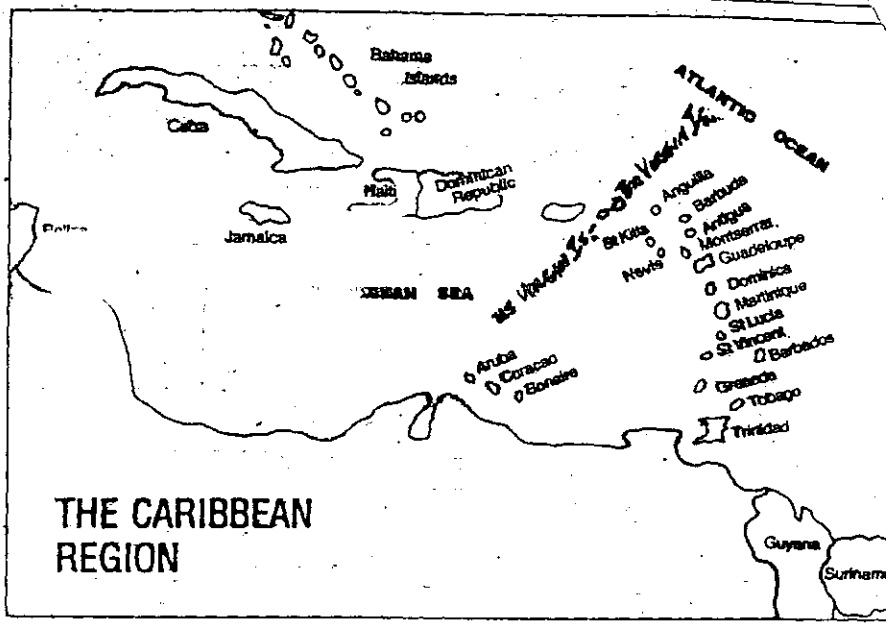
CARIBBEAN DEVELOPMENT AND CO-OPERATION COMMITTEE



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REPORT OF THE CARSTIN TRAINING WORKSHOP/SEMINAR ON NETWORK DEVELOPMENT IN THE CARIBBEAN

UNITED NATIONS

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Port-of-Spain, Trinidad

3-11 December 1984

I. BACKGROUND

1. The Workshop/Seminar was an initiative of UNESCO, as part of the preparation for the implementation of the Regional Network for the Exchange of Information and Experience in Science and Technology for Development (CARSTIN).

II. OBJECTIVES

2. The Workshop/Seminar was expected to serve as a forum to:

(a) Examine the basic concepts and main elements of resource sharing, especially in an automated network;

(b) Discuss the need for standardization as an essential requirement for networking, and provide opportunities for practical experience in standardized information handling procedures;

(c) Offer a general introduction to computerization of information services including an opportunity for practical demonstration and hands-on experience; and,

(d) Examine basic information services and products generated in both manually operated and computerized systems.

III. ORGANIZATION OF THE WORKSHOP/SEMINAR

3. The Workshop/Seminar was jointly sponsored and organized by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) and UNESCO and was held at the Holiday Inn, Port-of-Spain, 3-11 December 1984.

IV. ATTENDANCE

4. Participating in the Seminar were representatives from the following member and associate member countries of the Caribbean

Development and Co-operation Committee (CDCC): Antigua and Barbuda, Barbados, British Virgin Islands, Dominica, Grenada, Guyana, Jamaica, Montserrat, the Netherlands Antilles, Saint Christopher/Nevis, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago. A List of Participants is contained in Annex I to the present document.

V. OPENING SESSION

5. In his opening address, the Acting Director of the ECLAC Subregional Headquarters for the Caribbean, expressed pleasure that ECLAC was involved in the sponsorship of the workshop/seminar. He noted that this was one of the many areas in which there had been co-operation between ECLAC and UNESCO in the process of developing regional infrastructure. In recognition of the need to ensure co-operation and co-ordination of regional activities, programmes similar to the seminar were currently being carried out by ECLAC in response to a decision taken by the Caribbean Development and Co-operation Committee (CDCC) that information and the development of a regional information capability be regarded as a priority programme for the sub-region. It was as a result of this definition by the CDCC that the Caribbean Information System for Economic and Social Planning (CARISPLAN) had been initiated in 1979 by ECLAC with the assistance of UNESCO and ECLAC Headquarters in Santiago, Chile. Further developments in sectoral information systems were indeed encouraging, in particular in the CDCC priority area of Science and Technology. The ECLAC Office had in the recent past been involved in the establishment of the Caribbean Council for Science and Technology (CCST), and in the determination of the draft regional Science and Technology policy which had been reviewed at the ministerial level of the Caribbean Community. The ECLAC/CDCC Secretariat had, at the request of member countries, taken the initiative in the establishment of a regional Patent Information and Documentation Unit (PIDU) to be located in the Caribbean Documentation Centre of the ECLAC Office in Port-of-Spain. The role of the PIDU would be to identify, from its collection of patent literature, appropriate areas of Science and Technology which could be exploited.

6. In closing, he welcomed the participants, representatives of UNESCO, and observers from other regional organizations to the workshop/seminar and exhorted them to make optimum use of the facilities of the ECLAC Office and the Caribbean Documentation Centre during their stay in Trinidad and Tobago.

7. Ms. Ursula Albertus, the UNESCO Regional Adviser of the General Information Programme (PGI), conveyed greetings from the Director of the UNESCO PGI and expressed the wish that the workshop/seminar would be successful. The seminar formed part of the activities of PGI and similar activities were expected to be incorporated into future plans. She therefore identified, the major issues governing the UNESCO Medium-Term Plan, as recognition of:

(a) The value of development of national information systems and services; and,

(b) The need to develop the national capability for management of information systems.

8. In addition, she noted that there were several obstacles to be overcome, particularly in:

(a) The range and complexity of information to be processed and stored;

(b) The need for information specialists to act as intermediaries in the provision of information services, and in the selection, analysis and re-packaging of information;

(c) The dominant role of the developed countries in the control and transfer of information;

(d) The problems faced by developing countries in providing adequate information services; and,

(e) The consequent failure by decision-makers to use scientific and technological information services.

9. The UNESCO Programme in the Caribbean had therefore attempted to address these problems, and as a result of the 1980 Consultation Meeting[1/] in Jamaica, several areas were studied with a view to identifying priority action for the development of regional information infrastructure. The Action Plan which was prepared as a result of the meeting, led to the development of national information plans in six of the countries, and proposals for standardization, computerization, referral services, document processing, document availability, and manpower development. These recommendations had been based on analyses by specialists who served as UNESCO consultants. She said that it was indeed very encouraging to note the progress which had been made in the sub-region since the Carol Collins survey of 1979 and it was expected therefore that future PGI programmes would be able to implement the remaining proposals for the consultants, particularly within the framework of a sub-regional scientific and technological information network which had been requested by the governments of the sub-region.

10. In closing, she expressed a desire that the objectives of the workshop/seminar as earlier defined, would be achieved, and that the participants would be successful in incorporating the theoretical aspects of networking into the practical realities of the Caribbean.

11. Dr. John Black, the workshop/seminar co-ordinator, in identifying the main areas of the programme, said that the sessions would deal with factors which would encourage the development of an information network and the general application of computerization and telecommunications to network development. The four basic modules: Resource Sharing and Co-operative Activities, Standardization, Computerization, Information Services and Products, were in fact, naturally interrelated and there would be need therefore to interlink their treatment from time to time during the workshop/seminar.

1/ UNESCO consultation on co-ordinated development of National Information Systems in the Caribbean.

12. Participants, consultants and observers described their job responsibilities, their interest, their expectations of the workshop/seminar, and in some cases, their expectations of CARSTIN. Participants indicated that they expected to gain a basic understanding and, in some cases, an updating of the component areas of network development. It was envisaged that there would be analyses of these areas, and in some cases, practical exercises and hands-on experience as a means of further in-depth analysis.

13. The participants at the workshop/seminar expected an understanding of the nature and scope of CARSTIN as proposed by UNESCO. The particular areas on which clarification was expected were:

(a) The national and regional implications of CARSTIN;

(b) The role, structure and function of the proposed CARSTIN Co-ordinating Unit; and,

(c) The value of CARSTIN as proposed, to the national Science and Technology communities.

14. It was also expected that an exposition would be made on the current developments of library and information services in member countries, a sharing of experiences in relation to the development of National Science and Technology Councils as a basis for a strategy to ensure the establishment of information services of maximum effectiveness, which would facilitate the definition of a model of a regional co-operative system to be implemented subsequently.

15. In order to satisfy these expectations, participants hoped to gain background knowledge about the theoretical and practical aspects of:

(a) Computerization - available hardware, software and services;

(b) Computerized information systems operating in or providing services to specialized technical information centres; and,

(c) Telecommunication facilities which could be used to facilitate the transfer of information between the nodes of a regional network.

VI. THE PROGRAMME AND WORKING SESSIONS

Introduction

16. Module 1 covered several basic aspects of networking, with illustrations from operational systems including the Caribbean Information System and the networks operating within the national information systems. Module 2 examined the theoretical aspects of standardization in relation to information networks including examination of current and proposed practices expected to influence decisions in the sub-region. The major practices were examined in groups and these were assessed in relation to their possible use in a scientific and technological information network for the subregion. Module 3 examined computer hardware and software available for use in the sub-region, as well as the telecommunication facilities which are available or would be required. Module 4 treated information services and products, particularly those currently in use for providing scientific and technological information services.

17. In the final session of the workshop, participants and resource persons met in groups to consider the areas treated in the workshop/seminar. Each group considered one of the following areas:

(a) Referral Centres, document processing and document availability;

(b) National information policies, and the design of a regional network; and,

(c) Computerization and Standardization,

and reported to the final plenary session. The Programme is attached as Annex II.

MODULE 1

RESOURCE SHARING AND CO-OPERATIVE ACTIVITIES

The basic concept of networking

18. The presentation identified types of resource sharing activities undertaken by libraries and information services, as co-operative

acquisition, preservation, cataloguing, catalogue support systems, centralized databases, provision of common computer services, software development and acquisition, provision of data communication facilities, and provision of information retrieval services. The constraints on network development, varying organizational, economic, legal and technical factors were recognized as influencing the structure and governance of networks, the organizational structure of networks and the degree of control of the co-ordinating organization. The consequent influences on participants' responsibilities and benefits provided were also treated.

The CARISPLAN Network and its co-operative arrangements

19. The Caribbean Information System for Economic and Social Planning (CARISPLAN) was described by Ms. Wilma Primus, the head of the Caribbean Documentation Centre as a network of national planning agency libraries and libraries of other organizations in the region which produce socio-economic data. The initial concern of the designers of the System, - policy-makers and librarians - had been the collection, analysis, and dissemination of information produced in the subregion, as the basis of a specialized information service to policy-makers and planners, and other technical personnel in the service of the governments of the sub-region. This was initially undertaken with the assistance of UNESCO; subsequently the International Development Research Centre of Canada (IDRC) had provided technical and financial assistance for the strengthening of the Caribbean Documentation Centre as the regional focal point and for the development of libraries to serve as national focal points for the System.

20. Initially, a database of relevant literature was produced from input provided by the regional focal point and by the national centres based on a territorial formula. The main product of the System CARISPLAN Abstracts, was produced by the regional focal point, and distributed to all participating centres. Corresponding information services were also provided to users on request. The responsibilities of the regional focal point, national focal points and participating centres were outlined, and the System's development was evaluated. The main thrust for the immediate future was described as:

(a) Analysis of the database, and determination of the weaknesses and strengths of its coverage, with a view to eliminating any gaps;

(b) Provision of copies of the database to national focal points; and,

(c) Provision of an improved document delivery service mainly through the use of microfiche.

21. As some of the participants had been involved in the use of the CARISPLAN Network, there was some discussion on the role of the network in providing information services, and the form the document delivery services should take in the future.

Scientific and Technological Information - Users and their Needs

22. This presentation defined science and technology as "the pure sciences, applied sciences, and related technologies" and identified this S and T information as playing a significant role in development, particularly by preventing the reinvention of the wheel. The main user groups of S and T information - industrialists, government policy-makers, planning groups, funding agencies, researchers and members of educational institutions - were examined in relation to their use or potential use of S and T information, particularly of the new forms of information transfer such as electronic publishing, on-line journals, teleconferencing, and computer conferencing. Particular emphasis was placed on the need for dynamic information services in view of the negative attitudes to new information displayed by some senior scientists, policy-makers and researchers.

Scientific and Technological Information, Users and Services in the Caribbean

23. Participants described briefly:

(a) The networking activities in their respective countries;

(b) The co-ordinating mechanisms, and administrative structure;

(c) The users of scientific and technological information;

(d) Library and information facilities; and,

(e) The prospects for resource sharing.

Antigua and Barbuda

24. A Plan for the development of a co-ordinated national information system had been prepared as the basis for the development of the national information system - a national network of libraries, archives and documentation services. The existing unit based in the Ministry of Economic Development would therefore serve as the focal point for all technical information - including scientific and technological - and as the country's link to external networks.

25. There is scientific and technological activity, mainly spearheaded by the Ministry of Agriculture and related agencies, the Government Chemist's Laboratory and the Food Processing Laboratory; personnel from these areas were expected to be the main users, along with government policy-makers and planners, local manufacturers and the Engineering Department of the Antigua State College.

26. The Public Library currently provides the main service to all users, while serving as the node for the CTCS network.

Barbados

27. The Barbados Library and Information Network (BLAIN) was established in 1981 as one network incorporating all libraries, archives and documentation centres. The Central Directorate was assigned the responsibility of carrying out certain centralized technical functions for government libraries below the tertiary level. Initially this development was undertaken with technical and financial assistance provided by IDRC.

28. The users of S and T information are currently being identified by the National Council for Science and Technology, and several studies have been carried out including one on S and T information, and others on priority development areas such as animal feed production and use of wind and solar energy.

29. There are several libraries with collections in Science and Technology, and several specialized libraries, such as those of the Barbados National Standards Institution, the Agricultural Development Corporation, the Government Chemist's Laboratory, the Meteorological Office and the Sugar Cane Breeding Station.

30. Resource sharing is currently carried out under the auspices of BLAIN, and it was envisaged that there would be further level of co-ordination in terms of the rationalization of the collections of S and T information.

British Virgin Islands

31. Although at present there is not a formalized network of libraries in the British Virgin Islands, the Public Library has had the function of co-ordinating the development of library and information services.

32. Users of S and T information will require information on environmental protection, medical and life sciences, and civil engineering.

33. Services are currently provided from the collections of the libraries and from departmental collections, and these are supplemented by the development of special collections in areas such as standards, and by referral to the unique collections such as the Patents collection of the Registrar's Office. The Public Library also serves as the national focal point for the CTCS and AGRINTER.

34. Special services are provided to policy-makers and businessmen with on-going SDI services to selected users.

Dominica

35. The Government of Dominica had adopted a national information plan in which libraries, archives and documentation centres would operate as a national network. The Public Library, which has the responsibility for stimulating the development of the national system, was expected to undertake a more dynamic role and provide scientific and technical information to the general public. The Central Documentation Centre in the Ministry of Finance would be responsible within the network for technical information services to all members of the Government, and would eventually be developed into several specializing units, the first of these units being the Planning Unit's Documentation Centre.

36. The Science Council was in the process of being developed and would eventually be provided with an institutional base; but in the interim the Central Documentation Centre would serve as the Central Co-ordinating Unit for CARSTIN.

37. Scientific and technological information needs were seen to be particularly directed to appropriate technologies, agro-processing and the development of mini-hydro projects particularly in relation to agricultural development.

Grenada

38. Grenada was reported to have an informal network of libraries and documentation centres which are being developed within the framework of the Plan for the development of a national information system, and directed by the Co-ordinator of the National Information System.

39. Scientific and technological activities are mainly spearheaded by the Science and Technology Council. Users have identified the following as their main areas of interest: agro-industries, metrology and standards, and training in Science and Technology, while such ongoing projects in aquaculture, energy, bio-gas digesters, fruit dryers, biomass and environmental monitoring of wind demonstrated the need for ongoing scientific and technological services. As a result of the information needs evidenced, the Science and Technology Council had initiated a survey of the persons involved in Science and Technology, and had begun to develop an information unit which would be the most appropriate location for the CARSTIN Central Co-ordinating Unit.

Guyana

40. The main networking activity initiated in Guyana was the development of tools to provide a basis for service at the national level and for the subregional resource sharing. A Union list of scientific and technological periodicals and a Directory of Information and Documentation Units in Guyana had been prepared by participating libraries, under the auspices of the Guyana Library Association. Proposals for the development of a National Scientific and Technological Information System had also been prepared at the request of the Government.

41. There was still some difficulty in defining the size of the user population; users were reported, however, to have come from all levels including post-university research and to be involved in areas such as agriculture, industry, health and education. They would be mainly from the public sector.

42. There were a number of institutional libraries holding collections in Science and Technology; and the question of a Central Co-ordinating Unit for CARSTIN was being examined with a view to determining the most suitable library, possible the University of Guyana Library.

43. The prospects for resource sharing between local libraries were good and it was expected that participation in the subregional system would also be possible.

Jamaica

44. The plan for the development of the national information system, which was gradually being implemented, had provided for several sectoral networks, with the National Council on Libraries, Archives and Documentation Services serving as an advisory council to all networks. The Scientific Research Council is the focal point for the Science and Technology Information Network (STIN) which also has sub-focal points for Agriculture, Mining and Energy, Health, Engineering and Physical Planning. The advisory body for the network was mainly composed of users, with working groups made up of unit librarians. The networking activities included training workshops and seminars for librarians and users of the network, inventories of equipment, development of a skills bank, preparation of a union list of serials, a survey of S and T activities, and plans for development of automated links between the units of the network.

Montserrat

45. The National Library System was reported to be moving towards a fully integrated network in 1985. The main barriers to resource sharing were in terms of staff, time and resources. The Development Unit has the main responsibility for the provision of specialized information and has begun the development of sub-units, the first being the unit in the Ministry of Agriculture.

46. Users of scientific and technological information number at least one hundred practitioners from the public and private sectors, and their

user profiles demonstrated need for informatin in appropriate technologies; standards; patents; production methods, in relation to ongoing projects in alternate energy and geothermal energy; production of sea island cotton; food processing; and the introduction of computer science in education.

The Netherlands Antilles

47. It was reported that in the Netherlands Antilles, there were no formal networking activities and that plans for an information network would need to take into consideration the physical separation of the islands. The national network would, however, be able to benefit from the existence of several well established libraries in the public sector, at the university, and in the public library system. There were also libraries in the private sector which held information of potential value to the network, and the workshop/seminar was asked to address the question of charging for the provision of information services.

Saint Christopher/Nevis

48. The development of a national network of libraries, archives and documentation services had been initiated with the preparation of a technical report for the Development of the National Information System. The proposals are currently under consideration by the Government.

49. The community involved in S and T activities has indicated the need for information for agricultural research, development of alternate energy sources - solar energy and biogas energy conservation, introduction and maintainance of computer facilities, establishment of electronic installations, and other technologies likely to be required by small industries.

50. At present the information requirements are met by the Public Library, with referral to external sources as necessary.

51. The establishment of the Science and Technology Council is expected to assist in the development of scientific and technological information facilities within the national information system.

Saint Vincent and the Grenadines

52. The representative of Saint Vincent and the Grenadines reported that the development of a national information network of libraries, archives and documentation centres had been initiated within the framework of the Plan for the development of a co-ordinated national information system.

53. The Science Council, which in the future, was expected to co-ordinate the development of scientific and technological activities, had been established in 1983. Information services, however, were provided by the Government Documentation Centre which also used the resources of the other libraries within the national network.

Suriname

54. The representative of Suriname reported that although there were several well-established libraries in the country, there was no official linkage in terms of resource sharing or other co-operative activities. The referral function was, however, recognized as important and it was expected that more formal co-ordination would be initiated in the near future along with the determination of a national focal point for scientific and technological information and for CARSTIN.

55. The existing industries, and the potential or proposed industries as developed by the Board for Industrial Development, were the main users of scientific and technological information in addition to the researchers at the university.

Trinidad and Tobago

56. The proposals for the development of a national information network included a national co-ordinating mechanism, a statutory board as the co-ordinating unit, and sectoral networks co-ordinated into a national network.

57. The users of scientific and technological information were mainly the large industries, small industries, small businesses and small farmers.

58. There were several libraries and information units providing scientific and technological information to these users, and it was expected that the national focal point for CARSTIN would be based in one of these.

59. Resource sharing was reported to be fairly active at the national level and this was expected to be formalized with the development of the sectoral networks.

MODULE 2

STANDARDIZATION

60. In his presentation, the Co-ordinator examined the conceptual framework of standardization, viewing it as a facilitation mechanism rather than an end in itself. The areas of standardization which were particularly relevant to resource sharing were also discussed, in particular process control, cataloguing standards rules, vocabulary control, information exchange formats - MARC, the UNISIST Reference Manual and the Common Communication Format - record separators, and the problems resulting from lack of standards in computer hardware and software particularly of microcomputers. It was proposed that relevant standards should be determined for CARSTIN as an indexing and abstracting network and that the same formats should be usable in participating libraries.

The concept of a Regional Library Processing Centre - the opportunity for increased productivity

61. In proposing that a regional processing centre would increase productivity, it was suggested that since very few libraries in the region had a sufficiently large throughput to justify a mainframe computer dedicated to their technical processing, sharing of such a resource among several countries would improve productivity as well as the services provided. The example of the OCLC system was used to demonstrate the proposal, and the UNESCO feasibility study of a Library Processing Centre for the Eastern Caribbean was briefly described. This study had considered that"processing" would include ordering, receiving, cataloguing, classifying, and other processes to prepare library materials for use, and that the

Technical Processing Centre would be based at the Central Directorate of the Barbados Library and Information Network. The practical aspects of transferring materials between sites of publication, processing and final depositories, were discussed, and the questions of original cataloguing, on-line access and standardized formats were also examined.

Standardization practices in the CARISPLAN Network

62. The Indexing Supervisor of the CARISPLAN network identified the standards which had been incorporated into the design of the network in order to achieve functional compatibility within the System and with other systems. The international standards were briefly discussed, while those specially created for the System were treated in considerable detail. The CARISPLAN Procedure Manual for Institutional and Personal authors, the Abstracting Manual, the Manual of Indexing Procedures, as well as the List of Proposed Descriptors prepared and maintained by the Caribbean Documentation Centre, were described, and their current implementation discussed particularly by the participants who currently employ them in their libraries.

The Bibliographic Record Card of CARISPLAN

63. The joint workshop/seminar co-ordinator, explained that the physical layout and the data elements had been selected on the basis of the requirements of The Reference Manual for Machine-readable Bibliographic Description and its value to participating libraries. The main influences on the card's structure were identified as: type of document, capability of the CDS/ISIS software, requirements of the printed products, - CARISPLAN Abstracts and the specialized bibliographies-and compatibility with other regional and international systems.

64. The bibliographic description was treated in some detail, particularly in relation to the Bibliographic Record Card's handling of the various types of literature likely to be received by an operational information network. Records of sample documents that had been prepared by the CDC were examined by the participants in relation to the use of the card by the CARSTIN network and the expected information requirements of the users.

Abstracting and abstracting services

65. The co-ordinator discussed the value of abstracting services to a decentralized network such as CARISPLAN, and their function in current awareness services, retrospective searching - particularly on-line searching - and generally in the selection and evaluation of materials.

66. The criteria for acceptable abstracts were also analysed with a view to determining suitable types of abstracts for the CARSTIN network. Participants then separated into groups which examined the output of various abstracting services in order to determine their applicability to a Caribbean network .

67. The groups, in reporting on their findings, determined that several abstracting journals would need to be available within the CARSTIN network; these would include those produced in co-operation with the participating centres and those acquired from external sources. The groups which had examined CARISPLAN Abstracts, and Abstracts of Tropical Agriculture, proposed that either of these formats could be used in an abstracting journal of CARSTIN, but it was also suggested that CARISPLAN Abstracts would be more useful if addresses of authors and/or locations where the documents could be located were included.

68. One of the major Science and Technology subject areas of relevance to the Caribbean users is agriculture; and Abstracts of Tropical Agriculture was found to be particularly relevant to the Caribbean, both in terms of the sub-divisions of agriculture as well as the amount of information on the Caribbean. The fact that the terminology was fairly simple also meant that the journal could be used by laymen, general practitioners and reserach scientists.

69. Food Science Policy Abstracts was also examined in relation to its usefulness to the various users of food-related information. This was found to have international coverage and to include a wide range of topics. As food science, food policy and food processing were considered to be priority areas in the Caribbean, it was suggested that this document was

a useful tool and should be available within the CARSTIN system either at the co-ordinating centre in its physical form or through the NTIS database.

70. In the area of industrial development, the Industrial Development Abstracts was examined and found to be a useful alerting tool, particularly for industrialists and planners, since it identified new developments in industry-related technologies. As this journal was available to all participating countries it was expected that it would be well used for providing information within the network.

71. The regional manufacturers and scientists working in the priority area of alternate energy were expected to be provided with useful information by the Abstracts of Selected Solar Energy Technology (ASSET) which is also available to all participating countries. Although it had international coverage, it was seen as being directly relevant to the Caribbean Technology Consultancy Service as well as to CARSTIN in general.

Indexing and information retrieval

72. Ms. Durrant, described the purpose of information retrieval systems as providing a channel of communication between information producers and users, and the maintenance of a balance between precision and recall. The activities of familiarization, analysis and conversion of concepts to index terms were discussed as well as the major factors influencing the analysis and conversion to index terms. The types of indexing languages were briefly identified, with more detailed treatment given to post-co-ordinate indexing languages as the most appropriate type for a computerized network or a specialized library. The objectives and main characteristics of thesauri were discussed, along with the features to be considered in the adoption or construction of a thesaurus for an information system. As the English version of the new edition of the SPINES thesaurus was not yet available participants worked in groups on the evaluation of three thesauri.

73. As the basis of their evaluation the groups used the following criteria:

(a) Subject scope;

(b) Kind of vocabulary - technical or non-technical;

(c) Number of access points;

(d) Availability of language versions;

(e) Arrangements for updating; and,

(f) Scope for the incorporation of proposed descriptors from participating centres.

74. The INIS Thesaurus was found to have a very clearly defined subject scope, and although the general area of nuclear energy was not of high priority to the Caribbean, some of the subject coverage could be considered to be relevant to a regional Science and Technology database. The alphabetical arrangement as the only sequence could be considered a drawback, but the fact that there were several levels of narrower terms provided some additional flexibility. The appendix, scope notes and list of terms deleted were also considered to be valuable aids in the use of the INIS Thesaurus.

75. The AGROVOC Thesaurus, which had a structure similar to the INIS Thesaurus, was considered to be particularly relevant to the Caribbean in view of the priority status of agriculture in many countries. It was seen as being potentially very useful in the creation of a regional Science and Technology database. The fact that the thesaurus used mainly scientific and technical names, reduced the range of audience by which it could be used, but it was recognized that the modifications expected in 1985 were likely to increase its value as an indexing and retrieval tool.

76. A sample issue of CAGRINDEX, the indexing journal for Caribbean agriculture, was examined in relation to its use of the AGROVOC Thesaurus as an indexing vocabulary, and it was suggested that indexing be more specific with greater emphasis on post-co-ordination.

77. The Thesaurus of Engineering and Scientific Terms, although not recently updated, was found to be fairly comprehensive and well-guided, with several access points including subject categories. The coverage was

in fact wider than Science and Technology and this was recognized as likely to be necessary because of the multidisciplinary nature of some of the material relevant to the CARSTIN database. The fact that this thesaurus was neither multilingual nor compatible with the AGROVOC Thesaurus would, however, reduce its immediate usefulness to the proposed CARSTIN network.

The Integrated Library and Information Services (ILIS) - (UNESCO/PGI pilot project) of the University of the West Indies, St. Augustine

78. This presentation by Ms. Shirley Evelyn of the Library of the University of the West Indies (UWI), described the proposal for the establishment of an ILIS Pilot Project at UWI. She said that the UWI Library proposed to establish a bibliographic database of Caribbean-related material covering the areas of the Social Sciences, the Humanities, Agriculture, and Science and Technology. This would include journal articles and all types of documnets excluding published books, and was expected to provide a comprehensive and unified group of useful databases.

79. The UWI's current indexing projects of CARINDEX and CAGRINDEX would be widened in subject scope and geographical coverage and would form the nucleus of the pilot project, which would involve the use of the IV+V software package, and two thesauri on magnetic tape in the preparation of the proposed databases.

80. In concluding, Ms. Evelyn stated that in implementing the project, UWI would ensure that duplication was avoided, and that the activities of CDB, CDC, the CARICOM Secretariat and the National Library of Jamaica were taken into consideration with respect to the exchange of machine-readable bibliographic data.

81. The participants at the seminar agreed that there was need to reduce duplication to the minimum and ensure that the accent was placed on producing current comprehensive products.

MODULE 3

COMPUTERIZATION

The use of computers in information processing

82. Dr. Black, in providing an overview of hardware and software, described the increased power of smaller machines and the new applications of portable software configurations. The data storage and distribution techniques were assessed as well as telecommunication facilities and newer distribution technologies. Computerization of traditional library functions could provide significant improvements in services, but the new applications of text editing, word processing and document preparation, full text and image storage and retrieval, creation of numeric databases, and computer conferencing were seen as providing users with access to a greater range of facilities. The development of integrated library software, off-the-shelf library packages as well as portable software, were all seen as likely to increase the ease of networking thus facilitating greater access to information.

83. NETNORTH the network of Ontario University Libraries was described, as well as various software packages which could be used for network creation.

84. The software package used for data entry in the International Bibliography of the Social Sciences Project was demonstrated on an IBM PC and a Radio Shack 100 with participants gaining hands-on experience in the procedures.

Computer hardware: an introduction to its capabilities and potential for the future

85. The developments in computer hardware were reviewed by the Head of the Caribbean Documentation Centre. The presentation described the trends toward microcomputers and illustrated this trend by the developments in the processing arrangements of the CARISPLAN network which would soon be moving to the use of a 'super' microcomputer, the HP 3000 series 37, for the creation of a database for the CARISPLAN network.

86. The role of the major elements i.e., operating systems, data storage devices and capabilities, memory and output devices were analysed in terms of the state-of-the-~~/~~art and in terms of their role in networking. The possibilities for networking were seen as being related to compatibility and standardization of formats and disk operating systems to permit the exchange of data and subsequently on-line access through telecommunication links.

Computerized bibliographic information systems

87. The paper examined briefly the various types of computerized bibliographic information systems and networks, the policy considerations for a regional network, some of the products of such systems, and proposed that the basic components of a national or regional information system were:

(a) A computerized directory of participating libraries and information units, as the basis of a referral service;

(b) A computerized union list of serials held by participating libraries within the system; and,

(c) A database of the system's holdings.

It was also proposed that copies of these basic resources should be available at least to each national focal point.

88. The existence of the CARISPLAN network, and the large installations existing and proposed at CDB and the National Library of Jamaica, were creating de facto standards with which the microcomputer systems installed in the future would need to be compatible.

89. Planning for computerization was linkded mainly to the evaluation of the capabilities of types of software packages and a basic list of requirements was outlined.

90. The developments in the on-line database market were examined particularly in relation to access to vendors, types of databases available and the kind of information provided by the numeric, bibliographic and factual databases.

The databases of the Caribbean Information System - practical demonstration

91. The CDC computer operator demonstrated:

(a) The CARISPLAN database;

(b) CARCAT database (the non-Caribbean holdings of the CDC);

(c) The authority files;

(d) An automated extract from the Jamaica directory of libraries; and,

(e) The corresponding data entry procedures which were created with CARDBOX PLUS on the Radio Shack TRS-80.

92. Participants were able to gain hands-on experience in input and retrieval.

Access to external databases through the University of the West Indies Library, St. Augustine

93. Ms. Shirley Evelyn introduced participants to various practical aspects of searching DIALOG, AGRIS and SDC, the three vendors of databases to which the library has access through a DEC terminal linked through the local data network to the external telecommunications facilities. Access to the three types of databases - bibliographic, numerical and factual - was discussed, and the actual searches done on DIALOG by Ms. Evelyn and Ms. L. Salisbury illustrated the search strategies and other procedures required for access to the bibliographic databases.

Categories of software for data storage, processing and retrieval

94. Dr. Black's review of software categories examined those likely to be used in information systems for word processing, database creation, communications, and general utility applications. The problem of software compatibility was however recognized as still requiring solutions, and interface programs were seen as being necessary for most levels of network development.

95. Some important areas in which compatibility was necessary in a network were the operating systems and the disk formats, on which some basic standardization would be required.

96. The development of portable software for microcomputers was seen as being able to provide a solution to the problem, and the software package IV+V which UNESCO is proposing to distribute to developing countries when completed, is expected to address several of these problems. Interim solutions are likely to be needed however, as the package is not immediately available.

CDS/ISIS and its implementation by the Caribbean Development Bank

97. The presentation by Mr. Clifford Willabus, Systems Analyst of the CDB, analysed the capabilities of the Release 4.4 of the software package, in relation to the major components - file maintenance, retrieval, sorting and printing facilities. The applications employed by the CDB were treated in some detail, as well as the hardware and software facilities which had been provided by CDB to facilitate the installation of ISIS. The new OS/VSE version which is to be released in March 1985, is expected to be more readily adaptable to the installations in the subregion, than the OS/VSE version currently in use at CDB.

A Librarian's experience in the use of CDS/ISIS

98. Ms. Nancy St. John, formerly librarian of CDB, identified potential problem areas in the adoption of an automated library system, and described some of the procedures adopted by CDB. The database which was created consisted of all CDB documents and material received in the library after a cut-off date. The procedures for installation of an updated version of ISIS were briefly described as well as the implications for training of staff and users.

Telecommunications

99. Dr. Black's introductory presentation examined the trends in new telecommunications technologies, particularly packet switching and integrated services digital network applications, as all leading to higher speeds, wider access and lower costs, as illustrated by the greater

reliability and relatively low costs of packet switching networks which are now becoming increasingly available. The hardware required for communications, network links, modems, and microcomputer terminals is now available and permits uploading and downloading procedures.

100. The development of these facilities and their obvious library applications could be used to exploit the benefits of newer applications such as computer conferencing.

Telecommunications services in Trinidad and Tobago: The local data network

101. Mr. Trevor Sylvester, Business Services Manager of the Trinidad and Tobago Telephone Company, described the recently installed network as an illustration of the structure of a packet switching network and also of the services available to some libraries in the subregion. The capabilities of the local network (DATANETT) were analysed including the protocols supported, the port speeds, interface between customer stations and the network, and the available service features. The access provided to other private data networks and to databases through TELCO's international connection was also treated briefly.

The International Public Data Communications Service of the Trinidad and Tobago External Telecommunications Corporation (TEXTEL)

102. Mr. Hollis Bertrand, Controller of Services Development and Network Arrangements of TEXTEL, addressed the question of the type of telecommunications links which could be used by a regional network such as CARSTIN. He described the type of packet switching facilities existing in Barbados, Trinidad and Tobago and those proposed for Jamaica. Although they provided links to sources of information held outside the subregion, an on-line regional network would need to rely on dedicated lines or on the telephone system. The main type of connection currently used between the countries in the subregion is the microwave hop, with some main nodes which might influence developments in individual countries.

103. The question of dedicated lines was also discussed particularly in relation to those currently used by the airlines and the UWIDITE network connecting the campuses and some of the territories of the University of the West Indies. The high cost of establishing these lines was recognized, as well as the fact that it would be difficult to provide reduced rates for data transmission. It was proposed that as the UWIDITE network was likely to have extra capacity, at least in non-working hours, this facility should be investigated for use in the transfer of data between participating centres of the proposed network.

MODULE 4

INFORMATION AND SERVICES

104. Dr. Black, in summarizing the range of information services and products potentially available to users of scientific and technological information, observed that most of the services are currently centred in North America and Western Europe, and some now include full-text. The database creators were still seen as the main providors, although the creation of microcomputer-based products could affect their impact.

105. The new trends in distribution of information services included the distribution of data in small-scale machine-readable form and on laser disc, which could also encourage the wider distribution of full-text information.

106. The new trends are mainly in the realm of new ways of employing the available technologies, rather than changes in the nature of the services and products; this has resulted in an increased role for the intermediary, who is now being required to evaluate and provide access to a much wider range of services.

Information services and products in Science and Technology

107. Ms. Jackie Archer, Head of the Technical Information Service of CARIRI, defined Science and Technology as the hard sciences and related technologies and briefly evaluated some of the main products and services used by CARIRI. Patent information was reported to be a significant source of information and was accessed by CARIRI through commercial database or through free service provided by WIPO. In the future it was expected that the Caribbean Patent Information and Documentation Unit to be established at the ECLAC Subregional Headquarters for the Caribbean would be used as a source of such information.

VII. SUMMARY

108. In the final session, the participants and resource persons met in three groups to consider:

a) Design of the regional system, national policies and plans and manpower needs and training;

b) Document processing, referral services and document availability; and

c) Computerization and standardization in relation to the proceedings of the workshop, and in relation to the Working Document which had been prepared by UNESCO for the Consultation Meeting.

109. Following is a summary of the groups' recommendations.

National Policies and Plans

110. The national plans, which are in the process of being implemented, all make provision for a system such as CARSTIN. There was still need for recognition by the regional system of national priorities in Science and Technology, notably patent information, and access to information held in external databases including those of other regional systems. A national advisory group for each Science and Technology network was seen as desirable to unify the various agencies involved in Science and Technology and to enable the implementation of the CARISPLAN model.

Design of the system

111. The regional system was also seen as requiring more accurate definition of the Central Co-ordinating Unit at both the national and regional levels, as well as more systematic identification of users and their information needs.

112. The areas of technical standardization seemed to require consultants to identify the desirable standards in particular aspects of the system.

Manpower needs and training

113. Training and manpower development seemed to be partly the responsibility of the Central Co-ordinating Unit and partly of the national information systems. Training schemes would undoubtedly need to be phased in according to information needs.

Referral services

114. A Regional Referral Centre linked to national referral centres was recommended to form the basis of the referral services for CARSTIN. Initially such a service would require automated versions of a list of participating centres, a central database of material produced in and about the region, a union list of serials held within the network and access to external database, including those of similar Science and Technology systems. Direct access between national centres was seen as desirable.

115. A Skills Bank of professionals, organizations and companies active in Science and Technology as well as repackaging of information on priority areas were also considered to be important for the development of required services.

Processing

116. Standardization of formats, which would facilitate the compilation of records for the various databases while ensuring international compatibility, was seen as a required activity of the Regional Centre, and in the case of CARSTIN the tools employed, particularly the thesauri, should be multilingual at least in English, French and Spanish.

Document availability

117. The Regional Centre would have the responsibility of providing referral services; and document delivery would be the shared responsibility of the participating centres.

Computerization and standardization

118. As the goal of CARSTIN was information exchange, the standardization of formats, hardware and software was seen as an important area for the development of the network.

119. The Regional Centre could therefore establish several task groups with expertise in the areas requiring computerization and standardization. These groups might also be able to provide local counterparts to foreign consultants.

Telecommunications

120. In planning for the development of on-line links within CARSTIN, the libraries and other participating centres would need to have access to some general technical information on national telecommunications developments, procedures permitted and rates, possibly in the form of the presentations made for Trinidad and Tobago at the earlier sessions.

VIII. EVALUATION

121. After the last session, participants were requested to complete a questionnaire which would help in assessing the organization, content and usefulness of the workshop/seminar.

122. The questionnaire covered:

(i) the participants' job responsibilities and backgrounds;
(ii) their expectations of the workshop/seminar;
(iii) their opinions of their level of understanding of the content of the individual sessions;
(iv) their opinions of the organization of the workshop/seminar; and
(v) their opinions of the background material, and working tools provided.

123. Completed questionnaires were received from 12 participants and their responses are summarized below.

A. Personal background

i) The general education level of the 13 participants was:
PhD - 2 MA - 3 BA/BSc - 5

ii) and their qualifications in librarianship included;

Bachelor's Degree	6
Associateship of the Library Association	2
Diploma in Librarianship	1
Bachelor of Library Science	1

iii) All participants were officials of national governments which are potential members of CARSTIN, and their job responsibilities are:

2 librarians whose main responsibility is the provision of Science and Technology information (1 university, 1 ministerial);

2 librarians of National Documentation Centres who have responsibility for providing national Science and Technology Information Services;

4 librarians with responsibility for planning and development of national information systems;

2 Public librarians who are expected to have responsibility for national Science and Technology Information Services; and

3 members of National Science and Technology Councils including 1 Executive Secretary.

B. Summary of Participants Expectations

124. Participants indicated that they had expected to gain a basic understanding of and updating on the component areas of network development and to understand analyses of these component areas, in some cases with practical exercises, and hands-on experience as a means of further in-depth analysis.

125. An understanding of the nature and scope of CARSTIN, as proposed by UNESCO, was also expected by participants of the workshop/seminar and the particular areas on which clarification was expected were:

(i) the national and regional implications of CARSTIN;

(ii) the role, structure and function of the proposed CARSTIN co-ordinating unit; and

(iii) the value of CARSTIN as proposed to the national Science and Technology communities.

126. It was also expected that there would be some treatment of the current developments of library and information services in member countries, a sharing of experiences in relation to the development of National Science and Technology Councils, as a basis for strategy to ensure the establishment of information services of maximum effectiveness, which would provide science and technology information, i.e. the physical sciences and applied technologies, and facilitate the definition of a model of a regional co-operative system which would subsequently be implemented.

127. In order to satisfy these expectations, participants had hoped to gain background knowledge about the theoretical and practical aspects of:

(i) computerization including available hardware, software and services;

(ii) computerized information systems operating in specialized technical information centres; and

(iii) telecommunications

and that they would be able to use this exercise as a basis for decision-making on the proposed network.

128. Participants reported that the training workshop/seminar was basically a well-organized and productive exercise which provided some new information and which was for some, a good introduction to information handling and documentation. It therefore would have provided a very valuable basis for decision-making, except that there was doubt expressed by several participants as to the appropriateness of the workshop being held before the Consultation Meeting.

129. Participants regretted that there had not been adequate preliminary information to permit adequate preparation on the national Science and Technology situation and on needs of users at the national level. It was generally agreed, however, by the majority of participants that the technical aspects of a possible network were appropriately dealt with but that linkage with the policies and planning mechanisms of the proposed network were not clear.

130. Participants also commented that the presentations on the use of new technologies in information services could have been more beneficial if they had been accompanied by more detailed outlines and illustrations, and by longer and more structural practical sessions on the actual use of computerized information systems and services.

Summary of responses to evaluation questionnaire

131. Participants' opinions on their understanding of the individual sessions were:

1. Basic concept of networking

Good	92%
Fair	8%

2. Basic aspects to be taken into consideration for establishing a network

Good	92%
Fair	8%

3. Concept of a regional library processing centre to increase productivity

Excellent	8%
Good	25%
Fair	50%
Poor	9%
Not sure	8%

4. Design principles of the CARISPLAN network and its co-operative arrangements

Excellent	25%
Good	50%
Fair	25%

5. Brief description of networking activities in the respective countries

Excellent	9%
Good	66%
Fair	16%
Poor	9%

6. Science and Technology information users and their needs

Excellent	
Good	67%
Fair	25%
Poor	8%

7. Standardization in information activities and networking

Excellent	
Good	84%
Fair	17%

8. Standardization practices in CARISPLAN

Excellent	17%
Good	75%
Fair	8%

9. Use of the CDC Bibliographic Record Card

Excellent	33%
Good	67%

10. Abstracting, and abstracting services

Excellent	33%
Good	42%
Fair	25%

11. Indexing and information retrieval

Excellent	25%
Good	50%
Fair	25%

12. CARINDEX and other indexing activities of UWI

Good	33%
Fair	42%
Poor	25%

13. Use of computers in information processing

Good	83%
Fair	17%

14. Practical demonstration of the operation of data bases of the Caribbean Documentation Centre

Excellent	8%
Good	75%
Fair	17%

15. Practical sessions on computerized information retrieval at UWI, St. Augustine

Good	17%
Fair	75%
Not applicable	8%

16. Description of CDS/ISIS system by a staff member of CDB

Excellent	17%
Good	58%
Fair	25%

17. A librarian's experience in the use of CDS/ISIS

Excellent	8%
Good	67%
Fair	25%

18. Telecommunications: general

Excellent	16%
Good	67%
Fair	17%

19. The local and telecommunications network in Trinidad and Tobago

Excellent	17%
Good	66%
Fair	16%

20. The external telecommunications facilities in the Caribbean

Excellent	9%
Good	83%
Fair	8%

21. Information services and products

Excellent	16%
Good	67%
Fair	17%

22. Science and technology sources of information

Good	67%
Fair	33%

23. Summary of technical aspects of CARSTIN in working groups

Excellent	8%
Good	41%
Fair	41%
No response	9%

Annex I

PROVISIONAL LIST OF PARTICIPANTS

I. CDCC MEMBER AND ASSOCIATE MEMBER COUNTRIES

ANTIGUA

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Systems Programmer
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Barbados

V. OBSERVERS

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Head, Office of External Co-ordination
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Ms. Salisbury
UWI

VI. ECLAC

Mr. Wilfred Whittingham
Deputy Director

Mrs. Wilma Primus
Associate Documentation Officer
Caribbean Documentation Centre

Ms. Lirlyn Elliott
Librarian

Ms. Judith Modeste
Indexing Supervisor

Ms. Nancy Adams
Indexer

Mr. Dale Alexander
Data Entry Operator

Ms. Safia Khan
Secretary

PROGRAMME

MONDAY, 3 DECEMBER

8:30 - 9:00	REGISTRATION
9:00 - 12:00	OPENING SESSION
	CHAIRMAN - Mr. Wilfred Wittingham, Ag. Director UNECLAC Subregional Headquarters for the Caribbean
	WELCOME ADDRESS - Mr. Wittingham
	PRESENTATION OF UNESCO MEDIUM-TERM PROGRAMME FOR THE REGION - Ms.Ursula Albertus, Regional Adviser for the General Information Programme
	PURPOSE AND ORGANIZATION OF THE WORKSHOP/SEMINAR : brief outline - Dr. John Black Workshop/Seminar Coordinator.
	PARTICIPANTS, CONSULTANTS, AND OBSERVERS INTRODUCTION OF THEMSELVES, AND THEIR EXPECTATIONS OF THE WORKSHOP/SEMINAR.

MODULE I
RESOURCE SHARING AND CO-OPERATIVE ACTIVITIES

2:30 - 3:30	THE BASIC CONCEPT OF NETWORKING AND PROSPECTS FOR A NETWORK - Dr. John Black.
4:00 - 5:00	THE DESIGN PRINCIPLES OF THE CARISPLAN NETWORK AND ITS CO-OPERATIVE ARRANGEMENTS - Ms. Wilma Primus, Chief, Caribbean Documentation Centre.

TUESDAY, 4 DECEMBER

9:00 - 10:00	SCIENCE AND TECHNOLOGY INFORMATION USERS AND THEIR NEEDS - Dr. John Black
10:00 - 12:30	NATIONAL PRESENTATIONS
2:30 - 4:00	NATIONAL PRESENTATIONS

MODULE II
STANDARDIZATION

4:00 - 5:00	THE CONCEPT OF A REGIONAL LIBRARY PROCESSING CENTRE - THE OPPORTUNITY FOR INCREASED PRODUCTIVITY - Mr. Michael Gill, Campus Librarian, UWI Barbados

WEDNESDAY, 5 DECEMBER

9:00 - 9:20	THE CONCEPTUAL FRAMEWORK OF STANDARDIZATION - Dr. John Black
9:20 - 10:15	STANDARDIZATION PRACTICES IN THE CARISPLAN NETWORK - Ms. Judith Modeste - Indexing Supervisor - Caribbean Documentation Centre.
10:30 - 12:30	THE UNECLAC Manual for use of the Bibliographic Record Card - Ms. Fay Durrant - Joint Workshop/Seminar Co-ordinator.
5	ABSTRACTING AND ABSTRACTING SERVICES Ms. Fay Durrant.
15 - 5:30	Evaluation in groups of the output of various abstracting services, in relation to their applicability to CARSTIN.

THURSDAY, 6 DECEMBER

9:00 - 10:00	INDEXING AND INFORMATION RETRIEVAL - Ms. Fay Durrant
10:00 - 11:00	THE INTEGRTED LIBRARY AND INFORMATION SERVICES (UNESCO/PGI PILOT PROJECT) - Ms. Shirley Evelyn, UWI Library.
11:00 - 12:30	Evaluation in groups of various Science and Technology thesauri in relation to their applicability to CARSTIN.

MODULE III
COMPUTERIZATION

2:00 - 4:00	THE USE OF COMPUTERS IN INFORMATION PROCESSING.
4:00 - 5:30	THE INTERNATIONAL BIBLIOGRAPHY OF THE SOCIAL SCIENCES - demonstration -hands-on experience of the data-entry package.

FRIDAY, 7 DECEMBER

9:00 - 10:00	COMPUTER HARDWARE : AND INTRODUCTION TO IT'S CAPABILITIES AND POTENTIAL FOR THE FUTURE - Ms. Wilma Primus.
10:00 - 11:00	COMPUTERIZED BIBLIOGRAPHIC INFORMATION SYSTEMS - Ms. Fay Durrant
11:30 - 12:30	THE DATABASES OF THE CARIBBEAN INFORMATION SYSTEM - Practical demonstration - Mr. Dale Alexander, Computer Programmer, Caribbean Documentation Centre.

2:00 - 5:30	ACCESSING EXTERNAL DATABASES - Practical Demonstration - Ms. Shirley Evelyn, and Ms. L. Salsbury - UWI Library.

MONDAY, 10 DECEMBER

9:00 - 9:45	SOFTWARE FOR INFORMATION PROCESSING - Dr. John Black
9:45 - 10:45	CDS/ISIS - Mr. Clifford Willabus, Systems Programmer - Caribbean Development Bank
10:45 - 12:30	A LIBRARIAN'S EXPERIENCE IN THE USE OF CDS/ISIS - Ms. Nancy St.John.
2:00 - 3:00	TELECOMMUNICATIONS - Dr. John Black
3:00 - 4:00	TELECOMMUNICATIONS SERVICES IN TRINIDAD AND TOBAGO : THE LOCAL DATA NETWORK - TELCO - Mr. Trevor Sylvester, Business Services Manager TELCO.
4:00 - 5:00	INTERNATIONAL PUBLIC DATA COMMUNICATIONS SERVICE - TEXTEL - Mr.Hollis Bertrand, Controller Services Development and Network Arrangements.

TUESDAY, 11 DECEMBER

MODULE IV
INFORMATION SERVICES AND PRODUCTS

9:00 - 10:00	GENERAL INTRODUCTION TO INFORMATION SERVICES AND PRODUCTS - Dr. John Black

10:00 - 11:15	INTRODUCTION TO SCIENCE AND TECHNOLOGY SOURCES OF INFORMATION. Ms. Jackie Archer, Head CARIRI - Technical Information Service.
	SUMMARY
11:15 - 12:30	Discussion by Working Groups of :
	National policies and plans Design of the regional System Manpower Needs and Training Referral Services Document Processing and Availability Computerization Standardization Telecommunications
12:30 - 4:00	Discussion by working groups (contd.)
4:00 - 5:00	Reports of Working Groups
5:00 - 5:30	CLOSING SESSION.