee • LG Electronics • *Chair*

Andrew Herson • Verizon • *Vice Chair*

Mitch Tseng • ITRI • *Vice Chair*

Applications

Addressing the 6G-related application needs that will drive innovation and development for consumers, enterprises and verticals in a Next G world.

The Applications Working Group is identifying the leading vertical applications that will leverage network infrastructure in the Next G environment. The work is designed to ensure that their 6G-related application needs align with the vision set forth by the Next G Alliance.

Technical Working Groups

Leadership

Jessamine Chin • VMWare • *Chair*

Scott Migaldi • T-Mobile • *Vice Chair*

Jeremy Nacer • Verizon • *Vice Chair*

Societal & Economic Needs

Identifying and characterizing societal demands and economic needs to set forth a sustainable 6G business case.

This group is identifying and characterizing relevant social and economic drivers (e.g. societal demands, market needs, operational necessities and strategic imperatives) to recommend how they should influence North American 6G R&D and deployment priorities.

Technical Working Groups

Leadership

Andrew Thiessen • MITRE • *Chair*

Reza Arefi • Intel • *Vice Chair*

Pascale Dumit • T-Mobile • *Vice Chair*

Spectrum

Proactively addressing the spectrum issues of a Next G world.

With the build-out of 5G, spectrum use and demand is already increasing and will grow even more with 6G. The Spectrum Group is working to better understand and influence spectrum access, management, policy recommendations, standards, and long- term needs in this area. The work will identify potential spectrum in North America and worldwide and address opportunities related to shared spectrum alternatives

Technical Working Groups

Leadership

Marie-Paule Odini • HPE • *Chair*

Micaela Giuhat • Microsoft • *Vice Chair*

Colleen Josephson • VMware • *Vice Chair*

Green G

Minimizing the environmental impact of future generations of wireless technology

The mission of the Green G Working Group is to position North America as the global leader in environmental sustainability in future generations of wireless technology or "Green G." The work addresses reducing Next G technologies' energy consumption and environmental impact. It involves assessing environmental impacts, such as water and materials consumption; exploring the use of renewable and/or ambient energy; and investigating how the ICT industry can help other related industries reduce their environmental footprint. The goal is to build an environmentally friendly focus into Next G standards and technologies — as well as the communications industry globally.

Contributions

- As a general rule, the Next G Alliance will not consider any contributions, presentations, or other documentation that is subject to any requirement of confidentiality or any restriction on its dissemination.
  - Exceptions are permitted if a group determines that confidentiality is needed for a project or subgroup.
- Each contributor must provide the Next G Alliance with the necessary copyright rights to adapt, copy and publicly distribute any contribution or submittal.
  - Each contribution or document submitted to the Next G Alliance is subject to an unlimited perpetual, non-exclusive, royalty-free, world-wide right, and license to the Next G Alliance of any copyrights in such contribution.

Process

- Next G Alliance work will be progressed via the written and oral contributions of its members.
- Consensus is the method used by the Next G Alliance to make most decisions.
  - Consensus is established when substantial agreement has been reached among those participating in the issue at hand.
  - Substantial agreement means more than a simple majority, but not necessarily unanimous agreement.
  - Consensus requires that all views and objections be considered, and that a concerted effort be made toward their resolution.

Thank you for attending; we look forward to your contributions!

Mike Nawrocki
Managing Director
Next G Alliance

Eric Burger
Technical Program Office Director
Next G Alliance

Building the foundation for North American leadership in 6G and beyond