Integrating the Different Business Document in Supply Chain Management

S.Vairamuthu, Dr.k.Soorya Prakash

Abstract— Today the enterprises are increasingly engaged in supply chains. Business document integration is the one of the main problem of supply chain management. Most of the enterprises are still exchanging business document in different formats, such as EDI formats, fixed width files, Mails, CSV files, XML files, and excel file etc. however, few more problems are how to choose the intermediate format. And how to map this intermediate format with different business document then store it in relational database. We used the interface tool to map with different format. And we used XML as intermediate format. And also we designed the model to compose the mail in respective format. Such as EDI, XML, CSV, TEXT, EXCEL to communicate with the respective partner.

Index Terms— supply chain, business document integration, intermediate format, and intermediate format to relational database.

1 INTRODUCTION

In recent years, even small scale and medium scale firms are using web- based supply chain network system. But electronic data interchange technology and document integration are being excluded from the supply chain in small and medium scale. (8). There are the problem that they still facing,

(i) Chose the intermediate format: choose the intermediate format to map with all formats.

(ii) Document integration: the different partners are using different data format to exchange the information among them. Web based scm can't interpret with the all type of data format. so the different data format should be mapped with the intermediate business document.

(iii) Relational database is needed to store the information in convenient manner.

2 EDI- ELECTRONIC DATA INTERCHANGE

Electronic Data Interchange (EDI) format is exchange of data in a standard format between the systems. It used widely in exchanging the business information electronically in supply chain. There are Two widely used standards are (i) X12 (commonly used in U.S.A. and Canada), and (ii) UN/EDIFACT (commonly used in Europe and the rest of the world). Companies have avoided EDI for three main reasons that are

(i) It's too difficult to implement.

(ii) It's too expensive to implement and maintain.

(iii) It's too rigid and not flexible to work.

- *S.Vairamuthu, M.E Industrial Engineering, Anna University Of Technology, Coimbatore. E-mail: vairamuthu.ceg@gmail.com*
- *Dr.k.Soorya Prakash Ph.D, Assistant Professor, Anna University Of Technology, Coimbatore.*

Security and audit controls, telecommunications infrastructure, access to international VANs, ''friendliness'' of laws governing global trade in electronic data transmission are found critical (2).

The major cost of EDI had always been the implementation phase of it. This was due to the lack of tools consultants had available. Framework EDI allows companies to use their existing in-house IT staff to implement and maintain their own EDI system. This would have been unthinkable prior to Framework EDI because of the complexity of EDI. But Framework EDI made this possible by making EDI files easier to manage. There are two Processing step involves in the EDI exchange that are

2.1 Outbound Process

The Outbound process is the generating and sending of EDI files. Below are the steps of an outbound process.

(i) Obtain data from existing system.

(ii) Generate EDI file.

(iii) Validate EDI file.

(iv) Send EDI file to trading partner. Some common methods of transmission are FTP, HTTP and AS2.

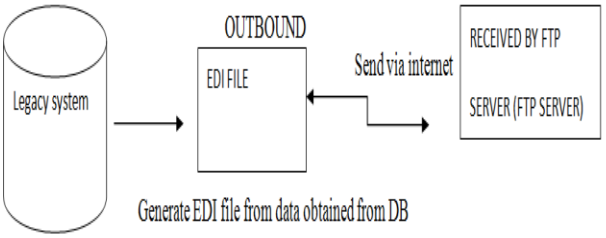


Fig 1. Outbound Process

2.2 Inbound Process

The Inbound process is the receiving and translating of EDI files. Below are the steps of an inbound process.

(i) Get EDI file.
(ii) Validate and acknowledge EDI file be sending back a TA1, 997
(iii) Translate EDI file.
(iv) Save data to a database.

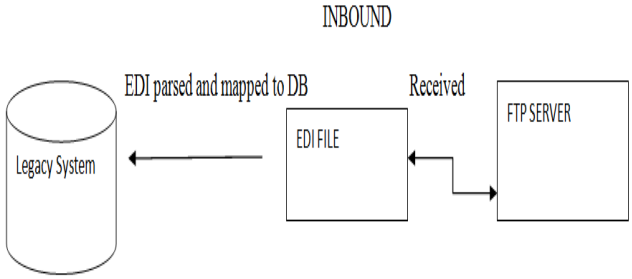


Fig 2. Inbound process

3 FLAT-FILES

Flat file formats are supported by a wide array of legacy systems and popular enterprise applications, such as accounting software packages, banking solutions, CRM systems, SCM system, standard UNIX applications, etc., as well as by Microsoft Excel, and are often used as an interchange format for transferring information between different applications, including databases. Flat file formats come in a variety of flavours and include fixed width, comma separated value (CSV), and tab-delimited text files. The flat file format has proven invaluable in the pre-XML era for allowing users of disparate tools to share information. However, though flat files are supported by many applications, they generally require additional processing to interoperate with common data formats such as XML and EDI.

.

3.1 CSV- COMMA SEPARATED VALUES

In csv file, Fields are separated by commas. These files are commonly used to transport large amounts of tabular data between either companies or applications that are not directly connected. The files are easily editable using common spreadsheet applications like Microsoft Excel. Read and bulk load Excel XLS and Excel 2007 XLSX spreadsheet files natively without external dependencies like having Office installed.

4 XML-EXTENSIBLE MARKUP LANGUAGE

XML is a markup language that is both human-readable and machine-readable. It is produced by the W3C. XML-based standards have been widely used to enable and ease Business-to-Business (B2B) integration (1). Examples of standards include cXML, CIDX and ebXML. It is new emerging technique XML for transporting information over internet and thus nullifies the disadvantages (viz. rigid transaction set, fixed business rule, high cost, and slow pace) of previously used EDI (3). It is a textual data format with strong support via Unicode for the languages of the world. Although the design of XML focuses on documents, it is widely used for the representation of arbitrary data structures, for example in web services. Many application programming interfaces (APIs) have been developed to process XML data, and several schema systems exist to aid in the definition of XML-based languages. Though XML provides much of the basis for B2B information exchange over the Internet today, it was not designed to replace existing EDI, flat file, and database technologies. Rather, the flexibility and openness of XML allow it to co-exist with and complement non-XML data formats and technologies.

- It is a platform independent language.
- It can be deployed on any network if it is amicable for usage with the application in use.
- If the application can work along with XML, then XML can work on any platform and has no boundaries.
- It is also vendor independent and system independent. While data is being exchanged using XML, there will be no loss of data even between systems that use totally different formats

As of 2009, hundreds of XML-based languages have been developed, including RSS, Atom, SOAP, and XHTML. XML-based formats have become the default for many office-productivity tools, including Microsoft Office (Office Open XML), OpenOffice.org and LibreOffice (Open Document), and Apple's iWork. XML has also been employed as the base language for communication protocols, such as XMPP. Xml is widely used in business document exchange in e-business. Still most of the companies are using it.

Table 1: XML Vs EDI FILE

XML vs EDI:

Issues	XML	XML reality	Traditional EDI	EDI reality
E-commerce Standard	- New technology - Internet based, easy to implement	- Many standards of multiple complex frameworks - Not as simple to implement	- Old, passé electronic standard	- Time tested and successfully works - Straight forward to implement
Cost	- Cheap to implement and cheaper to deploy via the Internet	- Tools and developers still cost money - Consumer still pay for Internet connection - Bandwidth usage can be costly	- Traditionally expensive	- Cost of tools are getting cheaper - Can be implemented over the Internet - Less bandwidth
Data Representation	- Intuitive, easy to read	- Verbose - Time consuming to implement - Storage requirements increases	- Cryptic	- Once understood, quick to implement - Storage requirements are minimal - Information can still be transported on floppy disk
Companies pushing the technology	-New economy companies	- Consulting companies - High business risk	- Established companies (Fortune 500) and governments	- Status quo - Established global user base - Low business risk

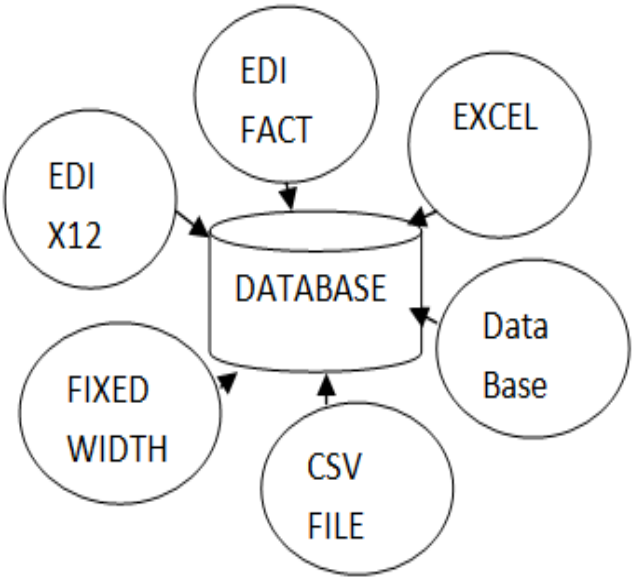


Fig 3. Integration of different files

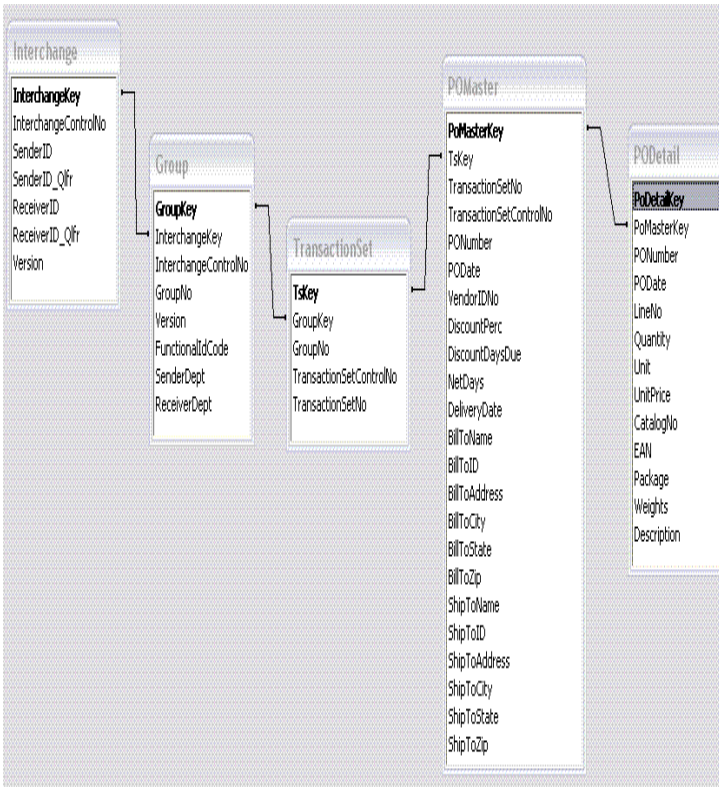
(i) Convert EDI X12 into xml and load into a relational database.
(ii) Convert CSV into xml and load into a relational database.
(iii) Directly load XML into database.
(iv) Convert FIXED WIDTH into xml and load into a relational database.
(v) Convert EXCEL into xml and load into a relational database.
(vi) Convert EDI FACT into xml and load into a relational database.

Framework tool is should not be complicated, expensive, and time consuming. Large file size of EDI takes more processing time (when converted to xml format and store into database).

5 Document Integration

Interfacing framework tool reduce the complexity of integration with different data format and database. Comparison results of xml to sql with existing tools like ShreX, Altova is shows the Number of tables, Number of tables' relationships, Primary Keys, Foreign Keys, Data Redundancy are very low in XML to SQL compare to other types (4).

To store the EDI X12, CSV, FIXEDWIDTH, DATABASE, EXCEL, XML, and EDI FACT in database using distributed framework, follow the given steps.



EDI File Schema Relationship

6 CONCLUSION

The organizations are realising the benefits and need of document integration. Xml is adopted as intermediate format because of its flexibility and easy to integrate with different data format, legacy and database Systems. Designing interfacing framework tool reduce the complexity of integration with different data format, and database. Here we have mapped with EDI x12, CSV, FIXEDWIDTH, DATABASE, EXCEL, XML, and EDI FACT. And also we designed the model for composing the respective format data to send the respective client. This system will be providing the better interaction between the client and increase the productivity.

REFERENCES

[1] Jorge Cardoso, Mapping between heterogeneous XML and OWL transaction representations in B2B integration, 2011.
[2] Rebecca Angeles, Success factors for domestic and international electronic data interchange (EDI) implementation for US firms. (2001) 329–347
[3] Saikat Goswami, XML based advanced distributed database: implemented on library system
[4] Razieh-Sadat Shamsedin-Tekieh, Business Document Integration for SMEs in Supply Chains.
[5] A. Gunasekaran, Information systems in supply chain integration and management
[6] Takashi Kobayashi, Business process integration as a solution to the implementation of supply chain management systems
[7] David C. Yen, The impact and implementation of XML on Business-to-business commerce.
[8] Gunnar Stefansson, Business-to-business data sharing: A source for integration of supply chains
[9] Su-Cheng Haw, Data storage practices and query processing in XML databases: A survey
[10] Samini Subramanian, s-XML: An efficient mapping scheme to bridge XML and relational database
[11] Ipek Koçoglua, The effect of supply chain integration on information sharing: Enhancing the supply chain performance
[12] louis Raymond, Adopting EDI in network firms: a case study of subcontracting SME.