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PROPOSED PROGRAMME BUDGET FOR THE BIENNIUM 1992-1993

Integrated management information system project

Third progress report of the Secretary-General

INTRODUCTION

1. The General Assembly, by its resolution 43/217 of 21 December 1988, approved the implementation of phase I of the integrated management information system (IMIS) over a three-and-one-half-year period at a total cost not to exceed $28 million at 1988 rates. Details of the Secretary-General's proposal for the project are contained in his report to the General Assembly at its forty-third session 1/ and in the related report of the Advisory Committee on Administrative and Budgetary Questions (ACABQ). 2/ The purpose of the project is to develop an integrated system for the processing of, and reporting on, administrative actions at all major duty stations. This system will replace the numerous independent systems which, built in many cases 20 years ago and mostly for regular budget activities, are no longer able to provide the support needed by management at a time of rapidly changing needs and increasing demands made on the administrative sector to support peace-keeping activities and those financed from extrabudgetary resources.

2. The Secretary-General has since submitted two progress reports, in 1989 3/ and in 1990. 4/ The first progress report provided information on the general work plan for the first phase of the project until the end of 1992. It also gave an outline of decisions taken to proceed with the development of IMIS, using a modern relational database management system supporting the structured query language (SQL), which facilitates portability across computer environments. Furthermore, the report indicated that IMIS would use a computer-aided software engineering (CASE) tool to document the system over the project life-cycle, i.e. from design through coding and implementation.

This CASE tool presents significant advantages for future maintenance of the system since it documents the specifications for the entire system in a rigorous and consistent manner and in electronic form. This will be a cost-effective measure since, too often, electronic data processing (EDP) specialists find that the systems they are asked to maintain or enhance are poorly documented, forcing them to spend hours and days understanding how a program or set of programs functions before they can work with it effectively. The progress report also stated that the hardware environment would not be limited to large mainframes, but would take advantage of new technological developments for distributed data processing on smaller computers and provide greater flexibility to offices away from Headquarters, taking into consideration the fact that not all offices have a sufficient amount of data processing to warrant the purchase of large mainframes.

3. In his second progress report, 4/ the Secretary-General described the progress achieved in 1990: the detailed analysis of user requirements and the logical design of the system (i.e. a design that is not dependent upon the selection of hardware). These tasks were performed with the assistance of a consulting firm with experience in designing modern administrative systems. The user requirements analysis was conducted in the following functional areas:

(a) Finance: budget, post management, assessments and contributions, treasury, accounting, payroll and employee insurance;

(b) Human resources: recruitment, appointments, tracking of personnel actions, entitlements, leave and attendance and medical certification;

(c) General services: requisitioning, procurement, contracting, vendor management, travel, transportation, inventory and property control.

4. The logical design, also referred to as external design, was elaborated through the use of the CASE tool, building a basis for computer system specifications and potential coding of the application software. It provided a more accurate view of the scope of the project, thus ensuring that proposals from consulting firms invited to bid for the remaining stages of the project would not be inflated to cover for uncertainties.

5. In parallel with those two stages, a recommendation for the hardware and software platform was made by the consulting firm. The recommendation was reviewed by the IMIS team, representatives of the Electronic Services Division at Headquarters and heads of EDP sections at major duty stations away from Headquarters. The technical architecture consists of a three-tier platform and is based on the principle of open systems. Further details on the technical platform are provided below (see paras. 11-15).

I. PROGRESS OF WORK

A. External design

6. The external design was accepted by all potential IMIS users at Headquarters not only in the central services of the Department of Administration and Management, but also in the executive or administrative offices of the substantive departments, the Department of Technical Cooperation for Development and the Field Operations Division, which administers the peace-keeping operations. A detailed presentation of the work in progress was then made to administrators and their staff at offices away from Headquarters, again emphasizing the need for the system to address the requirements of activities funded by the regular budget and extrabudgetary resources. Changes and amendments identified during these presentations were carefully documented for inclusion in the internal design. Since the beginning of the project, the Division of Internal Audit provided assistance on controls, security and audit requirements to be built into the new system as well as on procedures for project management. Representatives from that Division receive all documentation pertinent to the various phases of the project. This close cooperation with the Internal Audit Division will continue throughout the project.

7. It was during this stage that significant new ways of processing administrative actions and the capabilities of IMIS were presented to the future users of IMIS, from managers to clerical staff. Foremost among these are the integration of data across functions and geographic locations through the common IMIS database, the replacement of manual transactions with online screen-based processes and single-point capture of data. It should be noted that all potential IMIS users are in favour of the approach taken in the external design of IMIS and look forward to improved operations in the administrative environment that will provide greater uniformity in the application of rules and procedures, reduce paperwork, decrease the lag-time between actions to be taken and enhance efficiency. It is also understood that the enhanced reporting capabilities of IMIS will be a valuable tool for management planning and forecasting.

8. In addition, the external design was presented to various United Nations organizations such as the United Nations Children's Fund (UNICEF) and the United Nations Development Programme (UNDP), which have expressed interest in IMIS and meetings with either data processing specialists or users (in the case of UNICEF) were arranged. Several other agencies in the United Nations system have requested information to determine whether IMIS would meet their needs and have inquired when the system would be available. The United Nations also informed these organizations that the software would be made available without charging a "usage fee", only reimbursement of costs incurred in making the model or system available. The logical design has already been made available to two specialized agencies which expressed interest in a more detailed study of the IMIS features.

9. UNDP conducted its own detailed user requirements analysis and then

proceeded with a comparison between this requirements analysis and the external IMIS design. The United Nations IMIS team and consultants assisted UNDP in this task by providing clarifications and explanations when needed. It is expected that a decision will be made by UNDP on the use of IMIS or portions of the software as a result of this comparison.

10. Administration and information systems personnel at the Office of the United Nations High Commissioner for Refugees (UNHCR) and the International Trade Centre (ITC) at Geneva received all documentation relating to IMIS and were invited to participate in the meetings held at Geneva in 1990 and 1991 for United Nations Secretariat offices. Both organizations have not only expressed keen interest but indicated that they fully endorse IMIS; efforts are being made to ensure that their specific requirements are taken into account in the design of the system.

B. Hardware and software

11. As described in paragraphs 12 to 14 of the second progress report, 4/ a three-tier platform has been adopted for IMIS. Processing autonomy for offices and duty stations away from Headquarters is available through the second tier of the architecture, which consists of powerful minicomputers distributed throughout all IMIS sites. Each site will be capable of executing all administrative tasks in an independent manner as specified by current United Nations procedures for delegation of authority. The third tier of the architecture, desktop personal computers, provides user access to IMIS. These personal computers are linked to the IMIS computers through local area networks (LANs), and are also linked to office automation servers for word-processing, spreadsheets, electronic mail and other office applications.

12. Centralized reporting is delivered by the first tier of the architecture. This will be a large, mainframe-class computer located at Headquarters. Local databases will periodically transmit updates to the Headquarters computer to keep the central databank current. All sites, including Headquarters, will be linked through a wide area network (WAN) capable of providing the necessary communications infrastructure. Efforts to improve the current telecommunications network are described in the Secretary-General's report on the subject. 5/ Without the network described above, the users will not have access to the IMIS software. This network is therefore an integral part of the IMIS technical platform.

13. The operating system chosen for IMIS is UNIX, which offers features such as scalability (it is available for small processors up to very large ones) and vendor independence, both essential to IMIS. It also provides a robust environment to host major applications with the required security features. Furthermore, UNIX utilizes to the fullest extent the latest powerful microprocessor architectures.

14. The IMIS database management software has been selected. Since IMIS is conceived as a distributed system, it requires a database management system

with distinctive features, i.e. mechanisms to ensure integrity of distributed data and to control data replication (same instances of data are stored at multiple separate locations). The database management system provides this needed functionality. This selection was consistent with the conclusions of an internal United Nations database evaluation work group, which included users from several United Nations departments and which, in March 1990, rated the selected software as the preferred product among the three database systems short-listed.

15. A request for proposals was sent to 13 computer manufacturers at the beginning of 1991 for the purchase of computer hardware and related system software for IMIS. The scope of this purchase was limited to development equipment only (computers to be used to program and test the IMIS software), not for operational purposes. After an exhaustive evaluation procedure, which took into account technical aspects as well as support, market share, user references and cost, a vendor was selected to supply the requested equipment for the development of IMIS. The acquisition of hardware to host and execute the IMIS at all major duty stations once the software is developed and fully tested will be undertaken at a later date so as to avoid technical obsolescence. Another request for proposals will be issued at that time.

C. Tasks related to effective use of IMIS

16. During the external design of IMIS, it became apparent that IMIS will have far reaching effects throughout the administration of the United Nations. These effects extend to related operational tasks such as developing a new chart of accounts coding structure, analysing authorizations, certifications and approvals of transactions, formulating policies relating to United Nations regulations and rules, generating new procedures, preparing appropriate administrative instructions and manuals, reorganizing workflows to improve efficiency and reviewing internal controls. To capitalize on IMIS, and in some cases even to implement and use the system, these tasks must be accomplished and their related issues must be resolved.

17. A new chart of accounts to be used for all financial transactions is being developed. Drawing on the experience of the consultants who assisted in the external design, the detailed construction and population of a new chart of accounts prototype was completed and reviewed by potential users in the financial area. This new chart of accounts is currently being refined to ensure it will meet the reporting needs of the Organization and enable management to obtain comprehensive reports analysing financial transactions from various points of view such as programme, source of fund, organizational unit, projects and projects within programmes. This capability for enhanced reporting addresses recommendations of ACABQ and the Board of Auditors (General Assembly resolutions 44/183 and 45/235 for instance) on, inter alia, accountability and the presentation of financial statements.

18. For the processing of entitlements, an expert system (a product of the latest advances in software technology) was used and representative examples

of system-wide staff entitlements were loaded into a prototype for a test run. Eventually, all relevant entitlements for personnel working for the Organization will be entered into the expert system, thus providing consistency in the application of staff rules and regulations, which has been often requested by the Joint Inspection Unit (JIU), the Board of Auditors, the United Nations Administrative Tribunal and the Group of High-level Intergovernmental Experts to Review the Efficiency of the Administrative and Financial Functioning of the United Nations (recommendation 42). 6/ The use of an expert system for entitlements processing has a number of other advantages, most important of which is its flexibility, a major concern of IMIS users in the area of entitlements because implementation of changes can be difficult. In the recent past for example, entitlement changes based on recommendations of the International Civil Service Commission (ICSC) and endorsed by the General Assembly required extensive modification and reprogramming of the payroll systems at various duty stations and in different organizations.

D. Progress towards internal design and implementation at Headquarters

19. In January 1991, while the external design was being completed simultaneously with its presentation to potential IMIS users, a request for proposals for the remaining stages of phase I of the IMIS project was sent to 34 consulting firms in 12 countries. While vendors were preparing their proposals, evaluation criteria and procedures were developed by the IMIS team drawing on the expertise of a technical adviser.

20. In April 1991, nine proposals were received from companies located in five different countries. After completing a careful assessment of these proposals, which included contacting former clients for references, the evaluation team selected the highest scoring proposal from a technical and financial point of view and submitted its report to the IMIS Steering Committee. The new contractor, who started work on the final stages of phase I in July 1991, brings considerable expertise and experience in the implementation of large administrative systems across multiple locations. The importance of adhering to the deadline for completion of the system has been stressed.

II. PLANS FOR END-1991 TO 1993

21. The final stages of phase I of the IMIS project include workflow analysis, internal design, programming, conversion and installation of the new system at Headquarters. These stages will be completed by the end of 1993. The installation of the system at offices away from Headquarters is expected to be completed during the first half of 1994, once the system is fully tested and operational at Headquarters.

22. In the second IMIS progress report by the Secretary-General, 4/ the

stages of phase I of IMIS needed to complete the system, such as internal design, programming and testing, telecommunications and training, were briefly described. More information is provided in the present report. Prior to beginning these tasks, the new contractor prepared a detailed workplan for the time period July 1991 until end-1993, which was approved by the United Nations. Although the major tasks are listed below sequentially, some stages do not require completion of the previous task in order to begin implementation.

A. Business area analysis

23. This stage involves the development of specifications for IMIS standards, information life-cycle analysis and process logic analysis. The results of the life-cycle analysis will provide the basis for defining the system integrity rules. The process logic analysis defines each IMIS elementary process exactly and without ambiguity and will be used as the basis for programming. All elementary processes will be decomposed into actions and conditions that govern these actions. Concurrently, the workflow analysis will be pursued.

B. Business system design

24. The business system design defines the interactions between the users and the computer required to perform the activities identified in the business area analysis. It comprises the edit or data validation rules for the system, definition of procedures, internal controls included in the software, a mechanism for the processing of distributed data and the screen lay-outs (which are the means by which the users communicate with the IMIS system). As technical specifications regarding the operating environment, operating system and the relational database management system are not relevant at this stage of information engineering, they will be addressed during the next stage of the technical architecture analysis.

C. Workflow procedure analysis

25. The primary objectives of the workflow analysis are to develop procedures for administrative functions in the Organization that will maximize the use of IMIS, to develop a strategy to manage the personnel transition to operating IMIS and to determine the physical structure, i.e. the human, logistic and paper organization flow, necessary to support the logical design of IMIS. The introduction of IMIS creates an excellent opportunity to modify existing procedures and workflows. Cost savings can be envisaged through the elimination of inefficient workflows and of administrative costs associated with duplicate processing on separate fragmented systems. The workflow analysis will be integrated with the logical design of phase I on the CASE tool by using a methodology called "Facilitating change management". This method depicts the interrelationship between business processes and

organizational areas, documents the workflows in electronic form and provides presentation material for user review workshops. It analyses both the manual and automated processes and documents not only what the system is supposed to do (this was covered by the logical design) but who performs the necessary tasks, how they are performed and when.

26. It is at this point that a thorough review of existing internal controls will be conducted. This review has been accorded high priority, especially since the Board of Auditors has highlighted the importance of better controls in several of its observations and the United Nations recognizes that the introduction of a new system is an ideal time to question existing procedures with a view to improving them. The consulting firm currently assisting the United Nations for the development of the system has substantial expertise in the analysis of security and controls for information systems and internal controls in general. Their experts will assist the Organization to ensure that all opportunities for improvements are taken into account. The workflow procedure analysis will therefore provide all the information required by the IMIS security, internal control and access features regarding segregation of duties and the authorization, certification and approval functions.

27. As a result of this analysis, the time needed to perform functions in terms of cycle times, processes and elapsed time between processes can be tracked, so that the cycle efficiency can be determined and operational improvements can be identified. The final output of this stage will be a proposal to management for new workflows and a strategy for their implementation. This should result in improvements and increased efficiency in performing administrative functions.

D. Technical architecture analysis

28. During the technical architecture analysis, the IMIS prototyping environment will be established and the tools for automated coding and programming will be fully defined. Recommendations will be elaborated regarding the distribution of data: identification of those data used primarily at a single location and data which should be maintained centrally, i.e. data used by central applications for organization-wide reporting and management. Data and processing security will also be addressed in detail at this stage of the IMIS project, as well as an analysis for process distribution.

29. It is understood that the design of the system is being carried out interactively with the potential IMIS users and proposals will be made to the IMIS Steering Committee (which includes the Under-Secretary-General for Administration and Management, the three assistant secretaries-general and the directors of the Internal Audit and the Electronic Services Divisions) for approval. User review workshops will be scheduled, utilizing teleconferencing with offices away from headquarters wherever feasible. Officers from these duty stations may be requested to join in working sessions at Headquarters in order to reach a consensus rapidly. The networking environment of the United

Nations is being enhanced at a rapid pace, which should make teleconferencing a viable means of communication.

30. At this stage, the system designers will tailor the models developed so far to the specific technical context: operating system, database management system and telecommunications monitor. In addition, technical design includes such tasks as database definition and optimization to provide a better response time from the system.

E. Construction of the system

31. During construction, all application programs and the database needed to support the different modules in the three functional areas of phase I are generated. Quality assurance reviews on the basis of the defined functionality and the established coding standards and conventions will be performed.

32. Several steps for acceptance testing are planned: first, criteria and test plans will be established and test data will be generated; secondly, each unit and module will be tested separately; finally, the integrated system test will be performed. All cycles will be performed iteratively. During system testing, the test team from the United Nations will combine all processing functions of the system and will exercise them in varied combinations. The test team will be comprised of selected users from Headquarters and, if necessary, from offices away from Headquarters to complement the IMIS project team.

F. Transition

33. The objectives of this major stage are to implement IMIS at Headquarters and (through a simulated remote site) to test the system using a similar communications infrastructure to those available at duty stations away from Headquarters. Actual data will be used to ensure the success of the overall IMIS network, including remote operation and interaction with Headquarters. Transition activities will begin prior to the completion of the construction stage. The transition stage involves a data partitioning plan and conversion of information already in machine-readable form. In addition, data which currently are contained in paper documents but are needed for the system will be entered manually into the IMIS database. Help facilities in the system and operation manuals will be developed, another complete system testing performed in the production environment and the final acceptance of each application and of the system as a whole will also occur during the transition stage.

34. A number of audit reports on implementation of major systems outside the Organization have emphasized the importance of training for the successful implementation of any system. In 1992, the United Nations will investigate the various options to determine the most cost-effective method of performing this important task. A comprehensive training plan will be developed that

effectively addresses both those requirements that are unique to an office and those that are organization-wide. All personnel to be trained will be identified, and the training scope and strategy will be determined. The course material and training plan will be available by mid-1993. Training will be performed by a specialized training group.

G. IMIS in the official United Nations languages

35. The system is being designed to provide the capability of generating user interfaces in languages other than English. The use of this feature would involve only the translation of the terms used in screens, reports, queries and help facilities; programs would not be affected. Once the system has been fully tested and implemented in English, the user interface in another official language can be provided if required and if funds are available for that purpose.

III. IMIS PLANNED EXPENDITURES AND IMPLEMENTATION SCHEDULE

A. Planned experditures

36. Estimates of costs have been provided in section 33A, subprogramme 4: Technological innovations policies, of the proposed programme budget. In the proposed programme budget, it is stated that expenditures for the project have been kept to a lower level than originally anticipated during 1989 and 1990 for reasons which are further explained in the present report. ACABQ, in its report on the subject, took note of this fact, expressed concern with the delay in implementation and recommended a reduction in the appropriations requested by the Secretary-General, while noting that the Committee would consider a request for additional funds if necessary, in the context of the present progress report at the forty-sixth session. It is not possible at this stage to estimate whether a revision in the total cost of the project as approved by the General Assembly at its forty-third session will be required since the actual costs of several contracts (see para. 40 below) will be known only in 1992 and 1993, when the requests for proposals have been issued.

37. The following provides additional information regarding expenditures for the implementation of the project. During 1990, expenditures were essentially for consulting services (user requirements analysis at Headquarters and other duty stations, logical design for the entire IMIS and quality assurance review for critical deliverables), for travel to or from major duty stations to interview future users of IMIS during the user requirements analysis to verify the logical design and to discuss the proposed technical architecture, for salaries of staff assigned to the project and for initial technical training particularly on the use of a CASE tool, a new technology for United Nations staff.

38. Expenditures in 1991 have included: completion of the work with the first contractor on the logical design, including the two critical prototypes

(a new chart of accounts and entitlements processing through an expert system); the purchase of hardware and software for the development environment; the purchase of CASE tool services; further training of the technical staff on the use of CASE tool; and contractual services for the much larger consulting group now conducting concurrently the business area analysis and the workflow analysis. The multi-year contract signed at the end of July 1991 with the new consulting firm does not, however, cover all data-processing services needed for the completion of the project.

39. As at 31 October 1991, expenditures for the project amounted to $9,379,392. As at 31 December 1991, they are expected to total $10.3 million, of which $6.7 million will be financed from the regular budget. Since $12.8 million has already been appropriated, a balance of some $6.1 million of unexpended appropriations from the regular budget will be carried forward to the biennium 1992-1993.

40. During the next biennium, additional contracts will be required for data entry, quality assurance, user training, customization of workflows, conversion and installation at offices away from Headquarters, all of which are essential for the successful implementation of IMIS. These contracts are, however, smaller than the multi-year contract recently signed.

41. Staffing costs, which were kept to a minimum in 1989 during the negotiations with the Food and Agriculture Organization of the United Nations (FAO) when bids were issued and when proposals were evaluated, increased in 1990 and 1991. Staffing has now reached the level required to coordinate and review the work performed by contractors. The same level of staffing will be required through 1992-1993, with each member of the team performing functions or bringing knowledge to the project that are not duplicated: project management and planning, coordination and evaluation of all technical issues, representation of the community of users in the three major functional areas, expertise in modern databases, technical expertise for the review of the models generated by the system and submitted by the contractor in each functional area and supporting functions. Currently, focal points for the IMIS project at major duty stations are performing their coordinating functions in addition to their normal duties without financial assistance from the project in order to reserve work-months for implementation at offices away from Headquarters later in 1993 and early in 1994.

42. Specialized technical training will be needed for the transition from an older technology to the state-of-the-art technical architecture for IMIS, particularly training on UNIX, an operating system used by many vendors and therefore non-proprietary. Training on the use of the new database management system will also be needed.

43. The hardware and software for all major duty stations must be purchased during the next biennium, since the delivery date for the system is based on the assumption that the necessary infrastructure will be in place. Acceptance of the system at the end of 1993 or in January 1994 will be based on demonstrated ability to perform in an operational mode, after all data have

been converted or entered into the system. Implementation at duty stations away from Headquarters will take place after acceptance and after installation of the required hardware. Only the equipment for the development environment is being purchased in 1991 for the reasons explained in the present report (see para. 15 above). The equipment needed during the next biennium for operations under IMIS include the purchase of personal computers and related software, since each user of IMIS must be connected to the network through a personal computer, departmental servers (minicomputers) and a large server for the organization-wide database. Operating systems, database systems and other ancillary products will also have to be purchased during that period. Other expenditures include the rental and later purchase of the CASE tool, an item of expenditure not foreseen when the initial proposal was made in 1988 (based on the FAO system), but which has been found to be essential in the development of this complex integrated system and will ensure complete and consistent documentation.

44. Finally, travel costs to be incurred during the 1992-1993 biennium will be greater than originally budgeted, based on the experience of 1990 and pursuant to the specific recommendation of the Fifth Committee at the forty-third session that the Secretariat ensure that duty stations away from Headquarters be fully involved. The only way to ensure full involvement has been through the travel of teams to these duty stations during the user requirements analysis and external design. Travel will again be required during the business system design and workflow analysis and before the specifications are finalized for programming. Experienced systems developers have warned that inadequate consultations with all categories of users during these stages of development could lead to much more costly modifications to the system after implementation.

45. At this stage, it is estimated that requirements in 1992-1993 will not exceed $22.6 million, of which $14.7 million will be required from the regular budget. As indicated in paragraph 39 above, it is projected that an unused balance of $6.1 million under the regular budget will be carried forward to the coming biennium. Taking this into account, an appropriation for the regular budget from 1992-1993 of $8.6 million would appear adequate. This estimate represents a reduction of $1 million from the original proposed appropriation of $9,622,200. Since the regular budget share of the project is 65.1 per cent, the reduction at this stage would in fact represent a decrease of more than $1.5 million in the project budget if the agreed cost-sharing formula is maintained. Once the information regarding several contracts is obtained in 1992 (see paras. 36 and 40 above), the estimated expenditures for the project will be reviewed, and a report will be submitted by the Secretary-General to the General Assembly at its forty-seventh session.

B. Implementation schedule

46. Concern has been expressed over the delays in the implementation of the project. These delays, which occurred mainly in 1989, could not be avoided by the Organization. While several months were needed to discuss the modalities

for acquiring the system developed by FAO, this period of time provided an opportunity to assess the decision taken in 1988. Had the Secretariat reached prompt agreement on the system as planned in 1988, it would have been locked into an architecture which is today outmoded. Furthermore, the original architecture would not support distributed operations, a fact that was confirmed by the first contractor after the user requirements analysis. For the reasons explained in the first progress report, 3/ it was decided to proceed with the development of a new system on a modern technical platform, a decision which was endorsed by ACABQ in May 1989. Such delays are viewed as beneficial not only to the United Nations Secretariat but also to other organizations in the United Nations system. Through the re-examination of the technical architecture for IMIS and taking into account technological developments since the late 1980s, the United Nations has opted for a state-of-the-art platform that can be adopted by large or small entities, with centralized or decentralized operations.

47. The decision to develop a new system based on a modern architecture required the issuance of a very different request for proposals to consulting firms with experience in the development of large systems from that which had originally been planned. Given the importance of the tasks being envisaged in the first major contract for this project, time was required to evaluate carefully the proposals and conduct the necessary research. A more expedient solution would have been to request proposals for the entire development of the system from user requirement to final programming and testing, obviating the need for a second request for proposals in 1991 and a second evaluation period. Expert advice received by the United Nations strongly recommended against this course of action, pointing out that proposals would be inflated in the absence of reliable figures on the size of the system. Such figures could be obtained only upon completion of the external design, which provided detailed information on the number of data elements and processes, as well as estimates on the number of screens and reports to be developed. This information was needed by systems developers preparing proposals for a more accurate estimate of the work to be performed and anticipated costs, particularly given the United Nations requirements for fixed-price contracts. The extra time allotted for the evaluation of these two important contracts and for contract negotiations was not foreseen in the proposal submitted by the Secretary-General in 1988. In summary, the small delays that occurred at the beginning of the project have resulted in decisions which will benefit the Organization on a long-term basis and will be cost-effective.

48. Very recent developments resulting from further research conducted jointly by the United Nations IMIS team and the contractor indicate that it is now possible to consider that parts of the IMIS software will be operational at Headquarters during the latter part of 1992 or early 1993. This phased implementation is being given preference over the original plan (see annex), given the need of users to begin working in the new IMIS environment as early as possible and to compensate for the initial delays. The technology being selected can facilitate this process. A detailed report on the timetable for the phased implementation currently being formulated will be available at the forty-seventh session of the General Assembly.

IV. COST AVOIDANCE AND BENEFITS TO BE DERIVED FROM IMIS

A. Cost avoidance

49. The costs for developing the system have been provided in the proposed programme budget for 1992-1993 7/ and are further explained in the preceding section. These costs will be partially offset by the following savings:

(a) Several major systems development or enhancements projects partially started or planned have been cancelled. Since the General Assembly approved the project in 1988, all major system development efforts in the administrative area, whether in the Department of Administration and Management, in the Department of Technical Cooperation for Development, in executive offices and in administrative offices away from Headquarters have been suspended, thereby saving substantial costs which were about to be incurred. Many of the efforts that were under way or being planned would have been implemented on obsolete technology, using disparate approaches to system development and using a variety of hardware and software, thereby perpetuating the problems currently faced by the Administration and clearly described in the Secretary-General's report to the forty-third session of the General Assembly. 1/ In some cases, additional hardware and software might have been required. The alternative to IMIS would have been as follows: each data-processing unit would have continued to develop its own separate system or subsystems with the central office trying to integrate post facto these separate systems. Based on the experience within the Organization and in other entities, retrofitting systems can be a time-consuming and onerous task, if possible at all. In summary, the IMIS project negates the need for expenditures for a multiplicity of local systems and avoids costly efforts to integrate such disparate systems;

(b) Given the interest generated by the IMIS project and the fact that it is based on modern technology and open systems, several development efforts have also been suspended in other organizations in the United Nations system. Should some of these organizations, after a detailed review of their requirements, decide to use IMIS or even parts of it, significant savings will accrue to Member States. These two areas of cost avoidance cannot be easily quantified, yet they represent true savings (several millions of dollars) which, if deducted from the project costs, would significantly reduce the overall real cost of IMIS;

(c) Finally, as part of the implementation of recommendation 15 (General Assembly resolution 41/213), staffing-table reductions in the administrative area were higher than the average staff reduction for the Secretariat. Such reductions were predicated on the fact that, under IMIS, streamlined procedures would enable staff to perform their functions more efficiently and were implemented even before completion of the IMIS project. These reductions represent significant savings each biennium which need also to be taken into account when examining the true cost of the project.

50. The costs for maintaining the system after implementation will be examined as part of the preparation for the 1994-1995 programme budget and cannot be addressed at the present time without a careful analysis of the resources available and needed at each duty station. Unless the information resources are maintained once the system is implemented, the value of the initial investment will decline. The tasks envisaged are the training of new users, the maintenance of data tables, the maintenance of the IMIS software and the operating of the hardware and software needed to support IMIS. While some new functions linked to the modern technology (such as database administration) will be required, maintenance of the old systems will no longer be needed except during the transition period, and the staff can be reassigned, after appropriate training, to the maintenance of the IMIS software. While staff reductions have been implemented based on the anticipation of streamlined procedures (e.g. data-entry posts will be reduced under IMIS), other functions will be required such as help-desk facilities for IMIS users.

51. It is at the end of the workflow analysis in June 1992 at Headquarters, and at the end of 1993 and beginning of 1994 for other duty stations, that the true impact of IMIS and improved workflows will be documented. Following a detailed study in each area, non-value added processes or procedures will be identified and recommended for abolition. Costs associated with inefficient procedures or processes are expected to be reduced, although this may not result in actual savings in posts.

B. Benefits

52. Based on most studies performed during the last few years, the hopes of the early computerization efforts for substantial staff savings did not materialize in most government entities, since one type of function was replaced by other functions required by the new technology. What could be achieved was improved delivery of services and better management. The various benefits that the United Nations expects to derive from IMIS in the administrative area have been described in some detail, both in general and for each functional area, in the second progress report. 4/ Critical benefits are highlighted below in response to the request made by the General Assembly at the forty-fifth session.

53. The IMIS project is the first attempt to establish priorities in the development of information systems on an organization-wide basis and to ensure the most efficient use of resources and of modern technology. The Organization is also fully aware that an effort of this magnitude (scope and costs) demands that the IMIS system does not become obsolete shortly after implementation. It is with these considerations in mind that IMIS is being built: open systems (which provide for vendor independence), modern features, flexibility, central development and controls, decentralized processing by the users.

54. The savings in staff time will be addressed during the coming months, particularly through the workflow analysis, the results of which will be provided in the next progress report. This extensive and detailed study of the United Nations procedures in the areas covered by the IMIS system will present a unique opportunity to streamline United Nations administrative operations. Each step needed to perform an administrative function under IMIS will be analysed. Controls, levels of approval and the flow of authorizations or actions will be scrutinized and questioned to ensure that each step is needed and provides value added. Redundant processes and procedures will be documented and targeted for abolition after a review by management. Staff released from unnecessary activities will be able to devote their energies and skills to more productive work.

55. In particular, it will be possible to redeploy staff currently working on data-entry posts already identified for abolition to other more productive activities. A reliable assessment of time saved through direct input of data into the system at the time an administrative action is initiated instead of at the end of the process by data-entry staff will be made during the next nine months through the workflows analysis.

56. A significant amount of time is currently spent on retrieving paper files and finding out the status of administrative actions either through telephone calls to administrative offices within each duty station or cables to or from offices away from Headquarters. This applies in particular to personnel actions, travel and requisitions. The system will enable the staff to verify the status of such tasks and take the necessary actions directly on the system. Purely repetitive and routine work will be automated; edits and rules will be incorporated to the extent possible in the system to provide greater transparency and uniformity of application of rules and procedures. This is particularly relevant in the area of staff entitlements and accounting rules (posting of financial transaction to the various ledgers). IMIS will release staff and managers for more productive activities such as analysis, counselling and providing better services to the recipients of administrative actions, an important consideration at a time when administrative work has increased as a result of the additional workload without a commensurate increase in staff resources.

57. Better reporting and increased capability for decision-making are also expected: the current computer programs, which were geared essentially to service regular budget activities at Headquarters and for staff in the central services, will be replaced by a system linking administrative offices at Headquarters and other duty stations through a WAN.

58. The system will be able to address the needs of two rapidly expanding areas: peace-keeping operations and activities funded from extrabudgetary resources. The greater workload in these areas has not been followed by a commensurate increase in the number of staff working in the Secretariat. The Secretary-General is counting on increased efficiency through IMIS in the administrative area to be able to sustain the ability of the Secretariat to deliver quality administrative services without a substantial sudden increase in staff.

59. The multiplicity of disparate systems which were developed over the last 20 years at Headquarters and independently by offices away from Headquarters has been a major problem for management, which could not obtain accurate and consistent data from these disparate files. Never was this problem more apparent than during the financial crisis in 1986. An accurate picture of the cash-flow situation was crucial for the Secretary-General and his top advisers in order to take the appropriate measures to continue operations, albeit at a reduced rate. External bodies reviewing the operations of the Organization (JIU and the Board of Auditors) have also highlighted this problem. A major impetus to the IMIS project was the realization that new technology (mainly in telecommunications and distributed processing) could now help the Organization to strengthen its control over resources allocated to various organizational units. IMIS will indeed provide decentralization of operations while enabling management to retain centralized controls in a much more efficient and reliable manner than the current situation, which requires painstaking and lengthy reconciliation of reports generated by various non-integrated systems.

60. A number of recent reports from United Nations bodies (ACABQ, the Committee for Programme and Coordination (CPC), JIU and the Board of Auditors), have emphasized the need for organizations in the United Nations system to improve the presentation of their financial statements and budgets. IMIS is being designed and developed with these requirements in mind. For instance, the new chart of accounts has been designed to ensure that revenues and expenditures, assets and liabilities can be reported in accordance with the wishes of legislative bodies more easily and more accurately whether by fund, programme, project, organizational unit or object of expenditure. The Organization will then be in position to respond to new demands for information in the budget, financial, human resources, travel, procurement and inventory areas. At the same time, the system will provide managers with better tools for decision-making and in support of policy proposals to legislative authorities. IMIS will also promote the concept that data do not belong to a group of users in an organizational unit but must be accessible to, and shared with, all those who are authorized to access such data based on functional requirements.

61. IMIS will provide the necessary flexibility to respond to fluctuations and changes in the mandates of the Organization. This flexibility will allow duty stations to continue to operate in a decentralized mode, which has been found to be more responsive to the needs of the constituents served by these duty stations. Flexibility to add or delete activities, programmes, organizational units and fund codes based on the changing mandates of the Organization will be promoted by the design of the system which includes such new features as the chart of accounts mentioned above, the entitlements module and the extensive use of tables that can be easily updated.

62. In summary, the major benefit of IMIS is its contribution to the reform process to improve the administrative functioning of the Organization. It is, in fact, the vehicle through which the reform programme is being implemented since each item of data, each process, each procedure and each authorization is scrutinized to determine whether it is essential for the efficient

performance of IMIS functions. Multiple sets of codes are consolidated into one set of codes for the entire system. Internal controls are reviewed and embedded in the system to ensure accuracy, integrity and accountability. Manuals will be written that will document how administrative actions are processed. These procedure manuals will be available at all duty stations, ensuring consistency in the processing of administrative actions. In some cases, the rules will be embedded in the software (accounting rules and staff entitlements) to provide greater transparency and consistency across duty stations as well as accuracy of financial reports. These manuals will serve as excellent training for new staff, maximizing their contribution early in their assignment. The development of IMIS acts, therefore, as a major agent of change. The mandate given to the consulting firms assisting the Organization in this endeavour has been, in fact, to ensure that IMIS does not computerize inefficient procedures or processes. This unique opportunity for change will benefit the Organization in a number of ways: cost avoidance, consistency, transparency, better management, flexibility to respond to new mandates and, finally, improved reporting.

Notes

1/ A/C.5/43/24.

2/ Official Records of the General Assembly, Forty-third Session, Supplement No. 7 (A/43/7/Add.10).

3/ A/C.5/44/8.

4/ A/C.5/45/20.

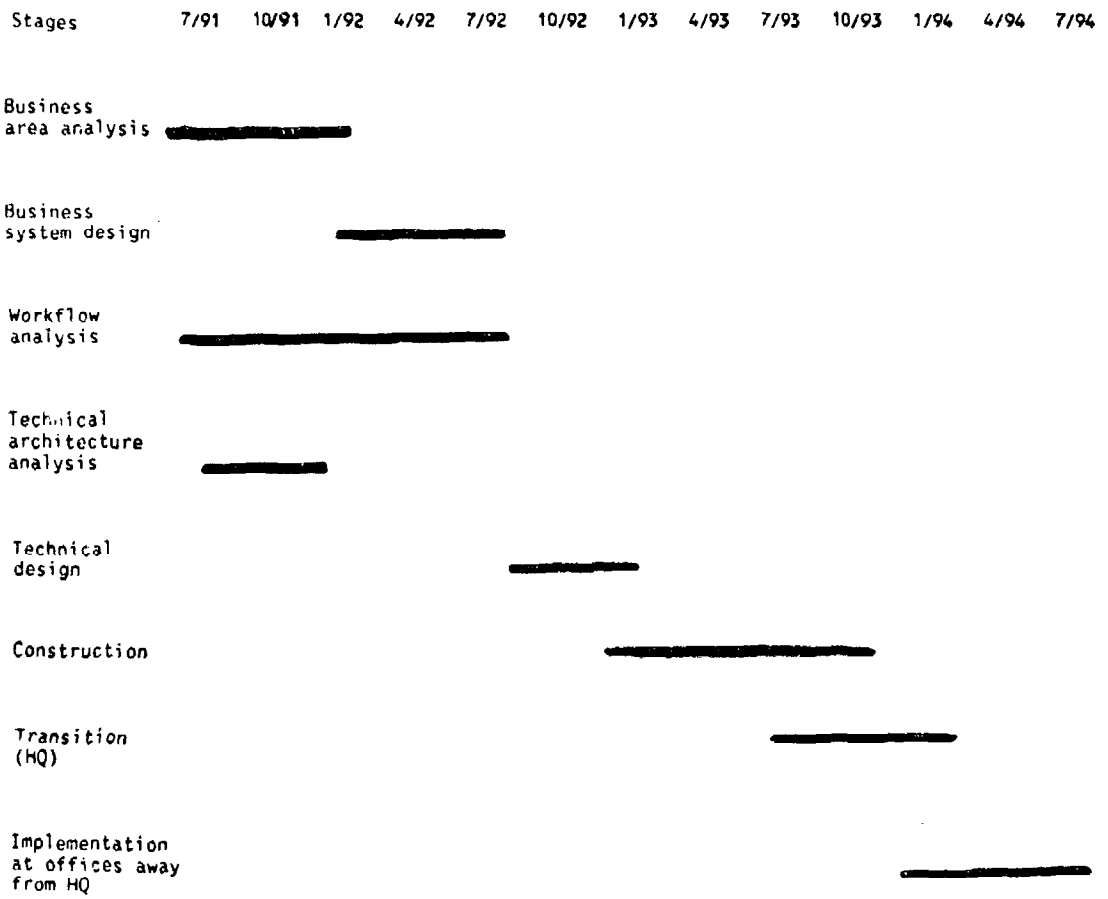
5/ A/C.5/46/5.

6/ Official Records of the General Assembly, Forty-first Session, Supplement No. 49 (A/41/49).

7/ Ibid., Forty-sixth Session, Supplement No. 6 (A/46/6/Rev.1).

Annex

SCHEDULE OF IMPLEMENTATION OF THE IMIS PROJECT
(remaining stages)



Note: The above schedule does not reflect the proposed phased implementation currently under discussion and to be finalized early in 1992.
