2013

E-Invoicing / E-Billing

The catalyst for AR/AP automation

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Electronic invoicing isn't new. It began some years ago, with B2B (business-to-business) Electronic Data Interchange (EDI) within private networks. Recently and partly as a result of globalisation, the physical supply chain has benefitted from multiple efficiency gains, such as ERP, EDI, or Vendor Managed Inventory (VMI), which has positively impact the bottom-line for companies. However, in the financial supply chain, the processing of invoices leading to payment has been left behind in the drive for efficiency, and in the majority of companies it remains a paper-bound, manual process.

While e-Invoicing technology has been available for years this lack of focus on the financial supply chain has hindered widespread adoption. How things are changing though, B2B is back on the wider business agenda as CEOs, CFOs, CPOs and Treasurers alike are scrutinising their supply chain to reduce risk, increase stability, make cost savings, optimise working capital and gain competitive advantage.

The e-Invoicing industry has never received so much attention. 2013 is already shaping up to be a watershed year for electronic invoicing, with new legislation coming into effect within Europe, Latin America and the United States. Most companies now understand that electronic invoicing is faster and more efficient than processing paper and offers compelling cost savings for both the buyer and supplier.

As the new rules are either in effect or legislated for this year, all companies must ensure their paper or electronic invoicing practices are tax compliant for each country they do business in.

Within Europe, from January 1st of 2013, new EU VAT rules came into effect for all 27 member states. These new regulations are designed to encourage wider adoption of both domestic and intra-EU e-Invoicing. Electronic and paper invoices are now treated equally, which in theory simplifies how electronic invoices are audited and encourages wider adoption.

Essentials of Tax Compliant e-Invoicing in Europe

Tax Data	*The correct tax fields must be present.*
Authenticity & Integrity	*The authenticity of the origin and integrity of the data must be ensured.*
Archive	*Invoices must be stored for an appropriate period and in accordance with local data protection laws.*

The new rules are intended to simplify the essential components of compliance in Europe. While the new legislation does not greatly alter the requirements on tax data and archiving, it has concentrated on the requirements for "authenticity and integrity". Previously member states were allowed to specify particular technologies, such as Electronic Data Interchange (EDI) or digital signatures to ensure authenticity and integrity, but this has now been taken away with an emphasis on the use of 'business controls and a reliable audit trail'. This removal of specifying certain technologies has been hailed as the 'liberalisation' of electronic invoicing in Europe.

However, look closely at the legislation and you will set that while member states cannot specify certain technologies, the requirement for authenticity and integrity remains. So what does this mean and what exactly are business controls and a reliable audit trail? The European Commission gives two working examples of such technologies that will help your company achieve tax compliance – EDI and digital signatures.

Within Latin America e-Invoicing programs are designed at increasing tax collection and reducing the 'grey economy'. These government initiatives where all companies turning over specified revenues must issue invoices through central government systems.

Brazil and Mexico have received the most attention and the compliance deadline for both countries is 2013. Any company sending or receiving invoices domestically within these countries must be aware of their legal obligations to integrate with these government systems, use only approved certificate authorities (CA) for digital signatures, and adhere to the specified data standards.

While this appears to be a draconian method, the ambition is pretty clear and so far it appears to be working. The volume of electronic invoices within these countries is increasing rapidly and with the deadlines for Brazil and Mexico falling in 2013, it is obvious that they will increase further. Any global corporate operating domestically within these countries must comply or face fines, so while this is a completely different approach to Europe and the US, it certainly assures success.

The United States does not have Federal legislation that forces companies to use electronic invoices. That is not to say the US government does not recognise the value of this technology, the US Treasury estimated that adopting e-Invoicing across the entire federal government would reduce the cost of invoice processing by as much as 50 percent and save $450 million annually.

This will not be the end of these government initiatives. The US intendeds to spread e-Invoicing across the entire federal government, meaning if your company does business with the US government, you will be e-Invoicing. The US is not alone, Austria, Ireland, Russia, France, Kazakhstan, Macedonia, Norway, Greece and recently Azerbaijan have all confirmed their public sector organisations will accept electronic invoices, and already in 2013 China has issued new guidance on e-Invoicing, Germany is discussing a mandated public sector system while the Portuguese government is considering the Latin American model.

The new rules and regulations around electronic invoicing are a clear indicator that these simple and practical solutions, inclusive of e-Procurement and supply chain finance, will be the watchword or corporates, banks and government in 2013.

This may seem daunting for a corporate operating across many jurisdictions, but it needn't be. GXS is a global solution provider that can help your company navigate these regulations across the world and ensure compliance in a cost effective manner.

0.   Executive Summary

Electronic and automated invoice processes can result in savings of 60-80% compared to traditional paper-based processing. Projects typically result in a payback period of 0.5-1.5 years. This report will give the reader useful information for achieving these results.

Mainly private sector businesses and numerous solution providers developed the market during the last years. They were partially supported by public sector initiatives, but just in a handful of countries.

The growth rates for electronic exchange and archiving of bills/invoices are impressive, but the potential is still tremendous.

Recipient segment	Annual bill & invoice volume estimated to be at least		Estimated electronic proportion of total volume in 2013		Estimated annual volume increase in electronic bills/invoices	
	World	Europe	World	Europe	World	Europe
Consumer	200 billion	17 billion	exceeding 5%	13%	20%	20%
Business & Government	150 billion	16 billion		20%		29%

Today's market environment is very challenging. This is on the other hand also a great opportunity to optimise one's own environment and collaboration with trading parties. The invoice forms a key component and is the catalyst to optimise the procurement process, the Financial Supply Chain and the AR/AP automation.

With at least 10% of the market invoice volume, the public sector belongs to the "Top 3 industries". Measured by the number of trading parties, it is the clear leader: 45-65% of all companies in a country are suppliers to the public sector and send invoices to it. 100% of enterprises and households receive invoices/bills from the public sector. That is why E-Invoicing initiatives by the public sector are key for the development of the whole country. Unfortunately, this sector often belongs to the laggards, despite the huge saving potential.

If electronic invoices replaced a major proportion of paper invoices, the saving potential in Europe's public sector could be at least 40 billion Euro (for inbound and outbound invoices). Today, less than 10% of it is exploited.

Brazil, Chile and Mexico belong to the leading countries not only in Latin America, but worldwide. This is despite very stringent legal requirements. The main reason for this is the early leading role played by the government (Chile) or obligation for E-Invoicing (Brazil and Mexico).

Denmark is the leader in Europe, mainly due to an obligation for suppliers to send invoices only in electronic format to the public sector.

The challenging economy and the debt crisis generate much uncertainty. The crisis may also be seen as a chance for the private and public sector to change and to take a huge step forward!

1. Introduction

1.1 The purpose of the Report

E-Invoicing / E-Billing is a rapidly expanding technology. Whereas Latin American and many European countries are already considerably advanced in this field, a vast majority of organisations have not yet decided upon one system or service.

A high number of providers offer solutions and services for this matter. In this phase, it is important to have up-to-date information and guidance on selecting the right solution and provider.

An independent international E-Invoicing consultant and market analyst has written this report. Its purpose is to support invoice issuers and recipients wishing to replace expensive paper-based invoice management. It gives all the relevant information for succeeding with an E-Invoicing project. The report not only provides facts, but also qualitative views, evaluation and details about the products offered by many providers.

1.2 Methodology

The author has worked in the E-Invoicing business since 1997. During the first two years in Switzerland, he established one of the first E-Billing/E-Invoicing services in Europe. Since 1999, he has acted as an independent consultant and has made business plans, RFPs, system evaluations and many technical and marketing concepts for large invoice issuers and recipients, banks, integrators, solution and service providers. During this time, he has constantly collected important data about the relevant markets. The results are repeatedly published in newsletters and market reports.

The report is based on
- Publicly available information; the author gathered information from thousands of sources over the years and adjusted them
- Market research carried out by third parties (representing 15,000+ enterprises and 10,000+ consumers)
- Verification of important figures by customer/provider visits and/or calls
- Own in-depth experience from more than 150 customer consulting projects in 50 countries
- Consolidation of the above information

1.3 Terms and definitions

The term "E-Invoicing" is used for the Business-to-Business (B2B) and Business-to-Government (B2G/G2B) segment. The EU legislation considers a relatively broad definition: The issuing and receipt of VAT compliant invoices in an electronic format. Most national legislation mandates users to archive the E-Invoices in its original (electronic) format, even if it were printed after receipt. This definition in Europe corresponds with the broad recognition by users and also includes image-based digital invoices (mainly PDFs).

Definitions in other regions of the world differ greatly. Although it is not valid in any case, it seems that E-Invoicing in the US means much more just "automated E-Invoicing". Other increasingly popular terms in this narrower sense are "Touchless E-Invoicing" or "Zero touch E-Invoicing".

In this report, "E-Billing" covers the electronic bills from Business-to-Consumers (B2C). Note: Some market participants use this term alternatively for the process on the issuer side in general, regardless of whether the customer is an enterprise or household.

All statistics and forecasts are based on a very strict definition of E-Invoicing: Transported and archived fully electronically from end to end and in a tax compliant manner. Not considered are invoices which are transferred electronically, but violate legislation for some reason and all "semi-electronic" invoices (printed E-Invoices, scanned paper invoices, etc.). Also not considered are the reporting and validation invoice data sent from businesses to the tax authorities (popular in Latin America, Asia and some European countries).

2. Improving the invoice management & supply chain

2.1 Your trading parties are anticipating the E-Invoice/E-Bill

For many years, strong buying organisations (e.g. in the retail, automotive and healthcare sectors) have been pushing their suppliers towards electronic exchange of messages along the supply chain. Until recently, the focus was on large suppliers. They generated the highest volume and they were the only ones able to integrate their environment in a VAT compliant manner at a reasonable cost. For some years, the situation has also been improving for smaller companies:

- Since 2004 E-Invoices have been legally accepted in EU member states and in most other countries
- An extensive range of solutions and services allows even smaller companies to process invoices electronically
- E-Invoicing has become "state-of-the-art" in many industries and countries

Most customers of the author confirm that each of them has dozens of trading parties expecting to send or receive an electronic invoice instead of paper. In the past, the smaller customers expressed this as a "nice to have" option, whereas larger businesses described it as a mandatory requirement for future business relationships. Due to increased cost pressures and competition in coming years, the "nice-to-have" option will in most cases become a mandatory requirement with a short deadline for reaction and implementation.

A proactive approach and a well structured project where users can define their own objectives and implementation roadmap is much better.

Your trading parties are awaiting the E-Invoice/E-Bill, because it is an interesting business case for them. The optimisation potential and the business case will also be very interesting to your organisation, if the past and future costs of all relevant processes relating to the invoices are compared.

2.2 Related processes and optimisation areas

Figure 1: Processes and optimisation areas for invoice/bill issuers

Issuer Process	Manual work and problems with paper based processes	Optimisation with E-Invoice & automated processes
Print, Envelope Send	- High costs - Paper with negative impact on pollution - Long delivery time - No control over whether customers have received the invoices - Customer may reject the invoice weeks later if key data is missing from it	- Send electronic invoices securely via the net - Contributes an improvement of up to 0.8% to the Kyoto protocol requirements - Real-time delivery with receipt/download confirmation - Validation of key data as soon as sent

Issuer Process	Manual work and problems with paper based processes	Optimisation with E-Invoice & automated processes
Payment Reminders	• 10-15% of invoice volume requires a payment reminder as recipients have time-consuming workflows and payment release systems for paper invoices	• Is reduced, as many of the clients process the electronic invoices automatically (below a certain amount and matching with order)
Remittance & Cash Management	• Time-consuming and costly manual processes • Data quality problems	• Automatic payment remittance • Due to faster electronic feedback regarding payment status, the Cash Manager has full control of all invoices, affording him optimised Cash Management
Archiving	• Hundreds or thousands of folders with paper invoices with high demand for storage capacity • High costs for manual search	• Automated archiving • Easy finding of the original invoice via various keywords • Quick access to the electronic archive in a decentralized environment • Instant on-screen auditability of invoices with unprecedented levels of integrity and authenticity guarantees • Millions of invoices only require the space of a hard disk

Figure 2: Processes and optimisation areas for invoice recipients

Recipient Process	Manual work and problems with paper based processes	Optimisation with E-Invoice & automated processes
Receive	• Opening mail • Check and remove undesired attachments • Entrance stamp • Forward to AP department	• Fully automated
Entering Codification	• Entering to AP system • 10% of entered data statistically viewed with errors • Delayed entering during peak season or permanently • Alternative Scanning solves just a small part of the problem	• Automated import to AP system • Real-time import, independent of volume • 100% correct data

Recipient Process	Manual work and problems with paper based processes	Optimisation with E-Invoice & automated processes
Validation & Matching	• Discrepancy in VAT compliance is detected at a (too) late stage • Line items in an invoice quite often contain a discrepancy with the order or contract terms. Manual matching is time-consuming and expensive	• VAT compliance and validation of other key data can be done automatically when E-Invoice is uploaded by issuer • Line-item matching with order data and contract term is fully automated • Faster and better spend analysis, leading to 1.3% to 5.5% spend reduction
Dispute Management	• The dispute resolution with the supplier is often done today by phone, unstructured email or fax • Dispute resolution can be very time consuming	• Improved dispute handling and avoidance • Many solutions or services enable automated, structured and real-time exchange of dispute information between buyers and suppliers
Payment & Cash Management	• Time consuming and costly circulation within the company for payment release; discounts are typically missed • Manual work for payment order and risk of errors • Cash Manager without full transparency for all pending invoices	• Payment relevant invoice data processed directly and automatically into payment orders • Every inbound invoice appears on the screen of the Cash Manager immediately after receipt and affords him optimised Cash Management (by offering rebates for payment on time, working capital optimisation) • Circulation within company for payment release is automated or at least supported by electronic workflow • In larger organisations, it is not unusual to benefit of additional 1.50 Euro discount per E-Invoice in average
Archiving	• Hundreds or thousands of folders with paper invoices with high demand for storage capacity • High costs for manual search • Traditionally 6 copies on industry average, not all clearly stated as "copy"	• Automated archiving • Easy finding of the original invoice via keywords • Quick access to the electronic archive in a decentralised environment • Instant on-screen auditability of invoices with unprecedented levels of integrity and authenticity guarantees • Millions of invoices only require the space of a disk

3. Business Case for Issuer/Recipient

3.1 Saving potential

The Finnish State Treasury and some Finnish companies have estimated that an incoming paper invoice incurs costs amounting to 30-50 Euros for the receiving company. By moving to electronic invoicing these costs can be reduced to 10 Euros by semi-automating the invoice process and to one Euro by fully automating the process [1]. Regarding in-depth analysis of Politecnico di Milano, the net benefits are 4 – 12 Euro per invoice in case of VAT compliant E-Invoicing and up to 65 Euro per cycle in case of full integration of the trade process [2].

> Thanks to electronic and automated invoice processing, savings between 1 and 2% of turnover are realistic objectives.

As a consultant the author analysed the full costs based on traditional paper based processes and compared it with the new electronic automated solution. The example below reflects the situation in an industry company with 5,000 employees, based on calculated staff costs of 60€/hour (full costs including overhead, working place, etc.).

Figure 3: Saving potential for invoice/bill issuers (actual customer case)
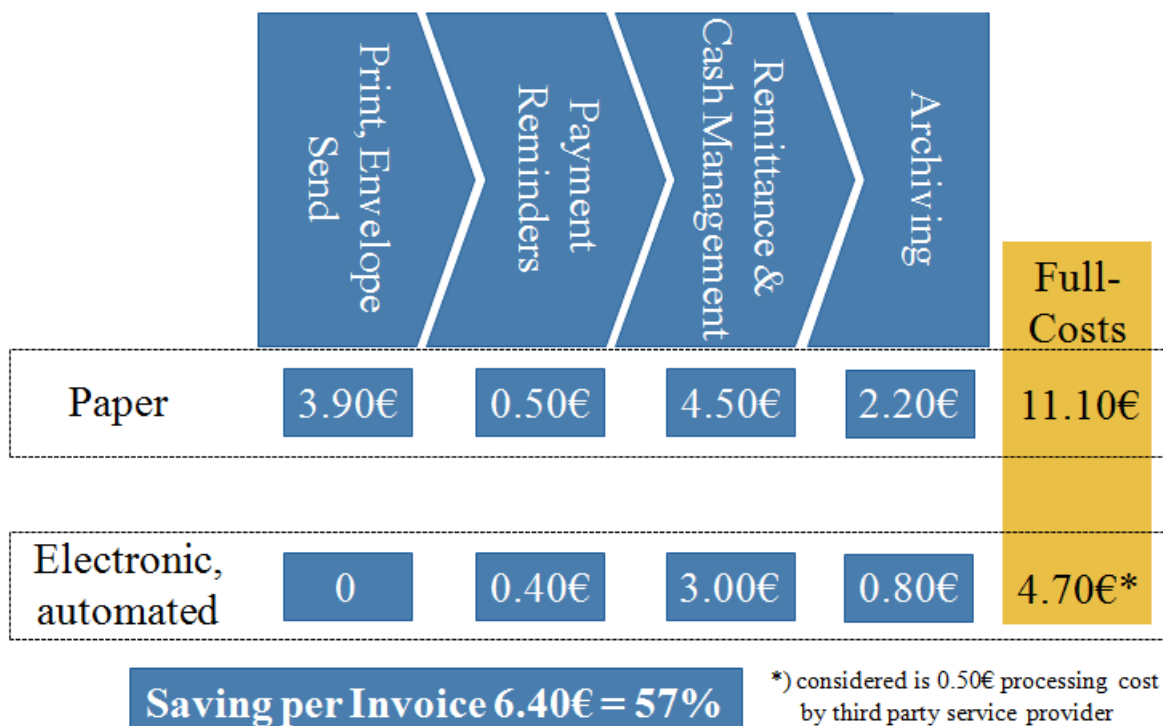
The invoices/bills in this example were relatively simple and had an average size of 1.5 pages. In most organisations, the invoices are more complex and the savings are higher.

Not considered in this calculation are indirect savings. This can include, for example, online updating of master data directly by the customers.

Figure 4: Saving potential for invoice recipients (actual customer case)

Saving per Invoice 10.90 € = 62%

*) considered is 0.70 € processing cost by third party service provider

Source: Billentis
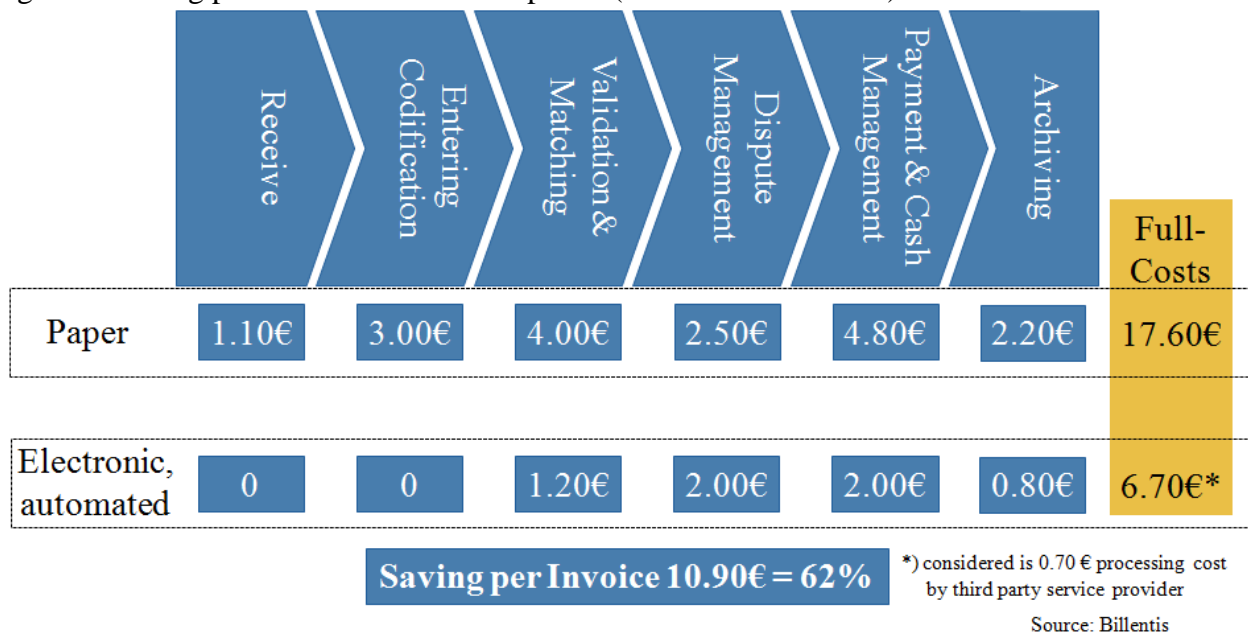
Not considered in this calculation are indirect savings. This can include, for example, the elimination of redundancies of the supplier master data and inconsistencies.

3.2   Know your volume

Sometimes, larger organisations do not know their precise invoice/bill volume. The reason for this is quite often the decentralised organisation or a heterogeneous layout of their AR and AP systems.

Over the last 16 years, the author has built key-metrics for being able to make a quick estimation of the invoice volume before the project start. Although not perfect in all cases, the key-metrics are based on the number of employees in an organisation and dependent on the industry.

Figure 5: Key-metrics for number of invoices

Indication for Number of invoices per employee in various Industries	Outbound invoices per employee	Inbound invoices per employee
Credit & Customer Cards	40,000	n/a
Mail order houses	8,000	n/a
Media	2,000	20
MRO Goods	1,400	450
Utility with direct distribution	1,200	20
Insurance	700	30
Electronic & IT	400	26
Chemicals & Pharmaceuticals	200	30
Industry independent average	200	80
Automotive Supplier	200	50
Food Supplier	200	20

Indication for Number of invoices per employee in various Industries	Outbound invoices per employee	Inbound invoices per employee
Logistics	100	77
Airlines	35	11
Services & Consulting	20	15
Banks	n/a	11
Telco	n/a	39
Industrial manufacturer	n/a	60
Catering	n/a	100
Retail	n/a	250
Buyer Clubs, Trade, Wholesalers	n/a	300
Health insurance	n/a	3,100[1]

In groups with service centres and/or subsidiaries, up to 10% can be added to the inbound volume for Intercompany Billing.

Calculation example: Utility Group with service centre structure and 5,000 employees

Outbound Volume   5,000 x 1,200   = 6,000,000
Inbound Volume   5,000 x 20   = 100,000
Intercompany Billing   10% of Inbound   = 10,000

3.3   Know your current and future costs

At first glance only direct costs appear in the organisation budget. However, this is just a fraction of all processing costs.

For a cost comparison, we have to consider
* Direct costs
* Indirect costs
* Hidden costs

3.3.1   Current costs for outbound invoices

On the outbound side, one part of the direct costs includes invoice printing and stamp costs. In a well-known telecom company, this represents just 9% of all directly related costs. Another major part is quite often well hidden and not recognised at first glance. Indirect and hidden cost items, which may be reduced by E-Invoicing are
* Sales Back office (Further inquiries in case of dispute)
* Accounting/Reconciliation manpower
* Debtor interest
* IT development and operation
* Payment fees (reduced or no fees in case of electronically and fully automated processes)
* Customer requests for copies of lost invoices

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[1] In countries with healthcare systems like The Netherlands, Switzerland etc.

- Archiving
- Query handling
- Settlement time and improved Cash Management
- Easier and faster audit

Typically, just 7,500 – 30,000 paper invoices can be processed per employee per year in the AR department. Therefore, the direct staff costs in the AR department already vary between EUR 2.50 – 10 per invoice.

3.3.2   Current cost for inbound invoices

Even worse is the cost recognition on the inbound side. Per employee in the AP department, typically just 5,000 – 15,000 paper invoices can be processed per year. Therefore, the direct staff costs in the AP department already vary between EUR 5 – 15 per invoice. Further costs are generated in the paper-based workflow and archiving. Analysis in some organisations showed, that on average 6 invoice copies are generated and archived decentralised in the files of secretaries and heads of departments.

3.3.3   Cost differences among continents and countries

The figures in the previous chapters are generally appropriate for Europe and probably for most parts of Latin America and Asia. Of course, we do have major differences in the labour costs, which are lower in Mediterranean countries than in the Nordic states. Nevertheless, exactly the countries with lower labour costs have in most cases the highest legal requirements for invoicing and are therefore not necessarily able to process the invoices for lower costs.

Surveys imply that invoice processing in the US could be around 25 percent less expensive [3] than in Europe. This is understandable for several reasons. The US does not apply the VAT system like many other countries. The invoice is just one of several business documents for the audit trail. The legal requirements are lower. The US is in addition more harmonized than the various legislations in Europe. Furthermore, US enterprises have in most cases to support just one or two languages for the invoice processing. In some but not all cases, economies of scale also help US titans to achieve lower invoice processing costs than the majority of comparatively small European companies.

This does not however reduce the relative saving potential compared to today's paper processing costs.

3.3.4   Future costs with automated processes

Small companies using E-Invoicing via website, have no implementation costs and very moderate or no running costs.

Besides the integration costs, large accounts have to consider the project costs.

In addition, third party service providers often charge a time and volume based fee for issuers and/or recipients. The level of these costs varies considerably depending on customers' requirements. It is best to summarise customers' requirements in a document (Request for Proposal) and ask for binding proposals. As an indication, third party costs of EUR 0.40 – 1.00 per invoice should be entered into the business case.

Future internal costs will probably be 40-50% of past costs depending on the individual situation (see also example in chapter "3.1 Saving Potential").

World class enterprises are able to process 125,000+ electronic invoices per year and AP employee, roughly 10 times more than paper based invoices.

3.4 Business Case

3.4.1 Small businesses

Their large suppliers and clients quite often push them to accept respectively send electronic invoices "as part of the general contract terms or business rules". Therefore, it is not necessarily the business case pushing them forward for electronic invoicing but good business relationships with their trading partner.

However, in most cases they find an easy and efficient way to practise it. This can be the use of an invoicing portal, where invoices can be uploaded or downloaded and stored for several years in a VAT compliant manner. Either no implementation is necessary or the effort required is very moderate. Key-in invoices on the portals of each large customer is however unpopular among suppliers and many insist on paper as long as they can. It is slightly better if the suppliers can key-in the invoices on the web portals of independent service providers and address several customers via the same platform. The absolute favourite for small businesses is to push PDF invoices to their customers (if they accept PDFs). This method is supported by numerous tools, and is quick and inexpensive.

3.4.2 Mid-sized and large businesses

Many solution providers offer an online business case calculation tool. Tools and ROI calculaters are also offered by some universities and industry portals. Please find details for some sources in the appendix [4].

As many readers of this report perhaps cannot understand the language in some ROI calculators, here is a translation of the major points to be considered.

Figure 6: Items to be considered in a business case

Item to be considered in a business case	Issuer	Recipient
Quantities and basic data - Number of electronic counterparts - Electronic proportion of total invoice volume - Interest rate - Hourly rate of employees	x	x
Customer churn rate with and without E-Invoicing	x	
Costs and Savings in the AR & archiving department	x	
Costs and Savings in the AP & archiving department		x
Cash Management, payment due period, payment discount	x	x
Initial costs (Project, implementation, hardware, software)	x	x
Operation costs internal and third party	x	x

3.4.3 Financial benefits for the public sector

3.4.3.1 Saving potential in the role as user

With at least 10% of the market invoice volume, the public sector belongs to the "Top 3 industries". Measured by the number of trading parties, it is the clear leader: 45-65% of all companies in a country are suppliers to the public sector and send invoices to it. 100% of enterprises and households receive invoices from the public sector. That is why E-Invoicing initiatives by the public sector are key for the development of the whole country. Unfortunately, this sector often belongs to the laggards, despite the huge saving potential.

> If a major proportion of paper invoices were replaced by electronic ones, the saving potential in Europe's public sector could be at least 40 billion Euro (for inbound and outbound invoices). Today, less than 10% of it is exploited.

This tremendous saving potential is recognized in many countries, but to exploit it within reasonable time is another story. The federal administration is privileged to go into a leading role and to facilitate a country-wide public sector project. As the public sector itself is very fragmented, many stakeholders have to be involved and convinced.

The breakdown of volume in the Danish and Swiss public sector is known. The mix of these two countries is shown in the next chart.

Figure 7: Breakdown of saving potential in the public sector

Fed. Admin.; 8%

Cities & Municipalities; 52%

States, Regions; 40%

Sources: Federal Administrations of Denmark & Switzerland
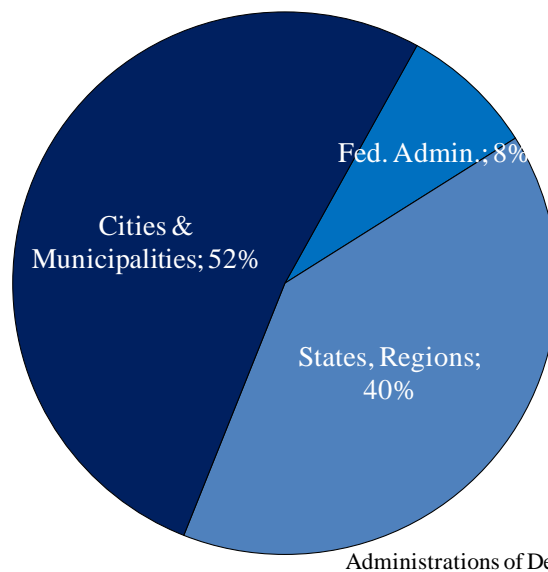
In the broadest sense, this breakdown might also be applicable for many other countries. Assuming so, the saving potential breakdown for various countries could look as shown in the following table.

Figure 8: Indication for the saving potential in the public sector of some European countries

Country	Minimum public sector saving potential (million Euro)	States, Regions	Cities & Municipalities
Austria	600 [5]	200	300
Belgium	900	400	470
France	4,200	1,700	2,200
Germany	6,500	2,600	3,400
Italy	3,000	1,200	1,600
Poland	1,700	700	900
Romania	1,400	600	700
Spain	1,800	700	900
Sweden	1,600	600	800
Switzerland	700	300	400
The Netherlands	1,200	500	600
United Kingdom	4,400	1,800	2,300

The difference to the total "public sector saving potential" above is the saving potential for the federal administration.

The above estimate is based on the assumption that 40% of the E-Invoices are exchanged in un-structured format (PDF) and 60% with structured XML invoices (fully automated processes). Many administrations insist on just structured invoice data. Their potential is higher than the figures above.

As attractive as E-Invoicing in the public sector appears, it is just as challenging to implement. The public sector is not one homogenuous segment. The state administration forms one part. In addition, we find regions, cities and municipalities. Many countries have a federalist structure with high autonomy for each entity. However, Brazil and Mexico have proved that it is possible to establish E-Invoicing country-wide, even with a federal structure.

The state government has the most power regarding legislation and is preferred to initiate and steer such projects. However, the saving potential in their segment is just a small proportion within the public sector.

Cities are in an excellent position to push E-Invoicing/E-Billing and to save much money. The author collected various data and built key-metrics over the year. Of course, the key-metrics can vary a great deal from country to country and city to city. On average, a city receives one invoice per year and inhabitant. Cities, including all its service units (taxes, energy distribution, garbage removal, communication, etc.), issue typically 2-6 bills/invoices per year and inhabitant.

The estimated saving potential for cities is based on the assumption that 40% of the E-Invoices are exchanged in unstructured format (PDF) and 60% with structured XML invoices (fully automated processes).

Figure 9: Saving potential for cities

Population (Millions)	Example of city (or metropolis) in this category Based on population as published in Wikipedia	Minimum annual saving potential (million Euro)
0.5	Atlanta, Bradford, Boston, Bratislava, Bremen, Copenhagen, Denver, Dortmund, Dublin, Duesseldorf, Duisburg, Edinburgh, Essen, Frankfurt, Genoa, Gothenburg, Hanover, Helsinki, Kaunas, Leeds, Leipzig, Lisbon, Liverpool, Málaga, Manchester, Miami, Palermo, Rotterdam, Seattle, Seville, Sheffield, Stuttgart, Tallinn, Thessaloniki, Toulouse, Vilnius, Washington, Zaragoza, Zurich	15
1	Adelaide, Amsterdam, Asturias, Athens, Auckland, Birmingham, Biscay, Brussels, Calgary, Cologne, Dallas, Edmonton, Jacksonville, Indianapolis, Kraków, Lyon, Lille, Marseille, Milan, Munich, Naples, Nice, Ottawa–Gatineau, Phoenix, Prague, San Antonio, San Diego, San Francisco, San Jose, Sofia, Stockholm, Turin, Valencia, Wellington	30
2	Barcelona, Brisbane, Bucharest, Budapest, Hamburg, Houston, Paris, Philadelphia, Vancouver, Vienna, Warsaw	55
3	Berlin, Chicago, Madrid, Rome	80
4	Los Angeles, Montreal	110
5	Sydney, Toronto	130
7	London, New York, Tokyo	200
10	Moscow	270

Cutting costs is one part of the business case. Increasing revenues is another.

3.4.3.2 Reduction of tax evasion

Evading taxes is almost a national pastime in many countries. As this is quite often the main revenue stream for national governments, this is very painful and one of the major reasons for today's debt problems in the public sector.

Some determining factors of fiscal evasion according to different theories and models from economic and non-economic analysis are [6]:

1. High tax rates result in higher tax evasion.
2. **Probability of being controlled/audited within reasonable time.**
3. The magnitude of the sanctions (fines and privative pains of the freedom).
4. The fairness of the tributary system.
5. The social attitude towards those who do not pay; social censure of fraud and the morals of the society.

Increasing tax rates is in most countries no longer an appropriate option. The VAT rate in many European countries has already passed 22% (e.g. Denmark, Finland, Greece, Hungary, Iceland, Ireland, Norway, Poland, Portugal, Romania, and Sweden).

E-Invoicing not only has a major impact on point 2 (control/audit within reasonable time). Much more, it can be **the** pre-requisite instrument to significantly reduce tax evasion. Several Latin American countries went ahead by mandating E-Invoicing. One of the key parts is also to oblige enterprises to send electronic invoice records to the tax authorities in real-time or near real-time. Further details see 2011 market report [7].

One example is Argentina, which proved how tax evasion could be reduced with a bunch of actions, including making electronic invoicing mandatory for critical sectors.

Figure 10: E-Invoicing reducing tax evasion in Argentina

Breach of VAT in Argentina

Year	Rate of VAT breach
2001	30%
2002	35%
2003	32%
2004	25%
2005	23%
2006	21%
2007	20%
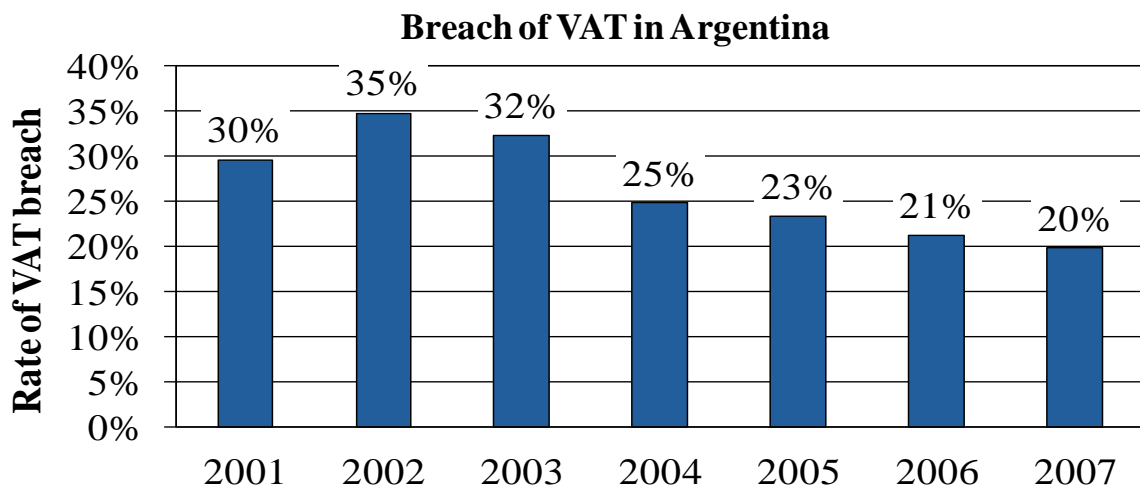
Source: AFIP

> Three of the four largest global economies have a very high public debt to GDP ratio. Europe's ratio is around 90%, the ratio of the US is above 110% and Japan's is above 230%. E-Invoicing, combined with online reporting can be a significant contribution to improve this situation. Many countries in Latin Americas demonstrate how it works and what the benefits are.

Most countries react to this situation by increasing their tax or VAT rates. This happens consciously to such an extent that the increase of such burdens is by far the single most important contributor to the increase of the shadow economy[8]. More appropriate instruments to combat the shadow economy are a sharp increase in electronic payment, electronic invoicing and (near) real-time audits. Mainly some Latin American and Asian countries already practice it exactly for this reason. Other countries like Greece, Portugal and Turkey follow this trend to some extent. Turkey declared E-Invoicing as mandatory for their most critical industries of tobacco and tobacco products, petroleum oils and lubricants, and alcoholic beverages.

With an estimated EUR 2.2 trillion, Europe's shadow economy is significant. Three industries represent 20 to 25 percent of the shadow economy: Wholesale and retail, transport and communication, hotels and restaurants. Examples to combat this include mandatory card terminals (e.g. for taxis, restaurants and doctors), the obligation to make payments above a certain amount using only electronic instruments, declare E-Invoicing as mandatory for critical industries and (near) real-time reporting of invoice and payment data to the tax authorities. Therefore, the author expects that an increasing number of European countries in the future intend to mandate electronic invoicing and payment channels, at least for critical industries.

4. How to overcome barriers and to be successful with your project

4.1 Barriers and how to overcome them

The barriers differ greatly for enterprises in various countries and depending on the company size.

Figure 11: Main barriers in many European countries [5]

Barriers (European mass market)	Possible actions to overcome them
Legal requirements are unknown or confusing	The multi-stakeholder fora and/or federal administrations are privileged to actively provide appropriate information to the mass market. Some of them organize information events & road-shows or engage evangelists. Many others (e.g. Austria, Belgium, Switzerland) operate an information portal with the most important information.
Missing market transparency about the solutions offered and the collaboration among various service providers	The multi-stakeholder fora and/or federal administrations are privileged to actively provide appropriate information to the mass market. Some of them already provide a broad overview on information portals. The best-in-class offers segment specific information (small company selects "I am a small biller" or "I am a small invoice recipient" etc. and guide the visitor through an interactive dialogue to provide exactly the appropriate information (lean).
Change/adoption of internal organisation processes (40% of larger organisations)	It is human nature that old habits die hard. This is especially valid if very numerous departments are affected by a project and have to change. Management attention and decisions are required.
Divergent requirements of trading partners regarding formats, methods and processes	As this is especially painful in case of bi-lateral (direct) exchange of structured electronic invoices, using standards can help. E-Invoicing network operators are also capable of significantly reducing the complexity for end-users.
Not recognizing the business case	Further market communication is required, especially by showing very concretely the individual saving for a certain outbound or inbound invoicing volume. See also list of calculation tools [4]
Trading partner does not support the electronic invoice	Viewed statistically, there is a relatively high chance that your trading partner already supports E-Invoicing. It could more likely be a lack of information. Some federal administrations or multi-stakeholder fora already maintain public user directories. By far the best running example is from Finland, http://www.tieke.fi Besides increasing transparency, often the trading partners just need inspiration to do it now and some guidance on how to do it.
Task sharing for accounting and	3rd party service providers have fears of or limited interest

Barriers (European mass market)	Possible actions to overcome them
invoice processing with external parties (trustee, tax consultant, commercial auditor, etc.); is in some countries practised by up to 50% of (smaller) enterprises.	in substituting labour-intensive (paper based) work with efficient, electronic and automated processes. It could be a major task for multi-stakeholder fora to clarify and show the risk of resistance to the opportunities of new electronic methods.

Figure 12: Main barriers for mid-sized and larger US companies [3]

Barriers (mid-sized and larger US companies)	Possible actions overcome them
Lack of budget	In-house developments cause high initial and follow-up costs. Field-tested applications and services from third parties are typically significantly cheaper. If services on demand or SaaS are preferred, the initial investments are moderate.
Belief that there will not be an ROI	Publicly available calculation tools / ROI calculators will probably show the reader within 5 minutes that there definitely will be a good ROI. See list of some calculation tools [4]
Lack of understanding of current available solutions	Some market analysts make the market more transparent with their publications and events. Solution providers are encouraged to make great market communications.
Lack of resources to manage automation	Shift E-Invoicing to the enterprise's number 1 priority.
Supplier resistance	Do not attempt to press all suppliers into the same scheme and require just one certain data format following your business process. The capabilities and requirements of suppliers differ greatly. If invoice recipients (or the E-Invoicing network operators involved) support various invoice formats, any-to-any data formatting and benefits (e.g. trade finance, early payments), acceptance by suppliers can significantly increase.
Current processes work	Complacency is a risk. It is likely that competitors are already implementing E-Invoicing, reducing the invoice processing costs and achieving a competitive advantage.

4.2   Success factors

Although we have a high number of innovative people in our world, the majority of human beings change their behaviour only under slight pressure. That is why a simple invitation to your trading partners to support E-Invoicing may not automatically result in a quick success.

The weak economical situation results in high cost pressures and will probably become an accelerator for changes in the invoice processing. Readers are not recommended to wait for pressure from their customers or suppliers. Instead, it is wise to start an E-Invoicing project proactively. Only then is it possible to clarify everything without too much time pressure and to move seamlessly from paper to electronic invoices.

Main reasons why E-Invoicing projects have not always succeeded immediately in the past are
- Underestimating the significance of the project for the many related processes and departments involved
- Poor project management
- Too technical focus (the more important challenges are the process automation and taking on board a high number of suppliers or customers within a short time)

Success factors in E-Invoicing projects
- Awareness by senior executives about the potential of E-invoicing in a broader sense (the value is much more than just eliminating printing and stamp costs or entering invoice data into the ERP system)
- Management Support, as many divisions within an organisation are involved
- One very active project owner
- Defining a three year objective/strategy, but implementing it step-by-step including a quick-win result for step 1 (best is just one invoice stream in one division of a big company)
- Internal and external communication to key persons affected
- Being a rollout champion with an excellent strategy for taking on board a high number of suppliers/customers (opt-out strategy if possible, combined with active marketing)
- Being realistic regarding mid- and long-term technical capabilities in your organisation including workflow and archiving → right decision for make/buy and direct or network model
- Don't re-invent and develop solutions which are already available for a fixed price and which have been well tested in other companies
- Being realistic regarding technical capability of your counterparts to send, receive and archive electronic invoices (this is quite often dramatically lower than you expect); simple and economical interfaces and possibly a third party archiving service are essential

The most promising models are described in chapter 5.3.

4.3   Define the best Scope for your organisation

Many organisations already exchange some electronic messages along the supply chain with their counterparts. For them, E-Invoicing is just an enhancement and a next step towards automating the whole supply chain.

For a vast majority, E-Invoicing is the first step towards the electronic supply chain. That is why many organisations start with the "queen of all messages". In most cases, it is a good approach starting with "just" the invoice message and aggressively increases the electronic share within your environment. E-Invoicing alone will already be an interesting business case! However, more future savings are possible with a fully automated supply chain.

In mid-term planning the next optimisation steps to take should be considered: Either in the pre- or post-processing of the electronic invoice.

Some invoice streams are more dominant and provide higher optimisation potential. The author believes that projects should follow that potential.

Figure 13: Priorities of invoice streams
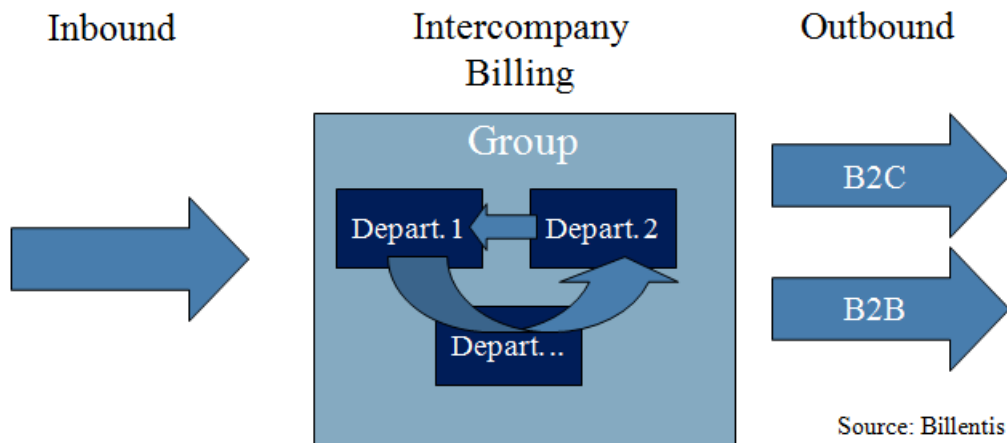
Inbound

Organisations in a strong buying position may decide to replace inbound invoices first, as they are in a strong position to push their suppliers to deliver invoices in electronic format.

Intercompany Billing

Volume and optimisation potential is quite often under-estimated. It is the only invoice stream fully under the control of each organisation. In one scenario, these invoices can quite easily be processed electronically or via account transfer. This is the case if all departments, branches or subsidiaries belong to the same tax entity in the same country. Wherever that is not the case, it can make sense to handle internal electronic invoices as for the external ones, with identical methods guaranteeing authenticity, integrity and legibility.

Outbound

High volume organisations in the B2C sector already provide electronic bills to consumers with direct models. However, the success is limited in most cases. If 40% of clients are using it, it is already a good value. Most send electronic bills just to 25% with best in class to 75-90%.

To increase the electronic share, an opt-out rollout model should be practised and/or networks should be distributed (e.g. online-banks or other favourite portals of consumers). Delivery of PDF invoices via email or portal has become very popular in many countries. However, many large billers made a more significant step forward by practising the push method rather than a portal based approach. The same is true for B2B invoices for small businesses. In this case, the PDF invoices are ideally much more than just a paper replica. Instead, the PDF files can include - alongside the invoice image - also a layer with structured (XML) data and the ability to include forms and components for dynamic interaction such as dispute, payment etc. E-Invoices are prepared in a VAT compliant manner by the issuer (digital signature for at least relevant parts of the PDF container, verification and sometimes with long-term online archiving).

4.4   Know your environment

In many projects in larger organisations, it was interesting for the author to see the heterogeneity of customer environments, e.g.:
- High number of different ERP systems
- Decentralised issuing and/or receiving of invoices

- No control and overview regarding paper invoices in the workflow
- No transparency concerning all the invoice streams, volume and the different ways in which they are processed
- Various decentralised long-term archives
- Unclear as to which document is the invoice original and which is a copy
- Parallel and isolated projects in different departments for scanning, workflow, archiving, digital signature solutions and E-Invoicing

If the reader is working in a large organisation, it is helpful to clarify the points above and summarise the current environment and the mid-term target environment.

4.5 Scenario for internal implementation

In a fragmented and large environment, the highest benefits can be achieved by following these steps.

Figure 14: Optimisation steps and benefits

Optimisation steps in large organisation
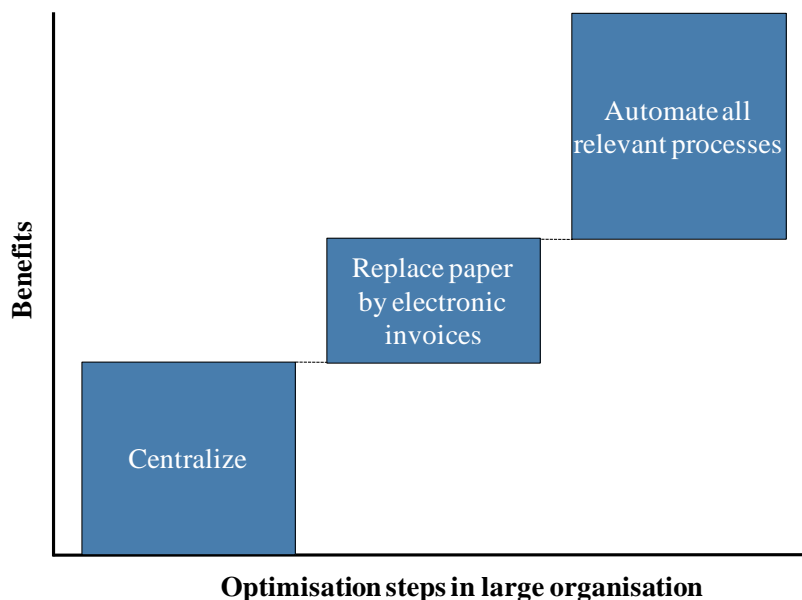
As this objective can be (too) time consuming (e.g. 2 years) a good alternative is migration within a decentralised environment. If the constraints of future centralisation are already known, they can be considered in the planning and implementation of systems and processes.

Improve to electronic and automated processes is generally a good step. However, in most organisations, it may be adviseable to critically scrutinize and streamline first all the processes. Often, 50% of historic burdens can be removed without loosing anything.

4.6 Know the capabilities & constraints of your trading partner

Although valid in many sectors of our environment, the 80:20 rule is not applicable regarding invoice streams, except in very few industries. The pattern below for inbound invoices in a mid-sized or larger organization is much more likely.

Figure 15: Pattern for inbound invoices
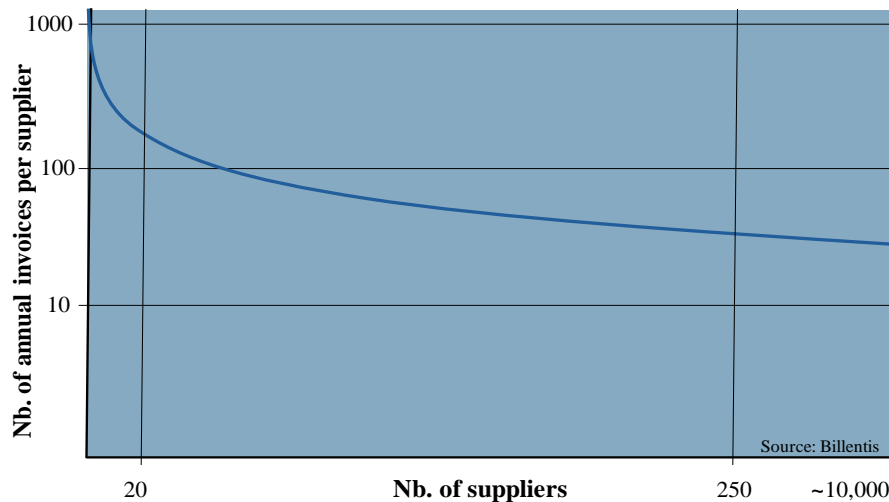
The number of suppliers sending more than 100 invoices per year is quite often just among 20-50. Perhaps another 1,000 send 10-100 annual invoices and the vast majority send less than 10 annual invoices. Large organizations have typically 10,000 suppliers and depending on the product n0,000 customers. The vast majority of suppliers and customers are SMEs with highly fragmented IT landscape and limited capability for import/export of structured invoice content and electronic archiving. In addition, these counterparties can be located in various countries with different legal constraints regarding tax compliant invoices, archiving, language and cultural behaviour.

E-Invoicing projects can just be successful, if the situation of trading partners is strongly considered in the project. This includes also thinking about what the incentives for them are and how they can easily be connected in a VAT compliant manner.

Whereas large issuers and recipients fully integrate electronic invoice processing into their environment, the requirements of mid-sized and small enterprises can be different.

Figure 16: Requirements of organisations

Size	Issuer requirements	Recipient requirements
Large	• Full ERP integration • Two-way communication • External archive (sometimes shifted to in-house in step 2)	• Full ERP integration • Two-way communication • External archive (sometimes shifted to in-house in step 2)
Medium	• Full ERP integration • Export Tools (CSV, ...) • External archive	• Full ERP integration • Import Tools (CSV, ...) • External archive
Small	• Printer Driver • WebEDI (type in invoice on a portal) • Electronic forms • PDF (including several layers with image, XML data and other features) • External or CD archive	• Browser presentation & download, e.g. via home banking • PDF (including several layers with image, XML data and other features) • External or CD archive

4.7 Compliant rollout model for your counterparts

Technique is just a small part of an E-Invoicing project. Much more important for the success and a high electronic share is the rollout strategy (on boarding of trading partner).

Figure 17: Different rollout models in use

Opt-In	A issuer or recipient upgrades his environment for electronic invoice processing. He informs his counterparts about this new opportunity and invites them to send and/or receive invoices electronically. Each participant has to be persuaded to change to electronic invoicing. This can be done with strong arguments, incentives and/or slight pressure. The traditional and friendly method of taking companies on board was used in the past, but is more often replaced by the Opt-Out model where possible.
Opt-Out	A issuer or recipient upgrades his environment for electronic invoice processing. He informs his counterparts about this new opportunity and explains that after a certain deadline, invoices will only be exchanged electronically. If anybody wants to "opt-out", they have to give notice. In many cases, it means also a (penalty) fee for keeping to paper based invoices. The Opt-Out model results in very quick results and a high electronic invoice volume. It can be practised by any larger organisation, but is mainly at the forefront for organisations in a steady interaction with a stable base of counterparts (e.g. Leasing companies, Transport & Logistics, Telecom, Utility, Credit & Customer Cards, Office Material, Suppliers of MRO articles and customer packaged goods, Online Services and any communities using Extranets or standard client software). Today's issuers who use this model quite often use signed PDF invoices with or without additional XML data. This guarantees immediate readability by the recipient, although the benefits for them can be quite limited in the case of PDFs.

Figure 18: Success rate for an organisation and the electronic proportion one year after launch

Model	Electronic proportion of all invoices
Issuer driven „Opt-In"	1-5% with free market range 5-50% within existing supplier-buyer networks
Issuer driven „Opt-Out"	85-90%
Recipient driven „Opt-In"	1-5% for organisations without much purchasing power 50-70% for organisations in strong purchasing position
Recipient driven „Opt-Out"	Up to 90% for organisations in strong purchasing position and providing electronic orders

The majority of businesses in Europe do not have an ideal environment for using an Opt-Out approach. However, the model should be tailored to its practicability for each environment. Certainly, it will be practised eventually by some of your counterparts, with a direct impact on your situation.

4.8 Solution scenarios

Complete in-house developments are no longer a realistic option
- No chance for a good business case due to high project/development costs and very high follow-up costs
- Too time consuming

- No reason to re-invent solutions which are already offered by hundreds of solution providers and which are up-and-running already in other companies

Therefore, the real alternatives are purchasing third-party applications or using external services.

Figure 19: Third-party services and applications

Services	Applications/Solutions

• SaaS (Software as a Service)
• E-Invoicing network service (single-point-of-contact; any-to-ano-to-any connection)
• Any-to-any data formatting
• VAT tax compliance service
• Invoice management service (including digitalisation and data capture of remaining paper invoices)
• E-Procurement, E-Marketplace
• Archiving Service
• Other added values like supply chain finance etc.
	• E-Billing/E-Invoicing applications for automated or semi-automated issuing and receiving electronic invoices, including handling of various output/input formats
	• Signature software or devices, Public Key Infrastructure (PKI); Signature verification tools and portals
	• Invoice cockpit (monitor all invoices circulating within an organisation)
	• Invoice management
	• Workflow
	• E-Procurement
	• Interface software
	    o data conversion and mapping tools
	    o printer driver with E-Invoicing, signature and transfer features
	• Archive

The scenario chosen from the above will depend on
- Make or Buy policy of each organisation
- Own IT and processing environment
- Invoice volume
- Business Case
- Internal requirements
- Requirements and capabilities of counterparts

Larger organisations quite often analyse 2-3 scenarios, compare them and decide on one of them. This step is then followed by a Request for Proposal (RFP), sent to 2-4 providers.

4.9   Roadmap

Small organizations can technically become up-and running within just a few days. More time consuming will be the onboarding of the counterparties.

In large organizations, the project and implementation time can strongly vary, depending on existing environment and degree of integration.

Figure 20: Indication for project and implementation time

Scenario	Centralised, homogeneous environment	Decentralised, heterogeneous environment
Key-in/upload invoices via 3rd party Web portal or printer driver Receive/download invoices via 3rd party Web portal Archive operated by 3rd party	0.1 – 1 days	1 month
Invoice export/import via AR/AP application Archive operated by 3rd party	0.5 – 2 weeks	3 months
Scenario above including analysis, re-design, workflow and archive implementation	6 months	1 – 1.5 years
Scenario above, including integration of invoices with related messages along the supply chain (order, delivery notes, payment, remittance etc.)	up to 1 year	up to 2 years

4.10   Project Checklist

Analysis
- Internal
  - Involved and related processes, systems and divisions/branches/subsidiaries
  - Invoice streams
  - Obstacles and how to solve them
  - Structure, capability and legal constraints (especially in multi-national companies)
- Of your counterparts
  - Volume
  - Technical capability
  - Willingness to adopt
  - Legal framework
- Strategic focus and priorities

Concept
- Solution scenarios
- Decision Make or Buy
- Step-by-Step approach (division by division) or "big-bang" (company-wide project)
- Implementation scenario
- Required investments and operation costs
- Rollout strategy

Request for proposal (RFP)
- Top 20 requirements
- Other "nice to have" requirements

If solution or service is to be purchased
- Provider evaluation
- Benchmark
- Contract
- Test

Implementation
- Internal adoption
- Test
- External adoption with suppliers and customers
- In countries where legally required (Germany, Switzerland, …): Document everything in a "procedure documentation"

Rollout
- Concept with scenarios for each sector of counterparts
- Dialogue with key suppliers and customers
- Mass-rollout

During the whole project: Communicate at least twice as much as you believe is necessary – you can never over-communicate!

5. The market

5.1 Market volume

5.1.1 An estimate for the global volume

5.1.1.1 Bills/Invoices

Whereas the volume (paper + electronic) in Europe is relatively well known, figures for other continents may just be guessed. There are clear indications that the number of bills/invoices per entity (enterprise or household) in Asia and America (North and South) is higher than in Europe. This seems to be especially the case for recurring bills (telco, utility and other bills).

Figure 21: Guess for global bill/invoice volume

Segment	Estimated volume to be at least
B2C/G2C	200 billion
B2B/B2G/G2B	150 billion
Total	**350 billion**

Source: Billentis

In most industrialised countries, invoices/bills represent 16-30% of the total (addressed) letter volume and up to 50% in less industrialised countries. Local organisations in an increasing number of countries meanwhile have their own mechanisms to make qualified guesses about their invoice volume. Several service providers processing invoices (paper and electronic) confirmed to the author that economic cycles do not have a noticeable impact on the invoice volume.

There are several indications that the bill/invoice volume increases 2-3% every year. This is for several reasons:
- Increase of the population, the number of households and enterprises
- Suppliers improve their working capital and are no longer willing to give credit to their clients due to low billing/invoicing frequency; by sending bills/invoices every two months instead, they do it after each delivery
- Legal reasons; some countries (especially within the European Union) are mandating suppliers to send bills/invoices within 15-30 days of their performance or goods delivered
- Electronic invoices are cheaper and allow suppliers to send invoices more frequently

5.1.1.2 Invoice-like documents and messages

Additional volume of "invoice-like documents and messages" can also be tremendous (likely **many times over the invoice volume**). Invoices are different from receipts. Both invoices and receipts are ways of tracking purchases of goods and services. In general, the content of the invoices can be similar to that of receipts including tracking the amount of the sale, calculating sales tax owed and calculating any discounts applied to the purchase. Invoices differ from receipts in that invoices serve to notify customers of payments owed, whereas receipts serve as proof of completed payment. The message content can be quite similar to bills/invoices and, for that reason, some press releases translated from any language to English also use the term "Bills/Invoices" for this kind of document/message. The author keeps that number outside of its statistics. Classical examples of these "invoice-like documents and messages" are
- Invoice data sent to the tax authorities just for validation or audit reasons

- Digital replacements of "fiscal printers producing payment receipts". Electronic receipts, generated by tills at the Points of Sale (shops, restaurants, ticket counters) and sent to the tax authorities just for validation or audit reasons (e.g. in Taiwan and some Latin American countries); more accurate translations to English use the terms "electronic tax receipts" or "uniform invoices" for these messages.

5.1.2   The European bill/invoice volume

Due to the annual increase, the European volume may have meanwhile passed the 33 billion and could increase to **35 billions in 2015**. Approximately half of the volume is send to consumers (B2C), the other half to enterprises and the public sector (B2B/B2G/G2B).

Figure 22: Invoice/Bill volume breakdown by industry (issuer view)

Source: Billentis
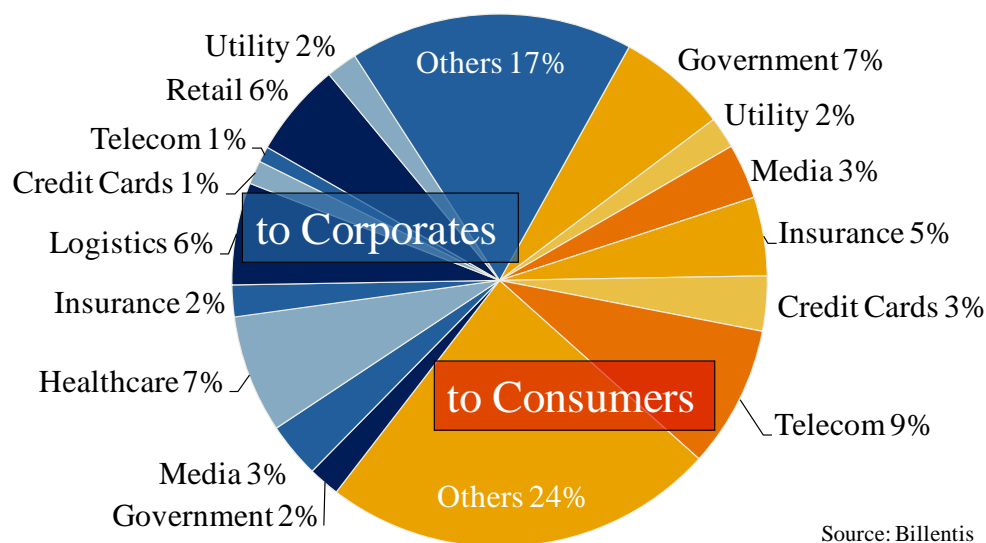
There are just few segments receiving a very high invoice volume. The industries with the highest inbound volumes are:

Figure 23: Invoice volume breakdown by industry (recipient view)

Industries with high inbound volume	% of all B2B invoices, indication
Healthcare	5-13%, depending on the country
Retail	10%
Public sector: National Government, regions & municipalities	9-15%
Buyer Clubs, Trade	5%

Source: Billentis

All the industries above, except the public sector, were early adopters of EDIFACT or other electronic invoicing channels. The remaining volume of 60%+ is spread out across the other industries.

5.1.3   Relevance of cross-border traffic

Only a relatively small fraction (1-5%) of all invoices is sent and paid abroad. The larger countries in particular are much more focused on the domestic markets. In Germany, there are 7 billion domestic payment fund transfers compared with just 16 million cross-border transactions to EU countries (<0.3%). In small countries like Luxembourg, the share of cross-border invoices is above 30%.

From a statistical point of view, it appears that E-Invoicing projects could focus on the domestic traffic. In reality, this isolated focus can be a risk for the project, especially if the foreign trading partners are anticipating electronic invoices. Large organisations and even SMEs should consider their international situation from the beginning in order to avoid selecting the wrong solution provider.

Globalisation is in progress and sharply increases cross-border transactions. The author's experience in customer projects: E-Invoicing is typically an international project immediately after project start.

5.2   Motives for replacing paper bills/invoices

Organisations start projects for various reasons:
- External pressure (Suppliers, Customers)
- Internal cost pressure
- Process innovation and automation
- Quality improvement
- Public sector initiatives (with the aim to reduce fraud and increase tax income and to optimise their own invoice processes)

Promoters can be found in various divisions
- Management
- Financial Department
- IT
- Sales
- Procurement
- Workflow
- Archive

5.3   Evolving market models

5.3.1   Overview

Many large organisations intend to exchange electronic business messages directly with their counterparts. This is still a good approach in the case of stable partnerships with very large trading parties and if the legal requirements for these messages are not very high.

The invoice can be seen as the "queen of documents/messages". In most countries, it is THE document regarding VAT reclaim, for tax reasons and auditing. If paper based invoices are replaced by electronic invoices, it is essential to stay VAT compliant. Even if very large organisations prefer to exchange electronic invoices directly with their counterparts, the vast majority of companies are advised to use a professional third party service operated by professionals.

We distinguish between several E-Invoicing models:
- Supplier Direct Model (in-house)
- Buyer Direct Model (in-house)
- Outsourced Direct Model: Software as a Service (SaaS)
- Network Model, 3rd party Service
- Hybrid Model
- Total Invoice Management (in-house or outsourced)

Figure 24: Overview about main market models
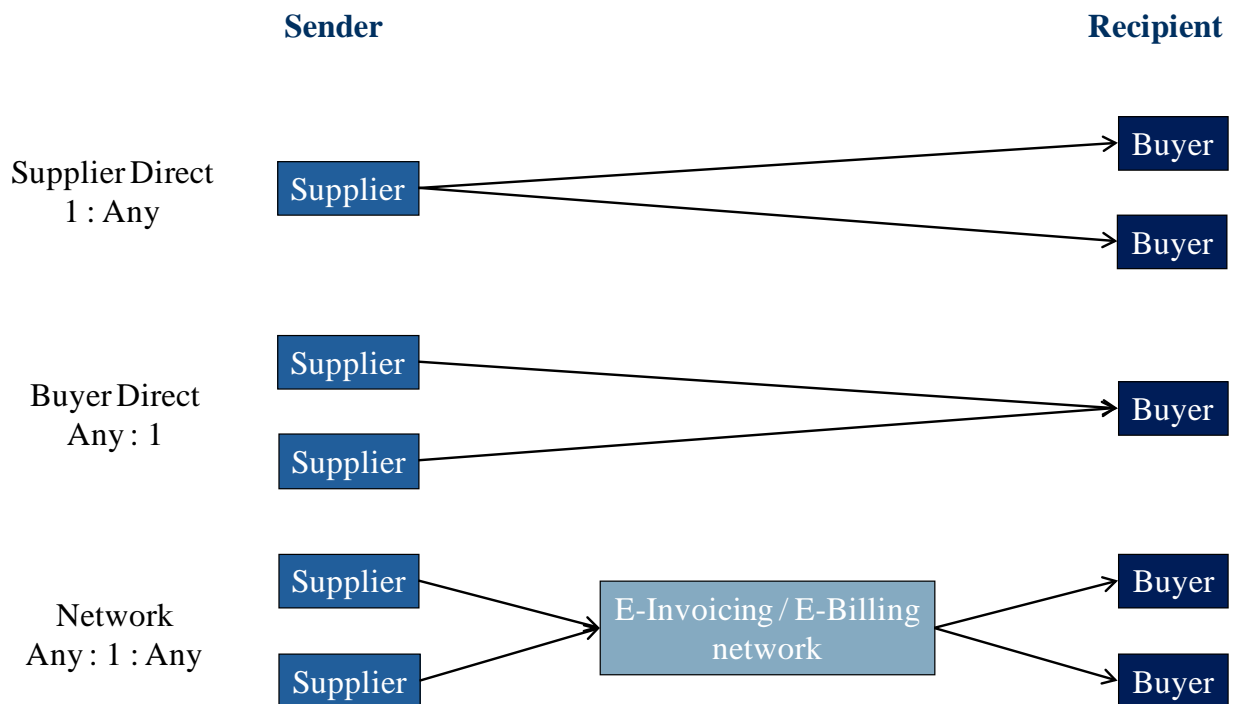
5.3.2 Supplier Direct Model

A supplier implements an E-Billing/E-Invoicing solution within his environment for distributing the electronic invoices via different channels:
- Sends them to the customers via email, SMS etc.
- Provides the E-Invoices on his customer portal; Customers can login, view and download them

The supplier direct model is quite popular in telecom, utility and card companies issuing a high volume of bills to consumers and businesses. Small businesses do not only accept PDF invoices attached to e-mails from larger issuers, but also increasingly exchange E-Invoices directly with their trading partners. Due to their size, they do not have the capability to provide E-Invoices on their own portals, but instead exchange them as PDF invoices attached to e-mails.

Figure 25: Supplier Direct Model
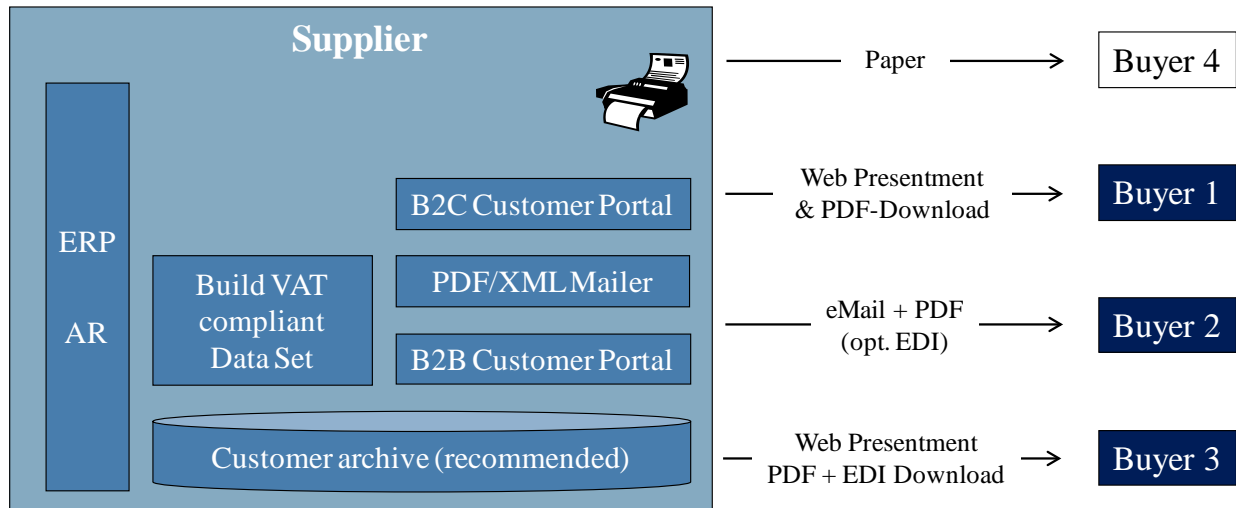
Source: Billentis

The classic market launch is done with a B2C Customer Portal. Customers can login, view, analyse and download the electronic invoices. Due to the login process on each suppliers' site, this route is not always popular. Therefore, customers should at least receive an email notification regarding a new invoice, including a hyperlink to the portal. Much more popular is to push the bills/invoices to the clients as email attachments.

To improve market acceptance, issuers to B2B customers should provide
- The most common structured invoice data for download (attachement or integrated to PDF invoice)
- Long-term and VAT compliant online archive for the customers' invoices (as smaller customers quite often do not have the required environment for doing this)
- In case of signatures: Verification tool for customers, reporting the result in a log file (must also be archived)

Figure 26: Advantages & disadvantages of Supplier Direct Model via customer portal

Advantages	Disadvantages
+ Direct contact with customers, chance for cross-selling and interaction + E-Invoicing functionality directly influenced by supplier; e.g. a telecoms operator offers analysis tools with CDRs (Call Detail Records) + Chance for very close integration with back office environment and automation of processes	− First part of solution development and maintenance seems not to be too expensive, but this changes dramatically over the years (upgrades; accumulation of maintenance costs) − Customers dislike logging on to various websites of different suppliers or making multiple integration projects − Customers only get a limited number of formats to download and have to convert them for import into their back office systems − SME customers don't get a centralised, efficient and VAT compliant E-Archive for E-Invoices of all their suppliers − Overall, customer acceptance will be limited

Many disadvantages can be reduced/eliminated if this model is operated by a third party (SaaS, Software as a Service) or if it is practised as a complement to a network model → see Hybrid Model.

In most market sectors, the customer adoption by using customer portals is lower than expected, except where the rollout strategy "Opt-Out" including the email channel can be practised.

An alternative builds the push method based on intelligent PDF invoices including XML data.

Figure 27: Advantages & disadvantages of Supplier Direct Model via push method

Advantages	Disadvantages
+ Direct contact with customers, chance for cross-selling and interaction + Efficient solutions for senders and recipients available; low upfront investment + Chance for integration with back office environment and automation of processes on issuer and recipient side + Acceptance by customers of any size	− Customers only get a limited number of formats to download and have to convert them for import into their back office systems − SME customers do not get a centralised, efficient and VAT compliant E-Archive for E-Invoices of all their suppliers

5.3.3   Buyer Direct Model

A buyer implements an E-Invoicing and/or Invoice Management solution within his environment for receiving the electronic invoices via different channels:

• Gets invoices directly as a data stream for importing them into his AP solution (preferred mainly for invoices of large suppliers)
• Smaller suppliers key-in the invoice data in a web-template on the corporate invoice portal of the buyer (webEDI); data can be automatically processed and imported into the AP system

Figure 28: Buyer Direct Model
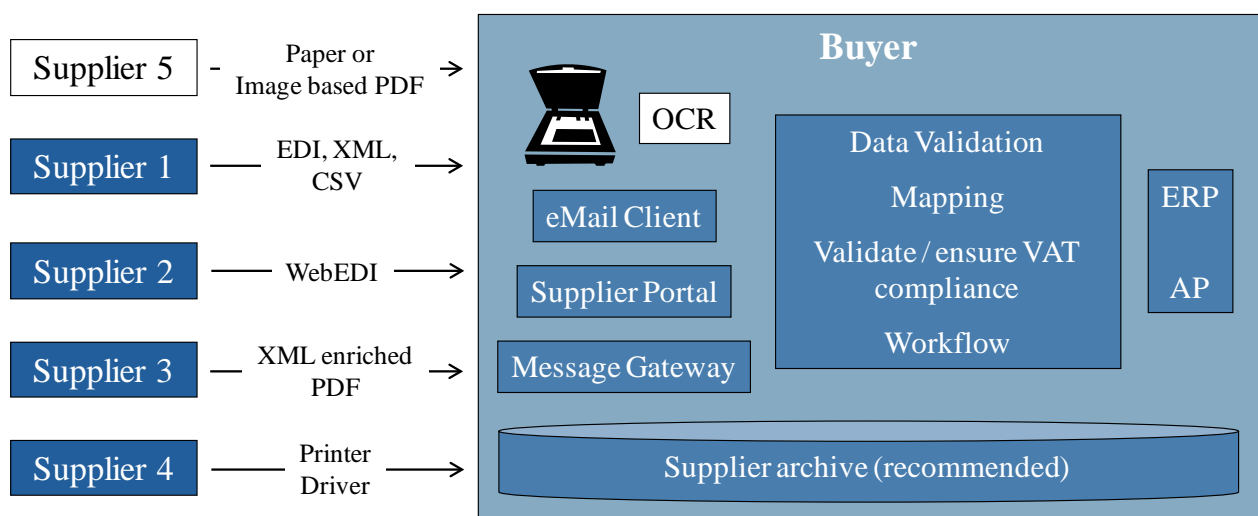
Source: Billentis

This model is preferred by larger organisations, especially if their suppliers are in strong competition with others (e.g. retail, automotive, trade).

Some providers offer E-Invoicing and Invoice Management solutions just for buyers, whereas others cover both sides: software for suppliers, already preparing and sending a compatible invoice format perfectly matching the requirements of buyers.

If suppliers are located in countries requiring digital signatures, they have to sign the E-Invoices in a VAT compliant manner. To succeed with smaller suppliers, it is of key importance to offer them good tools for this process and most probably a long-term supplier archive too.

The model can also be quite successful with smaller suppliers if orders are sent to them in electronic form alone (e.g. via Extranet Portal). Many solution providers offer a functionality to convert these purchase order data easily into an invoice for sending back to the buyer.

Figure 29: Advantages and disadvantages of Buyer Direct Model

Advantages	Disadvantages
+ Direct contact with suppliers, chance for interaction + E-Invoicing functionality directly influenced by recipient + Chance for a very close integration into back office environment and automation of processes	− First part of solution implementation and maintenance seems not to be too expensive, but this changes if mid-sized and smaller suppliers must also send electronic invoices; much legal clarification is necessary, especially in cases of cross-border exchange − Suppliers dislike converting their electronic invoices into the various formats requested by the buyers; they also dislike making multiple integration projects (with each buyer) − SME suppliers don't get a centralised, efficient and VAT compliant E-Archive for E-Invoices for all invoices sent to various customers − Overall, supplier acceptance will be limited but some pressure on suppliers is helping

5.3.4 Direct Model as a Service

Over the years, large organisations using biller or buyer direct models concluded that the marketing rollout is harder than expected and that the maintenance of their applications is ultimately too expensive. That is why some service providers in the UK, the Netherlands, Finland, France, Germany and other countries started to offer white-label services for them. They run a direct model on behalf of large issuers and recipients of invoices. The software is typically developed, maintained and operated by these providers. Customers pay just a fixed integration fee and a volume/time based fee.

Figure 30: Advantages and disadvantages of Direct Model as a Service

Advantages	Disadvantages
+ Direct contact with counterparts, chance for interaction + E-Invoicing functionality directly influ-	− Counterparts dislike logging on to various websites or making multiple integration projects

Advantages	Disadvantages
enced + Chance for very close integration into back office environment and automation of processes + Lower costs, as application development and maintenance is shared with others + No negative surprise with the costs, as provider offers a fixed integration fee and a price per transaction or user + Complexity regarding VAT compliant processing (and optional archiving) can be outsourced	− Counterparties only send/receive a limited number of formats − Overall, acceptance by counterparts will be limited

5.3.5 Network Model

Issuer and recipient have just one interface to their service provider, the network operator[2]. This E-Invoicing network operator manages the VAT compliant invoice transfer to clients. Issuers can deliver invoice data (e.g. ERP output format like idocs, any XML data or a flat file) to the operator who translates it into the target format of the recipient. The operator guarantees the main legal requirements, authenticity and the end-to-end data integrity. An increasing number of operators offer additional services such as tax compliant long-term archiving.

Figure 31: Network Model
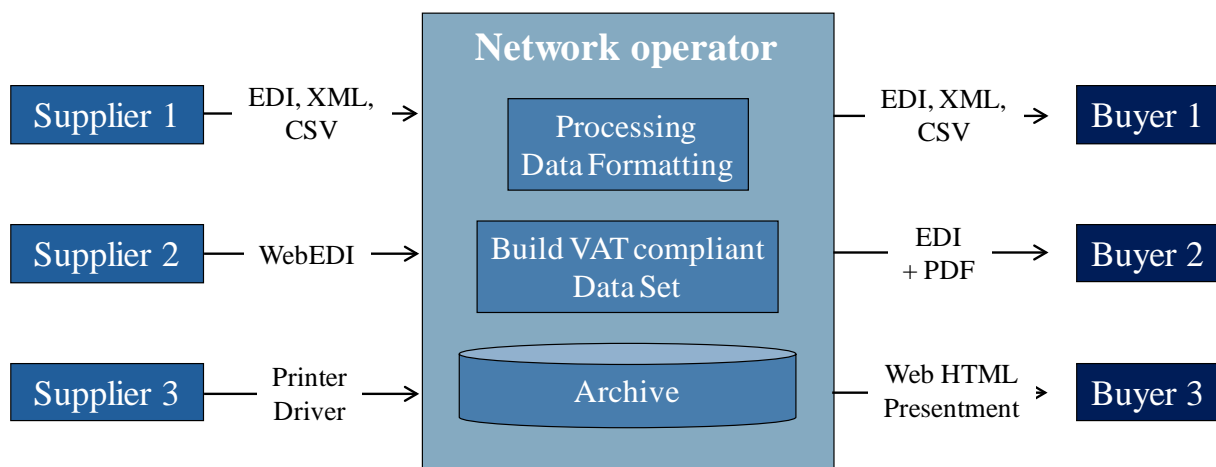
Source: Billentis

Large issuers and recipients intend to make a full integration into their AR and AP applications. SMEs often prefer easier and quicker solutions, either by using WebEDI or Printer Drivers. For both channels, suppliers' AR systems do not need any modification or upgrade. Use of E-Invoicing is possible for them within hours after making their decision.

Figure 32: Advantages and disadvantages of Network Model

Advantages	Disadvantages
+ Easy and efficient integration to a single point of contact	− Indirect contact with counterparts, chance for interaction possible, but limited com-

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[2] In some countries, the terms "consolidator", "service provider" or "supplier network" are more common

Advantages	Disadvantages
+ Lower costs as application development and maintenance is shared with thousands of other participants + No negative surprise with the costs, as provider offers a fixed integration fee and a price per transaction or per user + Complexity regarding VAT compliant processing (and optional archiving) can be outsourced + Easy to use: Technical and legal requirements can be outsourced to network operators + Counterparts like logging on to just one website, making one integration project with just one invoice format	pared to direct or SaaS model − E-Invoicing functionality is fixed and can't be influenced

5.3.6   Hybrid Model

Message transfer with a few high-volume and strategic important counterparts is based on a direct model, whereas mid-sized and small counterparts are addressed via network operators.

Organisations using this model have combined the advantages and disadvantages of direct & network models.

Advantage: Good solution for all organisations already practising a direct model with chance for an efficient route to all smaller suppliers and customers.

5.3.7   Total Invoice Management

Even at best, there will always be a remaining percentage of paper invoices in tandem with the increasing electronic volume. At worst, this can result in two different workflow and archiving processes. This can be avoided in most cases with innovative solutions for supporting and handling various invoice formats, including paper. If practised as a direct model, such invoice management solutions can be purchased on the market and implemented into the company's own environment. Organisations not yet using scanning solutions quite often prefer using the complete service of a third party. Ultimately, this means that issuer and recipient can exchange invoices 100% electronically.

Figure 33: Total Invoice Management
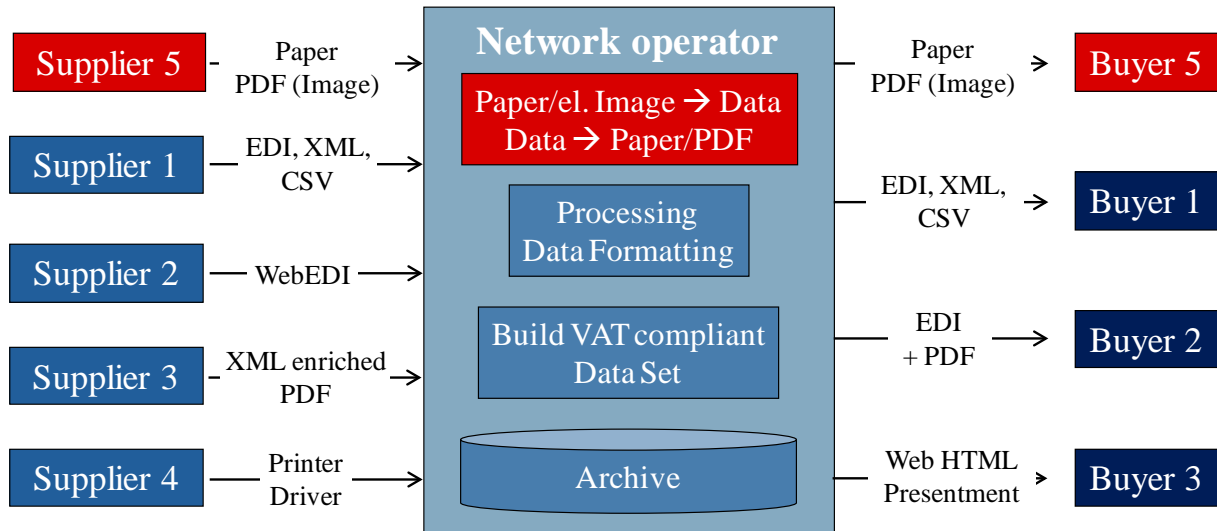
Source: Billentis

Figure 34: Advantages and disadvantages of Total Invoice Management

Advantages	Disadvantages
+ 100% solution + Harmonised processes, independent of invoice medium used	− Pressure to move very quickly from paper to electronic channel is limited; as a result, paper can survive longer than desired

5.4 The global landscape

5.4.1 Market evolution and maturity

Figure 35: Classical evolution pattern in most countries

Phase	Description
1	Large organisations (telcos, utility sector, card issuers, etc.) have tremendous expenditures for printing and mailing bills. Due to their competitive industry, they are pushed to reduce their costs significantly. They offer the bills electronically to their clients, often on their portals for download after log-in. The rate of acceptance by clients is limited, except if clients receive incentives for changing to E-Bills, if they are punished with penalties for paper bills or if they are pushed to accept the bills via email. This phase is the first experience with E-Billing for most countries.
2	Relatively soon, users of Supplier Direct services will recognise that their clients will not wish to log-in to each supplier's website. They prefer a single point of contact (aggregating website, online banking) for bills of all their suppliers. The acceptance of a B2C network service can be higher than with the Biller Direct model (Web-based) and the on-boarding costs per user are shared with other billers. Many billers recognize in this second phase that Bill Presentment on their own portal is not sufficient. They enhance their scope by using in addition a network service or switch to a push-model (send bills as PDF email attachments).
3	Enterprises can benefit most with electronic and automated processes in their role as issuer as well as recipient. As soon as legislation permits paperless invoicing (in most countries, except some in Africa and Asia), large organisations are typically the innovators for E-Invoicing. They push their large trading partners, followed by mid-sized and small ones. Due to the high benefits for issuers **and** recipients, E-Invoicing in the

Phase	Description
	B2B and B2G segment is typically more successful than in the B2C. However, it is still a challenge for large organisations to push a high number of mid-sized and small trading partners to exchange invoices electronically.
4	The public sector is in an excellent position to initiate the breakthrough in the mass market. In many countries, 45 to 65 percent of local enterprises are suppliers to the public sector. The government has the power to push these suppliers to send invoices electronically. They are also in the position to modify the legislation in a user-friendly way if necessary. Even in countries where the public sector is inactive regarding E-Invoicing, the market does move forward rapidly. An increasing number of providers meanwhile offer a broad range of solutions for all types of users and for fair conditions.

The maturity of the market varies between continents and the countries on each continent.

Figure 36: Market maturity for electronic invoices/bills
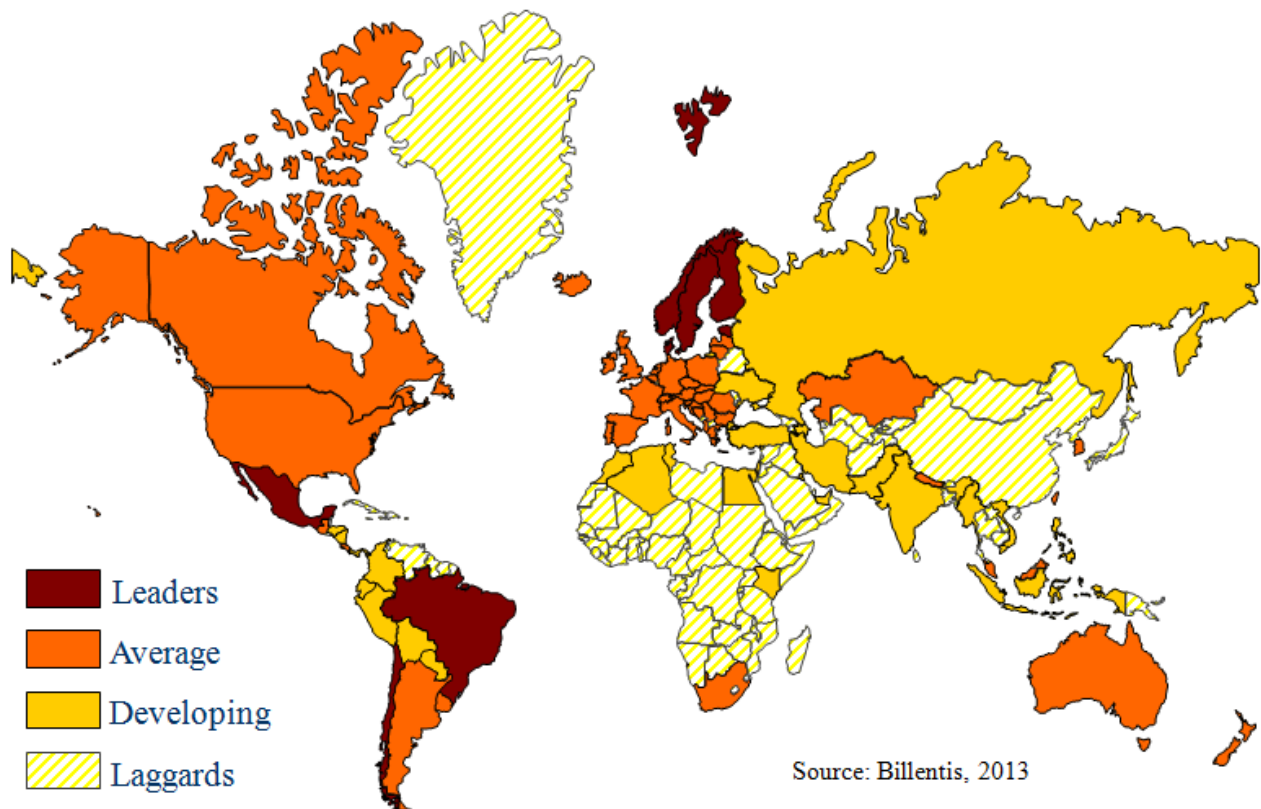
The term "Laggards" in the chart above does not mean that there was no E-Invoicing activity in these countries. It just expresses that they are typically in evolution step 1 or 2. "Developing" means that countries are typically in evolution phase 3. Either they are preparing their legislation for B2B E-Invoicing as well or, if already in place, the E-Invoicing volume is still very low.

It is expected that the 2013 volume for E-Bills/E-Invoices will achieve around 20 billion world-wide with annual growth rates of at least 20%.

Not considered above:

- Invoice data which are just copies in parallel to the paper-based original (e.g. EDI messages complemented with collective paper invoices or invoice data as result of paper scanning and OCR process)
- Invoice-like electronic messages as defined in chapter 5.1.1.2

5.4.2 Current optimisation focus of geographical regions

There are many similarities as to how invoices are used in our world. The challenge to implement E-Invoicing and to convince trading parties is also comparable. However, there are also major differences due to heterogeneous legislation, languages, cultures and the current optimisation focus. Although not applicable for all countries and organisations, the author concluded that the optimisation focus seems to be as follows:

Figure 37: Optimisation focus of geographical regions

Focus	Description
1	**Asia & Latin America** (and increasingly some Southern and Eastern European countries): Country-wide projects are launched by the tax authorities with the aim of reducing tax evasion. Suppliers and buyers have to send either invoice data or at least reports in electronic format to the tax authorities for real-time validation & auditing. The system for the trading parties is quite complex. As a benefit, suppliers and buyers have electronic invoices, but just because the government is demanding or mandating it. The company' internal process efficiency is not yet necessarily optimised.
2	**North America:** Larger and mid-sized companies optimise mainly their internal processes. AR and AP automation as well as Trade Finance and Working Capital Management are a focus.
3	**Major parts of Europe:** Suppliers and buyers can be located in various countries with different legislation. Much effort was done in EU member states to remove legal barriers. For Europeans, it is also important to build a framework, which is suitable for millions of companies of any size and from different countries. Hundreds of E-

Focus	Description
	Invoicing network operators offer their services, many of them interconnected with other providers. Suppliers and buyers may in most countries use E-Invoicing still on a voluntary base. Although the market is still quite fragmented, the approach in Europe can be described as relatively holistic with a strong intention to collaborate among all stakeholders.

In the long-run, all suppliers, buyers and the tax authorities want benefits with E-Invoicing. This increases the chance that each continent learns from each other and adopts best-of-breed components from others.

5.4.3   The Service Provider landscape

Organisations offering exchange & transaction services are founded either as start-ups or often originate as
- Print shops (invoice printing as third party service)
- AR and collection service
- Post
- EDI Clearing centres
- Archiving service
- Scanning service
- Electronic marketplace, procurement platform
- Banks or financial clearing services
- Payment service providers
- ERP integrators
- E-Business operators
- Software houses
- Consultants
- Digital signature service provider

Some very large operators have their roots and headquarters in Latin America (especially in Chile). The early market evolution, combined with the quite demanding legal requirements have obviously built an ideal environment to succeed with the service approach. Soon, the pioneers expanded into neighbouring countries. The language was the same and the practice model was quite similar, or at least inspired by the Chilean approach.

In North America, network operators have mainly been established in the B2C segment and often in form of payment networks with support for bill presentment. Compared to the size of the market, there are very few players covering the B2B segment. However, this is expected to significantly change during the coming years.

5.4.3.1   Service providers in Europe

In early 2013, about 550 network operators were active in the European market. No single player has reached a dominant position in the E-Billing/E-Invoicing market. Most of them have an extensive and balanced product range for issuers and recipients of any size. Others are more specialised for either issuers or recipients and for the B2B or B2C sectors. Around 80 of them have an international range (often supporting tax compliance in 30+ countries). An increasing number improve the international scope by linking partner platforms abroad and roaming E-Invoices. Still, many operators are well established as pure players (focussed on E-Invoicing), whereas others have already enhanced the support for further messages and process automation along the supply chain.

5.4.3.2 Inter-operability among different E-Invoicing network operators

In the area of mobile phones, we have many operators in a domestic market, which are connected to each other in the local market and with most others abroad.

For electronic invoicing, we can see a similar market development, but slower, and with much higher heterogeneity regarding legal constraints, invoice contents etc. Although there is not yet a single standard for exchanging E-Invoices across the various networks, more and more operator platforms are linked together for building inter-operable networks with a broad range.

Interoperability among operators is also pushed by initiatives from the European Commission and some associations in the private industry. Some leading operators have already established numerous interconnections on a bilateral and proprietary basis. There are also operator associations with the aim of pushing the interoperability with a standardized approach, e.g. EESPA/European E-Invoicing Service Providers Association [9], German E-Invoicing Alliance [9], OpenPEPPOL [10], the SimplerInvoicing [9] initiative etc. The first three already have 50+ members.

Despite some progress towards an interoperable eco-system, there are still many remaining shortcomings to be resolved.

Figure 38: Improvement potential for E-Invoicing operators associations

Shortcoming	Possible action
Transparency about the model, rules, specifications, level of up-and-running interconnections based on the associations approach	Publish the details about all building blocks. Publish a matrix with members fully supporting the framework in practice as defined by the association.
Market Communication	A professional marketing communication is probably 50% of the success. Within each association, a marketing group should be a must, followed by steady communication.
Too many passive observers in most associations; most members are just obliged to pay the membership fee and to participate annually at least at one meeting	The time is now right to oblige all members to implement specifications within 12 months and to connect with each other member. Operators unwilling to do so could change to an observer membership category.
Addressing/routing and the transparency of platform users	The leading associations have specified how they do it, but it is not published. E-Invoicing users shall be enabled to select an invoice recipient directly out of the users' list, even if the trading partner is on an interconnected platform.
Captured by too many old burdens	How would a green field scenario look like? How is the migration path to it? Leave the past behind you, even the path back there is not for free.

Most components for an interoperable eco-system are specified and known (based on a standardized framework, see OpenPEPPOL, CEN, etc.). Perhaps the most promising and fastest model to push interoperability could be the foundation of new associations by members with the same

interest and pace. This model could follow the alliance approach of the airline industry with Star Alliance, Skyteam, OneWorld, etc. Likely the first example in this direction is the "Global E-invoicing Network Alliance" GENA [9].

5.4.3.3   Redefining the role of the Financial Service Provider community?

Although some banks also intend to serve large organisations with E-Invoicing, the focus of an average bank is still more in the B2C sector and the SME market. Conversely, the non-bank operators have traditionally been successful in aiming their services at large companies and SMEs. Businesses require more value-added services (e.g. integration to ERP applications, workflow processes and archiving). Thus (measured by processed European volume in 2012), non-bank operators currently have a dominant market share of roughly 90%. The market share of banks is just significantly higher in Nordic countries and mainly for the consumer bills.

Does this allow the conclusion that banks will have more to win than to lose in this transaction business by occupying the mass market? Maybe that is true in a few countries and mainly in the consumer business, but questionable in the small business segment. Except some very successful providers from the Financial Service Providers community in Nordic countries, Spain and, to some extent, in Benelux and Switzerland, they do not play a significant role in the whole of Europe. This is especially valid in the largest European countries.

No international comparable statistics exist about the number of users practicing E-Invoicing via banks or related organisations. The most transparent development is reflected in the Finnish user directory. Remarkable is the fact that the SME segment in particular strongly preferred non-bank service providers in 2011 and 2012.

2012 increase of companies in the Finnish public user directory:
• 20% increase of users on banking platforms
• 52% increase of users on non-banking platforms

Figure 39: Number of businesses using Finnish service providers
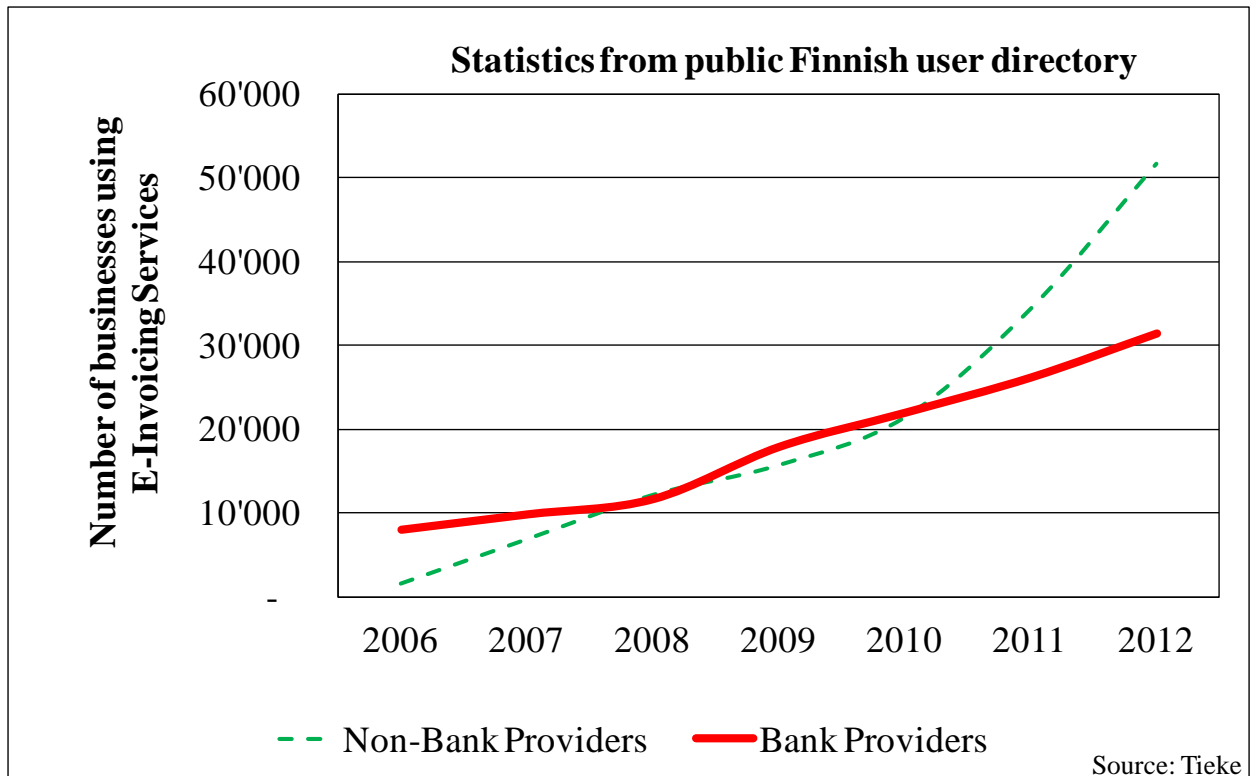
Banks are unlikely to keep the pace of non-bank service providers outside Nordic countries. Non-banks might follow their customers' demand regarding coverage of new countries, new functionality and new technology including components of social networks and cloud computing more quickly. The last two points in particular could also cause some security concerns within a bank's IT environment, but are increasingly important for a dynamic E-Invoicing market development.

> For all European banks which do not yet have a significant E-Invoicing customer base and profitable transaction volume, a shift in focus of their services could be a promising new strategy.

Figure 40: Strategic options for banks

Option	Strategy description
1	**Stay outside the E-Invoicing transaction business** Monitor market development. Do not participate in costly initial work. Enter into the market in a later stage by acquiring a successful E-Invoicing network operator.
2	**Participate with a low cost model** Offer such services mainly in the role as re-seller of a white-labelled service (platform developed, maintained and operated by an E-Billing/E-Invoicing service provider outside the banking community); variable costs with the option to participate in future market opportunities.
3	**Compete with national & international non-bank E-Invoicing operators** This means to keep the pace of the non-bank provider community. As we are in middle of globalisation, a domestic service is not sufficient. Instead, international support could be required regarding languages and tax compliance. To cover the automation of the full supply chain, functionality for the procurement process could also be required soon (e-Catalogues, e-Orders, purchase order flip, order matching …).

Option	Strategy description
4	**Complementary services for non-bank E-Invoicing operators and their clients** Offer only the typical bank products: Trade Finance, Supply Chain Finance. Stay off the E-Invoicing transaction business or exit it if your bank is already in that business with a moderate and unprofitable volume. As the bank does not compete in the E-Invoicing transaction business, collaboration with several dynamic non-bank operators is possible with a win-win situation for both parties. See details in chapter 7.5 about a possible collaboration model for Trade Finance services and E-Invoicing network operators.

5.4.4 Asia & Pacific region

Remark: The author allocates Belarus, Turkey, Russia and Ukraine to Asia and not Europe.

Most Asian countries are in evolution phases 1 and 2 (Figure 35): Large bill issuers start with "Bill Presentment" via their company portals or internet banking.

E-Invoicing in B2B is often not yet legally permitted, or only under strict legal conditions that sometimes include explicit approval from tax authorities. This does not rule out that some companies already exchange (in parallel to the tax relevant paper invoice) electronic invoice files ("commercial invoices") to improve process efficiency.

However, there are some countries in phase 3: Leaders are **Singapore, Hong Kong, Taiwan and South Korea**. Despite their major importance in the world economy, Japan and India are lagging in both legal framework and adoption. The government, shipping and retail industry play a key role in the B2B/B2G segment. Even though countries such as Singapore and Hong Kong have had rather lenient regulatory conditions for electronic invoicing and record keeping for many years now, adoption levels remain low to modest across most of Asia.

The government of **Kazakhstan** announced that the country would migrate on a stage-by-stage switch to E-Invoicing. The national companies had to start the process from July 1st 2012, while all others taxpayers had to support E-Invoicing from January 1st 2013.

Azerbaijan has in recent years worked to modernize its legislative and audit framework, and now also allows electronic invoicing.

The **Turkish** market has a size of 2 billion annual invoices/bills (Source: Turkish Ministry of Finance). The country was not very advanced until the end of 2012, but will make a huge step forward in 2013. Until recently, E-Invoicing was voluntary and only possible by using the only (state owned) service provider. Now, third party service providers (certified and linked to the state owned service provider) are permitted to address the divergent market requirements. They leverage the market reach. In addition, the government declared E-Invoicing as mandatory for certain industries and their trading parties if they generate a minimum turnover with them:
- Tobacco and Tobacco Products (Suppliers and Buyers)
- Petroleum oils and Lubricants (Suppliers and Buyers)
- Alcoholic beverages (Suppliers and Buyers)

In many (southern and eastern) Asian countries, electronic trade (and financing) is more in the foreground than just E-Invoicing.

[11] The current stage of E-Invoicing in **Russia** may be described as preparatory and introductory. The exchange of electronic business and reporting documents is already quite common, but the market had to wait until 2012 to see all the conditions for electronic invoicing united. Regulatory steps towards permitting electronic invoicing have been made in 2010 and 2011, and currently 30 authorized operators are competing for the nascent Russian E-Invoicing market. At present more than 10,000 E-Invoice users are registered with the Federal Tax Service. However, the actual number of exchanged E-Invoices is still very low. The general interest is quite high, but there is a lack of practical knowledge and real positive cases to boost the shift from interest to real action. The highest interest in this new market is seen in the distribution segment, in such industries as pharmacy, food and automobiles. Although there are also some barriers, the market development in the retail / FMCG sector could outperform other industries. Besides the relatively high volume in the industry, another reason is that the retail / FMCG sector is the only one which uses EDI (EDIFACT/ EANCOM) formats. The public Russian E-Invoice format (issued by the Ministry of Finance) contains practically no data that is relevant for the supply chain. It is only relevant for tax inspection needs, not for business needs. It is quite easy to produce such kind of format from the EDI file, which contains all data required by businesses. That is why it is easier for the companies already using EDI to start with E-Invoices (electronic VAT invoices). Speaking about other businesses outside retail, there are no EDI industry standards used in Russia. Therefore, these other industries probably switch to E-Invoicing more slowly. The tax authorities also started to send requests for VAT invoice samples in electronic formats. They currently test their readiness to receive samples of VAT E-Invoices.

Reducing tax evasion is also a serious challenge in Asia. **China** is no exception in that regard. To address this challenge, China launched a major fiscal reform project called the "Golden Tax Project" (GTP) which mandates the use of specific sophisticated information technologies to improve compliance with China's VAT laws. Although the Chinese GTP requires the use of information technology and some considered it as a form of "E-Invoicing", the author would describe it much more as a validation system for ensuring and controlling VAT compliance. China recently introduced further regulations for its online invoice management system in a bid to standardize the industry and curb tax evasion. The new online invoice management measures are valid since April 1, 2013.

India has made announcements about allowing E-Invoicing more broadly; however, electronic invoicing remains rare because Central Sales Tax explicitly requires paper invoices, while only about half of the States allow E-Invoicing under their VAT law.

Government initiatives fall into two categories, each representing extremes on the world spectrum: (a) countries such as Singapore and Hong Kong, which are influenced by the Common Law legal system take a process-based approach to tax compliance and shy away from imposing any specific form or method, while (b) countries such as South Korea and Taiwan have adopted a rather more heavy-handed approach with very specific technical requirements reminiscent of the Latin American approach. In the foreground is maximizing the benefits for tax administrations rather than E-Invoicing between trading parties or the optimization of processes and costs for them.

Suppliers of goods in some Asian countries with inflexible E-Invoicing legislation will likely come under much pressure. Their largest customers in Europe and the US are increasingly demanding electronic invoices to also be tax compliant in the western hemisphere. Especially advanced multinational buyers have already defined electronic business document exchange as one of the key criteria for supplier selection. Regulators should keep in mind that practicable and efficient legislation for cross-border E-Invoicing probably generates a competitive advantage for the enterprises in their country.

Australia and NZ are at a similar stage to Asia. Today, we have seen phases 1 & 2 through direct and independent development by Australian companies. Australians are embracing the electronic commerce phenomenon and are becoming increasingly more confident in electronic B2B transactions. At this stage, the majority of invoicing is direct via email or presented online for the user to either download or print. Some providers are also convinced that E-Invoicing via digital mailboxes will play an important role in the near future. Australia's state government launched an E-Invoicing pilot in 2012. Many other administrations also started electronic procurement (and E-Invoicing) projects. As this is affecting many suppliers, the maturity of the market is increasing sharply.

The legislation is very moderate. Australian Taxation law supports the issuing of electronic invoices and the requirements regarding storage timeframes for possible audits are much the same as paper. Australia places more responsibility on businesses themselves to confirm the identity and tax status of the entity using free government look-up services, such as the Australian Business Register [12]. Under Australian law, businesses are required to check this information before finalising the transaction and are required to withhold tax should the other entity not be suitably registered. Penalties can be applied to both parties should these laws be infringed.

5.4.5   Africa

Most countries are in evolution phase 1: Large bill issuers start with "Bill Presentment" via their company portals. Electronic Bill Presentment and Payment is already up and running in Egypt and Tunisia.

South Africa is the only country with a robust, albeit still nascent, market for E-Invoicing on the African continent. A regulatory framework for E-Invoicing has existed for many years, and was modernized in 2012.

With that exeption, countries such as Morocco in the Maghreb region are slightly more advanced than the rest of Africa, however the mentality in both government and business appear to remain geared towards the use of paper in administrative processes. PDFs transmitted by email could lead the way for several years. Consumer bills are also highly accepted via mobile devices.

5.4.6   North America

5.4.6.1   E-Bills for consumers and micro companies

North America started in the nineties with EBPP (Electronic Bill Presentment & Payment, consumer focus) and with EIPP (Electronic Invoice Presentment & Payment, business focus). Regarding a study conducted by NACHA CEBP, 5.1 billion E-Bills were delivered in 2010 in the US. The study states that E-Bills will overtake paper in 2016. In February 2012, NACHA published a white paper adding the information that nearly 30% to 40% of consumers who receive their financial statements and bills online also receive paper versions. However, even if the same strict definition of the term E-Billing is used as the one by the author, it seems that the US is still 3-4 years ahead of Europe (in the B2C segment only).

As expressed in the abbreviations EBP**P**/EIP**P**, payment is an important driver for electronic invoices. This has to do with the inconvenience of paying invoices (e.g. by checks), a pain which is less relevant in Europe where there is a high share of convenient Electronic Fund Transfer and Direct Debit payments.

Digital mail or secure electronic post also gains traction for electronic billing. Meanwhile, more than 8 million Canadians have registered for such a service [Canada Post].

5.4.6.2   E-Invoicing in the B2B/B2G/G2B segment

Market characteristics and drivers
In the B2B/B2G segment, the perceptions and objectives differ broadly from the European or Latin American approach. The optimisation of internal operations "order-to-cash, AR automation" and "purchase-to-pay, AP automation" is currently a main objective for US enterprises. E-Invoicing is still just one feature of this internal automation process and the invoicing collaboration with the trading partners has not yet been discussed holistically. Various surveys imply that the US is past the early adoption phase of electronic invoicing and that the interest in this topic sharply rises.

Status & prediction
PayStream Advisors, Inc. a research and consulting firm focused on back office financial applications: "The US AP Automation Market revenue is forecast to reach $1.7 billion in 2013, a 11.9 percent increase from 2012 revenue of $1.55 billion. AP Automation Market-based delivery will experience healthy growth through 2016, when worldwide revenue is projected to reach $2.4 billion. The market for E-Invoicing is opening up. Currently at **$280 million**, PayStream predicts demand is growing at a compound average **annual growth rate of 13 percent.** But if you look at where we are in the big picture, we are still in about the third inning."

Over 70 percent of companies surveyed (Titans included) either have adopted or are evaluating E-Invoicing technology.

Figure 41: Adoption of E-Invoicing Solutions in US companies [3]

Adoption of E-Invoicing Solutions in US companies
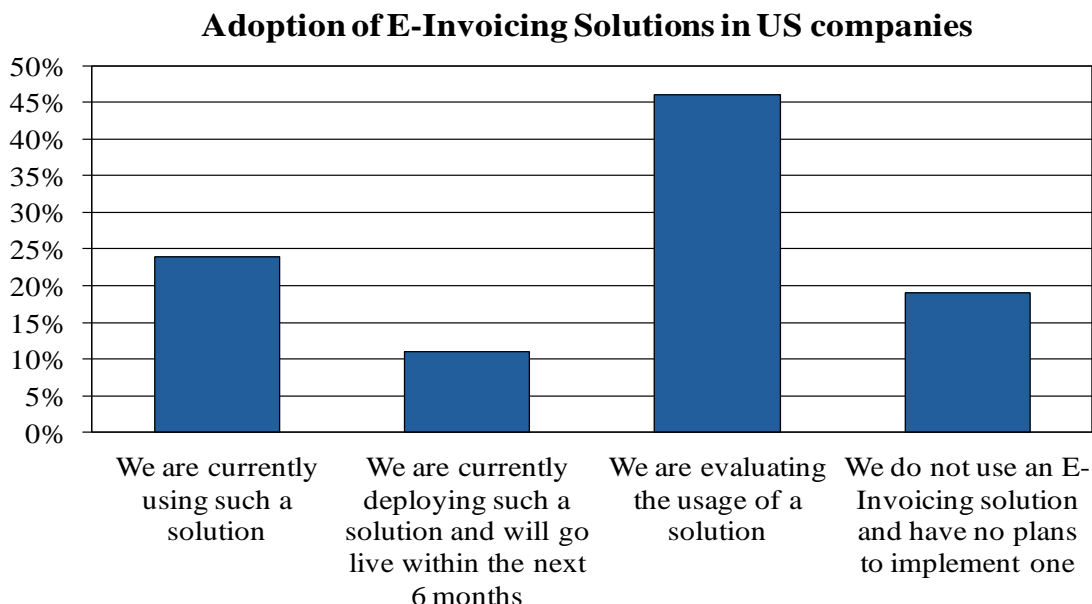
In small and medium sized enterprises, 22 respectively 43% of companies [3] are using an E-Invoicing solution. This is one explanation as to why on-boarding of smaller counterparts is not yet fully advanced and practiced models rarely support a mass adoption in the market. In addition, the public sector is much less active in this segment than on other continents. Hopefully the ongoing project of the US treasury, the Internet Payment Platform (IPP), will inspire cities

and other parts of the public sector. In the 2013 fiscal year, the US Treasury requires that its commercial vendors submit their invoices electronically via the IPP.

E-Invoicing networks & Service Providers
In relation to the huge size of this market, it may come as a surprise that there are very few E-Invoicing network operators in place. Because the US does not have VAT, but a sales tax system, invoices are not considered any different from other business documents. It has therefore taken some time for the value of E-Invoicing network operators to become recognized on the US market, but now the number of such operators is expected to increase sharply in the coming years. Another fact might also prove to be an accelerator for third party service providers: A high number of enterprises are interested in E-Invoicing solutions, but are faced with a limited budget/funding. External services on demand instead of in-house solutions help to overcome this barrier as well.

5.4.7 Latin America

Chile may be identified as the root of the Latin American market model and its development. Other markets like Argentina, Brazil, Costa Rica, Guatemala and Mexico belong to the early adopters and some of them overtook Chile due to strict obligations for the usage of E-Invoicing in that country [13]. Chile meanwhile also plans to make E-Invoicing obligatory. Meanwhile, almost all other countries in Latin America are rapidly evolving.

Brazil achieved globally the highest market penetration (>90%) for electronic invoices in the B2B/B2G segment. This result was possible due to the strict implementation of its' E-Invoicing obligation several years ago. It is a pleasure now seeing Brazil as one of the innovator for users in the retail segment. Recently the project "Nota Fiscal Eletrônica para Consumidor Final - NFC-e" was launched. The aim of the NFC-e Project is to be an alternative to current fiscal printers used in the retail segment by a fully electronic solution, based on an XML file, with a digital signature, that is authorized online before the sale. NFC-e follows the same technical and operational model of the NF-e (B2B/B2B) used for all industry and wholesale companies in Brazil. The expectation of the promotors is that the widespread of NFC-e in many states of Brazil will occur in the second half of 2013.

Colombia is also accelerating the E-Invoicing landscape. Nevertheless, it seems to depart at least partly from the traditional Latin American approach. Constraints are much more flexible and market focussed. The legislation permits "technology neutrality" and format flexibility (XML, PDF, TXT, etc.). However, digital signatures are required for the E-Invoices as well as a monthly reporting to the tax authorities.

Costa Rica has stipulated the use of electronic invoicing for certain market segments.

Guatemala is due to be the next country to follow this path: By the end of 2012, companies that issue at least one million invoices per year are obliged to transmit them electronically. This was gradually extended to companies issuing between 1,501 and 3,000 invoices per year by the end of March 2013.

In January 2013, **Peru** started a pilot project with the aim to declare E-Invoicing as mandatory for suppliers to the public administration. The approach in Peru considers international standards. It shall permit an easier integration with trading partners in the European Union and the APEC (Asia-Pacific Economic Cooperation) countries.

The **Uruguayan** national tax department DGI launched a platform for electronic invoicing in 2011, with companies representing 8% of the country's total invoice volume forming part of a pilot project. From 2013 onwards, E-Invoicing is mandatory for larger enterprises. This plan also leads to the first massive application of digital signatures in the country. Uruguayan stakeholders from the public and private sectors expect 70% E-Invoicing market penetration in the country by 2015. This would catapult the country into the group of global leaders in E-Invoicing.

In contrast to the rest of the world, most Latin American countries do not focus too long on evolution phases 1 and 2. Instead, they go straight to phase 3 (e.g. Chile) and phase 4 (Brazil and Mexico). The initiator for the market activities is in most cases the government. The driver for establishing country-wide E-Invoicing is often the reduction of tax evasion through real-time or near real-time invoice validation by tax authorities. This can be achieved by mandating an electronic invoice loop between supplier, the tax authorities and the supplier.

Although the legal requirements are among the strictest worldwide, some countries in Latin America have taken over the global leadership role. Not only do some of them already have good market penetration rates (Brazil with 90%), but their model is also inspiring larger countries in Asia and likely soon in Southern and Eastern Europe.

Typical characteristics of E-Invoicing in Latin American countries are
- Unique/sequential invoice numbers provided by the tax authorities
- Use of digital signatures based on suppliers' certificates, issued by approved or state-run Certification Authorities.
- Imposed XML standards for tax authority clearance
- Steady reporting to the tax authorities: either in real-time prior to issuance or at least monthly.
- Increasing integration with the physical supply chain e.g. simultaneous print-out of ancillary transport documents based on a pre-approved invoice
- After review/approval of suppliers' invoices, tax authorities put a visible "stamp" to the E-Invoices. It is either a country specific alphanumeric code (Mexico) or a barcode (following the standard CODE-128C in Brazil and PDF417 in Chile).
- Recipients often have to validate that the invoice was pre-approved by the tax administration
- Tax authorities validate either the invoice data real time or data-mine to check invoices later.
- General archiving period is 5 years.

Service providers play a key role. In some countries, service providers are accredited to perform clearance services on behalf of the tax administration; such service providers may also offer value-added services around these regulated functions. While many service providers are local, a good number of them are active in several Latin American countries and already process a very remarkable invoice volume. They belong to the largest operators worldwide and some of them are now entering into the American and European market.

Some low-hanging fruits have been picked and the government has achieved a significant reduction in tax evasion. Invoice issuers and recipients also have some benefits, as most invoices are no longer paper-based and operator fees generally remain affordable due to competition. However, they made this first step under a great deal of time pressure and many of them did not have the chance to first start a company internal process optimisation process. There is also still much to do to generate the maximum benefits for the enterprises and the economy. In many cases, it could also be advisable to look to Europe and the US to reduce the complexity of the model.

5.5 The European Market

5.5.1 The Business-to-Business & Business-to-Government market

5.5.1.1 Market penetration

VAT compliant B2B E-Invoicing has been legally permitted in Nordic countries since around the millennium and in Switzerland since 2001. EU member states have had to accept it since 2004. Potential EU users required some time to interpret the new laws and started their projects fairly quickly. As these were mainly large organisations, the projects took some time. Therefore, Europe was in first gear in 2004/2005 and progressed to second gear in 2006/2008 and gains momentum now in third and fourth gear.

Figure 42: European market penetration in the B2B/B2G/G2B segment

B2B/B2G/G2B	2008	2009	2010	2011	2012 (E)	2013 (E)
Electronic share	6%	8%	10%	13%	16%	20%

Status and market development differ from country to country.

Figure 43: B2B/B2G/G2B: Estimated market penetration 2013 per country
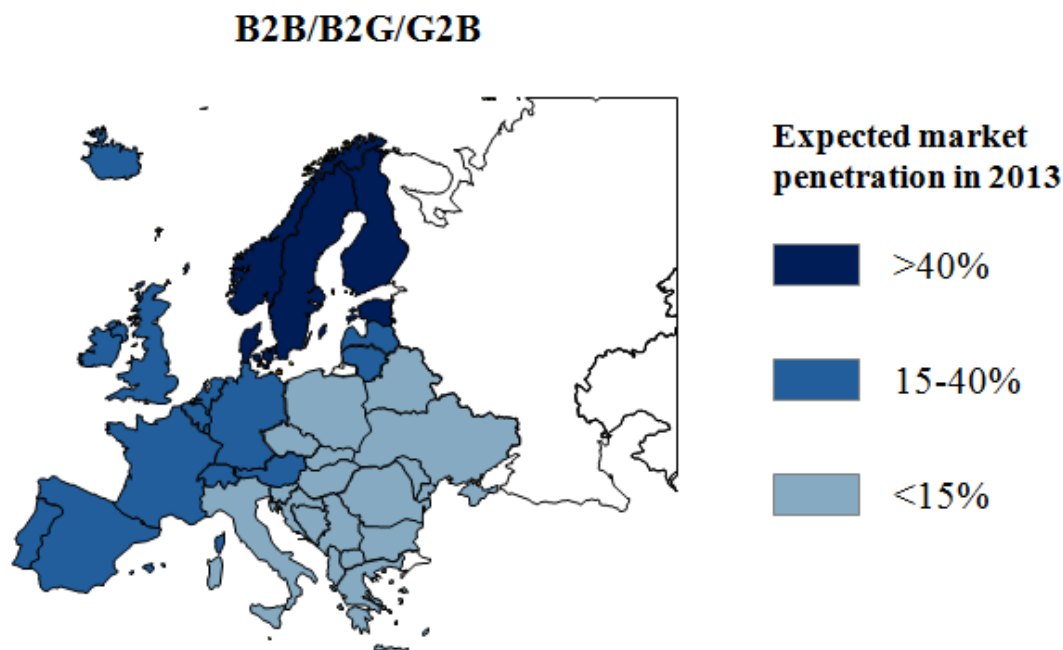
5.5.1.2 Transition from large innovators to mass market

For almost a decade, solution providers, large billers and invoice recipients have shaped the market. Meanwhile, the vast majority of larger companies practice E-Billing/E-Invoicing. The market development follows the decreasing size of the invoice streams:
1. Due to high volume and low legal barriers in the B2C sector, organisations with high outbound volume were first, offering electronic bills to consumers via their customer portals. This development started in most European countries before the millennium. Around 2001, this "Electronic Bill Presentment" channel was enhanced with email delivery of PDFs, causing a huge jump in the number of users.

   In the B2B market, the E-Invoicing market was initiated by large purchasing organisations,

pushing their large suppliers to deliver electronic invoices.

2. Due to the fragmented invoice situation, even large organisations did not achieve satisfactory electronic volumes just with their large trading partners. That is why we are now in the middle of the next evolutionary step: Addressing the SMEs. However, there is a limited but sharply increasing number of SMEs issuing and receiving electronic invoices. In most cases, SME projects have been initiated by large trading partners having pushed them to do so.

3. The next evolutionary step will be E-Invoicing on the mass market. The various initiatives by the national public sectors and the European Commission could result in the break-through in this sector.

5.5.1.3   Adoption and differences in various market segments

Figure 44: Portion of European E-Invoicing users

E-Invoicing users (issue and/or receive)
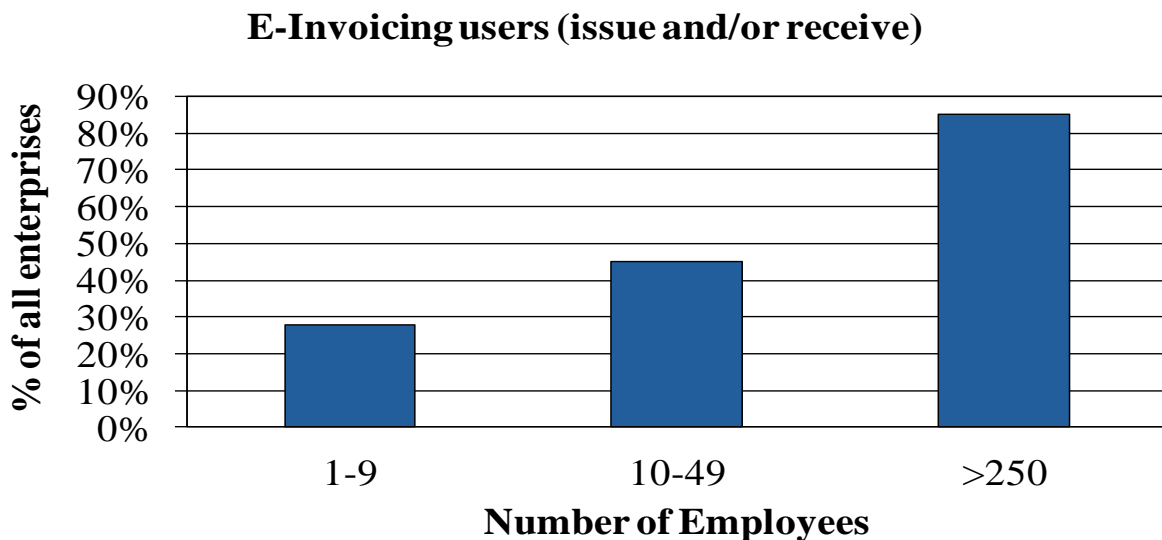
Source: Several country surveys & Billentis

Figure 45: Portion of E-Invoices received within European companies

Share of Invoices received electronically
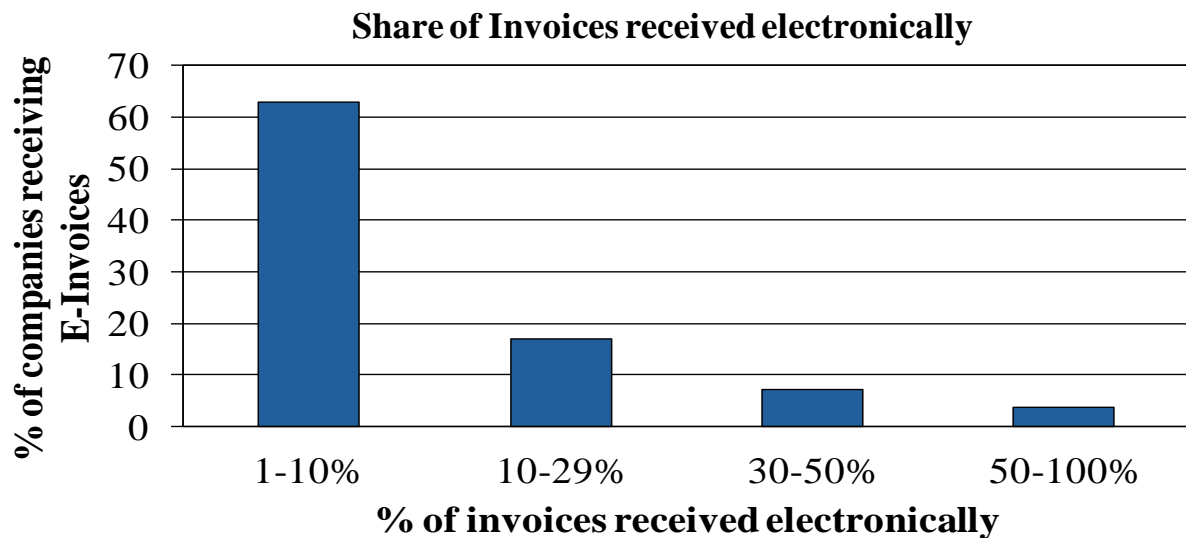
Source: Several country surveys & Billentis

5.5.1.4 Exchange formats

The usage of formats and channels differs a great deal depending on the country and the size of companies. It is extremely rare for companies to issue or receive invoices just in one electronic format.

Conclusions for the European market
- Multi-channel exchange strongly dominates the landscape
- There are already some suppliers offering invoices just in electronic format (e.g. online shops)
- Exchange via E-Mail is more popular than via EDI
- E-Mails are preferred by SMEs, but are also often accepted by larger companies

The long-term intention of most stakeholders is to exchange, process and archive most electronic invoices in a structured format. The high-volume industries (e.g. retail, automotive) were able to establish this in the first stage of market development. EDI, and in later years XML, dominated the E-Invoicing landscape. Trading parties were typically larger enterprises. The more the mid-sized and smaller companies entered into the E-Invoicing market, the more the PDF volume increased. The benefits of image-based PDFs are mainly limited to cheaper transport and archiving, but process automation does not really happen and cost savings stay limited.

In recent years, a combination of PDF+XML invoices gained ground. Either this happens with two separate files, or a XML data set is embedded in the PDF. This seems to be an appropriate way to fulfil the requirements of large, mid-sized and small enterprises. It could be a way to reduce the current dominance of just image-based PDFs.

Figure 46: Proportion of various invoice formats
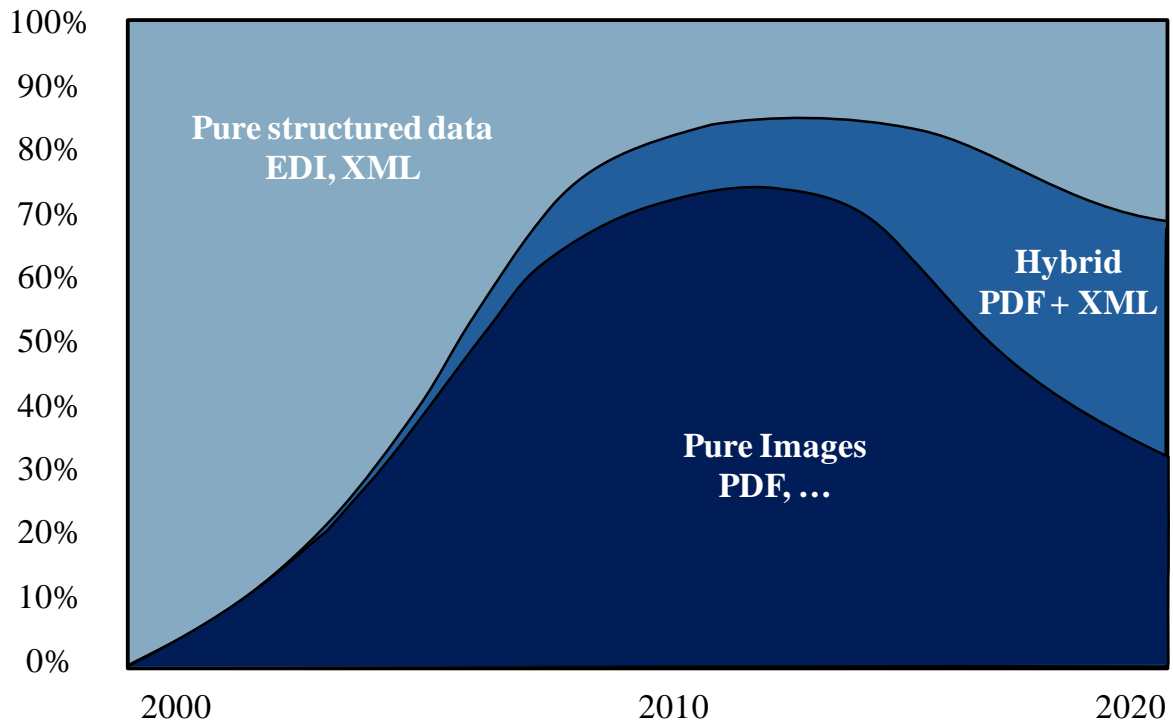
The public sector would definitely be in the position to change the picture completely for the benefit of structured E-Invoices. This is at least in progress in some countries. Governments mandating its suppliers to send invoices just in electronic format typically ask for XML and do not permit PDFs.

5.5.1.5   Distribution channels

The supplier direct model is currently dominating in many countries like Austria, Germany and the UK. Smaller pioneer countries intend to have a clear preference for E-Invoicing network operators: Belgium, Nordic countries, Slovenia and Switzerland.

Figure 47: Invoices received by European enterprises according to delivery channels

B2B/B2G/G2B: E-Invoices transferred directly or via service providers
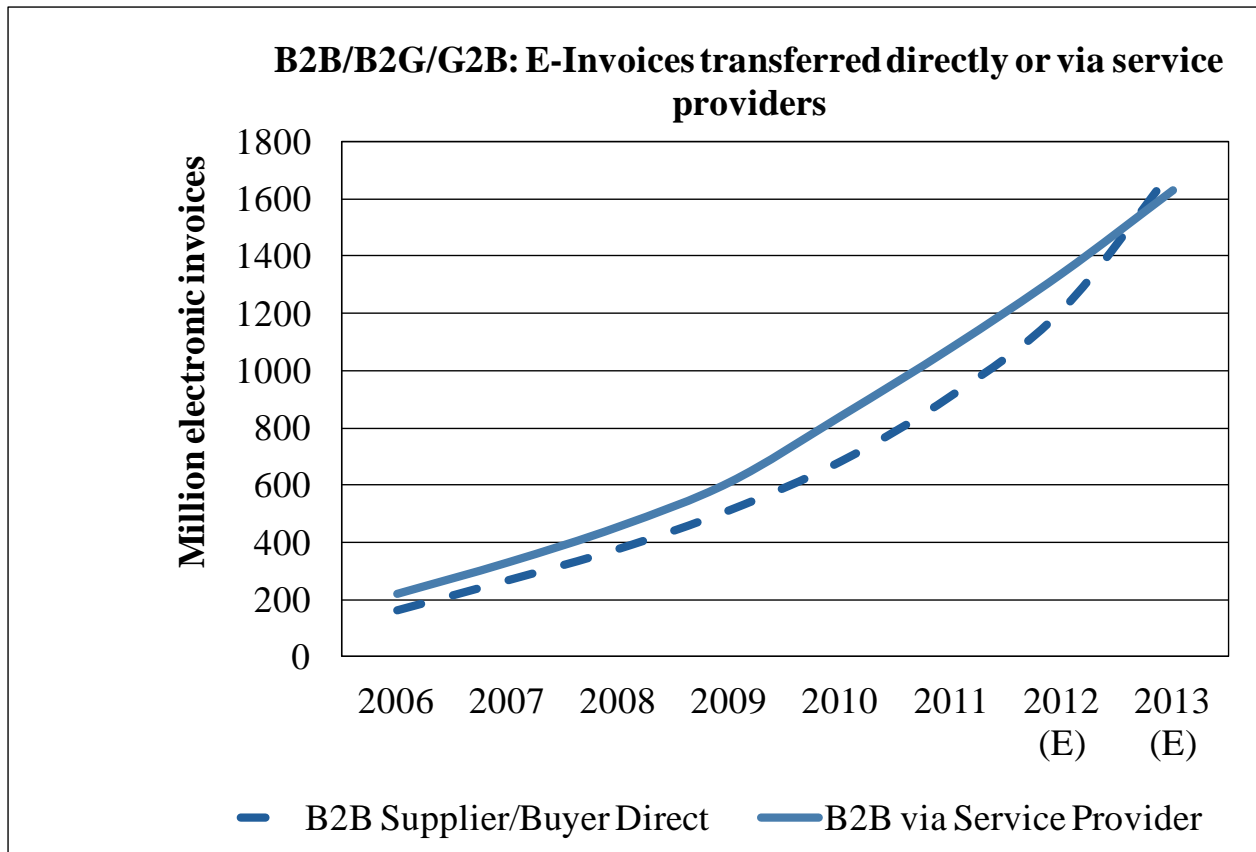
Source: Billentis

The exponential growth rates for service providers seem to become temporarily more linear. Some larger network operators are focussed on slower growing industries (retail, healthcare). Another reason is that some Nordic countries are already very advanced with a relatively high market penetration. Due to this basis effect, exponential growth is a challenge. Nevertheless, exponential growth rates are not out of reach. This could happen as soon as mid-sized or larger countries would start government initiatives for pushing electronic invoicing and procurement (high probability between 2014-2018 due to EU digital agenda).

The jump in the number of directly exchanged electronic invoices is due to these reasons:
- Statistical effect; due to the new legislation in EU countries, a portion of the unsigned PDF invoices now belongs to the "tax compliant" invoices and are therefore considered in these statistics.
- Due to legal enhancements in EU member states, companies increasingly decide to practice the "Equal Treatment method" (see Appendix A). This favours to some extent the direct exchange of unsigned PDF invoices, especially among mid-sized and smaller companies.
- The large German market is currently accelerating significantly. Traditionally, the portion of directly exchanged E-invoices in this country is high and has a directly visible impact on the statistic reflected in the chart above.

5.5.1.6   Market Maturity in the public sector

The saving potential in this sector is tremendous, and so is the positive economic impact. Nevertheless, the public sector in most European countries is still among the laggards. Almost a decade ago, the regulators made the first step and paved the way for E-invoicing (Level 1 in the follow-

ing chart). The evolution up to level 6 (Automate the full Supply Chain including e-Procurement) seems to need some more years yet.

They are currently going through the evolution cycle up to full users of E-Invoicing, and in rare cases to a fully automated supply chain.

Figure 48: Government evolution from pure regulator up to an active user
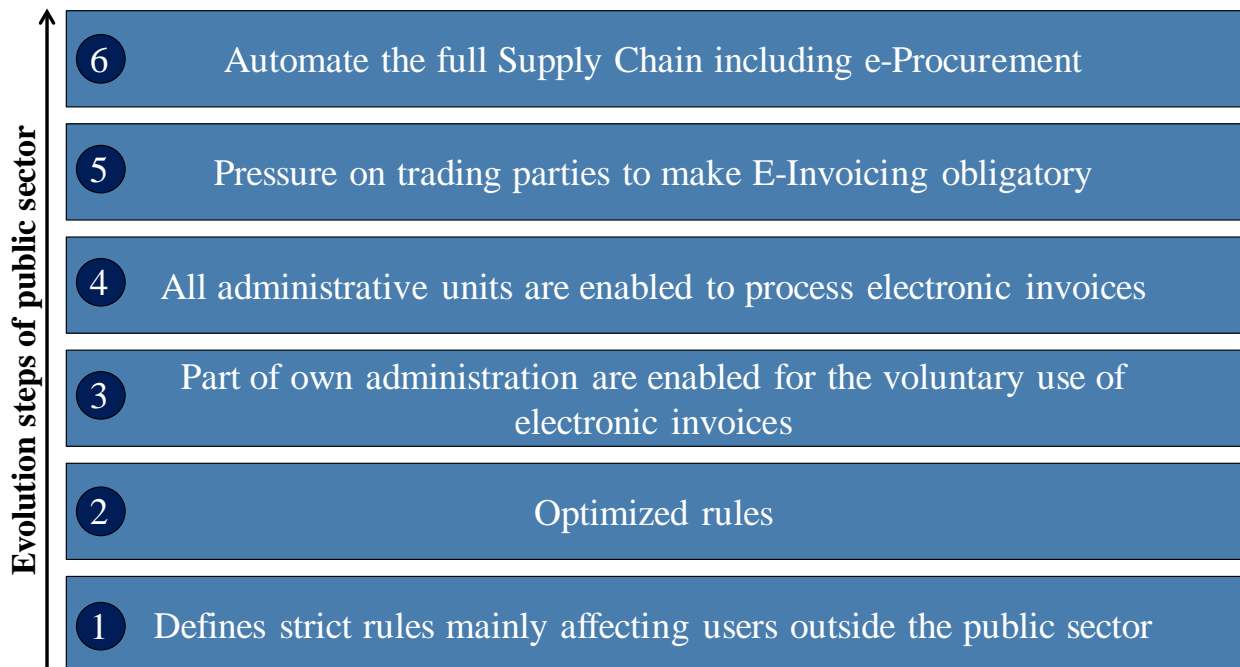
In Denmark, E-Invoicing has been mandatory since 2005 for the supplies to the public sector. Meanwhile, the country completed this process by enhancing the electronic process for procurement as well. The Danish government has already achieved the most advanced level 6.

Finland and Norway are other Nordic countries which are ahead, but have not yet achieved level 6.

Government activities on levels 5 and 6 have a significant impact on the development of the mass market, as 45 to 65 percent of all enterprises in a country are affected.

For the federal administration, Austria, Belgium, the European Commission, France, The Netherlands and Switzerland are already on level 4. Austria declared E-Invoicing to the federal administration to be mandatory from January 2014. The Swiss federal administration aims to enable all federal levels for E-Invoicing and for the inbound and outbound volume by no later than 2016.

2016 is also defined as a milestone by the European Commission. In that year, the majority of procurements by the government and the invoices to the administration shall be made electronically. Therefore, most European Union member states have now to move rapidly from level 3 to levels 5 and 6.

Key stakeholders in the public sector should recognize that such objectives can only be achieved if powerful projects will be started already in 2013.

5.5.1.7   Market Maturity in the SME sector

According to Eurostat, 99.8% of European Businesses are SMEs. They represent 2/3 of all employees in the private sector. Although larger organisations are the primary promoters of E-Invoicing, SMEs play a key role as the trading partners of larger businesses.

Meanwhile, in the most advanced countries, the SME segment is also mature for E-Invoicing. Despite a high number of appropriate and efficient E-Invoicing solutions and services, there is still much work to be done to prepare the field in this segment.

5.5.1.8   Current and estimated market growth

In 2013, the market is expected to grow by almost 30%. Sustainable annual growth rates of above 25% are also expected for the coming years.

Extrapolating the organic market growth and with the added effect of some known initiatives (e.g. public sector declaring E-Invoicing as mandatory in some countries), the author expects a market penetration of **above 50% in 2017** for the **B2B/B2G/G2B** segment.

5.5.2   The Business-to-Consumer market

5.5.2.1   Market penetration

In the intercontinental context, the European payment options are in most countries relatively convenient. Collective payments, Electronic Fund Transfers and Direct Debits are quite popular bill payment methods. Payment did not turn out to be a driver for E-Billing in Europe. There are also indications that European households receive (relatively) fewer bills than the consumers in most other continents do. Thus, E-Billing is not yet very advanced in most European countries and the market penetration lags behind the development in the B2B segment.

Figure 49: European market penetration in the B2C segment

B2C	2008	2009	2010	2011	2012 (E)	2013 (E)
Electronic share	4%	5%	7%	9%	11%	13%

Status and market development differ from country to country.

Figure 50: B2C: Estimated market penetration 2013 per country

B2C

Expected market penetration in 2013

>40%

15-40%

<15%
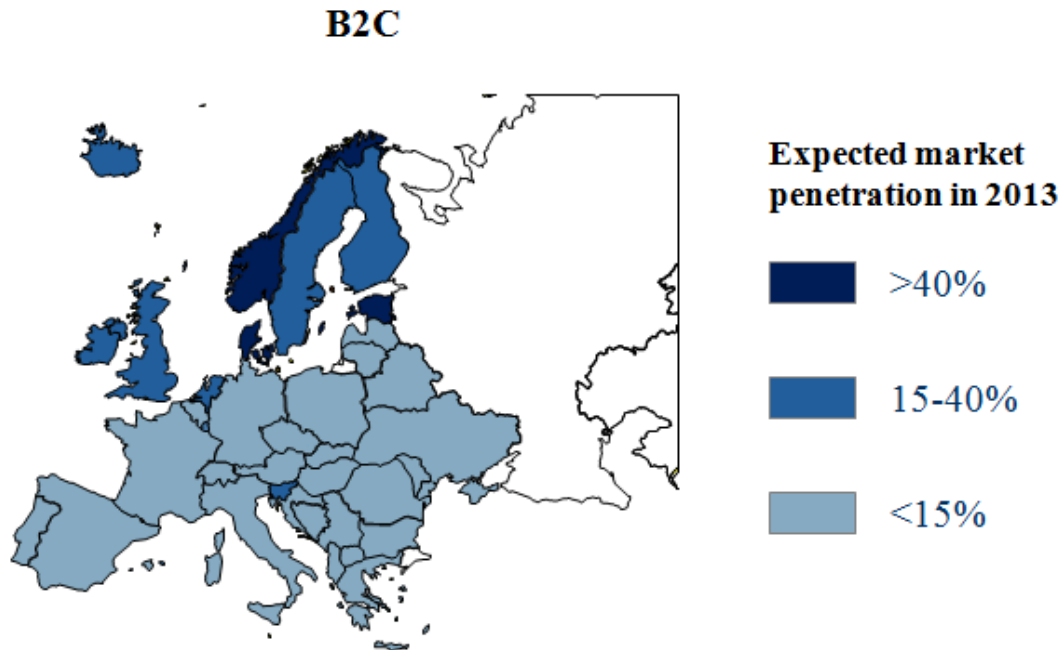
5.5.2.2 Transition from large innovators to mass market

Most large billers have meanwhile an acceptance of 25-90% for E-Bills with a majority of around 35-50% of their customer base. The few available surveys confirm that still mainly younger consumers use E-Billing. Obviously a paradigm shift, a new approach and some more years are needed to achieve the mass market.

5.5.2.3 Distribution channels

Most consumers prefer to receive electronic bills via email. Email is still gaining ground in many larger countries and could be the preferred delivery channel for 2/3 of European consumers in the mid-term. Bill presentment on the supplier portals and via internet banking does not yet play a major role in most European countries. An exception build the Nordic countries, where the exchanged e-bill volume via online banking portals is almost as high as the one distributed by other channels.

Figure 51: Electronic bill volume B2C, direct and via Service Provider
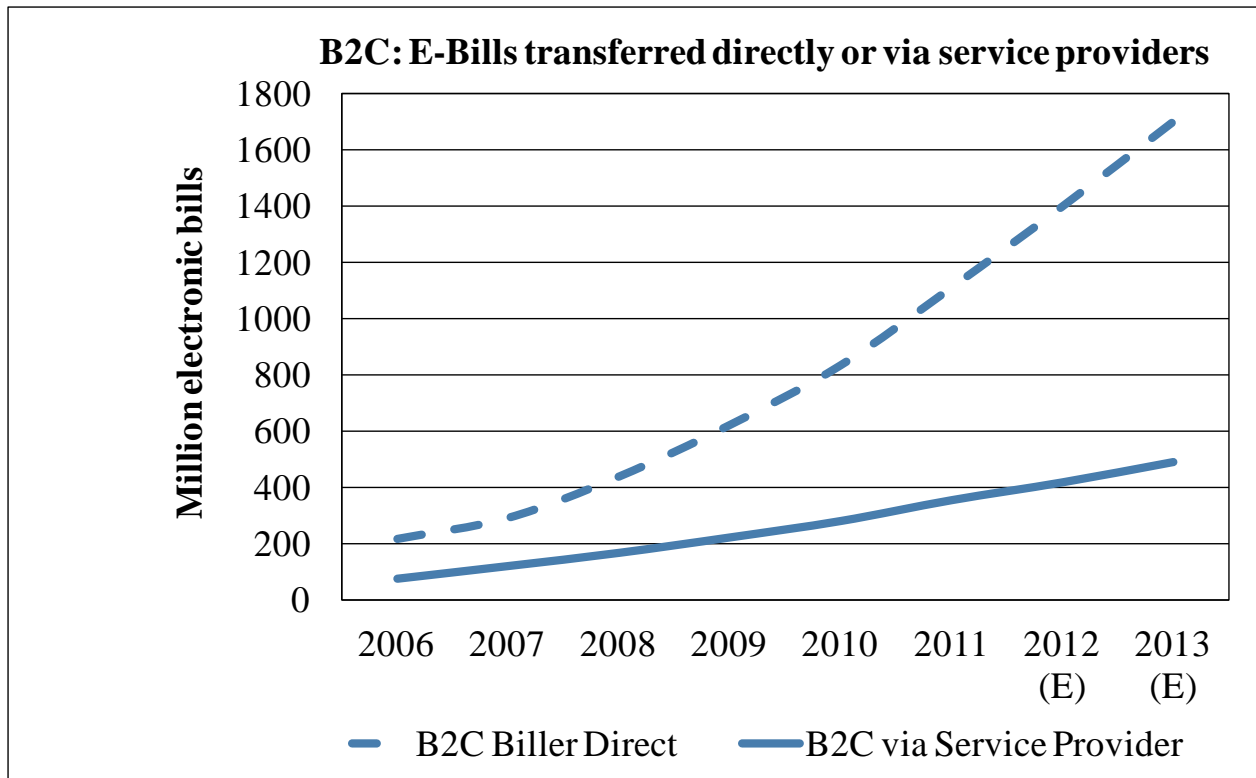
Source: Billentis

5.5.2.4   Current and estimated market growth

In 2013, the market is expected to grow by 20%. Sustainable annual growth rates of close to this rate are also likely for the coming years.

Extrapolating the organic market growth, the author expects a market penetration of **above 50%** for the **B2C** segment **in 2020**. There is a high probability to exceed this mark much earlier in case of a paradigm shift and a new go-to-market approach of solution providers (e.g. intelligent PDFs, components of social networks).

5.6   Market Trends

5.6.1   Increasing financial pressure as a main accelerator for E-Invoicing

Due to strong competition in most industries, cost pressure is increasing. Investments will be made in a very selective manner, following criteria such as
- Promising business case with good ROI
- Reduce fixed costs and replace them by variable (volume based) costs
- Increase transparency of invoices in company-internal workflow and reduce circulation time
- Increase customer retention
- Future technology
- Buy instead of Make; external solutions or services

These are the exact ingredients for E-Invoicing and automation of the supply chain.

For the private industry, in almost all market surveys cost reduction is the top criteria for pushing E-Invoicing. The public sector pushes it not mainly due to inefficiencies within their own organization, but to increase the tax revenues.

5.6.2 Improved market transparency, recognition and confidence

Meanwhile, the market is flooded with a huge amount of information. Depending on the keyword which is keyed-in to a web search, several tens of thousands, and up to millions of hits will result.
E-Invoicing is no longer something new and a majority of enterprises and consumers has already heard of it. Increasingly, national multi-stakeholder fora or other not-for-profit organizations build information portals with appropriate information. In the ideal case, these platforms no longer focus on quantity, but quality. This also includes specific guidance for the different customer segments.

5.6.3 Wide range of attractive solutions offered for any size of organisation

Whereas in the past it was difficult to find any suitable solutions for smaller companies, the challenge today is more in selecting the right one from a wide range. There is sufficient competition amongst providers to get an attractive price. Almost all solutions offer tax compliance and many also offer format flexibility (any format in / any format out).

For more advanced organisations already using E-Invoicing, the leading providers offer the next upgrades for electronic and automated E-Procurement and Financial Supply Chain processes.

5.6.4 Fees for paper invoices

In most countries, trading partners cannot be legally obligated to support electronic channels. Organisations in a strong position take other paths: They declare E-Invoicing as state of the art and punish counterparties insisting on paper invoices. Paper invoicing surcharges are becoming more and more popular in many countries.

> Prices/penalties[3] for paper invoices seen on the market are
> - Issuers charge EUR 1 – 3.50 to consumers and EUR 5 – 25 for businesses
> - Recipients subtract EUR 15 – 25 from a paper invoice amount and pay just the reduced rate

This behaviour mainly appeared in early 2008 and is now increasing sharply. It is expected to gain more ground, although consumer protection organisations, suppliers and corporate clients complain vociferously. The impact on market penetration seems to be significant. Surveys state that about 40% of small companies (already using E-Invoicing) accept electronic invoices from their suppliers due to penalties for insisting on paper invoices. A Finnish survey [14] also confirms this for the consumers. Many paper graspers stated their willingness to receive bills electronically if an extra fee has been introduced for paper bills.

5.6.5 More innovative rollout models

Traditionally, counterparts are invited and persuaded to send or receive electronic invoices instead of paper. This friendly (Opt-In) approach was common for a decade and is in line with the culture of most countries. The results are quite often below expectations.

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[3] Legislation in some countries (e.g. Austria, Ireland) do not permit penalties for Telco bills

Innovative (and more aggressive) issuers and service providers have changed their strategy in cases where they know the electronic addresses of their clients:

- In stable business networks where clients already use electronic channels, either by email or Extranet (Online Shops, ASP Portals, Payment Networks, Networks using electronic orders/order confirmations/payment advice etc.); the "Opt-Out" rollout is applied: Trading parties have to send/receive E-Invoices per default; only few can resist and Opt-Out
- Online Banking and Payment Service Providers; if customers type in payment data, they receive a pop-up message inviting them to receive the invoices electronically (customers can activate this enhanced service with a simple mouse-click)

5.6.6   Public sector becomes E-Invoicing user

Almost every quarter, we read in the press that another country declares E-Invoicing as compulsory. Often, these press releases are translated from the national language to English and they do not always mean the same thing. This has to do with different usage of the terms E-Invoicing and "obligation" and a big discrepancy between intentions and reality. Such projects in a public sector environment are quite complex. Objectives within a state's administration may already vary broadly. In addition, we have many federal states with great autonomy of local authorities.

The common denominator is usually that an announcement making E-Invoicing obligatory includes preparing all departments of a central state's government to upgrade their systems and processes with the aim of receiving and/or issuing E-Invoices. Municipalities are typically in an observer role and do not necessarily act, but they are encouraged to do so. The suppliers are still free to exchange invoices with the public sector in paper or electronic form. Examples in this category are France and Switzerland.

In a second step, suppliers (or at least larger ones) are mandated to send the invoices electronically. Denmark is a pioneer in this segment (obligation since 2005). Finland, Norway and Spain belong to the early adopters, as do the USA and Kazakhstan.

Some countries in Latin America, Asia and Europe mandate businesses to send electronic invoice data to the tax authorities mainly for reasons of validation.

5.6.7   Service provider offerings and shift of focus

Large buying organisations (and to some extent also large billers) for about one decade influenced the requirements for service providers. The services were appropriate for the first million of larger E-Invoicing users. Increasingly, mid-sized and smaller enterprises are affected by the E-Invoicing projects of their trading parties.

Mass market users demanding new features and business models

In many countries we have reached the mass market. Appropriate solutions for SMEs become increasingly important. The change to the new customer segment also has a major impact on the provider landscape and their solutions.

Key success factors for addressing small users with low invoice volume are:
- No fee or discount prices up to a certain electronic invoice volume
- Provide an invoicing portal at least as an entry point before a full integration into accounting software is done.
- Due to the limited IT expertise, SMEs demand very easy-to-use-solutions, tutorial videos, self-care functionality. It should be ensured that the solution/service can be used within min-

utes. Instruction video clips are a useful guidance for new subscribers for the setup up to the point where the first electronic invoice is successfully exchanged.

- Intelligent PDF invoices respectively PDF/A-3 invoices (images plus embedded XML data) are often more suitable for SMEs than just pure XML data; Appropriate solutions are able to generate such invoice formats on the invoice issuer side respectively to extract/import data on the invoice recipient side.

Often hundreds of thousands of SMEs are already participating in some way in a related electronic business network. This can be an electronic payment network or one of their accounting software. If these services are connected to an E-Invoicing network, all of its users can become E-Invoicing enabled quickly and easily. By going this way, several millions of enterprises were enabled for E-invoicing during the past two years.

Flexible and open solution architecture
Several working groups specified international appropriate standards regarding invoice content. They also defined frameworks for the collaboration among the trading parties and for the E-Invoicing network operators. Interoperability is seen by most stakeholders as a keystone to address the mass market.

The first generation E-Invoicing service platforms were developed almost two decades ago. Often they are inflexible and proprietary, making interconnections with other network operators difficult and expensive.

The youngest generation of platforms is developed with a green field approach. Its architecture supports international standards and provides open interfaces to plug-in third party products and Apps. Cloud support is key, as is support for mobile devices.

Differentiation and enlargement of the solution portfolio

Up to today, it was often sufficient to have a powerful sales force and to be one of the first providers contacting potential customers. Meanwhile, the number of competitors is high and the market is also more transparent. An interested organization will easily find 10 or more appropriate solution providers they can contact with their Request for Proposal. It therefore becomes key to differentiate at first glance one's own portfolio from those of competitors. An increasing number of solution providers differentiate themselves by offering added values (e.g. Trade Finance options), by vertical enhancements along the electronic Supply Chain Management (e-SCM) or by becoming the best for a certain customer segment (industry, size of user company).

5.7   Supporting initiatives

5.7.1 Standards

In many cases, standardisation initiatives have failed to convince stakeholders to use them. A lack of information about existing standards combined with the pride of some introverted organisations has resulted in the re-invention of dozens of niche standards (domestic or industry focus) even during the last years. They can probably only survive if they build a subset of one of the most popular global standards (Oasis UBL, UN/CEFACT) or if they are based at least on the same standard model.

An estimated 10,000 ERP and accounting solutions are used in Europe. Integrating various E-Invoicing standards is outside the scope of the ERP providers. That is why many E-Invoicing network operators offer any-to-any-data-formatting services. Besides legal challenges and the

networking idea, these formatting services are another main reasons that third party providers play a major role in E-Invoicing in most countries. As a result, issuers and recipients of invoices using such services are independent of any standards and they have no longer to wait for a market dominant standard.

Some global and industry independent standards for invoices and directly related pre- and post-processes are:

Figure 52: Global and industry independent standards for invoices

Standard	Description
ebXML	ebXML (Electronic Business using eXtensible Mark-up Language), is a modular suite of specifications that enables businesses of any size and in any geographical location to conduct business over the Internet. Using ebXML, companies have a standard method for exchanging business messages, conduct trading relationships, communicate data in common terms, define, and register business processes.
OASIS UBL 2.x	UBL, the Universal Business Language, is the product of an international effort to define a royalty-free library of standard electronic XML business documents such as purchase orders and invoices. Besides ebXML, this standard is the most important one for E-Invoicing in Europe. It is the base of several country specific standards and it is the intention to merge it into UN/CEFACT. UBL is the first standard implementation of the ebXML (see above) Core Components Technical Specification.
UBL Northern European Subset (NES)	The Northern European Subset (NES) defines the specific use of UBL electronic procurement documents domestically and between the member countries: Denmark, Sweden, Norway, Finland, Iceland, and the UK. NES documentation includes profiles describing business processes and scenarios, profiled UBL documents, and guidelines on the specific usage of UBL entities, as well as schema and schematron validation tools.
UN/CEFACT	UN/CEFACT, a United Nations body, has a global remit. It encourages close collaboration between governments and private business to secure inter-operability for the exchange of information between the public and private sector. It has developed: • The UN Layout Key for Trade Documents, which is the foundation for the EU's Single Administrative Document (SAD) • UN/EDIFACT, the international standard for electronic data interchange • numerous trade facilitation recommendations • The UN/CEFACT CII (Cross Industry Invoice) provides not only standard XML schemas, but also globally consistent invoicing processes and data that are common across a wide range of industries.
PDF/A-3 ISO 19005-3	PDF/A is an ISO-standardized version of the Portable Document Format (PDF) specialized for the digital preservation of electronic documents. PDF/A differs from PDF by omitting features ill-suited to long-term archiving. This is a key requirement for business documents which have legally be archived in long-term.

	PDF/A-3 adds a single and highly significant feature to its predecessor PDF/A-2 (ISO 19005-2) specification, to permit the embedding within a PDF/A file a file, or files, in any other format and of any type, e.g. XML files. As of November 2012, PDF/A-3 is a brand new standard. It is too early to assess adoption of PDF/A-3 per se, although several vendors of tools supporting creation of or conversion to PDF/A have announced that they already offer support for embedded files.
	The intensive collaboration between the Forum for Electronic Invoicing in Germany (Forum elektronische Rechnung Deutschland or FeRD) and the PDF Association has begun to bear fruit. Based on PDF/A-3 and designed to simplify E-Invoicing, the Central User Guidelines of the Forum for Electronic Billing in Germany (ZUGFeRD) – and the data format defined within them – was one of the highlights at the CEBIT fare 2013. A number of providers presented prototypes of ZUGFeRD-compliant solutions. The Germans embed a subset of UN/CEFACT CII (Cross Industry Invoice) as XML into the PDF/A-3 files.

Industry specific standards are
- ETIS: Telecom invoices
- GS1: EANCOM standard mainly for Retail sector
- ISO 20022: Financial industry
- LITIG/LEDES: Law firms
- PIDX: Oil and Gas Industry
- Rosetta Net: vehicle manufacturers

Some country specific standards are
- Austria: ebInterface
- Belgium: BMF
- Czech Republic: ISDOC (based on UBL)
- Denmark: OIOXML (based on UBL)
- Finland: Finvoice
- Spain: facturae
- Sweden: Svefaktura, SFTI
- Switzerland: swissDIGIN
- Turkey: UBL-TR (based on UBL)

5.7.2 Electronic invoicing on the EU agenda

5.7.2.1 Digital agenda

The Digital Agenda is Europe's strategy for a flourishing digital economy by 2020. It outlines policies and actions to maximise the benefit of the Digital Revolution for all [15].

The European Commission is focusing its efforts on removing barriers to the broad-scale adoption of electronic invoicing in Europe and the four key priorities on this topic are:
- Ensuring a consistent legal environment for E-Invoicing
- Achieving mass market adoption by getting SMEs onboard
- Stimulating an environment that creates maximum reach between trading partners exchanging invoices

- Promoting a common E-Invoicing standard

For each of these priorities, the Commission Communication sets out a number of specific actions, for example:
- The Commission proposed a revision of the e-signature Directive to provide cross-border recognition of secure e-authentication systems.
- The European Committee for Standardization (CEN) [16], a major provider of European Standards and technical specifications, defined useful E-Invoicing Guidelines.
- In 2011, the Commission set up the "European Multi Stakeholder Forum on Electronic Invoicing" [15]. The aim is to bring together key actors from the private and public sector of all Member States. It provides a unique platform to exchange experiences and best practices that can pave the way to the broad-scale adoption of E-Invoicing at both national and EU level.

To facilitate the monitoring and implementation of these actions, the Commission pushed Member States to act as well. National fora have been formally set up in AT, BE, CZ, DE, DK, EE, ES, FR, HU, IE, IT, LU, LV, NL, PL, PT, SE, SF, SK, UK and some countries outside the European Union.

5.7.2.2 Combat late payments

Many payments in commercial transactions between businesses or between businesses and public authorities are made much later than agreed. This is very costly for businesses. Directive 2000/35/EC was adopted to combat late payment. It was replaced by the new Directive 2011/7/EU [17]. The new EU directive had to be transposed into national law by 16 March 2013 at the latest. One of the Commission's priority actions: Ensure that, as a matter of principle, invoices - including to SMEs - for supplies and services are paid within one month to ease liquidity constraints. Invoices trigger requests for payment and are important documents in the chain of transactions for the supply of goods and services, inter alia, for determining payment deadlines. Public authorities will have to pay for the goods and services that they procure within 30 days or, in very exceptional circumstances, within 60 days. Enterprises will have to pay their invoices within 60 days, unless they expressly agree otherwise and if it is not grossly unfair. Enterprises will automatically be entitled to claim interest (at least 8 percentage points above the European Central Bank's reference) for late payment and will also be able to obtain a minimum fixed amount of 40 Euro as compensation for recovery costs. They can claim compensation for all remaining reasonable recovery costs.

> In many cases, late payments are the result of an inefficient invoice approval process. E-Invoicing can help significantly to accelerate this process.

6. E-Invoicing / E-Billing as catalyst for AR/AP automation

6.1 Finance departments facing new challenges

The past few years have not been easy for enterprises and their finance departments. Erratic markets, the globalization of the trading network, new regulation and compliance issues, increasing complexity of business processes and the steady change/transformation have forced the function of finance to redefine its role in the organization.

Today's finance departments face a complex and challenging business environment that requires tremendous business savvy. In this environment, innovation is an essential driver of excellence, and the finance department is no exception. But what form does innovation take in the department of the CFO?

Figure 53: Challenges and possible actions to improve the AR & AP department

Joint AR/AP challenges	Description and possible actions to solve them
Regulation and compliance requirements	Access and generation or modification rights for master data are often not sufficiently arranged among the internal stakeholders. Increasingly, a unique identification of trading partners based on compliant master data is a legal requirement. A multi-channel and multi-format approach for invoice processing is more and more common, but can also result in redundancies of invoice data, and often originals and copies cannot be distinguished. Consequently, tax compliance is difficult to achieve despite the fact that it is of increasing importance. Eliminate the paper based process and substitute it with a very high portion of E-Invoices and, where necessary, imaging of the remaining paper based part.
Improve quality and up-to-dateness of master data from trading partners	Trading parties are often registered redundantly in the master database, only distinguished by a minor difference in the writing of a few letters. Paper invoices & scanning/OCR increase the redundancies of master data and the situation does not improve. The objective requirement, and often a compliance requirement, is to register each trading partner uniquely in the database. Increasing the pure electronic collaboration with trading partners builds a cornerstone to achieving it. Pushing an electronic loop for orders and invoices paves the way for Customer Self-Care processes; they may update their own master data electronically. Suppliers can be enabled with a combination of an alerting and self-service capability to update information as required or when a particular incident or set of workflows triggers a new request for information or additional validation.
Improve operational efficiencies and corporate finance	See suggestions in chapter 7
Environmental improve-	Eliminate the paper processes by migrating to a fully electronic

Joint AR/AP challenges	Description and possible actions to solve them
ment	supply chain.
Invoice data validation	Accounts Payable: The later in the process that invoice data are validated, the more the costs increase for handling exceptions. Accounts Receivable: Late payments by the customers are often caused by detecting errors too late in the case of incorrect invoices. The sooner the invoice data are validated, the earlier corrective invoices can be sent. E-Invoicing paves the way for real-time or near real-time data validation.
Increase the portion of purchase order based invoices; exploit the full potential	Practice the Opt-Out model for purchase orders and invoices: POs can be provided just in electronic format, either via portal or as structured data file. The supplier shall be supported on the platform to flip the PO data into an invoice. The electronic loop for orders and invoices can be closed, resulting in benefits for supplier and buyer.
Reduce trading partner administration costs; increase electronic interaction	Trading partners are often faced by late payments and working capital issues. Especially if the trading partners are smaller companies, it may be very challenging for them to get access to suitable Supply Chain Finance Features (Trade Finance, Dynamic Discounting, quick payments etc.). This may be one of the main reasons for a high churn rate of customers and steady changes of suppliers, increasing your costs as a result. E-Invoicing solutions build an excellent basis to embed SCF features and to reduce the churn rate of trading partners.

Figure 54: AR specific challenges and possible actions for improvement

AR specific challenges	Description and possible actions to solve them
Increase visibility; missing basis to exploit the full optimization potential	Many enterprises still process invoices in a decentralized way. A large proportion of it is paper based. The finance department often does not have an overview about all issued invoices and status information like "invoice accepted, dispute, paid, etc." Therefore it cannot exploit the optimisation potential. To increase transparency, the centralisation and automation of AR processes can significantly improve the chances of optimized cash management and forecasting. E-Invoicing solutions often support automated payment reconciliation, paving the way for a closed electronic loop between invoice and payment.
Reduce the high number of costly invoice queries	Large billers are often faced with this situation: 50% of the calls in the customer service centre are from customers asking for an invoice copy or more invoice details. Such reprint and information requests can be almost eliminated. Electronic bills/invoices provide the customers the suitable vehicle for customer self care. Days of Sales Outstanding can in most cases be shortened by some days in average.

AR specific challenges	Description and possible actions to solve them
Reduce the high number of discrepancies and exceptions	Typically, 20-30% of all invoices have to be treated somehow as exceptions, resulting in very high processing costs. The reasons are many-sided. Often, formal incorrectness like wrong addresses, missing information (reference, PO nb etc.) or tax relevant data are the cause for having to handle exceptions. If suppliers only exchange the invoices with their customers electronically, the invoice data are validated sooner by the customer. The earlier an incorrect invoice is rejected, the sooner a new one can be sent. E-Invoicing paves the way for real-time or near real-time data validation. However, E-Invoicing solutions cannot prevent disputes based on incorrect line items, amounts etc. but often provide features for quicker dispute resolutions. Structured or at least semi-structured dispute management/resolution can be a functionality within E-invoicing solutions. It typically supports a quick collaboration between the trading parties and often provides real-time updates and status information.

Figure 55: AP specific challenges and possible actions for improvement

AP specific challenges	Description and possible actions to solve them
Increase visibility; missing basis to exploit the full optimization potential	Many enterprises still receive and process invoices in a decentralized way. A large proportion of it is paper based. The finance department often does not have an overview about all invoices in circulation and therefore cannot exploit the optimisation potential. For gaining better transparency about invoices in the workflow, its approval and payment status, the centralisation and automation of AP processes can significantly improve transparency, cash management and forecasting. With E-Invoicing, the transparency of inbound invoices can happen in real-time. Cash management can be improved and paves the way to exploit the full optimisation potential for corporate finances.
High number of small suppliers sending a low number of invoices.	E-Invoicing offers efficient tools and features for small suppliers. These solutions also build a vehicle for a partial or full standardisation of invoice processing. Scanning/OCR does not generate this advantage.
Reduce the high number of discrepancies and exceptions	Handling exceptions forms a major cost block for invoice processing. With paper based processing, a significant portion of invoices have to be treated as exceptions, resulting in high costs. The percentage of exceptions cannot be reduced much with scanning, but substantially with E-Invoicing! Data validation and rejecting invoices at an earlier stage reduces the follow-up costs. Disputes are often caused by discrepancies between PO, deliverables and the invoice. A high portion of PO based invoices reduces the number of disputes.
Exploit the optimisation potential by capturing	Typically, in a non-automated environment, it takes 23-27 days to approve an invoice for payment. Discounts cannot be cap-

AP specific challenges	Description and possible actions to solve them
discounts	tured. AP automation and E-invoicing significantly accelerate the processing time and often build the pre-requisites to exploit the potential with offered discounts.
Inefficient matching process	Automation of the PO match; AP automation as well as E-Invoicing paves the way to improve the matching.

6.2 Capability of AR/AP automation and E-Invoicing to exploit the full potential

Larger enterprises often intend to automate partially their paper based AR/AP processes with the aim to improve the internal operations. The electronic collaboration and E-Invoicing with trading partners is not sufficiently considered in the optimisation projects although they significantly support the automation of the AR/AP optimisation.

Figure 56: Capability to cope with joint AR/AP challenges

Joint AR/AP challenges	Capability to overcome the challenges with	
	paper based AR/AP automation	E-Invoicing
Regulation and compliance requirements	◕	◔
Improve quality and up-to-dateness of trading partners' master data	◷	●
Improve operational efficiencies and corporate finance	◐	●
Environmental improvement	◷	●
Invoice data validation	◔	●
Increase the portion of purchase order based invoices; exploit the full potential	◐	◔
Reduce trading partner administration costs Increase electronic interaction	◷	◕

Legend: High capability ● and low capability ◷ to overcome the challenges

Figure 57: Capability to cope with specific AR challenges

AR specific challenges	Capability to overcome the challenges with	
	paper based AR automation	E-Invoicing
Increase visibility; missing basis to exploit the full optimization potential	◐	●
Reduce the high number of costly invoice queries	◕	●

AR specific challenges	Capability to overcome the challenges with	
	paper based AR automation	E-Invoicing
Reduce the high number of discrepancies and exceptions	◔	●

Figure 58: Capability to cope with specific AP challenges

AP specific challenges	Capability to overcome the challenges with	
	paper based AP automation	E-Invoicing
Increase visibility; missing basis to exploit the full optimization potential	◑	●
High number of small suppliers sending a low number of invoices.	◔	●
Reduce the high number of discrepancies and exceptions	◔	●
Exploit the optimisation potential by capturing discounts	◕	●
Inefficient matching process	◕	●

The focus of many US companies in phase 1 is AR & AP automation and organisational excellence. European and Latin American companies often enter into the automisation process with an E-Invoicing project with their primary focus on collaboration with trading partners. Very soon, E-Invoicing projects result in follow-up projects for AR & AP automation (including scanning/OCR).
As long as organisations internally process paper and electronic invoices in parallel, the full potential cannot be exploited. A single and unified internal process regardless of the original invoice format (paper or electronic) results in maximum benefits. The combination of AR/AP automation and E-Invoicing is the right answer for this.

In most parts of the world, E-Invoicing / E-Billing might become the catalyst for a full AR & AP automation!

7. E-Invoicing opportunities in a challenging market environment

7.1 Overview

There are of course several reasons to start an E-Invoicing project, but one is the strongest driver: Even during a period of robust economic growth, organizations state that the major drivers for process automation were the improvement of financials. This is especially valid during today's challenging economy.

The author sees a set of parameters where E-Invoicing has a major impact on the optimization of corporate finance.

Figure 59: Optimise corporate finances with E-Invoicing
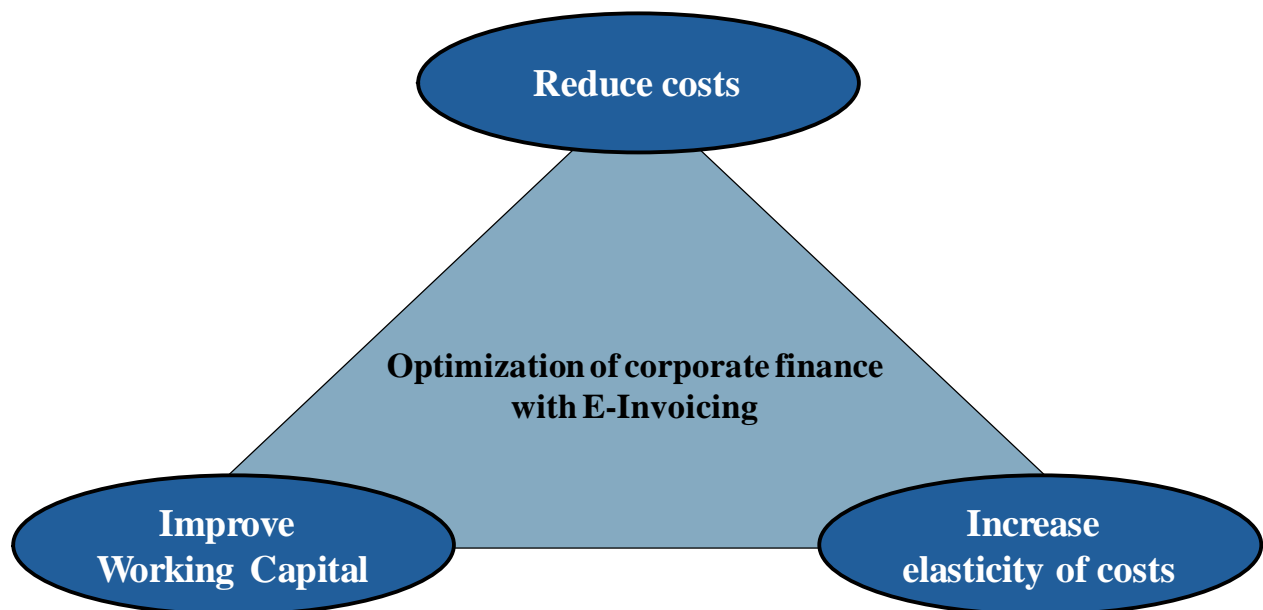
7.2 Reduce costs

Chapter 3 describes in detail how the Business Case might look like – and that is already very promising. The author intended to apply today's reality to those calculations: Organizations replace a portion of its paper invoices with electronic ones and only partially optimize their processes.

The next chart describes the classical evolution in most organizations. Today, just low hanging fruits are picked. Very few enterprises also challenge their processes in general and streamline, re-design and optimize them. It is likely that it will take some more years until the market is mature for this next step. Thus, this chapter focuses on the migration path options.

Figure 60: Migration path to exploit the full optimization potential
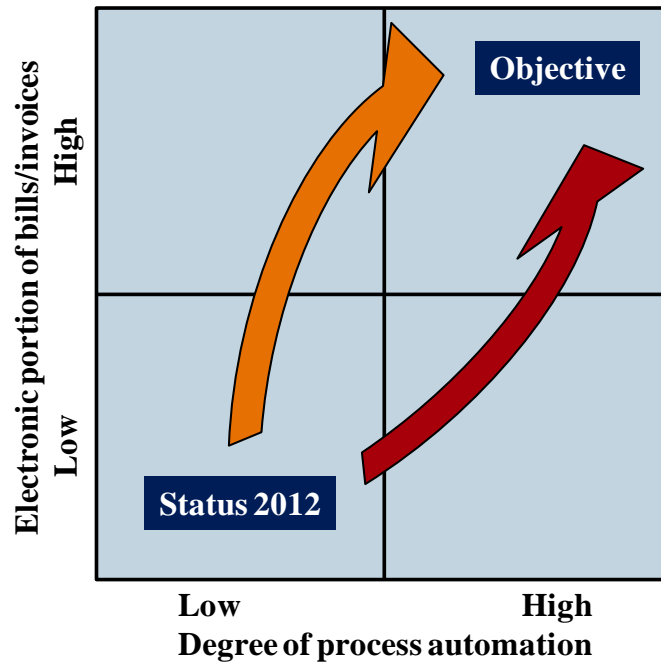
7.2.1 Increase electronic proportion

By monitoring the international markets for 16 years, the author analysed the differing developments in organizations. The success rates and electronic proportions differ greatly.

Figure 61: Success rate dependant on practiced on-boarding methods

Phase	Description
Classic approach	Mainly large companies are innovators for E-Invoicing. They push their larger trading partners to send and receive the invoices electronically. The Opt-In on-boarding method is practiced (convince one by one to enter into the electronic community). For the vast majority of organisations, the achievable share of E-Invoices with large trading partners is just 25-30% after several years.

Phase	Description
	In a next step, the large innovators also try to push their mid-sized and small trading partners to support electronic invoices. Even by increasing the marketing activities, a large organization does not have the power to make the market alone. They are dependent on the maturity of the mass market. The annual growth rates are limited. This market evolution was common in the past and is still in progress today in most countries. It did not cause a broad break-through in the markets up to today.
Pressing	For most large companies, it is possible to achieve an electronic invoice share of at least 60% after 3 years. This will not happen automatically with a smart and friendly approach towards trading partners. Instead, powerplay and marketing is necessary for increasing the share of E-Invoices. In addition, the general contract terms should be enhanced to provide the contractual instrument to force trading partners towards E-Invoicing. Although the rollout is strongly based on powerplay, this is still a fair method if the promoter or its service provider offers appropriate solutions for any kind and size of trading partner and for fair conditions. Registration and usage barriers shall be as low as possible. This can happen, for example, by taking the first step using only the internet. An account shall be pre-defined for each trading party and can be activated with just a click of the mouse, followed by completing the user's master data. An increasing number of large companies are practicing this method.
Powerplay	For most large companies, it is also possible to achieve an electronic invoice share of at least 80% after 3 years. The "Pressing" method is enriched with penalties for counterparts which insist on paper invoices. Electronic invoice exchange is declared as the default channel, but penalties are applied for paper invoices: • Suppliers charge typically EUR 1 – 3.50 to consumers and EUR 5 – 25 to companies per paper invoice • Buyers reduce the paid invoice amount typically by EUR 15 – 25 per paper invoice if the suppliers are not willing or not able to send the invoices electronically
Closed electronic loop for orders and invoices	In many large companies, at least 40% of the invoices are based on Purchase Orders (15% in the US, Paystream Advisors [19]). This rate is steadily increasing. Enterprises have the chance to receive all PO-based invoices electronically within just a few months. Suppliers are keen to get purchase orders. If they only get the chance to receive them electronically in the future, they will accept the new channel rapidly. In addition, they also have the chance to return invoices electronically. This model results in a quick win-win situation for suppliers and buyers.

Considering these known facts, it is surprising that more organizations do not switch to more promising on-boarding methods.

7.2.2 Enhance the degree of process optimization

Today a major bulk of electronic invoices is just digital images of paper. This is not really a surprise, as people are familiar with PDFs and the barriers to start with are quite low. However, the benefits are mainly on the supplier side and buyers are keen to move towards the next steps.

Improvements, which can be noticed on the market

- PDF Images → Intelligent PDFs including images + structured invoice data (+ interactive components, digital signatures, logfiles, workflow functionality); PDF invoice becomes interpretable by both humans and computer systems
- PDF Images → structured XML invoices
- Scanning of images only → Scanning + OCR + Workflow

Any development as mentioned above helps to increase the degree of automation on the recipient's side as well. The weak economy might accelerate the next evolutionary step towards fully automated processes and to tap the full potential in the mid-term.

More advanced organizations might have a broader objective than just to optimize the invoice processes. This is indeed worthwhile: The automation and optimization of the invoice process is typically only 1/3 of the total potential. Considering this, the full purchase-to-pay and order-to-cash process might be pushed to the foreground during the coming years.

Figure 62: Exploit the full optimization potential
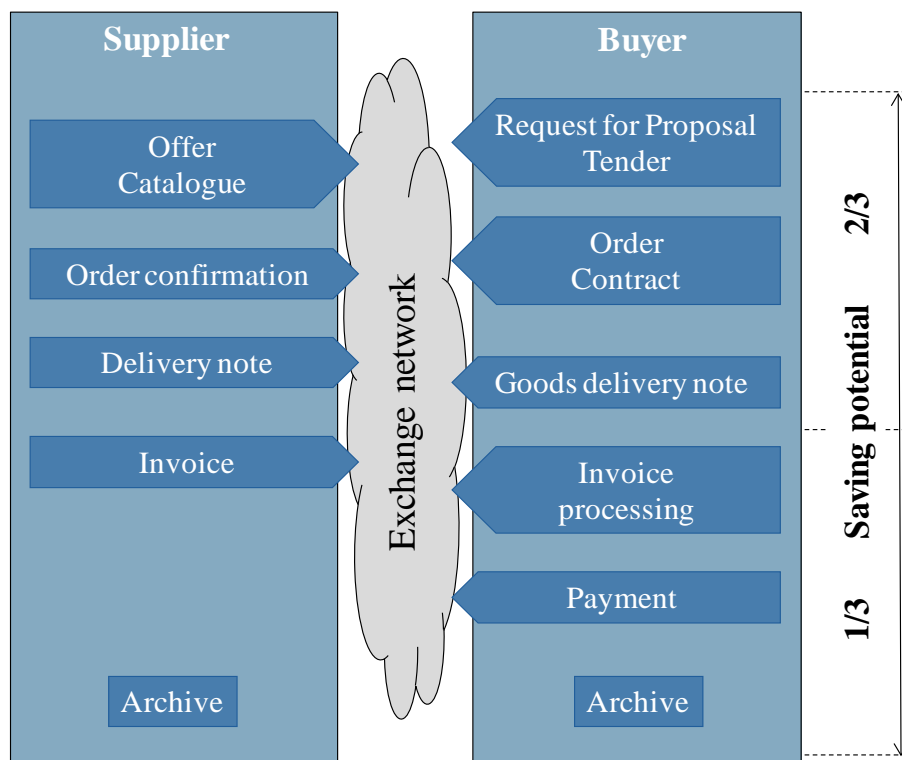
7.3   Increase elasticity of costs

7.3.1   Inhouse developments vs. 3rd party solutions

Businesses in smaller countries intend to use solutions proven on the market. Such solutions are indeed available in high numbers (hundreds) and of good quality. From this perspective, it is surprising that mainly businesses in larger countries still intend to re-invent things and develop inhouse solutions. This is not only the case with large organizations, but even in companies with less than 20,000 employees. In such scenarios, it is the IT staff who often drive projects. Clarifying legal requirements for all trading parties (located in dozens of countries) is extremely chal-

lenging or almost unsolvable for them. Such projects typically never succeed. Companies eventually switch to state-of-the-art third party solutions.

7.3.2   Shift fixed costs towards variable costs

Customer demand today is becoming more and more erratic and the turnover is subject to considerable variations.

Thus, most companies try to reduce fixed costs and to shift them towards variable costs. Providers of E-Billing/E-Invoicing solutions reacted at a very early stage and offer suitable products for any kind of demand.

Due to investment freezes in many companies and attractive on-demand pricing, numerous businesses are expected to change from inhouse operated solutions to SaaS (Software as a Service), white label or network services offered by third parties.

It is therefore scalable regardless of organization size and, most importantly, businesses only pay for the services they use.

7.4   Improve Working Capital

7.4.1   Challenges and today's options for organizations

The crisis in the global financial markets, a corporate credit squeeze, combined with weak economic growth, all change financial managers' minds on working capital optimisation. Invoice automation is a key component to achieve this objective!

There is a growing demand for financially efficient supply chains, with customers and their suppliers under conflicting pressures to improve payment terms, reduce prices and improve cash flow efficiencies.

A number of related buzzwords currently dominate the mass media
- Optimize cash flow and working capital
- Decrease DSO
- Accelerate processing and workflow cycle to benefit (dynamic) discounts
- Payment guarantees; Reduced risks
- Trade Finance; Supply Chain Finance
- Access to liquidity; Reduce capital outlay
- On-demand SCF (not full turnover, just some invoices)
- Enable suppliers to keep pace with buyers' growth.

These topics reflect the market demand, but also what providers of such finance tools and instruments increasingly offer.

The major challenge for solution providers is to offer a balanced product portfolio appropriate for suppliers and buyers, regardless of company size and the location of the trading party.

There is also a major part, which is directly under the control of suppliers and buyers and their internal processes and whose improvement may not be outsourced.

7.4.2   Improving company internal processes

7.4.2.1   Increase transparency for inbound invoices

Typically, 30-35% of larger companies still manage the invoices decentralised. Almost all of them use several ERP and accounting systems. This environment does not allow the financial manager the required transparency about the number, the total amount and the status of invoices.

E-Invoicing often results in a central outbound and inbound gateway, aggregating all invoices. This significantly increases transparency for finance managers and is a pre-requisite to optimise the working capital.

7.4.2.2   Accelerate internal invoicing cycles for inbound invoices

Suppliers of goods and services suffer from the credit crunch. This is especially valid for SMEs. For that reason, they increasingly offer discounts to their clients. Despite these discounts, the effect is very limited and the payment period (e.g. 15 days to benefit from discounts) cannot be improved significantly.

The reason is primarily that many larger invoice recipients are just unable to process paper invoices faster than within 23-25 days.

> A recent consulting customer of the author confirmed to have missed discounts with a value of EUR 1.50 per paper invoice. The discount benefits alone more than compensate the project costs and investments for the E-Invoicing in this project!

An efficient workflow and archive solution is in most cases another result of an E-Invoice project. This enables real-time monitoring of the invoice processing and permits an optimisation of the working capital.

7.4.3   Trade Finance / Supply Chain Finance (SCF)

Supply Chain Finance refers to the set of solutions available for financing specific goods and/or products as they move from origin to destination along the supply chain. It shall improve the Working Capital for suppliers and buyers. This is of special relevance during the challenging economy and the fact that an increasing number of trading parties is located abroad.

The market opportunity for a SCF solution is significant. The total worldwide market for receivables management is US$1.3 trillion. Payables discounting and asset-based lending add an additional US$100 billion and $340 billion, respectively. Only a small percentage of companies are currently using SCF techniques, but more than half have plans or are investigating options to improve SCF techniques [Wikipedia]. Some 43% of German companies and 61% of British enterprises are planning to monetise their receivables & payables to provide liquidity within their supply chain [20].

Some of the solutions that could be sold under the banner of SCF with relevance to E-Invoicing include, but are not limited to:
- Asset-based lending, e.g. mortgage, factoring and reverse-factoring
- Receivables management services – Provides third-party outsourcing of receivables management and collections process. It also provides financing of those receivables and guarantees on the payment of those receivables.
- Dynamic payables discounting –Provides third-party outsourcing of the payables process and leverages a buyer's credit quality to obtain favourable financing rates for suppliers.

Suppliers are mainly interested in financing, guaranteed and early payments, whereas the focus on the buyer side is more on working capital / benefit of discounts etc. Providers should address both sides with suitable solutions and they should be appropriate for small businesses. It should also be possible to use it selectively on a case-by-case basis.

One component of SCF is currently gaining much traction and forms an ideal combination with E-Invoicing. It is therefore described in the following chapter.

7.4.4 Dynamic discounting

Dynamic discounting is a process which allows buyers and sellers of commercial goods and services to dynamically change the payment terms – such as net 30 – to accelerated payment based on a sliding discount scale. Dynamic payables discounting is "dynamic" in one or more ways. Dynamic discounting is also known as dynamic discount management, early payment discounting, or payables discounting.

It encourages suppliers to opt in for early payments. Dynamic discounting allows buyers and sellers to dynamically change the payment terms to accelerated payment based on a sliding discount scale. The buyer allocates a "pool" of liquidity, determines liquidity limits, and establishes the interest rate for early payments. Once invoices are approved, the suppliers are automatically informed about new early-payment options. Through the portal, suppliers are able to view their approved invoices and trigger payments prior to the nominal due date, accepting the corresponding discounts.

The dynamic discounting functionality may be directly implemented as a Plug-In in the ERP or accounting application of suppliers and buyers. Another smart way is a "Pay me early button" on the buyer's E-Invoice portal (in case of direct exchange) or on the portal of the E-Invoicing network operator.

7.5 Collaboration model for Trade Finance Services and E-Invoicing operators

There is no doubt that Trade Finance / SCF will become increasingly important during economically challenging times. Considering a survey by Demica [20], the top 40 European banks expect annual SCF growth rates between 10% and 30% per annum in developed markets and between 20% and 25% in emerging markets.

E-Invoicing has the potential to become a catalyst for a strong growth of SCF. The author expects that the way to enrol successful and scalable SCF solutions is to fully embed it into a single E-Invoicing platform that can then handle all information exchanged between companies and financial institutions electronically. Payment Service Providers (banks or non-banks) could collaborate in a complementary manner with technology companies operating E-Invoicing network platforms.

Figure 63: Complementary collaboration model

Role	Description & comments
Funder	Funders might be financial institutions, investment funds, private equity companies or the buyer himself. A funder establishes the rating criteria against which it elects to provide its funding capital. Funders commit to the pool and can participate in more than one pool, based on their current risk appetite. Flexible and auction-like models with coverage for international trading partners are in demand.
Open SCF Network	This might not yet exist today. Banks often operate their proprietary platforms. Customers dislike to be "captured" within a proprietary solution without a guarantee of competitive prices. Some non-bank provider platforms are slightly more open. The suggestion is a provider-neutral and open platform with price competition and multiple funders.
Payment Service Provider	May be a bank or not. He pools the various funder products and ensures communication between the SCF network and one or several E-Invoicing network operators.
E-Invoicing network operator	Millions of organisations are already using E-Invoicing operator networks. They are familiar with a variety of technology and process requirements of their customers of any size located in any country. As long it is not a commodity business, this is a key success factor of technology companies as service provider. Banks may also be the E-Invoicing network operator, but are most successful if a country has the maturity to be served with standardised commodity business products. What the Financial Service provider community definitely has as an advantage is the capability to offer SCF, and this is in increased demand on the market. As long as a bank is itself an E-Invoicing operator, it might have the potential to address up to 35% of their own user community only. If it shifts the focus and is instead a provider for SCF, it might address almost all E-Invoice users via partners, which act as resellers for them.
Open E-Invoice exchange	An increasing number of operators connect each other's plat-

Role	Description & comments
network	forms to exchange electronic invoices and other related messages cross-platform.

7.6   The E-Invoicing Opportunity

E-Invoicing and process automation might be THE answer for today's challenges in the market. It is the enabler to significantly cut costs, to improve working capital and to increase the elasticity of costs.

The time is right for taking the next step now!

8.   GXS

Europe Headquarters:
GXS
18 Station Road
Sunbury
TW16 6SU
United Kingdom

VAT compliant E-Invoice processing guaranteed for	Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Liechtenstein, Lithuania, Luxemburg, Mexico, Morocco, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, South Africa, Singapore, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States.
Countries with highest E-Invoicing revenues	France, Germany, United Kingdom, United States
Number of employees dedicated to E-Invoicing and directly related offering	500

Number of customers	Customers on own platform	Customers on partner platforms, reached via interconnection & roaming (Estimate)
Connected suppliers	550,000	1,000,000+
Connected corporate buyers	40,000	95,000+

Kind of offering	SaaS e-Invoicing Consolidator Service for Corporates, SMEs and Banks. SaaS Order-to-Pay, SWIFT Service Bureau, and Supply Chain Finance.
Covered processes/messages along the supply chain	Full physical/financial supply chain: forecasting, point-of-sale, logistics, purchase orders, change orders, advance shipping notices, invoices, payments and reconciliation.
Main target market segments	**Large Enterprises** – simple to complex e-Invoicing scenarios: e.g. Direct Store Delivery, Pay on Scan, Consolidated Invoicing. **Banks**–partner for financial institutions offering e-Invoicing, trade and Supply Chain Finance solutions. **SMEs** – cost-effective solutions for SME's to integrate with trading partners.
Supported languages (with application/service and the online-help/customer support)	Czech, English, French, German, Italian, Spanish, Japanese, Korean, Portuguese, Chinese.

GXS

GXS has provided electronic invoicing solutions globally for 25+ years, originally as an Electronic Data Interchange (EDI) based service, with non-repudiation guaranteed through the GXS Trading Grid® network.

With the growth of Software-as-a-Service (SaaS) solutions, GXS also offers electronic invoicing in the cloud, supporting direct as well as indirect materials processes.

GXS solutions are tax compliant globally, meeting legislation within the EU, North America, Latin America and Asia Pacific. Our e-Invoicing solution is inclusive of EDI, digital signature and government mandated processes. Today, GXS provides e-Invoicing services for hundreds of thousands of corporate, SME and banking customers with SaaS and outsourced options to suit customer's specific e-Invoicing requirements.

GXS offers a 'Managed Service' for Finance, combining SaaS Order-to-Pay GXS Active Applications with GXS Expert On-Boarding and integration services in the cloud, providing a comprehensive e-Invoicing solution for global companies.

1. **E-Invoicing for Large Enterprises -** GXS enables companies to exchange electronic invoices via EDI and other preferred methods.Supplier companies create electronic invoices directly from Oracle, SAP or other G/L accounting applications and GXS extracts information from these enterprise systems, converting data into the buyer's preferred electronic invoicing format for straight-through processing to their ERP system.

   Many countries, particularly in Europe, enacted tax legislation to regulate electronic invoicing. GXS provides digital signature and EDI solutions that shield customers from compliance complexity by providing:

- **Content Validation**
- **Authenticity and Integrity**
- **Electronic Archive**
- **Invoice Image Creation**

2. **E-Invoicing for Banks -** GXS partners with financial institutions to offer e-Invoicing and Supply Chain Finance solutions, inclusive of the services listed for Large Enterprises. Financial institutions either white-label GXS SaaS solutions or use GXS as a 'data aggregator' to provide trade, supply chain finance and e-Invoicing offerings.

3. **Order-to-Pay for Corporates -** GXS products and services combine to automate customers' physical and financial information processes, including complex supply chain scenarios.
   - **SaaS Solutions**
   - **B2B Integration Services**
   - **GXS Expert On-Boarding**

4. **E-Invoicing for SMEs** – GXS offers a range of cost-effective connectivity solutions for SMEs to integrate with their trading partners.
   - **Web Connectivity**
   - **Excel-Based Connectivity**
   - **Software and Service Solutions**
   - **A Range of Payment Models**

e-Invoicing Solutions
Ensure your global requirements are met

	Data Validation	Authenticity	Integrity	Archive
EDI in VAN	✓	✓	✓	✓
Compliant EDI	✓	✓	✓	✓
Digital Signatures	✓	✓	✓	✓
Other Means	✓	✓	✓	✓

Visit us at www.gxs.eu or www.gxs.com for more information. Also visit www.einvoicingbasics.co.uk for helpful advice on eInvoicing adoption and implementation.

GXS

Tesco

Major retailers have been reaping the benefits of trading electronically for many years. Electronic transactions are faster, cheaper and more accurate than manual processing. But retailers have typically struggled to eliminate paper-based transactions entirely, because EDI is too expensive or complex for their smaller suppliers.

With the help of GXS™, Tesco has tackled the challenges that have, in the past, prevented some of its trading partners from adopting EDI. Tesco has significantly increased automation levels in their B2B e-commerce network during the last twelve months. Tesco, the U.K.'s largest retailer and sixth largest retailer worldwide, sends and receives more than 1,000,000 documents per month, 42,000 of which were processed on paper. They wanted to reduce their paper-based documents even further, and selected GXS Trading Grid®'s automation and community enablement services to do so. Since deploying the solution, Tesco has added more than 500 small and medium-sized suppliers to their electronic trading partner network, has reduced their paper document volume by more than 25 percent to 28,000 a month. Through GXS, Tesco is continually reducing paper-based transactions and an ever-greater proportion of Tesco's trading community is reaping the benefits of e-commerce.

Tesco has 250,000 employees and nearly 1,800 stores in the UK, and operations in 12 other countries. From its roots in food retailing, stretching back more than 80 years, it now sells a wide range of non-food products, supplied by some 5,000 suppliers based mostly in the UK but also in countries as diverse as the Republic of Ireland, France, Germany and China. These suppliers range from large multinationals to small suppliers delivering nationally down to very small local suppliers serving just one or two stores.

Around half of Tesco's suppliers already trade electronically with the retailer, receiving orders and sending invoices and credits. These suppliers include most of the company's larger trading partners, with the result that Tesco now receives just 28,000 paper documents out of the total of nearly one million documents it handles each month. However, the extremely high cost of processing paper documents compared with processing EDI transactions—together with the relocation and reorganisation of Tesco's finance function—meant the retailer was keen to reduce the number of paper documents still further by helping its smaller and local suppliers invoice electronically.

"We recognised that we needed to help them make that switch without incurring the kinds of costs that come with a full EDI implementation," explains Jean Davies, EDI Project Manager at Tesco. "We also knew that most of these suppliers have limited in-house IT resources, so we didn't want to force them to hire or buy in specialist resources to implement a solution and keep it running. We were looking for a solution for them that was simple and cost-effective."

Tesco put together a cross-functional team involving commercial, finance and IT staff to evaluate potential solutions. "It was important that we involved commercial at this stage in the process because they own the relationship with suppliers," Davies explains. "They've helped us educate suppliers that being EDI-capable is about sending invoices and credits electronically to us, as well as being able to receive orders electronically from us, and worked with suppliers to ensure they implement solutions that can handle all of that."

When this cross-functional team reviewed solutions for smaller and local suppliers, it chose the combination of GXS's Intelligent Web Forms and community enablement services for a number of reasons. Firstly, Davies says, "The GXS solution requires no technical expertise on the part of our suppliers. If they've used the web for online shopping, then any small supplier with a PC and an internet connection should have the skills to send Tesco an EDI invoice."

With no technical requirements on the supplier side, and a range of pricing models to suit different supplier needs, Intelligent Web Forms also provides the cost-effective approach needed to meet the concerns of smaller suppliers about the costs of trading electronically. "For seasonal suppliers, there's an annual one-off fee, with a small charge per transmission when they actually use the service," Davies explains, "while small and local suppliers who send invoices regularly throughout the year can pay an extremely affordable all-inclusive set fee every month."

GXS's solution also met Tesco's needs. "We could also be confident that, with the way Intelligent Web Forms can be customised, any invoice sent from a non-technical user with no experience of EDI will still be received by Tesco in the required format—that it will have a much greater chance of being 'right first time'," Davies says. She adds that, because Tesco already had an excellent existing relationship with GXS for the provision of EDI solutions and services to meet Tesco's own needs, Tesco could be confident GXS would deliver on its promises.

Once the deal was agreed, Tesco and GXS worked closely together to customise Intelligent Web Forms to meet Tesco's needs. GXS then helped Tesco carry out extensive testing with a small number of trading partners who between them provided a representative sample of Tesco's supplier base. For instance, Tesco was able to confirm it could successfully accept invoices from: UK-based suppliers invoicing in sterling as well as suppliers based overseas who were sending invoices in other currencies; suppliers who deliver to multiple countries under different terms and different invoicing parameters; and suppliers who deliver both to depots and directly to stores.

At the same time, GXS helped Tesco identify and electronically enable suitable suppliers who would benefit from the Intelligent Web Forms solution. "GXS helped us by contacting suppliers, explaining the solution to them, and getting them to sign up to it," Davies says. "For instance, we could show them that the GXS solution offers them better traceability of their invoice. They will know when they sent it, when we received it, and that we received it in the right format—which allows the invoice to flow quickly through our systems and be paid promptly. All of that helps our suppliers better manage their cash flow."

Tesco now has more than 500 suppliers using Intelligent Web Forms. and adding new suppliers is quick and easy. "New suppliers are automatically referred to GXS as and when they appear to be suitable for the solution," Davies explains. "Once they're signed up, we're able to very quickly carry out a short test to make sure that the invoices we receive are from the right supplier and go to the right account. Then we're able to go live."

She adds, "We're also finding that larger suppliers who are keen to establish a trading relationship with Tesco can use this product as a first step when working with us, while they decide if they want to make the investment in a full in-house EDI implementation. Our aim is for 100% compliance with EDI for new suppliers, although we accept that because of the wide range of suppliers we deal with, we may never completely achieve that." The benefits for both Tesco and its suppliers are clear. "Submitting invoices electronically eliminates the potential for mistakes in rekeying data or the possibility of other errors creeping in during manual processing," Davies points out. "While we make every effort to ensure accuracy at every stage in Tesco's processes, electronically-received invoices do flow through our systems much more efficiently, helping suppliers manage their cash flow and ensuring Tesco meets the payment terms previously agreed with them."

Global Premium Apparel Manufacturer

This premium apparel manufacturer has successfully met the challenge of automating its invoicing and shipping processes with more than 2,000 of its small and medium-sized customers. These customers now receive electronic invoices and ship notices, and all parties are realizing the benefits.

The company engages in design, marketing and distribution of consumer products and sells its goods to department and specialty stores. It also operates hundreds of retail and factory stores and its own online business.

The company had already been exchanging EDI documents with its largest customers for many years and is realizing tremendous benefits. Although approximately 75% of invoices were being sent via EDI to large retailers, a high volume of paper invoices were still being sent to small and medium-sized customers. These invoices were "clogging up the cogs" and causing numerous issues.

Although many of the target customers were small, in aggregate they represented a high volume of orders. For each of these orders, paper documentation had to be attached to the non-conveyable cartons used for shipping the product from the apparel manufacturer's distribution centre (DC). The documentation shipped with the goods consisted of paper invoices and packing slips. Frequently, orders were held up until the necessary documentation could be generated. This manual process slowed down the entire shipment process. Furthermore, the staging area created to attach the documentation consumed a significant amount of valuable floor space in the distribution centre that could have been used for product storage instead.

The paper-based invoices and packing lists created challenges for the apparel manufacturer's customers as well. Store managers had difficulty reconciling their orders against the goods they received. Purchase orders were often split into multiple shipments. As a result, customers frequently received multiple cartons from the same order at different times. The process was even more challenging if the paperwork was lost during shipment. The inability to reconcile the orders caused a high volume of calls to the apparel manufacturer's customer service department. Customers were inquiring as to the whereabouts of the missing documentation and estimated arrival dates for outstanding shipments.

The apparel manufacturer's customer service department was challenged to respond to these inquiries as the teams had limited or no visibility into the status of a shipment once it left their DC. As a result, the apparel manufacturer could not determine whether the carton had been lost or simply misplaced upon arrival at the customer location.

The paper-based process resulted in the apparel manufacturer's service center personnel being tied up with customer inquiries. Representatives were forced to spend time tracking down shipments and resolving order discrepancies rather than concentrating on higher-value activities that would generate more revenue.

The apparel manufacturer needed to eliminate the paper in the invoicing and shipment process. A shift towards electronic document exchange would make it easy for their customers to reconcile their orders, shipments and invoices. Rather than search for a new solution to electronic communications with its smaller customers, the apparel manufacturer chose to leverage the EDI technology that was currently in use with larger accounts. To reduce the barriers to adoption, the apparel manufacturer chose to subsidize the program, offering it at no cost to their customers. With no fees to pay, customers were more likely to view participation as a win/win situation.

The apparel manufacturer partnered with GXS to roll out the program internally and externally, which required the implementation of more than 2,000 customers in approximately two years.

The top priority was to ensure that the customers were happy with the shift from paper to electronic document exchange. The apparel manufacturer's smaller accounts were on-boarded to the GXS Intelligent Web Forms service. The Web Forms service enabled anyone with a PC and an Internet browser to receive electronic invoices and advance ship notices via an easy-to-use, secure Internet portal. The service proactively notifies the customers via email that electronic documents have arrived. Therefore, customers do not need to waste time checking for new messages. And, because the apparel manufacturer pays all costs for their customers' use of Intelligent Web Forms, the apparel manufacturer's customers are quite happy to switch to an electronic process.

The apparel manufacturer has realized major benefits from this program. The documentation centre on the DC floor was eliminated, enabling the apparel manufacturer to reclaim valuable floor space. Furthermore, the shift to electronic document exchange dramatically reduced mailing and shipping costs. Shipping orders are no longer delayed due to missing documentation.

Customers receive advance notice of shipments in-transit before cartons arrive at the door and easily reconcile goods received with invoices. They also enjoy faster issue resolution and have timely access and visibility to invoices and ASNs. And, they enjoy all these B2B benefits at no extra cost!

Customers now receive advance ship notices containing carton IDs and tracking numbers along with invoices that tie to the ship notice. The result is fewer status calls, less research time required and happier customers. When calls do come in, the apparel manufacturer's personnel have full visibility into when invoices were sent, received and opened, enabling them to resolve issues faster and to spend more time on new business rather than handling disputes.

Now that customers receive invoices that are easily reconciled, they pay invoices sooner. As a result the apparel manufacturer has been able to lower days sales outstanding (DSO). The apparel manufacturer now uses a single EDI process for all customers whether they are large, medium or small. Furthermore, the manufacturer now has a very easy process for adding new small and medium-sized customers on an on-going basis, currently at the rate of approximately 15 customers per month.

More GXS case studies can be found at;

http://www.einvoicingbasics.co.uk/resources/case-studies/

9. Appendix A: Law and regulations

Appendix A written in cooperation with Christiaan van der Valk

9.1 Legal acceptance of electronic invoices

Almost all countries in the world, except some in Africa and Asia, accept correctly processed & archived electronic invoices as originals. Therefore, from the legal point of view, there is no longer any reason to wait with an E-Invoicing project.

Only where E-Invoicing is an in-house development do users have to invest a significant amount of time and money in further legal analysis. That is why the author recommends either purchasing existing solutions or using third party services compliant with law in all countries where you trade. Experienced providers of such solutions and services will be able to inform you in more detail about the legal requirements. The following chapters will give just a brief overview for readers interested in a generic overview.

For detailed questions, the author recommends to investigate the sources as mentioned in appendix B or a discussion with your solution/service provider.

9.2 Minimum legal requirements

The legal framework of most countries includes these mandatory rules for the tax compliance of electronic invoices
- Authenticity of origin
- Integrity of the content
- Legibility (until the end of the period for storage)

While on this general level nearly all countries that allow E-Invoicing are similar, these requirements can translate to very different processes in different countries, depending on:
1. Whether the country's general legal/tax culture is prescriptive (focused on form) or functional (focused on result).
2. Whether the country uses a traditional *ex post* (after the fact) audit system or a real-time 'pre-approval' audit system.

For countries with a traditional *ex post* audit system, the main requirements for maintaining integrity and authenticity evidence can be met with:
- Digital signatures (advanced or qualified).
- EDI method with point-to-point security and surrounding controls: Secure platforms (e.g. VAN) and processes between supplier and buyer.
- Business Controls-based audit trails: Control systems of business processes on supplier and buyer side; Audit trails for two or three way matching (invoice authenticity/integrity with contract, order, delivery and/or payment data); Components to be stored include: (a)Internal business records generated during the invoicing processes, i.e. contracts, sales/purchase order, goods receipt/dispatch notes, (b) External documents received during the invoicing processes, i.e. purchase orders, goods, dispatch notes, bank statements, (c) Historic master data; (d) Evidence of controls to ensure data quality.
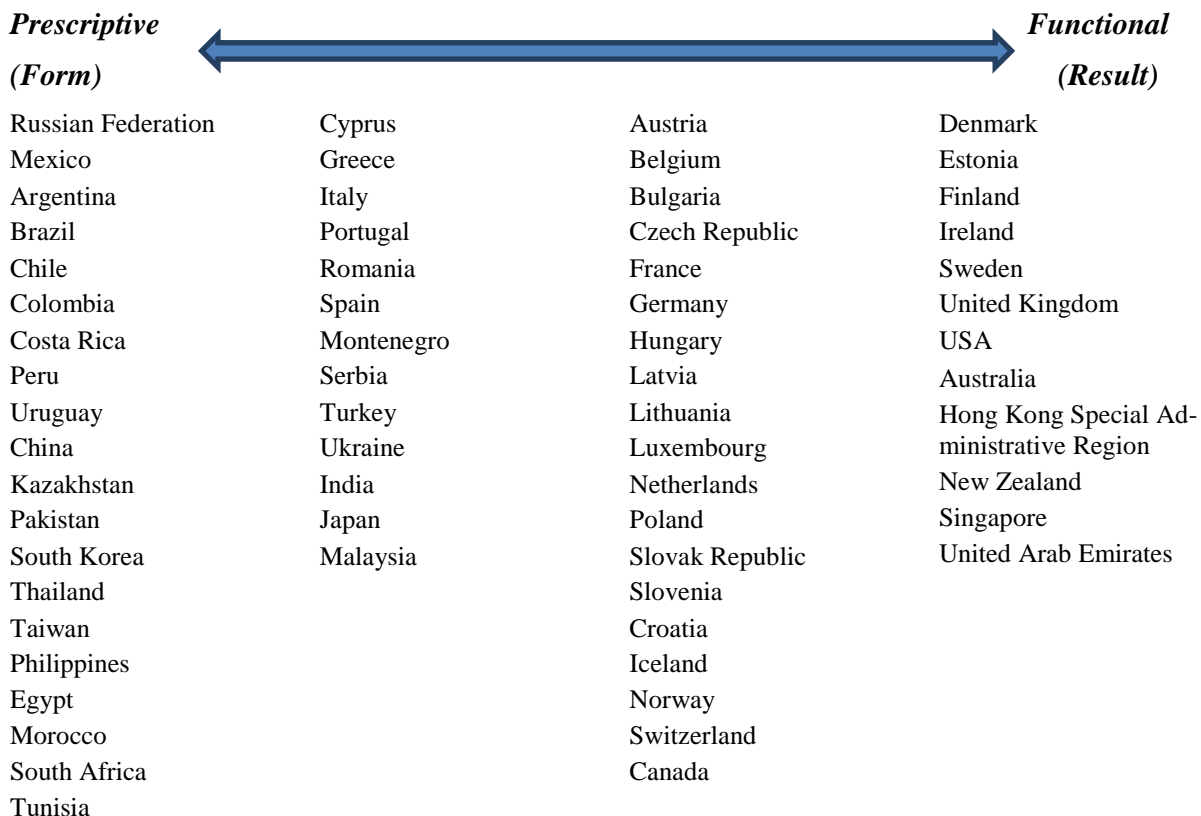
Many countries describe rules regarding the human readability of E-Invoices and mandatory invoice content (typically, in EU member states 12-15 fields are mandatory), format, archiving and auditing. Other rules can be defined if third party service providers are acting on behalf of

invoice issuers and recipients. If not stated in the original law text of any country, it is quite often described in complementary side letters.

Countries with a real-time audit system wrap the requirements for integrity, authenticity and legibility into technical specifications, usually with very little or no possibility for enterprises to choose alternative compliance methods.

9.3 Overview of regulatory approaches globally

Contrary to many people's perception, legal requirements on E-Invoicing are not generally more stringent than those for similar electronic documents. There are differences of requirements among countries, however, and it is important to analyse the impact of legislation on an E-Invoicing process prior to rollout. Free advice on Internet discussion sites cannot be relied upon for serious risk decisions. Many discussions or articles on the Internet are not based on a sufficient multi-disciplinary analysis of regulatory aspects. For example, volunteer commentators have a tendency to classify countries with requirements expressing only functional objectives as "no problem" and countries with prescriptive requirements as "difficult". This is not a view of the world that should be used to underpin a long-term cost-effective strategy for multi-country tax compliant E-Invoicing. A deeper analysis will show a more nuanced picture: all countries that permit E-Invoicing within a VAT or VAT-like regime of consumption tax have requirements for taxable persons to maintain the integrity, authenticity and legibility of B2B invoices during their legal life-cycle. Cultural differences must also be taken into account: the exact same requirement definition in the law can mean radically different in different countries. The chart below classifies countries on a scale showing one important dimension: on the left hand side of the spectrum countries are very prescriptive and formal in their approach to electronic invoicing, while on the right hand side countries allow any means of complying with functionally-defined integrity and authenticity requirements. This scale does not mean that countries to the right are "easy" and those on the left "difficult" – they are reasonably similar in fundamental objectives but approach the means to achieve these in different ways due to differences in size and culture.

Prescriptive			*Functional*
(Form)			*(Result)*
Russian Federation	Cyprus	Austria	Denmark
Mexico	Greece	Belgium	Estonia
Argentina	Italy	Bulgaria	Finland
Brazil	Portugal	Czech Republic	Ireland
Chile	Romania	France	Sweden
Colombia	Spain	Germany	United Kingdom
Costa Rica	Montenegro	Hungary	USA
Peru	Serbia	Latvia	Australia
Uruguay	Turkey	Lithuania	Hong Kong Special Administrative Region
China	Ukraine	Luxembourg	New Zealand
Kazakhstan	India	Netherlands	Singapore
Pakistan	Japan	Poland	United Arab Emirates
South Korea	Malaysia	Slovak Republic	
Thailand		Slovenia	
Taiwan		Croatia	
Philippines		Iceland	
Egypt		Norway	
Morocco		Switzerland	
South Africa		Canada	
Tunisia			

9.4 Electronic invoice issuance/processing and archiving by third parties

The EU VAT Directive allows outsourcing of tax-relevant functions to third parties. This gives issuers and recipients of electronic invoices the opportunity to offload technical and legal complexity to experienced service providers. They then act in the name of and on behalf of the issuer/recipient. Such services can include data conversion from source to target format, digitally signing and verifying, validating invoice content, exchanges between issuer and recipient, archiving data on behalf of users, etc.

Outsourcing of tax-relevant functions never changes the fact that the parties to the underlying sales transaction are accountable to the tax authorities. Enterprises can seek to obtain warrantees for compliance with certain legal requirements by service providers, but this always remains a private agreement and has no impact on the taxable person's tax responsibility.

In many countries, restrictions are in place regarding the location for the archiving of E-Invoices. This is of special interest, if cloud computing is the base for archiving. Cloud computing is a very young technology. It is for sure not the objective of legislators to prohibit the usage of Cloud computing, but the legislation is lagging behind the practice. Enterprises in EU member states are advised to ensure, that archiving services by third parties are performed in compliance with the law, which in most cases means that the invoices need to be stored within the territory of an EU Member State. Even if all legal requirements can be met by using a Cloud storage service for archiving electronic invoices, there is little experience with this type of solution and users should exercise caution before making design decisions involving Cloud storage.

9.5 Procedure/Process description

Most country regulations with *ex post* audit regimes require a document describing the environment, the end-to-end electronic invoice transport, processing and storage. It has to include all relevant information about:
- Flow of invoices & related documents
- Manual and automated process steps
- IT and communication environment, interfaces, database
- Procedures for guaranteeing invoice integrity and authenticity

Procedure descriptions play a major role for all users in such countries, regardless of their approach to compliance. When a service provider is used for certain tax-relevant processes, users can often obtain the documentation of these processes from the service provider.

In countries with real-time audit approaches, compliance is more technology-driven; hence, the value of procedure descriptions for tax compliance is reduced.

9.6 Evolving legislation

9.6.1 World is divided into two groups regarding legal requirements

In the early days of E-Invoicing, legislators assumed that risk of fraud with electronic methods would be higher[4] than with paper invoices. That is why E-Invoicing legislation is stricter than for paper invoices almost everywhere on the world. In addition to this, some governments view electronic invoicing as a convenient way to vastly increase control over, and statistics on, economic activity in their country. The resulting high requirements are seen as a necessity or opportunity

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[4] This assumption is meanwhile proved to be clearly unfounded. Several European tax authorities confirmed in 2011 to the author, that E-Invoicing is either neutral or has a positive impact to reduce tax evasion.

by some people and as a barrier by others. For several years, an important discussion has been in progress: should paper-based and electronic invoices be treated equally in law or not? This discussion is often erroneously reduced to the question of whether the digital signature for E-Invoices should be pushed or avoided. "Equal treatment" from a legal perspective simply means that no specific form or method should be prescribed for electronic invoices to meet the requirements of integrity and authenticity when there are no such requirements for paper invoices.

Latin America and many countries in Asia have a clear preference for prior validation mechanisms by tax authorities before issuing an E-Invoice. These countries treat electronic invoicing as an entirely different process than paper-based invoicing, and they do not consider the idea of treating electronic and paper-based processes equally to be of much interest.

The indirect tax system in the US is quite different to the European system: since there is no VAT but a sales tax, invoicing is not legally different from other business processes. Although digital signatures do not play the same role for invoice exchanges among businesses, the usage is rising for other reasons. Companies digitally sign an increasing number of E-Invoices issued in the US internally. This is for fulfilling other legal requirements, especially the Sarbanes-Oxley Act.

The author estimates that 55% of B2B E-Invoices in Europe are currently exchanged & archived by using the signature method, 40% are based on the EDI method and 5% using a reliable business process-based audit trail. This latter method is currently mainly used in smaller European countries.

9.6.2 Objectives and status of legal changes in the European Union

9.6.2.1 Objectives

Rules and regulations about E-Invoicing and E-Archiving are relatively young. In addition, new technologies generate further possibilities for electronic processing. Due to globalisation, cross-border exchange for tax-relevant business documents (e.g. E-Invoices) plays an increasing role. European and national governments want to increase economic performance by removing legal barriers to reduce administrative burdens. These are reasons why the legislation around E-Invoicing is currently on the move.

In 2010, the Council of the European Union adopted VAT Directive No. 2010/45/EU, which amends Directive 2006/112/EC to simplify invoicing requirements. Some articles refer to E-Invoicing. Member States had to bring their national legislation in line with the new provisions by 1 January 2013, and currently all but two Member States have done so.

The key points of the Directive are
* The use of an electronic invoice shall be subject to acceptance by the recipient (remark of author: this can be a constraint for the usage of the Opt-Out rollout).
* It must comply with VAT Regulations
  o Electronic and paper invoices are to be treated equally – the administrative burden on paper invoicing should not increase.
  o The authenticity of the origin, the integrity of the content and the legibility of an invoice, whether on paper or in electronic form, shall be ensured from the point in time of issue until the end of the period for storage of the invoice.
* Proof of authenticity and integrity may be provided:

o With any mechanism each taxable person deems suitable (setting a *freedom of evidence* rule for EU invoices, whether paper or electronic; note that evidence must still be provided within a reasonable time)
o A reliable business controls-based audit trail between an invoice and a supply of goods or services. This method is available for paper and electronic invoices.
o An advanced electronic signature on an electronic invoice based on a qualified certificate and created by a secure signature creation device.
o Electronic data interchange (EDI) of electronic invoices.

- Member States do not have the option to impose other rules for E-Invoices
- The rules regarding electronic invoices that apply are the rules of the Member State from which the supply is made (this relates to the complex subject of 'place of supply' rules but in practice is often the Member State of the supplier).
- Rules concerning the storage of invoices are in practice mostly determined by the Member State where the taxpayer is established.

9.6.2.2   Status

All major EU Member States have now transposed Directive 2010/45 including the compliance options set out above. In many Member States, the tax administration is now working to provide further guidance on each of the compliance options. In particular, the business controls-based reliable audit trail is a rather open-ended option around which many enterprises have questions. This guidance, and associated enforcement practices, is expected to take a few years to come to a point where trading partners can concretely understand their options and choose the method that is most cost-effective to them.

Not all Member States have faithfully transposed the Directive:
- One group of countries have introduced additional options or requirements.
- Others have not implemented all elements of the Directive i.e. some have not explicitly transposed the freedom of evidence rule.
- Some do not mention all compliance methods, e.g. stating only one or a subset, or only the general requirement of integrity and authenticity.

9.7   Which method is appropriate for organisations in the European Union?

The new European legislation aims to give enterprises more choice from among equivalent implementation options to meet the legal requirements of integrity and authenticity evidence. The base idea behind this new legislation is that business practice is too diverse to be caught in a limited number of compliance methods. However, more choice of means to comply also means that businesses will now have a greater *responsibility* to select an implementation option that ensures compliance. Unfortunately, the wording of Directive 2010/45 on available *methods* ("business controls" for example) is often used to justify a relaxed view of the regulatory *requirements*. This is a grave error: *businesses must still be able to prove integrity and authenticity of their invoices over a long period*, and this long-term evidence position is often not fully achieved by existing control frameworks. Businesses should therefore analyse their ability to generate and maintain appropriate evidence across their different processes and trading relationships, and on that basis decide which mechanism is the most cost-effective to ensure compliance where gaps are identified. Since all businesses are different, no method is more or less appropriate than others are in an absolute sense.

Importantly, the new EU legislation does not force any existing compliant process to change. Despite misguided interpretations that companies should now always beef up their internal controls and audit trails, there is *absolutely no need* for additional controls if a process is based on compliant EDI or qualified electronic signatures.

The previous legislation in the EU has often been criticised for valuing form and method over substance. It was indeed, from a European perspective, unfair that a taxable person could in theory be penalized by a tax administration for not having scrupulously met specifically prescribed controls even if such a taxable person possessed sufficient evidence of integrity and authenticity through other means. It is important, under the new legislation, that businesses do not make the same mistake as the previous EU Directive and paraphrase the requirements in terms of form (for example "we are now free to send unsigned PDF invoices by email"); such a focus on form can lead a company to misjudge the need for continued compliance with integrity and authenticity evidence requirements.

Importantly, even if the new legal framework in the EU has cut the legal interdependence between a supplier and a buyer (the trading partners previously had a joint responsibility to ensure integrity and authenticity, whereas now each taxable person is separately responsible), this does not mean it is good practice for trading partners to only look at their own part of transactions when designing a compliant e-invoicing system:
- Many compliance techniques require a level of coordination between the trading partners.
- The cost-effectiveness of available methods depends on various factors such as the size of an enterprise. Companies may thus need to support different compliance methods across different categories of trading partners.

When assessing the relative costs and benefits of available options, companies should base their ROI calculations on actual solution costing rather than preconceived ideas or popular views of what is cheap or expensive.

When a service provider is involved on behalf of one or both trading partners, certain compliance methods may become more or less attractive due to this particular type of setup.

A number of publications providing guidance on the new EU legislation are available. This is especially valid on the European scale with the European Commission [15] and CEN Workshop on E-Invoicing [16]. Readers more interested in a compendium about E-Invoicing legislation in Europe and many other countries around the globe are recommended to read the TrustWeaver whitepaper as referenced in [18].

10.   Appendix B: Glossary, Sources

10.1   Glossary

In the course of this report, a number of key notions are frequently referred to. To avoid any ambiguity, the following definitions apply to these notions.

Figure 64: Glossary

AR	Accounts Receivable
AP	Accounts Payable
B2B Invoices	In this report: Includes all tax compliant invoices to corporate as well as to the public sector
Bill	Includes all categories of bills sent to consumers (B2C/G2C)
E-Billing	"E-Billing" covers in this report the electronic bills from Business-to-Consumers (B2C). Some market participants use this term alternatively for the process on issuer side in general, regardless if the customer is an enterprise or household.
EBPP	Electronic Bill Presentment and Payment; focus in B2C; this acronym is more popular outside Europe
EIPP	Electronic Invoice Presentment and Payment; focus in B2B/B2G; this acronym is more popular outside Europe
E-Invoicing	Electronic invoicing is the sending, receipt and storage of invoices in electronic format without the use of paper-based invoices as tax originals. Scanning incoming paper invoices, or exchanging electronic invoice messages in parallel to paper-based originals is not electronic invoicing.
Invoice	Includes in this report all categories of invoices: B2B, B2C, B2G
Issuer	Invoice issuer, Supplier, Biller
Network operator	Service provider respectively operator with any-to-any model; an invoice issuer or recipient needs just one interface for achieving any other counterparty in the same network; In some countries, the terms "operator", "service provider", "consolidator" or "supplier network" are more common.
Order-to-Cash	Supplier perspective for the processes order-delivery-invoicing-payment
Purchase-to-Pay	Buyer perspective for the processes order-delivery-invoicing-payment

SME	Small and Medium sized Enterprise
Recipient	Buyer, Customer; The individual or organization that will receive the invoice

10.2 Sources

Figure 65: Key sources used in this report

Ref	Document and/or hyperlink	Date or version
[1]	Helsinki School of Economics, „Electronic Invoicing Initiatives in Finland and in the European Union"	2008, B-95
[2]	Politecnico di Milano, Alessandro Perego, Presentation "Process Optimization and Saving Potential with e-Invoicing" at the EXPP Summit in Munich/Germany	October 2010
[3]	PayStream Advisors: a. Automating Payables for the SME Market b. Invoice & Workflow Automation Adoption c. Electronic Invoice Management d. Global Electronic Invoicing e. Electronic Invoice Adoption Benchmark Report	Q2 2012 Q3 2012 Q4 2012 Q1 2013 Q1 2013
[4]	Tools and ROI calculators: a. Industry portal with numerous tools in several languages http://www.einvoicingtoolbox.com/ b. Fachhochschule Nordwestschweiz (in German only) http://www.swissdigin.ch/apps/swissdigin.nsf/de/ressourcen_recommend c. Politecnico di Milano (in Italian only) http://www.osservatori.net/fatturazione_elettronica_e_dematerializzazione/qrat d. Paystream Advisors (US) http://www.paystreamadvisors.com/advisory_services/cost_per_invoice_calculator.cfm	March 2012
[5]	Billentis, Nutzenpotenziale der E-Rechnung http://wko.at/e-rechnung	October 2011
[6]	Eficiencia y Evasión http://www.econlink.com.ar/impuestos-distorsivos-iva/eficiencia-evasion	2013
[7]	Billentis Report: E-Invoicing / E-Billing in Europe and abroad	March 2011
[8]	Schneider Friedrich, Johannes Kepler University of Linz and IZA, The Shadow Economy and Work in the Shadow	March 2012
[9]	E-Invoicing network associations & alliances:	2013

Ref	Document and/or hyperlink	Date or version
	a. European E-Invoicing Service Providers Association http://www.eespa.eu/ b. Global E-invoicing Network Alliance, www.gena.net c. SimplerInvoicing, www.simpleinvoices.org d. The Association for Electronic Invoicing www.e-invoice-alliance.de	
[10]	OpenPEPPOL, http://www.peppol.eu/	2013
[11]	Input about Russia was provided by Diadoc, I-Teco, Taxcom and Trustweaver	March 2013
[12]	Australian Business Register http://www.abr.business.gov.au/	2013
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