



***Lawful Access and Protection of Data and Privacy
Concerns about Radiation from Radio Masts
Has Liberation been a Success?
How can Businesses Take Advantage of Liberated
Markets?***

Presentation to BBBF

21st April 2009

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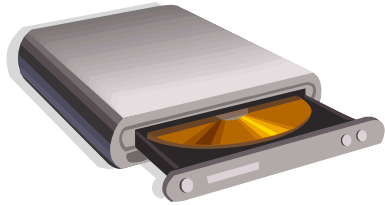


Messages

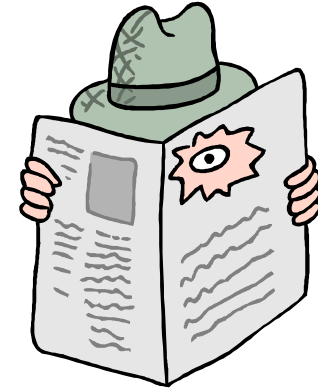
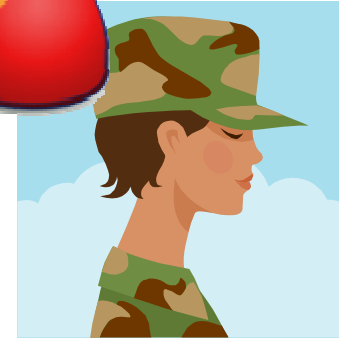
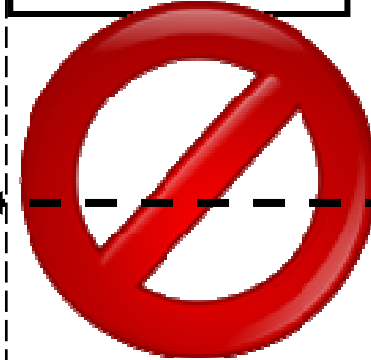
- 1. Privacy** - Telecommunications Law (2002) - it is an offence to bug, disclose any conversation or data related to content of any message unless permitted by the Public Prosecutors Office or an Order from a court
- 2. Radiation** - Telecommunications sources in Bahrain are typically around 1/800 lower than the limit for safe radiation levels set by International Commission for Non Ionizing Radiation Protection (ICNIRP) – Not a health hazard
- 3. Liberalisation** – A success – increased choice, lower prices, more services, better services
- 4. Business Opportunity** - Taking advantage of liberalisation through setting an Information Management/ICT Policy, understand your needs and go out to tender



1. Privacy – Lawful Access



Constitution
Law S75 & S78
Regulation



1. Privacy – Lawful Access References

www.tra.org.bh

Constitution
Article 91

Internal
Regulation
Representative
Council
Article 133

Telecommunications
Law
S75 & S79

*Draft Regulation on Requirements of
National Security
TRA
25 February 2009*



2. Radiation from Radio Masts



2. Radiation from Radio Masts

Requirements and Reports – www.tra.org.bh

Ministerial Order
Order No. (4) of the Year 2009
Regulating and Monitoring of Non-Ionizing Radiation emitted from Electromagnetic Fields

Report on measurement
Rhoads & Schwartz
2005

Report on measurement
Bahrain University
2007

Wireless Telecommunications Network Facility Sharing Regulation
TRA
April 2009

Mast Sharing Policy
TRA
April 2009

Report on measurement
TRA
Q1 2009



Measurement Equipments Purchased by TRA

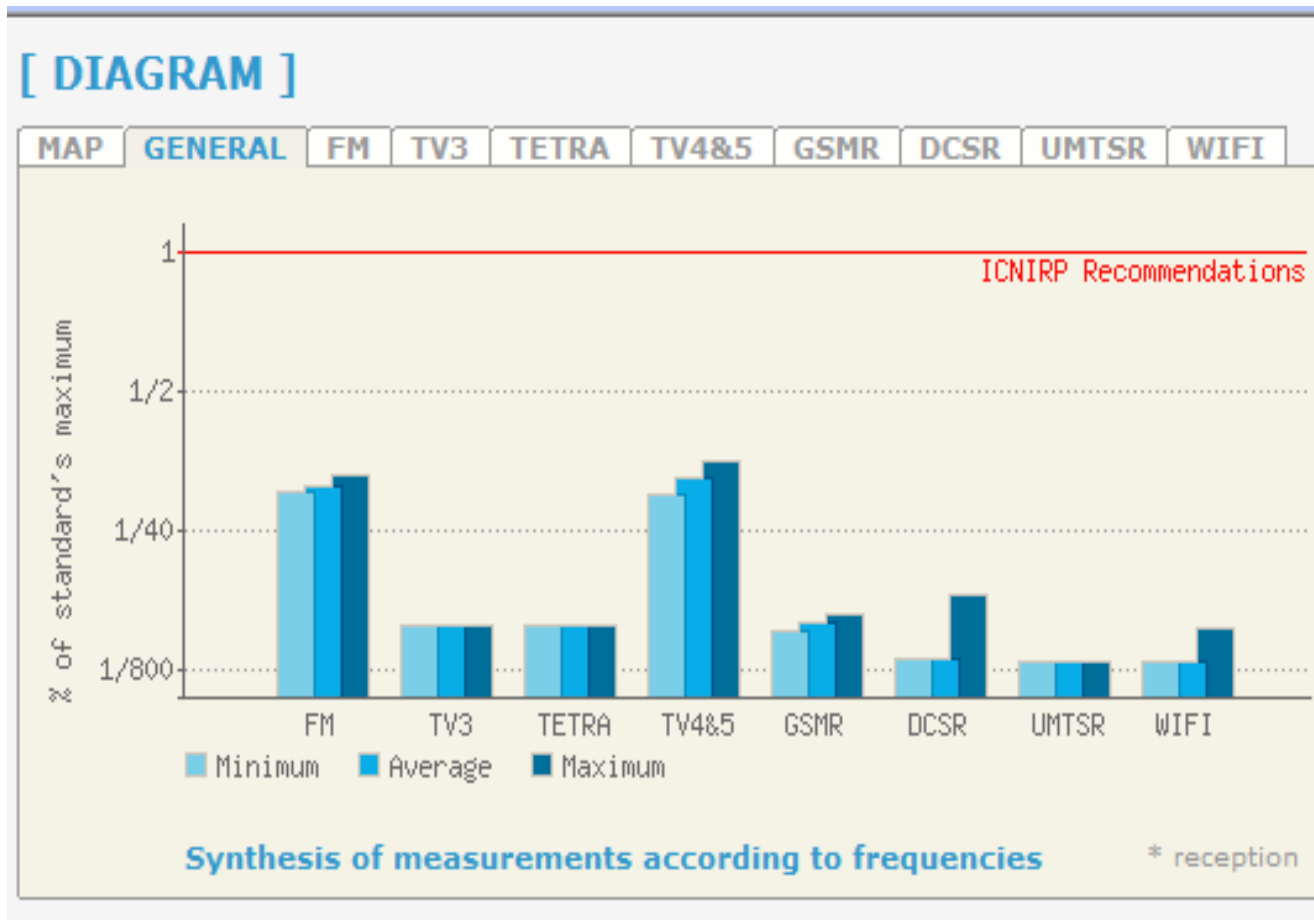


Measurement Sites in Q1 2009

Location	General Area	Specific Location
1.	• Central Informatics Organisation, Isa Town	• Cisco Training room on second floor
2.	• City Centre Mall	• Customer service point on ground floor
3.	• Crown Plaza Hotel	• Boardroom number 1 at the conference centre
4.	• French School, Muharraq	• Playground
5.	• International Exhibition Centre	• Multiple locations
6.	• Malkiya	• Villa 2201, Block 1034
7.	• Saar	• Villa 2782, Block 507, Saraya 1
8.	• St. Christopher's School, Isa Town	• Playground
9.	• Taib Tower, Manama	• TRA office on 7 th floor
10.	• Tubli	• Al Mahmood Villa
11.	• Seef District	• 5 th Floor, Rabiya A-4 Building



Example CIO Building – Measurement Results



[INFORMATION]

Measurement campaign passed

- Beginning on : 03/08/2009
- End on : 03/23/2009
- Last measure : 03/20/2009

[LOCALIZATION]

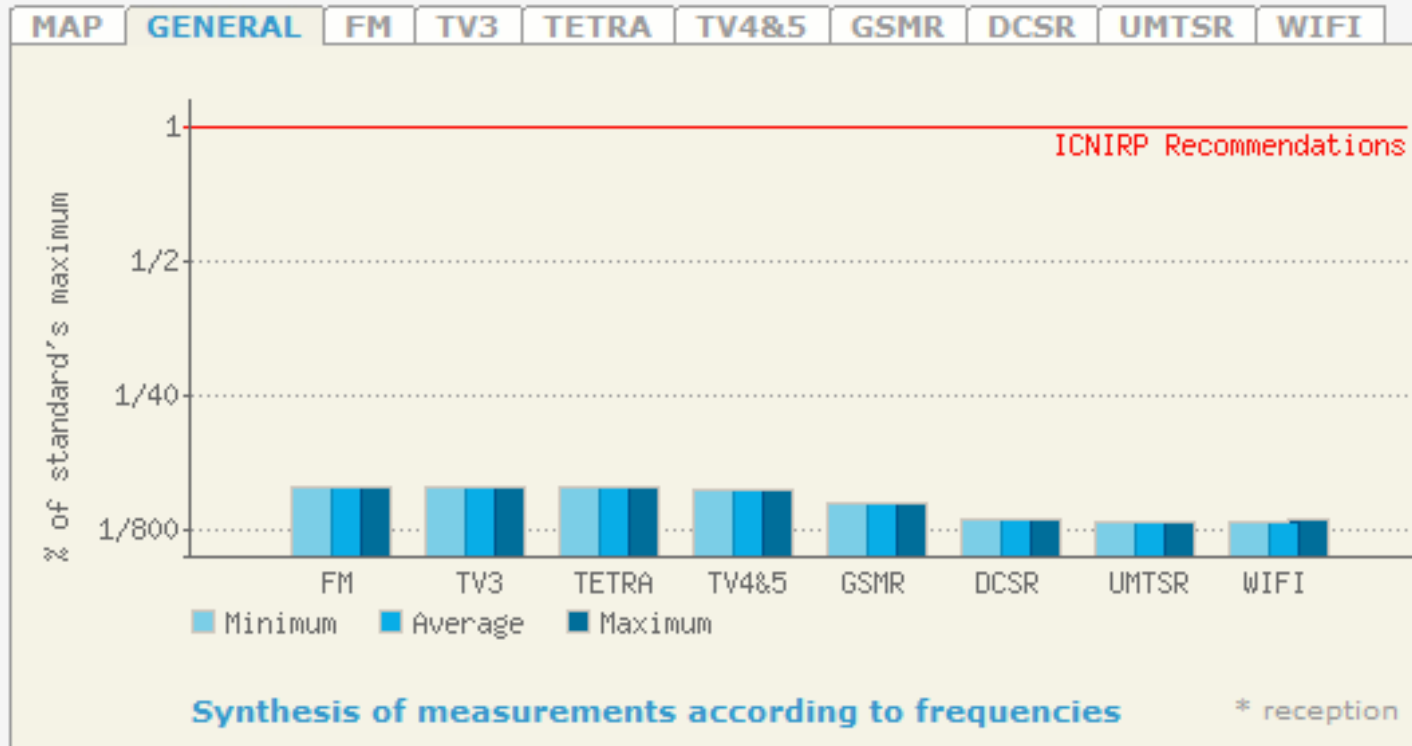
Central Informatics Organisation
Isa Town
Kingdom of Bahrain

Latitude : 26° 9' 9
Longitude : 50° 33' 4



Example French School Muharraq – Measurement Results

[DIAGRAM]



[INFORMATION]

Measurement campaign passed

- Beginning on : 01/26/2009
- End on : 02/26/2009
- Last measure : 01/31/2009

[LOCALIZATION]

French School
Muharraq
Kingdom of Bahrain

Latitude : 26° 16' N
Longitude : 50° 36' E



2. Radiation from Radio Masts - Summary

- WHO and ICNIRP have set a maximum power level for non ionisation electromagnetic radiation at a level below which there is no evidence of harm to people
- The experience in Bahrain follows international experience with radiation levels from Telecommunications being typically 800 times lower than the maximum level set by ICNIRP
- Authorities and the general public should not have health concerns in respect to Telecommunications Masts
- TRA in cooperation with Environment Protection Commission will continue monitoring power levels and publish results
- TRA will monitor at any place of concern to the public
- TRA will respond to any public concerns over power levels and have ongoing Public Awareness activities
- TRA will work with operators to optimise number of masts and their appearance



Has Liberation been a Success?



Choice in Services & Suppliers

Services offered by 15 Licensees

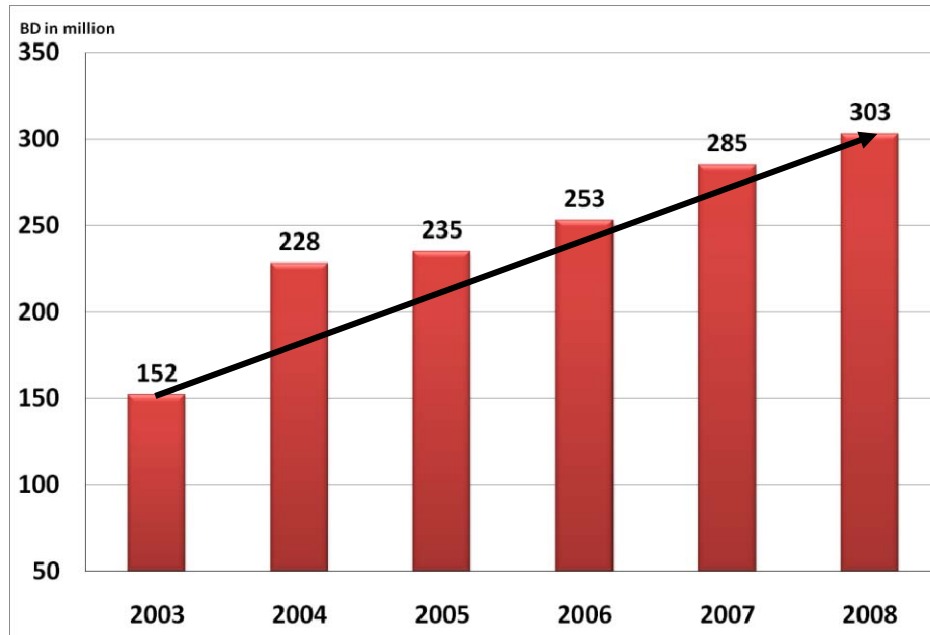
Operator Name	National Fixed	International Calls	Mobile	Internet	Leased Line	Other Data Services
2Connect	√	√		√	√	√
Batelco	√	√	√	√	√	√
BT Solutions LTD						√
Business Communication Networks		√				
Etisalcom	√	√		√	√	√
Fakhro IT Services		√				
Fastelco (TeleGulf)		√				
Kalaam Telecom	√	√		√	√	√
Light Speed	√	√		√	√	
Mena Telecom		√		√		
Northstar		√		√		
Nuetel Communications	√	√		√	√	
Orbit		√		√		
Viacloud		√				
Zain (Bahrain)	√	√	√	√		

Note: Only licensees offering public services are included in this table



Growth in Revenues and Employees in the Telecommunications Sector

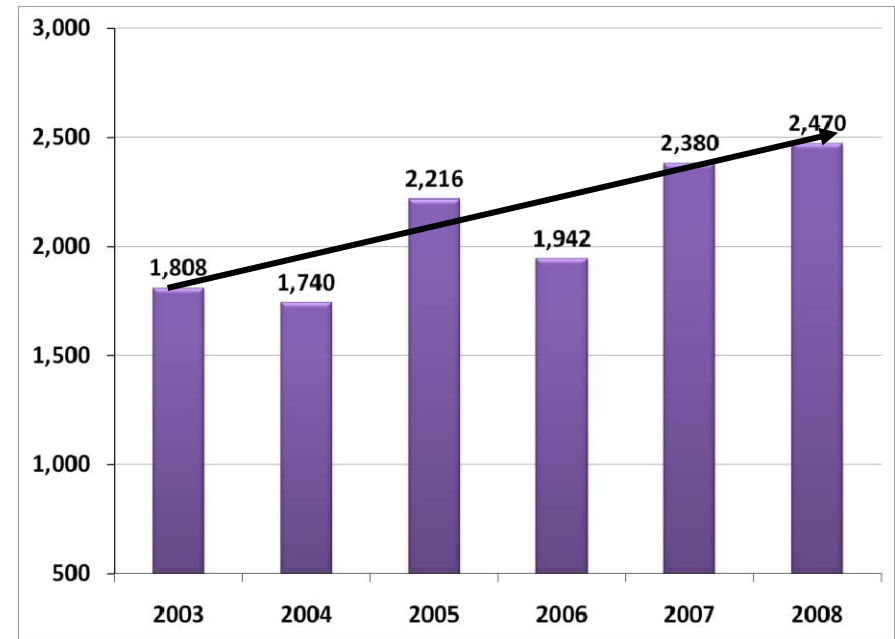
Growth in the telecommunications sector revenues (2003 – 2008)



Source: TRA

- 6.3% Growth in revenues between 2007 and 2008
- 7% Compound annual growth rate between 2004 and 2008
- 99% growth from 2003 level at time of liberalization

Growth in the number of employees in the telecommunications sector

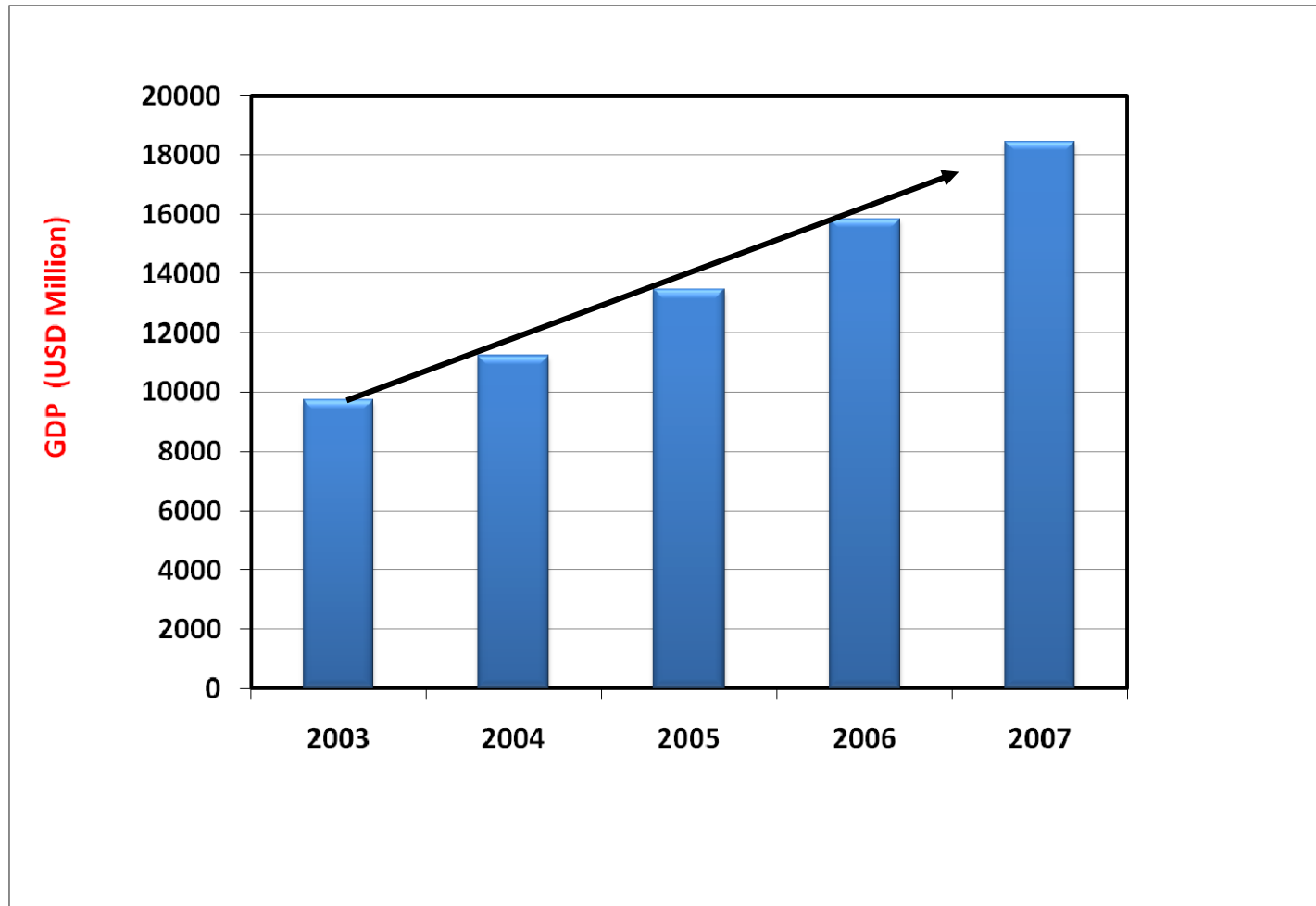


Source: TRA

- 4% growth in number of employees between 2007 and 2008
- 37% growth since liberalisation



Percentage Contribution to GDP

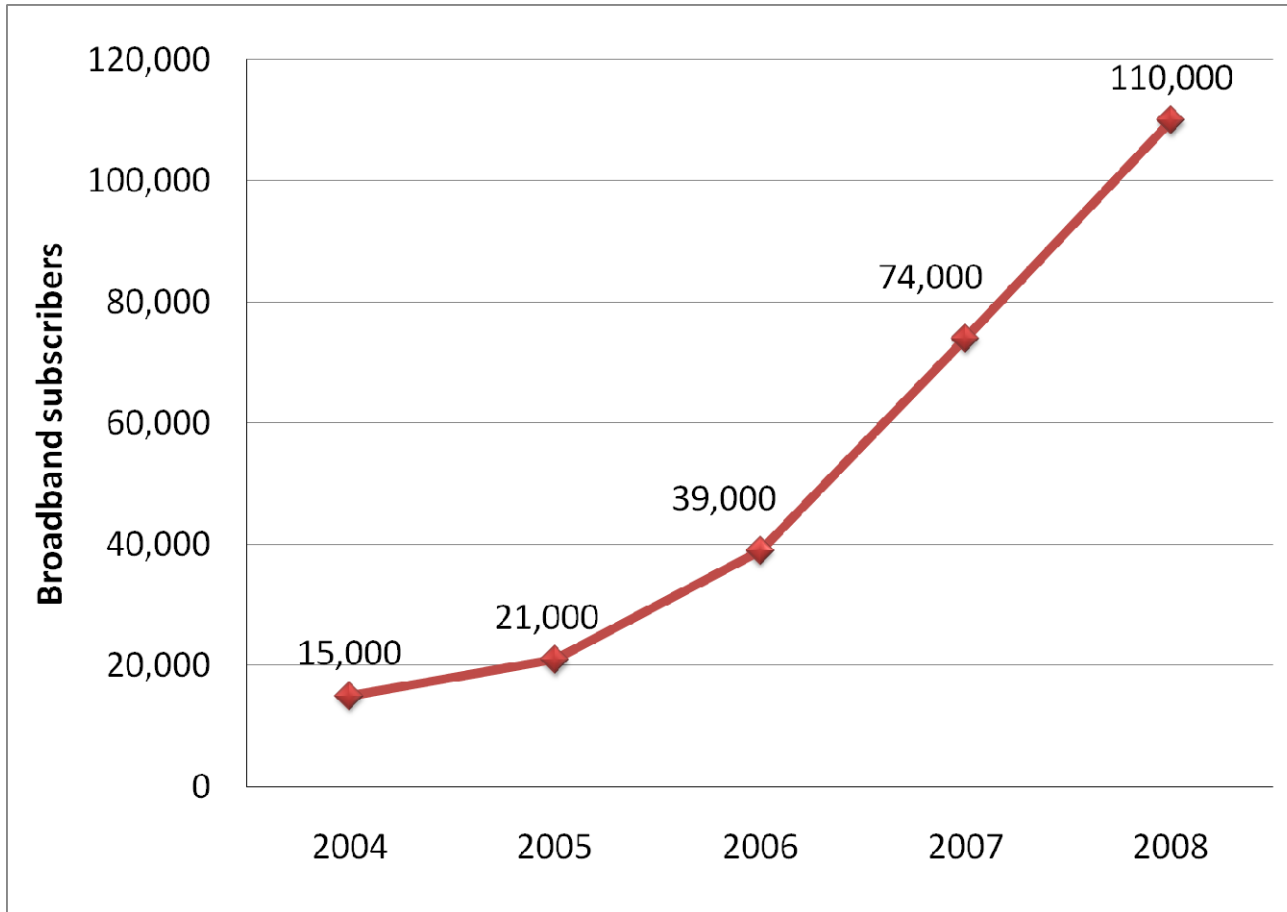


Source: CIO

Telecommunications revenues represent **3.1%** of GDP in line with UK.



Broadband Subscribers



Source: TRA

ADSL 76,000

Wireless 17,000

Mobile Broadband 17,000

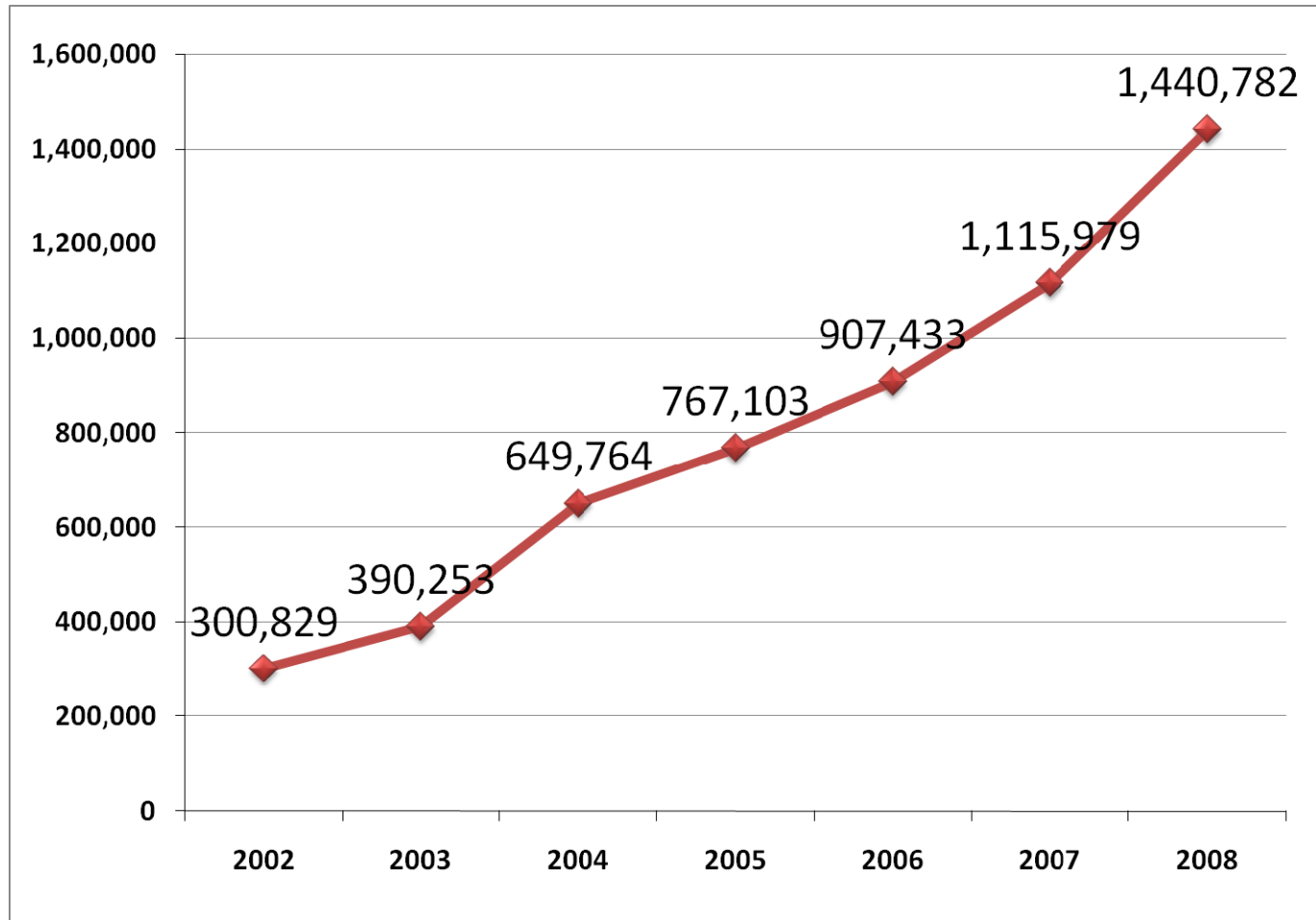
50% growth in broadband subscribers between 2007 and 2008

10.5 subscribers per 100 inhabitants

~ 56% of households have Broadband



Mobile Subscribers



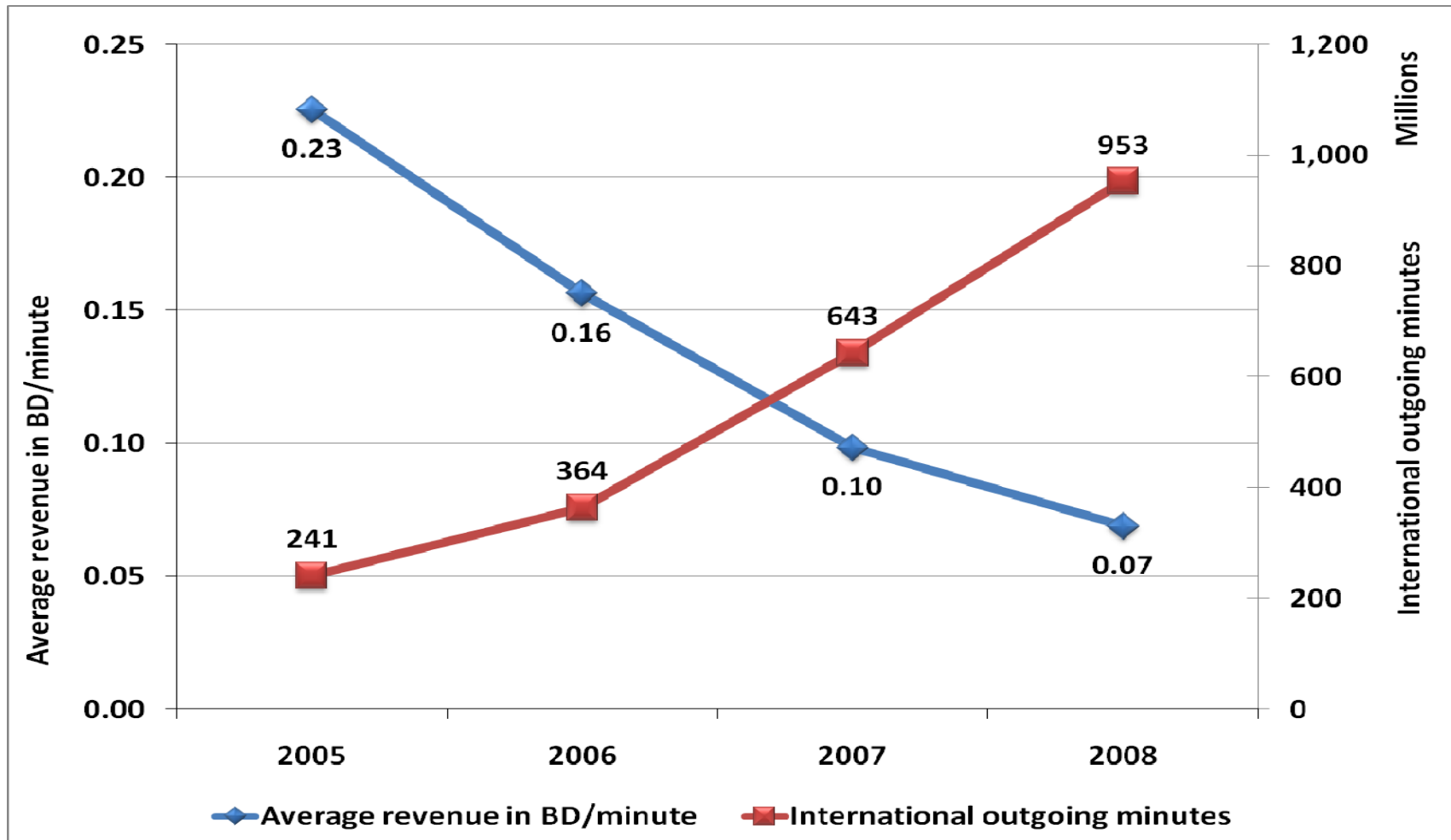
29% growth in Mobile subscribers between 2007 and 2008

138% Mobile penetration

Source: TRA



International Calling

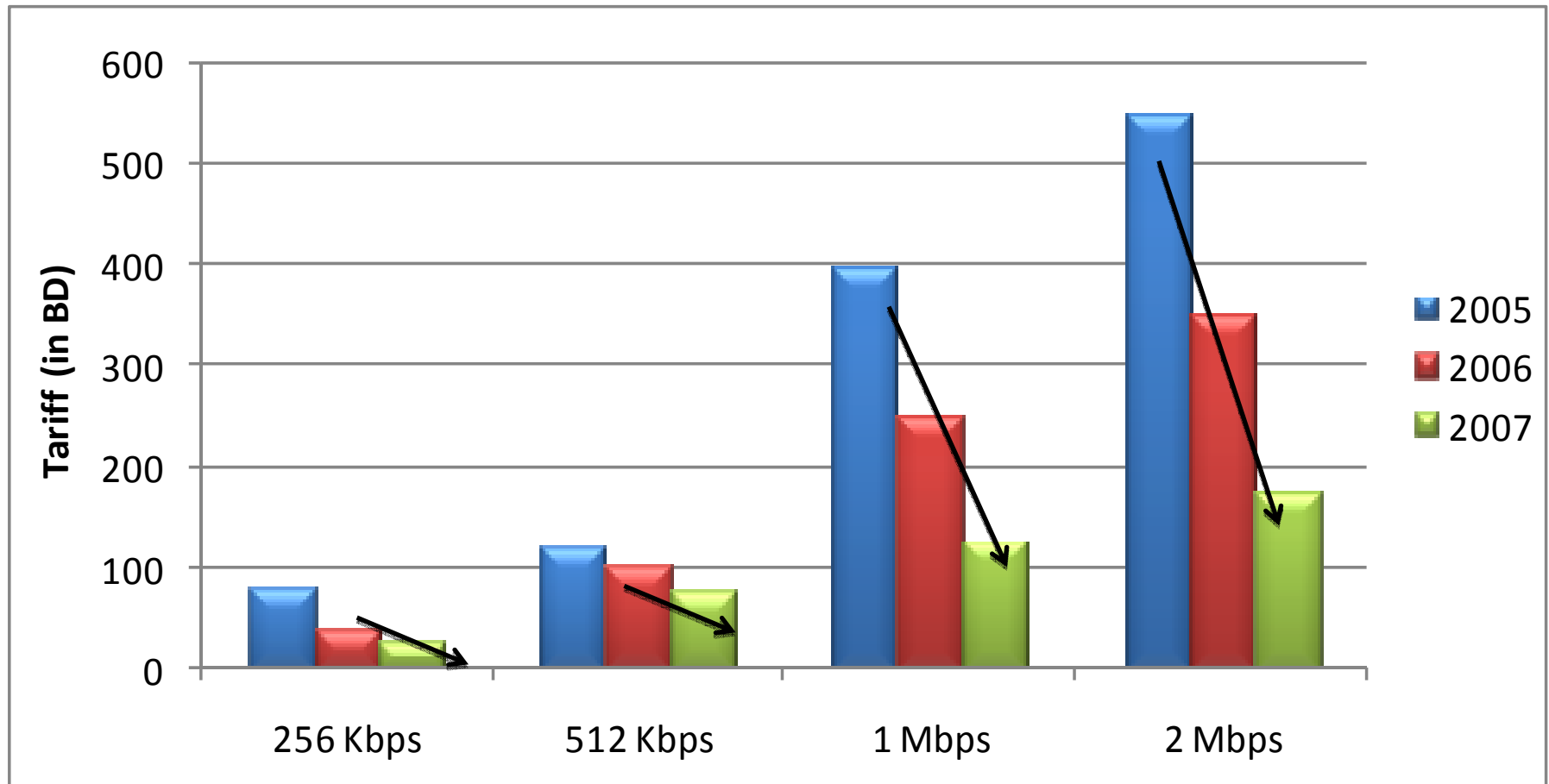


Source: TRA analysis

30% Drop in international average revenue per minute (2007 to 2008)

50% Growth in the international outgoing minutes between 2007 and 2008

Business Broadband Tariff Reduction



Source: TRA analysis

Up to 50% reduction in business broadband monthly charges

New Businesses – New Investment

- Companies like Zain and Cisco have set up regional offices in Bahrain
- Orange through its subsidiary Jordan Telecom has entered the market through the acquisition of Lightspeed
- MENA Telecom and Zain have launched broadband wireless services throughout the Kingdom
- Batelco invested in NGN and 3G
- STC has received the third mobile licence

Yes - liberation is a success storey for Bahrain



How Can Businesses Take Advantage of Liberated Markets?

Communications systems - Your second most valuable asset to support:

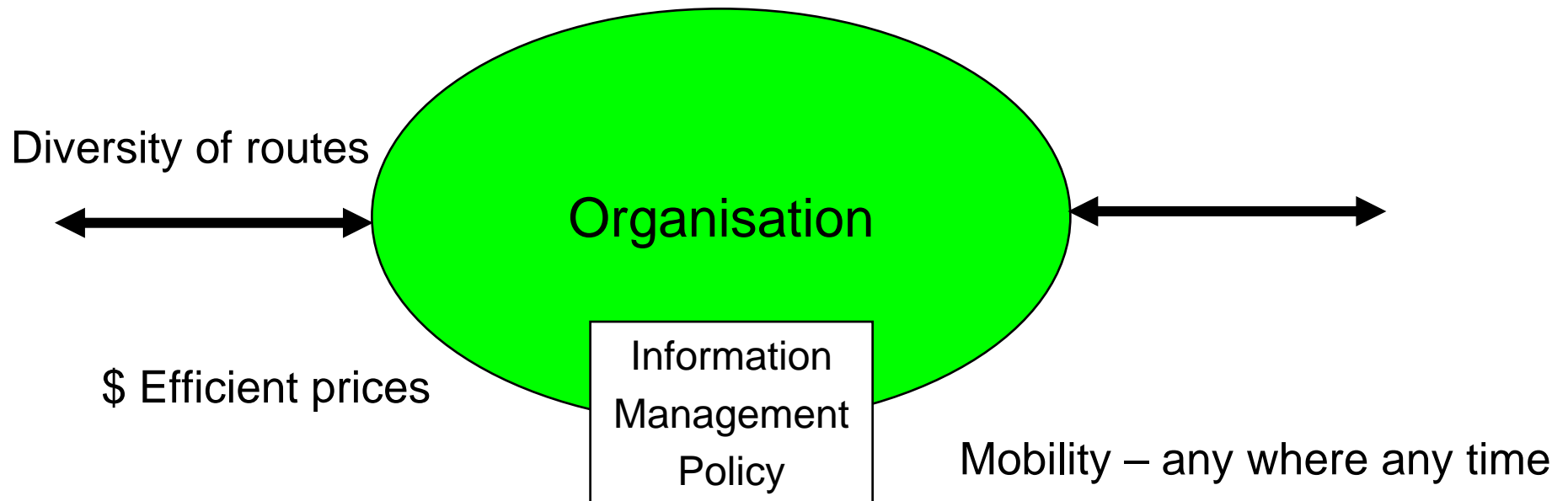


Understand Requirements of Organisation

Always available, tolerant of failures

Resilience – to failures and attacks

Secure – from unlawful interception



Flexible – in bandwidth demands, in moves and changes



Economic 2030 Vision for Bahrain

Competitive Ubiquitous Broadband communication services

Consortium (5 Operators X 96 Fiber cables)

Theoretically unlimited capacity from Bahrain to the meet me room on the King Fahd Causeway

SFO (Batelco only)

Design capacity = 12 Gbps

Lit capacity = 4.2 Gbps

Falcon

Design capacity = 1.28 Tbps

Lit capacity = 50 Gbps

FOG

Design capacity = 7.2 Gbps

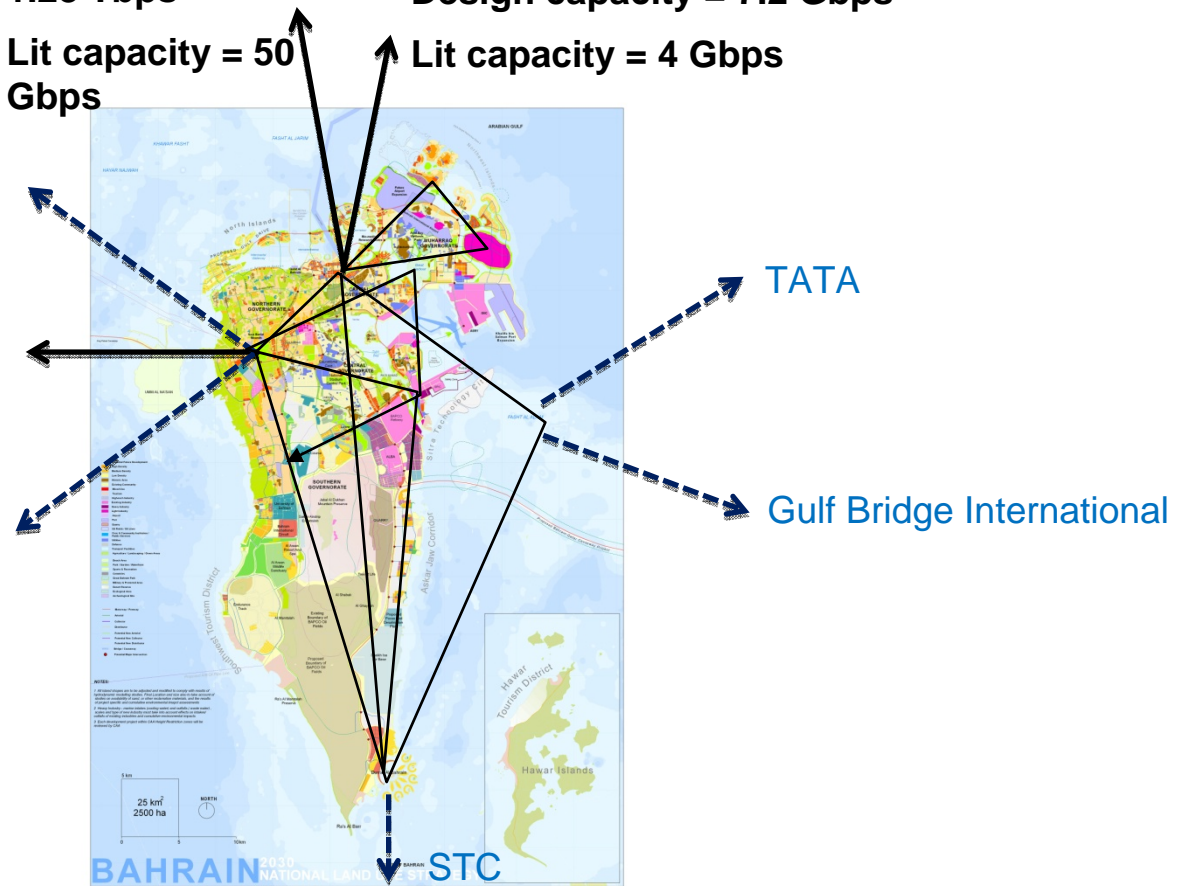
Lit capacity = 4 Gbps

STC & 2Connect

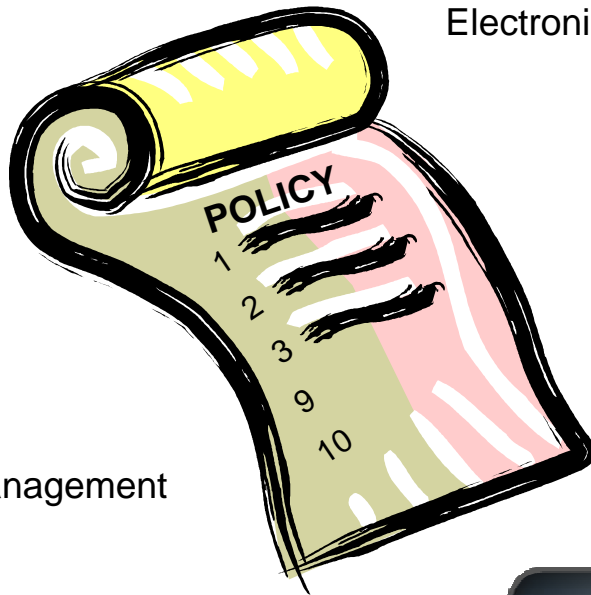
TATA

Gulf Bridge International

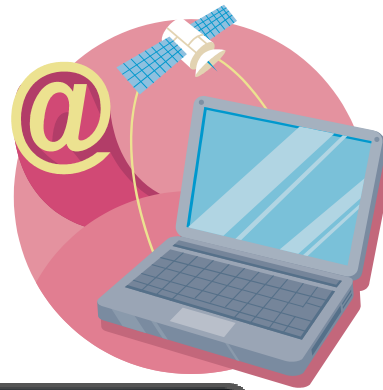
— indicative



Information Management Policy (1)



Electronic communications



Information Management



Security rules



Security classifications



Conclusion

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TRA

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Talk To Us





Information Management Policy (1)

1. Exchange of information - by electronic means
2. Information Classification Policy - need, priorities and degree of protection
3. Asset Classification and Control Policy - All major information assets should be accounted for and have a nominated owner
4. Policy for the Storage, Dissemination and Destruction of Information
5. Automation Policy - Routine tasks and operations should be automated whenever possible
6. Information Security Policy - Establish and maintain a security program that ensures the availability, integrity, and confidentiality of the organization's information resources



Information Management Policy (2)

7. Communications and Operations Management Policy - Responsibilities and procedures for the management and operation of all information processing facilities
8. Access Control Policy - Access to information, and business processes should be controlled on the basis of business and security requirements
9. Availability of information - Information assets should be accessible for at least 99.9% of the time, or higher, from local or remote devices (Given the right access rights)
10. Compliance Policy - The design, operation, use and management of information systems may be subject to statutory, regulatory and contractual security requirements.

