

SBIR 06.2 PHASE I - AWARD DETAILS	
ORGANIZATION	CERDEC
TOPIC NUMBER	A06-113
CONTRACT NUMBER	
YEAR OF AWARD	
AWARD START DATE	
AWARD COMPLETION DATE	
PROPOSAL NUMBER	A062-113-1266
TITLE	Geometric Pairing (GP) of battlefield entities thru the Combat Net Radio System (CNRS)
PROJECT MANAGER	Kent Krumvieda (720) 872-2145 kkrumvieda@datafusion.com
COMPANY	Data Fusion Corporation 10190 Bannock Street Suite 246 Northglenn CO 80260-6052 Minority Owned: No Veteran Owned: No Number of Employees: 10
KEYWORDS	Geometric Pairing, tracking, precise position, multipath, MANET, SINCGARS, TDOA, PVT
ABSTRACT	Data Fusion Corporation (DFC) proposes the development of a prototype Combat Identification (CID) system that will reduce fratricide, increase situational awareness (SA), and enhance combat effectiveness for Soldier-to-Soldier based CID applications. The system design will use GPS, a modified-mobile adhoc network MANET, local ranging signals, mesh network and geometric pairing (GP) that will provide sub-meter position information, velocity, time (PVT) as well as ID. The sub-meter position is obtained using DFC's innovative positioning algorithms that uniquely combine (in a weighted least squares sense) lower accuracy absolute positions with highly accurate relative positions. Furthermore, DFC takes advantage of the mesh rigidity where appropriate. The minimal configuration can be a mixed network of dynamic nodes with or without GPS. GPS receivers only need be single carrier (L1) receivers processing the lower accuracy CA signal. This can be accomplished without any infrastructure. Should L1L2 P(Y) code receivers, and infrastructure be available additional accuracy and robustness can be gained.
BENEFITS	Phase-III Dual Use Commercialization: The CID system could be applicable to the Army's One Tactical Engagement Simulation System (ONETESS), real-time casualty assessment as well as CID. In addition, this type of system has applicability in a wide range of military and civilian applications. Military applications include: blue force tracking in urban environments, tagging of material, special operations, Joint Precision Landing System (JPALS), etc. Civilian applications include: the FAA, Enhanced 911 in cellular phones, robotic navigation in hazardous environments, smart highways, etc.