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Produced on behalf of the Combined Gas & Electricity IT Working Group.

Draft Paper for industry consultation

White Paper

Part A - 'Business'

Version 0.3
IT WG
10/10/2000

1 Executive Summary

This White Paper is prepared by the IT WG to meet the challenges of providing effective IT communications for the fully contestable gas and electricity 'mass' markets commencing next year.

The paper presents a 'Way Forward' that addresses these challenges by enabling energy companies to talk to each other in a timely and cost effective manner, providing cost savings at both industry and individual company level.

Specifically, the 'Way Forward' prescribes the standardisation of both the 'format' and 'transportation' of data to be exchanged from business-to-business or from business-to-market operator etc. Standardisation in this way, mitigates 'IT' mass market risks by enabling the IT industry to effectively and efficiently cope with the expected large volumes of data to be exchanged as customers 'churn' and the requirement for Distributors to interface with a multiplicity of Retailers and vice-versa.

Overview of IT WG recommendations to facilitate this 'Way Forward'

…that the industry adopt XML to encode common electronic transactions required to facilitate the fully contestable market next year.

…that transactions be developed and adopted by all energy market participants using the new ASEXML Standard.

…that the electricity industry adopt an interim network architecture initially, using FTP server accessed via existing network facilities eg NEMNet (existing NEMMCO owned, dedicated network) for data transportation, and in the longer term,

…that both the gas and electricity industries adopt the Internet (a 'shared' network) for data transportation. The use of the internet will depend on a final set of recommendations from the IT WG on the framework and Internet standards to be used. The implementation of the final decision is expected around July 2001, ie in-time for Mass market FRC for both energy types.

Risks

Failure to deliver on these 'standards' will increase the IT costs to all companies. Exchange of data between companies does not provide participants any competitive advantage, in fact the opposite, non-compliance with industry standards is a competitive disadvantage! Due to the additional cost and complexity of meeting the challenges described above.

The IT WG are confident that standards for many of the higher-priority transactions will be in place for the respective mass market *Day-One's*. There is however one caveat, IT are reliant on final 'business requirements/rules' before baseline IT systems can be delivered. Obviously it would not be prudent for IT to develop and implement solutions prior to national ratification of business requirements. For instance, "pre-transfer availability of NMI Standing Data" and CATS business requirements – for both gas and electricity – are required [pre Christmas] to meet the mass market *Day-Ones*.

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3 Background

3.1 Energy Deregulation, Competition and Retail Contestability

Government policy has mandated retail competition, or customer choice, progressively from 1994. As part of this progressive establishment of the national energy market, residential electricity customers in Victoria will become contestable from 1 January 2001 with gas customers to follow on 1 September 2001. Other States will follow over the next 1-2 years.

Contestability has already been implemented for many energy customers, typically in the larger industrial and commercial markets. However, from 2001 there will be up to 7 million electricity and 4 million gas customers that become contestable. This gives rise to a number of challenges that will require robust, effective and efficient Information Technology solutions to ensure the success of full retail contestability. In particular, there will be substantial volumes of data to be managed and communicated, and customer related business processes will need to be streamlined and automated.

As a result, a clear focus and sound strategy for the development of cost effective and efficient Information Technology solutions across the National energy market is required. Electricity and gas participants in the National Energy Market (NEM), including Retailers, LNSPs/Distributors, MDAs, NEMMCO/VENCorp and Generators, will be critically affected by the IT decisions made.

3.2 The New Zealand experience

Poor IT solutions could potentially hamper successful market reform. The New Zealand experience with contestability provides a timely example of the potential negative impacts of inadequate IT systems and processes (www.infotech.co.nz).

Problems have beset the New Zealand electricity industry with core issues relating to an inappropriate market structure for retail contestability. The New Zealand electricity industry is now paying the price for not investing in computer system enhancements and processes required to facilitate customer switching. Furthermore, they're now in the unenviable situation of having to build adequate systems for a market in which energy businesses are already competing for customers.

3.3 The Information Technology Working Group

The IT working group (IT WG) was formed to meet the Information Technology challenges of full retail contestability in a cost-effective and efficient manner. This can be achieved through the IT WG's proposed 'Way

Forward' which suggests delivery of a standards framework for electronic business-to-business transactions.

3.3.1 Composition of the IT WG

The combined IT Working Group was formed in August 2000 and is represented by IT technical and regulatory/commercial specialists from each gas and electricity business in Queensland, New South Wales, ACT, Victoria and South Australia. The group currently reports to the various jurisdictional FRC project offices but plans to obtain NEMSAT auspice for electricity, and state jurisdictions for gas.

3.3.2 Objectives and Tasks of the IT WG

The objectives of the IT WG are as follows:

1. Develop interface standards for use in the energy industry with voluntary adoption nationally.
2. Demonstrate the cost-effectiveness of the standardisation process. The ITWG has no direct implementation responsibilities.

Tasks to be performed by the IT WG are as follows:

1. Ensure that data interface processes and formats are comprehensive, available on a timely basis, clearly defined and communicated to relevant parties.
2. Define data interfacing standards to be adopted for inter-business data transfer.
3. Define security standards/approach/principles.
4. Provide guidelines for development and testing of these interfaces.
5. Define respective roles of Retailers, LNSPs/Distributors, MDAs, NEMMCO/VENCorp and external project management in FRC development and testing.
6. Define a process for readiness assessment, criteria development and readiness sign-off.

3.3.3 White Paper Audience

This part of the *White Paper* ('Business') is targeted at the industry's commercial and regulatory personnel. This section of the *White Paper* covers a high level overview of the directions of the group, to aid in management decision-making. Other parts of the *White Paper* provide further technical details and specific recommendations.

For clarity, it is recommended that the IT WG's earlier *B2B Communication Protocol Standards Options Paper* (dated 28/7/00) be read in conjunction with this *White Paper*.

3.3.4 IT WG Progress to Date

According to the revised Terms of Reference (TOR), the IT WG is focussed solely on the delivery of IT communication protocols for business-to-business transactions that enable energy market participants to communicate to each other in a timely and cost effective manner.

The *Options Paper* reviewed and recommended protocol standard requirements for business-to-business communication and the use of Extensible Markup Language (XML) to provide information standardisation over networks as will be required between energy companies (refer to *B2B Communications Protocol Standards Options Paper, 28/7/2000)*.

This *White Paper* reviews the various options and provides recommendations on the various levels of the XML 'Stack', including interim arrangements where uncertainty surrounded recommendations, eg uncertainty surrounding development/acceptance of 'latest-technology.'

4 Business Drivers

In a contestable market, businesses will be striving to minimise operating costs while maximising their competitive advantages. Common business drivers for market participants will include:

- Cost minimisation
- Maximisation of flexibility
- Efficiency of transfer mechanisms to remove barriers to market entry and customer switching

The standardisation of business-to-business communications would support these basic business drivers by:

- Allowing competitive suppliers to concentrate their resources on new products and services for the benefit of their customers instead of having to struggle with different standards.
- Transparency and the removal of barriers to the free movement of goods, capital, and services.
- Allowing customers to engage in interstate commerce.
- Allowing market participants to select the most appropriate technologies to support innovative and cost effective customer and supplier solutions.
- Removing many unnecessary obstacles that would add cost to the customer.
- Significantly reducing the competitive market's transition time.

Effectively, communication standardisation would result in significant cost savings for utility companies, preservation of margins and an efficient market.

5 Business-to-Business Communications

Electronic business-to-business (B2B) communications are not new and are currently performed daily by companies with affiliated retail/distribution businesses. For example, in the case of a fault, a residential franchise customer would contact their retail energy company who would enter customer information into their system. This information would then be passed onto the distributor's system, which would in turn trigger the dispatch of an operational crew to the site.

Given the industry and regulatory changes however, there will be a greatly increased need for business-to-business communications for new market participants and for the industry as a whole. This will come at a significant cost. In a fully contestable market, non-affiliated companies that cannot communicate in a timely and effective fashion could present a barrier to customer switching and could possibly jeopardise the success of full retail competition.

One key advantage of developing communication standards is that each company need only develop one interface for each transaction type. Without standardisation, each business-to-business transaction with other organisations would require dedicated interfaces, processes and procedures, etc. In a market with more than 30 retailers, this would be an expensive and inefficient exercise.

The adoption of common communication standards would provide numerous business benefits including:

- Enabling companies to communicate with each other in a timely and cost effective manner.
- Enabling incumbent energy companies to maintain service-level performance and profit margins.
- Ensuring that new(er) participants are not subjected to any IT related barriers-to-entry.
- Achieving cost savings at both an industry and a company level.

5.1 Electronic Data Interchange (EDI)

Electronic Data Interchange has been the mainstay of B2B communications within the American power industry. It is, however, a complex standard with many variants. The US experience is that the variation of communication is infinitely complex.

A more complete discussion of the US experience may be found in the white paper entitled "XML for Retail Energy Transactions: A White Paper" from Excelergy (http://www.xml-pipe.org).

5.2 Data Transfer Catalogue

In 1998, the UK market delivered an electronic Data Transfer Catalogue (DTC) that allows electricity participants within the UK to communicate to each other in a standard manner. The data format is similar to CSV (comma separated variable) but uses a 'vertical-bar' as field separator instead of commas. A benefit of the UK model (or a centralised solution) is the ease in updating/changing the DTC.

Information transferred using the DTC includes: customer registrations, customer detail changes, meter readings, meter changes, illegal usage and notification of planned outages.

Data flows are transmitted over an automated private network, connected to a B2B Portal that is supplied by an IT vendor. The facility includes utility 'boxes' that plug into the Portal. Cost recovery charges are based on annual standing and volumetric (traffic) charges. The system is reported to be a high cost, low-efficiency solution and not desirable for the Australian energy market.

5.3 Extensible Markup Language (XML)

XML is a technology developed by the World Wide Web Consortium (W3C). W3C is the body responsible for HTML, the specification central to the Internet revolution.

The driver for XML is the recognition that whilst HTML standardises the way data is presented, it provides no meaning to the data. In order to allow a higher level of communication, a description of what will be contained in a transaction must accompany content.

The term XML is somewhat overloaded. The abbreviation stands for "Extensible Markup Language" but it is often used to indicate a suite of standards for common electronic transactions.

XML is a young technology with the base standard only ratified in February 1998. Whilst the installed base is small, the rate of development is staggering. Major industry players such as Microsoft are committing heavily to it and Bill Gates, recently in Australia for the Sydney Olympics, advised Australian businesses to develop standards for transactions specific to their industries

XML allows different groups to develop information exchanges specific to their area of interest, for instance our Australian energy industry. An exact match to requirements can thus be achieved whilst still leveraging commercial products to facilitate the information transfer. In addition, tight integration between XML and existing Internet standards such as HTML will allow participants to leverage their existing Internet investment.

The following chart illustrates the projected rate of business development on the Internet. As can be seen in the following chart, the differential

growth rate between EDI and the Internet over the next 3 years is substantial.

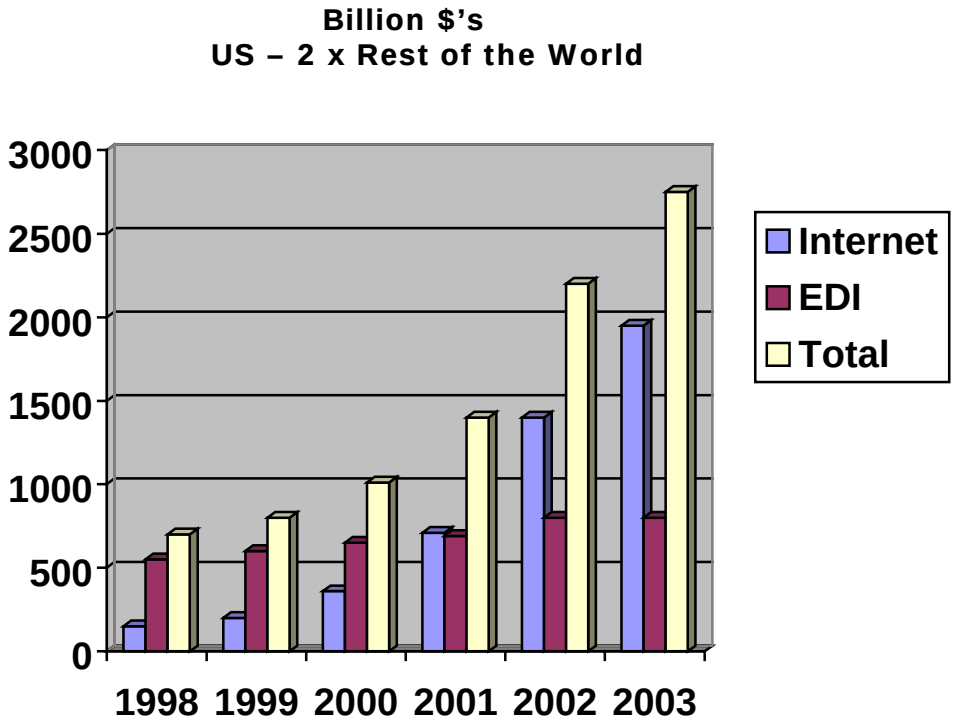

Chart 1 – Emerging Trends in the US (Boston Consulting Group, http://www.oasis-open.org)

Additional information on XML and EDI may be found in Part B of the White Paper.

6 IT WG RECOMMENDATIONS & PAPERS

Introduce the various IT WG documents produced to date

There is general agreement that the Australian energy industry wishes to pursue an XML based solution[1].

6.1 Technical White Paper

It is generally accepted that XML and the Internet will be the strategic technologies to facilitate the wider uptake of business-to-business (B2B) electronic data interchange (EDI) communications into the future.

The 'Technical' paper has reviewed options for the XML 'Stack' as there are a number of levels or layers at which standards must be employed to ensure an orderly exchange of XML transactions across the Internet. A number of recommendations and actions have been subsequently prescribed.

General Recommendations

… an interim solution be sought in the short term which allows participants to progress the development of FRC systems, but delays selection of standards in areas of uncertainty.

… the final decision on the framework and Internet standards to be used for business-to-business transactions in the Australian energy industry be reached by the January 2001 timeframe, pending further market movement either towards a dominant B2B framework, or increased inter-operability between B2B frameworks.

… the implementation of the final framework occur by the July 2001 timeframe.

Recommended Actions

- Short-term focus on encoding and transaction standards to codify the data dictionary and transactions to be used, given that the business processes required are well known.

- Selection and implementation of an interim solution to facilitate participant familiarity with XML and development of their FRC infrastructure.

Watching brief to be maintained on standards development with a final recommendation no later than January 2001 for implementation by July 2001.

Refer to White Paper, Part 2, *Business*, v0.2, IT WG.

[1] Consensus decision of the Combined Gas & Electricity IT WG, 14/7/00.

6.2 Guidelines for Building a Transaction Standard

The Working Group commissioned the development of the 'Guidelines' document in order to further the standardisation of common electronic transactions required within the fully contestable Australian Energy Market. The document is highly technical and designed for software development staff responsible for systems implementing the aseXML standard.

The IT WG's approach to the development of Standards is to allow individual energy companies to develop working prototypes and have these ratified by an [authorising committee[2]]. Specifically, the aim of Working Group is to harness the industry's collective intellectual property with individual companies focussing on transactions where they perceive the most benefit.

A high degree of parallelism may be achieved using this approach which is a timely benefit considering the tight timeframes established for contestability. Obviously broader acceptance is contingent on the standard meeting the requirements of the IT industry.

The purpose of the document is thus to establish sufficient infrastructure to allow the independent development of portions of the specification and their combination in an efficient manner.

Refer to White Paper, Part 3, *Guidelines for the Development of the Australian Standard for Energy Transactions in XML (aseXML)*, v0.3, Michael Leditschke, NEMMCO.

6.3 Repository for Transaction Standards Built to Date

The Repository details and maintains Standards for electronic transactions proposed and accepted by the IT WG. It's expected that these Standards will be used by IT developers within energy companies, and vendors of systems that are required to interface with other energy companies.

The information contained in the document illustrates the 'business requirements' and encoded XML Schemas for each transaction. The repository currently contains the draft Standards for the Working Group's first-two (high priority) candidate transactions, namely NMI/MIRN Data Processes, (i) Get NMI/MIRN and (ii) Get Standing Data Items and CATS (Customer Transfer). The repository will evolve over time with the inclusion of newly developed standards and updating of existing standards as required.

[2] The IT WG have recommended that its activities be brought under the auspices of NEMSAT and relevant jurisdictional bodies in gas for electronic transactions involving the market operators. With respect to strict B2B transactions responsibility will reside with the energy IT industry.

Refer to White Paper, Part 4, *The Australian Standard for Energy Transactions in XML (aseXML) : Candidate Transactions*, v0.2, IT WG.

7 References

www.infotech.co.nz

B2B Communications Protocol Standards Options Paper, 28/7/2000.

XML for Retail Energy Transactions: A White Paper, http://www.xml-pipe.org.

http://www.oasis-open.org

8 Acknowledgments