

Combined Aerial Target Service (CATS)

‘Preparing for the Future’

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SCOPE

- The Current UK Aerial Targets
- Why CATS?
- Specifying the Threat
- AWWIS to Threat Matching
- Conclusions
- Questions

The Current UK Aerial Targets

TARGET	UTILISATION	MANUFACTURER	OPERATING CONTRACT
MIRACH 100/5	CHUKAR replaced by the MIRACH in Mar 2001 as an interim 3 year procurement to satisfy the terms of MER 3/97 Replacement Aerial Target System (RAST)	Meteor CAE	792 Sqn RN Meteor
FALCONET	Army and RAF Regt GBAD communities for system proving and for advanced RAPIER operator training	Flight Refuelling Ltd	QinetiQ
BANSHEE Target Drone	Basic RAPIER operator training and all HVM training	Meggitt Defence Systems Ltd	Meggitt
JINDIVIK	Used by the RAF for SIDEWINDER and SKYFLASH firings	Aircraft Design Group Cranfield Aerospace Ltd	QinetiQ
STILETTO	Used by the RAF for SIDEWINDER and SKYFLASH firings.	Raytheon	QinetiQ



The Current UK Aerial Targets

- Each aerial target owned by UK MoD
- Operated by variety of contracted operators and Servicemen (792 Sqn)
- Also use FMS for Full Scale - QF-4
- Disparate Contracts
- “Targets” and not “Threat Emulation”
- Not VFM
 - Not coherent
 - No economies of scale



Why CATS?



Why CATS?

- Provide an all-encompassing aerial target capability
 - all UK AD weapon systems
 - all UK armed services
- Up-to-date and enhanced Threat emulation
- Flexibility of operating locations
- Value for money
- Leads to Public Private Partnership (PPP)/Private Finance Initiative (PFI) strategy
 - Expected contract length: 20 years with options to break at any time after 10 years
 - Contract value: up to £750M VAT inc

Principal Stakeholders

- Equipment Capability Customer
- Army/RN/RAF Planning & Co-ordination Cells
- Army/RN/RAF Participating Units
- MOD - Thro' ATS IPT
- CATS Contractor
- Ranges

Principal Users

UK Anti - Aircraft Warfare Capability

Carrier-
borne AD
aircraft

Land-
based AD
aircraft

Air Defence Aircraft

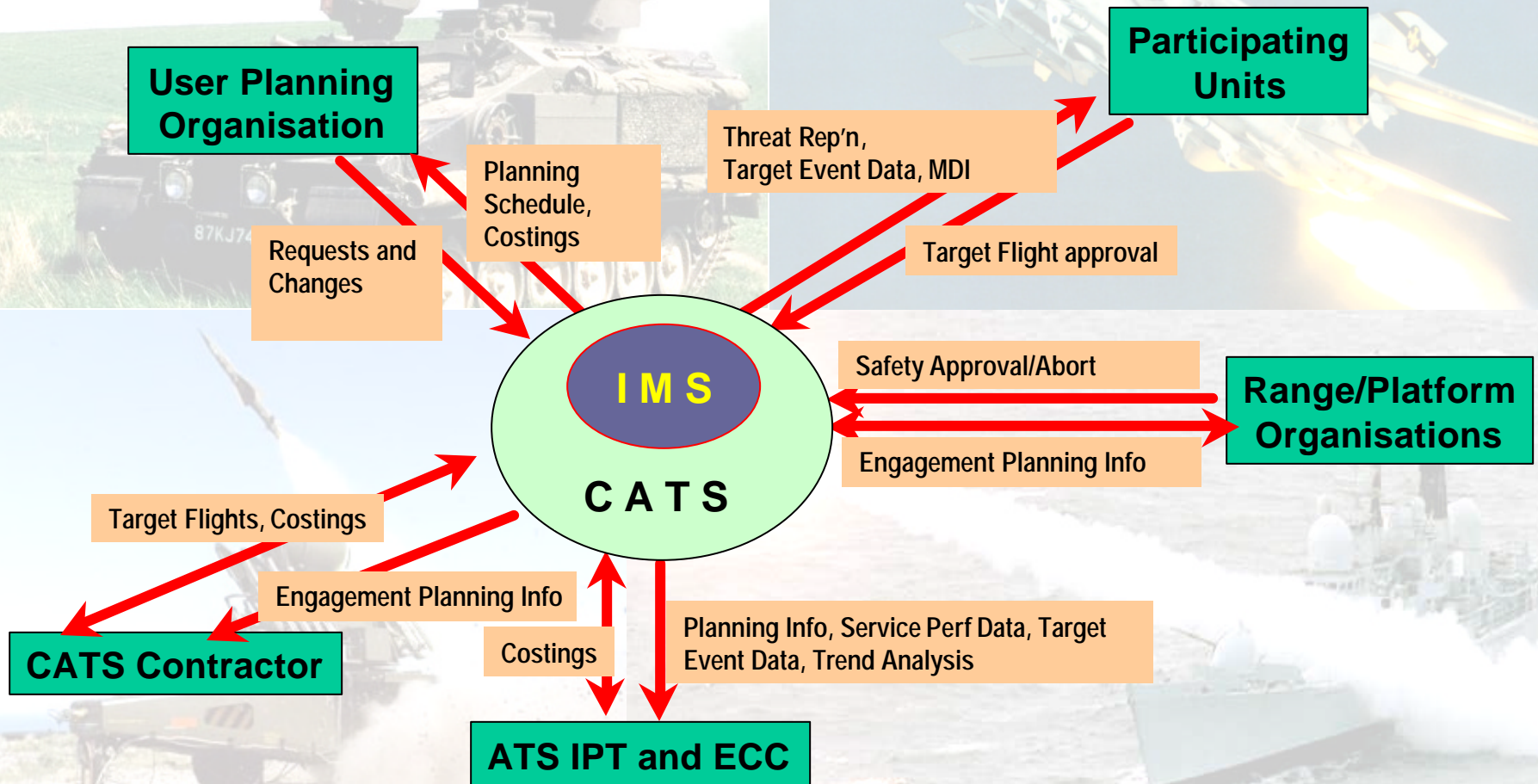
Ship based surface to
air guns and missiles

Ship Based Air Defence

Land based surface to
air guns and missiles

Ground Based Air Defence

Interaction



The Service (CATS)

- Full Service Provision
 - Single Services request Threat Emulation
 - Contractor Plans, Transports (with MoD assistance) and provides Threat Emulation
- Targets owned by contractor
 - Payment based on availability & use, not equipment
 - We pay for what we use

The Service (CATS)

- Realistic Threat Emulation
- Variety of Threats/Payloads
- Up to 4 Threats simultaneously
- Worldwide capability
- Variety of Launch Platforms

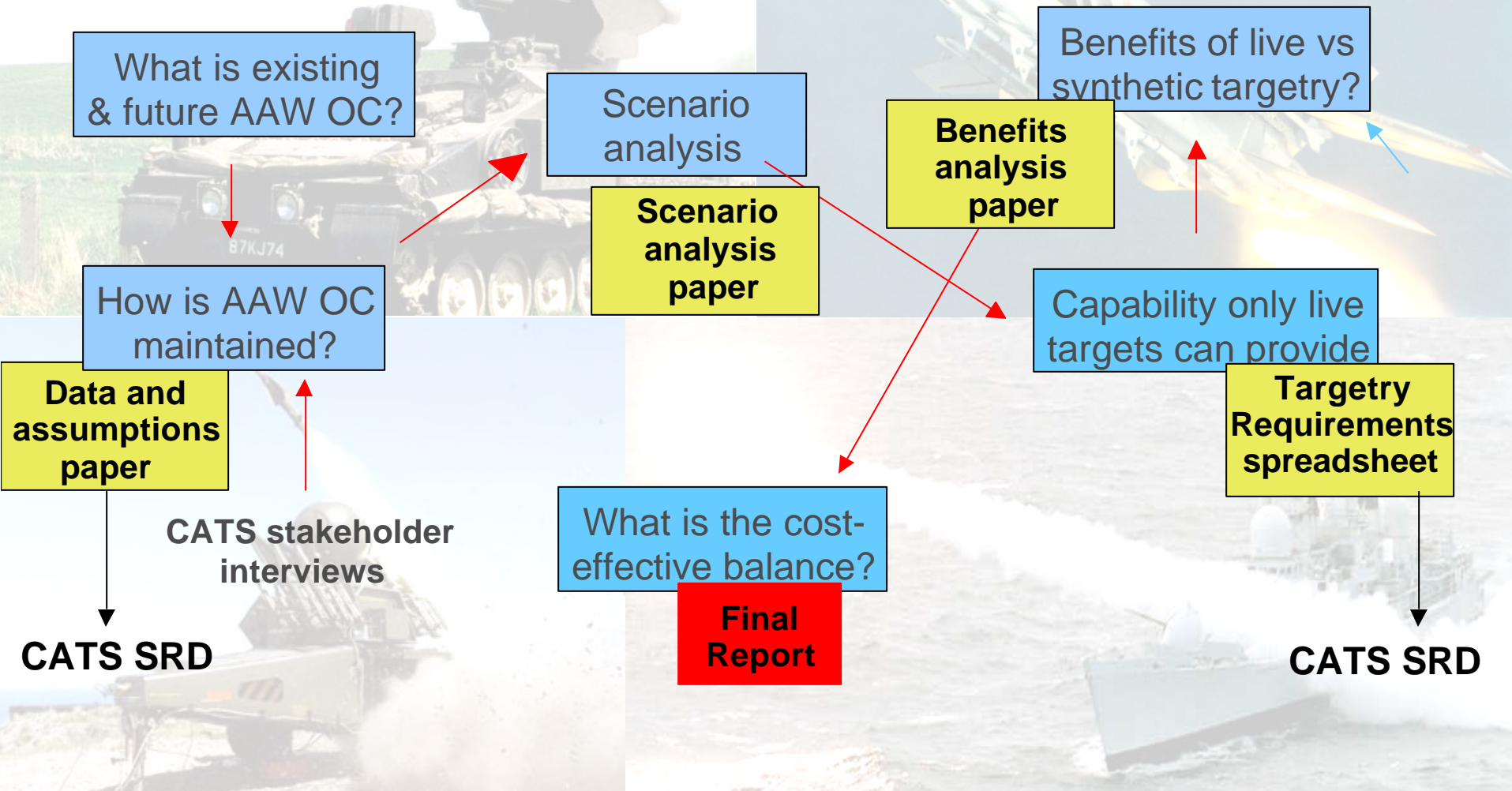


Specifying the Threat

Specifying the Threat

- IPT commissioned DSTL study to detail “Generic Threat to 2015”
 - Studied 124 threat types
 - Created “Generic” Threat parameters/payload performance
- Only used UK sourced threat data
- Threats then matched to AD weapon system capabilities
- UK Secret Document produce

Specifying the Threat



A collage of four images illustrating aerial warfare weapon systems. Top left: A military vehicle with a large radar dome and the number 87KJ74 on its front. Top right: A fighter jet in flight, firing a missile. Bottom left: A missile launcher on a trailer firing a missile. Bottom right: A naval ship at sea, launching a missile.

Air Warfare Weapon Systems (AWWS) to Threat Matching

CATS Threat and Air Warfare Weapon Systems (AWWS)

- 10 AWWWS
 - 3 GBAD
 - 2 Maritime
 - 5 Air-to-Air
- 17 Generic Threat Types

CATS Air Warfare Weapon Systems

Air Defence Aircraft

Skyflash/Sidewinder
tactics development

ASRAAM and
BVRAAM training

Skyflash/Sidewinder
(sensor) system proving

ASRAAM, AMRAAM and
BVRAAM tactics development

GBAD surveillance
system proving

Sea Dart tactics
development

Rapier (B2 and FSC) training and
tactics development

HVM training and
tactics development

Sea Dart (sensor)
system proving

PAAMS tactics
development

Ship Based Air Defence

GBAD

AWWS to Threats Fixed Wing Aircraft

	Fighter Interceptor	Fighter Bomber	Maritime Patrol Aircraft	Airborne Early Warning	High Alt Bomb/surv Aircraft	Support Aircraft
Starstreak High Velocity Missile (HVM)		X				
Rapier Field Standard B2 (FSB2)	X	X				X
Rapier Field Standard C (FSC)	X	X				X
Sea Dart Missile System		X			X	
Principal Anti-Air Missile System		X			X	
Sky Flash Air-To-Air Missile (AAM)	X	X	X	X	X	X
AIM 9-L Sidewinder AAM	X	X	X	X	X	X
Advanced Short Range AAM (ASRAAM)	X	X	X	X	X	X
Advanced Medium Range AAM (AMRAAM)	X	X	X	X	X	X
Beyond Visual Range AAM (BVRAAM)	X	X	X	X	X	X

AWWS to Threats Rotary Aircraft

	Attack Helicopter	ASW Helicopter	Support Helicopter
Starstreak High Velocity Missile (HVM)	X		X
Rapier Field Standard B2 (FSB2)	X		X
Rapier Field Standard C (FSC)	X		X
Sea Dart Missile System			
Principal Anti-Air Missile System			
Sky Flash Air-To-Air Missile (AAM)	X	X	X
AIM 9-L Sidewinder AAM	X	X	X
Advanced Short Range AAM (ASRAAM)	X	X	X
Advanced Medium Range AAM (AMRAAM)	X	X	X
Beyond Visual Range AAM (BVRAAM)	X	X	X

AWWS to Threats Missiles

	Cruise Missile	TASM	Sub-sonic sea-skimmer	Supersonic sea-skimmer	High Diving anti-ship
Starstreak High Velocity Missile (HVM)					
Rapier Field Standard B2 (FSB2)	X				
Rapier Field Standard C (FSC)	X				
Sea Dart Missile System		X	X	X	X
Principal Anti-Air Missile System		X	X	X	X
Sky Flash Air-To-Air Missile (AAM)					
AIM 9-L Sidewinder AAM					
Advanced Short Range AAM (ASRAAM)	X				
Advanced Medium Range AAM (AMRAAM)	X				
Beyond Visual Range AAM (BVRAAM)	X				

AWWS to Threats UAVs

	'over the hill' UAV	Low Alt Tactical UAV	Med Alt Tactical UAV
Starstreak High Velocity Missile (HVM)		X	
Rapier Field Standard B2 (FSB2)	X	X	X
Rapier Field Standard C (FSC)	X	X	X
Sea Dart Missile System			
Principal Anti-Air Missile System			
Sky Flash Air-To-Air Missile (AAM)			X
AIM 9-L Sidewinder AAM			
Advanced Short Range AAM (ASRAAM)			X
Advanced Medium Range AAM (AMRAAM)			X
Beyond Visual Range AAM (BVRAAM)			X

CATS Threat Emulation

- Further development of Generic Threat Document to include
 - Elements of each Threat that should be emulated for each AD Weapon System
- Amendment of “Generic Threat Data”
 - Known/predicted UAV/Target Technology
 - Cost

Threat Characteristics Exemplar

	Fighter Bomber	Attack Helicopter	Low Alt Tactical UAV
IFF	(1) Red/Green Smoke on demand	(1) Red/Green Smoke on demand	
Active Seeker RF			
ECM RF Jamming			
ECM Chaff			
EOCM Flares			
IR Signature	(1) Signature 8-12 microns	(1) Signature 8-12 microns	(1) Signature 8-12 microns
RCS			
Towed Decoy			
Basic MDI	(1) Range: 0-30m. Accuracy: +/- 10-15%	(1) Range: 0-30m. Accuracy: +/- 10-15%	(1) Range: 0-30m. Accuracy: +/- 10-15%
Sector MDI			
Responsive Evasive Manoeuvres			
Manoeuvrability	(2) Straight and level flight only	(2) Straight and level flight and "pop-up"	(2) Straight and level flight only
Physical Size			(2) 3.2m long; 1.2m high; 3.3m wingspan
Physical shape	(3)	(1)	(2)
Visual shape	(3)	(1)	(2)
Speed	(1) 120-300kts	(1) 0-175kts (to include a hover capability)	(1) 50-100kts
Altitude	(1) 30-3000m	(1) 15-3000m	(1) 100-3000m
Visual Augmentation	(1) Smoke required to aid visual acquisition and tracking	(1) Smoke required to aid visual acquisition and tracking	(1) Smoke required to aid visual acquisition and tracking

CATS Threat Emulation

- Bidders are using information to match Targets/Payloads to our Threat Emulation Requirements
- Will provide a suite of Target types and Payloads to emulate Threats
- Customers specify Threat, Contractor matches with a “bespoke” Target



Conclusions



Summary

- CATS Essential for continued Op Eval of AD Weapon Systems
- Threat emulation not “Targets”
- Capability will give UK full suite of Threats to test AD Weapon Systems and Operators
- Maintain high levels of Op Capability of UK AD Forces

Where Have We Got To?

- Project initiated - **May 00**
- Ministerial approval for procurement strategy
- Pre-Qualification & Selection Questionnaire (PQSQ)
- 3 consortia selected - **Aug 01**
- Ministerial Approval of Business Case and ITN Issued – **06 Sep 02**
- 3 consortia currently have bids in preparation
 - BAE Systems, Firecats (Serco & EADS) and QinetiQ

Future Programme

- Return of bids - Jan 03
- Main Gate approval and announce preferred bidder - Nov 03
- Contract Award - Mar 04
- SCD (IOC) - Dec 04
- SCD (FOC) - Dec 05

The background of the slide is a collage of four images: a tank in a field, a fighter jet in flight, a missile launch, and a naval ship. The title 'Combined Aerial Target Service (CATS)' is centered over the top half of the collage.

Combined Aerial Target Service (CATS)

Questions on CATS