

Working Group Spotlight

ARCHITECTURE & SOLUTIONS

Discover how radical R&D collaboration is systematically solving the toughest architecture challenges to clear the way for world-changing 5G innovation.

Working Groups Bring Open Generation's Mission to Life

MITRE Engenuity Open Generation brings together diverse technical viewpoints and domain expertise from across industries and market verticals, to collaboratively design, develop, and demonstrate connected world solutions that may be uniquely enabled by 5G capabilities. The mission is to create public good, advance the commercialization of 5G enterprise applications, and unlock massive economic value in the U.S.

Open Generation's Architecture & Solutions Working Group sits at a critical juncture — developing the revolutionary networking approaches that take concepts from the Advanced Use Case and Devices Workgroup to the hands-on analysis of the Implementation, Testbeds & Experimentation Working Group.

The Architecture & Solutions Working Group is pioneering research and execution of the distributed, service-based architecture necessary to realize the potential of 5G — taking on the complex challenges like O-RAN, RIC, and MEC utilization for network deployment.

UAS: Prioritizing the Hardest Challenges with the Highest Impact

The Architecture & Solutions Working Group actively supports Open Generation's initiative to solve the complex issues in the 5G ecosystem through advanced R&D with an initial focus on Uncrewed Aerial Systems (UAS).

The group's priority is to achieve high-capacity, high-speed, low-latency architecture capable of supporting the rigorous command and control requirements needed for safe UAS operations and complex missions requirements, such as high-resolution video and fast, real-time interaction with the surrounding environment. Solving these challenges will accelerate connected world solutions across industries.



Our Work: Current Challenges in UAS Architecture

Interference Mitigation

Uncrewed aircraft (UA) have three-dimensional movement and operate at elevated heights, which multiplies signal visibility and interference phenomena.

Continuous Communications

Real-world drone use cases demand seamless command and control prioritization beyond what's possible through current network architecture, including automated handoffs along the flight path.

Collision Avoidance

The ability for UAS to detect and avoid collisions (with other aircraft and ground-based obstacles) must be improved, which amplifies connectivity complexities and calls for precise, high-accuracy positioning and surveillance capabilities.

Safety & Compliance

Drone operation has inherent hazards. Premier use cases present high-stakes safety challenges such as operation Beyond Visual Line of Sight (BVLOS), flight over populated areas, and controlled use in restricted airspaces.

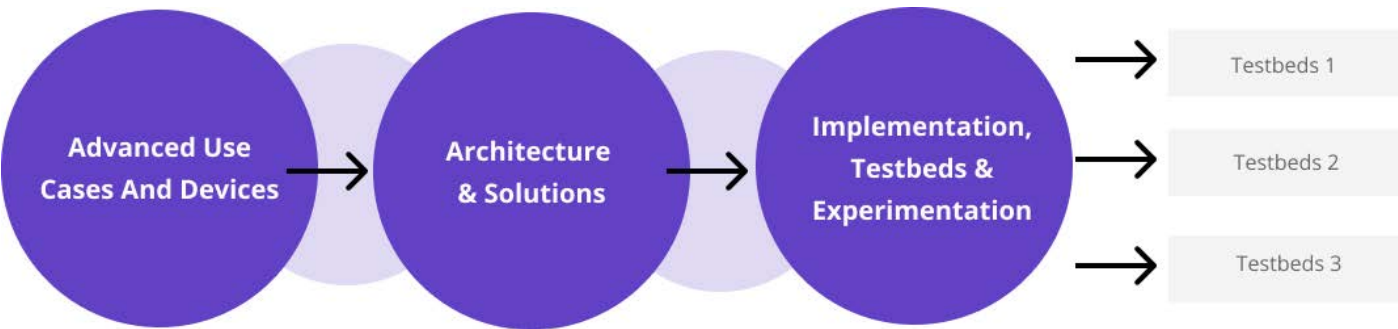
How We Break Boundaries in UAS 5G R&D

PROBLEM		APPROACH & SOLUTION
5G connectivity offers significant advances, but the cost-prohibitive nature of network buildout currently prevents full realization of its benefits.	→	Open Generation seeks to validate 5G architecture investments by proving the value of its latency, capacity, bandwidth, and edge computing advantages for high-impact, commercializable use cases.
Use case-focused 5G development calls for intersectional collaboration across public and private organizations.	→	Open Generation brings together industry leaders, start-ups, academic institutions, and critical standards bodies to solve hard technical problems, prove the reliability of 5G, and accelerate collective progress.
Testing and demonstrating 5G capabilities requires experimentation environments with high-speed, high-capacity, low-latency networks.	→	The Architecture & Solutions Working Group is expediting advances in fixed mobile 5G networks with edge cloud computing through implementation of software-based 5G core private networks.
Commercial UAS R&D opportunities are limited due to a lack of safe, compliant airspace with fitting connectivity requirements.	→	Open Generation is leading an initiative to create 5G-enabled experimentation hubs on existing aviation ranges for indoor and outdoor UAS experimentation. Ranges will feature long-range flight paths and private 5G networks to support Beyond Visual Line of Sight (BVLOS) testing and other advanced use cases.

Impact-Driven Collaboration Across Working Groups

Driven by the singular vision of making life-changing 5G applications a reality, Open Generation operationalizes end-to-end development and collaboration of industrial partners from across the ecosystem through dedicated working groups, each contributing key resources to designated stages of the discovery, development, and experimentation process.

Working Groups Operationalize 5G R&D



Advanced Use Cases & Devices Working Group	Architecture & Solutions Working Group	Implementation, Testbeds & Experimentation Working Group
<ul style="list-style-type: none">Identifies key use cases and corresponding challengesProposes innovation to improve and enable those use cases with 5G capabilitiesDevelops and details selected priority use cases (such as UAS)Develops technical requirements and high-level experiment proposals	<ul style="list-style-type: none">Reviews use cases and experiment plans proposed by the Use Cases & Devices groupProposes architectures to support each use caseIdentifies feasible implementation solutions for the conditions identified for potential experimentation testbeds	<ul style="list-style-type: none">Plans and details experiments utilizing inputs from Use Cases & Devices groupIdentifies testbed locations and feasibility aligned with solutions proposed by the Architecture & Solutions working groupCoordinates contributions from members and partners to implement testbedsLaunches experimentation initiatives for targeted use cases in testbeds, reports results, and recommends improvements.

Explore Open Generation’s Mission, Vision, and Partnerships

Learn more about how MITRE Engenuity Open Generation is advancing 5G technology to improve lives: opengeneration.mitre-engenuity.org/