INFORMATION TECHNOLOGY FOR A MODERN FLEET AIR ARM

BY

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ABSTRACT

The Fleet Air Arm is in the process of implementing a comprehensive Information Technology programme using a strategic approach, as opposed to *ad hoc* methods used in the past, to provide for a range of administrative computer applications. This article aims to explain the origins and developments of the strategy and how it links to the MOD Strategy for Information Technology. It covers the programme of projects and mentions some of the advantages and difficulties being experienced.

Developing the Strategy

The need for an Information Technology (IT) strategy for the Fleet Air Arm did not arise in isolation, nor was it driven by the recently established MOD policy for Non-Operational IT. In 1983 and 1984 a comprehensive review of the overall support of Naval Aviation was carried out by management consultants. They made many recommendations for improvement and brought to everyone's attention the fairly obvious fact that in many areas the management would greatly benefit from more accurate, numerate and immediately available information. The 83/84 study identified the potential for substantial savings, some of which were taken from the LTCs in anticipation of improvements to come; this not only acted as a spur for action, but also enabled the Fleet Air Arm to get some of the 'savings' fed back into the Navy's IT programme to enable the necessary Information systems to be developed.

The project team who were tasked with implementing the recommendations from the 83/84 study were faced with the problem of defining the overall IT requirements. The solution was to form a small team of one commander and a lieutenant-commander, and then to employ consultants with the necessary experience to carry out a strategy study. This exercise took six months and cost £350,000. The result was a comprehensive coverage of the existing systems, the future requirements, a proposed programme, the estimated costs and potential benefits. The initial objective was to concentrate on DGA (N)'s area only, but the first and most fundamental point to come out of the study was that the Fleet Air Arm, despite its various separate lines of management, collectively has the same aim, i.e. to get operationally effective aircraft into the air. Looked at from an IT point of view, the organizational complications are irrelevant; what is important is the business about which information is required. The study therefore broadened to become a Fleet Air Arm Strategy Study, covering FONAC, DGA (N), and relevant areas of C-in-C Fleet, DNW and DOR (SEA).

Having accepted the concept that the FAA is a business unit, for IT purposes, it does not mean that the FAA can be isolated from the rest of the world. There are already a number of systems in existence such as OASIS, the RAF stores computer (USAS), and the RAF Maintenance Data System, all of which are used by, but not owned or run by the FAA. It would not make any sense to throw away the benefits which such systems already provide, so the strategy has to take these existing systems into account and allow for any new systems to operate alongside and if necessary be capable

of interchanging information with them. At the same time the MOD is defining standards to be used for all new systems and so the FAA will be working within the framework of the new standards.

The Strategy report was taken and 'distilled' down into a Strategy Statement which has become the working document for the programme. The statement has been through three separate stages of acceptance, first by the FAA community, then by the Navy Board, and finally by the Defence IT Coordinating Committee. Each stage had its own problems, one of them being that this was the first MOD area IT strategy to go through such an approval route. Also, those who are familiar with the MOD's Strategy for Non-Operational IT will realize that the FAA does not fall neatly into any one Top Level Budget Holder's area, nor do the applications covered by the FAA's IT programme fall into any one of the three so-called IT functional areas (logistics, personnel or command management). Awkward as this may be for anyone trying to define IT policy for the MOD, the arguments for treating the FAA as a special case are overwhelming and have been accepted. But the total time taken from first formal presentation to completion of the third stage was eighteen months. This is in startling contrast with the Strategy Study teams' estimate of three months.

The applications defined in the strategy fall broadly into five major and fairly self-contained groups:

(*a*) Non-Operational Mission Support.

(*b*) Work Recording and Asset Management.

(*c*) Logistic Support Analysis.

(*d*) Production control for the Naval Aircraft Repair Organization (NARO).

(*e*) Finance and administration (including personnel and training).

The Strategy proposes that, rather than develop these applications as separate projects identifying their own hardware, etc., the applications should wherever possible use common hardware, software and communications. This concept generated a separate project which had to define and provide the necessary infrastructure. Once in place, the infrastructure will allow for the capture, storage and dissemination of all the information required, it will enable people to move from job to job and continue to operate on the same system, and because it will be operating to MOD standards it should be compatible with other emerging systems thus easing the problem of exchanging data. Despite these advantages, it is not that easy to define the shape and size of such infrastructure without having defined in some detail the requirements for the various applications. To install infrastructure too far in advance creates the risk that the follow-on projects will define some rather different requirements, but to delay the infrastructure too long will risk delaying the implementation of the other projects. There is therefore a need for some fine judgement on the timing of the programme.

The approach now being taken with the FAA programme is to concentrate on the project which provides the greatest cost benefits and use the key outputs from the study phase of that project to trigger further progress on implementation of the infrastructure.

The IT Infrastructure

A full study of the required infrastructure has now been completed. various technical options were considered, and the adopted solution is illustrated in FIG. 1. The system will provide a central headquarters resource (systems 5 and 6 in the diagram) largely for data storage, with branches to a set of networks at alternative headquarters and at each station level.

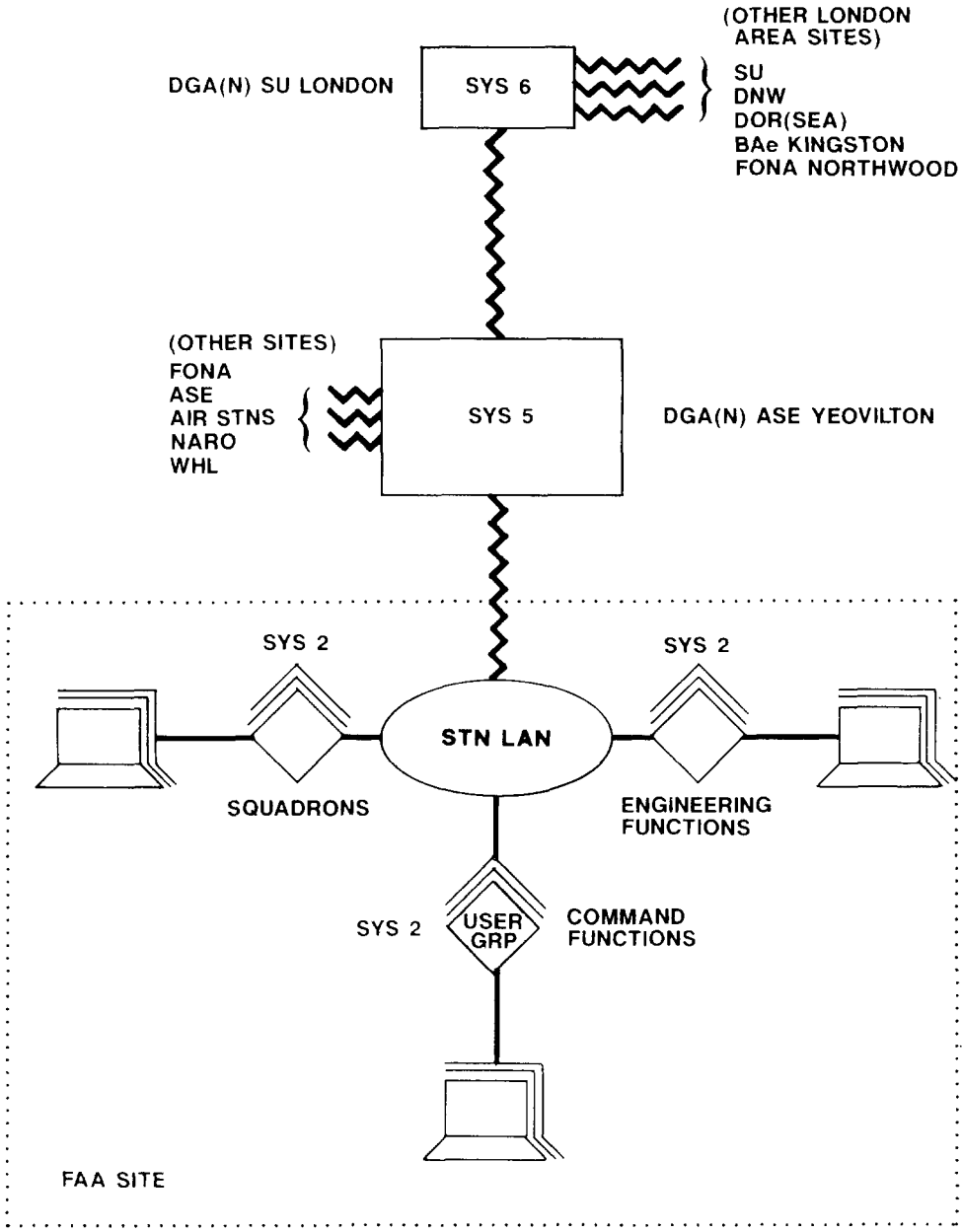

FIG. 1—HIERARCHICAL ARCHITECTURE

ASE	Aircraft Support Executive
BAe	British Aerospace
DGA(N)	Directorate General Aircraft (Navy)
DNW	Directorate of Naval Warfare
DOR(SEA)	Directorate of Operational Requirements (Sea)
FONA	Flag Officer Naval Aviation
NARO	Naval Aircraft Repair Organization
SU	Support Unit
WHL	Westland Helicopters Ltd

The station networks should provide processing and local storage and a backbone for the station and squadron users and for the common functions within each station over a Local Area Network (LAN). The station level processing capability is to be divided into a number of smaller computing elements (system 2 in the diagram) each serving a specific area. The progress of information and application processing from squadron level to HQ level is based on consolidation of data. One of the attractions of such an architecture is that it can be built in stages from squadron level upwards with each small unit being able to operate independently before the whole system is complete but, even more important, it allows for squadrons to detach from the main system when they deploy.

This system will only allow for information classified up to Restricted. There is a requirement to process some data above this level and therefore this solution does not satisfy all the customers, but it proved impossible to justify the extra cost involved in providing a system capable of working to Secret. The proposal for the longer term is to make use of the MOD's corporate headquarters office automation system (CHOTS) which is designed

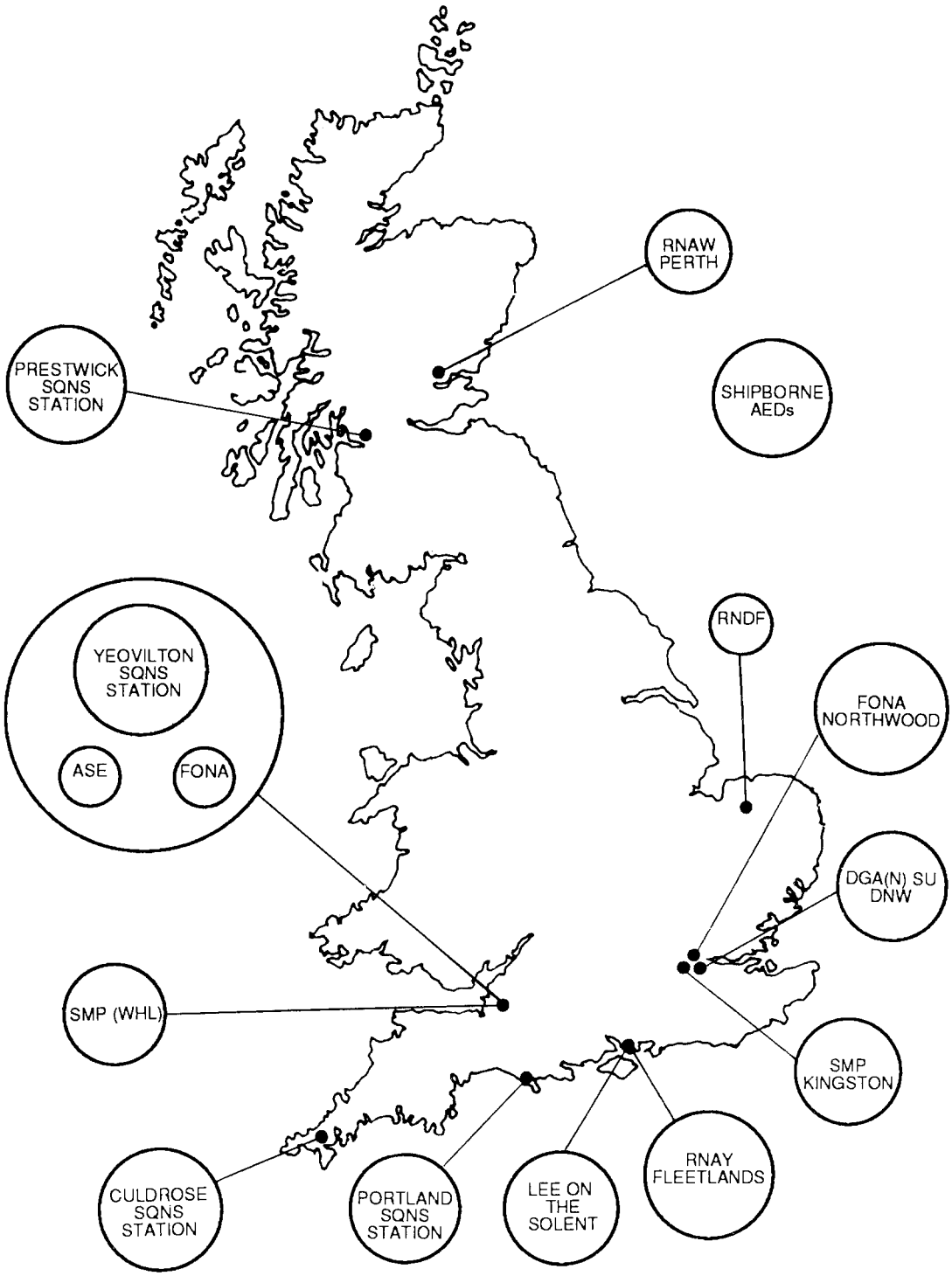

FIG. 2—TERMINAL DISTRIBUTION

key as in FIG. 1, and:

AEDs	Air Engineering Departments
RNAW	Royal Naval Aircraft Workshops
RNAY	Royal Naval Aircraft Yard
RNDF	Royal Naval Data Flight
SMP	Special Maintenance Party

to operate up to Secret. The aim is to enable information from the FAA Restricted system to be passed directly into CHOTS. There is one particular application in the programme (Mission Support) which does require to store Secret data, but since this data is not required on the network, it will be possible to operate on a stand-alone workstation.

The overall distribution of terminals will look something like FIG. 2. The aim will be to provide wide area networking between sites. The method of achieving this has yet to be resolved, but in the long term it is intended to use the Defence Packet Switch Network (DPSN). Communications from units deployed at sea or elsewhere away from the network will be by disc and/or plugging back into the network when returning to their home base.

The Applications in the FAA IT Programme

The five applications mentioned on p. 670 have been divided into seven separate projects as follows:

(*a*) *Work Recording and Asset Management (WRAM).* This will cover aircraft maintenance data, engineering records and at least partial control of high value repairable spares. Repairables for the FAA get into a variety of loops which include the RAF, Industry, and to a limited extent DGST(N). The asset management facility will therefore be part of a larger network and in particular will have to interface with the RAF. There are large savings associated with this project which is why it has high priority in the programme and is being used as the driver for the infrastructure. Study work is under way.

(*b*) *Logistic Support Analysis (LSA)*, the process of deciding and implementing repair and provisioning policies when introducing equipment into service, and monitoring the equipment throughout its in service life. This project has close links with the WRAM project and, although no formal work has started on LSA, some preliminary work has been done; in particular the data requirements of LSA have been considered for inclusion in WRAM project analysis.

(*c*) *Mission Support.* This project addresses a number of free-standing applications which are aimed at improving operational effectiveness by providing IT assistance for mission planning in the aircrew briefing rooms ashore and at sea. The project is very close to the interface between Non-Operational and Operational IT systems but it is not part of any permanent aircraft system. It will be using the FAA's infrastructure, and has therefore been accepted as Non-Operational. The project team have completed a feasibility study and development work is expected to start shortly.

(*d*) *Naval Aircraft Repair Organization (NARO) Production Management.* This is primarily aimed at improving production of repaired and modified helicopters and aircraft components from the two NARO establishments at Fleetlands and Perth. It will involve work schedule planning together with budget control and links to the RAF stores system. It is in direct support of an efficiency drive within the NARO which has developed from a separate management consultancy study[1]. The project is now undergoing full study.

(*d*) *Financial Management Information (FMI).* One of the recommendations to come from the 83/84 Management study was to provide a method of counting the cost of operating the Fleet Air Arm. The FMI project was therefore aimed at this fairly ambitious target. Subsequently the Government introduced the New Management Strategy (NMS) for the MOD. This brings with it the devolution of responsibility for running costs through command areas, and means that DGA(N) and FONA will both

be operating higher level Executive Responsibility Budgets for which they require some level of ADP assistance. The precise requirements are still being identified. The Fleet Air Arm's FMI project is not yet under way, but the aim will be to develop a comprehensive financial management system on the IT infrastructure, covering the requirements of NMS as well as those of the wider FAA business area.

(*f*) *Training*. This project involves administrative support for flying and air engineering training. Part of this work is being developed at H.M.S. *Daedalus* with the aim of providing support to the Air Engineering Training Standards Board (AETSB). This application has some requirements in common with other training establishments and so links have been established with H.M.S. *Collingwood* in an attempt to share the development work where relevant. The remainder of the work identified in the strategy under the Training project has yet to be started and is dependent on the necessary manpower resources being made available.

(*g*) *Personnel*. This covers the administrative requirements for both Service and civilian personnel. Currently, OASIS is providing a level of support for the Service side, and there is now a system running on the mainframe computer at Fleetlands which covers the civilian workforce at the yard. Future developments will be to replace them.

The IT strategy does not just cover the requirements for new systems. The aim was to pool financial and manpower resources for IT in the FAA so that, in addition to implementing the programme, it would be possible to provide coordinated support and maintenance for existing systems and management of new systems as they get put in place. The FAA IT Systems Manager now in post also has responsibility for the FAA's small systems group (SSG). The SSG has now been officially recognized amongst other MOD SSGs and has a level of delegated authority for direct purchase of limited size systems. They also aim to provide help for and follow-up assessments of, the many individual small computer systems which are currently in use.

Resources

The overall cost of the FAA programme was estimated to be £29M in LTC 89. This figure included the cost of consultancies, procurement and maintenance. The overall benefits identified were £123M, that is a net benefit of £94M over the ten years with a net present value (for those accountants among you) of £61M. These figures were estimated; history tells us that the costs will inevitably rise, but the bright side is that as study work has progressed we are seeing opportunities for more rather than fewer savings. Whatever the final figures, it is certain that the Strategy overall will bring great benefits, regardless of the actual cash savings which can be achieved.

The biggest problem facing the programme at the moment is finding the right people in the numbers required, not a new or surprising problem in today's climate. The strategy aims to make maximum use of commercially available expertise to develop new systems, but this cannot be done without a nucleus of in-house people to work with consultants to ensure that they understand our needs and deliver what is really wanted. In order to persuade senior managers to allocate resources to IT, it is necessary to persuade them that it is worthwhile and has a higher priority than the many other tasks which are also calling for manpower. One telling argument in this case is the fact that some money for the support of naval aircraft has already gone from the LTC, and this demands early action.

The original implementation plan aimed at starting in January 1988 and completing by the middle of 1994. In fact, work did not start until the end

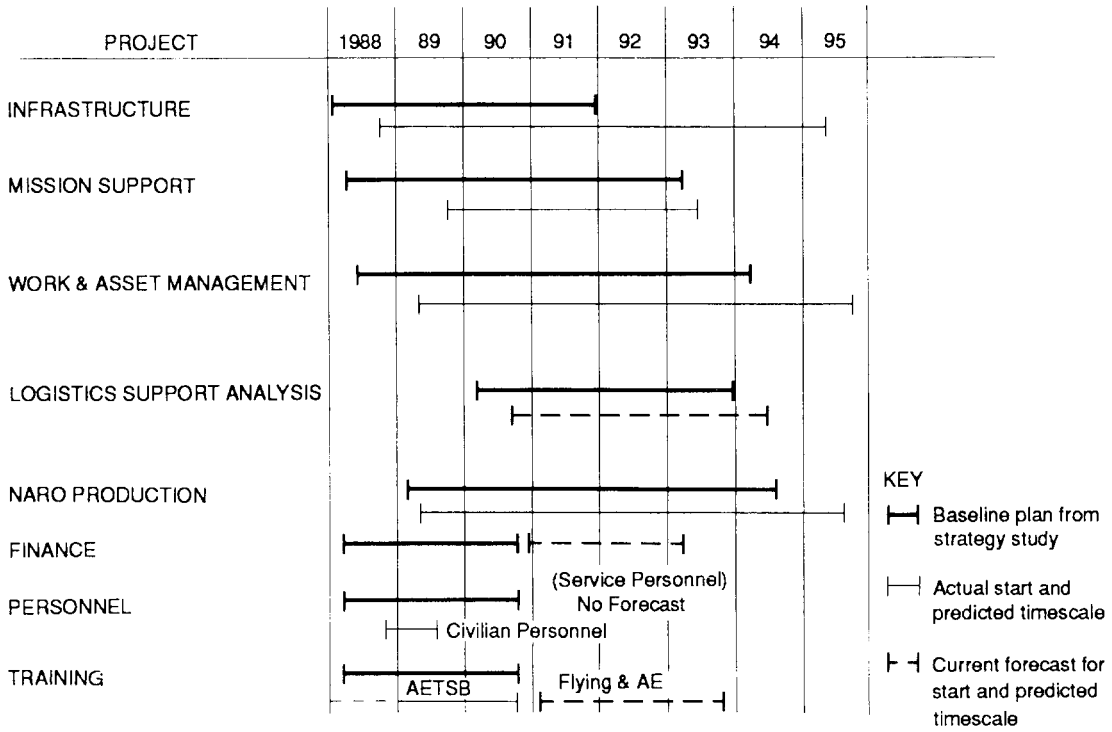

FIG. 3—PROGRESS ON EACH PROJECT, AS ORIGINALLY PLANNED AND AS REVISED
AETSB Air Engineering Training Standards Board

of 1988 and is now forecast to run until mid 1995. Some real and encouraging progress is being made and, as FIG. 3 shows, work is progressing in four main areas. There are however three projects which are delayed because of the lack of resources.

The fact that the FAA now has an IT strategy has enabled all efforts to be channelled down an agreed path with a clear view of what the organization wants to achieve. It should be possible to spend the funds available for IT to much better effect than in the past, and it will provide an infrastructure system with the necessary standards and disciplines, not only to benefit from the current applications but also to enable easier development of any future requirements. As somebody said, 'the trouble with strategies is that they degenerate into work'; but maybe, once the work is done, it will be possible to appreciate the real benefits of having a strategy.

Reference

1. Kennedy, R. M. and Seeley, R. G.: Naval aircraft repair policy analysis; *Journal of Naval Engineering*, vol. 31, no. 2, Dec. 1988, pp. 318–325.