

Small Business Phase III Transitions

Rick Edwards
NAVSYS Corporation
July 1, 2010

(DFARS 252.227-7018 (June 1995))

SBIR Data Rights

Contract Number: N68335-04-C-0053, HMO177-10-C-0003, FA2550-09-C-8008

NAVSYS Corporation, 14960 Woodcarver Road, Colorado Springs, CO 80921

Expiration of SBIR Data Rights: Expires five years after completion of project work for this or any other follow-on SBIR contract, whichever is later. The Government's rights to use, modify, reproduce, release, perform, display, or disclose technical data or computer software marked with this legend are restricted during the period shown as provided in paragraph (b)(4) of the Rights in Noncommercial Technical Data and Computer Software—Small Business Innovative Research (SBIR) Program clause contained in the above identified contract. No restrictions apply after the expiration date shown above. Any reproduction of technical data, computer software, or portions thereof marked with this legend must also reproduce the markings. (End of legend)

Example Phase III Contracts

- Broad Agency Announcements (Direct Ph III)
 - Army CERDEC: GEISS, TIDGET-SAASM
 - Navy ONR: MCM
- Existing SBIR Contract Extensions
 - NAVAIR: GPS-NAP (Phase II Enhancement)
- Sole Source Phase III Contracts
 - JLOC
 - Talon NAMATH

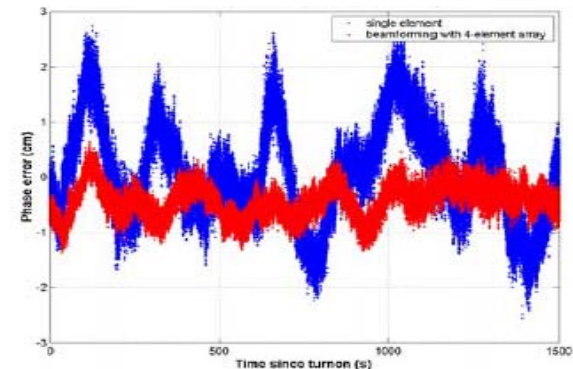
How NAVSYS Phase III Contracts have benefited DoD

- Prototyping for Requirements Analysis
 - NAVAIR JPALS Tech Evaluation
- New Capabilities for Warfighters - GPS Jammer Detection and Location
 - (JLOC)
- Response to Urgent Operational Need
 - Talon NAMATH

NAVAIR JPALS Tech Evaluation

- Developed integrity algorithms and High-gain Advanced GPS Receiver (HAGR) under Phase II
- Navy awarded follow-on effort to collect data supporting their evaluation of the Joint Precision Approach and Landing System (JPALS)
- Captured signal environment on aircraft carrier
- Made recommendations to reduce multipath errors

HAGR



HAGR Carrier Phase Multipath Mitigation

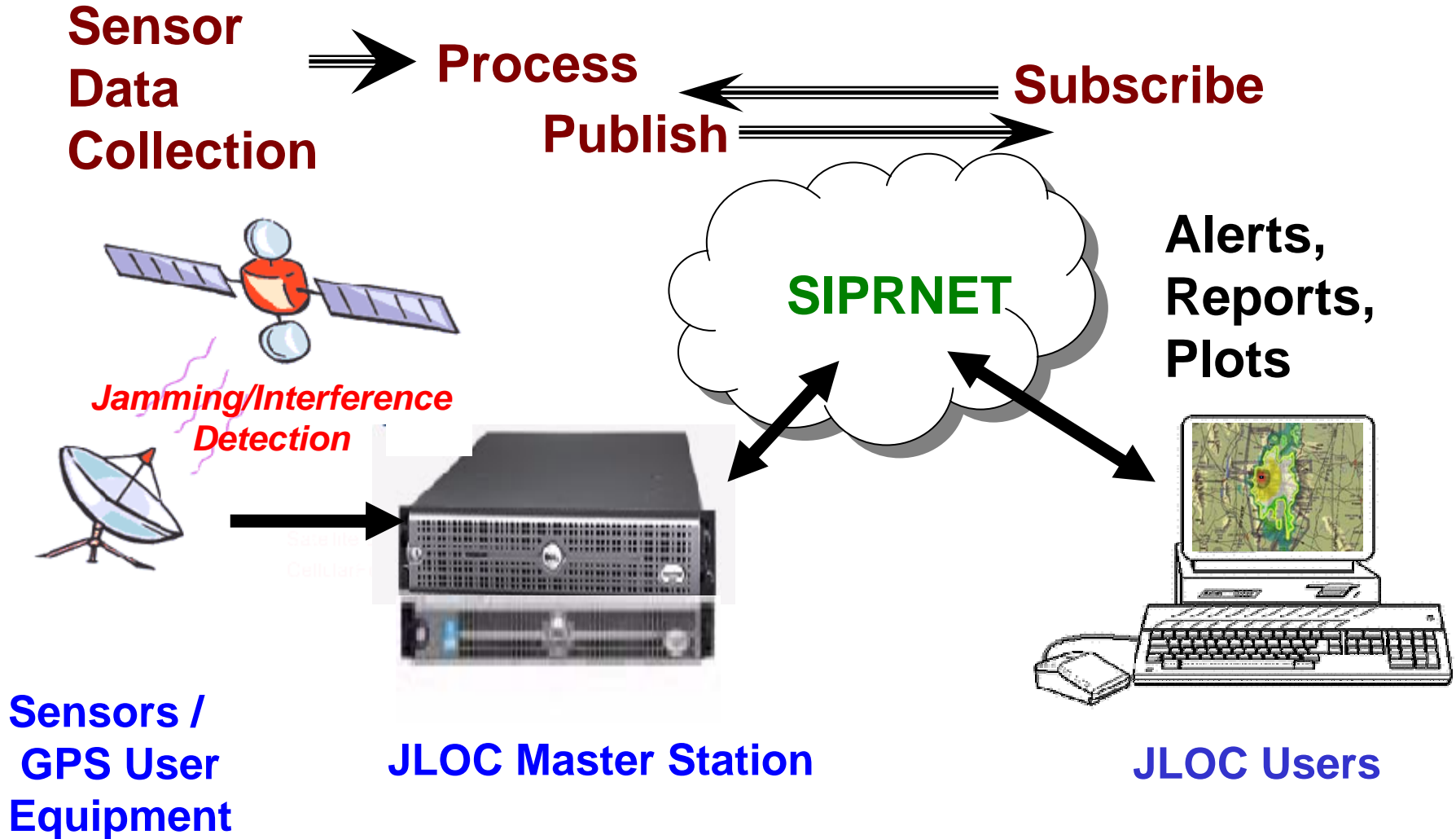
GPS Jammer Detection and Location (JLOC)

- Early recognition of GPS growth in the military
 - Electronic Protection v. Electronic Support
- Understanding the need to protect this critical capability
- Leading initiatives to educate community on the problem and offer solutions

JLOC History

- '98: AFRL initial JLOC contract awarded
 - Technology concept development (TRL5)
- '00: GATOR Space Battlelab Initiative
 - Prototype testing at Woomera Range showed system capability (TRL6)
 - No POM funding submitted by Program Office
 - “Valley of Death” between Phase II and III contracts

JLOC Phase III SBIR



JLOC History (con't)

- '04: AF TENCAP JLOC Ph III contract
 - Congressional plus-up funded development (TRL7)
- '07: JLOC Operational Capability
 - Initial operational capability fielded, gained wide warfighter support (TRL8) – 200 accounts w/ many times more users
 - Transitioned to NGA and now part of their POM

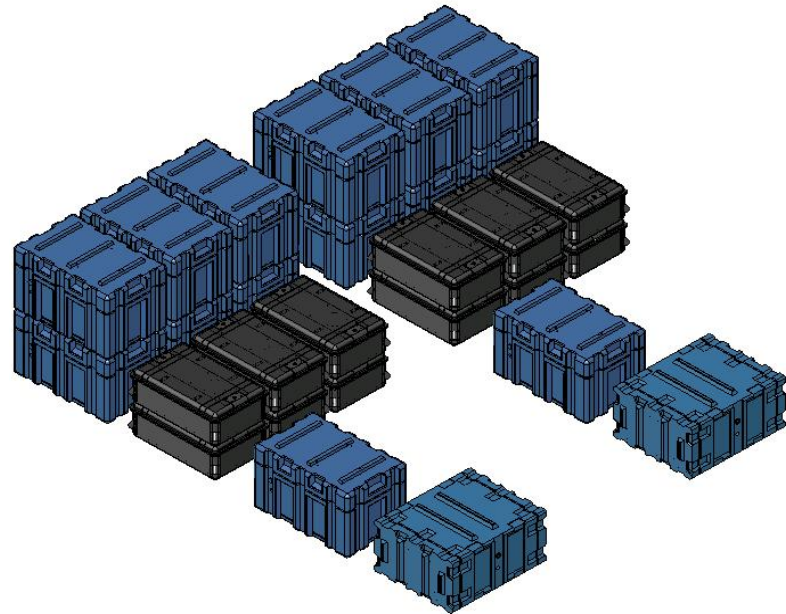
- **Timeliness**
 - GPS Interference and Mitigation now a “hot topic” in military and government circles
 - JLOC system provides a ready platform for integrating GPS interference data and predicting effects through a common operating picture
- **Cost**
 - JLOC designed to be used with existing systems and architectures
- **Capability**
 - System now in use worldwide to identify and locate GPS interference sources and predict their effects
 - Department of Homeland Security looking at similar JLOC system for U.S.

- Boeing produced the Small Diameter Bomb (SDB) for “focused lethality” capability
 - Precision GPS corrections required
 - NAVSYS low-cost proposal not selected
 - SRI Int’l Accuracy Support Infrastructure (ASI) developed instead



- Boeing scheduled to deliver SDB to Iraq theater in 2006, but Theater Commander unhappy with ASI footprint; threatens SDB deployment

- **14 Cases**
- **750Lbs**
- **16 Pieces of COMSEC**
- **7 locations**



- Boeing, Air Force Air Combat Command and Air Armament Center revisited NAVSYS' approach, awarded Phase III contract, again with Congressional Plus-up

Talon NAMATH (PGE) Phase III SBIR



2 SOPS/GPSOC

- Generate differential corrections

TN Server

Talon NAMATH Server

- Generate ZDGPS J28.2(12) msg
- Publish/Subscribe capability



SIPRNET
(primary)

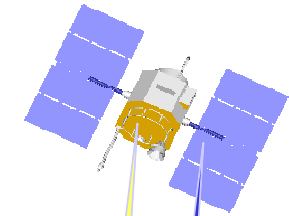


LINK 16

Combat Aircraft

- J28 msg from Data Link
- Push to Weapon

Current
J28.2(12)
Message



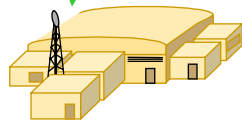
Broadcast NAV
Message

Ranging Data



CAOC or C2 node

- Pull Nav Data
- Push to Data Link via JRE per JICO



Weapon

- Apply ZDGPS to GPS Signal
- Result: Precision Strike

- Cost savings
 - Talon NAMATH system developed and fielded in 1 year for ~\$2M
 - When cancelled, ASI budget was \$35M with another \$5.5M for sustainment costs
- Logistics
 - Talon NAMATH required no new HW in theater, no footprint
 - ASI required new HW, systems, security and transportation
- Training
 - Talon NAMATH basic training minimal (30 min – 1 hour)
- Capability
 - SDB now being used in theater with full precision capability
 - Talon NAMATH technology being adapted for Navy, Army, and other AF applications