**Access to Microfinance & Improved Implementation of Policy Reform
(AMIR Program)**

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**E- Government Assessment of the
Telecommunications Regulatory
Commission of the Kingdom of Jordan**

Draft Report

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Executive Summary

In the new millenium, the most successful economies in the Arab world and elsewhere will be those that prove most effective in mobilizing a skilled workforce, deploying the latest technology throughout their infrastructure and delivering quality products on time and below budget. Brains, not natural resources will matter most.

Already H.M. King Abdullah represents the first in a new generation of Arab leadership, one that is comfortable in a high tech world, embraces a global vision of integrated economies and challenges his people to aspire to world-class standards of excellence. His Majesty's challenge to Jordan's information technology (IT) sector has resulted in extraordinary document, the REACH Initiative, a blueprint to make "future oriented", intelligent industries the focus of Jordan's future.

The REACH initiative and other private sector efforts such as the Jordan Vision 2020 strategy document have encouraged certain progressive government officials to pursue modernization more aggressively. Clearly, the one central key to success in these efforts is a modern, efficient telecommunications industry supported by progressive, responsive regulatory oversight. The leadership of the Telecommunication Regulatory Commission is pursuing modernization in this crucial industry in support of His Majesty's vision.

The strategies in each of the attached documents address the need for regulatory reform and the deployment of world class telecommunications infrastructure in Jordan. This infrastructure will provide the "glue" to enable Jordan's IT Sector to use its talent and technology to compete world wide on a transparent, non-distance sensitive platform. To bring about these changes and to support these initiatives, high level support and additional resources must be mobilized to ensure that the Jordanian Telecommunications Regulatory Commission (TRC) is a showplace for the full utilization of these

extraordinary IT products and services. The current management and staff of the TRC are committed to use its extraordinary assets to ensure that the full benefits of their deployment inure to the public good of Jordan's citizens and its business sector as envisioned by His Majesty and embedded in the vision of its Director General, Dr. Yusuf Mansur. (Annex A).

The driving force behind the needed reforms, deployment of this advanced telecommunications technology, and utilizing it for the public good, are the Director General and the various Directorates of the TRC. This assessment by an experienced outside telecommunications/regulatory reflects both the strong points and the needs of the TRC in terms of human resources development, process and procedures framework and information technology use for greater transparency and more effective regulation in the day-to-day activities of the agency.

In the area of Human Resources Development, TRC has a major need to provide its people with management, technical, financial and legal training as well as interpersonal skills, conflict resolution and assertive management techniques.

The TRC must develop a legal framework for handling its administrative Law and Rule making processes which Law No. 13 directs. There is little telecommunication case law in Jordan and few precedents, so outside legal counsel will be essential.

To be the strong independent and transparent regulatory agency envisioned by the Law No. 13 and to fully support H.M. King Abdullah's mandates, the Director General has initiated a complete review of his internal IT platform. This initiative will move it from primarily functioning as a website and word processing environment to a true world class showplace of converged information technology. This in turn will make fully transparent the daily activities of the TRC and serve as a repository and delivery mechanism of progressive regulatory deliberations, data for use by operators and for the delivery of superb service to both the public and private sectors of the Kingdom of Jordan.

The following action recommendations, described in greater detail in the body of this report, are necessary first steps toward realizing would-class telecommunications in Jordan:

1. **Establish the Rules of the Game**. Immediately obtain outside legal counsel to assist in the development and gaining Ministerial approval for a set of "Rules for Rule Making and Procedure" by August 1, 2000;

2. **Require Telecommunications Service Data**. The Director General should determine that the appropriate and necessary grade of service data has been requested and obtain a briefing on that data, which has been received and how it is being used to improve the regulatory capabilities of the TRC by May 1, 2000. He should adjust according to findings;

3. **Refocus TRC Activities to the External Public**. Immediately seek approval for : moving all administrative functions under the current Directorate of Training Development and Administration: acquiring outside Public Relations expertise; and replacement of the Customer Service staff, in order to ."refocus" the activities of TRC to the <u>external</u> <u>public</u> and not on <u>internal</u> <u>functions</u> by June 1, 2000;

4. **Create Information Technology Division**. This new should be formed by June 1, 2000 in order to exploit the current IT platform of TRC to move it toward "Showcase" status for e-government;

5. **Elevate Human Resources Directorate**. Immediately request approval for the appointment of a full Human Resources Directorate for training acquisition and personnel development by July 1, 2000;

6. **Reduce High Speed Digital Access Prices**. The Director General should initiate investigations by June 1, 2000 into alternative sources of funds for JTC to allow them to substantially reduce the prices charged for high speed digital access and the goals, objectives and progress being made in Greater Amman and throughout Jordan on the commitment made by JTC at the IT Conference recently. Directors Shagrah and Hunitie should spearhead this project;

7. **Initiate Public/Private Dialogue.** Commerce formal dialogue with the Board of Directors of Int@j, the newly formed IT industry association, to explore mutually beneficial ways to more rapidly advance the implementation of wide variety of internationally competitive (on Roth Price and quality) telecommunications services.

8. **Achieve Regulatory Independence**. Seek the operation and financial autonomy crucial for world class telecommunications in Jordan;

BACKGROUND

The forces driving the dramatic changes being experienced throughout the global economy are clear. Among other things, they include a heavy reliance on new technology, especially related to information, computerization and their convergence with a wide range of media accessed through various telecommunications infrastructures. The ability to adapt, innovate and move quickly is vital. In this new millenium, the most successful economies in the Arab World or anywhere worldwide will be those that prove most effective in mobilizing a skilled workforce, deploying the latest technology and delivering quality products on time and below budget. Brains, not natural resources will matter most.

Jordan can and must respond to this challenge and emerge as a leader, first in the Arab World and then beyond. Already H.M. King Abdullah represents the first in a new generation of Arab leadership, one that is at home in a high tech world, embraces a global vision of integrated economies and has challenged his people to aspire to world-class standards of excellence. His challenge has resulted in an extraordinary private sector strategy document called "Jordan Vision 2020" and sector specific documents such as the REACH initiative, a strategy for the IT sector.. This document presents seven strategies aimed at ensuring a more prosperous future for His nation. These strategies are designed to:

- ➢ Project dynamic leadership
- ➢ Establish on effective public-private sector partnership
- ➢ Instill international competitiveness
- ➢ Ensure access to markets
- ➢ Modernize the business environment
- ➢ Develop world-class infrastructure
- ➢ Develop skilled human resources

It is within this background that H.M. King Abdullah has also made a very, very strong initiative and national strategy for Jordan to develop a vibrant, export-oriented

Information Technology (IT) sector. The acceptance of this challenge, and in response to the King's initiative, the REACH strategic action plan has been developed to spur action through a comprehensive framework as follows:

- ➢ Regulatory Framework
- ➢ Estate (Infrastructure)
- ➢ Advanced Programs
- ➢ Capitol
- ➢ Human Resource Development

This framework, and subsequent action by His Majesty and the private sector, has encouraged certain equally progressive and necessary government leaders to pursue modernization more aggressively.   Realizing that the very fundamental fabric to make both programs operative was a world-class telecommunications infrastructure, the Director General of Jordan's Telecommunications Regulatory Commission conceived modernization program.   This assessment, entitled E-Government Assessment of the TRC is an essential first step in that program.

Established in 1995 under Telecommunications Law No. 13, the TRC regulates the telecommunications industry in Jordan. Its' goals include creating, through the use of advanced technology, user-friendly working relationships with the following constituents:

- ➢ Other Ministries and agencies of the Government of Jordan
- ➢ The international business community
- ➢ Telecommunications service providers
- ➢ Telecommunications users, and
- ➢ Telecommunications equipment suppliers

through

- ➢ high quality, customer oriented services,

➢ modern, technological systems enabling efficient interaction with TRC constituents,

➢ a strong research and analytical capability,

➢ a strong, aggressive legal department,

➢ a high level of transparency and

➢ a strong image for TRC, the telecommunication sector and Jordan.

This consultancy's objective are: to fully assess the TRC's legal framework, human resources, its operating structure and procedures, its database resources and its equipment infrastructure. Further, it is to recommend how the TRC might more optionally utilize these resources, structures and procedures to provide a more interactive, user friendly work relationship with its constituents, and wishes to provide extensive training to its staff to more fully contribute to a more modern regulatory environment.

For the purposes of this report, these issues and recommendations have been divided into two parts: 1. Evaluation of TRC Resources and Processes and 2. Database and Computer Systems in Support of a More Transparent TRC.

1.
Evaluation of TRC Resources and Processes

Background

In order to properly assess these areas of TRC, an extensive set of interviews was initiated with the various Directorate Heads according to the included organization chart. (Annex A)

Legal Department – The Legal Department's operational guidelines are governed by Telecommunications Law No. 13. To date there has been few cases tried under the jurisdiction of this Law, so little case law and few precedents exist for guidance on specific Telecommunications Law issues. The Director is concerned over this, but bravely presses ahead with her 6 lawyers and secretary. Her daily task is to insure

actions proposed by the various other Directorates of the TRC and their staff is in keeping with Law No. 13. Her staff lawyers are working to distill the Law No. 13 into a series of by-laws/policies to be used in the TRC's internal governance and gaining approval of these by-laws/polices by the Ministers' and Prime Minister's legal staff.

Frustration is obvious over the very slow pace of this approval process. I suggested she and the TRC Director General might pay a courtesy visit to these delaying parties and exhibit grave concern over the delays in view of the King's interest in the performance of TRC in strengthening the overall telecommunication infrastructure for his IT initiatives.

Her young lawyers are inexperienced in International Telecommunication Law and she seeks ways very quickly to overcome this limitation. The Legal Director has access and budget for use of outside counsel, the law firm of McCarthy and Tetrault in Canada. We agreed she should use this outside group to develop a set of "Rules of Practice and Procedure" for use by the TRC in rule making and conducting administrative hearings. We also agreed the McCarthy and Tetrault lawyers could conduct seminars, workshops and other training sessions when they are in Amman on current trends in International Telecommunications Law for her young lawyers. Also sessions could be held on other important issues such as interconnection, price regulation, competitive telecommunication policy, international best practices, conduct final reviews of proposed licenses prior to issuance and on issues of protection of the public trust.

I also suggested that the Director review training available in international and national telecommunications law from the International Telecommunications Union (ITU), headquartered in Geneva, Switzerland. Resources are available in such media as interactive compact discs, video teleconferencing and eventually at their "Centre of Excellence" proposed for Cairo, Egypt.

Technical and Licensing Affairs – This department has documented most of its procedures and processes including posting of these data on the Internet, accessible from the TRC website. Copies of licenses for the various operators the TRC regulates have

been developed and draft versions of each are on the Internet. This group also has responsibility for "type approval" of all customer premises equipment, personal equipment and network technology deployed in Jordan's telecommunications infrastructure.

The biggest problem for this group is staying current on the exploding surge of new technology wanting permission to "attach" to the various operating networks. Also network operators are "interconnecting" with other operators networks. Almost all of these interconnections are electronically different and in many cases at different locations. Extensive contact with equipment suppliers, other regulatory agencies and use of the TRC Product Testing Laboratory are the main tools used in performing their critical job. The Director produced an extensive list of the needed training for himself and his staff. I left this list with the Director of Training and Administrative Development, Mrs. Muna Hakooz, for follow up. Another HR concern is the apparent lack of a succession plan. The Director needs to carefully review people who may be developed and trained as his possible successor who can very effectively perform his current duties and those which maybe added in the future.

A second significant problem is the deployment of a new National Numbering Plan. While well underway, an effective methodology for allocating the 800 Services has not been forthcoming. They are developing procedures and are resolving each on a case-by-case basis.

A third area of concern is the quality of technical service being provided by the operators. While the criteria has been communicated by the Directorate through the licensing process, no meaningful data has returned to the Group and no database or tracking methodology has been put in place. I urged that they try to revitalize this request, keep it simple, and insist that the requested data be sent in on the Internet so they can view, analyze and catalog as time permits.

Concern was voiced regarding the possible licensing of other network services providers beyond the incumbent, Jordan Telecommunications Corporation (JTC). Other operators must be licensed if JTC continues to be unable to provide high speed digital access at competitive prices. I suggested that the group carefully study the progress made on their (JTC) commitment to the King on high speed digital access and to study what other regulatory jurisdictions are charging for similar bandwidth and speeds. These data may be needed in a licensing procedure for a competitor to JTC.

While the licensing process and documentation for current operators and services is in adequate condition, grave concern was voiced for how to deal with requests for licensing for new services, such as 3-G wireless, MSS services and wireless local loop distribution systems. I suggested research via the Internet of vendor sites, requests for technical information from standards groups and attendance at technical seminars as possible source of sorely needed information. Also insist on "type approval" requests for all elements of the new technology to include staff training which they can do under Law No.13.

Telecom Services, Economic and Financial Studies - This Group is primarily focused on conducting economic studies on telecom services to determine if the operators are properly charged for their licenses and services. Embedded in this group is a two-person group responsible for Customer Service/Consumer Affairs.

The major problem within the economics group is the need to be trained on cost study methodology and how to best obtain the elements for doing econometric studies. I suggested various sources of these data to the group from the FCC Website and suggested visits to local libraries and universities where enormous volumes of literature on this subject is available. An area where this need is most needed is in their efforts to price leased line circuits. They are also concerned over whether prices charged by JTC and the GSM operators are fair. I committed to sending information I have in the USA to them on these matters, but I also suggested a check with ITU on this type of comparative cost/price data as numerous studies have been conducted on a worldwide scale.

The Customer Service/Consumer Affairs Group does not seem to have any problems as they rarely get a complaint. This tells me that the public/consumers are not aware fully on how to make a complaint or escalate a concern. Citizens seem now to "call their minister", political friend or just tolerate the mistreatment. The TRC desperately needs to use its Public Relations Department to raise the public profile and knowledge of the TRC. A properly trained and functioning Customer Service/Complaint processing function would add statue to the TRC, but would require more well trained people. I would strongly recommend the current and all new employees in this Section be given training in Interpersonal Skills, Conflict Resolution, Case Studies in Problem Solving and the technical aspects of the many services that TRC must regulate.

The Customer Service group has requested no Grade of Service information from the various operators and obviously are receiving none. This situation should be reversed immediately! These types of criteria for service measurements are readily available. I provided some to the Director General and will send more when I return to USA. The TRC staff should publish these requirements to the proper operators and then insist on the receipt of this data from these operators on a regular basis via the Internet. More than any other Group, the Customer Services people need the full list of training covered in the proceeding paragraph.

Spectrum Management - This group, particularly the Director, does much more than Spectrum Management even though this is his number one priority. In this Spectrum Management position, the greatest impediment to effectively managing the Kingdom's spectrum natural resources is the lack of cooperation from groups and associations who use spectrum but will not provide information to the TRC on how and to whom the spectrum is assigned.

The major difficulty comes from dealing with the Jordanian Army Signal Corp. These people are by far the largest claimant to bands of spectrum and steadfastly refuse to discuss how and for what service they might apply the various bands. While under the

Law No. 13, the TRC does not have a mandate to manage the spectrum used for National Defense (Article 31b.), it is suspected and has been clearly demonstrated, the Army protects large bands of spectrum, but does not actually use the bandwidth. To resolve this issue, I suggested continued pressure by the Director on the Signal Corp to free up excess bands and for him to enlist third party assistance in gaining more flexibility with the Head of the Signal Corp. The Broadcast Band, Video, Aerospace and Maritime operators are a bit more cooperative, but need continuos prodding.   Flow of the work in this department is well documented. All applications for wireless licensed services are computerized and available on the Internet.

This Directorate has only two people who monitor all wireless operators and frequency bands. They in turn have very limit equipment to do their job. They sorely need a mobile monitoring platform as recommended in USTDA funded project conducted in late 1996 by Telconsult, Inc., Washington, D.C. The projected cost for such a tender at the time was for $500,000 US. A van and suitable, minimum equipment was projected to cost less than $100,000. This would more than quadruple the monitoring productivity of their Directorate and I heartily recommend revisiting that tender and find funds for its implementation. (See Annex B) Another important use of this vehicle would be to determine if additional bandwidth requests by wireless operators is warranted. If this sorely needed asset is obtained, GID and/or Army Signal Corp personnel would have access to ride on monitoring trips. The TRC is concerned only with radio frequency (RF) energy being radiated into the spectrum band and not in the voice, data or other content of the transmissions.

The technology evolution throughout the world (and Jordan) is moving most rapidly in the wireless telecommunication infrastructure. With the introduction of wireless handset data (Internet), 3-G broadband digital cellular, high speed digital wireless Internet access (desktop) and wireless loop technology, this Directorate will be on the leading edge of the regulatory process and must be given the equipment, training and manpower to do their job in accordance with the Law No. 13.

The Directorate also provides management, guidance and oversight to the IT and computer system for the TRC. This role and my analysis of this activity will be covered in the second Section of this report.

Financial and Administrative Affairs - This group contains the Accounting, Revenue and Collection, Archives and Media/Public Relations Sections. Discussions within the Group determined that the day-to-day accounting and auditing functions are driven by various Laws of Jordan and Regulations issued by the various Ministries. No serious problems seem to exist here except for the short time the Director has been on this job. Since he comes from the Planning Ministry's office, he seems qualified to do the Financial piece of this job.

However, the Media/Public Relations and Affairs Section seems to have limited direction, productivity, guidelines and abilities. They seem to be "travel coordinators". Their efforts to produce the TRC's monthly publication, "The Communicator" seems to immerse them and it is rarely produced on time. They are doing very, very little to raise the profile of TRC, to communicate the mission or mandate of the TRC to the public, nor to inform the public of the services that are available via the Internet, telephone or visitations to the offices of TRC. Their job description needs to be re-visited, revised and measurements of performance put in place to make their day-to-day activities "PUBLIC" and insist they "get the message(s) of the TRC to the public". They should also use the outbound capability of the Internet to broadcast press releases to the media, operators, Ministries, international telecom groups and consumer groups regarding the activities, proceedings, accomplishments of and "how to contact" the TRC Directorates effected. Strong supervisory and management intervention is needed if TRC is to fulfill its "public" trust mandate.

Training and Administrative Development - This group functions as the Human Resources Development (HRD) for the TRC. It is limited to one Director and a secretary. However, due to the maturity, experience and very hard work by its Director, it seems to be making major strides in identifying the human resource needs of the TRC.

Job descriptions, personal performance appraisal procedures, training requirements and administrative procedures for the timely administration and production of these necessities is within a few weeks of reality. The next task is to train the TRC staff on effective and timely use of these tools and to locate sources of needed training, get it funded and scheduled. The Director and I discussed sources of training (interactive CD's, video distance learning, "centres of excellence", JTC, local universities, NGO seminars, etc.). She is trying to gain approval to attend an ITU Educational Update Seminar to assist her in cataloguing and pricing the most pressing training needs. (See Annexes C) Annex D is a seminar she hopes to attract to Amman.

One very obvious sentiment expressed throughout my visits to various Groups was that the technical people want financial training, the financial and administrative people want technical training and the legal people both want technical and financial training. So the desire to learn permeates the entire TRC staff. Only the sources of the desired training and the budget of funds are missing. The Director of this group has the needs well defined and is wrestling with the timing and financial elements. All segments need general management training! They all need to be more assertive in their actions.

This Director feels there is entirely too much "paper" flowing within the TRC. The full capability and potential of the Intranet within TRC is not being utilized and she is suggesting a Director-level task force be assembled under her leadership to mechanize or computerize much of the current paper shuffling. I heartily agree with her and made a number of suggestions including challenging each Director and the DG's office to nominate one (1) function per month for migration to the Intranet or Internet including providing the procedures to effect the computerization (and elimination of paper).

An HRD database does not exit. I suggested she broadly outline one and with the introduction of her new forms, procedures and practices, provide a pathway for mechanizing them and creating their database. I am told the capacity for such a function exists within the current hardware and software systems.

This Director is struggling with writing job descriptions for future positions that will need to be filled at the TRC staff. I mentioned to her if she would get me just a generic description of the job functions, I would consult with some of my HR colleagues in USA/Canada and have them fax or email her some material. (I have two excellent such colleagues/groups.) She will do so.

None of the HRD functions or work processes are documented, flowcharted or mechanized. This needs to be remedied as the human element and the ability to hire, retain and pay good people is absolutely essential to the future of TRC.

Recommendations

1. A major initiative is needed to raise the public profile of the TRC in order for it to perform the regulatory oversight of the various operators under its jurisdiction. This raise in profile will add to its efforts to become a more independent agency.

2. TRC must clearly communicate to each of the telecommunication operators the information it requires and in what timeframes these data are required so TRC can do its job in accordance with Law No.13.

3. The TRC Legal Directorate must develop, gain approval and implement a set of Rules of Practice and Procedures which will allow it to conduct evidentiary hearings on administrative matters and perform rule making. Its young, bright legal staff must have training in international telecommunications law, the technological/convergence explosion occurring worldwide and its impact on the Kingdom of Jordan.

4. The Technical and Licensing Group should leverage the vendors and operators who wish "type approvals' to conduct technical briefings, seminars and indepth training for these staffs as part of the approval process in order to keep themselves current on technology.

5. The Customer Service function must be re-defined to the current staff and a clear set of operational guidelines, measurements and performance criteria imposed on the Group. This will be critical if Recommendation #1 above is properly executed.

6. The Director General and the Director of the Spectrum Management Directorate should visit the USTDA office and push for funding for the Mobile Field Radio Frequency Monitoring Platform. USAID may be of help on this initiative.

7. The Public Relations Department needs to be re-invigorated to do its job with the Public. It needs clear operational guidelines, measurements and performance criteria imposed upon it ASAP for the good of the TRC.

8. As the TRC continues to grow in numbers and mature in its mission, a full blown, fully functional Human Relations Directorate should be established. Training must be delivered as noted in each Directorate review. The TRC is woefully understaffed and desperately needs permission from the Ministry to add people in order to comply with Law No. 13 and assure WTO compliance.

2.

Database and Computer Systems in Support
of a More Transparent and Effective TRC

Background

As has been noted in the earlier pages of this report, a modern, efficient, state-of-the-art telecommunications infrastructure is critical to achieving the national goals of world-class leadership in the Information Technology field as mandated by H. M. King Abdullah and supported by the private and public sectors under such programs as "REACH" and Jordan Vision 2020. Therefore, it is reasonable to expect the regulatory agency created by Jordanian Law to strive to be the showplace for such technology convergence and utilization in the performance of its lawful obligations to its constituents. To that end, I have conducted a very broad overview of the IT assets

currently in place at TRC and developed a forecast of the minimum requirements for the near term future. Acknowledging the time constraints to review such a critical TRC element, and given the breadth of the task-at-hand, I relied heavily on the goodwill, cooperation and splendid preliminary work done by Mr. Moh'd Alwathiq Shagrah, Director, Spectrum Management, on this subject. His complete report is attached as Annex E.

System Overview

At present the TRC system has 68 personal computers and 7 servers meeting the needs of its constituents who are:

    a. TRC employees – At the present the primary use of the system is for generating documents that are essential to the performance of the duties of the various Directorates and the Director General's offices. This includes correspondence, production of draft licenses, standards and regulatory documents, scanning in documents of interest to an archive system, accumulation of a modest amount of operator operations data, posting some PR releases and hosting a relatively deep Internet Website (See Annex F for copy of the home sheet.)

    b. Government Sector – Use of the Intranet to fulfill requests by government agencies for information and to receive inquires for information from them via the Internet.

    c. Operators – Both current and prospective operators can hit the Website and pull desired material on such items as described in a.) above plus obtain copies of type approvals, committee lists, feedback, forms, consumer information and FAQ's. (Frequently Asked Questions)

    d. Consumers – Have full access to most of the links off the Website, plus the ability to enter comments and complaints on operator service and treatment.

Information Management

It is vital for the credibility and on going reputation of the TRC that data the IT system contains be accurate, relevant and current. Maintaining data quality demands effort and

discipline. Usually the best person to be responsible for maintaining accuracy of a particular document is the author. Review prior to publishing is an important aspect of ensuring information quality. Information for external distribution is often sensitive, requiring internal management and legal review first. There appears to be a sensitivity to both of these issues within the TRC staff – but guidelines and process documents for insuring the performance of these functions must be put in place.

So that users rapidly and conveniently locate information they are seeking, mechanisms are needed similar to a library catalog. This is currently managed through standard software search engines and via links, or managed access paths (MAP's) on the Intranet and the Website server. At the present time this methodology is adequate and no complaints have been received.

System access, control and security are of paramount concern in the high profile environment in which TRC to operates. System security must be operated at both the logical access and physical network layers. Currently three levels of access security is exercised to prevent unauthorized access.

> ➢ Read access for users
> ➢ Modification access for information owners
> ➢ Posting access of new documents for authors

Disaster protection and back-up is provided. This is essential both for the software/information content and electrical power systems to protect the service rendering reputation of TRC. Levels of protection for these issues have been achieved by having duplex servers, making sure all development work and changes are tested on an off-line machine and the provisioning of emergency back up power supplies. Design in the network topology allows for duplicate paths for vital Internet segments where acquired. Reliability has been stressed to the people involved.

TRC Minimum Information Technology Requirements

World class telecommunication is key to the successful implementation of the role of the TRC. To lead by example through effective use of technology will enhance TRC's role of

stimulating the Telecommunications Sector and supporting the IT mandates of the King. Some of the major aspects are listed as follows.

Publishing Technical Standards
It is required to publish telecommunications regulations and technical standards for use by both telecommunications users, service providers and equipment suppliers. The annual report will also require to be published and widely disseminated.

Specialist Library
A specialist library of books, journals, standards, Government of Jordan economic data and telecommunications market information will be built up and maintained. The contents of the library will need to the catalogued and the catalogue kept up to date. To enable effective access to this information resource, the catalogue has to e communicated or published.

Performance Monitoring
Performance data, for example about telecommunications service provision and usage, will be accumulated and maintained to enable analysis and comparison. Summaries will be constructed from time to time to be communicated as required.

Communications with Government and the Telecommunications Sector.
It is necessary to communicate with the Government of Jordan and all the different components of the telecommunications sector, service providers, service users and equipment suppliers. This communication has to be two way. Easy to use processes to get in touch with TRC, provide feedback and handle complaints are needed.

The Intranet/Extranet provides a cost effective, flexible solution that is very suitable to meeting the communications and publishing needs of TRC.
The project should be carried out in three phases:
1. Intranet development, using of the technology "in house" to gain experience
2. Extranet development, extending Intranet to include external partners
3. Enhanced development, increasing information content, enhancing services and improving communications.
A prompt start is made on phase one using resources already available to commence the practical learning process.
In its role of stimulating private sector investment, TRC should embrace this technology as an example to others. (E- gov)

Information Content Requirements
Four categories of information have so far been identified, to be developed, maintained and communicated.
Quick and Updated Information
This consists of addresses to obtain market data, market research reports and consultancy reports. Also included is how to access a number of news letters, Web sites and other online sources of up-to-date information (such as what's new and committees meetings) about developments in telecommunications and related fields*.*

Background Information
This is made up of a selection of books and articles to provide the background for more detailed analysis. The subject areas covered are:-
  1-   Economics
  2-   Information Society
  3-   Law
  4-   Policy
  5-   Regulation
  6-   Technology
  7-   Other

National Regulation and International Organisations[1]
In this section is listed the publications and official documents dealing with the telecommunication regimes in a number of countries such as:-
  • USA.
  • Canada.
  • European Union (EU), and other European jurisdictions
  • Japan and other jurisdictions in Asia.
  • International   Organizations,   such   as   the   World   Bank,   International Telecommunication Union (ITU) and so on.

Recommended Material
Here is put forward recommended material from the previous three sections. The selective list of recommended publications aims to provide the basic material for the Information Center to meet its initial needs.

Information Distribution
As stated, in section 3.4 it is required to provide access to customers for the information in the Information Technology Center to people within the TRC and to those important group outside such as involved government departments, telecommunications service providers, equipment suppliers and users. Such a communications group made up of selected people inside and outside an organization can be naturally served by the newly available techniques of the Internet and the World Wide Web, (WWW). The name for an Internet like network that is constrained to be only within an organization is an Intranet. An Extranet is similar, but where selected groups outside the immediate organization have been given access.

Information Technology Platform Content Management

Authoring and Information Ownership
It is vital for the credibility and ongoing reputation of the TRC Information Technology Center that data it contains is accurate, relevant and current. Maintaining data quality demands effort and discipline. Carefully controlling the authoring of information for publication by the Information Center and clearly identifying roles and responsibilities for data quality are essential. Usually the best person to be responsible for maintaining the quality of a particular document is in fact the author. Review prior to publishing is an important aspect of ensuring information quality. Information for external distribution is often sensitive, requiring internal review first.

Locating Information
So that users can rapidly and conveniently locate information they are seeking, mechanisms are needed analogous to a library catalogue. An "Information Map" is needed to provide managed and controlled access to information through "managed access paths". Additionally, it will allow users to locate relevant information through hierarchically structured indices with minimal effort. A search and indexing mechanism is also necessary to enable users to search either the whole information repository or specific sections.

Change Control and News
A safe Change Control process will be needed to assist information owners with version control and information quality management. Posting and review dates on documents will also reassure the information users.
Linked to this is the need of users to know if any updates or changes have been made in a given time period, or indeed whether any new documents have been published that they perhaps should check.

Access Control and Security
System security has to operated at the both logical access and physical network layers. Because access is made possible outside the organization careful consideration has to be given to how access is to be managed. The logical access layer covers the authorization, provision and cessation of access, preventing unauthorized access, monitoring of access service levels and controlling of congestion should it occur. There will be three levels of access authority. Effective security measures are required to prevent unauthorized access at all three levels.
1. Read access for users.
2. Modification accesses for information owners.
3. Posting access of new documents for authors.
At the physical network layer, the network topology and use of controlled access gateways will prevent accidental or malicious access. For example, those parts of the network containing information for internal use only will be isolated and protected to prevent accidental or malicious access.

Disaster Protection and Back-up

Not to maintain the quality of the Information Centre service expected by customers will adversely impact the reputation of TRC. At the same time to spend scarce resources to avoid something that might never happen is wasteful. Key is to carry out a risk analysis linking the cost of protective measure to the impacts of possible risks.

An example of a possible risk is loss of data, which could be due to human error such as accidental deletion, equipment failure, a wider failure such as a power outage or more unusually deliberate action. Recovery from such an occurrence requires that there is an effective data back-up and restore process in place. Another example is loss of the service due the server being down, a software problem, accidental or deliberate human error or again a wider problem such as power failure. Levels of protection from this can be achieved by having duplex servers, making sure all development work and changes are tested on an off-line machine and providing back-up emergency power suppliers. Design of the network topology should allow for the provision of duplicate paths for vital segments, where required. Reliability of people has also to be considered**.**

Feedback (It is available in the TRC web site)

Feedback will be facilitated by convenient built in links to email access and provision of a complaint submission form.

Information Technology Network Information Center Implementation Strategy

Network Infrastructure

Internal

The internal network topology will be designed with the redundancy to deliver the connectivity and capacity needed with the required level of reliability. TCP/IP support and dynamic address allocation will be provided, using a DHCP server.

Internet Connection

The Internet connection needed is dependent on the number of users, traffic anticipated and service standards intended. A 128K line is a start which can be upgraded into a 512K or above depending on the cost and need.

Firewall software is needed to protect the Intranet from the Internet users. This is a gateway that controls access. Firewalls permit desired services coming from the outside and allow access to the Internet from the inside.

External Network (dedicated stand alone server)

The external partners to TRC can gain access to the TRC WWW server either via the public Internet or via direct "private" links to wherever the TRC server is hosted.

The "private" links for Extranet users can be dial in or leased line. This is a very secure approach, although a firewall will still be needed to protect internal information. It would "lock in" TRC's customers. The TRC host connected to the TRC network, which is connected to the Internet, can do this. This is the most flexible solution, but the hardest to keep secure requiring a firewall (new HW and SW) to restrict user access to public information.

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Solution Software

Authoring tools

Many authoring tools are now available especially from Netscape and Microsoft. Simple tools are needed as HTML editors and also converters from programs such as word into HTML.

Simple tools are available like Netscape Composer or Microsoft Front-page for non experienced users and more complicated tools are available for authoring such as LiveWire from Netscape or IntraBuilder from Borland. SoftQuad have an excellent editor in HotMetal, which operates at three levels of complexity from text to WYSIWYG and comes with a useful set of WWW site management tools.

For graphics ADOBE Photoshop and illustrator and their counterpart from Corel Draw are required.

The Common Gateway Interface (CGI) is the standard UNIX method for WWW servers to run back end applications, e.g. databases and forms processing. Tools for CGI such as Java and Javascript are needed if taking the Netscape route and Visual Basic and Active Server Pages if Microsoft.

What is available:

- Microsoft Front-page,
- Corel Draw,
- ADOBE PhotoShop.

What is needed:

A complete package of software and services that form a dynamic content-driven to manage all of TRC's information is needed

This package must include at least the following:

Web server engine that connects the original content to the TRC's web site,

Integration with TRC web Site Server deployment to enable enterprise searching, notification, and more.

Web content server that stores and manages all of TRC's mission critical information and is integrated with all the popular authoring applications (ie. Word, Powerpoint, etc.)

Automated Web publishing that translates documents authored in over the popular

To build and delivers a scaleable, high-reliability, integrated web authoring Content-Services-Basic-Implementation-Packages environment.

Content-Publication
Enable automated web publishing of most TRC's source documents to

HTML/XML including creation of the publication templates that control the "look and feel" and navigation created for TRC's HTML/XML pages.

Web-Workflow
Web-based review and approval workflows which ensure the right content gets onto TRC website.

Web Site (new one is needed)
For Web Servers on a UNIX platform, Netscape Enterprise and Enterprise PRO is the leading servers. On NT based servers Microsoft IIS is an option. Netscape also offers a range of other servers in its Suitespot product, such as PROXY, News, Messaging, Video and so on.
There is now a wide range of products, such as servers, proxies, firewalls and so on from a number of competing manufacturers. The choice depends on application. For example Oracle (8i) WWW Server is very effective for delivering a database information source as part of an overall information service.

Document Management
Netscape offers the Netscape catalogue server for the management, version control, search of documents. This server indexes documents on both the Internet, Intranet and the Extranet. Microsoft have their Index Server.

Browser
The best two browsers available on the market are Netscape Communicator and Microsoft Explorer. Netscape still leads in market share but Explorer is becoming a strong browser with the same features as Communicator. The support of Communicator for Java and Java script is still better for the provision of the more rich in function services.

Infrastructure Software

Operating Systems
The two main options are UNIX or NT. UNIX is proven and reliable. NT is a strong contender. Factors such as cost and traffic, security, company standards, in house support skills, support in Jordan all have to be taken into consideration.

What is available:

- Unix , Solaris 2.6,
- Windows NT 4.00.

What is needed:

- Operating System (Unix is Preferable) with the following:

1-   64-bit architecture,
2-   Unlimited user license,
3-   Supports Multi-Threading,
4-   Support MOTIF , PostScripts Display, OpenGL Graphics,
5-   C2 level security,
6-   Includes X-windows (if Unix)
7-   Includes XGL, XIL, PEX and ODBC,
8-   Includes FTP, DNS, Telnet, TCP/IP, NETBUIE, APPLETALK, NFS and NIS,
9-   Includes Management tools which provides easy graphical interface for common system administration functions.

Firewall and Internal network security

There are several options for firewalls, depending on the functionality and features needed. A router firewall prevents access to particular network segments, but allows the internal network to be visible to the external network, so making spoofing easier. A firewall proxy, which hides the internal network from the external one by re-transmitting the packets, gives higher levels of protection, is easier to configure and offers a wider range of facilities. Whether such a proxy needs a dedicated server depends on capacity.

What is available:

Checkpoint is the Firewall system that used at the TRC site, but it is licensed for 25 users

What is needed:

TRC needs at least a Firewall System with 100 users license.
With the Expanding Internet technologies TRC need a firewall system for internetworking and network security. TRC require an innovative solution that integrates all aspects of network security, connectivity, and management.
It must be Easy to understand, text-based configuration and provide the following:

- Filtering of all header fields in the IP, TCP, UDP, ICMP, IGMP
   packets.
- Intelligent RIP and FTP support.
- Easy to understand, text-based configuration.
- Graphical management interface for configuration of several
   firewalls.
- Dynamic rules, including counters and time-outs.
- Extensive logging, alerting, and counter intelligence.
- Prevention of packet and address spoofing - GNU GPL license.

A complete enterprise security solution is also needed and must provide the ability to:

-    Authenticate TRC network users with strong authentication techniques before granting access to sensitive data,

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- Ensure the privacy and integrity of communications over untrusted, public networks like the Internet,
- Provide content security at the gateway to screen malicious content, such as viruses and malevolent Java/ActiveX applets,
- Detect network attacks and misuse in real time and respond automatically to defeat an attack,
- Protect internal network addressing schemes and conserve IP addresses
- Ensure high availability to network resources and applications,
- Deliver detailed logging and accounting information on all communication attempts.

Network Management
Basic network management functionality will come with the operating system that is obtained. A variety of specialist software packages are available should additional functionality be needed.

Hardware (a new server is needed)
There are many choices for the computer system hardware on which to run the main Web servers. The most widely used systems for Web servers are UNIX machines such as Sun, IBM, Digital and HP. The spread of UNIX is because of the multitasking and mature TCP/IP software built in. NT servers are now spreading and becoming more and more reliable. NT servers are a good option and there is an increasingly a wide range of hardware that could be used.

What is available :

- Sun Ultra-Enterprise 2 , Server (Unix Solaris ver. 2.6)
- IBM Netfinety 3000 (Windows NT ver 4.00)

What is needed:

The hardware to be selected can depend on many factors, but has to be sufficiently powerful with enough memory capacity to deliver the quality of service required.
- No. of users
- Anticipated traffic levels
- Ease of set-up
- 64-bit architecture
- Multi-processor (500 Mhz at least)

Web Site Development
   A normal web site will involve the following development steps:
- Requirements development to produce a site map
- Information Design to produce the text, text flow and layout
- Graphic design and user interface
- Technical design of databases, Java programs etc.…
- Testing of site

- Roll-out, monitoring and feedback
- Updates and changes

Information Input

- Digitising of all non digital information
- Conversion of all digital information,

What is available :

A document Management system for archiving purposes based on Saperion ver. 9.00. This can be the start for the full automation process that must be implemented to achieve the goal of TRC information center. The Saperion system is working under Windows NT . ver 4.00 platform using

    A Gateway 300 Mhz processor Server ,
    1 HP scanner,
    1 JuekBox
    3 Pc's for Indexing, Retrieving and Querying.

What is Needed:
A powerful system for enterprise document storage and retrieval needs with all major modules such as Imaging, Document Management, Computer Output to Laser Disk (COLD), Jukebox Management and Workflow system. It must be based on 64-bit architecture at least and:
- Server with 2-processor (500 Mhz at least) (HW),
- Scanner for A3 documents (HW),
- 4 Pc's for Indexing, Retrieving, Querying and Management's Issues.

Implementation Phases

An overall three phase program is recommended:

    Phase 1 : Intranet development
At this stage an Intranet will be set up to serve the Internal users of the TRC. Users will have secure access to information such as the technical standards or the specialist library through their web browsers. The information on the system can be limited to that recommended in section 4.4 initially. The Intranet will connect to available databases and a referencing system. Alternatively a knowledge database can be used to index and link to resources available in other formats such as Word or Excel documents.
An important aspect of this phase is the learning that takes place not just about the systems but also about the processes of managing information and providing an information service. To use specialist contractors could be very helpful at this stage.

Phase 2 : Extranet development

At this stage the Intranet will be extended to include users and information from external partners of the TRC. They will be able to interact and use the information available on the Intranet of the TRC. Also the third party information will be web published and access to it will be available to all or some users.

Key to the successful widening of the service to external users is not adding more information but ensuring that the service has a sufficiently high standard of usability in terms of functionality, ease of use and reliability. The use of specialist contract resources is most likely to be essential for this phase of the work.

Phase 3 : Enhanced Extranet development

More information is to be added at this stage and more services to enhance the communication between all parties will be developed. The pace at which this phase can be accomplished will depend on the internal and external resources that can be made available. Feedback from customers can be used to justify budget provision and set the priorities for the areas to developed and improved.

Skill Sets Needed and Their Possible Development

Authoring Support

At least one person is needed to work with and guide the Web page and information authors. Besides providing authoring consultancy this could also operate an authoring and information ownership access approval process in line with senior management direction.

- Programming experience : Visual basic, databases
- Information Map and Index management
- HTML, Java and CGI.
- Manipulation of images using ADOBE Photoshop etc.…

User Support

At least one person is needed to advise, train and support the information service users inside and outside TRC. Besides running a help desk this person could also operate a user access approval process in line with senior management direction.

- Internet usage and browser support
- Database entry
- HTML
- Training skills

System Development and Implementation

IT project management skills will be needed to manage either internal or external systems specialists.

The numbers of systems development specialists needed will vary from zero to perhaps half a dozen, phase of the overall project and the number of different skills involved at that phase. Outsourcing to a firm with the range of specialist skills and necessary numbers of development staff is an important option here. The use of experienced contract systems engineers fresh from working on other similar projects will ensure

access to the latest tools and developments. IT contract management skills will be needed internally to manage any outsourced development.

System Management and Support
At least one person, experienced in UNIX administration (OR/AND NT) is needed to be the Webmaster to manage and support the system. This can be outsourced, which may be a useful option initially.

- Server set-up and configuration: Web server, Proxy, Mail etc..
- TCP/IP and networking
- HTML, Java and CGI.
- Management of Security
- Service advertising and promotion
- General System Administration skills

Conclusions

1.The communications and information publishing needs of TRC have been addressed and the systems requirements listed.

2.An Internet/Extranet solution has been proposed to distribute information in a user friendly way from a variety of data sources, including databases.

3.The longer term issues have been considered such as information management, security and quality of service.

4.A practical method of implementation in three phases has been identified to minimise risk and cost by concentrating on learning initially.

5.An Information Technology Center implemented in this way will not only meet current customer expectations but will lead to the provision better services to the Telecommunication Sector

Recommendations

1. I strongly recommend the creation of a Division of Information Technology/Planning within the Spectrum management Directorate and this Directorate be re-designated to reflect this vital management function.

2. This new Division would be composed of the current Information Technology Manager, Mr. Mohammed Dabbas, the existing archival function and archivers, current computer and IT operations personnel and the following new-hires:

   ➢ Computer Engineer (with Website construction and operation experience)
   ➢ IT Technican/Support (also use contractors and vendor warrantees)
   ➢ 3 Archivers (who also assure authors permission and internal review)

3. Increase Internet bandwidth to 128 Kbps or 256 Kbps as traffic builds

4. Add new main server as current system is licensed for only 25 users

5. Use old server to become customer information server as Customer Service function is re-vitalized and inquires and responses are encouraged and received

Summary of Conclusions/Future Strategies

1. The Jordan Telecommunications Regulatory Commission under the visionary leadership of the Director General and his Directorates are to fully support the initiatives of H.M. King Abdullah, his REACH strategic action plan, the Jordan Vision 2020 plan of the Private Sector and maintenance of membership in the WTO.

2. The DG of the TRC is highly desirous of creating a very visible, highly independent, efficient and fair regulatory climate within his agency. To be successful he must inspire and insist upon a change of focus by his Directorates to become "external" and not be internally focused.

3. This change in focus will require extensive training in Interpersonal Skills, Conflict Resolution and General Management Skills.

4. To effectively follow through, manage and gain the full benefits of this training, the DG should appoint a formal Human Resources Development Directorate.

5. The DG is very desirous of raising the public profile of the TRC to represent and Ensure the operators it regulates deliver high quality, fairly priced telecom services to consumers. Currently, the average consumer in Jordan is not aware of TRC's existence. The TRC Public Relations Department must be refocused on the external constituencies of the TRC. It is not there today.

6. The Directorates must very clearly inform the operators of the Quality of Service, Grade of Service and operational data it requires from them on a monthly or annual basis. This data should be kept simple, transmitted via the Internet, processed on the enhanced IT platform and made available to the appropriate user group on higher speed digital network.

7. The Legal Department must develop and gain ministerial approval for a set of "Rules for Rule Making and Procedure". The young legal staff needs training on International Telecommunications Law, convergence of advanced technology and public finance.

8. The current relatively sophisticated computer system at TRC is primarily used as a word processor system and for hosting a modest Website. An Information

    Technology Division needs to be formed, a computer engineer, technicians and Archives added to reach the full capabilities propertied by Annex E.

9. The DG needs to gain approval for the organization shown in Annex A as "proposed". He is a visionary, but is currently bogged down with the huge volume of paper he must sign and review. A major "paper reduction" program should be critical and chaired by Muna Hakooz.

10. A way must be found to get JTC to reduce rates on access via high speed digital Facilities. The DG was provided input on possible alternatives. It is felt that under Article 12 b of the Law No. 13, the TRC can regulate the prices and quality of these interconnections.

11. In order to be in compliance with the WTO guidelines, the telecommunications regulatory function must be independent of budgetary restraints, decision making oversight and to handle administrative matters in accordance with Law No. 13.

This is a unique moment in time, a new millenium opportunity for the Jordanian TRC to perform a great service for H.M. King Abdullha and its people by becoming the strongest single force that creates a world-class telecommunications infrastructure.

**THE VISION OF THE DIRECTOR GENERAL
OF THE TRC IN SUPPORT OF
H.M. KING ABDULLAH'S INITATIVES**

In conducting this assessment, the consultant has been very impressed with the commitment of the Director General (DG) of the Telecommunications Regulatory Commission, his Directorates and staff to ensuring that the IT Sector in Jordan has a competitively priced, world class telecommunications infrastructure. Implementation of this commitment, throughout all areas of government, is essential to timely execution of H.M. King Abdullah's information technology initiatives, as expressed in the REACH strategic action plan, and of the private sector's modernization strategies, as presented in the Jordan Vision 2020 document.

Although the DG has been at the TRC for less than a year, it is very obvious in working with him that he wants to mold a modern organization and focused on upholding the spirit, intent and literal content of Law No. 13. He wants the TRC to be a highly visible advocate for both the public users and the telecommunication operators it regulates, an independent agency which is eminently fair to all parties involved in the regulatory process. It is to this end that he wants well trained employees, well qualified, experienced people to manage his strong, well-framed Legal Directorate and to implement a transparent, world-class information technology platform for processing, analyzing and distributing information. The DG has the vision and the zeal to drive his agency to be the best of the best in the regulatory field, and by default, to make Jordan a leader in telecommunications in the region.

There must be high level support to make TRC a truely independent regulatory authority. This is essential pre-cursor to the world-class telecommunications that His Majesty seeks. However, it is also fundamental to WTO understandings on telecommunications.

In the near term, that is, in the next four months, the TRC must be granted special "modernization pilot" status, preferably by the Royal Decree. This status would confer the following rights and responsibilities to the DG.

- **Board Reconfiguration.** The right to reconfigure the TRC's Board of Directors to refocus its membership toward independence, and a private sector orientation. Note that the fact that the Minister of Telecommunications and certain other senior government officials are on the Board precludes the TRC form complying with WTO understanding in this industry.

- **Budgetary Independence.** In the short run, that is, immediately, TRC must have budgetary independence. In the past year, the commission has generated almost $40M from license fees, yet it has operated on a budget of less than $1M. This ratio is unsatisfactory to enable the timely first class regulatory environment required. Such critical capital items as mobile frequency testing platform, new main servers for optimizing the IT platform and greater bandwidth for its Website must be procured immediately. Operational enhancements are equally urgent. To mention only a few, two deputy-level managers for the Administrative Affairs and Technical Affairs are required. A fully functional Human Resources Development Directorate and an Information Technology Division must be put in place. Another grave need of the TRC is to raise its public profile. Few citizens are even aware of its existence or that they have certain appeal rights under the Law No. 13 to be heard if wronged. TRC must be enabled to institute this important aspect of accountability. The Customer Service Division <u>must</u> be properly staffed and funded so the citizens who do not get satisfactory service from the various service operators can appeal to the regulators. The TRC needs a budget commiserate to its highly critical role to Jordan's IT future

- Meritocracy Implementation. One of the most significant constraints to realization of His Majesty's vision for the information technology sector, and indeed for the economy as a whole, is the practice of filling jobs in government based not on the job requirements or the applicant's qualifications, but rather on the basis of who the applicant knows. While this benefits the well-connected applicant, it penalizes the rest of the Jordanian public.

- **Modification of Law 13.** The TRC should spearhead the drafting of amendments to Law 13 which would enable institutionalization of the three suggestions above, and of others necessary for the TRC to move the telecommunications industry towards world-class status.

The following comments capture the DC's vision and purpose for the TRC of Jordan as it enters the new millieum:

1. Contribute to the overall economic development of Jordan in keeping with the mandates of H.M. King Abdullah by increasing the penetration of digital high speed telecommunications services as rapidly as is possible and economically feasible.

2. Offer high quality and reliable telecommunications services, on a universal access basis, to the people, businesses, tourists and institutions of Jordan. (Universal access means that all people in Jordan shall have access to a publicly available telephone, within a reasonable distance.)

3. Offer telecommunications services at reasonable, internationally competitive prices based on cost-based, economically supported analyses.

4. Encourage the participation of all elements of society – government institutions, state-owned enterprises, private sector businesses, associations, labor unions, consumers and others – in developing and contributing to the telecommunications sector through the Telecommunications Regulatory Commission (TRC).

5. Empower the TRC to create a regulatory regime and procedural framework capable of fair, equitable, transparent policy formulation, telecommunications regulation, licensing, enforcement and frequency management. This will be conducive to the rapid network development and efficient regulation of telecommunication services at affordable prices.

6. Encourage the accessibility of telecommunications for villages, rural areas, industrial and agricultural developments, new settlements and low-income segments of Jordanian society and other segments in need of telecommunications services.

7. Take advantage of developments in technology, equipment capability and telecommunications regulation and management to offer a broad range of telecommunications services, which support the competitiveness of Jordan industry and business as mandated by the King.

8. Encourage the preservation, development, efficient management and allocation of the spectrum in a way that recognizes it as a valuable national resource for the society and the economy of Jordan.

9. Ensure compatibility and transparent inter-operability of all network elements in the Jordanian Telecommunications Sector.

10. Ensure reliable, redundant and robust telecommunications networks for use in responding to and planning for national security emergencies and natural disasters.

11. Articulate a National Telecommunications Policy clarifying the roles, responsibilities and goals of all the stakeholders in the telecommunication's sector.

12. Encourage the operation of key Jordanian telecommunications operators to maximize their efficiency, service quality, deployment of advanced digital services and keep prices competitive with other international operators.

13. Empower the TRC to officially and effectively represent the Hashemite Kingdom of Jordan in international telecommunications organizations and forums.

14. Achieve the telecommunications regulatory independence and dynamics of progressiveness committed by the Jordanian Government to gain and retain membership in the World Trade Organization. (WTO)

This noble, very progressive vision must be allowed to take substance through true and timely independence, for the TRC as called for in Law No. 13, by allowing it budgetary technological and operational autonomy to make Jordan's telecommunications infrastructure indeed world-class.

Under Development.

TRC
Follow-Up Required on
Data Requests from Licensees

All Licenses issued by TRC contains paragraphs which outline the requirements for data to to be submitted to the TRC and with what frequency it is to be provided. Material requested, include financial results from quality of service, unit growth, failure rates, etc. Each of the Directorates of TREC, under the close supervision of the Director General should review the specific information requested of each Licensee, the frequency that the data is to be provided to the TRC, the distribution of the received data with the TRC, how the data is used within the various Directorates of the TRC and the feedback returned to the Licensees reflecting use of these data to improve regulatory oversight.

Examples of the type of data requests from JTC is attached. Each license contains very similar requests.

Also each License Document contains a paragraph similar to Paragraph 4.14 of the JTC License (attached) wherein it is acknowledged that TRC may request information, not specifically detailed in the License document, from time-to-time from various Licensees for general or specific regulatory use.