MANAGEMENT IN CONFIDENCE

RUTHERFORD APPLETON LABORATORY
INFORMATICS DEPARTMENT

A Strategy for Informatics Department

F.R.A. Hopgood
July 5, 1994

EXECUTIVE SUMMARY

1. The future Mission Statement of Informatics Department should be:

    To develop high-value IT solutions for customers both inside and outside DRAL.

    Note that the proposal is not to focus just on engineering in the future.

2. The Department will concentrate on four areas:

    (1)   **Engineering and Commercial Data Exchange**
    (2)   **Advanced Interactive Systems**
    (3)   **Knowledge Engineering**
    (4)   **Databases**

3. Residual funding (6.7MY) exist in the following areas:

    - Graphics
    - Visualisation
    - Parallel Processing
    - Device Modelling
    - Computational Fluid Dynamics
    - Software Engineering

    Such areas should be reassessed in relation to similar activities taking place in CCD and at Daresbury.

4. Informatics is currently 60 people with funding of 40MY in 1994/95 and 20MY in 1995/96.

5. Not all the current staff are appropriate to the current mission statement. About 10 need redeploying early in 1994 and about 10 need recruiting late in 1994 if a 60-strong funded department is required by 1995/96.

6. The main funding sources for Informatics are the CEU, industry, commerce, and DRAL. Minor funding only is anticipated from the Research Councils.

7. For successful CEU funding, DRAL must provide a solution to 50% funding covering all the costs including their share of the Informatics infrastructure. A reduction in DRAL Overhead charges is essential. The current manpower charges to the CEU are too high yet do not provide sufficient funding within Informatics.

8. Some project funding by DRAL is necessary in 1994/95 to ensure that this transition can take place successfully.

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1. INTRODUCTION

1.1 Agents of Change

Informatics Department has evolved over a period of 4 years from being almost totally dependent on SERC funding (a *block* PGIA grant plus *top-up* RG2 Grants) and over 100 strong to a position where such funding covers no more than 25% of the Department. During the same period, the Department has reduced in size by over 40%. Thus the future size, funding sources and mission of the Department would need reconsideration. The fact that the current funding is not secure for the future makes the need even more urgent.

1.2 Daresbury and Rutherford Appleton Laboratories

The change of status of Daresbury and Rutherford Appleton Laboratory (DRAL) proposed in the government White Paper is a second agent of change. Duplication of activities at the two laboratories needs to be addressed. It is particularly noticeable in the computing areas.

The new DRAL mission statement needs to be taken into account:

To provide high quality large scale facilities and specialist services, to develop technology and to carry out high quality basic, strategic and applied research, underpinning the missions of the Research Councils, placing special emphasis on meeting the needs of the users of their research output and facilities, thereby enhancing the United Kingdom's industrial competitiveness and quality of life.

The User Communities are defined as: **The Research Councils and their user communities together with overseas customers and partners.**

This mission statement itself raises questions concerning participation in CEU projects where the emphasis is much more on supporting European rather than UK's competitiveness. The customers are often European industry with marginal relevance to the Research Councils or even DRAL. However, the skills established in such projects are highly relevant.

1

The proposed umbrella agreements with the Research Councils also raise questions for Informatics. The emphasis on priority of Research Council work over repayment, the requirement that Research Council funding should not subsidise repayment work but not vice versa, the insistence that repayment work has to be relevant to the Research Council-funded programme at DRAL, all make it difficult for Informatics with almost no EPSRC-funded activities.

2. THE CURRENT SITUATION

2.1 Funding

The best estimate so far concerning future funding in Informatics is as follows:

Year	93/94			94/95			95/96		
Division	CMD	DD	SED	CMD	DD	SED	CMD	DD	SED
DTI Staff/Monitoring	0.10	0.05	2.35	0.10	0.05	0.85			
SERC EASE	8.50	3.50	0.55	7.00	3.00	0.05	4.50	3.00	0.55
JFIT Grants	1.00	0.00	1.00	2.00		0.20			0.20
RRS ESPRIT etc	6.45	6.05	16.10	0.70	5.00	15.90		0.50	3.00
TTC		1.50			1.50			1.50	
RAL	0.80	1.50	1.65	0.60	0.50	1.50			
ERCIM		1.32	0.45		1.32	0.45		1.32	0.45
Other			0.90			0.90			0.90
IDUS Infrastructure		3.00							
RRS Carry						4.00			
Total	16.85	16.92	23.00	10.40	11.37	23.85	4.50	6.32	4.60
		56.77			45.62			15.42	

Funding has been divided out between the three Divisions, Computational Modelling (CMD), Design (DD) and Systems Engineering (SED). In the short-term, Systems Engineering has least problems but longer term all Divisions are non-viable on current funding.

Whether the figures are accurate to one or two man-years is not the issue; the overall state is the point of focus. The current known funding position would require the Department to reduce by about 20 staff on 1 April 1994 and a further 20 on 1 April 1995, thus reducing in size progressively from approximately 60 to 40 to 20. Attempting to obtain funding externally for a further 20MY in 1994/95 and repeat the exercise for 1995/96 will be difficult and is probably impossible.

In consequence, it makes sense to use this predicament to precipitate some DRAL-wide thinking now concerning the organisation of computing within the new management structure of DRAL. While Informatics has significant problems, it is not clear that CCD is immune from similar problems.

A specific problem in Informatics, due to the large change in funding, is the breadth of areas covered:

- Education and Awareness
- Data Management
- User Interface Design
- Computational Fluid Dynamics
- Engineering Applications
- Parallel Processing
- Visualisation
- Image Processing
- Formal Methods
- Software Engineering
- Knowledge Engineering
- Data Engineering

This is too wide an area for an Informatics Department of reduced size. Many areas are getting sub-critical in size.

2.2 Position of Informatics within DRAL

Informatics Department is part of DRAL and whatever policy it attempts to pursue it is inevitable that DRAL's policy will influence and, to a large extent, dictate the limits under which Informatics will operate.

The future position of DRAL is as a Laboratory supporting the new Research Councils with a guaranteed income for at least a year equivalent to what it had in the current financial year. Thus, there are no immediate problems within DRAL financially. The major interest from DRAL's point of view is how it moves from SERC to EPSRC to independence in some smooth and acceptable way. In consequence, the discussion within DRAL Management over the next year will be dominated by how to keep EPSRC at arm's length and how to integrate DL under a common management structure.

It is possible that in the longer term, when service contracts start eroding, when the other Research Councils fail to sustain the existing funding, when no new projects arise, DRAL may well experience problems similar to those of Informatics. However, even when it surfaces, there will be a long period of resisting a more commercial approach, or one where the Research Councils do not call the tune, as in some areas such a change is doomed to failure. So it is likely that energy will be expended in trying not to go commercial other than as a technology transfer activity in order to sustain DRAL as a major UK support laboratory.

A key element of the future for DRAL will be the balancing of Research Council support work and advanced R&D projects with industry, commerce and government bodies. The current management thinking is to put nearly all the eggs in the Research Council basket and hope for the best.

Despite the small size of the Informatics problem (20MY in 1200MY), it should be treated seriously as much of the expertise in modern IT lies within Informatics. Losing that resource by a lack of interest will not benefit DRAL as a whole both in the short and long term.

3. EXISTING FUNDING SOURCES

3.1 Introduction

The following sections give some background to the funding in 1994/5 and the likelihood for longer term funding in each area. It is included here to give some substance to the figures in the previous section.

3.2 DTI/ITD Monitoring

Existing monitoring contracts will run to completion. As it currently only generates about 1MY, it is more useful in maintaining awareness than a source of revenue. The aim will be to negotiate any future monitoring contracts direct with DTI as appropriate.

The two secondments to DTI will cease. The 0.5MY support for Mike Russell will certainly end in April 1994, the 1.0MY support for Tony Conway may continue to the end of 1994/95 but this is unlikely. Both have no jobs to go to.

3.3 SERC , EASE and Engineering

The current position is a decreasing FYFL. Education & Awareness seems popular as a continuing line but this is becoming just a programme of running courses with no long term commitment of funding for technical activities to back up the programme. The other areas are under attack by the Committees although there is support from the Community. This support by the community is likely to evaporate once the activities are put out to tender as has been proposed. The universities are better placed with their infrastructure funding to undercut any bid from DRAL, with its significant Overhead charges. *The lack of any base funding at DRAL means the level playing field is a myth compared with the well-found universities when bidding in this area.*

The two Newsletters that Informatics currently run (Engineering Computing Newsletter and Graphics and Visualization Newsletter) could bring in some revenue through related advertisements and appropriate mailing list sales or adding inserts to existing mailings. Many professional organisations can make income by having good lists of names. The recent surveys have resulted in a tighter and more focused mailing list. In consequence, a small amount of income is being generated.

While the funding loss from the Engineering Board is a problem, a more important result is that the Department **loses its original reason for existing.**

When formed, Informatics was completely funded by the Engineering Board to provide IT support for its researchers. (The break of my Computing Division into two parts was on that basis.) Engineering is where the expertise of the Department used to be and there are pockets where this still exists sustained by CEU Projects. A particular example is Product Data Exchange between CAD systems.

Some possibility exists of getting funds not through the EASE route but direct from Engineering Board Subject Committees either for infrastructure activities or from grant applications. This would keep a toe in the engineering camp.

3.4 Research Grants

The Department has an enviable collection of RG2 unfunded alphas. Unfortunately, they do not bring in resource. The effort to submit an RG2 is approximately 20% of a CEU proposal. The chances of success are approximately 7% (compared with 25% in ESPRIT III(1) and 8% in ESPRIT III(2)). There is also the problem of Committees dominated by university staff who do not believe DRAL should be allowed to bid against *their* research funding. The reduction in Overhead charges on research grant proposals to 40%, assuming that it remains after the DRAL merger, will help. However, as DRAL has to include principal investigator costs in any grant proposal, Informatics is still not competitive with equivalent university bids. In consequence, chances of success will continue to be low irrespective of the quality of the bid. As this does not effect any other part of DRAL, Informatics is unlikely to get any management support to solve the problem. With DL joining, it is feasible there will be a discussion concerning how Overheads are levied. DL bid for research grants with 0% Overheads. In consequence, Informatics is even uncompetitive with the current DL Computing Department! Until the chance of success increases, or the resource given per unit effort to proposals increases, RG2s are relatively uneconomic compared with CEU proposals. Their main advantage is that there are more calls and they tend to be continuous.

DRAL needs to decide whether it is sensible to go for RG2 funding. If it does, DRAL needs to ensure a level playing field. If 40% Overheads on Research Grants were continued **and** finding the Principal Investigator costs, a level playing field would ensue and Informatics would guarantee to compete successfully for funding in that environment. The problem is that inevitably that would be a drain on other programmes who would resist such a proposal.

In theory, all the EPSRC IT Committees will change with more industrial involvement. In practice, the chances of any real change are low. Also, there is no guarantee that industrialists would have a more sympathetic view towards DRAL if the DRAL bids are more expensive.

Bidding to other Research Councils is clearly an option. MRC is a possible target. However, it will take time to build up contacts, understand their system, and convince them that DRAL is designed to work with them also.

3.5 European Research Programmes

Success in ESPRIT II and ESPRIT III(1), with less success in ESPRIT III(2) has led Informatics to believe this is a good source of funds. However, while there may be a mid-life kicker of funds in Framework 3, Informatics will probably have to wait until 1995/96 for Framework 4. Even then, it is possible that Framework 4 may have only 25% of funds or less for *traditional* proposals (thus decreasing chances by a factor of 4 to a maximum of 5%) but that the *big money* will go to large consortia for large programmes. The ERCIM EDGE proposal is our only horse in *that* race and the orientation proposed is not ideal for RAL. In consequence, the situation is quite obscure. If Framework 4 is similar to Framework 3 current practices will ensure a reward. On the other hand, if Framework 4 is mainly large projects, more investment is needed to capture significant funds. Although the probability may be low, the rewards may be high if successful.

A major problem to Informatics is that these projects are only 50% funded so that creative accounting is needed to break even. Effectively, 100% funding has to be achieved with 50% income. This leads to high manpower charges and leads the CEU to frequently query the manpower costs submitted. In some areas, the manpower costs are outside the limit allowed for the programme. **Unless DRAL comes up with a different manpower charge for CEU projects, it will be very difficult to continue in this activity.** The current proposals are becoming more expensive than the industrial partners and yet still do not provide an acceptable share of the Department's infrastructure costs. While SERC funding existed, the issue could be fudged. A decision is needed on this point before Informatics embarks on any more fruitless exercises. A reduction in Overhead charges to 40% of staff costs would make a significant difference especially if only part of the reduction was passed on to the Commission.

Given a solution that makes Informatics an attractive partner, there are many other programmes under Framework 3. Informatics currently has only a marginal track record in these (but some in DELTA, COMETT, TELEMATICS, RACE and ESSI). This implies effort is needed in making alliances and formulating proposals.

3.6 Industry

Informatics has had limited success in the industrial / commercial sector. The Water DES project is the highlight. It is a good example of an industrial-strength pilot in use in industry with the possibility of repeat business. The work was carried out with some involvement of the industry's RTO (Research and Technology Organisation). The Informatics work was clearly of higher quality than that of the RTO.

The Transputer Consortium (TTC) is one example recently where industry has been willing to provide funding in the Education & Awareness area. TTC is interesting in that it is the type of activity normally done for an industrial sector

by its trade society or RTO. With the CEU being interested in using such organisations as a route to SMEs, it may be worth further study.

The industrial sector has no apparent funding limits except those of the marketplace. However, Informatics has only a limited track record and experience. As the country comes out of recession, some companies may not have the courage to expand quickly themselves through direct employment but may prefer to sub-contract. ICL has made that a policy in terms of its research funding, but the results have not been impressive. BP has abolished its corporate research and is effectively sub-contracting it to its suppliers.

A particular area where the Department has some track record is the provision of tailored training courses for industry within their own environment. This is not a major money earner but opportunities do arise from time to time.

The ERCIM-SME contacts are an interesting starting point as a set of companies that have involvement with Laboratories such as ourselves. It does give Informatics an entry point both in the UK and Europe. That is true also for the CEU partners in earlier projects.

3.7 DRAL

The new DRAL organisation will require (for survival) up-to-date administrative support systems. Will it be sensible to build these in-house or are there products to be purchased externally? The SERC experience of purchasing products from outside is not good - with DBS as the prime example! That systems has put a major burden on every Department in DRAL due to its cumbersome procedures. In return, Departments now get access to vast amounts of data and little information.

Informatics is in an ideal position to make a significant impact on DRAL administration. It has experience of modern office systems through its research programme, and has competent staff available. The success of the ROAr project is critical in establishing credibility.

Similarly, the scientific departments of DRAL need computing expertise. Informatics has had some limited success with SSD and SD. Informatics strengths are a broad range of skills that are lacking in a number of other Departments. Unfortunately, these Departments do not naturally look to Informatics for support, often preferring to do the job themselves within their own skill base or, if this is lacking, to use Informatics on short-term (weeks not months) projects which are not of any real use to Informatics. There have been examples where Departments have sub-contracted work to commercial organisations outside DRAL.

A specific problem that will affect DRAL is the need for regular management meetings between sites separated in time by several hours driving. Cooperative working between RAL and DL is an issue and the management should be looking towards an effective means of day-to-day face-to-face contact without the

need for travelling. Localised cooperative working is now possible and as the locality of the two ends is high, putting in the necessary connectivity is clearly feasible.

The recent RAL Management Board decision not to embark on an installation programme of high bandwidth connections across site nor to put even modest funding into local in-office video conferencing facilities means that work is needed to convince the management that there is a need. The time to do it is now.

3.8 ERCIM

Informatics have had some success in receiving funds to manage / administer parts of ERCIM via RAL Overheads. However, this can ever only be a peripheral funding source, but its publicity value and exposure are of value, as are the contacts made. Currently, RAL is providing a significant investment to ERCIM and a return is needed in the future.

The one activity that will bring us close to a large number of industrial partners or potential partners is the SME Symposium. Suitable alliances here might be of high value. These are being pursued. Informatics also needs EDGE to succeed or similar projects if a large continuous flow of funding is to come from this route.

3.9 Conclusions

It is clear that Informatics traditional sources for funding are drying up. SERC/EPSRC is unlikely to provide greater than 10 MY in the future. JFIT may provide 1MY. Survival of Informatics as a separate entity will depend on funding from collaborative R & D, industry and DRAL.

Within Europe, competition for CEU funding is getting harder, and Framework 3 is dwindling. Framework 4 is a new ball-game, with some uncertain chances of success. The ability to submit grants at a manpower rate that is competitive yet is economic to Informatics depends crucially on the Overhead levy charged by DRAL.

The main growth area is the industrial / commercial sector, especially as UK heads out of recession ahead of mainland Europe. Informatics can and should take advantage of this. However, **a level playing field is needed here too** particularly in the early days. The success of SMEs in new areas is because they are lean and have few overheads. DRAL on the other hand has a large infrastructure required by some parts of the overall programme which it expects external funding to share in the costs. Unless this is changed, this will ensure that this approach is not successful.

DRAL funding is a relatively new source for Informatics though CCD have some 10-14 MY for administrative systems support. CCD's track record is mainly in providing support. The current situation is one where deliverables and vision are required in terms of a proposed approach.

4. INFORMATICS MARKETABLE PRODUCTS AND SERVICES

4.1 Skills

The Department has staff with a range of skills. Some of these are listed below, not exhaustive.

Skills	
Application of Numerical Methods	Object-Oriented Programming
Finite Elements	Data Exchange
Parallel Computing Theory	Knowledge Engineering
Use of Affordable Parallel Systems	Formal Specification
Graphics and Visualisation	Software Metrics
Image Processing	Systems Design
User Interface Techniques	Databases
Information Dissemination	Education & Training
IT Organisation/Administration	Document / Office Systems

Platforms		
CRAY	PARSYS	PC
SUN	Silicon Graphics	Transputers
MAC	Intel	Communications

A brief classification of possible marketable activities is given below.

4.2 Industrial Strength Pilot Systems

A major strength from both ESPRIT and existing industrial activities is the ability to produce industrial strength pilot systems of high value. Such projects can be developed in various ways. They can:

(1) be **taken over** by the customers in-house DP department to maintain / develop (possibilities for consultancy to Informatics). The initial development could be under contract (as the Water system);
(2) be **sold to a VAR** (value-added reseller) for customisation / sale to a wide market, providing to Informatics (or is it DRAL?) a royalty stream and possible consultancy services;
(3) be **developed to full production status ourselves,** and thence maintained. This can be economic in high-value niche markets, especially where Informatics application domain knowledge and IT knowledge are together unique. However, it requires significant venture capital funding.

One specific pilot product variant is the re-engineering of legacy systems, involving consultancy work, pilot development and then exploitation.

Unfortunately, some of the RRS work is in large consortia with RAL providing some small part of the total skills needed to do even a prototype. This is not true for all projects but is so for some. However, consortium agreements in ESPRIT III

9

make the product of the project available to all partners for subsequent exploitation. This may be done as a consortium or individually. Either way, there is potential for a royalty stream, consultancy and further developments.

4.3. Shrink-wrapped products

Informatics could identify an area where suitable software systems do not exist and open that market. The shrink-wrapped software product market requires extensive marketing and distribution channels. The risk and cost of failure in this market is high and getting higher. The tailored application product (possibly based on generic tools) can be a lucrative market, but requires the unique combination of domain and IT knowledge mentioned above. This implies decisions on the target platform(s), tool areas and potential applications - all related to target markets.

For example, a potentially attractive idea is to be first into the market with a software product for a *new wave* device - such as the Psion, Sharp or Apple Newton hand-held devices. However, hardware suppliers usually enter strategic alliances with software suppliers years before bringing a product to market.

The situation is probably that this **is not** a fruitful path now. However, Informatics could look for alliances now to yield products in 7-10 years time. Hand-held devices do open up new market areas which would give an opportunity to get into, unlike established areas such as Mac and PC. However, Informatics would need a very clear identification of the niche markets and the focus adopted and a good understanding of the market need. The general view is that this is not a very credible option in the short-term.

4.4 Education and Training

This could be developed beyond the current Education & Awareness programme, probably coupled with the products developed under Section 4.2. It requires a fairly small administration, and ready access to expert speakers / trainers. If the staff are already employed, it can be used to *fill-in* troughs in other work. An advantage is that we have equipment and lecture rooms available, currently free of charge. A disadvantage is our location, miles from anywhere apart from the local scene where we are in competition with Harwell et al. There are mixed views in the Department as to whether success could be achieved here. The location of RAL in the South but with none of the benefits of proximity to London or an airport means that the starting position is not good. A possible focus would be to take courses into companies. There has been some success in the past at doing this.

A general point relevant here and also elsewhere is that there is a strong case for focusing on high value-added products. This cuts down 'competitive noise', thus sharpening our marketing image and streamlining our management. In addition it shifts the basis of competition towards quality and away from price - thus allowing larger margins and playing to Informatics strengths while the Department develops better business skills.

4.5 Commercial Consultancy

Commercial consultancy has the advantage of large returns for a small capital outlay. What is envisaged here is not personal consultancy but a team working with a company to advise it on future strategies. Marketing for such projects is mainly by word-of-mouth and reference sales. Some staff have experience already of this type of work. Typical rates obtainable are £400 - £500 per day for a Grade 7 with relevant experience. The work tends to be uneven - peaks and troughs - but can be combined well with other work. However, to support the staff currently unfunded would require 3000 days of consultancy next year (assuming RRS would let Informatics keep the profit!).

Informatics could provide services in:

(1) **Management Consultancy:** enterprise modelling, financial analysis, workflow analysis, match or mismatch of existing IT support;
(2) **IT Consultancy:** information modelling, data and procedure analysis, IT management
(3) **Specialist Consultancy:** basically, by Group in the Department

The major problem is in getting a track record in the industry and in being known that Informatics can deliver.

4.6 Personal Consultancy

Personal consultancy is where some small piece of work is accomplished using the individual's knowledge and skills. A problem is that many staff regard this activity as a way of augmenting their poor government salaries and would not be pleased to lose this ability. In consequence, this is not seen as a money earner but it might be a way of increasing contact with industry or government. On balance, the current practices should be allowed to continue.

5 . THE PROBLEMS

5.1 Staff Available

The previous section gives an idea of the opportunities open to Informatics. DRAL would need to make changes to ensure such an approach is successful in obtaining funding at a level of, say, 60MY per year.

However, **an approach based on employing all the current staff is doomed.** Just finding additional funding is difficult. Finding funding that employs existing staff is much more difficult. The ability to work commercially as defined in the earlier sections and achieve a size of 60 people will almost certainly mean the redeployment of some existing staff and recruiting. It has been pointed out that some residual funding exists in areas sub-critical within Informatics alone. Some realignment and redeployment is a possible route forward.

11

The staff without jobs next year fall into several different categories. Some have skills not needed in the future. Some have very relevant skills but funding is currently not available or is sub-critical in Informatics. Some can be retrained but it will take time.

5.2 RAL Procedures

For the foreseeable future, any commercial operation will need to work under the current constraints and RAL procedures. That means high overheads, existing salary structures, and an administrative system not designed for commerce. The burden of government thinking makes it almost impossible to envisage a commercial attitude within DRAL in the short-term although it may come in several years time. If the approach is to push for more commercial funding, a change in attitude and procedures will be needed long term and some attempts at changing procedures now for the commercial parts of the operation would be an advantage.

6. A STRATEGY

6.1 Introduction

The purpose of this paper is mainly to stimulate discussion and focus on the issue of a future strategy for Informatics assuming it continues as a separate organisation. A Department less than 40 people is probably not viable. Attracting additional funding requires decisions concerning areas to target. Any attempt to get funding from the CEU probably needs a reassessment of manpower costs.

6.2 A Strategy

The belief within Informatics is that the appropriate mission statement for the Department is:

To develop high-value IT solutions for customers both inside and outside DRAL.

Customers should include industry, commerce, the CEU, DRAL and the Research Councils. The solutions are most likely to be industry quality prototypes although specific products would not be ruled out. Our strengths have not been at the shrink-wrapped end of the market. Most of our successes have involved a significant amount of high-grade effort over a period that is years rather than weeks.

Education, training, awareness and consultancy are seen as complementary sources of funding rather than a major focus to the Department's activities.

6.3 The Market

Informatics does not believe it is sensible to limit the market to be attacked as chances of success are low and opportunities have to be seized when they are offered. The Department already has contacts or experience in:

- Distribution Industries
- Financial Sector
- Publishing
- Air Traffic Control
- Electromagnetics
- Process Engineering
- Construction
- Power Generation
- CAD Vendors
- Research Councils
- Government
- DRAL

This is potentially a large market.

6.4 The Technologies

It is clear that the breadth of activities currently performed by Informatics is too wide. For a small Department there is a need to focus. Analysing the Department's strengths, the belief is that Informatics should focus on four main technologies:

(1) Engineering and Commercial Data Exchange
(2) Advanced Interactive Systems
(3) Knowledge Engineering
(4) Databases

Having looked at the current funding in other areas and the likelihood of Informatics being a key player with a proven track record (best 10 in UK), it has been reluctantly decided that the following areas are unlikely to sustain themselves just in Informatics in the foreseeable future:

- Graphics (0.2MY)
- Visualisation (2.5MY)
- Parallel Processing (2MY)
- Device Modelling (0MY)
- Computational Fluid Dynamics (2.5MY)
- Software Engineering (0MY)

The figures in brackets give the current funding levels in the financial year 1994/5. Thus, of the 45MY of funding next year, 6.7MY is not in critical areas.

It is difficult to see the residual funding increasing either because there are other strong groups or because the area is considered of less importance by funding agencies. The Engineering Board has already decided that CFD has been supported long enough and will not continue past 1994/5. Clearly, a wrong decision but do not expect wisdom from the funding sources.

6.5 Engineering and Commercial Data Exchange

The area covers the development of solutions to the problems caused by the need to exchange data between different processes, using, where appropriate, international and de facto standards. The exchange may take place between remote sites, and may require the use of compression techniques and data conversion. The object is to make the transfer as transparent and as uniform as possible, so that the user has no need to be concerned with the underlying mechanisms, but can concentrate on problems directly related to the application. The data itself may take many forms, but the Department has special interest in scientific and engineering data, in heterogeneous data sets and in textual and other data relating to Office Automation applications. Generation of solutions will involve close interaction with the Database area for data access and management issues. The Department has considerable experience with the problems concerning the exchange of data. The main areas are:

- **STEP/EXPRESS:** the use of the STEP standard for engineering purposes has been applied in a number of engineering disciplines: electromagnetics, process engineering, CAD systems and finite elements. Informatics has participated in several ESPRIT projects, and has assisted the Particle Physics community in solving problems of data exchange for CAD systems between RAL and CERN. Work is currently in hand to apply the standard in ISIS.

- **Data Exchange in the Office:** from the initial implementation of Office Automation at RAL, Informatics has been involved with the transfer of different documents, between users and between systems (eg to printers). Specific projects have looked at exchanging documents between word processors. The international standard SGML has been used in the solution of this and other problems, and this experience has been applied to several CEC funded projects (notably MIPS and RIDDLE). There is also close involvement with the SGML Project at Exeter. DRAL needs a major commitment to SGML for corporate information. It will make it some day.

- **Computer Graphics Metafile:** transfer of computer graphics information has been facilitated by the CGM Toolkit jointly developed by CCD and Informatics.

- **Exchange of Images:** the problems concerning the interchange of images have been tackled in the CEC funded project AMICS, and have also played a part in the work of RIDDLE (mentioned above). Relevant image processing ISO standards (IPI) and also compression algorithms (JPEG, MPEG) have been applied.

14

- **Multimedia:** HyTime and MHEG are two standard of increasing importance as multimedia systems become the norm.

In addition, the conversion techniques, required to present complex data on screen have been studied as part of the Visualisation programme, funded by EASE. This has provided experience in the use of up to date tools.

6.6 Advanced Interactive Systems

This area aims to use current advanced IT best practice for the provision of system solutions to a wide range of domain-specific problems. Problems of particular relevance are those where human intuition is seen as an integral part of the final running system, and hence cooperation of the system with the end user is a key component of the final solution.

The aim is to use the IT methodologies, tools and technologies most appropriate to the application domain and user population under consideration. Resulting solutions will align with both the current and envisaged end user working environment, and any strategic or organisation directions; this can include integration with legacy systems. Attention to **quality**, in both management and software development, is woven into the philosophy.

Informatics has been involved with the design and implementation of significant software systems, as well as tools, for some years. Recent projects include two large ESPRIT projects - the Elusive Office (ELO), a total hardware, software, and communications system for a portable workstation with wireless communications for the mobile worker, and Hierarchical Case Processing System (HICOS), aimed at support for business case processing in commercial organisations.

Projects involving the *application* of new technology include the Intelligent Front End (IFE), which exploits AI technologies in the Building Design domain, and the Energy Kernel System, which similarly exploits the object-oriented paradigm. Following the philosophy of utilising appropriate IT techniques, formal (mathematically based) techniques have been used within HICOS to provide reasoning support to the system or users. Quality procedures have been established for both ELO and HICOS by the RAL team.

6.7 Knowledge Engineering

Informatics has engaged on development and research in knowledge engineering to solve industrial strength problems for real customers. The rationale for this is because it is the only way, in this area, to test which ideas and approaches have real applicability. This area is also one where the generation of high value solutions for commerce and industry is a genuine wealth creating activity.

The main thrust is the application of AI techniques to improve the applicability, quality and useability of Information Systems by strategic R&D leading to fielded pilot systems (not demonstrators). The area covered is broad including many user

interface issues as well as the more obvious knowledge acquisition and representation.

The market is seen as commerce and industry on one side and international and national research programmes on the other.

The main strengths are:

- KBS development methods
- Knowledge base architecture and explanation in KBS
- Requirements engineering
- Scheduling and reactive systems
- Knowledge representation
- Knowledge acquisition
- Causal model-based reasoning
- User and task modelling
- Dialogue
- Multi-media and multi-modal interfaces
- Reusability of knowledge
- Case-based reasoning, help desks

The Department has four major projects in this area, MMI2, F3, ISEE and MIPS

6.8 Databases

The vast majority of IT systems in the world today have a database as their core technology. The internal *model* of the external *world of interest* to an organisation or enterprise is a key strategic asset in all business dealings. This is true of systems to support administration and commerce (personnel, finance etc) as well as scientific and engineering application systems. Because of its importance, there has been a great deal of effort to understand the theory and to engineer solutions to the problems of a correct *model*. This includes systems development methodologies, descriptions of data and information (schemata) and optimal structuring, distribution and parallelism - all to meet the requirements of the organisation or enterprise. Once the *model* is deemed correct, the next problem is the provision of controlled access. There is again much theory (concurrency, security, privacy, transactions) and engineering practice.

Informatics has staff with much experience in the field and an international reputation through publications and engineered systems. It has an enviable range of external contacts including partners in projects. Expertise covers both theory and practice - thus Informatics is able to compete with the best academics on theory and the best commercial professionals on delivering engineered solutions.

Informatics has particular expertise in heterogeneous distributed databases (MIPS) - one of the major challenges today, homogeneous distributed databases (UofQ joint project) but have also proven capability in advanced applications of relational systems (EID/IAU, ROAr), and past and present experience in free text

16

(EWGORD), hypertext (ROAr, MIPS)), multimedia (MIPS), object-orientation (GRAIL) and deductive (NAB, GRAIL, Megalog) systems. The core market thrust is the development of advanced holistic systems to meet the needs of end-users and customers.

6.9 Conclusion

In conclusion, the following points are made:

(1)   Current Informatics funding will not cover a third of the staff costs in 1994/95 and over 60% in 1995/6.

(2)   The only major routes for long term funding are probably the CEU and industry.

(3)   To continue to obtain funding from the CEU, the current manpower charges need to be changed so that successful projects can pay their way within Informatics.

(4)   Of minor importance, but also of interest, would be a more level playing field with the universities in bidding for RG2s.

(5)   It is unrealistic to expect the build-up in industrial support to be sufficient given only three months remain.

(6)   Some areas in Informatics are sub-critical and a dialogue with DL and CCD would be appropriate. They may also have similar problems.

(7)   Some support from DRAL in the way of projects in 1994/95 would be extremely useful both to Informatics and DRAL.

SCIENCE AND ENGINEERING RESEARCH COUNCIL

RUTHERFORD APPLETON LABORATORY
INFORMATICS DEPARTMENT
CENTRAL COMPUTING DEPARTMENT

Informatics, CCD Realignment

F.R.A.Hopgood
B.W.Davies
July 5, 1994

1. INTRODUCTION

This paper is a result of a discussion between the Heads of Departments of CCD and Informatics following the meeting with Daresbury. Some notes of that meeting are attached.

We have looked at three main models:

(1)   Realignment of current responsibilities.

(2)   Some site-wide realignment.

(3)   Some DRAL-wide realignment.

The three are discussed below.

2. REALIGNMENT OF CURRENT RESPONSIBILITIES

This could be done in various ways depending on what one is trying to achieve.

One goal could be to optimise the position of Informatics vis a vis its position to bid for the Fourth Framework Programme and to avoid rival bids for contracts with other parts of RAL. In that case it would be sensible to transfer skills and activities from CCD. Another possibility is to decided to realign activities in the following areas irrespective of which Department they finally reside in:

(1)   **Databases:** much of this work is under contract or close to that and the activities in CCD could be amalgamated with the activities in Informatics. This would allow a more coherent strategy for databases within DRAL, bidding to Research Councils to provide Administrative support and taking part in projects.

1

(2) **Office Systems:** all the new development work should be concentrated in one place. The residual IBM service should be run down from CCD and not influence the siting of the new work. The site should be committed to putting funding into replacing the current systems with the aim of producing products of value that can create a revenue stream. There are no bought in solutions available that provide all the necessary interconnection.

(3) **PC Support:** this is no longer an IBM specific activity. Also, it is closely aligned with the delivery vehicles for most ESPRIT projects. In consequence, it should be integrated into a site-wide facility for all applications of PCs.

(4) **Networking:** the emphasis on networking, super highways and communications in the Framework IV programme (3 out of 4 areas have major emphasis in this activity) indicates that it is crucial that DRAL has a high speed communications base in which to work. Thus the network support on site and the Communications research activity need to be integrated.

In total, about 40 staffyears of activity within CCD and Informatics could be realigned. If most of this was from CCD to Informatics this would leave Informatics and CCD of roughly equal size. Against this scenario are a number of factors:

(1) It will only work if the ability to bid for future Contracts in Informatics is with a more than level playing field for activities on site. Space Science, for example, will do work in-house even if it is better done in Informatics unless there is a cash inducement.

(2) It leaves CCD in a run-down state with no great ability to move into new areas. It ring fences the area where cut backs may appear but is not a very hygienic solution. It would leave CCD having little scope to find new work if it does not retain its current customers.

If the goal is to separate service provision and immediate developments from long term R&D then one might boost some of the CCD areas mentioned above by transferring from Informatics, leaving Informatics with a role in contracted R&D (including contracts from DRAL). In this case, CCD would be considerably larger than Informatics. Also, Informatics would be living on short-term contracts with the associated uncertainties and the overheads of continuous bidding.

We can imagine other models. However, we believe that they would all suffer from instability due to the rapidly changing technologies and the changing role of DRAL itself; wherever the boundaries were drawn they would prove to be out-of-date within a year or so, and so we would end up with a sequence of short term fixes rather than a coherent picture.

Depending on the model, there would be accommodation issues. If staff were to be moved from CCD to Informatics, there would be further demand on space in

R1. If the move were in the other direction, there could be a need to create more Office space in the Atlas Centre. We do not believe that transferring people without relocating them would be seen by the staff as a real change.

3. REALIGNMENT AT RAL

We have looked at the possibility of merging the two Departments. The main activities can be divided into:

(1)   Information Systems
(2)   Scalar Service
(3)   CRAY Service
(4)   Applications support
(5)   Communications (in the wide sense: video, multimedia, high speed comms etc)
(6)   Infrastructure
(7)   Externally funded R&D work
(8)   Internally funded R&D work
(9)   Commercial work
(10)   The setting up of relevant spin-off companies

A set of actions which might make a merger feasible would be as follows:

(1)   Make a decision that we have too much manpower in the Computing Divisions and agree that a limited redundancy scheme should be put into place now with the aim of reducing staff by of the order of 30 people.

(2)   Merge the two Departments with the aim of moving them all into the Atlas Centre (again!). The staff reduction above would create some flexibility and Office Space.

(3)   Create more office space in the Atlas Centre by converting some air-conditioned space as soon as possible.

(4)   Ensure that we have a water-tight ability to recover the UKERNA space in the future if the commercial arm of the Department builds up. It is the obvious place for Start-up companies.

(5)   Move responsibility for PhotoRepro and the Library under the Computing Department. There is a great deal of overlap between the CCD video facilities and PhotoRepro. The need to update the Library and get it involved in the bookless library activities in the Fourth Framework Programme is important to its long-term stability.

The following has an impact on any realignment:

(6) Bid to take over NERC Computing Support. At 100+ staff, this is bigger than Informatics and is comparable with CCD, so if the bid were to be successful there would be major consequences for the scale of the new Department.

A side issue independent of the merger is:

(7) Move the Scientific Support, Numerical Algorithms and EASE support activities to Daresbury. Whether this gets sub-contracted back by DL is up to them. Some staff may well want to move to DL.

The structure we see has not been thought through and will require further discussion. In broad outline it is:

(1) BWD runs the new Department
(2) FRAH runs Information Systems
(3) Not all Grade 6s will be at the top level under BWD. Only about 4 would report direct.
(4) The possibility of Rob Witty returning must be put into the equation.

Many of the conditions placed on this structure are similar to the first one. For example, the commitment to a revitalising of Office Systems at DRAL must be funded. For the new Department to function effectively as an entity, it should be housed entirely in the Atlas Centre, and this will raise significant accommodation issues and costs to achieve the restructuring.

4. REALIGNMENT AT DRAL

The third possibility is to merge all Computing at DRAL under one head. Although the Pat Ridley Group could be included in this, we believe it would be more sensible to integrate a large part of this activity with the SRS.

Several of the realignments mentioned above could still take place. However, the main structure could be:

(1) Head of DRAL Computing: FRAH
(2) Three Departments run by BWD (CCD), Rob Witty (Informatics), and Paul Durham (Applications).

5. OUR PREFERENCE

Of the three options we favour the second. There are many reasons but some major ones are:

(1) The first option will not work long term. The demarcation between the two Departments will start to fade almost immediately and we will get back to our current problems.

(2) The third option puts a commitment to integration that we may not want at this stage. Rationalisation only now, with a review in two years when we see how funding develops, would be more sensible.

An attraction of the second is that it will be clear where responsibility lies in relations outside the new Department. Given a commitment by RAL to solve the over-manning problem in a sensible way, we could be a leaner and fitter organisation for the future. Attacking the cuts now before they arrive will give us a cushion both in funding and opportunities for the future.

A structural change of this magnitude in the two major computing departments should not be carried out without at least having a look at the other computing activities on site. It is feasible that some realignment here might also be sensible. An obvious question is the position of Ken Hartley and his staff vis a vis the new Department.

ANNEX

Meeting between Computing Departments

1. INTRODUCTION

On Tuesday, 17 May, a meeting was held between Daresbury and RAL to discuss possible overlaps between the four Computing Departments (two each!) and to see if any rationalisation would improve DRAL's image externally and stop duplication internally.

2. PRESENTATIONS

2.1 CCD

There are basically five areas of activity:

(1) CRAY Service
(2) Scalar Service
(3) Infrastructure for Research Councils
(4) Projects
(5) Advanced Comms (John Burren)

Main points coming out of the discussion were as follows. The CRAY service is mature, supports about 35 groups. Funding for a replacement is not available until 1995/96 or 1996/97. The chances of getting sufficient funding to be in the top 10 or 20 in the world is most unlikely. However, funding should be available for a vector/parallel machine. (As an aside, it is clear that CCD are still strong believers that there is always going to be a category of problems that cannot be solved effectively on scalar machines or Massively parallel.)

Scalar service is nearly dedicated to Particle Physics, and even that is Particle Physics Department (80%) dominated rather than the community as a whole. In consequence, long term funding is at risk. The scalar system consists of:

(1) VMS: 5 processor system
(2) HP9000 Central Simulation Facility
(3) DEC ALPHA Workstation cluster
(4) IBM Tape Library controlled by IBM RISC machine.

Thus supporting 3 flavours of UNIX and VMS in the service. The service is driven by Particle Physics and the concerns are what will PPD in the next round of activities. It would be feasible to do both the computation and data storage at CERN.

2.2 Informatics

FRAH gave an Overview of Informatics funding indicating strengths, weaknesses, and problems! Summarised as:

(1) EPSRC funding decreasing
(2) Delay in Framework IV causing us continuity of funding problems
(3) We cover too many areas.
(4) Need to concentrate our activities
(5) Competing within DRAL for contract work causes us problems

In consequence we see:

(a) STRONG: NO COMPETITION IN DRAL
        Knowledge-based systems
        Data Management and Exchange
        Case-based Processing
        Software Engineering and Formal Methods
        User Interface Design

(b) STRONG: COMPETITION WITHIN DRAL
        Databases
        Parallel Processing
        Visualisation
        Graphics

(c) WEAK
        Image Processing
        Computational Fluid Dynamics

There was agreement on this analysis.

2.3 Daresbury: Theory, Computational Science and Computing

This is the area run by Paul Durham. Four main activities:

Project	Staff	Groups/Users
CCPs	15.0	250
Parallel Processing	14.5	175
Distributed Computing	4.0	250
S R Theory	5.5	2000
Scientific databases	9.0	2100
TOTAL	48.0	

Not all the staff work directly for Paul as there is effectively a service Computing Division under Pat Ridley which is contracted to provide operations support etc.

7

Actual number in TCS Division is 30. They see themselves as closely aligned to the science. The Division has shown steady growth over the last few years.

2.4 Computing & Electronics

This is the 'central computing' Division but does Electronics also. Its staffing is:

Project	Staff	£K
Synchrotron Radiation Committee	27.3	1600
SMCC	7.2	410
Chemistry Committee	4.5	261
BBSRC (for SEQNET)	4.0	276
SCAP	6.0	310
NPS, RUSTI, MEIS	3.0	
Lab Overheads	3.9	156
TOTAL	55.9	3013

The Division is responsible for data acquisition, data analysis, control system, and systems support for SR Programme. The equivalent here would be ISIS's own computing support.

Most of the other activities are either related to the Science or provide CCD-like functions.

2.5 Summary

Overall the impression was that there was little overlap between Daresbury and RAL. The two Divisions at Daresbury were well integrated with the Science. If it is not broken, don't fix it.

In consequence, most of the discussion centred around responsibilities at RAL and how they might fit with DL.

3. POSSIBLE FUTURE STRUCTURE

3.1 Initial Discussion

The initial discussion concerned a possible DRAL bid to the HPC Initiative for Support Centres. Three out of the four Departments indicated that they were interested in a bid (C&E would not). It was agreed that there would be only one bid and that Paul Durham would coordinate the proposals to produce a single strong bid.

Brian Davies tabled a paper giving his view of how computing activities at DRAL broke down. He indicated that work fitted into four main areas:

(1)   Large Scale Scientific Computing
(2)   R&D non-PGIA work
(3)   DRAL Information Systems
(4)   DRAL Communications (including video)

The discussion following brought out a number of points:

(1)   Scientific Applications support should be coupled to the computationally intensive part of DRAL's facility.

(2)   Networking locally was a problem now that UKERNA had decimated the RAL local expertise.

(3)   Office Systems was an activity that needed to have a single focus.

3.2 Proposal

The Director put forward a proposal coming out of the discussion. Computing should be broken into three core activities:

(1)   Scientific Application Support: to be centred on Daresbury
(2)   National Supercomputer Centre, Scalar Service, DRAL Infrastructure centred on CCD
(3)   High Value IT Solutions for Customers centred on Informatics

In discussion, some elaboration of what this meant was agreed. In particular, as it effects Informatics:

(1)   Informatics would no longer bid for PGIA funding. Effectively the 10 Staff Years of EPSRC funding for Engineering Support would become the responsibility of Daresbury. How they carried out the programme was up to them. An approach, certainly initially, would be to sub-contract the activity back to Informatics. The single point of contact with the Office would be Paul Durham.

(2)   To ensure that it was attractive for Departments to sub-contract to Informatics, the cost of staff years in Informatics must be attractive. This also applies for external contracts. It was not spelt out how this could be achieved. Clearly one possibility would be to run Informatics with no Overhead levy. A second would be to import sufficient functions to make the Department Overhead contribution less significant.

(3)   Those activities of CCD that did not fit into their core programme and were contracts would move to Informatics.

It was clear that the Director's aim was to stop bids to the Research Councils for Laboratory Infrastructure. That would need to be funded by the Laboratory and

the staff year costs etc attributed to the PGIA programmes should take this into account.

3.3 Where Now?

It is still not completely clear to either FRAH or BWD what this entails in terms of moving activities from one Department to another. Some issues that need addressing are what is it that CCD does that is regarded as a Contract and what is laboratory infrastructure. Clearly anything that is development must be a contract but some service elements could also be regarded that way. For information, the CCD RAR is as follows:

Funding Source	Staff Years
Central Computing SCAP	
Base	44.5
Scalar service	19.5
CRAY Service	8.0
Infrastructure	21.5
APS	1.7
EB	1.0
NPB	2.0
SB	1.5
Swindon Office	8.0
RRS	4.3
RAL Ovhds	20.7
TOTAL	132.7

The Informatics RAR is:

RUTHERFORD APPLETON LABORATORY
Resources Allocation Review 1994-95
Bids for direct effort for projects

F.R.A.Hopgood   Version 9   17 May 1994

DIRECT EFFORT IN MAN YEARS

Project	Informatics			Admin			Total		
	NI	RA	Tot	NI	RA	Tot	NI	RA	Tot
EPSRC									
EASE	10.0		10.0				10.0		10.0
PRIPS	0.3		0.3				0.3		0.3
JFIT Coordination	1.0		1.0				1.0		1.0
EIME RG2	0.3		0.3				0.3		0.3
HLSPP RG2	0.2	0.6	0.8				0.2	0.6	0.8
Grant Modelling	0.2		0.2				0.2		0.2
PSTPA Coordination (CPW)	0.1		0.1				0.1		0.1
ESPRIT									
IDENTIFY	1.0		1.0				1.0		1.0
HICOS	5.6	1.0	6.6				5.6	1.0	6.6
MIDAS	0.1		0.1				0.1		0.1
F3	0.8	1.4	2.2				0.8	1.4	2.2
MIPS	2.3	2.0	4.3				2.3	2.0	4.3
I-SEE	2.2	3.0	5.2				2.2	3.0	5.2
PROCESS BASE	1.6	0.6	2.2				1.6	0.6	2.2
TORUS	1.5	0.2	1.7				1.5	0.2	1.7
AMICS	0.1		0.1				0.1		0.1
OTHER CEC									
RIDDLE	0.3		0.3				0.3		0.3
ESSI-FORMMETH	0.1	0.2	0.3				0.1	0.2	0.3
ADDITIONAL RRS									
The Transputer Consortium	2.1		2.1				2.1		2.1
GUIDT-JISC funded	0.1		0.1				0.1		0.1
ISPRA	0.5		0.5				0.5		0.5
COMBINE (Strathclyde)	0.2		0.2				0.2		0.2
Sub-Total	30.6	9.0	39.6				30.6	9.0	39.6

Note RA also includes F/T staff

Project	Informatics			Admin			Total		
	NI	RA	Tot	NI	RA	Tot	NI	RA	Tot
OVERHEADS									
ERCIM	2.0		2.0				2.0		2.0
ROAr	3.0		3.0				3.0		3.0
Repro/Lecture Theatre Support	0.5		0.5				0.5		0.5
Group C Probation	0.1		0.1				0.1		0.1
Brunel	0.1		0.1				0.1		0.1
Trainee Support (Hemmings)	1.0		1.0				1.0		1.0
RSS									
CAECC DRSB	0.2		0.2				0.2		0.2
FROM OTHER DEPARTMENTS									
Graphics Standards-CCD	0.2		0.2				0.2		0.2
Databases(KGJ)-CCD	0.1		0.1				0.1		0.1
SUN Maintenance (Various)	0.1		0.1				0.1		0.1
Finance Support-Technology	0.1		0.1				0.1		0.1
Data Definition-ISIS	0.5		0.5				0.5		0.5
RRS-Software Quality Assessed	0.3		0.3				0.3		0.3
RRS- Technology Transfer	0.5		0.5				0.5		0.5
User Interface Support-SSD	1.0		1.0				1.0		1.0
Networking/Rendering-Science	0.5		0.5				0.5		0.5
INFORMATICS INTERNAL									
Dept Overhds funded by recurrent	2.5		2.5				2.5		2.5
Bfwd Sub-Total	30.6	9.0	39.6				30.6	9.0	39.6
TOTAL	43.3	9.0	52.3				43.3	9.0	52.3

Note RA also includes F/T staff

Total Bids for Departmental Effort: 52.3
Staff In Post: 58.5

SCIENCE AND ENGINEERING RESEARCH COUNCIL

RUTHERFORD APPLETON LABORATORY
INFORMATICS DEPARTMENT

Importance of Informatics in Future of DRAL

F.R.A.Hopgood
July 5, 1994

1. INTRODUCTION

The Informatics Department at DRAL has had difficulty in surviving over the last two years due to:

(1) The massive decline in funding from DTI and SERC (from 100MY to 10MY over 3 years).
(2) The inability to find new funding at the same rate to compensate for this decline. The lateness of the Fourth Framework Programme has exacerbated the situation.
(3) The need to do CEC R&D programmes which are 50% funded as though they were 100% funded with Overheads at the full level on both halves.

Any organisation would make a decision on the long-term viability of the activity and either decide to ensure its success by removing barriers to progress or stop it now as irrelevant to the DRAL long-term viability.

2. DRAL

DRAL believes it has a role as the major supporter of R&D in the UK relevant both locally in the UK and the UK's involvement in Europe. In consequence, its future is dependent on aligning itself with the perceived future of necessary R&D both locally and within Europe.

It is opportune for a discussion of this with the European White Paper to be agreed at the summit in Corfu and the Bangemann Report emphasising what is essential for Europe to survive.

If DRAL has a future, it needs to align its activities to these thrusts within the Community or it and Europe will die.

1

3. WHITE PAPER

The challenge for the next decade according to the White Paper and Bangemann Report is:

(1) To create 15 Million new jobs.
(2) To accept the Information Revolution and ensure it works in Europe's favour.
(3) To ensure European business reacts to these challenges effectively.

Almost nothing in DRAL has any relevance to European survival other than Informatics and the DRAL involvement in Biotechnology. Almost everything else if of marginal importance. By Informatics, I do not mean just what goes on in Informatics Department as quite a bit of Technology Department and some of Central Computing Department is also relevant. However, the central activities of importance to European future lie within Informatics Department.

The White Paper and Bangemann Report stress:

(1) All industry has to invest in IT to make it competitive.
(2) Nearly all new jobs will be IT-related.
(3) Ensuring that Europe has a major input into the new multimedia revolution and information society is essential for its survival.
(4) We need to act now.

4. OPTIONS FOR DRAL

DRAL can either be part of this revolution or bury its head in the sand and say it is not our remit. The current management strategy is the latter and has every chance of being successful. That is DRAL will be marginalised and eventually die or at least not be a major player.

The alternative strategy is:

(1) Ensure that DRAL remains a major player in the Informatics area.
(2) Uses its current funding to ensure that both in its administrative and informatics practices, it is a model of the future.
(3) Ensure Informatics survives as a major discipline at DRAL irrespective of how it is funded.

Changes that would help this strategy are:

(1) Realise that it is essential that DRAL is part of the new Fourth Framework Programme and fund its 50% of the contribution from an overhead on other activities.
(2) Invest in replacing its out-dated and inferior administrative infrastructure so that it is a model of what is to come. In doing this, no developments

should be done in-house that did not have the opportunity to generate a revenue stream.

(3) Reorganise the IT in its scientific departments so that they anticipate the future rather than build more legacy systems.

5. CONCLUSION

A major change is needed in the position of Informatics within DRAL. It should be regarded as its most valuable asset rather than a millstone.

The aim must be to increase the Informatics activities within DRAL by at least 50% to ensure a viable size for significant and coherent activities.

DRAL needs to invest in IT modernisation throughout its infrastructure. An Overhead of £4K per manyear for this alone in the short-term is probably sensible.

Such decisions will not be made if left to the individual Departments to decide. It needs management action from the top to be successful.

Brian,

I did not find the meeting yesterday very constructive. From the Informatics point of view, the recommendation to merge the two Departments was based on a need for a concentration of information systems expertise in one place so that we could be effective in upgrading DRAL's information systems and getting external funding.

The response from Paul and Gordon I found quite depressing in relation to their attitude to IT. In Informatics, we believe:

(1) IT as a discipline should be a major activity at DRAL in its own right. It is crucial to DRAL, UK and Europe's future.

(2) Installing modern information systems within DRAL gives opportunities for external funding both in terms of a revenue stream and R&D contracts.

(3) Most activities at DRAL are dependent on modern IT and would be enhanced by a strong IT Department.

It was on this basis that Informatics was interested in a merger. Gordon was at the Informatics Department Division Heads Meeting where we discussed it.

I saw the response from Paul and Gordon yesterday as:

(1) Computing is an enabling technology for the Science Departments at DRAL. Any Computing Department should set itself up as a service to those Departments.

(2) Installing information systems and getting a coherent policy for PhotoRepro, the Library and Scientific Admin would be driven by the customers even if they were unaware of developments about to hit them.

(3) The major changes coming or here now with regard to information storage, retrieval and dissemination were almost totally ignored.

My belief is that the staff in Informatics will not be impressed by this policy. Effectively all the parts of the paper that were of importance to Informatics have been removed.

With regard to people:

(1) Since the meeting, I checked and David Boyd is a Chartered Engineer as is Rob Witty, David Duce, Keith Jeffery etc.

(2) I believe David Boyd sees his future interests within IT and particularly the areas in his current Division. I doubt if a move to Electronics would be one he favours.

(3) Mike Jane will most likely not see a move back to systems support a forward step.

(4) Keith Jeffery is pragmatic and will be pleased with the acquisition of the Database Group

(5) Rob Witty's position is very unclear but that may be better understood once he has talked to Paul.

It is a pity that the long-term importance of Information Systems to DRAL is not recognised.

Bob Hopgood