



Telcordia Network and Product Integrity 2011 Catalog of Offers

Issued: April 2011



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This 2011 Network and Product Integrity (NPI) Catalog of Offers contains a variety of valuable technical service offers which have proven effective in helping communication carriers and suppliers improve the integrity, performance and reliability of their networks and products. Telcordia has assisted many companies around the globe to enhance their network and product quality over the years and this catalog is being published to ensure that carriers and suppliers know the breadth and depth of our Network and Product Integrity service offerings. If you have engineering, product selection, network planning, operations, training, risk management or building/real estate responsibilities, these offers will help make your job easier and save you costs.

Please review the offer list below to identify those services which would be beneficial to your company and your end customers. Inquiries and additional information can be secured by contacting your Telcordia Account Executive or one of the two individuals listed below:

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The following offers appear in this document:

Title	Page
Software Vulnerability Testing	4
VoIP, SIGTRAN and SS7 Protocol Analysis	6
Signaling System 7 Consulting	7
SS7 Protocol Architecture & Operations Training	8
Switch Access and Interoperability Services	9
Central Office Switch Operations & Maintenance Training Services	10
Product Verification Testing During Supplier Product Development Lifecycle	11
Next Generation Networks Services Testing	12
2011 Generic Requirements (GR) Offers	13
Expert Consulting/Expert Witnessing for Claims	16
NEBS Testing	17
NEBS and CO Installation Training	18
NEBS Physical Risk Assessment	19
Back-Up Power Compliance Assessment	20
Energy Management Forum	21
Energy Management Assessment	22
Building Standards & Codes, Firesafety	24
Electric Codes and Electromagnetic Compatibility (EMC) Related Support	26

Title	Page
Distribution Network Element Services -- Network Facilities and Construction	28
Supplier Testing Management and Product Selection Support Services	30
OSP Battery Management System	31
Battery Hazardous Material Tracking	32
Energy Conservation Opportunity Web Application	33
Network Synchronization Consulting	34
GPON Consulting & Standards Support	35
High Speed Data Testing	37
OSP Cabinet Testing (GR-487)	39
Electrical Protection Testing	40
Power and Grounding Training	41
Fiber Optic / FTTx Technology Consulting, Technical Analysis & Testing Services	43
Customized Training on Optical and Access Network Technologies	45
Technical Product Marketing Consulting	47

Software Vulnerability Testing	
Title:	Software Vulnerability Testing
Description:	<p>Identify and Resolve Software Flaws Before They Become a Security Threat</p> <p>While traditional software testing provides a robust means of testing software function and performance under a range of expected conditions, it often fails to identify weaknesses that can arise from unexpected inputs. When faced with such inputs, many network devices can fail, or behave in unexpected ways.</p> <p>A classic example is a malformed packet, which could cause a buffer overflow in the system controlling a network device. Traditional testing may not address such a condition, since the input is essentially random "nonsense". However, the software error that results could open the device to control by unauthorized, outside entities. In fact, hackers exploit these failures (known as "zero day" vulnerabilities, since they often are not identified until the device is deployed and operational) to gain unauthorized access to Internet-accessible resources.</p> <p>Telcordia Software Vulnerability Testing service, available to both network equipment providers (NEPs) and Communications Service Providers (CSPs), helps identify and resolve software flaws that can cause unexpected security and performance weaknesses in network devices. It is an increasingly important and necessary complement to traditional software testing.</p> <p>What is Telcordia Software Vulnerability Testing?</p> <p>Telcordia Software Vulnerability Testing is a suite of intelligent, model-based tests that are applied against any network device's external interfaces. It utilizes the state-of-the-art Codemicon DEFENSICSi testing platform to perform random-input or "fuzz" testing, which assesses software from the outside in.</p> <p>The DEFENSICS platform is recognized throughout the industry for its ability to find quality, resiliency, and security exposures quickly, and within the broadest array of applications. This approach identifies vulnerabilities that traditional tests often miss. Our service provides a technical analysis report documenting the test results that a vendor can use to determine the root cause of the identified flaws prior to extensive product deployment.</p> <p>http://www.telcordia.com/services/testing/software-vulnerability-testing/index.html</p>
Impact of Services:	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Strengthen Network Security <input checked="" type="checkbox"/> Cost Reduction / Operational Efficiency <input checked="" type="checkbox"/> Identify Weaknesses in Software Before Implementation <input checked="" type="checkbox"/> Reduce Deployment Risks and Potential Negative Publicity
Benefits:	<p>Telcordia Software Vulnerability Testing service delivers results you can trust, from the industry's most experienced testing organization. We are able to meet aggressive schedules and test any device whether currently in production or in development. Equipment vendors and CSPs who use this software vulnerability assessment service can enhance in-house quality assurance processes and obtain rapid testing results without incurring the otherwise sizable investment in test environments and staff training.</p>

	As a result, vendors can deliver more reliable and secure products to their customers, while CSPs can deploy devices with a much higher degree of confidence.
Planning Price:	\$15,000 to \$50,000 (depending on the scope of the effort)

Title:	VoIP, SIGTRAN and SS7 Protocol Analysis
Description:	<p>Telcordia will provide vendor-neutral VoIP, SIGTRAN (SS7 over IP), and traditional Signaling System 7 (SS7) testing services to improve the quality of the client's existing network and/or help ensure the performance of new network elements. Specific network elements that may benefit from protocol testing services include:</p> <ul style="list-style-type: none"> • Traditional/Evolving CCS Network Elements (e.g., SSPs, SCPs, STPs, Combined Nodes) • NGN Network Elements (e.g., Signaling Gateways, Softswitches/Media Gateway Controllers, Converged Switches) • Internet Offload Solutions • Wireless Equipment (e.g., MSCs, VLRs, HLRs) • Voice Mail Systems • Programmable Platforms • PBXs • SS7 Protocol Stacks <p>http://telcordia.com/services/testing/ss7/services.html</p>
Impact of Services:	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Strengthen deployment of VoIP and Voice over Packet Technologies <input checked="" type="checkbox"/> Cost Reduction / Operational Efficiency <input checked="" type="checkbox"/> Interconnection Compliance <input checked="" type="checkbox"/> Reduce Deployment Risks and Potential Negative Publicity
Benefits:	<p>Telecommunications carriers and suppliers can minimize risks associated with deployment of new products and capabilities and potentially realize the following benefits from Telcordia protocol testing and analysis services:</p> <ul style="list-style-type: none"> • Experienced and independent analysis of its SS7 implementation for conformance to relevant specifications, industry standards, and/or Telcordia generic requirements; resulting in increased customer confidence in the supplier's product. • Identification of incompatibilities with other SS7 products deployed in their service provider customers' networks; resulting in improved service quality. • Impact assessment of any findings identified during the SS7 testing and analysis to assist the supplier with understanding the potential impacts of issues on SS7 networks and end-users. • Early identification of potential SS7 issues with the supplier's implementation prior to delivery to the supplier's customers; resulting in reduced cost to the supplier to resolve issues and increased customer satisfaction with the delivered product. • Improved understanding of existing and evolving industry standards and Telcordia generic requirements through interactions and discussions with Telcordia analysts, standards representatives, and requirements developers. • Reduced time-to-market for new products and capabilities. Telcordia Integrated Testing and Analysis results in increased testing efficiency and enables suppliers to identify and correct issues earlier in their integration and testing process. • Enhanced testing program. By working closely with the supplier's own testing process, Telcordia Integrated Testing and Analysis enhances and supplements the supplier's own test strategy, test plans/cases, test methodology, test capabilities, and test coverage.
Planning Price:	\$60,000 to \$150,000 (depending on the scope of the effort)

Title:	Signaling System 7 Consulting
Description:	<p>Telcordia will deliver Signaling System 7 (SS7) consulting services to improve the quality of the client's existing SS7 signaling network and to help facilitate the client's new service planning platforms, e.g., the introduction of IP Multimedia Subsystem (IMS) based services.</p> <p>Telcordia Technologies will review client information available from network Signaling Transfer Points (STPs), Switching Service Points (SSPs), System Control Points (SCPs), Signaling Gateways (SGs) and other network elements providing traditional or advanced signaling services such as SS7 over IP, i.e., SIGTRAN-based protocols. The review may include reviewing traffic data, maintenance and alarm information, provisioning information, switch traffic data and routing information, and consulting with the operators and involved equipment suppliers. Telcordia will provide an independent assessment of the health of the client's SS7 network and provide a report with any recommendations and/or best practices.</p>
Impact of Services:	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Cost Avoidance <input checked="" type="checkbox"/> Strengthen deployment of VoIP and Voice over Packet Technologies <input checked="" type="checkbox"/> Cost Reduction / Operational Efficiency <input checked="" type="checkbox"/> Interconnection Compliance
Benefits:	<p>Clients will benefit from having access to Telcordia subject matter experts, test tools and test methodologies that can be used to improve performance of the SS7 network and the interconnection with network services being provided from emerging network infrastructures, e.g., VoIP or IMS. This will assist clients in rapid resolution of SS7 functional problems and service outages. Clients will benefit from the exchange of key learnings from field experiences and product testing services.</p>
Planning Price:	\$30,000 to \$120,000 (depending on the scope of the effort)

Title:	SS7 Protocol Architecture & Operations Training
Description:	<p>Telcordia will deliver Signaling System 7 (SS7) protocol services to help facilitate the client's understanding of signaling network design planning, configuration, operation and maintenance. Telcordia will develop customized SS7 Course Material and provide the following:</p> <ul style="list-style-type: none"> • Instructor-led training at a customer location for up to 10 students for a 4 to 5 day training session. • Student Binders of course material • Electronic (PDF) copy of course material. <p>Examples of topical areas of SS7 training include:</p> <ul style="list-style-type: none"> • Overview of Network Topology: Link set types, node types, role of an STP in the signaling network, signaling network interconnection • Protocol Stack Overview: General message format for traditional low speed links, ATM high speed links, SS7 over IP /SIGTRAN suite of protocols • Protocol Layer Specifics: MTP2, MTP3, ISUP, SCCP, TCAP, SAAL, SCTP, M2PA, M3UA • Gateway Screening (at STPs): General concept, sequence of screening steps • Services messaging sequence: Basic call setup & teardown messaging, Local Number Portability service messaging, Call-free service messaging, Operator Services messaging, AIN service messaging. • Next Generation Network Interworking: SS7-to-SIP interworking • Operations Considerations: Management aspects of protocol messages, Inhibiting Thresholding of Alarms <p>The training method will encompass an interactive classroom style instructor-led session, lab exercises (when logistically possible on location) and review / testing of the course materials</p>
Impact of Services:	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Enhancement of Staff Skills <input checked="" type="checkbox"/> Risk Reduction <input checked="" type="checkbox"/> Operational Cost Savings
Benefits:	<p>Your company will benefit from having Telcordia provide training services. As years of testing SS7 protocol conformance, we are uniquely qualified to fulfill your training needs. Your team will enhance their skills, improve their knowledge and your company will save operational costs going forward if you invest in this valuable training.</p>
Planning Price:	\$20,000 to \$50,000

Title:	Switch Access and Interoperability Testing Services
Description:	<p>Telcordia operates the only independent legacy circuit-switching laboratory in North America which can be utilized for interoperability testing of any vendor's network-interfacing equipment across any standard, open PSTN interface including Signaling Gateways to next generation VoIP network environments. The laboratory consists of an Alcatel-Lucent 5ESS, a Nortel DMS10, a Nortel DMS100 and a Nokia-Siemens EWSD interconnected using Tekelec EAGLE STPs which also provide the infrastructure for SCP-based NGN signaling-based services such as CLASS, CALEA and LNP services.</p>
Impact of Services:	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Quality deployment of VoIP and Voice over Packet technologies <input checked="" type="checkbox"/> Interconnection Compliance <input checked="" type="checkbox"/> Interoperability Conformance Assessment
Benefits:	<p>Client interoperability testing will have the benefit of testing with actual network elements deployed in a laboratory-controlled Central Office environment rather than having to rely on a simulated network interface or risk testing in the live PSTN.</p>
Planning Price:	\$30,000 to \$150,000 (dependent upon the scope of the undertaking)

Title:	Central Office Switch Operations & Maintenance Training Services
Description:	<p>Telcordia operates the only independent legacy circuit-switching laboratory in North America which can be utilized for <u>training</u> technicians in Central Office operations, maintenance and provisioning procedures. The laboratory consists of an Alcatel-Lucent 5ESS, a Nortel DMS10, a Nortel DMS100 and a Nokia-Siemens EWSD interconnected using Tekelec EAGLE STPs which also provide the infrastructure for SCP-based NGN signaling-based services such as CLASS, CALEA and LNP services. Telcordia expert operations lab technicians are available to provide hands-on training for any of these legacy systems. The training engagements can be tailored to the specific needs of the students.</p>
Impact of Services:	<input checked="" type="checkbox"/> Cost Reduction through hands-on network operations skills training.
Benefits:	For training engagements, client trainees will derive benefits that can only be gained from hands-on laboratory exercises designed to supplement and reinforce classroom instruction provided as part of the training engagement.
Planning Price:	\$20,000 to \$50,000 (dependent upon the scope of the undertaking)

Title:	Product Verification Testing During Supplier Product Development Lifecycle
Description:	<p>Telcordia has technical experts available to assist product development teams with new product verification testing. The services are usually provided to suppliers who are in need of highly skilled experts to test complex features. Telcordia experts have a methodology for testing that has proven effective over the years and our resources will integrate into your team to ensure fast, seamless product verification and enable you to get your product to the marketplace faster. Telcordia provides product verification support for SS7 features, wireless features, IMS features or any special application that your company may require some assistance with. The services include regular updating of your product development team and comprehensive reports to document test results.</p>
Impact of Services:	<input checked="" type="checkbox"/> Cost Reduction <input checked="" type="checkbox"/> Faster Time-to-Market
Benefits:	<p>Clients will derive benefits from engaging experienced Telcordia experts who can do the product verification testing rapidly and with high quality. This will enable your company to introduce new features more rapidly and secure additional revenues.</p>
Planning Price:	\$50,000 to \$200,000 (dependent upon the scope of the undertaking)

Next Generation Network Services Testing	
Title:	Next Generation Network Services Testing
Description:	<p>Telcordia will apply Telcordia's signature conformance testing methodologies and proprietary testing tools to technologies being deployed in the client's next generation network, e.g., network elements IP Multimedia Subsystem (IMS) based services.</p> <p>Telcordia Technologies will review client information related to services planned from next generation network technologies to identify what signaling / services control conformance testing would be appropriate to successfully introduce the new technology and services into the network. The review will include consulting with the network and services planners as well as involved equipment suppliers to develop a proposed set of tests tailored to specific network interfaces or network elements viewed as being strategic to successful and timely deployment of the new services. The focus of this effort can be tailored to the client's strategic concerns, e.g., conformance to SS7 interfaces and SS7to SIP interworking on signaling gateways interconnecting the client's legacy SS7 network to the new network or any other control signaling interface identified as a concern during the review. Telcordia will conduct the tests necessary to provide an independent assessment of the conformance of the new network element interfaces to Standards and signaling feature specifications.</p>
Impact of Services:	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Deployment of VoIP and Voice over Packet technologies <input checked="" type="checkbox"/> Interconnection Compliance <input checked="" type="checkbox"/> IP Multimedia Subsystem <input checked="" type="checkbox"/> Reduced Cost and Time-To-Market for NGN Services
Benefits:	<p>Clients will benefit from having Telcordia's subject matter experts, test tools and test methodologies developed for Telcordia's signature SS7 testing services applied to the emerging network infrastructures, e.g., VoIP or IMS. This will assist clients in meeting time tables for introducing new network technology. Clients will benefit from the exchange of key learnings from Telcordia's product and conformance testing services.</p>
Planning Price:	\$100,000 to \$250,000 (dependent upon the scope of the undertaking)

2011 NPI Generic Requirements (GR) Offers — Network Infrastructure GRs																															
Title:	2011 NPI Generic Requirements (GR) Offers — Network Infrastructure GRs																														
Description:	<p>Telcordia is offering clients the opportunity to participate with other industry participants in the updated and/or develop of several network infrastructure Generic Requirements in 2011. The list of network infrastructure GRs offered for 2011 include the following:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">Document Number</th> <th>Document Title</th> </tr> </thead> <tbody> <tr> <td></td> <td style="text-align: center;">NEBS</td> </tr> <tr> <td>GR-63, Issue 4</td> <td style="text-align: center;"><i>NEBS Requirements: Physical Protection</i></td> </tr> <tr> <td></td> <td style="text-align: center;">Wireless</td> </tr> <tr> <td>GR-3171, Issue 1</td> <td style="text-align: center;"><i>Generic Requirements for Outside Plant (OSP) Network Elements Used in Wireless Networks – Physical Layer Criteria</i></td> </tr> <tr> <td></td> <td style="text-align: center;">Fiber</td> </tr> <tr> <td>GR-20, Issue 4</td> <td style="text-align: center;"><i>Generic Requirements for Optical Fiber and Optical Fiber Cable</i></td> </tr> <tr> <td>GR-1312</td> <td style="text-align: center;"><i>Generic Requirements Optical Fiber Amplifiers and Proprietary Dense Wavelength-Division Multiplexed Systems</i></td> </tr> <tr> <td></td> <td style="text-align: center;">Power</td> </tr> <tr> <td>GR-3168, Issue 1</td> <td style="text-align: center;"><i>Generic Requirements for Nickel Metal Hydride (NiMH) Batteries in Stationary Telecommunication Applications</i></td> </tr> <tr> <td>GR-3169, Issue 1</td> <td style="text-align: center;"><i>Generic Requirements: VRLA Battery Conductance</i></td> </tr> <tr> <td></td> <td style="text-align: center;">Outside Plant</td> </tr> <tr> <td>GR-3159, Issue 2</td> <td style="text-align: center;"><i>Generic Requirements for Non-Wood Utility Poles</i></td> </tr> <tr> <td>GR-60, Issue 1</td> <td style="text-align: center;"><i>Generic Requirements for Wooden Utility Poles</i></td> </tr> <tr> <td>GR-180, Issue 1</td> <td style="text-align: center;"><i>Generic Requirements for Hardware Attachments for Utility Poles</i></td> </tr> </tbody> </table> <p>Telcordia Invites Your Participation</p> <p>Pursuant to provisions of the Telecommunications Act of 1996, related to the development of industry-wide generic requirements, Telcordia invites all interested parties to participate in these network infrastructure GR projects. If your company is interested in participating in a GR project, please contact Carol St. Jacques of Telcordia at 732-699-6595. The resulting documents will only be available through the purchase of an Enterprise License. Note: A license is included in the participation fee for these projects.</p>	Document Number	Document Title		NEBS	GR-63, Issue 4	<i>NEBS Requirements: Physical Protection</i>		Wireless	GR-3171, Issue 1	<i>Generic Requirements for Outside Plant (OSP) Network Elements Used in Wireless Networks – Physical Layer Criteria</i>		Fiber	GR-20, Issue 4	<i>Generic Requirements for Optical Fiber and Optical Fiber Cable</i>	GR-1312	<i>Generic Requirements Optical Fiber Amplifiers and Proprietary Dense Wavelength-Division Multiplexed Systems</i>		Power	GR-3168, Issue 1	<i>Generic Requirements for Nickel Metal Hydride (NiMH) Batteries in Stationary Telecommunication Applications</i>	GR-3169, Issue 1	<i>Generic Requirements: VRLA Battery Conductance</i>		Outside Plant	GR-3159, Issue 2	<i>Generic Requirements for Non-Wood Utility Poles</i>	GR-60, Issue 1	<i>Generic Requirements for Wooden Utility Poles</i>	GR-180, Issue 1	<i>Generic Requirements for Hardware Attachments for Utility Poles</i>
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Impact of Service:	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Cost Reduction / Operational Efficiency <input checked="" type="checkbox"/> Early knowledge of requirements changes <input checked="" type="checkbox"/> Interaction with other industry participants 																														
Benefits:	Network infrastructure GRs promote efficient implementation of new network technologies and/or addresses important changes that are needed																														

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	<p>in today's networks. Whether the technology is fiber optic related, GPON related, metro optical Ethernet related or other technology, participating in network infrastructure GRs will help your company assure that specific requirements are addressed and products will be developed that meet industry requirements. Generic requirements promote the availability, deployment, and reliability of leading-edge technologies, maintain network compatibility in a multi-supplier environment and to help ensure network reliability through assurances of overall product quality and performance. Generic requirements are also starting to address current issues of energy management and data center efficiency.</p> <p>Some of the benefits that you will realize by participating in the GR projects include:</p> <ul style="list-style-type: none"> • Ability to put forth your company's specific requirements and impact product requirements that will be followed by the industry. • Ability to provide input and get feedback on specific network infrastructure requirements from other industry members (suppliers, other carriers, etc). • Establish industry requirements which will consistently guide product manufacturers in product development and reduce your company's risks when purchasing products. • Gain knowledge of changing requirements prior to official release of the GRs. • Gain access to Telcordia network product experts who have in-depth knowledge and experience with the requirements/products (e.g. Ernie Gallo, Trevor Bowmer, Richard Kluge) 																		
Planning Price:	<p>Pricing is Specific Per GR Project:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="text-align: center;">GR-63, Issue 4</td> <td style="text-align: center;"><i>NEBS Requirements: Physical Protection</i></td> <td style="text-align: center;">\$22,000</td> </tr> <tr> <td style="text-align: center;">GR-3171, Issue 1</td> <td style="text-align: center;"><i>Generic Requirements for Outside Plant (OSP) Network Elements Used in Wireless Networks – Physical Layer Criteria</i></td> <td style="text-align: center;">\$22,500</td> </tr> <tr> <td style="text-align: center;">GR-20, Issue 4</td> <td style="text-align: center;"><i>Generic Requirements for Optical Fiber and Optical Fiber Cable</i></td> <td style="text-align: center;">\$22,500</td> </tr> <tr> <td style="text-align: center;">GR-1312</td> <td style="text-align: center;"><i>Generic Requirements Optical Fiber Amplifiers and Proprietary Dense Wavelength-Division Multiplexed Systems</i></td> <td style="text-align: center;">\$35,000</td> </tr> <tr> <td style="text-align: center;">GR-3168, Issue 1</td> <td style="text-align: center;"><i>Generic Requirements for Nickel Metal Hydride (NiMH) Batteries in Stationary Telecommunication Applications</i></td> <td style="text-align: center;">\$18,000</td> </tr> <tr> <td style="text-align: center;">GR-3169, Issue 1</td> <td style="text-align: center;"><i>Generic Requirements: VRLA Battery Conductance</i></td> <td style="text-align: center;">\$18,000</td> </tr> </tbody> </table>	GR-63, Issue 4	<i>NEBS Requirements: Physical Protection</i>	\$22,000	GR-3171, Issue 1	<i>Generic Requirements for Outside Plant (OSP) Network Elements Used in Wireless Networks – Physical Layer Criteria</i>	\$22,500	GR-20, Issue 4	<i>Generic Requirements for Optical Fiber and Optical Fiber Cable</i>	\$22,500	GR-1312	<i>Generic Requirements Optical Fiber Amplifiers and Proprietary Dense Wavelength-Division Multiplexed Systems</i>	\$35,000	GR-3168, Issue 1	<i>Generic Requirements for Nickel Metal Hydride (NiMH) Batteries in Stationary Telecommunication Applications</i>	\$18,000	GR-3169, Issue 1	<i>Generic Requirements: VRLA Battery Conductance</i>	\$18,000
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	GR-180, Issue 1	<i>Generic Requirements for Hardware Attachments for Utility Poles</i>	\$13,500

Title:	Expert Consulting/Expert Witnessing for Claims
Description:	<p>Telcordia Technologies, a leader in both network physical risk assessment as well as disaster prevention and recovery, has helped commercial property and casualty insurers:</p> <ul style="list-style-type: none"> ❖ Reduce the number and size of claims for electronics and telecommunications equipment ❖ Avoid the high costs of total replacement by determining what equipment could be safely and effectively cleaned and repaired <p>Since 1984, our engineers and scientists have worked on over 5,700 disaster events involving telecommunications networks, the Internet, data networks and other electronic equipment. We have provided unbiased assessment in cases of:</p> <ul style="list-style-type: none"> • Fire • Flood • Earthquake • Explosion • Chemical exposure • Contamination and environmental incursions • Electrical, electronic and mechanical equipment failures • NEC and NESC safety code violations <p>Insurance companies and adjusters, telecommunications service providers, Cable TV companies, and financial institutions have all benefited from our services and expertise. We have helped companies as they continue to work damage issues related to the 9/11 disaster, and we have provided expert consulting services to companies who have concerns with product performance. Recently Telcordia saved a company at least \$1M by helping them avoid litigation fees.</p> <p>Telcordia can work with you on a per-claim basis, or via a long-term retainer to provide on-call support of your claims assessments.</p>
Impact of Services:	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Claims Cost Reduction <input checked="" type="checkbox"/> Risk Reduction <input checked="" type="checkbox"/> Accelerate Claim Settlements
Benefits:	<p>Your company will benefit from having access to Telcordia subject matter experts who compliment your team with extensive knowledge of a wide-range of fire, flood, earthquake, explosion, chemical exposure, contamination, and electrical/electronic and mechanical failures. Telcordia has test laboratories to do materials analysis and recreate, if necessary, conditions related to an environmental situation that has caused damage to a facility or equipment.</p> <p>Telcordia will help your firm with unbiased technical analysis and expert witnessing to address claim issues. This assistance may hasten the legal claim process, reduce costs and mitigate risks.</p>
Planning Price:	\$50,000 - 100,000

NEBS Testing	
Title:	NEBS Testing
Description:	<p>Telcordia can provide integrated product NEBS testing, and Reliability and Manufacturing Analyses services to Suppliers. These services will improve time-to-market of a robust and reliable product. In addition your customers will recognize the increased value of your products.</p> <p>Our engineers offer superior consulting and analytical expertise that is enhanced by their real-world experience beyond the lab. Telcordia experts have provided technical support, site management, root-cause analysis, and objective advice following many of the industry's most severe disasters. At our one-stop equipment testing campus, where we can simulate virtually any environmental threat, we can also analyze for compliance to a full range of other domestic and international standards. Telcordia will work with each Supplier and assemble a customized program based on its business strategy. A typical program may have the following elements:</p> <ul style="list-style-type: none"> • Verification of design can be performed by Telcordia prior to prototype creation • High risk NEBS test areas can be performed early at the prototype stage • GR-1089 and GR-63 Testing • Manufacturing can be analyzed for reliability and quality to ensure the product is built right and in a consistent manner • Final testing and Reliability analysis can be performed on the final design • NEBS Level 3 Certification and Reliability Analysis can be publicized by the Supplier
Impact of Services:	<input checked="" type="checkbox"/> Qualify Products for Network Deployment <input checked="" type="checkbox"/> Risk Reduction <input checked="" type="checkbox"/> Cost Savings
Benefits:	<p>Your company will benefit from having access to Telcordia subject matter experts who have helped developed NEBS requirements and who work in the Telcordia laboratory daily testing to NEBS requirements. Telcordia NEBS testing can compliment your product strategy and ensure compliance before you position product with carriers. Telcordia is the most experienced laboratory for NEBS testing across the globe and we can help you not only with the actual testing, but on analysis of failures and/or resolutions to specific issues found during testing. Telcordia engineers perform unbiased, cost-effective NEBS technical analysis and we will prepare a comprehensive report in a timely manner that your company can utilize to market your product and confirm your NEBS qualification. Leveraging the Telcordia brand in the area of NEBS testing is going to benefit your product marketing efforts and product sales.</p>
Planning Price:	\$50,000-\$90,000

NEBS and CO Installation Training	
Title:	NEBS and CO Installation Training
	<p>Telcordia will provide NEBS and CO Installation training services to assist customer personnel in performing specific NEBS-related evaluations and central office installations. Telcordia will develop customized NEBS Course Material and provide the following:</p> <ul style="list-style-type: none"> • Instructor-led training at a customer location for up to a maximum of 15 students for a 4-5 day training session. • Student Binders of course material. • Electronic copies of course material. <p>Examples of NEBS and CO Installation training courses are:</p> <ol style="list-style-type: none"> 1. Equipment and cable installations according to GR-1275-CORE, <i>Central Office/Network Environment Equipment Installations /Removal</i>, Issue #10. 2. Power/Grounding Training: This training will focus on unique aspects of equipment and space planning in central office facilities. These will include dc power architecture, equipment and facility grounding, and equipment space planning. The contents will draw upon the information contained in the following Telcordia documents: <ul style="list-style-type: none"> • GR-513-CORE, <i>Power Requirements in Telecommunications Plant</i>, Issue 2, January 2010 (GR-513) • GR-1089-CORE, <i>Electromagnetic Compatibility and Electrical Safety Generic Criteria for Network Telecommunications Equipment</i>, Issue 5, August 2009 (GR-1089) • GR-295-CORE, <i>Mesh and Isolated Bonding Networks: Definition and Application to Telephone Central Offices</i>, Issue 1, November 2004 (GR-295) • GR-63-CORE, <i>NEBS Requirements: Physical Protection</i>, Issue 3, March 2006 ("GR-63") • GR-1502-CORE, <i>Central Office/Network Environment Detail Engineering Generic Requirements</i> ("GR-1502"). 3. NEBS Overview Training <p>The training method will encompass an interactive classroom style instructor-led session, followed by review and testing of the course materials.</p>
Impact of Services:	<input checked="" type="checkbox"/> Enhancement of Staff Skills <input checked="" type="checkbox"/> Risk Reduction <input checked="" type="checkbox"/> Operational Cost Savings
Benefits:	<p>Your company will benefit from having Telcordia provide training services. Our technical staff authored the generic requirements that are used by telecommunications carriers to build and operate reliable networks. As authors of the NEBS testing standards and the CO Installation and Engineering Requirements, we are uniquely qualified to fulfill your training needs. Your team will enhance their skills, improve their knowledge and your company will save operational costs going forward if you invest in this valuable training.</p>
Planning Price:	\$25,000-\$50,000

NEBS Physical Risk Assessments	
Title:	NEBS Physical Risk Assessments
Description:	<p>Telcordia Technologies can provide cost-effective physical risk assessment services in data and telecom facilities. Aspects of physical risk assessment include:</p> <ul style="list-style-type: none"> ➤ Identifying and prioritizing risks to facilities ➤ Applicable to administrative buildings, data centers and central offices ➤ Recommending strategies to mitigate risk so as to increase facility and overall network reliability <p>Specifically, Telcordia will:</p> <ul style="list-style-type: none"> • Conduct a detailed Audit of the network sites • Identify and prioritize risks to facilities and housed equipment • Included in the assessment will be items unique to and of specific concern including review of equipment, EMI, electrical protection and grounding, equipment fastening, water detection, cable rack security, floor plan management, power, lighting, security and alarming, fire safety, facility maintenance, roof integrity, risk of water leaks, collocated tenant activities, and general facility issues. • Recommend strategies to mitigate risk so as to increase network reliability <p>Audits will be based on a checklist developed by Telcordia from equipment and installation requirements contained in:</p> <ul style="list-style-type: none"> • GR-63, NEBS Requirements: Physical Protection. • GR-1089, Electromagnetic and Electrical Safety Generic Criteria for Network Telecommunications Equipment. • GR-1275; Central Office/Network Environment Equipment Installation/Removal Generic Requirements. • GR-1502, Central Office/Network Environment Detail Engineering Generic Requirements. • GR-2930, NEBS Raised Floor Generic Requirements for Network and Data Centers. <p>Telcordia will develop a detailed report that will describe, tabulate and prioritize risks that exist, the potential for the exacerbation of those risks, steps and procedures to reduce or eliminate existing and future conditions related to site risks. These recommendations may include, but are not limited to, procedural changes, recommended methods, and immediate actions to be taken in order to remediate high-risk conditions.</p>
Impact of Services:	<p>Reduced risk of service disruption</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Reduced impact of service disruption <input checked="" type="checkbox"/> Faster service recovery <input checked="" type="checkbox"/> Improved facility operation and maintenance costs
Benefits:	<p>NEBS Physical Risk Assessments can help carriers determine faults in their facility infrastructure and enable them to correct faults prior to a customer-impacting issue. Assessments can also help determine whether facilities are following consistent procedures and ensure operational efficiencies.</p>
Planning Price:	\$50,000.00 US (T&M) for up to 6 sites.

Title:	Back-Up Power Compliance Assessment
Description:	<p>Telcordia Technologies can provide a cost-effective services to assess back-up power capabilities in a wide variety of network facilities:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Telcordia will provide an objective, independent assessment of current network backup power capabilities and identification of specific issues/non-compliances <input checked="" type="checkbox"/> Telcordia will work together with carrier resources and data to sample up to 8 central office and remote sites for backup power capacity <input checked="" type="checkbox"/> Telcordia will perform a field assessment of up to 6 facilities to assess back-up power capability <ul style="list-style-type: none"> ○ COs and remote sites (urban/rural) ○ Load and environmental conditions ○ Technology being used for powering ○ Engineered backup power capacity ○ Actual backup power capacity <input checked="" type="checkbox"/> Telcordia will provide data analysis for more comprehensive set of facilities <input checked="" type="checkbox"/> Telcordia will prepare a report for the customer which can be used as part of their response to requests from states and federal agencies interested in back up power availability.
Impact of Services:	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Regulatory Compliance <input checked="" type="checkbox"/> Cost Reduction/Operational Efficiency
Benefits:	<p>Telcordia Technologies Back-Up Power Compliance Assessment will strengthen the customer's regulatory compliancy and increase operational efficiency by:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Obtaining an independent assessment of the current backup power status from a respected third party <input checked="" type="checkbox"/> Performing a more comprehensive analysis than what might otherwise have been able to be accomplished with internal resources <input checked="" type="checkbox"/> Identifying specific issues and potential non-compliances relative to the state and federal agency requests <input checked="" type="checkbox"/> Application of Telcordia technical expertise to help analyze and/or develop strategies to resolve issues <input checked="" type="checkbox"/> Assisting with report preparation in a timely and effective manner <input checked="" type="checkbox"/> Reducing the risk of non-compliances and the risk of penalties from outages caused by backup power failures.
Planning Price:	\$95,000 plus T&L

Title:	Energy Management Forum
Description:	<p>Telcordia will provide energy management services including membership in an Energy Management Technical Advisory Group (EMTAG) which will meet 3 times per year to discuss energy management issues. This offer is particularly beneficial to companies who are <u>proactively</u> seeking to save energy costs and demonstrate an energy efficient or %green+image to their customer base and the public.</p> <p>The Energy Management Technical Advisory Group is comprised of telecommunication power engineering professionals that meet formally to discuss and address issues related to network power powering and energy efficiency. The goal of the group is to identify opportunities to reduce energy consumption and energy costs.</p> <p>The Forum will review approaches to such topics as:</p> <ol style="list-style-type: none"> 1) power systems (regular and backup) 2) air circulation/heat dissipation within the facility 3) heating and ventilation requirements for the space and HVAC systems in use 4) telecom and data-com equipment in use/power ratings/placement 5) time of day energy usage 6) alternative energy source considerations for each facility (solar, wind, micro-turbine, co-generation, fuel-cell). 7) impact analysis for implementation of alternative sources.
Impact of Services:	<input checked="" type="checkbox"/> Cost Reduction/Operational Efficiency
Benefits:	<p>Participation in Telcordia Technologies energy management forum will allow your company to:</p> <ul style="list-style-type: none"> ➤ Effectively plan and implement energy reduction initiatives. ➤ Market company services and public image with focus on energy efficient. ➤ Show environmental responsibility. ➤ Increase value of company to stockholders. <p>Participation affords the members the opportunity to hear and share ideas that are germane to their energy reduction plans. The benefits include opportunities to propose requirement changes to supporting GRs for consideration by the other forum members.</p> <ul style="list-style-type: none"> • A forum to raise, discuss, define, and resolve engineering power and energy efficiency issues and improvements, with three face-to-face meetings per year. • A forum to suggest how telecommunications carriers and suppliers might change their procedures and policies to enable the customer to reduce energy consumption and costs.
Planning Price:	\$30,000

Title:	Energy Management Assessment
Description:	<p>Telcordia will provide energy management assessment services that include:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Assessment of 6 telecommunication building sites and/or data centers. <input checked="" type="checkbox"/> Evaluation of energy utilization from both a network reliability perspective and a building operations perspective (balancing these is critical). <input checked="" type="checkbox"/> Detailed and <u>quantified</u> recommendations for decreasing energy consumption and energy costs in each facility (reduce PUE, reduce CO2 emissions, reduce costs). Telcordia will tell you what it will cost to implement changes and estimate the projected savings. <input checked="" type="checkbox"/> Use of LEED certified personnel to conduct audits. <input checked="" type="checkbox"/> Comprehensive and quantitative report that can be used for internal, marketing and/or regulatory purposes. <input checked="" type="checkbox"/> Options evaluated for alternative energy sources to support facility specific energy requirements. <p>This offer is particularly beneficial to companies who are <u>proactively</u> seeking to save energy costs and demonstrate energy-efficiency or <u>green</u>+image to their customer base, the government, and/or the public. We estimate that a Telcordia assessment can result in a 5-10% energy cost savings and a 10-15% CO2 emissions savings.</p> <p>Telcordia and our LEED qualified partners will utilize the Generic Requirement Framework in GR-63, GR-1089 and GR-3028 to thoroughly assess a telecommunications facility or data center from an energy efficiency perspective. The assessment will include a review of:</p> <ol style="list-style-type: none"> 1) power systems (regular and backup) 2) air circulation/heat dissipation within the facility 3) heating and ventilation requirements for the space and HVAC systems in use 4) telecom and datacom equipment in use/power ratings/placement 5) time of day energy usage 6) evaluations of control systems for heating, cooling and humidification 7) alternative energy source considerations for each facility (solar, wind, micro-turbine, co-generation, fuel-cell) 8) impact analysis for implementation of alternative sources. <p>A responsible company will ensure it is running the most energy efficient telecom and datacom facilities. Telcordia's analysis is focused on helping to ensure network performance as changes are made to save energy. Your company can benefit from having network engineers do a technical analysis, we know that the marketing value of a <u>green</u>+rating is also a valuable marketing tool in today's marketplace.</p>
Impact of Services:	<input checked="" type="checkbox"/> Cost Reduction/Operational Efficiency

Title:	Energy Management Assessment
	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Improved Corporate Energy Image <input checked="" type="checkbox"/> Consistency for Energy Management Across Corporate Footprint
Benefits:	<p>Telcordia Technologies' energy management services will:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Reduce energy usage and costs up to 5-10% per facility. <input checked="" type="checkbox"/> Reduce CO2 emissions up to 10-15% per facility. <input checked="" type="checkbox"/> Improve profitability through cost reduction. <input checked="" type="checkbox"/> Enable company to show it is proactively addressing energy management issues. <input checked="" type="checkbox"/> Market company services and public image with focus on energy efficiency. <input checked="" type="checkbox"/> Show environmental responsibility. <input checked="" type="checkbox"/> Increase value of company to stockholders.
Planning Price:	\$140,000

Title:	Building Standards & Codes, Fire Safety
Description:	<p>Service providers face the challenge of complying with current building, electrical and fire protection codes while forecasting the need and applicability of future code changes on their business. Participation in the creation and modification of building, electrical and fire protections standards and codes is essential to balance the financial impact of code modifications on business operations with the risk that these changes present to telecommunications service continuity.</p> <p>Telcordia Technologies acts as an advisor and advocate for telecom service providers on proposed modifications to building, electrical, and fire protection codes and standards as they pertain to the operation of our clients' domestic telecommunications facilities. Telcordia Technologies provides representation and support at public hearings and forums to forestall unwanted changes in current codes and standards held by the International Code Council (ICC) and the National Fire Protection Association (NFPA), including the National Electric Code (NEC). Moreover, Telcordia Technologies provides direct representation in the development and formulation of new standards and codes including the International Building and Fire Codes as well as the NFPA.</p> <p>The development of an annual, industry-wide, technology specific special report regarding fire protection or life safety in telecommunications facilities, is included as part of these services.</p> <p>In addition to building standards and codes representation, clients will receive telephone support on code matters, access to Telcordia Technologies' library of building standards and codes information, and participation in the biannual Building Standards and Codes, Firesafety Fire Protection Forum. The <i>BSCF</i> Project provides client access to a telecommunications library with over 30 years of codes and standards books, practices, reports, BSPs, BRs, guidelines, testimony, and code change hearing monographs. These include not only fire protection issues, but also general building related issues such as air filtration, smoke management, seismic and vibration control, energy management, and disaster management.</p> <p>Clients will also receive direct consulting on specific Customer issues on building standards & codes, firesafety, and/or life safety up to the coverage limitation chosen. This direct consulting covers Customer-specific work that includes representation related to code official challenges to sprinkler, power room, electrical disconnect, NEC and other telecommunications facility exemption challenges for specific offices.</p>
Initiative Mapping:	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Cost Reduction through Strategic Planning and Better Leveraging of Industry-Standard Solutions <input checked="" type="checkbox"/> Cost Avoidance
Benefits:	Telcordia Technologies has successfully forestalled proposed modifications to the codes that would have serious economic and logistical consequences on telecom service providers. The elimination of carrier code

Title:	Building Standards & Codes, Fire Safety
	<p>exemptions by special interest groups representing other industries is an ongoing threat to major carriers who struggle to cost effectively manage aging telecommunications facilities while housing cutting edge equipment. Code changes that do not meet the needs of the telecommunications industry will have enormous financial consequences. Telcordia Technologies has developed the key code language - that is in place today - to represent your business needs. We continue to refine fire prevention and safety guidelines and practices without outside interference. Telcordia Technologies has successfully represented clients in maintaining existing exemptions and preventing changes to various editions of the model building and electrical codes as well as the various standards related to fire protection.</p> <p>Telcordia is unofficially recognized in the codes industry as the gatekeeper to the 3 major telecommunications building code exemptions. We have earned a highly respected reputation and recognized credibility over the past 25 years by being professional and ethical team players. Respect from our clients and from the codes and standards industry has been cultivated through a heritage of continuity, fairness, and impartiality. Representation by less respected consultants could lose these exemptions and potentially cost a large carrier up to \$100M/yr.</p>
Planning Price:	\$110,000

Title:	Electrical Safety Codes and Electromagnetic Compatibility (EMC) Related Support
Description:	<p>Telcordia helps clients to effectively and efficiently introduce new, beneficial Code rules and standards requirements to advance and protect their technical and economic interests. Telcordia will mount effective technical arguments against unjustified changes that would adversely impact the client's technical interests and costs. This includes Code representation for the National Electrical Code (NEC) and National Electrical Safety Code (NESC), as well as representation on industry groups such as the Alliance for Telecommunications Industry Solutions (ATIS) Network Interface, Power and Protection Committee, the ATIS Protection Engineers Group dealing with electrical protection, bonding and grounding, and related NEC issues, or other Institute of Electrical and Electronic Engineers (IEEE), International Telecommunications Union (ITU) or Telecommunications Industry Association (TIA) committees involved in topics and standards development that can affect service providers technical interests and costs.</p>
Impact of Service:	<input checked="" type="checkbox"/> Cost Avoidance
Benefits:	<p>Telcordia will provide an integrated solution that will coordinate between all Code and standards bodies mentioned. This will help to harmonize requirements between the various standards bodies. Further, Telcordia will help to ensure that new requirements do not adversely impact client's costs. Recent examples of successful Telcordia efforts and ongoing standards efforts requiring continued participation include:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> The industry wide savings realized through the NEC exemption is estimated in the billions of dollars. During a recent NEC revision cycle, Telcordia successfully defended the exemption for building facilities under our client's exclusive control. The exemption was directly challenged. Our successful defense spared the client exposure to significant costs associated with local permits and electrical inspections. Telcordia participation in the NEC Code-Making Panels and the NEC Technical Correlating Committee enabled us to persuade other NEC members of the merits of the exemption and follow our lead to defeat the challenge. <input checked="" type="checkbox"/> Telcordia successfully defeated various change proposals in NESC Code committees that would have required revision of many of our client's existing practices. Telcordia's participation in the NESC Code-Making Panels enabled us to secure support from several NESC members and thereby successfully oppose unnecessary and costly changes. The NESC effort also provided important code interpretation and guidance to enable our clients to remain compliant with existing codes. <input checked="" type="checkbox"/> Participate in IEEE C62 Surge Protective Device Committee Meeting and IEEE 487 to help assure that your company's interests are represented to assure that the client's interests and requirements are

Title:	Electrical Safety Codes and Electromagnetic Compatibility (EMC) Related Support
	<p>represented at an industry accepted body developing electrical protection, bonding and grounding requirements</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Recent activities at ATIS Protection Engineers Group (PEG) NIPP-NEP have focused on improving safety and protection of communications towers, as well as the grounding/bonding requirements commensurate with new broadband services. <input checked="" type="checkbox"/> As an example, in 2010, the Telcordia work activities will include (a) review and evaluation of public comments on the NESC change proposals with the aim of stopping adverse or costly proposals while helping to promote changes favorable to your company and (b) interpreting and understanding consequences of NEC changes that were finalized at the December 2009 meetings.
Planning Price:	\$200,000

Title:	Distribution Network Element Services -- Network Facilities and Construction
Description:	<p>Distribution Network Elements (DNEs) are vital components of the network infrastructure which provide the network security and quality necessary to support the critical needs of business and residential customers alike. Telcordia provides an integrated solution that includes performance requirements, assessments of new product designs and materials choices, laboratory and field evaluations, failure analyses, and related services. This work covers aspects of distribution network element technology and applications including: 1) engineering; 2) technology selection; 3) deployment; 4) installation methods and procedures; 5) maintenance; 6) trouble-shooting; and 7) field failure root-cause analysis and remediation. In general, this program includes metallic media and components, such as copper and coaxial wire and cable, support hardware, electrical protection and interface devices.</p> <p>This work effort will focus on your company's highest priority issues related to distribution network elements and facilities in the outside plant environment, as defined by the Customer's Subject Matter Experts (SMEs). This may include, for example, hardware and issues related to the provision of advanced broadband services, such as FTTx and Asymmetric Digital Subscriber Line (ADSL) or similar technologies. Some of the key areas which can be addressed include:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Technical consultation activities related to outside plant products, materials, and safety, including but not limited to: Protection Devices; Network Interfacing Devices; Wire, Cable & Connectors; Encapsulants; Controlled Environment Vaults; Electrical/Electronic Devices; Outside Plant Hardware and Apparatus; Cabinets, Terminals and Enclosures <input checked="" type="checkbox"/> Root-cause field failure analyses and remediation efforts; <input checked="" type="checkbox"/> Expert technical guidance on construction practices; and <input checked="" type="checkbox"/> Technical guidance/assistance and evaluation of service provider field trials. <p>Based on current industry needs, activities and concerns, this project is expected to provide the following specific deliverables:</p> <ol style="list-style-type: none"> 1. Arc-Flash Risk Assessment for Telecommunications Workers 2. Recommended practices for antenna attachments to poles and their associated equipment 3. Review of developments in buried and underground deployment strategies for FTTx networks 4. Review of Grounding and Bonding practices for pole guys in light of the new NESC Rule 215 5. Review of developments in non-wood poles and naturally durable wood poles and associated attachment hardware 6. Development of retrofit procedures for components and assembled equipment for placement in OSP closures <p>As noted above, the exact deliverables for this project may be modified to</p>

Title:	Distribution Network Element Services -- Network Facilities and Construction
	respond to immediate needs in DNE facilities. Significant changes to the deliverables may change cost of project.
Impact of Services:	<input checked="" type="checkbox"/> Cost Reduction / Operational Efficiency
Benefits:	<p>Distribution Network Elements (DNEs) are vital components of the network infrastructure which provide the network security and quality necessary to support the critical needs of business and residential customers alike. Although the existing metallic plant was not originally engineered to support advanced services, advances in technology have made it possible to use this embedded plant to provide high-end services. The implementation of advanced network services is also accompanied with an increased emphasis on the vulnerability of the network, the costs associated with network maintenance, as well as the losses incurred during any network outages. The reliability and robustness of the many millions of dollars worth of DNE components (e.g., cables protectors, remote switches, etc.) purchased each year by service providers can easily be compromised as these components evolve under market and regulatory pressures. Market competition and regulatory demands, such as those from the FCC and EPA, require that service providers seamlessly integrate new and existing DNE technologies and new service technologies, while maintaining the reliability and integrity of the Outside Plant (OSP) Network and the services that ride on this infrastructure. Service providers must simultaneously maintain the flexibility to introduce new, more powerful and/or cost-effective technologies and services quickly and economically. DNE components need protection and stewardship to ensure that business is sustainable and profitable into the future. Based on past experience, we expect to help reduce by up to 15% the costs associated with the selection, purchase, installation, repair and maintenance, and eventual upgrading/replacement of DNE components.</p>
Planning Price:	\$100,000

Title:	Supplier Testing Management and Product Selection Services
Description:	<p>Telcordia offers carriers and suppliers services to help manage supplier or OEM product analysis work. Under this program Telcordia will work with product selection experts to help identify and define appropriate technical product requirements that are needed to properly evaluate and approve products for purchase. This will assist companies during the entire RFP/RFQ process. Telcordia will also manage the process of product technical analysis, tracking product testing as well as assisting in responding to field complaints. To manage the process, Telcordia will track and report on all supplier funded product analysis, identify the product test programs, provide the status of the testing, as well as assist with the review and interpretation of product test results.</p> <p>Under this program Telcordia can also perform supplier factory audits of to help ensure that proper procedures are being followed so that your company consistently receives a quality product which meets your stated requirements. Telcordia test management and product selection support services can be provided for any product, including those tested to NEBS, optical requirements, or any other outside plant and CPE requirements.</p> <p>Telcordia can manage the complete product selection technical analysis process. Telcordia will work with the current SMEs and can function as an extension of your in-house staff. This function will provide for a deeper review of key technical issues without the need for additional in-house staff. As a result, the current staff can operate more efficiently, and with greater technical value and higher volume of product through-put.</p>
Impact of Services:	<input checked="" type="checkbox"/> Cost Reduction / Operational Efficiency <input checked="" type="checkbox"/> FTTX, FTTP
Benefits:	<p>Your company will benefit from having access to Telcordia subject matter experts who compliment your team with extensive knowledge of a wide-range of NEBS, fiber, OSP, VDSL-2 and CPE products and who have direct hands on experience testing many of these products. Testing comes at a cost and Telcordia will help ensure customers are getting the maximum from their test programs. Telcordia will also provide product selection support services and provide a thorough review of products under consideration by and help ensure the optimal product selection decisions are made.</p> <p>Telcordia technical experts integrated with your product selection teams will help accelerate and build technical confidence into the product selection process.</p>
Planning Price:	\$100,000

Title:	Outside Plant (OSP) Battery Management System
Description:	<p>Telcordia Technologies has developed the Telcordia OSP Battery Management System (BMS). The Telcordia OSP BMS is designed to improve and simplify battery management through automation. The system provides immediate benefits in the procurement, installation, monitoring, replacement, hazardous material reporting, and disposal of lead-, nickel, and lithium- based batteries designed for outdoor use. It includes functions for procurement, inventory control, battery monitoring, and a reporting tool. The system includes a:</p> <ul style="list-style-type: none"> ▪ Relational Database Management System (RDBMS) ▪ Engineering analysis programs for all OSP BMS functions ▪ Predictive battery lifespan algorithm ▪ Report generation engine ▪ Java Enterprise Edition design architecture ▪ Effectively meets the requirements of battery management ▪ Predictive battery lifespan and capacity algorithm to determine remaining service life and battery discharge capacity, respectively ▪ Three-tier battery monitoring approach ▪ Multi-user capabilities and security features.
Impact of Services:	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Cost Reduction <input checked="" type="checkbox"/> Operational Efficiency <input checked="" type="checkbox"/> Regulatory Compliance
Benefits:	<p>Client benefits include:</p> <ul style="list-style-type: none"> ▪ Access to an unsurpassed team of technical expertise to develop the Telcordia OSP BMS ▪ Efficient application development testing utilizing Telcordia engineering analysis tools ▪ A means to proactively schedule OSP battery replacements and schedule battery replacement based on the actual service life ▪ Access to up-to-the-minute information on battery life expectancy ▪ Ability to accurately predict when, where, and how quickly battery systems need to be replaced ▪ Real-time priority monitoring of batteries that may be at risk during natural disasters ▪ Increased reliability of power systems ▪ Maximized battery performance ▪ Reduced battery maintenance costs ▪ Mitigation of potential problems due to battery failure
Planning Price:	<p>For 1yr License: \$500,000 plus T&L For 2yr License: \$450,000/yr plus T&L For +3yr License: \$400,000/yr plus T&L (dependent upon licensing agreement and scope of work)</p>

Title:	Battery Hazardous Material Tracking
Description:	<p>For telecommunications service providers, the reporting of hazardous material receives significant regulatory interest due to the large quantities of chemicals under their control. Battery chemicals like lead and sulfuric acid make up a large percentage of the hazardous materials in the network. Without a proven solution, the process of accurately identifying, verifying, and calculating quantities of battery chemicals can be very challenging. Reporting inaccuracies can lead to very costly fines, penalties, and negative publicity. To help providers with their adherence to regulatory compliance, right-to-know laws and pollution prevention requirements, Telcordia has developed a battery hazardous material reporting application.</p> <p>The Telcordia solution records, identifies, verifies battery types and calculates the quantities of battery chemicals all from an easy to use web-based database driven application. Reporting functions are implemented by a system interface to Crystal Reports. Web screens allow for dynamic searches on database fields and provide functions that allow for easy customization of reporting formats. Reports can be exported as Microsoft Word or Adobe PDF files and can be included in any company document.</p>
Impact of Services:	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Cost Reduction <input checked="" type="checkbox"/> Operational Efficiency <input checked="" type="checkbox"/> Regulatory Compliance
Benefits:	<ul style="list-style-type: none"> ▪ Proactively record, identify, verify batteries and calculated battery chemicals in network ▪ Accurately report battery hazardous materials ▪ Understand possible exemption scenarios ▪ Gain a better perspective on right-to-know laws ▪ Efficient application development testing utilizing Telcordia engineering analysis tools
Planning Price:	<p>For 1yr License: \$175,000 plus T&L For 2yr License: \$150,000 plus T&L For +3yr License: \$125,000 plus T&L (dependent upon licensing agreement and scope of work)</p>

Title:	Energy Conservation Opportunity Web Application
Description:	<p>Energy management and conservation in commercial and network buildings can be used to increase profits and competitiveness as well as help the environment by reducing outdoor air pollution. By identifying, ranking, and selecting energy conservation opportunities, an energy audit is the most efficient first measure to reduce energy expenditures without adversely affecting other relevant building parameters such as indoor air quality. Telcordia has developed a web-based energy conservation opportunity application that will help your energy engineers collect the necessary data (utility billing, economic, and meteorological) needed to evaluate the energy use of your company's buildings and to discover conservation opportunities within them. The Telcordia application provides detailed web-based screens powered by an Oracle RDBMS that guides energy engineers through the process of pre- and on-site auditing procedures. The program simplifies auditing by:</p> <ol style="list-style-type: none"> 1) Identifying preliminary energy savings through its utility billing, economic, and meteorological data collection functions, 2) Quantifies energy savings and determines the economics of changes, and 3) Includes computer simulations to find energy savings on a year-round basis.
Impact of Services:	<input checked="" type="checkbox"/> Cost Reduction <input checked="" type="checkbox"/> Operational Efficiency
Benefits:	<p>Client benefits include:</p> <ul style="list-style-type: none"> ▪ Understanding the energy profile of their buildings via an easy to use database driven web-based application ▪ Reducing costs associated with 3rd-party energy management services ▪ Recognizing opportunities to save on energy costs ▪ Generating real-time reports and analyses showing the energy savings (costs) for selected buildings ▪ Disseminating data and engineering analyses for internal/external energy management discussions ▪ Simplifying training new staff on the energy profiles of selected buildings ▪ Improving the transition to more energy efficient buildings ▪ Marketing the corporations "green" image.
Planning Price:	\$75,000 to \$90,000 (dependent upon licensing agreement & scope of work)

Title:	Network Synchronization Consulting
Description:	<p>Telcordia delivers network synchronization consulting services by representing clients at standards bodies which address synchronization network planning and integration guidelines and practices. Network synchronization standards affect the interoperability and reliability of long haul traffic.</p> <p>Telcordia will assist your company in analyzing synchronization related field problems and failures, and by providing recommendations to mitigate the recurrences of identified problems. Telcordia will assess the impact on the synchronization network resulting from the introduction of new technologies and will develop necessary recommendations to rapidly and cost-effectively integrate new network elements in the existing network.</p> <p>Telcordia hosted a North American Synchronization Workshop in March 2010 to provide a forum to discuss significant synchronization network related issues and to share information of common interest to its clients.</p>
Impact of Services:	<input checked="" type="checkbox"/> Cost Avoidance
Benefits:	<p>Over-restrictive and unnecessary standards proposals can be avoided by active participation and leadership in appropriate standards bodies. Network synchronization standards support will ensure that new standards will not lead to excessive implementation costs, and that performance specifications are adequate to maintain quality of service, reliability and integrity of the network. Clients will also benefit from having access to Telcordia subject matter experts, test tools and test methodologies. This will assist in rapid resolution of synchronization related impairments as well as service outages. Your company will benefit from the exchange of key learnings from field experiences and product testing services provided to other telecommunications service providers.</p>
Planning Price:	\$65,000

Title:	GPON Consulting & Standards Support
Description:	<p>Telcordia has been involved in access network consulting, standards and testing at the product, interoperability and integration levels for many years and we believe our experience could be leveraged by our clients to help ensure faster release of equipment for deployment and cost efficiency. Telcordia has worked with suppliers on their test programs for OLT/ONT components and has extensive knowledge of what should be incorporated in a network element test plan. Telcordia also has a high level understanding of some of the OLT/ONT testing programs performed by carriers and can provide an independent view of the product level and interoperability test programs. Finally, Telcordia has extensive first-hand experience with carrier access network infrastructure issues and can help ensure that connectivity element evaluation being performed by our clients aligns with other product evaluations such that they interoperate with the OLT/ONT elements being considered. Specific services may include:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> As an active contributor to the FSAN Interoperability Task Group Telcordia proposes to be a liaison between our clients testing organization and the FSAN Interoperability Task Group, including the related GPON interoperability efforts in ITU-T SG15/Q2. Telcordia will provide quarterly readouts on the activities of the FSAN Interoperability Task Group, plus work closely with our clients testing organization to ensure that their needs are adequately represented within FSAN. This may include as many as six Telcordia authored contributions to FSAN per year. <input checked="" type="checkbox"/> Review and acceptance of conformance and G.984.x interoperability testing performed by network equipment suppliers to help assure that products meet specific minimum performance and interoperability criteria defined by the carrier to be considered prepared for the more rigorous deployment-specific testing (i.e., system integration testing) performed by your testing organization. <input checked="" type="checkbox"/> Expert support in test plan development, test execution and analysis performed by our client company for primary network elements (OLT, ONT); with a focus on integration with existing network elements, operations systems, and services. <input checked="" type="checkbox"/> Connectivity device selection program review and approvals of the connectivity elements of the FTTP architecture that provide the pathways from the OLT to the customer.
Impact of Services:	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Cost Reduction / Operational Efficiency <input checked="" type="checkbox"/> FTTP
Benefits:	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Help avoid costly field performance and operational problems with GPON FTTP deployments by reviewing your FTTP test program across all test program elements and identifying gaps and means to address these gaps. <input checked="" type="checkbox"/> Help ensure that industry G.984 interoperability test plans (i.e., FSAN) are reflective of carrier deployment needs. This is particularly important as G.984.x Interoperability Test Plans being developed by FSAN are influencing the test plans used by GPON vendors in their internal interoperability testing programs, programs which you may directly rely

Title:	GPON Consulting & Standards Support
	<p>on to help ensure the availability of G.984 interoperable products in their network.</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Help ensure product evaluation and testing organizations are well informed on the activities (including G.984.x interoperability) being undertaken in FSAN and ITU-T SG15/Q2. <input checked="" type="checkbox"/> Support your current product evaluation, testing and deployment programs and enable enhancements to help meet evolving needs and new challenges. <input checked="" type="checkbox"/> Support your company by helping to ensure that its testing interests are represented in FSAN.
Planning Price:	\$100,000

Title:	High Speed Data Testing of Network Elements for Use in Broadband Networks
Description:	<p>There is a new emphasis using DSL for high speed data to support new services at higher and higher data rates for the short distances between the neighborhood cabinet and the customer. These data services need to support voice, video and data and in some cases multiple high-definition video streams. This has resulted in a new demand for connectors, protectors and other metallic interconnection components as well as a new push for smaller form factor components that are deployed with the new DSLAM installations. The size of the cabinet is often a cause of controversy within the community and any means for the service provider to minimize its size is helpful.</p> <p>The protocol for this data is ADSL2+ or VDSL2 which have the requirement for a maximum of 30 MHz of bandwidth over the entire link. (The maximum bandwidth the outside plant components need to support may depend on the profile used by the service provider.) In addition, some service providers use other protocols within the house between the modem and the set top box for video services like MOCA. These may use the same cabling for a short distance with the incoming ADSL2+ or VDSL service and again promote new requirements for the metallic components. Some of the products that we have tested in the past are VDSL splitters. For the link between the splitter and the modem, they can use either twisted pair or coax which may change the applicable requirements.</p> <p>Telcordia has experience with the various areas of testing needed for these products including: materials testing, environmental and transmission testing. The materials requirements cover the established requirements for components that go into service provider network. Some of the more challenging materials requirements include chemical resistance to protect the plastic parts of the product from paint, fuels, lubricants and insect repellants. The environmental testing included showing the product works correctly at various temperature and humidity conditions even with long term cyclic exposure. The environmental testing may also include the presence of bias voltage as present in many traditional outside plant applications. Finally, Telcordia has a transmission requirement test setup to determine the performance of the component over its specified frequency range both for new samples and after many of the environmental tests.</p>
Impact of Services:	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Cost Avoidance <input checked="" type="checkbox"/> Strengthen Deployment of Broadband Services <input checked="" type="checkbox"/> Determine Network Elements Ability to Support Voice Video and Data Services <input checked="" type="checkbox"/> Cost Reduction / Operational Efficiency <input checked="" type="checkbox"/> Interconnection Compliance
Benefits:	<p>Clients will benefit from having access to Telcordia subject matter experts, test tools and test methodologies that can be used to review performance of network elements to various broadband deployment architectures. Suppliers can use the Telcordia generated reports to demonstrate to their service provider customers that their products will operate properly and</p>

	support deployment of high tier broadband services. Clients will benefit from the exchange of key learnings from field experiences and product testing services.
Planning Price:	\$25,000

Title:	Outside Plant Cabinet Testing (GR-487), ONU Testing (GR-950) and GR-3108 Testing
Description:	<p>This program is to conduct analysis to Telcordia generic technical requirements and characteristics required of Electronic Equipment Cabinets. It is these requirements that will need to be met in order to meet the needs of a Service Provider. It should be noted that a Service Provider may have actual requirements that differ from the generic requirements stated in the Telcordia documents. Under this program we can also test cabinets and closures to the NEMA 250 ratings, and the IEC IP rating system.</p> <p>The testing includes criteria for analyzing Electronic Equipment Cabinets and electronics used in a variety of outside plant environments and applications. Included in this testing service are a review of functional design criteria, generic mechanical and environmental requirements, desired features, and the performance tests for Electronic Equipment Cabinets with the stated requirements.</p>
Impact of Services:	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Cost Avoidance <input checked="" type="checkbox"/> Strengthen deployment of Broadband Services <input checked="" type="checkbox"/> Cost Reduction / Operational Efficiency <input checked="" type="checkbox"/> Interconnection Compliance
Benefits:	<p>Clients will benefit from having access to Telcordia subject matter experts, test tools and test methodologies.</p> <p>This testing will help users, suppliers and manufacturers properly Electronic Equipment Cabinets and electronics. By finding issues in testing millions of dollars in field issues can be avoided.</p> <p>Suppliers can use the Telcordia generated reports to demonstrate to their service provider customers that their electronic equipment cabinets will operate properly and support deployment of high tier broadband services.</p> <p>Clients will benefit from the exchange of key learnings from field experiences and product testing services.</p>
Planning Price:	\$65,000 to \$120,000 (depending on the scope of the effort)

Title:	Electrical Protection Testing Services
Description:	<p>This service is analysis and review of the generic technical requirements and characteristics required of integrated surge protection devices to be met in order to meet the needs of a Service Provider. It should be noted that a Service Provider may have actual requirements that differ from the generic requirements stated in Telcordia documents. We can also conduct testing to Telcordia GR-974, GR-1361, as well as, IEEE, IEC and ITU requirements.</p> <p>The testing reviews surge protection devices used in a variety of outside plant environments and applications, including those used in Remote terminals and building entrance facilities. Included in this review are the functional design criteria, generic mechanical and environmental requirements, desired features, and the performance tests for comparing integrated surge protection devices with the stated requirements. These could be for protectors on POTS, T1, xDSL, Ethernet etc., as well as devices on AC Power Mains.</p>
Impact of Services:	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Cost Avoidance <input checked="" type="checkbox"/> Strengthen deployment of Broadband Services <input checked="" type="checkbox"/> Cost Reduction / Operational Efficiency <input checked="" type="checkbox"/> Safety and Code Compliance <input checked="" type="checkbox"/> Interconnection Compliance
Benefits:	<p>Clients will benefit from having access to Telcordia subject matter experts, test tools and test methodologies.</p> <p>Suppliers can use the Telcordia generated reports to demonstrate to their service provider customers that their electrical protection devices will operate properly and support deployment of high tier broadband services.</p> <p>Clients will benefit from the exchange of key learnings from field experiences and product testing services.</p>
Planning Price:	\$65,000 to \$120,000 (depending on the scope of the effort)

	Power Training
Description:	<p>Telcordia power training will focus on unique aspects of power requirements, power planning and how power relates to equipment and space in your company's facilities.</p> <p>Topics Covered</p> <p>Standardized Terminology for Common Systems</p> <ul style="list-style-type: none"> • OPGP • Ground bar • Amp hour rating • Battery reserve time • BDFB • BDCCB • Distribution • Rectifier • Others <p>DC Battery Plant DC Battery Plant Architecture (Overview) " How a DC battery plant works</p> <p>Rectifiers</p> <ul style="list-style-type: none"> • Rectifier N + 1 concept <p>Batteries</p> <ul style="list-style-type: none"> • Amp hour rating • Battery reserve time <p>Distribution</p> <ul style="list-style-type: none"> • DC plant • BDFB • Rack mounted Distribution <p>DC Power Plant Versus UPS – Compare and Contrast</p> <p>Grounding Grounding Overview . purpose</p> <ul style="list-style-type: none"> • Safety overview • OPGP • Ground bars and terminations • Proper ground cable layout • Proper terminations • Equipment Grounding • Interaction with other equipment <p>Space Planning Overview of General Space Planning</p> <ul style="list-style-type: none"> • Overall building design • Ceiling support . cable racking

	<ul style="list-style-type: none"> • Ceiling height • Floor support <p>Floor plan layouts</p> <ul style="list-style-type: none"> • Thought process for layout • Rack types • Growth • Expansion • Supporting Equipment space • Growth wall expansion • Aisle spacing • Cooling impact • Over head racking • Single tier racking • Two tier racking • Ground conductor support racking.
Impact of Services:	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Cost Reduction <input checked="" type="checkbox"/> Operational Efficiency <input checked="" type="checkbox"/> Enhancement of Staff Skills <input checked="" type="checkbox"/> Risk Reduction
Benefits:	<p>Clients will benefit from this training in many ways:</p> <ul style="list-style-type: none"> ~ improve staff knowledge of power and space planning ~ ensure the fundamentals of power are understood by all who plan, build and operate equipment in your facilities ~ build consistency among your staff members who are responsible for power implementation/power operations ~ learn from experts who have actually developed industry requirements for power and have real-world experience with power ~ learn more efficient ways to manage your main and back-up power ~ possibly reduce power costs by learning ways to implement more efficient power configurations for your facilities
Planning Price:	\$2000-\$4000/person per course (courses can be customized and suitcased to your location)

Title:	Fiber Optic / FTTx Technology Consulting, Technical Analysis & Testing Services
Description:	<p>As part of this program, Telcordia will provide your company with diverse, in depth technical support related to the deployment of fiber optic technology in the telecommunications network. As the leading developer of global requirements for optical network and component standards, Telcordia has broad knowledge of optical component and network functional and performance requirements as well as firsthand knowledge of all aspects of fiber optic deployment (including FTTx deployment), optical component and network performance and reliability issues, installation, maintenance, materials, and restoration concerns. Our expert base of consultants adds depth and breadth the internal talent pool of our customers and can be leveraged as a natural extension of the team.</p> <p>Telcordia fiber consulting services may also include conducting product performance analysis and in-depth root-cause failure analysis. Whether funded directly by a carrier or by strategic carrier suppliers, the performance of such testing will ensure you purchase and deploy only optical components having the highest performance and quality standards necessary for the long term reliability of the optical network infrastructure. The cost of remediating defective and inadequate product that has been widely deployed in the network can easily exceed tens of millions of dollars per year and have an immeasurable impact on customer satisfaction and retention. A failure of just one key optical network component can result in widespread outages affecting large numbers of customers. With major optical component suppliers now universally relying on low cost, off-shore manufacturers, the risk of unknowingly purchasing substandard product has never been greater. Telcordia has the expert knowledge and comprehensive laboratory facilities necessary to rigorously evaluate and ensure compliance with performance requirements.</p> <p>Telcordia may also be called upon to support SMEs in developing purchase requirements to support product qualification and/or product selection efforts. Quick access to the Telcordia optical analysis team will also help with the remediation of failures of critical fiber optic network components and to support field trials of new products or deployment techniques. Such help from Telcordia will help ensure that your company maximizes the investment it makes in time and staff resources to work with suppliers to develop new products and deployment methodologies during field trials. Telcordia can also play the role of technology evangelist to ensure that best practices are widely shared throughout operating entities.</p> <p>The specific technology areas supported by this program may include, but is not limited to, the following:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Optical fibers, fiber ribbons, and cables (indoor & outdoor) <input checked="" type="checkbox"/> Fiber and cable handling and installation tools & methods <input checked="" type="checkbox"/> Optical fiber splicing and splicing systems (i.e. fusion/mechanical) <input checked="" type="checkbox"/> Optical connectors and jumper cable assemblies <input checked="" type="checkbox"/> Field mountable & hardened optical fiber connectors <input checked="" type="checkbox"/> Closures, including splice cases and optical network units (ONUs) <input checked="" type="checkbox"/> Fiber distribution hubs and terminals (pedestal, pad, pole, indoor)

Title:	Fiber Optic / FTTx Technology Consulting, Technical Analysis & Testing Services
	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Optical Amplifiers <input checked="" type="checkbox"/> Laser sources and photo-detectors <input checked="" type="checkbox"/> Dense wavelength-division multiplexers (DWDMs) <input checked="" type="checkbox"/> Couplers/splitters and optical switches <input checked="" type="checkbox"/> Other active and passive optical components <input checked="" type="checkbox"/> Field diagnostic and test sets <input checked="" type="checkbox"/> Installation practices and quality improvement
Impact of Services:	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Cost Reduction / Operational Efficiency <input checked="" type="checkbox"/> FTTP/FTTx
Benefits:	<p>Clients will benefit by having timely access to Telcordia subject matter experts, test tools and test methodologies to support strategic broadband needs. Telcordia will assist with product performance assessments and with the rapid resolution of optical infrastructure related impairments such as service affecting network outages.</p> <p>The ramifications of product related failures at any point in the optical network can be significant. Given the depth of global economic distress, every product supplier is taking aggressive measures to reduce costs such as through the off-shoring of manufacturing and the substitution of substandard or lower quality materials. Participation in this critical program will ensure that the performance and reliability requirements established by service providers are consistently met and respected by suppliers. Such vigilance is required to assure the long term reliability and integrity of the service provider's optical network infrastructure and ultimately the satisfaction of a customer base increasing tempted by competitive elements.</p> <p>Your company will benefit from the exchange of key findings from field experiences and product testing services provided by Telcordia to other telecommunications service providers, particularly in the deployment of FTTx installations.</p>
Planning Price:	Typically \$50,000 to \$150,000.00

Title:	Customized Training on Optical and Access Network Technologies
Description:	<p>Telcordia has a long history of leading the development of Generic Requirements and deployment methods and procedures for distribution and access network products and components. Telcordia maintains a very broad-based, depth of technical expertise in all areas of telecommunications. Telcordia's Network & Product Integrity team is engaged with Tier 1 carriers at various levels in support of strategic broadband deployment initiatives.</p> <p>In an increasingly competitive and technological advanced field such as Telecommunications, it is imperative that carriers maintain the highest level of technical proficiency among its staff. With this offer for Customized Training in the area of Optical and Access Network Technologies, Telcordia will leverage our existing portfolio of training materials to develop customized deliverables that will enable your staff from various departments to increase proficiency and understanding of key technology and deployment issues that define their day to day performance. Such training can be targeted to Management, System Engineers, Subject Matter Experts, and even commercial and residential Sales Executives.</p> <p>Training can take the form of distance learning through either webinars or other multimedia applications, on-site courses which are suit-cased by a certified Telcordia trainer or train-the-trainer where Telcordia certifies your trainers who conduct the actual on-site training of staff members.</p> <p>In the area of Broadband Network Products and Technology, training may include the following relevant areas:</p> <ol style="list-style-type: none"> 1. Fiber Basics 2. Refraction versus Reflection <ol style="list-style-type: none"> a. Snell's Law 3. Physical Concepts that enable Fiber Optic Systems to work 4. Optical Fiber Dissected 5. Optical Fiber Effects <ol style="list-style-type: none"> a. Absorption b. Scattering c. Attenuation d. Reflectance e. Polarization Effects 6. Link Effects <ol style="list-style-type: none"> a. Optical Return Loss (ORL) b. Chromatic Dispersion (Material + Waveguide Dispersion) c. Polarization Mode Dispersion (PMD) 7. How Light Travels in Single-mode and Multimode Fiber. 8. Why 1310 nm and 1550 nm are the most popular wavelengths and windows for transmission with SMF. 9. Building Physical Plant <ol style="list-style-type: none"> a. Cable placing b. Joining Fiber pathways c. Splicing (fusion and mechanical) d. Mechanical Connectors (single and multifiber)

Title:	Customized Training on Optical and Access Network Technologies
	<ul style="list-style-type: none"> 10. Testing Fiber Plant <ul style="list-style-type: none"> a. Attenuation (End-to-end) b. Search for point discontinuities c. Search for points of high loss or high reflectance d. OTDR traces make maintenance operations easier and faster. 11. Repair Physical Network <ul style="list-style-type: none"> a. Clean mechanical connectors (two ferrule housings and alignment housing) b. Replace or repair bad splices c. Replace bad cable 12. Commonly Used Transmission Systems <ul style="list-style-type: none"> a. SONET b. Ethernet c. Construct protected loops 13. DWDM Basics <ul style="list-style-type: none"> a. How it works b. Wavelength spacing 14. FTTX <ul style="list-style-type: none"> a. PONS b. Active Networks
Impact of Services:	<input checked="" type="checkbox"/> Operational Efficiency & Excellence
Benefits:	Your company will benefit significantly from having access to Telcordia subject matter experts who can provide training. Leverage our expertise in the areas of NEBS, fiber, OSP and CPE products and gain from our direct experience developing telecommunications standards, evaluating product conformance and readiness for deployment, and helping to define and refine deployment strategies. Telcordia training experts will prepare customized training material that will target very specific needs identified by your company to help improve staff technical proficiency which will lead to higher staff efficiency and performance in an increasingly competitive business landscape.
Planning Price:	\$25,000 - \$50,000 (customized training deliverables)

Title:	Technical Product Marketing Consulting
Description:	<p>This Telcordia offer represents an opportunity to create a usage based project to provide carriers and suppliers with access to a broad base of SMEs and extensive optical and access technology laboratory resources which will enable Telcordia to provide technical support and consulting services in support of a variety of strategic initiatives. The specific services provided by Telcordia are intended to support your company's marketing efforts and validate product performance through independent testing and analysis.</p> <p>This project will be set up with a pre-approved budget of \$250,000 with a minimum commitment by to spend at least \$100,000. Specific tasks and deliverables will be identified throughout the year and priced individually by Telcordia. Following approval of a task or deliverable, the work will be completed by Telcordia and the relevant cost will be charged to the usage project. There is no commitment or risk beyond the \$100,000 minimum usage level.</p> <p>Telcordia SMEs can accompany you to important meetings, lead technical discussions, introduce data related to technical analysis and provide appropriate marketing reports and/or press releases which will support your Marketing organization. Consulting may include:</p> <ul style="list-style-type: none"> ➤ Support of marketing events (e.g. trade show presentations) and customer meetings ➤ Root-cause field failure analyses and remediation efforts; ➤ Expert technical guidance on construction practices; and ➤ Technical guidance/assistance and evaluation of field trials.
Impact of Services:	<input checked="" type="checkbox"/> Cost Reduction / Operational Efficiency
Benefits:	<p>As the leading developer of global requirements for telecommunications standards, Telcordia has broad knowledge of all distribution network elements as well as firsthand knowledge of all aspects of FTTx deployment issues including optical component and network performance and reliability issues, installation, maintenance, materials, and restoration concerns. Our expert base of consultants adds depth and breadth to the internal talent pool and can be leveraged as a natural extension your company's team. We can help you position your product more effectively by providing independent and reputable technical expertise to support your product marketing efforts.</p>
Planning Price:	<p>\$250,000 CAP with a \$100,000 minimum funding commitment. Throughout the year specific tasks and deliverables will be identified and priced on a FQP basis. The funding for such deliverables will draw from the approved budget for this program offer.</p>

Notices:

These planning estimates are for budgetary purposes only.

Pricing and Terms may change without notice.

This document is provided for informational purposes only and should not be construed as a contract, nor an offer to contract.

Upon review and subsequent mutual discussions on content, Telcordia will provide a price and schedule.

Estimated benefits described in this catalog are for illustrative purposes only and do not reflect an analysis of actual benefits.

Assumptions:

Travel and living, third party hardware and software expenses, and applicable sales taxes are not included in the prices provided in this catalog.