

**The Establishment of a National Higher Education
Information and Applications Service for South Africa**

**Report of the Working Group
to the
Minister of Education**

June 2002

Foreword

It gives me great pleasure to release the report of the Working Group on the establishment of a National Higher Education Information and Applications Service (NHEIAS) for South Africa.

The establishment of a National Higher Education Information and Application Service has far reaching implications for enhancing equitable access to higher education, and in turn for increasing the high level human resource base of our country. The NHEIAS, once fully established, will ensure that every school leaver in the country, as well as others wishing to access higher education, will have the full benefit of knowing exactly what is under offer by all of our public higher education institutions and so helping them to make informed choices about their future. It will open up new possibilities for those students who in the past were ill-informed about the range of options available to them in higher education. This will also hopefully attract increasing numbers of students into areas of 'scarce skills' where there is an urgent need to build expertise.

I would like to thank the members of the Working Group for the rigour with which they have undertaken their task and for their unstinting commitment. In particular, I wish to thank the Universities and Colleges Admissions Service of the United Kingdom and the Central Applications Office of Ireland for their participation in the Working Group, which has contributed to a rich product. I also wish to thank the Carnegie Corporation for its generous financial support for the initiative. Finally, I wish to acknowledge the contributions of a range constituencies, both local and international, for their constructive engagements with the Working Group.

I am confident that this comprehensive report provides a basis for moving towards establishment of the National Higher Education Information and Applications Service.

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EXECUTIVE SUMMARY

In accordance with the provisions of the National Plan for Higher Education which was released in March 2001, the Minister of Education established a Working Group in October of the same year to advise him on the establishment of a National Higher Education Information and Applications Service.

The Working Group examined the structures and processes of four existing national applications services in other countries, those of the United Kingdom, Ireland, Kenya and Turkey. In addition, it looked closely at the more recently established local regional service in KwaZulu Natal (the esATI CAO). In its research into the ways in which these services function, the Working Group took note of the size of the systems (i.e., the number of member institutions and the number of applicants served), funding of the service, governance structures, legal constitution, and, most critically, the operating processes. The latter involved the handling of applications, selection, the construction of handbooks, fees, communication with institutions and applicants, the administration of admissions criteria, and the ICT platform to support the service.

The Working Group consulted widely with significant stakeholder groups to gauge their opinions and views. These groups included the Committee of Technikon Principals, the South African Universities Vice-Chancellors Association, Vice-Chancellors, Academic Registrars and Senior Admission Officers, National Student and Teacher Organisations, and IT Directors. In addition, the Working Group undertook a survey of universities and technikons applications and admissions processes and commissioned expert advice and specialist studies on legal matters, information technology and cost estimates. Views expressed by the stakeholder groups and the professional advice received were taken into consideration in formulating the final recommendations.

The recommendations of the Working Group are as follows:

1. In order for an information and applications service to work effectively at a national level, all first-entry students wishing to study at undergraduate level at any public South African higher education institution should apply only through the National Higher Education Information and Application Service. This includes local and foreign students, and those intending to study at either contact or distance educational institutions. It should also include students entering a programme at the first level for the first time whether transferring from another programme in the same institution or from another institution;
2. The National Higher Education Information and Applications Service should produce a handbook listing every programme offering available to first-entry students in all the public higher education institutions. This handbook should be widely distributed (to all high schools, foreign embassies, public libraries, appropriate community organisations etc.). As a service, it should also provide career information in the form of career information handbooks, liaison with schools, and career fairs;
3. The application form for entry into higher education institutions should be carefully designed to elicit essential information required by the central applications service and by the higher education institutions. At minimum, the applications forms should

combine applications for academic placement, student financial aid, and student housing;

4. Applicants should be permitted choices not exceeding ten in number that must be ranked in order of preference. They should be allowed a 'change of mind' facility to adjust their course choices within a stipulated time period. Applicant choices must not be used by institutions in a manner prejudicial to the applicant;
5. The model recommended for administering the admissions process is one in which institutions maintain their right to set the criteria for admissions (including any special admissions criteria) but delegate to the central service the administrative application of the criteria to the pool of applicants. The institutions inform the central service of the total number of offers to be made for the places available for specific programmes and, on the basis of the criteria set out by the institutions, offers are generated by the service and sent to applicants. This model is similar to the Irish, Kenyan and Turkish systems;
6. The National Higher Education Information and Applications Service should be established as a Section 21 Company, supported by statutory provisions to be incorporated into the Higher Education Act, that make all public higher education institutions members of the service;
7. It should be governed by a Board of Directors comprising knowledgeable persons drawn mainly from the higher education sector;
8. A Chief Executive Officer, appointed by the Board and reporting to the Board, and operating out of delegated authority from the Board, should manage the National Higher Education Information and Applications Service. Provisions should also be made for the appointment of a Deputy-Director, HR/Office Manager, Finance Officer, Editor and IT Manager who will, along with the Chief Executive Officer, constitute the core management team;
9. From a technical perspective, the esATI CAO system should be used as the basic information services and technical platform for the National Higher Education Information and Applications Service. It will need to be modified and expanded to meet the specific needs of a national applications system. This will require both additional hardware and software development. Adequate time and resources should be made available for the design, piloting, testing and implementation of the ICT platform;
10. The implementation of the National Higher Education Information and Applications Service and the restructuring of the higher education sector should be synchronised and treated as one change process. In particular, the implementation of the information and applications service should get underway at the same time as the proposed mergers so as to allow the change management resources and expertise associated with the service to be available to the institutions as they 're-engineer' their applications and admissions processes;

11. A multi-phase implementation model should be adopted in which the esATI CAO software is modified to accommodate the proposed changes to the applications and admissions processes and where the new system is used initially (i.e., in the first phase) only for the existing esATI institutions and thereafter extended, in a further two phases, to other institutions over a period of at least an additional two years. It is believed that this model will significantly reduce many of the risks associated with the implementation as a whole.
12. It is recommended that implementation be embarked upon from the second half of 2003 which will allow for the process to be completed by the first quarter of 2007;
13. It is estimated that set-up costs for the National Higher Education Information and Applications Service will be in the order of R35 million and the annual operating costs R28 million. The Working Group recommends that Government meet the set-up costs. The annual operating costs of R28 million should be met by charging a standard application fee, with a penalty for late applications. Should additional funding be required to meet the annual operating costs, consideration should be given to top slicing a percentage from the overall higher education budget or levying a capitation fee on institutions.
14. The fees to be charged for foreign students should be set in consultation with the higher education institutions. However, it is recommended that students from SADC countries should be charged no more than the standard fee for local students.
15. The National Higher Education Information and Applications Service should be located in KwaZulu Natal where it can draw on the existing expertise of the esATI CAO. This location would facilitate the implementation process and costs could be maintained at moderate levels. The neutrality of the service should be protected by ensuring that it is not located on the site of any higher education institution.
16. The National Higher Education Information and Applications Service should be embarked upon with care, thorough planning, and with the allocation of sufficient financial and human resources to ensure that it provides an effective and efficient service;
17. Clear communication with all stakeholders, including parents, students, teachers and the higher education community should be accorded high priority as soon as decisions in relation to the establishment of the National Higher Education Information and Applications Service have been finalised. This should include creating awareness of the service through, among other strategies, a strong advertising campaign.

1. WHY AN INFORMATION AND APPLICATIONS SERVICE FOR SA

Literary studies or philosophy? Biomedical engineering or nuclear physics? Environmental studies or town planning? Film production or media studies? How many matriculants are aware of the extraordinarily rich range of programmes available to them in South Africa's public higher education institutions? A lucky few who have adequate counselling at school, or parents who make exceptional efforts, may have some inkling of this vast array of offerings, but even the most enterprising and well-resourced schools and families would have difficulty gaining access to the full store of this kind of information. That would change with the establishment of a National Higher Education Information and Applications Service (or NHEIAS). Through its information service, it would make available to all school-leavers and any working adults interested in pursuing higher education studies, a comprehensive list of courses and programmes available to first-entry students at all the public higher education institutions in the country.¹

In a situation where participation rates in higher education are declining, but there is an increasing need for high level skills to power an economy that hopes to be globally competitive, such an information service could play a potentially invaluable role in promoting access to higher education by enabling students to match their interests and ability to appropriate courses of study. For the first time, South African school-leavers, and many others, would be able to reflect on the opportunities afforded them across the full spectrum of institutions, from those in close proximity to their homes to those far away, from residential institutions to distance providers, and from universities to technikons. What is more, this information would be as accessible to pupils in the most remote rural areas of the country as to those in major urban centres and could mean that no student, who is eligible for admission, is lost to the higher education system, of whatever race, gender or economic position.

The National Plan for Higher Education (NPHE) of 2001 makes provision for a National Higher Education Information and Application Service to be established². It should be viewed, therefore, as one component of the wider restructuring of higher education to meet more effectively the goals of Education White Paper 3 (1997). Seen in this context, it is a critical new mechanism for turning the chimera of a 'single co-ordinated system' into a reality. The service is intended to facilitate access to higher education institutions for applicants, to help institutions deal more effectively with the applications and admissions process, and to provide institutions, regions and the Department of Education with

¹ In 2001, South Africa had 5,816 public high schools with 449,371 candidates writing the Senior Certificate Examination. Of these candidates, 277,206 passed the examination - 67,707 with Matriculation endorsement and 209,499 without endorsement.

² "The Ministry is of the view that the establishment of a National Higher Education Information and Applications Service would facilitate race and gender access ... This must therefore be prioritised...[the service] should be in operation by 2003" (NPHE: p. 43).

valuable planning information. In short, the service is intended to facilitate better management of student enrolment within higher education.

The need for a higher education information and applications service arises out of a number of shortcomings in the present situation that in turn produce disadvantages for potential applicants. Aside from those wishing to study at the higher education institutions of KwaZulu Natal, where a Central Applications Office (known as the esATI CAO) is now entering its third year of operation, applicants to universities and technikons elsewhere in South Africa are currently required to apply directly to each institution at which they are interested in studying, paying a separate application fee each time. This process of *multiple* applications is expensive and wasteful for applicants. It is also wasteful for the institutions, as several institutions will process the data for a single applicant. And it leads inevitably to shortfalls at registration time, when students who have been selected by other institutions fail to register. The process also means that critical data and data-trends essential to effective planning in higher education are not always available at institutional, regional or national level.

But potential applicants are especially disadvantaged by inadequate access to good information. In communities where there is little or no career guidance and little experience of higher education, potential applicants are least able to explore all the opportunities open to them. Those who do apply to study further may simply focus attention on the nearest accessible institution and make an application listing a range of different programmes within the same institution. As a consequence, they can end up accepting a place on a programme that does not correspond to their real interests or lead in their chosen career direction. This may well be a contributing factor to high dropout rates.

An even greater problem is that many potential applicants do not consider the possibility of applying for a place in higher education until the Senior Certificate results have been received or until they are partly sure of some financial support, whether from parents or from other sources. Then they rush from institution to institution, either accepting a place that is not suitable or failing to find a place to study. This can happen even though there is spare capacity within the system, because applicants do not have access to a central database that can give them information about programmes that still have available places. It is many of these students who constitute the peculiarly South African phenomenon known as 'walk-ins' – students who arrive at institutions during the registration period without having made any prior application, but nonetheless expect to be admitted to the programme of their choice. Aside from the disappointments that many of these students come to experience, it is a pattern of behaviour that makes a mockery of any responsible academic planning process.

A national applications service would attempt to modify such behaviour over time by making school-leavers keenly aware of the need to make early application for places in higher education institutions and encouraging them to do so even though they may be unsure of meeting admission requirements. With a much richer information base than is currently available to applicants, even those who, in the end, do not meet admission requirements, could be redirected to alternative access programmes.

The benefits of the esATI CAO provide valuable lessons here. In KwaZulu Natal, students make multiple applications while paying only a single affordable fee. Extended to a

national level, such a service would allow every potential student, at very small personal cost, the space to dream, and the mechanism to translate dreams into reality.

Apart from the likely benefits to applicants, a centralised information and applications service would offer considerable benefits to the institutions in the higher education system, and to the Department of Education. In addition to the obvious benefits of greater efficiency and cost savings, a centralised service would provide data, presently available only on a limited basis, critical to future planning as well as to implementation strategies for redress and the promotion of excellence in higher education. At present, the applications information supplied to the higher education database is incomplete in part because many institutions do not keep reliable applicant data. The other problem is that even where this information exists, there is no way of tracking multiple applications.

The higher education sector in South Africa currently does not manage student enrolment in any systemic way. Some higher education institutions have sophisticated applications processes in place, including active recruitment of good students and the nurturing of special relationships with "feeder schools". Other institutions hardly have an applications process to speak of and rely almost solely on "walk-ins" who arrive on registration day expecting to be admitted. A national *information* service on enrolment patterns and trends would be an essential first step to better management of student enrolment. The experience of countries where national or regional applications services are found suggest that the introduction of such a service in South Africa would enable better applicant choice, better marketing reach and efficiencies for institutions, and provide better enrolment information for the sector as a whole. In a reciprocal relationship, every public higher education institution would enjoy exposure to the whole pool of potential applicants.

Some of these benefits are already in evidence as the central applications service in KwaZulu Natal matures. Indeed, the establishment of a national higher education information and applications service is likely to be made easier by the experience gained in this regional service.

The Minister of Education established a Working Group in October 2001 to advise him on the establishment of the NHEIAS. Its Terms of Reference (see Appendix One) require it to recommend a model for a national higher education information and applications service to meet South African conditions and needs. The service must add value, be feasible and be economically practicable. The Working Group was also required to consult widely with relevant stakeholders at both the national and regional levels, and to make recommendations on governance, funding and on how the costs of setting up such a service should be met. This Report is the outcome of the process of consultation and deliberation.

2. THE APPROACH OF THE WORKING GROUP

The Working Group has met on numerous occasions and has interacted with many stakeholder groups, the first meeting having taken place on 24-25 October 2001. A list of scheduled meetings can be found in Appendix Two. Following clarification of the mandate in the Terms of Reference received from the Minister of Education, the Working Group set out to review the two best known foreign systems in developed countries, namely UCAS in the United Kingdom and CAO in Ireland, two systems in developing countries, namely Kenya and Turkey, and the local regional system, the esATI CAO in KwaZulu Natal.

The Working Group further undertook the widest possible consultation with relevant interest groups and stakeholders, including inviting written submissions. These included meetings and workshops held with:

- Members of the SAUVCA/CTP Higher Education Admissions Task Team
- The CEO of the Committee of Technikon Principals (CTP)
- The CEO of the SA Universities Vice Chancellors Association (SAUVCA)
- Representatives of National Teachers Organisations
- Representatives of National Student Organisations
- Members of the esATI CAO Users' Group
- Academic Registrars and Senior Admissions Officers of Universities and Technikons
- The CEO of the National Student Financial Aid Scheme (NSFAS)
- The EXCO of the Committee of Technikon Principals
- The EXCO of the SA Universities Vice Chancellors Association
- Vice Chancellors of Universities and Technikons
- Higher Education – IT Directors Forum
- esATI Governing Board

In addition to these meetings, the Working Group circulated a concept paper outlining some of the critical issues and available options/scenarios for the establishment of the NHEIAS. It also undertook a survey of universities and technikons applications and admissions processes. A questionnaire was handed to higher education institutions at a consultative meeting with Academic Registrars and Senior Admissions Officers, with the request that it should be completed and submitted to the secretariat to the Working Group by a due date. Of the 36 public higher education institutions the return rate was just below 50%, with the majority of return from universities. The profile that emerged from this survey was instructive in so far as it highlighted areas of uniformity and convergence as well as differences in institutional applications and admissions practices.

Expert advice on legal matters, information technology, and business and financial models was commissioned on the following issues:

- The available structural options for the establishment of a national higher education information and applications service for South Africa;
- The software, hardware and network requirements of a national higher education information and applications service for South Africa;

- Implementation scenarios and financial models for estimating the set-up and operating costs of a new national system.

3. REVIEW OF APPLICATIONS SYSTEMS

The Working Group has had the benefit of in-depth discussion and on-site study of five applications services. The UK and Irish services are mature, well-established national systems; the KwaZulu-Natal service is relatively new and regional; Kenya and Turkey are two developing countries that have managed their applications centrally for some time now. We have learned much from all of them.³

The next section offers a brief overview of some of the central features of the five systems examined and this is followed by a more detailed comparison of the applications and selection processes adopted in each of these systems. A summary comparing the essential elements of these systems is provided in Appendix Three.

3.1 esATI CAO in KwaZulu Natal

The Terms of Reference specify that the Working Group should undertake as a first step “a detailed evaluation of the current Central Applications Office (CAO) that is in operation in KwaZulu-Natal, as a basis for determining an appropriate model for the establishment of a National Higher Education Information and Applications Service”. The Working Group has had the opportunity to conduct a detailed study of the esATI CAO, including discussions with the management team on site, to attend a meeting with the CAO Users’ Group and a meeting with members of the esATI Board.

The esATI CAO was established in 1994 as a project of the Eastern Seaboard Association of Higher Education Institutions, representing the three universities and three technikons in KwaZulu-Natal and the two distance education institutions, UNISA and Technikon SA. The CAO began operating in 1998. It is governed by the Board of esATI through a representative Steering Committee. A CAO Users Group consisting of different users, ranging from deans and faculty officers to personnel from admission offices from the eight member institutions, meets three or four times a year. The operating costs of the CAO in 2001 were of the order of R3, 3 million and were met almost entirely from revenue generated from applications fees (R130 per on-time application; R170 per late application), plus a small revenue derived from advertising. The initial set-up costs were met by means of a bank loan underwritten by the participating institutions. Interest on the loan is paid from operating expenditure with little prospect of paying off the loan.

³ The Working Group wishes to place on record its appreciation of the hospitality and assistance by the heads and staff of esATI CAO, UCAS, CAO Ireland, JAB Kenya and OSYM Turkey. The South African delegation has learned a great deal from all the systems, and has benefited from the sometimes robust debate between representatives of these five different systems.

The esATI CAO has a core staff of nine, assisted by seasonal data capturing staff, to handle some 22 000 applications on behalf of eight institutions, with a placement rate of about 11 000. The office has developed its own software. The database is run on SQL server and managed in-house. The CAO uses the Tertiary Education Network (TENET) for network services.

The Working Group has been impressed by the initiative of esATI and has learned a great deal, both from the willing staff who have been unstinting of their time, and from the users who have given us the benefit of their experience.

3.2 UCAS in the United Kingdom

The Universities and Colleges Admissions Service (UCAS) is located in Cheltenham in its own building that houses a staff complement of some 330. It is the result of a merger in 1993 of the services, run separately until then, by the universities and polytechnics in the UK. UCAS receives applications from some 450 000 applicants for places on 45 000 courses in UK universities and colleges. This includes applications from foreign students. The Open University, the UK's primary distance education provider is not a member of UCAS, although there are indications that the university is in the process of reconsidering its position. From all accounts, the system would be able to accommodate the requirements of a distance education provider with relative ease.

UCAS is owned and run by the higher education sector through a company limited by guarantee, similar to our Section 21 Company. It has some 336 member colleges and universities who must each subscribe to the terms of the Association to be admitted. A Board of Directors of at least 16 but not more than 22 governs the company. The management of UCAS consists of a Chief Executive, Deputy Chief Executive and eleven Heads of Department.

Government met the set-up costs of the Polytechnics Central Admissions System (PCAS) in 1984 when the system was established, but did not do so for the university system when it was established in the 1960s. Applicants' fees pay for 40% of the running costs, and a capitation fee, paid by institutions once an applicant registers accounts for a further 40%. The remainder is met from revenue generated by the UCAS marketing company.

3.3 CAO in Ireland

The Central Applications Office (CAO) was established in 1975 by the five universities in the Republic of Ireland. In 2002 there were 42 participating universities and colleges. The CAO receives applications from some 63 500 applicants, including foreign student applicants, for 37 525 places in the system. Headquartered in Galway, a core staff of nine, headed up by the Secretary, runs the service.

The CAO is owned and run by the higher education sector through a private company, limited by guarantee. Initially government met its set-up costs. Its annual operating costs are met entirely by applications fees.

3.4 JAB in Kenya

Applications and admission to Kenya's public universities are facilitated and administered by the Joint Admissions Board (JAB). All the public universities in Kenya (6) participate in this process on a voluntary basis. The JAB developed out of the desire of the initial two institutions (University of Nairobi and Kenyatta University) to co-ordinate their admissions processes. Kenyatta University originated as a constituent college of the University of Nairobi and as such shared a common admissions procedure at the time. The younger universities, which were subsequently established, all opted to participate in the JAB. The JAB is made up of the six Vice Chancellors and their Deans. It is administered by the Registrar of one of the six universities, and financed solely from applicant fees. Some 56 000 applications are received for some 11 000 places in these six institutions, at a fee of about R30 per application. JAB does not employ any full time staff.

3.5 OSYM in Turkey

The Student Selection and Placement Centre (OSYM) was founded by the Inter-University Board in 1974 and was then named the Inter-University Student Selection and Placement Centre (USYM). The reason for centralizing the system was due to the significant increase in the number of applicants and the tradition of each institution setting its own entrance examination. This placed undue demands on the higher education institutions, resulting in wastage of resources. In 1982, in accordance with the Higher Education Act, USYM was affiliated to the Higher Education Council and named the Student Selection and Placement Centre (OSYM).

All students, including foreign students, wanting to enroll in any of the 52 public and 25 private universities and several 2-year colleges are required by law to apply for admission through OSYM. After having completed the secondary school diploma, the students are required to sit for a centrally administered examination, which is organised and administered by OSYM. On release of the entrance examination results, those candidates meeting the minimum requirements for entrance to university may apply for placement in any of the higher education institutions. In 2001, 1 500 000 candidates wrote the entrance examination. Approximately 700 000 candidates qualified for admission to university programmes and 450 000 students were placed. A further 200 000 student were placed in 2-year vocational college programmes where an entrance examination is not required. Students are placed in programmes based on their achievements in the examination, their preferences for study programmes expressed at the time of the application, and the capacity of the institutions to accommodate students in the respective programmes.

OSYM is headquartered in Ankara and is managed by a President who is appointed by the Higher Education Council. The staff consists of 321 full-time and approximately 50 part-time staff. Around the time of the entrance examination, approximately 160 000 additional staff are engaged prior to and on the day of the examination. OSYM is financially self-supporting and generates its revenue from the examination fee (US\$20) and the placement fee (US\$9). Foreign students pay a combined examination and placement fee of US\$100. Additional income is derived from administering placement examinations for various professional bodies.

3.6 Review of Application and Selection Processes

For comparative purposes we have examined the actual applications processes used by the five systems.

3.6.1 The Handbook

The vital component of the information and applications process is the compilation and publication of the handbook and its distribution to high schools and to the wider public. All five systems provide information on the courses, qualifications and programmes offered by participating institutions and this information is also published on their websites. There are two major methods of presenting information in handbooks: one method takes the institution as the primary organising factor (UCAS, Turkey, Kenya, Irish CAO); the second method is by programme offerings (esATI CAO). Handbooks require long lead times (some 13 months) and are therefore often out of date by the time they are published. But the handbook (or a CD Rom or online version that can be frequently updated) is the key carrier of information available to schools, guidance teachers and potential applicants. It is also the vehicle by means of which every participating institution is able to communicate with potential applicants.

3.6.2 Application Form

A further key element of the applications process is the application form. These are carefully designed to elicit essential information required by the service itself and by participating institutions. Applications have to be submitted by a set date, though late applications may be permitted (with the exception of Turkey that does not permit late applications), accompanied by a penalty fee. Most systems currently require applicants to submit information and documents in respect of financial aid eligibility and need for and type of student housing, which information is forwarded to the relevant institution or organisation. UCAS is unique in requiring applicants to write a personal statement that must accompany the application and a reference written by the applicant's school or college.

In the Kenyan system, the high schools have the responsibility for submitting the completed forms and fees to the central service before the due date. With the exception of Kenya, applications can be submitted on paper or on line.

All students entering into the first-year of programmes make applications via the applications service. This includes students who may be starting afresh in a new programme having been registered previously in a different programme (either within the same institution or at another institution). This is particularly important for the management of student enrolment in the first level of each programme especially where students are competing for a limited number of places.

3.6.3 Applicant Choices

UCAS permits applicants to make up to six choices to be placed in directory (i.e. alphabetical) order. esATI CAO permits applicants to make up to six choices that must be ranked in order of preference. CAO Ireland allows up to ten degree and ten diploma choices that must be ranked in strict order of preference. Kenya permits four choices, and Turkey 24 choices, that must be stated in order of preference. All systems, with the exception of Turkey, allow applicants a change of mind facility. It should be pointed out that the CAO in Ireland is the only system that provides for a separate listing of degree and diploma programmes. The rationale offered for this practice is that it allows the applicant to keep open as many options as possible for as long as possible. None of the systems reviewed provides for a separate listing of preferred choices for contact and distance education programmes. The rationale is that the inclusion of distance education programmes as part of a common listing of preferred choices reinforces the perception of equal quality, irrespective of the mode of programme offering and may also contribute to the marketing of distance education programmes.

3.6.4 Application Fee

In all of the systems reviewed, a standard application fee is levied. An additional late application fee is charged for applications submitted within a further set period determined by the applications service. All foreign students pay an application fee which in most cases is higher than that charged to local students.

3.6.5 Method of Selection

Perhaps the best way to appreciate the essential difference between methods of selection is to compare the UK system and the Irish system. The other three systems are variations of these primary types, with the esATI CAO a derivative of the UK system and Kenya and Turkey operating like the Irish system.

In the UK system, institutions are informed simultaneously if they are cited in an application. The institutions cited then consider the application and respond to the applicant via the applications service. In essence, the institution will make a firm offer, a conditional offer, will require further information, or make no offer. The applicant then has a period during which he/she may accept or reject the offer via the applications service. From 2003 UCAS Extra will be introduced that will provide for applicants making further applications if they receive no offers after their original six are considered by institutions concerned.

The Irish system operates in a substantially different way. While similar to the UK system in that full details of all applications are provided simultaneously to institutions in computer format, institutions delegate the mechanics of the allocation of places process to the CAO Ireland by setting minimum entry requirements for each programme or qualification, and specifying the number of student places to be offered.

Applicants for each course are 'scored' in order to determine an order of merit. The institutions delegate to CAO Ireland, under direction, the calculation of scores of standard applicants which are based on examination results. Institutions also notify the CAO Ireland of the 'scores' to be given to non-standard applicants. They may, for example, take account of special admissions such as recognition of prior learning or of quotas (such as those for applicants from disadvantaged areas, who will be given enhanced scores). These scores place non-standard applicants appropriately among the order of merit list of standard applicants for each course.

On the authorisation of the institutions, the CAO Ireland then electronically sorts applications by applicant preference, points scored and places available, and makes offers accordingly. Applicants are offered the highest preference course to which their scores entitle them. The applicant accepts the offer via communication through the applications service.

In order to fill any places not accepted, further offers are made as required on a scheduled weekly basis, and drawing from those applicants on the 'waiting' list for each course. Applicants may receive a further offer for a higher preference course should a place become available.⁴

3.7 Lessons Learnt

⁴ In essence, the difference between the UCAS (and its esATI CAO derivative) and CAO Ireland is best understood at the theoretical level or level of underlying principle. Its Secretary, Martin Newell, describes the CAO Ireland model as "continuous", whereas the UCAS model is "discrete". A "continuous" system is one that is so designed that its integrity is maintained continuously through the process of application, selection and placement, as is the case in the CAO Ireland model. The applicant applies and appears in the lists of courses for which he/she has applied. When assessment takes place, his/her specific position in each list is determined by his/her merit compared to the other applicants for the course. Powerful computer programming ensures that the applicants ranked preferences are ordered and offers made accordingly with applicants being offered the highest preference to which their score entitles them.

A continuous model can accommodate a discrete model, and the CAO Ireland does so, but the reverse is not the case. In a discrete system, the applicant applies and is assessed and offered a place unconditionally, conditionally or not at all. No attempt is made to assess the merit of the applicant relative to all other applicants. The system is discrete in that a single action determines the fate of the applicant. There is no attempt to develop a waiting list upon which institutions may draw to fill places at the later stages. In the case of the UK, however, the UCAS Extra, to be introduced next year, will partly address this. Furthermore, if the applicant does not meet the requirements of a conditional offer, once examination results are known, he/she may enter into a series of unstructured negotiations or enter "clearing" which is also unstructured. At this point in the cycle the role of the central applications office essentially stops except as a place of record, whereas the CAO Ireland role continues throughout the cycle, maintaining an orderly structure throughout the entire process.

Despite the fact that these services operate in different social contexts, arise out of varying histories, and accommodate systems of different sizes, there are a number of general characteristics shared by all.

Although they are designed primarily to serve the public higher education systems, they can include private providers and serve both contact and distance education institutions. Set-up costs have been met differently in these systems (for example, in Ireland, government provided the initial set-up costs and in the UK initial costs were partially government funded), but all have become financially self-sustaining. All systems require all applicants to pay application fees, which are crucial to meeting the operating costs of the services. In some instances, revenue is supplemented by capitation fees and/or other income-generating activities.

In the five systems explored, the establishment of this kind of service was achieved through one of three structural options: consortial agreement, setting up a Section 21 company or statutory enactment. Within the first two of these, while membership may be voluntary, the historical reality has been that over time, almost all public (and some private) institutions have seen it as being in their interests to participate in the service. Geographical location is determined by access to appropriate facilities, but in other respects is not seen to be a significant factor except in the case of Turkey, where location close to the seat of government was held to be an advantage.

The systems are designed primarily to serve first-entry students, and successful enrolment management is dependent on all students entering the first level of a programme making application through the central service. In other words, even if a student has previously been registered for another programme, but is now starting at the first level of a new programme, either within the same or at another institution, he/she is required to apply through the central service. In this way, information about *all* applicants at first level is captured. Transferring students at second or third level, on the other hand, have their applications handled by the institutions and not by the central service.

All the systems have the capacity to deal with applications from foreign students. In fact, in the UK, Ireland and Turkey, this is required of foreign students. Some well-established systems also accommodate enrolments in select postgraduate programmes.

All these systems allow students to make a range of choices, the majority in ranked order, and there are a variety of ways in which choices may be organised such as separating degree and diploma programmes. The selection processes that follow also vary. These systems also have the flexibility to accommodate any special criteria decided upon by the institutions such as preference given to female applicants, quota systems, recognition of prior learning, mature applicants and so on.

Even the most sophisticated of these systems is still postal-based, although they are all increasingly moving towards online communication as facilities become more generally available.

4. ISSUES AND CONCERNS RAISED BY STAKEHOLDERS

As stated earlier, the Working Group consulted widely with significant stakeholder groups to gauge their opinions and views on the establishment of the NHEIAS. A list of the main issues raised is outlined below.

□ **Issues of principle**

- Will a SA national applications service be independent of government and of participating institutions?
- Will it be an applications or admissions system?
- Will membership be voluntary or compulsory?
- Who will own it?
- Who will pay for it?
- Will it be based on principles to which the higher education sector subscribes?
- Will it link academic placement with student financial aid and student housing?
- Will it cater for alternative admissions processes, including recognition of prior learning?
- Will a certain standardisation of course/programme nomenclature and of dates be necessary?
- How can a national applications service cater for the language needs of applicants?

□ **Practical concerns**

- The proliferation of programmes, lack of common nomenclature, and the sheer size of the national higher education system may make a handbook simply unmanageable.
- A certain standardisation of course/programme nomenclature and of dates will be necessary.
- The interface between the data requirements of the central system and the data capturing systems of institutions will constitute a major set-up challenge.
- It must be recognised that in the matter of IT capacity the playing fields are by no means level. IT training of both staff and applicants will be required.
- An interface between the NHEIAS and NSFAS and HEMIS must be developed.
- The system must have the flexibility to deal with “walk-ins”.
- Effectiveness and efficiency are critical success factors in centralising applications.
- The whole matter of programme descriptors, and related career and curriculum guidance, will need careful attention.
- Good information for and communication with applicants, especially those in rural areas, are required to facilitate informed choices, including information on student financial aid and housing. The potential for distrust of a central applications service must be addressed.
- Centralisation of the applications process could result in staff retrenchments.⁵ The importance of staff development and training at an institutional level was stressed; adequate financial provision must be made for this.
- What will happen to esATI CAO in KwaZulu Natal with the introduction of a national system?

⁵ It should be noted that consultations with KZN institutions indicated that there had been no staff retrenchments as a result of the establishment of the esATI CAO, in part because institutional administrators had multiple functions.

In summary, no fundamental opposition was expressed to the establishment of a central information and applications service although concerns were voiced over the implications it may have for institutional control over admissions processes. Other views focussed on the practicalities of implementation and possible disruption that this may cause in the initial phases of setting up the service particularly in the context of wide scale restructuring of the sector. Strong opinions were expressed that government should provide the funding to set up the service as the higher education sector cannot afford it out of its already stretched resources. Sufficient lead-time is seen to be necessary to ensure that the system would operate effectively from its inception.

5. PROPOSED MODEL

The Working Group believes that in order for the system to work effectively, all first-entry students wishing to study at undergraduate level at any public South African higher education institution should apply only through the national higher education information and application service. This includes local and foreign students, and those intending to study at either contact or distance educational institutions. It would also include students entering a programme at the first level for the first time whether transferring from another programme in the same institution or from another institution.

This is essential for the generation of an accurate database. All institutions and their programmes would be given equal promotion and exposure to applicants through the handbook.

The Working Group is also of the view that the project of centralising applications must be of demonstrable value to applicants, higher education institutions, the higher education sector and government. It has therefore adopted the notion of a "value proposition" to describe the possible ways in which the system may be seen to be of value or benefit to the various groups of stakeholders. Some of the possible benefits to each group are tabulated below:

5.1 The NHEIAS Envisaged

The Working Group envisages an information and applications service for South Africa that has the following benefits for the country.

First, it should be guided by these **principles**:

- Fairness and transparency;
- Equality of treatment of applicants and higher education institutions;
- An applications system and not an admissions system; institutions remain responsible for admissions policies and decisions;
- Respect for applicant choices;
- Non-prejudicial handling of all applicant choices; no matter how ranked by applicants;

- Respect for the autonomy of higher education institutions;
- Provision of a seamless web of information to applicants and participating institutions about academic placement, student financial aid, and student housing;
- The system should facilitate access and not militate against redress strategies adopted within institutions, such as categories of special admissions, including recognition of prior learning;
- Independence from government and from higher education institutions.

Second, it should be designed and run primarily in the **interests of the applicant**:

- Providing a “one-stop-shop” for potential higher education students;
- Improving access to higher education by giving applicants who qualify opportunities to enter the higher education institutions of their choice, and improving understanding, particularly in rural and poor areas, of the range of higher education opportunities open to them;
- Offering a learner-centred service that is accessible, affordable, and user-friendly;
- Allowing consolidation of what would have been separate applications to two or more institutions into a single application;
- Lowering the application cost for the applicant where the application is to more than one institution;
- Requiring only one set of supporting documents, irrespective of the number of institutions to which application is made;
- Improving the chances of applicants being successfully admitted to an institution of choice;
- Redirecting students who have not received offers for the programmes of their choice to alternative programmes;
- Redirecting students who have not met the admissions criteria for their chosen programmes to alternative access programmes;
- Making the application process and offer of admission potentially more transparent and predictable;
- Providing career information and advice on labour market trends via the NHEIAS handbook and liaison with individual high schools.

Third, it should be designed and run so that it **benefits higher education institutions and the higher education system as a whole** by:

- Enabling the national system and the participating higher education institutions to improve the management of student enrolment;
- Marketing higher education institutions and their programme mixes nationally;
- Marketing the SA higher education system in Africa and worldwide;
- Providing career and course information to schools early enough to influence learners subject choices;
- Providing comprehensive and timely information on applicants and their choices;
- Providing information linkages with the Higher Education Management Information Systems (HEMIS) and the National Student Financial Aid Scheme (NSFAS);
- Informing applicants about entry requirements/admissions criteria;
- Providing career information and advice that could lead to more appropriate applications to specific programmes of study;

- Reducing the overall applications and admissions cost incurred by institutions;
- Potentially reducing the number of “walk-ins”;
- Capturing data of applicant information;
- Managing some of the necessary correspondence to applicants;
- Providing verified school certificate results per applicant and calculation of point scores for admission decisions;
- Providing consolidated lists of applicants for admission decisions;
- Increasing the possibility of detecting student application fraud;
- Scanning and electronic distribution of supporting documents to institutions;
- Carrying out a centrally administered diagnostic means test for financial aid, prior to NSFAS processing of financial aid applications.
- Enabling institutions to monitor progress in achieving race and gender access

Fourth, it should be designed to ensure that the **Ministry of Education** has reliable information by:

- Enabling the Ministry of Education to monitor progress in achieving a widening of race and gender access;
- Providing statistical information to the Government thereby allowing it to assess the efficacy of its human resource development strategies;
- Potentially reducing the total cost to the country of the Higher Education applications and admissions process;
- Potentially ensuring more efficient allocation of applicants to places in the national higher education system;
- Improving the statistical validity of the data on the applicant cohort.

5.2 Proposed Applications Model

Generic to all applications systems are the primary components of a handbook, an applications form, the number (and possible ranking) of choices available to applicants and the process of allocating places. The decision about the manner of allocation of places lies at the heart of the model and in certain respects determines the form of the other components. The focus initially must therefore be on the choice of the allocation of places process, after which attention will return to the other aspects of the system.

There are two fundamental forms of allocation. In Model One, all the applications in which a particular institution is named are sent to the relevant institution, which then applies its chosen admissions criteria (including any special criteria) to the pool of applicants to select those to whom it will offer places. In this scenario, the central applications service plays the role of a conduit receiving applications, forwarding them to the relevant institutions, and then informing applicants of the institutions’ decisions. Applicants’ acceptances are then conveyed through the central service back to the institutions. This form is the one adopted in the UCAS and esATI CAO services.

In Model Two, institutions set the criteria for admissions (including any special admissions criteria), as in the previous example, but *delegate* to the central service the administrative application of the criteria to the pool of applicants. Institutions also inform the central service of the total number of offers to be made for the places available for specific

programmes, on the basis of which offers are generated by the service and sent to applicants. Acceptances are received by the service and then communicated to the institutions. In this scenario, the central service assumes responsibilities delegated to it by the sector and takes on more of the administrative functions of the allocation of places process while still performing the role of conduit between applicant and institution. This method is used by the Irish CAO, and in the Kenyan and Turkish systems.

In addition, a number of other features can be built into these processes in response to the needs of the sector, for example, to cater for the making of conditional offers.

Using the notion of the "value proposition" as a guide, the Working Group recommends an applications model that is similar to the Irish (and Kenyan and Turkish) system, with modifications to take account of a "Conditional Offer" process. It is our considered view that this model is best able to deal with the specific South African conditions relating to the applications and admissions process. Furthermore, it meets all the imperatives enshrined in the principles upon which we believe an applications service ought to be based; principles we have established through wide consultation within the sector.

From a public interest perspective, Model Two has several advantages over other systems. First, it creates a foundation for better and more realistic enrolment planning on the part of higher education institutions; something that needs to be encouraged in all institutions, especially the weaker ones. In such a system institutions are required to inform the NHEIAS of their entry-level requirements per institutional grouping of qualifications and majors, and the number of places available.

Secondly, it compels institutions to disclose upfront their selection criteria and processes, including their policies on social redress through special admissions procedures. This is in the interest of all applicants including potential applicants from disadvantaged backgrounds. The way in which institutions are responding to the pressing issue of widening student access thus becomes transparent for all to see, and can be monitored in the national interest.

Thirdly, it relieves institutions of some of the administrative burdens of the applications and admissions process without detracting from their right to set their own admissions criteria. A further point worth noting is that in Model One, the number of choices is restricted because institutions process *all* choices made by applicants. The higher the number of choices offered to applicants, the more applications the institution has to process. In Model Two, applicants can be offered a greater number of choices as these are dealt with in an automated system and do not place any additional burdens on institutions. A reasonable limit should nonetheless be placed on this number, beyond which choice becomes relatively meaningless.

A crucial difference between our situation and that of the international systems described in this report is that currently supply of places exceeds demand, except for popular and over-subscribed courses. In other words, with the exception of over-subscribed courses, South African institutions are competing fiercely for students; they are *recruiting rather than selecting*. We believe that Model Two is better able to deal with this situation in the following way:

- For courses in short supply, i.e., where demand exceeds supply, it offers applicants a fair opportunity based on the criteria of merit (i.e., highest points score) *and/or* special admissions criteria;
- For courses where supply of places exceeds demand no institution is unfairly advantaged; i.e., applicants get placed in their institutions of preference.

We also consider that Model Two provides a significantly better value proposition both for applicants and for institutions. Earlier (see Section 5.1) we listed the possible benefits of an applications service to applicants, institutions, the sector and government. If we apply the “value proposition” to these potential benefits, which of the two ideal-type systems – Model One or Model Two - score best? The table below expresses our best attempt to answer that question:

VALUE PROPOSITION	MODEL ONE (UK, esATI)	MODEL TWO (Ireland, Kenya, Turkey)
To Applicants Consolidation of applications – single set of documents etc. Lower total application cost Potentially improved chance of admission to an institution More transparent and predictable admission process Career information	X X X	X X X X X
To Institutions Reduced applications cost Verified documents and examination scores Efficient offering process Efficient data capture Central assessment for financial aid means test Better able to deal with “walk-ins”	X X X	X X X X X
To Central Government Public interest benefits High quality statistics Reduce total cost to country of applications process More efficient allocation of applicants to available places	X X	X X X X

In the following section the recommended model is described in some detail in order to show how it will work in our situation.

5.2.1 The Model in Brief

From the perspective of the higher education institution

Institutions will delegate to the NHEIAS certain of the administrative functions involved in their annual application and admissions cycles. The academic policies and decisions which underpin these cycles will, however, remain the responsibility of each institution.

To enable it to fulfil these administrative functions, each institution will provide the NHEIAS with:

- A detailed listing of all the qualifications which it offers and of the major fields of study linked to each qualification;
- The minimum entrance requirements for any institutional grouping of qualifications and majors (to be termed "programmes" for this purpose);
- The number of new students it proposes to register in each programme (to be termed "the number of places available" in a programme);
- The entrance criteria for special admissions (offers to be made to candidates who do not meet standard minimum entrance requirements) that are set at the discretion of the institution. The methods by which applicants for special admission are to be assessed will be institution-specific, and so need not be standardised.
- The total number of offers to be made for the places available in specific programmes (these offer totals may equal the number of places available or may include over-offer factors).

On delegated authority, the NHEIAS will administer the admissions process in this way:

- When the SA school-leaving results are available, it will draw up an order of merit list for each programme based on applicant preference, standard scores derived from examination results as well as non-standard scores supplied by the institutions. On the basis of these lists, it will then make, for each programme the number of offers set by the institution concerned. These offers may be made only in accordance with the conditions set by each institution.
- If sufficient acceptances of offers for a programme are not received, within the specified time, then any applicants who either received no offer or who received an offer for a preference other than their first choice, will receive any offer to which they then became entitled. Such offers will be made only on the further instructions of the institutions and in accordance with the order of merit lists.
- "Rounds" of offers will continue to be made until all places are filled or the order of merit lists are exhausted.
- Since institutions will have access to the NHEIAS database, they will always know the offer-status of each of their programmes and each of their applicants. Institutions can instruct the NHEIAS to fill any vacancies as they arise.
- Strict adherence to deadlines will apply only to high-demand programmes. If institutions know that there are certain programmes that they will not fill, they will inform the NHEIAS that these are "Vacant Place" programmes to which all qualified applicants will be admitted. The NHEIAS will then continue to accept applications for those programmes after the normal closing date, and will process them in the normal way.
- When institutions instruct NHEIAS to issue offers to all qualified applicants in these courses, all such applicants will receive an offer.
- Earlier in the year, institutions will be free to make **conditional offers** on any basis they wish. The NHEIAS will issue statements to applicants setting out the terms of these conditional offers. Applicants will then be able to avail themselves of a "Change of Mind" facility until (say) six weeks before the offers of places are issued. In this way applicants may, if they wish, adjust their course choices in light of conditional offers.

From the perspective of the applicant

Each applicant will be permitted to apply for a number of programme choices, which must be stated in strict order of preference. They will pay a single application fee irrespective of the number of programme choices made and the range of institutions selected. Applicants will be able to avail themselves of a "Change of Mind" facility for a period of (say) six

weeks before the offers of places are issued. In this way applicants may, if they wish, adjust their course choices in light of conditional offers, or any other circumstances.

Following evaluation of their performance against the criteria set by an institution, applicants will be offered the highest programme preference to which they are entitled.

The central applications system will have details of the minimum entry requirements for every programme. Therefore, the NHEIAS may notify applicants who have not been placed in any of their programme choices of suitable alternatives among "Vacant Place" programmes. This will entail only that they give to NHEIAS their application numbers and the programmes in which they are interested, again in order of preference. Appropriate offers could then be issued immediately.

"Walk-in" applicants

"Walk-in" applicants could be accommodated on this model. They could enter the Admissions Office of any institution and fill out an application form or, preferably using a terminal, complete an online application direct to NHEIAS. Their examination results could be verified at once from the central database and they could be allocated an immediate number with which to register and start classes.

The central system could in this way maintain complete and accurate data on all applicants to the higher education system.

We now turn our focus to the handbook and applications processes and career information for the proposed model.

5.3 Handbook

The NHEIAS will produce a handbook listing every programme offering available to first-entry students in all the public higher education institutions. There are, however, some significant challenges inherent in the scaling up of the handbook preparation process from that of the esATI CAO to a national level for the NHEIAS. In particular, a process of extensive consultation and discussion will be required to reach agreement on the form and content of a NHEIAS handbook including whether listing will be by institutions or programmes.

The distribution of the handbook should extend to all high schools and many community and labour organisations through which working adults can be reached, as well as to public libraries and foreign embassies. We will return to the matter of handbook production in the section on implementation.

5.4 Applications Form

The application form will have to be carefully designed to elicit essential information required by the service itself and by participating institutions. Applications will have to be submitted by a set date, though late applications may be permitted accompanied by a penalty fee. A thoroughgoing process of consultation and discussion will be required to reach agreement on the application form or forms.

In consultation with the higher education sector, it is clear that there is overwhelming support for an application form that combines application for academic placement, student financial aid, and student housing. In the esATI CAO some, but not all, institutions currently require applicants to submit information and documents in respect of financial aid eligibility and need for and type of student housing requested. The Working Group strongly recommends that this information should be collected on the NHEIAS application form(s).

The Working Group does not believe that the NHEIAS should get involved in the processing of financial aid applications. This is a function of NSFAS and is, in any event, essentially a post-admission process. What could and should be provided for in the NHEIAS application form is a "diagnostic" means test that will allow institutions to advise applicants on the probable level of financial aid they will receive once the full means test has been applied. This will require close collaboration between NSFAS and the NHEIAS, on the one hand, and between the institutional administrators responsible for academic admission and financial aid on the other.

Completed application forms could be made available to institutions via a download facility or in other form should they wish to review them.

Consideration should also be given to possible implementation of an Electronic Applications System and to the design of the paper form to make it more suitable for automated capture via electronic scanning and optical character recognition.

5.5 Applicant Choices

The Working Group recommends that all applicants should be permitted choices, that choices must be ranked in order of preference, and should not exceed ten in number. In consultation with the higher education sector, decisions will have to be made as to whether the listing of choices should be separated, as in the case of Ireland, into degree and diploma programmes, and whether there should be separate listings of contact and distance education programmes. Decisions in this regard would need to balance advantages to students against the possibility of creating the perception that some programmes are of a higher quality than others. Applicant choices should not be used by institutions in a manner prejudicial to the applicant.

5.6 Application Fee

In place of the current situation in which students possibly pay multiple application fees to a number of institutions, in the new system, applicants would pay a single application fee for multiple choices whether these are within a single institution or across a range of institutions. For further details, see Section Ten.

5.7 Career information

A clear distinction must be made between career guidance and career information. The Working Group believes that the NHEIAS can provide applicants with information about available career opportunities and educational facilities. This will assist teachers at schools to help applicants make career decisions wisely. Career guidance, however, should continue to be the responsibility of school and provincial education authorities.

We envisage that career information can be provided to schools through the following:

5.7.1 Career Information Handbook

The NHEIAS in conjunction with the higher education institutions should develop a career information handbook. The handbook should be separate from the handbook describing institutional programme and qualification offerings. It would be critical to get the career information handbook to applicants early enough to ensure that learners make appropriate subject choices. The information contained in the handbook would also assist teachers in helping applicants during the application process. At minimum, the handbook should focus on the range of career and employment opportunities, professional and career skill requirements, education and training centres, minimal curricula and entrance requirements, and how applicants can finance their higher education studies.

5.7.2 Schools liaison

It is recommended that the NHEIAS make provision for career information officers to be located at regional level whose functions, with concurrence of the provincial departments, would be to visit schools to provide technical support around the applications process and assistance on career information. Additionally, the schools should be encouraged to make provision for a career guidance period to enable both teachers and NHEIAS career information officers to talk to potential applicants.

5.7.3 Career fairs

The NHEIAS should work with schools and higher education institutions to plan and co-ordinate regional career fairs for potential applicants. This will give the higher education institutions the opportunity to meet with potential applicants, to market their programme offerings and provide additional information about their institutions. The applicants, in turn, would get the opportunity to discuss their intentions and learn more about the institutions that they are interested in attending.

5.8 Summary of Recommendations

Key recommendations on the applications model include:

- (i) All first-entry undergraduate students wishing to study at any public South African higher education institution (whether by contact or distance mode) should apply through the national higher education information and application service. This includes local and foreign students;
- (ii) All applicants should pay a standard fee to the NHEIAS and an additional fee for late applications under set conditions;
- (iii) The model recommended for administering the applications and admissions process is one in which institutions set the criteria for admissions (including any special admissions criteria) but delegate to the central service the administrative application of the criteria to the pool of applicants. The institutions inform the central service of the total number of offers to be made for the places available for specific programmes and on the basis of the criteria set out by the institutions, offers are generated by the service and sent to applicants. This model is similar to the Irish, Kenyan and Turkish systems;
- (iv) The NHEIAS should produce a handbook listing every programme offering available to first-entry students in all the public higher education institutions. This handbook should be widely distributed (to all high schools, foreign embassies, public libraries and appropriate community organisations);
- (v) The NHEIAS should develop application forms that combine applications for academic placement, student financial aid, and student housing;
- (vi) Applicants should be permitted choices not exceeding ten in number that must be ranked in order of preference;
- (vii) As a service, the NHEIAS should provide career information in the form of career information handbooks, liaison with schools, and career fairs.

6. GOVERNANCE

In this section we deal with the governance options for the NHEIAS.⁶ More specifically, the issues addressed relate to the range of alternative structural options for the establishment of the NHEIAS, the implementation and process issues that would be required to facilitate the establishment of the NHEIAS, including the full compliance and participation of all

⁶ The Working Group has based its considerations and recommendations on the proposed governance model on expert legal advice.

public higher education institutions, and the fiscal and other implications arising from the recommended governance structures⁷.

6.1 Possible Legal Structures

South African law makes provision for six structural options which are theoretically available for the purpose of establishing an initiative of this nature. These are:

(a) A Statutory Body.

This structural option envisages that national legislation might be enacted to make special provision for the establishment of an appropriate institution, whose founding statute would define matters affecting its governance, financing, powers, functions, and responsibilities. There are many such bodies, of which the Council on Higher Education (CHE) represents a recent example.

The *principal advantage* of a Statutory Body is its legal competence and legitimacy, which is constrained only by the terms of the Constitution. The *principle disadvantage* is that it is an "organ of State", and as such may be seen to compromise the principle of academic freedom and institutional independence, including the statutory prerogative with respect to "admission" contained in section 37 of the Higher Education Act No. 101 of 1997.

(b) A Consortium or Joint Venture.

This structure is relatively informal and simple, and results from the fact that the interested parties reach an agreement on governance of the enterprise in question.

(c) A "public" Company limited by guarantee (qua "Section 21 Company").

This structure is frequently the preferred form for public benefit initiatives, as it is internationally recognised, and comprehensively defined by the elaborate provisions of the Companies Act. In fact, it is the form of structure, which has been adopted by both UCAS and CAO under equivalent UK and Irish legislation. It represents a particular variety of Company, which is limited not by share capital but by guarantee – such guarantee is usually of a nominal nature (e.g. R1, 00), and is undertaken by each "Member" as a consequence of membership.

As a deemed "public" company, it is required to have a minimum of 7 members (no maximum), and a minimum of 2 directors (no maximum). In view of the fact that it is a Company, there is a defining "two-tier" structure – involving a "membership" at one level and a "directorship" at another level (although these roles may be accorded other nomenclature).

⁷ The Working Group does not recommend the outsourcing of the NHEIAS to a private provider as this could limit the control that the higher education sector could exercise over the service.

The *principal advantage* of a Section 21 Company might be that it was established as a product of collaboration between the participating institutions. As “members” of the company they would be entitled to the rights and subject to the obligations of members in terms of the Companies Act, and the Memorandum and Articles of Association of the company.

The *principal disadvantage* of a Section 21 Company might be its reliance upon ongoing consensus and voluntary compliance, and the absence of enforcement mechanisms or sanctions, in the event that one or more institutions refused or failed to collaborate.

(d) A "private" Company limited by shares.

In terms of section 10(1)(cA)(i)(ii) of the Income Tax Act, Universities are enabled on a tax-exempt basis to conduct complementary activities through wholly owned subsidiaries limited by shares. Many Universities have established such companies of which they are the sole shareholder, and in such circumstances these companies enjoy the benefit of incorporation whilst also being eligible for tax-exempt status.

(e) A Trust.

A Trust represents a commonly used form of structure for purposes of implementing developmental and non-profit initiatives. The rights, assets, and liabilities of a Trust vest collectively in the persons who serve as Trustees from time to time. Although technically a Trust is not a separate legal persona, it may enter into contracts in its own name and for tax purposes is deemed to be a separate “legal person”. If a Trust is (voluntarily) registered in terms of the Nonprofit Organisations Act, it derives the benefit of acquiring separate legal personality.

(f) A Voluntary Association.

This type of structure is a product of common law, and represents the oldest and most commonly used structure for clubs and small-scale charitable and community organisations. There exist no statutes that regulate the establishment or regulation of Voluntary Associations.

Having considered the relative merits of each of these structural options, the conclusion was reached that the most suitable model for purposes of this initiative would be either “**a Statutory Body**” or “**a Section 21 Company**”; that is:

- a special purpose body established in terms of an amendment that would have to be introduced to the Higher Education Act No. 101 of 1997; or
- an Association incorporated in terms of Section 21 of the Companies Act, representing a so-called “public” company, limited by Guarantee.

6.2 Proposed Form of Legal Structure

6.2.1 Guiding Principles

In arriving at its recommendation, the Working Group has been guided by a number of principles, including the following:

- The foundational principle that academic freedom and institutional independence should be respected;
- The need to defer to the statutory right of each public higher education institution to determine its own admission policy (as envisaged by **section 37(1)**) of the Higher Education Act of 1997);
- The need to assert the statutory prerogative of the Minister to determine national policy on higher education (**section 3(1)**); to promote institutional co-operation (**section 38(3)**); to allocate public funds (**section 39(2)**), including the right to impose "*reasonable conditions with respect to such funding*" (**section 39(3)**); in each such instance, after due consultation with the CHE and in implementation of gazetted policy on higher education (Higher Education Act of 1997);
- The need to reconcile preference for a consensual or voluntary system with the necessity to ensure co-operation and compliance by all participating institutions. Accordingly, there needs to be adequate enforcement mechanisms, coupled with inducements and/or sanctions, to ensure essential collaboration upon which the benefits of the system are dependent;
- The need to enable the new entity, however constituted, to be accorded tax-exempt status; including if possible tax-deductibility of amounts donated by taxpaying donors.

6.2.2 Proposal: a *via media*

In the light of these considerations, the Working Group sought to develop a "hybrid" or compromise solution whereby the advantages of a non-Statutory Body were combined with the advantages of a statutory mechanism to enforce compliance, in case of need.

It was recognised that such a model need not be prescriptive in all its details, and there exist a number of variables or permutations which may be negotiated with the participating institutions. However, the essential proposal envisages the following elements:

- The registration of a Section 21 Company, of which the participating institutions would all be subscribing members, thereby entitled to the rights and subject to the obligations set forth in the Memorandum and Articles of Association.
- The *prerogatives* of the institutional members would include:
 - the right to attend, participate, and vote at all general meetings of the company;
 - the right to (dis) approve amendments to the Memorandum and Articles of Association, and other matters requiring special resolutions;
 - the right to appoint and remove directors – subject to any entrenched prerogatives to be set out in the constituting documents;
 - the right to appoint independent auditors, subject to the prerogatives of the Auditor General and the provisions of the Public Finance Management Act No. 1 of 1999;
 - the right to attend and participate in the Annual General Meeting, including the right to receive narrative and financial reports from the Board of Directors.
- The *obligations* of the institutional members would include:

- the nominal statutory obligation, applicable to all Section 21 Companies, to contribute in the event of the financial failure of the company, a nominal amount of say R1,00 per member;
 - the substantive obligation to contribute – if deemed appropriate - such amount as may represent from time to time the pro rata share of each participating institution with respect to the annual operating budget of the NHEIAS – to the extent that such costs were not covered by Ministerial grants or Parliamentary appropriation; having regard also to possible other revenue sources such as fees to be paid by individual applicant students and/or by participating institutions.
- A Board of Directors would be appointed to govern the NHEIAS. For operational reasons the Board should not strive to be representative, but rather it should comprise knowledgeable persons, say eleven persons in all, drawn mainly from the higher education sector.

6.2.3 Powers and Enforcement

It is self-evident that an effective higher education information and application system would depend upon full compliance and participation of all public higher education institutions. This presupposes consensus and voluntary compliance, but in reality also necessitates the existence of fallback provisions to deal with any refusal or default.

Section 37 of the Higher Education Act of 1997 presently makes provision for the statutory right of public higher education institutions to determine their own admission policies; and pursuant thereto, their own entrance requirements; the number of admitted students to each programme; the manner of selection of students; the minimum requirements for readmission; and the right to refuse readmission to students failing to satisfy its requirements.

The Working Group is cognisant, however, that certain provisions in the Higher Education Act also confer upon the Minister powers and responsibilities which could be used to enforce compliance, for example, the attachment of conditions to public funding (and/or to registration). However, the Working Group is concerned that the use of funding to enforce participation could be seen as contentious, and invasive of the jealously guarded independence of higher education institutions. Such a perception would be unfortunate and prejudicial to a successful launch of the NHEIAS.

Accordingly, the Working Group recommends the enactment of an appropriate amendment to the Higher Education Act, which would allow for the Minister to designate a particular entity, whether constituted as a company, trust or other body, in order to establish a National Higher Education Information and Application Service with respect to all first-entry undergraduate students seeking admission to programmes offered by public higher education institutions; without derogating from the power of such institutions to determine their own admission policies and to exercise their ancillary prerogatives as referred to in section 39 of the Higher Education Act of 1997.

6.3 Fiscal implications

The Working Group is of the view that it is essential that any such Designated Structure should be accorded tax-exempt status in terms of the relevant provisions of the Income Tax Act, and related fiscal statutes.

In the event that the NHEIAS is constituted as a statutory body, such primary income tax exemption would be available by virtue of the provisions of section 10(1)(cA)(i)(bb) of the Income Tax Act.

In terms of the proposal of the Working Group, if the NHEIAS were to be constituted as a Section 21 Company, its tax-exempt status would be dependent upon it being approved by the Commissioner for SARS as a "public benefit organisation" for purposes of section 10(1)(cN) of the Income Tax Act.⁸

The Working Group further recommends that provision be made within the new envisaged Ninth Schedule to the Income Tax Act (Part II) for the itemised "public benefit activities" (for purposes of section 18A) to include the activity envisaged in respect of the NHEIAS – thereby ensuring tax-deductibility for any donor contributions.

6.4 Summary of Recommendations

The Working Group's recommendations on structure and governance are as follows:

- (i) The NHEIAS should be established as a non-statutory structure (in the nature of a Section 21 Company), supported by statutory provisions to be incorporated into the Higher Education Act that make all public higher education institutions members of the NHEIAS. Such a solution incorporates both the benefits of a non-statutory body, and the benefits of statutory enforcement. It also represents an accommodation between the academic independence of the institutions concerned, and the statutory powers and prerogatives of the Minister to promote the objectives of the Higher Education Act and the policy prescribed thereunder.

⁸ The legal advice received notes that this exemption is conditional upon a series of prescribed provisions set forth in section 30 of the Income Tax Act, which are intended for ordinary non-profit organisations, and are awkward to apply in the context of this particularly entity. A submission has been made to the Portfolio Committee on Finance in connection with the draft Taxation Laws Amendment Bill of 2000, in order to make provision for the tax exemption of an entity such as that which is the subject of these recommendations. At the time of preparation of this Report, the outcome of such representations has not yet been determined.

- (ii) The designated structure should be accorded tax-exempt status in terms of the relevant provisions of the Income Tax Act, and related fiscal statutes.
- (iii) It should be governed by a Board of Directors comprising of knowledgeable persons drawn mainly from the higher education sector.

7. MANAGEMENT AND ADMINISTRATION

In terms of management structure, the NHEIAS would be an operating entity, offering services such as those described above, to potential applicants and to public higher education institutions.

The Working Group recommends that a Chief Executive Officer, appointed by the Board and reporting to the Board, and operating out of delegated authority from the Board, should manage the NHEIAS. Provisions should also be made for the appointment of a Deputy-Director, HR/Office Manager, Finance Officer, Editor and IT Manager who will, along with the Chief Executive Officer, constitute the core management team.

It is envisaged that the Chief Executive Officer will fill an important external role dealing with the high level liaison with government, other higher education statutory bodies and associations and the institutions. The Deputy-director's role will be more operational and will entail responsibility for setting up and managing the day-to-day operations of the NHEIAS. Given the significant numbers of employees that will be employed, either on a temporary or permanent basis (see Appendix Four for more details on staffing), it will be important to have a skilled Human Resource person in the management team, and this could be provided for by combining it with the role of office manager. The large budgets and complex operations (see Section Eight to Ten) suggest the need for a dedicated finance team run by a finance specialist. The Editor and IT manager will take on the responsibilities associated with core NHEIAS functions such as publication of the handbook, media releases, software development, etc.

8. THE INFORMATION AND COMMUNICATIONS PLATFORM

The Working Group, in addition to receiving professional advice in respect of the possible IT platform has had the benefit of extensive discussions with the IT Directors of the 5 central applications systems studied.

8.1 Proposed Option

The feasible options that appear to be available for a business model for the information services and technical platform for the NHEIAS include:

- The NHEIAS setting out to create its own business software *de novo* and running it on a technical platform. It may choose to operate this itself or outsource it to a professional operator;
- Starting with the esATI CAO system and scaling it up and developing it further;
- Starting with either the UCAS system or the CAO Ireland system, and modifying it to meet our requirements; or
- Contracting with UCAS or CAO Ireland to provide the information service that NHEIAS itself and the institutions would use, via the Internet.

Having considered the relative merits of each of these options, the Working Group has reached the conclusion that the most favourable option would be to start with the esATI CAO platform and to scale it up and develop it further (i.e., option 2). The professional advice received suggests that the existing esATI CAO system and the design of the underlying database provide a solid starting point for developing a national system and could be scaled to handle the higher data and transaction volumes envisaged:

- The database appears to have been well designed and can easily be extended to hold the additional data fields that will inevitably be required in a national system;
- The application software using the database is highly modular. This means that existing functionality can be upgraded and new functionality added in a technically straightforward manner;
- It is implemented in a Microsoft VB/SQL Server software environment on standard Intel hardware platforms, which is well-understood and part of supported industry standards;
- Following some investigation and discussion with database specialists, it would appear that Microsoft VB/SQL Server software is capable of scaling to the required levels;
- The esATI CAO system allows online applications and is already capable of communicating with applicants through the web, email or IVR (interactive voice response over the phone). A mobile phone SMS capability and an upgraded IVR facility are currently under investigation.

It is clear, however, that modifying the esATI CAO system for national use would require some upgrading of the hardware and additional development work. This would include:

- Upgrading the current hardware with more powerful (still Intel based) computers to run the database and applications as well as the web-server;
- In the long term, as more applicants move to online interaction with the NHEIAS, and the performance demands on the system grow, applications could be migrated to more powerful hardware and software platforms (*e.g.* Linux/Oracle etc);
- Changes will be needed to accommodate the inevitable revisions made to the application form as additional institutions are included;
- There is currently no module to facilitate a "CAO Ireland style" offer-allocation process;
- The current software module for importing school certificate results functions poorly and needs to be rewritten;

- A facility for capturing financial aid information will need to be designed and implemented (esATI CAO currently has an unused software module for doing this).

A problem identified by the esATI institutional users that would need to be addressed is the slow response times at critical periods in the academic year when system usage is high. This is a serious problem that could get more serious in a larger system. It is not entirely clear what is at the source of this problem but the most likely possibilities are all correctable, viz., the underlying hardware is not powerful enough; the “indexing” of the SQL Server database is inefficient and needs to be reconfigured; there is not enough capacity on the network links between the CAO and the institutions.

Ongoing technical support for the system is critical and steps would need to be taken to ensure continuity of support. In this regard, some of the key issues are:

- The company that originally developed the system is no longer able to support it;
- Two esATI CAO employees and a contracted developer provide the current IT support for the system. The loss of any of these people would create problems;
- The system is poorly documented. Initially, there was no technical documentation and the actual programming code was inadequately documented with explanatory comments. These problems are being addressed by the esATI CAO database administrator and the current developer, but there is still much to be done.

The system is not secure and is vulnerable to “hackers” entering it and potentially changing sensitive information like school certificate results or admission decisions. This problem can be remedied fairly easily by tightening security procedures and using secure encryption for certain sensitive data transfers.

Current disaster recovery plans are inadequate. A catastrophic failure or loss of the system would shut down the esATI CAO for an extended period (the current esATI CAO disaster recovery plan predicts a downtime of 18 days in the worst case). This is unacceptable. Plans should be made to have redundant hardware and software systems at an alternative location. This could be owned by the NHEIAS or, more economically, be available by arrangement with a participating institution.

Applicant data is captured manually using in-house personnel. Although there are manual data validation procedures, the current system does very little validation of the data captured. This capability should be improved and possibly combined with automated data capturing technology to streamline this process (note the discussion of scanning/OCR technology and EAS in an earlier section). It is likely that most applications in South Africa will continue to come on paper forms for the foreseeable future. This contrasts with overseas experience where online applications will account for the bulk of applications within a few years.

8.2 Interface with Higher Education Institutions

Interface with institutions would, on the advice received, be similar to the existing esATI CAO or CAO Ireland interfaces:

- Applicant information destined for the particular institution would be stored in text files by the NHEIAS, downloaded by institutions from the NHEIAS site and then imported into the institutional information system;
- Using a web interface, institutions can query the NHEIAS system for the latest information or add limited amounts of new information.

Institutional access to web interfaces is now ubiquitous using a web browser such as Microsoft Explorer so there are few technical issues with this sort of interface with one exception. Web interfaces are particularly susceptible to performance problems, strongly suggesting that operating processes should be set up in such a way as to minimise the transactions that take place over such a web interface.

The transfer and uploading of text files presents more of a problem. Importing the text file into the institution's system requires that the institution have an interface program capable of recognising the text file format and transferring it into its own databases. There are two approaches to this:

- Some institutions (*e.g.* Durban Institute of Technology) simply read the text file and import the data into their own database. In this case the interface program was simple and there are few problems of an ongoing nature;
- Other institutions need to translate esATI CAO data (*e.g.* schools codes) to their own definitions and must therefore incorporate this translation into their interface. It appears that all institutions running the popular ITS system will need such a "translation table" in their interface. Translation tables have two drawbacks: 1) they are more expensive to implement in the first place, and 2) they require regular communication by the CAO to ensure that institutions are made aware of changes to data coding schemes.

Technically, implementing either kind of interface is straightforward and presents few problems. However, we believe that establishing the interfaces with the institutions will require the NHEIAS:

- To provide funding to institutions to develop the interface software;
- To ensure that the data definitions and codes are managed on a continuing basis;
- To directly support some institutions where such support is required for them to continue to import and utilise data from the NHEIAS.

8.3 Summary of Recommendations

Key recommendations on the IT platform include:

- (i) From a technical perspective, the esATI CAO system should be used as the basic platform for the proposed NHEIAS. It will need to be modified and expanded to meet the specific needs of a national system. This will require both additional

hardware and software development, much of which has been outlined in the discussion above;

- (ii) In the light of the severe difficulties experienced in KwaZulu-Natal during the start-up of the esATI CAO arising from programming problems, adequate time and resources should be made available for the design, piloting, testing and implementation of the information and communications platform of the NHEIAS.

9. IMPLEMENTATION FRAMEWORK

9.1 The Implementation Challenge

The implementation of the NHEIAS will introduce significant change to the way in which the application and admissions process operates at many institutions. In some cases institutions already operate a sophisticated applications and admissions process, whereas other institutions receive very few formal applications prior to registration date and operate an admissions process at registration. In both these models, the transition to a centrally managed applications service – the NHEIAS - will involve considerable change.

At essentially the same time as the NHEIAS is to be implemented, several institutions are likely to be experiencing far more dramatic change in view of the Minister's recent declaration of his intention to merge several institutions. It could reasonably be asked whether these elements of major institutional change should be separated or combined. Either option will have significant impact on possible scenarios for implementing the NHEIAS.

In change management terms, a guiding principle must be to minimise the number of changes to which people are subject. The implementation of both the NHEIAS and the proposed mergers will require changes to the applications and admissions systems of institutions. We are strongly of the opinion that, if at all possible, the implementation of the NHEIAS and of institutional mergers should be synchronised and *treated as one change process*. In particular, the implementation of the NHEIAS should get underway at the same time as the proposed mergers. The change management resources and expertise associated with NHEIAS would then be available to the institutions as they inevitably "re-engineer" their application and admission processes. If managed effectively, the NHEIAS would be in the position of providing a solution and support to merging institutions rather than imposing an additional burden on them.

A key principle of change management is to involve the "players" in designing their own future. In the context of implementing the NHEIAS, this will mean building a relatively small core implementation team (no more than 8-10 people) that has representatives from both the NHEIAS itself and from some of the institutions. It is suggested that this core implementation team operate throughout the implementation process. Its initial role will be to formulate design proposals for such things as the software modifications and the

Handbook. During the actual implementation in an institution, this team will then work closely with an institutional rollout team so that the implementation is done **with** institutional representatives, rather than being imposed on them. A similar approach was adopted in implementing the esATI CAO.

9.2 Implementation Scenarios⁹

The Working Group has considered three possible scenarios for the implementation of the NHEIAS, each illustrating the merits and demerits of various approaches to the implementation challenge. All three scenarios take as a starting point a model for the NHEIAS which will subsume and extend the existing esATI CAO and which will implement an applications and admissions process similar to that operating in Ireland.

The three scenarios are:

- (i) **A multi-phase implementation** and “rollout” in which the esATI CAO software is modified to provide an automated allocation model similar to that of CAO Ireland and where this is used initially only for the existing esATI Institutions with rollout to additional institutions, probably grouped according to the extent that they are affected by current ministerial proposals, over a period of at least an additional two years. The time frame for this implementation scenario could be extended if necessary to cater for the desirability of synchronisation with institutional mergers.
- (ii) **A two-phase implementation** in which the esATI CAO software is modified to provide an automated allocation model similar to that of CAO Ireland and where this is used initially only for the existing esATI Institutions with rollout to all other institutions at the same time.
- (iii) **A single-phase implementation** (or “big-bang” model) in which the esATI CAO software is modified to provide an automated allocation model similar to that of CAO Ireland and where this is then implemented for all institutions (including the esATI institutions) at the same time.

A phased implementation scenario means that during the implementation process applications for some institutions are made via the NHEIAS while for other institutions an applicant will have to apply to the institution directly. Would this model pose serious problems for either an applicant or an institution?

As far as applicants are concerned, a phased implementation would represent no change from the situation already in place since the esATI CAO is already operational. esATI CAO accepts applications from all over South Africa (its Handbook is distributed to all high schools) so an applicant who, for example, wishes to apply for admission to the University of Durban-Westville and to the Universities of Cape Town and the Witwatersrand in 2003

⁹ We have drawn heavily on the work of our consultants in this Section of the report.

must make an application to esATI CAO for the University of Durban-Westville and also apply directly to the other two institutions.

With a phased implementation of the NHEIAS, then, the general case will be one in which an applicant will make one application to the NHEIAS for all programmes at institutions that are handled by the NHEIAS at that time, together with possibly one or more applications directly to institutions that are not yet handled by the NHEIAS. Implementing an automated allocation model similar to that of CAO Ireland will also not significantly change things for the applicant during the period in which the NHEIAS handles some, but not all, institutions. The applicant will continue to (potentially) receive offers of admission to more than one institution and/or programme of study and will then have to make a final decision as to which to accept. From the perspective of an institution that is not yet handled by the NHEIAS, then, the current status quo will not have changed. Institutions that are handled by the NHEIAS will all have to undergo the changes involved in moving to the Irish type system at the same time.

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9.3 Proposed Implementation Model

The Working Group recommends a *multi-phase and rollout implementation model for the NHEIAS* (i.e., Scenario One), in which the first phase of implementation is restricted to esATI institutions; the second phase to esATI institutions plus Group 1 institutions; and the third phase to esATI institutions plus Group 1 and Group 2 institutions. The institutions that constitute Groups 1 and 2 should be decided by the NHEIAS in consultation with the higher education sector with primary consideration given to the timing of institutional mergers. Geographic consideration, while important, should be a secondary consideration, although there would be benefits to having institutions within a group restricted to as few geographic regions as possible.

A key reason for this recommendation is that it significantly reduces many of the risks associated with implementation on a national scale. The multi-phase nature of this model means that there will be opportunities to learn from an earlier phase of the rollout and to apply the lessons learnt to subsequent phases. For example:

- The first usage of the automated allocations model is restricted to the esATI institutions. If there are any problems associated with the process, then its impact is kept to a minimum. The phased extension of the allocation model first to Group 1 institutions and then to Group 2 institutions allows for enhancement and tuning as necessary.
- Lessons can be learnt from any problems with training and testing and with general change management in esATI institutions and applied and refined during the rollout to Group 1 and then to Group 2 institutions.
- If there are indications of insufficient hardware, software or network performance during rollout to Group 1 institutions, then these can be addressed prior to rollout to Group 2 institutions.

9.4 Implementation Steps

The implementation steps of this model are illustrated by a Gantt chart in Figure 1 and described more fully in the discussion that follows. The assumption has been made that this process will be embarked upon from the second half of 2003 and be completed by the first quarter of 2007. If this is not the case, then the dates should be adjusted accordingly. It is critical to note that some tasks and their associated dates can only be adjusted by a full year and the time blocks for these are shown on the Gantt chart with a solid fill. In other words, failure to proceed with some of these steps in the stipulated time period could delay implementation for up to a year and substantially increase overall costs of setting-up the service (see Section 10 on funding).

Although the implementation steps are shown below in a specific order, it must be appreciated that not all steps need to be completed before a subsequent step can start. There are also many cases where implementation steps can run in parallel. The Gantt chart shows the relationship between different steps. In this scenario the normal operations of the esATI CAO are not shown explicitly, but are assumed to be taken over by the NHEIAS when it is formed.

The implementation steps are as follows:

1. Creation of Interim Steering Committee for NHEIAS

It seems probable that there will be a need for some legitimate group to assist in carrying out steps 2 and 3 below and we suggest that this could be termed an "Interim Steering Committee" and that its members be appointed by the Minister in consultation with the higher education sector. We envisage that the work of this Committee would be complete once steps 2 and 3 are complete and that its functions would then pass to the Board of Directors of the NHEIAS.

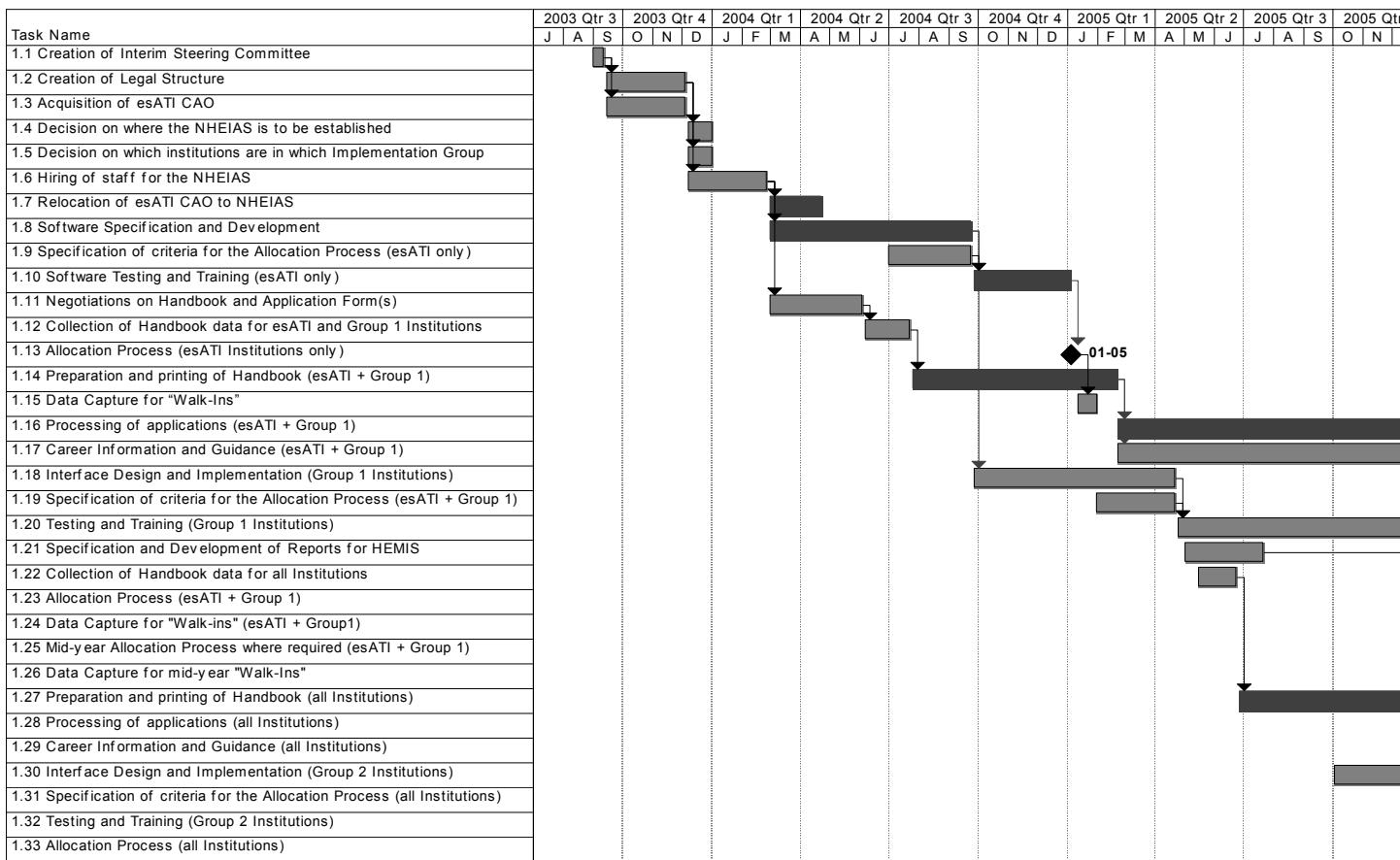


Fig. 1 Gantt Chart to illustrate the timing and interrelationship of implementation steps in Scenario 1.

2. Creation of Legal Structure for NHEIAS

This implementation step is to give effect to whatever legal structure is finally selected and approved. It can proceed simultaneously with step 3 provided that an Interim Steering Committee is in place. It is assumed that all steps from 4 onwards are under the overall control of the Board of Directors of the NHEIAS, but with the CEO of NHEIAS carrying out operational responsibility once that person is appointed.

3. Acquisition of esATI CAO and Creation of NHEIAS

The next step in implementation is to conclude negotiations with the esATI Board in respect of the acquisition of the esATI CAO as a “going concern”. It is not clear how long this will take, but we have assumed that this and step 2 will both take three months.

4. Decision on where the NHEIAS is to be Located

It is not necessary at this stage to actually relocate the esATI CAO to form the NHEIAS, but the ultimate location of the NHEIAS must be known before the recruitment of staff can be undertaken. (See Section Eleven on recommended location).

5. Decision on which Institutions are in which Implementation Group

We recommend that all the higher education institutions that are not part of esATI should be aggregated into two “groups”. We believe that these groups should be based first on the timings for institutional mergers and only on geographic region as a secondary consideration. Having said that, there are obvious benefits in having institutions within a group restricted to as few geographic regions as possible. In the present scenario under discussion applications for the institutions in Group 1 will be handled by the NHEIAS one year prior to those for institutions in Group 2.

6. Hiring of Staff for the NHEIAS

Certain key staff must be hired at an early stage in the formation of the NHEIAS. These should include all members of the proposed management team (Director/CEO, Deputy Director, IT Manager/DBA, Editor, Finance Officer and Office Manager). In addition, it will be essential to hire the two software developers at this stage and the call centre and data capture staff.

7. Relocation of esATI CAO to NHEIAS

It is assumed that the Board of Directors of the NHEIAS, in conjunction with the CEO and/or Deputy Director, will decide on suitable premises to rent and will make the

necessary arrangements. The actual move of equipment and personnel from the esATI CAO to the NHEIAS should take place in March-April 2004. These months are specifically selected, as they are the quietest period in the esATI CAO year and a time where the unavailability of the service for several days will have minimum impact.

During this move, the new computer hardware for NHEIAS should be installed and systems transferred to this from the existing esATI CAO hardware as part of the moving process. Provisions should also be made for a complete backup system at a site near the NHEIAS but physically separate from it. This backup system should also be installed and commissioned at this time if possible.

8. Software Specification and Development

There are several software modules that will need to be developed to enhance the existing esATI CAO system so that it can perform an allocation of offers to applicants in a similar fashion to that done by the Irish CAO system. Some of the key requirements are:

- To modify the database structure and the web-based application forms to reflect the additional data items that are required in the modified paper application forms(s) as decided in step 11. Consideration should also be given to possible implementation of an Electronic Application System and to the redesign of the existing paper form to make it more suitable for automated capture via electronic scanning and optical character recognition;
- To provide mechanisms for the institutions to record "conditional offers" in such a way that these will be taken into account during the actual allocation process;
- To provide mechanisms to cater for forms of assessment other than school certificate (or equivalent examination) and specifically to cater for admission of mature students and for admission of applicants of whom interviews, portfolios, etc. might be required;
- To provide a mechanism for institutions to give preferential access for educationally disadvantaged applicants to a proportion of available places on a particular programme of study. Without such a mechanism, the NHEIAS will not be able to give effect to transformation imperatives without an inordinate degree of manual intervention in what should be (largely) an automated process;
- To provide the algorithmic model for automated allocation of offers to applicants so that applicants are offered admission to their highest-ranked preference for which they are qualified, for which they are competitively ranked relative to other applicants (taking the additional factors noted above into account), and for which there is space. Prior to developing the detailed specification for the algorithmic model for automated allocation of offers, it will be important for the Deputy Director of the NHEIAS, the IT Manager and at least one developer to visit the CAO Ireland and to have extended discussions with the team there to ensure a thorough understanding of the way that the process and the software module operate.

Agreeing on the specifications for these modules has a significant change management component and it is important that these specifications are developed with significant opportunity for input from the institutions and that they are agreed and "signed off" by all institutions. This step proceeds at the same time as step 11 in which the specifications for the Handbook and Application Form(s) are agreed. It is strongly recommended that the same small core implementation team consisting of both NHEIAS staff and institutional representatives drive both steps

There should also be provision during this implementation step for refining the interface software at each institution for data transfer from the NHEIAS to the institution. The current situation with the esATI CAO is that all information transferred from the institution to the CAO is provided online through a web-based interface. Consideration should also be given in this step to the possibility of implementing bulk data transfer from the institution to the NHEIAS via an upload for certain categories of data (*e.g.* admissions criteria for all academic programmes).

It is recommended that the NHEIAS appoint two software developers. It is essential throughout the operation of the NHEIAS to have two such individuals to provide cover for leave and sickness absences and for ongoing development requirements. However, after the main phase of software development is complete, it is envisaged that these two developers could also provide technical advice and support to institutions in respect of the interface software for downloads and uploads.

9. Specification of Criteria for the Allocation Process (esATI Institutions only)

All esATI institutions will have to provide the minimum entrance requirements for any institutional grouping of qualifications and majors so that the allocation process is possible, including the number of places available on the programme of study.

It is envisaged that this process will require careful co-ordination to ensure consistency and timeous production of the information required and therefore it is recommended that the core implementation team drive it.

10. Software Testing and Training (esATI Institutions only)

Software testing is obviously a critical step in the overall process of establishing the NHEIAS, but it is also a key opportunity for training. This training and testing period will be shorter for the esATI institutions than it will be for institutions in Groups 1 and 2, as the esATI institutions are already familiar with overall operations of a central applications system. In this particular step the focus will be on training for those activities which are linked to the automated allocation process.

11. Negotiations on Handbook and Application Form(s)

This step proceeds at the same time as the initial stages of step 8 in which the specifications for software development are developed and agreed. It is strongly recommended that the core implementation team drive both steps. Both steps will

require interaction with the same group of Registrars and Admissions Officers at the institutions.

It is clear from our consultations that certain changes must be made to the existing esATI CAO application form before it can be used as a NHEIAS application form. In particular, we stress the need to collect additional information on Financial Aid and Student Housing from applicants. We believe that it is critical that all institutions should be involved in the design of the handbook and application forms at the outset.

It is anticipated that to reach agreement on the application form(s), Handbook content and presentation and on the software specifications, several workshops in various regions of the country will be required.

12. Collection of Handbook data for esATI and Group 1 Institutions

This implementation step simply represents an extension of the existing process of collecting esATI CAO Handbook entries from all participating institutions into a larger process that will now encompass the Group 1 as well as esATI institutions. This takes place some 6-8 months prior to initial receipt by the NHEIAS of applications for study at the Group 1 institutions and some 16 months prior to the allocation process in which offers of admission to the Group 1 institutions are made by the NHEIAS for the first time.

13. Allocation Process (esATI Institutions only)

This will be the first time that an automated allocation of admission offers to applicants is used. The process will have been thoroughly tested in step 9, but this is the first time that it will be run utilising the final school certificate results. The downloading and processing of school certificate results as part of the implementation scenario has not been explicitly listed, as this is already done by the esATI CAO and the same process will continue in the NHEIAS, but extended to the Group 1 and 2 institutions at the appropriate times.

The CAO Ireland allocation process is run at the CAO on a specific day with an admission officer from each institution in attendance. We understand that the admissions officers are provided with preliminary allocation listings on arrival and that they then have several opportunities during the day to adjust the admissions criteria for specific programmes of study (acting on a mandate from their institutions), with the allocation process being rerun after each adjustment. It is recommended that the NHEIAS adopt a similar process, but possibly extending over more than one day if required.

The allocation process should take place as soon as possible after the school certificate results have been downloaded and processed and on the Gantt Chart in Fig. 1 this is shown as 5 January of each year.

It will be important however to ensure that applicants find out what offer has been made to them as soon as possible. With the uncertainty of the postal system it will be important to make good use of SMS messaging to cell phones and of IVR

telephone systems to make effective contact with as many applicants as possible as fast as possible after allocation day. It is also worth considering the publication of the full allocation list in the national and local press.

14. Preparation and Printing of Handbook (esATI + Group 1)

It is assumed that the information on programmes of study at the various institutions to be provided in the Handbook will be similar to that currently provided for esATI institutions and that the format for supplying and printing this information will have been agreed in implementation step 10. We understand that this information is supplied electronically by several of the esATI institutions at present. We believe that with some careful thought and planning, together with detailed specifications provided to the institutions for the format and content of their submissions, that the preparation of the Handbook can be automated to a very significant extent.

There may be merit in separating the existing Handbook into two separate Handbooks, one providing the information required to complete the application form and a second exclusively for Career Information.

15. Data Capture for “Walk-Ins”

The Working Group is of the view that “walk-ins” should complete a simplified NHEIAS application form and be required to pay the late application fee to a nearby bank for credit directly to the NHEIAS. The institution would then accept the application form and proof of payment as the initial step of registration and would simply send the application forms to the NHEIAS for data capture. We see no reason why the data capture at the NHEIAS should have to precede registration. If this process is adopted, there is no reason for institutions to 'claim' part of the late application fee, as all they are being asked to do is hand out and collect forms. In any event, the application fee is not simply a payment for processing the application form: it also contributes to the enormous cost of producing handbooks and other services which are of benefit to institutions.

16. Processing of Applications (esATI + Group 1 Institutions)

It is recommended that the processing of applications and associated data capture by NHEIAS, following the esATI model, should be done “in-house” rather than outsourced. The reason for this recommendation is that partial outsourcing of data capture by the esATI CAO at an early stage of its implementation proved disastrous, particularly in respect of data quality. At the esATI CAO they now hire additional staff for data capture during the busy period of the year and this has proved successful. Extension of this model to cater for processing applicants to additional (non-esATI) institutions would be gradual in this particular implementation scenario as the full number of additional staff would only be required in step 25.

Some additional consideration will need to be given to the mechanisms by which applicants can change details of their application and the time or times at which they can do this. Introduction of an automated allocation process will require applicants to be much more careful about their stated preference order than is the case for applicants to the existing esATI CAO.

17. Career Information (esATI + Group 1 Institutions)

The provision of career information, including educating learners and teachers (who will play a crucial role in assisting potential applicants) on the applications procedures and processes will be a critical role for the NHEIAS. It is recommended that this be carried out by establishing five (or more) modest-sized regional teams who will have career information provision as a key component of their work, but who will also be responsible for provision of training and support to the institutions as well (as in step 19).

The career information role will require a considerable amount of interaction with schools. It will also require the organisation of "career fairs" and input to the design, content and use of a career guidance Handbook (or portion of the main Handbook). Ideally, the regional teams should be established in all regions at the same time so that they can also play a strong promotional role for the NHEIAS in schools across the country.

The regional teams can also interact with the schools and with potential applicants to ensure that they are aware of the disadvantages of being a "walk-in" applicant and to highlight the benefits of applying via the NHEIAS.

18. Interface Design and Implementation (Group 1 Institutions)

An important lesson to be learnt from the implementation of the esATI CAO is that proper provision of assistance (in terms of both expertise and money) will be needed to ensure the ability of institutions to download and upload information from the NHEIAS and to ensure effective integration between the NHEIAS database and institutional databases and processes.

In this implementation step the necessary interface software should be designed, developed, installed and tested. For approximately half the institutions this will be somewhat simplified as they use the same software for student administration (ITS), but there will be differences in the detail of the translation tables required. It is important to note that this step must also develop well-documented processes at each institution so that the continued effective use of the interface software is ensured.

19. Specification of Criteria for the Allocation Process (esATI+Group 1)

This step is an extension of the process initiated for esATI institutions in Step 9 to now encompass Group 1 institutions as well.

20. Testing and Training (Group 1 Institutions)

Many aspects of the software testing and training process as it applied to the esATI institutions were discussed in step 9. However there will be some important differences for the Group 1 institutions. In particular, the Group 1 institutions will require training in how to operate in conjunction with the NHEIAS in the whole

application and admission process. Some institutions will also need assistance in developing and documenting proper processes to ensure consistency.

Very close liaison and a good understanding between the NHEIAS and the institutions is going to be important if the whole NHEIAS concept is to succeed and the training and testing step of implementation is a critical one for establishing understanding and trust.

21. Specification and Development of Reports for HEMIS

It is suggested that the specification and development of the reports to be provided to HEMIS should happen at this stage of the implementation as this will provide an opportunity to supply the reports to HEMIS after the allocation process for esATI and Group 1 institutions (step 23) and to clear up any problems and make any modifications required prior to NHEIAS actually handling all higher education applications which it will do after full implementation.

22. Collection of Handbook Data for all Institutions

This implementation step represents the extension of the previous process as established in step 12 to now collect Handbook data from all institutions. It is envisaged that the regional guidance and support teams will now play a key role in interacting with the institutions to ensure that all the required material is available timeously and in the form required.

23. Allocation Process (esATI + Group 1)

This step extends the process of algorithmic allocation of admission offers to include applicants to Group 1 institutions as well as the esATI institutions. It is again suggested that this take place on or about 5 January.

24. Data Capture for "Walk-ins" (esATI + Group 1)

Data capture process for "walk-ins", carried out either by NHEIAS staff or institutional staff – see discussion in step 15.

25. Mid-year Allocation Process where Required (esATI + Group 1)

The NHEIAS will have to accommodate multiple registration periods. It is envisaged that the allocation process will be a scaled-down version of the main allocation process in early January and need only be attended by admissions officers from those institutions that do mid-year registration.

Additional Implementation Steps

The implementation steps shown below and on the Gantt chart shown in Fig. 1 are essentially the same as those discussed above, but extended now to include Group 2 institutions and thus to cater for all higher education institutions in the country.

- 26. Data Capture for mid-year "Walk-Ins"**
- 27. Preparation and Printing of Handbook (all Institutions)**
- 28. Processing of Applications (all Institutions)**
- 29. Career Information Guidance (all Institutions)**
- 30. Interface Design and Implementation (Group 2 Institutions)**
- 31. Specification of Criteria for the Allocation Process (all institutions)**
- 32. Testing and Training (Group 2 Institutions)**
- 33. Allocation Process (all Institutions)**

9.5 Summary of Recommendations

Key recommendations in relation to implementation are as follows:

- (i) The implementation of NHEIAS and the restructuring of the higher education system should be synchronised and treated as one change process. In particular, the implementation of the NHEIAS should get underway at the same time as the proposed mergers so as to allow the change management resources and expertise associated with the NHEIAS to be available to the institutions as they 're-engineer' their applications and admissions processes.
- (ii) A multi-phase rollout implementation model for the NHEIAS is recommended in which the esATI CAO software is modified to accommodate the proposed changes to the applications and admissions processes and where this is used initially only for the existing esATI institutions and thereafter a phased extension of the service to the other institutions over a period of at least an additional two years. It is believed that this model will significantly reduce many of the risks associated with the implementation as a whole.
- (iii) Implementation of the NHEIAS should be embarked upon from the second half of 2003 which would allow for the process to be completed by the first quarter of 2007. If this is not the case, then the dates should be adjusted accordingly.

10. FUNDING

Estimates of future costs are inherently uncertain. In order to address this issue, the Working Group has relied on expert advice and analysis into the likely cost of establishing and running the NHEIAS. Based on the advice, including insights from the analysis

undertaken by the expert consultants, we believe the following to be a reasonable estimate of what it would cost to establish and operate the NHEIAS. At the outset, however, three assumptions need to be highlighted, all of which have a bearing on the estimated revenue and cost model:

(i) Assumption about participation

The cost and revenue models assume that *all* public higher education institutions participate in the NHEIAS and that *all* applicants are handled by the NHEIAS. If this does not apply, for example, participation of higher education is voluntary and accordingly some institutions opt not to be members of the NHEIAS, or if institutions resist paying over the application fee from walk-in applicants to the NHEIAS, the estimates provided below will not apply.

(ii) Assumption about the number of applicants

The Working Group has relied on estimates provided by the Department of Education on the likely totals of new undergraduate applicants to public universities and technikons in South Africa.¹⁰ For the purposes of cost calculations it has been assumed that between 180 000 and 240 000 applicants will potentially use the NHEIAS. The base estimate is about 210 000 applications or ten times the applications received by the esATI CAO.

An alternative approach to that used by the Department to calculate the likely applicant numbers arrives at a similar base case estimate. The esATI institutions registered 13 385 first-time entering undergraduates in 2001, 11% of the national total. Assuming that the esATI applicant to places ratio holds nationally, this suggests that the esATI applicant number should be scaled by 9 to arrive at a national total of 204 000 applicants.

These totals could be slightly higher if transferring undergraduate students are added into the equation. In this context, the kind of transferring students about which the applications service needs information would be those entering a programme at the first level for the first time whether transferring from another programme in the same institution or from another institution. There are no available national data for these transfers but this is critical data for programmes with limited places.

The Working Group strongly recommends additional work to verify the estimates of potential applicants before proceeding. These assumptions are crucial to the economics of the NHEIAS and will determine values like the appropriate application fee. As a lesson, the esATI CAO experience is instructive: applicant numbers were overestimated with the consequence that the fee was set too low - budget deficits quickly followed.

(iii) Assumption about the implementation approach

The cost estimates are based on the assumption that a multi-phase implementation and rollout of the NHEIAS (scenario 1) is the model that is likely to be adopted. As discussed in Section 10.2, should the decision favour either implementation scenario two (a two-phase implementation approach) or implementation scenario three (a single-phase or 'big-

¹⁰ The submission on estimates of the potential number of applicants is available on request from the Department of Education.

bang' approach) the NHEIAS will cost approximately R6 million more than the estimated cost of scenario one.

10.1 Set-up and Operating Costs

It is estimated that set-up costs for the NHEIAS would be in the order of **R35 million** and the annual operating costs **R28 million**. Table 1 below provides a breakdown of composition of costs expressed as a percentage of total set-up and operating costs. A more detailed discussion of cost items is provided in Appendix Four.

Cost Item (% of total cost)	Set-Up	Operating
Management Team		9.1%
Guidance Teams		9.5%
Career Advising Costs		2.1%
IT Staffing and Support	1.9%	3.0%
IT Development and Infrastructure Costs	10.5%	2.0%
Data Capture and Call Centre	6.7%	11.0%
Handbook/Form Production and Distribution/Mailings	0.8%	32.8%
Editorial Team		0.9%
Post Room	0.1%	2.0%
Secretarial and Support Staff		2.2%
Staff Training	0.5%	0.6%
Facilities Costs	1.5%	5.1%
Miscellaneous Operating Costs		15.8%
Other One-Off Set-up Costs	8.7%	
Capital Replacement Charges		3.9%
Change Management and Project Management Costs	15.0%	
Unfunded Operating Cost	54.5%	
Total	R35	R28

Table 1: Relative significance of costs (expressed as a % of total cost)

Analysis of the cost estimates shows that the single largest set-up cost is the "Unfunded Operating Cost" which accounts for 55% (R19 million) of the total set-up cost. This is what is referred to as a pre-revenue operating cost and is based on the assumption that the NHEIAS will incur operating costs from the moment of its inception (e.g., all fixed operating costs such as rent, managerial salaries etc.). In the normal course of events, these costs will be wholly funded from fee revenues received and there is no need to make external provision for them. However, in the case of the NHEIAS, while a significant portion of the annual operating costs will be incurred in the initial stages, these will not be fully offset by corresponding revenues. It is therefore estimated that R19 million of the set-up costs is money that will need to be spent operating the NHEIAS before the service generates a substantial revenue stream. In essence, all the fixed costs of the NHEIAS need to be paid from day one whereas revenue will only 'ramp-up' over three years. Consequently, provision needs to be made to fund the equivalent of about seven months of operations without revenues.

In addition to the unfunded operating costs, it is estimated that a set-up cost of R10 million will be needed for infrastructure and development and R6 million for change management. Also included in the set-up costs is a provision for the 'buyout' of the esATI CAO. Although the price at which this will occur will have to be negotiated with the esATI

Board, preliminary indications suggest that this could be in the range of R2.5 to R3.5 million.

On the operating cost side, the most significant single cost item is the production and distribution/ mailing of the Handbook and Application Forms, which accounts for a third of annual operating costs (approximately R9 million). It is estimated that the NHEIAS will serve approximately 10 times the number of applicants than the esATI CAO. Likewise, the information in the handbook will include a listing of programmes offered by *a//* public higher education institutions. It is estimated that approximately 1 million handbooks and 1.4 million application forms will need to be produced and distributed annually. In addition, the NHEIAS will need to send out substantial numbers of letters (estimated at approximately 500 000 letters per year) for various reasons, principally, acknowledging receipt of applications and change of mind, communicating offers, underpayment advice, etc. This will result in significant postage costs.

10.2 Cost Comparison of Implementation Scenarios

As stated above, the costing model for the NHEIAS estimates that implementing scenarios two and three will cost approximately R6 million more than implementing scenario one. Although one would expect the smaller number of rollout phases, as in scenarios one and two, to cost less this is certainly not the case. The reason for this lies in understanding that the bulk of the set-up costs in any scenario come from the need to fund the pre-revenue (unfunded operating costs) operations of the NHEIAS. Of the three scenarios, scenario one has the fastest revenue build-up, hence covers the fixed costs more quickly and consequently has the lowest 'unfunded operating cost'. Given that it generates revenue more quickly, it is therefore considered to be a less expensive option. In applying its mind to these options, however, the Working Group based its decisions on the effectiveness of the scenarios in serving the interests of the sector, with cost considered as a secondary factor.

10.3 Revenue and Fee Estimates

10.3.1 Set-up Financing

The Working Group recommends that Government meet the set-up costs estimated at R35 million. This includes the infrastructural and change management set-up costs of NHEIAS, estimated at R16 million and the unfunded operating cost, estimated at R19 million.

It is strongly recommended that a loan arrangement such as that used for the esATI CAO should **not** be used. The deleterious effects of this practice on the esATI CAO are widely acknowledged.

10.3.2 Annual Operating Costs

Annual operating costs are estimated at R28 million. These costs can be derived from the following revenue streams:

- An annual membership fee payable by participating institutions, on some basis that is reflective of institutional usage of the NHEIAS; or,
- The NHEIAS may levy a capitation fee for applicants successfully placed;
- Top slice a percentage from the overall higher education budget;
- Fees payable by applicants;
- Sale of NHEIAS services and/or products.

The Working Group recommends the annual operating costs be met by charging a standard application fee, with a penalty for late applications. We have made some assumptions in order to calculate the required application fee:

- The revenue generated from applicants paying the standard (on-time) application fee must cover the basic operating costs. Any additional revenues received from incremental late fee will be dedicated to providing support to the institutions and potential applicants.
- The late application fee is set at roughly 133% of the regular application fee.
- Initially, approximately 1/3 of applicants will pay the late application fee. This is roughly in line with the esATI CAO "walk-in" experience.
- It is assumed that approximately 225 000 applicants will potentially use the NHEIAS.

Based on these assumptions, it is recommended that **the on-time application fee should be set at R130** and that the **late application fee be set at R170** (these are at the current esATI CAO levels). It should be noted that a survey undertaken by the Working Group suggests that the average cost of a single application ranges between R75 and R100, although the top of the range is about R150 per application.

We should, however, caution that the number of applicants is uncertain and that an overestimate of applicants (as happened to esATI CAO) could have serious financial implications. If, for example, there are only 180 000 applicants, additional funds will be needed to support the operational costs. Although, the operating costs in this scenario will be somewhat lower due to less processing, fewer printed forms and handbooks etc., it should be stressed that these savings may not be realised initially as the NHEIAS would have planned for larger numbers.

A final point to note is that the on-time application fee is sufficient to cover the NHEIAS operating budget. Revenue from the late application fee (i.e. R40 per late application), likely to be about R3 million, is surplus that could be used for two potential purposes:

- Providing support to institutions and potential applicants;
- Providing a cushion in the initial years against an incorrect estimation of the applicant numbers.

Since the intention is to eliminate “walk-ins” and hence most late fees, it is not prudent to fund core operations out of late fee revenues.

The fees to be charged for foreign students should be set in consultation with the higher education institutions, but the Working Group recommends that students from SADC countries should be charged no more than the standard fee for local students.

The advantages of the NHEIAS developing into a financially self-sustaining entity in the long-term notwithstanding, it must be recognised that developing cost estimates without a detailed specification of all the elements in the model is an imprecise exercise, nor is it possible to provide an accurate prediction of all future costs. Consequently, the situation may arise where additional injections of cash may be required to support new functions or a major system upgrade (e.g., a migration to Oracle) not covered in the annual operating budget. It is not possible to estimate these costs, but the Working Group believes that it is important that the Ministry and the higher education sector are aware that they may exist. In the event that there are additional operational costs, the Working Group is of the view that these costs should be met by top slicing a percentage from the overall higher education budget or through levying a capitation fee on institutions.

The table below summarises the various NHEIAS cost and revenue estimates:

Financial Summary	R millions (except fees)
Set-up Costs	35
Infrastructure and Development	10
Change Management	6
Unfunded Operating Cost	19
Annual Operating Costs	28
Application Fees	
On-time application fee	130
Late application fee	170

Summary of cost and revenue estimates

10.4 Summary of Recommendations

Key recommendations on funding include:

- (i) Government should meet the set-up costs estimated at R35 million;

- (ii) The annual operating costs estimated at R28 million should be met by charging a standard application fee, with a penalty for late applications;
- (iii) Should additional funding be required to meet the annual operating costs of the NHEIAS, consideration should be given to top slicing a percentage from the overall higher education budget or levying a capitation fee on institutions;
- (iv) The fees to be charged for foreign students should be set in consultation with the higher education institutions. However, it is recommended that students from SADC countries should be charged no more than the standard fee for local students.

11. GEOGRAPHICAL LOCATION

The Working Group has assumed that for costing purposes, the NHEIAS could, in principle, be established in any major centre in South Africa. Notwithstanding this, the Working Group is of the view that there are some compelling reasons for locating the NHEIAS in either KwaZulu Natal (Durban) or Gauteng (Pretoria or Johannesburg).

11.1 Preferred Options

The advantage of a location in Gauteng would be proximity to the Department of Education and other higher education organisations and associations such as SAUVCA and the CHE, and its accessibility to a large number of students.

The Working Group, however, considered that the reasons for locating the service in KwaZulu Natal outweighed the above, and included the following:

- There would be substantial benefits in retaining the expertise of senior staff at the esATI CAO who have learnt an enormous amount during its establishment and early years of operation;
- Those staff have achieved a great deal under difficult circumstances. Their skills and expertise would be of tremendous value particularly during the implementation and early operations of the NHEIAS;
- The technical skills necessary to operate and modify the esATI CAO ICT platform are housed within esATI or on contract to them;
- It would facilitate the multi-phase implementation and rollout of the NHEIAS as the NHEIAS would be in close proximity to the first group of institutions when the changes are introduced and piloted;
- During the design stages, the NHEIAS will continue to serve the KwaZulu Natal institutions in the same way that the esATI CAO currently does and therefore it makes sense for the NHEIAS to be positioned in KwaZulu Natal;
- Relative to other major centres such as Johannesburg and Pretoria, Durban is a moderate cost area and therefore overall staff costs and locational costs (such as rental) are likely to be lower.

For the reasons outlined above, the Working Group is of the view that the NHEIAS should be located in KwaZulu Natal, but not on the present esATI CAO site. In fact, it is strongly recommended that the neutrality of the NHEIAS should be protected by ensuring that it is not located on the site of any higher education institution.

11.2 Summary of Recommendations

Recommendations on geographical location are as follows:

- (i) The NHEIAS should be located in KwaZulu Natal where it can draw on the existing expertise of the esATI CAO. This location would facilitate the implementation process and costs could be maintained at moderate levels;
- (ii) The neutrality of the NHEIAS should be protected by ensuring that it is not located on the site of any existing higher education institution.

12. CONCLUSION

The National Higher Education Information and Applications Service will provide huge benefits to all users, from applicants to higher education institutions and administrators of the system. It will generate invaluable information for educational planning and human resource development strategies, and for applicants it will make information about the higher education system far more accessible than it is at present. It will make processes of admission into higher education more transparent and promote wider access. It will extend a generous range of choices to applicants for an affordable fee and enable them to make choices from a more informed base. Such a service will enable the marketing of South Africa's higher education institutions far beyond its borders, particularly within SADC countries.

It is, however, an ambitious, complex and expensive undertaking. It will also be embarked upon at a time that the higher education system is undergoing fundamental restructuring. Nonetheless, the Working Group recommends that the implementation of the service and the restructuring of the sector be pursued as part of a single change process. A national higher education information and application service can serve to support institutions in the redesign of the applications and admissions processes in which they will be engaged as an inevitable part of merging and restructuring. It is critical however that it be embarked upon with care, thorough planning, and with the allocation of sufficient financial and human resources to ensure that it provides an effective and efficient service. Furthermore, clear communication with all stakeholders, including parents, students, teachers and the higher education community should be accorded high priority as soon as decisions in relation to the establishment of the National Higher Education Information and Applications Service have been finalised. This should include creating awareness of the service through, among other strategies, a strong advertising campaign.

APPENDIX ONE: WORKING GROUP TERMS OF REFERENCE

WORKING GROUP ON ESTABLISHMENT OF A NATIONAL HIGHER EDUCATION INFORMATION AND APPLICATIONS SYSTEM

1. Purpose

- 1.1 To investigate and to make recommendations on an appropriate model for establishing a National Higher Education Information and Applications Service, which would facilitate the promotion of access and equity in higher education through:
- Providing a national higher education applications service that is uniform, cost-effective and efficient.
 - Providing institutions with information on the available pool of potential students with the appropriate qualifications for entry.
 - Satisfying the information needs of applicants on available programmes, as well as providing careers guidance and information on labour market trends.
 - Enabling the Ministry and institutions to monitor progress in achieving race and gender access.
 - Providing the Government with information to assess the efficacy of its human resource development strategies.
- 1.2 To develop a business plan for establishing a National Higher Education Information and Applications Service, in operation by 2003.

2. Principles

The investigation must be guided by the principles and goals for the transformation of the higher education system as outlined in the Education White Paper 3: A Programme for the Transformation of the Higher Education System.

3. Terms of Reference

- 3.1 The investigation must as a first step undertake a detailed evaluation of the current Central Applications Office that is in operation in KwaZulu-Natal, as a basis for determining an appropriate model for the establishment of a National Higher Education Information and Applications Service.
- 3.2 The development of the model must address the following, taking into account existing conditions:

- The relationship between the central applications system and the admissions process, including, the preferential ordering of applications; the number of choices allowed; and the desirability of multiple offers and acceptances.
- The impact on a central applications system of the general move towards two registration periods in the case of modular programmes and an open or ongoing registration system in the case of distance education programmes.
- The role, function and desirability of establishing decentralised offices to ensure access to information and advisory services, including careers guidance, as well as to centralised electronic facilities.
- The administrative, management, governance, funding and information technology systems, including personnel, required to sustain a National Higher Education Information and Applications Service.
- The geographical location of the National Higher Education Information and Applications Service.

4. Process

- 4.1 The Working Group must consult with the appropriate constituencies at both the national and regional levels.
- 4.2 The Working Group may commission specialist studies and draw on the experience and expertise of other individuals both within and outside of the higher education sector as and when necessary.
- 4.3 The Universities and Colleges Admissions Service (UCAS) of United Kingdom and the Central Applications Office (CAO) of Ireland will provide technical support to the Working group.
- 4.4 The Working Group is accountable to the Minister of Education. It is required to complete its investigation and to submit its recommendations to the Minister by no later than the end of March 2002.

5. The Working Group consists of:

Professor Angina Parekh – Chairperson; Ministerial Advisor on Higher Education.

Dr Jim Leatt – Executive Director, The Cape Higher Education Consortium.

Dr Khehla Ndlovu – Head: Higher Education Programmes, United States Agency for International Development (USAID).

Dr Julian Smith – Deputy Vice Rector (Operations), University of Stellenbosch.

Professor Edmund Zingu – Deputy Vice Chancellor, Mangosuthu Technikon.

Mr Tony Higgins – Chief Executive Officer, The Universities and Colleges Admissions Service (UCAS) of United Kingdom.

Mr John McAvoy – General Manager, Central Applications Office, Ireland.

APPENDIX TWO: SCHEDULE OF WORKING GROUP MEETINGS

The Working Group extends its appreciation and gratitude to all those who made time available and graciously hosted us during the course of this investigation

DATE	MEETING	VENUE	TIME	IN (non
24 October 2001	Members of IAS Working Group Presentation: Overview of esATI Central Applications Office	Holiday Inn, Durban	09h00-12h30 14h00-17h00	Dr John Butler-Adam Executive Director, E Tertiary Institutions Dr Ann Knock, Executive Officer, Ce
25 October 2001	Members of IAS Working Group	Holiday Inn, Durban	08h30-16h15	
20 November 2001	Members of IAS Working Group - Site Visit to esATI Central Applications Office	CAO Office, Durban	09h30-16h00	Paul Featonby Head of Information Colleges Admissions Dr Duncan Martin Tertiary Education N Dr John Butler-Adam Executive Director, E Tertiary Institutions Mrs Gayle Boshoff Office Manager, Cent Mrs Debra Duggan, I Applications Office (C Ms Kiloshnee Naidoo Central Applications
21 November 2002	Members of IAS Working Group	Holiday Inn, Durban	08h30-16h15	Paul Featonby Head of Information Colleges Admissions Dr Duncan Martin Tertiary Education N
15 & 16 January 2002	IAS Working Group - Site Visit to Universities and Colleges Admissions Service	UCAS, UK		
17 & 18 January 2002	Members of IAS Working Group - Site Visit to Central Applications Office, Ireland	CAO, Ireland		
6 February 2002	Members of IAS Working Group	ACSA Business Centre, Johannesburg International Airport	09h00-16h00	
8 February 2002	Members of IAS Working Group	Belmont Square Conference Centre, Rondebosch, Cape Town	09h30-16h30	
21 February 2002	Members of IAS Working Group – Consultative Meeting with Matriculation Board and Members of SAUVCA / CTP Higher Education Admissions Task Team	Belmont Square Conference Centre, Rondebosch, Cape Town	11h00-13h15	Hugh Amoore SAUVCA Member of Admissions Task Tea Cobus Lötter Director, Matriculation Administration for SA Admissions Task Tea Larry Pokpas SAUVCA Member of Admissions Task Tea Cape

DATE	MEETING	VENUE	TIME	IN (non
	Members of the IAS Working Group - Consultative Meeting with CTP Executive Director		14h30-16h15	Rob Woodward Representing Prof N CTP Higher Education Technikon Prof Roy du Pré Executive Director, C
27 February 2002	Members of Working Group – Consultative Meeting with SAUVCA Chief Executive Officer	Holiday Inn, Pretoria	14h30-15h50	Ms Piyushi Kotecha Chief Executive Officer Chancellors' Associat
	Members of IAS Working Group		14h30-16h30	Ms Hanlie Griesel Director: Academic Vice Chancellors' Ass
			17h00-19h30	
28 February 2002	Members of IAS Working Group Consultative Meeting with Representatives of National Teachers Organisations	Holiday Inn, Pretoria	09h00-11h00	Jos Grobbelaar South African Teach Mrs Thelma Louw President, National U South Africa (NUTES
	Members of IAS Working Group Consultative Meeting with Representatives of National Student Organisations		11h30-13h30	Enoch Rabatapi Assistant Director, Na Organisation of Sout Dr J J C Sauer COC-Member, Nation of South Africa (NU (NOTE: NEHAWU & S attend) Sephiri Nyirenda Education & Transfor Technikon Student U Ngoato Phadime Deputy Secretary Ge Congress (SASCO) Zola Sapeta Secretary General, S Union (SATSU) Tshepho Segodi Organiser, Pan Africa (PASMA) Siphiwe Zuma President, South Afri Representative Coun (NOTE: AZASCO, SA but did not attend)
7 March 2002	Members of IAS Working Group – Consultative Meeting with esATI User Group	CAO Office, Durban	10h45-12h30	51 Representatives o

DATE	MEETING	VENUE	TIME	IN (non
13 March 2002	Members of the IAS Working Group – Consultative Meeting with Academic Registrars and Admissions Officers	ACSA Business Centre, Johannesburg International Airport	09h00-17h00	Di Francombe Director, Enquiry & A UWE Bristol Paul McClure Head, Application Se Admissions Service Dr John Butler-Adam Executive Director, e Dr Ann Knock Executive Officer, CA Debra Duggan Database Administra Kiloshnee Naidoo Acting Call Centre Ma 68 delegates from hi
18 March 2002	Members of the IAS Working Group	NSFAS Office, Cape Town	10h30-11h30	Roy Jackson, Chief E Financial Administrat
19 April 2002	Members of the IAS Working Group – Consultative Meeting	Belmont Square Conference Centre, Rondebosch, Cape Town	10h00-11h15 11h00-12h00 12h00-12h45	Richard Rosenthal, R Dr Duncan Martin, T (TENET), Cape Town
19 April 2002	Members of the IAS Working Group – Consultative Meeting with Committee of Technikon Principals (CTP) Exco	Board Room, Peninsula Technikon	14h00-16h00	CTP Exco Members: Dr M Balintulo (Chair Prof B de L Figaji, Pe Prof L Brunyee, Bord CTP Office: Prof RH du Pré, Exec Mr BJ Whyte, Registr Annie Viljoen, Secret Committee on Tutori Exco Members: Prof I Mggamqo Prof A Padayachee Prof L van Staden Prof E Tyobeka CTM Office: Kogie Pretorius Christelle Visser
25 April 2002	Members of the IAS Working Group	Holiday Inn, Johannesburg International Airport	16h15-19h30	
26 April 2002	Members of the IAS Working Group – Workshop for Vice-Chancellors	Holiday Inn, Johannesburg International Airport	10h00-13h00	34 Vice-Chancellors o
May 2002	Member of the IAS Working Group – site visit to Kenya			Mr. Ambrose Ouma J Kenyatta University Mr Mfestus Imboha M Mr. Mungai Gacuhi: f Nairobi & Secretary o (JAB)
7 May 2002	Members of the IAS Working Group – Consultative Meeting	Johannesburg International Airport	14h00-15h00	Prof N Ndebele (Chai Prof S Coetzee, Unive

DATE	MEETING	VENUE	TIME	IN (non
	with South African Universities Vice Chancellors' Association (SAUVCA) Exco	Business Centre		Prof C T Keto, Vista Prof D Swartz, Unive Prof D Woods, Rhod Ms P Kotecha, Chief Ms T Yeowart, Direct
9 May 2002	Members of the IAS Working Group – Consultative Meeting with IT Directors Forum	Elgro River Lodge, Potchefstroom	14h00-14h45	49 IT Directors
13 May 2002	Members of the IAS Working Group – Consultative Meeting with esATI Governing Board	ML Sultan Campus, Durban Institute of Technology	10h00-12h15	17 Representatives o
23 May 2002	Members of the IAS Working Group	Alphen Hotel, Constantia, Cape Town	09h30-12h45 14h00-15h30 14h00-17h30	Prof Ian Bunting, Con Ms Erica Gillard, Con Warwick Blyth, PSP I Andrew Duncan, PSP
24 May 2002	Members of the IAS Working Group	Alphen Hotel, Constantia, Cape Town	09h00-10h30 10h50-12h45 13h00-16h00	Richard Rosenthal, R
4 June 2002	Members of the IAS Working Group – Informal information gathering meeting with the University of South Africa (UNISA)	Pretoria	14h30-15h30	Dr Bob Day, Executiv Communications Tec Africa (UNISA) Mrs Phoebe van der Design, Learning Ma
16 – 20.June 2002	Members of the IAS Working Group – site visit to Turkey	Ankara Istanbul		Dr Fethi Toker, Presi Dr Durmus Ali Ozceli Dr Rukzan Eski Mr Mustafa Tutunca Ms. Ebru Erdem Ms. Emel Hizlan Prof Dr Sabih Tansal Istanbul
28 June 2002	Members of the IAS Working Group	Belmont Square Conference Centre, Rondebosch, Cape Town	09h00-17h00	

APPENDIX THREE: COMPARATIVE SUMMARY OF APPLICATIONS SYSTEMS

Service/Operation	UCAS, UK	CAO, Ireland	esATI CAO, KZN	J
Country population	59,4 million	3,8 million	RSA - 43,3 million KZN - 12 million	30,7 million
1. Size/Volume	<ul style="list-style-type: none"> • 465 000 applications pa; • 336 institutions – 365 000 placements. 	<ul style="list-style-type: none"> • 65 000 applications pa; • 42 institutions – 37 525 placements. 	<ul style="list-style-type: none"> • 22 000 applications; • 8 institutions –11 000 placements. 	<ul style="list-style-type: none"> • 56 000 a • 6 institut placements
2. Governance	<ul style="list-style-type: none"> • Owned by HE Sector through company limited by guarantee (charity). Governed by Board of Directors. CEO manages UCAS operation of some 350 staff. • HEI membership is voluntary. 	<ul style="list-style-type: none"> • Owned by HE Sector through a private limited company. Governed by Board of Directors of 11 members. CEO manages CAO operation of some 9 staff. • HEI membership is voluntary • A Memorandum of Understanding governs relationship between CAO and member Tertiary institutions. 	<ul style="list-style-type: none"> • Owned by HE Sector through representative Steering Committee that reports to esATI Board. CAO operation managed by Director with staff of 9. • HEI membership is voluntary. • A Memorandum of Agreement governs relationship between esATI CAO and participating tertiary institutions. 	<ul style="list-style-type: none"> • Voluntary • Board (J of the Ac the parti • No fulltin • Secretari of the un
3. Funding 3.1 Set up costs 3.2 Running costs	<ul style="list-style-type: none"> • Original set up costs for PCAS paid by government, but not for the university system. • 87,5% of annual budget of ±£16million met by application fee £15 plus capitation fee £17 • 12,5 % of budget met by for-profit UCAS marketing company 	<ul style="list-style-type: none"> • Original set up costs paid by government • Met entirely by application fee of £20 	<ul style="list-style-type: none"> • Original set up costs paid by bank loans underwritten by participating institutions • Met by application fee of R130 plus small advertising revenue 	<ul style="list-style-type: none"> • No set • Met by 200 Ks • Incom running meetin

Service/Operation	UCAS, UK	CAO, Ireland	esATI CAO, KZN	
<p>4. Applications</p> <p>4.1 Handbook</p> <p>4.2 Application Form</p> <p>4.3 Applicant Choices</p> <p>4.4 Selection Process</p>	<ul style="list-style-type: none"> Published annually: paper/CD Rom/Web. Entries by institution in alphabetical order, displaying courses offered. Paper/Online Up to 6 courses in directory (i.e. alphabetical) order All HEIs cited are informed of application choices & sent applicant data simultaneously. HEI responds: firm offer, conditional offer, rejection Applicants accepts offer or not 	<ul style="list-style-type: none"> Published annually: paper/Web. Entries by institution in alphabetical order, displaying courses offered. Paper/Online Up to 10 degree + 10 diploma courses, in strict order of preference HEIs do not see application details made available simultaneously. HEIs delegate CAO by setting minimum entry requirements per course and number of places to be offered. CAO electronically sorts applications by applicant preference, points scored & places available and makes offers accordingly. Applicant accepts offer or not. 	<ul style="list-style-type: none"> Published annually: paper. Entries by programmes offered by institutions in KZN Paper/Online Up to 6 programmes in order of preference All HEIs cited informed of applicants choices & sent applicant data simultaneously HEI responds: firm or conditional offer, or rejection Applicant accepts offer or not 	<ul style="list-style-type: none"> Published Simple program Entries Paper Up to order Univer depart capaci studer Univer inform choice No firm are ma selecti All inst Board selecti Applica not
<p>5. Management</p>	<p>CEO manages UCAS operation through a management structure of strategic and infrastructural departments whose Heads report to CEO. These include:</p> <ul style="list-style-type: none"> Applications Services (some 100 persons) Data & analytical services Outreach & publications (done annually) UCAS Enterprises (marketing) Digital & interactive services (ICT) 	<p>Secretary runs CAO administration with 9 core staff</p>	<p>Manager runs CAO operation with 9 core staff.</p>	<p>Secretary a administrati the operati</p>
<p>6. IT</p>	<p>Has developed its own software on an Oracle database management system; manages hardware itself and uses HE network.</p>	<p>Has developed its own software (Dibol-a derivative of Cobol); manages its servers and uses HE network.</p>	<p>Software developed by Logical; database run on SQL; servers managed in-house. CAO uses TENET for network services.</p>	<p>Makes use computing</p>

Service/Operation	UCAS, UK	CAO, Ireland	esATI CAO, KZN	
7. Curriculum and career guidance	Handbook supplemented by several means of reaching school leavers with basic curriculum and career guidance.	No attempt is made by CAO to offer guidance. Applicants are referred to CAO website which interfaces with HEIs and to HEIs themselves. CAO does run events for guidance teachers.	Handbook attempts some curriculum/career guidance. Does schools liaison.	No curriculum/career guidance provided.

APPENDIX FOUR: COST ESTIMATES – DISCUSSION OF COST ITEMS

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Staffing Costs

Scaled esATI CAO staff costs were used as the basis for staff cost estimates for the NHEIAS. In general, it has been assumed the esATI cost is the Low estimate, the Base is 33% higher and the High 50% higher than esATI CAO costs. It should be noted that the esATI staff costs are believed to be reasonable estimates of what is required to attract and retain the required skills in a moderate cost area like Durban. However, for the purposes of this exercise, higher costs were allowed to cater for the eventuality that the NHEIAS is located in a higher cost area like Gauteng.

Management Team

Costs assume that there will be 6 core members of the NHEIAS management team including CEO/Director, Deputy-Director, HR/Office Manager, Finance Officer, Editor and IT Manager. It is envisaged that the Director will fill an important external role dealing with high level liaison with government, other relevant statutory bodies and associations and the institutions. The Deputy-director role will be more operational and will entail responsibility for setting up and managing the day to day operations of the NHEIAS.

Given the significant numbers of employees, temporary and permanent, it will be important to have an HR capability in the management team and this has been provided for in a joint role with the office manager. The larger budgets and more complex operations suggest the need for a dedicated finance team run by a finance specialist. The Editor and IT manager will take on the expanded responsibilities associated with these core NHEIAS functions.

Guidance Teams

As proposed, regional presence of the NHEIAS should be provided by regional guidance teams. The base case assumption is that there will be 5 regional teams of 4 members each. These teams will be responsible for:

- Running training sessions at the institutions;
- Co-ordinating and collecting handbook updates from the institutions;
- Organising, co-ordinating and running regional career fairs;
- Visiting schools and generally promoting the NHEIAS “on the ground” – includes physically distributing handbooks and forms;
- Being the first point of contact to the NHEIAS for the local institutions.

¹¹ Extract from the report of the consultants commissioned by the Working Group to advise on cost estimates for the NHEIAS.

Career Advising Costs

The cost estimates account for the NHEIAS career advisory role in 3 ways: staffing of guidance teams partially dedicated to career advising, Handbook design which includes a career advisory section, and career fairs. The first two costs have been discussed elsewhere. It is envisaged that the regional guidance teams (with support from the central office) will have a role in organising regional career fairs. These could be co-sponsored with institutions and used as a channel for marketing the NHEIAS and distributing handbooks and application forms.

Included in the cost estimates is an initial allocation of funds for hosting career fairs. However, it is anticipated that funds required for these events could be reduced over time through possibly commercial sponsorships. A portion of the NHEIAS advertising budget (discussed under "Miscellaneous Operating costs") could also be dedicated to publicising career information.

IT Staffing and Support

The NHEIAS IT team is likely to comprise 2 full time developers, in addition to the IT manager, who will be skilled at developing in a Microsoft application environment. It is believed that these skills are currently available owing to a recent surge of training for qualifications like the MCSD (Microsoft Certified Software Developer).

A technical help desk will be manned by 2 full-time equivalent (FTE) less-skilled technical support people who will be available to handle moderately technical user requests by phone *e.g.* a secretary in the faculty office wants to do a mail merge from NHEIAS or recover a lost password. The help desk will also be available to the NHEIAS Regional Guidance teams if they encounter user problems of a more technical nature. Deeply technical questions originating from, say, institution IT departments would be referred to the developers or the IT manager as these would generally be beyond the skills of the help desk. To enable the help desk, provision has been made for 3 workstations. In times of low use these could also double as software development workstations.

IT Development and Infrastructure Costs

IT is a core enabler for the proposed NHEIAS. A substantial IT platform already exists in the esATI CAO operation, but this will need to be built on in several respects:

- Additional development work will need to be done to modify the existing database and system to cater for the new application forms and handbook, new user requirements and the applicant allocation system that is at the core of the NHEIAS proposed applications model;

- Server hardware will need to be upgraded to provide more processing power and faster response times for both the database server and the web server. Ideally, a backup box will need to be situated offsite and kept up to date to ensure fast recovery in the event of a catastrophe – this could probably be one of the esATI CAO servers being replaced with upgraded equipment.
- Additional bandwidth will need to be acquired to ensure fast response times to the system's institutional and individual users.
- Adequate security and intrusion detection will need to be installed at the NHEIAS site and in the system.

Various cost allocations have been made to cover these issues:

- In addition to the in-house development team, several cost items relate to outside development support for specific development items: "cost of enhancements to systems", "development of in-house IVR", "call centre upgrade", "HEI Interfaces" and a "Consulting" item that will partially be used for IT consulting. It is believed that together, these make adequate provision for the required outside IT consulting skills.
- The cost estimates include provisions for server upgrades. These include new database and web servers together with supporting equipment for uninterrupted power supply, data storage redundancy etc.
- Additional bandwidth will need to be rented from TENET on a "pay-as-you-go" basis. Consequently, there is no anticipated investment for acquiring additional bandwidth – provision has simply been made for higher annual bandwidth costs.
- Provision has been made for an outsourced supplier of firewall and intrusion detection services in the costing. This will involve an annual charge for the service. Additional development work needs to be done to enhance the security of the esATI CAO application itself –e.g. encryption of data exchanges etc. These enhancements are assumed to be funded out of the development budget discussed above.
- The need for an enhanced IVR (interactive voice response) facility linking the call centre system to the database application has been identified. This is discussed in the call centre section and hence is not considered further here.

Software licensing costs are an ongoing cost in any IT installation. Modest allocations to cover this is included in the cost estimation, although it is not expected that these will be a significant cost to the NHEIAS as long as Microsoft continues to provide favourable terms on the core software applications. Much of the software required for the call/data centre comes with the hardware and only certain other items like virus checking software need be considered.

A substantial IT cost that should be borne by the NHEIAS is that of creating the institutional interfaces to the NHEIAS system. Several esATI institutions have cited lack of budget as the primary reason they have not interfaced to the CAO. In reality, lack of technical expertise has played an equally important role. Consequently, it has been

recommended that a generous sum be set aside to have external developers create these interfaces at the institutions. The actual cost may be significantly lower if NHEIAS can strike a bulk deal with ITS which is the supplier of the dominant administration software used by the institutions.

Data Capture and Call Centre

The electronic capture of application forms and responding to telephone inquiries in the call centre are activities that will account for the majority of the headcount at the NHEIAS. Many of these employees will be seasonal as over half the applications and inquiries typically arrive in a three-month window between September and November (the call centre peak period extends to January).

In order to run this operation efficiently:

- Personnel should be capable of performing both the data capture and call centre functions. This allows efficient load balancing according to demand and breaks the monotony of the specific tasks.
- A core complement of permanent staff is available throughout the year to handle the low demand areas and provide leadership when temporary personnel arrive.
- Ongoing training programs to develop a pool of temporary operators for these functions need to be in place. Budget has been set aside for this ongoing training function including a training officer dedicated to the data/call centre.
- Two permanent supervisors to run the data capture and call centre operations respectively need to be appointed. These could probably be drawn from the existing esATI CAO staff.

To estimate the personnel requirements for these operations, the esATI CAO experience was examined and it was established that a data capturer (fully applied to this) could process 35 (base case) application forms a day. Similarly, each application has about 5 minutes of telephone time associated with it. These benchmarks, together with the historical seasonal demand pattern were used to calculate that the NHEIAS will require about 38 full time equivalent (FTE) data capture/call centre operators (assuming 225 000 applications annually). This will probably be made up of 25-30 full time personnel and a peak complement of 88 people. The computing infrastructure will have to be designed to handle the peak load.

Workstations will need to be created for the peak load of personnel since each person requires their own workstation. A workstation includes a chair, desk, computer equipment and, possibly, phone equipment if the workstation is configured for call centre use. It is not necessary to configure all workstations for call centre use, as the peak load in the call centre never requires more than half the total workstations. Accordingly, the costs assume that half the workstations are set up for dual data capture/call centre use with the balance being exclusively for data capture. Account has also been taken of the possibility that the

existing esATI CAO workstations still have a useful life and could be deployed in the NHEIAS.

The current esATI call centre management software is not considered adequate and will need to be upgraded. In addition, it is believed that a significant number of telephone inquiries could be handled by an automated IVR (interactive voice response) system connected to the NHEIAS database. This capability would largely be created by in-house software development and a cost item has been allocated to cover additional costs associated with this.

Handbook/Form Production and Distribution/Mailings

The largest cost item in the NHEIAS operating budget is likely to be the production and distribution of the Handbook and application forms. In estimating the costs it has been assumed that the Handbook will be a national listing of programs in a format similar to the current esATI CAO handbook. The possibility of a separate career guidance handbook or multiple handbooks with more detailed listings has not been included in the cost estimates as currently there is basis on which to determine what these will entail in practice. The cost estimates include provisions for the consultative process of designing the Handbook and Form. This is in addition to the staff and portions of the travel and change management budgets that will go to this task. It is envisaged that the Handbook and Form design will involve a core team drawn from NHEIAS and institutions that will take responsibility for designing and validating these forms.

The current esATI Handbook costs about R2.50 per copy to produce and is printed in runs of 160 000 copies. Of these, approximately 15 000 are mailed to schools, 50 000 are mailed out to applicants in response to personal requests and the balance are distributed in bulk to institutions or schools during CAO visits. The NHEIAS will serve approximately 10 times the number of applicants. The base case estimate is that the NHEIAS will distribute around 1 000 000 handbooks. The rationale here is that there is already some national coverage by the existing handbook. In addition, there will be better advertising of the NHEIAS and more direct contact with schools which should improve the overall response rate to handbook distribution.

Cost per new handbook is roughly double that of the current handbook. This reflects the greater number of listed programs but also takes account of the lower unit printing cost for the larger production run.

Cost assumptions for the new NHEIAS Application Form assume an 8-page 2-colour form printed in a run of over 1 million. A base case run of 1.4 million forms (esATI CAO prints 220 000) has been assumed.

Handbooks and Application Forms are distributed together. Schools receive packs with multiple forms per handbook. It has been assumed that roughly half the handbooks will be distributed by post with the balance being bulk delivered to institutions, probably through the guidance teams. Estimates of postage costs are based on outsourcing to Nicor, the current esATI provider. Bulk distribution costs assume transportation of the Handbooks and forms to the regional centres or institutions.

NHEIAS will also need to send out substantial numbers of letters for various reasons, principally: acknowledging receipt of applications and change of mind, communicating offers, underpayment advice and clearinghouse letters. The esATI CAO currently sends out 75% of these letters by post using Nicor (an outsource provider) with the balance being sent by fax or email. It has been estimated that NHEIAS will incur postage costs for approximately 500 000 letters per year.

Editorial Team

It has been assumed that an editorial team of 2 FTEs in addition to the Editor will be responsible for creating, co-ordinating and maintaining the Handbook and the underlying database entries associated with it. This will involve substantial liaison with the regional guidance teams who will be the primarily responsible for collecting the handbook update information from the institutions. It is possible that the editorial support team could be reduced after the NHEIAS material has been developed over the initial start-up years. Another possibility is that the capability could be redeployed into creating new career guidance material for distribution through the NHEIAS.

Post Room

Large volumes of incoming applications and postal inquiries require a significant post room team at the NHEIAS. This team could have two functions:

- Opening correspondence and filing it in the appropriate processing queues for the data centre.
- Removing and accounting for the money contained in the postal applications. In practice, cash as well as cheques and money orders are attached to applications and it is therefore necessary to have good supervision and tight accounting procedures around the post room functions.

For the purposes of cost estimates, it has been assumed that the basic post room team will comprise a supervisor and 2 FTEs and that additional letter opening personnel will be hired on an hourly basis at times of peak mail volume. Also included is a cost item for an automated letter opener that could reduce the post opening workload and is justified by the volumes NHEIAS would handle.

The cost estimates have also made provision for an assistant to the finance officer. A key role for this employee is to oversee the funds received in the post room. Cost has been allocated for a safe in the post room to help with this task.

Secretarial and Support Staff

Provision has been made for a number of support positions including: a receptionist, office administrator providing general secretarial support, a PA shared by the director and deputy-director, a messenger and 4 filing clerks.

The filing clerks would be responsible for filing and retrieving application forms between the filing room and the data/call centres. They will also assist with photocopying and similar tasks.

It may be necessary to have more than one receptionist. The esATI CAO handles roughly 5000 people per year at its reception – this amounts to nearly 25% of applicants! Most of these inquiries are handled by call centre personnel, but the receptionist is responsible for directing them. It is doubtful that these visits would increase significantly in a national system because the NHEIAS office would not be accessible to other regions.

Staff Training

If the NHEIAS continues with the current esATI CAO staffing strategy of “recruiting and training” there will be a need for ongoing training activity to create an appropriately skilled pool of workers who can step in when seasonal demands pick up. Consequently, a small cost for setting up a training area and an ongoing budget for training activities has been included in the cost estimates. These funds would be used create training material, purchase equipment for training use and possibly for travel expenses for trainees coming from the regional offices. It could also be used for external trainers to provide input to the NHEIAS. The bulk of the actual training would be carried out by the permanent staff during the low demand seasonal periods. Since the training program has not been clearly defined it is hard to assess the likely accuracy of the estimated costs.

A special item has also been provided for additional training during the start-up phase when there is greater need to train the initial expanded core staff team. A separate training budget has been allocated to the data/call centre operations where provision was made for a dedicated trainer (see discussion above). It is likely that the data/call centre trainer would also make use of the training area.

Facilities Costs

The current esATI CAO occupies approximately 250m² of rental space excluding the reception area that is shared with esATI. Of this space, 50m² is used for the 3 management offices, 40m² for the data/call centre (currently 9 workstations) and 160m² for file and handbook storage and a workroom area for preparing mailings.

It is essential that the main office, reception and call/data centre facilities be office standard accommodation. The storage and workroom area could, in principle, be a separate (ideally nearby) warehouse facility. Files, however, need to be stored in close proximity to the data/call centre facility. Actual configuration of the facilities needs to be decided at a later time. Provisions have been made in the cost estimates for a head office facility of 1200 m². This assumes a data centre at least 10 times larger than the existing one, 5 times as much office space and approximately 5 times as much storage/working space. The Base estimate of the rental rate is R50/m² /month. This is believed to be on the high side given: (i) that a substantial portion of the space is essentially warehousing and (ii) there is no reason to believe that the NHEIAS requires superior A grade office accommodation. However, it was considered more appropriate to use this base rate in the cost estimates so as to allow for some flexibility in the costs for a location other than Durban.

In addition to the main office provision has been made for 5 regional office facilities of 150m² each. Assumed rental for these is also R50/m² /month. These are envisaged to be a base for the regional guidance teams and will not be set up with support staff etc., or to receive "clients". Equipment will be basic furniture, a shared computer and phones (guidance teams will probably rely more on mobile phones) and some basic office equipment like a fax/printer/copier. Limited storage space for handbooks and forms will be important at these offices.

The rental rates assume premises in good working order. Nevertheless, included in the cost estimates are refurbishment costs for both the head office and the regional offices for customising them to the required configuration. For the main office, costs for shelving, furniture and office equipment are explicitly included as additional items (note that workstation costs include the associated furniture costs). One of the key items in the main office refurbishment will be to ensure that the computer servers are housed appropriately in a cool, secure and fire protected area. Refurbishment costs for the regional offices include all furniture and equipment.

Miscellaneous Operating Costs

Numerous other operating costs were identified and provided for in the cost assessment. These fall naturally into several categories depending on how they scaled from the corresponding esATI CAO costs:

Costs that Scale directly with the Number of Applicants:

- Bank charges - These relate principally to the deposit of application fees and can be expected to scale in proportion to the number of applicants
- Photocopying costs mostly arise from duplication of an applicant's supporting documents when requested by an institution.
- Letter printing costs associated with the various letters the NHEIAS will send to applicants and institutions.

- Stationery costs are related to correspondence sent to applicants as well as filing stationary used to store application forms and supporting documents.
- Telephone costs include calls to applicants, fax charges and calls to institutions.

Items that assume substantially more importance in the NHEIAS:

- Advertising the CAO. This is currently a low-key activity at the esATI CAO due, principally to budget constraints. There appears to be real need to create awareness of the NHEIAS through a strong advertising campaign and therefore it has been assumed that significant resource will be dedicated to this.
- Access to broadcast media is probably beyond the allotted amount and exposure in these media will probably need to come through public interest slots in the state sponsored broadcast media.
- Travel and accommodation costs will rise dramatically with a national higher education information and applications service. Visits to institutions will need to be regular and will involve national travel. Regional teams will also have needs to travel to the main office for training.
- Meetings – similar to the travel and accommodation, the advent of a national application service will create greater needs for meetings between the NHEIAS and the larger group of institutions.

Costs that scale by less than the number of applicants:

- Audit fees for a bigger operation will naturally be higher than esATI CAO fees.
- Consultancy fees related to external consultants have been increased over the esATI numbers but not in proportion to applicants. This is because these are mainly IT consulting costs. The addition of 2 developers to the permanent team should reduce the extra demand for outside expertise.
- Electricity costs may be additional to rental costs and have been explicitly provided for.

Other One-Off Set-up Costs

Three other start-up cost items have been identified. These include:

- Staff recruitment costs which include the cost of placing advertisements and possible travel and relocation expenses.
- Staff contract modifications will be needed if the esATI staff are rolled into the NHEIAS. This item is mainly to cover the legal fees associated with this.
- Buyout of esATI CAO. A base case purchase cost of R2.5 million which includes all the transaction costs associated with the transfer of ownership has been assumed. The High case of R3.5 million makes provision for a substantially higher purchase cost.

Capital Replacement Charges

For the NHEIAS to be sustainable it is necessary to replace capital equipment on an ongoing basis. Since capital equipment expenditures are typically “lumpy” in the sense that equipment is only replaced or upgraded every few years it is important to set aside funds on an annual basis to ensure that the necessary cash is available when needed. The NHEIAS has two kinds of capital equipment with different replacement characteristics: IT equipment and “Office” equipment. The former includes computers, printers, servers, etc., while the latter includes furniture, office fittings, letter openers etc. It has been assumed that IT equipment has a useful life of 4 years and Office equipment a useful life of 7 years (both base case estimates). Accordingly, provisions have been made in the cost estimates for $\frac{1}{4}$ of the IT equipment value to be set aside each year to save for eventual replacement and $\frac{1}{7}$ of Office equipment value. Even with the money set aside in an interest bearing account, the likely impact of inflation means that the amounts saved are not likely to cover the full replacement cost when the time comes. To counter this, the amounts set aside has been increased by 20% when computing the full capital replacement charge.

All this assumes that the NHEIAS owns the bulk of its capital equipment. Another possibility that needs to be considered in practice is that of leasing equipment. This has the advantage of reducing the NHEIAS set up costs by approximately R2.5m but will increase the annual operating costs with a lease in lieu of the capital replacement charge. In general this lease charge will be substantially higher than the capital replacement charges estimated since they include profits to the leasing company.

Change Management and Project Management Costs

It is crucial to explicitly provide resources for Change Management at the institutions. Two specific areas are envisaged in which external resources experienced in Change Management could be applied:

- During the consultative design and validation process to specify the Handbook format, application form and system functionality. In addition to a core team comprising of persons drawn from higher education institutions and the NHEIAS who would take the lead in this process, it would be useful to have a Change Management specialist (probably an externally appointed consultant) as part of this team.
- During the rollout of the system to institutions it is essential that the “users” at the institutions are adequately supported. An effective way to do this is to create implementation teams at each of the institutions drawn mostly from the institution itself but also including NHEIAS personnel and an external change management specialist.

In order to provide these external resources provisions have been made in the cost estimates for 1 FTE Change Management consultant per year of the rollout (roughly 3

years). In practice, this is likely to be a team of 2-3 people deployed for 4-6 months a year.

Given the scale and organisational complexity of the project, provisions have also been made in the cost estimates for the appointment of a professional project manager, who would be tasked with the responsibility of managing the entire NHEIAS roll-out. This person would be accountable and report to the CEO/Director of the NHEIAS.

Unfunded Operating Cost

The NHEIAS will incur operating costs from the moment of its inception. In the normal course of events these costs will be wholly funded from fee revenues received and there is no need to make external provision for them. Unfortunately, in the initial stages of the NHEIAS a significant portion of the annual operating costs will be incurred but not fully offset by corresponding revenues. In fact, they will never be offset and consequently provision must be made to ensure that the NHEIAS can operate while it is getting established and rolling out to the institutions. This is referred to as the pre-revenue operating cost or "unfunded operating cost".

In calculating this cost, it has been assumed that all fixed operating costs (e.g. rent, managerial salaries etc.) are incurred from the inception of the NHEIAS. Variable costs such as handbook production are assumed to be funded by corresponding revenues in that year and consequently do not contribute to the "unfunded operating cost" item.

Overdraft Facility Requirement

Variable costs such as the handbook production create another funding need of a slightly different nature. In the normal NHEIAS annual operating cycle, revenue tends to be received towards the end of the year when applications come in and major costs are incurred at the beginning of the year when handbooks and forms are printed. Consequently, the NHEIAS needs to have a bank overdraft facility to fund this seasonal mismatch in the operating cost and revenue flows. In computing the required magnitude of this facility it has been assumed that all variable and half the fixed operating costs are incurred in the first half of the year while all revenues are received in the second half of the year.

Contingency Costs

This has not been provided for in the cost estimates. The reason for this is methodological. There are essentially two reasons to add contingency costs:

- (i) To account for uncertainty in the cost estimates being used for the various items in the calculation.
- (ii) To account for unanticipated items that have been left out of the calculation.

In the current analysis, the second factor is not likely to play a big role because the esATI CAO has provided a working example from which insights were drawn into what costs are involved. It is unlikely that any significant cost items have been excluded from the analysis. Reason (1), though, is still very valid – there is still considerable uncertainty about the magnitude of costs even though what the items are is known. However, the methodology used by the consultants has (i.e., the Decision & Risk Analysis methodology) explicitly accounted for this uncertainty and therefore the advice received is that there is no need to add contingency to the costs.