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 Social Services
 Prime Minister:

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From the Secretary of State for Social Services

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You may be interested to see Mr Fowler's proposal for a consultation document on future social security operational strategy. The main elements of the strategy are set out in the summary attached to Mr Fowler's

15 June 1982

letter. It looks quite promising in terms of greater efficiency and manpower savings but would

require substantial investment

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SOCIAL SECURITY OPERATIONAL STRATEGY

You may recall that in December 1980 my predecessor published a working paper entitled "A Strategy for Social Security Operations". That paper called for a long-term, strategic approach to the planning of our very large and expensive operational systems; proposed a number of broad objectives (including greater administrative efficiency, improved service to the public and better jobs for our remaining staff); and called for a further consultative paper setting out specific proposals. It was generally well received.

Since then we have conducted a significant exercise in consultation, analysis and design with the aim of preparing specific proposals for a social security operational strategy covering the 1980s and early 1990s. The results are presented in the follow-up document which I enclose, together with a brief guide which presents the bare bones of the strategy, and a one-page summary.

It is clear that the proposed strategy offers major prizes - in terms of staff and financial savings, as well as better service - but requires considerable investment first. I should stress three points:

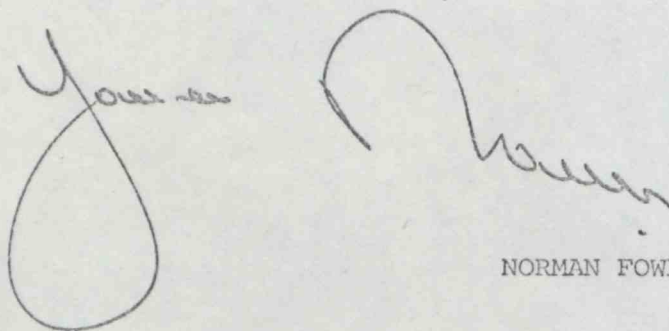
- the paper provides a general strategic framework within which developments can take place. This seems clearly preferable to a piecemeal approach to the introduction of technology. But it is vital that such a framework should not become a straight-jacket. The paper emphasises that it would be possible to stop off at any one of a number of points over the next few years. It also describes some alternative approaches, which offer less far-reaching advantages, and smaller savings, but require smaller investment. So there is plenty of flexibility, and a wide range of options.

- the proposals take account of technological advances, including the trend towards less centralised computer systems; and of the need to ensure confidentiality of personal information. We also recognise the important management implications of a substantial enterprise lasting many years.
- although the paper gives broad estimates of costs and savings, we are not seeking approval for any expenditure at this stage. If the strategy approach is adopted, every item of development (the strategy consists of a number of semi-autonomous projects) will have to be justified on its own merits, and approval sought for expenditure individually.

I might perhaps mention that my officials have had constructive discussions with the Prime Minister's Information Technology Advisers, who have welcomed the proposals, and made a few specific suggestions which we have tried to meet in the drafting.

We do not need to reach firm decisions now on any of the specific proposals contained in the paper. My proposal is that it should be published on a consultative basis in the same way as its predecessor, to enable us to discuss our ideas with a wider body of outside knowledge and expertise as well as to give those with a legitimate direct interest, including our staff and Trade Unions, a chance to give their views. I would like to publish in July and allow until the end of the year for public discussion; then we could review the responses, and the progress of more detailed internal planning work, and could reach well-based decisions on the next steps.

I doubt whether we need a formal discussion on this and I would therefore be grateful for your agreement to publication of the enclosed draft on this basis. It would be helpful if I could receive any responses by the end of this month. I am copying this to the Prime Minister, members of H Committee, Patrick Jenkin, Lord Cockfield, Sir Derek Rayner and Sir Robert Armstrong.



NORMAN FOWLER

Enc.

SOCIAL SECURITY OPERATIONAL STRATEGY: SUMMARY

Aims

Modernised service with better service for public, cheaper/more efficient administration and better jobs for staff. (Discussed in Working Paper I, published 1980).

Getting there

Key features:

- better use of claimant information;
- common communications network;
- common computer approach across benefits;
- computer terminals for staff;
- 3-tier computer structure supporting staff in ILOs and UBOs.

To be built up by mid-1990s in phased step-by-step approach. Each project subject to joint strategy management but individually costed and justified.

Gains

Public: more efficient service; fewer errors; better advice and information; more "whole person" treatment.

Government: 20-25,000 staff savings; fewer errors; more responsive computer systems.

Staff: shift of focus from paper to people; more job satisfaction.

Costs and savings

Over 20 years, £900 million must be spent on social security computing anyway. Full strategy would cost £700 million extra and would produce extra savings of £1,900 million. Strategy pays for itself by 1993. Financial approval would be sought project by project, starting in 1983.

More limited approaches are possible, but do not provide same level of savings and other benefits. The strategy could be stopped or change direction along the way.

Next steps

Publish Working Paper II for consultation. Review and first implementation decisions early 1983.

MANAGEMENT IN CONFIDENCE

17 MAY 1982

REVISE

A STRATEGY FOR SOCIAL SECURITY OPERATIONS - WORKING PAPER 2

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I INTRODUCTION

1. In December 1980 DHSS published a working paper entitled 'A Strategy for Social Security Operations'* (referred to below as Working Paper I). It pointed out that social security operations were under considerable strain, which was likely to continue, but that advances in computer and telecommunications technology were creating new opportunities for advance during the 1980s. The broad aims which the paper suggested should be followed may be summarised as:

- . to improve operational efficiency, reduce administrative costs and increase the flexibility of the operational system to respond to changing requirements;
- . to improve the quality of service to the public, eg by treating customers in a less compartmentalised benefit-by-benefit manner and more as 'whole persons' with a range of possible social security business; and by improving the provision of information to the public;
- . to modernise and improve the work of social security staff; the paper suggested that it would be important to involve staff as closely as possible as the strategy developed.

2. These broad aims were elaborated in a series of more specific desiderata of a future system. The paper recognized that not all the aims could necessarily be achieved in full: the whole person approach, for instance, might in practice prove too expensive and complex if carried to its limit. Trade-offs would be necessary between competing objectives, and a number of important constraints - including constraints on finance and manpower - were noted. Nevertheless, the paper concluded that a piecemeal approach to improving social security operations was unlikely to meet present and future needs of the system and that an overall strategy was needed into which individual plans and developments could be fitted. The result should be a comprehensive operational system, meeting the broad objectives outlined above, which could be implemented in substance over about the next decade.

*Copies available (price £2) from: DHSS (leaflets), PO Box 21, Stanmore, Middlesex, HA7 IAR

3. Although Working Paper I stressed the need for an operational strategy, it did not attempt to specify one. Instead it called for more studies leading up to a further report which should contain proposals with broad costs and savings for an integrated operation including the organisational and human implications; the outline of a phased plan for implementation; and proposals with detailed planning costs for work up to the end of the next review period, including costs and savings for improvements which can be implemented within that timescale. These recommendations were approved and this report attempts to fulfil them. It has seemed best, however, to concentrate on the strategic framework. Detailed proposals about the first projects will be coming forward separately.

4. The main activities of the Strategy Study Team, since the preparation of Working Paper I, have been consultation, fact finding/analysis, and design. Additional information on a number of aspects is provided in the Background Papers listed in Appendix 1.

Consultation

5. A number of discussions have been held with outside experts and organizations, including:

- . a two-day seminar in January 1981, chaired by Mrs Lynda Chalker MP, the then Parliamentary Under-Secretary (Social Security), at which the participants included individuals from industry, public administration, the computer world, DHSS unions, and the universities; the report is available (Background Paper A);
- . individual meetings with a number of suppliers of computer, telecommunications and peripheral equipment;
- . discussions with organisations concerned with social security claimants' interests. A summary of the main points to emerge is in Background Paper B;
- . discussions with organisations, in both the private and public sectors, who have had experience of introducing large-scale technological change;

- . contacts with computer experts, at meetings, seminars, etc;
- . discussions with other Government Departments.

6. Many detailed discussions have also been held within DHSS and with the Department of Employment (DE), including consultation with all the main social security policy and operational branches. Discussions have taken place with the DHSS Trade Union Side, who were also represented at the two-day seminar mentioned above. Finally, a number of individual members of staff have contributed their views in response to circulars, in the course of visits by Strategy Study Team members and at training courses and seminars.

7. We are grateful to all those who commented on Working Paper I or contributed to discussions on the strategy. Most endorsed the broad aims, particularly the need to improve advice and information and to provide a more 'whole person' service; and the importance of trade-offs between objectives was recognised.

Fact Finding/Analysis

8. A principal activity has been the analysis of the functions and data for a number of benefits to identify commonalities and duplication of data in the various benefit systems. Allied to this was an examination of the procedures for assessing and paying various benefits, to establish what commonality there was between procedures to achieve similar ends but carried out in different ways in different parts of DHSS and DE. This data and functional analysis work, whose methodology is described in Background Paper C, is not complete but is sufficiently advanced to enable some firm conclusions to be reached about the changes which need to be made, over time, to our existing benefit systems to achieve two particular objectives: improving operational efficiency and moving towards the whole-person concept discussed in Working Paper I.

9. In parallel, the rolling programme of studies of the operational aspects of individual benefits (Working Paper I, paragraph 4.6) has continued. Six studies have been completed covering ten benefits. Total potential savings of about £10 million a year have been identified.

10. Studies have also been completed on a range of other relevant issues, including recent computer technology; data communications; the views of claimants; and the human and managerial implications of large-scale technological change. Special studies were carried out by Logica Ltd on the location of social security work and by the DHSS Operational Research Service into future scenarios for change, the costs of change and the costs of alternative numbers of computer centres.

11. Strategy Sub-Groups have been established to consider the scope for improving advice and information to the public and the needs and role of DHSS Headquarters within the strategy. The Advice and Information Sub Group has presented its first report (Background Paper D).

12. Costing the strategy has been a significant exercise in its own right involving projections of future work-loads, sizing of hardware requirements, analysis of staffing activities, assessment of savings potential and the development of a risk analysis model. Substantial assistance was provided by Software Sciences Ltd and Logica Ltd.

Design

13. The Strategy Study Team has also been assisted in the design work by consultants from Software Sciences Ltd. This report presents the main conclusions of that work. In particular, it specifies the features of a proposed strategy for future benefit operations and, in outline, a way open to DHSS and DE for achieving it. It embraces all social security operational matters dealt with by DHSS, together with the administration of unemployment benefit by the DE. Attention has been concentrated on how contributions and claims to benefit are processed and paid, and particularly on the records and communications involved. However, we have also borne in mind the broad functions and requirements of other aspects of social security administration - including advice and information, human factors and management information - and where possible have taken them into account in our conclusions.

II THE FUTURE STRUCTURE

14. When the broad aims outlined in Working Paper I are closely examined in the light of the technology now available and of experience in applying it elsewhere they imply a number of features which we believe should form part of any future operational system. This section describes the most important of them. It will be vital throughout to adopt a 'modular approach' - ie it should be possible for different parts of the structure (data, communications, machines, application software etc) to be amended or adapted separately without repercussions on each other; and for each in turn to be broken down into independent components which can be changed with minimum disturbance of the others. In addition it will be essential to adopt wherever possible nationally and internationally accepted technical standards, to ensure compatibility throughout the social security system and to minimize the difficulty of adapting to meet future needs.

Data

15. The DHSS and DE need to maintain a very large number of records. Many are in computer systems but more are contained in manually operated index systems and in conventional files in local offices. The amount of data held and the number of records maintained is much higher than, theoretically, it need be. The DHSS holds some information for almost everyone in the United Kingdom. Records are kept of children and their parents or guardians for child benefit; details of national insurance contributions are held for the working population; and the elderly appear in the system by way of retirement pensions records. Further records are kept for the administration of each of the other benefits. As a result, more than one record often exists for an individual and the personal data - name, address and date of birth - are frequently replicated. These personal data items are held on average more than five times (excluding dormant records which would considerably increase this figure) for the total population of Great Britain. Furthermore, the information about a person in these various records may be inconsistent as events are recorded in different systems for different purposes at different times. This situation has arisen largely because the benefit systems were designed to operate independently, each with their own files.

16. Procedures have been developed for notifications from one system to another when there is a particular need. For example, details of an initial payment of supplementary benefit may have to be notified to the unemployment benefit system or to the sickness benefit system in order to avoid duplicate payments for the same period. (Some 600,000 notifications were made in 1979). On the other hand, many events which should desirably be notified from one system to others are not. Reliance is often placed on what a claimant chooses to reveal and on what he believes is relevant. For instance, a variation of centrally administered child benefit payment might need a revision of any associated supplementary benefit; but the local office would not be aware of the change immediately unless the claimant himself advised. And there is occasionally acute embarrassment when a letter is sent to a beneficiary, whose death is already known in a different part of DHSS.

17. Thus existing methods of arranging for information received at one point in the system to be transmitted to other points where it would be useful are unsatisfactory because:

(a) a notification is not usually made at once to other systems; activity elsewhere may therefore be inconsistent and in error;

(b) even when some evidence exists to prompt a notification to another record, it may not always be recognised and acted upon because of the complexity of the clerical systems and procedures;

(c) when an initiative is taken to pass on a particular item, subsequent changes may not be similarly conveyed, thereby causing discrepancies and confusion;

(d) a notification, even when made, can be subject to mistakes in transcription and loss or misdirection in transit;

(e) in many instances a response is needed from another system before action can be completed; this introduces delays, double-handling and other inefficiencies.

18. Further problems are caused by the variations in the way the same detail is recorded in different systems. For instance, the identifiers used in records - typically the name and date of birth - are stored in different ways and cannot always be matched with certainty. If the various records for individuals are in future to be linked and readily updated from a single notification, it is essential that data formats should be standardised. The standards would need to be applied throughout DHSS and DE and this leads to the conclusion that it is a task that should be controlled centrally.

19. Even if the definition of data is controlled centrally, there are essentially two ways of overcoming the problem of inconsistency. The first would be to continue to hold records in separate files, benefit by benefit, but to introduce an additional notification mechanism to keep them in step by keeping track of the various versions of the data and updating them. To introduce this together with the essential standardisation of records would be a formidable task, but it would have the considerable advantage of avoiding upheaval of the existing benefit-related organisational structure. However, it would not address the problem of data duplication, which we see as the main cause of poor data management; it would do nothing to ease the problem of inflexibility; it would contribute little towards the better utilisation of ADP staff; and it would inhibit organisational changes by perpetuating the bias towards having large blocks of work compartmentalised benefit by benefit. The technical problems would include the complexity of the notification mechanism itself and of arrangements to maintain and control it - software is not yet available to perform these tasks; temporary inconsistencies in data - increasingly serious as on-line interrogation spreads; and the inflexibility of such a system to meet changing requirements.

20. The present data structure, therefore, is not a suitable platform for development. To solve the existing problems and provide greater flexibility for future changes there is little choice but to restructure and rationalise the data. The aims should be to minimise the number of times a particular data item is stored so that we reduce the complexity of maintaining it and increase the availability of relevant information to those who need to use it.

21. These aims could be achieved by different parts of the DHSS and DE sharing the same data instead of each attempting to create and maintain their own separate records. This concept of collecting data together and then sharing it between different computerised functions is known as the database approach. It forms one of our central proposals. *It should be stressed that what is envisaged is a logically unified system, not one held in a single physical location.*

22. The benefits of the database approach can be summarised as follows:

(a) future options are kept open longer: with a harmonised data system, for example, it would be far easier to make changes in later years - eg in response to legislative change, or towards the whole-person approach - even if this was not needed immediately. Unharmonised data closes off such possibilities;

(b) the data is more compact and accurate, with less duplication. This should result in lower storage costs and fewer errors;

(c) the time spent by analysts and programmers in manipulating data should be reduced, which should in turn lead to a reduction in application development timescales and better utilisation of one of our most valuable resources;

(d) users can be given direct access to information without using specialist staff;

(e) greater flexibility, because the physical layout and the 'logical' organization of the data, and the application programs can be largely independent of each other so that any of them can - to a great extent - be altered without altering the others.

23. In implementing the database approach it will be important to learn from outside experience. The main issues are discussed in Background Paper E. We propose that introduction of the database approach should be gradual, with limited areas of work affected at first so that the techniques can be proved with minimum risk. This will limit the size of the database in the early years. But implementation even by this route will involve careful consideration of design constraints. Relationships between data items will have to be restricted to allow efficient performance with database usage but still meet as many requirements as possible for new or changed applications. There may also be parts of the social security information base which are so specialised and voluminous - aspects of war pensions might be an example - that it would make

sense to leave them outside the main database. Implementation should build on continued detailed analysis of social security data and functions, on the lines described in Background Paper C. To avoid excessive size, the database would be divided into geographical segments, linked through a Departmental Central Index (DCI). Strong central data management and new training for ADP staff will be essential. In such ways the unacceptable risks of sudden change and an over-large, over-centralised database can be avoided. To avoid unnecessary complexity, the normal 'key' to provide access to an individual record would be the National Insurance number (which can in turn be obtained from the index if an individual cannot quote it). Other reference numbers for individual benefits would be phased out over a number of years.

24. We conclude that the co-ordination and central management of data, the sharing of data between different applications and the database approach is the right path to follow for DHSS and DE. Implementation could be greatly assisted by new analysis and design techniques and by standard software which is likely to improve in range and quality over the next few years. Within the DHSS there is very little practical experience of the use of database techniques. Priority tasks for the proposed central strategy team, in conjunction with the Central Computing and Telecommunications Agency (CCTA) and others, will therefore be to consider individual data management systems, to identify training requirements and to initiate work designed to prove the techniques in the social security environment.

Communications

25. The DHSS and DE use a number of different communications systems and technologies including the post, telephone, telex (for unemployment benefit) and British Telecom's 'Midnight Line' (Datalink). DHSS has also been exploring the use of dedicated leased telephone lines. Each approach is technically incompatible with the others.

26. Because of the increasing need to provide a better and faster service at lower cost, modern telecommunications will become much more important. To tackle the communications problem by putting in special links, for example between ILOs and UBOs or between ILOs and the UB processing

centres, without an overall strategic plan, would result in a further proliferation of links and equipment. This would not only increase the problems of technical incompatibility and cost would create difficulties for local office staff, who would be called upon to operate different systems at different terminals. At present the incompatibility between communications systems is masked by the extensive clerical operations surrounding them, but with more variants the problem would be difficult to contain.

27. If the aims of the strategy are to be achieved, a fast, all-purpose, telecommunications network is necessary to link local offices, processing centres and payment centres and to provide appropriate connections to regional offices and Headquarters. The network should eventually encompass all aspects of telecommunications, not just computer data transmission, and thus make optimal use of expensive resources. This is made feasible by the advent of digital technology which enables voice and data traffic to be handled by the same equipment.*

28. The future network:

(a) Must be realistically achievable with commercially available and proven technology that conforms to appropriate national and international standards;

(b) must support the probable traffic load with low error rates (to minimise retransmissions); even where the traffic load is low, data rates must be high enough to ensure that staff receive swift responses from the system;

(c) must be dependable and have good back-up facilities;

*The existing telephone network is predominantly 'analogue', designed to handle voice traffic using somewhat dated technology. Computer data can be sent on this network only by making it look like voice traffic. British Telecom are in the process of converting the telephone system to use modern 'digital' techniques, where voice traffic is encoded as a series of 'blips', a format which is also ideal for computer data and enables much faster and more reliable transmission. A significant digital capability will be available by 1990, but the process will not be completed until after the turn of the century.

(d) should be capable of progressive implementation, building up over the strategy implementation period.

29. The range of telecommunications services on which the DHSS and DE could draw is changing rapidly; the liberalisation of the British Telecom monopoly seems likely to accelerate the pace of change. Recently introduced services based on the public network include the Prestel viewdata system and the Packet Switched Services (PSS or 'Switchstream') for data transmission. A range of services ('X-stream') becoming available through the growing British Telecom digital network, and the first privately run service (Project Mercury) will facilitate fast, high quality telecommunications. The CCTA is also investigating the possibility of a Government Telecommunications Network to serve the needs of all Departments. The underlying technology is also advancing fast, with such techniques as microwave, fibre-optics, satellites and lasers becoming available. However, we regard it as unrealistic for the DHSS itself to attempt to introduce these devices: their value will come as and when they are adopted by the carrier(s) on whom we rely.

30. Prestel would not in practice meet our needs. On present tariffs (November 1981), PSS appears more costly than a network of analogue leased circuits, given our heavy and lengthy traffic loads. Nevertheless, it has attractive features, particularly the capacity for rapid and reliable communications without the need to set up a major network. Even at current costs, therefore, it has a potential role as an interim or supplementary method.* Unless the tariff structure were to change, however, the main network at present could be most economically constructed using analogue telephone circuits leased from British Telecom. Nevertheless, as the future trend is towards greater use of digital facilities, as they become available, any future network must be designed with the standards and protocols appropriate to these superior services.

*For example, PSS might be used as a temporary measure, pending completion of the leased network; even when the network is established, PSS might be used for major trunk circuits or other jobs where its technical advantages justified any additional cost.

31. The optimal network may embrace more than one type of service. A high-level network linking computer processing centres, where traffic is heavier and flexibility more important, would make better use of digital transmission or PSS than a relatively lightly loaded intermediate-level network linking computer centres and local offices. Within local offices and within computer centres low-level local area networks will be appropriate, using distinct but compatible techniques and interfacing with electronic office technology. Although the detail of the network will depend on the strategic approach adopted, much of the network infrastructure will be independent of it.

32. A common all-purpose network will only be achieved in practice if telecommunications are treated, like data, as a corporate resource, subject to central Departmental specifications and strong management. The immediate issue for DHSS and DE if a uniform, integrated communications network is to be established is therefore primarily one of management rather than technology.

Functions

33. An innovation of the strategy study has been to consider the things the DHSS does ('functions') in a cross-benefit manner - rather than in the more normal benefit-by-benefit way. The advantage of this approach is that it produces a comprehensive and co-ordinated analysis of the work of the 'business' as a whole, rather than the partial picture which concentration on individual aspects inevitably produces. In DHSS, for example, it is conventional to consider individual benefits, or groups of related benefits, in isolation from others: the result is to highlight the idiosyncrasies of particular systems - and to reinforce the assumption that separate operational systems must be constructed for separate benefits.

34. It should be stressed that the functional analysis concentrates on *what* has to be done in the abstract (the 'logical' view) and does not describe *how* these jobs are actually carried out (the 'physical' view). The model produced is therefore highly theoretical. In the context of the strategy, however, this is an advantage since it provides a relatively stable basis for considering the full range of possible ways in which jobs might be carried out, now or in the future. However the function is physically implemented

- for example, clerically, by batch computer, by on-line computer etc - and wherever it is carried out, the logical view remains constant. The methodology is described further in Background Paper C.

35. The analysis so far has concentrated on eight benefits, including the five largest; preliminary studies have also been made of other aspects, including the system for recording contributions. In volume terms, some eighty per cent of the work associated with benefit processing has been analysed. The work will need to be continued to cover the other benefit systems and extended to other areas of social security administration which fall outside benefit processing - eg audit and management information.

36. The analysis has already confirmed a high degree of commonality between different benefits in terms of functions. Processing any benefit, for example, involves three main functions: collate evidence, determine entitlement, and implement decisions. These in turn can be broken down into lower-level functions including such items as checking existing evidence, obtaining new evidence, deciding whether broad conditions are met, deciding appropriate reviews, notifying and paying. At the lowest levels functions appear that are special to a single benefit, but it remains possible to view all functions for all benefits within a common framework.

37. This approach can help:

(a) ensure that all relevant aspects of the 'business' are considered and - in conjunction with the data analysis described above - to ensure that the planned data base will support all functions; it thus provides a central control and support to the data analysis;

(b) design a system which will be structured in a more whole-person, rather than benefit-by-benefit manner;

(c) avoid duplication of effort.

38. This cross-benefit approach should be carried forward from the current analysis phase into the detailed design of all new systems. Clearly the detailed re-design and programming of the full range of social security business is a massive job which will have to be broken down into manageable parts and carried out over many years. We propose that the primary division should be by function rather than by benefit. One development team, for example, might

prepare a 'payments' package, which all benefits could use; another might prepare an 'assessment' package, again (in principle) covering all benefits. There would *not* be a supplementary benefit system, a UB system, an IVB system and so on. It will be necessary to define carefully and in detail these functional 'segments', as we have termed them, and this will be a priority task for the proposed central strategy team, in consultation with others, in 1982 (see Section III). Each segment would, of course, utilize the common database and common communications network as necessary.

39. Although each segment should be capable of handling any benefit (unless any benefits are deliberately excluded), it may not be necessary actually to process all benefits together, nor will it be feasible in the early years. It is essential, however, even where a segment applies - at least initially - to one or to a few benefits, that it is designed in a manner which would allow it to be applied with no fundamental adaption to other benefits later.

40. The DHSS is not unique in using this functional approach. Indeed, within Government the CCTA is now encouraging departments to use the techniques involved wherever new or revised computer systems are being considered. Many organisations have decided to use the techniques within the boundaries of an existing sub-system. Where the DHSS is going further is in using the approach to analyse the business as a whole and, in effect, re-define what the sub-systems, or segments, should be.

41. One functional area already undergoing technical and procedural changes is that of benefit payment. The administrative cost of social security payments represents about a third of total administration costs. The frequency of payment of some benefits is changing and certain additional beneficiaries will be given the option of having their benefits paid directly into a bank account by automatic credit transfer (ACT).

42. In view of the substantial cost of the payment function and the recently available technical innovations including ACT and automated cash-point machines, we considered the possibilities for major changes in payment methods. The DHSS is not the sole - or even the main - organisation involved in this area, since the payments themselves are made through the Post Office or (under ACT) the banks, building societies etc. Major change therefore depends critically on what is acceptable and practicable for them as well as for DHSS. Our main conclusions are that:

- (a) payments should be handled as a separate functional segment, with a common system covering all benefits;
- (b) where more than one benefit is in payment, they should be made together unless there is good reason not to;
- (c) order books, giros and ACT are likely to remain the main payment methods during the 1980's; but eventually - depending largely on the speed of Post Office automation - it may be possible to offer a cash-point type payment option in post offices*;
- (d) so far as possible, beneficiaries should be offered a choice of payment methods; and
- (e) in view of the economies of scale which can be achieved in the production of instruments of payment and of the desirability for security purposes of separating payments from assessment, payments should actually be issued from a relatively small number of computer centres, even if the system as a whole is generally decentralised.

43. A number of other functional changes, with which the strategy would have to cope, are in prospect. Housing benefit is likely to create new demands, including better communications between DHSS local offices and local authority housing departments. In the longer term there may be changes in the relationship between tax and social security. Already the volume of transactions between the two systems is immense: around 37 million tax and NI contribution records are processed by both Departments; the taxation of certain social security benefits and assistance in establishing individuals' correct NI numbers add to the volume. The time-scales for the computerisation of PAYE project (expected to take most of the 1980s) and the social security operational strategy are similar. It is therefore highly desirable to ensure that data used across the two Departments are in compatible formats from the start of both developments.

44. Compatibility would be even more important if there were moves towards tax credits. We assume that the main aim of such a system would be to abolish income tax allowances (which only benefit those in tax) and to replace them with 'credits' payable to those meeting specified criteria. Social security

*This and other possibilities should be pursued with the Post Office. The critical issue will be the extent to which the Post Office can provide such facilities at the 23,000 Crown and Sub-Post Offices which our customers use to draw their benefit. Discussions are taking place about a proposed Post Office cash dispenser experiment, in co-operation with DHSS.

benefits (with the possible exceptions of Child Benefit and FIS) would not be directly affected, but all or most of them would be paid with tax deducted or credit added, according to the individual's eligibility for credits.

45. Such a system would require three main operational changes for DHSS:

(a) additional data items - eligibility for credits - would be held on every individual: the database approach would enable this to be done with comparatively little difficulty;

(b) a new function - deduct tax/add credit - would be added to most or all benefit calculations: the functional approach should enable this to be done as a standard cross-benefit procedure;

(c) there would be a substantial increase in the volume of exchanges of information between DHSS and IR: this reinforces the need for a central index to enable records to be located, and for DHSS (like IR) to use the NI number as the main key to records.

46. Moves towards a tax credits system are by no means certain, not least in view of the high potential cost. Nevertheless, it seems clear that adoption of strategy principles would reduce the practical difficulties. It thus provides one illustration of the greater flexibility which the strategy would provide.

Computer Structure

47. The question of the location of work was discussed in Working Paper I, which concluded that there was a clear need for a local interface with the public and that benefit work should be controlled from local offices as far as possible; but that there were very few social security functions for which a particular location was essential. A subsequent study by Logica Ltd highlighted the high cost of transferring work from one location to another and concluded that greater savings could generally be achieved by automating tasks 'in situ' than by relocating and automating them. We have therefore assumed that clerical work should generally remain where it is.

48. Choosing the right computer structure is made more difficult by the rapid pace of technological change. As Working Paper I noted, this will continue apace throughout the life of the strategy. It could well change not only what is technically feasible but also what is cost-effective. Smooth

social security operations are so essential that prime reliance must be placed on proven technology rather than the latest innovative ideas; but the proven technology of the late 1980s could look very different from that of today. The primary requirement, therefore, is for a computing framework which meets existing needs in a safe and cost-effective manner but which also provides a basis for technical flexibility in the light of future changes both in technology and in the relative costs and performance of differing solutions.

49. The physical location of the computers would make little difference to customers and not much to the staff who served them. Information would be 'input' to the computer through terminals and the 'output' would be received in the same way or printed out and sent through the post. It will be essential to provide a standard and helpful 'interface' between the computer system and the staff who use it. We propose that this should be achieved through:

- . the general use of video terminals as the means of access to the computer system: of the terminals likely to be available over the next decade these offer the greatest versatility and are now cheaper than the older electro-mechanical devices;
- . inter-active working through the terminal as the normal method of work of local office staff: only this will provide the immediate facilities which they require to progress work efficiently and eliminate double-handling;
- . assistance to staff in coping with complicated rules through the use of a supportive dialogue design and a system of 'prompts';
- . standardisation of hardware and software facilities - eg types of terminal, dialogue conventions, screen lay-outs etc - across social security applications.

50. The video terminal will become an essential working tool in the future - as ubiquitous as the calculator or telephone today. Many of the advantages of using terminals will be lost if use is restricted to a small group of staff interposed between the clerk handling the claim and the computer system. It is important to spread terminals as widely as possible as soon as this can be achieved. In the longer term a benefit clerk might need to make use of a terminal for 30-40% of the time in the peak hour. On this basis sharing would be difficult.* There will therefore be a requirement for many thousands of terminals (on a number of broad assumptions we have put the figure at perhaps 20,000 by the end of this decade, building up eventually to over 30,000).+

*In the computerisation of PAYE project Inland Revenue are planning on the basis of one terminal per clerk.

+For further details, see Background Paper F.

51. The main computer resources could be located at the existing central offices (where they are currently concentrated), at existing local offices or at an intermediate ('area') level,* or at a combination of these. We have assumed that no more than three tiers should be considered for the main computer structure. This gives 7 theoretical permutations (eg all processing at the centre, or a mix of local and area processing); but most are ruled by practical considerations.

52. Some activities must be done from the centre. Because our customers (the entire population) move from time to time, there must be a central index to allow earlier records to be located when people appear in a new locality. The collection and direction to individual accounts of NI contributions must also be a central function, since they are generally paid by employers whose addresses may bear no relation to those of their employees. There are, in addition, specialised functions (including work on a number of small benefits at North Fylde Central Office and the work of the Overseas Branch at Newcastle) which it may always be sensible to concentrate in a few locations and for which some computer support can be provided.

53. At the other end of the spectrum there is a clear need for some ADP facilities in DHSS and DE local offices. The question is not whether to place computer power there but how much. The trend in the computer industry is clearly towards more distribution. As a minimum, local office staff will need terminals with communication links to the main computer processors and data, wherever they may be. Such terminals (and their controllers) are, increasingly, small computers themselves which can utilize supporting hardware and software. It will make financial and technical sense to minimise the communications traffic by holding some data and programs locally - at least screen formats, data input validation programs and temporary collections of data prior to transmission. It could make sense to retain and update additional computer records in local offices - eg local indexes, basic personal identification, benefit history data - and commonly used application programs relying primarily on locally held data. In addition there is a growing long-term role for information technology generally within local offices - including microcomputers for specialist tasks (eg work on maintenance payments to beneficiaries from legally liable relatives); word processors (eg to issue better quality and more personal letters to

*We refer to 'areas' to differentiate from 'regions' and 'groups' both of which have specific size and management connotations; there is no necessity for the distribution of ADP resources to coincide with these existing units.

members of the public); intelligent copiers (eg to transmit documents between local offices or between local and regional offices) and - to link all these together - 'local area networks' enabling piece of equipment to be connected or disconnected quickly and easily to enable data to be transmitted between them.

54. Some ADP resources must therefore be provided at both local and central offices. It would in principle be possible to have just two tiers. However, we recommend that an additional intermediate tier, which we have called area computing centres, should be introduced. The reason is that a two-tier structure would require very large-scale computing facilities at either central or local level or both. The establishment of intermediate area centres would provide a more balanced structure.

55. The main draw-back of even greater concentration of computer resources at one or two central offices would be sheer scale of the enterprise: the Newcastle Central Office is already one of the largest computer centres in Europe and a highly centralised approach in the longer term would mean either a much bigger installation there or the creation of one or two more such installations. The technical size and complexity of a heavily centralised and integrated system (ie not just an assembly of separate systems on one site), supporting local offices for their full range of business, would be formidable with extremely heavy communications and transaction loads and highly complex software. A centrally-held database, for example, could be of the order of 60,000 megabytes - the equivalent of about 115,000 copies of 'The Times'. There could also be additional management problems. Despite back-up arrangements, the vulnerability of the entire social security system to a major failure there would be a serious problem. The concentration of expertise could create staffing difficulties. It would be difficult to overcome a sense of remoteness between the centre and the local offices it served.

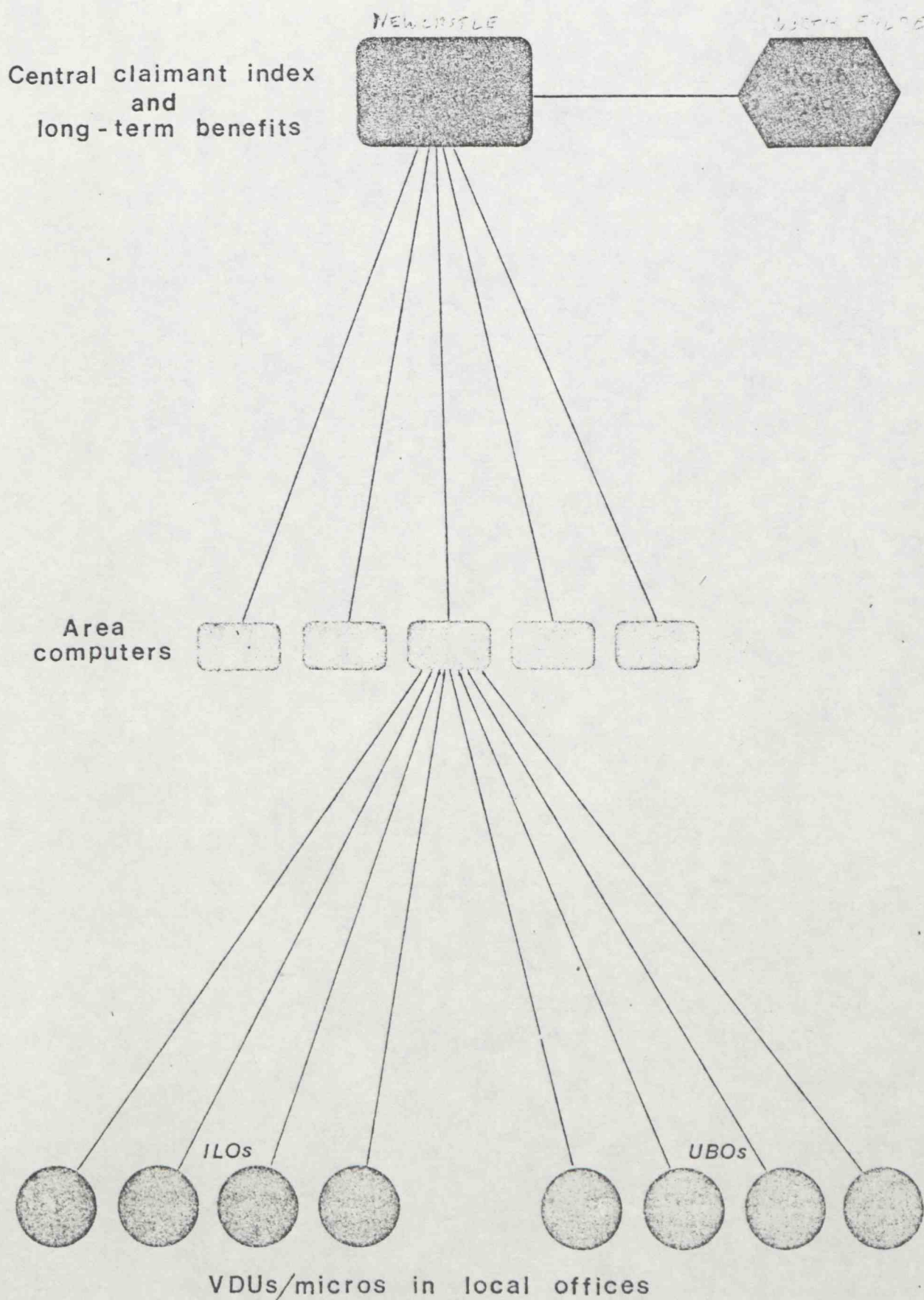
56. Heavy reliance on local office computing would create different problems. One is the technical capacity of the small machines which would be needed. Although this is a rapidly developing field, we are not yet at the stage when micro-computers can be said to have proven their ability to handle large-scale administrative work of the kind needed for social security operations. Hitherto, they have mainly been used for relatively limited and self-contained functions. A central aim of the strategy, however, is to provide a more

integrated operational system enabling an individual member of staff to utilise a wide range of shared data and programs. Something more sophisticated than the conventional free-standing micro-computer would therefore be necessary. Other areas where, as yet, micro-computers have been weaker than large machines have included the necessary sophisticated supporting software (eg for handling data and communications and for recovery from disturbance or breakdown) and in support and maintenance provision. Dispersal of main computing resources to over one thousand DHSS and DE local offices would create significant logistical problems such as distributing and updating programs identifying and correcting hardware and software faults and organising specialist support staff. In addition, the capital and running costs would be higher at present than in a less radically decentralised approach.

57. The creation of area centres, in addition to computing resources at both local and central office level, would provide a structure within which the worst problems of more extreme solutions could be minimised. If main records were held at area level, for example, the chances of locating a particular one quickly would be greater than if they were spread amongst every local office; while the database would be of more realistic size than if concentrated at one or two centres. Area centres would provide a more robust communications network; and a natural location for the payments function (see paragraph 42 above) and for contingency facilities and technical support for local offices. Above all, a 3-tier structure would provide a framework within which maximum flexibility would be provided to meet changing demands and changing circumstances.

58. The main draw-back would be the work involved in setting area centres up, although this can be minimised by opting for a relatively small number and by concentrating some together at existing centres and readily available sites. Preliminary analysis of the relative costs of a higher or lower number of centres suggests that the variation is not marked within the range 2-20. There are no overwhelming or managerial reasons for a particular number. Nor need each centre be physically located on a separate site. The more centres there are, the longer it is likely to take to establish a full national network. On the other hand, smaller centres and more of them would permit more manageable units. Further study will be needed in the next stage of the strategy to

PROPOSED COMPUTER STRUCTURE



NOTE: all telecommunications use fast telephone/digital links

Figure 1

establish the optimum number but for illustrative and costing purposes we have assumed that initially there should be seven centres to enable quicker implementation; this would not preclude the possibility of dividing the work between a larger number later. Final decisions about the extent of the centres' ultimate activity cannot be reached until they have been established and the options for further developments, particularly for more processing locally, have been assessed in the light of the prevailing circumstances. Nevertheless, to provide flexibility and to enable later moves towards a more integrated operational system, the centres should be planned from the outset for a gradually expanding role during the 1980s and 1990s. The broad pattern is illustrated in Figure 1, and the telecommunications implications are assessed in Background Paper H.

59. If the objective of establishing a coherent, efficient and economic organisation is accepted we believe it is inescapable that development should take the direction indicated in this section. Indeed, failing to reorganize social security information, communications and operations along these lines will become increasingly dangerous as the other organizations which interact with ours organize themselves to take advantage of the technology that is available, while our customers become increasingly dissatisfied with a standard of service that will fall further and further behind current expectations. The area of choice, and of risk, surrounds the issues dealt with in the next two sections - the specific changes to be aimed at, the 'migration path' along which they are planned to take effect, the time scale, the investment required and the returns to be expected.

III A WAY FORWARD

60. This section describes 14 projects through which the strategy objectives can be achieved. The projects are briefly outlined in Appendix 2. It also suggests a sequence and timing for them, summarised in Figure 2. The next section provides estimates of costs and savings calculated on this basis. The proposals, including the selection of the projects, have involved a series of choices, and therefore the rejection of a series of alternatives, as the design work has proceeded during the past year. It has not been possible with the resources available to develop alternative courses in equal detail, nor consequently to cost them with comparable accuracy. Section V, however, discusses possible courses which involve less change, less investment and correspondingly reduced savings.

61. In framing the proposals in this section we have kept a careful eye on the physical resources - staff, premises and equipment - which are available and on the constraints that they impose, including such factors as the dates by which existing computer equipment must be replaced (shown in Table 1; further information about resources and constraints is provided in Background Paper G). We have assumed that it will generally take 3 years from the development of a major new project to full national implementation and that no more than two major projects should be in process of implementation simultaneously.

Management and Control

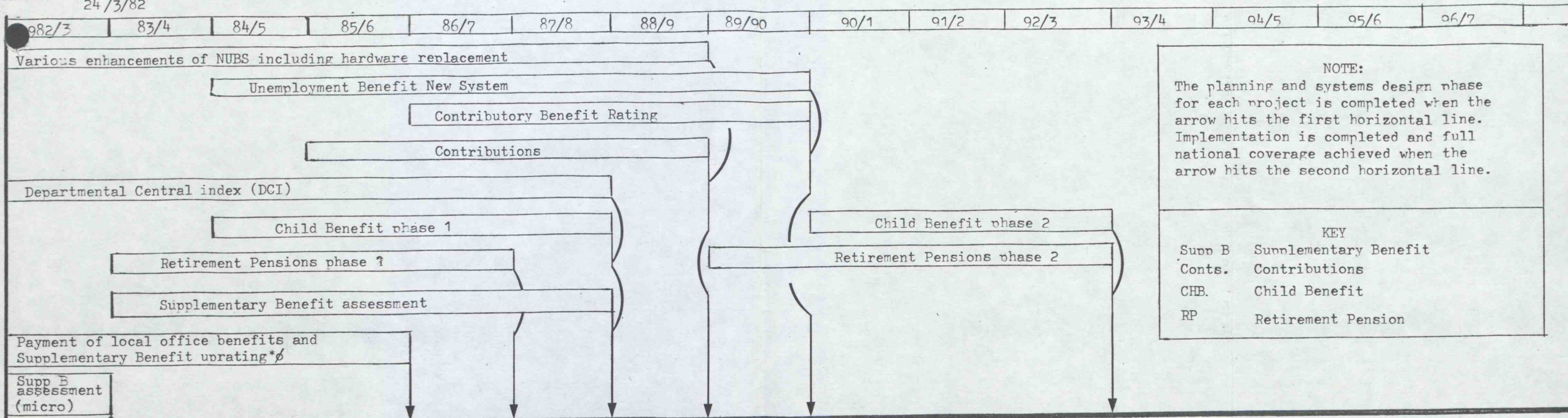
62. Responsibility for social security operations is at present divided between a number of separate commands, united only at the top. This applies even within ADP. Implementing the strategy will involve not only new technical methods but also a more fundamental shift in the perspective of operational planners and managers. The proposed changes can only be achieved with stronger co-ordination and control.

63. Building on the functional approach described earlier, particular installations and projects should be charged with designing individual segments of the planned system, conforming to uniform standards and protocols. They would thus become development centres - no longer solely concerned with providing a service to their immediate users. It will be critically important to find the most effective way of controlling and implementing the strategy proposals. We understand that it is proposed to take advice from management consultants outside the Department on this. It seems clear, however, that there will need to be a post at a very senior level charged solely with the direction and oversight of the implementation of the strategy; and it is also clear that to ensure co-ordination across Department boundaries, the Department of Employment should be invited to participate in the management of the strategy at a senior level.

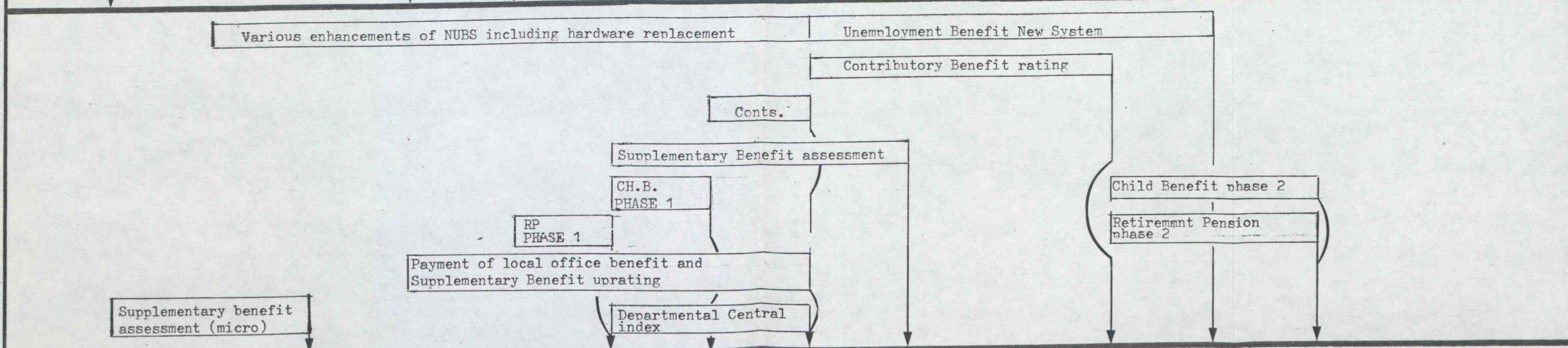
64. Whatever the management structure for implementation there would need to be a central team, combining the functions of the strategy team and the present social security computer branch. This group's main roles would be:

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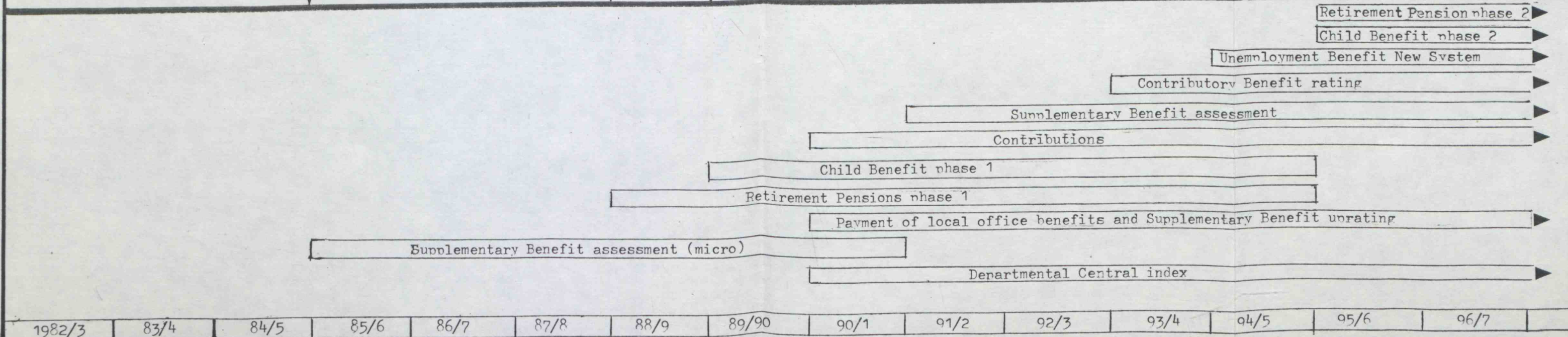
Planning and Systems Development



Phased Implementation



National Running



* This activity will involve the establishment of the main DHSS telecommunications network, and the first database application
 & See Fig 3

TABLE 1

SOCIAL SECURITY COMPUTERS AND THEIR FUNCTIONS

CENTRE	MACHINE NUMBER	MACHINE	FUNCTION	DATE ACCEPTED	DATE TO BE REPLACED
NEWCASTLE CENTRAL OFFICE	1	GRAFIX I	Computer input of microfilm for contributions recording	3/76	1986
	2	ICL 2980	Payment of Pensions Staff pay and records	9/77	1987
	3	ICL 2980	Payment of Child Benefit. Statistics	4/78	1988
	4	Twin De la Roux Cros- field OCRs	Optical character readers for girocheque reconciliation	2/79	1989
	5	2X SP600	Night line enquiry services to LOs (Datalink)	5/79	1989
	6	ICL 2980) ICL 2980)	Social security contributions recording and enquiry service for local offices	3/79	1989
	7			12/79	1989
	8	ICL 2982) ICL 2982)	Computerised index, girocheque reconciliation and back-up to machines 6 and 7	1981	1991
	9			1981	1991
NATIONAL UNEMPLOYMENT BENEFIT SERVICE	10	ICL 1904S) ICL 1904S) ICL 1904S)	<u>READING</u> Rating, computation and payment of unemployment and/or related Supplementary Benefits	8/73	7/83
	11			8/73	8/86
	12			9/76	8/86
	13	ICL 2956	Development machine for machines 17 and 18	4/81	1991
	14	ICL 1904S) ICL 1904S) ICL 1904S)	<u>LIVINGSTON</u> Rating, computation and payment of unemployment and/or related Supplementary Benefits	10/76	1986
	15			10/76	1986
	16			3/78	1987
	17	ICL 2966) ICL 2966)	Extra machines for the increased UB workload	1982	1992
	18			1982	1992
N FYLDE CENTRAL OFFICE	19	ICL 1904S	Maintaining files and processing of claims to AA, WP, FIS, MOBA ENCIP/NCIP and IDB	7/74	10/83
	20	ICL 1904S		9/79	4/83

- . to support the head of the strategy programme in overseeing its development generally and rolling it forward. This means inter alia watching the development of technology and of social security, social policy etc and responding with adjustments to the strategy;
- . to take part in the design of different elements of the strategy, making sure that individual projects were in line with common standards, consistent with departmental plans; to this end monitoring progress through established reporting and reviewing procedures;
- . procurement of equipment and associated matters;
- . defining standards for the storage and use of data, communications networks and the interface between the system and the operational staff.

65. It will be necessary to involve people with skills and interests going well beyond ADP in the implementation process. Direct Department of Employment involvement will be essential. A number of early tasks can be seen:

- (a) determine the priority functional areas to be tackled and allocate responsibility to particular development centres for implementing them;
- (b) implement the decision to adopt the PROMPT* methodology for monitoring and controlling progress on computer projects throughout DHSS;
- (c) assess the training needs in new ADP techniques and make arrangements for them to be met (see paragraph 66 below);
- (d) establish a data administration, responsible for data standards and for the form and extent of use of database techniques. (Specific tasks for 1982/83 will include an evaluation of available database packages and their associated application development aids; investigation of aids to programmer productivity and how they might be applied in DHSS; development of a methodology for converting benefit rules into computer code; and continuation of data and functional analysis);
- (e) specify details of the communications network, with particular reference to communications between local offices and area centres;
- (f) specify system interface standards, covering dialogue design, terminal features and environmental factors;
- (g) develop and initiate micro-computer projects (see paragraphs 77-82 below);

*Project Resource Organisation Management Planning Techniques.

(h) assess the potential contribution of new 'electronic office' products, especially local networks, to the part local offices will play in the strategy.

These tasks will not be pursued by the central team in isolation: there must be the closest co-operation between them and the existing ADP teams for all strategy activities.

66. A vital question is whether there are sufficient ADP staff with the requisite expertise. DHSS has a considerable number of capable and experienced ADP staff, but the design and introduction of integrated systems using new techniques will be an additional task, superimposed on the continuing development and maintenance of current systems. Furthermore, although a number of our proposals, such as the use of database and the functional approach, should in time limit the need for additional staff, there is at present a lack of expertise in these very areas. We have looked at the scope for achieving higher productivity through partial automation of systems and programming work; but whilst techniques like end-user programming and application generators may have a significant impact in the long term, they are unlikely to provide early assistance.

67. Some additional resources will therefore be needed, particularly in the early years of the strategy. This requirement can only be met by the deployment of a number of outside consultants and allowance for this has been made in the costings. A programme of training for DHSS ADP staff will also be needed to familiarise them with the new methods. ADP staffing implications are discussed in more detail in Background Paper G.

Central Index

68. A vital part of the future structure will be a comprehensive central index covering NI contributors and social security beneficiaries and their dependants. This will enable all existing records to be traced quickly and help ensure that they are more accurate. The existing Genral Index at Newcastle has recently been computerised and an individual's NI or pension number can be traced interactively at Central Office from personal data such as name or date of birth. As it stands, General Index does not meet strategy

requirements. In particular, it does not provide on-lines access from elsewhere; indicators of where all records relevant to an individual are located; cross references for dependants, aliases, alternative payee etc; or access if necessary via a range of keys (eg other benefit numbers, multiple keys).

69. The limitations have already led to consideration of an additional index for child benefit purposes. A feasibility study has recommended establishing a Child Benefit Index by late 1984. This would provide many of the facilities needed for the strategy. There would be merit, therefore, in designing it from the outset as the first stage of a Departmental Central Index (DCI). The development, in outline, could be to design and establish a Child Benefit index by 1984; extend coverage to contributions and RP records by 1987; and include local office records as area computer centres come on stream. The relevant geographical portion of the DCI would be duplicated at area centres, so that only queries not resolved there would need to be channelled to Newcastle and the index would be immediately available to local office clerks.

70. One possibility, which we do not include as a firm recommendation but which appears sufficiently attractive to warrant further study, would be to use plastic cards as a means of accessing this information. DHSS plans to issue new NI numbers in future on plastic cards in place of the present flimsy cardboard and it is proposed that these should be machine readable in the same way as those issued by the banks. They would contain the individual's name and NI number. At interviews etc they could be used to identify the individual to the system and summon up the appropriate record by inserting them into card readers attached to terminals. It is conceivable that the efficiency of the traditional signing-on procedure for unemployment claimants could be improved, and worthwhile staff savings secured, by the use of plastic cards in this manner. However, the practical and other implications would need careful consideration before a decision could be taken.

71. The DCI would be a powerful tool, holding or providing access to personal information about virtually every citizen. Controls to ensure privacy and security would be essential but it should be emphasised that the index would not provide any information that is not currently obtainable from the present

system. What it would do is to take summary information much more readily available to staff and thereby make a major contribution to efficiency, accuracy and service to the public.

72. Detailed decisions on how best to maintain the security and privacy of the personal information which DHSS has to hold will be taken as the strategy advances. There are a number of techniques to control access to personal information, including encryption of sensitive data (so that while it is stored or transmitted it is unintelligible), passwords, badges, voice prints and physical barriers preventing public access to the computer. Local office clerks should have access, as now, only to the records of people in their locality. Additional procedures will be needed to access or obtain other records. These could include authorisation by another person, and a report of the access to the manager. Specific records could be 'locked out' unless special authorisation was given. Another important safeguard for the public will be appropriate provision for individuals to inspect personal information held about them on computer.

Local Offices and Area Computer Centres

73. The system of linked area computer centres is the heart of the strategy. Their initial function would be to support the local offices, holding records, processing claims and making payments. But once these centres are in place the basis for the structure described in Section II and illustrated in figure 1 will have been laid. Work is proceeding on detailed proposals for the first phase of this project, including the order in which benefits and functions should be tackled, the proposed timescale and estimated costs and savings. For illustrative and costing purposes we are assuming in this paper that there will be only 7 area centres, thus minimising the problems of securing new accommodation and setting them up (see paragraph 58 above).

74. On these assumptions we estimate that the first area centre could start to function in 1986 (having completed the steps outlined in figure 3) and the last one in 1990. In parallel, the second phase of functions (which we have assumed to be supplementary benefit assessment) would be developed and implemented: national coverage for this would be achieved by 1991. National coverage of incapacity benefits rating would be achieved by 1993 and full incorporation of unemployment benefit by 1994.

FIG 3: PAYMENT OF LOCAL OFFICE BENEFITS
AND SUPPLEMENTARY BENEFIT UPRATING

Expanded version of planning and system
development phase in Fig 2.

1982	April	Systems specification		
	October	Issue of operational requirements (computer)		
1983	January	Short list		
	April	Discussions		
	October	Memorandum of agreement		
	November	Invitations to tender		
1984	December	Submission of tenders/evaluation		
	February	Contract		
	April	PROGRAMMING	Issue of operational requirements (terminals)	May
			Issue of operational requirements (communications equipment)	June
			Short list	
	October		Discussions	October
1985	Computer delivery			
	April		Memorandum of agreement	April
			Invitation to tender	May
			Submission of tenders/evaluation	June
			Contract	August
			First delivery	October
	November			November
1986	April	Testing		

75. A local office group is being set up to work out the changes in working methods that will be necessary as computer assistance becomes available and the improvements that it will make possible in service to the public and the working environment of the staff in local offices. It is clear that the changes could, over time, be dramatic. At present, for example, about 8,000 different forms are used within DHSS (not counting approximately 12,000 which go to claimants and others outside the system). Enquiries on VDUs require no input documentation or printed output, so large numbers of these internal forms should go. The bulky volumes of code instructions should be radically reduced, with procedural instructions in particular either replaced by software or presented on the VDU. There would be less need for the rows of filing cabinets which often dominate offices. Indeed, although the DHSS and DE are never likely to have 'paperless offices', there should be a major reduction in the volume of paper used and retained.

76. As Working Paper I stressed, getting the right relationship between the technology and the staff who use it will be crucial. The new methods could mean more satisfying work in local offices, with less form-filling and paper-work, fewer frustrations due to the non-availability of records or information or long delays before they can be obtained, and less dependence on other staff in seeing a case or an enquiry to a satisfactory conclusion. Greater emphasis on direct public service - with the ability to provide it - would be a real benefit to staff as well as customers. Staff would have the satisfaction of using modern tools and not being left behind by comparable outside organisations (banks, building societies etc) and even by claimants themselves. All this will, of course, have implications for the training of local office staff.

77. Many factors could vary the illustrative timetable for introducing computer support to DHSS local offices. But on the assumptions listed above, they would not start to receive this kind of immediate help with daily work until the second half of this decade and would not have a full range of support until well into the 1990s. Given the pressures today this is too long. We have therefore considered interim improvements and recommend that a new project, for micro-computers to help with supplementary benefit work, should be launched as a matter of urgency.

78. The purpose would be to provide some computer help quickly to hard-pressed local office staff in one of their more difficult and laborious tasks, calculating supplementary benefit entitlement. As the project would be an interim step, to provide help until better and more comprehensive assistance can be provided in the latter 1980s, it should be a simple scheme which can be implemented quickly. We therefore recommend:

(a) the system should merely involve entering details of a claimant's income and commitments and producing a print-out of the calculations. It would not retain records for subsequent interrogation; this would limit the uses of the system but would allow quicker and cheaper implementation;

(b) the system should not attempt to cover every conceivable situation; to keep it simple, unusual cases should be reserved for clerical handling (as now);

(c) to speed up implementation, the system development work might be done by an outside software house (selected after competitive tender). This work should be completed in the 1982/83 financial year.

The system would be used by DHSS staff after the initial information had been assembled through interview or through the postal claim form. In principle, it could also be used by UBO staff in the same way, at least for first and straightforward supplementary benefit claims, although some logistical problems - accommodation, office layout, procedures, training etc - would need to be overcome.

79. An interim system for use by staff would be likely to produce modest financial savings. However, the benefits would go wider. They would include an assurance to staff and the public that DHSS was in practice as well as theory providing computer assistance; a worthwhile improvement in accuracy; a hedge against any delays in the development of the full strategy system; and perhaps most significant, the first practical experience for local office staff in direct working on a routine basis with advanced computer hardware.

80. Other possible uses for micro-computers in local offices - including control of overpayments, liable relative work, direct payments to outside authorities (eg for rent or fuel) and Housing Benefit calculations - are also being explored. One such application is a 'self-service' micro-computer system,

designed to enable members of the public to discover for themselves through a straightforward dialogue with the machine whether they may be entitled to benefits. This system is being developed in collaboration with Dr Nigel Gilbert of the University of Surrey, who produced the prototype, and will be tested experimentally in selected locations in 1982 and 1983. If the tests are successful, it could form the basis of a much needed improvement in this aspect of our service. Provision for an 'advice and information project' has been included in the costings.

81. A further possibility which appears sufficiently attractive to justify investigation and experimentation would be to develop a modified version of the micro-computer assessment system, to be used by members of the public directly, at least for the collection of initial information. Staff would still need to validate and authorise any payments, and would of course have to determine any discretionary or unusual features. Work on the advice and information micro-computer project will throw light on the extent to which such a self-service approach is feasible, and in the early years of the strategy this approach might turn out to be only moderately successful: however, it could ultimately provide some of the public with a more convenient and cheaper service and should be explored on an experimental basis, perhaps in both ILOs and UBOs.

82. Micro-computers and other 'electronic office' equipment could play an increasing role in all kinds of local office work, including administrative tasks outside the processing of benefits. We recommend that the proposed local office group and others should launch further studies in this area. It will be important to maintain co-ordination in the deployment of micro-computers and other office equipment within the strategy.

Implications for the Unemployed

83. One important consequence of these proposals would be the closer integration of the unemployment benefit service - at present run from quite separate computer centres - with the rest of social security administration. This makes sense in both social and technical terms: most UB recipients also claim other benefits, particularly supplementary benefit; and there are major similarities between UB and sickness benefit.

84. We have assumed that UBOs would remain the normal contact point for unemployed claimants but that their role should expand, in accordance with the whole person and one office approach, to cover at least straightforward supplementary benefit claims from the unemployed. During the 1980s the present National Unemployment Benefit System (NUBS) would continue to function as an autonomous system serving UBOs alone. Hardware replacement would take place by 1986 as planned and other enhancements would be introduced as necessary. The most important would be the office-by-office replacement of the current teletype terminals in UBOs, as they wear out, with more advanced VDUs; and the introduction of improved enquiry facilities so that UBO staff can readily obtain more information from the NUBS computer centres. As suggested above, by the mid-1980s micro-computers might be used in UBOs as well as ILOs to handle straightforward supplementary benefit claims - used either by clerks or (initially in an experimental way) by claimants themselves. The use of micro-computers within UBOs would raise logistical problems which would need close consideration before a decision could be taken to proceed. The possibility of handling more supplementary benefit work on the NUBS computer might also be explored.

85. By 1990 the area computer centres would be established, and would be introducing the full supplementary benefit assessment module to ILOs in place of the more limited micro-computer service. It would be possible to extend this facility to UBOs at about the same time (say, 1990/1992). This would also provide UBO staff with access to the same records and central index as ILO staff; and could provide electronic mail facilities (via the area computer centres) between the offices. UBO staff would use the same VDUs as for NUBS.

86. By the early 1990s the present UB software will need to be re-written. In parallel with other activities, therefore, systems design and programming would be taking place in the late 1980s; the new version would be designed not as an autonomous system but as a part of the general purpose benefit processing system provided by the area computing centres - in accordance with the functional approach. It would therefore utilize and contribute to the existing database, payments module and other functional segments (eg for other similar benefits) which then existed or were being developed. The revised system could be phased in to the area centres and UBOs over 4 years,

designed to enable members of the public to discover for themselves through a straightforward dialogue with the machine whether they may be entitled to benefits. This system is being developed in collaboration with Dr Nigel Gilbert of the University of Surrey, who produced the prototype, and will be tested experimentally in selected locations in 1982 and 1983. If the tests are successful, it could form the basis of a much needed improvement in this aspect of our service. Provision for an 'advice and information project' has been included in the costings.

81. A further possibility which appears sufficiently attractive to justify investigation and experimentation would be to develop a modified version of the micro-computer assessment system, to be used by members of the public directly, at least for the collection of initial information. Staff would still need to validate and authorise any payments, and would of course have to determine any discretionary or unusual features. Work on the advice and information micro-computer project will throw light on the extent to which such a self-service approach is feasible, and in the early years of the strategy this approach might turn out to be only moderately successful: however, it could ultimately provide some of the public with a more convenient and cheaper service and should be explored on an experimental basis, perhaps in both ILOs and UBOs.

82. Micro-computers and other 'electronic office' equipment could play an increasing role in all kinds of local office work, including administrative tasks outside the processing of benefits. We recommend that the proposed local office group and others should launch further studies in this area. It will be important to maintain co-ordination in the deployment of micro-computers and other office equipment within the strategy.

Implications for the Unemployed

83. One important consequence of these proposals would be the closer integration of the unemployment benefit service - at present run from quite separate computer centres - with the rest of social security administration. This makes sense in both social and technical terms: most UB recipients also claim other benefits, particularly supplementary benefit; and there are major similarities between UB and sickness benefit.

1990/4. Additional communications links would be necessary where UBOs were not already linked to area centres. The workload of the existing NUBS computer centres would gradually contract as UBOs were taken on by the area centres; in the end they might be upgraded to become area centres handling the full range of social security business.

87. The result would be the system illustrated in figure 1, with both UBOs and ILOs linked to and supported by general purpose Area Centres. We have made no assumptions about changes in the role of UBOs, except that the unemployed should be able to make initial claims for supplementary benefit there, to avoid having to visit two separate offices simply to claim benefits. By the early 1990s, once the strategy infrastructure was established, it would be possible to extend the range of service now provided at UBOs quite significantly: any or all of the facilities extended to ILOs might also be provided to UBOs.

Contributions

88. The recording of the receipt of contributions is always likely to be a central function. The contributions system has recently been rewritten to coincide with the current replacement of hardware and the next hardware replacement will not take place until 1989. Although the contribution recording system is thus up to date, the strategy will require improvements in the enquiry facilities.

89. Local offices will require immediate access to recent contribution records to calculate entitlement to short-term contributory benefits. Such records would be held at area computer centres as part of the data relating to the individual and would supercede the Datalink system by which DHSS local offices now obtain contributions information from Newcastle.

90. On line availability of contributions data for long term benefits is also desirable, eg to provide better and speedier information to people below pension age who want to know their pension position. But the difficulties of providing such rapid access are much greater. The whole contributions record is required instead of the recent record and this

can be lengthy and sometimes involve the contributions of more than one person (eg a woman's own record and that of her husband). This kind of rapid access also requires that all contributions details should be held in the computerised record but some are not at present and it would require a major effort to put them on to computer. We recommend that this matter be examined further in the light of the effort required and the latest technology (particularly optical discs) with a view to establishing the costs, benefits and practicability of providing on line interrogation facilities with existing computers.

91. Prior to 1989 the existing contributions system will need to be redesigned on lines compatible with developments elsewhere in DHSS. This will involve taking account of the DCI and its use, and devising an on-line transaction processing system for pensions awarding to bring it in line with the facilities which will have been developed for determining entitlement to other benefits. The question as to whether the replacement machines should be used for contributions work alone, or whether the whole of the computing requirement at Newcastle should be embraced by a single replacement programme, also needs examination.

Pensions and Child Benefit

92. The strategy would permit the decentralisation of pensions and child benefit in the longer-term. There are arguments for and against doing so, but it is not a practicable proposition for some time. The area computing network, into which pensions and child benefit could fit, will not be completed until the latter 1980s and it will then be heavily engaged in taking on work related to short-term benefits. What is important is that the option should be left open to enable pensions and child benefit work to be dispersed if that proves desirable at some later stage.

93. The pensions and child benefit computers are due to be replaced in 1987 and 1988 respectively. As the systems have been revised fairly recently it would be possible to transfer them onto the replacement machines and defer further development until the beginning of the next decade. However, this would mean that some desirable facilities, such as on-line enquiry (and eventually on-line up-dating), will not be available for a long while and no progress would be being made towards strategic objectives.

94. We propose therefore that these systems should be redesigned in accordance with strategy principles by the time of hardware replacement. This would mean that the new systems would be developed in a modular fashion in line with the functional approach; use database techniques for the structuring and storage of records; conform to the agreed protocols and standards; incorporate/enhance relevant modules developed elsewhere; and be designed in such a way that retention of these tasks at Newcastle or distribution to area centres would be practicable. On-line enquiry and updating of records from within Newcastle should also be made possible. We recommend that studies be put in hand to determine the steps necessary to achieve this and to what degree the administration of these two benefits can be combined into a single operation.

95. In practical terms, the effect of all this would be that the payment routines, which would already have been developed, would be used again at Newcastle; the writing of new programs for determining entitlement, changes of circumstance etc would be made easier by use of generalised routines previously developed for these functional areas; and input and validation of data could also be based on routines already developed. Once the area computer centres were installed and linked to the revised Newcastle systems, local office staff would be able to obtain information on-line and input claims and the other information directly to Newcastle via the VDU, but this would not take place until well into the 1990s.

96. It is not necessary to specify now the precise phasing of subsequent development of these systems into the 1990s. If it were agreed to move further in the 'area centre' direction

- . Newcastle/Washington would become an area centre (or concentration of several) and one of a number of payment centres for all benefits;
- . the determination of entitlement to child benefit would be undertaken at area centres;
- . consideration could be given to distribution of contribution records and the related pensions awarding function.

Although no decision is required on these matters for a long while, the costings illustrate the effects of decentralisation to areas in 1994/95.

North Fylde Benefits

97. The computer equipment at North Fylde Central Office is shortly to be replaced and arrangements are in hand to transfer the present systems. Around 60 per cent of North Fylde computer work is on health, rather than social security matters. War pensions, which are administered from North Fylde are being reviewed in the 'whole benefit' programme. We do not therefore make any major immediate proposals for North Fylde benefits although any changes should, of course, be made in line with the general strategy. For instance, the concepts of database and functional development should be introduced as quickly as possible and details of social security beneficiaries should be included in the proposed Departmental Central Index when that is created. About the early 1990s summary payment records might be made available on-line to area centres and the full records for some benefits, eg FIS, might be decentralised to area centres, together with the payment aspects of other benefits. We recommend that during 1982 North Fylde should draw up a broad plan for the integration of its benefit procedures within the proposed strategic framework. The analysis should include an assessment of the scope for a unified data base to replace the existing separate benefit files.

Summary

98. In summary, the outcome of the strategy would be a major extension of computer assistance to the work of DHSS and DE. It would mean significant changes in the character of local offices and the working environment of staff. The implementation process is summarized in Figure 2. For local offices, the main steps would be:

- . from around 1984 micro-computers would be used for supplementary benefit assessment in ILOs and possibly UBOs;
- . in the mid-1980s staff in UBOs would start to obtain more information directly from the NUBS computer centres, using modern VDU terminals;
- . from 1986 the first ILOs, and from about 1989 the first UBOs, would start to use VDUs for inter-active working - initially for a limited range of work but gradually covering more and more functions and benefits.

All local offices should be equipped with some VDUs by 1990, but national coverage of all short-term benefit applications, including unemployment benefit, would not be achieved until 1994. One important spin-off would be to make it far easier for staff in UBOs to process supplementary benefit claims along with claims to UB.

99. In the meantime, revisions of the major benefit systems at Newcastle would allow a decision to decentralise to area centres either the total processing of those benefits or some functions of them. This, of course, assumes that capacity would have been provided at the area level to encompass the work. The range of business of North Fylde Central Office would be less affected but should be brought into line as the strategy progresses.

100. By the early 1990s DHSS and DE would have the infrastructure to effect a major improvement in the quality of service, along the lines proposed in Working Paper I. The information readily available to staff would be greatly improved, enabling more efficient working and speedier resolution of queries and opening the way to a more comprehensive advice and information service to the public, whether they call in person, write or telephone. If the introduction of new computing facilities is accompanied and followed through with organisational changes - eg in the layout of local offices and the organisation of work within them - it will be possible to make real progress towards a 'whole person' service to our customers.

IV COSTS AND SAVINGS

101. More economical administration was one of the major objectives established in Working Paper I. Unless significant administrative savings can be made, the scope for securing objectives like improved service to the public and greater job satisfaction for staff will be severely limited.

102. Whilst it is not possible at this stage to cost with absolute precision and certainty the way forward set out above, broad costings have been undertaken. This need not imply commitment to the whole programme. Review points along the way are essential to monitor progress, confirm that targets

(including costs and savings) are being met and, if not, to raise the question whether to call a halt or change direction. Such a decision might be prompted by a number of considerations - financial, technical, managerial or policy. Additionally detailed costings will be necessary for individual projects and developments within the strategy when approval for them is sought.

103. Costings have been projected forward 20 years (to 2001/2) and are based upon November 1981 prices. A major difficulty has been to determine the baseline against which our proposals should be measured. We have taken this to include those computing and associated costs which DHSS would have had to meet to keep existing systems going in the absence of strategy - some £900 million over the same period. The additional investment necessary to achieve strategy objectives is therefore the critical figure. A financial risk analysis model has been constructed to assess the effect on savings of delay or changes in costs.

104. Table 1 of Appendix 3 presents a summary of costs and savings, and shows that:

- . costs amount to some £700 million for the 20 year period (rather less than 3% of total administration costs over the same period or 0.14% of total benefit payout);
- . savings amount to about £1,900 million gross or some £1,200 million net with a cumulative net present value (NPV) of £550 million (after discounting);
- . yearly savings begin to exceed costs after 8 years and when a 5% discount factor is applied a positive NPV emerges after 11 years (1993/94).

In addition to savings there would be substantial added value for the public from improved advice and information and a faster, more accurate and more convenient service.

105. The most important element of these savings arises from a potential reduction in staff numbers across DHSS and DE over some 15 years of the order of 20-25,000, from a total of over 100,000. The exact level achieved will depend on a number of factors including the extent to which savings were ploughed

back into improvements in the quality of service. Staff too would benefit from the improved facilities available to them but we think a proportion of the estimated savings would need to be set aside to provide more tangible incentives. The savings could not be achieved suddenly, but would build up as the strategy was implemented: the aim should be to achieve them through natural wastage. Changes in the nature and quality of work would also raise questions about the appropriate grading of jobs: such issues would need to be considered carefully, in consultation with the relevant trade unions. We have looked at the level of staff savings attained in other large Government computing projects and noted that they tend to fall short of original estimates in extent and timing. If only three quarters of the postulated savings were actually achieved, the strategy would produce net savings of some £700 million.

106. Conversely, our calculations do not take account of variations in relative costs. Computers can be expected to improve dramatically in cost/performance terms; and our economists advise that 2% per annum might be added to staffing costs over the twenty year period. The latter change would increase estimated net savings to £1,750 million. A number of other costings assumptions are deliberately cautious. On balance we think the level of savings assumed is realistic and achievable.

107. A total of fourteen projects have been identified within the strategy, of varying degrees of size and complexity (see Appendix 2). Ten achieve a net saving (in cumulative NPV terms) in their own right. The central team, included as a separate 'project', is a cost of carrying forward the strategy at all. The loss incurred by the remaining projects is modest in relation to the strategy as a whole, and is to some extent due to their position in the strategy timetable; they all contribute to meeting the strategy objectives and their value should be assessed in that context.

108. Ministers are anxious to improve the level of benefit take up, but it is difficult to estimate the effect the provision of a better service and improved advice and information might have on this. The main benefits likely to be affected are supplementary benefit and FIS. If a 5 per cent reduction in the amount of unclaimed benefit were achieved, the additional cost would be £40 million and £7 million per annum respectively.

109. The calculations suggest a strong financial case for moving ahead with a strategy of the kind proposed. As is normal with such developments, significant investment is required before benefits can be expected. However, the benefits would clearly be substantial, and would include considerable savings in addition to a much better, more personal service for the public and a working environment for our staff similar to that increasingly found in comparable organisations.

V VARIATIONS

110. Earlier sections of this paper present proposals for a cohesive system covering the administration of all social security benefits. They seem to us the most promising way of meeting the objectives and desiderata proposed in Working Paper I. But they are not the only possibility and are open to question on a number of grounds: it might be argued, for example, that they take too long to achieve results, or that they require too much initial investment, are too ambitious and would make unrealistic demands on management. We have therefore explored the extent to which variations or alternative approaches might be adopted without jeopardizing the central purposes of the strategy.

111. There are a number of dimensions of the strategy which might, at least in theory, be altered:

Aims. The strategy aims were laid down in Working Paper I and can be summarized as improving service to the public, achieving administrative savings and improving the jobs of staff. It was not within our terms of reference to alter these broad aims, and we have therefore not considered alternatives which would, for example, provide an even better quality of public service but which would provide no net administrative savings. However, there is scope for altering the balance of trade-offs between the main objectives and the extent to which they are achieved; we have been particularly anxious to identify variations which would require reduced investment.

Degree and type of computerisation. The strategy proposals are for a highly computerised system. A less extensive use of computers could be achieved by:

- (a) computerising some benefits but not others;
- (b) within each benefit restricting further the range of cases covered; or

(c) within each benefit computerising some functions but not others.

Variations along the lines of (a) or (b) are not incompatible with our main proposals: it would, for example, be possible to undertake some but not all of the individual projects listed in Appendix 2. Variation (c) is touched on below. Variation is also possible in the type of computerisation adopted - eg batch or on-lining working.

Location of computing resources. As explained in Section II above, the strategy involves structuring computing resources in three tiers. To abandon this - eg to opt now for a predominantly local computing structure - would add significantly to the technical risks and uncertainties and has therefore been ruled out. However, the strategy would leave open the precise location, within the three tiers, of individual functions and services; decisions would be reached in the light of the technical and cost considerations at the time.

Common approach to data, functions, communications and system interface. These proposals are central to the strategy: it would be possible to dispense with the common approach in these areas, but we see no substantial advantage in so doing and it would seriously jeopardize achievement of the ultimate strategy objectives, even at a later date. However, there is scope for debate about the precise standards and techniques to be adopted, and how they can be applied most sensibly in individual developments.

Degree of integration. The strategy aims at a modular but highly integrated system. We have considered whether a continuation on less closely integrated lines would enable the main objectives to be achieved at less cost and with less difficulty. A highly fragmented approach would be incompatible with strategy objectives, but a middle way - involving a number of relatively independent systems with some improvement in their capacity to link harmoniously together - would be possible and has been given some consideration.

Sequence/timing of projects. Section III presents an illustrative implementation plan. The details must be regarded as provisional until detailed studies of individual projects have been completed. There is some scope to alter the sequence of projects or to accelerate or slow them down eg to advance the return on investment or spread it over a longer period.

112. Clearly the range of variants possible by altering these dimensions is immense. Within the time and resources available we have considered a small number of alternative approaches chosen to illustrate the variations most likely to prove worthwhile. The specific aim has been to develop more modest proposals which would reduce the investment required, lower the level of technical innovation and limit the demands upon management. These approaches have not been worked up in the same detail as the full strategy proposals.

113. Under the first of these alternatives a payment system would be developed for locally administered benefits and standard record formats adopted over time for data stored in all social security computer systems. A centralised information source built on the central index concept would be made available through video terminals across DHSS and DE. It would include identity, contributions and benefits in payment data (the last of these supplied by daily update from the payment systems). The central offices would otherwise continue to develop in relative isolation. Micro computers would be used extensively in local offices to provide assistance where there were clear opportunities for staff savings, cost reductions or improvements in effectiveness: some benefit functions would be computerised but by no means all.

114. The second alternative would be rather more ambitious and would concentrate on parts of the main strategy that offer the best return on investment. This would mean going ahead with the modules for payment and uprating of locally administered benefits, supplementary benefit assessment and the calculation of UB entitlement. The first two include computerizing large areas of clerical work; the last involves replacing an already computerised system with a more advanced and integrated one. To this would be added a centralised information source as envisaged for the first alternative. Again, there would be little fundamental change at the central offices. Four variants of this broad approach were devised, with different network of terminals giving access to information held centrally and with different levels of support for staff. More detail about these alternatives and their likely costs and savings is given in Appendix 3.

115. The more modest of these approaches in particular would certainly reduce the technical and managerial difficulty of implementation and would require less investment than the full strategy proposals. The risks - technical, managerial, financial - would therefore be less. However, the benefits would also be reduced. The information readily available to staff and the public would be better than it is today, but would not be comprehensive; there would be severe limits to the extent to which the 'whole person' approach could be achieved. A lot of staff effort would still go into processing paper, maintaining records and trying to obtain information from elsewhere in the system. The financial savings would also be reduced. The calculations summarised in Appendix 3 show that amongst the various costed approaches, the

rate of return improves with the size of the investment. After discounting costs and net savings, the return on investment amounts to 50 per cent for the most limited alternative over the 20 year costing period, but rises to 120 per cent for the most ambitious - a rate which broadly equates to that of the proposed strategy itself. As already explained, the costings of these variants are less precise than those of the main strategy, but we believe they are of the right order.

116. Further refinement of these alternatives and their costings might improve their cost performance, but there seems little doubt about the trend: higher levels of investment appear to provide a better rate of return. Other alternatives can no doubt be devised and we cannot be certain about their respective performance. But there are a number of reasons why we think this broad relationship would be likely to obtain under most permutations of the strategy:

- . three large projects (payment of local office benefits, supplementary benefit assessment and unemployment benefit) all show a high rate of return and contribute the bulk of strategy savings. The more of them that are included the better the net return is likely to be;
- . any viable strategy will require investment, eg in computer support to local offices. The more comprehensive variants will provide an infrastructure which could be used more widely. This allows the initial cost to be spread over a larger number of projects; and means that - once constructed - the marginal cost of incorporating further areas of work falls;
- . conversely a limited infrastructure restricts the savings which can be achieved: for example, full computerisation of the administration of a benefit enables the maintenance of paper files (a laborious activity) to be very substantially reduced, whereas partial computerisation means that both computer and paper records are needed and must be maintained;
- . the cost of the cheapest alternative, which relies heavily on micro-computers, is significantly increased by the need to replace these more frequently than the larger machines.

117. We have considered the possibility of variants designed to achieve more substantial benefits than the main strategy proposals, or to achieve them more quickly. Cost and practicability are the major constraints. The strategy does involve the use of micro-computers on an interim basis, to bring forward the first gains. We could see no ways of achieving substantial additional benefits, or of achieving them significantly faster, which did not carry with them unacceptable additional costs and/or risk.

118. Consideration of possible variants has confirmed our present view that development along the broad strategy lines suggested in Section II above appears the most promising way forward for social security operations. It is noticeable, for instance, that the most attractive variants in terms of investment return share the same broad direction as the main strategy, even though they do not go so far down the road. However, this is not to dismiss the possibility of further ideas and suggestions - not least in response to this paper - which could lead to the formulation of a preferable approach. Nor is it to suggest that adoption of the strategy should mean the imposition of a rigid or immutable blue-print which must be followed unswervingly. On the contrary, a great many important issues will remain open and will only be decided in the light of experience and the balance of factors prevailing at the time individual decisions are needed.

119. The suggested broad timetable for reaching decision on the implementation of the strategy is illustrated in Figure 4. The empty circles show when decisions to develop particular projects on strategy principles will need to be taken; the full ones indicate decisions on implementing the developed system on the ground. At each point it will necessary to assess the financial and technical implications of proceeding in accordance with strategy principles, including any additional costs and difficulties they might impose, and the possible variations, eg to meet differing circumstances, minimise costs or ease implementation.

120. In addition to these individual decision points, it will be a prime function of strategy management continuously to monitor and report on progress and identify particular problem areas where a change in direction may be needed. Beyond this, however, as suggested in Section IV above, there will need to be a number of formal review points at which the future of the strategy as a whole is considered by top management. Five suggested dates are shown in Figure 4, and we have looked at the possible implications of a decision at each of them not to proceed with implementation of the full strategy proposals. The first, a decision at the end of this year not to go ahead needs no comment. The next would occur in March 1985 when implementation of the supplementary benefit micro-computer system had been completed. Termination at this point would lead to a marginally positive NPV of £9 million over the strategy period, but involve nugatory costs of £15 million mainly for the area centre development work.

FIGURE 4: STRATEGY DECISION TIMETABLE

FIGURE 4: STRATEGY DECISION TIMETABLE		Commitment to Strategy							Major Review Points		
Year	Decisions Required	Payment/uprating	Supp. Ben. assessment	Cont. Ben. rating	UB	DCI	Conts.	RP		CB	N. Fylde
1982/83	1. publication of working paper 2. supp. ben. micros trial 3. LOP payment/uprating module development 4. Departmental central index development 5. NUBS enhancement/hardware replacement plan 6. planning for integration of N. Fylde benefit systems	○					○			○	★
1983/84	1. advice & information micros implementation 2. supp. ben. micros implementation 3. LOP supp. ben. assessment module development 4. RP phase I development	○							○		
1984/85	1. NUBS enhancement implementation 2. Begin N Fylde benefit systems integration 3. UB new system development 4. CB phase I development						○			○	
1985/86	1. Contributions development							○			★
1986/87	1. LOP contributory benefit rating module development			○							
1987/88	1. LOP payment/uprating module implementation 2. RP phase I implementation	●							●		★
1988/89	1. DCI implementation 2. CB phase I implementation						●			●	
1989/90	1. RP phase II development 2. LOP supp. ben. assessment module implementation 3. Contributions implementation		●							●	★
1990/91	1. CB phase II development										
1991/92	1. UB new system implementation 2. LOP contributory benefit rating module implementation						●		●		★
1992/93	-										
1993/94	1. RP phase II implementation 2. CB phase II implementation								●	●	

Key: development = ○ implementation = ●

Key: development = ○ implementation = ●

By the 1987 review point these nugatory development costs (including piloting the payment/uprating module for local office benefits) would have risen to nearly £60 million.

121. However by the next review point (1989) enough would have been achieved to provide a cumulative NPV of around £190 million over the same period, if projects which had been proved at that stage but only partially introduced were implemented nationally: these would include the payments/uprating system, the DCI and RP and CB phases I. Nugatory costs of around £50 million would need to be set against this. By the next (1991), the cumulative NPV would have risen to around £440 million: by then the supplementary benefit assessment module would have been introduced, but other steps - including the incorporation of UB work at the Area Centres - would not have taken place. Nugatory costs at this stage would be around £60 million.

122. In effect, if a halt were called at one of these review points a more modest variant of the strategy would have been achieved. The drawbacks of achieving a variant this way, as compared with planning deliberately for it from the outset, would be a financial overhead and an opportunity cost (if we had not been going in this direction we might have been developing another). These risks may be regarded as intrinsic to any long-term strategic approach and need to be balanced against the substantial advantages which a strategy can provide. On the whole this exploration of alternatives has reinforced our view that the proposals in Section II offer the best way forward.

VI CONCLUSIONS

123. We have four broad categories of conclusions: the long-term strategy target; the 'systems approach' which should be adopted to achieve it; the management issues which will need to be considered; and specific tasks for the next stage. Finally, we propose the next review point.

The long-term target

124. We recommend that the following should be the main features of the long-term strategy target:

- . the administration of social security benefits should be viewed as a single operational entity with movement towards the whole person concept, and in particular incorporating a 'one office' approach to the administration of unemployment and supplementary benefit for the unemployed;
- . computer and communications technology should be used to cut administration costs and allow staff to concentrate on work for which human skills are essential;
- . a three tier computer structure;
- . maximum use should be made of all the information which DHSS and DE hold with access available from any point in the system, subject to safeguards to secure confidentiality of an individual's record.

Systems approach

125. To achieve this, we recommend that all future social security operational developments should be designed in accord with the following principles:

- . the co-ordinated use of ADP resources (staff, hardware and software) to achieve corporate objectives;
- . the adoption of a modular approach to system construction and accepted technical standards (paragraph 14).
- . the treatment of information as a common resource spanning social security applications and the adoption of the database approach to organizing and using it (paragraphs 15-24);
- . the use of standard communication protocols, facilitating a common network (paragraphs 25-32);
- . the use of the functional approach to application development (paragraphs 33-46);
- . the adoption of a standard user interface (video terminals, dialogue design, ergonomic features etc) (paragraph 49);

Management issues

126. Implementing the strategy will necessitate the reorganization of the existing management structure and the creation of new management tasks (eg the common management of data and the communications network). More generally, it will require a greater emphasis on the central direction and control of social security planning and projects to ensure that corporate objectives are achieved.

The next stage

127. We recommend a number of specific pieces of work in 1982-83; the main ones are:

Central team - specify system components, standards etc;
introduce control and training arrangements, carry forward
micro-computer projects (paragraphs 65, 77-82);

LO/Area Centre implementation team - prepare Phase I
proposals; commence implementation (paragraphs 73-74);

Newcastle - design prototype DCI;

NUBS/DE - prepare hardware and terminal replacement;

North Fylde - prepare broad plan to bring benefit work within
strategy framework.

Next review point

128. The tasks undertaken from now on, including those outlined for 1982 and 1983, will all impact upon the strategy. Particularly important will be the revised proposals for developing the first phase of the area computer centres. Detailed issues concerning costs, savings, procurement of equipment and new demands from systems will continue to arise on individual projects. It is therefore essential to provide regular monitoring and control arrangements to ensure that each aspect remains compatible with the strategy and to take corrective action if not. The consideration and discussion of this paper will take some time and will, we hope, lead to a decision either to proceed with these proposals or to amend them. The whole process will provide something similar to a formal review, and should provide the basis for future reviews.

BACKGROUND PAPERS

The following Background Papers may be obtained (single copies only) from:

Department of Health and Social Security
Room 213
Ray House
6 St Andrew Street
LONDON
EC4A 3AD

- A Report of a seminar (January 1981)
- B Consultation with customers' organisations
- C Data and functional analysis
- D Advice and Information Sub-Group, first report
- E Database considerations
- F Job design and the system interface
- G Resources and constraints
- H The communications network
- J Social security operational strategy: a brief guide

PROJECTS INCLUDED IN THE OPERATIONAL STRATEGY

Fourteen projects have been identified in the operational strategy. Brief details are provided below.

Central Team

A central DHSS/DE planning team, with consultant support, would be essential and has been taken into account in the costing.

Microcomputer based advice and information

It has been assumed that a microcomputer would be installed in each ILO from 1984/85 to assist in providing general information on benefit conditions and rates. This would improve service to the public. It has not been assumed that it will be replaced by the main system.

Microcomputer based Supplementary Benefit assessment

Provision of some 5 microcomputers in each LO has been assumed during 1983-85 to enable claims to be taken and assessments made by clerks operating the microcomputers. There would be no direct links with other computer systems. Printed output would be provided by the microcomputer and the claimant record then deleted in its store. The system would be replaced when the full Supplementary Benefit assessment system was implemented.

Payment of local office benefits

This system would provide for the computation, payment and uprating of supplementary benefit and other local office benefits. It would be based on area computer centres linked to local offices. On average, some 23 VDUs would be introduced at each ILO.

Supplementary Benefit assessment

This system would cover the taking, assessment and maintenance of claims and retain a permanent record. Data would be passed to the payment system to effect payments. A further 9 VDUs would be provided to each LO for use by clerks. The interim microcomputer based system (above) would be superseded.

Contributory benefit rating

This system would provide the corresponding service for the short term contributory benefits. One further VDU would be required in each LO for use by clerks.

Unemployment Benefit

This system would provide an on-line interactive service for clerks in UBOs corresponding to that provided in ILOs. 10 VDUs per UBO would be provided.

Departmental Central Index

An integrated central index would be developed from the general and child benefit indexes at NCO and made available on line to staff both in Newcastle and elsewhere (eg LOs) between 1988 and 1990. It would record, inter alia, the location of all information for an individual held by DHSS. A further 3 VDUs would be provided in LOs for accessing the index.

Child Benefit at Washington

The Child Benefit system would be replaced, at its present location at Washington, when the existing equipment is due for replacement in 1988/89. The costs and savings included in the strategy costings relate to additional features and facilities provided under the strategy proposals.

Child Benefit in Local Offices

Transfer of child benefit work from Washington to LOs between 1993 and 1995 would require a further 4 VDUs in each LO.

Retirement Pension at NCO

The Retirement pension system would also be replaced in its present location when the existing equipment is due for replacement in 1987/88. The costs and savings included in the strategy costings relate to additional features and facilities provided under the strategy.

Retirement Pension in Local Offices

Transfer of RP work (other than Overseas Branch) to LOs between 1993 and 1995 would require a further 7 VDUs in each LO.

Contributions

Development of the contributions record system can also be expected in advance of replacement of existing equipment in 1989/90. Under the strategy it is additionally proposed that a contributions record should be made available on-line to LO and UBO staff. The strategy costs and savings take into account additional features and facilities at NCO and the provision of 3 additional VDUs in LOs to access the records.

Specialised Benefits at NFCO

Development of systems at NFCO can be expected irrespective of the strategy. The costs and savings included in the strategy costings relate to additional features and facilities.

COSTING THE STRATEGY

1. This Appendix provides background information on the costing of the main strategy proposals and the variant approaches discussed in Section V.

The Base Line

2. To distinguish the costs and savings likely to result from the strategy from developments which would probably occur in any case, it was necessary to establish a 'base-line' indicating likely expenditure required in the absence of a strategy.

3. It was assumed that if there were no strategy existing DHSS computers would need to be replaced as they wear out and that a number of relatively modest enhancements would be made. These would include the replacement of teletypes in UBOs with VDUs, providing an enhanced on-line enquiry service; the introduction of VDU-based on-line data input and enquiry services to branches at Newcastle and North Fylde Central Offices; the replacement of Datalink by a VDU service offering ILOs slightly more comprehensive on-line enquiry facilities; and the general replacement of magnetic tapes with discs as the main computer storage medium. On this basis the total cost of maintaining social security computing over the 20-year costing period of 1982/83 to 2002/3 would exceed £900 million (November 1981 prices).

Strategy Costs

4. The costings are based on current (1980) workloads and transaction volumes, amended to reflect:

(a) changes expected to take place by 1990 following demographic, social and legislative changes and other foreseen changes in DHSS/DE practices and procedures;

(b) estimates of additional likely changes as a result of the strategy itself.

A number of other possible legislative, social and procedural changes which were thought less likely to occur were also considered to assess their possible impact on 1990 workloads: in only a few cases were these found to have a significant impact on the costings. In view of the uncertainty about future levels of unemployment, costings were based on current levels of around 3 million. (If the level of unemployment were lower both the costs and the savings would be lower: if a level of a 2 million is assumed, the net present value achieved by 2002 would be some 8 per cent lower).

5. Estimates were made of the equipment needed to cope with the volumes and workloads established, when it would be needed, where it might be sited and the consequent telecommunications needs. Allowance was included for some back-up facilities.

6. Other costs taken into account include additional development and operational staff, accommodation and the operational and maintenance costs of the new equipment. Cautious assumptions were made, eg on the availability of existing accommodation, the need for development staff and the opportunity for bulk purchase discounts.

Strategy Savings

7. The strategy would provide savings in 3 main areas: staff, payment methods and other non-staff costs.

8. Staff account for some 70% of social security administration costs, and therefore provide the greatest scope for savings. Savings were estimated by:

(a) calculating staff requirements in 1990 in the absence of a strategy by reference to the transaction volumes etc indicated above; and

(b) revising these calculations in the light of estimates of the impact of the strategy proposals on specific staff functions.

9. The scope for savings in other areas, including payment methods, is relatively limited in view both of their smaller proportion of total costs and of saving measures already being taken - eg standardisation of order books, four-weekly payment of child benefit and the introduction of ACT. In general, the estimated savings are deliberately cautious: examination has focused on areas where the strategy is expected to have a major impact and savings can be readily identified. No savings have been assumed in other areas where the strategy is considered likely to have smaller impact or where it is more difficult to assess the extent of savings. Whether additional savings can be found in such areas will emerge in the course of further, more detailed analysis.

Timing

10. The timing of expenditure and savings depends on the sequence and timing of the individual projects which between them comprise the strategy. The timings indicated in Figure 2 of the paper were assumed for costing purposes.

Totals

11. The total estimated strategy costs and savings are summarised in Table 1. Both costs and savings are additional to the 'base-line' costs discussed above. It should be stressed that all figures must be regarded as broad estimates: further detailed refinement will be needed project by project. Approval would not be sought for strategy investment on a global basis but for each project individually.

Risk Analysis

12. Many factors could alter the estimated costs and savings, eg relative price changes, delays, non-achievement of savings etc. A micro-computer-based risk and sensitivity analysis model has therefore been developed. This enables costs and savings to be separately identified in up to 750 related tasks within 25 projects over a period of 20 years. The impact of a wide range of variations in assumptions can therefore be assessed.

Review Points

13. Implementation of the strategy will require comprehensive monitoring and control arrangements and a number of major review points. Five are suggested in Figure 4 of the paper. The first would have little significance in costing terms. The others are:

- . at March 1985, prior to decisions to develop the contributions and contributory benefit rating modules;
- . at March 1987, prior to implementation of the payment of LO benefits system throughout the country but following its initial trial;
- . at March 1989, prior to implementation of the supplementary benefit assessment module;
- . at March 1991, prior to implementation of the contributory benefit rating and unemployment benefit systems.

14. To assess the financial implications of the worst possible situation at each of these review points, it was assumed that a decision would be taken not to proceed further but simply to consolidate on elements which had already been implemented or substantially so at that point. The results are shown in Table 2.

15. As the 1985 and 1987 review points fall during the initial development phase, a decision to stop at either of them would only lead to a marginal positive net present value (NPV) by the end of the strategy period, against which nugatory development costs would need to be set. The position improves markedly, however, in subsequent years when major elements of the strategy would be implemented and would provide a growing return on the investment.

Variations

16. Section V of the paper briefly describes the study undertaken of possible alternative approaches and the conclusions reached. Those considered are set out below:

ALTERNATIVE 1

- . computerised payment system for locally administered benefits;
- . the introduction over time of standard record formats into all social security computer systems;
- . development of a centralised information source built upon the central index concept and available through video terminals across DHSS/DE, containing for all claimants identity, contributions and benefits in payment data (the last through daily updates from payment systems);
- . extensive use of micro computers in local offices to assist in supplementary benefit assessment, liable relatives work, control of the movement of papers, code interrogation and other areas likely to lead to staff savings, cost reductions or improvements in effectiveness.

TABLE 1: BROAD ESTIMATES OF COSTS AND SAVINGS
(£ million)

Year	82/ 83	83/ 84	84/ 85	85/ 86	86/ 87	87/ 88	88/ 89	89/ 90	90/ 91	91/ 92	92/ 93	93/ 94	94/ 95	95/ 96	96/ 97	97/ 98	98/ 99	99/ 2000	2000/ 2001	2001/ 2002	TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Total Costs	-	10	15	10	40	50	40	55	55	55	45	45	35	30	35	45	35	40	35	45	720
Savings	-	-	5	5	5	5	15	45	90	110	125	145	160	165	165	165	170	170	170	170	1880
Net Cash Flow	-	-10	-10	-5	-35	-45	-25	-10	35	55	80	100	125	135	130	120	130	130	135	125	1160
Discount Factor (5%)	1.000	.952	.907	.864	.823	.784	.746	.711	.677	.645	.614	.585	.557	.530	.505	.481	.458	.436	.415	.395	
Annual NPV	-	-10	-10	-5	-30	-35	-20	-5	25	35	50	60	70	70	65	60	60	55	55	50	
Cumulative NPV	-	-10	-20	-25	-55	-90	-110	-115	-90	-55	-5	55	125	195	260	320	380	435	490	540	

TABLE 2: Financial implications of termination at review points

Review Point	Projects already implemented		Nugatory Expenditure Incurred
	NPV* achieved by 2002	Year positive NPV* achieved	
	£m		£m
March 1985	10	1992/93	15
March 1987	10	1992/93	55
March 1989	200	1992/93	50
March 1991	450	1991/92	65

* Net present value

ALTERNATIVE 2

- development of a local office network to cover the payment and uprating of all locally administered benefits, supplementary benefit assessment and the calculation of unemployment benefit entitlement;
- construction of a centralised information source as in alternative 1 but with a common database shared between it and the local office network;
- within this approach 4 variants were identified, in ascending order of investment:

Option A making use of a restricted system dialogue (eg no prompts) and fewer terminals than proposed for the main strategy with a separate limited network in local offices accessing the centralised information source.

Option B again a restricted dialogue and fewer terminals but these now switchable between systems to provide easier access to centralised information.

Option C making use of a comprehensive system dialogue with similar assumptions about numbers of terminals as the main strategy but still with a separate limited network to access the centralised information source.

Option D again a comprehensive dialogue and full set of terminals but these now switchable between systems.

17. The results of the calculations are summarised in Table 3.

Table 3: Costs and savings of alternative strategies

	ALT 1	ALTERNATIVE 2				Strategy
		Option A	Option B	Option C	Option D	
Total Cost	£450m	£510m	£510m	£620m	£620m	£720m
Total Savings	£780m	£870m	£990m	£1410m	£1590m	£1880m
Cumulative NPV*	£150m	£150m	£220m	£360m	£460m	£540m
Year positive NPV* achieved	1992/93	1994/95	1993/94	1992/93	1992/93	1993/94
Return on investment/	50%	50%	70%	100%	120%	120%

* Net present value

/ The return is calculated by dividing the net savings by the costs (both discounted at the recommended rate of 5 per cent) and multiplying by 100.

APPENDIX 4

GLOSSARY

ACT	Automatic Credit Transfer
Analogue telephone circuit	Normal way of sending speech over the telephone system, gradually being superseded, in computer use, by digital transmission (q.v.)
ADP	Automatic data processing
Batch computer	Computer system where work is processed in batches and results may be returned within hours rather than minutes or seconds
Bit	a binary digit
bps	bits per second
BT	British Telecom
Byte	a number - usually 8 - of bits
CB	Contributory Benefit
CCTA	Central Computer and Telecommunications Agency
CHB	Child Benefit
Conts	Contributions
Data and functional analysis	The study of data required by an organisation to fulfil its business; and the study and identification of the functions the business performs (associating the data items) in achieving its objectives, irrespective of the organisational structure
Database	A pool of data available to different users
Data input validation program	Program to prevent misinformation being entered into a system
Datalink	DHSS computer system to enable local office to obtain contribution records using over-night telephone calls
Dedicated leased telephone line	A telephone line leased from British Telecom (eg for computer traffic) used exclusively by the lessee; also known as a private circuit
DCI	Departmental Central Index
DE	Department of Employment

DHSS	Department of Health and Social Security
Digital transmission	Telephone (or other) circuits where the transmitted signal is encoded as a series of pulses which can be represented as numbers
EA0	Economic advisers' office (of the DHSS)
Encryption	Encoding of data to prevent unauthorised access
FIS	Family Income Supplement
GI	General Index
Hardware	The physical pieces of equipment that make up a computer
ILO	Integrated local office (run by DHSS)
Intelligent copier	Facsimile copying through the telephone system
Interactive system	One in which the user enters data in response to questions by the system
IR	Inland Revenue
IVB	Invalidity Benefit
LO	Local office
Megabyte	One million bytes
NCIP	Non-contributory invalidity pension
NFCO	North Fylde Central Office
NI	National Insurance
NPV	Net present value
NUBS	National unemployment benefit system
On-line	A terminal remote from but connected to the main computer so that it can communicate with it
ORS	Operational Research Service (of the DHSS)

PAYE	Pay-as-you-earn
PO	Post Office
Prestel	Information held on computer database accessed through public telephone network for TV display
PROMPT	Project resource organisation management planning techniques
PSS	Packet Switched Services. (British Telecom's PSS is known as Switchstream One)
RP	Retirement Pension
SB	Sickness Benefit
Software	A set of instructions for the computer
Switchstream	See PSS (q.v)
Terminal	Apparatus for transmitting messages to and from computer
TUS	Trade Union Side
UB	Unemployment benefit
UBO	Unemployment benefit office (run by DE)
VDU	Visual display unit (television screen display of computer information)
WB	Widows' benefit
X-stream	The range of British Telecom's digital communication services (including PSS/Switchstream (q.v))

SOCIAL SECURITY OPERATIONAL STRATEGY

A brief guide

Department of Health and Social Security
1982

INTRODUCTION

This paper provides a brief guide to the social security operational strategy including its origins, the main proposals now put forward in Working Paper II, the costs and the returns. A glossary of terms is at the end.

SOCIAL SECURITY TODAY

The scale of social security operations is huge:

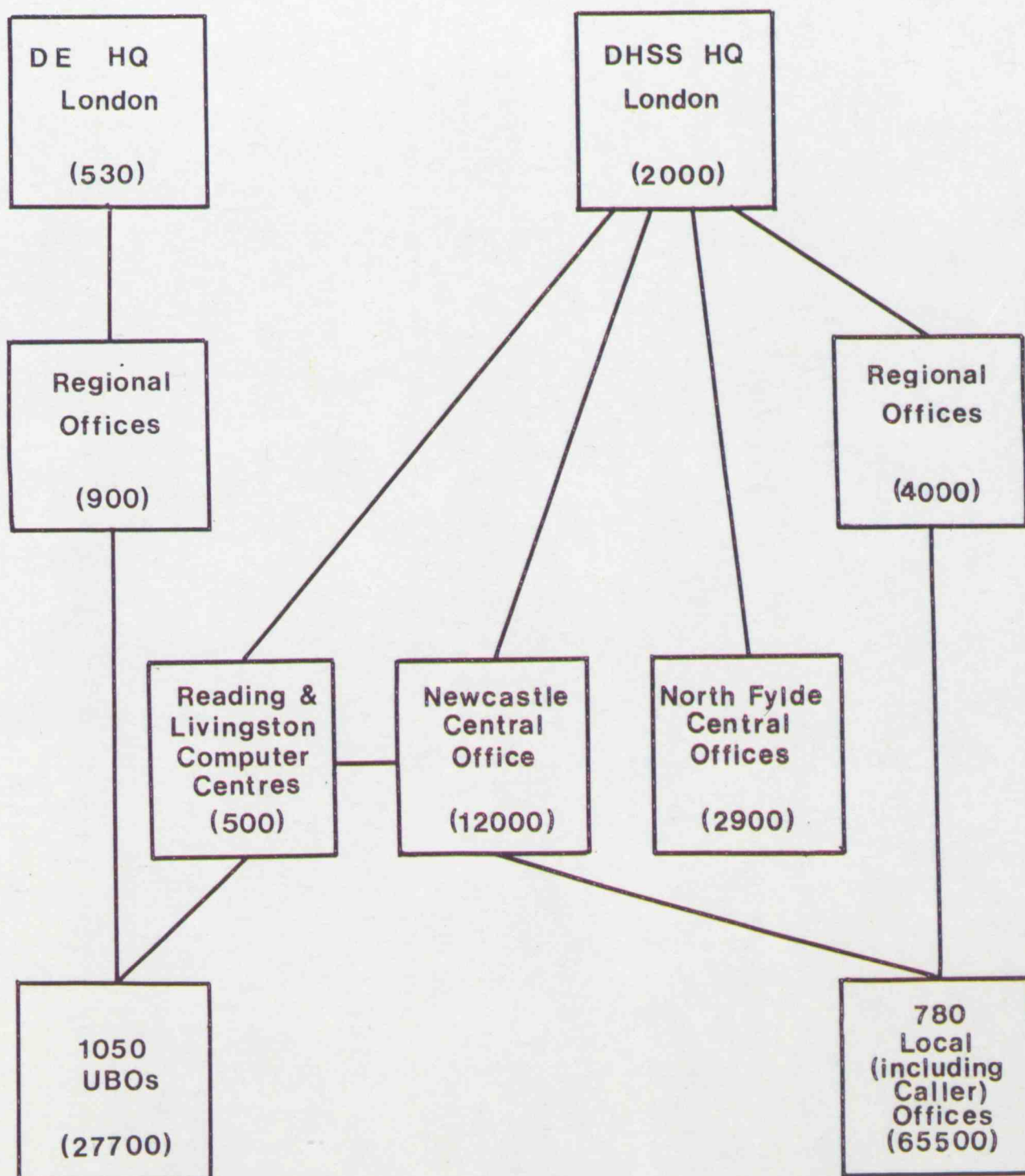
- . 25 million claims a year;
- . 24 million beneficiaries at any one time;
- . 1,200 million payments a year;
- . 117,000 staff in the Department of Health and Social Security (DHSS) and the Department of Employment (DE) - predominantly clerical staff working outside London;
- . £1,400 million administration costs (1981/82).

The work is highly complex: over 30 benefits are paid (10 introduced in the 1970s); staff rely on over 100 bulky instruction manuals - closely printed, frequently amended and full of cross-references.

DHSS and DE already rely heavily on computers, housed at four centres. Newcastle is one of the biggest centres in Europe. Almost £40 million is invested in computers and there are around 3,000 ADP staff.

Figure 1 shows the organizational structure of the whole system, in both DHSS and DE. The Reading and Livingston computer centres are linked to a separate network of Unemployment Benefit Offices (UBOs) - run by DE - and pay benefits to the unemployed. Newcastle Central Office records contributions for the whole working population and pays Retirement and Widow's Pension and Child Benefit. North Fylde Central Office pays War Pensions and various disablement benefits. At all these points in the network computers play an important part.

ORGANISATIONAL FRAMEWORK



*Staff nos. shown in brackets
(October 1981)*

Figure 1

DHSS local offices, however, are purely clerical with millions of paper records held in rows of filing cabinets. These offices are the initial contact point for the public. Half the staff work on calculating and paying supplementary benefit, while the rest are concerned with sickness, invalidity and other benefits and other local work.

WHY A STRATEGY?

A combination of concerns about the state of operations, allied with an awareness of new technical opportunities, surfaced together in the late 1970s and led to work on a strategy for operations for the 1980s and 1990s.

The problems included reliance on paper and on more and more clerical staff - expensive and inefficient methods. Staff numbers, administrative costs and supplementary benefit error rates all rose sharply in the 1970s. Complexity increased and standards of efficiency and service to the public seemed to decline.

The computer systems were not able to give direct and immediate help to front-line local office staff in DHSS and, through them, to the public.

Meanwhile, computers and telecommunications were generally becoming cheaper, faster, more reliable and able to handle more work. This opened up quite new opportunities. Things which had been technically impossible or too expensive to contemplate began to seem feasible.

The present DHSS computers have to be replaced during the 1980s and this offers an opportunity to introduce a more coherent system providing real improvements - for the public, the taxpayer and the staff.

WORK SO FAR

The work started within DHSS in the late 1970s. The pace quickened in 1980, when a new Strategy Team was set up and the Secretary of State for Social Services announced the work in Parliament:

'Piecemeal changes can never be enough. We need a more radical approach if we are to modernise the way we run the system and give the public a quicker and more accurate service. We also want the staff to have more worthwhile jobs with greater satisfaction.' (Hansard 21 November 1980.)

The first Working Paper was published in December 1980. It explained the reasons for the strategy and stressed as key issues the need for economy and efficiency; the need to improve service to customers, particularly by treating them more as 'whole persons' with a range of social security requirements; and the need to involve staff and pay particularly close attention to the relationship between people and machines. Working Paper I invited discussion and called for a further paper with specific proposals for a strategy to meet these needs.

In January 1981 the Parliamentary Secretary (Social Security) chaired a two-day seminar at Sunningdale, at which the strategy was considered by a group of well-informed outsiders - including people with extensive private sector computing and management experience. The broad approach was welcomed, but the scale of the undertaking and the need to avoid undue risk was stressed. Since then wide discussions - inside and outside Government - and analysis work have led up to the proposals contained in Working Paper II.

THE PROPOSALS

More Economic and Effective Use of Claimant Information

Collecting, storing and using information about contributors and claimants lies at the heart of social security operations. At present the information is poorly organised. Several separate records may be held about one individual. It is difficult to keep them up to date and consistent and for staff in one part of the organization to get relevant information held elsewhere. This causes inefficiency and waste and a risk of overpayments to which the Public Accounts Committee has drawn attention:

'We urge the Departments [DHSS and DE] to pursue their investigations to ensure that full advantage is taken of the facilities offered by computers to cross-check and supply information at the point at which a claim is decided.' (PAC 9th Report, 1976/77)

This highlights a central issue: either DHSS and DE continue to hold large numbers of separate records in a form not easily accessible to local office staff, or they link them together and make them readily available to the staff who need the information. Technology now makes it possible to pursue the second alternative and we propose that the records should be re-structured to minimise duplication of information and make it accessible to the staff who need it. There will be fears about privacy, and strict safeguards to control access and prevent abuse will have to be built in. But to take any other course would mean opting for less efficiency and less control of public money and foregoing opportunities to improve standards of service.

Cross Benefit Approach

In the past each benefit has been administered largely in isolation. The strategy work has sought to identify functions which are the same irrespective of benefit. Printing order books or giro's is a clear example. We recommend that so far as possible common approaches should be used for all benefits, to achieve economies and a less confusing system.

Common Communications Network

As telecommunications become more important, it is essential to prevent the spread of different, incompatible networks, which would restrict flexibility and confuse staff. We recommend a common, general purpose network spanning all social security offices.

Terminals for Staff

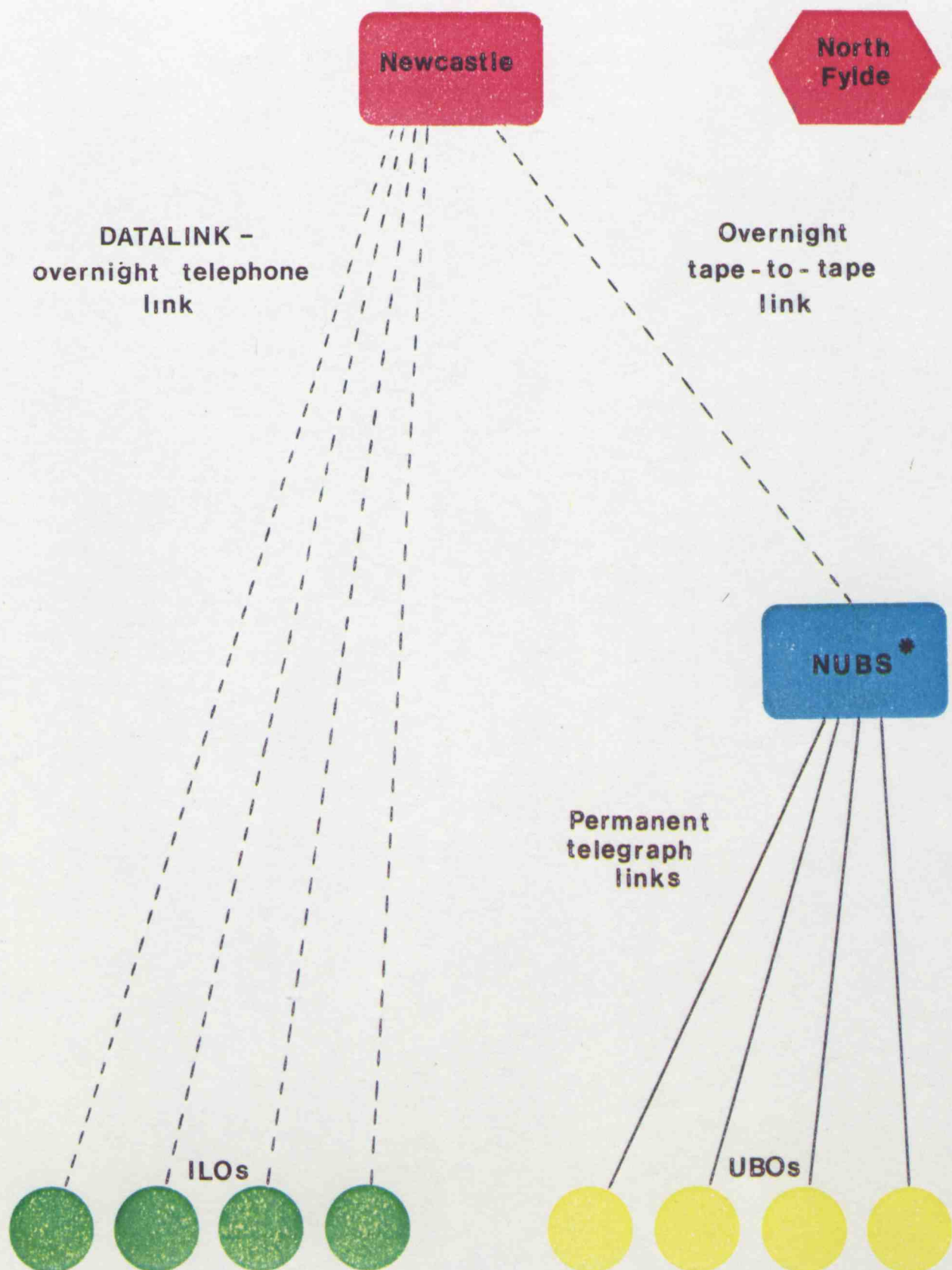
Computer terminals on the desk would give staff access to the information they need and to computer assistance. We recommend the widespread use of such terminals: they would replace paper and pens as the basic working tool for benefit clerks.

New Computer Structure

To put these proposals into practice, DHSS and DE would have to move from the present computer structure to a more modern and integrated one.

Figure 2 illustrates the present arrangements. They reflect the constraints of the 1960s and 1970s when they were designed. For example, both sickness

EXISTING COMPUTER SYSTEMS



* National Unemployment Benefit System computer centres at Reading and Livingston

Figure 2

benefit - administered in DHSS integrated local offices (ILOs) - and unemployment benefit - administered through UBOs and the National Unemployment Benefit System (NUBS) computers at Reading and Livingston - rely on national insurance records at Newcastle; yet these closely related benefits are administered quite separately and rely on separate and rudimentary communications links to access these records.

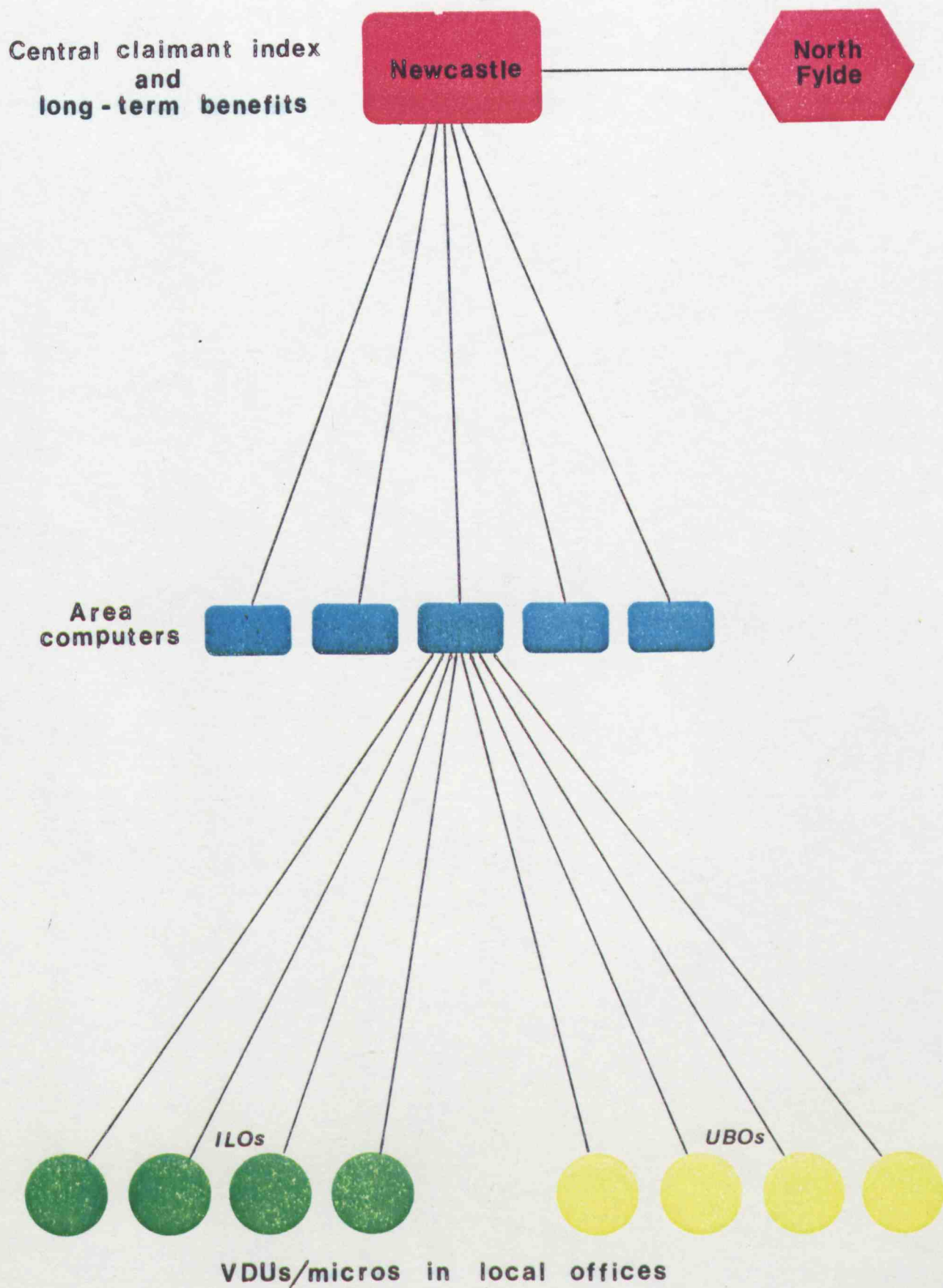
Figure 3 shows the proposed long-term computer structure. To concentrate computer resources at either central or local offices would mean excessive size and concentration at the centre and/or unrealistic demands on local processing facilities. The addition of area centres would enable a more balanced structure.

Ultimately, each area computer centre would:

- . support a number of ILOs and UBOs, making the same information and computer resources (eg facilities to calculate benefit entitlement) available to both;
- . provide quick communications between local and central offices and between local offices themselves;
- . hold the main information about claimants living in their area;
- . provide natural locations for fast, efficient payment centres.

The structure would build up gradually. In the 1980s the Area Centres would be established, holding information and computer programs and with links to ILOs and Newcastle. Among the first activities which they would support would be the payment and uprating of local office benefits, and the calculation of

PROPOSED COMPUTER STRUCTURE



NOTE: all telecommunications use fast telephone/digital links

Figure 3

entitlement for claimants to supplementary assessment and sickness benefit. In parallel, a new central index would be developed at Newcastle; and the existing large computer systems there would be modernised.

Meanwhile, UBOs would continue to be supported by the NUBS computers, but improvements - notably the introduction of visual display units to improve links between the offices and the computer centres - would be introduced.

In the early 1990s UBOs would be linked to the area centres. This would make attainable the objective that unemployed claimants should not have to deal with both DHSS offices and UBOs: the network would enable the full range of benefit transactions for the unemployed to be handled through 'one office'. The North Fylde system would also be more closely integrated and an option would exist to distribute pension and child benefit administration from Newcastle Central Office to area centres and local offices to further the 'whole person' concept by making the local office the point through which all social security benefit transactions for an individual are handled.

However, all this will take time and local offices need computer help now. We propose that micro-computers should be introduced into local offices as an interim step - starting in 1983.

Implementation

The proposed new structure could not be implemented as a single exercise: it must be broken down into individual projects developed within a strategic framework. Figure 4 shows the most important ones and the suggested dates for systems development and implementation.

MAIN STRATEGY PROJECTS

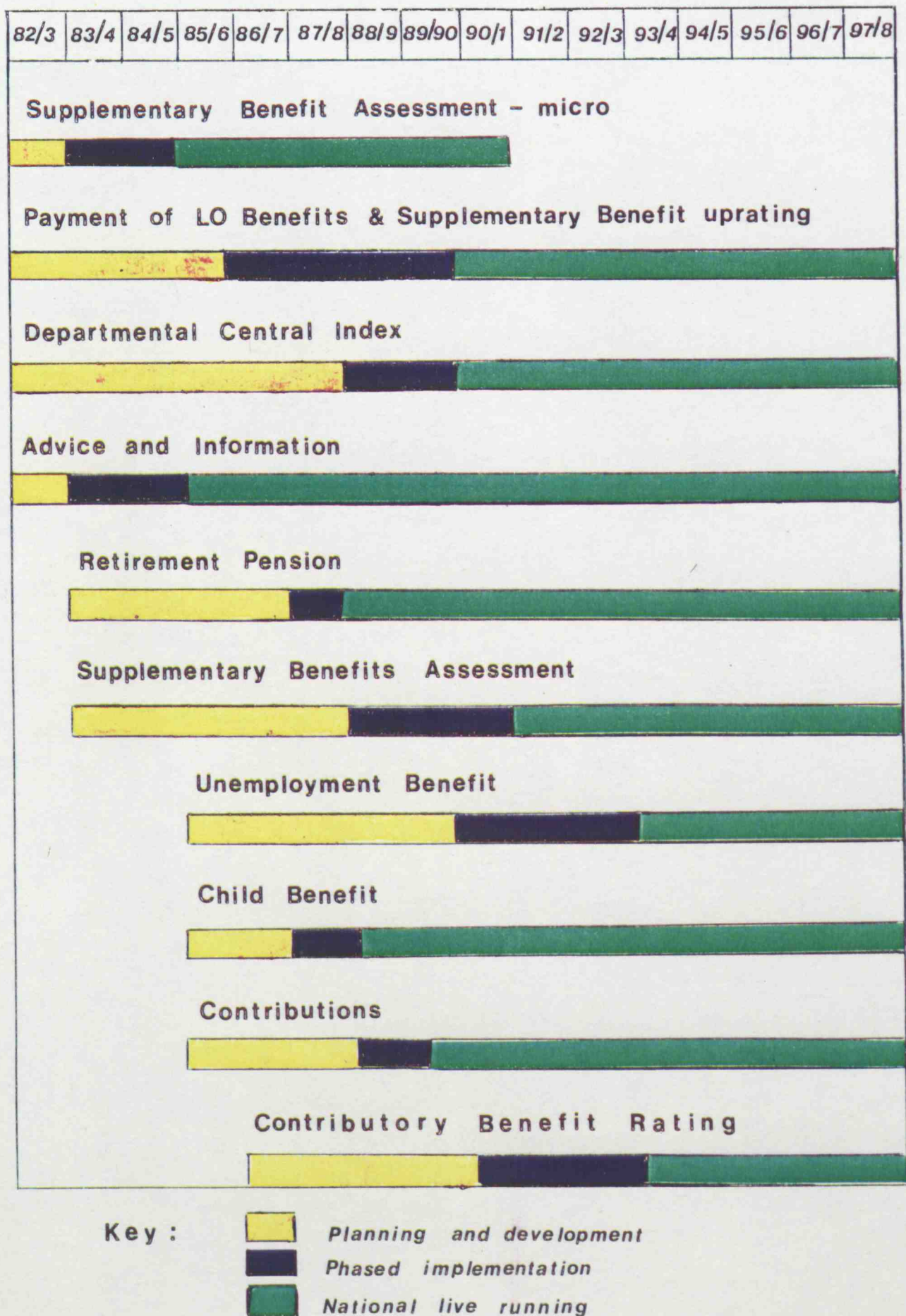


Figure 4

The first and fourth projects are relatively small-scale micro-computer systems which could be implemented quickly. The second and third are particularly important, as they will together established the frame-work (central index, area centres, communications network, database) on which subsequent projects will build.

Managing these inter-dependent projects will be a complex and difficult task. Strong central management will be essential.

THE GAINS

The proposals would enable a better service for the public. As local office staff would have ready access to all the information they need to deal with a case they would be able to provide better information to customers and a quicker and more efficient service. As computers shoulder more of the burden of calculations and ensure that all the right questions are asked, errors should be reduced and calculations speeded up. As staff would be less burdened by procedural and arithmetical work each of them would be able to handle a wider range of social security business, instead of requiring claimants to contact different counters at different offices. It would then be possible for them to treat customers as 'whole persons'.

The Government would achieve substantial staff and financial savings (discussed further below); fewer complaints about inaccuracies, overpayments etc; better controls against abuse due to improved cross-referencing of available information; and a computer structure which was more responsive and adaptable to change than the present systems and more able to cope with additional demands than the present over-stretched manual systems. (The difficulties of introducing a tax credits system, for example, would be reduced.)

The staff too would benefit. The focus of their work could shift from processing paper to dealing with people and resolving their problems. By having the information on which they depend readily available they would be able to do a better and satisfying job. The frustrations of not having information available, of depending on others elsewhere to complete a task, and of relying on complex and voluminous instruction manuals should all diminish.

COSTS AND SAVINGS

NET CASH FLOW OVER STRATEGY PERIOD

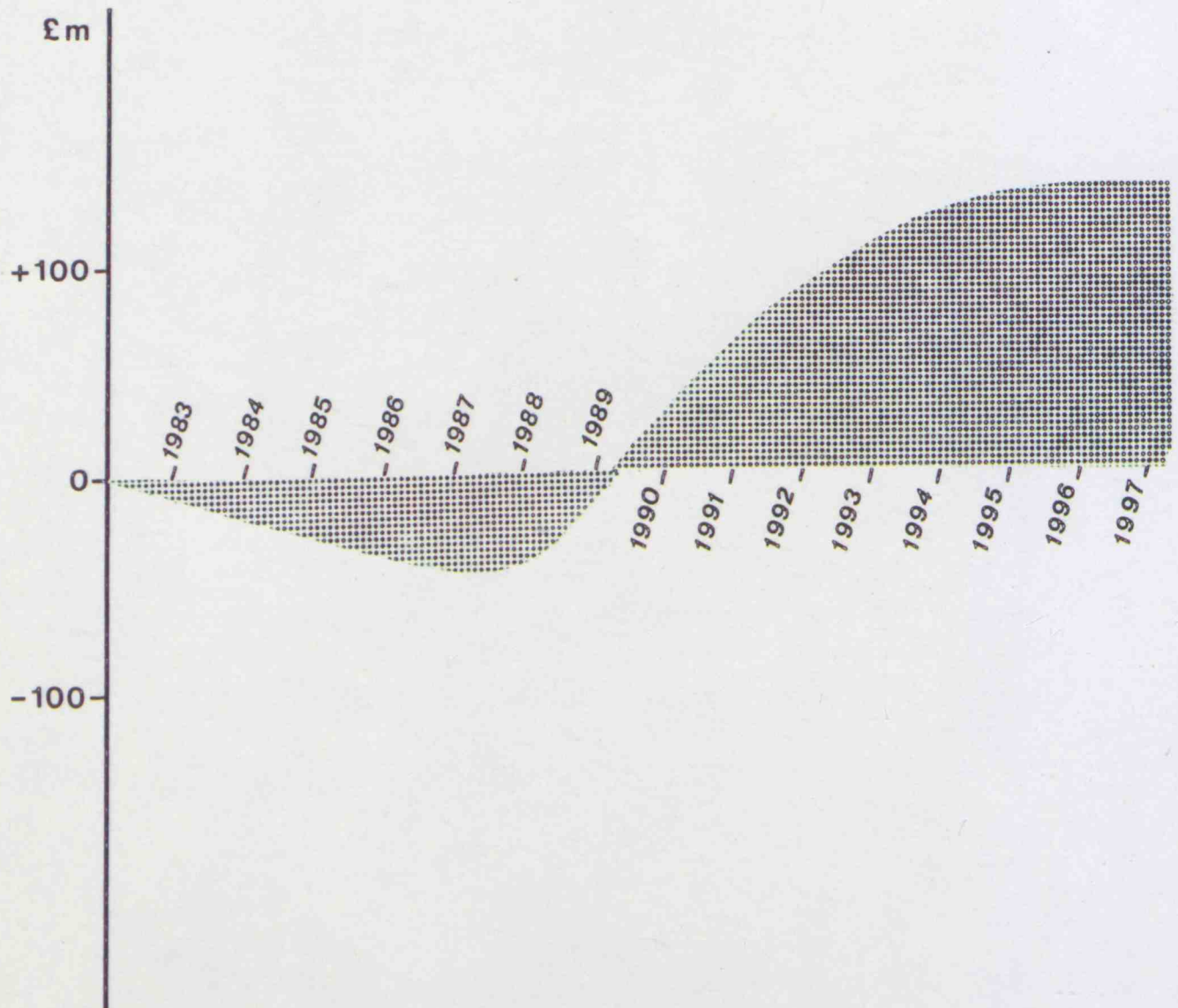


Figure 5

COSTS AND SAVINGS

DHSS will need to spend around £900 million* (November 1981 prices) over the 20 years 1982/2002 simply to keep the current computer structure running with minimal improvement.

Implementation of the full strategy proposals would cost an additional £700 million* and would produce gross savings of £1,900 million* over the same period: a return of 123%. The internal rate of return (the discount rate at which savings would equal expenditure) is 27%.

Figure 5 shows the cash flow: net annual expenditure in the 1980s turns to net annual savings after 1990. In net present value terms the strategy will have paid for itself by 1993.

Most of the savings would come from fewer staff in DHSS and DE, particularly in local offices. The build-up of staff savings is illustrated in Figure 6. Savings would start in 1984, would build up gradually at first but more sharply from the end of the decade. By 1995 they would have reached 20-25,000. The aim would be to achieve these savings through natural wastage.

The strategy would thus facilitate continued reductions in the size of two major Government Departments; would provide a planned framework for achieving them; and would enable this to be done while improving the level of service provided.

* At this stage the figures must be regarded as order of magnitude estimates.

STAFF SAVINGS

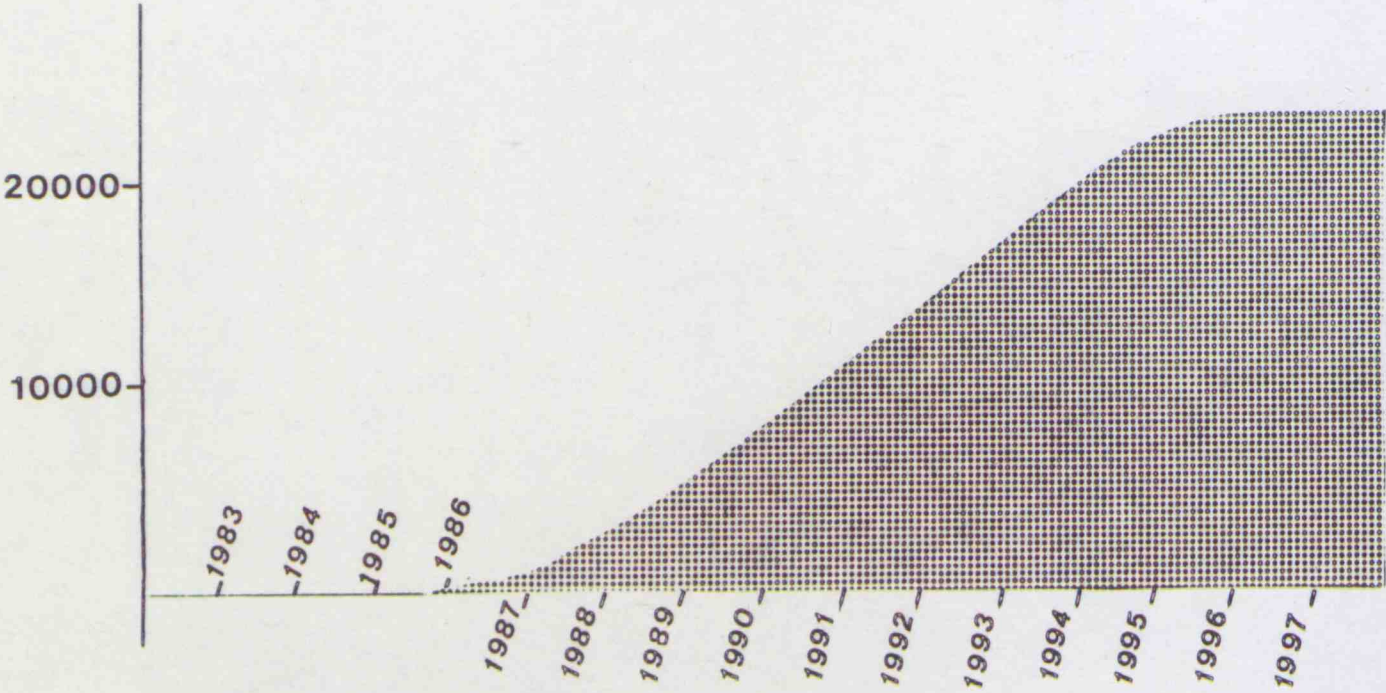


Figure 6

It is not necessary to seek global approval for the total investment needed to complete the strategy. Each project within it would be individually costed and decisions on investment would be taken one by one, in the light both of their individual justification and their contribution to the strategy as a whole. During the time the strategy is developing technology will advance and the demands on the system may change: this reinforces the need for a flexible approach, with constant reappraisal.

KEY REQUIREMENTS

Success is only possible if a number of key requirements are met.

The strategy must be flexible and responsive to change - not a straight-jacket. It should be seen as a framework within which individual projects are justified and carried forward. Constant monitoring will be necessary. In addition, several review points are built in at each of which it would be possible to stop or change direction. Working Paper II also outlines several variants, which would be less comprehensive and less expensive but would offer smaller savings and lower attainment of strategy objectives.

Privacy and security must be safeguarded. The strategy does not require any additional personal information to be held by the Departments: it proposes that it should be used better. Forthcoming legislation will provide the framework for data protection. Access to sensitive information would be controlled (eg by passwords, badges, voice prints, special authorisation procedures, etc). Significant back-up support to cope with machine failure would be needed and has been included in the costings. The extent of security controls and back-up provision will be determined in the detailed planning of the individual projects, in the light of the possible risks and costs involved.

Effective management will be essential:

- . to ensure unity of purpose throughout the planning and implementation process;
- . to ensure that necessary resources (including skilled technical personnel) are available and efficiently deployed; and
- . to maintain momentum and proper control.

CONCLUSION

The proposed strategy would enable DHSS and DE to provide a modernised and more efficient service at lower cost. It would also have wider implications for Government:

- . it would continue the Government's drive for greater efficiency and lower Civil Service staff numbers, beyond 1984;
- . it would give practical expression to the Government's determination, in Information Technology Year, to take full advantage of modern technology in its own directly run services;
- . it would make a major contribution to technological advance in the UK, generating high technology business and jobs.

GLOSSARY

DE	Department of Employment
DHSS	Department of Health and Social Security
ILO	Integrated Local Office
LO	Local Office
NCO	Newcastle Central Office
NFCO	North Fylde Central Office
NUBS	National Unemployment Benefit System
PAC	Public Accounts Committee
UBO	Unemployment Benefit Office
VDU	Visual Display Unit