Interoperability of Electronic Invoicing with Accounting and Resource Planning Systems

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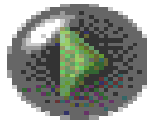

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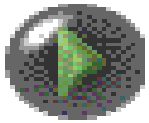
Motivation, problem area

- ERP systems generally communicate with external systems manually
  - ERP outputs, especially invoices, are in paper form
  - ERP data entrance is usually executed manually by operators
- Waste of time and money on manual processes
  - Paper costs
  - Mail costs
  - Manual output process time
  - Manual data entrance time
  - Operator costs from manual processes
- Failures
  - Human factor (operator) leads to fault



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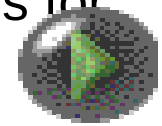
Research Objectives

- E-invoice solutions are constantly developed in various countries
  - Finland, Belgium, Norway, Singapore, Italy
- Our study in particular aims at
  - Defining the opportunities provided with the interoperability of e-invoicing with
    - Finance ERP modules/applications
    - Stock ERP modules/applications
- Desired solution
  - Is to minimize human data processing at ERP systems for invoicing.



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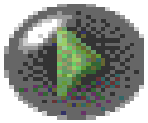
Research approach, Methodology

- Research based on e-invoice integration with ERP systems
  - Accountis, Esker, SAP Biller Direct
- Concentrated on the exchange of standard UBL 2.0 messages
- Research is directed towards Turkish market
  - UBL-TR 2.0
  - Turkish Uniform Chart of Accounts
  - ERP solutions in Turkey
    - ERP software package developed by CyberSoft
    - TEDAS – ERP issues have been investigated
    - Well-known and open source ERP packages are analysed



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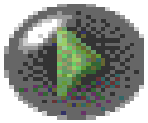
Major Outcomes

- In labour/prototype working
  - ERP Accounting module
    - Manual entry into the account payable is eliminated
    - Automatic entries, using the data on e-invoices.
  - ERP Stocking module
    - Manual entry to stock registration by an operator is eliminated
    - Automatic entries, using the data on e-invoices.
- Less paper forms
- Fewer number of required operators



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UBL E-invoice Integration in Practice

```
...
<cbc:CustomizationID>TR-1.0</cbc:CustomizationID>
<cbc:IssueDate>2009-02-03</cbc:IssueDate>
<cbc:InvoiceTypeCode>SATIS</cbc:InvoiceTypeCode>
<cbc:PaymentMeansCode>10</cbc:PaymentMeansCode>
...
<cbc:TaxAmount currencyID="TRL">18000</cbc:TaxAmount>
<cbc:TaxableAmount currencyID="TRL">100000</cbc:TaxableAmount>
<cbc:TaxAmount currencyID="TRL">18000</cbc:TaxAmount>
<cbc:TaxTypeCode>KDV</cbc:TaxTypeCode>
<cbc:LineExtensionAmount currencyID="TRL">100000</cbc:LineExtensionAmount>
<cbc:TaxExclusiveAmount currencyID="TRL">100000</cbc:TaxExclusiveAmount>
<cbc:TaxInclusiveAmount currencyID="TRL">118000</cbc:TaxInclusiveAmount>
<cbc:PayableAmount currencyID="TRL">118000</cbc:PayableAmount>
...
```

UBL E-invoice Integration in Practice

- Upon receiving the invoice, transaction is recorded to account receivable
  - PaymentMeansCode = 10: Payment is received in cash.
  - TaxAmount = 18000 TL: Amount of tax applied.
  - TaxTypeCode = “KDV”: shows that the type of tax, VAT.
  - PayableAmount = 118000 TL: Amount of money

---------- 02.03.2009 ----------

100 CASH	118000	
	600 DOMESTIC SALES	100000
	391 VAT CALCULATED	18000

Inv. No: A0121280000000000 2009020000086

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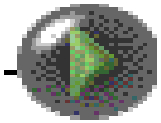

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UBL E-invoice Integration in Practice

- For recording the transaction to account payable, journal entry info is extracted for recording to account payable
  - PaymentMeansCode = 20: payment is made via cheque
  - TaxAmount = 9000 TL: Amount of tax applied
  - TaxTypeCode = “KDV”: Type of tax applied is VAT.
  - InvoiceLine = Item: Category of the sale item is trade goods.
  - LineExtensionAmount = 50000 TL: Total cost of the purchase
  - PayableAmount = 59000 TL: Amount of total money (inc. VAT)

Seller

Buyer

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UBL E-invoice Integration in Practice

- Regarding this purchase operation,
  - Accountant should be able to create the accounting record
  - Accounting records could be generated automatically by using the e-invoice values

---------- 02.04.2009 ----------

153 TRADE GOODS 50000

191 DEDUCTIBLE VAT 9000

103 CHEQUES GIVEN AND PAYMENT ORDERS 59000

Inv. No: B0121280000000000 UUID 2009020000087

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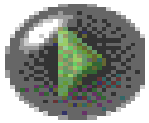
E-invoice ERP Integration Methods

- E-invoice messages could be integrated with ERP by
  - Web services
  - RMI, CORBA
  - Data tier integration
  - Extract-Transform-Load (ETL)
  - Message Queue



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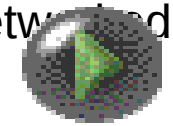
Conclusion and outlook

- Outcomes of integrating e-invoicing systems into ERP
  - Cost and error reduction
  - Processing and allocation
  - Archiving and access
  - Further interoperability
    - Export/Import interoperability
- Outlook
  - Inter/Intra-industry software systems are occasionally capable of working together.
  - Such an integration makes
    - to build up a network of different systems
    - to work together without human intervention
    - World wide trade would be expressed as a huge network e-message system that includes companies ERPs



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