

EXECUTIVE SUMMARY

The successful implementation of interconnection mandates requires a disciplined and measurable approach. One of the regulator's primary challenges is to maintain a balance between the needs of the public, the incumbent and the service providers. In this context, the creation of an information model, the on-going management of the actual information and the appropriate software to support inter-carrier processes is a significant challenge that all parties require for the successful implementation of an Interconnection plan.

An undisciplined approach to the management of information leads to inconsistencies that cost significant amounts of money to fix later or work around in extending the use of systems and information or the integration of systems. This issue is magnified when the information and processes that need to be managed cross independent organizations (service providers) that have evolved their software systems independently of each other. Avoiding this requires a level of discipline that most organizations are not equipped to apply without compromise across their entire operating environment.

An information infrastructure, a simple concept with a complex implementation that requires extreme discipline in its evolution, must be applied to assure that it is viable across Service Providers, supports the goals of the regulator, and the interests of the Mexican public, and is open to support Mexico's future needs. Such an approach can radically transform the way service providers in or across countries can manage their own information, gain value through improved efficiencies, improve time to market and the ability to create and offer new services and make enormous leaps forward in communicating across service provider boundaries.

A complete Information Infrastructure is more than a data model or a set of standards. It addresses seamless interconnection needs by providing an integrated, common data infrastructure for the communications industry, with a distinctive telecommunications network naming convention and information infrastructure that can be used to uniquely identify and describe the elements of a service or network in any corner of the world: from interconnection services, to locations, to transmission facilities, to circuits, to types of equipment, to electrical connections and mass market services.

Introduction

Telcordia would like to thank the Comisión Federal de Telecomunicaciones (Cofetel) for the opportunity to provide our thoughts with regard to Cofetel's *Basic Interconnection and Interoperability Technical Plan*, published on April 17th, 2007. Telcordia's comments to your plan provide our ideas with regard to how the telecommunications industry in México might want to approach the challenges of interconnection. At the highest level, the successful implementation of interconnection mandates will require a disciplined and measurable approach that:

1. Is very clear with regard to schedule, scope and measurements for compliance.
2. Sets well defined goals based on an understanding of current and future metrics. For example, how much interconnection may take place in Mexico over the next few years? How many service providers are expected to participate in interconnection activities? How will any one interconnection request be evaluated with regard to success or failure of the participating service providers? Success or failure must be evaluated in terms of each party's response time, coordinated human resources, need for rework, and other factors.

A comprehensive understanding of metrics coupled with Cofetel's goals will provide the insights necessary to define proper mechanisms required for successful mechanization or automation.

3. Provides a well defined set of regulatory requirements that will be leveraged by the industry in order to define software mechanisms for the creation and management of all interconnection requests. All software focused on creation, management and coordination of Interconnection activities must use a single, well defined information infrastructure.
4. Mandates a well defined and complete information infrastructure which is the only way to assure that communications are well understood and executed. This information infrastructure must be defined for Mexico as a nation. Ideally it should consider the use of an information infrastructure that is proven and deployed in other countries. This is important because Mexico is not an isolated country, and has service providers whose customers do span international boundaries. Many service providers originate and terminate traffic in Mexico and there can be significant benefits to leveraging an information infrastructure that extends beyond the borders of Mexico.
5. Identifies clear standards and channels for dispute resolution related to such issues as technical feasibility and availability of specific interconnection locations, types of available collocation and available collocation space, technical connection standards and protocols and parameters for collocated equipment, and ordering, provisioning and maintenance timeframes and their related information requirements.
6. Establishes clear, appropriate and detailed cost standards for the efficient resolution of interconnection and collocation pricing disputes.



This document provides some considerations that Telcordia believes will assist Cofotel in making the Interconnection regulation a success.

The Regulator's Dilemma

Cofotel is not alone. Regulators around the globe are liberalizing their markets. The challenge is opening a market to fair competition while assuring that all citizens have access to important basic services and that businesses are offered the kinds of services that will provide them with the opportunity to compete in a global marketplace. To do this, regulators often introduce competition as a catalyst that motivates service providers to expand their service coverage, adopt new technologies and deploy new services in order to differentiate themselves and gain market-share. The key to ideal regulation is to promote competition and an open marketplace promoting fair competition, driving all service providers to provide reasonable support levels to their competition but assuring that incumbents are not required to assume a weak position in the market.

In the typical scenario, regulators will define a set of goals for the industry that dictate "what" needs to be accomplished and will leave it up to the industry to decide "how" it is to be accomplished. The industry in turn will assemble groups where they get together to decide as a consortium "how" they can meet the goals defined by the regulator. Of course, in the process of deciding how things are to be accomplished, individual service providers will each lobby for an implementation that serves them well. It is important that regulation positions the rights of service providers in a fair and unbiased manner. It has in some cases proven to be effective for the regulator to identify necessary service provider consortia & standards bodies and to mandate their establishment and define their goals.

Software and the Information Challenges

One of the regulator's primary challenges is to maintain a balance between the needs of the public, the incumbent and the service providers. In this context the creation of an information model, the on-going management of the actual information and the appropriate software to support inter-carrier processes is a significant challenge that all parties require for a successful implementation and have a vested interest in addressing.

Given the size of Mexico, it is a fair assumption that regulation of this sort will result in significant interconnection volumes. In reaction to this assumption, many service providers and systems vendors supporting this effort will disproportionately invest in the development of software as the sole mechanism to support operations and interconnection with too little investment in information management. However, software is nothing more than a set of instructions designed to manage information. The form and meaning of the information is critical for success. A managed effort to define form, meaning and management of interconnection data across service providers is critical.

An undisciplined approach to the management of information leads to inconsistencies that cost significant amounts of money to fix later or work around in extending the use of systems and information or the integration of systems. This issue is magnified when the information and processes that need to be managed cross independent organizations (service providers) that have evolved their software systems independently of each other. Avoiding this requires a level of discipline that most organizations are not equipped to apply without compromise across their entire operating environment.

The Impact of Interconnection and Regulation

As a result of poor planning and implementation, many service providers have been forced to create operations war-rooms where large amounts of staff manage faxes, e-mails and phone calls in a frenzied effort to communicate with other providers and manage the volume of requests and work flow. These individuals work to apply order to chaos and the results are typically poor. Interconnection deadlines are frequently missed, customers are left with lapses in services, service providers experience unnecessary cost because the service provider they rely upon has no mechanism to help them manage and meet their commitments.

Over time, the industry typically learns from these mistakes and evolves to develop more robust interconnection software platforms. Still, despite their ability to eliminate much of the war-room staff responsible for manual coordination, the results are frequently poor due to poor data. Many operators have indicated costs in excess of 500 US Dollars per failed interconnection order. Orders fail for a number of reasons including: unclear or invalid service request types, incomplete data fields, invalid interconnection locations, invalid port quantities, etc. Learning from the mistakes that others have made in the past helps avoid many of these pitfalls and unnecessary burdens and expenses.

What Is an Information Infrastructure?

Perhaps one of the most important things for us to do at this time is to define “what is an information infrastructure?”

The concept is simple, but the implementation is complex, and extreme discipline must be applied in evolving the information infrastructure to assure that it is viable across Service Providers, supports the goals of Cofetel, and the interests of the Mexican public, and is open to support Mexico’s future needs. Such an approach can radically transform the way service providers in or across countries can manage their own information, gain value through improved efficiencies, improve time to market and the ability to create and offer new services and make enormous leaps forward in communicating across service provider boundaries.

A complete Information Infrastructure is more than a data model or a set of standards, it includes:

- **Data Framework:** The definition of a single data framework or structure that can be implemented by any system, built by any software vendor for any service provider. This data structure will define the format, critical data entities or database keys and attributes.
- **Language and Syntax:** A single, clear, published language providing all users of this information infrastructure with the necessary knowledge to represent ideas by populating the data framework with information that will be meaningful to all those who may need to access this information. This would include well-defined reference data as to what each character position in the identifiers represents, valid values for each field and sub field and in general, any and all rules on how the data infrastructure is to be represented and interpreted. This approach will ensure that all adopters who implement this data infrastructure will be ensured the benefits from a shared understanding not only within a single service provider organization, but between trading

partners and suppliers. It can also provide the regulator with single coordinated view of information that it can look to in order to view the broad set of information being created and to understand the specifics behind the activities across service providers.

- **Active Registries with a Publish and Subscribe Engine:** A centrally or distributed hosted computing environment where relevant information can be posted by information owners and distributed on an as needed basis to trading partners with a need and right to know. This hosted environment must have the mechanisms to assure that registered information is uniquely identified and follows the language and syntax rules mentioned above. It must provide the necessary rules to manage the creation of data by different service providers who do not typically have insight into the day-to-day workings of each others' businesses. This is achieved through software algorithms and the language standards upon which the platform is built. All subscribers have the right to publish relevant information to the registries. The registries can have basic mechanisms that allow the publishers of information some control to decide which trading partners get to see what data.

Key Categories of Critical Information

While the scope of information managed as part of an ideal information infrastructure for the country of Mexico needs to be explicitly tied to Cofetel's final regulation, Telcordia has found that key information typically maps to these categories:

- **Services:** Must provide language elements and syntax enabling the definition of all services via one simple data structure. These services include: mass market, business and inter-carrier services.
- **Locations:** must provide a unique basis for the naming of locations and the management of relevant information about critical network locations and functionality.
- **Connections:** must provide key elements that define a language capable of defining physical and logical connections for the IP and circuit switched networks and describing infrastructure and services as diverse as circuit switched telephony to IP-TV.
- **Equipment:** must provide a basis for the meaningful identification of all equipment items and the management of critical equipment attributes.

Comprehensive Management of an Evolving Infrastructure

An effective information infrastructure must be implemented with the utmost discipline, must be evolved over time and provide software developers with the assets they require to leverage, support and gain value out of the information it manages. To assure this, the following are key attributes of a plan for success.

Leveraging and Influencing Industry Consortia and Standards Bodies: in order to evolve the information infrastructure components identified above, it is critical to assure that they are designed for longevity. To accomplish this, Subject Matter Experts (SMEs) must participate in industry consortia and standards bodies around the globe. Working as members of these standards bodies, these SMEs should influence national and international standards and represent the interests of their constituency assuring that regulation and standards evolve along similar paths and are defined in a



manner that allows users of the information infrastructure to gain the most value out of their investment.

Bringing Stakeholders together for the evolution of an Infrastructure: in addition to their participation in standards and industry bodies, the SMEs responsible for the evolution of the information infrastructure should regularly lead events or advisory groups and strategy sessions. Subscribers from across a country and even around the world should be invited to submit recommendations and ideas for the evolution of this living Information Infrastructure to drive the scope of information managed, the actual language and syntax and the capability of the hosted registries.

Supporting the Daily Needs of Its Subscribers: SMEs must be available to subscribers in order to provide technical support and collaborate in the needs associated with the daily support of a global information infrastructure in and across service provider environments. To discuss potential use of this critical information in and across systems and inter-carrier processes.

How Can an Information Infrastructure Support the Success of the Interconnection Plan

The following table provides Cofetel with preliminary input from Telcordia indicating how a common information infrastructure can support meeting the goals of the *Basic Interconnection and Interoperability Technical Plan*.

Our Common Language Information Services, have a significant deployment in Mexico at Telmex who uses Common Language as an asset in its efforts to interconnect with Global, North American, and Mexican Service providers.

Section 3: Purpose of Interconnection Plan	How an Information Infrastructure Supports the Interconnection Plan
I. Regulate the provision of the Interconnection Services between Carriers, to promote the efficient Interconnection and Interoperability of the PSTN and Telecommunications Services.	<ul style="list-style-type: none"> ▪ A proven Information Infrastructure that is used by Service Providers is key for efficient communications in support of interconnection, including defined data structures and related procedures for interconnection service requests and local service migration for efficient interconnection processes.
II. Promote fair competition between different Telecommunications Service providers.	<ul style="list-style-type: none"> ▪ Provides ONE managed platform to share information across all providers in a clear, fair and unbiased manner. Common Language information can be easily accessed in order to support audits and assist in evaluating compliance to interconnection rules. It also provides a common definition for metrics by which all service providers can be measured to assess their compliance with expectations of fair competition.
III. Ensure the efficient and quality User Access on a non-discriminatory basis.	<ul style="list-style-type: none"> ▪ Provides a clear and concise information service that can be used by all participating entities on an equal basis.
IV. Ensure the Interconnection and	<ul style="list-style-type: none"> ▪ Define the procedures for the processing of interconnection

<p>Interoperability of the PSTN and the Telecommunications Services, under the terms and conditions set in the Law.</p>	<p>requests.</p> <ul style="list-style-type: none"> ▪ Simplifies the ability of regulators to audit processes in an effort to determine compliance through the implementation of standard interconnection metrics. ▪ Provides a single information infrastructure for relevant interconnection data.
<p>V. Ensure that the Carriers allow for the Interconnection to their PSTN, on non-discriminatory basis, considering their technological evolution.</p>	<ul style="list-style-type: none"> ▪ Provides a basis for the publication of all wholesale services based on one shared platform and language. ▪ Provides a single means to uniquely identify and register all interconnection locations (across service providers) and available function of these locations.
<p>VI. Ensure Users may utilize the User Access they hired from any Carrier to unrestrictedly access the Telecommunications Services, capabilities, applications and contents, offered by other service providers, including PSTN</p>	<ul style="list-style-type: none"> ▪ Provides up-front assessment of regulations in order to assess the high level goals of Cofetel and to assist in refining regulation to evolve toward clear and meaningful interconnection goals that are achievable and financially sensible.
<p>VII. Regulate the disaggregated access to service elements, capabilities, functions, and network infrastructure, as well as the Related Auxiliary Services, thus preventing the Carriers from using and/or paying for resources that do not require the Interconnection and Interoperability of its RPT with that of the other Carriers</p>	<ul style="list-style-type: none"> ▪ Common Language provides a very well defined set of services and codes that facilitate the definition and management of purchasable interconnection or service capability. This Capability can be used to manage the definition of service so as to support efforts to achieve fair business practices and evaluate compliance across service providers.
<p>VIII. Promote the adoption of cost-oriented Interconnection Rates</p>	<ul style="list-style-type: none"> ▪ Provides an organized framework that facilitates the identification of equipment, connections, and services that contribute to the interconnection cost components.
<p>IX. Allow the access to the information required for the provision of the Interconnection Services</p>	<ul style="list-style-type: none"> ▪ Common Language provides access to globally managed network locations used for interconnection as well as service registry information where all service providers can register available interconnection and wholesale services that they offer.

Note: This represents Telcordia’s initial thinking with regard to how Common Language and our consulting services can be used to enable Cofetel’s Interconnection and Interoperability efforts. We look forward to future engagements where we can participate in further discussions and work with Cofetel and the service providers of Mexico to explore specifics in greater detail.

Why Telcordia?

Telcordia would like to offer its experience to the Mexican industry to assist in the successful implementation of interconnection. Telcordia has played a critical role in supporting regulators and



service providers to define processes, software and an information infrastructure that help realize the demands of interconnection in a cost-effective manner. Telcordia's efforts span the globe, with significant contributions across North America, Europe, South America and the Middle East. We have also deployed relevant capability at Telmex, which uses the Common Language® Information Services today, and we have begun initial work with other Mexican Service Providers.

Our capabilities include:

- The development and on-going management of a Common Information Infrastructure for the Telecommunications Industry. With approximately 100 service provider customers worldwide, Telcordia Common Language is recognized as the world's leading information infrastructure and unique across the telecommunications industry.
- Telcordia is a contributor to standards bodies and industry consortia around the world, representing the interests of our customers. Telcordia representatives participate in the ITU-T, Alliance for Telecommunications Industry Solutions (ATIS), Internet Engineering Task Force (IETF), North American Numbering Committee (NANC), and TeleManagement Forum (TMF) to name just a few. Telcordia plays a key role in defining the communications protocols and information constructs sanctioned by these organizations. These organizations have also referenced Telcordia Common Language standards within their work.
- Telcordia is a leader in the development of software platforms designed to manage outbound and inbound interconnection orders. Telcordia has built and deployed three different applications to support this capability. These systems support the generation and outbound communication, the receipt of orders and the management of the overall transactions between service providers. Telcordia software products handle the overwhelming majority access service requests in the United States.
- Telcordia supports regulators in managing disputes over applicability and specifics of interconnection policy. Telcordia has worked with regulators world-wide to define detailed rules and procedures that help to avoid and resolve disputes among operators over access to and pricing of interconnection and collocation.
- Telcordia supports service providers in an effort to assure that they effectively meet regulatory mandates. This includes consultation on processes for service providers to efficiently manage interconnection service requests (both as the "requesting carrier" and the "requested carrier") and consultative training in procedures related to interconnection access service requests, local service requests, interconnection billing and settlements, number administration, and number portability. Telcordia has also supported service providers through audits and process reviews related to interconnection services.

Telcordia Common Language Information Services provide the telecommunications industry with a managed data infrastructure that simplifies integration, communication and coordination within and between trading partners & suppliers. In fact, Common Language is the only information service of its kind commercially available to service providers and equipment suppliers worldwide.



Common Language Information Services address seamless interconnection needs by providing an integrated, common data infrastructure for the communications industry. Common Language Information Services provide a distinctive telecommunications network naming convention and information infrastructure that can be used to uniquely identify and describe the elements of a service or network in any corner of the world: from interconnection services, to locations, to transmission facilities, to circuits, to types of equipment, to electrical connections and mass market services. Common Language leverages global industry standards and are referenced by ANSI (American National Standards Institute), ETSI (European Telecommunications Standards Institute), ITU (International Telecommunications Union), ATIS (Alliance for Telecommunications Industry Solutions), TeleManagement Forum, IETF, (Internet Engineering Task Force) and ISO (International Standards Organization). They are also part of industry defined ordering processes that have been developed and deployed to support interconnection services across North America and on a less formal basis elsewhere in the world.

If you have any questions or comments with regards to the content of this document, or would like to meet to further discuss the evolution of these ideas with Telcordia and perhaps the service providers of Mexico, please contact:

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