Request for Expression of Interest

A Concept Paper, Online Toolkit, and Training Material on:

– Managing the Radio Spectrum –

Country: International

Notice/Contract Number: 1251

Publication Date: April 26th, 2005

Deadline: May 16th, 2005

Funding Agency: infoDev

Implementing Organization: infoDev

Eligibility of Bidders: The consultants are expected to be a team of experts, consisting of personnel with professional capabilities in economics, law, and engineering, each with significant experience in spectrum management. The consultants should have a minimum of 5 to 10 years of relevant experience and a proven record of expertise showing that they are qualified in the field of the assignment and have previous experience in similar studies.

Expression of Interest (EOI):
infoDev intends to finance the assignment described below under funding to be made available by infoDev Donors.

The overall objective of this activity is to develop a concept paper, toolkit, and training materials related to radio spectrum management. Detailed description of the assignment is provided in the attached Terms of Reference.

The assignment is expected to be completed 28 weeks from the date of signing the contract agreement (i.e. approximately November/December 2005). The assignment is expected to require a level of effort of approx. seven person-months to be completed within the available lump-sum budget of US$180,000 which includes all fees, travel, and other expenses.
infoDev now invites eligible consultants to indicate their interest in providing their services. Interested consultants must provide information indicating that they are qualified to perform the services (brochures, description of similar assignments, experience in similar conditions, availability of appropriate skills among staff, etc.). Consultants may associate to enhance their qualifications.

For this assignment we specifically request submission of a five page note outlining how the consultants would conduct this assignment if selected. The note should include the following: (a) an analytical framework and a process by which the research will be conducted; (b) a timeline that demonstrates the consultants ability to meet the deadlines as noted in the Terms of Reference below; (c) a brief narrative on resource allocation; and (d) brief summaries of key personnel to be involved in the work, particularly their experience that directly relates to needs of this concept paper. In order to prepare the note, interested consultants should review the Terms of Reference, which is provided below.

We suggest that the EOI including the five page note and all additional documents, brochures etc. should not exceed 25 pages in length.

Electronic submission of the EOI, including the note, is preferred. The EOI can be submitted either as a Microsoft Word or PDF file. Please send your email submission to dpauschert@worldbank.org. (Please, cc. Mrs. Samia Melhem, smelhem@worldbank.org)

Selection will be based on the “Consultants Qualifications” (CQ) method (provision 3.7 and 3.8 of the Consultants Guidelines) in accordance with the procedures set out in the World Bank's Guidelines: Selection and Employment of Consultants by World Bank Borrowers May 2004.

Interested consultants may obtain further information at the address below from 10:00am – 5:00pm US Eastern Daylight Time.

Expressions of interest must be delivered to the address below by May 16th, 2005.

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Request for Expression of Interest

TERMS OF REFERENCE
A Concept paper, Online Toolkit and Training Material on:
Radio Spectrum Management

I. BACKGROUND/OVERVIEW
This is a joint knowledge product of infoDev and the International Telecommunication Union (ITU).

infoDev is a program committed to the use of information and communication technologies (ICTs) for development consisting of public bilateral and multilateral development organizations, working in close cooperation with partners from civil society and the private sector, and assisted by an expert secretariat housed at the World Bank’s Global Information and Communication Technology Department (GICT). Its mission is to help developing countries and their international partners use ICTs broadly and effectively, as tools of poverty reduction, sustainable economic growth, and empowerment of individuals and communities. Its work is rooted in the conviction that information and communication are indispensable elements of effective and responsive institutions, governments, markets, and societies. One of the main pillars of infoDev’s new strategy (approved by all its donors in July 2004) is the ICT enabling environment. Within that theme, infoDev will be producing research and knowledge products to practically assist its partners and stakeholders in reforming regulatory frameworks to allow private sector growth in the ICT arena. This entails adapting infoDev’s knowledge products to developing countries’ needs in terms of policy advice and capacity building services.

Web Site: http://www.infodev.org

ITU is a world-wide organization which brings governments and industry together to coordinate the establishment and operation of global ICT/telecommunication networks and services; it is responsible for standardization, coordination, and development of international telecommunications including radio communications, as well as the harmonization of national policies. To fulfill its mission, ITU adopts international regulations and treaties governing all terrestrial and space uses of the frequency spectrum as well as the use of all satellite orbits which serve as a framework for national legislations; it develops standards to foster the interconnection of ICT/telecommunication systems on a worldwide scale regardless of the type of technology used; it also fosters the development of ICT/telecommunications in developing countries.

The Telecommunication Development Sector (ITU-D) is the development arm of the ITU, the main responsibility of which is to foster ICT/telecommunication development in developing countries through policy advice, provision of technical assistance, mobilization of resources, and initiatives to extend access and bridge the digital divide.

Challenges to Regulators and Existing Approaches to Regulation
Most countries have established—or are in the process of establishing—regulatory authorities to implement competition-centered policies on ICT reform and ICT infrastruc-
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ture development. The diffusion, structure, and usage of an ICT infrastructure is influenced by the substantive regulatory standards that are applied, by the way regulators incorporate market considerations into their decisions, and by the relations they establish with the government, the courts, the sector itself, consumers, and the media. The ICT sector has undergone some dramatic changes within the past years, triggered by the development and convergence of new technologies which in turn is leading to a convergence of markets and services. These developments affect traditional regulatory approaches, raising questions such as how to deal with growing pressure to adopt converged licensing regimes and how to successfully realize the potential of new alternative infrastructures such as WI-FI and WIMAX to bring both services and high-speed Internet access to urban and rural areas.

The ICT Regulation Toolkit

As a tool to help regulators identify relevant questions and provide answers and guidance, infoDev in cooperation with the ITU has decided to develop an ICT Regulation Toolkit. The Toolkit is an update and expansion of infoDev’s popular and influential Telecommunications Regulation Handbook. The ICT Regulation Toolkit will be a web-based tool, divided into several modules being authored in the 2005-2006 time frame. The modules currently planned to be developed are on: (a) Overview on Regulation; (b) Radio Spectrum Management; (c) Extending Services Beyond the Market; (d) Licensing (recently completed), e) Legal and Institutional Aspects of Regulation; (f) New Technologies and Their Impact on Regulation; and (g) Regulating Competition, Interconnection and Prices. The latter three modules are currently being commissioned in parallel by infoDev.

Beyond the aforementioned modules, infoDev and ITU are already discussing the framework and content for additional modules, for example, a module focusing on ICT-related taxation issues. With this strategy, and building up on its predecessor’s success, the ICT Regulation Toolkit will become a regularly updated live tool to provide regulators, operators, policy makers, sector experts, and the general public the latest on regulation strategies, best practices, and case studies.

The Module on Radio Spectrum Management is one Part of the ICT Regulation Toolkit

Telecommunications growth, competition, and innovation depend on operators having effective and fair access to the radio spectrum, numbering blocks, and rights of way. The radio spectrum is an essential resource for telecommunications, broadcasting, military, and other activities. Traditional ways of allocating spectrum among classes of services and technologies and of assigning frequencies to particular individual users are based on government planning and control with emphasis on engineering and administration. New approaches are emerging, guided by business and economic principles, seeking to allow the market to play a larger role and reduce government intervention. In order for regulators to understand these new approaches and the related challenges, infoDev invites proponents to deliver the following:
The consultants will deliver:

- A concept paper used as a primer on spectrum management by economists, lawyers, engineers, and other professionals interested but without prior training in this field. The concept paper gives the main story lines to be developed for the module. The concept paper should present the main ideas that will go into the core documents of the module, providing a basis for determining, early during the consultancy, on module structure and content. World Bank Group staff and managers involved in ICT activities, as well as clients in developing countries, are among the expected readers. The concept paper is likely to be revised during the consultancy. The final version will include ideas for further work, including any suggestions for the World Bank Group and the ITU’s agendas on spectrum management for development. The concept paper will preferably not exceed 5,000 words.

- The web-based module on Radio Spectrum Management, as a part of the online Toolkit outlined in Section 1 of this Terms of Reference. The spectrum module will be developed generally along the lines of the pilot module on licensing.

- Training material derived from the module. This will be used by infoDev and ITU in conferences and other events, to disseminate and promote the Toolkit. The training material will follow a standard format to be provided by infoDev.

Regulators in developing countries are usually not able to leverage the same amount of resources and skills than regulators in developed countries. Thus, in developing the aforementioned study and the module, the consultants should emphasize to discuss tools of minimum complexity that require a minimum of resources and that are operational in the specific environment and circumstances in which most developing country regulators do have to function.

II. SCOPE OF WORK

First Deliverable: Concept paper on Radio Spectrum Management

Content

The module will deliver proven good practices of spectrum management at the national level. This will include principles of spectrum management, spectrum policy and planning, licensing and registration, and institutional capacity development. The module will also introduce readers to new approaches to spectrum management being tried out in some countries. Spectrum reform strategies for developing countries, however, are being developed separately.
Indicative Table of Contents

The following is an illustrative list of topics that the concept paper, web-based module, and training material on spectrum management might cover. Consultants are expected to propose a more definitive selection, initially in the approach paper that will accompany their expression of interest, but mainly in the concept paper to be developed as first deliverable. The final table of contents will be determined by discussions between infoDev, ITU, and the selected consultants.

- Spectrum management: overview and principles
  - Objectives – technical and economic efficiency, growth, innovation
  - Stakeholders – telecommunications, broadcasting, military, other
  - Governance
    - Reconciling stakeholder interests
    - Legislation, regulations, institutions
    - International cooperation

- Spectrum policy and planning
  - Short term, long term, strategic planning
  - Technical standards
  - Allocating the spectrum
    - National table of frequency allocations
    - Measures to facilitate growth, innovation

- Licensing and registration
  - Assigning frequencies
  - Spectrum auctions
    - Design, implementation
    - Success factors, limitations, alternatives
  - Equipment authorization

- Developing institutional capacity
  - Human resources
  - Procedures, engineering practices, automation
  - Monitoring and enforcing compliance

On selected topics for which satisfactory tools are not available, improved instruments will be developed as part of the consultancy. This may include, for example, guidelines for project analysis, standard terms of reference for consultants, standard investment packages, and a best practice note and case studies on competition for scarce spectrum:

- *Guidelines for project analysis.* Standard guidelines for the analysis of spectrum management components of development projects are needed. Investments in spectrum management by government agencies should be subject to the same discipline of project analysis as any other public sector investment. This should include the economic justification of the size and composition of investment. For
example, the decision on the number of monitoring stations, which account for the bulk of investment in many projects, and choices between fixed and mobile stations and between attended and remote stations, should be supported by technical and economic analysis. These analyses, moreover, should be undertaken in the early stages of project formulation so as to effectively influence design.

- **Standard terms of reference for consultants.** Standard terms of reference (TOR) for spectrum management consultants would save significant preparation effort and project cost as well as enhance consistency of approach and quality. TORs for consultants to prepare a plan for improving spectrum management in a particular country and to specify technical assistance, training, and equipment needed to implement the plan are often written anew for each project. While full TORs for one country may be quite inadequate in another, a base model of broad applicability could provide a common starting point as well as a checklist of features to be considered when tailoring the base model to specific country situations.

- **Standard investment packages.** Standardizing the investments in equipment, software, and training for spectrum management would probably accelerate and reduce the cost of project preparation, help ensure that all critical features are properly considered, and provide benchmarks against which individual projects can be gauged. Existing spectrum management solutions tend to be customized for each client, are driven primarily by equipment vendors, emphasize technical objectives with little attention to business processes, and lack incentives to contain cost and keep it simple. Initial discussions with experts suggest that two standard packages could be specified, one requiring investment of perhaps not more than US$0.5m to meet priority needs of most low-income countries with small markets and networks and another costing not more than about US$5.0m for larger and more complex environments. System specification can be sufficiently broad so that effective competition among solutions, technologies, and suppliers is encouraged.

- **Best practice note and case studies on competition for scarce spectrum licenses.** A paper on the relative merits of various approaches to competing for spectrum licenses, supported by case studies of selected experiences, should provide valuable guidance. This, for example, would help governments and financing organizations assess whether an auction is the right tool, what key auction design features to include, and how the prospects for success might be enhanced. While auctions can increase economic efficiency, success in meeting sector development objectives depends also on the business and regulatory environment in each case. Results, in developed as well as developing countries, have been mixed, including some resounding failures that have delayed service development for years and compromised government credibility. There is an extensive literature on this subject drawing on the experience in developed countries, especially the US and Europe, and more recently also on some developing countries (e.g. India, Nigeria). Equally important, competition in terms of network rollout, retail price, or other measures that maximize service development rather than fiscal gain, is an alternative used regularly by some developing countries (e.g. Chile). Contests
among firms in terms of their overall capability to deliver services is common among several high-income countries (e.g. Finland). Hybrid forms of competition are used in some other countries (e.g. France). These experiences, and their significance for developing countries, are less well documented.

**Second Deliverable – Merging the Concept Paper into a Web-Based Product (ICT Regulatory Toolkit)**

The aforementioned concept paper, in addition to its own value as a knowledge resource, will also generate knowledge for and feed into the development of the toolkit-module. However, the toolkit-module itself is considered an independent product to the extent that it will offer a number of features and additional content which is not covered by the concept paper. The module will offer (a) core documents; (b) secondary documents; (c) practice notes and (d) reference documents. Especially the latter two will be derived from and linked to the intellectual framework that is set by the concept paper, but will clearly present additional material that is beyond the concept paper’s scope of work.

As described further in section three below, infoDev has already developed a standard format for modules of the ICT regulatory toolkit and the consultants will be expected to develop content according to this format. The consultants will use the standard model for the web-based toolkit already developed by infoDev (as exemplified in the existing licensing module – please see Part III. Resources). In preparing the web-based module, the consultants will work closely both with infoDev and the web-design firm commissioned by infoDev to develop the common information architecture, look & feel, and functionalities of all toolkit modules.

To this end, the selected consultant will:

- Develop the web-based module based on the aforementioned concept paper;
- Develop logical content/theme linkages and references between the different modules and between the different parts within each module where appropriate;
- Use extensive developing country examples and case studies, while balancing the choice of country and regional examples to provide a global overview of ICT/telecommunication regulation best practices that reflects a range of country and regional perspectives;
- Communicate progress regularly with relevant infoDev staff and adapt the module according to input from infoDev, ITU, and the WBG Steering Committee. An infoDev task manager with in-depth knowledge of the module’s subject matter is assigned to ensure close cooperation with the selected consultant;
- Conduct several review meetings with infoDev, taking into account comments, suggestions, and feedback offered on form and substance during the review meetings;
- Present the findings of the concept paper as a set of four different document formats for the online-ICT regulatory toolkit:
  - Core Document – The core document is a revised and abridged version of the main module. It will provide a high level summary of the process and issues re-
lated to policy aspects of regulation and will serve as the framework for the online content from which more detailed information will be hyperlinked.

- “Secondary” Documents – Secondary documents will open as separate pages on the web site, hyperlinked from the core document or other content. These secondary documents will contain more detailed discussion or examples of issues (in text and graphical format) than that contained in the core document. Some of the content will come from text boxes, tables, and more detail-oriented sections of the module in question.

- Practice Notes – Practice notes will also open as separate web pages. Practice notes are short Case Studies summarizing for the reader good practices and international experience. Practice notes will provide summaries, context and practical advice regarding reference documents and other content. They will often be intermediary steps to reading reference documents. For example, in the licensing module, by clicking a link to a certain telecommunications licence, the reader may first be guided to a practice note that describes the licence, and that gives background, context and practical advice on its use.

- Reference Documents – Reference documents will contain documents and other data selected by the consultants and WBG advisors as representative of good practices and precedents dealing with the module’s main theme.

- The selected consultant will be provided with detailed information on the methodology upon beginning the work. The types of documents will be hyperlinked to a database that provides precedents, practical examples, and commentary on the practices and issues discussed. Final decisions about where such a database will be maintained, by whom, with what criteria to screen content for inclusion, how quality is maintained, and related technical and quality control issues will be decided by infoDev in consultation with ITU and the WBG steering group.

- The selected Consultants will co-ordinate with infoDev in developing the module format, look and feel; and with infoDev’s web designers to produce the web-based product.

- infoDev will also oversee and manage relationships with various regulators providing intellectual input, reference documents, and case studies related to the different modules of the toolkit.

The toolkit will also be published in CD-ROM and paper form, and it is expected that most of the material produced will be used for training and capacity building.
Third Deliverable - Developing Training Materials and Review Workshops

In order to facilitate the dissemination of the results of the work, the consultant will provide a training module with detailed comments and explanations.

The training module will be integrated in a generic Powerpoint presentation format to be used by infoDev and ITU staff to disseminate and organize full propagation of the concept paper results.

The consultant will prepare draft versions of each component of the concept paper for review and discussion. The assessment process will be organized through several review meetings. ITU may participate in such review meetings by virtual or video conference.

Composition of the Steering Committee and details in the organization of review meetings will be proposed to the Consultant at the beginning of the assignment.

III. ORGANIZATION OF WORK

Resources

Generally, the selected consultants are expected to identify all resources (papers, books etc.) necessary for completion of the work. However, several infoDev and ITU products are specifically important as reference points for developing the final products and it is expected that the selected consultants will make use of the following to develop the content of the toolkit-module.

- *The Telecommunications Regulations Handbook* (2000). The original Handbook was published in 2000 and has since been translated to six languages and has been distributed by ITU and infoDev. It has become a world renowned, standard reference book for regulators and an indispensable training tool for their new personnel. It consists of six chapters: (a) An overview of regulation; (b) licensing; (c) price regulation; (d) interconnection; (e) competition; and (f) universal service. The Handbook is one of infoDev’s most successful products, and was used in several capacity-building events. The deliverables defined in this EoI will have strong resemblance to the content, methodology, and design of the handbook; however, they will offer new and updated content and explore more profoundly the impact of new technologies on regulation. Overall, the toolkit module will present a clear evolution from the Handbook.

- *The Pilot Module on Licensing (Module 2.) of the ICT Regulatory Toolkit* (2004). infoDev and ITU commissioned the development of a pilot module on licensing (previous Chapter 2 in original telecommunications handbook) according to the methodology and objectives of the new ICT Regulatory Toolkit. This pilot module is to demonstrate the core functionality of the new ICT Regulatory
Toolkit and consists of five sections describing the background, policy, and legal context of telecommunications licensing, types of licensing and authorization regimes, and the practices and procedures used in various countries. The module includes boxes, figures, and tables that illustrate licensing processes in various countries and regional groups, including a checklist of contents of typical licenses. The Licensing module is a complete revamp of the former Telecommunications Handbook’s Chapter two. Access will be provided to the selected firm.

- [http://www.itu.int/osg/spu/ni/spectrum/](http://www.itu.int/osg/spu/ni/spectrum/)
- [http://www.comreg.ie](http://www.comreg.ie)

**Timing**

The assignment is expected to be completed within 28 weeks of commencement. The assignment is expected to require a level of effort of approximately seven person-months to be completed within the available lump-sum budget of US$180,000.00 which includes all fees, travel, and expenses, etc. The project funds will be disbursed in five tranches. The release of each tranche will be further conditioned upon infoDev being satisfied with each of the deliverables before proceeding to the next.

**Conduct of the Assignment**

In undertaking this assignment, the consultants will work under the general direction of the task supervisor from infoDev. The consultants will take the lead and will be directly responsible for all tasks, while the task supervisor will be closely involved in reviewing reports and providing guidance as necessary. Final decisions will be made by infoDev in consultation with ITU and the WBG steering group.

**Qualification of the Consultants**

The consultants are expected to meet the following minimum requirements:

- The team should include professional capabilities in economics, law, and engineering, each with significant experience in spectrum management.
• As a group, the team should have extensive experience working in developing countries, especially in the context of ICT sector reforms. Experience in broadcasting, cable, or government and private networks, in addition to public telecommunications, would be an advantage.

• The lead consultant of the team should (a) be an internationally known expert on spectrum; (b) have at least 10 years of professional experience in this field at the national level, of which at least five years at senior management or consulting level; (c) have had some participation in international spectrum governance; and (d) be well informed and preferably actively involved in the current debate on spectrum reform.

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<tr>
<th>Tranche</th>
<th>Deliverable</th>
<th>Due Date</th>
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<tr>
<td>Tranche 1</td>
<td>The first tranche will be paid by infoDev to enable the consultant to start developing the concept paper</td>
<td>Mid of Jun 2005</td>
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<tr>
<td>($18,000)</td>
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<td>Tranche 2</td>
<td>Workshop: Present draft concept paper, a toolkit blueprint, and proposed content revisions</td>
<td>Mid of July 2005</td>
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<td>($35,000)</td>
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<td>Tranche 3</td>
<td>Workshop: Present first extensive toolkit draft. Submit final concept paper for publication.</td>
<td>End of August 2005</td>
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<td>($39,000)</td>
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<tr>
<td>Tranche 4</td>
<td>Workshop: Present complete draft toolkit and draft training material</td>
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<td>($39,000)</td>
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<td>Tranche 5</td>
<td>Deliver final toolkit incorporating comments from WSIS</td>
<td>End of December 2005</td>
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<td>($49,000)</td>
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