Department of the Navy SBIR/STTR Transition Program

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NAVAIR SPR Number: 2022-845

Topic # N192-090
Modern Forward Error Correction (FEC) and Automatic Repeat Request (ARQ) Algorithms for Tactical Data Links
MaXentric Technologies LLC

WHO

SYSCOM: NAVAIR

Sponsoring Program: PEO(T)/PEOC4I - PMA101/PMW101

Transition Target: technology is desired for transition with a start in FY23 and a potential full release in FY25. The platform would be F/A-18s, E/A-18Gs, E-2Ds and PMW-150 surface afloat platforms.

TPOC: (619) 524-1582

Other Transition Opportunities: In the future there maybe applicability to other radio families.

Notes:

WHAT

Operational Need and Improvement: Many current FEC implementations are offered only in packages that utilize a large portion of FPGA resources. These solutions are often considered bulky while being limited on the capability to optimize usage of the channel. Maxentric's solution addesses these concerns while offering the capability to scale for future improvements.

Specifications Required: Improve channel effeciency under variable conditions while minimizing the utilization of valuable resources and maintaining latency/throughput requirements.

Technology Developed: Maxentric has developed a practical implementation of Polar Codes FEC that reduces utilization of valuable resources while meeting/exceeding existing performance metrics.

Warfighter Value: Improve communication performance for lower SNR environments while maintaining LPI/LPD specs.

WHEN

Contract Number: N68335-21-C-0147 **Ending on:** Apr 06, 2023

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Establish Matlab Simulation of Polar Codes FEC	Medium	Matlab Simulation	3	2nd QTR FY21
Analyze Polar Code Performance in Harsh Environments	Medium	Matlab Simulation	3	2nd QTR FY21
Develop bit-accurate RTL Model	Medium	RTL Simulation	4	3rd QTR FY21
Transceive Loopback Demo	High	Hardware Demo	5	1st QTR FY22
Matlab Integration w/ Prime Simulation	Medium	Matlab Integration	6	TBD
RTL Integration w/ Prime Simulation	Medium	RTL Integration	6	TBD
HW Integration	Medium	Functional HW demo	7	TBD

HOW

Projected Business Model: Package our poduct solution suitable for distrubatable IP license agreements

Company Objectives: Our goal is to work with customers and primes to inject the proposed solution into multiple target radio platforms.

Potential Commercial Applications: Our solution is generally applicable to many wireless communication solutions that operate in low SNR environments (IoT, etc)

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