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PARTICIPANTS' REPORTS-5

ICTP - URSI - ITU/BDT WORKSHOP ON THE USE OF RADIO FOR DIGITAL COMMUNICATIONS IN DEVELOPING COUNTRIES

(17 - 28 February, 1997)

"Brief Review on Use of Digital Radio"

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Banjul
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BRIEF REVIEW ON USE DIGITAL RADIO

PERSONAL INTRODUCTION: NAME, COUNTRY AND NAME OF THE COMPANY.

AFTER GRADUATION FROM [illegible]

THIS WAS AROUND 1986, WHERE ALL THE SYSTEMS IN DIVISION WERE ANALOGUE. THE GAMBIA BEING A VERY SMALL COUNTRY IN WEST AFRICA, BORDERED BY SENEGAL IN THE NORTH AND SOUTH AND WEST BY THE ATLANTIC OCEAN, ITS TELECOMMUNICATIONS HISTORY IS WAY BACK IN 19 CENTURY. ITS STRETCHES ABOUT 450 KM AND DIVIDED BY A RIVER ALONG THE WHOLE LENGTH.

DURING THOSE DAYS WE HAD UHF, VHF AND MICROWAVE RADIO SYSTEMS. THE VHF WAS FOR THE TERRESTRIAL LINK, BEING THE BACKBONE. THE MICROWAVE OPERATING ON A FREQUENCY OF ABOUT 8GHZ WAS USED TO LINK THE NEIGHBORING COUNTRY(SENEGAL). COMMUNICATION USED TO BE SO DIFFICULT BETWEEN THE CAPITAL AND THE SURROUNDING AREA, THAT IT WAS ALMOST NON EXISTENT. THIS IS DUE TO LOW AVAILABILITY OF TRUNK CCTS.

DIGITALIZATION OF THE INFRASTRUCTURE STARTED AROUND THE SAME TIME i.e. 1986. SWITCHING AS WELL AS MICROWAVE WERE BOTH DIGITALISED. THE FIRST DIGITAL MICROWAVE HAVING A CAPACITY OF 480 CHANNEL HAD A TREMENDOUS IMPACT ECONOMICALLY, TECHNICALLY TO OUR INSTITUTION. IT WAS INSTALLED BETWEEN THE CAPITAL AND THE MAJOR TOWNS, AND ANOTHER BETWEEN THE CAPITAL AND THE EARTH STATION; ALL HAVING AROUND 30KM LINE OF SIGHT DISTANCES. CONGESTION, CROSSTALKS, HIGH LEVEL OF NOISE WHICH WERE THE MAJOR EXPERIENCES ON THE CIRCUITS WERE MADE HISTORY.

TECHNICALLY,DIGITAL RADIOS HAS THE EASE TO HANDLE, EASE-TO DIAGNOSE FAULTS, IT IS COMPACT AND OCCUPY LESSER SPACE THUS ALLOWING AN ECONOMICAL INSTALLATION. THE NETWORK TECHNICAL MAINTENANCE FEATURE USING THE SOFTWARE TO ENHANCE THEM TO HAVE HIGH AVAILABILITY AND HIGH RELIABILITY. DIGITAL RADIO OFFER A WELL DEFINED PERFORMANCE WITH SIGNAL DEGRADATION ALMOST DISTANTLY INDEPENDENT HAVING BANDWIDTH OCCUPANCY QUITE GREAT.

WITH THE INTRODUCTION OF DATA COMMUNICATION, MANY BUSINESS SECTORS WERE INTERESTED TO COMPUTER NETWORK THEIR OFFICES IN DIFFERENT LOCATIONS OF THE COUNTRY. THESE ARE INSTITUTIONS LIKE BANKS, AIRLINE INDUSTRIES, CIVIL AVIATION AUTHORITY ETC.INTERNATIONAL LEASED CCTS INCLUSIVE. AS THIS REQUIREMENT NEEDS BASIC QUALITY CIRCUITS, LEASED CIRCUITS HAVE TO BE PROVIDED WITH HIGH GRADE SPECIFICATIONS,.HENCE THE AVAILAIBILITY OF DIGITAL CCTS..MOST OF THESE, USE RADIO MODEMS AND ARE PROVIDED WITH DEDICATED TIMESLOTS AT 64KBIT/S FOR TRUNKING AS WELL AS DIALUP MODES.HOWEVER WITH THE INTRODUCTION OF INTERNETSERVICES, THE DEMAND INCREASED WITHIN THE BUSINESS SECTOR. THE COUNTRY BEING A SMALL COUNTRY HAS NOT REACH THE REQUIREMENT FOR USE OF THE WHOLE RADIO FOR COMPUTER NETWORKING BUT IT DOES ANTICIPATE IT. PRESENTLY MOST OF THE SERVICES PROVIDED ARE TELEPHONY. — SEE ANEX I & II

OUR TELECOMMUNICATION COMPANY BEING A MONOPOLY INSTITUTION IS BEING CENTRAL TO ECONOMIC SUCCESS AND PROSPERITY. THE RELIABLE, HIGH QUALITY, FLEXIBLE AND HIGH AVAILABILITY FEATURES OF DIGITAL NETWORK HAD ENCOURAGED THE TELECOM SECTOR TO DIGITALISE THE WHOLE COUNTRY. THE COUNTRY BEING DIVIDED BY A RIVER, DIGITAL MICROWAVE SYSTEM ON A FREQUENCY OF 2GHZ BAND WAS DEPLOYED IN THE NORTH OF THE COUNTRY. FIBER OPTIC BACKBONE OF 140MBIT/S IN THE SOUTH BANK RUNNING TO ABOUT 400KMS. AT THE END OF THE FIBER IN THE SOUTH A DIGITAL TDMA MICROWAVE WAS CONNECTED FOR AVAILABILITY TO AREAS THE BACKBONE HASN'T REACHED.

THANKS TO DIGITAL TECHNOLOGY WITHOUT WHICH MY COUNTRY CANNOT STAND TODAY ALMOST ,IF NOT SECOND TO NONE AFRICA.I CANNOT CONCLUDE WITHOUT GIVING MY SPECIAL GRATITUDE TO THE SUPPLIERS OF OUR EQUIPMENTS.THESE ARE SAT (SOCIETE ANONYME DE TELECOMMUNICATIION)OF FRANCE , ALCATEL OF FRANCE ,PHILIP'S TRT OF FRANCE. BT TYMNET FOR PACKET SWITCHNETWORK

MY SPECIAL GRATITUDE TO THE ORGANISERS OF THE WORKSHOP.

Anex I

GAMBIA TELECOMMUNICATIONS COMPANY LIMITED
(GAMTEL)

TITLE: NATIONAL INTERNET NETWORK PILOT PROJECT PROPOSAL

TO:

DATE:

PROJECT DEFINITION

The main objective of this project is to build a countrywide full Internet (TCP/IP) network backbone and to develop related internet (information) services accessible throughout the Gambia . The project impementation would be as follows:

(1) **build a National Internet Network Backbone**, stretching from Banjul to Basse on the excisting **140MB** Optical fibre cable link and from Banjul to Illiasa on the existing **34MB** digital Microwave backbone on the North Bank. The backbone will be built with **at least 5 Router boxes** which are rackmountable and hot swappable.

(2) install the following Host computer systems :

(i) A **WWW** server based on a proven platform in the market. Also make provision for video conferencing and other multimedia services.

(ii) An **Email server** for National and international electronic messaging. Also make provision for online News and conferencing (IRC).

(iii)Billing and Network management computer

(iv) A backup computer to be used as a standby for the 3 systems specified above.

(3) build an international **Internet gateway** link through an established Internet access provider in UK and or USA using a **VSAT** satelite link and/or **switched 56/64kbps** link going through either MCI, AT&T or BT.

(4) To negotiate a settlement agreement with the Internet access provider for **zero billing on traffic**.

(5) To **setup a number** of Internet telecentres and include internet services in existing Gamtel and private (telephone) Telecentres. Each telecentre to be equiped with a **computer Terminal** and **modem** plus suitable software.

(6) train up to 3 engineers on Internet Network and train other resourceful persons on network applications and administration.

(7) Assist and link up certain social/research/educational organisations on the net and these are to be identified in the project study:e.g Hospitals, high schools, health centres, NGOS, a national news agency, etc.

ANEX II

Expected Benifits and outputs

(1) **Education**

- remote learning for schools
- remote access by schools to libraries and educational material, national and international.

(2) **Research:**

- national research groups be able to share data conveniently.
- facilitale easy access to international research data and vice versa.
- researchers be able to partcipate in world forums much more conveniently.

(3) **Health:**

- telemedicine applications, especially for remote clinics and health centres.
- facilitate easy access to medical records, national and international; enable doctors to interact with people/patients much more conveniently across the country.

(4) **Social:**

- catalyse the formation of an information society.
- more awareness as a result of easy access to vital information online: from Online news and databases.
- social communications further enhanced, both nationally and international; improved postal service with datagram service on the Net.
- enhance news dissemination within the country.
- telemedicine and remote learning will improve the standard of living of people as they become more easily conscious about their enviroment and hygiene.
- telecommuting would make life easy for travelling professionals.

(5) **National Economy:**

- formation of a knowledge-based economy.
- businesses would have easy access to the world market and global trade centres (WTCs).
- private sector enterprises and markets grow as businesses have easy and timely access to critical local and international market information; new enterprises will arise, such as content providers, information processing centres, etc
- enhance level of (foreign) investment.
- help in the decentralisation and diversification of services as rural dwelling becomes more convenient.
- enable the tourist industry to grow and expand into the provinces.

- facilitate computerisation of business offices as a computer become a tool and information an asset for most or all.

(6) **Government:**

- increased revenue from market expansion and growth.
- easy business of governance as information becomes more readily available.

USER GROUPS

Expected number of users/institutions, including telecentres, in the pilot project is estimated at between **500 - 1000**.