INDUSTRY BRIEF

TCS PROGRAM

CAPT WITTE

10/4/97

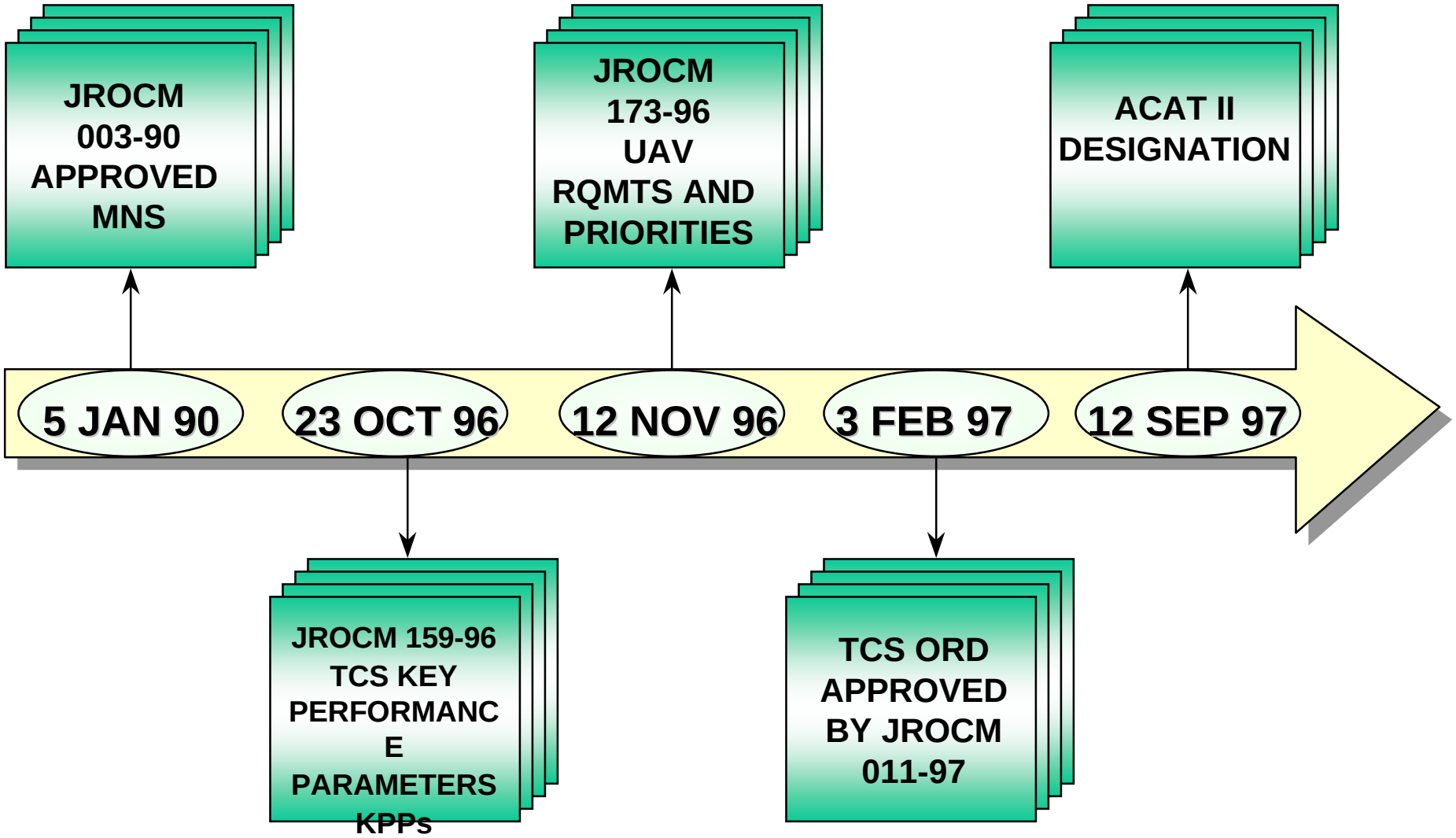
AGENDA

1300	WELCOME	CAPT WITTE
1310	SYSTEM INTEGRATION CONTRACT	CONTRACTS
1320	TCS PROGRAM	CAPT WITTE
1415	SYSTEM INTEGRATION CONTRACT PLAN, SCOPE, AND PHILOSOPHY	LISA COLUZZI STEVE DANIEL
1530	BREAK	
1600	DISCUSSION	CAPT WITTE AND STAFF

TODAY'S OBJECTIVE

- DESCRIBE TCS PROGRAM
- DESCRIBE THE SYSTEM INTEGRATION CONTRACT
- OBTAIN FEEDBACK ON THE PROCESS

PROGRAM DIRECTION



LEVELS OF UAV INTERACTION
ORD DEFINED

MULTI PLATFORM/SENSOR

LEVEL I

- Secondary Product

LEVEL II

- Direct Data Receipt

LEVEL III

- Payload Control
- Direct Data Receipt

LEVEL IV

- Flight Control
- Payload Control
- Direct Data Receipt

LEVEL V

- Launch & Recovery
- Flight Control
- Payload Control
- Direct Data Receipt

DEMOS: OPERATIONAL TOMAHAWK LAUNCH 203, TASK FORCE XXI, JWID 97, USS TARAWA FLTX

UAV'S WITH TCS

HAE

Predator*

Outrider*

Pioneer

VTOL/
Future UAV

(RECEIVE
ONLY)

TCS

UAV A/V & PAYLOAD CONTROL	C4I INTERFACES FOR IMAGERY & DATA

- TCS
- ASAS
- JSTARS GCS
- AFATDS
- MIES
- IAS
- ATHS
- ADOCS
- ATWCS
- TROJAN SPIRIT II
- COMPASS
- GUARDRAIL ACS/IPF
- JDISS
- JSIPS-N
- TEG
- JSIPS
- JMCIS
- TBMCS
- CCTV
- ETRAC
- CARS
- MISSION PLANNERS

* FUNDED EFFORT

UNDER CONSIDERATION

10/4/97

TCS C4I SYSTEMS INTEGRATION PLAN PER FY

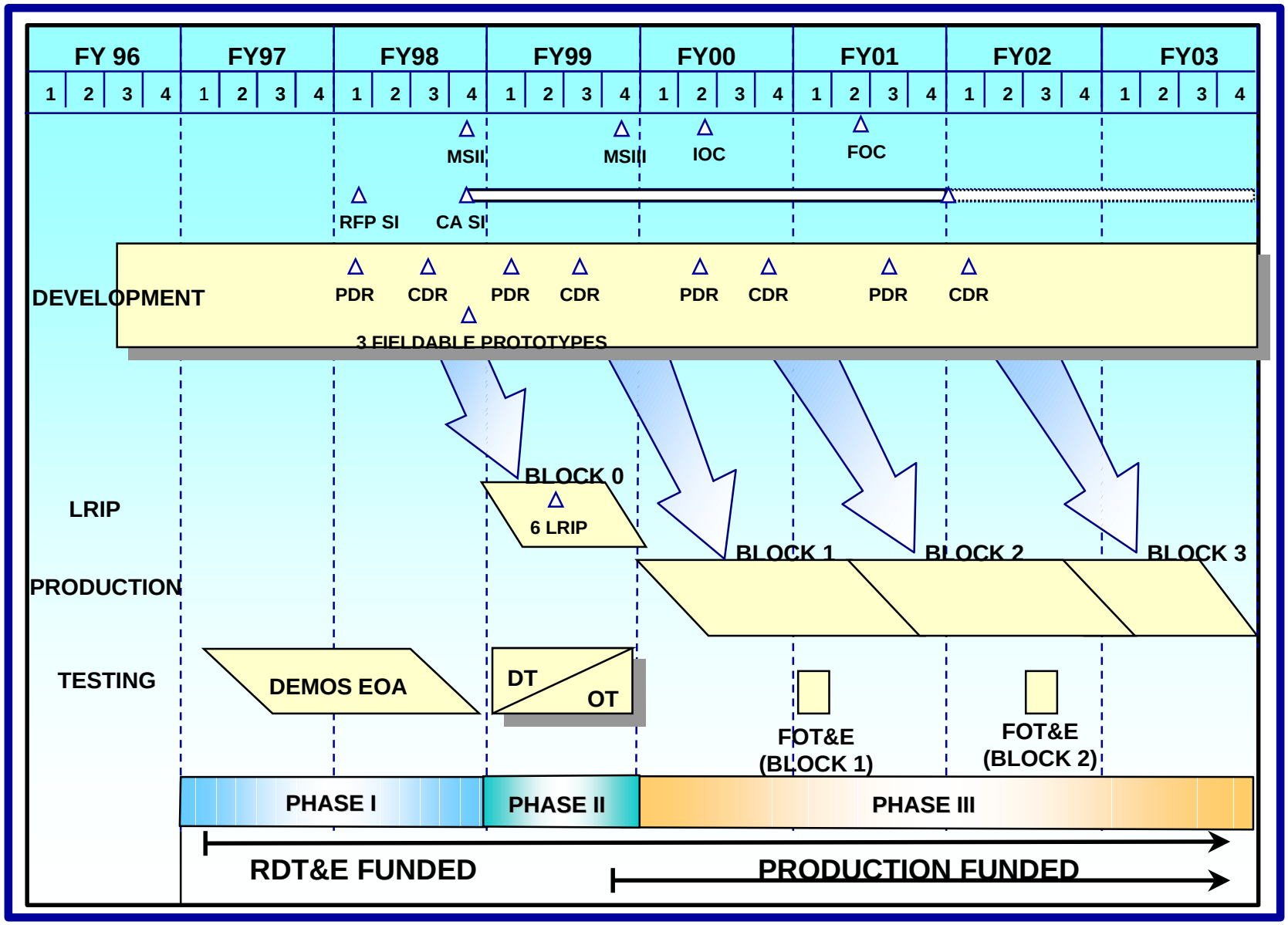
TCS

FY97	FY98	FY99	FY00
AFATDS	IAS	JSIPS-AF	ATHS
ADOCS	JDISS	ACS IPF	ATWCS (I)
ASAS	TROJAN SPIRIT II	MIES	JMCIS (I)
CCTV	ETRAC	ATWCS (C)	TBMCS (I)
JSIPS - NAVY	JSTARS-CGS (I)	CARS	Mission Planning Systems
JMCIS (C)	TEG		
JSTARS-CGS (C)			

C - CONNECTIVITY
I - INTEGRATION

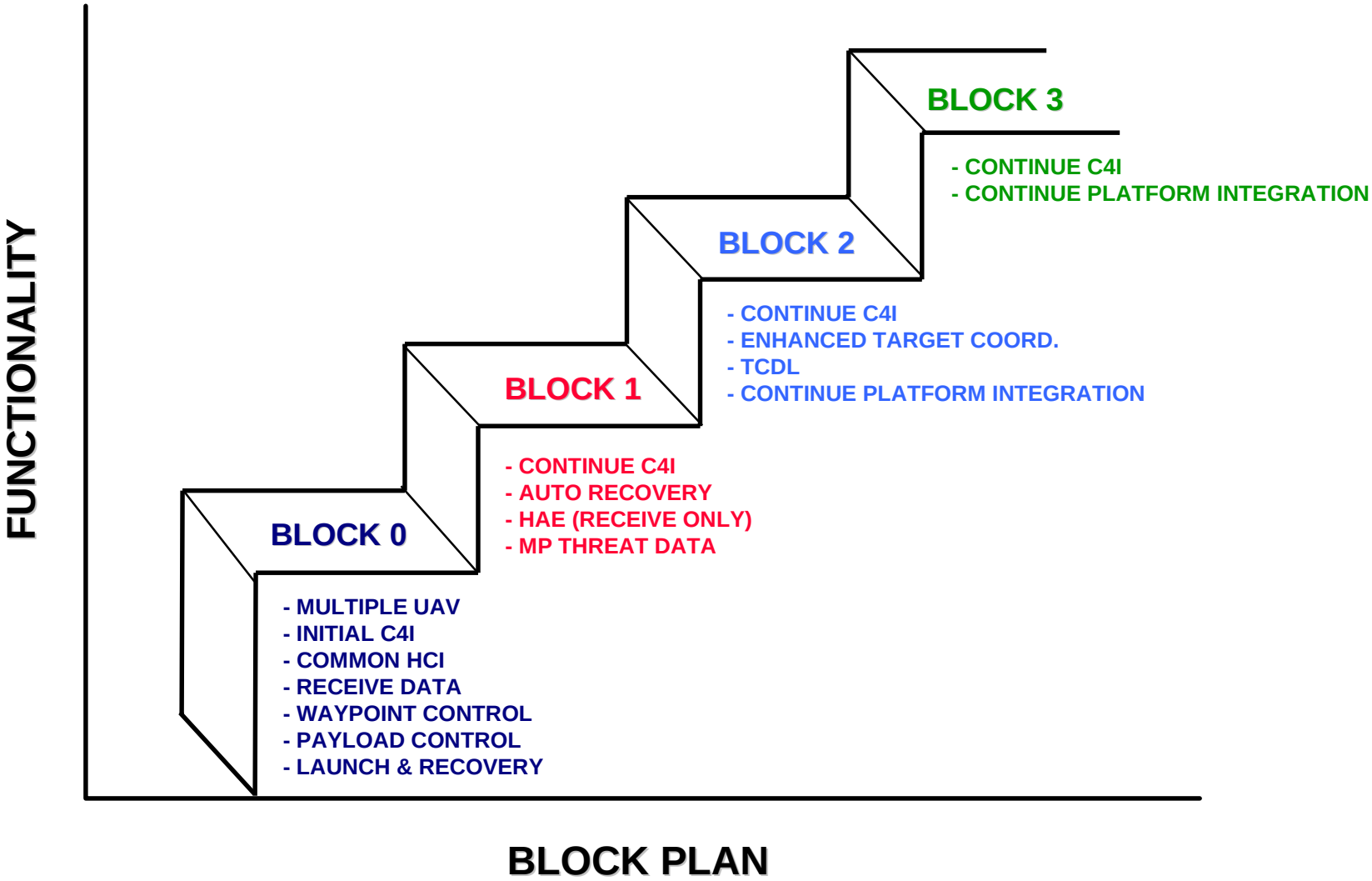
10/4/97

TCS SCHEDULE

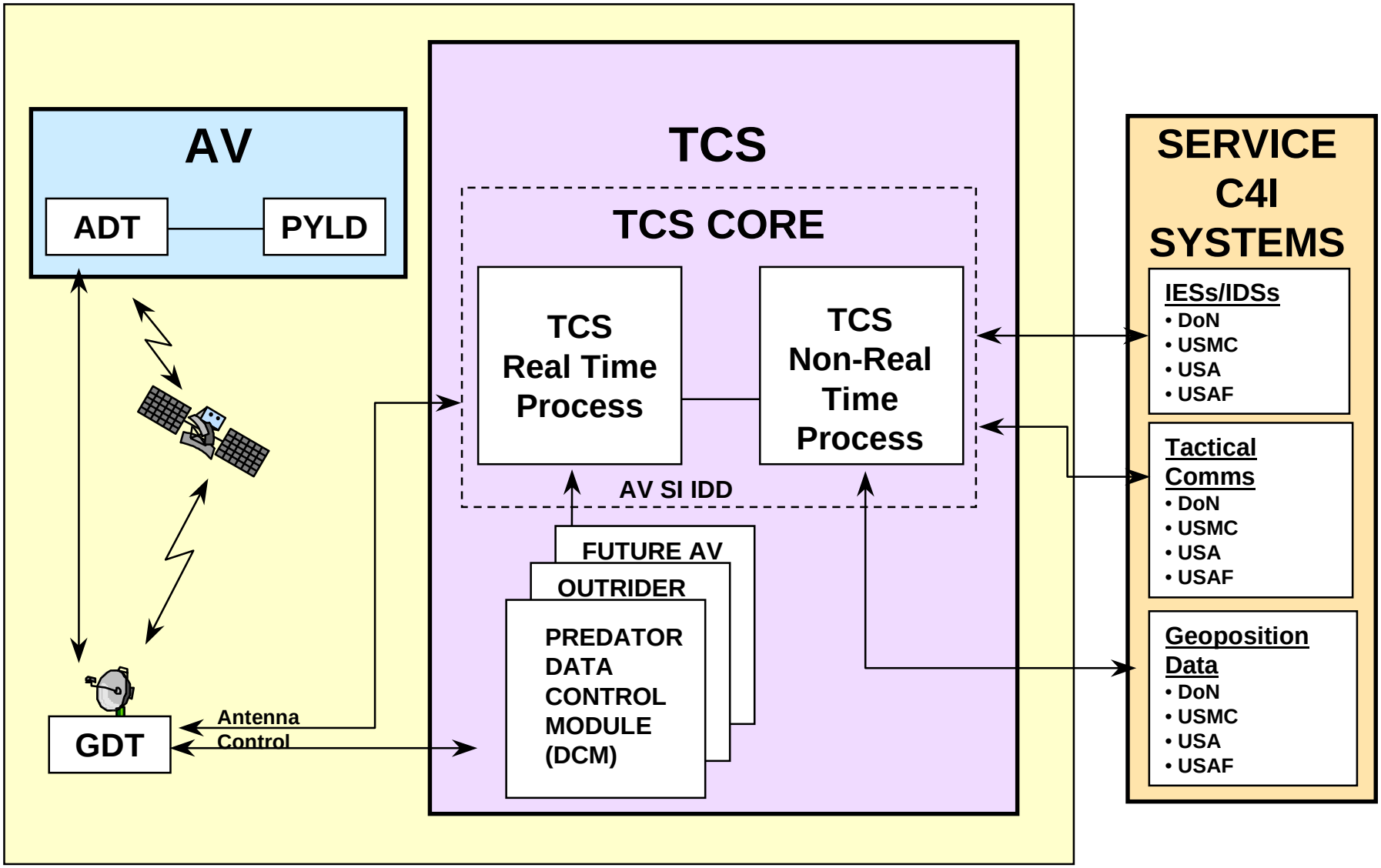


10/4/97

TCS PLAN


FUNCTIONALITY
BLOCK 0
- MULTIPLE UAV
- INITIAL C4I
- COMMON HCI
- RECEIVE DATA
- WAYPOINT CONTROL
- PAYLOAD CONTROL
- LAUNCH & RECOVERY
BLOCK 1
- CONTINUE C4I
- AUTO RECOVERY
- HAE (RECEIVE ONLY)
- MP THREAT DATA
BLOCK 2
- CONTINUE C4I
- ENHANCED TARGET COORD.
- TCDL
- CONTINUE PLATFORM INTEGRATION
BLOCK 3
- CONTINUE C4I
- CONTINUE PLATFORM INTEGRATION
BLOCK PLAN

UAV CONTROL SYSTEM INTEROPERABILITY

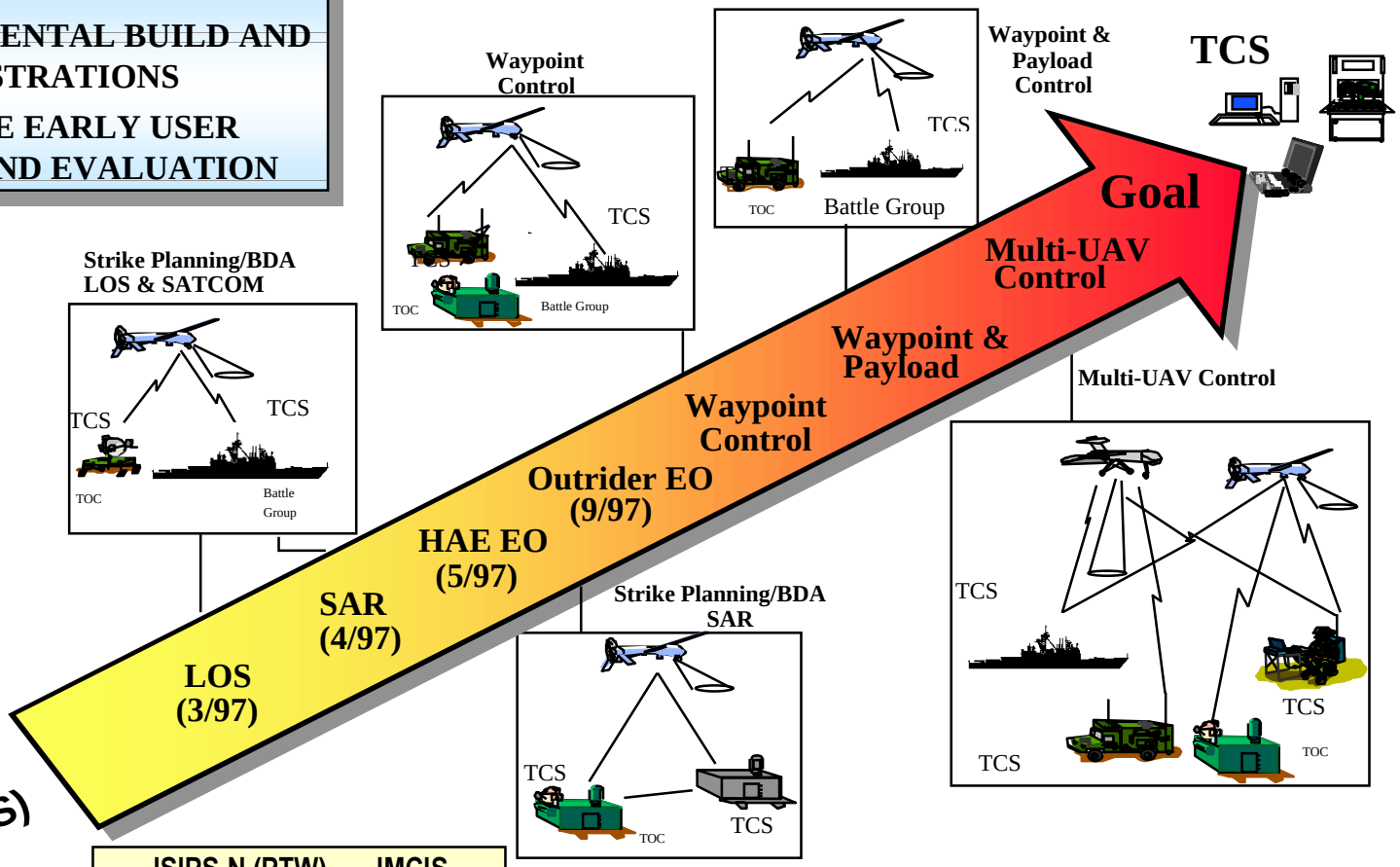


10/4/97

PHASE I

TCS DEVELOPMENT PLAN/STATUS

- INCREMENTAL BUILD AND DEMONSTRATIONS
- PROVIDE EARLY USER INPUT AND EVALUATION



(ACTUALS)

JSIPS-N (PTW) JMCIS
ASAS AFATDS JSTARS
ADOCS CCTV AI/CGS

PLANNED

3/97 7/97 1/98 3/98 6/98

TCS LRIP

10/4/97

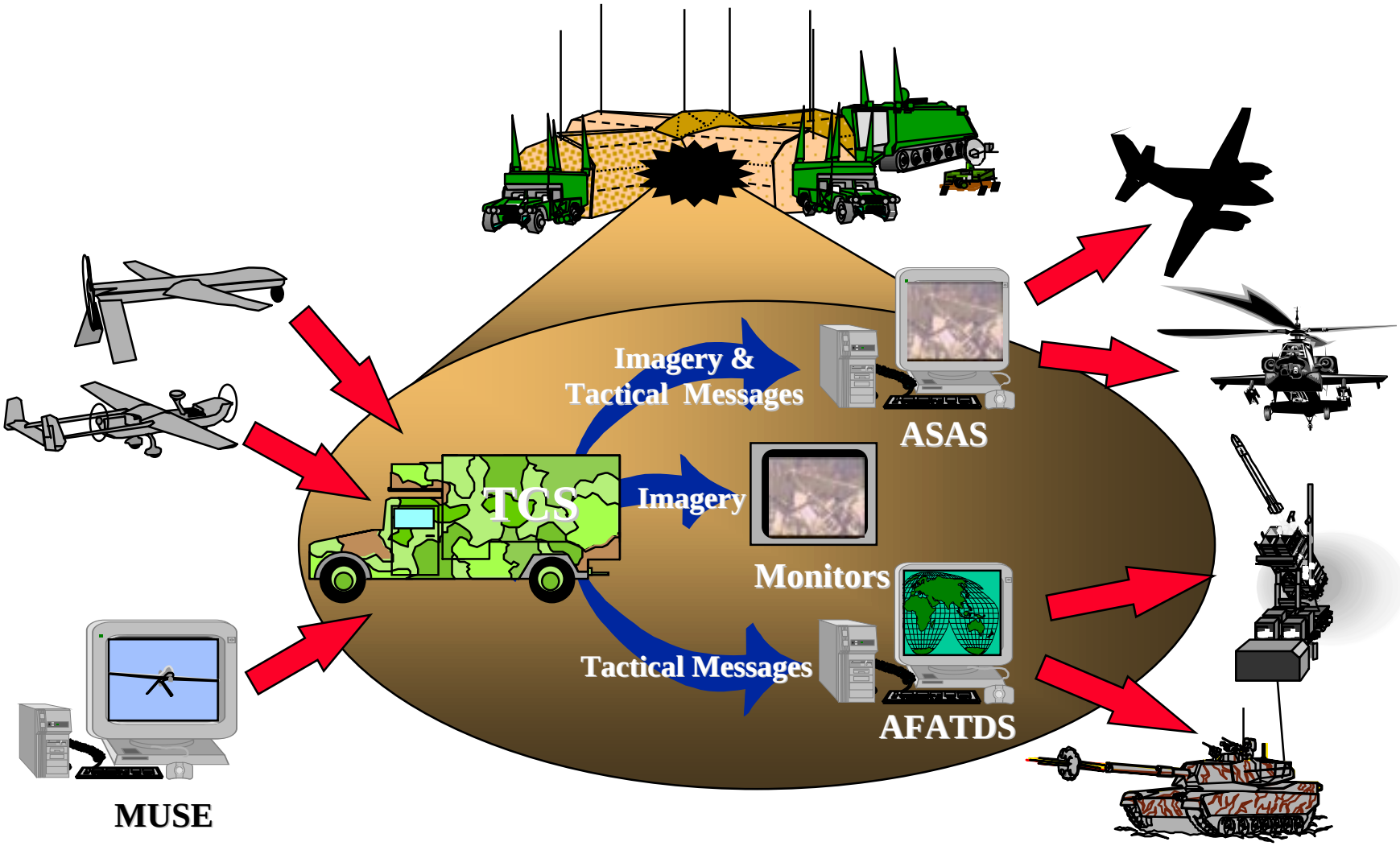
ACCOMPLISHMENTS TO DATE

- DEMONSTRATED DATA RECEIPT AND DISSEMINATION TO JSIPS-N PRECISION TARGETING WORKSTATION
  - PREDATOR EO/IR DATA VIA GBS/JBS, HAE EO DATA (TAPE)
- FIRST LANDBASED FIELDABLE PROTOTYPE TFXXI EXPERIMENT
  - INITIAL BUILD V 1.0.0.4
  - SUPPORTED SIMULTANEOUS RECEIPT OF PREDATOR SURROGATE AND OUTRIDER SURROGATE DATA
- FIRST SHIP-BASED FIELDABLE PROTOTYPE - JWID - 97
  - PARTICIPATED IN MULTIPLE DEMO'S
  - TASKED BY STENNIS NWCS, OBTAINED IMAGERY, SENT NITF 2.0 STILLS/TACFIRE MSG'S TO NWCS
  - 3 DAYS AT SEA
  - USS STENNIS, USS ATLANTA, USS SAN JACINTO

ADDITIONAL ACCOMPLISHMENTS

- DEMONSTRATED OUTRIDER EO DATA RECEIPT (TAPE)
- PARTICIPATED IN ULCHI FOCUS LENS - 97
  - SIMULATED PREDATOR, OUTRIDER, AND PIONEER AV'S VIA MUSE
  - C4I INTEGRATION AND CONOPS
- DOWN SELECTED TO LOGICON AND BOEING FOR UAV MISSION PLANNER SOFTWARE APPLICATIONS (JUNE 27) - FINAL DOWN SELECT (NOV 97)
- FINALIZING PLANS FOR FLTEX - USS TARAWA - NOV 97

TACTICAL OPERATIONS CENTER



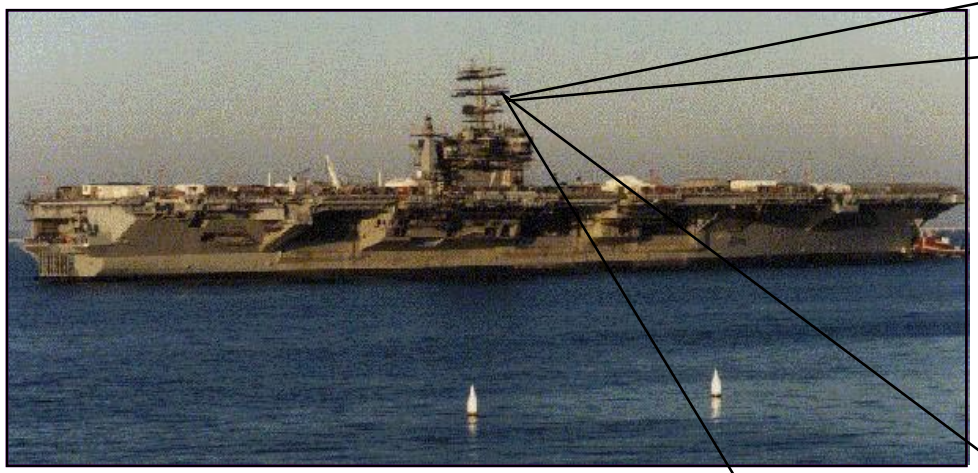
TACTICAL CONTROL SYSTEM
LAND-BASED, SHELTERIZED (TCS-LS)

FIELDABLE PROTOTYPE #1

TCS-LS PROTOTYPE DEPLOYED IN SUPPORT OF 4TH DIVISION AT TASK FORCE XXI ADVANCE WARFIGHTING EXERCISE

TCS OPERATORS ON DUTY INSIDE THE TCS-LS - OPERATORS ARE PROCESSING UAV PAYLOAD IMAGERY AND PREPARING TACTICAL COMMUNICATIONS MESSAGES ON CHS X WORKSTATIONS

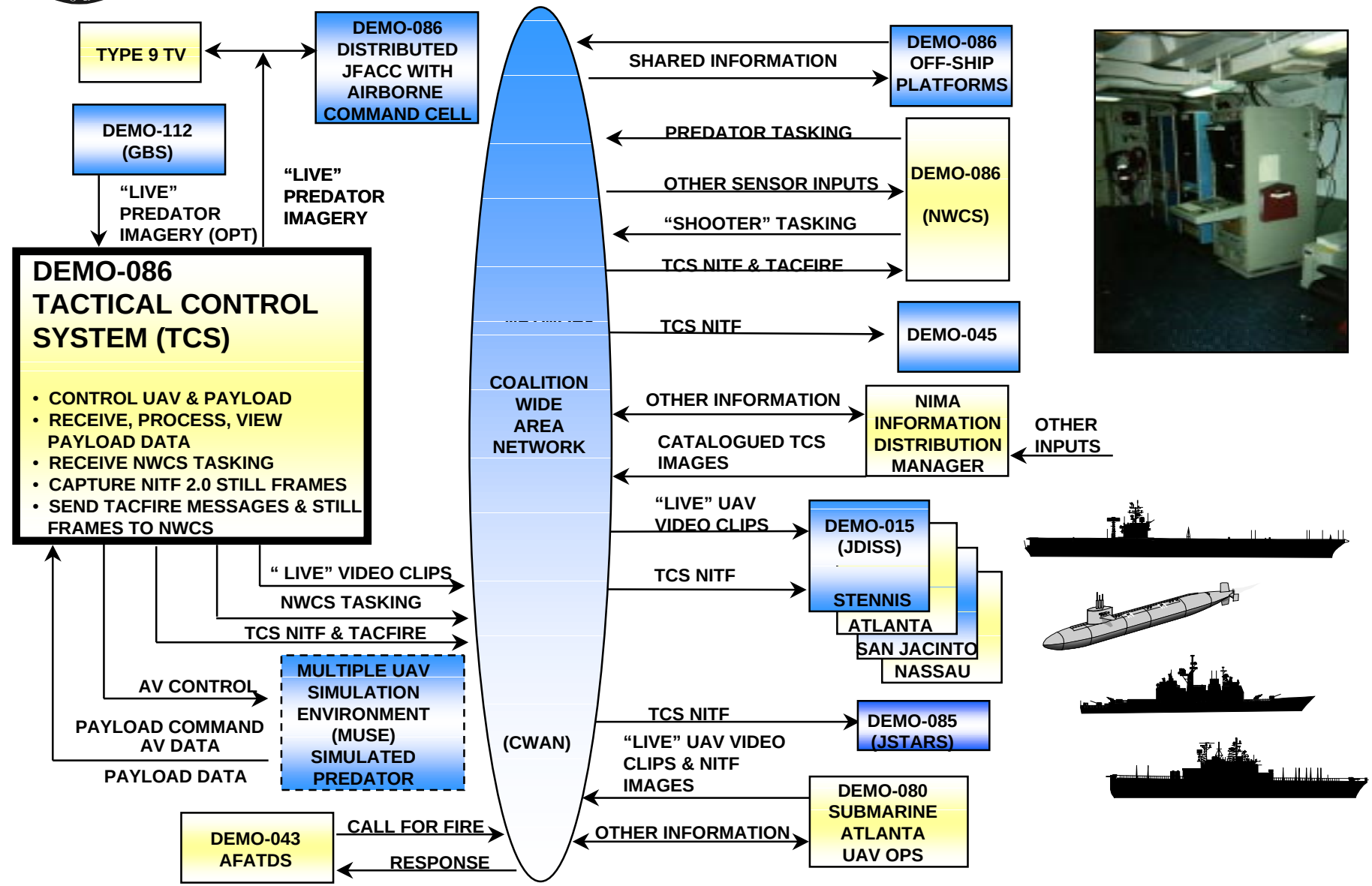
TACTICAL CONTROL SYSTEM SEA-BASED (TCS-SB)



FIRST PROTOTYPE SHIP INSTALL
USS STENNIS

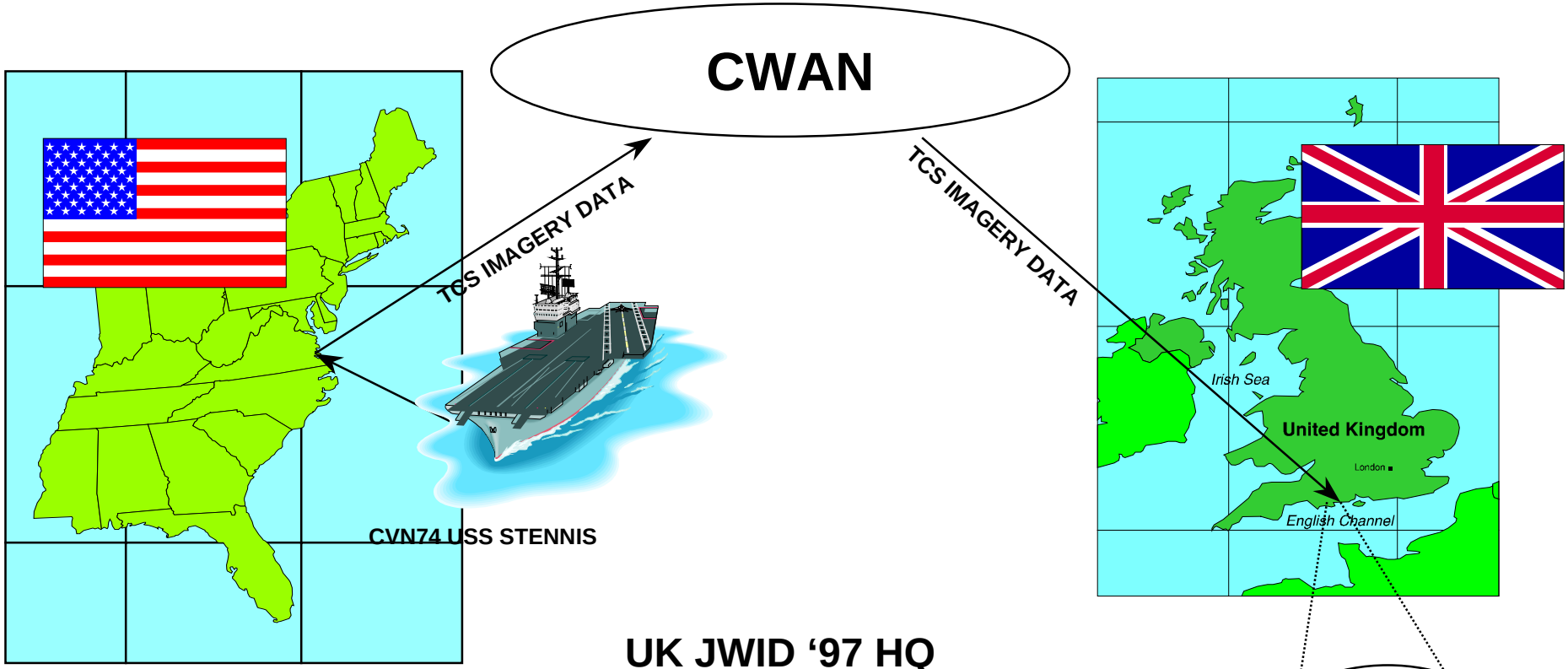
- **FIELDABLE PROTOTYPE #2 USS STENNIS**
  - **FIRST SHIP INSTALL (TCS AND MUSE) FOR JWID 97 COMPLETE**

JWID DEMO-086 TACTICAL CONTROL SYSTEM (TCS) CONNECTIVITY



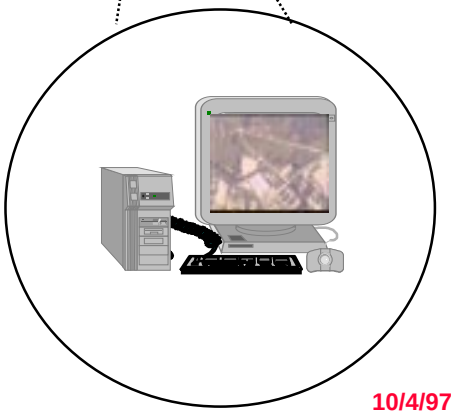
10/4/97

JWID '97: UK RECEIPT OF US TCS IMAGERY



UK JWID '97 HQ

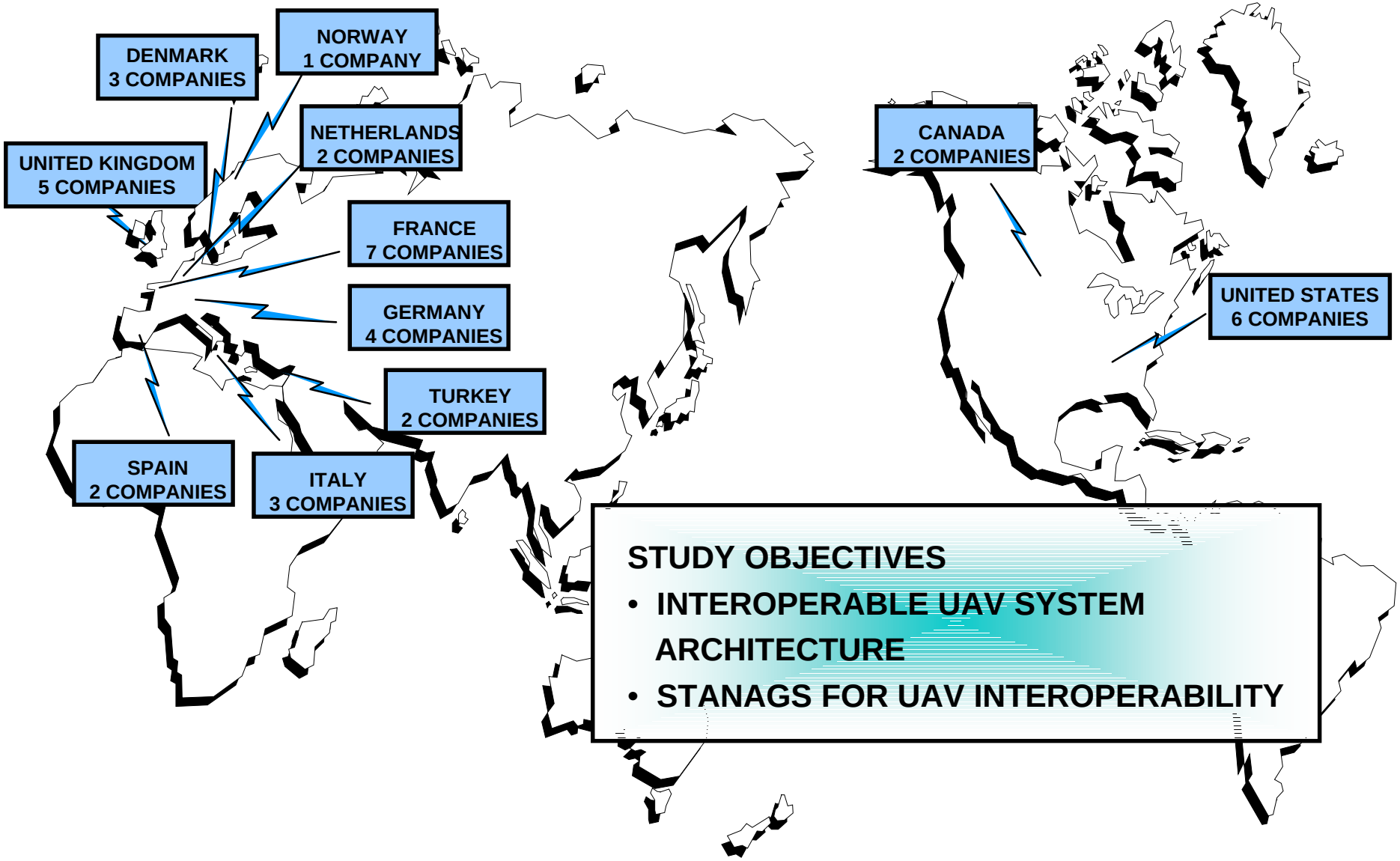
COMMAND INFORMATION SYSTEM ENGINEERING
BLANDFORD, UK
- 3 COMMANDO BRIGADE RM TOOK RECEIPT OF TCS NITF 2.0 IMAGE ON SUN SPARC20 W/S USING MATRIX 4.0.2 SOFTWARE



NATO

- <u>GERMAN/US</u> TACTICAL REQUIREMENTS DATA PACKAGE (TRDP) PROJECT AGREEMENT SIGNED 18 JULY - ANS (RDA) AND GERMAN MOD
  - VTOL UAV LAND BASED FLIGHT TESTING INTEGRATED WITH TCS (DEMO WITH SEAMOS VTOL UAV SEPT 98)
- <u>UK/US</u> INTERNATIONAL R & D AGREEMENT - DRAFT IN REVIEW
  - UAV DIGITAL DATALINK INTEROPERABILITY TEST BED PROJECT (MOU)
- NATO NAVAL ARMAMENTS GROUP PG/35 CONTINUES AS A SOURCE FOR COOPERATIVE PARTNERS
  - OTHER COUNTRIES PARTICIPATING INCLUDE CANADA, ITALY, NETHERLANDS
  - NATO INDUSTRIAL ADVISORY GROUP SG 53 PURSUING INTERNATIONAL STANDARD FOR UAV CONTROL BASED ON TCS

NATO INDUSTRIAL ANALYSIS GROUP
INDUSTRY PARTICIPANTS



STUDY OBJECTIVES

- INTEROPERABLE UAV SYSTEM ARCHITECTURE
- STANAGS FOR UAV INTEROPERABILITY

UPCOMING EVENTS

- LEVEL 2 DATA RECEIPT AND DISSEMINATIONS
  - PREDATOR SAR RECEIPT - OCT 97
  - FLTEX (GNAT 750) NOV/DEC 97
  - OUTRIDER PAYLOAD DEMO - NOV 97
  - DIVISION XXI 1 QTR 98
- PREDATOR WAYPOINT CONTROL LAB DEMO (LEVEL 4) - JAN 98
- RELEASE SYSTEMS INTEGRATOR RFP - MAR 98
- PDR - DEC 97
- PREDATOR WAYPOINT/PAYLOAD CONTROL (LEVEL 3 &4) - MAR 98
- OUTRIDER WAYPOINT CONTROL (LEVEL 4) 2ND QTR 98
- CDR - MAY 98
- LEVEL 5 DEMO - 4TH QTR 98
- TCS MULTIPLE UAV CONTROL - 4TH QTR 98
- MSII DECISION - AUG/SEP 98

PHASE II SYSTEMS

6 LRIP

LANDBASED

HMMWV

SEABASED

CV Battle Group

SEABASED

Amphibious Battle Group

TOC

Task Force Commander

PREDATOR

GCS

OUTRIER

HMMWV

$3.6M

PRODUCTION

$670K

	ARMY/ MARINES	NAVY	AIR FORCE
Hardware	CHS X	TAC X	SUN/SGI
Software	Common Core AV Unique Payload Unique	Same	Same

TCS HOME PAGE
http://uav.nswc.navy.mil/tcs/

DOCUMENTATION AVAILABLE ON HOMEPAGE:

This page contains Netscape 2.0 enhancements.

Last modified on 18 July, 1996

Tactical Control System

Mission

Create a joint Tactical Control System (TCS) to receive imagery from and provide control for unmanned aerial vehicles (UAVs). The TCS will supply UAV capabilities for all services and will be hosted on standard Army, Air Force, Navy, and Marine computer platforms. A 24 month schedule has been planned for shipboard and land-based TCS demonstrations with the Predator UAV and the Tactical UAV (TUAV).

Creator and Web Master: Tom Crow NSWCDD (L43)

Questions or comments concerning page: tcrow@nswc.navy.mil

TCS CONOPS DRAFT	FEB 18, 1997
DATA SERVER INTERFACE DESIGN DESC. 10	APR 1997
TCS SOFTWARE REQUIREMENT SPECIFICATION 1.0.1	APR 17, 1997
MISSION PLANNER CRITERIA DOCUMENT 1.1	APR 30, 1997
MISSION PLANNER EVALUATION PLAN 1.1	MAY 1, 1997
MISSION PLANNER BAA QUESTION & ANSWERS	MAY 2, 1997
MISSION PLANNER BAA SCHEDULE	MAY 5, 1997
C4I JOINT INTEROPERABILITY INTERFACE 2 1.0	MAY 5, 1997
TCS SYSTEM SUBSYSTEM SPECIFICATION 1.0	JUN 30, 1997
TCS ORD 5.0	JULY 7, 1997
TCS TO CLOSED CIRCUIT TV INTERFACE DESIGN DESC. 1.0	JUL 15, 1997
TCS TO NWCS-PROTOTYPE INTERFACE DESIGN DESC. 1.0	JUL 18, 1997
TCS SEGMENT TO AV STD SEGMENT INTERFACE DESIGN DESC.	AUG 1, 1997
TCS PROGRAM PLAN 4.1	AUG 6, 1997
TCS SYSTEM/SUBSYSTEM DESIGN DESCRIPTION	AUG 8, 1997
TCS TO ASAS INTERFACE DESIGN	SEP 11, 1997
SYSTEM INTEGRATION AGENT CBD ANNOUNCEMENT	SEP 12, 1997
TCS ACQUISITION CATEGORY II DESIGNATION MEMO	SEP 12, 1997

SUMMARY

- TCS IS ON SCHEDULE
- PROVIDES CONNECTIVITY WITHIN EXISTING/FUTURE C4I ARCHITECTURES
- SCALEABLE TO SATISFY USER REQUIREMENTS
- INTEROPERABLE WITH ENTIRE UAV FAMILY (TUAV/MAE/HAE)
- WILL PROVIDE TOTAL UAV MISSION PLANNING, AV CONTROL, PAYLOAD CONTROL, AND DATA DISSEMINATION