Joint Survivability Experiment with NAVAIR

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11-14 April 2005
Monterey, CA

UNCLASSIFIED

TARDEC
U.S. ARMY TANK AUTOMOTIVE RESEARCH DEVELOPMENT AND ENGINEERING CENTER

SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY

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Collaborating Partners

SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY

US Army Research, Development, and Engineering Command (RDECOM)

Tank-automotive Research, Development and Engineering Center (TARDEC)

Survivability, Intelligent Systems, and National Automotive Center (NAC) Ground Vehicle Simulation Laboratory (GVSL)

Warren, MI

US Navy Naval Air Systems Command (NAVAIR)

Air Combat Environment Test and Evaluation Facility (ACETEF)

Patuxent River, MD

TARDEC   **NAVNAIR**

SUPERIOR **TECHNOLOGY** FOR A SUPERIOR **ARMY**

- Requirements driven by TARDEC Survivability Technology Area "customer"

- Demonstrating and Evaluating new technology in areas of Survivability to aid soldier *Situational Awareness* and *Protection*

- Simulation environment (TARDEC Embedded Simulation System) to provide modeling for:
  - *Sensors*
  - *Countermeasures*
  - *Decision Aids*
  - *Weapons Systems*
  - *Armor*
  - *Vehicle Mobility*
  - *Human Performance Models (HPM)*

- NAVAIR to provide airborne assets for intelligence reporting and air support

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Survivability Requirements

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- Integrated Survivability Active Protection System (IS APS)
  - Demonstrates Platform Protection System (PPS) for Future Combat Systems (FCS) Manned Ground Vehicle (MGV)

- Commanders Decision Aid
  - Software provided by BAE Systems (Nashua, NH)

- Sensor Suite
  - Laser Warning Receiver (LWR)
  - Electro-optical / Infrared Warner (EO/IRW)

- Threat Modeling
  - AT-5 threats / Semi-automatic Command to Line of Sight (SACLOS)
  - Rocket Propelled Grenades (RPG-7)

- Countermeasures
  - Electromagnetic Armor (EMA)
  - Multifunction Countermeasure (MFCM)
  - Smoke

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CDA Integration Effort (U)

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TARDEC Crew Integration and Automation Testbed (CAT) Crew Station Embedded Simulation System (ESS) Architecture Overview
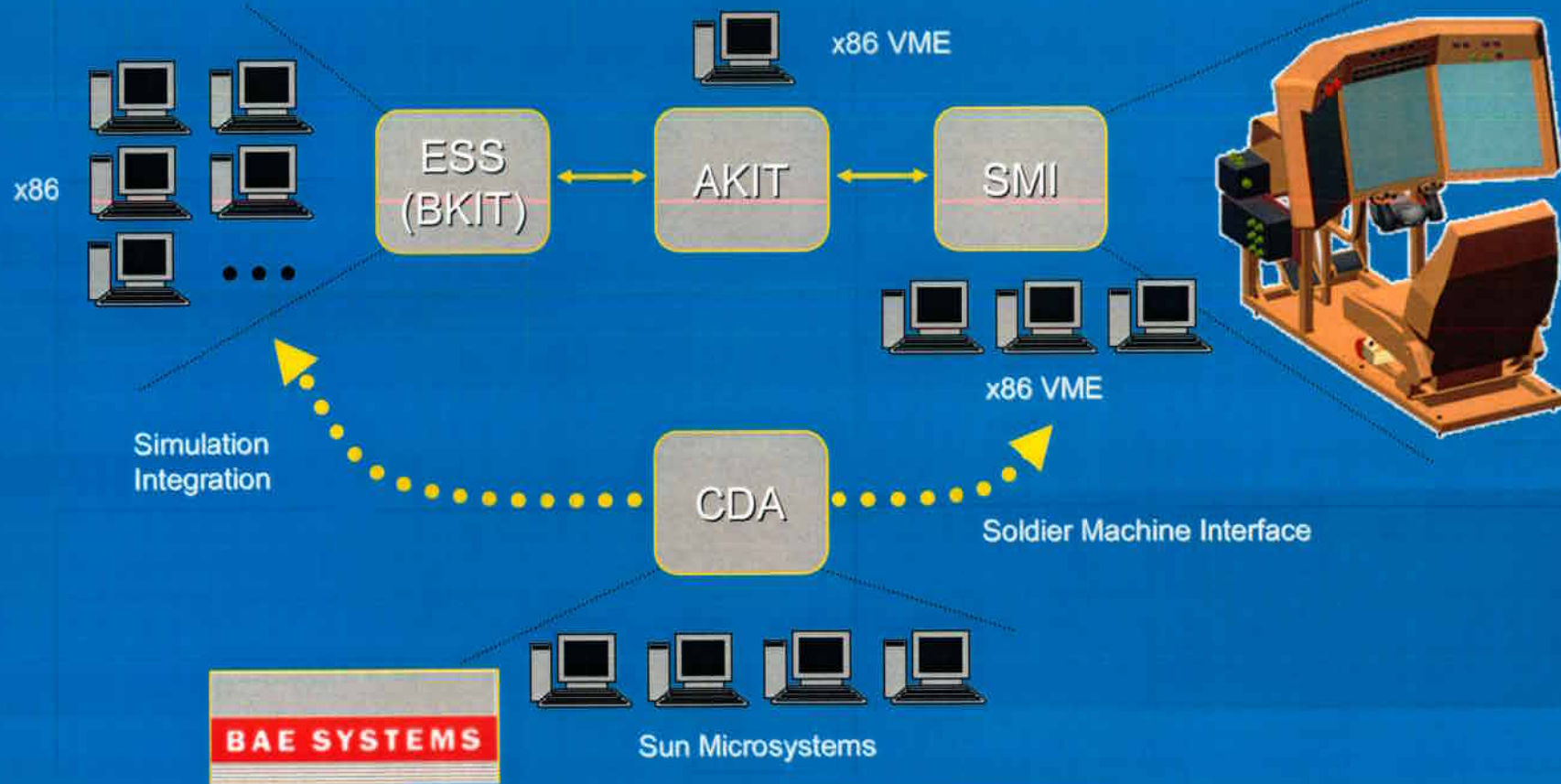
CDA Screen – Vehicle Protection Zones (U)

SUPERIOR **TECHNOLOGY** FOR A SUPERIOR **ARMY**

Launch Smoke

CDA Mode

Setup Modes

Setup Zones

Diagnostics

Activate Zones

SNS/CM Status

Done

Activate All

Exclude All

CM State

Sensor State

Disconnected

Sensors

CM

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NAVAIR Integration Efforts

SUPERIOR **TECHNOLOGY** FOR A SUPERIOR **ARMY**

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NAV AIR

ENCRYPTED ATM OVER DREN
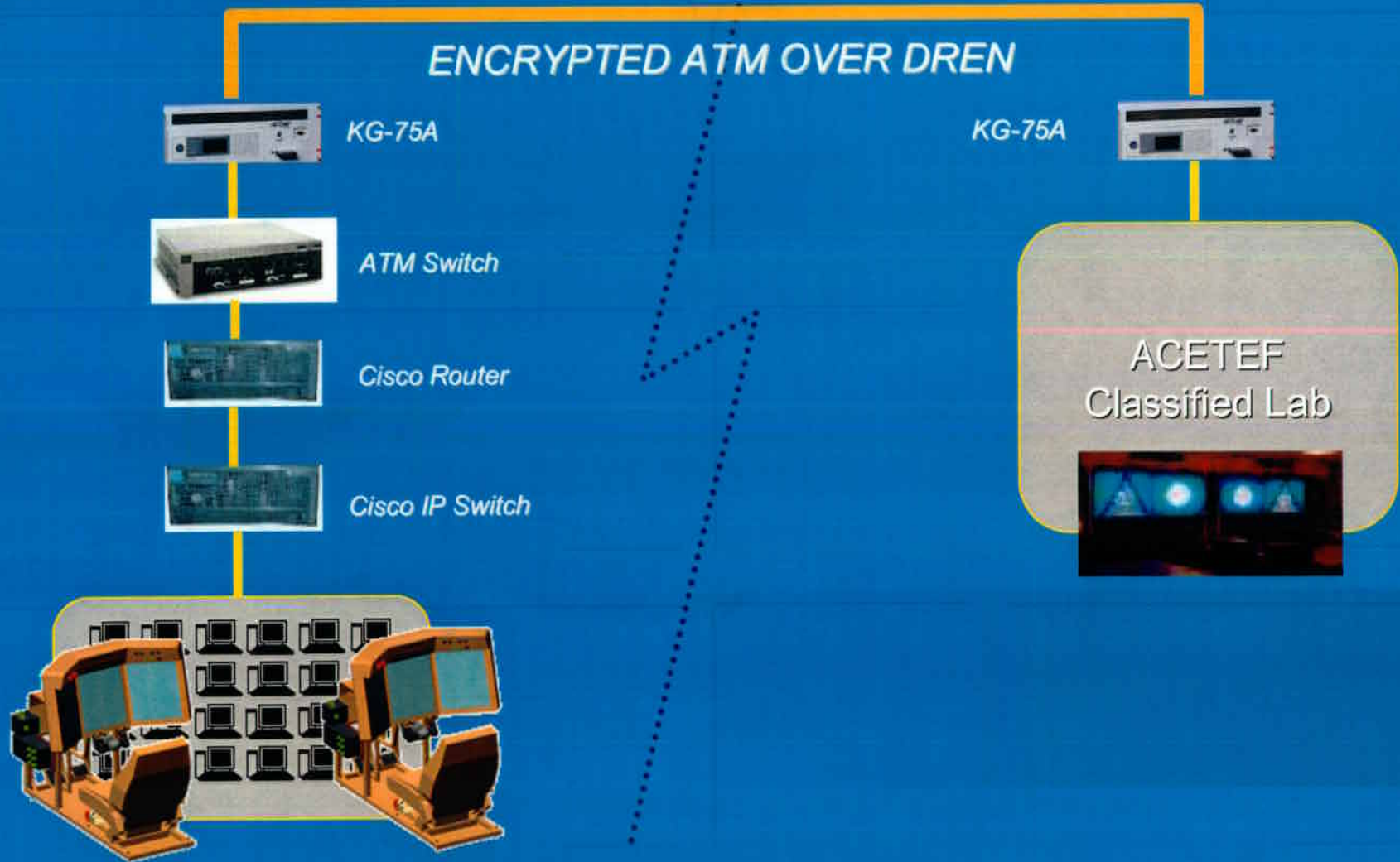
KG-75A

KG-75A

ATM Switch

Cisco Router

Cisco IP Switch

ACETEF
Classified Lab

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Rural Scenario Overview

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Rural Scenario Overview

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38 0646178 44

38 0648646 4465394

38 0643606 4462299

START POINT

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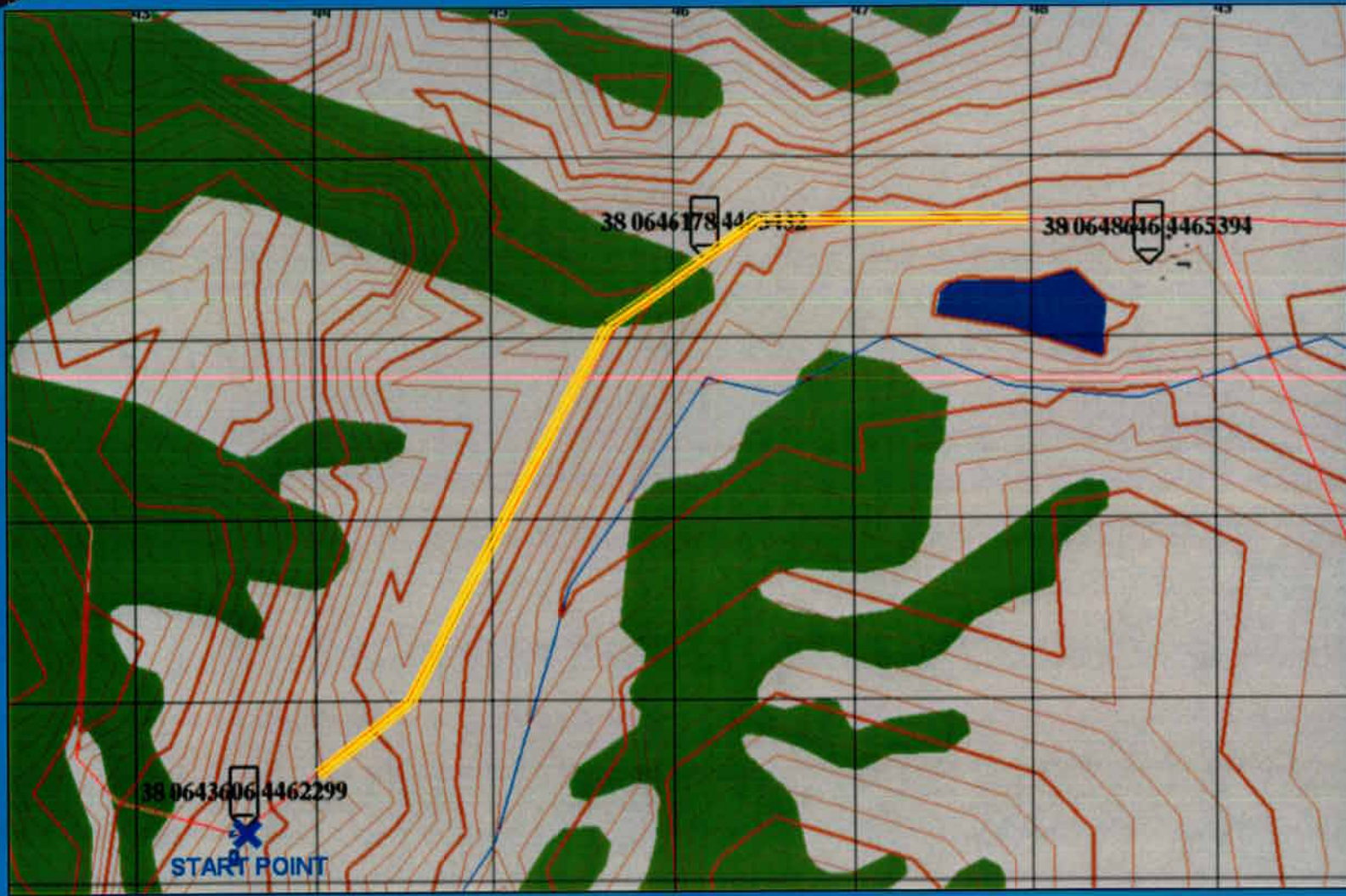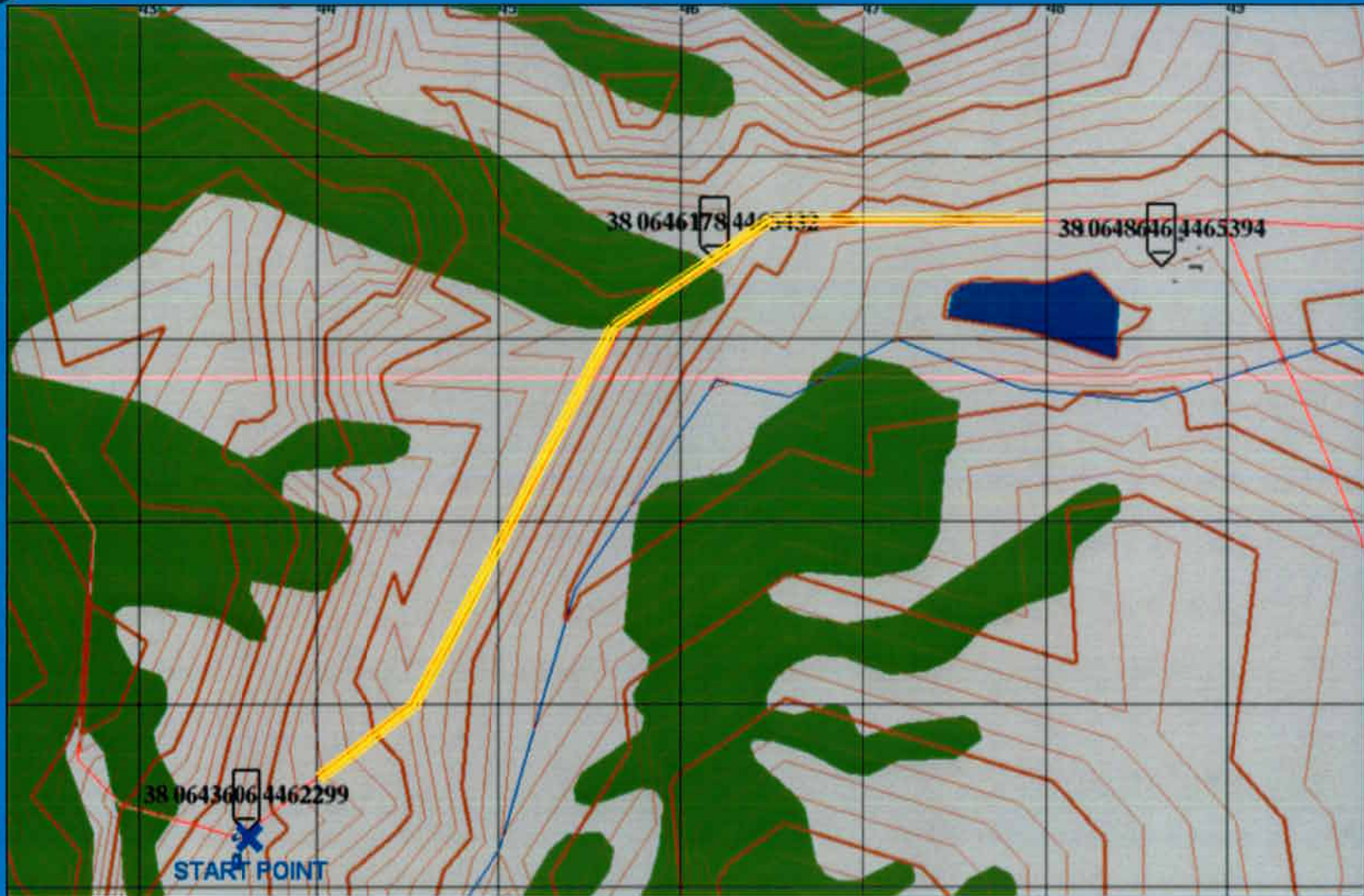
Rural Scenario OPFOR Assets

SUPERIOR **TECHNOLOGY** FOR A SUPERIOR **ARMY**

(18040,37920)

(19000,37920)

(destroyed by NAVAIR)

(destroyed by FCS)

(19840,37080)

(destroyed by NAVAIR)

(19560,36560)

(destroyed by FCS)

(19160,36080)

(destroyed by FCS)

(20000,35200)

(18160,35480)

(destroyed by FCS)

(destroyed by FCS)

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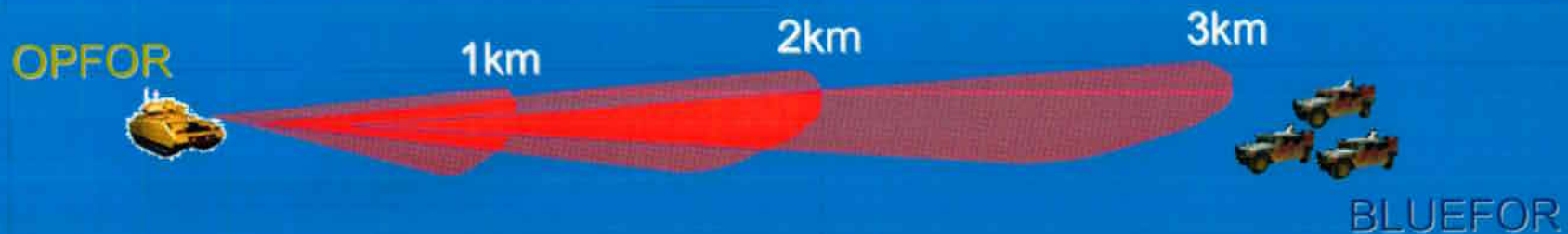**SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY**

- Signature Management Benefits
  - Increased survivability of vehicle per detection range reduction
  - Highest OPFOR defeat when detection range reduced from 3km to 2km
  - 2km to 1km range

OPFOR　　　　　　　1km　　　　　　　2km　　　　　　　3km

BLUEFOR

- Other results
  - Simulation results logged for analysis
  - EMA performance
  - CDA performance

- Experiments on-going as of 04 Apr 05, further results TBD

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Conclusions and Lessons Learned

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- Inter- and Intra- agency cooperation enhanced value of future technology experimentation

- Study of impact on scenario outcome with NAVAIR involvement
  - Increase in situational awareness with added intelligence
  - Increase in vehicle survivability
  - Increase in cooperation with Joint Service activity

- Programmatic
  - Experience in Stand-up of Classified experiment
  - Experience in Information Systems and Lab Physical Accreditation for desired classification levels
  - Experience in developing network infrastructure for classified communication

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Thank You

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