

MINISTRY OF DEFENCE



MOD Architectural Framework

Feedback from Community of Interest Workshops

Draft 0.1
17th September 2004

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RECORD OF CHANGES

This page will be updated and re-issued with each amendment. It provides an authorisation for the amendment and a checklist to the current amendment number.

Issue No.	Date	Revision Details
Draft 0.1	17 th Sep 2004	First Draft Issue: New document to provide consolidated feedback from the MODAF Community of Interest Workshops. This version is an unapproved draft provided for initial guidance only

Introduction

Stakeholder engagement is a key success factor to the MODAF project success

The MOD Architectural Framework (MODAF) is being developed as a critical enabler of Network Enabled Capability (NEC)¹, which enables improved interoperability and should realise significant cost avoidance benefits through improved efficiency of the MOD acquisition processes and reduction in the amount of rework required to deliver interoperability and integration. The full rationale behind the development of MODAF and its expected benefits are described in more details within the MODAF Project Initiation Document (PID)² and its associated business case.

A key success factor for the implementation and sustainment of an Architectural Framework within the MOD will be that there is a clear understanding of the role and relevance of the Architectural Framework to the MOD processes. In order to ensure that the stakeholders are aware of MODAF and their needs understood, a number of Communities of Interest (COIs) have been consulted during Project Start-up and Initiation stage of the project to ensure that the impacts of MODAF on those communities have been captured.

Aim

The aim of this paper is to summarise the feedback received from a series of COI workshops held with the main MODAF stakeholders during the start up and initiation stages of the project.

Scope and Exclusions

During the Start-up and Initiation stage of the MODAF project it was only possible to consult with a relatively small number of stakeholders. Every attempt was made to ensure that all affected COIs were consulted, that those individuals representing the COIs covered the full diversity of that COI and that the issues associated with all COIs are incorporated. Since the number of individuals consulted often represented a small proportion of the total COI, the results may not be statistically rigorous. However, these results are generally consistent between COIs and are rigorous enough to guide the development stage activities – all MODAF products (eg views, concept of use and training needs analysis) will be subject to further scrutiny by the COIs before formal release.

Objectives

Understanding COI needs regarding MODAF

The purpose of the Workshops was to achieve the following objectives:

- Provide communications on the MODAF objectives and programme plan within each of the COIs
- Establish the existing usage of architectural approaches in general and familiarity with the base framework, Department of Defense Architectural Framework (DODAF)

¹ CM(IS) NEC Next Steps paper of April 2003

² MODAF Project Initiation Document, draft 0.8b, MODAF-M02-001, June 2004

- Determine the size and nature of the likely MODAF user group within the COI, to help establish the training and support needs
- Understand where architectural products are likely to be used and/or produced within the COI
- Establish which views offer most benefit to the COI
- Consider the nature and where possible magnitude of benefits that an architectural approach could deliver to the COI

The latter objective has been separately documented in the MODAF business case and is not reported here.

Audience

Understanding COI needs regarding MODAF

The following COIs were consulted during the workshops:

- Capability and Requirements (DEC)
- Acquisition Management (DPA IPTs)
- Network and Communications (DCSA)
- Operational Commands / Customer 2
- Sustainment Processes
- Governance Processes

Detailed lists of attendees are at Annex A. Further workshops are to be scheduled during the bridging phase for Doctrine and Operational Concepts and additional stakeholders in the Front Line Commands (FLCs).

Feedback from the Workshops

Understanding COI needs regarding MODAF

During the COI workshops results were collected on the following topics and are reported below:

- Existing level of architectural activity
- Architectural maturity model assessment
- MODAF view preferences
- Potential pilot projects
- Scope of roll-out

In addition, the main COI processes were captured along with an indication of where MODAF views might interact with these processes. This information along with the MODAF view preferences has been used to develop an initial MODAF Concept of Use³.

Existing Level Of Architectural Activity

High awareness of architectures

The workshop attendees were asked if they were aware of DODAF, NATO Architectural Framework (NAF) and associated frameworks, with a

³ MODAF Concept of Use, MODAF-M04-003, version 0.1, September 2004.

surprisingly high proportion claiming awareness of the existence of these architectural frameworks. Figure 1 illustrates the feedback received.

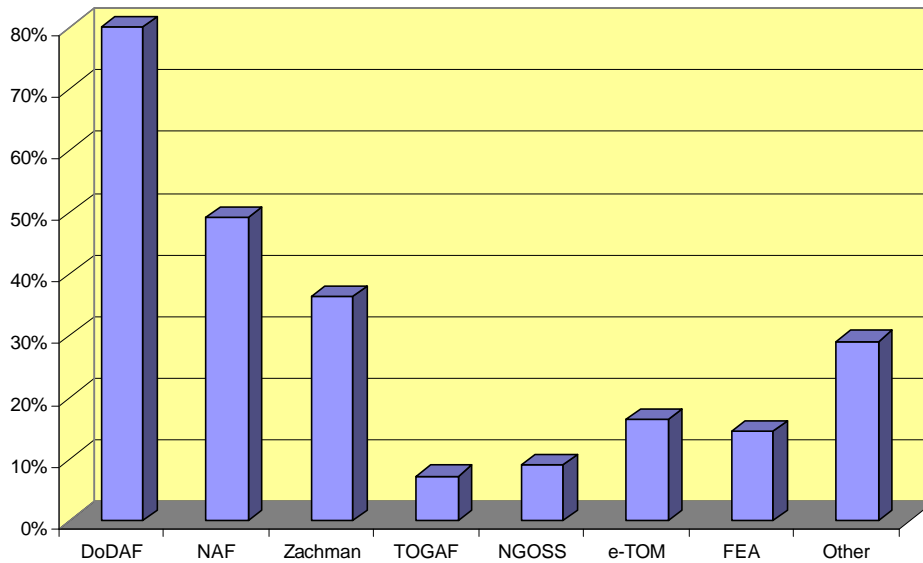


Figure 1: Awareness of Architectural Frameworks

Moderate familiarity with DODAF / NAF contents

However, when asked if they were familiar with the contents of these standards, the proportion exhibiting a reasonable level of understanding was considerably lower, as shown in Figure 2, where 0 represents no familiarity with the contents and 5 is very familiar. It should also be noted that around half of the respondents who assessed themselves at level 5 were contractor staff working with or in an IPT.

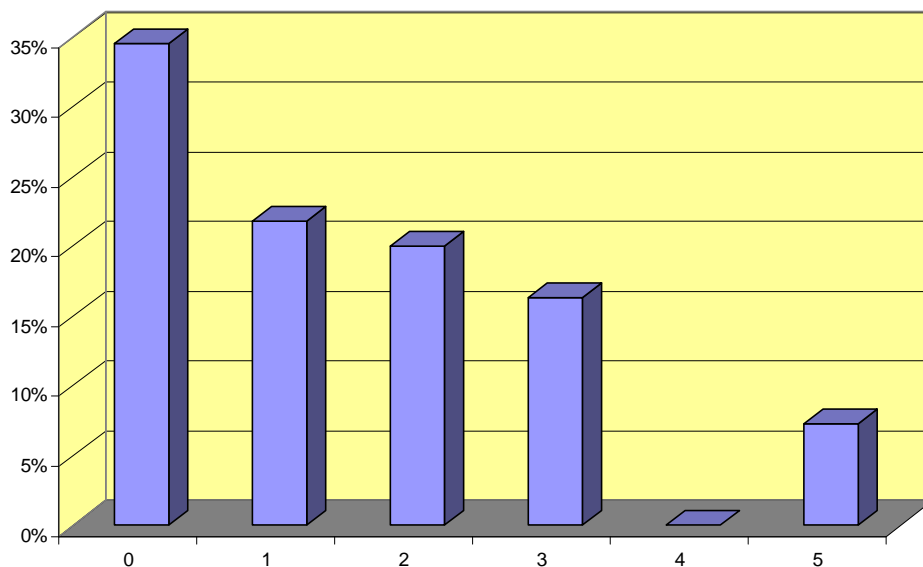


Figure 2: Level of Familiarity with DODAF or NAF

Minimal architectural usage

Subsequently when asked to what extent an architectural approach was routinely applied in the respondent’s day-to-day job the results showed that the vast majority never used this approach and only 7% regularly used it. These results are shown in Figure 3 – where 0 means never use architectures and 5 means that they are used regularly.

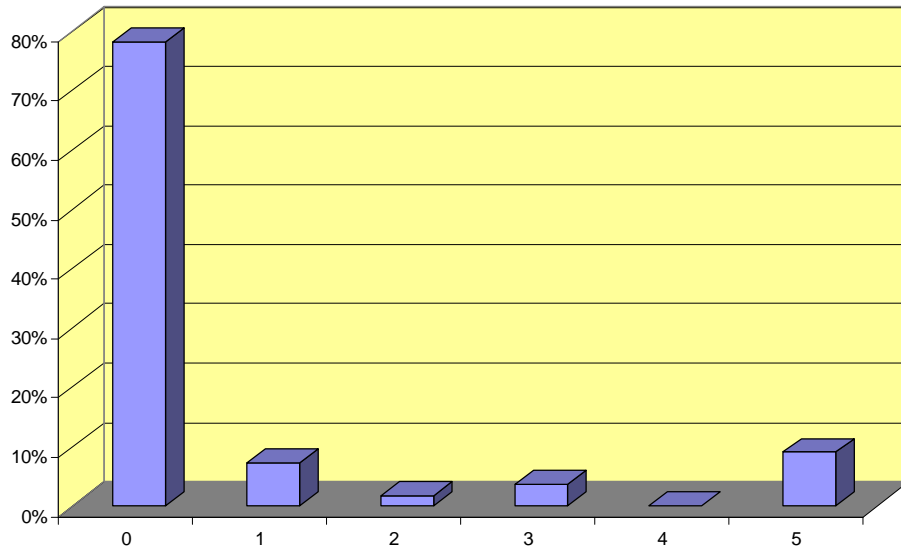


Figure 3: Level of Architectural Usage

Architectural Maturity Model Assessment

COIs rated MOD at initial / ad hoc level of architectural maturity

The workshop attendees were asked to rate the MOD as a whole against an Architectural Maturity Model. The main characteristics of the different levels of the Model are shown Table 1. The response was that the COIs universally rated the MOD as operating at Level 1 only. When considering localised areas within a COI there were some that it was felt could claim to be operating at Level 2.

Level	Descriptor	Characteristics
1	Initial	Ad hoc
		Unaware
		Poor repeatability
		A few “early adopters”
2	Managed	Documented processes
		Widespread awareness
		Some process monitoring
		Not consistently applied
3	Defined	Tailored and standardised processes by COI
		Widespread understanding
		Process improvements
		Clear definitions and measures
		Consistent application

Level	Descriptor	Characteristics
4	Quantitatively Managed	Quantitative measures
		Process performance understood
		Statistical process control
		Outcome focussed objectives
		Predictable outcome
5	Optimising	Reference site for best practice
		Continual process improvement
		Improving performance
		Complex interactions understood

Table 1: Architectural Maturity Model Levels

Realistic MOD aspiration is level 3

When questioned as to the realistic expectations of the MODAF change project, the consensus was that expectations should be a balance between potential business benefit, the level of effort required to achieve the change and the potential short-term adverse impact during the transition. As a result, the consensus view was that MODAF should strive for a Maturity Level of 3 within 5 years.

This is consistent with CMMI best practice that suggests it is not realistic to mature at a rate of more than one Level every two years and that only a very small proportion of organisations will ever aspire to Level 5.

MODAF View Preferences

The workshops attendees were asked to complete a survey that sought their opinions on which of all the candidate MODAF views they thought would be of most value as inputs to their COI's processes and which were likely to be contributed to by that community.

A summary of the ten views that were on aggregate the most popular with all of the COIs is shown in Table 2. Detailed results are illustrated in Figures 4 to 7.

Viewpoint	View	Description
Capability	SCV-2	Capability Functions
	SCV-3	Capability Phasing
Operational	OV-1	High-Level Operational Concept Graphic
	OV-2	Operational Node Connectivity Description
	OV-3	Operational Information Exchange Matrix
System	SV-1	Systems Interface Description
	SV-2	Systems Communications Description
	SV-3	Systems-Systems Matrix

Viewpoint	View	Description
Technical	TV-1	Technical Standards Profile
Acquisition	AcV-2	SoS Acquisition Programmes

Table 2: Most Popular MODAF Views

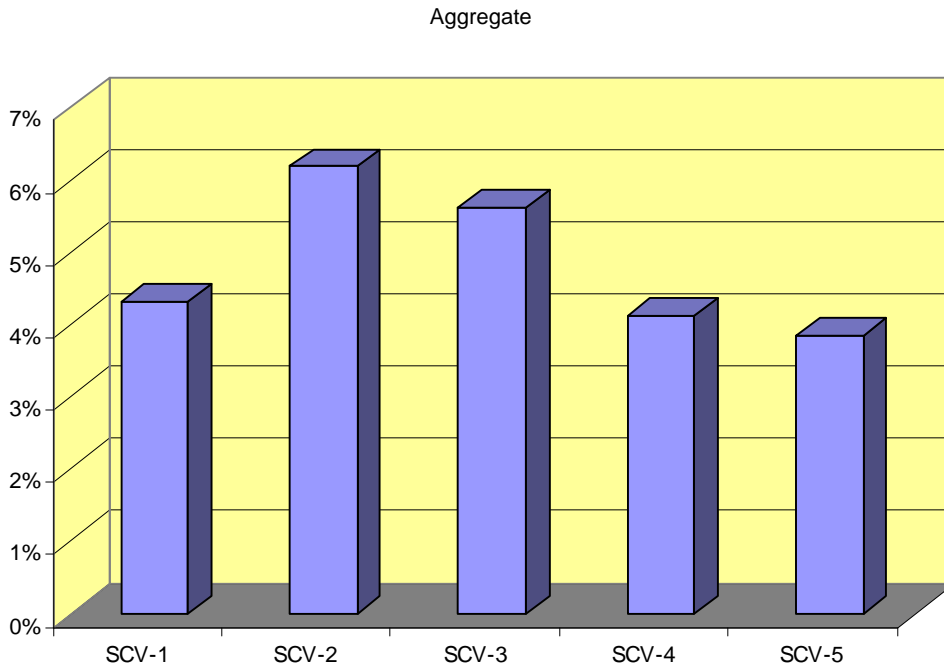


Figure 4: Feedback on Strategic Capability Views

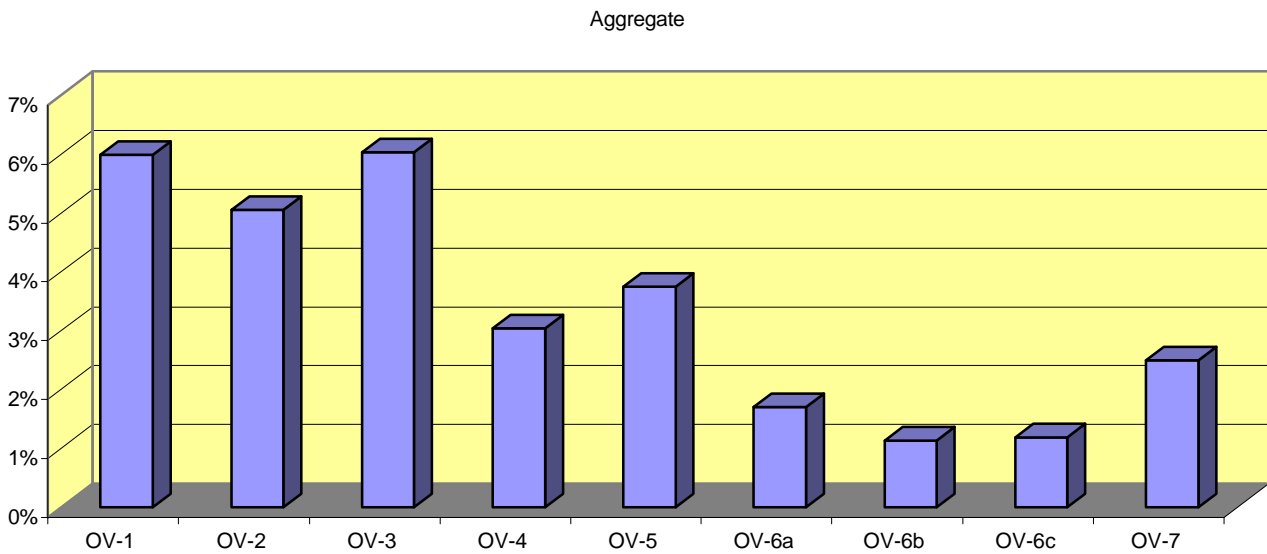


Figure 5: Feedback on Operational Views

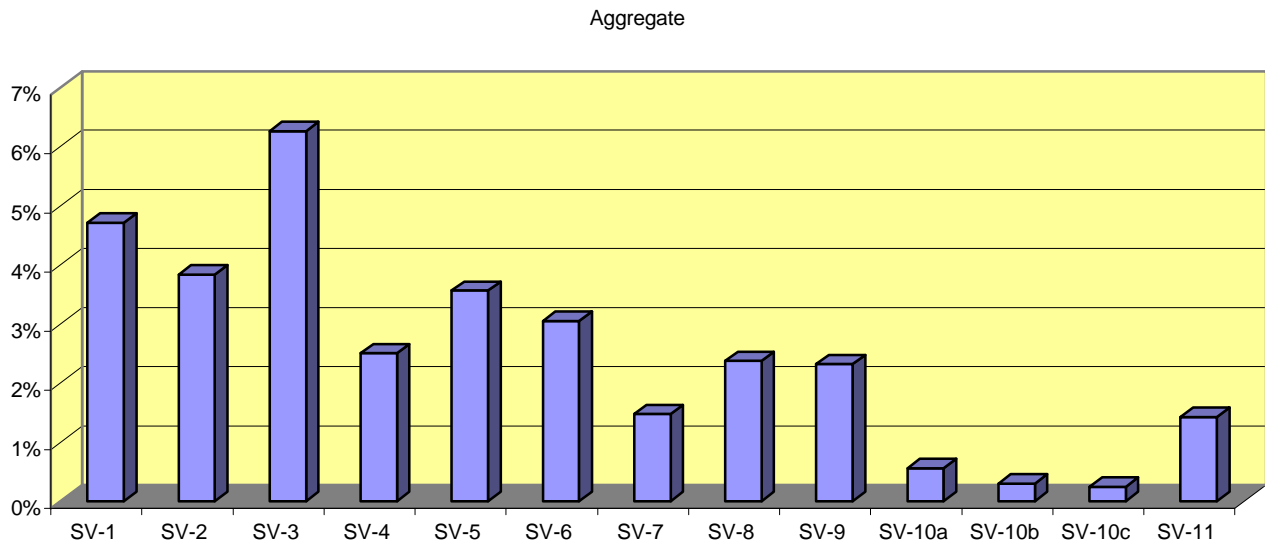


Figure 6: Feedback on System Views

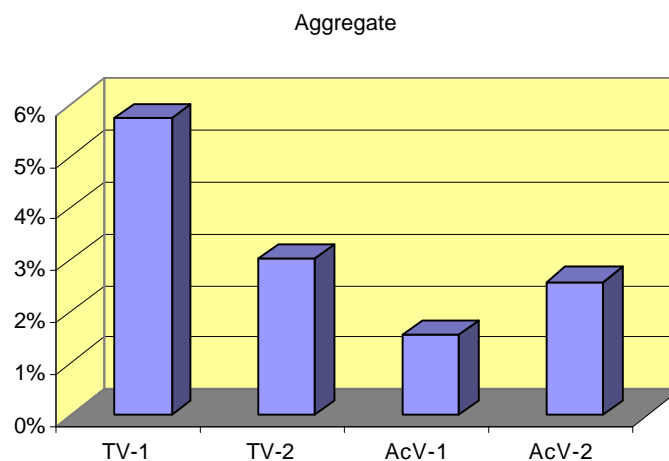


Figure 7: Feedback on Technical and Acquisition Views

Significant differences between COIs

It should be noted that although the results above represent an aggregate of the COI feedback, there were in some areas significantly different responses from different COIs, as shown in Table 3. In part these differences reflect the differing roles that the COIs play throughout the acquisition lifecycle. Some of the differences can also be attributed to the different nature of the systems and processes being dealt with by the COI – for instance, information centric organisations such as DSCA placed a higher weighting on views that define standards and support data structures / information flows, while Customer 2 is far more focussed on operational processes..

View	Description	DPA	DCSA	DEC	Gov'nce	Cust 2	Aggregate
SCV-1	Capability Vision	5%	3%	6%	2%	5%	4%
SCV-2	Capability Functions	6%	8%	6%	3%	8%	6%
SCV-3	Capability Phasing	6%	2%	8%	6%	6%	6%
SCV-4	SoS Clusters	5%	2%	9%	3%	2%	4%
SCV-5	Capability to Systems Deployment Mapping	5%	3%	3%	7%	2%	4%
OV-1	High-Level Operational Concept Graphic	7%	3%	10%	2%	7%	6%
OV-2	Operational Node Connectivity Description	4%	3%	5%	5%	9%	5%
OV-3	Operational Information Exchange Matrix	7%	3%	7%	8%	5%	6%
OV-4	Organizational Relationships Chart	3%	2%	3%	1%	7%	3%
OV-5	Operational Activity Model	2%	2%	2%	2%	10%	4%
OV-6a	Operational Rules Model	2%	1%	1%	1%	4%	2%
OV-6b	Operational State Transition Description	2%	1%	1%	0%	2%	1%
OV-6c	Operational Event-Trace Description	2%	1%	1%	1%	2%	1%
OV-7	Logical Data Model	2%	4%	2%	4%	1%	2%
SV-1	Systems Interface Description	6%	7%	2%	5%	4%	5%
SV-2	Systems Communications Description	3%	7%	2%	4%	3%	4%
SV-3	Systems-Systems Matrix	5%	7%	5%	11%	2%	6%
SV-4	Systems Functionality Description	2%	5%	0%	3%	3%	3%
SV-5	Operational Activity to Systems Function Traceability Matrix	3%	3%	3%	6%	3%	4%
SV-6	Systems Data Exchange Matrix	3%	2%	3%	5%	1%	3%
SV-7	Systems Performance Parameters Matrix	2%	3%	0%	2%	1%	1%
SV-8	Systems Evolution Description	3%	4%	1%	3%	1%	2%
SV-9	Systems Technology Forecast	3%	4%	2%	2%	1%	2%
SV-10a	Systems Rules Model	1%	1%	0%	1%	0%	1%
SV-10b	Systems State Transition Description	1%	1%	0%	0%	0%	0%
SV-10c	Systems Event-Trace Description	1%	0%	0%	0%	0%	0%
SV-11	Physical Schema	1%	2%	1%	3%	0%	1%
TV-1	Technical Standards Profile	3%	12%	3%	4%	6%	6%
TV-2	Technical Standards Forecast	1%	6%	3%	3%	1%	3%
AcV-1	SoS Acquisition Clusters	2%	1%	3%	1%	1%	2%
AcV-2	SoS Acquisition Programmes	3%	1%	4%	3%	1%	3%

Table 3: Feedback on MODAF View Preferences by COI

Ensuring completeness and balance of MODAF views

Although this COI view preference data will be used to guide which views are to be mandated, further validation will be sought before issuing the final MODAF handbook. This validation will include a review against the MODAF Concept of use, stakeholder review of the MODAF handbook and feedback from MODAF pilot project activities.

Indeed, a quick inspection of these preferred views shows that they cannot be complete because they do not include either the OV-5 Operational Activity model that defines operational processes and SV-6 Systems data exchange matrix that describes system to system data transactions.

The merit of including extra MODAF views in the core mandated set will be balanced against the need to only mandate the minimum necessary set. The objective is that there should only be around 15 mandated MODAF views. The balancing of these mandated views will be subject to SME review during the development stage.

MODAF Pilot Projects

Identifying a good selection of pilot projects

The COI workshops also considered suitable potential Pilot projects for MODAF e.g. projects that could trial some of the MODAF views and provide feedback on how to develop these views and their utility within the pilot project's processes. The intent was to develop a reasonably small number of MODAF pilots that gave as complete as possible coverage of the MODAF views, represented both business and battlespace and covered the entire acquisition lifecycle.

To assess the viability of candidate pilots the COI workshops were asked to consider a number of factors that included:

- CADMID stage – pre-CADMID, C, A, D, M, I, D
- Existing use of Architectures on a range from 0 (nobody aware of an Architectural approach) to 5 (everybody understands the Architectural approach and uses where appropriate)
- Whether the Project has 2004/5 funding for architectural activities
- Whether the Project is in the business space, battlespace or spans both
- The possible degree of near term benefits from 0 (little near term benefit possible from AF application) to 5 (excellent near term benefit possible from AF application)
- Likely team receptiveness from 0 (team likely to be closed to new methods at present eg too busy) to 5 (team likely to be very receptive eg open to new methods, timing is good)
- Clarity of boundaries from 0 (poorly defined boundaries with environment / other systems/IPTs) to 5 (clearly defined boundaries with environment / other systems/IPTs).

MODAF pilots should be selected to cover as much of this space as possible - including some where implementation is likely to prove more difficult. It is only by fully exploring the envelope that all the potential implementation issues will be identified.

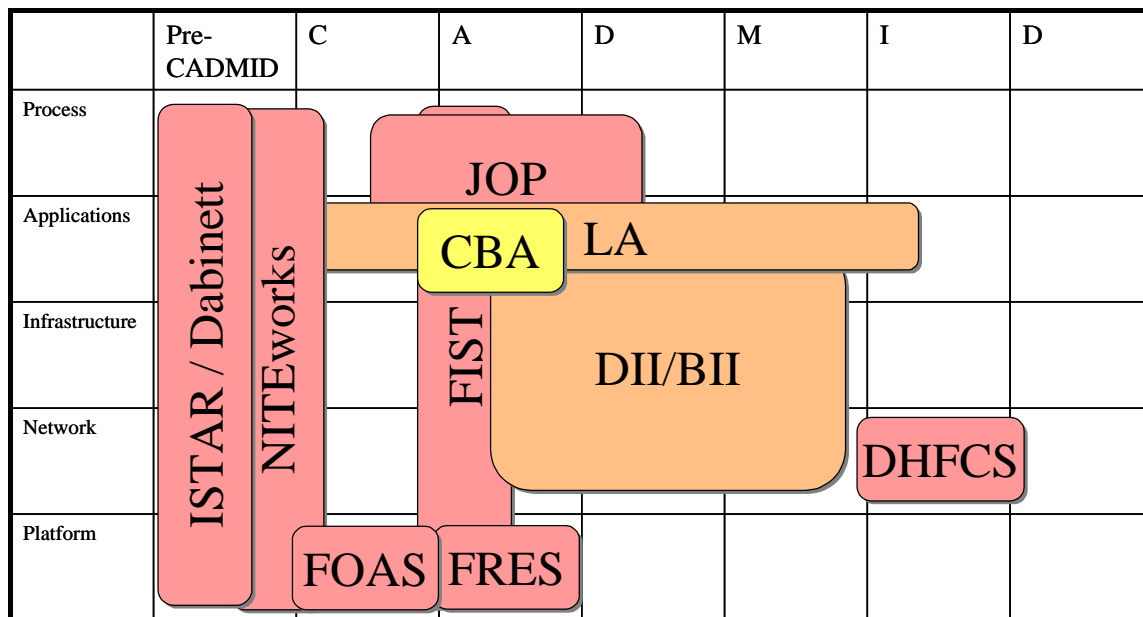
COIs provide a wide variety of potential pilots

The COI workshops provided a wide variety of potential MODAF pilot projects as shown in Table 4. These cover much of the CADMID cycle, both business space and battle space and wide variation in existing exposure to architectural activities.

A number of these potential pilots have also been plotted against dimensions of CADMID stage and nature of project in Figure 8.

COI	Project	CADMIID Stage	Use of AF	2004 Funding	Biz or Battlespace	Near term benefit	Team Receptiveness	Clarity of Boundaries	Ranking within COI
IPT 1a	FOAS C4ISTAR	C/A	5	Y	Bat	3	5	1	1
	BOWMAN	M	1	N	Bat	0	2	4	6
	JCA	A	Y	Y	Bat	4	0	5	3
	JOCS/CSS	I	1	N	Bat	4	0	2	5
	DABINETT	Pre-C	?	?	Bat	4	5	2	1
	DII	A	1	N	Biz	3-4	2	1	4
IPT 1b	JC2CSS	C/A	0	Min	Bat	5	5	1	1
	FIST	A	1-2	Y	Bat	5	5	2-3	1
	FRES	A	1-2	Y	Bat	5	?	2-3	3
	Integrated Soldier System	C	1-2	N	Both	3	5	2	4
	MAKEFAST	D/M	3-4	Y	Bat	3	3	4	5
IPT 2	FRES	C	2	Y	Bat	4	4	2-3	1
	FIST	A	2	N	Bat	4	4	3	
	DABINETT	Pre-C	1	Y	Bat	4	4	0	2
	WATCHKEEPER	A	3	Y	Bat	4	4	3	
	IFPA	C	1	Y	Bat	4	4	2	3
IPT 3 (DCSA)	DII(F)	A	1	Y	Biz	N	1	4	
	DHFCS (STRS)	I	2	Y	Both	1	4	4-5	1
	SMC2 (SAT IPT)	D/M	1	Y	Bat	1-2	1-2	4-5	
	DMICP (CBA IPT)	A	0	Y	Both	2-3	2	3	
	Future Pay (CBA IPT)	A	0	Y	Biz	1-2	2	4	2
Cap & Reqts Man	Carrier Strike		3	Y	Bat	3	4	4	=3
	Med Wt Force		1	?		4	4	2	1
	ISTAR/DABINETT		3-4	Y		4	4	1	1
	JOP		1	N		1	1	2-3	
	FOAS		2-3	Y		3	4	2-3	=3

Table 4: COI Assessment of Potential MODAF Pilots



Business space
 Battle space

Figure 8: Mapping a Sample of Potential MODAF Pilots

Suggested list of MODAF pilot projects

Given that affordability constraints on the MODAF project suggest that the number of pilots is limited to around 6, the suggested short list of pilot projects for the next stage was determined to be:

- ISTAR architectures (DEC ISTAR) including DABINETT (FBG)
- Medium Weight Force including FRES (DEC GM, DEC CCII and FRES IPT)
- FOAS (FOAS IPT)
- JC2SS (CSIS IPT)
- Defence Medical Info Coherence Prog (CBA IPT)
- DHFCS (STRS IPT)
- Logistics applications (LA IPT)
- NITEworks theme (Combat ID)

Scoping the MODAF Roll-out

Scope of required MODAF training identified

During the workshops the size and nature of each COI was examined in order to establish accurate cost estimates for the roll-out stage - especially in establishing an initial training needs analysis.

It was determined that several different forms of training may be required within any particular organisation. These would include:

- **Expert training** – to train those who are going to be producing MODAF architectures / views most of the time as a part of their normal job. This training might involve 4 or 5 days of hands-on

training in interpreting, manipulating and populating views. Typically this level of training might be applied to IPT requirements managers and a core of the systems engineering team

- **User training** – aimed at those who will be regular users of MODAF views and will be required to interpret information from MODAF in order to carry out their job function – but will not be expected to directly manipulate MODAF views. This training might involve an intensive 1 day course covering all of the MODAF views relevant to a particular COI
- **Awareness training** – aimed at those who should be aware of the implications of MODAF but will not utilise any of its products on a regular basis. There is unlikely to be a specific course aimed at this group, but rather a series of communications and materials aimed at increasing awareness of MODAF throughout the MOD
- **Tool specific training** – needed for expert users to become fluent on a particular architectural tool set. MODAF is tool agnostic and there are likely to be between 5 and 10 tools that are initially certified to support MODAF. These will often be tailored to different user groups such as those conducting business process modelling or those developing system architectures. Some of these tools are already used widely within certain communities and only the new MODAF specific tool aspects would need to be trained. Also, tool specific training is likely to be provided by the various tool vendors and it may be possible to negotiate a degree of tool specific training within the purchase of a number of licenses. Therefore, it is not practical to attempt to scope the degree of tool specific training as part of the MODAF roll-out

Another training issue that arose during the COI workshops was the extent to which MOD was going to train its contractors. For the purpose of scoping initial training the MODAF project has assumed that where contractors are embedded within the MOD team (e.g. acting as systems engineer within the MOD IPT) then their training needs should be included. However, if the contractors are working on the delivery of contracted services, systems or platforms they should be expected to train their own personnel as necessary to meet any contractual obligations relating to MODAF products.

The approximate numbers from each main COI / organisation that are estimated to need the two main forms of initial training likely to be offered by the MODAF project are highlighted in Table 5.

Organisation	Expert Training	User Training
DPA IPTs	500 ~ 700	1,500 ~ 2,000
DCSA	~220	~440
DEC	~45	~285
DSTL (in support of DEC)	~150	-
Customer 2 and Front Line Commands	~200	~2,000
Governance (including DG Info, DG (S+A) and TLBs)	~10	~100
Concepts and Doctrine	~10	~100

Table 5: Estimated Training Needs by COI

Conclusions

A sound understanding of COIs MODAF needs

The COI workshops have provided a sound understanding of each COI's needs with respect to MODAF and started to spread the MODAF communications. This provides a firm basis for the MODAF Development stage including, including:

- Clearer knowledge of MODAF relationship with many of the MOD's key processes
- Good idea of which views are likely to provide most utility – initially at least
- Identification of a number of good MODAF pilot projects
- First estimate of the training needs for the different COIs and an understanding of the level of existing architectural knowledge

Produced by David Pile of the MODAF team using information from the following sources, with thanks:

COI participants including: ECC, DPA, DCSA, DGSA, DLO, DG Info, DCBM(A), DSTL, and the Army.

For the preparation of COI materials and analyses Dave Mawby and Ian McDougall of PA Consulting and Fariba Hozhbrafkan of Cornwell Associates.

Appendix A: List of COI attendees

COI	Organisation	Appointment	
IPTs	FIST PCMO	Battlespace Integration Manager	
	FIST PCMO	C4I Manager	
	FOAS IPT	Tech & Sys Manager	
	FOAS IPT	Technical Lead	
	FOAS IPT	Requirements Manager	
	FOAS IPT	C4ISTAR Manager	
	FOAS IPT	Requirements Manager	
	FOAS IPT	ILSM	
	BLD IPT	BLD-351A	
	BLD IPT	BLD-3	
	FBG IS	FBG-4	
	FBG IS	FBG-4b	
	CSIS IPT	CSISDevs5	
	DCC IPT	DCC Sim	
	DCC IPT	DCC SI3	
	DCC IPT (FIST)	Technology Manager	
	DCC IPT	DCC SI2	
	DCC IPT	Programme & Risk Manager	
	FRES IPT	DIPTL	
	FRES IPT	Interfacing Programmes & Sys	
	FRES IPT	NEC / C4I Lead	
	FRES IPT	Requirements Manager	
	FRES IPT	Sys Engr Lead	
	FBG	PICTM2	
	DCSA	STRS IPT	STRS RM1
		SAT IPT	SAT RM2
		LA IPT	CATP1
		DSD	Regs and Interoperability
		DINSA	DINSA Cons1
DINSA		DINSA 4	
DSD		Architecture Modelling	
DII		Reg Management	
DSD		SO1 Architecture Coherence	
DSD		Regulation Support	
DII		EM1	
DII		AD Convergence	
DII		EM2	

COI	Organisation	Appointment
	DIO	DIO1
	DEILIS CIS	Messaging
	CBA IPT	AC1
	CBA IPT	New Business
	FBG	PICTM2
DEC	DEC CCII TAC CBM	SO2 Capability Development
	DEC CCII Strat Dev	Strategy
	DEC CCII SOCBM	SO1 Capability Development
	DEC CCII Interop	SO1 Interop 3
	DEC CCII Interop	Interop 2
	DSTL (Malvern)	Capability Adviser
Governance	DG(S+A)	TS(CIS)1
	INFO-CDMA	CDMASO
	INFO-IM	IM1
	IA	IA1CON4
	IA	IACON1
	DEC CCII	Regs and Interoperability
	DSD	Regs and Interoperability
Customer 2	DCBM(A)	SO1(W) Regs
	ACDS(Log Ops)	SO1 LOGWAR
	DCI(A)	SO2c AEP
	LAND GB ICS	SO2 Proj Man
	DCBM(A)	SO2 Css
	DCBM(A)	SO2 Regs