

Electronic Commerce for Natural Gas:

A comparative evaluation of Energy E-Commerce Realities in North America and the Southern Cone



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Part I: The state of electronic commerce in the world today

Part II: Legal and Statistical Framework

Part III: Voluntary Standards for Natural Gas Electronic Commerce



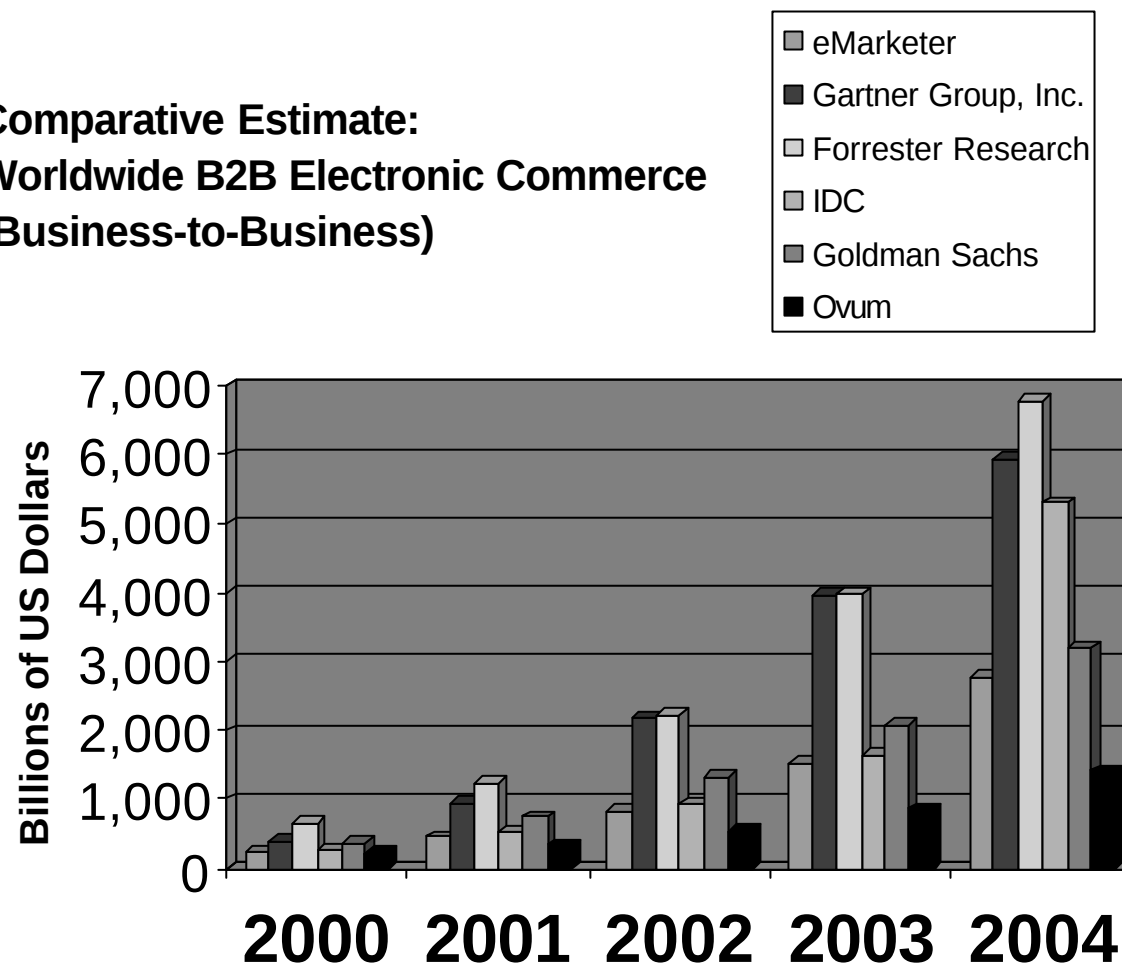
Part I:

The state of electronic commerce in the world today



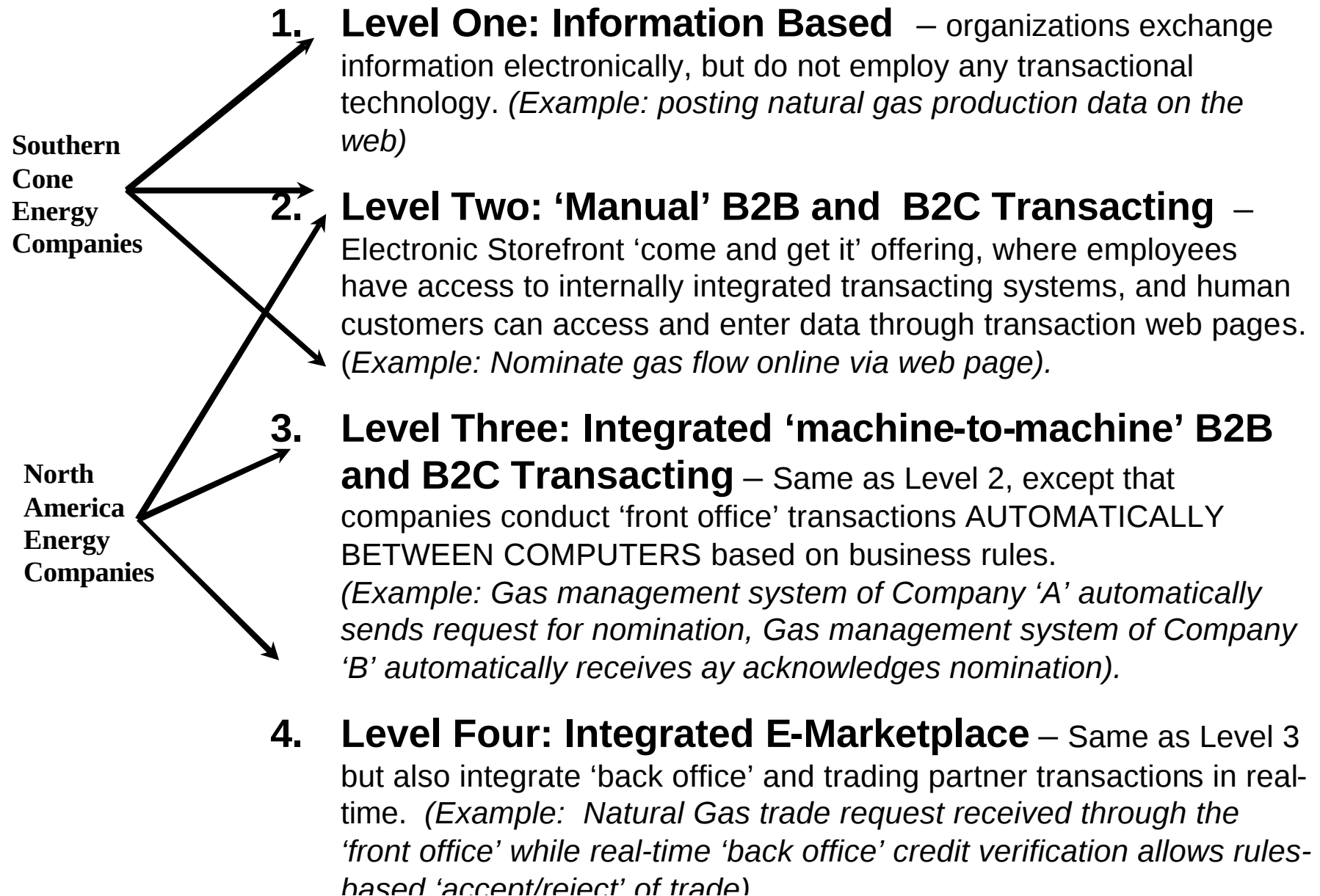
Worldwide Electronic Commerce Trend

**Comparative Estimate:
Worldwide B2B Electronic Commerce
(Business-to-Business)**





E-Commerce: four principal levels





Basic Requirements to conduct international electronic commerce

- **Contract Law in all nations must allow/recognize the binding nature of an electronic transaction**
- **The computing technology used must be SECURE (private) and RELIABLE (auditable/redundant).**
 - **Normal e-mail by itself is not viable e-commerce.**
 - **Spreadsheets, documents and other electronically alterable formats can't be successfully audited.**
- **Transaction sources must be IDENTIFIABLE and VERIFIABLE (electronic certificate authorities)**
- **International communications INFRASTRUCTURE must be ROBUST (fault-tolerant) and ECONOMICALLY ATTRACTIVE (high-bandwidth for low prices)**
- **A COMMON DISPUTE RESOLUTION MECHANISM, preferably binding arbitration, must be in place and legally binding in all affected nations.**



Principal MOTIVATORS to use Electronic Commerce

- **Compete in the Electronic Marketplace**
- **Improve customer service**
- **Increase speed to market**
- **Reduce costs**

Principal CONCERNS regarding Electronic Commerce

- **Security**
- **Authenticity of signatures, authenticity of parties' identities**
- **Fraud/abuse of electronic medium**
- **Privacy**



Electronic Commerce by region (focus on 2004)

	2000	2001	2002	2003	2004	% of total sales in 2004
Worldwide E-commerce Growth						
Total (billions US\$)	\$657.0	\$1,223.6	\$2,231.2	\$3,979.7	\$6,789.8	8.6%
North America	\$509.3	\$908.6	\$1,495.2	\$2,339.6	\$3,456.4	12.8%
United States	\$488.7	\$864.1	\$1,411.3	\$2,817.2	\$3,189.0	13.3%
Canada	\$17.4	\$38.0	\$68.0	\$109.6	\$160.3	9.2%
Mexico	\$3.2	\$6.6	\$15.9	\$42.3	\$107.0	8.4%
Asia Pacific	\$53.7	\$117.2	\$286.6	\$724.2	\$1,649.8	8.0%
Japan	\$31.9	\$64.4	\$146.8	\$363.6	\$880.3	8.4%
Australia	\$5.6	\$14.0	\$36.9	\$96.7	\$207.6	16.4%
Korea, Republic of	\$5.6	\$14.1	\$39.3	\$100.5	\$205.7	16.4%
Taiwan	\$4.1	\$10.7	\$30.0	\$80.6	\$175.8	16.4%
Western Europe	\$87.4	\$194.8	\$422.1	\$853.3	\$1,533.2	6.0%
Germany	\$20.6	\$46.4	\$102.0	\$211.1	\$386.5	6.5%
United Kingdom	\$17.2	\$38.5	\$83.2	\$165.6	\$288.8	7.1%
France	\$9.9	\$22.1	\$49.1	\$104.8	\$200.0	5.0%
Latin America	\$3.6	\$6.8	\$13.7	\$31.5	\$81.8	2.4%
Rest of world	\$3.2	\$6.2	\$13.5	\$31.5	\$68.6	2.4%

Total may not equal sum of rows, only selected countries included

Source: Forrester Research Inc. Worldwide E-commerce Growth, April 18, 2000

North America:
(including Mexico)
\$3,456.4 Billion US

Latin America:
(excluding Mexico)
\$81 Billion US



Legal and statistical framework by nation

Disclaimer: I am not a lawyer. The following statements should not be taken as legal advice.



United States

Electronic Signatures in Global and National Commerce (E-SIGN) Act *(Effective, October 1 2000)*

SEC. 101. GENERAL RULE OF VALIDITY.

(a) IN GENERAL.—Notwithstanding any statute, regulation, or other rule of law (other than this title and title II), with respect to any transaction in or affecting interstate or foreign commerce—

(1) a signature, contract, or other record relating to such transaction may not be denied legal effect, validity, or enforce-ability solely because it is in electronic form; and

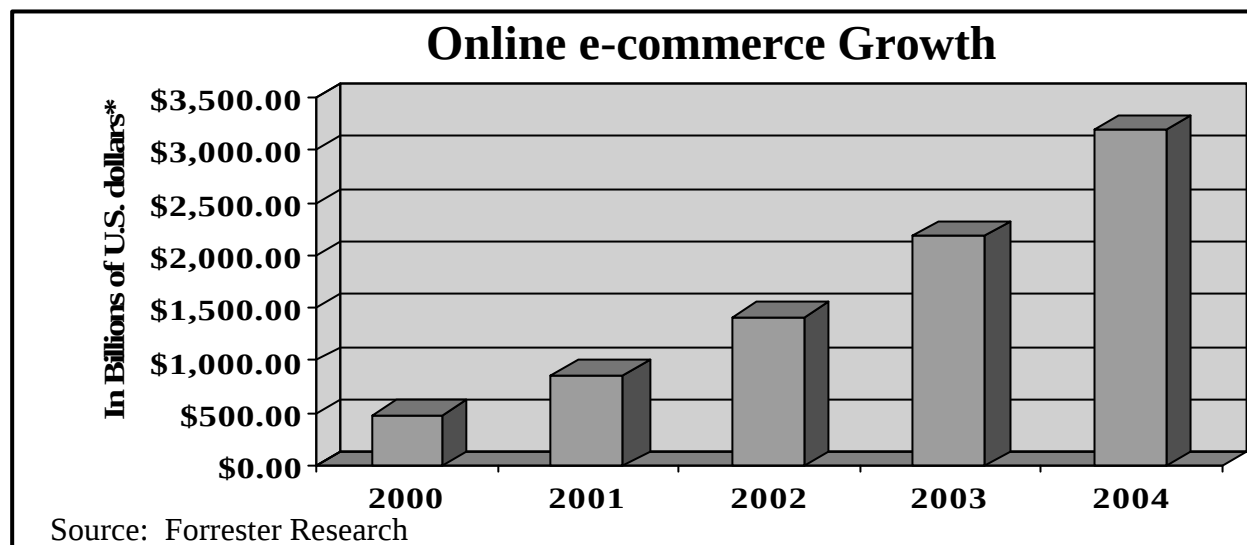
(2) a contract relating to such transaction may not be denied legal effect, validity, or enforceability solely because an electronic signature or electronic record was used in its formation.

The Bottom Line:

For purposes of U.S. law, electronic signatures and electronic contracts FOR BOTH NATIONAL AND INTERNATIONAL agreements have EQUAL validity as paper signatures and contracts.



United States



Users connected to the Internet

	January 2001	January 2002	Percent Change
AT HOME			
BroadBand Users	13.1 million	21.9 million	+ 67%
Dial-Up Users	87.0 million	82.0 million	- 6%
AT WORK			
BroadBand Users	18.0 million	25.5 million	+ 42%
Dial-Up Users	19.3 million	15.0 million	- 23%

Source: Nielsen/NetRatings



Canada

Personal Information Protection and Electronic Documents Act (Bill C-6)

(Effective, January 1, 2001)

Clarifies Rules for the Digital Marketplace: Legal, Policy and Regulatory Frameworks, including the formal recognition in law of digital signatures and electronic documents, through the amendment of more than 300 federal statutes relating to governmental transactions and information requirements. Bill C-6 also protects personal privacy, ensures consumer protection and states the 'no new taxation' position of the Canadian government.

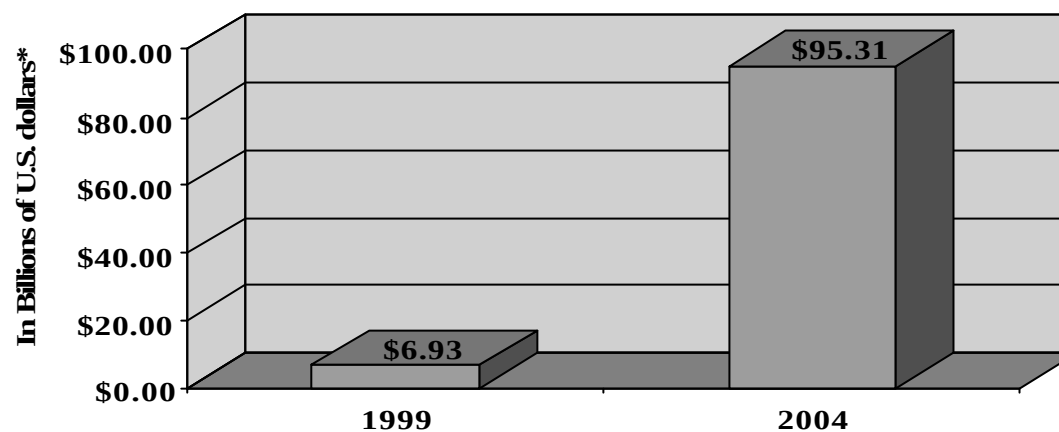
The Bottom Line:

For purposes of Canadian law, electronic signatures and electronic contracts have EQUAL validity as paper signatures and contracts.

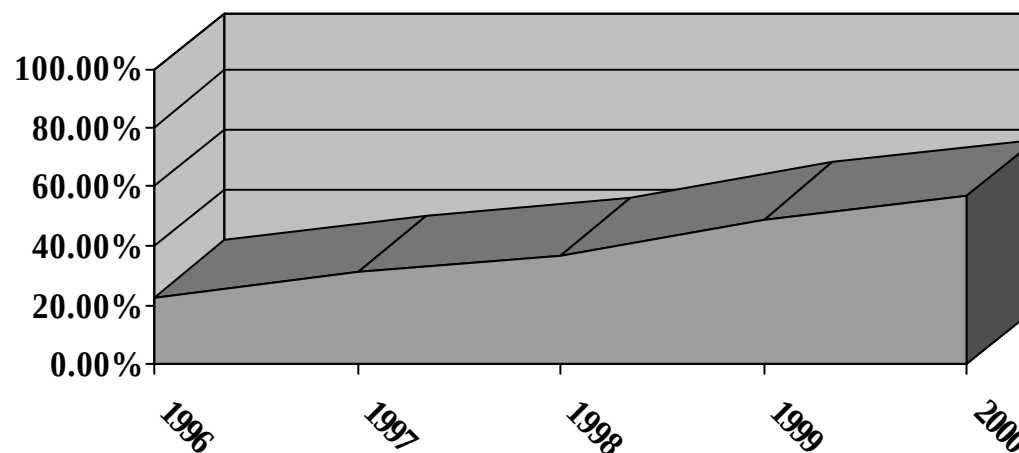


Canada

Estimated Total Canadian E-Commerce



Percent of Canadians Connected to the Internet



Source: Electronic branch of commerce Canada



Mexico

Comercio Electrónico:

**Legislación Nacional-México Gaceta Parlamentaria, año III,
número 500, miércoles 26 de abril de 2000**
(Effective, April, 2000)

This legislation is an amendment to existing legislation to take into account

- Electronic documents may be a valid form to enter into an enforceable agreement IN PLACE OF paper contract with handwritten signature.
- Enforceable agreements may be entered into without a prior written copy having been produced (i.e. electronic contract means)
- A section on “electronic commerce” is now included in the Mexican commercial code on UNCITRAL guidelines

Notably absent:

SPECIFIC detailed legislation regulating electronic signatures/ contracts and Electronic Authentication



Brazil:

Key e-commerce legislation

ANTEPROJETO DE LEI

Ementa: Dispõe sobre o comércio eletrônico, a validade jurídica do documento eletrônico e a assinatura digital, e dá outras providências.

Submitted (pending passage)

**E-Commerce regulations in progress in legislature
(modeled after United Nations Commission on International
Trade Law UNCITRAL)**

In progress

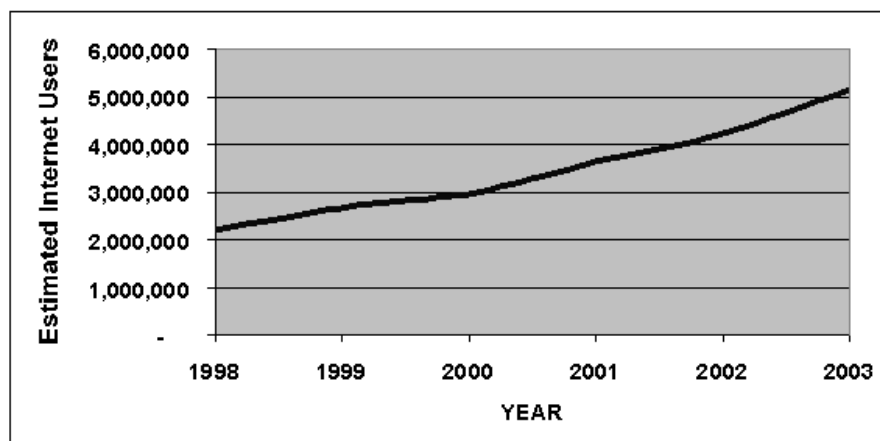
Privacy Note:

The Brazilian government may soon require all ISP's to collect complete personal data on all users for any potential future judicial processes.

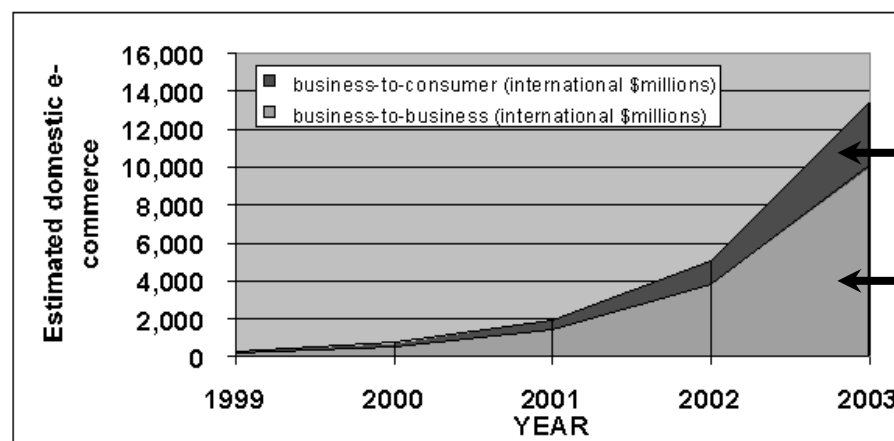


Brazil: e-commerce projections

Estimated Internet Users



Estimated domestic e-commerce



Business to Consumer

Business to Business

Source: Boston Consulting Group



Argentina: Key e-commerce legislation

Orden del Dia N° 2651/01

LEY FIRMA DIGITAL

Passed - November 14, 2001

Resolución SFP N° 212/98

**Políticas de Certificación para el Licenciamiento
de Autoridades Certificantes**

Enacted - December 30, 1998

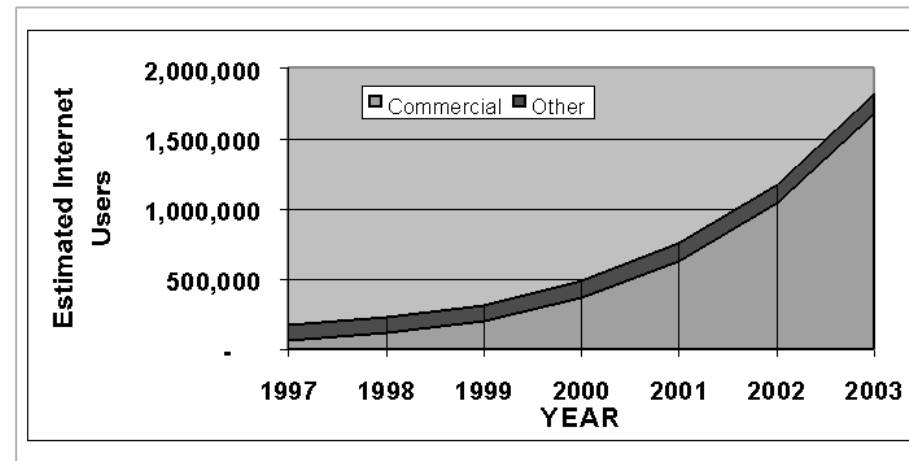
The Bottom Line:

Argentina has enacted all fundamental legislation to enable electronic commerce. Forward-thinking e-commerce legislation.

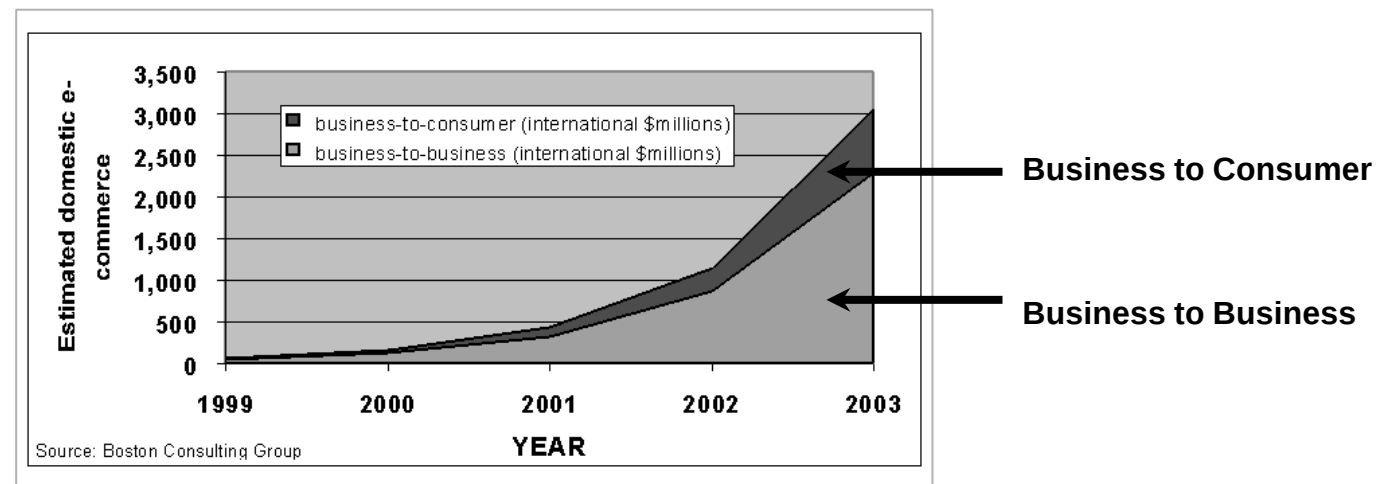


Argentina: E-commerce Projections

Estimated Internet Users



Estimated domestic e-commerce



Source: Boston Consulting Group



Bolivia:

Key e-commerce legislation

Comisión de la Comunidad Andina

DECISIÓN 486: Régimen Común sobre Propiedad Industrial

Enacted – December 1, 2000

Ley de Derechos de Autor No. 1322 - Artículos 6 y 68

Enacted – April 13, 1992

**Decisión 351: Régimen Común sobre Derecho de Autor y
Derechos Conexos**

LA COMISIÓN DEL ACUERDO DE CARTAGENA

Signed - December 17, 1993

Artículo 362.- Código Penal (Delitos contra el Derechos del Autor)

Enacted – August 23, 1972

Notably absent:

- Law regulating electronic signatures/contracts
- Law regulating Electronic Authentication



Part III: Voluntary Standards for Natural Gas Electronic Commerce



Examples of natural gas e-commerce transactions

Retail	Wholesale
• B2C – Online user profiles – Online payments – Online invoices /volume statements • B2B – Nominations – Gas Purchase/ Trading – Flow Schedule projections – Online invoices – Risk management/ hedging	• B2B – Shipper to Transporter Nominations – Shipper Scheduled Quantities – Online contract reports – Online imbalance reports (including shipper-Transporter, storage, cash balance) – Capacity Release bidding – Pre-determined allocations – Online confirmations/ transaction validations – Statement of Account



North America: Natural Gas e-commerce

- 
- A dark, semi-transparent map of North America is positioned behind the list of bullet points, serving as a background for the text.
- Formalized voluntary e-commerce industry body (Gas Industry Standards Board)
 - Strong industry support for uniform e-commerce standards
 - Balanced and structured participation of all segments of industry
 - Strong Government/Regulatory support for voluntary e-commerce standards (*FERC-U.S., NEB-Canada, CRE-Mexico*)

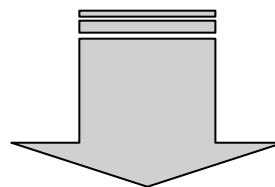


North America: Natural Gas e-commerce becomes Energy e-commerce

Gas Industry Standards Board



GISB was established in September 1994 as an independent and voluntary North American organization to develop and promote the use of business practices and related electronic communications standards designed to promote more competitive, efficient and reliable gas service.

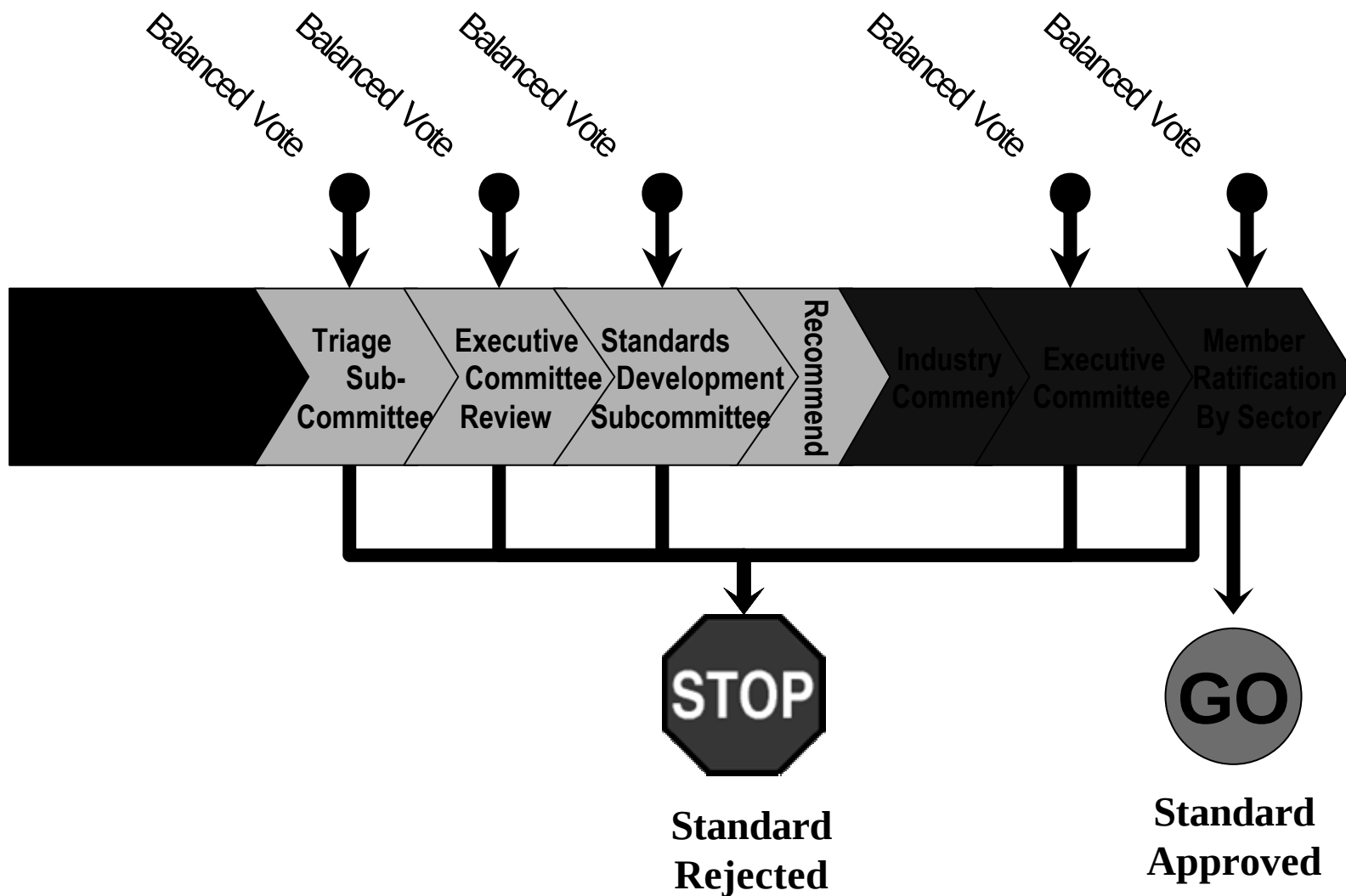


The North American Energy Standards Board

officially began operation on January 1, 2002. "NAESB" as it is known in short, encompasses what used to be the Gas Industry Standards Board (GISB) representing the wholesale gas market interests, but also provides for market-based standards efforts for wholesale electric, retail electric and retail gas market interests.



North American Energy Standards Board (NAESB) *Voluntary e-commerce Standards Model*



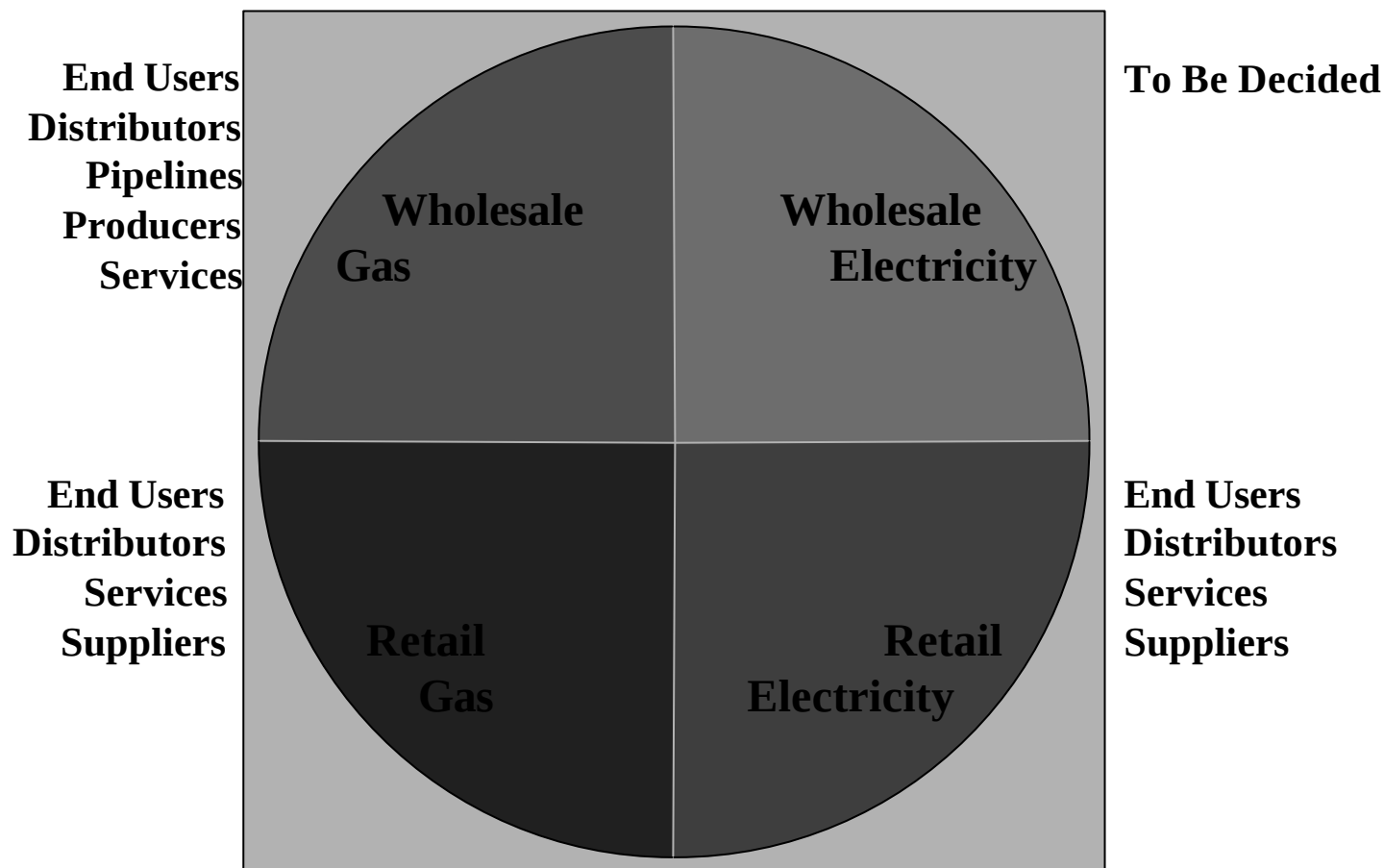


NAESB - Voluntary Nature of Standards

- All standards are voluntary.
- The standards *may be provided to regulatory agencies* as status reports as they are published.
- Regulatory agencies *may choose to adopt* the standards.
- The standards organization will NOT monitor for compliance, provide performance measures for compliance, nor will it define sanctions for non-compliance.
- The organization will not advocate.

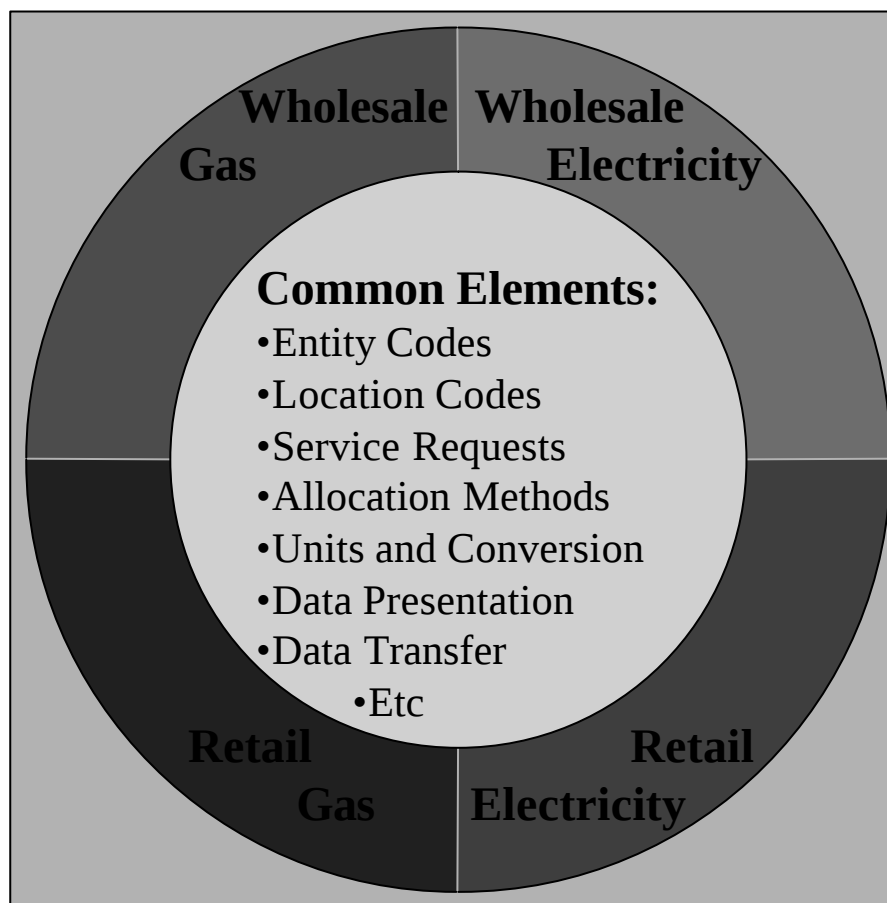


NAESB: Energy Commerce Quadrants & Participants



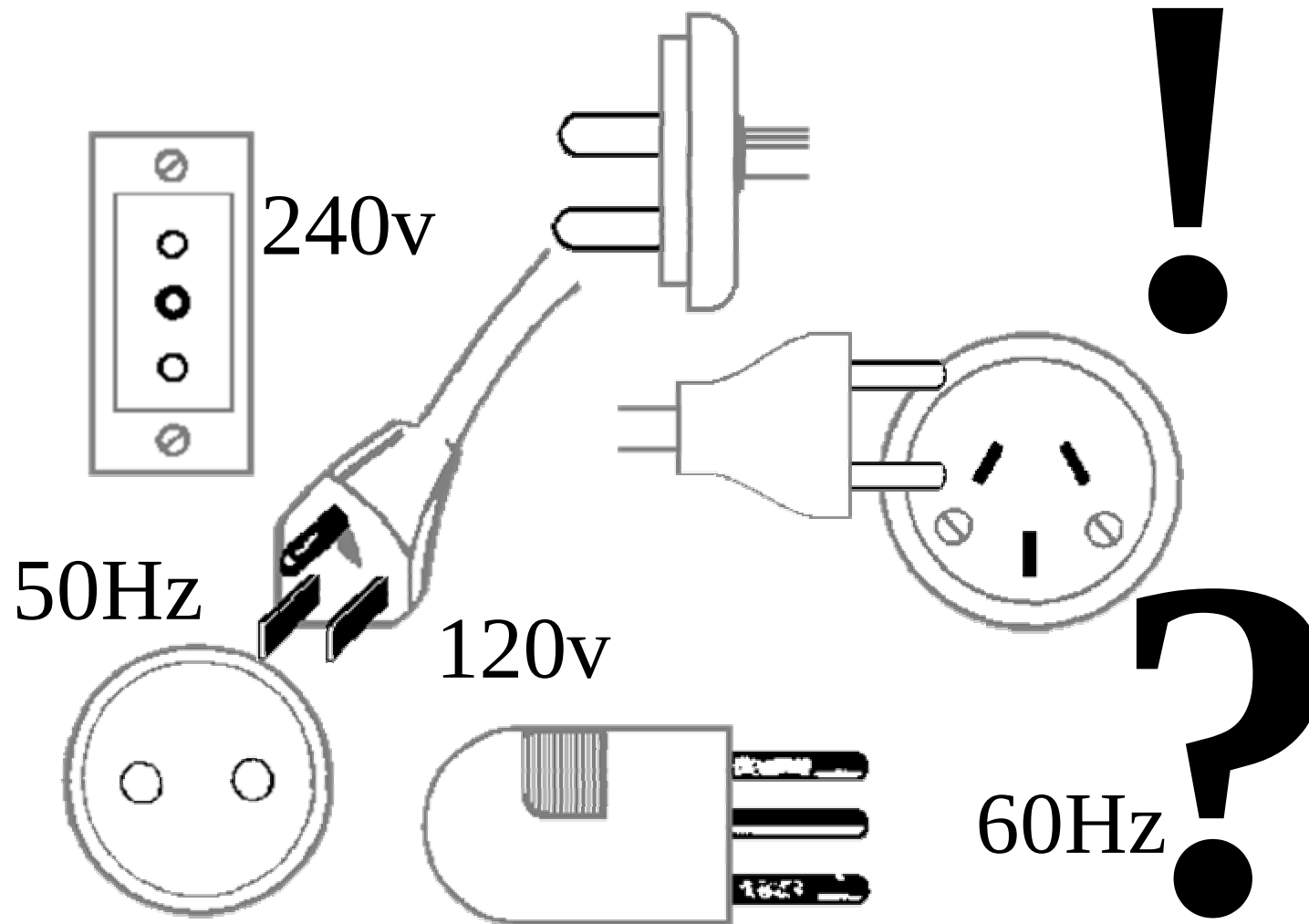


Some common e-commerce elements among energy commerce sectors





The problem with Cross-Border standards





Conversions for cross-border natural gas e-commerce

“The standard quantity for nominations, confirmation and scheduling is **dekatherms** per gas day **in the United States**, **gigajoules** per gas day **in Canada** and **gigacalories** per gas day **in Mexico**.

(For reference:

1 dekatherm = 1,000,000 Btu's;

1 gigajoule = 1,000,000,000 joules; and

1 gigacalorie = 1,000,000,000 calories.)

For commercial purposes, the standard conversion factor between dekatherms and gigajoules is 1.055056 gigajoules per dekatherm and between dekatherms and gigacalories is 0.251996 gigacalories per dekatherm. The standard Btu is the International Btu, which is also called the Btu(IT); the standard joule is the joule specified in the SI system of units.”

Quoted from GISB draft standard 1.5



Examples of Differences



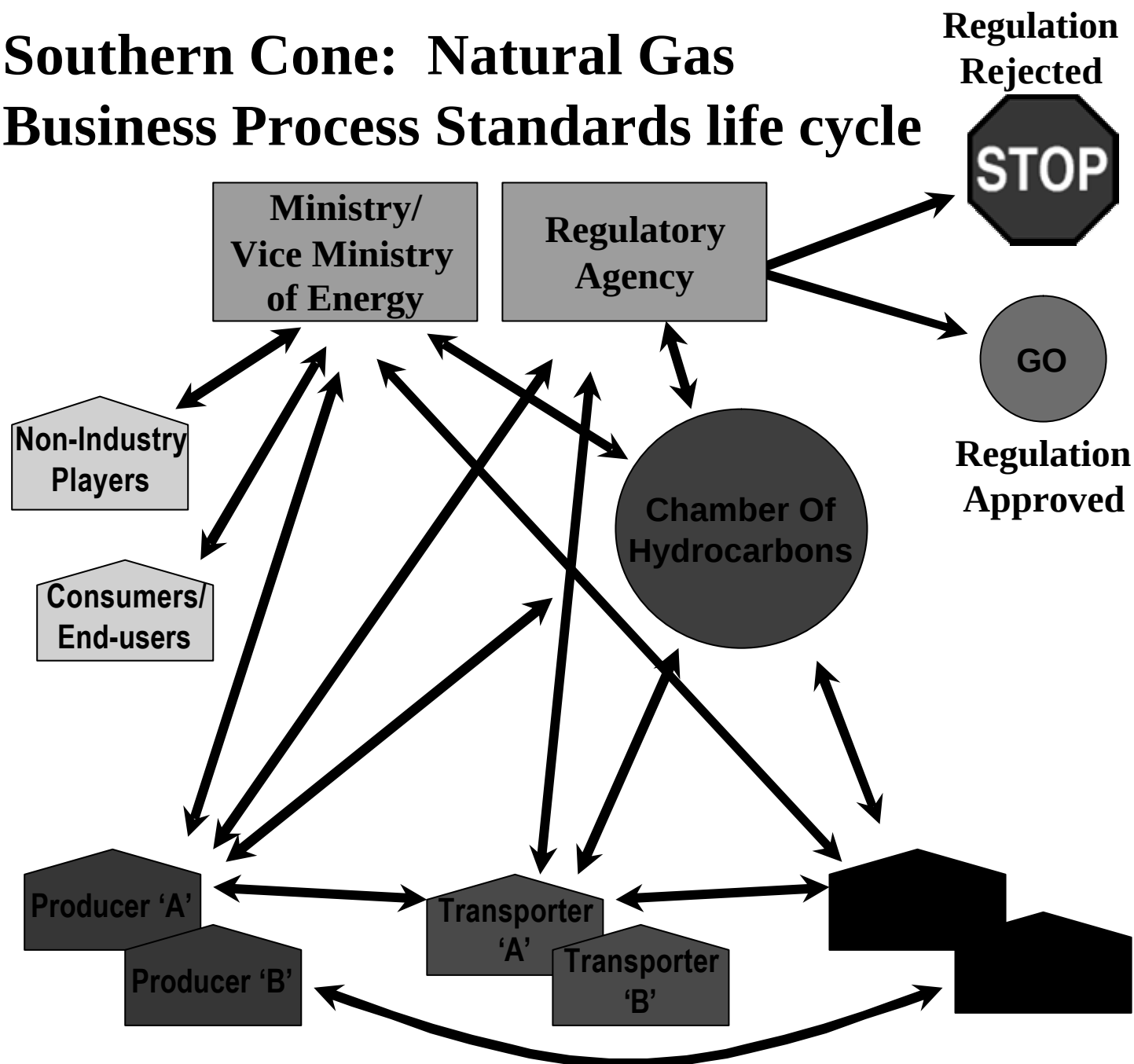


Southern Cone Natural Gas E-Commerce

- No formal natural gas e-commerce standards
- Each nation uses their own method to create, approve and implement business processes
- Energy E-commerce, where it exists, usually defaults to the available features of software installed.
- Technical (operational), commercial and legal structures are significantly different across borders, posing noteworthy challenges to cross-border electronic commerce.
- Industry and governments support e-commerce in principle, however implementation cost is an issue.



Southern Cone: Natural Gas Business Process Standards life cycle





Examples of Differences

- Gas currently Measured in **MCM/day** or **MMBTU/day**
- Temperature/Pressure/ Saturation specs unique
- National Holidays
- Currency **Boliviano**
- Export/Import Tax
- Government Royalties/Surcharges

- Gas Measured in **MMBtu/day**
- Bolivia/Brazil custody transfer
- National Holidays
- Currency **Real**
- Export/Import Tax

- Gas Measured in **MCM** (resolución ENARGAS No. 658/98, transporte)
- Temperature/Pressure/ Saturation specs unique
- National Holidays
- Currency **Peso Argentino**
- Export/Import Tax
- Government Royalties/Surcharges



Industry Concerns regarding standards

“Developing standards is time-consuming and costly.”

Standards are LESS expensive than no standards. Litigation, errors, miscommunication and inefficiency due to conflicting or un-defined business transactional processes are all much more expensive and can be dramatically reduced with clear standards.

“We would have to change the way we do business.”

When standards are created, improvements and efficiency gains are sought. Industry Standards are a means of transacting and communicating BETWEEN companies, governments and consumers, not INTERNAL norms. Businesses do not necessarily have to change the way they conduct internal affairs, just standardize the way they do business with each other.

“Implementing standards is difficult and costly.”

The benefits are worth the effort. There is no question that implementing standards is a challenge. If the standards are designed to enhance EFFICIENCY and improve SPEED, the benefits are clear.



Regulator/Governmental concerns regarding industry standards

“If the industry sets its own standards, then the regulatory agency will loose the power to regulate and ministry/cabinet will loose power to set energy policy.”

Regulators/Governments always maintain their right to regulate. An industry standards board sets only technical/business process standards. Standards should be voluntary. Governments and regulators don't loose any control since they are the bodies that set MANDATORY standards and public policy.

“The standards will be dominated by one sector of the industry.”

An industry standards board is made up of all segments of the industry, including the producers, transporters, distributors, service providers and end-users. This approach is slower, but is a representative method that balances the interest of all parties.



Chamber of Hydrocarbons concerns regarding industry standards

“Our chamber already plays an consensus-building role. Why do we need an e-commerce standards body?”

Standards are a compelling necessity if energy e-commerce is to become reality. Chambers of hydrocarbons could play a key role in developing the standards body.

“We don’t have the budget to undertake something like this.”

A standards board should be staffed by volunteers provided by the industry. This implies a significant investment in resources by the industry to create and maintain up to date energy e-commerce standards.



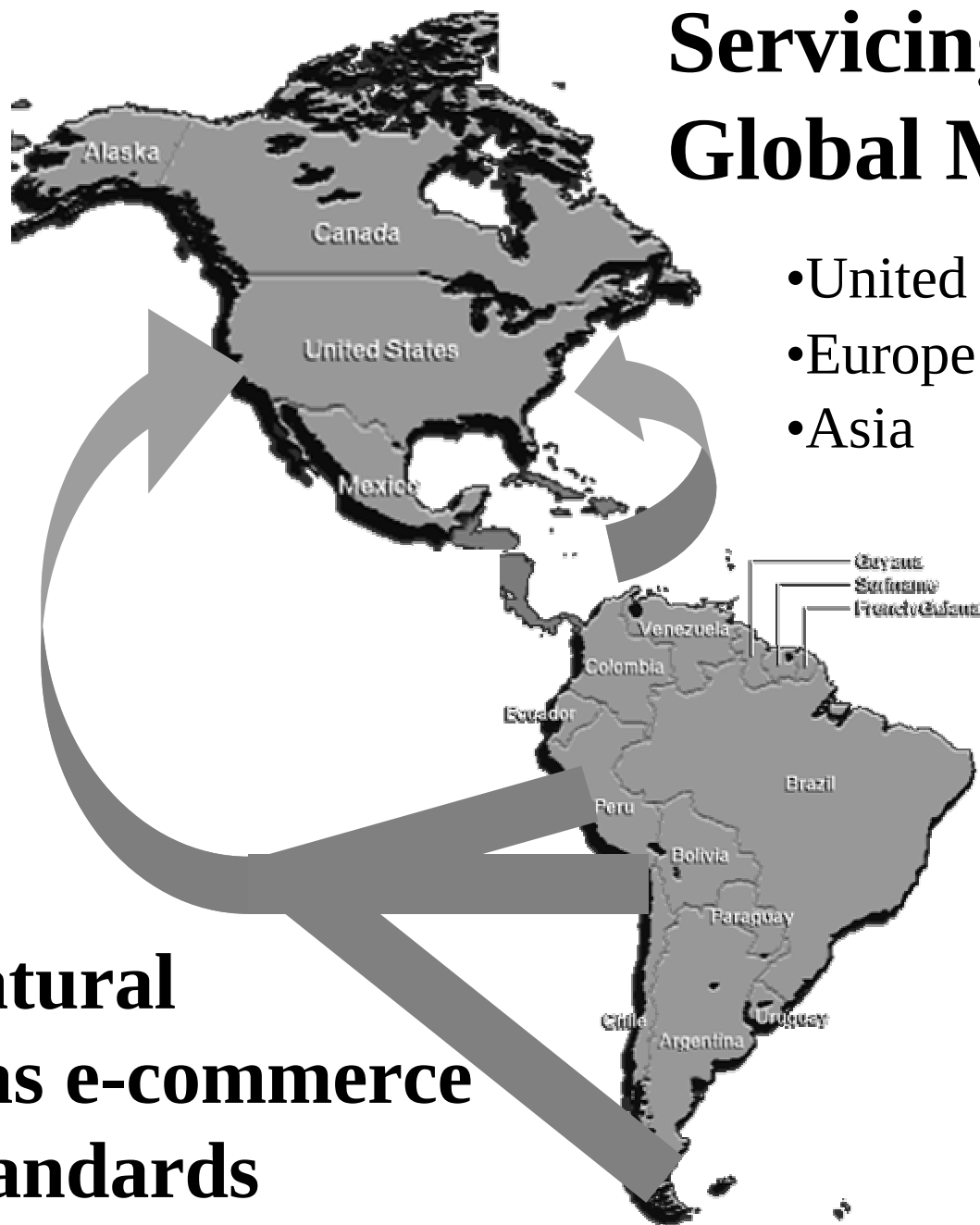
Brief Comparison:

	North America	Southern Cone
Status of E-Commerce Framework	E-Commerce legal, commercial and infrastructure framework fully operational (Mexico in progress)	E-Commerce legal, commercial and infrastructure framework in different states (Argentina operational, Brazil in progress, Bolivia in early stages)
Status of Cross-Border Natural Gas Technical specifications	International custody-transfer rules, cash balancing rules units of measure, and currency specified, implemented and operational	Partial definition of cross-border rules. Volume/energy/allocation rule enhancement in progress.
Status of Natural Gas e-commerce standards generation mechanism	Industry-Government collaborative partnership via industry standards board. Government reserves right to accept/reject proposed standards.	No explicit natural gas e-commerce standard generation mechanism. Business processes defined via inter-company, company-to-chamber, chamber-government, company-to-government negotiation cycle.



Servicing Global Markets

- United States
- Europe
- Asia



**Natural
Gas e-commerce
Standards**



Summary Thoughts

- Electronic Commerce is **clearly the method of the future** to complete energy-related transactions.
- If secure, reliable electronic commerce is to become a reality, **industry and government must work together.**
- The **minimum legal framework required** for effective and defensible electronic commerce includes the legal guarantee for privacy, the legal rules for authenticating the transacting parties and the rules for allowing electronic signatures/contracts.
- In order for diverse natural gas (or any energy) companies to transact in an electronic marketplace, **all parties must agree upon clear and robust transaction rules.**
- **In order to service global markets** (Liquids sold from the Southern Cone/Caribbean to the United States, for example), the marketer will be obliged to provide online value-added service via electronic commerce tools to compete. The customer is King in the new economy.



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Energy e-commerce tools

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