

هيئة الاتصالات وتقنية المعلومات
Communications and Information Technology Commission



Internet Development in Saudi Arabia

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Agenda

- Section 1: The Saudi ICT Market
- Section 2: Internet Usage in Saudi Arabia
- Section 3: Internet Development Strategy
- Section 4: National Internet Exchange
- Section 5: SPAM
- Section 6: IPv6



What is not covered:

- DNS:
 - Arabic Domain Names
 - Flat registration, Registry registrars, etc
- Filtering
 - Dynamic URLs
 - Multi-vendor support
- International Internet Exchanges



[Section 1]

The Saudi ICT Market



The Saudi ICT Market (End of 2007)

Population

- Population: **24.47 million** (74% Saudis)
- Annual growth **2.31%**, (ICT, fastest growing sector: **9.3%**)
- Young Population (about **50%** less than 20)
- Large Household Size (Average **5.7 persons**)

Economy

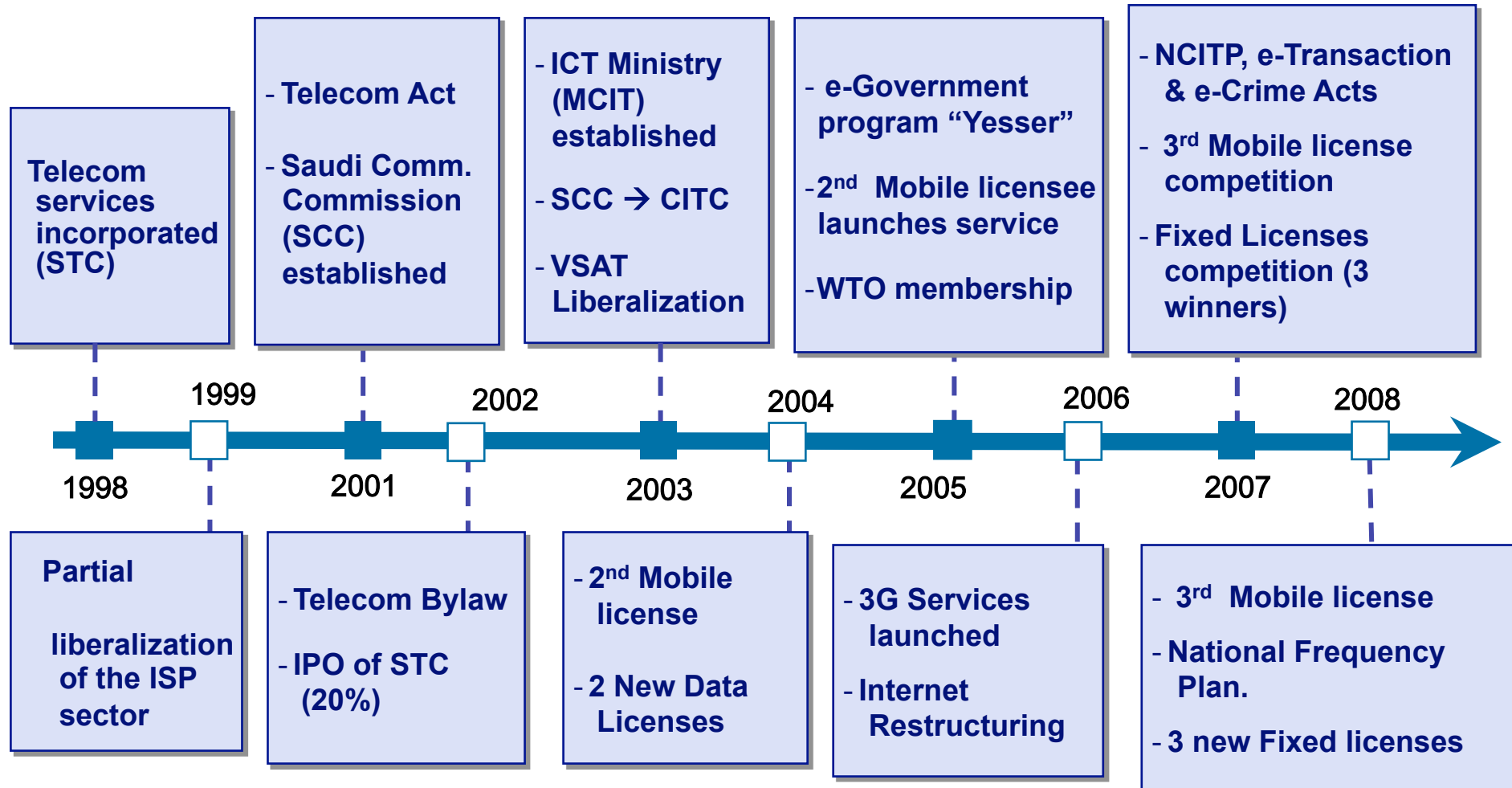
- GDP > US\$ 380B – GDP per capita > **US\$ 15,600**
- Heavy investments in creating a leading ICT economy
- 30 %** of ME ICT Spending

ICT Indicators (end 2007)

- Fixed Line Penetration/ Capita **16.4%**
- Mobile Penetration **116%**
- Broadband Penetration /Household **11%** (**15% by mid 2008**)
- Fixed lines Penetration/ Household **66%**
- Internet Penetration **31%**
- PC's **43%**



Saudi ICT Sector Reform Timeline

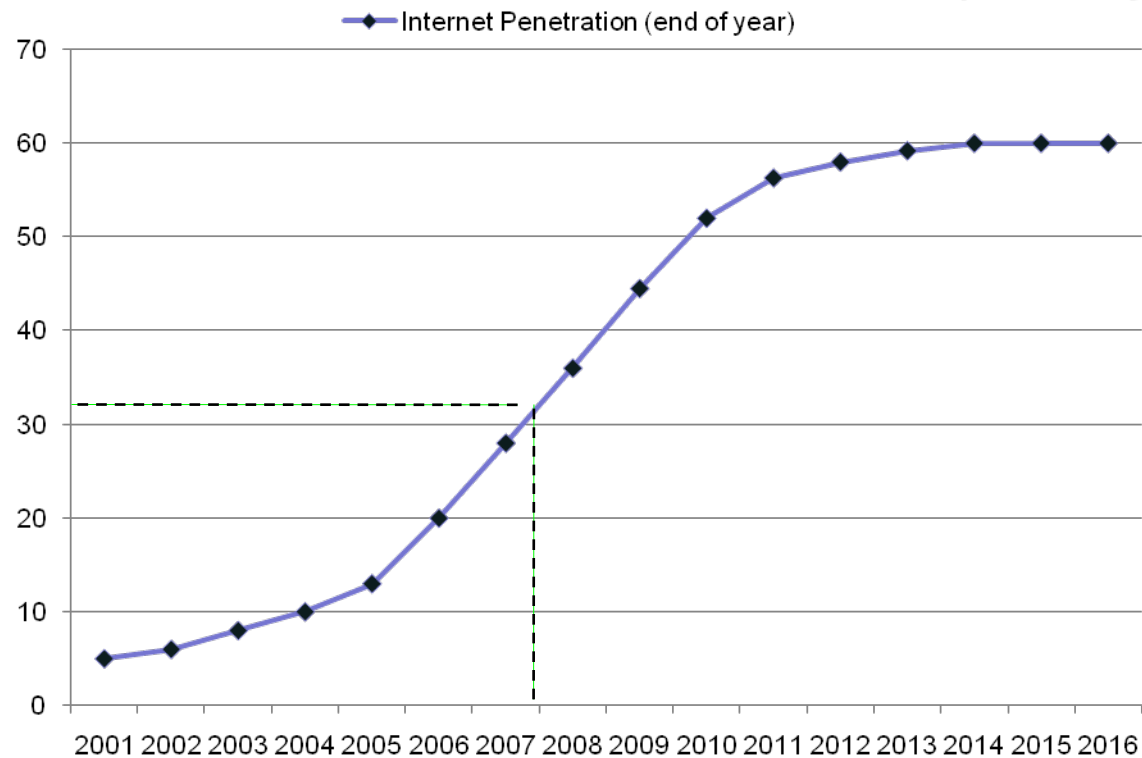


Internet Penetration



Internet Penetration Forecast (end of year)

Internet Penetration Forecast (end of year)





[Section 2]

INTERNET USAGE IN SAUDI ARABIA



Internet Usage in Saudi Arabia



- ✚ CITC wanted to understand the Internet status and potential **growth within the Kingdom**;
- ✚ **Conducted a comprehensive market research** study covering a wide range of the Internet related indicators in Saudi Arabia;
- ✚ The study would be done annually and will be repeated for minimum of **three years**;

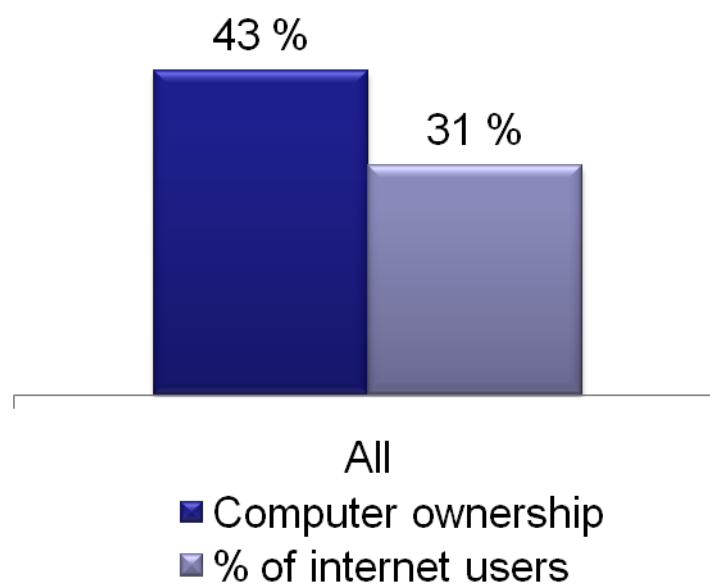
Segments	No. of Interviews	Margin of Error (%+ or -) At 95% Confidence Level
General consumer (Individuals)	7,570	1.1%
Business establishments	1,296	3.1%
Health sector	400	4.9%
Education sector	700	3.7%
Government sector	441	4.9%
TOTAL	10,407	
Expert Interviews	9	



Individual – Internet & PC Penetrations

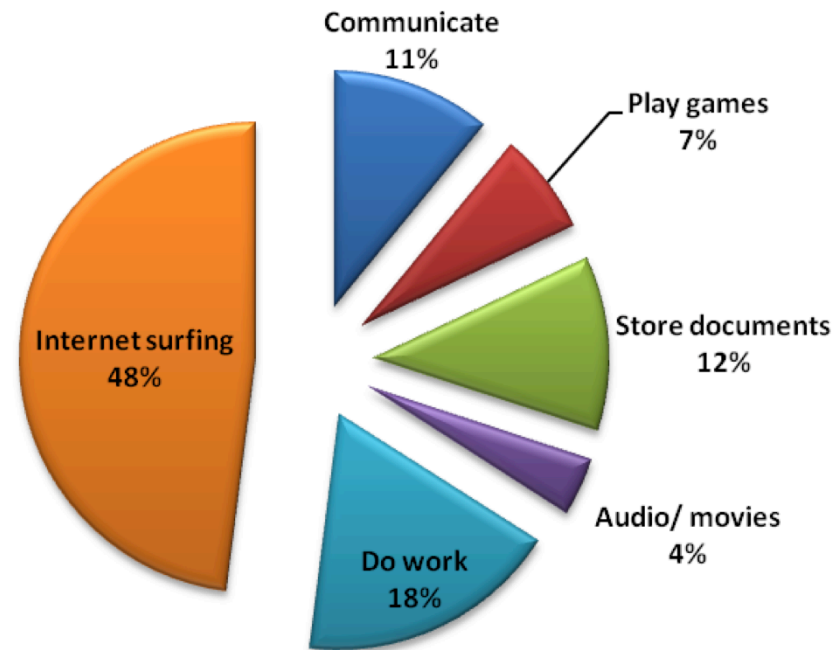


	UN ICT	World Bank	ITU	Arab Advisor
PC	34% (2004)	38% (2005)	43% (2008)	-
Internet	19% (2006)	19.8% (2006)	31% (2008)	30% (2007)



Individual – Main Reason for using Computers

Main reasons for using computers



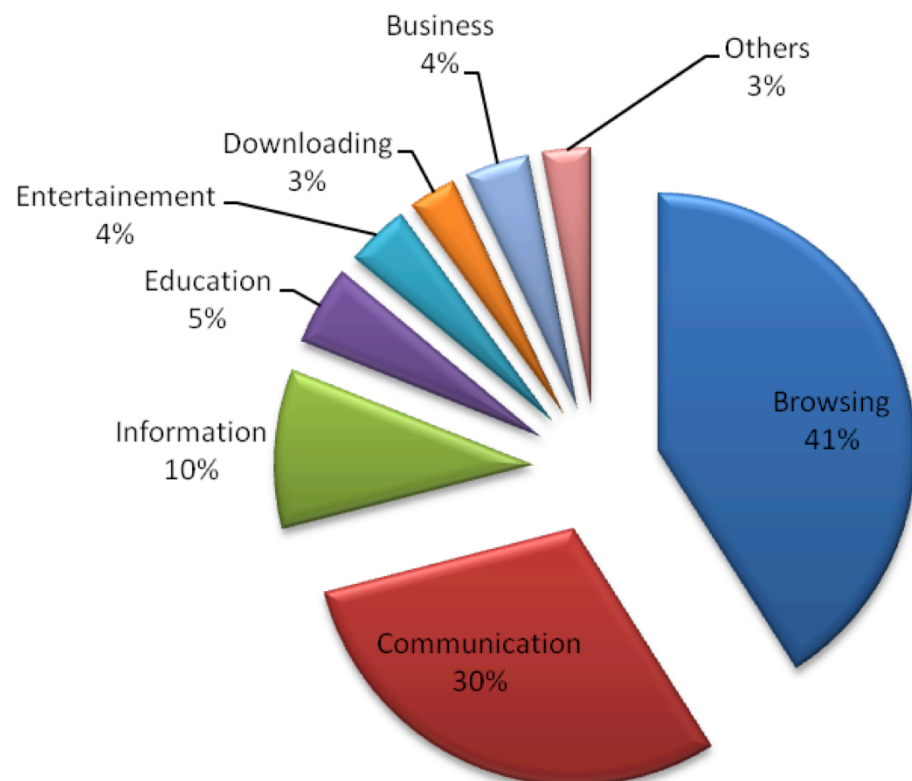
Around 60% for Internet reasons

Base : All Computer Users
(1149)



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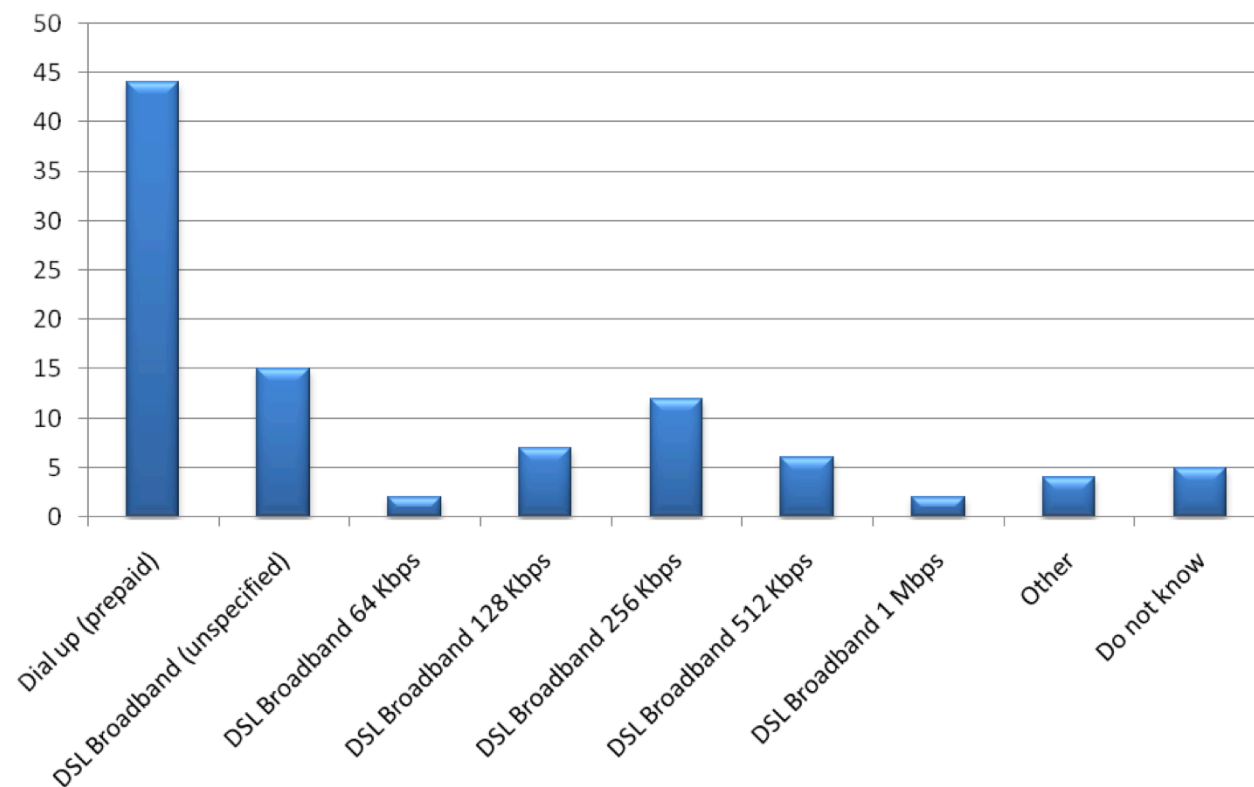
Individual – Main Reason for using Internet



Main Reason for using Internet



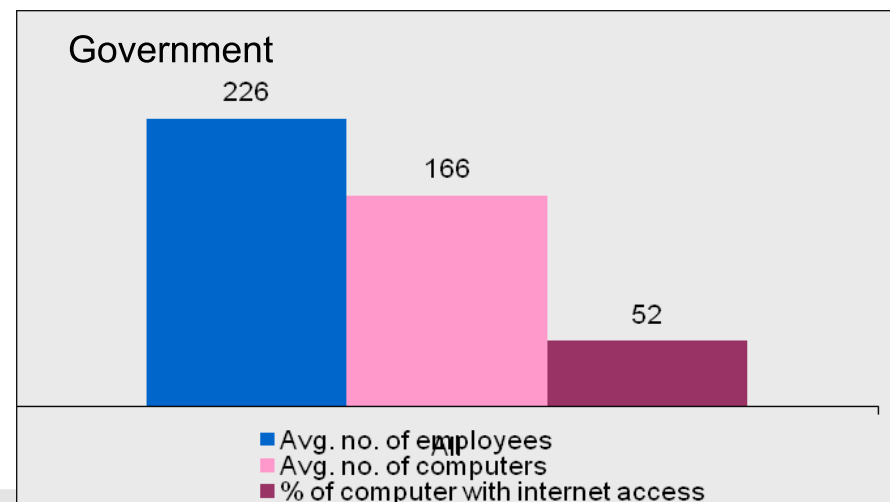
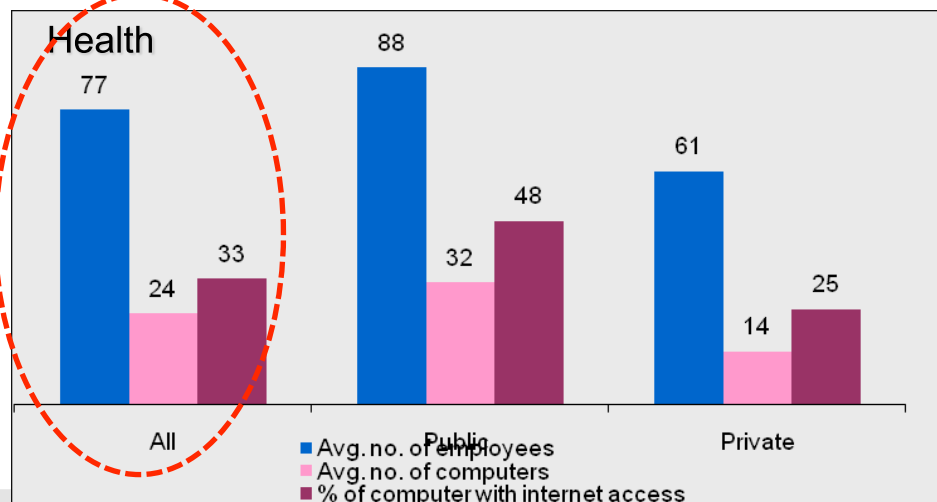
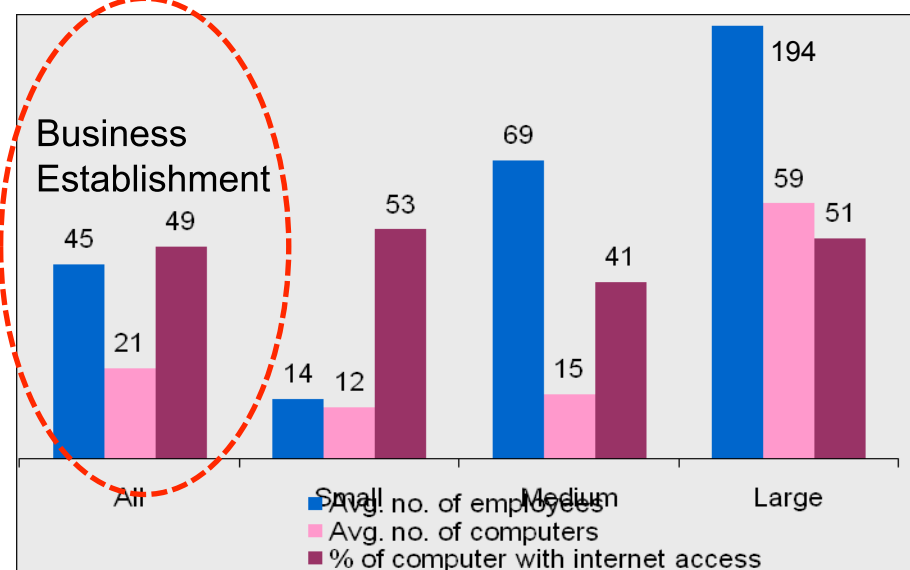
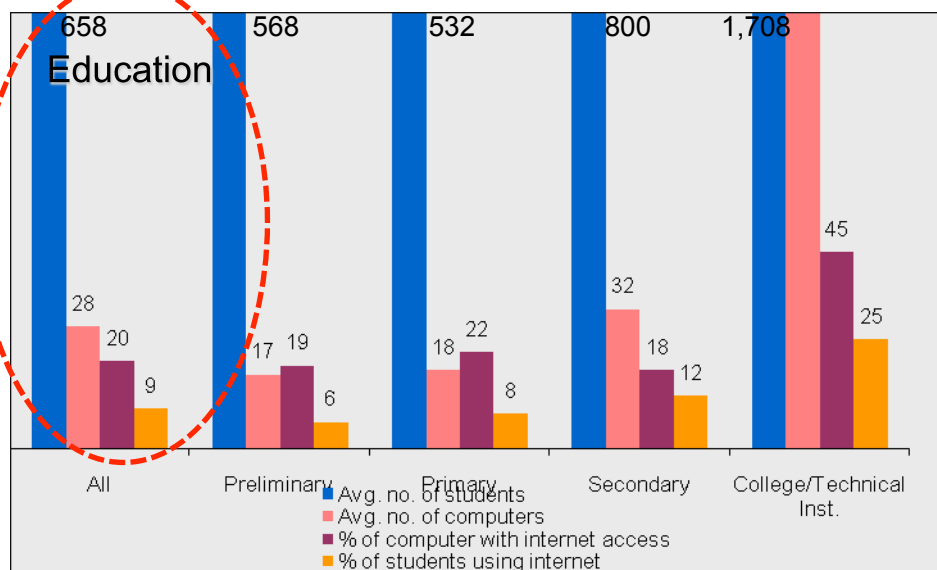
Individual – Type of connection



DSL represents almost 50% of the connections



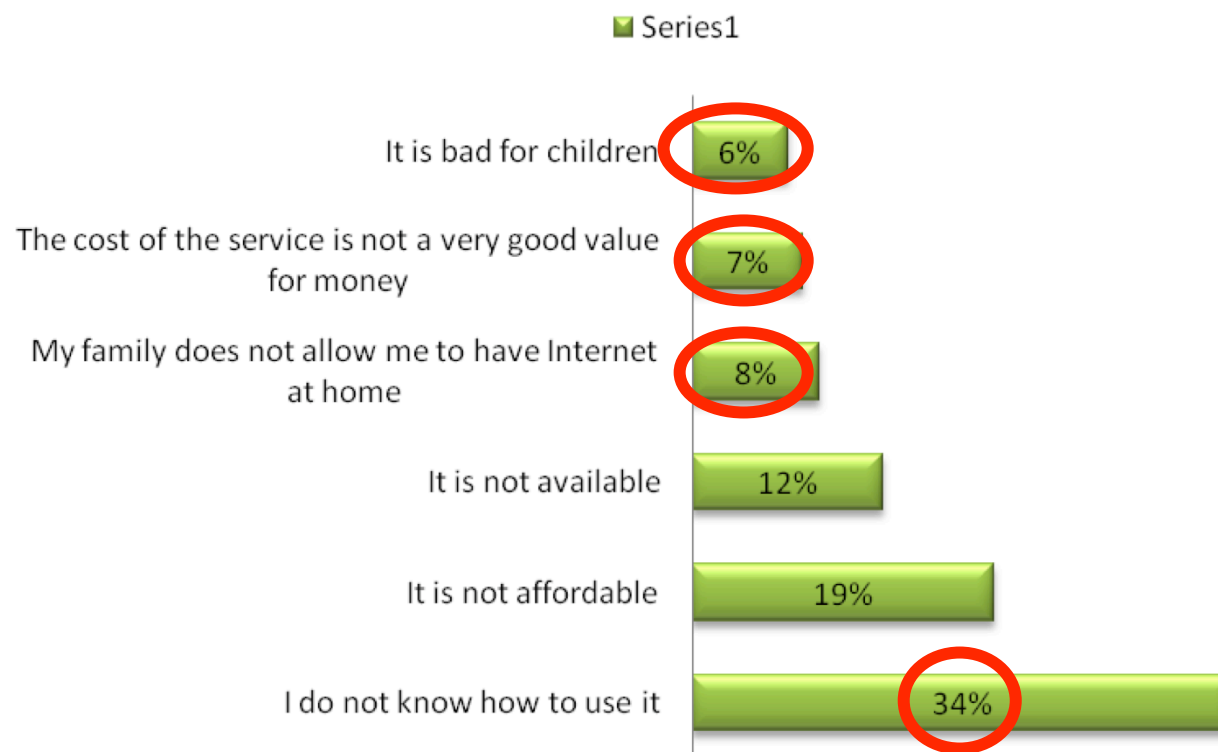
PC Penetration at Work & School



Individual – Reasons for not using internet

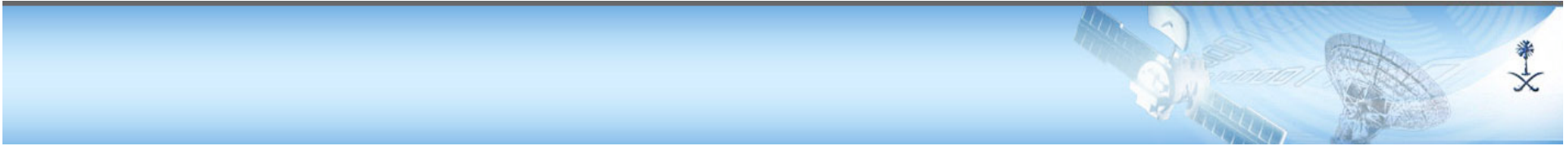


Reasons for not using internet



Awareness will help solving problems for 60-70%
USF will help





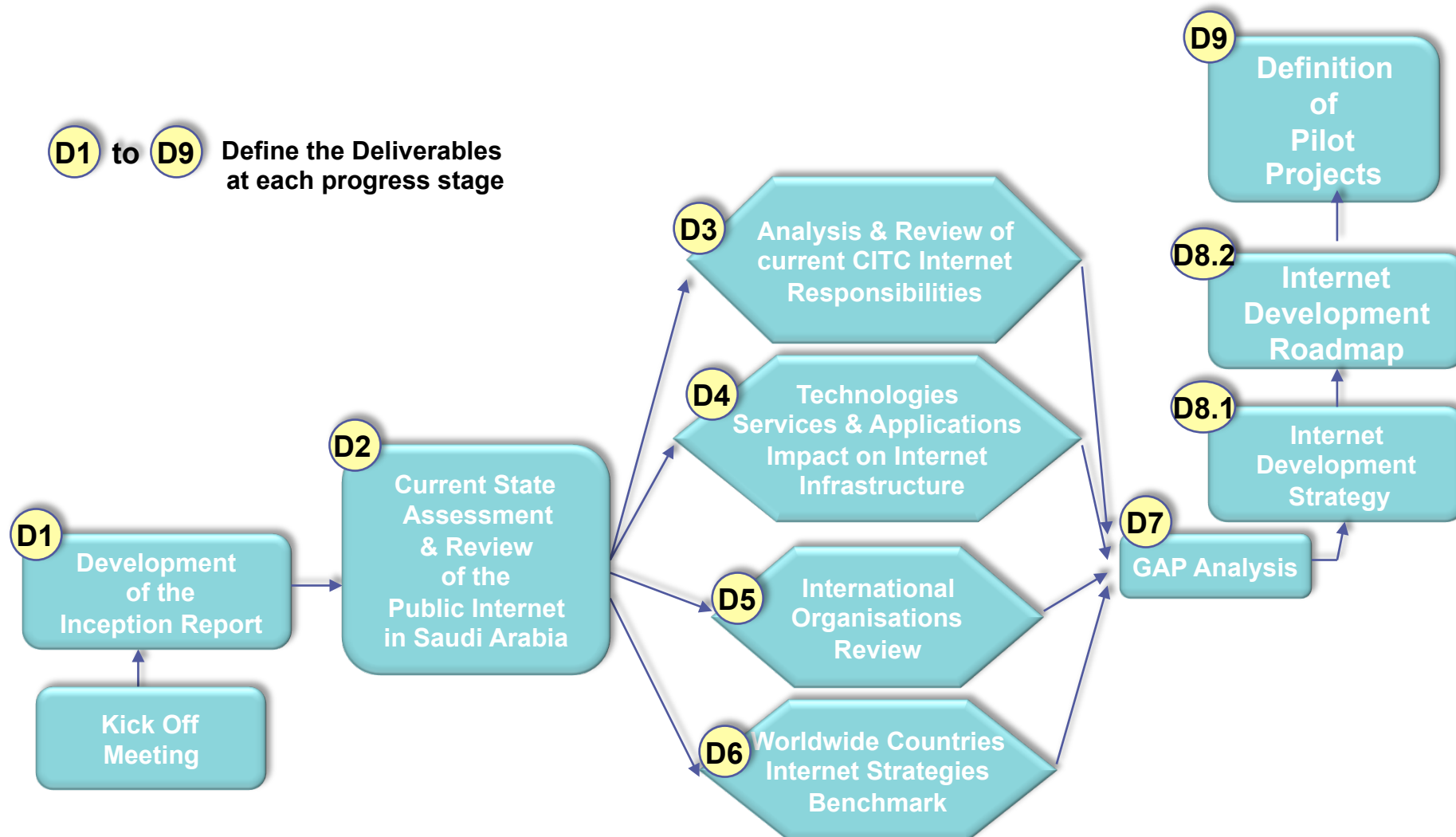
[Section 3]

INTERNET DEVELOPMENT STRATEGY



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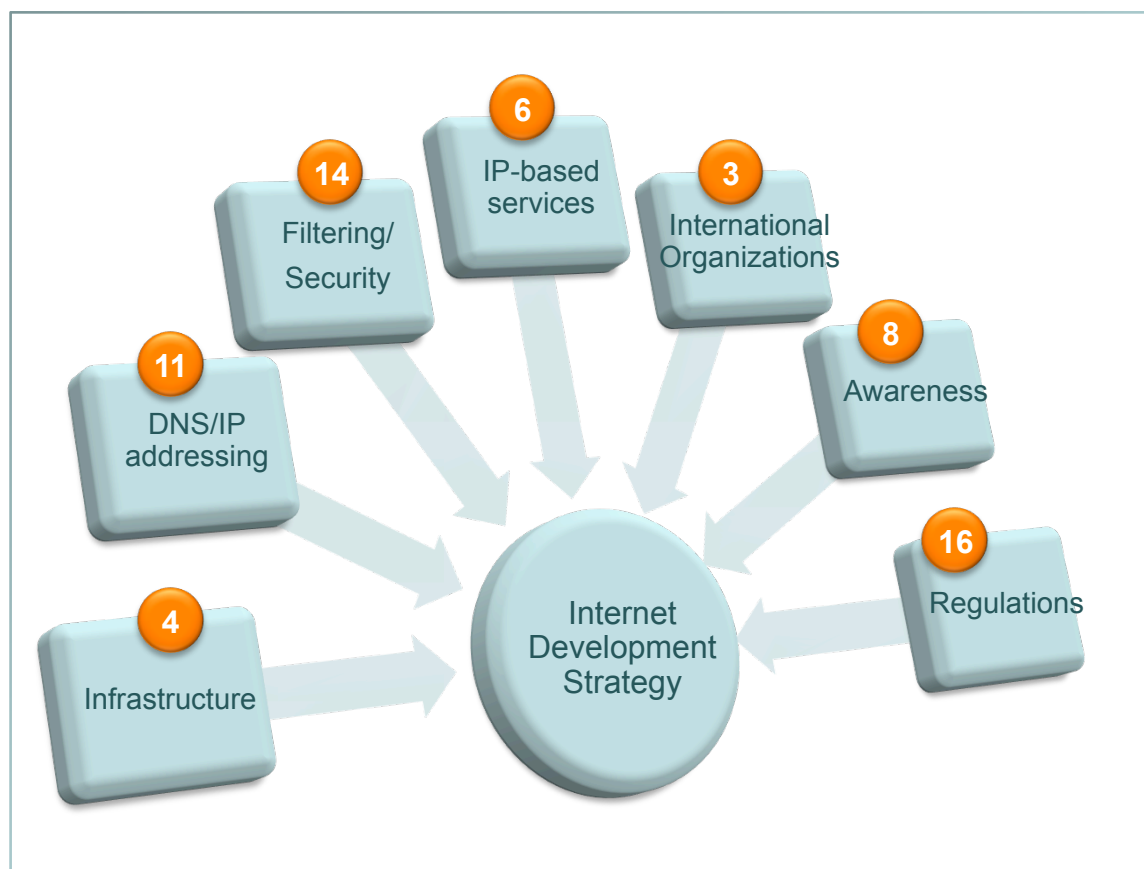
Internet Development Strategy



Internet Development Strategy Map

7 Streams

- + Infrastructure: **4 projects**
- + DNS/IP addressing: **11 projects**
- + Filtering/Security: **14 projects**
- + IP-based services: **6 projects**
- + International Organizations: **3 projects**
- + Awareness: **8 projects**
- + Regulation: **16 projects**

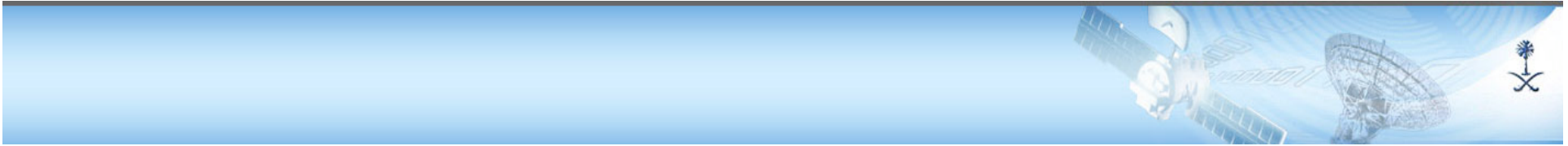


Project: Well defined actionable scope of work in direct relation with the gaps

Stream: Similar projects are listed together (depending mainly on CITC organization)

Project Group: After approval, projects are clustered into groups for easier management and procurement





[Section 4]

NATIONAL INTERNET EXCHANGE



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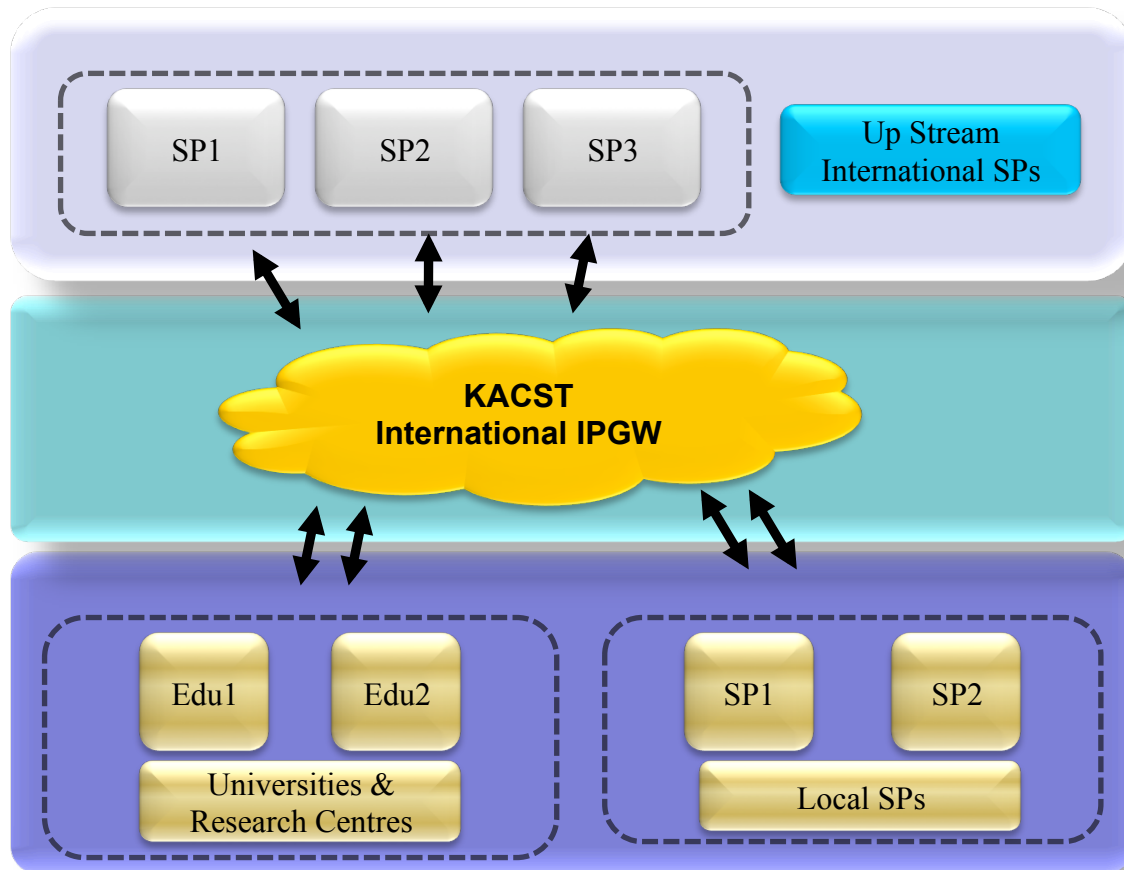
National Internet Exchange - Why NIXP?



- ✚ Multiple international internet gateways in Saudi Arabia;
- ✚ 9 providers could have international Internet gateways;
- ✚ **No direct exchange** of traffic between those providers;
- ✚ Currently, routing part of National Internet traffic goes through **international hops**;
- ✚ Detailed **assessment** was done by CITC ;
- ✚ Workshops were conducted with Service Providers;
- ✚ NIXP Project;



Internet Structure - before 2004



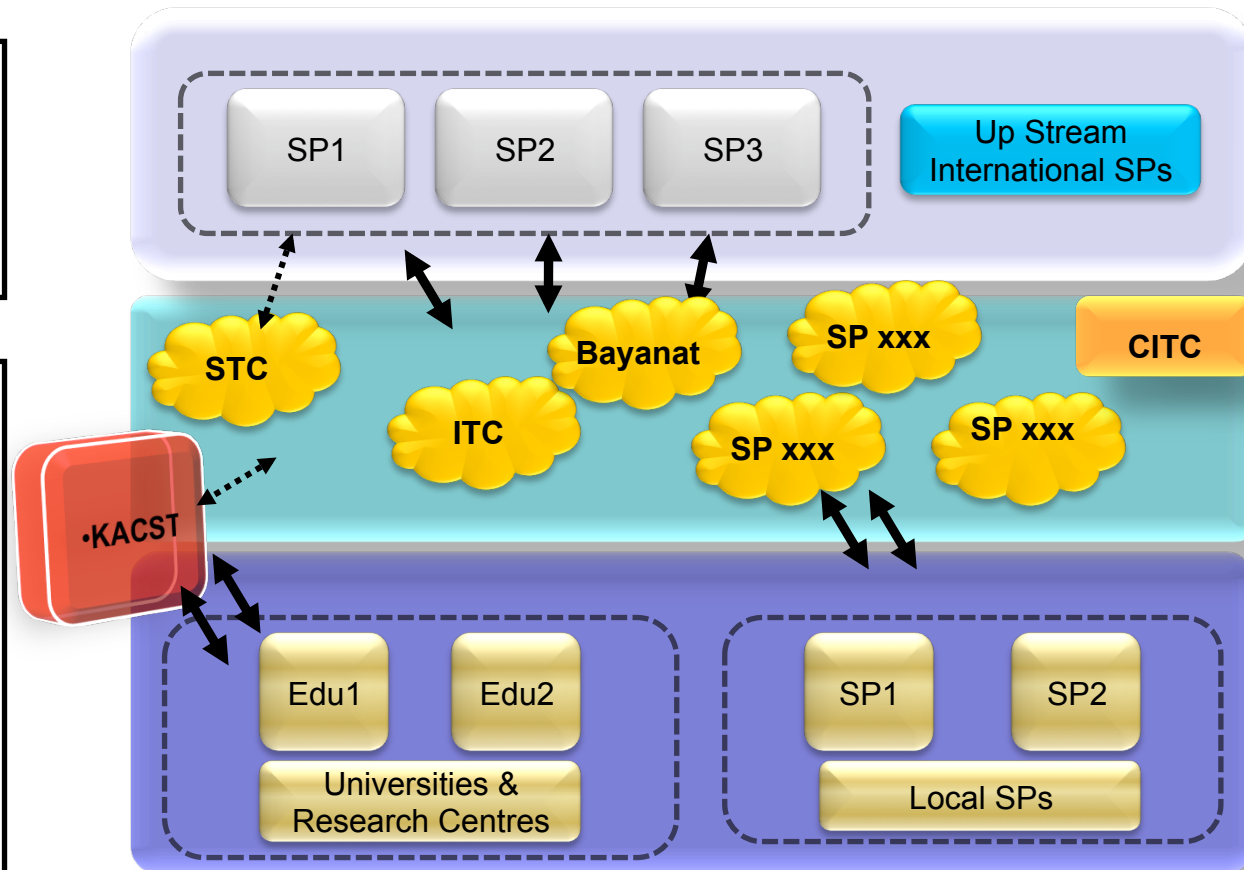
Current Internet structure

- Currently no national/local peering between DSPs

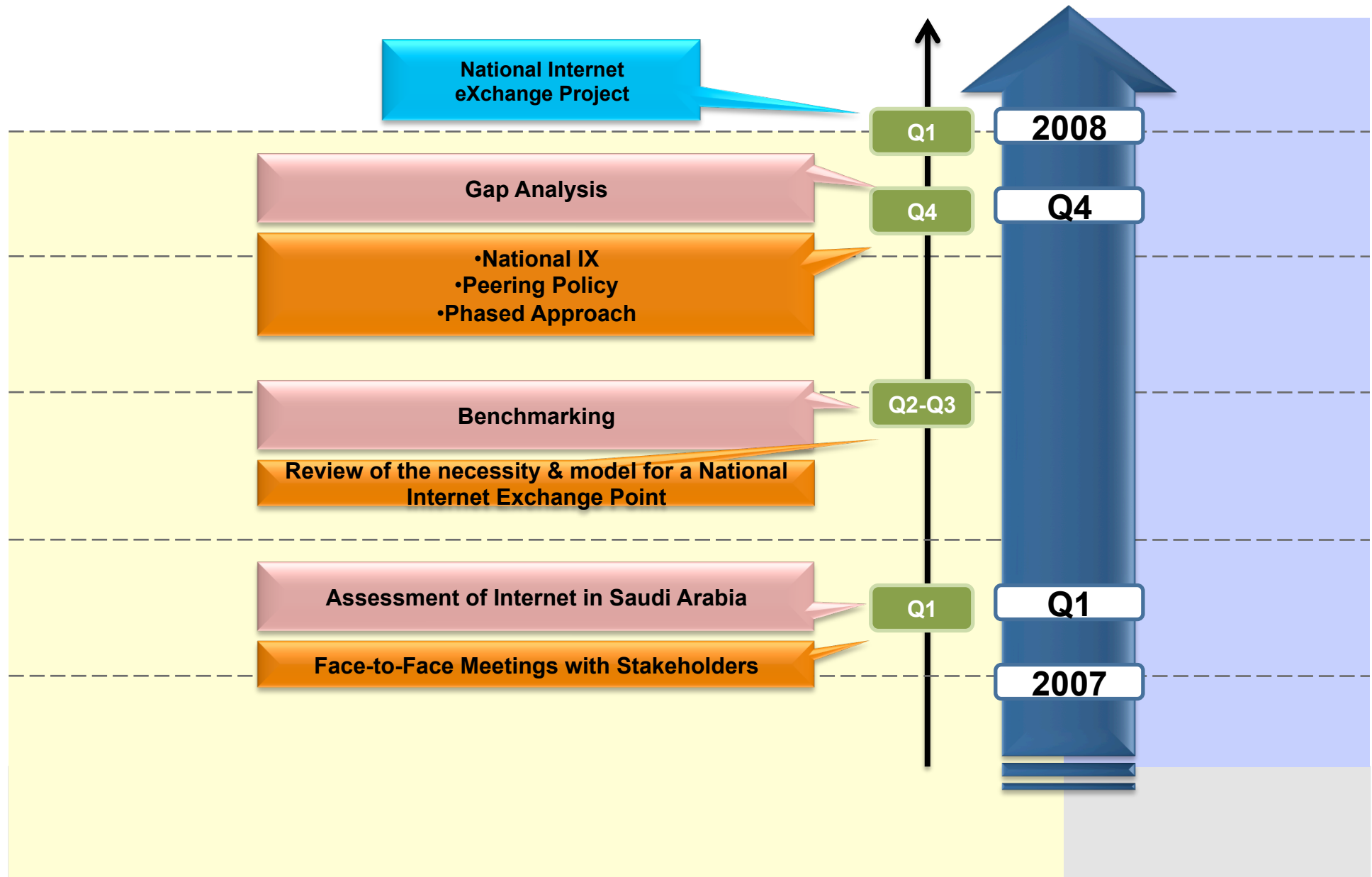
- Part of the traffic is being exchanged through international link and ISPs

- Local ISPs connected to different SPs may exchange traffic using international links and peering between International Service Provider outside KSA

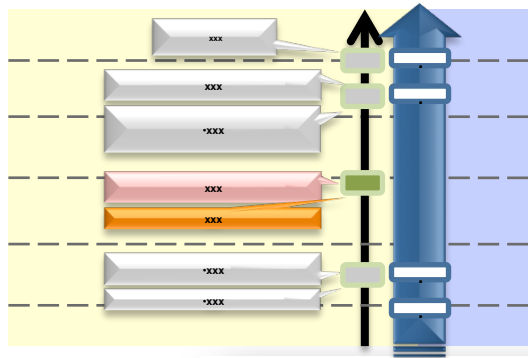
- In current environments some interconnections exist between SP



National Internet eXchange Project



Benchmark



✚ Benchmarking Over 15 countries;

✚ Neutrality was a key issue

Ownership	Growth potential	Ease of initiation	Neutrality	Competence level
University / Research				
Non-profit ISP Association				
Governmental/ Institutional				
Private ISP ownership				
Incumbent Telco				
Telehousing Companies Telecom Hotel				

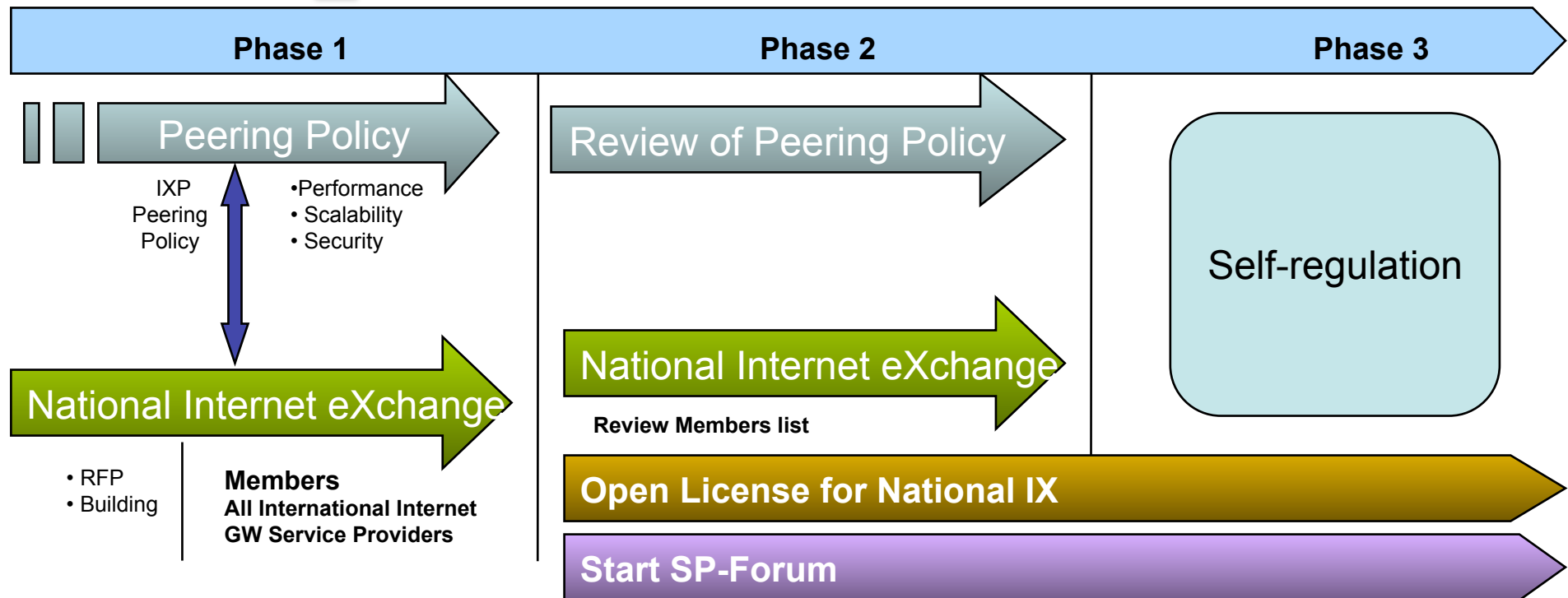
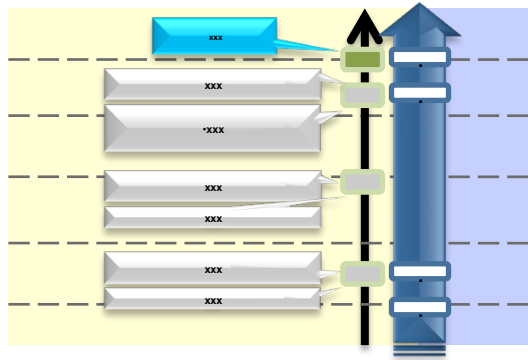
Legend:

Highest Score

Lowest Score



Strategy



National Internet eXchange Project (IX.SA)



Objective

- ✚ Keep the national internet traffic locally;
- ✚ Increase the current level of Internet services to meet national needs (security, performance, reliability and costs);
- ✚ Facilitate National Internet interconnection;
- ✚ Kick off MAY 2008

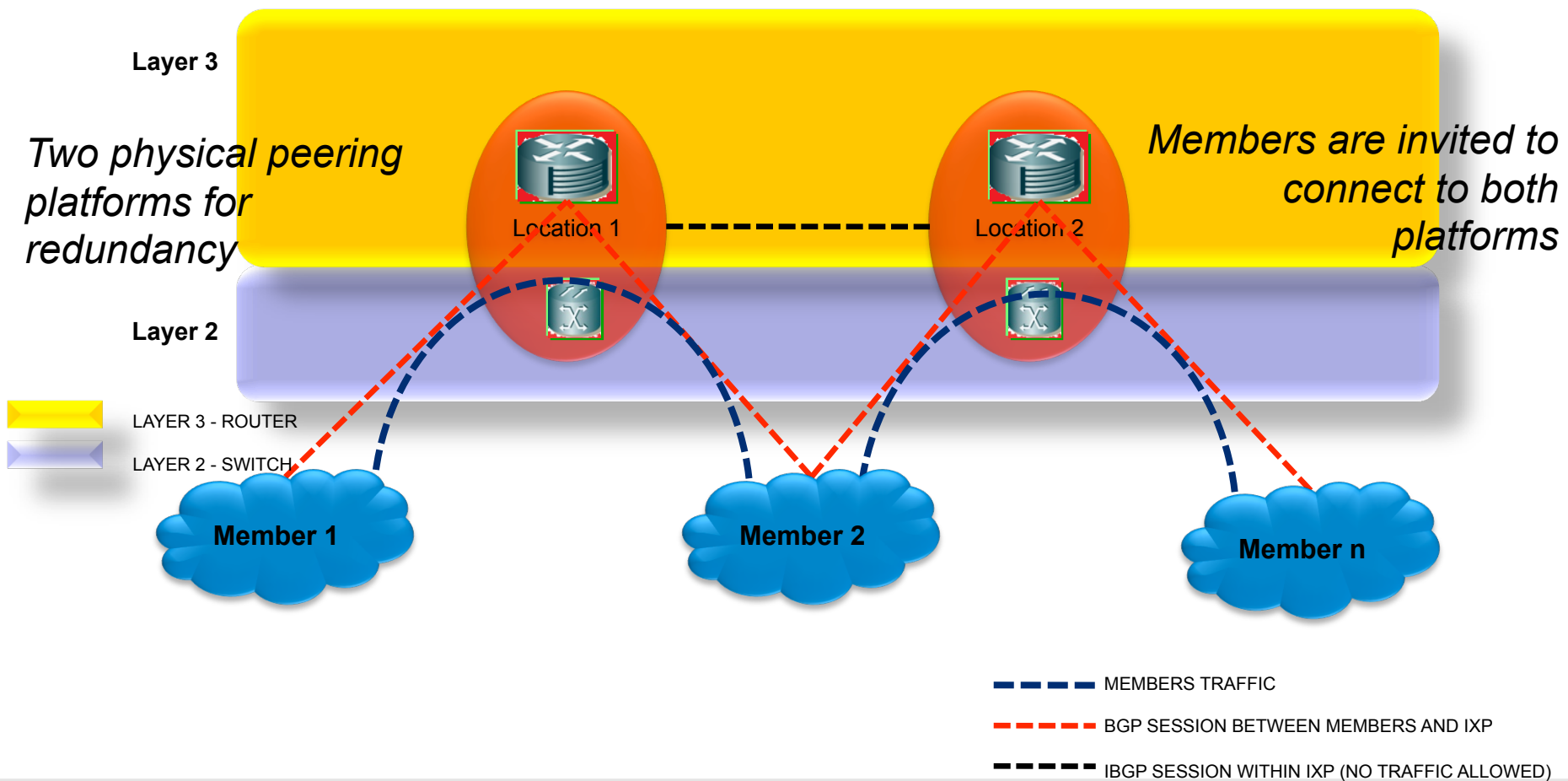


Project Scope

- ✚ Design, Build, and Operate an Internet eXchange;
- ✚ Located in **two different sites** with redundant infrastructure;
- ✚ Allow Peering for **approved Members**;
- ✚ **Secured** environment and services;
- ✚ High Availability;
- ✚ Operation for 2 years;



IX.SA High Level Architecture



CITC Interconnection & Settlement Policy Decisions

3 interconnection scenarios

-  Direct interconnection between Members;
-  Interconnection via the National Internet Exchange Point (NIXP);
-  Both options;

 Each Member should arrange for his own links to reach the NIXP

Model 1:

Bill-and-keep with no monetary settlement between peering ISP members based on “Best Effort” delivery

Model 2:

Traffic volume based settlement based on the concept of “requester Pays

Interim Solution:

CITC has decided to implement first module (Bill-and-keep) till CITC publish the IXP regulation





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[Section 5]

SPAM



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SPAM

- ✚ **SPAM** represents a major annoyance and threat to Internet and communications infrastructure, applications, computer users in general and to users of the Internet in particular;
- ✚ **High volume spam** over limited bandwidth acts as a denial of service attack – isolating countries from the rest of the world;
- ✚ In the Kingdom itself, SPAM has been used for **malicious purposes** including phishing, spreading viruses and fraud;
- ✚ CITC has received numerous **SPAM complaints**



Project Approach

- The project approach comprised of 7 stages as depicted below:



Current State Assessment in the Kingdom



Relevant Legislations:

- ✚ The following list represents the relevant legislations for SPAM in the Kingdom which were identified and analysed:
 - ✚ The Telecom Act and its Bylaws;
 - ✚ The Licensing Agreements with Bulk SMS Service Providers and ISPs;
 - ✚ The Banking Laws and Regulations;
 - ✚ The Anti e-Crime Act;
 - ✚ The e-Transactions Law;

- ✚ **No need for new legislation.**



Current State Assessment in the Kingdom



Key Findings:

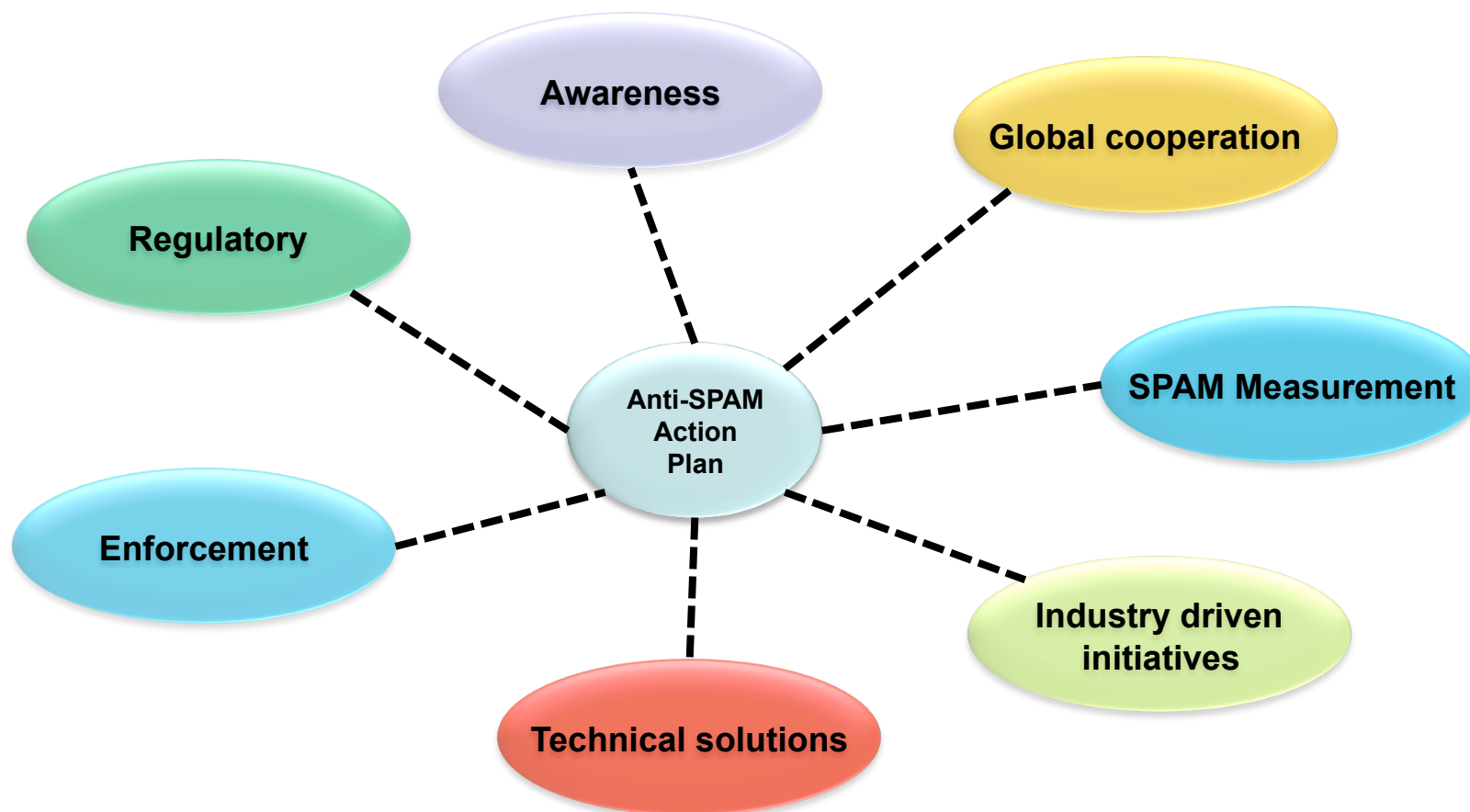
- ✚ eMail and SMS SPAM are the major sources of SPAM in the Kingdom.
- ✚ Fax SPAM is not considered as a major source of SPAM.
- ✚ Most of the email and SMS SPAM in Saudi Arabia originates from outside the Kingdom.
- ✚ Most SPAM messages received in the Kingdom tend to be of a commercial nature.

	Email SPAM Rate	Dominant SPAM Type	Fax SPAM Rate	SMS SPAM Rate
Average	54%	Commercial	6%	1.7%



Approach

The Anti-SPAM Multi-Pronged approach recommended by OECD and ITU was



A- International Bodies- Key recommendations

The table below lists the selected **internal bodies/initiatives** and shows **the applicable components** to be addressed for each of them:

	Regulatory Approaches	Enforcement Cooperation	Industry Driven Activities	Technical Solutions	Education and Awareness	SPAM Measurement	International Cooperation & Exchange
ITU	X	X	X	X	X		X
OECD	X	X	X	X	X	X	X
SPAM-HAUS				X	X		
LAP		X					X
WGIG							X
APEC							X
APCAUCE					X		X
APWG				X			X
MAAWG			X	X		X	X
GSMA			X		X		
MMA			X		X		
IETF				X			
Messaging Service Providers					X		
Seoul-Melbourne Agreement							X



B- Other Countries Experiences



Countries Selection

- ✚ **8 countries were selected** for benchmarking exercise in order to study their experiences in combating SPAM
- ✚ These countries were selected using a number of criteria including:
 - The maturity and effectiveness of their anti-SPAM policy framework;
 - The geographical factor; and
 - The reduction in SPAM rates where available.
- ✚ These countries are: USA, Australia, Canada, UK, Belgium, Peru, Republic of Korea, Malaysia.



Anti-SPAM Framework in the Kingdom



The **Approach used** in the development of the Framework was as follows:

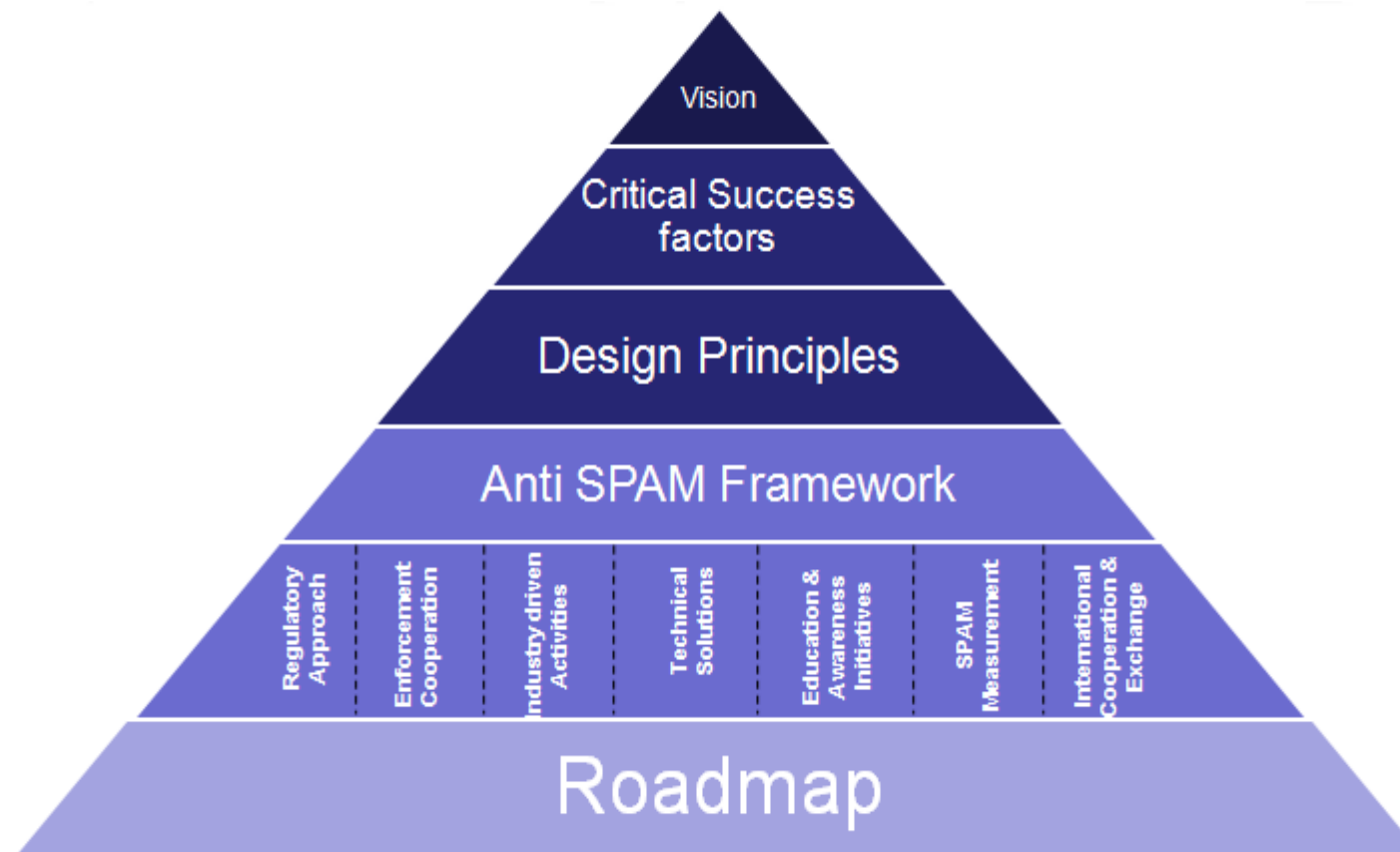
- ✚ An Internal Workshop was held in CITC to discuss the **Design Principles** which were identified. CITC and other Stakeholders participated in selecting the principles which were then used in developing the Framework.
- ✚ **CITC invited all members of the public**, including private individuals, public organizations, and commercial entities to participate in the consultation process, in particular, to give their feedback on the Anti-SPAM framework general principles such as:



Anti-SPAM Framework in the Kingdom



The Anti-SPAM framework in the Kingdom was customized according to the vision of the CITC & the agreed on design principles.



Anti-SPAM Policy Framework Elements



Any unsolicited electronic message that contains commercial or objectionable content transmitted without prior consent through various communication modes including, but not limited to, e-mails, Mobile Messaging, fax, Bluetooth and instant messaging services

- ✚ Unsolicited commercial and unsolicited objectionable messages must not be sent;
- ✚ Commercial electronic messages must include valid, up-to-date contact information about the individual or organization that sent the message.
- ✚ The content of the message must be truthful, accurate, complete and not seek to deceive;
- ✚ Commercial electronic messages must contain a functional, simple, swift and free unsubscribe facility;
- ✚ Address-harvesting software must not be supplied, acquired or used.
- ✚ Electronic address list produced using address-harvesting software must not be supplied, acquired or used;
- ✚ Sanctions will be imposed for violations of the Anti-SPAM regulatory policy framework rules in accordance with the governing legislations, mainly the Telecom Act and Anti e-Crime Act.





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[Section 6]

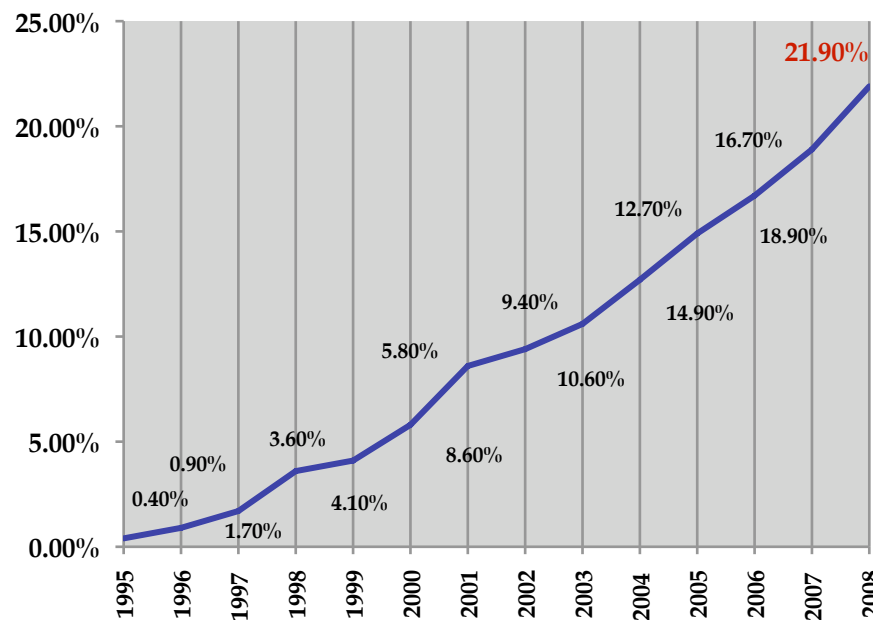
IPV6



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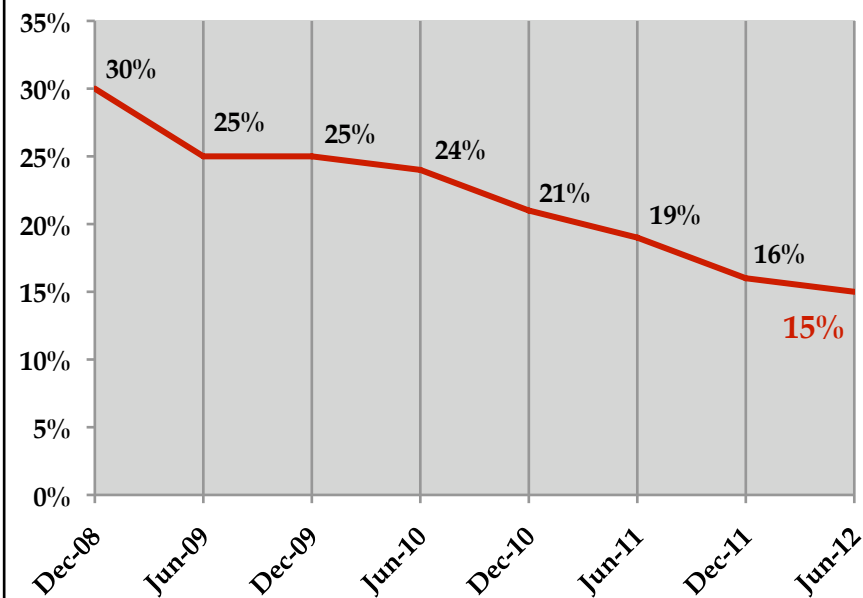
Why is IPV6 needed?

Percentage of Internet Users from World Population



Source: Internet World Stats
<http://www.internetworldstats.com/>

Depletion of IPv4 Addresses at IANA



Source: Number Resource Organization
<http://www.nro.org/>

As of September 20th, 2008

Projected Depletion date at IANA:
Oct-2010

Projected Depletion date at RIRs:
Oct-2011

Source

"The IPv4 Address Report"
By Geoff Huston

<http://www.potaroo.net/tools/ipv4/>



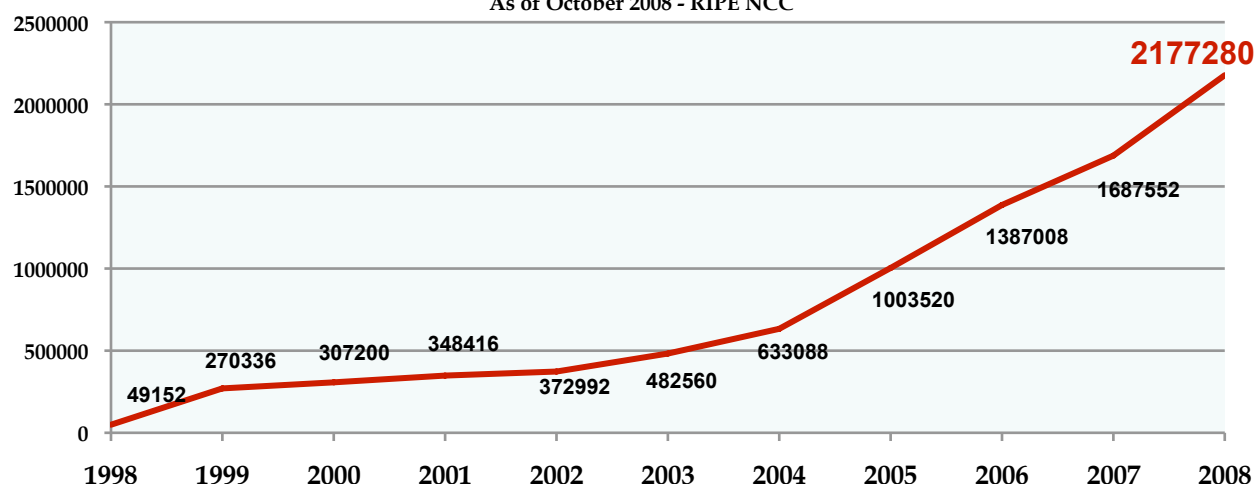
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IPv4/IPv6 Current State



IPv4 Status Locally

IPv4 Cumulative Status KSA
As of October 2008 - RIPE NCC



August 2008:
88 LIRs in KSA
(Source: RIPE NCC)

**2.17 Million IPv4
Addresses – July 2008**

73% Advertised

**0.08 IPv4 Address Per
Capita**

(Source: <http://resources.potaroo.net/iso3166/v4cc.html>)

Biggest IPv4 Allocations

Date	Size	LIR	Date	Size	LIR
20080625	/14	STC	20050428	/16	Bayanat
20050209	/15	Arabic Com. Sys	20050905	/16	STC
20060523	/15	Nesma	20061208	/16	STC
20080131	/15	STC	20070719	/16	AL Faisaliah
19990128	/16	KACST	20071228	/16	Ettihad Etisalat
20030820	/16	Orbitnet	20080218	/16	Ogertel

IPv6 Status:

KACST (2001: /32)
&
STC (2001: /32)
(Source: RIPE NCC)

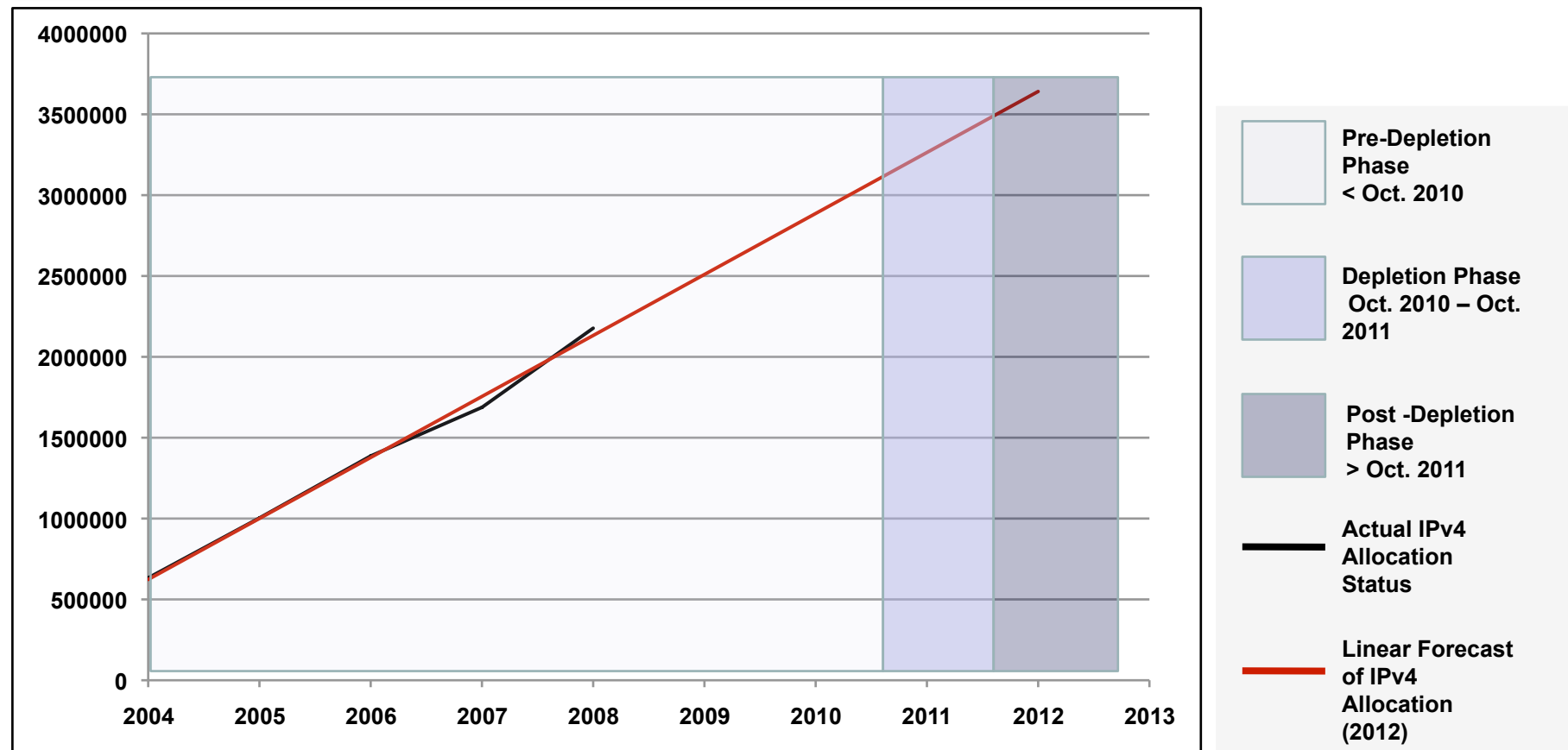


IPv6 Current State Assessment



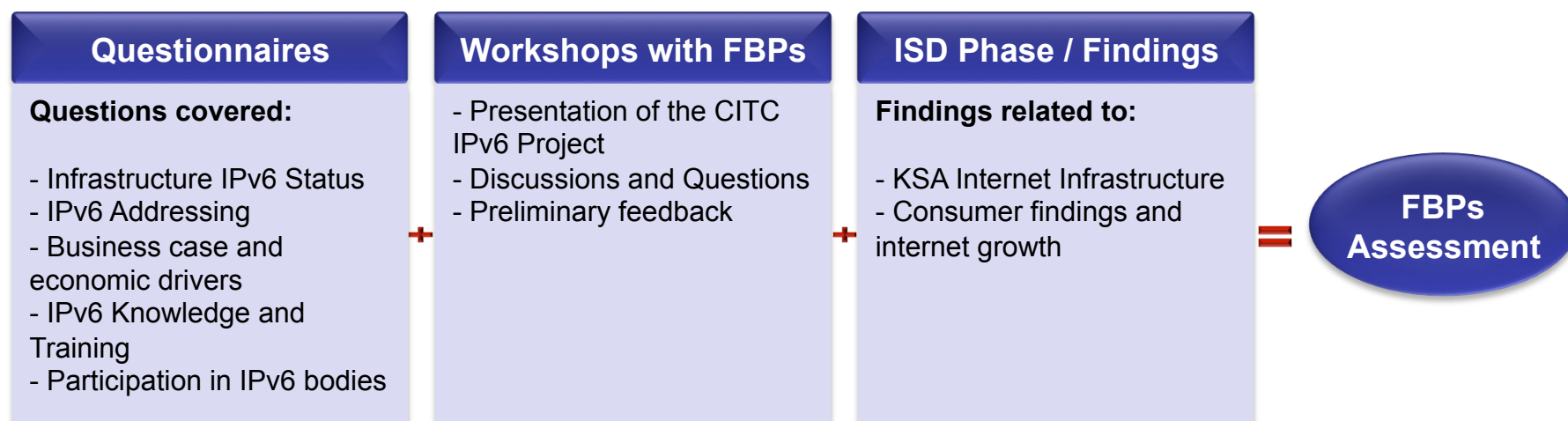
KSA Allocation Forecast: 2008-2012

Linear Regression based on past data from: 2004-2008.
Assumptions: Same growth, no acceleration/deceleration



IPv6 Current State Assessment - Methodology

Methodology for FBPs



IPv6 Current State Assessment - FBPs



**Questionnaires were sent to 8 FBPs and KACST.
Four (4) FBPs and KACST answered.**

Question	Results
Level of IPv6 Knowledge	40% In-Depth, 40% Medium, 20% Basic
IPv6 Addressing Status	Only 40%: KACST (advertised) & STC (not advertised)
IPv6 Upstream Status	20% Yes (KACST), 80% No
IPv6 Peering Readiness	20% Yes (KACST), 80% No
OS Support for IPv6	40% Partly, 40% Supported but feature not enabled, 20% No assessment
Applications Support for IPv6	40% Partly, 60% No assessment
Plans to offer connectivity for end users	20% ongoing, 20% already available, 20% no plans, 20% near future initiation (2008-9-10), 20% dist. Fut. >2011
Inclusion of IPv6 compliance in SW/HW Procurement	20% Yes, 60% No, 20% Partly
IPv6 Training Plans	20% Yes Ongoing, 40% Near Future (2008-2010), 40% No Plans
Economic Drivers and Value Added to Business	40% Yes, 60% No Assessment
Critical to Future Business Activity	1 Not Critical, 4 No Assessment
Most Important Obstacle towards IPv6 Deployment	100% No Market Demand
Membership in IPv6 Bodies, WGs or Forums	100% No
Willingness to participate in the National IPv6 Task Force	60% Active Participation, 40% Only Attendance



IPv6 Current State Assessment – Other Stakeholders



Assessment of other stakeholders: ISPs, Enterprise, .sa ccTLD Registry (SaudiNIC), SW/HW Vendors

Stakeholder	Status	Assessment
ISPs and Enterprise	No interest Only 3/62 ISPs answered Questionnaires No Consideration for IPv6 No Future Plans No IPv6 Addressing	-Not ready
SaudiNIC cc .sa TLD Registry	No IPv6 Transport Support yet The necessary software and process changes to add IPv6 Glue Records into the DNS zone have been implemented in July/August 2008 already	-Not Fully Compliant -Work is Ongoing
SW/HW Vendors	Major vendors are already shipping IPv6 within their products	-Major Vendors are ready

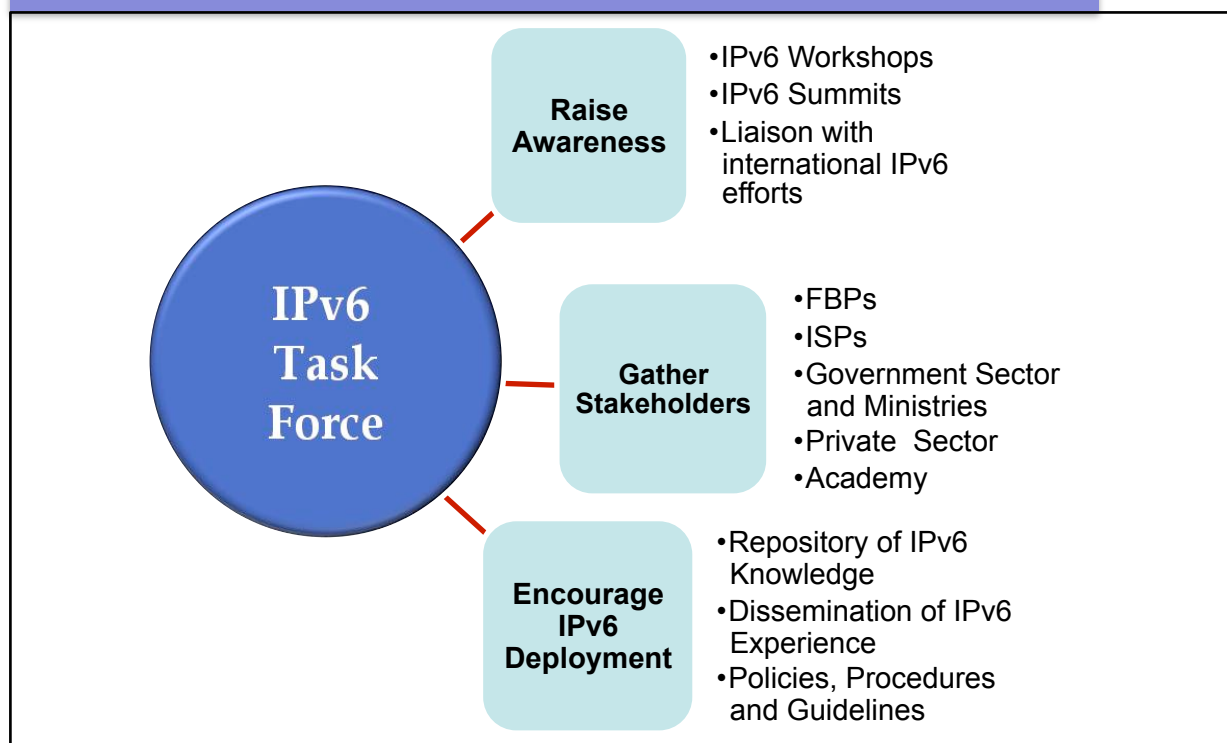


IPv6 Task Force Saudi Arabia



The IPv6 Task Force Saudi Arabia was established in order to raise awareness and encourage the deployment of IPv6 in Saudi Arabia

Spectrum of Activities of the National IPv6 Task Force



Actions:

- IPv6 test lab
- 3rd Task force meeting (mid Nov)
- Finalization of strategy and action plan
- Saudi IPv6 Forum (planned Q1, 2009)



Summary



- ✚ **Internet Growth in Saudi Arabia** is driven through rapid regulatory evolution. Currently at **31%** Internet penetration is forecast to pass 55% within 3 years. The Saudi market is characterized by *24 million people, a young population, (50% less than 20), a heavy investment in Technology, Education and Health*
- ✚ On-going **Internet Development Strategy** consists of *7 streams of projects*: Infrastructure (4 projects), DNS/IP addressing (11 projects), Filtering/Security (14 projects), IP-based services (6 projects), International Organizations (3 projects), Awareness (8 projects), Regulation (16 projects);
- ✚ A National Internet Exchange, **IX.SA**, will go live in Q4 2008 and will help keeping national traffic national and increasing security
- ✚ CITC has agreed upon a framework to fight **SPAM** and a roadmap has been defined
- ✚ A task force was set up to handle planned **IPv4 addresses exhaustion** and prepare the shift to **IPv6**



Thank You



Contact

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Related
websites

www.citc.gov.sa
www.internet.gov.sa
www.spam.gov.sa

Coming soon:
Internet Exchange website
IPv6 website



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