Individual Force Protection System (IFPS)
Overview

2007 Worldwide
Personnel Recovery Conference

Program Manager: Preston Marshall
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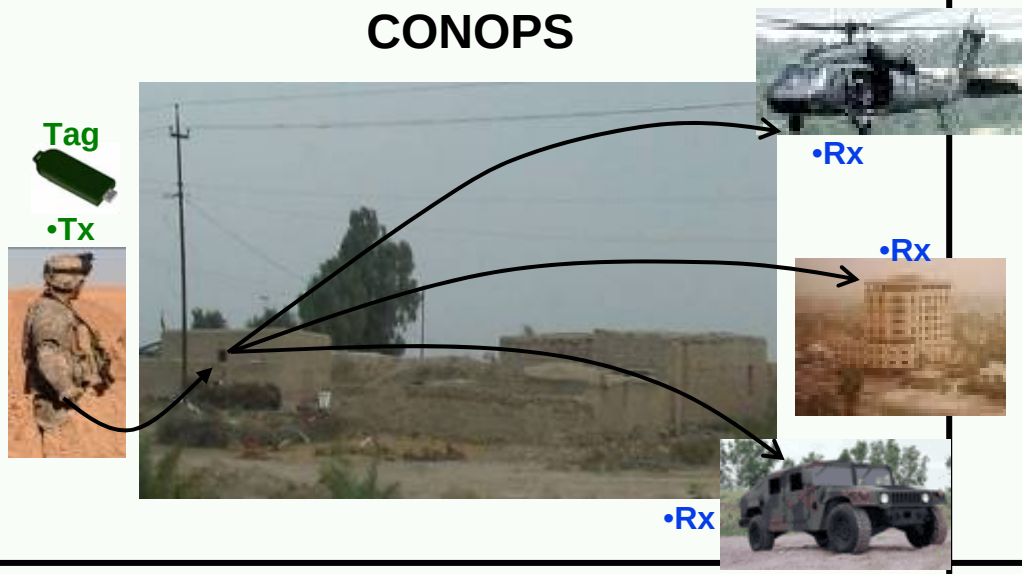
Individual Force Protection System (IFPS)

CONOPS



PROGRAM DESCRIPTION

- Develop a personal radio beacon (tag) that simply and reliably transmits a LPI/LPD signal for force protection
- Uses one to four receivers to provide location and tracking information for search and rescue operations

MICRO TAGS

- Enables warfighter to alert when in distress
  - Soldier/Marine
  - Pilot's backup to primary rescue system
  - Small size, easily integrated into clothing or boots
- Earliest possible tactical deployment: 3rd Qtr FY07

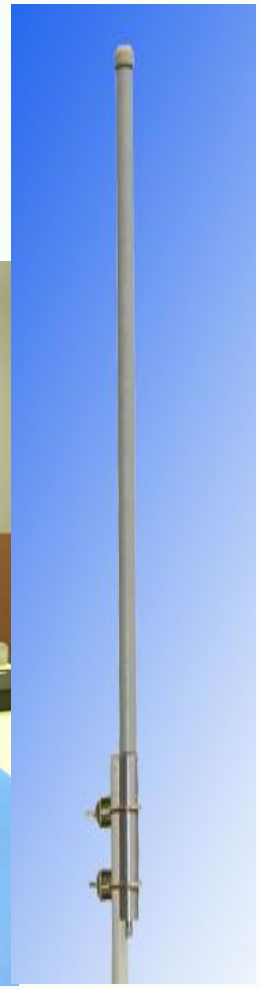
DEMONSTRATED:

- Localization without GPS at tag
- LOS localization accuracy < 70' and processing speed < 30 sec
  - Measured geolocation performance and LPD classified
- LOS range = 113 miles
- Cost < $100 per tag (In quantities)

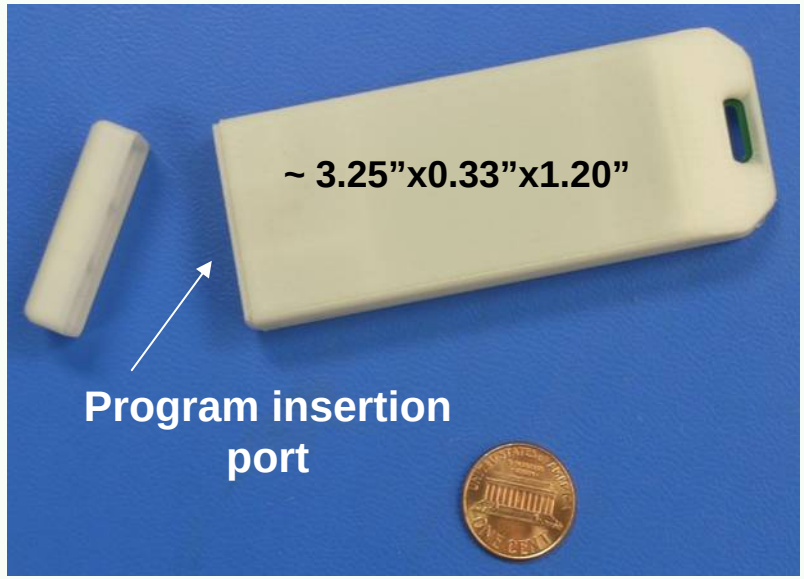
Capability to alert, locate and track missing personnel

IFPS - Equipment

Receiver



Tag

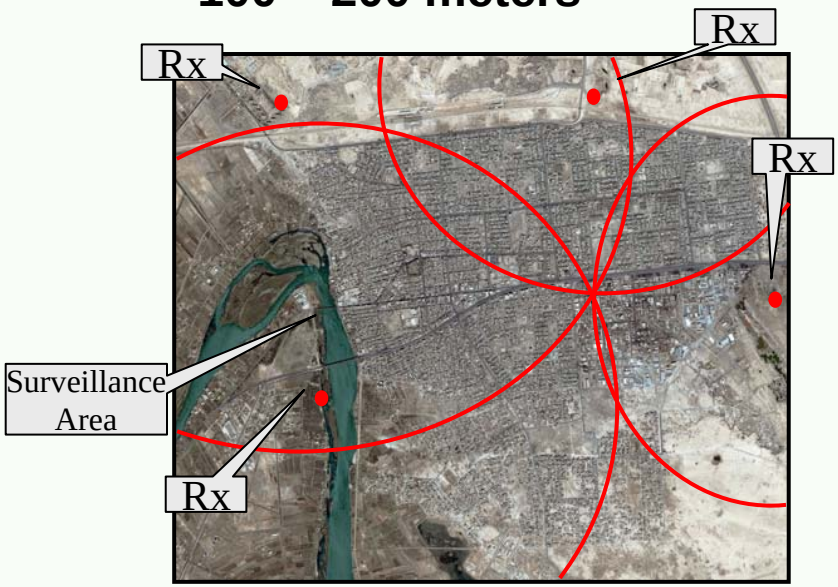


Tag completely inert

- Lifetime limited by battery shelf life
- Activated lifetime: Days to week
- 40% reduction in size by end of FY07

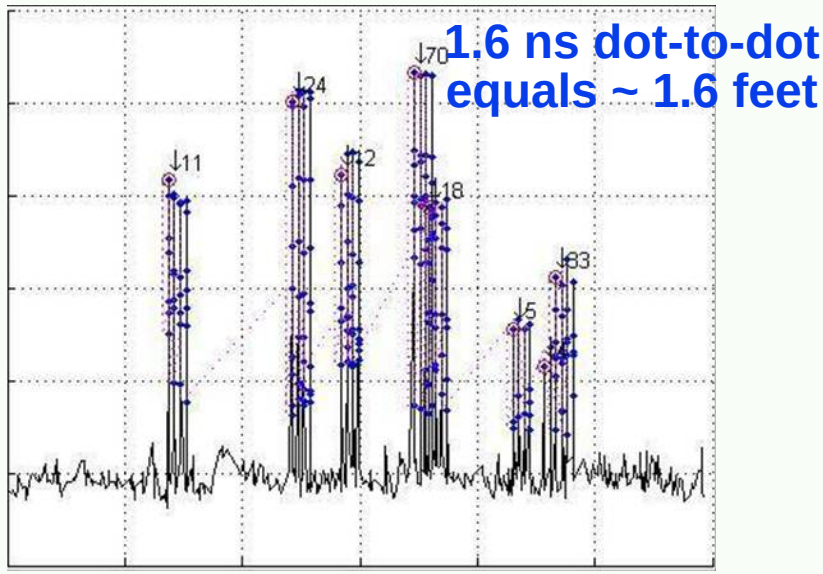
IFPS System Capabilities

- **Basic detection**
  - 1 receiver
  - 150km line of sight (LOS)
- **Geolocation**
  - 3 - 4 receivers, ultra high accuracy geolocation, or
  - Single airborne: estimated 100 – 200 meters



IFPS Ground Deployment Scenario

- **Receiver**
  - Able to discriminate multiple tags in close proximity of each other simultaneously
  - Uses existing communications infrastructure to pass short message to SAR center



Shows identification of eight tags

Quantico, VA Field Trials Oct 6-12

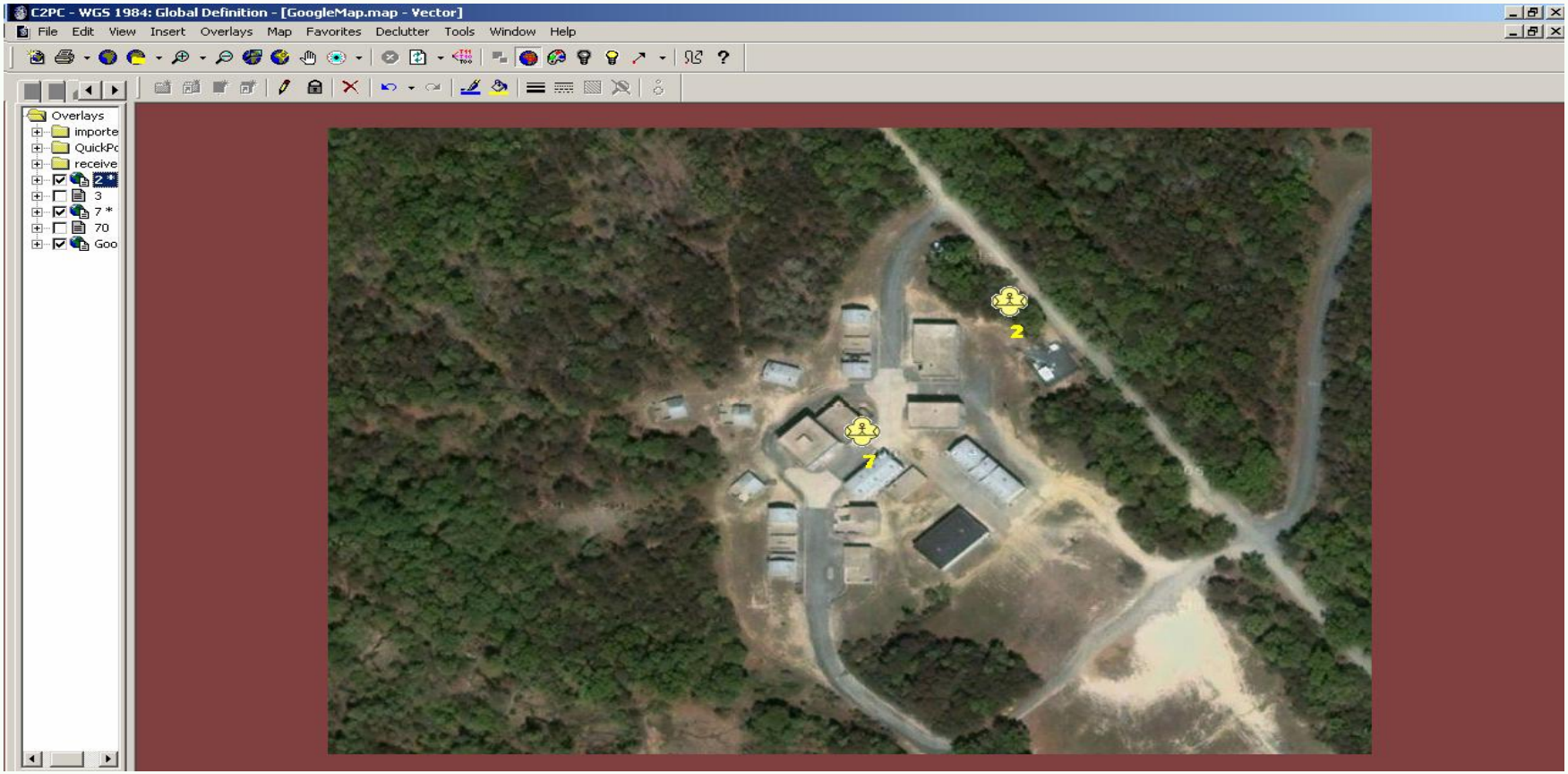
- The first successful end-to-end system field trial in an urban (multi-path) environment.
- IFPS receivers generated a tactical report containing tag ID, lat/long, and time stamp
  - Used GSM and 802.11g to transmit IFPS message
- Used the USMC Command and Control PC (C2PC) system to display mission data

Military operations in urban terrain facility

One of four receiver sites

Able to operate in an urban environment

Quantico, VA Field Trials C2PC COP



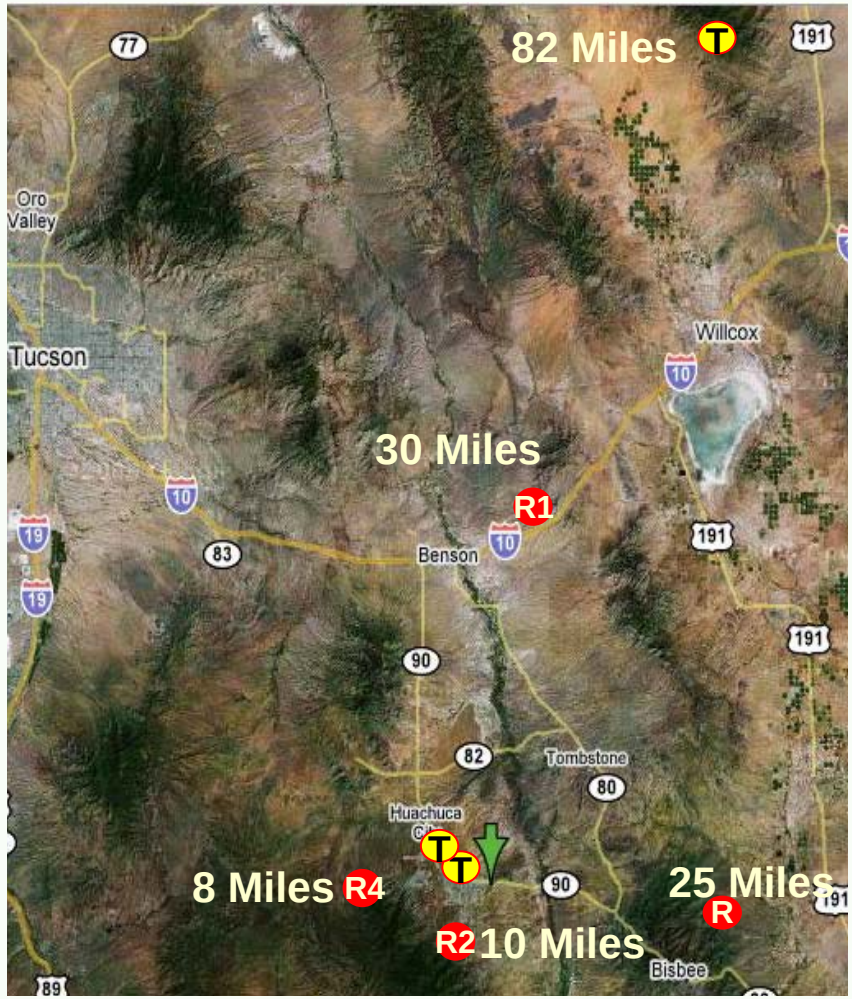
Minimal Impact: High Level Self Executing Software Script

- **Manual or automatic update**
- **Single or multiple tags simultaneously plotted**
- **Mil-Standard 2525B Icon**

Can be integrated into PRMS, USMC C2PC, CPOF, or other existing operational personnel recovery systems

Ft. Huachuca, AZ Field Trials Nov 13-17

- **Very successful open range test**
  - **Able to detect tag at 82 miles**
  - **Used GSM to pass data between receivers**
  - **Localization accuracy not affected by receiver distance**



Successfully detected and located tags at operational ranges

Ft. Huachuca Field Trials

- **Able to operate in dense signal environment**
  - **Receivers successfully excised the high, in-band interferers**
- **Successfully demonstrated mobile operations**
  - **Fixed receiver able to detect moving tag at highway speeds (60-70 mph)**
  - **Mobile receiver (25 mph) able to detect fixed tag**
- **Quick Reaction Force Capability**

Receiver 4 at Radar site on Scott Peak

Receiver 1 at Sybil Siding

Operates in high EMI environment

IFPS – Way Ahead

- **Field Demonstrations –**
  - **Airborne and LPD demos planned for Feb – Mar 07**
  - **Large scale field demo 1st QTR FY08**
- **JPRA believes technology holds great promise**
- **DARPA seeking Service or Joint Sponsor to take program ownership**
  - **Will tailor program development to meet user requirements**

Tag on Tripod at Scott Peak, AZ

Loop can be used to attach tag to a neck strap

Goal: Delivery 2nd Qtr FY08 – opportunity for earlier transition

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QUESTIONS ?

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Ft. Huachuca Field Experimental Results

System Parameter	Objective	Result
Localization without GPS at Tag	Operate during local GPS outage at tag	No GPS used at tag for any tests
LOS Localization Accuracy	70 feet	Meets objective
LOS Localization Speed	< 3 minutes	30 seconds
LOS Range	50 miles	113 miles (183 km)

Tag Positions for Localization Tests

Program results met or greatly exceeded