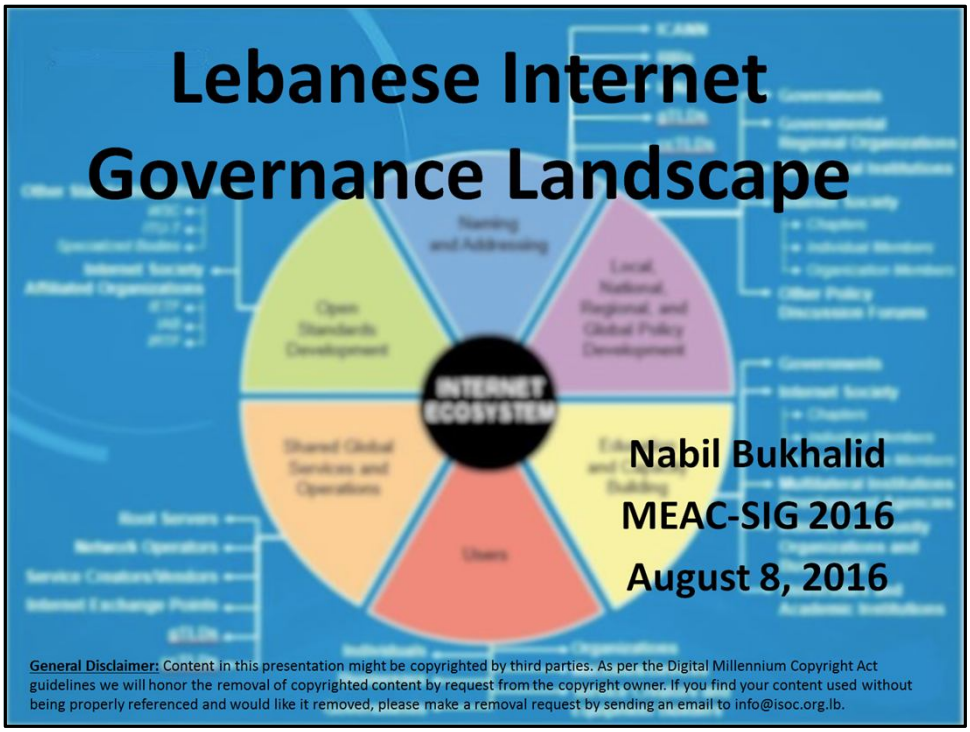
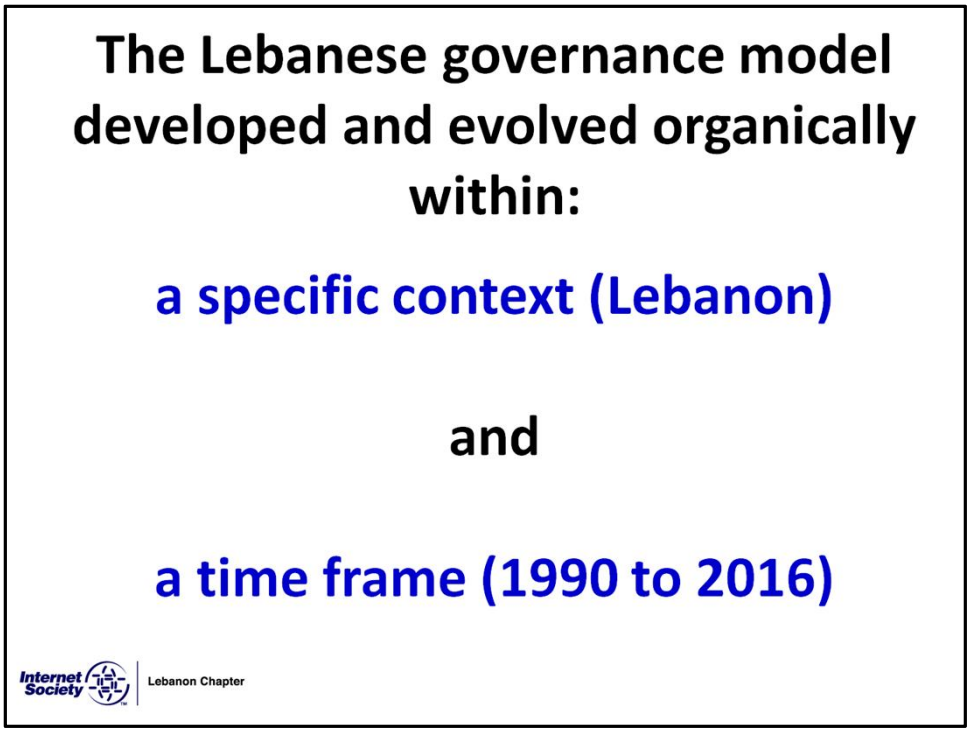
Lebanese Internet Governance Landscape



Nabil Bukhalid

MEAC-SIG 2016

August 8, 2016



In this session I will try to recount, as best I remember it, the story of the Internet in Lebanon. At the core of that story lies an Internet Governance model.

A governance model that developed and evolved organically within a specific context (Lebanon) and time frame (1990 to 2016).

As you may well know, in business, context analyses encompass the entire environment: internal and externa. The Lebanese Internet Governance Model developed and evolved in a specific environment "Lebanon" but not in isolation from the regional or global environment.

The Lebanese Context 1990 – 1993

Public Telecommunication Sector:

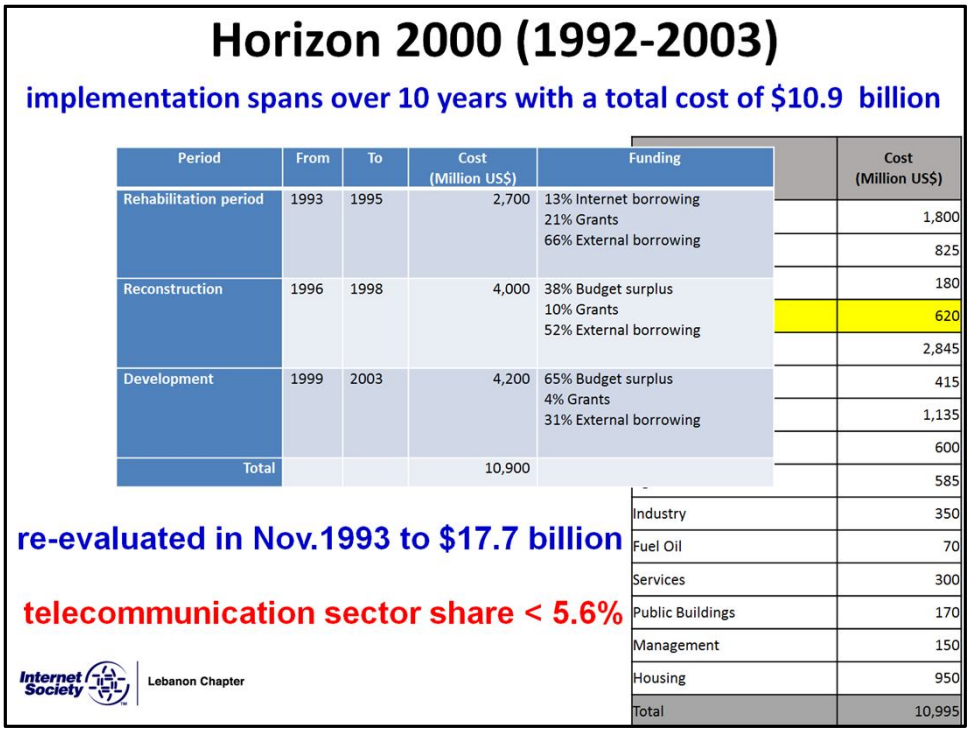
By the early 1990s, and after sixteen years of war, the Lebanese state had accumulated a public debt of over US$4 billion, which contributed to the devaluation of the Lebanese pound from US$1= LBP 3 in 1975 to LBP 2,750 in October 1992. This economic plunge was accompanied by skyrocketing inflation of over 500 per cent, excessive destruction of residential and industrial areas, industrial stagnation, and phenomenal devastation of electricity, telecommunication and all other infrastructures.

In brief, the economic consequences of the war on the Post Phone and Telegraph (PTT), the publically owned telecommunication monopoly by the Lebanese government, could be grouped into four broad areas:

- heavy destruction of productive facilities and infrastructures and failure to renew capital assets leading to obsolete and heavily damaged infrastructures
- considerable loss of skilled manpower and failure to develop human resources leading to a decline in employee competencies, professionalism and career attachments;
- deeply implanted bureaucratic inefficiencies and corruption; and
- archaic and largely obsolete regulatory framework.

The National Reconstruction Program

On 8 June 1991 the first step in an arduous journey for the rehabilitation, reconstruction and development of Lebanon began. The Lebanese government, represented by the Council of Development and Reconstruction (CDR) entered into an agreement with International Bechtel Incorporated and Dar Al-Handasah Consultants to develop a master plan for the Reconstruction and Development of Lebanon, the project was dubbed "Horizon 2000". Horizon 2000 implementation spans over 10 years (1992-2003) with an initially estimated total cost of US$10.9 billion.



In terms of expenditure stages and financing sources, the plan recognizes the following three periods:

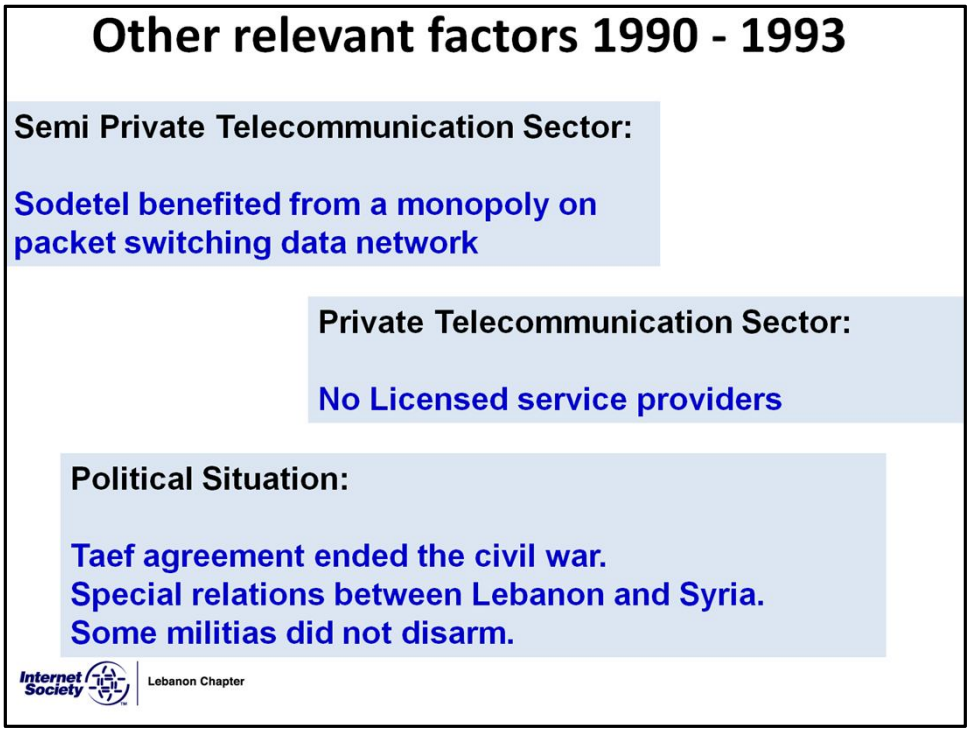
(Table)

Horizon 2000 budget was re-evaluated in November 1993to US$ 17.7 billion. To various experts, this ambitious scheme for financing Lebanon's reconstruction requirements rests on a number of long-range political, administrative, economic and monetary assumptions that are, to say the least, precarious.

The implementation of such an ambitious plan, even if the political and economic variables were favorable, would still depend on a deep rooted public bureaucracy.

So, in what concerns the Internet infrastructure development, the telecommunication sector share was barely 5.6% of the total plan and the focus was on the rehabilitation and reconstruction of the fixed telephone infrastructure.

We tried to influence Horizon 2000 by proposing the establishment of a national academic and research network (LARN) and connect it to EARN/BITNET but the Lebanese government showed a passive interest and had somewhat different priorities and other more basic or urgent obligations to fulfill.



Semi Private Telecommunication Sector:

Sodetel was created in 1968 to manage the submarine cable between Beirut & Marseilles. The Lebanese Ministry of Telecommunications holds %50 of Sodetel, France Telecom / FCR holds %40 and Telecom Italia %10.

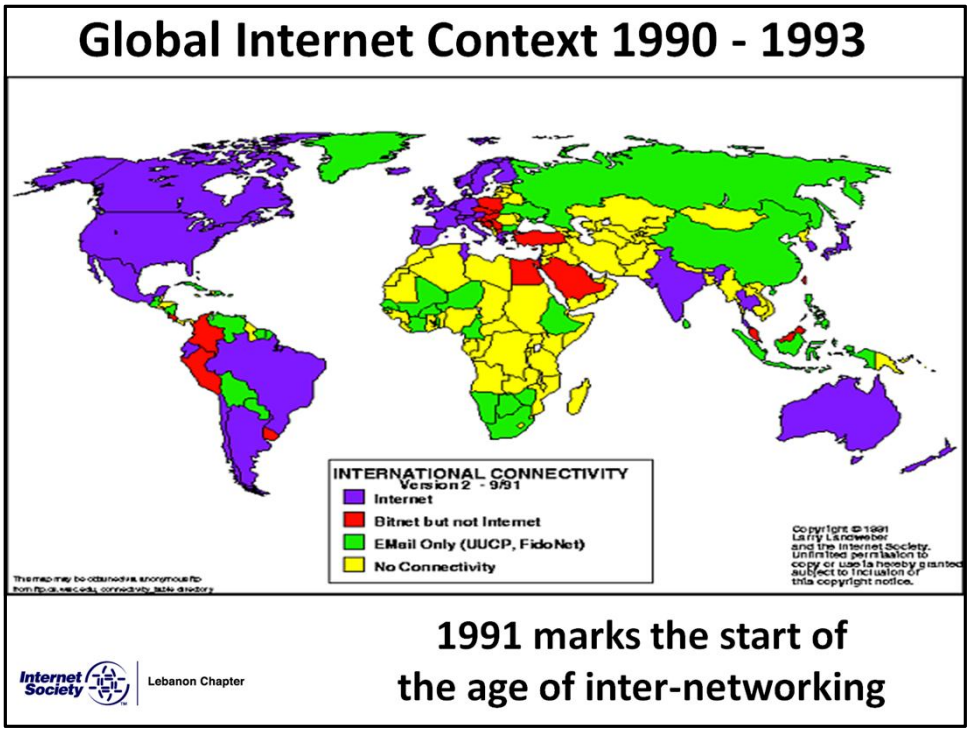
Sodetel started expanding its services in 1991 with the introduction of LIBANPAC, the sole national packet switching data network legally authorized. A monopoly on packet switching data network.

Private Telecommunication Sector:

The Lebanese economy has traditionally been marked by liberalism and a laissez-faire economy but the Lebanese Ministry of Post and Telecommunication monopolistic behavior hindered the development of the private sector.

Political Situation:

The Taef agreement ended the civil war but Lebanon did not return to political normalcy as the special relations between Lebanon and Syria translated to a heavy handed Syrian guardianship over Lebanon and Hezbollah and the Palestinian camps militias did not disarm.



Global Internet Context 1990 - 1993

In 1990 'the net' has grown to over 300,000 hosts. The list of countries connecting to 'the net' is growing rapidly. The latest to join the net were Argentina, Austria, Belgium, Brazil, Chile, Greece, India, Ireland, South Korea, Spain, and Switzerland.

Several search tools, such as ARCHIE, Gopher, and WAIS start to appear. Institutions like the National Library of Medicine, Dow Jones, and Dialog are now on line.

In early 1991 NSF lifted any restrictions on commercial use. The net's growth accelerated dramatically. And we the first Commercial Internet Exchanged was established by popular providers such as UUNET and PSInet.

The US Congress passes the El Gore Bill to create the National Research and Education Network, or NREN initiative.

The NSFNET backbone upgrades to T3, or 44 Mbps. Total traffic exceeds 1 trillion bytes. Over 100 countries are now connected with over 600,000 hosts and nearly 5,000 separate networks.

For many 1991 marks the start of the age of inter-networking and its pervasive role in

the lives of professionals in developed countries.

Global Internet Context 1990 - 1993

Year (June)	Websites	Internet Users (million)	Users per Website	Websites launched
1990	0	2.6		Commercial traffic over UUNET/ALTERNET. ARCHI Search Engine
1991	**1**	**4.5**		Gopher, WAIS. **Commercial Internet Exchange (CIX).** **August 1991 launch of first website info.cern.ch**
1992	10	7.8		
1993	130	14.2	108,935	
1994	2,738	25.5	9,297	yahoo
1995	23,500	44.8	1,908	Altavista, Amazon
1996	257,601	77.4	301	

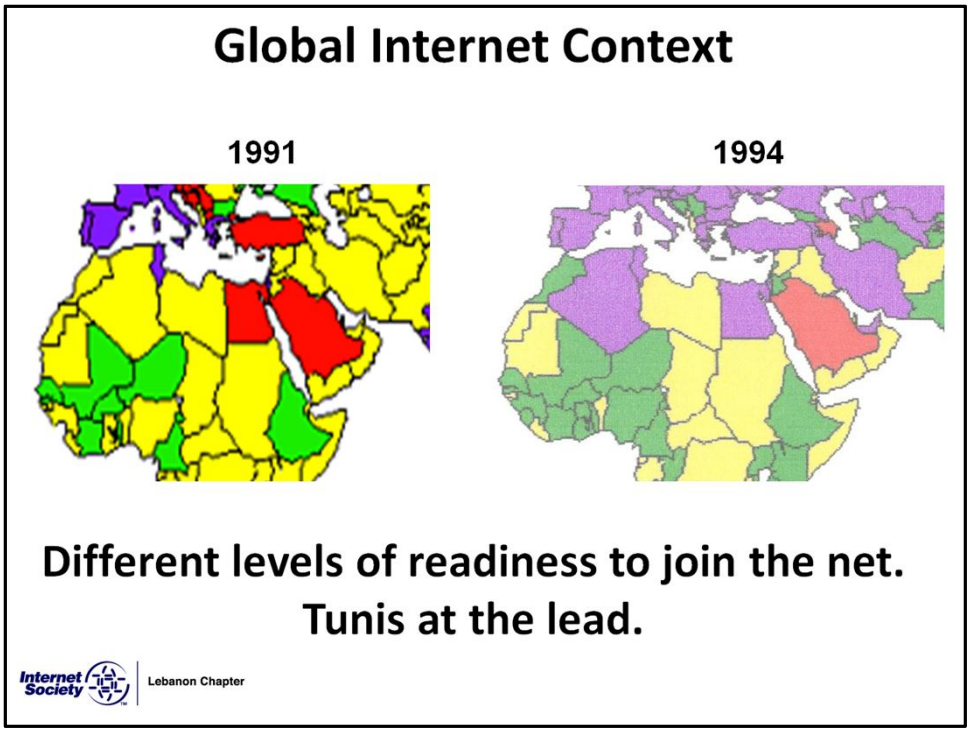
The Internet hype is at its peak!

Internet Society Lebanon Chapter

1992, the number of networks exceeds 7,500, the number of connected computers exceeded 1 million and the number of users exceeded 7.8 million.

"The net" the Internet becomes the core of the computing establishment. The Internet Society (ISOC) is formed to guide its progress, with Vint Cerf and Bob Kahn among its founders. The Internet Architecture Board (IAB) and its supporting committees become part of ISOC.

1993, the web bursts into the world and the growth of the Internet explodes exponentially. The Internet hype is at its peak!

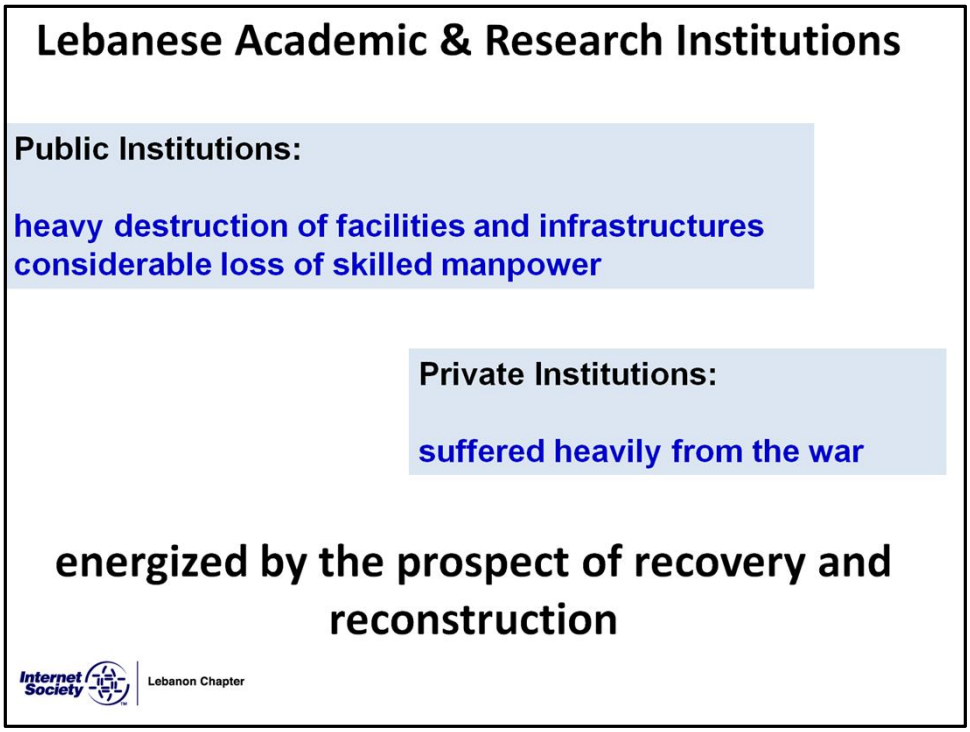


Regional Internet Context 1990 – 1993

Many of the regional and Arab league countries started to show interest in joining the Internet. By end of 1991, Tunisia was connected to the Internet and each of Egypt, KSA, Cyprus and Turkey piloted Bitnet connections.

In August 1993 official representative from the governments of Egypt, Tunisia and Morocco attended INET'93 and I attended in my personal capacity from Lebanon (in realty I immigrated to Montreal Canada on February 1993).

A side event was organized with US VP El Gore in San Francisco and we agreed with him to push ahead the connection of our respective countries to the Internet and to organize a meeting in the region to discuss the possibilities of establishing a regional Internet exchange.



Lebanese Academic and Research Context 1990 – 1993:

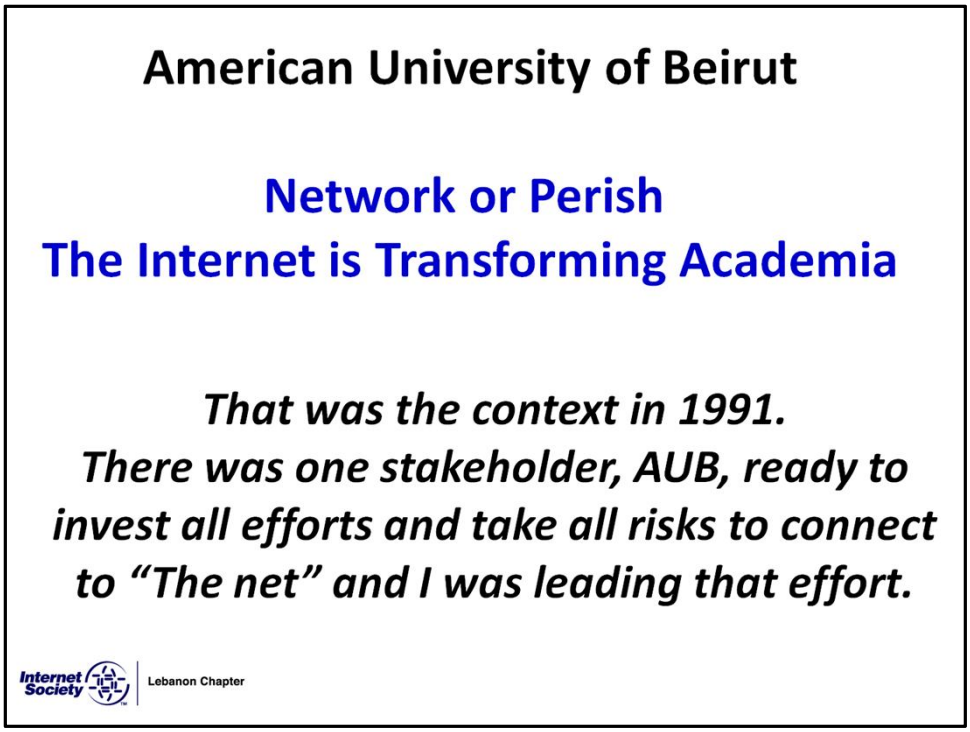
Lebanese University (LU) and the National Council for Scientific Research (CNRS):

In brief, the consequences of the war on the LU and CNRS were no better than on all the other publically owned sectors:

- heavy destruction of facilities and infrastructures and failure to renew capital assets leading to obsolete and heavily damaged infrastructures; and
- considerable loss of skilled manpower and failure to develop human resources leading to a decline in employee competencies, professionalism and career attachments.

Private Universities:

Suffered heavily from the war but were energized by the prospect of recovery and reconstruction of Lebanon.



The American University of Beirut was leading with some pilot projects in data networking and dialup connectivity. The Biomedical Engineering Department installed in 1987 a remote dialup connection to Dialogue to facilitate the access to Medical research papers followed by a connection to PSInet and started to experiment with local area networks.

In 1989, the director of the Biomedical Engineering Department Mr. George Tomey was appointed as VP for Administration and in the same year he appointed Sami Cortas to manage the computer center and Nabil Bukhalid to establish the Personal Computing and Networking Services. Both experienced in and enthusiastic about personal computers, mini computers and all kind of data networking including using DECnet, Novell LANs, baseband fiber optic/10-Base-T WAN and FDDI and X.25 packet switching. PCNS team was also experienced in UNIX and all sort of PC OSes and programing languages.

In parallel, faculty members and researchers in the department of Computer Science and School of Engineering started to express interest in Bitnet. PCNS organized a brainstorming session to assess the requirements, study the solutions and propose an action plan.

The outcome was compiled into a position paper "Network or Perish - The Internet is Transforming Academia" the paper highlighted the critical need to connect AUB to "The net" and outlined the networking directions to be pursued by PCNS in collaboration with the user community over the next two years:

"*PCNS has to provide a network infrastructure and the technical expertise and leadership to help users make effective use of network computing. Only then can the University reap the benefits of a seamless distributed computing infrastructure in which a desktop computer can access a library catalog, students' records, a color printer across the campus, or a supercomputer across the continent. The goal is to provide connectivity with hierarchy of*

networks. Local area networks (LANs) connect to wide-area networks (WANs) like a campus backbone which in turn connects to worldwide nets."

That was the context in 1991. There was one stakeholder, AUB, ready to invest all efforts and take all risks to connect to "The net" and I was leading that effort.

The First Internet Node - Chronological

Date	Cornerstone Events - Phase-1
Aug. 5, 1991	Network or Perish - The Internet is Transforming Academia
Sep. 7, 1991	Feasibility of joining Internet - PCNS ref./90-084
Nov. 28, 1991	AUB received NIC application form
Oct. 26, 1991	AUB requested a class B address from NIC
Jun. 9, 1992	NIC referred AUB's application to the National Foundation of Science
Jan. 5, 1993	AUB requested from Libanpac a 9.6kbps X.25 leased line
Feb. 19, 1993	NIC rejected AUB's request for a class B address
Feb. 23, 1993	AUB replaced its initial application with a new one requesting 4 class C addresses from NIC
Feb. 24, 1993	NIC rejected AUB's request as AUB main campus is outside North America
Feb. 26, 1993	AUB requested from RIPE NCC 4 class C addresses
Mar. 7, 1993	RIPE assigned 4 class C addresses to AUB
Mar. 15, 1993	AUB started negotiating the physical Internet access with Fnet
Mar. 22, 1993	AUB applied for the aub.edu domain
May. 5, 1993	AUB installed the first on-demand X.25 link with PSInet
Jun. 6, 1993	PC Networking on Campus and Beyond - PCNS Strategic Plan

The First Internet Node - Chronological

Date	Cornerstone Events - Phase-2
Aug. 19, 1993	Nabil Bukhalid and Randy Bush developed and deployed the DNS infrastructure for .lb and a UUCP/Fidonet store and forward node on psg.com infrastructure with secondary DNS servers hosted at University of Oregon and University of California at Irvine.
Aug. 20, 1993	Nabil Bukhalid applied for the .lb domain
Aug. 25, 1993	Jon Postel assigned Nabil Bukhalid as the .lb ccTLD administrator and Randy Bush as the
Aug. 27, 1993	AUB registered "aub.ac.lb" being the first ".lb" domain name and Nabil Bukhalid deployed the DNS server and a UUCP/Fidonet store and forward node on a linux server hosted in his apartment in Montreal thus creating the first .lb email server layla.aub.ac.lb and account
Nov. 6, 1993	layla.aub.edu.lb was relocated to AUB
Dec. 23, 1993	AUB released to production the first on demand IP over X.25 internet link to Fnet and Lebanon Joined the Internet community

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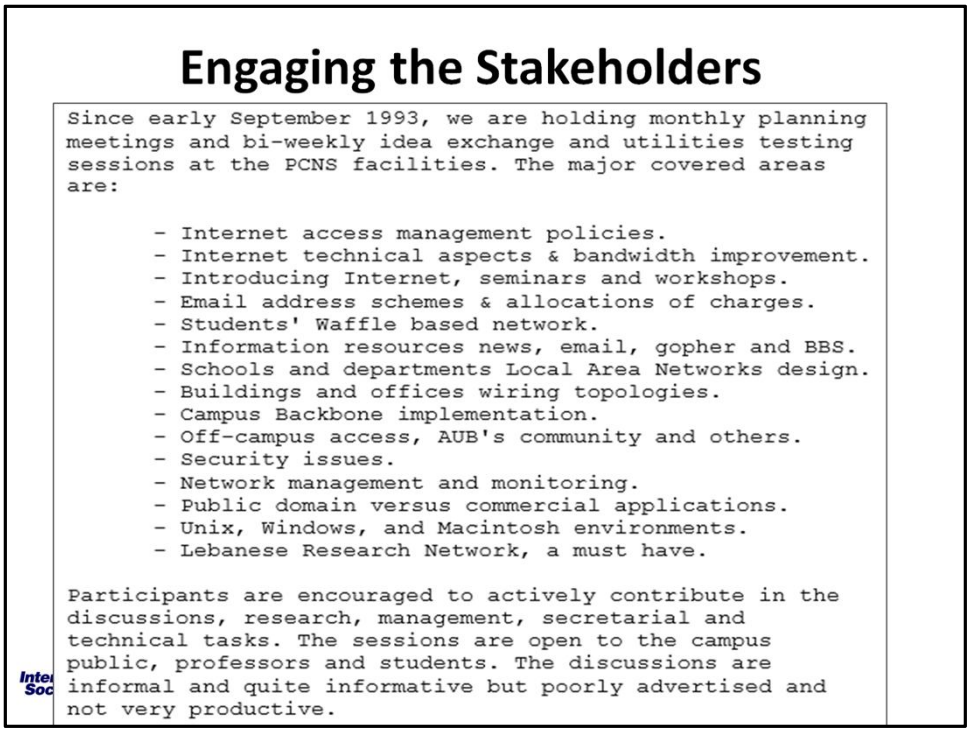
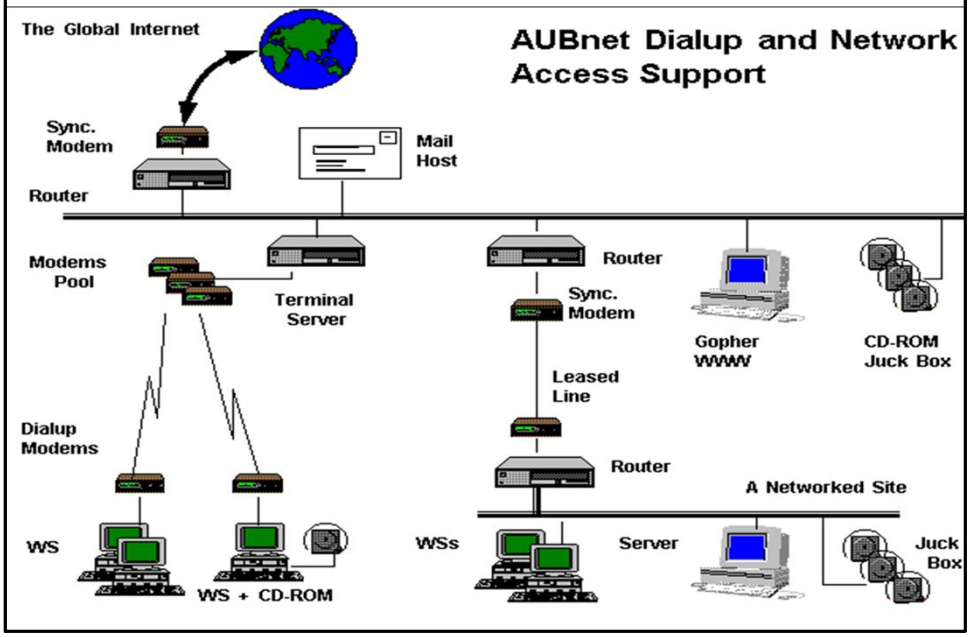


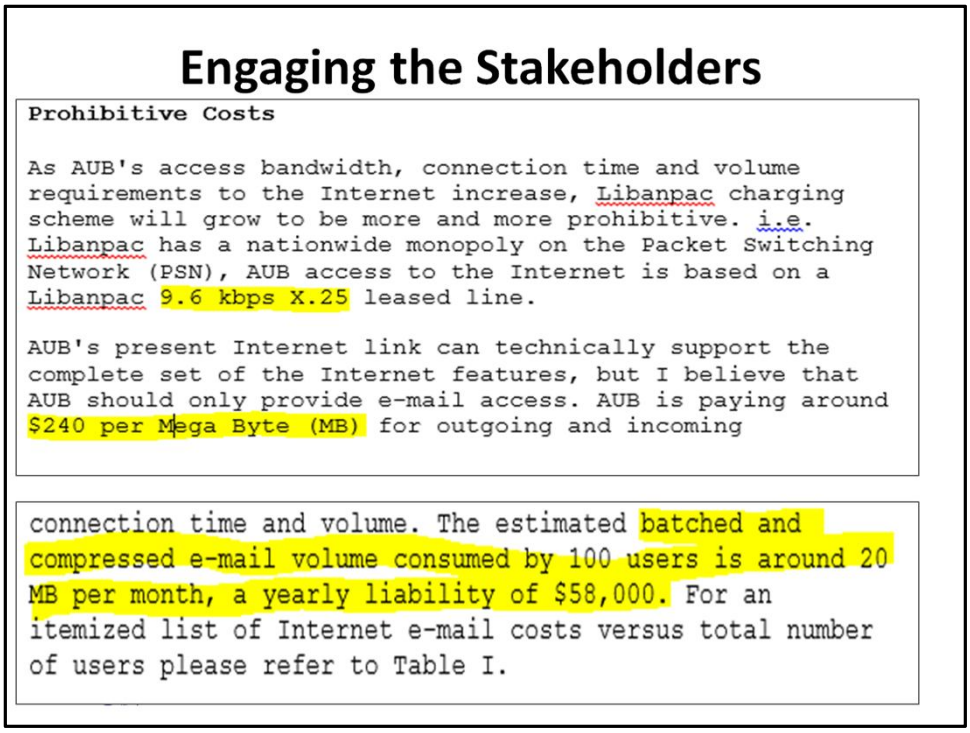
I initiated the process of involving the stakeholders and encouraged them to participate in the design, development, deployment, management and policy setting even before I relocated to Beirut.

The following is a scanned abstract from “Internet Challenges & Future Plans”, PCNS, January 1994.

One of the main initiatives was the critical need to establish the “Lebanese Research Network” and the spectrum of stakeholders widened beyond AUB’s community.

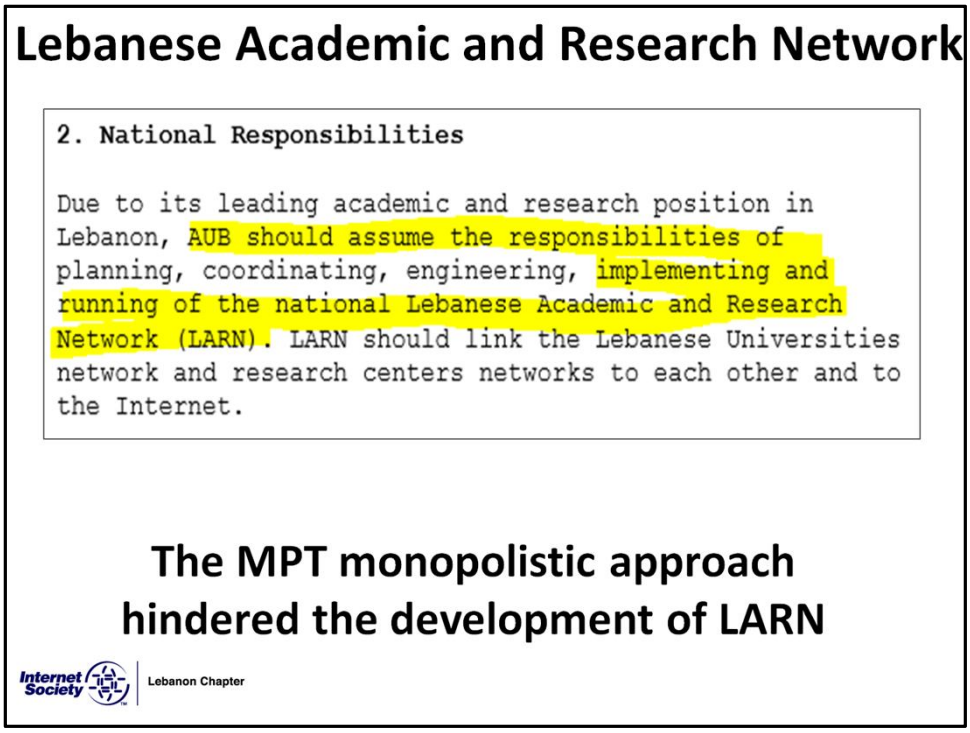
Engaging the Stakeholders



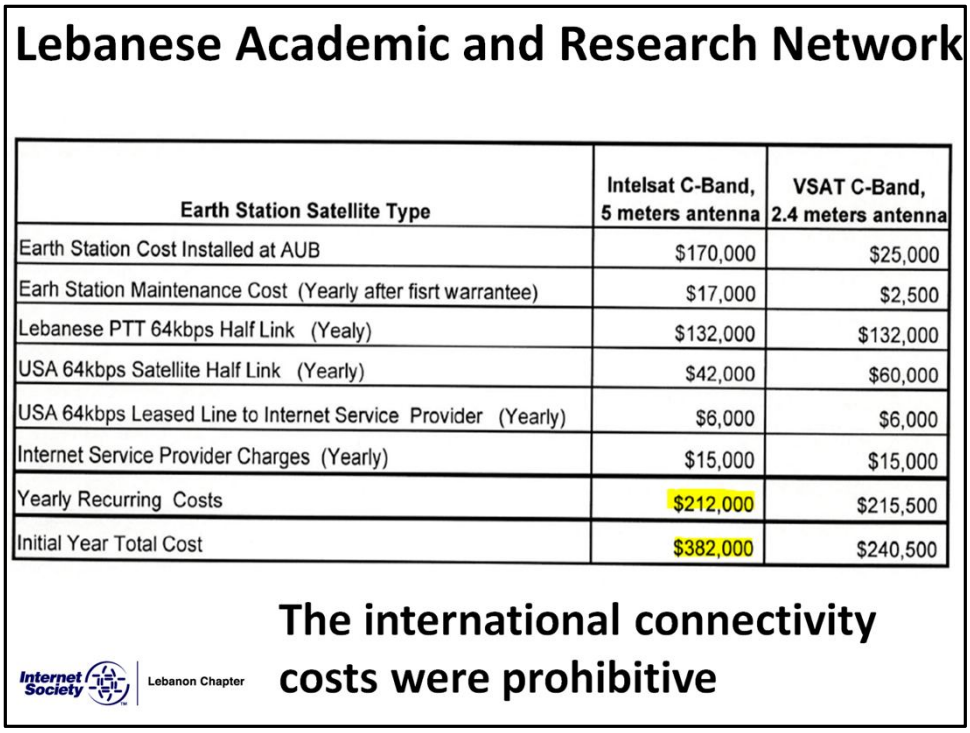


The toll of the inadequacy of the Lebanese telecommunication infrastructure, regulatory framework, bureaucracy and costs were heavy on the university.

But as the stakeholders/users were fully informed and participated in the making of the net, they were very understanding and supportive. Self managed the bandwidth and controlled abuse.



The MPT monopolistic approach vis-à-vis the prohibition of local connectivity between networks and the prohibitive international connectivity costs hindered the establishment of LARN:



The international connectivity costs were prohibitive

Lebanese Academic and Research Network

The multistakeholder group developed to academic, public sector and government representatives

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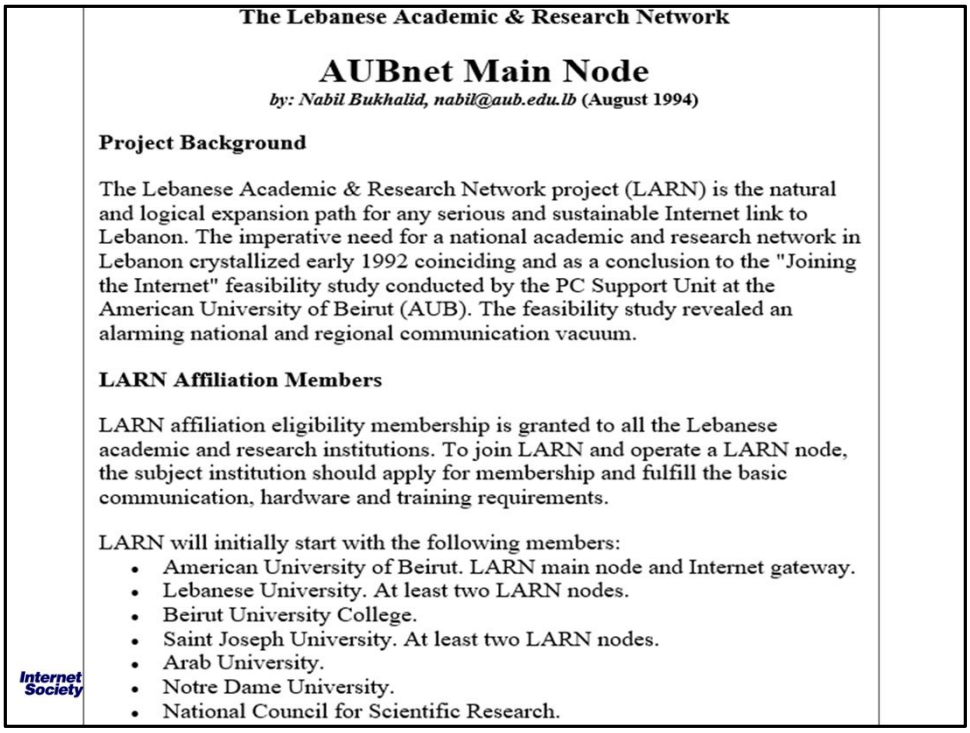
We are in early 1994 and we engaged in a systematic plan to widen the spectrum of Internet users by offering Internet awareness presentation and workshops and offering dialup email accounts to a wide variety of users from other universities and government ministries and research centers. The purpose is to widen the stakeholder and increase the pressure on the PTT and the Lebanese government leading the establishment of LARN and the reduction of connectivity costs.

The multistakeholder group developed and we held monthly meetings. The participants included academic, public sector and government representatives including Sodetel but MPT did not engage with the group.



The Lebanese Academic & Research Network

AUBnet Main Node

by: Nabil Bukhalid, nabil@aub.edu.lb (August 1994)

Project Background

The Lebanese Academic & Research Network project (LARN) is the natural and logical expansion path for any serious and sustainable Internet link to Lebanon. The imperative need for a national academic and research network in Lebanon crystallized early 1992 coinciding and as a conclusion to the "Joining the Internet" feasibility study conducted by the PC Support Unit at the American University of Beirut (AUB). The feasibility study revealed an alarming national and regional communication vacuum.

LARN Affiliation Members

LARN affiliation eligibility membership is granted to all the Lebanese academic and research institutions. To join LARN and operate a LARN node, the subject institution should apply for membership and fulfill the basic communication, hardware and training requirements.

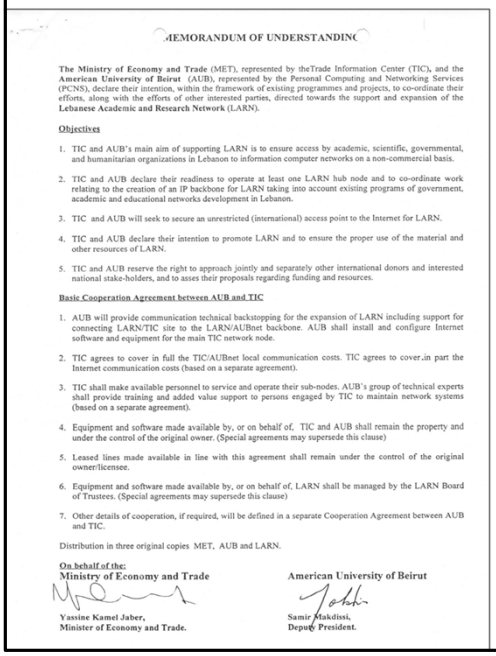
LARN will initially start with the following members:

- American University of Beirut. LARN main node and Internet gateway.
- Lebanese University. At least two LARN nodes.
- Beirut University College.
- Saint Joseph University. At least two LARN nodes.
- Arab University.
- Notre Dame University.
- National Council for Scientific Research.

Internet Society

We kick started LARN by establishing AUBnet Main Node.

LARN/AUBnet Main Node



MEMORANDUM OF UNDERSTANDING

The Ministry of Economy and Trade (MET), represented by theTrade Information Center (TIC), and the **American University of Beirut** (AUB), represented by the Personal Computing and Networking Services (PCNS), declare their intention, within the framework of existing programmes and projects, to co-ordinate their efforts, along with the efforts of other interested parties, directed towards the support and expansion of the **Lebanese Academic and Research Network** (LARN).

Objectives

1. TIC and AUB's main aim of supporting LARN is to ensure access by academic, scientific, governmental, and humanitarian organizations in Lebanon to information computer networks on a non-commercial basis.
2. TIC and AUB declare their readiness to operate at least one LARN hub node and to co-ordinate work relating to the creation of an IP backbone for LARN taking into account existing programs of government, academic and educational networks development in Lebanon.
3. TIC and AUB will seek to secure an unrestricted (international) access point to the Internet for LARN.
4. TIC and AUB declare their intention to promote LARN and to ensure the proper use of the material and other resources of LARN.
5. TIC and AUB reserve the right to approach jointly and separately other international donors and interested national stake-holders, and to asses their proposals regarding funding and resources.

Basic Cooperation Agreement between AUB and TIC

1. AUB will provide communication technical backstopping for the expansion of LARN including support for connecting LARN/TIC site to the LARN/AUBnet backbone. AUB shall install and configure Internet software and equipment for the main TIC network node.
2. TIC agrees to cover in full the TIC/AUBnet local communication costs. TIC agrees to cover in part the Internet communication costs (based on a separate agreement).
3. TIC shall make available personnel to service and operate their sub-nodes. AUB's group of technical experts shall provide training and added value support to persons engaged by TIC to maintain network systems (based on a separate agreement).
4. Equipment and software made available by, or on behalf of, TIC and AUB shall remain the property and under the control of the original owner. (Special agreements may supersede this clause)
5. Leased lines made available in line with this agreement shall remain under the control of the original owner/licensee.
6. Equipment and software made available by, or on behalf of, LARN shall be managed by the LARN Board of Trustees. (Special agreements may supersede this clause)
7. Other details of cooperation, if required, will be defined in a separate Cooperation Agreement between AUB and TIC.

Distribution in three original copies MET, AUB and LARN.

On behalf of the:

Ministry of Economy and Trade

Yassine Kamel Jaber,
Minister of Economy and Trade.

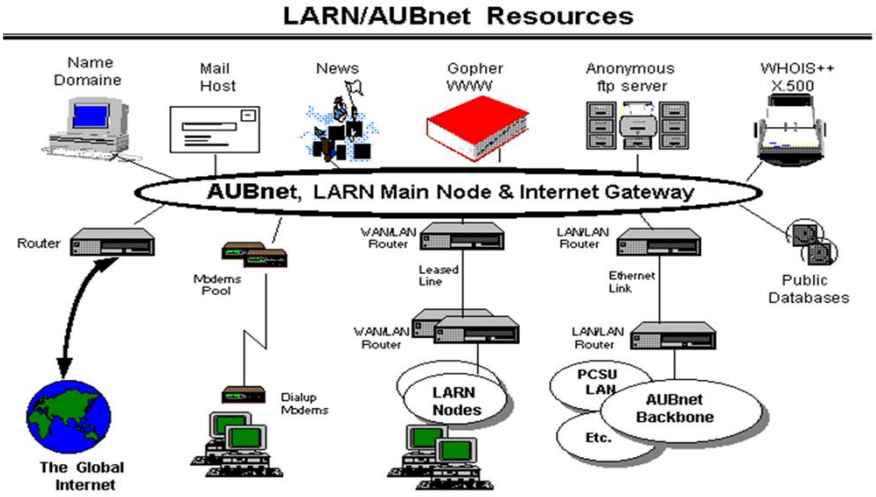
American University of Beirut

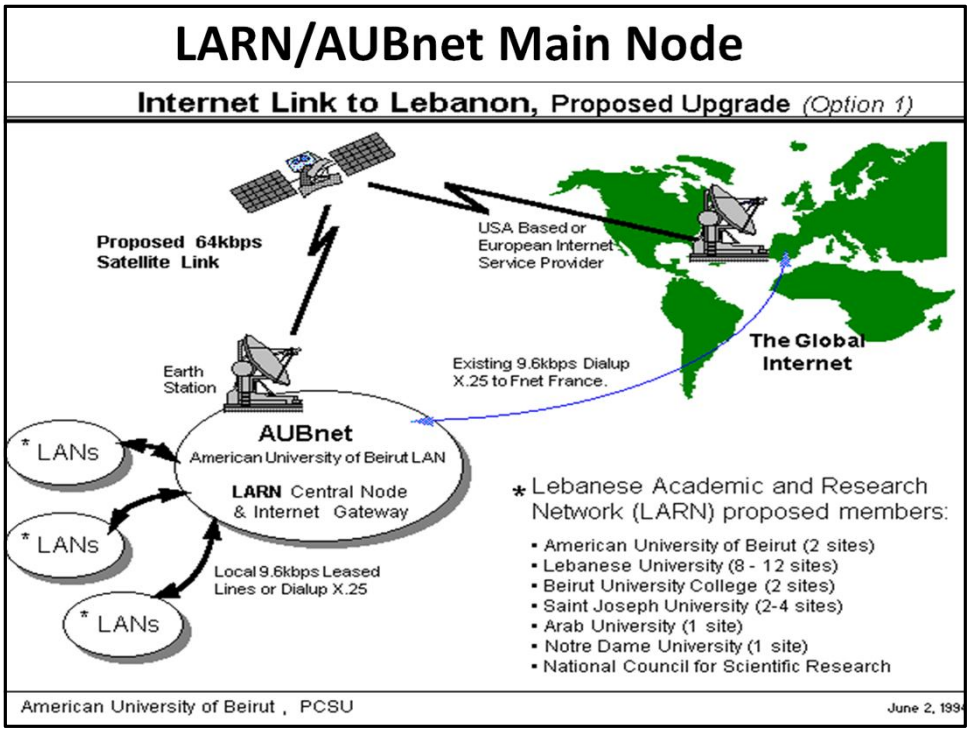
Samir Makdissi,
Deputy President.

widened and formalized the stakeholder base by signing MOUs with 23 members

And widened and formalized the stakeholder base by signing MOUs with 23 members: Universities, Ministries and Centers

LARN/AUBnet Main Node

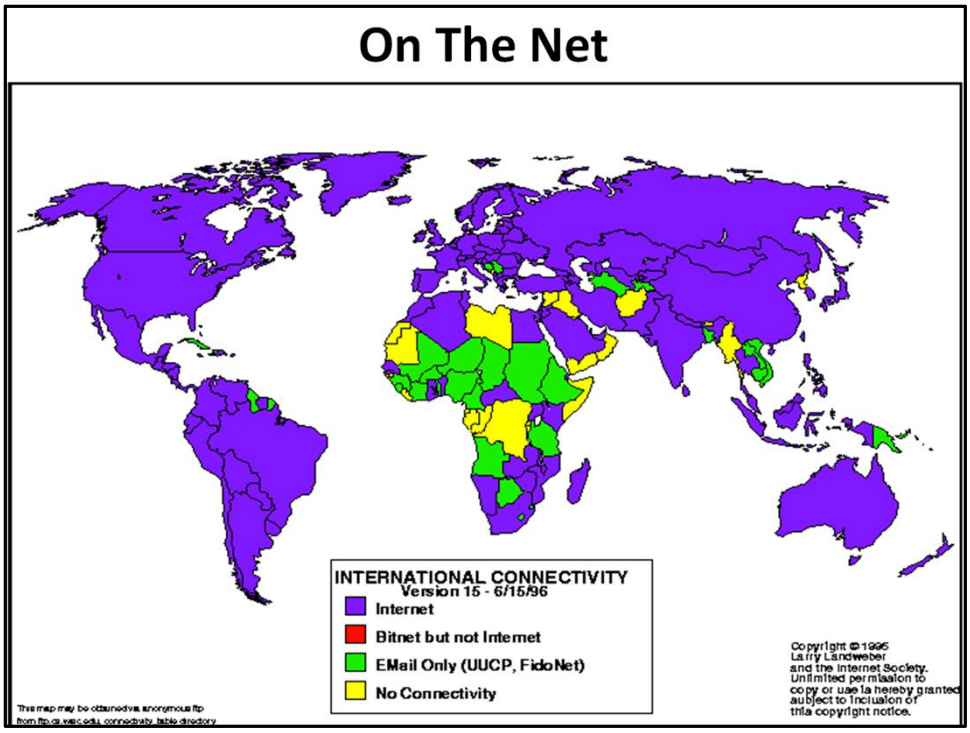




The MPT monopolistic attitude pushed us into seeking solutions that are in the grey (no clear regulation text regulating their use) or solutions provided by providers with political protection.

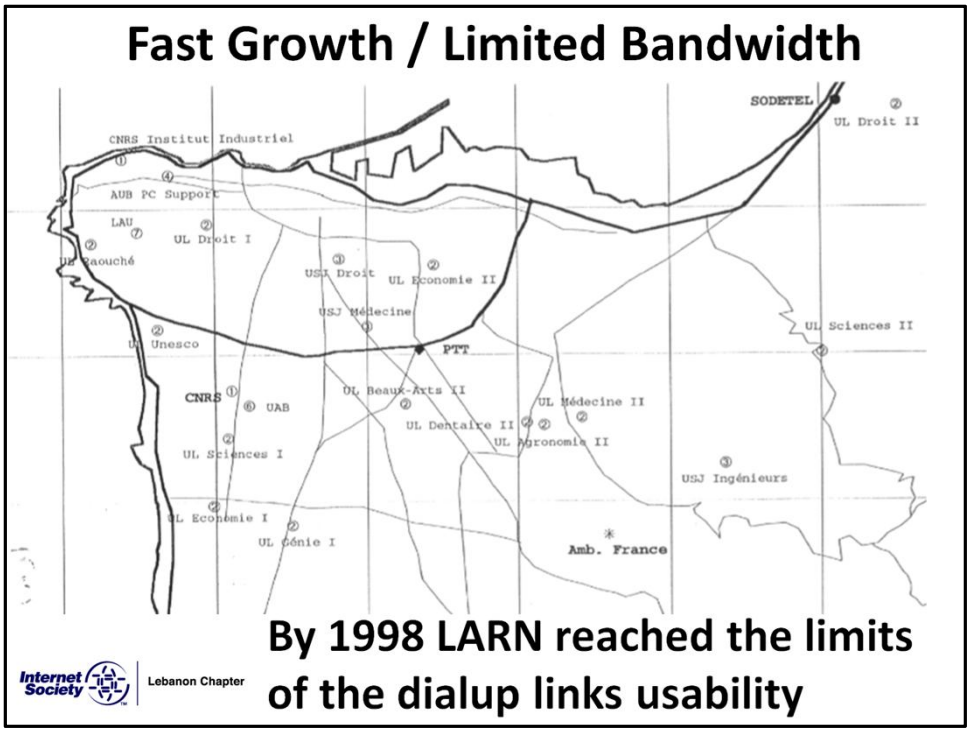
We kept on growing our user stakeholder base, network reach, internet services and bandwidth.

Between January 1993 and December 1994, AUB filed with the MPT 6 applications for international data connectivity over submarine fiber optic link and satellite connectivity.



After we build a comprehensive file proving that the MPT is technically capable to connect AUB to the Internet via Cytanet over the existing fiber submarine cable and intensive lobbying with Prime Minister Hariri. On April 25, 1995 the MPT commissioned the 64kbps lease line international connection between AUBnet and Cytanet. Lebanon is on "The Net".

Consequently the MPT started to license commercial ISPs and the first ISP DM.NET.LB registered its domain in August 1995, followed by TERRANET.COM.LB and CYBERIA.COM.LB in September 1995 and LIBANPAC.NET.LB in November 1995.



LARN added additional dialup nodes to include Fnet supported nodes under an EU funded project. By 1998 LARN reached the limits of the dialup links usability and the MPT did not authorize the installation of dedicated lease lines to support the growth in bandwidth needs. LARN was doomed to fail and the members secure their internet connectivity via the commercial ISPs/DSPs.

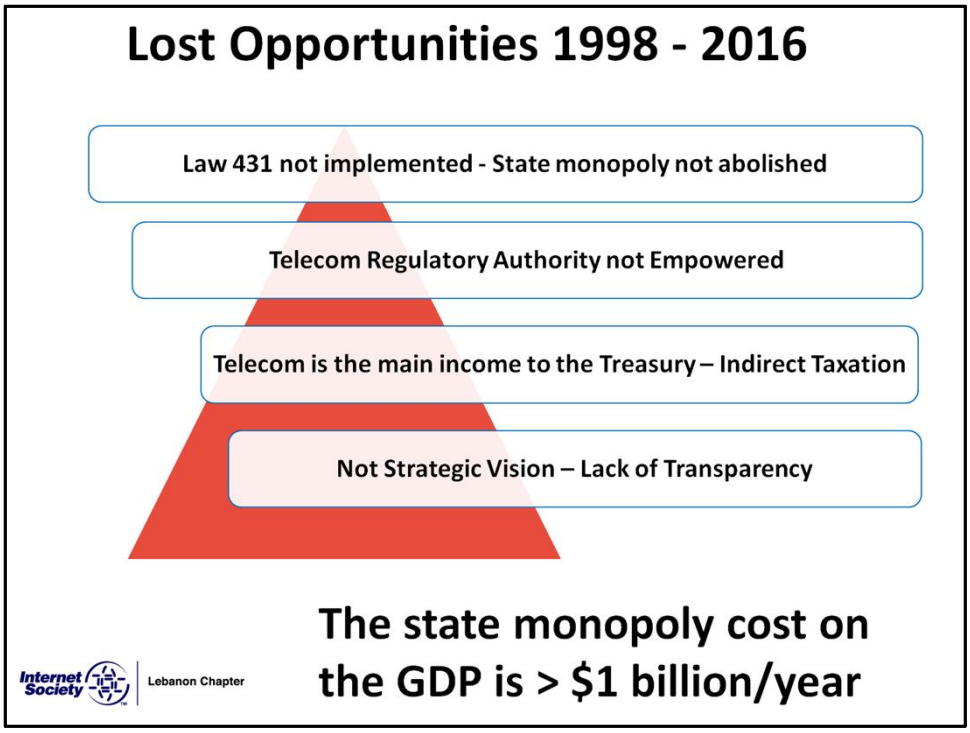
Limited Bandwidth / Prohobitive Costs

Sheet1

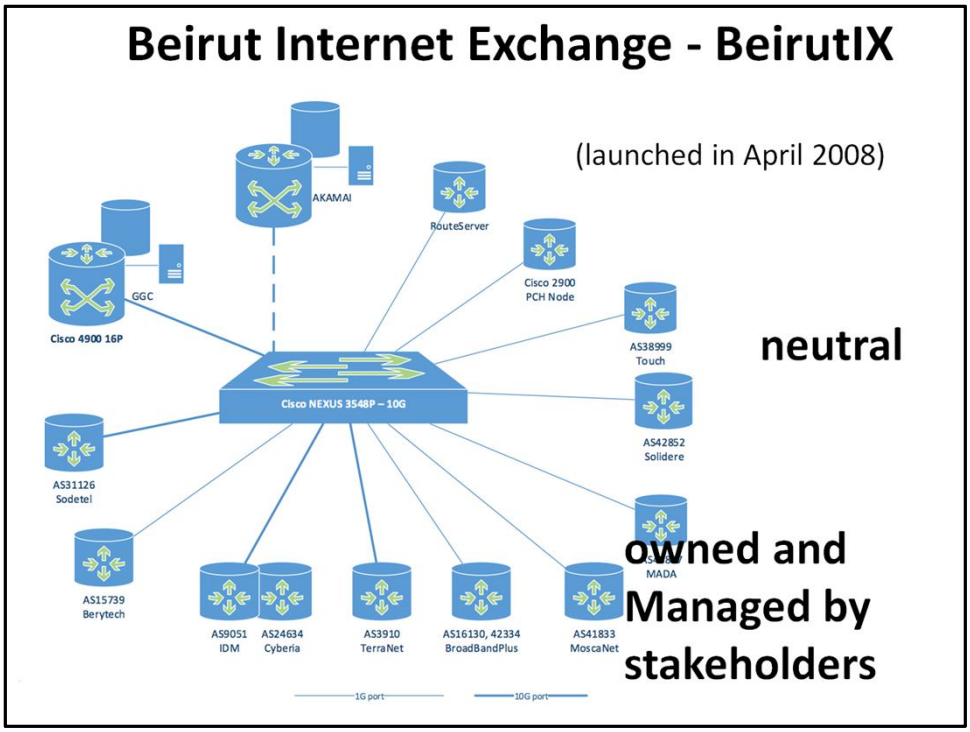
AUB INTERNET LEASED LINE CONNECTION OVER FIBER

(January 1998)

				USD Rate	1530
Description (64kbps)	**One Time USD**	**Monthly USD**	**Italie USD/year**	**Cyprus USD/year**	**Cyprus 128Kbps**
International Circuit to Sea-Bone Italie					
Half Circuit Lebanese PTT to Italie	$1,307	$8,382	$100,588		
Half Circuit Italian PTT	$3,000	$3,500	$42,000		
Italie		$1,917	$23,000		
Total international circuit Italie	**$4,307**	**$11,882**	**$165,588**		
International Circuit to Cyprus					
Half Circuit Lebanese PTT to Cyprus	$1,307	$6,706		$80,471	
Half Circuit Cyprus PTT	$1,161	$3,380		$40,565	$69,077
Cyprus				$0	$0
Total international circuit Cyprus	**$2,468**	**$10,086**		**$121,035**	
Local Lesead Line to International Node					
Circuit to Jdeideh	$1,307	$706	$8,471	$8,471	
NTU x 2	$2,000	$17	$200	$200	
Total Local Circuit	$3,307	$723	$8,671	$8,671	
Total Cost 64Kbps Internet Con. Yearly			$174,259	$129,706	
Total Cost 64Kbps Internet Con. Monthly			$14,522	$10,809	



I will cover the main IG events between 1998 and 2016.



The first Internet Exchange Point in Lebanon (IXP) was officially (launched in April 2008).

The BeirutIX is the fruit of a multistakeholder effort between the private sector and academic. The stakeholder worked hard to engage the MPT without success.

BeirutIX founding members included: Cyberia, IDM, Moscanet/WISE, New-Com Sodetel, Solidere BBM, and Terranet and Berytech.

Beirut Internet Exchange - BeirutIX

#	List of BeirutIX Peering Members	ASN
1	IDM	9051
2	Cyberia	24634
3	Solidere	42852
4	Connect	48847
5	Sodetel	31126
6	Moscanet	41833
7	Broadband Plus 1	16130
8	Broadband Plus 2	42334
9	Terranet	39010
10	MNET	41956
11	Smart Networks	31338
12	Pros-Services	57256
13	Switch Telecom	47719
14	I-Click	48629
15	I-Connect	15511
16	Basic ISP	25491
17	Bravenet	31390
18	Advanced Broadband Services	59955
19	Libalink	24892
20	Packet Clearing House	AS42, AS3856
21	Berytech	15739
22	Google	AS200817
23	Akamai	AS32787

(Source BIX August 2016)

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Beirut Internet Exchange - BeirutIX

CDN	Peak		Current	
	Ingress	Egress	Ingress	Egress
Google	2.5 Gbps	10.0 Gbps	0.9 Gbps	4.5 Gbps
Akamai			0.6 Gbps	2.0 GBps
ITWorksMe			0.2 GBps	1.0 Gbps
Total	***2.5 Gbps***	***10.0 Gbps***	***1.7 Gbps***	***7.5 Gbps***
Ratio		***4.0***		***4.4***
USD Saving per Year		***12,150,000***		***9,396,000***

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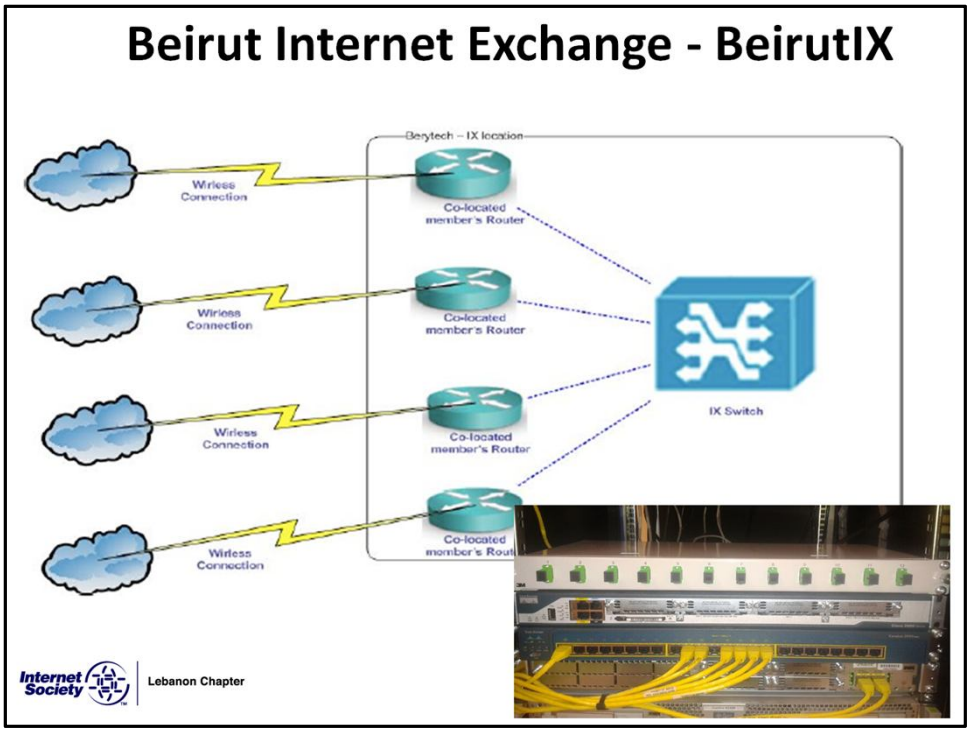
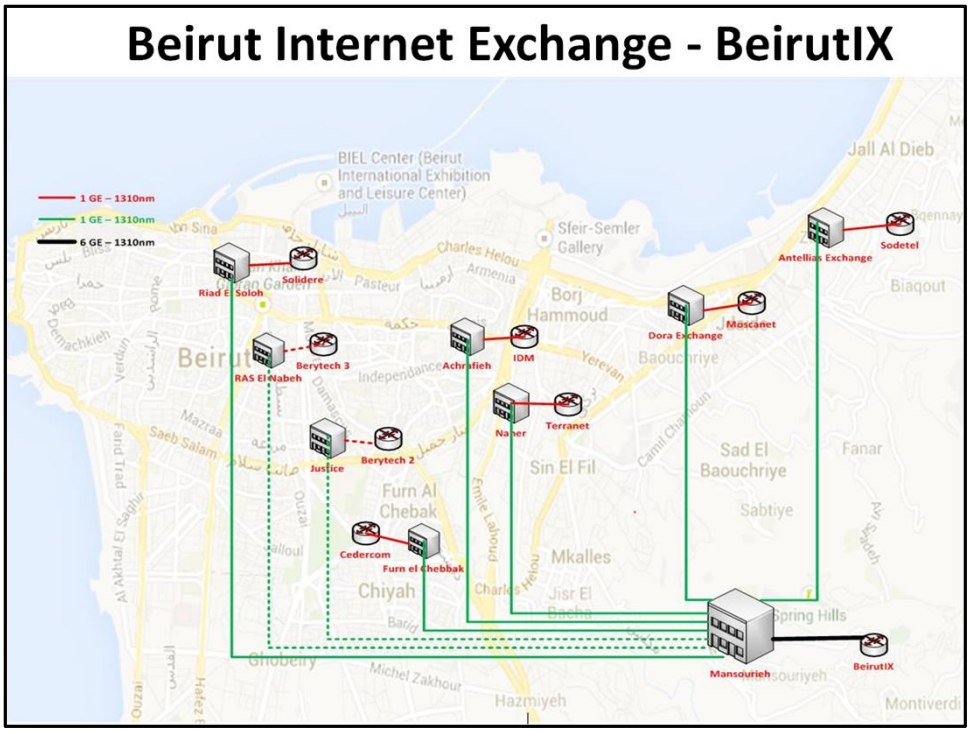


Wireless connectivity challenge.

Fiber available but not lit?



The multistakeholder are lobbying for fiber connectivity

The Broadband Manifesto

Economic Growth and Social Development for Lebanon

(Launched in May 2008)

endorsed by 6,436 organizations and individuals.

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Economic Growth and Social Development for Lebanon

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We, the undersigned, hereby make this deed publicly known with the aim of reclaiming Lebanon's position as a regional leader in the provision of products and services. Lebanese citizens, businesses, and civil society have a right to broadband connectivity, which we consider to be an enabler of economic growth and social development.

1. True Broadband
We demand affordable and reliable Broadband telecommunications services. By 2011, citizens and businesses should have access to 100Mb/s in all major population centers. Higher bandwidth services of up to 1 Gb/s should also be made available in Lebanon. "Broadband" should no longer be used loosely to refer to speeds of less than 1 Mb/s. Broadband prices in Lebanon should be comparable to the lowest prices available in the most competitive markets around the world.

2. Broadband For All
We demand that all Lebanese citizens should have access to Broadband services. Lebanon's competitive advantage is its people, with their unique combination of talent, skills, hard work, global outlook, and entrepreneurship. We demand universal broadband, which will unleash an untapped potential for innovation and creativity and will bring the promise of a prosperous future to all Lebanese, regardless of economic condition or place of residence.

3. Broadband for Economic and Social Development
We demand that Broadband telecommunications be given its proper role as an enabler of sustainable economic and social development. Telecommunications should not be perceived principally as a source of revenues to the treasury and the industry should not be overtaxed. Broadband creates new business opportunities, opens new markets, and attracts new investments. Broadband reduces costs and improves productivity and thus enhances the competitiveness of Lebanese businesses. We strongly beleive that Broadband will help create growth, prosperity, and development.

4. Privacy and Security
We demand that safeguards and enforcement mechanisms be put in place to protect the privacy of personal information while ensuring, at all times, the free flow of information.

5. Simple, Fair and Competitive Market
We demand the immediate opening of the Lebanese telecommunications market to competition at all levels of the network – international, national transmission, metropolitan, and access (last mile). We demand that this be done on the basis of rules and regulations that are simple, fair, and publicly available. These regulations must favor competition and penalize anti-competitive behavior.

6. Access to Public Infrastructure
We demand that all licensed service providers be given equal access to public property and the existing public infrastructure that has been already paid for by public funds, i.e., by Lebanese citizens. This will significantly reduce the Broadband "time to market," minimize public nuisance and disruption to public transportation due to construction, and will provide more affordable Broadband services.

7. No Restrictions on Content
We demand that citizens should be able to choose the services they wish and should have access to unrestricted information. Online content – ranging from government, media, culture, health, business, learning, entertainment, sciences, and inclusion – needs to be made accessible to all.

8. Support and Develop Local Content
We demand a concerted public-private partnership to support and develop local content. We call for the development of a local content industry, which allows the Lebanese to be producers and not only consumers in the global knowledge economy. We also call for the enforcement of intellectual property rights.

9. No Restrictions on Applications and Services
We demand that neither conditions nor restrictions be placed on providers in order to enable the most diverse provision of applications and services. Data convergence allows a wide array of new applications to be offered on the network, and we ask that digital content not be segregated into data, voice, and image.

10. The Development of Online Public Services
We demand that the Government develops public services to be delivered over broadband and for the availability of public information online.

Lebanese Broadband Stakeholders Group

برودبند أهم بند

(Launched in October 2008)

independent forum for people and organizations across the broadband value-chain to discuss and propose solutions related to the development and usage of broadband connectivity.

Initial membership 6,436 stakeholders.

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Lebanese Broadband Stakeholders Group

(Launched in October 2008)

The Lebanese Broadband Stakeholders Group is an informal and independent forum for people and organizations across the broadband value-chain to discuss and propose solutions for the issues related to the development and usage of broadband connectivity across the whole country and within the framework of the national interest.

Steering Committee and Spokesperson:

The Steering Committee will be working to achieve the objectives of the Broadband Manifesto within the framework of the Scope of Work defined in this document.

Membership in the Steering committee is currently open to Broadband Stakeholders of the private sector only. In time, the Steering Committee will evolve to become more representative of society at large, including membership from government, NGOs, academia, research, etc.

The ten (10) Members of the Steering Committee Oct 2008 – Oct 2009 are:

- Nabil Bukhalid (founding member)
- Gaby Deek (founding member)
- Salim Edde
- Jalal Fawaz
- Tony Issa
- Khalil Letayf
- Dani Richa
- Jennifer Sarraf
- Bassam Tueini
- Salam Yamout (founding member)

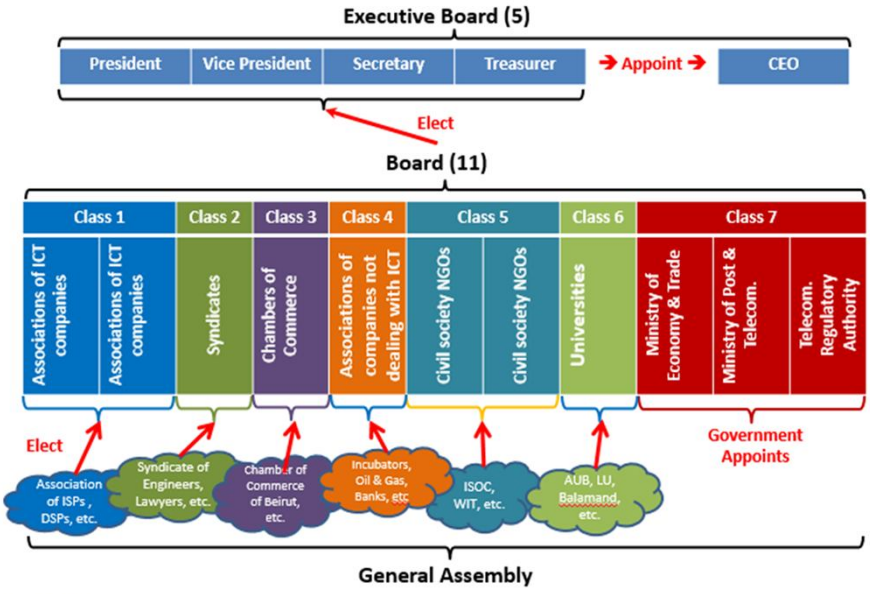
The bodies represented in the Steering Committee of the Lebanese Broadband Stakeholders Group are:

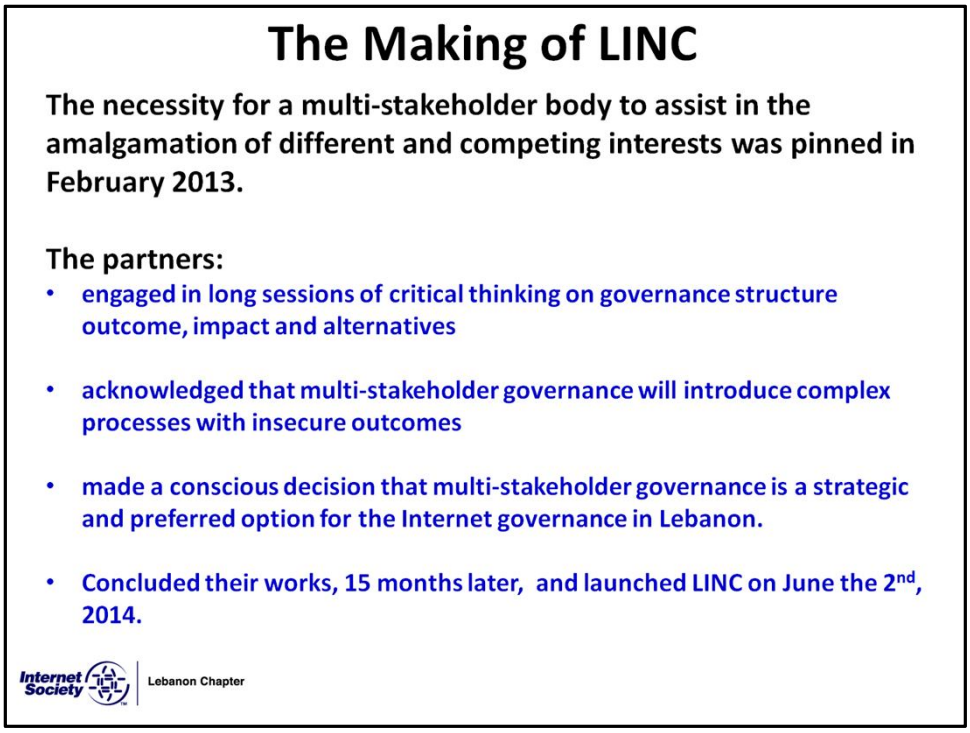
- All chambers of commerce - Enterprises and Small Medium Businesses
- Banks and all financial sector
- Manufacturing and industrial sector
- Entrepreneurs – Outsourcing – Global internet business
- Lawyers and Legal Framework
- ICT and Software industry – Content development
- MEDIA and content producers – Pre/Post production houses – TV and radio stations
- The Steering Committee has kindly asked Mr. Salim Edde from among its members to be its spokesperson.
- A seat for the 'Telecommunications Industry, Operators, Service Providers and Under Marine Cables' on the Steering Committee has been

reserved but remains vacant.

The Lebanese Internet Center (LINC) is a bottom-up public/private not-for-profit organization characterized by a democratic multi-stakeholder governance structure (Figure 1). LINC's strategic alliance between civil society organizations, corporations, syndicates, universities, research organizations and the government of Lebanon emanated from major and long standing gaps in Internet governance in Lebanon affecting the sustainability and growth of the Internet and more specifically the operation and business continuity of the Lebanese Domain Name Registry (LBDR).

LINC Governance Structure





Starting February 2013, the partners engaged in long sessions of critical thinking on governance structure outcome, impact and alternatives and, while they acknowledged that multi-stakeholder governance will introduce complex processes with insecure outcomes, they made a conscious decision that multi-stakeholder governance is a strategic and preferred option for the Internet governance in Lebanon. On June the 2nd 2014, 15 months later LINC was launched from the Ministry of Economy and Trade in the presence of ICANN President.

The Making of LINC

لمركز اللبناني للانترنت (لينك)ا

مـؤسـسـو الـجـمـعـية

الجهة	ممثلة بـ
جمعية مجتمع الانترنت في لبنان (علم وخبر رقم2073)	نبيل اديب بوخالد
وزارة الاقتصاد و التجارة	سلوى رحال فاعور
نقابة المحامين بيروت	د. شربل القارح
الهيئة الناظمة للاتصالات	د. عماد يوسف حب الله
اتحاد غرف التجارة و الصناعة في لبنان	د. نبيل حنا فهد
جمعية التمجمع النسائي لتكنولوجيا المعلومات (علم وخبر رقم134 / أد)	سلام سهال يموت
جمعية مدراء المسؤولين عن تكنولجيا المعلومات في لبنان (علم وخبر رقم 5471)	رفول الياس رفول
الجمعية اللبنانية للاتصلات (علم وخبر رقم 29)	بسام لطفي جابر
جمعية مؤسسة بيريتك (علم وخبر رقم 26/أد)	روحاداد. نقولا سامي
جامعة البلمند	وليد فيليب كرمد.

LINC is a legally registered association under the Lebanese Constitution, but in effect and based on a widely contested practice by the Ministry of Interior, LINC is unable to open bank accounts and operate unless if the Ministry of Interior issues a certificate of association. The Ministry of Interior alleges that they referred LINC's bylaws to the Ministry of Telecommunication for their comments and "No objection".

Despite the fact that the Ministry of Telecom was the cosponsor of the multi-stakeholder works that led to the creation of LINC and that the previous Minister of Telecom, Nicolas Sehnaoui, officially appointed Diana Bou Ghanem to represent the Ministry as a founding member of LINC and Imad Hoballah to represent the Telecom Regulatory Authority (TRA)as a founding member.

After many follow ups with Minister Boutros Harb, the Ministry of Telecom did not provide the Ministry of Interior with their comments and LINC's operation as association is on hold.

Numbers, Figures and Statistics

lack of transparency from MPT results in distrust, imagination, and **guesswork**

reliance on **crowdsourcing** to develop data sets results in issues with **data quality**

use at your own **risk,** the author does not offer any warrantee and disclaim all responsibility

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Numbers, Figures and Statistics

	1996	2008	2012	2015
avg Internet access (Mbps)	0.05	0.32	1.27	2.15
avg consumption (GB)	0.49	2.16	11.3	30.9
avg price ($)	55	41	32	23

DSL users	577,000
Cable users	677,000
3G/4G users	2,850,000
penetration	86%
penetration on fixed	25%

Internet Society Lebanon Chapter

Numbers, Figures and Statistics

#	List of Licensed ISPs	#	List of Licensed ISPs
1	IDM (NETLINK)	23	Libalink SARL
2	Cyberia	24	Fiber Communication Network SARL
3	Terranet	25	Giacom SARL
4	New Com (FiberlinkNetworks)	26	شركة الاتصالات والتجارة العالمية SARL
5	Sodetel	27	Connexions Services SARL
6	Broadband Plus	28	Swift Broadband SAL
7	ComNet	29	Libatech SARL
8	Farah Net	30	Sama Telecom
9	Keblon	31	E- Sharing corporation
10	Lebanon OnLine	32	T.H Global Vision Company
11	Masco Group	33	Top Net
12	Moscanet (Wise)	34	Matrix
13	Onet Plus	35	Safe Net
14	Pros Services	36	Liban Company
15	Tri Network Consultants	37	شركة إبراهيم الديراني وشركاه
16	Virtual ISP (VISP)	38	SkiesPro Networks
17	Ferrari Networks	39	M Net
18	GC Group SARL	40	DSP Hequet
19	121 SARL	41	Admins Lebanon
20	ICLIK SARL	42	EagleNet
21	Advanced Broadband Services SARL	43	Bravenet
22	IConnect SARL		

(Source MPT - August 2016)

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Numbers, Figures and Statistics

#	DSPs
1	Cable One
2	Cedarcom
3	GlobalCom Data Services
4	New Com (FiberlinkNetworks)
5	Pesco
6	LCNC S.A.L
7	TriSAT S.A.R.L.
8	Sodetel
9	Solidere
10	Waves S.A.L.

(Source MPT - August 2016)

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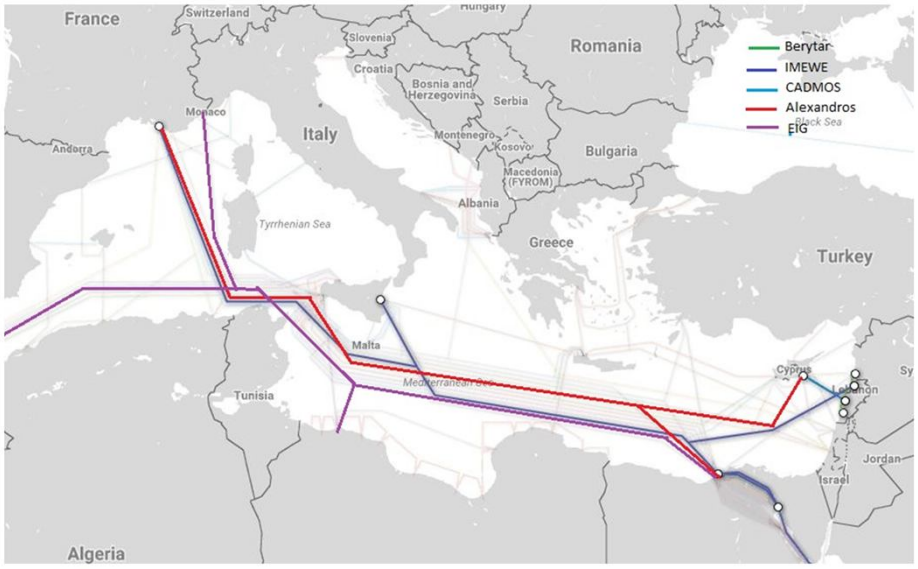
Numbers, Figures and Statistics



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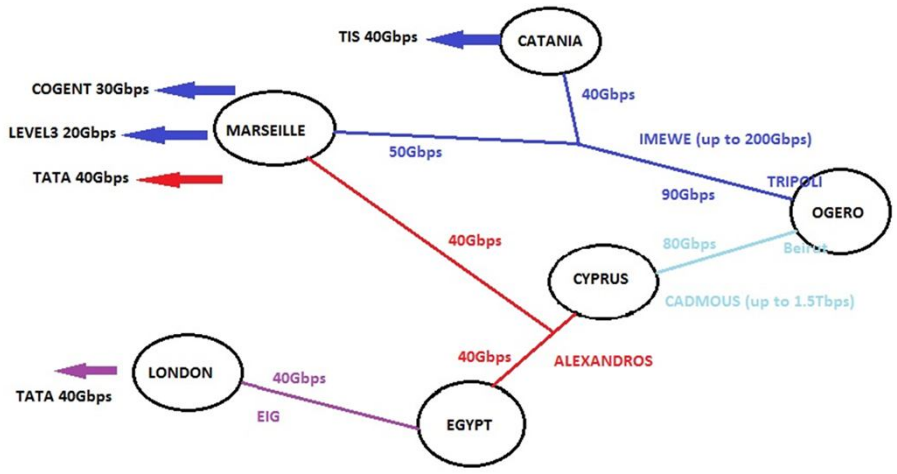
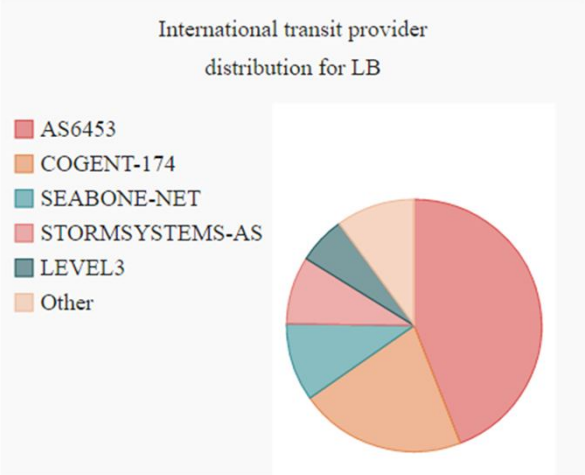
Numbers, Figures and Statistics



Internet Society Lebanon Chapter

Numbers, Figures and Statistics



Total number of ASes: 132

Total number of prefixes: 1182

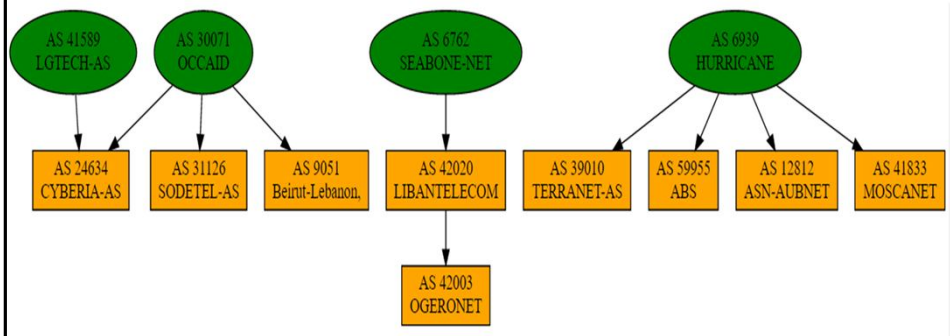
This report was last updated on 11:47:23 07/19/16 CEST
based on RIS raw data

Internet Society Lebanon Chapter

Numbers, Figures and Statistics

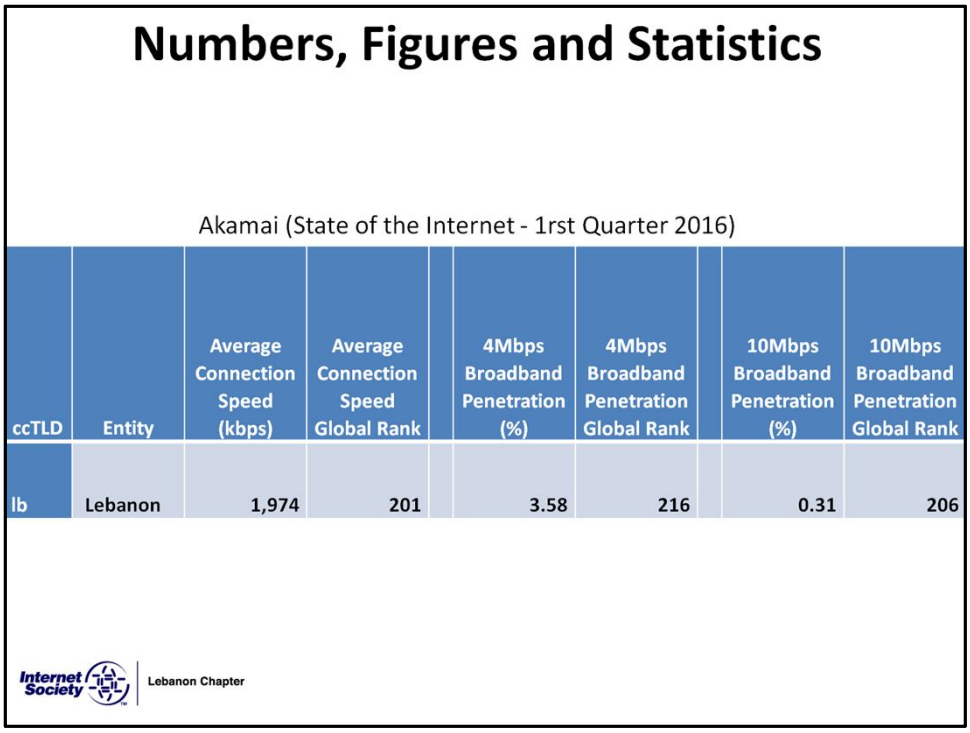
IPv6 AS

Number of nodes: 13 Number of edges: 10



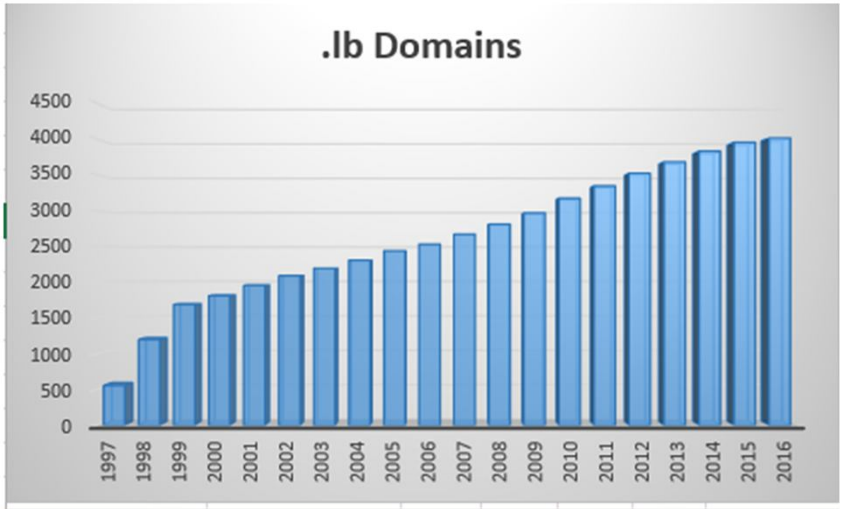
Internet Society Lebanon Chapter

This graph was last updated on 11:40:59 07/19/16 CEST
based on RIS raw data



The reported data are from Akamai (State of the Internet - 1rst Quarter 2016) an reflect actual figures. Akamai uses its globally distributed platform to process trillions of requests each day, this allows Akamai to gather massive amounts of data on metrics related to connectivity and media delivery. Being from a CDN provider I anticipate that the data is skewed on the upper side and reflect download speeds (attached is compiled global measurements from Akamai data for Q1 2016).

Numbers, Figures and Statistics



17-Jun-16	com.lb	edu.lb	gov.lb	net.lb	org.lb	Grand Total
Grand Total	3070	291	271	43	337	4012

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Thank you

The Internet is for everyone!

Nabil Bukhalid (bukhalidn@gmail.com)

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