Panel 2: Academic-Industry Collaboration for "Moonshot" Contributions

Moderator: Marwan Krunz (U. Arizona)

Panelists: Carlos Cordiero (Intel), Amitava Ghosh (Nokia Bell Labs), Upamanyu Madhow (UC-SB), Ali Niknejad (UC-B), Sarah Yost (NI)

Format: Moderator opening remarks (5 min); panelists' opening remarks (3-5 minutes each), followed by panel discussion and audience questions.

Discussion Questions to Seed the Panel Discussion:

This panel discussion will build on activities of Day 1, in particular, the breakout and panel discussions. The readouts from breakout sessions, preceding the panel, will help prime the panel discussion.

Building on the 2nd workshop, the panelists will be posed the following broad question:

What moonshot problems will drive innovation and/or new applications for mmW technology?

The goal is to identify big impact problems that could greatly benefit from a close and mutually beneficial collaboration between academia and industry in the next 3-5 years.

Some notable responses from the 2nd workshop, included:

• Integration of communication and computing to meet delay and energy requirements

• Bandwidth vs latency tradeoffs that vary with use cases

• The use of higher frequency bands above 100GHz

• Sustained (rather than peak) Gbps data rates

• Business models and economic considerations

• Cross-layer and inter-operability issues for verticals

• New uses cases for driving innovation

Integrated communication and sensing, including radar and channel estimates, was noted as a promising direction for new use cases.

Enabling mobile networks at mmW frequencies was noted as necessary for disruptive innovations.

A particular use case of interest – considered a killer app by some – is autonomous vehicles which will not only require high rates and low latency but would also benefit from integrated communication and sensing and many of the key operational functionalities enabled by mmW technology.

Machine learning could also play an important role in this use case.