E-Invoicing / E-Billing
Digitisation & Automation

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Billentis
May 27, 2016

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Anticipating the Move to E-Invoicing and Beyond

By Emmanuel Olivier, Esker Worldwide Chief Operating Officer

Governments across the world are continuously looking for ways to reduce costs associated with the billions of invoices they send and receive each year and take control of business transactions to avoid fraud. To accomplish these goals, forward-looking governments are turning to e-invoicing and are playing a major role in the adoption of e-invoicing — for both B2G and B2B operations. In the European Union for example, the goal is to make e-invoicing the predominant invoicing method in Europe by 2020. These government e-invoicing regulations will affect millions of companies.

Rather than sit back and wait for deadlines to draw near, business must embrace the shift to e-invoicing or risk being left behind.

Navigating the muddy waters of local government regulations

Every country has its own specifications in terms of formats, required fields and platforms by which e-invoices must be sent. With no consensus on one invoice format or how to transmit them, businesses can feel overwhelmed and confused. For some, their solution is just to do nothing and hope for the best. But with a growing number of governments adopting e-invoicing, businesses must send e-invoices if they want to get paid.

Government rules surrounding e-invoicing have generated confusion and some businesses have argued they lack the necessary IT infrastructure to support sending and receiving documents. As a result, many fail to put a proper e-invoicing solution in place and, consequently, are unable to conduct business for the government. The financial impact can be significant.

In this evolving context from a legal, process and technical point of view, businesses need a trusted partner to help them navigate the complex universe of e-invoicing. They can rely on the expertise of Esker.

Esker’s Accounts Receivable automation solution and Esker’s Accounts Payable automation solution completely automate the delivery, the reception and archiving of e-invoices in compliance with the different worldwide regulations. Esker’s strength lies in its ability to support all customers, regardless of invoice transport mode or volume (e.g., postal mail, signed PDF, EDI, etc.). Esker is capable of processing the different formats used throughout Europe (e.g., FacturaE in Spain, Fattura-PA in Italy, etc.), as well as communicating with its public administration’s platforms (e.g., FACe, SDI, Chorus, Billexco, Peppol, etc.) to send e-invoices and provide full visibility on invoice statuses. As a result of Esker’s proficient knowledge of the local markets and issues at hand, the company can adapt its solution to the different legislative requirements.

Thanks to Esker, businesses can jump on the e-invoicing bandwagon today and gain many benefits, including: reduced invoicing costs, an increased competitive advantage, and an enhanced perception as an innovative company.
According to the CIO at Eurofeu, a leading French company in the fire safety industry: “More and more RFPs are requiring vendors to be compatible with Chorus, the French government’s e-invoicing platform. Esker represents a major competitive advantage and key selling point.”

**E-invoices and electronic orders: Automating the order-to-cash (O2C) cycle with Esker**

It’s not just e-invoicing to public administrations that is becoming mandatory. Governments have started requiring businesses to receive electronic orders as well and regulations are already in place in some countries. In Italy, for example, where B2G e-invoicing is already mandatory, public administrations in the Emilia-Romagna region require vendors to receive electronic orders. Any organisation unable to accept electronic orders won’t be able to conduct business with public entities, resulting in poor financial and business repercussions.

The evolving market trend toward full business automation with the government is on the rise.

Esker allows businesses to control all of its document process improvement efforts in one shared and collaborative platform. Using the same automated platform, businesses can process and track any invoices and orders, regardless of how it arrives (e.g., email, fax, paper, EDI or web), with full accuracy and visibility. Esker instantly captures customer and supplier documents and immediately routes them for processing — maximising control and flexibility.

Today there are directives in place mandating B2G e-invoicing, and the trend is moving towards automating the entirety of business document exchanges with the government. Rather than waiting for regulations to be officialised and laws to be passed, and possibly having to make crucial decisions under pressure, business would be much better off taking a proactive approach to automating their document processes. Esker delivers this full scope of automation and can handle evolving market trends to ensure compliance.
0. Executive Summary

Today’s business models evolved through decades, which focused on conventional paper processing. In the northern hemisphere, businesses and governments are usually taking a gradual approach to replacing these paper-based systems with digital substitutes. Small steps can only create incremental improvements. Paper invoices are clearly still dominating the landscape. Scan and capture can bring first improvements. Image-based PDFs and a minor proportion of structured electronic invoices follow this evolutionary step quite often.

This kind of digitisation requires organisations to increasingly establish invoice workflow and archiving solutions. As a consequence of this improvement, many disadvantages of conventional paper processing disappear, yet several other ones remain.

Digitization of invoices alone is not sufficient for achieving zero-touch and automated invoice processing. The proportion of exception handling is still too high in most organisations. One major reason is poor data quality in invoices. Inaccurate information in B2B invoices is a major reason for payment delays. Reducing the proportion of exception handlings might increasingly become a priority. Automated e-invoicing is an excellent vehicle to combat this quality problem.

More advanced organisations might have a broader objective than merely to optimise invoice processes. This is indeed a worthwhile undertaking: automation and optimisation of invoice process usually represents only one third of the total potential. In light of this, the full purchase-to-pay and order-to-cash process may be brought to the foreground over the upcoming years. Larger businesses in the private industry are the innovators in this field.

The public sector is responsible for 16-18% of all purchases in given countries. Nevertheless, a maximum of 5% of public purchases are processed using electronic procurement solutions. Now, this is in progress of being changed – at least within the European Union. The EU intends to modernise public administration with end-to-end e-procurement and e-invoicing. There is a tremendous impact of new government initiatives for e-invoicing and directly related topics. The author estimates that 100,000+ public administrations / agencies in Europe will be affected by new directives by 2018 – at the latest.

In today’s erratic economy, business agility is more important than ever before. According to the concept of business agility, organisations seek to approach their operations and resources in a flexible manner. The concept also concerns the ability to rapidly adapt to market and environmental changes in a productive and cost-effective way. Simultaneously, a rapidly growing number of disruptive next-generation technologies lay a strong foundation as strategic drivers. They pave the way to substitute old solutions and processes by a completely new approach.

A new era for digitisation and automation lies ahead of us and the environment might change dramatically in upcoming years.

A number of Latin American and Asian countries are developing disruptive models instead that are optimised for a fully digital world on a broad scale, considering all fiscal documents. It is the invoice that provides the most complete information for tax authorities. Invoices are therefore moved to the foreground as part of the next step. In this phase, tax authorities mandate the organisations in a country to exchange invoices in electronic format only. These developments on a national level also make sense on a company level. The time is right to critically question the use of traditional models and shift to disruptive technologies.
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 160 customer consulting projects in 50+ countries
- Consolidation of the above information

1.3 Terms and definitions

The term “e-invoice” is used for the Business-to-Business (B2B) and Business-to-Government (B2G/G2B) segment. It includes exclusively the electronic invoice exchange between suppliers and buyers, but does not consider the data exchange between suppliers/buyers and tax authorities for reporting and control purposes. 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 includes image-based digital invoices (mainly PDFs).

Definitions in other regions of the world differ greatly. Although, in any case, it is not valid, for others e-invoicing means much more than simply ‘automated invoicing’. In this report, ‘e-invoicing’ is used in the broad legal sense as described above. Terms like ‘touchless e-invoicing’, ‘zero touch e-invoicing’ or ‘true e-invoicing’ are used in the event of structured e-invoices.
Figure 1: Definition of e-invoice in a global context

Not considered as e-invoices:
- Fiscal documents not representing a commercial transaction followed by “demand for payment”, e.g. bank statements
- Fully electronic invoices that are not tax-compliant due to lack of integrity, authenticity and legibility
- ‘Electronic invoices’ are supported by legally relevant paper summary invoices (parts of the EDI world), scanned or printed/archived by recipients (if just the paper version is stored as the ‘new’ de-facto original).
- ‘Asymmetric e-invoice’, buyers can demand a printed invoice and consider it as the legal original invoice.

Major bulk of paper invoices, even if in parallel some invoice data are transmitted to the tax authorities or trading partner.

E-invoices in the broader legal sense:
- ‘Simplified low value’ e-invoices with reduced content requirements (often just 4-8 mandatory data fields) and without customer authentication

Legally can this category include invoices in a broader sense. It might become part of a separate statistic in the future.

E-invoices in the narrow legal sense: Only this part is included in the statistics.
- E-invoices with the full content (typically 10-16 fields) and authentication of the issuer & recipient.
- Two organisations in the role as supplier and buyer exchange a digital and tax-compliant invoice as the valid original invoice. They exchange them directly via service providers and/or via the platform provided by tax authorities. These e-invoices are preserved. They are the only relevant original invoices for the tax authorities and auditors (any paper copies produced are only used as representations).

Paper representations can be found, but will never be considered as the legal original versions.

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.

Remark: In the past, the author included invoices/e-invoices in the statistics if they fulfilled the description as defined in their national legislation. Unfortunately, the figures were not completely comparable at a global level. This approach is now replaced by a common denominator, valid for a majority of countries around the world. The new figures are therefore lower than in past publications.
2. The market

2.1 Market volume

2.1.1 An estimate for the global volume

2.1.1.1 Bills/Invoices

Whereas the volume (paper + electronic) in Europe and Latin America 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 2: Guess for global bill/invoice volume

<table>
<thead>
<tr>
<th>Segment</th>
<th>Estimated volume to be at least</th>
</tr>
</thead>
<tbody>
<tr>
<td>B2C/G2C</td>
<td>200(^1) billion</td>
</tr>
<tr>
<td>B2B/B2G/G2B</td>
<td>170 billion</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>370 billion</strong></td>
</tr>
</tbody>
</table>

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

2.1.1.2 Invoice-like documents and messages

Additional volume of “invoice-like documents and messages” can also be tremendous (depending on country likely \textbf{5 to 15 times over the invoice volume}). Invoices are different from receipts (payslips, tickets). 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. Classical examples of these “invoice-like documents and messages” are

- Invoice data sent to the tax authorities just for validation or audit reasons, e-reporting

\(^1\) Compared to past publications significantly reduced figure; got meanwhile more accurate figures from some larger countries.
Digital replacements of “fiscal printers producing payment receipts”. Electronic (payment) 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.

2.1.2 The European bill/invoice volume

Due to the annual increase, the European volume may have meanwhile passed the 36 billion and could increase to **37 billions in 2017**. Approximately half of the volume is send to consumers (B2C), the other half to enterprises and the public sector (B2B/B2G/G2B).

Figure 3: Invoice/Bill volume breakdown by industry (issuer view)

Legend: 1% of all invoices in a country are sent by Telecoms to corporations and 9% to consumers. Telecom invoices represent typically 10% of the total market volume.

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

Figure 4: Invoice volume breakdown by industry (recipient view)

<table>
<thead>
<tr>
<th>Industries with high inbound volume</th>
<th>% of all B2B invoices, indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthcare</td>
<td>5-13%, depending on the country</td>
</tr>
<tr>
<td>Retail</td>
<td>10%</td>
</tr>
<tr>
<td>Public sector: National Government, regions &amp; municipalities</td>
<td>9-15%</td>
</tr>
<tr>
<td>Buyer Clubs, Trade (to buy wholesale)</td>
<td>5%</td>
</tr>
</tbody>
</table>

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.

2.1.3 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.

2.2 Motives for replacing paper bills/invoices

Organisations start projects for various reasons:
- External pressure (Suppliers, Customers)
- Internal cost pressure
- Process innovation and automation
- Optimise cash management
- 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

2.3 Evolving market models

2.3.1 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 re-
placed 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.

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 operator Service
- Hybrid Model
- Total Invoice Management (in-house or outsourced)

Figure 5: Overview about main market models

2.3.2 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 high-volume industries like telecommunications, utility and card companies, as well as online shopping portals. Small businesses also have a preference to exchange e-invoices directly with their trading partners. Due to their size, they do not have the capacity to provide e-invoices on their own portals, but instead exchange them as PDF invoices attached to emails.
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 (attachment 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 of the verification process in a log file (must also be archived)

Figure 7: Advantages & disadvantages of Supplier Direct Model via customer portal

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Direct contact with customers, chance for cross-selling and interaction</td>
<td>– 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)</td>
</tr>
<tr>
<td>+ E-invoicing functionality directly influenced by supplier; e.g. a telecoms operator offers analysis tools with CDRs (Call Detail Records)</td>
<td>– Customers dislike logging on to various websites of different suppliers or making multiple integration projects</td>
</tr>
<tr>
<td>+ Chance for very close integration with back office environment and automation of processes</td>
<td>– Customers only get a limited number of formats to download and may have to convert them for import into their back office systems</td>
</tr>
<tr>
<td></td>
<td>– SME customers don’t get a centralised, efficient and VAT compliant e-archive for e-invoices of all their suppliers</td>
</tr>
<tr>
<td></td>
<td>– Overall, B2B customer acceptance will be limited</td>
</tr>
</tbody>
</table>
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. Explanation of the term “Opt-Out” see figure 45.

An alternative option builds on the push model and utilizes intelligent PDF invoices including XML data embedded in the document.

Figure 8: Advantages & disadvantages of Supplier Direct Model via push method

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

2.3.3 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 9: 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 10: Advantages and disadvantages of Buyer Direct Model

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Direct contact with suppliers, chance for interaction</td>
<td>− 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</td>
</tr>
<tr>
<td>+ E-invoicing functionality directly influenced by recipient</td>
<td>− Suppliers dislike converting their electronic invoices into the various formats requested by the buyers; they also dislike making multiple integration projects (with each buyer)</td>
</tr>
<tr>
<td>+ Chance for a very close integration into back office environment and automation of processes</td>
<td>− SME suppliers don’t get a centralised, efficient and VAT compliant e-archive for e-invoices for all invoices sent to various customers</td>
</tr>
<tr>
<td></td>
<td>− Overall, supplier acceptance will be limited but some pressure on suppliers is helping</td>
</tr>
</tbody>
</table>

2.3.4 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 offer white-label services for them (SaaS, Software as a Service). They run a direct model on behalf of large issuers and recipients of invoices. These providers typically develop, maintain and operate the software. Customers pay just a fixed integration fee and a volume/time based fee.
Figure 11: Advantages and disadvantages of Direct Model as a Service

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Direct contact with counterparts, chance for interaction</td>
<td>− Counterparts dislike logging on to various websites or making multiple integration projects</td>
</tr>
<tr>
<td>+ E-invoicing functionality directly influenced</td>
<td>− Counterparties only send/receive a limited number of formats</td>
</tr>
<tr>
<td>+ Chance for very close integration into back office environment and automation of processes</td>
<td>− Overall, acceptance by counterparts will be limited</td>
</tr>
<tr>
<td>+ Lower costs, as application development and maintenance is shared with others</td>
<td></td>
</tr>
<tr>
<td>+ No negative surprise with the costs, as provider offers a fixed integration fee and a price per transaction or user</td>
<td></td>
</tr>
<tr>
<td>+ Complexity regarding VAT compliant processing (and optional archiving) can be outsourced</td>
<td></td>
</tr>
<tr>
<td>+ Most service providers have considered and implemented solutions around security, auditability and proof of sender identification to comply with the in country legal and taxation requirements.</td>
<td></td>
</tr>
<tr>
<td>+ SaaS models typically provide a reliable, stable and scalable platform.</td>
<td></td>
</tr>
<tr>
<td>+ When delivering an e-invoice/e-bill via email deliverability, track and traceability is at the forefront of the service providers service level agreements.</td>
<td></td>
</tr>
<tr>
<td>+ Management information and statistical reporting is available as a result of most SaaS providers platform capability.</td>
<td></td>
</tr>
</tbody>
</table>

2.3.5 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.

\(^2\) In some countries, the terms “consolidator”, “service provider”, “e-Commerce network”, “B2B network”, “e-invoice cloud” or “supplier network” are more common.
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 13: Advantages and disadvantages of Network Model**

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Easy and efficient integration to a single point of contact</td>
<td>− Indirect contact with counterparts, chance for interaction possible, but limited compared to direct or SaaS model</td>
</tr>
<tr>
<td>+ Lower costs as application development and maintenance is shared with thousands of other participants</td>
<td></td>
</tr>
<tr>
<td>+ No negative surprise with the costs, as provider offers a fixed integration fee and a price per transaction or per user</td>
<td>− E-invoicing functionality is fixed and can’t be influenced</td>
</tr>
<tr>
<td>+ Complexity regarding VAT compliant processing (and optional archiving) can be outsourced</td>
<td></td>
</tr>
<tr>
<td>+ Easy to use: Technical and legal requirements can be outsourced to network operators</td>
<td></td>
</tr>
<tr>
<td>+ Counterparts like logging on to just one website, making one integration project with just one invoice format</td>
<td></td>
</tr>
</tbody>
</table>

**2.3.6 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.
2.3.7 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 14: Total Invoice Management

Figure 15: Advantages and disadvantages of Total Invoice Management

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ 100% solution</td>
<td>− Pressure to move very quickly from paper to electronic channel is limited; as a result, paper can survive longer than desired</td>
</tr>
<tr>
<td>+ Harmonised processes, independent of invoice medium used</td>
<td></td>
</tr>
</tbody>
</table>
2.4 The global landscape

2.4.1 Market evolution and maturity

Figure 16: Classical evolution pattern in most countries

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>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.</td>
</tr>
<tr>
<td>2</td>
<td>Some 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. Some billers enhance their scope by using in addition to their portals a network service or switch to a push-model (send bills as PDF email attachments).</td>
</tr>
<tr>
<td>3</td>
<td>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 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.</td>
</tr>
<tr>
<td>Phase</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>4</td>
<td>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.</td>
</tr>
</tbody>
</table>

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

Figure 17: 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 2016 volume for e-bills/e-invoices will achieve around 30 billion worldwide with annual growth rates of 10-20%.
2.4.2 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:

![Diagram of optimisation focus of geographical regions]

<table>
<thead>
<tr>
<th>Focus</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Asia &amp; Latin America</strong> (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 &amp; auditing. Typically, tax authorities completely disrupt the traditional paper scheme, as they design and implement a completely new system. The resulting clearance system for the trading parties is quite complex. The companies’ internal invoice process efficiency...</td>
</tr>
</tbody>
</table>

---

3 See definition in Appendix B, Glossary
<table>
<thead>
<tr>
<th>Focus</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>and electronic collaboration between suppliers and buyers are not yet necessarily optimised, but VAT declaration and tax returns may become much easier and more efficient.</td>
</tr>
</tbody>
</table>

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. However, the market becomes increasingly mature for focus 3.

3 **Major parts of Europe**: In contrast to Latin America, the conventional invoicing mechanisms and processing methods are not critically scrutinised, but replaced by a comparable working digital substitute. 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-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.

2.4.3 **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 16): Large bill issuers start with “Bill Presentment” via their company portals or internet banking.

E-invoicing in B2B is in some Asian countries 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: The leaders are **Singapore, Hong Kong, Taiwan and South Korea**. The government, shipping and retail industries 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.

**Australia and NZ** are at a similar stage to Asia. Today, we have seen phases 1, 2 & 3 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. The retail industry is already quite active regarding digital processes. Pushed by the National E-Health Transition Authority, the healthcare industry is increasingly exchanging health information and related messages like invoices electronically. A limited number of businesses achieved a considerable adoption rate regarding electronic business messages and invoices within their eco system. At this stage however, the majority of invoices in most other industries is exchanged paper-based or as PDF directly via email.
In early 2015, the Australian Government decided to actively push e-invoicing on a broad scale. As a result [1] of a consulting mandate, the author recommended a range of activities for the public and private sectors. Some of the recommendations have since been launched. A multi-stakeholder forum, the Australian Digital Business Council (ADBC, http://digitalbusinesscouncil.com.au/), was kicked off in December 2015. One of the council’s first deliverables concerns a document draft for an e-invoicing interoperability framework which shall be ratified in June 2016 [2]. The strong integration of the Australian Business Register for the country-wide rollout is worth particular mention. This should help to significantly improve invoice accuracy (issuer and receiver identification) and simultaneously reduce tax evasion.

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. In 2013, China introduced further regulations for its online invoice management system in a bid to standardize the industry and curb tax evasion. For using the online electronic invoicing system, taxpayers register at the tax authorities and open an account. To issue an invoice, they fill out the required information and issue the electronic “fapiao” online. The issued fapiao is verified by matching the information against that in the online system. Compared to pure paper invoices, the taxpayer has the benefit that he has no longer to physically travel back and forth to the tax bureau to obtain and verify invoices. Further evolutionary steps around paperless billing/invoicing, reporting and archiving are now in progress or respectively being announced. New measures for managing accounting archives have now entered into force, thereby allowing the electronic archiving of e-invoices [3]. The new measures only treat the issue of archiving tax records, but do not regulate the e-invoicing process itself. A B2C pilot project run by the National Tax Bureau with a limited number of online retail stores is still in progress. A pilot project for B2B e-invoicing and archiving shall be extended in the near future. There are clear indications that these activities will play the first foundations towards a clearance system in the future.

Regardless of this progress, the author would still not describe the Chinese system as e-invoicing in the sense as described in figure 1.

India has made announcements about allowing e-invoicing more broadly; however, electronic invoicing remained rare because Central Sales Tax explicitly required paper invoices, while only about half of the states allowed e-invoicing under their VAT law. In early 2015, the legislation was changed, allowing all service-related and domestic invoices to be transmitted electronically from March 2015.

From July 2016, almost all taxable entrepreneurs in Indonesia will be required to issue their VAT invoices (Faktur Pajak, FP) electronically and settle tax payments online only. Manual tax payments can no longer be conducted using a tax payment slip.

The current stage of e-invoicing in Russia may be described as dynamically developing, especially in the segments retail, FMCG, automotive, pharmaceuticals and power generation. As of today, there has been a considerable growth of interest among large and medium-sized businesses in implementing projects concerning electronic invoice and document management. This is supported by the fact that the total electronic administration of value added tax was introduced by the Federal Tax Service in 2015. VAT invoices are mandatory following every commercial transaction. They have to be sent electronically to the tax authorities in order to confirm the correctness of the calculation of value added tax. The purpose is different and they do not directly correspond with the definition of ‘e-invoices’ as used in this report.
The size of the **Turkish** market amounts to two billion annual invoices/bills (source: Turkish Ministry of Finance, 2013). With respect to e-invoicing, the country has made huge progress during recent years. It implemented e-invoicing requirements gradually for an increasing number of industry sectors. In a first step, the Turkish Revenue Administration (TRA) established a state-owned e-invoicing platform. Third-party service providers (certified and linked to the state-owned service provider) are able to address the divergent market requirements. They are interconnected with the TRA platform and leverage market reach significantly. There are currently more than 50,000 businesses that are required to be e-invoice users. The vast majority of them (35,000+) is using the third-party service providers, followed by the portal users on the TRA platform (around 12,000) and the remainder with direct integration on the TRA platform. All the invoices based on this e-invoice scheme are transmitted and received through the TRA system. Meanwhile, Turkey has additionally introduced the e-archive scheme. The e-archive is positioned in Turkey as a new version of electronic invoicing. It is a brand new application which paves the way for addressing new user groups, even if a recipient were not listed in the e-invoice registry.

In the e-archive application, the invoices are transmitted to end users via electronic mail (in PDF format or structured data with an embedded ‘style sheet’) and invoices that are sent within the month are submitted to TRA as a report. The buyer is not required to register in the e-archive system. Upon the request of end users, the e-archive invoice is printed out and can be delivered to its user as a hard copy.

### 2.4.4 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 exception, 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.

### 2.4.5 North America

Considering the annual survey of Fiserv, 24% of all U.S. consumer bills are sent electronically, only with paper suppressed) [4].

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. Various surveys imply that the US is clearly past the early adoption phase of electronic invoicing and that the interest in this topic is rising sharply.

In relation to the huge size of this market, it may come as a surprise that in early 2016 there are still just around 150 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 steadily 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.

Surveys also directly or indirectly taking consideration of the e-invoicing topic are relatively rare. Most currently focus on the AP side, and mainly with regard to very large businesses.

Considering various sources, the results/trends for larger businesses can be summarised as follows:

- Around 40 percent use frontend scanning and OCR solutions for the invoice processing; trend: increasing
- Supplier portals are in place; trend: remains stable
- Purchasing cards (P-Cards) are popular and common for purchases with a high volume, but a small amount. Using P-Cards is directly affecting the invoicing volume and the kind of processing; trend: remains stable
- Roughly 2/3rds of businesses issue PDF invoices via email, but less than 20% via EDI
- For AP departments, e-invoicing is priority number 4-5 (behind imaging, scanning/OCR, workflow, matching)
- Third-party services like e-invoicing networks or alternatively SaaS becomes increasingly important. Using this service helps significantly reduce high in-house investments, but at the same time paves the way to exploit the saving potential; trend: increasing
- Around 50 percent of the B2B invoices are still paid by checks; trend: stays stable
- Any alternative invoice payment and cash optimisation instruments are clearly gaining momentum. Offerings for Dynamic Discounting and Supply Chain Financing vehicles are benefitting in particular.

The vast majority of US businesses, however, employ less than 500 employees. Their behaviour and their preferences are not sufficiently reflected in today’s available surveys. If the market behaves in a way comparable to the corresponding user segment in other countries, we may soon expect a very solid growth of third party cloud services.

This prediction is also confirmed in a recent study by Ardent Partners. According to the study, 19% of companies are using these networks and the number is expected to rise to 41% within the next two years.

The US Federal Administration intends to make a huge step forwards. After a pilot programme which explored the feasibility and benefits of e-invoicing in the public sector, the Office of Management and Budget (OMB) released a memorandum [5] directing federal agencies to transition towards electronic invoicing. Government agencies must begin processing all invoices electronically by the end of FY 2018. They can do so either by migrating to a Federal Shared Service Provider (FSSP) and using the FSSP's e-invoicing solution, or by using an OMB-approved electronic invoicing solution such as the Department of the Treasury's Invoice Processing Platform (IPP). IPP has already been implemented at three out of four FSSPs and has nearly 80 agencies enrolled and using the service.

2.4.6 Latin America

Chile may be identified as the root of the Latin American market model and its development. Other markets like Brazil and Mexico are among the early adopters and some of them overtook Chile due to strict obligations for the usage of e-invoicing in that country. Meanwhile, almost all other countries in Latin America are rapidly evolving.
Argentina’s tax authority (AFIP) announced a further expansion of the mandatory e-invoicing regime to all sectors of the economy. The final deadlines depending on business revenues are set in April, July and November 2016. The AFIP forecasts that the requirement to issue e-invoices will affect a total of 810,000 taxpayers.

Brazil achieved the highest market penetration globally for electronic invoices in the B2B/B2G segment. With very few exceptions e-invoicing is mandatory for all businesses and around 1.3 million businesses issue e-invoices for goods [6]. This result was possible due to the strict implementation of its e-invoicing requirement several years ago. It is now a pleasure to see Brazil as one of the innovators for users in the retail segment. The project ‘Nota Fiscal Eletrônica para Consumidor Final – NFC-e’ was launched at the end of 2011. The aim of the NFC-e project is to provide an alternative to the current fiscal printers used in the retail segment in the form of a fully electronic solution, based on an XML file, including a digital signature which is authorised online before the payment at the point of sale. In addition, customers (individuals or businesses) with purchases above $ 5,000 are required to provide identification. NFC-e follows the same technical and operational model of the NF-e (B2B/B2B) used for all industry and wholesale companies in Brazil. NFC-e is already in operation in more than 15 states. NFC-e is the last frontier of electronic tax documents in Brazil. Soon all tax documents will be in the database of the Tax Administration prior to implementation. Electronic reporting and auditing plays a key role in Brazil. They consequently expand upon its reporting requirements significantly. From 2017, Brazil intends to require businesses to also submit monthly inventory and production reports. E-reporting increasingly considers all documents relevant for tax purposes. This also includes documents regarding labour costs, employment etc.

After several years of following a voluntary approach, the Chilean tax authority declared a requirement for electronic invoicing. Consequently, at the end of 2015, 200,000 businesses were already registered as e-invoicing users [7]. In 2015, they already exchanged 77% of all invoices in the country electronically. Tens of thousands of other SMEs will be required to issue invoices exclusively electronically from August 2016 or respectively February 2017. The remaining 64,000 businesses will be affected by the requirement in 2018. The requirement to issue e-invoices forms one part of the model. On the other side, the tax authorities also offer incentives for recipients to provide electronic confirmation of received e-invoices. This shall ensure that business only consider the purchases of confirmed e-invoices in their monthly tax returns.

Colombia is also promoting the e-invoicing landscape. The constraints here are much more flexible and market-focused. The legislation permits ‘technology neutrality’ and format flexibility (XML, PDF, TXT, etc.). In December 2013, CONPES [8] published a new concept with the aim of pushing the mass market in Colombia. E-invoicing was voluntary in phase one, but it will become mandatory in the future. It will also ensure that the structured invoice data are actually received by customers. The new decree will require buyers to digitally acknowledge receipt of the e-invoice by issuing a digitally signed XML message to the supplier, and accept or reject the invoice by issuing a second digitally signed XML message.

Combating tax evasion is a major objective of the new ‘Sistema de Facturación Electrónica’ (SIFEL). It is the aim of the tax authorities DIAN to halve VAT evasion using this new electronic system.

Mexico is among the leading countries worldwide and is mainly driven by a government requirement. Meanwhile, more than 5.4 million taxpayers are issuing electronic invoices for goods and services in Mexico.

Additional initiatives are being taken in Mexico beyond electronic invoicing. E-accounting has become mandatory for companies and individuals with annual revenues in 2013 greater than
US$ 270,000. Companies and individuals with revenues below this threshold will have to adopt e-accounting by 2016.

Besides efficiencies in the generation, distribution, archiving, collection and reduction in the use of paper, Mexico’s positive results in the adoption of e-invoicing and e-accounting have paid off in the reduction of tax evasion. Mexico has already increased tax revenues by more than a third without raising tax rates and will further enhance electronic audits. This goes far beyond the reporting of accounting and invoice data. It also includes documents regarding the relationship between businesses and their employees. For example, all the monthly salary slips must already be sent electronically. The ultimate goal is to conduct all audits for tax-relevant business processes electronically. The e-audit system is scheduled for update in the second half of 2016.

In addition to the past and present activities regarding the domestic electronic exchange of tax relevant information, there are also projects in progress in order to consider cross-border invoices. Mexico intends to expand the international acceptance of electronic invoices across the American continent. The SAT is therefore working with tax authorities in several Latin American countries, the United States and Canada [3].

In January 2013, Peru started a pilot project with the aim of declaring e-invoicing as mandatory for suppliers to public administration. The approach in Peru takes international standards into consideration (UBL 2.0 as the content standard). It shall enable easier integration with trading partners in the European Union and the APEC (Asia-Pacific Economic Cooperation) countries. The Peruvian model has similarities with the Brazilian model insofar as shipping documents are also part of it. Either the ‘Factura’ or ‘Boleta’ should accompany the carrier in conjunction with the ‘Guia de Remisión’ (signed bill of lading that forms part of the process). The rollout is steadily mandating new groups of invoice issuers; 11,800 issuers have been affected from July 2015, followed by more in coming years. The objective is to achieve full mandatory e-invoicing by 2017 [3][9].

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 and phase 4 (e.g. Brazil and Mexico). The initiator for the market activities is in most cases the government. The driver for establishing countrywide 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 high market penetration rates, 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.
- Consider the classical invoices, but also other tax documents like credit notes, debit notes, receipts respectively “boletas de ventas” or “tickets” as they are also named
- 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, PDF417 in Chile or any QR Code).
• 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. A very large proportion of the numerous SMEs still prefer printing a paper copy of the invoices, regardless if they were available electronically as well [10].

2.5 The European Market

2.5.1 Market characteristics and development

The European landscape is not comparable with Latin America or the US for several reasons. Here just some facts about Europe in the narrow sense:
• 40+ countries (28 of them members of the European Union)
• 40+ legislations
• 100+ languages
• 22+ million SMEs (with less than 250 employees)

Europe has a long tradition of optimising electronic business processes, but the development happens step-by-step.
Figure 20: e-invoicing development in the European Union

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Classical bottom-up growth in each single country, solution and service providers developed the market in the early stage, but with an isolated approach.</td>
</tr>
<tr>
<td>2</td>
<td>Especially the stakeholders in Nordic countries launched national initiatives for improving the collaboration. E-invoicing became increasingly a cornerstone of the digital agendas defined and pushed by the government; first national multi-stakeholder I were founded with the aim for faster market development and at least harmonisation on national level.</td>
</tr>
<tr>
<td>3</td>
<td>Due to the market fragmentation and growing cross-border trade, e-invoicing became a key topic also in the digital agenda and activity plans of the European Commission. It resulted in some directives, removal or reduction of barriers and standardisation work.</td>
</tr>
<tr>
<td>4</td>
<td>In 2014, Directives 2014/24/EU and 2014/55/EU were released. They will affect probably more than 100,000 Public Administrations in EU member states. They will be obliged from end of 2018 to support a certain e-invoicing standard and to become able for automated processing of electronic invoices. In addition have they to change certain procurement processes towards electronic procedures. Although the obligation is valid just for the public sector is it obvious that it will have a major impact to the public sector as well as to all suppliers to the public sector.</td>
</tr>
</tbody>
</table>
2.5.2 The Business-to-Business & Business-to-Government market

2.5.2.1 Market penetration

VAT compliant B2B e-invoicing has been legally permitted in Nordic countries since around the millennium, in the EU since 2004 and meanwhile in all larger, mid-sized and de-facto all smaller European countries.

Status and market development differ from country to country.

Figure 21: B2B/B2G/G2B: Estimated market penetration 2016 per country

2.5.2.2 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.

2.5.2.3 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. Unfortunately, no international survey gathered such data on a comparable base. That is why the author shares here the results of a study done with survey participants in German-speaking countries in 2011 and 2015, with a focus on the largest European country.

Figure 22: Multi-channel invoice exchange methods in German speaking countries

### Invoice exchange methods 2015 (Focus Germany)

#### Issue

<table>
<thead>
<tr>
<th>Method</th>
<th>Large Business</th>
<th>Mid-sized Business</th>
<th>Small Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper</td>
<td>88% (91%)</td>
<td>85% (98%)</td>
<td>79% (91%)</td>
</tr>
<tr>
<td>E-Mail</td>
<td>53% (20%)</td>
<td>62% (23%)</td>
<td>64% (48%)</td>
</tr>
<tr>
<td>Via Website</td>
<td>5%</td>
<td>8%</td>
<td>5%</td>
</tr>
<tr>
<td>EDI</td>
<td>10% (26%)</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>DE-Mail/E-Postbrief</td>
<td>5%</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>Fax</td>
<td>19% (19%)</td>
<td>9%</td>
<td>7%</td>
</tr>
<tr>
<td>Others</td>
<td>11% (4%)</td>
<td>4%</td>
<td>2%</td>
</tr>
</tbody>
</table>

#### Receive

<table>
<thead>
<tr>
<th>Method</th>
<th>Large Business</th>
<th>Mid-sized Business</th>
<th>Small Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper</td>
<td>93% (100%)</td>
<td>93% (99%)</td>
<td>97% (99%)</td>
</tr>
<tr>
<td>E-Mail</td>
<td>78% (47%)</td>
<td>81% (74%)</td>
<td>92% (83%)</td>
</tr>
<tr>
<td>Via Website</td>
<td>5%</td>
<td>8%</td>
<td>5%</td>
</tr>
<tr>
<td>Website Download</td>
<td>28% (32%)</td>
<td>33%</td>
<td>45%</td>
</tr>
<tr>
<td>EDI</td>
<td>9% (9%)</td>
<td>9% (7%)</td>
<td>0%</td>
</tr>
<tr>
<td>DE-Mail/E-Postbrief</td>
<td>8% (8%)</td>
<td>6%</td>
<td>9%</td>
</tr>
<tr>
<td>Fax</td>
<td>45%</td>
<td>27% (27%)</td>
<td>22%</td>
</tr>
<tr>
<td>Others</td>
<td>5% (5%)</td>
<td>3%</td>
<td>1%</td>
</tr>
</tbody>
</table>

(Values of comparable survey in 2011)

Source: ibi research [11]

Multiple answers were possible. The majority of companies interviewed are located in Germany and are enriched with a few survey participants from Austria and Switzerland.

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 23: Proportion of various invoice formats

Recent surveys in countries like Austria, Estonia, Germany, Spain and the US indicate that in 2015, the proportion of PDF invoices was around ¾ of all electronic invoices.

The public sector is definitively 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 (e.g. Austria).

2.5.2.4 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, the Nordic countries, Slovenia and Switzerland.
The temporary jump in the number of directly exchanged electronic invoices is mainly a 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 (before they were not be considered as tax compliant e-invoices).

The exponential growth rates for service providers is 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 2015-2018 due to EU digital agenda and new directives).

2.5.2.5 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 following 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.
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 fully 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.

At least with respect to the federal administration, Austria, Estonia, France, Italy, the Netherlands, Slovenia, Spain, Sweden and Switzerland are already on level 5, or respectively are expected to reached this level within the coming twelve months (as is the case for France).

The regulatory field in the UK has now also been prepared. It is covered by the Small Business, Enterprise and Employment Act 2015, which received final Royal Assent and passed into law in March 2015. The Act contains a regulation-making power which allows the UK Government to mandate a range of measures relating to public procurement in the future, including the use of electronic invoices.

Preparing the regulatory field at the EU and national level is often a necessary first step for broad support in the public sector. This is now fully in progress and an important deadline in EU member states is set at the end of 2018.

The results of two surveys in the German-speaking countries are available and show the increased awareness in the public sector. Survey 1 [12] shows that just 8% of the German municipalities already used e-invoicing in March 2015. Only an additional 19% planned to implement e-invoicing by the end of 2016. 77% of municipalities and states in Germany as well as 23% of the public administrations in Austria and Switzerland took part in survey 2 [13]. This survey was conducted in October/November 2015 and showed a more advanced state of progress: 19.6% responded that they already use e-invoicing, whereas a remarkable 60.1% had plans to implement it. This indicates that the awareness for the relevant EU directive in the analysed markets has
sharply increased within just a few months. Although the public sector is increasingly maturing, it will be a major challenge for the public administrations to keep within the timeframe as defined in the EU directive.

2.5.2.6 Market Maturity in the private industry and 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.

2.5.3 The Business-to-Consumer market

2.5.3.1 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.

Status and market development differ from country to country.

Figure 26: B2C: Estimated market penetration 2016 per country
2.5.3.2 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.

2.5.3.3 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 27: Electronic bill volume B2C, direct and via Service Provider

A Dutch and a very large German Telco operator lose steam and the proportion of its e-billing users increases just modestly. Due to its size (16+ million e-bill subscribers), it has an impact on the European figures.

2.5.4 Supporting initiatives

2.5.4.1 Overview
The private industry is typically the catalyst for almost all digitalisation and automation projects. Although the solution providers are in competition with each other, as well as often the users in specific industries, they frequently build supportive initiatives and associations with the aim to standardise and promote the new technologies. Classic examples include OASIS, UN/CEFACT,
GS1, CEN, EESPA (European E-Invoicing Service Providers Association) and many national or industry-specific organisations.

The public sector supports development through a variety of activities
- Considering the topics in the digital agenda and supporting it in various ways
- EU directives and implementation into national legislations
- E-Government Action Plan 2016-2020
- Launching/supporting standardisation initiatives
- Mandating public administrations to prepare their systems and processes for e-invoicing and e-procurement
- Promoting or mandating its suppliers to communicate exclusively by electronic means

2.5.4.2 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 28: Global and industry independent standards for invoices and business messages

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ebXML</td>
<td>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.</td>
</tr>
<tr>
<td>OASIS UBL 2.x ISO/IEC 19845:2015</td>
<td>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. UBL v2.1 has now been approved for release as ISO/IEC 19845:2015 Standard. UBL provides the standards for the PEPPOL (Pan European eProcurement Online) platform and public procurement initiatives in several countries.</td>
</tr>
</tbody>
</table>
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

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 Germans embed a subset of CEN CII (Cross Industry Invoice) and MUG (Message User Guides) as XML into the PDF/A-3 files.

CEN/PC 434

The new Directive 2014/55/EU requires the development of a European standard for e-invoicing in public procurement with the aim of removing cross-border barriers. The future standard should be based on existing initiatives, such as the CEN Workshop on Business Interoperability Interfaces for Public Procurement in Europe CEN WS/BII, the MUG (Message User Guide UN/CEFACT Cross Industry Invoice) and other international standards if required.

The deliverables of the project group will include a European standard on the semantic data model for the core elements of an electronic invoice, a technical specification on a limited number of invoice syntaxes and other components.

The standard will be transposed to Member State level and is intended to be supported by all EU public administrations by the end of 2018. The core invoice is also intended for B2B use.

CEN/PC 440 Electronic public procurement

The main objective of the committee will be to develop standards to support and facilitate the electronic public procurement processes and their underlying accompanying information flows in the physical and financial supply chain (for all other document exchanges in electronic public procurement).

The committee will work in close collaboration with the CEN Project Committee on Electronic Invoicing (CEN/PC 434).
Industry specific standards are
- ETIS: Telecom invoices
- GS1: EANCOM, GS1 XML and GS1 UN/XML standard mainly for various sectors including retail
- 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
- Germany: ZUGFeRD
- Italy: BTW, FatturaPA
- Spain: facturAE
- Sweden: Svefaktura, SFTI
- Switzerland: swissDIGIN
- Turkey: UBL-TR (based on UBL)

2.5.4.3 Electronic invoicing and procurement on the EU 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.

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 on board
- 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 EU has adopted a new regulation, which will introduce a new legal framework for electronic signatures, seals, time stamps and electronic documents. These rules aim at creating a uniform regime across EU for the mutual recognition of electronic identification between member states. This new regulatory framework (910/2014/EU) will apply from 1 July 2016 replacing the Directive on Electronic Signatures (1999/93/EC). The new directly effective Regulation will ensure uniformity across the EU, and will address the existing problem of different national rules on electronic signatures, which is due to every member state implementing the law individually.
- The European Committee for Standardization (CEN), a major provider of European Standards and technical specifications, defined useful e-invoicing Guidelines. Further specifications will follow within the CEN/PC 434 and 440 project.

e-SENS (Electronic Simple European Networked Services) is a new large-scale project that embodies the idea of European Digital Market development through innovative ICT solutions. The
The project will consolidate, improve, and extend technical solutions to foster electronic interaction with public administrations across the EU (www.esens.eu).

A major boost during the coming years is expected due to the implementation of the new directive for e-invoicing in public procurement.

2.5.4.4 Impact of new government initiatives

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 into 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 there is 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.

In a second step, suppliers (or at least larger ones) are mandated to send the B2G invoices electronically. Denmark is a pioneer in this segment (obligation since 2005). Austria, Finland, Italy, Norway, Slovenia, Spain and Switzerland belong to the early adopters.

Some countries in Latin America, Asia and Europe mandate businesses to send electronic invoice data to the tax authorities mainly for reasons of validation. This is sometimes just reporting invoice-related data, but appears increasingly to be combined with real e-invoicing between suppliers and buyers.

Last year, Directives 2014/24/EU and 2014/55/EU were passed. From the end of 2018, Public Administrations (PAs) in EU member states will be obligated to support a certain e-invoicing standard (see CEN/PC 434 in Figure 28) and to develop the ability to carry out automated processing of electronic invoices. In addition, they have to migrate certain procurement processes towards electronic procedures. The schedule is quite tight for the PAs affected. This means that most of them are starting their projects now. Because of the obligation, many PAs are now also evaluating strategic options that go beyond the objectives of the EU Directives. They are developing strategies with the aim to achieve broad-scale market adoption rates for electronic processes. The directives shall increase the proportion of electronic invoices and pave the way for cross-border interoperability.

The author estimates that the new directive will affect 100,000+ public administrations/agencies in Europe. They have to enable their systems and processes until 2018 at latest with the aim to receive and process invoices electronically. Almost all EU member states have meanwhile launched projects for planning and implementation. In parallel, the update of their legislation is in progress.

This step paves the way for a broad-scale market adoption. Several countries are also expected to declare an obligation for Business-to-Government electronic invoicing in addition.

Government e-invoicing initiatives are certainly not limited to Europe. More than 50 countries around the world are pushing e-invoicing and other paperless processes.
3. **Market trends and changing environment**

In view of the rapidly changing environment, the author sees these topics as being in the foreground for the two years ahead of us:

- Many new government initiatives resulting in B2B and B2G e-invoicing, e-reporting and e-auditing requirements are forcing large international invoice issuers in particular to act.
- The business models and IT systems of most organisations evolved in decades characterised by the use of paper-based processes. Businesses are required to become more agile. They are recommended to replace their traditional models with disruptive innovations and to re-engineer the processes.
- Pure e-invoicing services are no longer sufficient. The demand to support additional documents, processes and value added services is increasing substantially.
- Accurate data build the pre-requisite for automated processing of invoices and other business documents. Improving the data accuracy is also increasingly required to be fully tax compliant.

3.1 **International invoice issuers being forced to take action**

Many larger companies have already been sending their invoices to customers domestically and abroad in electronic format for around a decade. This format was and still is quite often a PDF and sometimes enhanced with structured data as defined by the invoice issuer. A sharply increasing number of governments abroad are mandating their suppliers to send the invoices in a specific format. The receiver defines this target format. Further legal requirements can force these international suppliers to not only convert invoice data, but also to process and archive them on servers in the country of destination. The in-house IT and legal staff can often no longer guarantee to fulfil the compliance requirements of customers abroad.

The author has already noticed a sharply increasing demand of international invoice issuers for consultation and solutions. This might be just the beginning of a major trend for the next 4-5 years.

3.2 **Increase business agility with disruptive innovation**

3.2.1 **Trends to increase business agility**

In today’s erratic economy, business agility is more important than ever before. According to the concept of business agility, organisations seek to approach their operations and resources in a flexible manner. The concept also concerns the ability to rapidly adapt to market and environmental changes in a productive and cost-effective way. Next-generation technologies lay a strong foundation as strategic drivers. Cloud computing allows scalability and adjustable costs per transaction, while mobile devices enable employees to work more easily away from traditional office environments, as well as providing a new form of interaction between people and machines.

Today’s business models evolved during decades which focused on conventional paper processing. In the northern hemisphere, businesses and governments are typically taking a gradual approach to replacing this paper-based systems with digital substitutes. Small steps can only create incremental improvements. A number of Latin American and Asian countries are instead developing disruptive models that are optimised for a fully digital world on a broad scale. These developments on a national level also make sense on a company level. The time is right to critically question the use of traditional models and shift to disruptive technologies.

Some innovative organisations have already realised the need to change and are therefore replacing their existing solutions with next generation technology.
Gartner predicts that 47% of (US) companies with less than $1 billion in revenues will move their core ERP systems to the cloud within the next five years. A new generation of providers has already launched services for cloud-based accounting and data entry via Click- or Crowdworker. They even believe that the new accountant of the future is a robot. This will of course have a significant impact on the next generation of AR, AP and e-invoicing solutions. E-invoicing clouds, compliance & archive services might soon gain momentum.

Associations such as https://www.eurocloud.org/ and others are pushing and coordinating this development. As a result, the author expects an increasing number of platforms featuring trusted cloud components (portals/shops with a catalogue of numerous cloud components). This allows end-users and service providers to form the desired cloud services into a complete service.

This development is still in its early stage, but may have the momentum to disrupt conventional models. By using these services, organisations will have the chance to be much more agile in the future.

3.2.2 Overcoming the ‘not-invented-here’ syndrome

Many organisations have a DIY (do-it-yourself) culture. They even develop in-house solutions for e-invoicing and the entire automation of business processes.

This results in insufficient business agility:
- Regulators are steadily increasing the requirements regarding tax compliance for invoices and other business and fiscal documents. Ongoing changes to the companies’ own systems and processes are required.
- The trading partners send or request the business documents in diverse formats. Organisations with in-house solutions have to invest a lot of time in building and maintaining the corresponding mapping tables and divergent processes.
- It is hard to maintain and expand functionality in a tax-compliant manner, while also staying flexible.

Tax-compliant invoice processing and archiving is business critical. In the vast majority of cases, it should therefore not be re-invented. Instead, users have the opportunity to replace in-house solutions with flexible and field-tested cloud services.

3.3 Beyond e-invoicing

3.3.1 Large organisations demanding value added services

In the past, large businesses pushed the e-invoicing market. They are also the promoters for the next market-developing phase and are quite demanding:
- A focus just on e-invoicing is not sufficient for them. The leaders among them intend to address and optimise the whole Order-to-Cash and Purchase-to-Pay processes.
- Electronic and automated invoice processes increase visibility, which allows cash flow and working capital management to improve. Data analytics and reporting features build an excellent basis for effective financial decisions and to maximize discount savings potential.
- Large organisations have the skills and resources to exchange electronic business documents directly with larger counterparts, but not necessarily with the high number of mid-sized and smaller trading partners. To address them, they can use electronic B2B networks. In the case of individual requirements, they are increasingly asking for SaaS platforms.
• Analytics solutions for procurement, invoicing, spend and payment trends might gain momentum. They deliver valuable results which are required to improve the entire order-to-pay and purchase-to-pay processes.

3.3.2 SMEs demanding new solutions and on-boarding models

Millions of SMEs are pushed by their customers (especially from the public sector) to send invoices just in electronic format. They will use the solutions that are most appropriate for them, very easy-to-use and efficient. Most SMEs expect out-of-the-box solutions, which can be implemented within minutes.

SMEs are demanding very smart solutions, but do not want to pay (much) for it.

3.3.2.1 Mass market users demanding new features and models

In many countries, we have reached the mass market. Appropriate solutions for SMEs are becoming 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 volumes are:
• No fee or discount prices up to a certain electronic invoice volume
• Provide an invoicing portal at least as an entry point before full integration into accounting software
• Due to limited IT expertise, SMEs demand very easy-to-use-solutions including self-care functionality. SMEs in particular do not want to change their processes and their way of doing business. It should be ensured that the solution/service could be used within minutes. Instruction video clips are a useful guide for new subscribers for setup up to the point where the first electronic invoice is successfully exchanged.
• Intelligent PDF invoices or 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.
• SMEs might also demand at least a limited workflow functionality as part of an e-invoicing service.
• Total invoice management, including hybrid (paper & electronic) and multi-format services.
• Trade finance products in combination with e-invoicing help to increase the acceptance of e-invoicing in this market segment.

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 taking this route, several millions of enterprises were enabled for e-invoicing during the past two years.

3.3.2.2 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.

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 by default; only a few can resist and Opt-Out; Explanation of the term “Opt-Out” see figure 45.
• 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)

Innovative solution providers developed very advanced strategies, models, tools and services for recruiting and engaging a very high number of trading partners.

3.3.3 E-invoicing & e-procurement

In many countries, e-invoicing is much more visible on a broad scale than e-procurement. One reason for this is that e-invoicing was pushed by tax authorities around the world as a top priority and e-procurement was mainly an issue of the private industry. According to Eurostat [14], 17% of all businesses with 10 or more employees in the EU received at least 1% of its orders electronically in 2015. Considering this statistic, Belgium, Croatia, the Czech Republic, Denmark, Germany, Iceland, Ireland, Norway, Portugal, Sweden and the United Kingdom are more advanced than average. Sweden maintains a nationwide index on the growth of e-invoices and e-orders. In Q2 2014, the ratio was 11.4 e-orders for every 100 e-invoices. The absolute growth rates of e-orders are clearly below the values achieved for e-invoices. [15]

The public sector is responsible for 16-18% of all purchases in a given country. Nevertheless, a maximum of 5% of public purchases are processed using electronic procurement solutions. This is now in progress of changing – at least within the European Union. The EU intends to modernise public administration with end-to-end e-procurement (from the electronic publication of notices to electronic payment). Specific concepts and standards have already been developed or are currently being drafted. [16]

These public sector activities in the EU might generate a strong tailwind for e-procurement initiatives in the private sector as well. It paves the way for closing the electronic loop in the processing of orders and invoices.

3.3.4 E-invoices & other fiscal documents

Governments’ revenue departments combat tax evasion wherever they can. They seek to gather vast amounts of data regarding all relevant issues – following the concept of Big Data. Today, the status quo in all countries is just to collect general ledgers and other audit data. In most countries, this is still only required periodically, after transactions have already occurred, and paper-based reporting is in most cases still permitted. This likely has no real influence on reducing tax evasion.

Considering all fiscal documents, it is the invoice which provides the most complete information for tax authorities. Invoices are therefore moved to the foreground as part of a next step. In this phase, tax authorities mandate the organisations in a country to exchange invoices in electronic format only. The invoice data also have to be sent to the tax authorities (clearance model) before or after the shipment of goods. A major focus is place on real-time or near real-time processing. E-audit and data forensics help the tax authorities to detect anomalies sooner. As we see in a number of countries, these steps significantly facilitate a reduction in tax evasion.
Nevertheless, tax evasion is still possible, for instance, if goods are sold over the counter, or if paid salaries are wrongly declared or not declared at all etc. Consequently, countries that in particular exhibit a level of tax evasion above the international average are currently attempting to completely close the electronic loop between tax payers and the tax authorities. All data of fiscal relevance will be reported to the tax authorities electronically in the future. Real-time or near real-time audits will become a matter of course.

Most countries in Latin America, as well as some in Asia and Southern Europe (Portugal, and Spain from 2017) are forerunners with respect to this development.

This concerns several fiscal documents, which are increasingly required to be exchanged with tax authorities, trading partners and employees in an electronic format only, including:

- Salary statements (such as in Mexico)
- Bank statements (such as in Mexico)
- Bill of lading or delivery note, to ensure that a supply follows an invoice (such as Brazil)
- Invoice
- Goods received notes (such as Manifestacao do Destinatario in Brazil)
- VAT declarations
- VAT deduction documents
- Payment slips to cover revenues made over the counter (fiscal document issued by tills at the point of sale)
- Export/import, trade facilitation documents
- …

As the electronic gaps from the taxation perspective will be closed, tax declarations, deductions and the traditional audits will no longer be required in the future.

The results for the tax authorities are remarkable:

- Brazil has seen a $ 58 billion (USD) increase in tax revenue as a result of plugging gaps in invoicing and reporting.
- Mexico increased tax collections by 34% in the first wave of its e-invoicing rollout, before mandates on reporting even went into effect.
- Colombia found that it could reduce 50% of the country’s tax evasion by applying these forms of models.

To achieve this, it is necessary to completely disrupt the conventional paper-based models. Not all countries have this capability or the political support for the strict replacement of traditional models.

### 3.3.5 Solution providers challenged by diversified demand

Even for larger businesses it is often too difficult to comply with these rapidly changing requirements using in-house solutions. Therefore, it is even more important to involve third-party solutions and service providers to support them through this transition phase.

Specialised solution providers are experienced in this area and they have the business focus to handle this level of complexity. Nevertheless, it is also quite challenging for them to support their customers through the transition phase. The competition between solution providers is now
quite tough. Customer-oriented offerings and innovations are in demand more than ever. A suitable and affordable long-term strategy for managing future business may become a key issue for these service providers.

Figure 29: Future Markets Radar for Service Providers – Future Management

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>The commodity service could include any-to-any data formatting, tax compliant e-invoice preparation (domestic and cross-border), transport/distribution and archiving. Cost leadership is required for being competitive in the future. Providers unable to increase the processed invoice volume above the market average growth should think about mergers with competitors for achieving the critical mass.</td>
</tr>
<tr>
<td>2</td>
<td>The author expects that in the provider community the “wheat will be separated from the chaff” based on the capacity to be a champion in these disciplines: Specific business rules are applied at least for validating the mandatory data fields in invoices. Data accuracy is a cornerstone for significantly reducing the costly exception handling of invoices. Electronic invoices can become the catalyst for this improvement. Meanwhile, a few service providers have developed excellence to engage and onboard a high number of users in a short time. In just a few years, the most attractive market segments in advanced countries might be occupied. In today’s globalized world it is no longer sufficient to support just the domestic requirements. Country- and even industry-specific enhancements should also be supported.</td>
</tr>
<tr>
<td>3</td>
<td>Value Added Services (VAS) are increasingly an important differentiator to other competitors. In the spotlight today are hybrid services (processing of paper and electronic invoices in parallel), instant payment features, any kind of Supply Chain Financing &amp; Trade Financing, Dynamic Discounting, data synchronisation services (master data, product data), analysis of invoice and processing related data.</td>
</tr>
<tr>
<td>4</td>
<td>The tax authorities are increasingly demanding with regards to the reporting of any tax documents in electronic format. In the past this was often limited to general ledgers and VAT declarations. Increasingly taxpayers are also requested to send electronic</td>
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<tr>
<td>Phase</td>
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<td>data of audit files, invoices, credit notes, debit notes and even the payment receipt data produced by fiscal printers at the point of sales. Service providers mainly acting in Latin America, Asia, South and Eastern Europe are affected by this development. The IT challenges for many taxpayers are too high and they prefer to involve a service provider doing this on behalf of them.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>A pure focus on processing solely electronic invoices is no longer sufficient. Meanwhile, more than 50% of service providers offer also support for other related business messages (e.g. orders, order confirmations, statements). In a first step they transport such documents in an electronic envelope. Leading providers offer advanced services like content validation and matching between the different messages. The most popular services are currently the matching between orders, invoices and delivery notes. This can also include the optimisation of expenses management (e.g. comparison of invoice line items with orders and/or prices as agreed in contracts).</td>
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<tr>
<td>6</td>
<td>Traditional electronic marketplaces grow increasingly into the business area of e-invoicing networks and vice-versa.</td>
</tr>
<tr>
<td>7</td>
<td>Exporters and importers process many cross-border invoices, but also a high number of customs, trade and transport documents. These additional trade documents have a high degree of overlap with the commercial and tax invoice. Tax authorities and auditors increasingly demand documents approving supplies and customs documents. The first e-invoicing network operators enter into this area in order to offer a full e-document service to their customers (full service for exporters and importers). This development is still in its early stage but might gain momentum until the end of this decade.</td>
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</table>

Today the service providers have an extremely high degree of vertical manufacturing (make almost everything by themselves). It is obvious that most providers do not have the capacity and resources to develop and process all future services by themselves. Comparison: The automotive industry today has a depth of manufacture of 20-25% and still tries to reduce it. Specialized partners do the rest. In the end the author expects (and recommends) a similar development of the solution provider community.

Disruptive innovations should not only be considered by end-users, but also by solution and service providers. The market ultimately demands a highly holistic solution, exceeding the capability of most solution providers. Segmentation into specific functions that are provided by specialists to other service providers could become a realistic scenario. Finally, the potential innovation models for service providers are comparable to those of end-users (chapter 3.2.1).

### 3.4 Improve the data accuracy of tax-relevant documents

#### 3.4.1 Brief analysis of challenges

Recipients particularly understand the problems of poor data quality in invoices. This starts with differences in the master data and other data fields mandatorily required by the tax legislation. Inaccurate invoice data result in expensive exception handling and payment delays.

As many businesses optimise taxes through illegal and legal methods, tax compliance is increasingly put into the spotlight. The OECD and G20 countries agreed to increase the requirements for reporting and the tax compliance of any business documents. The Panama papers scandal
might further strengthen and accelerate this trend. Businesses have to provide more precise evidence that trading partners really exist and that business documents are based on a supply of goods or services. The current accuracy of invoices and related business documents may no longer be sufficient.

Invoice issuers and recipients also have tremendous costs associated with inaccurate invoices. This is well reflected in a survey. Atradius [17] analysed the main reasons for payment delays by domestic B2B customers. Incorrect information on invoices was the reason for 25.7% of these delays in Asia Pacific, 26.3% in the Americas and 15.1% in Europe. Even worse is the fact that in 19.2% of the cases in Asia Pacific, the invoice was sent to the wrong person. The value in the Americas was 21.4% and in Europe 11.6%.

Higher invoicing accuracy can be achieved by improving the address data of issuers and recipients, and all data related to the underlying supplies (goods and services).

Phantom trading partners (fictitious corporate entities) and supplies (never delivered) are also a main reason for AP fraud. According to a 2015 APN survey, 44% of organisations have been affected by fraud in the last three years [18]. According to the 2014 Report to the Nations on Occupational Fraud and Abuse, the typical organisation loses five percent of its revenues to fraud each year [19].

Not all, but many of these challenges can be overcome with an appropriate measure to improve data accuracy and validate the data on a real-time or near real-time basis. E-invoicing based on accurate data lays an excellent foundation to this end.

3.4.2 Accurate addresses and master data

Tax compliance requires that both trading partners really exist, and that their addresses are correct and in line with the entry in the business register.

Digital certificates can be one tool that may be used to unequivocally identify trading parties, at least on the technical authentication level. They are already in use in some countries with this objective. However, this unique identification does not necessarily guarantee that the issuer and recipient addresses on the invoice will correspond. This can rather be ensured by a synchronisation of the master data with accredited registers. Such accredited registers may be the national business registers. In addition, public sector registers – including the public administrations/agencies on all federal levels – may be established and maintained. The data of these registers are sometimes not yet fully public, mainly for privacy reasons. If this is the case, the legislation can be changed to pave the way for easy online access to them. For practical reasons, registers are required to support a number of specifications regarding hierarchies such as for headquarters and branches, subsidiaries etc. If these prerequisites are fulfilled, the market participants can use lookup routines to dynamically synchronise key parts of their master data in their ERP solutions or respectively the user directories of e-invoicing network operators. Australia might be one of the first countries going this way with dynamic lookup routines [1][2]. Some Nordic countries, Austria, Italy (public administrations) and a number of others are also quite advanced in this respect due to their use of public registers in the context of e-invoicing.

Direct data synchronisation between the systems of trading parties will still play an important role in many high volume industries, but might in the medium term be complemented or replaced by synchronisations with national registries.
Some projects are paving the way towards the identification of trading parties in the future, including for cross-border transactions. The EU has initiated eIDAS [20]. Mexico is also very active regarding unique cross-border identifiers for trading partners in Latin American countries, the US and Canada.

3.4.3 Accurate product and service information

Due to compliance requirements, businesses have to provide the evidence that business documents are based on a supply of goods or services. Tax optimisation by over-invoicing (fraudulently increasing the price of a good or service) or under-invoicing (decreasing the prices) shall thereby be avoided.

Businesses also have their own interests in accurate goods or service descriptions in invoices. For standard or mass goods and services, especially in regulated market segments, such data can be synchronised with a central database. One example is TARMED, the tariff structure in the Swiss healthcare industry. The supplies in the invoices are matched with these standardised data. Most businesses are operating in a less standardised environment. For them, good options for increasing the accuracy of such invoice data are also available. Integrated purchase-to-pay solutions are leading to catalogue data matching.

For most organisations, it makes sense to issue orders predominantly by electronic means and receive e-invoices. The content of these two messages can be automatically matched.
4. Digitisation & Automation

4.1 From gradual evolution to innovative business process automation

Remark: In order to simplify the description, the author focuses on the invoice recipient side in this chapter. The steps for improvement are accordingly also valid for the invoice issuer side.

Organisations typically follow an evolutionary path and gradually improve their processes in 10-20% steps. Substantial savings are possible with this approach. Besides the introduction of these classic steps in this chapter, the author will also encourage the readers to assess a more revolutionary model for business process automation based on disruptive innovation with the aim to improve to 90%.

Figure 30: From gradual evolution to innovative business process automation

| Invoice Processing Costs | Business Process Automation
<table>
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<tbody>
<tr>
<td></td>
<td>Disruptive Innovation</td>
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<td></td>
<td>Automated E-Invoicing</td>
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<td>Digitisation</td>
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<td></td>
<td>Sustaining improvement with manual paper processing</td>
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</tbody>
</table>

4.2 Sustaining improvement with manual paper processing

In most organisations, conventional paper processing is not optimised. Invoices are often received decentrally by many departments. Cash managers do not have an overview of all invoices in the workflow and therefore only have limited opportunities to improve the working capital.

A first step of improvement is to centralise inbound invoices. From the very beginning, they can be processed more efficiently in a shared service centre. Offshoring such shared service centres can again reduce the processing costs substantially.

Nevertheless, the classic shortcomings caused by the paper format remain, such as:

- The accuracy of the invoice content remains a problem; typically 20-30% of all invoices have to be treated as exceptions in one form or another, resulting in very high processing costs.
- The data are validated and matched with related documents manually; this is time-consuming and costly. Delayed payments are often caused as invoice errors are detected very late during the processing cycle. Potential discounts are missed and the DSO stays too long.
• The master data have to be updated manually, resulting in high trading partner administration costs.
• For archiving paper invoices, a great deal of space is required. It is also costly to retrieve paper invoices in the event of audits or queries.
• The demand of trading partners for an electronic channel is not satisfied.
• Last but not least, paper invoices are harmful to the environment.

4.3 Digitisation

Digitisation is a huge step forward. Currently, two methods are in the foreground:
• Paper scan and capture
• Image-based PDF invoices

Digitisation requires organisations to establish invoice workflow and archiving solutions. As a consequence of this improvement, many disadvantages of conventional paper processing disappear, but several still remain:
• The accuracy of the invoice content remains a problem; typically 20-30% of all invoices have to be treated as exceptions in one form or another, resulting in very high processing costs.
• The master data can be updated on a semi-automatic basis, but the risk of redundancies of master data with minor differences could increase.
• The demand of trading partners for an electronic channel is not, or not fully, satisfied.
• Last but not least, paper invoices are harmful to the environment.

Image-based PDF invoices are for many organisations a first step towards paperless invoices. Invoice issuers favour these as they have an immediate positive impact on costs. Larger invoice receivers are more sceptical towards exclusively image-based digital invoices. Nevertheless, it is even an improvement for them compared to paper invoices. Transport is much faster. They have access to a quick, digital channel for feedback and rejects. For internal processing, recipients can feed the PDF invoices into the scan and capture process. The resulting data quality of this is slightly better than with paper invoices.

4.4 Automated e-invoicing

The legislation in many countries (in Europe, North America, Pacific etc.) considers paperless invoices in any electronic format to be e-invoices. This includes structured electronic invoices as well as image-based PDFs. Depending on the country, up to 50% of all businesses use office programs to generate invoices. They often neither have AR nor AP modules for their accounting. Many of them have outsourced invoice-related processes to third parties. For them, it is challenging to practically automate e-invoicing processes. For most others, however, a key objective is to fully automate these processes. Terms like ‘touchless e-invoicing’, ‘zero touch e-invoicing’, ‘true e-invoicing’ or ‘automated e-invoicing’ are used in this connection.

Suppliers and buyers use structured invoice data and typically establish direct two-way communication or increasingly use a service provider for the bilateral exchange. This results in many benefits.

E-invoicing is typically practiced in a centralised manner for all outbound and inbound invoices. This results in increased transparency and builds an excellent basis for the optimisation of cash management.
A major shortcoming of any paper and digital image-based approach is that the accuracy of invoice data is not guaranteed. With the appropriate approach, this problem can immediately be eliminated or at least improved (see chapter 3.4). The unique identification of trading partners based on compliant master data is a prerequisite and becomes the norm for automated e-invoicing.

True e-invoicing paves the way for real-time or near real-time data validation. The earlier an incorrect invoice is rejected, the sooner a new one can be sent. As a result of the improved invoice accuracy, the approval and processing time can be reduced significantly. The DSO can in most cases be shortened by several days.

Dispute handling can be conducted in a more structured way by using the same electronic communication channel. As a result of the increased electronic interaction, the trading partner administration costs can be reduced substantially.

Compared to conventional paper invoice processing, the automated e-invoicing will result in cost savings of 60-80% in most cases.

Structured e-invoices build a good starting basis for value-added services and the easier implementation of trade financing services.

4.5 Business process automation with disruptive innovation

More advanced organisations might have a broader objective than merely to optimise invoice processes. This is indeed a worthwhile undertaking: the automation and optimisation of the invoice process typically represents only one third of the total potential. In light of this, the full purchase-to-pay and order-to-cash process may be brought to the foreground over the coming years.

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4 A survey in Germany confirmed 5.4 days for example.
Many businesses seeking to optimise the full purchase-to-pay and order-to-cash cycle intend to replace paper processes with electronic processes. They can thereby achieve substantial savings. However, it can be worthwhile to critically scrutinise the current processes and systems. Both of which likely evolved over one or two decades. Gradual improvements achieved by substituting paper-based processes are positive, however it is possible to take a disruptive approach and thereby improve the entire financial supply chain by many factors.

Experience shows that often one third of the sub-processes can be removed without losing anything essential. Monolithic systems can be replaced by cloud services on a modular basis. Costs can be significantly reduced and the organisations following this approach can become more agile.
5. **Business Case for Issuer/Recipient**

5.1 **Saving potential**

The Finnish State Treasury and some Finnish companies have estimated that an incoming paper invoice incurs costs amounting to 30-50 Euro for the receiving company. By moving to electronic invoicing these costs can be reduced to 10 Euro by semi-automating the invoice process and to one Euro by fully automating the process [21]. 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 [22].

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 32: 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.
Not considered in this calculation are indirect savings. This can include, for example, the elimination of redundancies of the supplier master data and inconsistencies.

5.2 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 18 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 34: Key-metrics for number of invoices

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

<table>
<thead>
<tr>
<th>Industry</th>
<th>Outbound invoices per employee and year</th>
<th>Inbound invoices per employee and year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logistics</td>
<td>100</td>
<td>77</td>
</tr>
<tr>
<td>Airlines</td>
<td>35</td>
<td>11</td>
</tr>
<tr>
<td>Services &amp; Consulting</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>Banks</td>
<td>n/a</td>
<td>11</td>
</tr>
<tr>
<td>Telco</td>
<td>n/a</td>
<td>39</td>
</tr>
<tr>
<td>Industrial manufacturer</td>
<td>n/a</td>
<td>60</td>
</tr>
<tr>
<td>Catering</td>
<td>n/a</td>
<td>100</td>
</tr>
<tr>
<td>Retail</td>
<td>n/a</td>
<td>250</td>
</tr>
<tr>
<td>Buyer Clubs, Trade, Wholesalers</td>
<td>n/a</td>
<td>300</td>
</tr>
<tr>
<td>Health insurance</td>
<td>n/a</td>
<td>3,100&lt;sup&gt;5&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

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

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Outbound Volume</td>
<td>5,000 x 1,200</td>
</tr>
<tr>
<td>Inbound Volume</td>
<td>5,000 x 20</td>
</tr>
<tr>
<td>Intercompany Billing</td>
<td>10% of Inbound</td>
</tr>
<tr>
<td></td>
<td>= 6,000,000</td>
</tr>
<tr>
<td></td>
<td>= 100,000</td>
</tr>
<tr>
<td></td>
<td>= 10,000</td>
</tr>
</tbody>
</table>

### 5.3 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

#### 5.3.1 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
- Archiving

<sup>5</sup> In countries with healthcare systems like The Netherlands, Switzerland etc.
• 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.

5.3.2 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.

5.3.3 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 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.

5.3.4 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 0.20 – 0.80 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 “5.1 Saving Potential”).

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

5.4 Business Case

5.4.1 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.

5.4.2 Mid-sized and large businesses

Many solution providers offer an online business case calculation tool. Tools and ROI calculators are also offered by some universities and industry portals. Please find details for some sources in the appendix [23].

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 35: Items to be considered in a business case

<table>
<thead>
<tr>
<th>Item to be considered in a business case</th>
<th>Issuer</th>
<th>Recipient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantities and basic data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Number of electronic counterparts</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>- Electronic proportion of total invoice volume</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Interest rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Hourly rate of employees</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer churn rate with and without e-invoicing</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Costs and Savings in the AR &amp; archiving department</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Costs and Savings in the AP &amp; archiving department</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Cash Management, payment due period, payment discount</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Initial costs (Project, implementation, hardware, software)</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Operation costs internal and third party</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>
5.4.3 Financial benefits for the public sector

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 36: Breakdown of saving potential in the public sector

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

<table>
<thead>
<tr>
<th>Country</th>
<th>Minimum public sector saving potential (million Euro)</th>
<th>States, Regions</th>
<th>Cities &amp; Municipalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>600 [24]</td>
<td>200</td>
<td>300</td>
</tr>
<tr>
<td>Belgium</td>
<td>900</td>
<td>400</td>
<td>470</td>
</tr>
<tr>
<td>France</td>
<td>4,200</td>
<td>1,700</td>
<td>2,200</td>
</tr>
<tr>
<td>Germany</td>
<td>6,500</td>
<td>2,600</td>
<td>3,400</td>
</tr>
<tr>
<td>Italy</td>
<td>3,000</td>
<td>1,200</td>
<td>1,600</td>
</tr>
<tr>
<td>Poland</td>
<td>1,700</td>
<td>700</td>
<td>900</td>
</tr>
<tr>
<td>Romania</td>
<td>1,400</td>
<td>600</td>
<td>700</td>
</tr>
<tr>
<td>Spain</td>
<td>1,800</td>
<td>700</td>
<td>900</td>
</tr>
<tr>
<td>Sweden</td>
<td>1,600</td>
<td>600</td>
<td>800</td>
</tr>
<tr>
<td>Switzerland</td>
<td>700</td>
<td>300</td>
<td>400</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>1,200</td>
<td>500</td>
<td>600</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>4,400</td>
<td>1,800</td>
<td>2,300</td>
</tr>
</tbody>
</table>

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 unstructured 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 homogenous 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 38: Saving potential for cities

<table>
<thead>
<tr>
<th>Population (Millions)</th>
<th>Example of city (or metropolis) in this category Based on population as published in Wikipedia</th>
<th>Minimum annual saving potential (million Euro)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Berlin, Chicago, Madrid, Rome</td>
<td>80</td>
</tr>
<tr>
<td>4</td>
<td>Los Angeles, Montreal</td>
<td>110</td>
</tr>
<tr>
<td>5</td>
<td>Sydney, Toronto</td>
<td>130</td>
</tr>
<tr>
<td>7</td>
<td>London, New York, Tokyo</td>
<td>200</td>
</tr>
<tr>
<td>10</td>
<td>Moscow</td>
<td>270</td>
</tr>
</tbody>
</table>

Cutting costs is one part of the business case. Increasing revenues is another.
6. **How to overcome barriers and to be successful with your project**

6.1 **Barriers and how to overcome them**

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

Figure 39: Main barriers in many European countries [24]

<table>
<thead>
<tr>
<th>Barriers (European mass market)</th>
<th>Possible actions to overcome them</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal requirements are unknown or confusing</td>
<td>The multi-stakeholder I and/or federal administrations are privileged to actively provide appropriate information to the mass market. Some of them organize information events &amp; road-shows or engage evangelists. Many others (e.g. Austria, Belgium, Switzerland) operate an information portal with the most important information.</td>
</tr>
<tr>
<td>Missing market transparency about the solutions offered and the collaboration among various service providers</td>
<td>The multi-stakeholder I 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).</td>
</tr>
<tr>
<td>Change/adoptions of internal organisation processes (40% of larger organisations)</td>
<td>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.</td>
</tr>
<tr>
<td>Divergent requirements of trading partners regarding formats, methods and processes</td>
<td>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.</td>
</tr>
<tr>
<td>Not recognizing the business case</td>
<td>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 [23]</td>
</tr>
<tr>
<td>Trading partner does not support the electronic invoice</td>
<td>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 I already maintain public user directories. By far the best running example is from Finland, <a href="http://www.tieke.fi">http://www.tieke.fi</a> Besides increasing transparency, often the trading partners just need inspiration to do it now and some guidance on how to do it.</td>
</tr>
</tbody>
</table>
### E-Invoicing / E-Billing 2016

<table>
<thead>
<tr>
<th>Barriers (European mass market)</th>
<th>Possible actions to overcome them</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task sharing for accounting and invoice processing with external parties (trustee, tax consultant, commercial auditor, etc.); is in some countries practised by up to 50% of (smaller) enterprises.</td>
<td>Third party service providers have fears of or limited interest in substituting labour-intensive (paper based) work with efficient, electronic and automated processes. It could be a major task for multi-stakeholder to clarify and show the risk of resistance to the opportunities of new electronic methods.</td>
</tr>
</tbody>
</table>

Figure 40: Main barriers for mid-sized and larger US companies

<table>
<thead>
<tr>
<th>Barriers (mid-sized and larger US companies)</th>
<th>Possible actions overcome them</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of budget</td>
<td>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.</td>
</tr>
<tr>
<td>Belief that there will not be an ROI</td>
<td>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 [23]</td>
</tr>
<tr>
<td>Lack of understanding of current available solutions</td>
<td>Some market analysts make the market more transparent with their publications and events. Solution providers are encouraged to make great market communications.</td>
</tr>
<tr>
<td>Lack of resources to manage automation</td>
<td>Shift e-invoicing to the enterprise’s number 1 priority.</td>
</tr>
<tr>
<td>Supplier resistance</td>
<td>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.</td>
</tr>
<tr>
<td>Current processes work</td>
<td>Complacency is a risk. It is likely that competitors are already implementing e-invoicing, reducing the invoice processing costs and achieving a competitive advantage.</td>
</tr>
</tbody>
</table>

### 6.2 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 2.3.

6.3 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.
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 (as defined in figure 45) 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).
6.4 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.

6.5 Scenario for internal implementation

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

Figure 42: Optimisation steps and benefits

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 advisable to critically scrutinize and streamline first all the processes. Often, 30% of historic burdens can be removed without loosing anything.
6.6 **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 43: 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 44: Requirements of organisations

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

6.7 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 45: 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 46: Success rate for an organisation and the electronic proportion one year after launch

<table>
<thead>
<tr>
<th>Model</th>
<th>Electronic proportion of all invoices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issuer driven “Opt-In”</td>
<td>1-5% with free market range 5-50% within existing supplier-buyer networks</td>
</tr>
<tr>
<td>Issuer driven “Opt-Out”</td>
<td>85-90%</td>
</tr>
<tr>
<td>Recipient driven “Opt-In”</td>
<td>1-5% for organisations without much purchasing power 50-70% for organisations in strong purchasing position</td>
</tr>
<tr>
<td>Recipient driven “Opt-Out”</td>
<td>Up to 90% for organisations in strong purchasing position and providing electronic orders</td>
</tr>
</tbody>
</table>

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.

6.8 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 47: Third-party services and applications

<table>
<thead>
<tr>
<th>Services</th>
<th>Applications/Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>SaaS (Software as a Service)</td>
<td>e-billing/e-invoicing applications for automated or semi-automated issuing and receiving electronic invoices, including handling of various output/input formats</td>
</tr>
<tr>
<td>e-invoicing network service (single-point-of-contact; any-to-any-to-any connection)</td>
<td>Signature software or devices, Public Key Infrastructure (PKI); Signature verification tools and portals</td>
</tr>
<tr>
<td>Any-to-any data formatting</td>
<td>Invoice cockpit (monitor all invoices circulating within an organisation)</td>
</tr>
<tr>
<td>Rule based data validation</td>
<td>Invoice management</td>
</tr>
<tr>
<td>VAT tax compliance service</td>
<td>Workflow</td>
</tr>
<tr>
<td>Invoice management service (including digitalisation and data capture of remaining paper invoices)</td>
<td>E-Procurement</td>
</tr>
<tr>
<td>E-Procurement, E-Marketplace</td>
<td>Archiving Service</td>
</tr>
<tr>
<td>Archiving Service</td>
<td>Other added values like supply chain finance, analytics and reporting etc.</td>
</tr>
<tr>
<td>Other added values like supply chain finance, analytics and reporting etc.</td>
<td>Interface software</td>
</tr>
<tr>
<td></td>
<td>o data conversion and mapping tools</td>
</tr>
<tr>
<td></td>
<td>o printer driver with e-invoicing, signature and transfer features</td>
</tr>
<tr>
<td></td>
<td>Archive</td>
</tr>
</tbody>
</table>
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.

6.9 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 48: Indication for project and implementation time

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

Analysis
• Internal
  o Involved and related processes, systems and divisions/branches/subsidiaries
  o Invoice streams
  o Obstacles and how to solve them
  o Structure, capability and legal constraints (especially in multi-national companies)
• Of your counterparts
  o Volume
  o Technical capability
  o Willingness to adopt
  o 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!
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 49: Optimise corporate finances with e-invoicing

![Diagram showing optimization of corporate finance with e-invoicing](image)

- Reduce costs
- Improve Working Capital
- Increase elasticity of costs

7.2 **Reduce costs**

Chapter 5 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.
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 51: Success rate dependant on practiced on-boarding methods**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classic approach</td>
<td>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.</td>
</tr>
<tr>
<td>Phase</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td>Pressing</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>An increasing number of large companies are practicing this method.</td>
</tr>
<tr>
<td>Powerplay</td>
<td>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:</td>
</tr>
<tr>
<td></td>
<td>• Suppliers charge typically EUR 1 – 3.50 to consumers and EUR 5 – 25 to companies per paper invoice</td>
</tr>
<tr>
<td></td>
<td>• 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</td>
</tr>
<tr>
<td>Closed electronic loop for orders and invoices</td>
<td>In many large companies, at least 40% of the invoices are based on Purchase Orders. 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.</td>
</tr>
</tbody>
</table>

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.

7.3 Increase elasticity of costs

7.3.1 Inhouse developments vs. third 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 in-house 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 challenging 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 [25]. In an US survey of 2014 [26], the percentage of respondents reporting that they use supply chain financing increased to 13.7 percent from 8 percent a year ago.

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 [25], top banks expect annual SCF growth rates of between 20% and 30% in 2015. This could slow down towards the end of the decade but is still estimated to be more than 10% by 2020.

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 52: Complementary collaboration model**

<table>
<thead>
<tr>
<th>Role</th>
<th>Description &amp; comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funder</td>
<td>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</td>
</tr>
</tbody>
</table>
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 network

An increasing number of operators connect each other’s platforms 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. Esker

#### Headquarters:

Esker  
10 rue des Emeraudes  
69006 Lyon  
France

| Countries with highest e-invoicing revenues | France, USA, Spain |
| VAT compliant e-invoice processing guaranteed for | More than 43 countries in Europe, America, Africa and Asia Pacific |
| Number of employees dedicated to e-invoicing and directly related offering | 380 |
| Registered users on own e-invoicing platform |  |
| Suppliers: 600 |  |
| Buyers: 650,000 |  |
| Consumers: 100,000 |  |
| Processed volume on own e-invoicing platform | 5.8 million e-invoices per year |
| Core offering |  |
| Document process automation |  |
| SaaS (software as a service) |  |
| Covered processes/messages along the supply chain |  |
| Accounts Receivable automation (paper and e-invoices) |  |
| Accounts Payable automation |  |
| Purchasing automation |  |
| Order Processing automation |  |
| Value-added services |  |
| Sending and archiving of both paper and e-invoices; hybrid mail services; online tracking of customer invoices in real time, cash collection metrics and tools |  |
| Main target market segments | Large and SMBs in any industry |
| Supported languages (with application/service and the online-help/customer support) | English, French, German, Italian, Spanish |
| Competitive differentiator | One on-demand platform to automate e-invoices, as well as the entire order-to-cash and procure-to-pay cycles. |
Esker’s Accounts Receivable automation solution — the first SaaS solution to offer 100% automation of customer invoice delivery.

Esker is a global leader in document process automation solutions, helping organisations Quit Paper™ and improve how business information is processed and exchanged via one unified and integrated automation platform.

Esker’s single platform can automate and capture any inbound document (sales orders, confirmations, vendor invoices), deliver any outbound document (customer invoices, purchase orders, receipt acknowledgements), and integrate with any ERP application. A pioneer in cloud computing, Esker is one of the first software vendors capable of offering a 100% on-demand automation solution to its customers, based on patented Esker on Demand technology.

Esker completely automates the sending, receiving and archiving of invoices according to customer preferences and regardless of media type — postal mail, fax, email, EDI and/or publica- tion on a web portal. Companies of any size can immediately implement e-invoicing while allowing customers to adapt at their own pace.

E-invoicing
E-invoices are processed in compliance with all international regulations (e.g., e-signatures, EDI, sales order matching, tracking and reporting capabilities for business controls audit trails, e-archiving, etc.). In partnership with TrustWeaver, Esker applies appropriate e-signatures, time stamps and verifications to support regulatory compliance in over 50 countries. The integrity and authenticity of each invoice is ensured during transmission and archiving. E-invoices can be generated in all types of formats (e.g., PDF, XML, EDIFACT, ANSI, UBL, etc.) and communicate with platforms from other service providers and public administrations.

Paper invoice delivery
With Esker Mail Services, part of Esker’s Accounts Receivable solution, paper invoices are electronically and securely submitted directly from any application to one of Esker’s seven worldwide mail production facilities where they are printed, folded, stuffed into envelopes and handed-off to the local postal services within 24 hours of creation. Customers benefit from least-cost routing via the facility nearest to the recipient and a significant reduction in mail delivery time.

E-invoicing customer success story
After implementing Esker’s Accounts Receivable solution to automate e-invoice delivery, Arkadin reduced invoice processing time by one-third (from six to two days), and significantly improved productivity and DSO. Additional benefits included: improved invoice tracking and sending guarantees, as well as regulatory tax compliance for e-invoicing in over 50 countries. Today, 27 Arkadin subsidiaries (in Europe, North America, Asia Pacific and Africa) use Esker to send over 25,000 monthly invoices.

E-invoicing and accounts payable automation
The Esker portfolio also includes accounts payable automation, delivering end-to-end invoice automation. Incoming paper or electronic vendor invoices are entered into an automated workflow for approval upon receipt. Once approved, the invoice is integrated with any ERP application, archived electronically on a web portal, indexed and available 24/7 from anywhere, for as long as necessary.

Optimised order-to-cash cycle
Together, Esker’s Accounts Receivable and Esker’s Order Processing solutions deliver the perfect order-to-cash automation solution for businesses. From the reception of customer orders to the sending of customer invoices and their archiving, Esker automates the full order-to-cash cycle, helping companies increase productivity throughout the cycle.

For more information, visit www.esker.com/einvoicing
SALTI, a specialist in construction and industrial equipment rental, selected Esker’s cloud-based Accounts Receivable solution to outsource and automate its customer invoices and customer reminder letters. Following a specific request from a customer who wanted to receive e-invoices, SALTI began to rethink its customer invoicing process.

**The Challenge**
Printing, folding, stuffing and sending 8,000 monthly customer invoices was a very time-consuming, unreliable and expensive process for SALTI. A significant increase in invoicing volumes and a growing number of specific customer needs (e.g., attached documents, reconciliation of invoices and purchase orders, e-invoices, etc.) led SALTI to seek an accounts receivable automation solution.

It was crucial that SALTI’s new automation solution meet the following requirements:
- Flexibility to handle all invoices according to customer requirements
- One single solution capable of processing all documents in the entire document chain
- Easy to implement

Our primary criteria was to find a company that could offer us one unique solution, capable of handling all our different needs. With Esker, our customer requirements are taken into account automatically and transparently. Esker remains our sole contact — with no third-party involvement.

**The Solution**
Thanks to Esker, SALTI is now able to:
- Automate the sending of over 12,000 documents per month including:
  - 8,000 customer invoices
  - 1,800 “preventive” customer reminders
  - 2,500 customer reminders after due date
- Automatically attach the purchase order to the invoice
- Send (with electronic signature) and archive e-invoices

**The Benefits**
SALTI has gained many benefits from using Esker’s solution, including:
- Improved customer relations: Thanks to the increased availability of customer service agents, more focus is placed on value-added tasks and there is a greater response to customers’ expectations.
- Significant gain in productivity and reduced handling time: Teams benefit from increased productivity and more free time (e.g., the team responsible for mailing invoices now only needs to manually process a small amount of specific invoices).
- Invoices are sent quickly, on time and as they are generated in the system.
- Comprehensive customer reminders process: All customers are contacted without exception and on time.
- Traceability: All documents are available online and contain all processing information (e.g., date and time of processing date, postal service reception, etc.).
- Archiving: All invoices are archived and accessible by SALTI teams 24/7.

Esker has enabled us to free up a lot of time that is now allocated to indispensable activities. Without Esker we would be lost! Time spent sending and sorting invoices and reminder letters, processing missing documents, etc. is now spent with our customers and on more value-added projects like customer surveys and coordination with the marketing department.”

Customer Service Manager at SALTI
Wanting to get a head start on the compliance deadline set by the French law on e-invoicing to public administrations, Eurofeu turned to Esker to put in place an e-invoicing solution compliant for Chorus, the e-invoicing platform established by the French government for use by its suppliers.

The Challenge

Eurofeu, a leading French company in the fire safety industry (e.g., fire extinguishers, alarms and services), was already using Esker’s Accounts Receivable (AR) solution, integrated with its Microsoft Dynamics™ AX ERP, to automate the sending of over 300,000 yearly customer documents in different formats (e.g., paper, e-invoices in PDF format with e-signature or via EDI, etc.) to the private sector.

As a provider to many public entities, Eurofeu knew they would soon have to comply with the French legislation on e-invoicing to the public sector. To anticipate compliance with the new law, the company proactively approached Esker to add e-invoicing to Chorus to its existing AR solution.

The Solution

Implemented in just a few months, Esker’s solution enables Eurofeu to send e-invoices to its customers in both the private and public sectors. In just a few clicks, Eurofeu can easily configure its solution, and invoices are sent directly to Chorus.

Today, all e-invoices sent to government ministries are sent to Chorus. As of January 1, 2017, the regulation will extend to community and public institutions. Eurofeu can rely on Esker’s industry expertise to ensure that they are always up to date on the latest regulations and deliver their e-invoices in compliance with all requirements.

Customer Benefits

Esker offers Eurofeu numerous benefits, including:
- Significant cost and time savings
- Better respect of government deadlines
- Improved governmental compliance
- Reliable tracking on invoice delivery

Today, Eurofeu has 450 customers potentially affected by Chorus and in the near future, over 12,000 invoices per year will automatically transit to the platform.

More and more RFPs are requiring vendors to be compatible with Chorus. Esker represents a major competitive advantage and key selling point.

CIO at Eurofeu
9. Appendix A: Tax compliant e-invoicing in an international environment

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 a legal point of view, there is no longer any reason to wait with an e-invoicing project. Rather, aggressive government mandates for B2B and B2G invoicing worldwide mean that delaying the implementation of a broad-based e-invoicing strategy could sharply increase future costs and risk.

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 packaged 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 Holistic view on tax compliance

Combatting tax evasion comes increasingly into the spotlight almost everywhere on our world. Invoices and everything related with them are recognised as a key instrument to ensure that all taxes due on transactions are collected. For many years, e-invoice compliance was mainly focused to ensure the authenticity, integrity and legibility. This is indeed a keystone. Even if this is ensured, however, tax evasion is still possible. Therefore, the scope of e-invoice tax compliance is steadily extended. Four types of compliance issues are mainly in the foreground [27].

Figure 53: Four types of tax compliance and methods of evidence

<table>
<thead>
<tr>
<th>Type</th>
<th>Methods of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-Fraud compliance</td>
<td>• Lookup with national business registers; know-your-trading partner and similar requirements.</td>
</tr>
<tr>
<td></td>
<td>• Business Controls, Audit Trail, two/three way matching of invoice with contract, delivery notes, payment etc.</td>
</tr>
<tr>
<td>Form compliance</td>
<td>Ensure Authenticity, Integrity and Legibility of e-invoices.</td>
</tr>
<tr>
<td>Content compliance</td>
<td>Rule-based data validation either in-house or provided by third party service providers: Are all legally required data included in the invoice and in the appropriate format? In addition, the emergence of realtime or frequent automated reporting of transaction data (see next item) exposes individual indirect tax choices (tax percentage, conditional mandatory notices etc.) to tax authorities in a much more granular manner than was previously the case with infrequent consolidated declarations; indirect</td>
</tr>
</tbody>
</table>
tax determination therefore also becomes an area where more precision will be required going forward.

<table>
<thead>
<tr>
<th>Type</th>
<th>Methods of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reporting Compliance</td>
<td>Reporting platforms, depending on country rules traditional (typically annually), near-realtime reporting (1-7 days) or real-time clearance &amp; auditing. Frequent automated reporting is increasingly extended not only to business-to-business transactions but also to software systems and tills that support commercial transactions over the counter at the point of sales.</td>
</tr>
</tbody>
</table>

**9.3 Types of legal requirements; a rapidly changing picture**

The world of electronic invoicing has changed drastically between 2012 and 2016. Viewed from an international business perspective, developments around the European model, which essentially transforms paper-based processes into electronic ones, were centre stage until just a few years ago; in a relatively short period of time, Europe has become just one consideration among a patchwork of national e-invoicing regulatory challenges faced by international business. This rapid change in the perspective of enterprises has been driven by the fact that countries newly introducing electronic invoicing mandates have almost without exception chosen a model inspired by the Latin American ‘clearance’ approach, which is an extreme form of reporting compliance. The mushrooming of mandates based on this ‘clearance’ model has been a wake-up call for many larger corporates, which are now typically working towards a proactive global e-invoicing strategy where operational readiness for compliant e-invoicing in countries in Latin America, but also for Turkey, Russia and China ranks among the highest priorities.

The following figure shows the composition of the principal regulatory features in a number of selected regions (averages among countries with active e-invoicing regimes) and a number of significant individual countries.
Figure 54: summary of regulatory requirements across selected regions and countries

Below is a brief description of these features and the methodology used for their relative importance in the chart:

**Tax authorization needed**
A value of 100 was allocated where a country requires that the tax administration, Finance Ministry or other part of the public administration (including law enforcement) explicitly authorizes a business before it starts sending and/or receiving invoices electronically. A value between 0

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6 Countries included in the regional summaries: for “Commonwealth” (Australia, Canada, Hong Kong Special Administrative Region, New Zealand, Singapore, South Africa), for “EUROPE” (Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Ukraine), for “LATAM minus Brazil” (Argentina, Chile, Colombia, Costa Rica, Mexico, Peru, Uruguay), and for “ASIA minus Turkey” (Israel, United Arab Emirates, South Korea, Taiwan, Japan, Malaysia, Philippines, Thailand).
and 100 was given if such authorization requirement is conditional, implicit, recommended or customary.

**E-invoicing mandate**
A value of 100 was allocated in cases where all businesses must by law use invoices in electronic format. A value between 0 and 100 was given if such a mandate does not address all businesses or if the mandate is not all-encompassing in terms of types of invoices, business processes etc.

**Prescriptiveness**
A value of 100 was allocated where a country leaves no choice to businesses as to how to achieve e-invoicing compliance. A value 0 means complete freedom of choice as to the method used by businesses to comply. A value between 0 and 100 was given if the applicable legal regime falls in between these two extremes.

**I&A (integrity and authenticity required)**
A value of 100 was allocated where a country requires businesses to ensure and be able to demonstrate (a) the integrity of all mandatory fields of an invoice and (b) the authenticity of its origin (the identity of the supplier or, where allowed, the third party acting on its behalf) during the legal lifetime of an invoice. A value between 0 and 100 was allocated where such requirements are generally assumed but not explicit in the law, or if there is a formal policy within the tax administration not to seek such evidence.

**Archiving**
A value of 100 was allocated in case there is a requirement for an electronic invoice to be archived for subsequent tax administration auditing purposes. A value between 0 and 100 was allocated where archiving requirements exist but the period is very short (less than a year), or it if such archiving is viewed as more of a formality which the tax administration does not typically pay attention to.

**Digital signature/Timestamp mandatory**
A value of 100 was allocated when a country has a hard requirement for an electronic invoice to be digitally signed and/or time-stamped using a Public Key Infrastructure-based time-stamp at some point during its legal life time. A value between 0 and 100 was allocated where such signature or time-stamp requirements are not absolute and can under certain conditions be replaced with technologies and/or processes that provide an equivalent result.

**Mandatory XML**
A value of 100 was allocated when a country specifies an XML-based invoice schema as the exclusive format for an electronic invoice original.

**‘Clearance’**
A value of 100 was allocated if an electronic invoice must be sent to the tax administration or its licensed/accredited agent for authorization prior to issuance as an original tax invoice. A value between 0 and 100 was allocated if clearance is required within a relatively short time after instead of after the transaction, or in cases of alternative clearance processes e.g. requirements for a code to be fetched from an online tax administration service and integrated into an invoice instead of the whole invoice being sent to the clearance service.

**Clearance + buyer acknowledgement**
A value of 100 was allocated if the clearance process is legally only considered complete if the buyer has sent the tax administration or its licensed/accredited agent a confirmation that it has received and validated the invoice.
Full cycle clearance
A value of 100 was allocated in case the tax administration or its licensed/accredited agent not only clears the invoice but also serves as transport mechanism or access point for the buyer to obtain the cleared invoice.

Accounting document compliance
A value of 100 was allocated in case the clearance process for invoices also applies to certain other formalized B2B/accounting documents if sent electronically.

Localization
A value of 100 was allocated when a country’s requirements for electronic invoicing are exclusively or to a large extent intertwined with requirements for processes, service provider relationships, hardware and/or archiving to remain within its national boundaries. A value between 0 and 100 was allocated where such localization requirements exist but are conditional or narrower.

9.4 Electronic invoice issuance/processing and archiving by third parties
Most countries’ e-invoicing laws allow 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 typically 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, collection of data contributing to reliable audit trails, various ‘clearance’ processes, 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 warranties 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 some countries with a ‘clearance’ model, private service providers accredited by the tax administration must be used, or their use may be among a limited number of implementation options. This is for example the case in Mexico, Russia and Turkey. In such cases, the service provider is primarily an agent acting on behalf of the tax administration (or at least performing processes that are regulated and supervised by the tax administration) rather than a private vendor; however, it is common that such tax administration-accredited entities also provide non-regulated value-added services.

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 and the global scandal created by the USA’s National Security Agency’s extensive data access in 2013 has made users more conscious of political factors related to where and by which vendors data are processed or archived. Enterprises trading 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. It remains important for every enterprise to seriously investigate how a prospective Cloud-based archiving vendor handles monitoring and implementation of legally required features, particularly in relation to the physical location of stored data.
9.5 Procedure/Process description

Many countries require businesses to document their e-invoicing process environment, the end-to-end electronic invoice transport, processing and storage. Where such documentation is not mandatory, it is commonly viewed as good practice. Descriptions should typically 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
- Increasingly, archive-specific descriptions are required or strongly recommended.

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.

9.6 Objectives and status of legal changes in the European Union

Background

While it was stated above that the relative importance of the EU approach to electronic invoicing has somewhat diminished in recent years, it is worthwhile briefly looking back at the regulatory changes that entered into force early 2013. The primary purpose of the changes enshrined in VAT Directive No. 2010/45/EU, which creates the foundation for today’s rules in EU Member States, was to give businesses more implementation choice as regards compliant electronic invoicing on the basis of a legal regime that in principle has the same requirements for paper and electronic invoices.

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
  - Electronic and paper invoices are to be treated equally – the administrative burden on paper invoicing should not increase.
  - 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:
  - 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).
  - 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.
  - An advanced electronic signature on an electronic invoice based on a qualified certificate and created by a secure signature creation device.
  - 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.
Status

All EU Member States have now transposed Directive 2010/45, including the compliance options set out above. In a number of Member States, the tax administration has issued further guidance on each of the compliance options.

Not all Member States have faithfully transposed the Directive, and the trend today is rather towards more regulatory fragmentation:

- One group of countries have introduced additional options or requirements; this is today a strong trend where many Member States (e.g. Portugal, Hungary, Spain) introduce variations of additional control mechanisms such as automated reporting, standard audit files, accounting software certification, data export requirements, invoice numbering requirements etc.
- Others have not implemented all elements of the Directive i.e. some have not explicitly transposed the freedom of evidence rule.
- Some countries 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 B2B compliance method is appropriate for organisations in the EU?

The current 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 business 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.

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. One thing that has changed since entry into force of VAT Directive 2010/45/EU is that businesses, rather than mechanically adopting a technology-based compliance method, have started becoming more cognizant of the importance of high-quality end-to-end processes. This often leads to more awareness of strengths and weaknesses of existing processes, including a better understanding of the transaction evidence such processes naturally generate. Based on such a gap analysis, we see many businesses make choices for or against using technology (such as compliant EDI or qualified electronic signatures) for maintaining adequate integrity and authenticity evidence with more confidence and on a more strategic basis than previously. The worldwide trend towards wholly technology-based clearance schemes, as well as specific technological requirements for B2G e-invoices in a number of EU Member States, can be viewed as strengthening the case for a single layer of baseline technological controls that can be adapted to meet specific country requirements.

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 [28].
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 55: Glossary

<table>
<thead>
<tr>
<th>AR</th>
<th>Accounts Receivable</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP</td>
<td>Accounts Payable</td>
</tr>
<tr>
<td><strong>B2B Invoices</strong></td>
<td>In this report: Includes all tax compliant invoices to corporate as well as to the public sector</td>
</tr>
<tr>
<td>Bill</td>
<td>Includes all categories of bills sent to consumers (B2C/G2C)</td>
</tr>
<tr>
<td><strong>Clearance System / Model</strong></td>
<td>Legal regimes in which an electronic invoice must be sent to the tax administration or its licensed/accredited agent for authorization prior to, during or just after issuance as an original tax invoice.</td>
</tr>
<tr>
<td>DSO</td>
<td>The days sales outstanding analysis provides general information about the number of days on average that customers take to pay invoices.</td>
</tr>
<tr>
<td>e-billing</td>
<td>“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.</td>
</tr>
<tr>
<td>EBPP</td>
<td>Electronic Bill Presentment and Payment; focus in B2C; this acronym is more popular outside Europe</td>
</tr>
<tr>
<td>EIPP</td>
<td>Electronic Invoice Presentment and Payment; focus in B2B/B2G; this acronym is more popular outside Europe</td>
</tr>
<tr>
<td>e-invoicing</td>
<td>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.</td>
</tr>
<tr>
<td>Issuer</td>
<td>Invoice issuer, Supplier, Biller</td>
</tr>
<tr>
<td>Network operator</td>
<td>Service provider respectively operator with any-to-any model; an invoice issuer or recipient needs just one interface for achieving any other counter-</td>
</tr>
</tbody>
</table>
party in the same network; In some countries, the terms “operator”, “service provider”, “consolidator” or “supplier network” are more common.

<table>
<thead>
<tr>
<th>Order-to-Cash</th>
<th>Supplier perspective for the processes order-delivery-invoicing-payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase-to-Pay</td>
<td>Buyer perspective for the processes order-delivery-invoicing-payment</td>
</tr>
<tr>
<td>SME</td>
<td>Small and Medium sized Enterprise</td>
</tr>
<tr>
<td>Recipient</td>
<td>Buyer, Customer; The individual or organization that will receive the invoice</td>
</tr>
</tbody>
</table>

10.2 Sources

Figure 56: Key sources used in this report

<table>
<thead>
<tr>
<th>Ref</th>
<th>Document and/or hyperlink</th>
<th>Date or version</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1]</td>
<td>Billentis, Implementing E-Invoicing on a broad scale</td>
<td>16th July 2015</td>
</tr>
<tr>
<td>[8]</td>
<td>CONPES (Consejo Nacional de Política Económica y Social del Departamento Nacional de Planeación) 3786</td>
<td>December 2013</td>
</tr>
<tr>
<td>Ref</td>
<td>Document and/or hyperlink</td>
<td>Date or version</td>
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<tr>
<td>[14]</td>
<td>Eurostat, Enterprises having received orders online (at least 1%)</td>
<td>April 2016</td>
</tr>
<tr>
<td>[18]</td>
<td>Doxey, Inc, Stop the AP Fraudster: Your Top 20 Controls for the AP Process</td>
<td>April 21, 2016</td>
</tr>
<tr>
<td>[21]</td>
<td>Helsinki School of Economics, “Electronic Invoicing Initiatives in Finland and in the European Union”</td>
<td>2008, B-95</td>
</tr>
<tr>
<td>[22]</td>
<td>Politecnico di Milano, Alessandro Perego, Presentation “Process Optimization and Saving Potential with e-Invoicing” at the EXPP Summit in Munich/Germany</td>
<td>October 2010</td>
</tr>
</tbody>
</table>
| [23] | Tools and ROI calculators:  
b. Fachhochschule Nordwestschweiz (in German only) [http://www.swissdigin.ch/apps/swissdigin.nsf/de/ressourcen_recommend](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](http://www.osservatori.net/fatturazione_elettronica_e_dematerializzazione/qrat) | March 2014 |
<p>| [25] | Demica, A Rising Role, “A study in the growth of Supply Chain Finance, as evidenced by SCF-dedicated job titles at top European banks” | April 2014 |
| [27] | InCoPro BVBA, The impact of platformization on P2P and the ERP landscape | October 2015 |</p>
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<thead>
<tr>
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<th>Document and/or hyperlink</th>
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<td>management</td>
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