



END-GEN

ENDLESS GENERATIVE WAVEFORMS

INTELLIGENCE VALUE

The End-Gen program seeks to develop generative artificial intelligence (GAI) and machine learning (ML) frameworks capable of consuming input mission objectives in order to output mission waveforms. These novel communications waveforms are generated within two different environments: 1) Through non-foundational GAI-enabled software-defined radios (SDR) placed directly in the environment 2) Through prompting non-language foundational GAI models, outside the environment, to create custom waveform building blocks.

waveform lexicon such as Wi-Fi, 4G/5G, and Bluetooth.

While U.S. government (USG) waveform names are lesser known to the general population, USG has also invested heavily into waveform development for their own mission needs. Due to the broad nature of missions, waveform development can be slow, expensive, and repetitious in order to meet needs in a changing world.

The goal of the End-Gen program is to develop novel methods of arbitrary communication protocol creation - generative waveforms - enabling the intelligence community, and wider USG, to more easily, and cost effectively, perform wireless information exchange without costly, delayed human development cycles. This will be accomplished across two developmental technical areas (TA). The first TA is research and development of intelligent frameworks capable of in situ creation of dynamic generative waveform protocols. The second TA is

research and development of intelligent frameworks capable of ex situ creation of fixed generative waveform protocols. End-Gen's ambitious goal is to change the paradigm of waveform development. Let the machine use its generative abilities to make the waveform. Let the humans spend their cognitive resources on the mission itself.

PRIME PERFORMERS

- TBD

TESTING AND EVALUATION PARTNERS

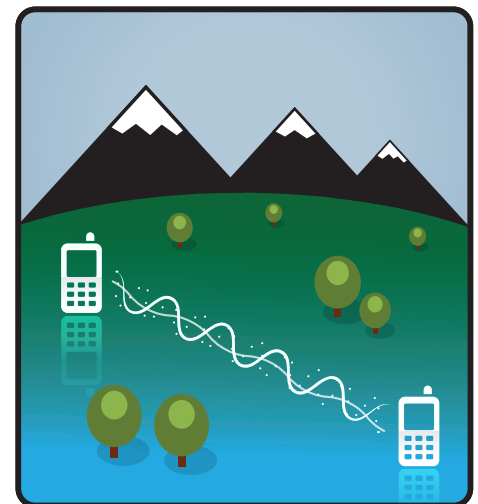
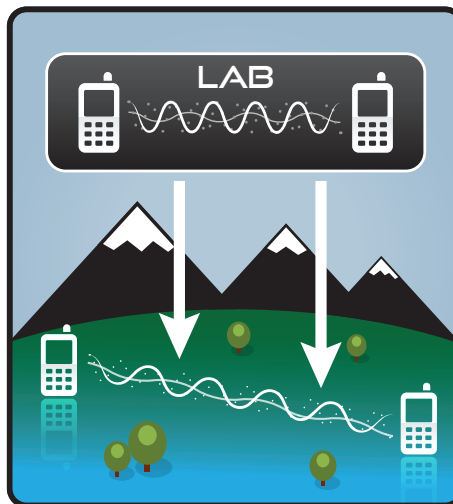
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KEYWORDS

- Generative Waveforms
- Generative Artificial Intelligence
- Machine Learning Communications
- Waveforms
- Networking
- Software-Defined Radio

National security missions need to generate, store, use, transmit, and receive information and data both in secure facilities and "in the wild." Waveforms are often used as the method for the transmission and reception of the data generated in these missions. In general, a waveform is any method used to pass information between two entities by transducing physical energy into the physical world environment.

There is a significant commercial private sector investment in order to create waveforms that satisfy the population's need for throughput and reliability of information. The popularity of connected humans has led to a ubiquitous



End-Gen waveforms are either created in the lab (TA-2) and transplanted into the wild or learned in the wild directly (TA-1).



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