NTC Workshop on Internet Issues

19 July 2007

Sudanese Internet Society

Development of Internet services in Sudan
Challenges and Prospects

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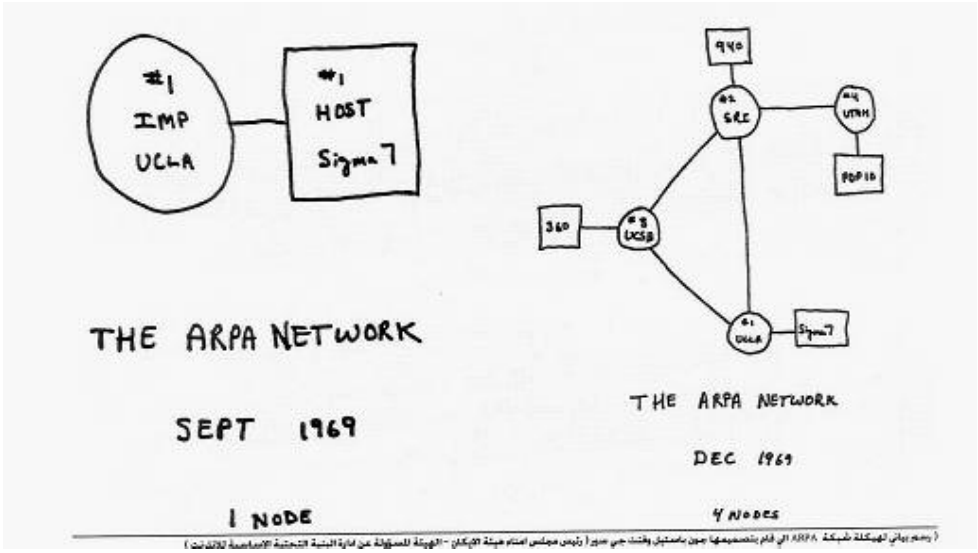
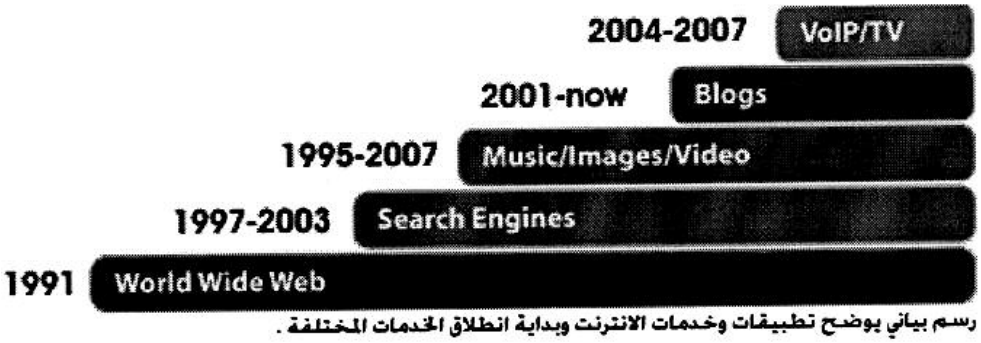
International and regional Internet service development

Since the establishment of USA D.o.D's ARPA Network in 1969 (depicted below), the Internet is constantly developing and turned out to be the backbone of international economy and the foremost information channel in the world.



Internet users and contents are steadily increasing. The 1990's is considered the undisputed Internet decade. In 1991 the Worldwide Web was introduced which enabled of browsing sites containing texts, files and multimedia contents, this service led to the great expansion of the Internet use. The number of Internet users exceeded 50 millions in 5 years.



رسم بياني يوضح تطبيقات وخدمات الانترنت وبداية انطلاق الخدمات المختلفة .

chronology of Internet services and applications and the start of various services

The expansion of the Internet introduced new multimedia interactive services such as online games, Video on Demand, IPTV and e-education. As the access to these services normally requires large Internet bandwidth capacities, telecom operators began to offer increased speeds and optional access technologies.
Dial-up service via normal telephone line was an important and ubiquitous means of connection to the Internet. Dial-up maximum speed was limited to 56 Kb/s. Advanced telecom technologies enabled more effective methods of connectivity with much higher speeds known as the broadband technologies.
All ISPs in Sudan provide the dial-up service which started in 1997 by Sudanet. The service started in Khartoum then extended piecemeal to other cities. In 2004, Sudatel introduced broadband service via DSL technology over telephone lines. According to the UNDP/NIC e-readiness report in 2005, the Internet broadband users in Sudan were 2500 which is considered of meager proportion.

Internet accessibility in Sudan in 2005 - E-readiness report:

Service	Speed	Total subscribers
ISDN	64 kb/s	1360
Analog leased lines	64 kb/s -2048 kb/s	123
Digital leased lines	30 x 2 Mb/s	344
ADSL	256 Kb/S	2560

Internet Broadband services:

Broadband Internet service is a key indicator of the state readiness for information society. The Tunis commitment declaration in (WSIS) 2005 urged to afford low-cost Internet broadband service.
In 2007, some Telco's in Sudan started to provide broadband service via wireless CDMA - EVDO at relatively

higher prices. This service is normally provided as value-added service for those who are capable to pay to enjoy mobility and roaming.
Broadband Internet service is normally provided via landlines due its expandability, reliability and high quality. Nevertheless, Telco's in Sudan started lately to forgo landlines and introduce wireless networks.
Natural evolution of the Internet service means to expand affordable broadband service and make it available for the widest customer base in urban areas, then gradually include the rural areas. Broadband Internet enables users of interactive services as tele-education and advanced multimedia services such as TV and video. Broadband Internet service may instigate private sector to provide extra services to users.

Problems of Internet service in Sudan:

1. Capacities:

Estimated Internet capacity in Sudan ranges between 300 to 450 MB. Though it is more than those of some neighboring countries (Ethiopia, Eritrea and Chad) but still well below other regional countries (Egypt 2.1 GB, UAE 5.1 GB). There is no definite assessment of capacity need, neither of the market nor those required to meet the ISPs demand to meet the requirements of additional services, local contents and other applications.

2. Quality of service and technical support:

Despite the paucity of Internet users, there is inefficiency in the technical support, installation and follow-up.
Technical faults demand relatively long time to recover.

3. Internet websites hosting:

Some Internet websites are hosted locally in Sudan but at high prices compared with hosting abroad. Optional values (such as e-mail) are still fewer than abroad. Dedicated Internet Bandwidth 'CIR' prices offered by Telco's are higher than abroad and considered a barrier to local hosting. That will add to the restriction of Internet market in Sudan. Website owners have genuine desire to host their web pages locally due to the trouble of fund transfer to abroad and the impossibility of a direct technical support. Moreover, the languish barrier is an added trouble. The U.S. embargo is another standing threat; any web service is subjected to shut down hereupon. So, and due to the strategic importance of the matter, the ISP's problems should be considered and resolved. The State project of the e-government necessitates local hosting and co-

location services and establishment of data centers must be hosted locally for security and confidentiality. Presently, the high cost of engineering works and setting up of data centers deter the investment in the field. Unfortunately, the main Telco's did not manage to create their own data centers of international standards that may offer hosting of Internet sites and data centers for the local market. It is incredible that the internet hosting service or enriching the local content shall develop as the dedicated bandwidth prices for ISP's is that high. Such prices will reflect negatively on customer use.

4. IP addresses and software licensing:

The present policy of IP address assignment restrains users from developing internet applications. To have an IP address, Telco's stipulate paying for dedicated leased circuit. In addition, the IP addresses are not offered for broadband applicants against nominal prices. University students, for example, can not post their graduation projects on the internet due to the unavailability of IP addresses and the difficulty of securing bandwidth. ICANN and AfriNIC (the body responsible for the Internet IP-address assignment in Africa) recommend free of charge assignment or against nominal charge. ISPs and other corporate entities must be encouraged to join the AfriNIC to increase the Local Internet Registry agents in order to mitigate the rigmarole of obtaining Internet addresses for users.

The dependence of programmers and developers on banned foreign software imposes difficulties on applications based thereon, which inflict high cost. So, it is advisable to encourage the use of open sources to develop internet applications.

Prospect and solutions:

To develop the internet service and make optimal use of the telecommunication infrastructure at hand – considered the best in Africa – we presume to focus on the following:

The Relationship between Telco's and ISP's:

- It is mandatory to maintain a cooperative partnership between Telco's and ISPs to enable the latter of offering broadband services to the widest targeted Sudanese sectors possible. In this way, Telco's can assume their role as carriers utilizing their infrastructure. As the ISPs in a position to offer other

value-added services, there will be a competitive market activity that shall render internet prices more affordable.

- Broadband service via landlines should be resumed and not to be abandoned. There must be an offered opportunity for Telco's/ISPs partnership. The Egyptian case is a good example, Telecom Egypt, the main Telco – extended revenue-sharing partnership with the ISPs to disseminate the internet service via Telecom Egypt. That enabled the ISPs of great expansion in offering broadband services with token prices. That partnership instigated positive competition in the market.

Internet Capacities:

The internet bandwidth dedicated to corporate bodies should be reduced. A special rate must be worked out for universities and educational institutions so they can avail the internet adequately to students. That shall indeed unleash progress and development of scientific research.

Internet Added Services:

- As a contribution to the development of internet local services including website hosting it is advisable to sponsor value-added and additional services via Telco's and ISPs.

- Establishment of Data Centers, by the State or private sector, is a strategic issue to develop the Internet applications service. Government data center is a pressing need.

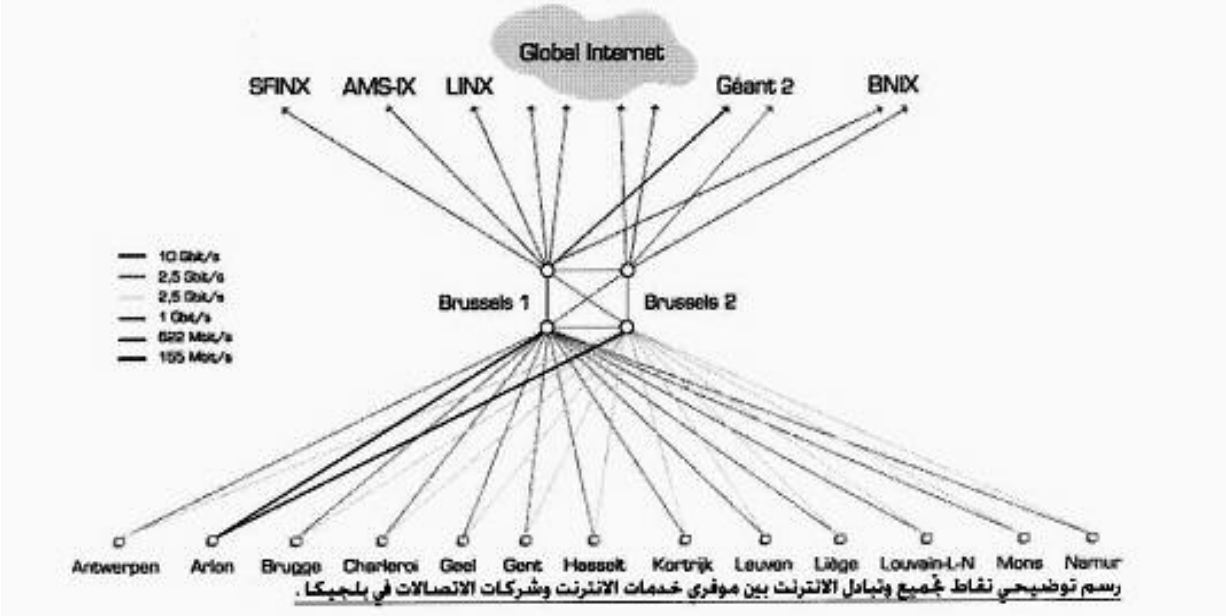
Sudan Internet Domain:

Sudan Internet Domain is ready for registration against a nominal fee of 6 SDG per annum. Sudan has now his own address on the internet global map. That will no doubt enhance all services including the contents. Still, there is a big need to develop the DNS infrastructure to bolster the internet development.

Sudan Internet Exchange Point 'SINEX':

The growth of the Internet capacities and hence the local services there will be an urgent need to establish the Sudan Internet Exchange Point 'SINEX'. That shall enable the Internet traffic of being shuttled locally via Internet Gateways instead of via international up-stream providers. That shall save the consumed bandwidth and

reduce costs. African projects for Internet Exchange Points are 10 projects in which we have contribution and incorporate many stakeholders including Telco's who run Internet gateways, ISPs, governments and universities. There are some ambitious projects in Africa to interchange internet, data, multimedia and voice traffic through interconnected 'Internet Points'. Traffic of Tanzania, Kenya and Uganda is already interconnected via their Internet Exchange Points so conserving pertinent costs. National Telecommunication Corporation in Sudan is in a position to initiate such vital project through the Informatics Support Fund in collaboration with the stakeholders. It is worth mentioning, nevertheless, that without consolidating the offered capacities and local contents such a project shall be futile. The importance of the Internet Exchange Points was elucidated in WSIS (Tunis commitment 2005) which dictated, inter alia, the reduction of international costs of internet imposed by main network operators, support of the regional ICT infrastructure, establishing Internet Exchange Points and expanding internet access.



ISP Association:

ISP association is an imperative body to improve internet service provision. SIS can locally and regionally contribute to this process. The association can effectively interact with the African ISP Association "AfriISPA". It is very important to have such a body for the ISPs to exchange expertise and knowledge.

Finale:

To develop internet services it's mandatory to effectively encourage internet usage. That can be achieved by expanding the geographical reach (urban and rural coverage) and improve affordability. Value-added services and creativity shall indeed contribute positively to the development of internet output and push forward the enrichment of local contents.
The development of internet services in Sudan is a direct responsibility of all stakeholders. NTC should be regarded as the backbone of all collective activities of stakeholders to develop the internet in Sudan. NTC is in a position to enhance and coordinate the commitment of Telco's and ISPs and stipulating them to provide the services according to definite timetables and clearly defined expansion plans for the whole country.

We do hope that this workshop is the real start to hit the true road towards the establishment of an effective information society that can, in turn, take part in the formation of the internet regionally and globally.

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