NSF Convergence Accelerator's 2022 Cohort Phase 1 Award

Project Title
Intelligent 5G Networks Designed and Integrated for Globalized Operations (INDIGO)

Awardee
AT&T Corporation

Award/Contract #
49100422C0020

Award Contract Type
R&D

Award Date
July 15, 2022

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NSF Funded Program
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PROJECT ABSTRACT

There are numerous examples of societal challenges faced by AT&T and the larger ecosystem of which AT&T has always been an influential member. For example, plain old telephone service set a new standard for reliability and simplicity. Then came the transistor, satellites, the Internet, and the wireless revolution. Today, AT&T is building upon its close partnerships within a new multidisciplinary, multicultural, multigenerational team to face challenges posed by Track G within a project dubbed INDIGO or Intelligent 5G Networks Designed & Integrated for Globalized Operations.

In view of the parallels between NSF's Convergence Accelerator and DoD's Joint All Domain Command & Control, INDIGO is adopting a basic-building-blocks approach to meet the functional and security requirements of military missions and civilian first responder teams in near real-time through a system-of-systems/network-of-networks approach across focus areas (1) Planning and Composition, (2) Interoperability, and (3) Execution. This integrates a novel Artificial Intelligence Planner with a Service Management & Orchestration Framework and RAN Intelligent Controllers.

INDIGO ensures the timely transfer of information needed to connect every sensor and every actor despite the unique variations in network type, availability, traffic, and data across the lifecycle of a complex mission. The goal is to develop real-world solutions for securely operating through 5G infrastructures in allied, hostile, and contested areas, and also to develop new infrastructures and partnerships for future secure wireless solutions in pace with emerging 5G/6G standards. The latter's importance extends beyond military applications into the civilian sphere given the integration of sensors and multi RAT (Radio Access Technologies) in Smart Cities initiatives, Internet of Everything, and the emerging metaverse, i.e., the fully realized digital world that exists beyond the one in which we live today.