European Commission

Fostering SMEs' growth through digital transformation

Guidebook for Regional and National Authorities

Internal Market Industry, Entrepreneurship and SMEs

Fostering SMEs' growth through digital transformation

Guidebook for Regional and National Authorities

Table of contents

Table of boxes

1 Summary

Introduction

This guidebook is addressed to national, regional and local stakeholders interested in **promoting regional innovation and competitiveness through the use of information and communication technology (ICT),** with a special focus on small and medium sized enterprises (SMEs). In particular, it addresses decision-makers in the managing authorities of Cohesion Policy Funds. The guidebook introduces an EU initiative which aims to improve the framework conditions for the smart use of ICT in specific sectors. It offers suggestions on how the remarkable results of the projects which were funded under this initiative could be exploited by follow-up actions in other regions, to further advance the smart use of ICT in Europe.

It should be of interest to all regions, irrespective of their regional structure, strengths and weaknesses - and in particular, regions with a strong base in **agriculture & food, textile & clothing, automotive, transport & logistics, tourism or construction**. These sectors were covered by the six projects under the EU initiative, and the results are now available to guide similar actions in other regions. However, the methods developed are also applicable in other industries.

The "smart use of ICT" and related policy initiatives

The "smart use of ICT" refers to the ability of companies in a supply chain to **interact electronically** and seamlessly, thus avoiding (or significantly reducing) paper-based, manual data processing. It also refers to unprecedented opportunities for companies, notably SMEs, to enter **new markets** by enabling them to participate in global digital supply chains. Challenges lie in the way of realising the full potential of ICT. Technical issues must be addressed, the benefits may not be equally shared among stakeholders, and a mind-set which is open to innovation will be required (see *Chapter 2.1* for more information).

The main challenge for realising fully integrated digital supply chains is to overcome lingering issues of **lack of interoperability** between different systems, formats and standards for electronic data exchange. This is particularly **problematic for SMEs** trading with multiple business partners. Unlike large companies, they cannot enforce their own data exchange formats on business partners. Rather, they need to adapt to the data exchange requirements of large firms.

The European Commission has repeatedly **emphasised the importance of ICT** for a thriving European economy. It takes the view that the "smart" use of ICT by companies – both in manufacturing and in services – is critical for innovation, competitiveness and growth. In particular, the Commission has always advocated and supported the **perspective of SMEs** in this context (see *Chapter 2.2* for more information).

Within the European Commission, DG Enterprise and Industry (now DG Internal Market, Industry, Entrepreneurshup and SMEs) is charged with helping to improve Europe's economic standing by ensuring that businesses are competitive and that they can compete openly and fairly.[1]. Many European actions to promote the smart use of ICT by SMEs have been initiated by DG Enterprise and Industry. The DG's recent focus has been on promoting the smart use of ICT in specific areas and approaches, including digital entrepreneurship (the most recent strand of policy), sector-specific improvements in interoperability, policy coordination and knowledge sharing, ICT skills, ICT standardisation and e-Invoicing.

The "**eBSN**", the European e-Business Support Network for SMEs founded by the Commission in 2003 as an open **policy coordination platform**, (http://ec.europa.eu/growth/sectors/digital-economy/ebsn/index_en.htm), has played a crucial role in bringing together decision-makers and public policy experts to share information and collectively examine strategic policy orientation. In 2006/07, the eBSN shifted its attention. Instead of awareness-raising and sponsoring or co-financing ICT investments and internet connectivity, it explored more advanced policy

1 See website of DG Enterprise and Industry: http://ec.europa.eu/growth/sectors/digital-economy/index_en.htm

instruments, and in particular, the **digital supply chains approach** for e-business. This innovative approach, modelled largely on the French "TIC-PME 2010" (ICT-SMEs 2010) initiative (http://www.ticpme2010.fr) , focuses on improving interoperability (and other framework conditions) to make it easier for SMEs to connect with their customers and suppliers along a sector's value chain.

Achievements to build on: the EU initiative on "Stimulating innovation for European enterprises through smart use of ICT"

To improve the framework conditions for electronic data exchange, and particularly for SMEs, the DG Enterprise and Industry launched an initiative on "Stimulating innovation for European enterprises through smart use of ICT" in 2007. This encompasses a **series of demonstration actions** that are funded by the Commission. The demonstration actions share a common policy objective: to assist SMEs in taking part in global supply chains, and thus, ultimately, to stimulate innovation. Harmonising business processes, data exchange architectures and standards within specific industry sectors could greatly improve the framework conditions for SMEs to use e-business.

Sector	Project	Time	Website
Textile, clothing and footwear	eBIZ-TCF	2008-2010	http://ebiz-tcf.eu
Automotive	auto-gration	2010-2012	http://www.auto-gration.eu
Transport and logistics	DiSCwise	2010-2012	http://www.discwise.eu
Agro-food industry	eFoodchain	2012-2014	http://www.efoodchain.eu
Tourism	TourismLink	2012-2014	http://www.tourismlink.eu
Construction	Connect & Construct	2013-2014	http://www.connectandconstruct.eu

The projects were all established following a similar pattern and shared the objective of improving the interoperability of existing systems and standards. First, the project consortia **developed a common framework architecture** for electronic data exchanges in the relevant sector (or specific segments of it), considering in particular the needs of SMEs. These architectures (or frameworks) contain specifications for the business messages to be exchanged (such as "order", "delivery note" or "invoice"), and for how they are exchanged (describing roles and processes).

The frameworks were then **tested in a number of pilot actions** and refined as necessary on the basis of the results. Finally, they aimed to establish a **governance mechanism for the industry-wide deployment** of the results once external funding ceased. Three of these demonstration actions have now been completed, and three are still in progress. Their specific objectives, results and experiences are summarised in *Chapter 3*.

Recommendations for regional and national authorities

The results of the EU initiative on "Stimulating innovation for European enterprises through smart use of ICT" are remarkable. The projects carried out under this initiative have successfully demonstrated that interoperability and the smart use of ICT are possible, also for SMEs. They have developed and piloted sector-specific frameworks which facilitate the interoperable data exchange between business partners in the supply chain. These frameworks are readily available, but they need to be deployed as an opportunity for promoting regional competitiveness and innovation.

This guidebook proposes that regional and national authorities should make use of the results of the EU initiative. They can launch and coordinate follow-up initiatives to exploit the benefits in their region, and they can leverage also means from the European Structural Investment Funds for this purpose. They can use the EU initiative as a template, as well as the readily available results of this initiative. The guidebook suggests, in particular, the following types of actions (see Section 4.2 for details):

→ Supporting **national / regional implementations** of the existing frameworks
→ Conducting **regional pilots**

- Supporting the **further development or advancement** of the existing frameworks
- **Liaison activities**: connecting with the demonstration projects still in progress
- **Initiating projects in new sectors** by using the EU initiative as a template

Authorities and industry stakeholders that engage in such projects should be aware of the following critical success factors (see Section 4.3 for recommendations how to deal with them):

- **Commitment of stakeholders:** The involvement and commitment of all relevant stakeholder groups in the supply chain constitute the single most critical success factor for the effectiveness and longer-term impact of such initiatives. This includes primary stakeholders (SMEs and large companies from the sector), but also secondary stakeholders (such as other supply chain partners and ICT vendors).
- **Co-operation with multipliers / intermediaries:** These initiatives depend on the support of "multipliers", which help to reach out to the target groups. These can be industry associations, regional clusters, regional development agencies or other SME support organisations.
- **Focus on specific business segments and scenarios:** It is recommended to focus actions on specific segments of a sector and specific business scenarios. The more detailed, the more likely it is that the solution and the configuration of the pilots can be adapted to specific needs.

2 Boosting the smart use of ICT by SMEs: What is it all about – and why does it matter for regions?

2.1 The challenge: getting SMEs connected with digital supply chains

Introduction

European companies are increasingly operating and competing in **global business environments**. This is self-evident for large international companies, but the trend also applies to many small and medium-sized enterprises (SMEs), which constitute the backbone of the European economy. Companies need to meet the challenges of a global market by maximising productivity and innovation. They must take the lead in inventing and developing new high-quality products and services, as the key to keeping and creating jobs in Europe. The way companies use **information and communication technology (ICT)** has a major impact on their **productivity** and their **innovation capacity**. Ultimately, the "smart" use of ICT is an important success factor for the **competitiveness** of European companies, in particular for SMEs. This has been broadly confirmed in economic studies which explore the impact of ICT, although the results highlight distinctions across different sectors and markets[2].

Box 1: Results of economic studies on the impact of ICT

Studies conducted with company level data in the UK show that:
"The benefit from use of integrated or multiple electronic business processes is different between manufacturing and services firms; manufacturing gains come most strongly from procurement and supply chain management; services gains come most strongly from links to customers."
"Having employees use IT has a significant additional productivity impact, after taking account of IT investment effects, and after allowing for industry differences; it suggests that part of the impact is due to the changing nature of work."
Source: OECD (2008): Measuring the Impacts of ICT Using Official Statistics

What is the "smart use of ICT"?

The "smart use of ICT" refers to the ability of companies in a supply chain to **exchange data electronically** and seamlessly, thus avoiding (or at least reducing significantly) paper-based, manual data processing. It also refers to unprecedented opportunities for companies, notably SMEs, to **enter new markets** by enabling them to take part in global digital supply chains. Challenges lie in the way of realising the full potential of ICT. Technical issues must be addressed, the benefits may not be equally shared among stakeholders, and a mind-set which is open to innovation is required. This guidebook introduces an EU initiative which aims to improve the framework conditions for the smart use of ICT in specific sectors. It offers suggestions on how the remarkable results of the projects which were funded under this initiative could be exploited by follow-up actions in other regions, to further advance the smart use of ICT in Europe.

In the past 15-20 years, both ICT and the internet have significantly changed the way in which businesses process and exchange data with their customers and suppliers. Large companies have taken the lead. They quickly recognised the potential, and implemented powerful ICT systems that support their planning and management of business operations, and assist their decision-taking processes. Most medium-sized and even many small firms also use ICT in their daily operations for a range of purposes. Recognising the importance of this fundamental development, attention has been paid to **promoting rapid uptake of ICT** by companies, in particular by small and medium-sized enterprises (SMEs). [3]

2 This used to be a hot topic in economic research, in particular in the period 1995-2010. For a synopsis of the main results, see: OECD (2004). The Economic Impact of ICT. Measurement evidence and implications. OECD (2008): Measuring the Impacts of ICT Using Official Statistics.

3 Detailed information about the role of ICT in different sectors is available from the studies of the European Commission's "Sectoral e-Business Watch", a former platform that analysed e-business developments from 2002-2010. In particular, the last synthesis report ("ICT and e-Business for an Innovative and Sustainable Economy", 2009) offers a comprehensive picture which is still valid. All e-Business Watch reports are archived and available online at http://ec.europa.eu/enterprise/archives/e-business-watch/index.htm

However, exploiting the full potential of ICT will require more than each company developing its own ICT system. Processing data internally is an important first step – but the productivity benefits from ICT result largely from **improving data flows *between* these companies**. If data exchange mechanisms between companies can be improved so as to obviate manual data entries, real "e-business" can take off (see Box 2).

Box 2: What is "e-business"?

In this guidebook, the term e-business refers to all kinds of electronic data exchanges between companies. The objective is to **replace formerly paper-based document exchanges** (for instance orders, order confirmations or invoices) by sending the same business messages electronically. The idea is to "automate" the exchange of these documents, in the sense that manual data processing is reduced to the minimum. This cuts error rates and improves efficiency.
However, this requires a high degree of **interoperability**. Participants must agree on **electronic standards** for data exchange, and on conventions for an interoperable way of using different standards.
EU support is needed to help SMEs develop this capability, notably by improving framework conditions. This will prove crucial to the participation of European SMEs in global supply chains.

Although the term "e-business" is making its way into the mainstream vocabulary of a growing number of business sectors, efforts geared towards realising its potential remain highly relevant – for companies and for policy makers. Nowadays the approach is more systemic, with a focus on enabling **digitally integrated supply chains**, connected through interoperable ICT systems. This constitutes a new stage in the evolution of e-business since its beginnings in the late 1990s. It involves agreements (on a framework for data exchanges) not only between individual companies, but ideally across entire industries.

The challenges ahead

Today, the main challenge to fully integrating digital supply chains is the **lack of interoperability** between different systems, formats and standards for electronic data exchange.

This is particularly **problematic for SMEs** trading with multiple business partners. Large companies typically have powerful ICT systems in place and the market weight to enforce their own data exchange formats (such as their own EDI systems). This allows them to profit from advanced forms of e-business, with little concern for specifications or the requirements of others. In contrast, their smaller business partners are often left with no alternative to adapting to the requirements of others.

This uneven playing field is holding back the potential for **network effects** on the larger scale. SMEs stand to benefit the most from smarter uses of ICT, but do not have the clout to enforce improvements in the interoperability of systems. Large companies on the other hand have only a limited interest in evolving towards greater ICT interoperability.

Although e-business has grown continuously over the past 10-15 years, this lack of interoperability could put further development at risk. The main challenge today lies not so much in the technology itself (in terms of its hardware or software), but in how to enable smart information flows between companies and the different ICT systems in place.

This assessment is supported by an evaluation study of the EU initiative on stimulating the smart use of ICT in 2012.[4] It found that SMEs were still not enjoying the full benefits of participating in digital supply chains because of the following challenges:

4 Evaluation of the EU initiative on "Stimulating innovation for European enterprises through smart use of ICT". Study for DG Enterprise and Industry conducted by empirica GmbH and Technopolis Group Ltd., 2012 (see http://ec.europa.eu/enterprise/sectors/ict/files/ebsn/best-practices/ebsn-study_final-report_en.pdf)

- A general lack of interoperability between different ICT systems, standards and message formats used for electronic data exchange.
- The **proliferation of proprietary (often EDI-based) standards** for e-business, initially developed and adopted by larger companies (with very limited interoperability), making it difficult for smaller companies to exchange data with them.
- The still existing **dominance of manual, paper-based processing of information** in specific industry segments, in particular in sectors where micro and small companies dominate (for instance in the textile industry).
- Challenges related to **legal complications** and requirements, in particular for cross-border data exchanges.
- A **lack of ICT skills**, and time pressures in small companies without a dedicated ICT department to deal with such issues.

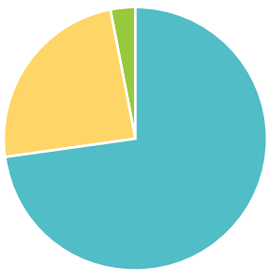
How much potential remains untapped?

Stakeholders and experts from across different sectors agree on the significant **untapped potential** of a (smarter) use of ICT. Improving the efficiency of information flows could open opportunities in terms of cost savings, productivity gains, and innovation.

The evaluation study cited above reached the same conclusion. It conducted an online survey among industry stakeholders and experts in the sectors (mostly from the automotive industry), in which almost all interviewees agreed that a wider adoption of standardised data exchange would significantly benefit the productivity and competitiveness of the European economy (see Box 3). More than 90% of respondents agreed that broad acceptance of a common framework architecture for e-business, with specifications of the main messages and business processes, would greatly facilitate the wider deployment of e-business. Similarly, nearly 90% of the interviewees fully or partially agreed that SMEs are not yet well connected to their business partners (see Box 3).

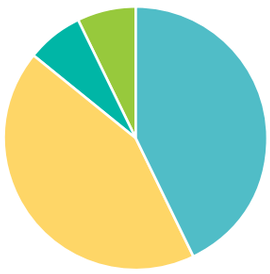
Box 3: Stakeholders confirm the untapped potential of e-business

"A wider adoption of standardised electronic data exchange among European companies could have a significant impact on the productivity and competitiveness of the European economy."



- **73 %** Fully agree
- **24 %** Rather agree
- **3 %** undecided/don't know

"Typically, SMEs are not yet well connected to their large business partners."



- **43 %** Fully agree
- **43 %** Rather agree
- **7 %** undecided/don't know
- **7 %** rather disagree

But how can this "untapped potential" be unlocked? Two prerequisites are coordination and cooperation among the relevant stakeholders, to agree on "rules" for exchanging data which are acceptable for all parties involved. The key stakeholders are large companies and SMEs from the market sector in question; other stakeholders include ICT service providers (software vendors, B2B portals), standardisation organisations, as well as authorities and third-party organisations involved in logistics processes (e.g. customs, ports). This guidebook presents an EU initiative (consisting of six projects, each focusing on a specific industry) which aimed to achieve precisely such an agreement among stakeholders (see Chapter 3).

2.2 The EU response: European actions to boost the smart use of ICT

ICT as a horizontal policy issue

The European Commission has long **emphasized the importance of ICT** for a thriving European economy. It shares the view that the "smart" use of ICT by companies – both in manufacturing and in services – is a critical success factor for innovation, competitiveness and growth. In particular, the Commission has always advocated and supported the **perspective of SMEs** in this context. As large companies are moving to exploit the advantages offered by ICT, smaller companies will have to follow suit, or risk being left out of digital supply chains.

ICT and e-business-related issues touch on a **broad range of economic policy areas**, including innovation, standardisation, competitiveness, SME and industrial policy. Although the smart use of ICT will impact all these areas, the **role of policy** is limited. Policy can aim to improve the framework conditions for using ICT and e-business (for instance by funding or coordinating relevant initiatives), and it can provide incentives (for instance by co-funding innovation projects). However, in the end, it is up to market players to decide whether and how they use any given technology.

ICT-related standardisation initiatives offer a good example of this. While the European Commission emphasises the importance of standards for innovation, it also insists that standardisation remains a voluntary, consensus-based, market driven activity. All the same, policy has a unique role to play in supporting and promoting initiatives which aim to enhance interoperability. It can also help by promoting the adoption of ICT standards. The EU launched its initiative on "Stimulating innovation for European enterprises through smart use of ICT" (see Section 3) for exactly this purpose.

The evolution of the policy approach

Many European policy initiatives in this field can be traced back to the "**Go Digital**" initiative (2001-2003), which was the first "umbrella" programme to focus on supporting SMEs in using ICT for doing business. The smart use of ICT by SMEs has also been a key element in the large European information society policies to have emerged over the past decade (eEurope, i2010) – see Box 4.

Box 4: The evolution of ICT-related industrial policy by the European Commission since 2001	
Year	Key EC initiatives and strategic frameworks (and how they reflect the goal of boosting the smart use of ICT)
2001 - 2003	**Go Digital Initiative** → Raising internet awareness among SMEs → COM(2003) 148 "Adapting e-business policies in a changing environment" → Founding the European e-Business Support Network as a platform for policy makers, and for planning and implementing actions to encourage e-business uptake (2003–2013)
2002 - 2007	**eEurope Action Plans (2002, 2005)** Promoting the take-up of ICT and the use of e-business through investment and training, to increase the competitiveness and productivity of European companies
2005 - 2010	**i2010** → Stressing the critical role of ICT for productivity and innovation → Anticipating "a new era of e-business solutions", based on integrated ICT systems and tools (COM(2005) 229 final) → Identifying the "lack of interoperability, reliability and security" as a major obstacle to productivity gains
2010 -	**Europe 2020** → Continued reflection of the importance of ICT, but with more specific and selective identification of issues and challenges → Main relevant Europe 2020 flagship initiatives: → **Industrial policy for the globalisation era** [COM(2010)614]: recognising the increasing interconnectivity of international value chains and emphasising the strategic importance of improved use of ICT. → **Digital Agenda for Europe** [COM(2010)245]: Action area 2 addresses interoperability and standards, e.g. to facilitate online cross border transactions. → **Innovation Union** [COM(2010)546]: stressing the importance of continued investment in education, R&D, innovation and ICT, also in times of financial and economic crisis.

ICT continues to play a role in **Europe 2020** (http://ec.europa.eu/europe2020/index_en.htm), the EU's ten-year growth strategy for this decade. However, the issues and challenges to be addressed are more specific and selective than in previous programmes. Europe 2020 consists of seven flagship initiatives (each comprising numerous specific actions) that will promote smart, sustainable and inclusive growth in Europe. The smart use of ICT in business plays a role in three of these initiatives: the "Industrial policy for the globalisation era", the "Digital Agenda for Europe", and the "Innovation Union".

For instance, with regard to the **industrial policy** strategy,[5] the smart use of ICT (notably by SMEs) is an important component in to reaching the following goals:

→ making it easier for SMEs to access credit and helping their internationalisation;
→ strengthening European standardisation;
→ establishing a more efficient European transport, energy and communication infrastructure and better services for European industry.

5 For more information, see:
http://ec.europa.eu/enterprise/policies/industrial-competitiveness/industrial-policy/index_en.htm

ICT for competitiveness & innovation – the policy of DG Enterprise and Industry

Within the European Commission, DG Enterprise and Industry is charged with helping to improve Europe's economic standing by promoting business competitiveness, so that they can compete openly and fairly. Many of the actions to promote the smart use of ICT by SMEs have therefore been initiated by this DG, reflecting the close links with its policy mission. The industrial policy flagship initiative is also coordinated by DG Enterprise and Industry. In the field of ICT, the DG has focused on promoting the smart use of ICT to enhance competitiveness and innovation in the following areas:[6]

- **Digital entrepreneurship**: in its most recent strand of policy, the Commission has focused on the role of novel digital technologies for entrepreneurship, in particular among start-ups and fast growing companies as well as the digital transformation of existing enterprises. It pledges to help entrepreneurs and SMEs exploit the potential of ICT, the supply of new digital products and services, and the demand and the smart use of these technologies. See: http://ec.europa.eu/enterprise/sectors/ict/digital-entrepreneurship/index_en.htm
- **Sector-specific initiatives to improve the smart use of ICT in digital supply chains**: with its initiative on "Stimulating innovation for European enterprises through smart use of ICT", the Commission is aiming to improve the framework conditions for SMEs to participate in digital supply chains. See: http://ec.europa.eu/enterprise/sectors/ict/ebsn/digital_supply_chains/index_en.htm
- **Policy coordination and knowledge sharing**: by setting-up the e-Business Support Network for SMEs (eBSN), the Commission created a platform for decision-makers in the field of e-business, to share knowledge and experience, and to discuss strategic policy direction. See: http://ec.europa.eu/enterprise/sectors/ict/ebsn/index_en.htm
- **ICT skills**: this long-term strategy supports actions to foster the ICT and e-business skills that are needed by Europe's enterprises. See: http://ec.europa.eu/enterprise/sectors/ict/e-skills/index_en.htm
- **ICT standardisation**: the Commission supports activities in the field of ICT standardisation (including actions to address challenges or to launch initiatives, and financing studies). See: http://ec.europa.eu/enterprise/sectors/ict/standards/index_en.htm
- **eInvoicing**: sending and receiving invoices electronically can deliver savings for many companies. For years, the Commission, with the support of expert groups and stakeholder representatives, has worked on removing (or at least reducing) regulatory and technical barriers to e-invoicing (in particular cross-border invoicing) across Europe. See: http://ec.europa.eu/enterprise/sectors/ict/e-invoicing/index_en.htm

6 See website of DG Enterprise and Industry: http://ec.europa.eu/enterprise/sectors/ict/index_en.htm

The eBSN – the European e-Business Support Network

The "eBSN", the European e-Business Support Network for SMEs, plays a crucial role in this wider context (http://ec.europa.eu/enterprise/sectors/ict/ebsn/index_en.htm). The Commission set it up in 2003 as an open **policy coordination platform** where decision-makers and public policy experts in the field of e-business could share information and examine strategic policy orientation together.

The eBSN soon turned into a success story. It has gradually grown into a network of more than 200 members from about 30 countries in Europe, and a Steering Group of about 30 members that act as its main executive body. eBSN activities include organising workshops (about 3-5 annual workshops were held during the first years of the network), developing and funding specific initiatives, and gathering empirical evidence through studies.

Around 2006/07, the eBSN shifted its focus away from raising awareness and sponsoring or co-financing ICT investments and internet connectivity, and towards more advanced policy instruments. In particular, it has focused on a new policy trend: the **digital supply chains approach** for e-business. This innovative approach, inspired largely by the French "TIC-PME 2010" (ICT-SMEs 2010) initiative (http://www.ticpme2010.fr), explores improvements to interoperability (and other framework conditions) to make it easier for SMEs to connect with their customers and suppliers in a sector's value chain. The decision to follow this strategy manifested itself in the initiative on "Stimulating innovation for European enterprises through smart use of ICT".

The EU initiative on "Stimulating innovation for European enterprises through smart use of ICT"

This on-going initiative, launched in 2007 by the eBSN, encompasses a **series of industry-specific projects** (named "demonstration actions") funded by the Commission. These demonstration actions share a common policy objective: to help SMEs to participate in global supply chains, so that innovation will be stimulated through the smart use of ICT. The overall aim of the demonstration actions is to harmonise business processes, data exchange architectures and standards within specific industry sectors. If successful, this could greatly improve the framework conditions for SMEs to use e-business.

The **commitment of all relevant stakeholder groups** is vital to the success of this initiative: primary stakeholders (SMEs and large companies from each sector), and also secondary stakeholders (such as other supply chain partners and ICT vendors). The demonstration actions showed that common agreements can be reached, because a harmonised framework is seen as capable of bringing advantages to all stakeholders (see Box 5). However, it also showed that any agreement requires a convincing and well communicated "business case" for each stakeholder involved.

Box 5: Stimulating innovation for through the smart use of ICT: creating a win-win situation for all stakeholder groups

Benefits for SMEs	Benefits for large companies	Benefits for the wider
→ improved process efficiency (time and cost savings) and quality (reduced error rates); → better customer satisfaction; → easier access to new markets; → strengthened business relations with big companies; → higher return on investments in ICT; → reduced administrative overheads and greater focus on core business.	→ improved competitiveness of the supply chain; → increased innovation capacity through partnering with innovative SMEs; → enhanced customer satisfaction through more flexible, personalised services; → shorter time-to-market.	→ strengthened competitiveness of the regional economy; → easier market entry for new players and on fair terms; → strengthened innovation capacity (for instance because of follow-up innovations it triggers).

3 Achievements to build on: Six European pilot projects in different industries

Introduction

The European Commission is actively committed to improving the framework conditions for electronic data exchange, in particular for the benefit of SMEs. For this reason, DG Enterprise and Industry launched the "Stimulating innovation for European enterprises through smart use of ICT" initiative in 2008. It has led to six fully funded "demonstration actions" which have been managed by the eBSN. Each project focuses on a different industry and was proposed, planned and implemented by an international consortium of industry federations, R&D organisations, consultancies and ICT companies.

The projects all follow a similar pattern:

- First, the project consortia **develop a common framework architecture** for electronic data exchanges in the relevant sector (or specific segments of it), considering in particular the needs of SMEs. These frameworks contain specifications for the kind of information that they intend to exchange (orders, delivery notes, invoice...), and for how the information is going to be exchanged (describing roles and processes).
- The frameworks are then **tested in a number of pilot actions** and, if needed, refined on the basis of the results.
- The final step is to develop a **governance model for the maintenance and wider deployment of the framework** after the funding ends.

Sector in focus	Project	Time	Website / detailed information
Fashion (textile, clothing and footwear)	eBIZ-TCF	2008-2010	http://ebiz-tcf.eu Details: Section 3.1
Automotive	auto-gration	2010-2012	http://www.auto-gration.eu Details: Section 3.2
Transport and logistics	DiSCwise	2010-2012	http://www.discwise.eu Details: Section 3.3
Agro-food	eFoodchain	2012-2014	http://www.efoodchain.eu Details: Section 3.4
Tourism	TourismLink	2012-2014	http://www.tourismlink.eu Details: Section 3.5
Construction	Connect & Construct	2012-2014	http://www.connectandconstruct.eu Details: Section 3.6

The following sections explore the activities, plans and achievements of these projects.

3.1 The automotive industry: assisting SMEs to participate in global digital supply chains

Box 6: Assisting SMEs to connect with supply chains of the automotive industry

Companies wishing to do e-business together in the automotive supply-chain must have **compatible communication systems.** SMEs are often expected to send data in a format which is acceptable to large companies they do business with. The "auto-gration" project (2010-2012, http://www.auto-gration.eu/) developed a solution to improve the integration of automotive companies, particularly SMEs, in the sector's digital supply chains by allowing them to communicate business messages (orders and invoices) over existing, formerly incompatible, IT infrastructures and systems.

The **auto-gration "connector"** is available for free. It functions as an interpreter between the existing software solutions, "translating" business messages into a common format that can be sent and received by all partners using the connector, irrespective of their own ICT system. The technical implementation of the connector is easy, taking typically about a person-day,[7] depending on the configuration of the company's ICT system. The solution was tested in pilots across different countries and systematically showed **benefits for SMEs** and potential to strengthen the competitiveness of regional SME suppliers. The connector is now available for free, and ready for a wider roll-out in follow-up **national or regional initiatives**, in particular in regions with a significant automotive industry.

3.1.1 The challenge

Companies wishing to do e-business together in the automotive supply-chain must have **compatible communication systems**. The alternative is to purchase a new system, hire an external message-conversion service, or resort to manual, paper-based information exchange. SMEs doing business often find themselves expected to use the ICT system of larger partners. This adds to their costs and makes it harder to trade with multiple partners.

Specialised B2B service providers can offer a solution by "translating" business messages through web-portals between the sender and receiver. The problem is that portal solutions usually involve manual data input and processing. There are also numerous B2B portals, with limited interoperability, leading to a similar fragmentation problem to the one they are designed to solve.

3.1.2 The solution

The European Commission has funded the "**auto-gration**" project that addresses this challenge. Its goal has been to develop and pilot a solution to help SMEs participate in global digital automotive supply chains by enabling them to exchange business data seamlessly, regardless of their own digital infrastructure.

The project was designed, proposed and executed by a consortium of key organisations from the automotive sector with extensive experience in standardisation and e-business work. At their helm was **Odette International**, a non-profit organisation founded by the automotive industry to develop standards for data exchange and logistics management. The other core partners were two industry federations (CECRA, the European Council for Motor Trades and Repairs, and CLEPA, the European Association of Automotive Suppliers) and two innovation consultancies (BOOST and Inova+).

7 This figure is based on reports of SMEs which had piloted the auto-gration connector and then reported their experiences at the auto-gration Conference in Stuttgart in March 2012.

The project identified four main categories of stakeholders whose commitment was critical to the success of the project:

- **SMEs** from the automotive industry, who are the primary target group and the major beneficiary of auto-gration;
- **Large companies**, whose business protocols tend to dominate the sector;
- **ERP vendors**, as the data to be exchanged are often stored in ERP systems;
- **B2B service providers**, as their business could be affected by the new solution.

A common framework architecture for connecting SMEs

The first step was to analyse current practices and challenges to electronic data exchange in different segments of the industry. The project then developed a **framework architecture** for data exchange in response to the shortcomings and challenges they identified in this sector. The architecture specified the business processes that the project would cover, and which business messages it would help to exchange, and outlined some of the technical requirements involved (such as connectivity principles).

This architecture is **not to be confused with a new standard.** It presents a new way to transport data between existing software solutions (such as ERP systems) in use along the automotive supply chain.

The **auto-gration connector** is the technical solution that the project developed to implement the framework. It plugs into existing software (thus respecting previous investments) and seamlessly transforms messages to and from the auto-gration specification, allowing previously incompatible systems to communicate. Companies that participated in the auto-gration pilot projects reported that the solution is easy to implement (representing on average the workload of a person day).[8] The "connector" itself is available for free (for instance on the auto-gration website); thus, the implementation costs are affordable even for small companies (they may need some support from their ICT service provider, if any).

The "early-adopter-programme": pilots and their results

SMEs within the automotive sector exchange data with customers and suppliers in a variety of domains and business scenarios. For piloting the architecture, the project developed an "early-adopter-programme" focusing on two business segments.

- 14 pilot projects were conducted in the (upstream) **supply chain** of producers of cars and parts, most of them in France.
- The pilots in the (downstream) **aftermarket** focused on the Spanish market. They involved nearly 70 SMEs (dealers, repair shops and wholesalers) and connected them with some 20 large suppliers of parts.

The pilots showed **significant potential**. Nearly all companies that participated were satisfied with the solution, and reported tangible benefits, including:

- Faster processes and better transparency of orders;
- Reduction of errors due to the elimination of manual data entry and/or the elimination of e-mails between suppliers and purchasers;
- Increased customer satisfaction due to faster order entries and delivery processes;
- Reduced communication costs, as the auto-gration connection is cheaper than previously used EDI/VAN connections.

8 This figure is based on reports of SMEs which had piloted the auto-gration connector and then reported their experiences at the auto-gration Conference in Stuttgart in March 2012.

The roll-out: signing of a Memorandum of Understanding

The auto-gration pilots confirmed the success of this solution and highlighted the benefits it can bring to SMEs. However, 18 months later, the deployment of the auto-gration solution remains at an early phase of development.

The project has taken some important measures to support and accelerate its roll-out, however. First and foremost, it committed stakeholders to sign two **Memorandums of Understanding** (see Box) to support the auto-gration solution. The project results and benefits were showcased at the **auto-gration Conference** in Stuttgart in March 2012 to over 200 attendees, and **cooperation continues with ICT service providers and associations**.

One sign that these efforts are paying off is that **VDA**, the German Automotive Association, issued an **official recommendation** to adopt auto-gration for their SME eInvoicing solution. The weight that a VDA recommendation brings in this domain could boost the deployment of the auto-gration solution still further.

Stakeholders signed two Memorandums of Understanding about auto-gration

In 2012, major stakeholders in the European automotive industry signed two Memorandums of Understanding (MoU) to support the auto-gration solution for data exchanges in the sector. The first MoU was signed by industry bodies Odette, supplier organisation CLEPA and aftermarket organisation FIGIEFA, committing themselves to promoting and maintaining the auto-gration solution through the creation of a permanent auto-gration Joint Working Group. A parallel MoU was publicly endorsed by 25 ICT service providers (including ERP vendors) during the auto-gration Conference in Stuttgart in March 2012.

3.1.3 Case study: Automotive

1. The challenge

Companies wishing to do e-business together in the automotive supply-chain must have **compatible communication systems**. The alternative is to purchase a new system, hire an external message-conversion service, or resort to manual, paper-based information exchange. SMEs doing business often find themselves expected to use the ICT system of larger partners.

This adds to their costs and makes it harder to trade with multiple partners. Specialised B2B service providers can offer a solution by "translating" business messages through web-portals between the sender and receiver. The problem is that portal solutions usually involve manual data input and processing. There are also numerous B2B portals, with limited interoperability, leading to a similar fragmentation problem to the one they are designed to solve.

2. The solution

The European Commission has funded the "auto-gration" project that addresses this challenge. Its goal has been to develop and pilot a solution to help SMEs participate in global digital automotive supply chains by enabling them to exchange business data seamlessly, regardless of their own digital infrastructure.

The project was designed, proposed and executed by a consortium of key organisations from the automotive sector with extensive experience in standardisation and e-business work. At their helm was **Odette International**, a non-profit organisation founded by the automotive industry to develop standards for data exchange and logistics management. The other core partners were two industry federations (CECRA, the European Council for Motor Trades Repairs, and CLEPA, the European Association of Automotive Suppliers) and two innovation consultancies (BOOST and Inova+).

The project identified four main categories of stakeholders whose commitment was critical to the success of the project:

→ **SMEs** from the automotive industry, who are the primary target group and the major beneficiary of autogration;
→ **Large companies**, whose business protocols tend to dominate the sector;
→ **ERP vendors**, as the data to be exchanged are often stored in ERP systems;
→ **B2B service providers**, as their business could be affected by the new solution.

3. Key case studies of automotive sector

The auto-gration pilots confirmed the success of this solution and highlighted the benefits it can bring to SMEs. From these pilot initiatives, key case studies have been identified and will be detailed above.

a) Auto-gration connection between 2 SMEs suppliers

(1) Overview

Case study : *Anixter & Bowden*

- **First implementation of an auto-gration connection between 2 SMEs suppliers in the French automotive industry**
- **Since September 2012, auto-gration connectors are running production exchanges of delivery instructions, despatch advice and invoice messages between the two companies.**

Project description

- **Context / issues that led to the project:**
  - SMEs suppliers in automotive industry are often expected to send data in a format acceptable for large partners and have to use ICT system requested by these large partners. Adaptation of EDI messages and maintenance of EDI require time and are costly for SMEs.
  - Since September 2011, pilots cases have been developed involving SMEs and its ERP Vendor, one B2B Service Provider and one Large EDI Partners (T1 supplier or OEM)
- **Objectives**
  - Reduce manual data entries for order and delivery
  - Work with a single set of normalized messages
  - Reduce costs associated to EDI messages adaptations
  - Improve productivity
- **Key challenges:** Getting clear recommendations by the French national automotive authority in France (GALIA) about auto-gration, as an alternative to the EDI or WebEDI connections in order to encourage small suppliers to use auto-gration.
- **Key actors:**
  - Tier 1 supplier (Bowden) & Tier 2 supplier (Anixter), as early auto-gration adopters and pilots
  - Infodev, ERP editor of the AGI software, key actor in auto-gration project since 2011
  - eBusiness eXpert as B2B service provider and auto-gration partner

Means / Budget

- **Budget of the project :**
  - Free of charge for Tier 1& Tier 2 suppliers, as early adopters
  - For a new comer SME: <2k€ (when using an auto-gration enabled ERP system)
- **Resources and planning:**
  - Pilot phase fully managed by ERP solution provider (Infodev) & B2B Service provider (eBusiness eXpert) , requiring 1 meeting per month for early adopters
  - For new SMEs: half-a- day to get installed, 2 days to go live

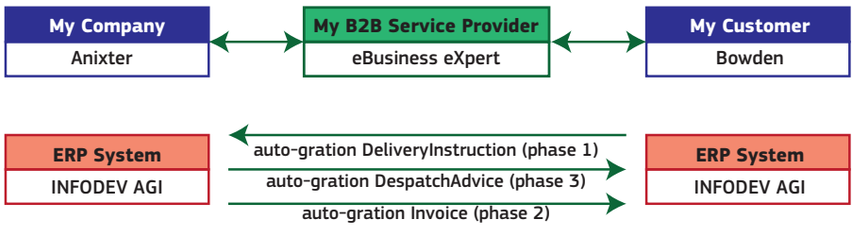
Achievements / outputs

- **Business benefits for SME suppliers**
- **Easier entry to the market**
- **80% reduction in manual data entry, fewer errors, lower operational costs**
- **50% cost reduction associated with translation between different ICT systems**
- **30% increase in productivity**
- **Technical added value**
  - Low cost and easy to implement : Half a day to get installed, two days to go live after functional tests
  - Decreased complexity of the EDI connectivity (only one message format is used) and simplification of the on-site EDI infrastructure

(2) Project description

Case study : *Anixter & Bowden*

- First implementation of an auto-gration connection between 2 SMEs suppliers in the French automotive industry
- Since September 2012, auto-gration connectors are running production exchanges of delivery instructions, despatch advice and invoice messages between the two companies.



- eBusiness eXpert is Anixter's B2B service provider for their EDI exchanges.
- For the exchanges with Bowden, Anixter can directly exchange auto-gration messages via eBusisness eXpert without any transformation in between.
- Auto-gration messages are directly generated and integrated by the AGI software on both sides .

Project description - BOWDEN

BOWDEN s.a.s.

Context / Sector of the company

- **Company description:**
  - Tier 1 supplier, Bowden manufactures jacks, handbrake levers, door locks and other automotive equipment for PSA, Renault, Ford, Volvo, …
  - Based in Boynes, Loiret (45), France, Bowden employs 200 people
  - Main suppliers of Bowden are Arcelormital, Bamesa …
- **Company context and issues**
  - A lot of time is wasted by Bowden in manual data entry for order and delivery management:
    - *product delivered are registered manually one by one,*
    - *order forms are sent by customers by email*
  - Because of this manual data entries, mistakes in orders and deliveries happen
  - Bowden has to maintain several EDI data mapping to adapt to format requested by its own suppliers and customers.
  - Maintaing EDI requires time and has a cost : 4-5 K€/year.

Description of the project

- **Project context:** Infodev, ERP editor implied in auto-gration project since 2011, invited its customers using AGI software (complete ERP system) to participate as early adopters to auto-Gration project
- **Objectives of the project:**
  - To replace several types of EDI messages by a set of standardized messages as proposed by auto-gration
  - To reduce cost of maintenance and communications of EDI messages
- **Content & phases**
  - Following messages are now fully automated since September 2012, after a 6 month pilot phase:
    - *Delivery instructions (integration of materials received from suppliers)*
    - *Despatch advice (notification of products sending to customers)*
    - *Invoice messages*
- **Barriers :** Convincing other suppliers and major customers (Renault, PSA …) to use auto-gration as well
- **Effective results :**
  - Reduce manual data entries for orders and deliveries
  - Reduce costs associated to EDI messages adaptations
  - Improve productivity

Project description - ANIXTER

Context / Sector of the company

- **Company description:**
- ANIXTER is a Tier 2 supplier located in Sarreguemines, in France, specialized in global sourcing and distribution of fasteners for automotive industry and aerospace.
- Main customers in Automotive industry are car manufacturers (Renault, PSA…) and Tier 1 suppliers (Faurecia, Anixter …)
- ANIXTER has a global presence worldwide:
  - $5.5B sales in 2010
  - 7,900 employees
  - 228 distribution facilities located in 50 countries
  - More than 450,000 products servicing over 100,000 customers worldwide

- **Company context and issues**
- After having used EDI for 14 years, ANIXTER is facing the following issues
  - Multiple formats and customer-specific contents require ad hoc implementation per customer
  - EDI enables our business with our customers but only the big ones!
  - Less than 30 % of our customers work with us via EDI messages
- Maintaing EDI requires time and has a cost : 4-5 K€/year

Description of the project

- **Objectives of the project:**
- ANIXTER is using AGI Software (ERP system) from Infodev since 2000.
- Infodev invited its customers using AGI software to participate as early adopters to auto-gration project
- Objective of the pilot was to use auto-gration connector as reference message to exchange with auto-gration enabled customers (Bowden) . This is an SME-SME auto-gration enabled connectivity case.
- **Content, phases**
- Following messages are now fully automated since September 2012, after a 6 month pilot:
  - *Delivery instructions (integration of materials received from suppliers)*
  - *Despatch advice (notification of products sending to customers)*
  - *Invoice messages*
- **Barriers :** Have a clear recommandation by key national automotive authorities (Gallia) about auto-gration, as an alternative to the EDI or WebEDI connections
- **Effective results:**
- Work with a single set of normalized messages
- Reduce costs associated to EDI messages adaptations
- Improve productivity

(3) Key outputs

Means of the project and key outputs

Means used

- **Financial**
- Free of charge for Tier 1& Tier 2 suppliers, as early adopters
- For a new comer SME: <2k€ (when using an auto-gration enabled ERP system)

- **Resources**
- Integration managed by the ERP provider
- Low impact on supplier's resources:
  - meeting once a month with ERP provider during pilot phase
  - half a day to get installed

Key outputs

- **Benefits for the company**
- Easier entry to the market
- 80% reduction in manual data entry, fewer errors, lower operational costs
- 50% cost reduction associated with translation between different ICT systems
- 30% increase in productivity

- **Technical added value:**
- auto-gration is a low-cost implementation : No VAN nor EDI station costs
- auto-gration is easy to implement: Half a day to get installed, two days to go live after functional tests
- It works and matches with SMEs expectations on the different technical, functional and business levels
- Decreased complexity of the EDI connectivity (only one message format is used) and simplification of the on-site EDI infrastructure

3.1.4 Conclusions, outlook and further information

All in all, the auto-gration project presents a **remarkable success story**. The project has developed an SME-friendly solution which facilitates the exchange of business messages within the automotive industry value chain. It also delivered evidence of the architecture's benefits for SMEs, both in the upstream supply chain and in the downstream (aftermarket) of the industry. The auto-gration project has created a new bridge across interoperability challenges, and provided SMEs with a simple tool to conduct e-business with multiple business partners.

This success story offers an excellent **opportunity for national or regional follow-up initiatives**. The auto-gration connector and the specifications of the framework are freely available, allowing any software developer or service provider to create its own implementations and/or add support services. Authorities could take the role of coordinators and initiators, just as the European Commission has done at a European level, for instance by launching regional or inter-regional projects to deploy the solution within automotive companies in their area.

Further information & contact

- → **auto-gration project website** (with detailed information about the background and results, the technical specifications of the architecture and the connector for download): http://www.auto-gration.eu
- → **auto-gration promotional video** on Youtube: http://www.youtube.com/watch?v=ltA7fqXW-9g
- → **Contact person**: Mr. Joerg Walther, Odette International (e-Mail: jwalther@odette.org).

3.2 The fashion industry: bringing e-business to a sector dominated by small companies

Box 7: Promoting e-business in the fashion industry

The textile, clothing and footwear (TCF) industry is particularly **fragmented**, with small companies making up the vast majority of actors in this sector. As a result, data is typically processed manually and exchanged in the form of paper documents. But accurate and fast information exchange between trading partners is becoming increasingly important for the competitiveness of companies in this sector.
The "eBIZ-TCF" project (2008-2010) set out to advance **electronic data exchanges** in the fashion industry. The project developed and piloted an innovative framework (or "reference architecture") for exchanging electronic data, linked to the specific needs and limited ICT infrastructure of small companies in this sector.
This framework was tested in pilot actions focused on product orders, which proved the **technical feasibility** of the framework and showcased the **benefits to SMEs** in time-saving and improved process quality.
In spite of promising results, the penetration of the reference architecture remains limited. Given the current **economic climate**, investment in ICT is not a priority for many companies. This reluctance illustrates the **lack of awareness** within the private sector of the opportunities of smarter ICT. It is also a prompt to **follow-up activities** that can inform SMEs in the region about the eBIZ framework, and help them adopt it.

3.2.1 The challenge

The textile, clothing and footwear (TCF) sector is highly **fragmented**, with **small companies** making up the vast majority of its players. As a result, only a small share of business transactions in the supply chain is conducted electronically: data are typically processed manually and exchanged in the form of paper documents. But accurate and rapid information exchange between trading partners is becoming increasingly important for the competitiveness of companies in this sector. The ICT that exists at present depends on numerous distinct proprietary data standards, and the limited interoperability creates a major barrier for digital integration of SMEs in the sector's value chain.

Accurate, fast and seamless data exchange could help suppliers, manufacturers and retailers respond to the business challenges of adapting to fast-changing market requirements and ever-shorter lead times for product development.

3.2.2 The solution

In 2007, the European Commission launched the "eBIZ-TCF" project to address eBusiness challenges within the fashion sector (see http://www.ebiz-tcf.eu). The goal was to develop and pilot a new framework to help the exchange of electronic data in the supply chain, focusing on business messages related to product orders. Rather than presenting an alternative ICT system, the framework was designed to **enable interoperability** between existing standards and e-business systems. It was conducted in 2008-2010 by a consortium which was led by **EURATEX**, the European Apparel and Textile Confederation, and included **CEC**, the European Confederation of the Footwear Industry, and **ENEA**, the Italian National Agency for New Technologies, Energy and Environment.

A new framework for exchanging business messages electronically

The eBIZ project developed an **innovative and coherent framework** that made it possible for suppliers, manufacturers and retailers to exchange data and documents electronically. The so-called "**eBIZ Reference Architecture**" is a guiding document, supported by online resources and a compliance check-tool. It is designed to provide interoperability across systems and standards. It is not new software, and not in itself a technical solution, but it specifies organisational and technical aspects, such as business models, processes, data models, product classification standards and communication protocols.

Rather than develop a new architecture from scratch, the project team aimed at harmonising the results of past projects and existing public standards. Many of the technical specifications are cross-referenced with their sources, and take into account advances towards standardisation by organisations such as CEN/ISSS, OASIS and GS1. The reference architecture has been updated in several releases since its initial development and is available for free on the internet (http://ebiz-tcf.eu/index.php/the-reference-architecture).

The pilots and their results

The Reference Architecture was tested in **17 pilot actions**, involving some **150 companies** (manufacturers, retailers and ICT suppliers) from 20 countries, and covering the upstream and downstream value chain. Eleven of the pilots also involved cross-border business transactions. All the participating companies were selected from applications received in response to a public call.

Overall, the pilots showed **remarkable potential benefits** from making use of the architecture, as an internal evaluation documented:

- **Faster order processing**: in more than a third of the pilots, reported processing times decreased by 80% or more;
- **Shorter order response times**: processing was accelerated by 10-20%;
- **Reduced software implementation costs**: the cost for implementing the XML-based eBIZ architecture was significantly lower than for existing EDI systems;
- **Quality assurance – reduced error rates**: processing errors and loss or ambiguity of information were reduced, by the move away from manual data processing and from communication by fax or telephone.

The scale of the benefits varied according to the quality of the system that each company had previously used. Companies that had not practised any type of electronic document exchange before derived significant immediate benefits from the "upgrade" to electronic business based on the reference architecture. For companies with prior experience with electronic document exchanges (although not open standard systems), the short-term benefits were less pronounced. Nonetheless, the architecture presented a longer-term potential from expansion of business networks and lower software maintenance and development costs.

Wider deployment

After developing and piloting the framework, the eBIZ project engaged standardisation bodies and user communities to promote wider uptake. But because not all the targeted stakeholders committed themselves to promoting the concept amongst their clients or members, deployment turned out to be the most challenging aspect of the project.

An important step towards wider dissemination has been to submit the eBIZ reference architecture for standardisation by CEN, the European Committee for Standardisation. An **eBIZ Workshop** ran from March 2012 until June 2013,[9], involving 74 members from 8 European countries, and reaching more than 500 stakeholders. An agreement on "Reference Architecture 2.0 for eBusiness harmonisation in Textile/Clothing and Footwear sectors" was adopted in the final meeting on June 26th, 2013 and publicly released in July (see http://www.cen.eu/cen/Sectors/Sectors/ISSS/Workshops/Pages/EBIZ-TCF.aspx).

The Workshop allowed eBIZ to reach stakeholders across Europe, and revealed significant interest for smarter ICT in the retail area. It also brought to light cases of spontaneous eBIZ adoption, and this has led to a doubling of estimations of the number of eBIZ users since 2010, to around 300 companies today. The contribution and commitment of GS1 – with its influence in the downstream market – promises to strengthen further deployment of the reference architecture.

9 A CEN "Workshop" is a procedure which generally takes 10-18 months and leads to a "CEN Workshop agreement" (CWA). The Workshop is open to anyone interested. A CWA does not have the status of a European Standard, but it is faster to establish and more flexible.

3.2.3 Case study: Fashion industry

1. The challenge

The textile, clothing and footwear (TCF) sector is highly **fragmented**, with **small companies** making up the vast majority of its players. As a result, only a small share of business transactions in the supply chain is conducted electronically: data are typically processed manually and exchanged in the form of paper documents. But accurate and rapid information exchange between trading partners is becoming increasingly important for the competitiveness of companies in this sector. The ICT that exists at present depends on numerous distinct proprietary data standards, and the limited interoperability creates a major barrier for digital integration of SMEs in the sector's value chain.

Accurate, fast and seamless data exchange could help suppliers, manufacturers and retailers respond to the business challenges of adapting to fast-changing market requirements and ever-shorter lead times for product development.

2. The solution

In 2007, the European Commission launched the "eBIZ-TCF" project to address eBusiness challenges within the fashion sector (see http://www.ebiz-tcf.eu). The goal was to develop and pilot a new framework to help the exchange of electronic data in the supply chain, focusing on business messages related to product orders. Rather than presenting an alternative ICT system, the framework was designed to **enable interoperability** between existing standards and e-business systems. It was conducted in 2008-2010 by a consortium which was led by **EURATEX**, the European Apparel and Textile Confederation, and included **CEC**, the European Confederation of the Footwear Industry, and **ENEA**, the Italian National Agency for New Technologies, Energy and Environment.

The eBIZ project developed an **innovative and coherent framework** that made it possible for suppliers, manufacturers and retailers to exchange data and documents electronically. The so-called "**eBIZ Reference Architecture**" is a guiding document, supported by online resources and a compliance check-tool. It is designed to provide interoperability across systems and standards. It is not new software, and not in itself a technical solution, but it specifies organisational and technical aspects, such as business models, processes, data models, product classification standards and communication protocols.

Rather than develop a new architecture from scratch, the project team aimed at harmonising the results of past projects and existing public standards. Many of the technical specifications are cross-referenced with their sources, and take into account advances towards standardisation by organisations such as CEN/ISSS, OASIS and GS1. The reference architecture has been updated in several releases since its initial development and is available for free on the internet (http://ebiz-tcf.eu/index.php/the-reference-architecture).

3. Key case studies of Fashion sector

The Reference Architecture was tested in **17 pilot** actions, involving some **150 companies** (manufacturers, retailers and ICT suppliers) from 20 countries. They have shown **remarkable potential benefits**: faster order processing, shorter order response times, reduced software implementation costs, quality assurance and reduced error rates). Key initiatives will be detailed in case studies below.

a) eBIZ connection between fabric supplier and clothing manufacturer

(1) Overview

Executive summary

Case study

- **An early adopter of eBIZ,** data exchange platform in xml messages to **boost e-Business processes in the Textile/Clothing and Footwear (TCF) Industries**
- **An successful example of initiative launched by European Commission in textile industry, allowing faster data exchange for order collection and management, delivery and invoice between fabric supplier Piacenza and clothing manufacturer in Italy.**

Project description

- **Context / issues that led to the project:**
  - In textile-Clothing chain, fabric suppliers mainly receives order from their clothing customers by emails and fax.
  - To establish and maintain a different interface toward each partner is time consuming and expensive, especially for small and medium business
  - Manual data entry for order and delivery management leads to mistakes in orders and deliveries
- **Objective : Automate data transfer for order, delivery and invoice management in order to improve productivity and reduce costs linked to data transfer**
- **Key people:**
  - The European Commission launches the pilot phase of eBIZ to boost e-Business processes in the Textile/Clothing and Footwear (TCF) Industries, coordinated by EURATEX participated by CEC ENEA.
  - The necessary software development and installation was undertaken by Domina srl who also provide technical support to the companies.
  - Main clothing manufacturer and several fabric suppliers, as Piacenza, participated to the pilot

Achievements and Outputs

- **Business benefits**
  - Overall time spent involved in managing orders and deliveries reduced by over 80%, but only concerns 20% of activity (related to main fashion manufacturer having implemented eBIZ)
  - Substantial drop in data errors giving better control of the management of the business.
- **Technical added value**
  - Low cost and easy to implement
  - Platform is stable and daily used by commercial resources

(2) Project description

Project description

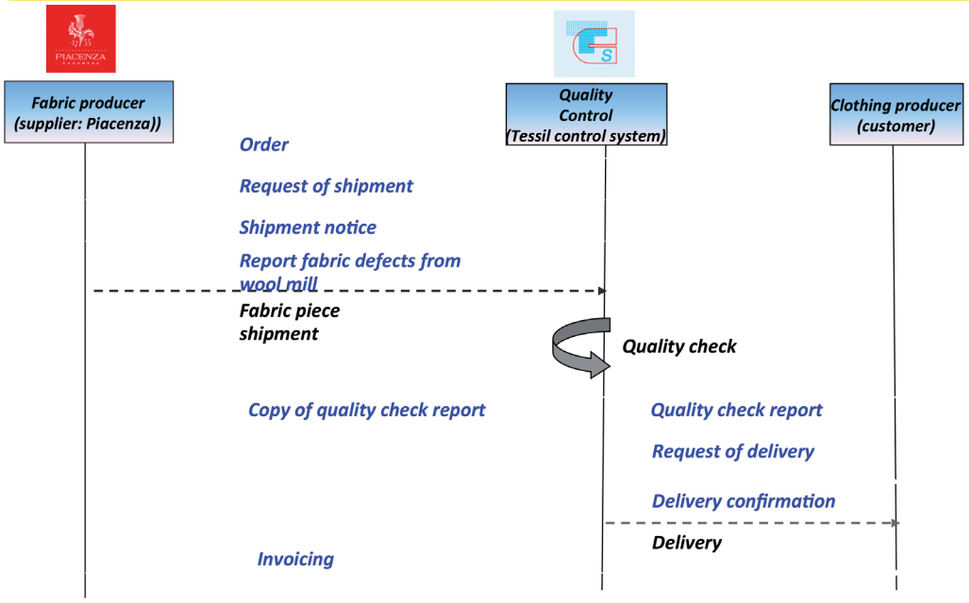
Context / Sector of the company

- **Sector context:**
  - In textile-Clothing chain is complex Textile-Clothing chain is complex and heterogeneous, due to numerous SMEs and different level of automation of different actors
  - Flexibility and timeliness are decisive: responsiveness of the chain must be improved
  - Fabric suppliers and clothing manufacturers should be able to exchange fast and accurate order and delivery information through automated data flows
- **Companies description:**
  - The Lanificio Fratelli Piacenza is a leading name in the production of high-quality fabrics and clothing
  - Piacenza is selling fabrics, men and women clothes and accessories in Italy. It has 3 shops.
  - Piacenza is supplying customers as Armani, Prada, Gucci, Louis Vuitton
  - Piacenza has 218 employees and has a 38 millions € turnover
- **Company context and issues**
  - Piacenza mainly receives orders from customers by email or fax.
  - To establish and maintain a different interface toward each partner is time consuming and expensive, especially for small and medium business
  - A lot of time can also be wasted in manual data entry for orders receive by email or fax and can lead to mistakes.

Description of the project

- **Project context:**
  - eBIZ project is the continuation of Moda ML project (Middleware tools and Documents to enhance the textile/clothing supply chain through xML), founded by European Commission. Piacenza was already as promoter of Moda ML naturally became an early adopter of eBIZ.
- **Objectives of the project:**
  - Reduce manual data entries for orders and deliveries
  - Work with a single set of normalized xml messages
  - Reduce costs associated to adaptations of EDI messages to several partners
  - Improve productivity by speeding order and deliveries processes
- **Content of the project**
  - Set up data flows between Piacenza and its customer for
    - Order, order response, order status
    - Despatch advice documents
    - Defects map
    - Invoicing
- **Barriers :**
  - Other standards than e BIZ are being used and implemented at the moment
  - Convince other large fashion groups to use eBIZ to boost adoption of all clothing chain actors
- **Results**
  - 80% of time saving in data transfer with one of the main customer, representing 20% of turnover
  - 10 persons in commercial team use eBIZ and are satisfied. System is stable.

Illustration of data flows between Piacenza and clothing manufacturer



Key outputs

- **Benefits for the company**
  - 80% gain of time by eliminating manual data entries
  - Reduce mistakes in orders and deliveries

- **Lessons learnt:**
  - eBIZ is a low-cost implementation
  - eBIZ is easy to implement
  - It works and matches with SMEs expectations on the different technical, functional and business levels
  - To make eBIZ a success and have wider benefits for company (more time savings, cost savings, easier entry to market), it is a necessary to convince other large fashion groups to use eBIZ to boost adoption of all clothing chain actors

3.2.4 Conclusions, outlook and further information

The eBIZ Reference Architecture presents an **innovative solution** to ease data exchanges in the supply chain of the textile, clothing and footwear industry. However, in spite of its **proven merits**, adoption remains limited, and deployment slow, perhaps because fashion sector SMEs are not yet convinced of the benefits it can provide. But the adoption of the eBIZ CEN Workshop Agreement is an **opportunity for follow-up activities**. Regional or national projects could build on this validated concept. In regions with a significant textile industry, promoting the readily available eBIZ architecture can foster innovation and competitiveness.

Further information & contact

- **eBIZ project website** (with detailed information about the background and results, and the current version of the eBIZ Reference Architecture for download): http://ebiz-tcf.eu
- CEN Website with information about the **CEN Workshop eBIZ**: http://www.cen.eu/cen/Sectors/Sectors/ISSS/Workshops/Pages/EBIZ-TCF.aspx
- **Promotional video** on Youtube explaining the benefits of eBIZ: http://www.youtube.com/watch?v=nHIYzpVs6FM
- **LinkedIn Group** of eBIZ-TCF: http://www.linkedin.com/groups/eBIZTCF-Harmonising-eBusiness-in-textile-2438948
- Contact person: Mauro Scalia, Project Manager, EURATEX (e-Mail: **mauro.scalia@euratex.eu**)

3.3 Transport & logistics: a pilot project to facilitate electronic data exchange in a complex sector

Box 8: Facilitating electronic data exchange in the transport and logistics industry

ICT has long fostered innovation in the transport & logistics industry, in particular for the large logistics firms. But obstacles persist - notably the absence of common processes, a common language and common standards for interoperability. Data and information are often still exchanged by telephone, or sent as unstructured data by e-mail and fax. The potential that the smart use of ICT offers for improving the efficiency of information flows remains largely untapped.

The DiSCwise project (2010-2012) aims to facilitate electronic data exchange in this industry with a new **reference architecture for interoperability**, which is particularly sensitive to the requirements of SMEs. This builds on the results of earlier initiatives, in particular the framework developed under the FREIGHTWISE project (an EU project funded under the 6th Framework Programme). **Three pilot actions**, focusing on different business segments and markets in Poland, the Netherlands and Portugal, have produced positive general conclusions, demonstrating that the DiSCwise framework works in practice, and has can **lower costs for companies** in their communications along the value chain – in particular with SMEs. The framework can also be used in conjunction with existing ICT infrastructure, respecting previous investments.

The deployment of the framework remains at an early stage, offering an opportunity for **regional or even national follow-up activities** to benefit from its achievements through, for instance, further pilot actions.

3.3.1 The challenge

The transport and logistics industry is important as an employer, as a factor in the competitiveness of all companies shipping goods, and as a potential contributor to reducing carbon emissions.

ICT has long fostered innovation in the logistics services industry and there is wide consensus on the untapped potential of further improvements. In particular, the absence of common processes, a common language and common standards for interoperability is a major obstacle to better integration, and to the more efficient information flows that the smart use of ICT could provide. Telephones, and unstructured data protocols such as e-mail and fax are still widely used, and planning remains largely reliant on simple software tools such as MS Excel spreadsheets, which have limited scope for interoperability.

Further integration must overcome the heterogeneous nature of the sector, with its mix of small transport service providers and international transport companies and the co-existence of abundant paper-based communication processes with the advanced ICT logistics systems employed by many large companies. The degree of regulation also varies (air transport is more tightly controlled than road transport, for instance), and harmonisation of data exchanges is accordingly complicated.

3.3.2 The solution

Improving interoperability through a common framework

The European Commission funded the "DiSCwise" project (see http://www.discwise.eu) to develop a framework for electronic data exchange within the transport and logistics industry. This built on the results of previous initiatives, to avoid competition between frameworks with similar objectives.[10] It was developed and implemented by a European consortium led by BMT Group Ltd (UK), an engineering, science and technology consultancy.

In consultation with industry stakeholders, the project developed the so-called "**DiSCwise Common Framework**" for electronic data exchange, which specifies functional roles in the industry, business processes (workflows and functions performed by these roles), and interfaces for the exchange of data.

10 In particular, it made use of results of the FREIGHTWISE project (an integrated project funded under the EU's 6th Framework Programme, 2006-2010, Project no. TREN-06-FP6TR-S07-60148).

Three pilot actions and their results

The framework was tested in a variety of real business transactions in pilot actions with different business segments in Flanders (Belgium), Poland and Portugal/Spain:

- The **Flemish pilot** demonstrated how customs compliance activities can be integrated within a co-modal logistics chain to facilitate and accelerate deliveries from ports to final destinations.
- The **Polish pilot** developed and tested new approaches to vertical and horizontal cooperation between shippers, freight forwarders and providers of transport & logistics services, aimed at increasing load factors and reducing transport costs through co-modality.
- The **Iberian pilot** (involving predominantly Portuguese companies) aimed to improve information flows between shippers, freight forwarders and providers of logistic service by rail and road - where information flows are often still based on unstructured, non-standardised data from spreadsheets and/or document editors.

Specific results and outcomes were mixed, but the general conclusions were positive, and demonstrated that the DiSCwise common framework works, and can lower the cost of electronically connecting companies in the sector. In addition, DiSCwise was able to operate in conjunction with existing systems, thereby respecting previous investments in ICT. The pilot in Poland was exceptionally successful, and the framework remains in use across the region even beyond the participating companies.

The framework was demonstrated and used on the platform of two specific software solutions: Logit 4SEE® and Tagus. But it is also compatible with practically all systems once customised.

The roll-out

The Polish pilot enjoyed rapid regional take-up, but the broader deployment of the framework architecture is just beginning. A major step towards wider deployment in the industry was the adoption of the framework by **Universal Business Language (UBL)**, a major international library of standard electronic XML business documents (such as purchase orders and invoices). The DiSCwise messages have become part of UBL Version 2.1 (adopted in May 2013).

3.3.3 Conclusions, outlook and further information

The DiSCwise project has **successfully optimised and refined a framework** for electronic data exchange in the transport and logistics industry. The major achievement of this proof of concept project has been to demonstrate, through pilots, the robustness of the architecture and the benefits it can bring to SMEs in the sector.

Deployment of the framework remains at an early stage. **Follow-up activities** with stakeholders from different regions and segments of the industry would promote wider adoption. National and regional authorities, as well as industry associations, could coordinate and initiate such activities, since they are in a privileged position to launch regional or inter-regional projects to encourage deployment among regional transport and logistics supply chains. They could be included in infrastructure or innovation schemes, with or without financial support from the ESIF programmes. Companies can build on the proven solutions and benefit from the lessons learned during the DiSCwise pilots.

Further information & contact

- **DiSCwise project website** (with detailed information about the background and results of the pilots, about related projects and the common framework architecture): http://www.discwise.eu
- Project website of **FREIGHTWISE**, a related EU project funded under the 6th Framework Programme: http://freightwise.tec-hh.net/
- **Contact person**: Frank Knoors, Logit Systems AS, Project Manager of DiSCwise (e-Mail: pm@discwise.eu)

3.4 Tourism: building a B2B platform to connect travel agencies, tour operators and service providers

Box 9: A new platform for connecting service providers in the tourism industry

While e-commerce is playing an increasingly important role in the tourism sector (for instance for making hotel reservations online), some companies, in particular smaller ones, have been slow adopters of ICT. Moreover, tourism companies often have difficulties in collaborating with other service providers in the sector due to the variety and incompatibility of many of these solutions.
The TOURISMlink project (http://www.tourismlink.eu/, 2012-2014) will develop an **interoperable framework** functioning as a **Business to Business (B2B) connector** between tourism companies, in particular SMEs. The framework will help exchange information between tourism service suppliers and destination providers, and will be tested across 12 countries in the form of an online platform.
The resulting interoperable platform will cover a wide range of tourism exchanges; it will be scalable, modular, and developed as open source. It will allow exchange of data and sharing of processes through a set of standardised specifications that offer **easy interaction between different ICT systems and solutions**. It will also provide complementary services and connections to large tourism service distribution platforms.

3.4.1 The Challenge

Tourism is a key sector in the European economy. In this highly competitive market, ICT can help SMEs establish relationships with other businesses and give them tools to cope with challenges. Despite the growing importance of ICT for the sector, **the level of ICT adoption remains comparatively low**, especially amongst SMEs. The main barriers for ICT adoption are:

→ implementation costs (both financially and organisationally), especially for smaller companies;
→ difficulties in collaborating with other companies;
→ a lack of interoperability between ICT systems within different companies; and
→ a lack of agreed technical standards for data representation and exchange.

3.3.2 The solution

The EU has funded the TOURISMlink to develop and pilot an interoperable framework to promote integration of tourism companies, especially SMEs, into the digital value chain, positioning them better in the global market, and making them more responsive to market trends for individual travel and dynamic packaging.

The project brings together partners from the European hospitality sector, travel and tourism intermediaries, and scientific, technological and communications expertise. The project is led by ECTAA – the European Travel Agents' and Tour Operators' Association.

An interoperable framework to connect SMEs in the tourism sector

Based on an initial analysis of the European tourism market and the role of ICT, TOURISMlink's interoperable framework will ease the exchange of information between **tourism service suppliers** (e.g. travel agencies) and **destination providers** (e.g. hotels or restaurants).

The framework will work as a **Business to Business (B2B) connector** across all branches of the industry (including hotels, travel agencies, and restaurants). It will be scalable, modular and developed as open source. It will support tourism companies in exchanging data and sharing processes through specifications that allow interaction between different ICT systems. It will also provide connections to other large tourism service distribution platforms.

Tourism service suppliers and destination service providers will obtain access to tourism services and be able to conduct transactions by using their own ICT tools and services (e.g. booking or reservations systems) or by using a

simple web interface provided by the framework. As the framework is open source, it will be available to tourism companies free of charge.

The pilots

The framework will be tested in **three pilot phases in twelve European countries**. Each of the pilot phases involves tourism service suppliers and destination providers (nine source markets and three destination markets). The scope of the pilots is to be gradually extended, with each consecutive pilot phase expanding to a larger number of participants and European countries. Eventually some 200-300 companies will be involved in the three pilot phases, and local teams will be set-up and trained to establish, deploy, and validate the pilots. Experience from each pilot phase will help to improve and refine the framework.

3.4.3 Case study: Tourism sector

a) Travel Agency: ATLAS

(1) Overview

Case study : *ATLAS*

- **Travel agency / Croatia / 250 employees (400 during summer)**
- **ATLAS involvement with TOURISMlink started on January 2013 and is ongoing (June 2014)**

Project description

- ATLAS - a major Croatian travel agency:
  - **employees 250 people** all year rising to more than **400** during summer.
  - has **7 branches** working all year for outgoing tourists, rising to **20** during summer serving incoming tourists mostly at the seaside.
- The Association of Croatian Travel Agencies (UHPA) introduced ATLAS to TOURISMlink.
- ATLAS started its involvement in TOURISMlink at its early stage (January 2013).
- The Croatian travel agency performed several tests on the platform.
- The key challenges to overcome are to bring suppliers on board, and to ensure the reliability of all partners that are made available on the platform.

Stakeholders/ Budget

- The Croatian Association of travel agencies and the Croatian Association of Hoteliers (HUH) participate to the platform promotion.
- 6 Croatian travel agencies, coordinated by ATLAS, are piloting the platform.
- The pilot does not require financial resources.

Achievements/ outputs

- **Extremely positive feedback on the idea and the initiative**
- **Very user friendly platform**
- **Very fast solution**

Project description

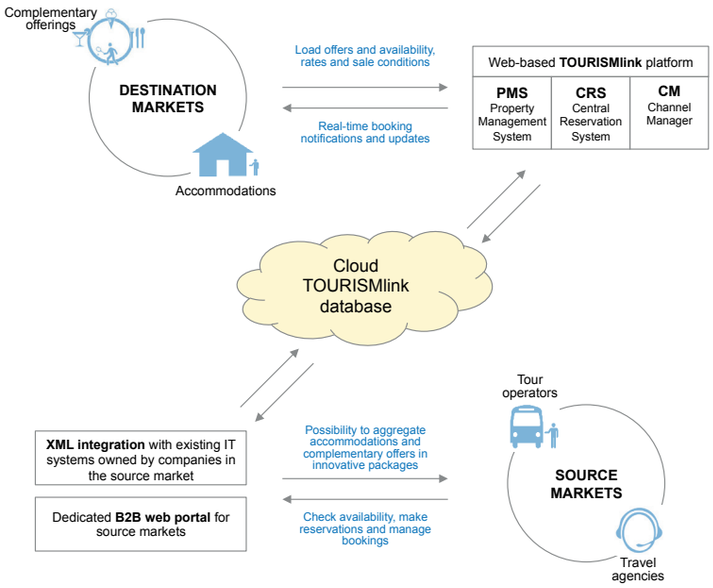
Context / Sector of the company

- **The European tourism industry is characterized by a fragmented technological outlook**, with a multiplicity of incompatible business standards, data models and ICT solutions, and very low interoperability levels, especially across borders.
- This is because **the offering of touristic services is extremely fragmented** and there is a difficulty in establishing partnerships among different players. SMEs are not integrated in the digital supply chain and their presence on the internet is not structured.
- Hence, there is a **need for a common communication standard** that allows organizations (including SMEs and niche service providers) to network and to communicate with each other allowing for wide interoperability.
- **ATLAS is a major Croatian travel agency** offering services in 400 international destinations working in the field of organized trips and providing all types of touristic services. The company was founded in 1923 and has a long history serving both the local market to outgoing destinations and incoming tourists travelling to Croatia.

Description of the project

- **TOURISMlink is a European project that aims to support the competitiveness of the tourism industry** by facilitating communication through digital networks. This is done by developing a common framework for interoperability among different ICT solutions and systems for the tourism industry. The TOURISMlink framework architecture is designed to help SMEs improve the digital connection between smaller local service providers in the broader tourism industry (hospitality, tourism, culture and leisure), and travel agents, tour operators and distributors.
- **TOURISMlink works as a B2B connector** between enterprises and SMEs covering all sectors of the tourism industry allowing travel agencies and tour operators to create totally dynamic packages.
- The project involves **three destinations** and **nine source market countries**.
- As soon as **more suppliers and partners** will join the network, the TOURISMlink platform will express its full potential and provide real added value.

Technical description of TOURISMlink



- **Destination market** companies (accommodation and complementary services) upload their offering using the web-based TOURISMlink platform, made of a **PMS** (that can integrate, via XML interfaces, with existing other PMSs owned by the companies), a **CRS**, and a **CM** (integrated and connected with several external OTAs). All data is stored via the **cloud** in a central database.
- **Source market** companies (travel agencies and tour operators) access the TOURISMlink database from a dedicated **B2B web portal** or through their own IT systems via an XML interface. In this way they can check availability and create travel **packages** combining accommodation, transport and complementary services.

Means of the project and key outputs

Means used

- **Financial.** The pilot phase does not require financial resources. The platform is based on Open Source Technology and therefore it does not involve license costs. It is accessible everywhere as it is delivered as a cloud computing service, which does not imply any maintenance cost and can also run on existing devices, whichever they are. After the end of the pilot, companies will have to contribute (participation fees are still under discussion)
- **Resources.**
  - One ATLAS employee works on the TOURISMlink platform and coordinates the 6 Croatian travel agencies involved in the pilot phase.
  - The Croatian Association of Hoteliers (HUH) is involved on the supply side of the pilot.
  - The Association of Croatian Travel Agencies (UHPA) provides information and performed a dissemination work.

Key outputs

- **Network of reliable suppliers at hand**. The TOURISMlink platform has the potential to enable ATLAS to connect customers with reliable suppliers. Previously ATLAS employees used desk research and phone calls to identify reliable suppliers - the platform will improve service offering and efficiency for ATLAS, once it is fully developed.
- **Many diverse suppliers on a single platform**. The single platform will give ATLAS access to a varied range of suppliers from a single point. This will improve the service ATLAS provides and extends the range of services offered. The integrated solution will reduce considerably the duplication of work previously conducted by ATLAS, improving performance and reducing cost.
- **User-friendly and fast platform**. Speed and ease of use means minimal training and maximum use of it by ATLAS. The large number of destinations are likely to make it the platform of choice for the company in the future.

Expected Benefits

Expected benefits: Greater Revenue

- **Selling more services to each customer**. ATLAS said the platform has the potential to widen the spectrum of services available to the agency's customers, thus prospectively generating considerable cross-selling opportunities (so selling more services to customers). This is one of the most relevant objectives of the TOURISMlink project: connecting the disconnected SMEs universe of companies offering the most disparate tourist services in Europe and world wide.
- **Attracting more customers**. ATLAS believes that the availability of additional high-quality services might attract a wider number of customers.
- **Accelerated revenue growth**. This combination of more customers spending more money means that the platform should widen the customer base and the spectrum of services available for sale to each customer. This has the potential to generate a double boost to participating travel agencies' revenues.

Expected benefits: Lower Cost

- ATLAS believes the platform has the potential to:
  - **Save time and cost** by reducing the time spent on desk research to select reliable partners as the platform is expected to put travel agencies in direct contact with secure and reliable partners.
  - **Save time and cost** by improving the efficiency of customer contacts through emails and phone calls as the platform should allow rapid and easy booking of different type of services through the same interface.
  - **Diminish paperwork** as the platform might allow provision of more services through a single means, generating less paper.
  - **Reduce seasonality,** allowing companies to work more easily in different geographic markets with different pick periods that can complement each other.
  - **Improve profitability** through dynamic packaging of products and dynamic price management allowing optimized price product strategies.

3.4.4 Outlook and further information

Currently, the framework has been validated in the first pilot phase, and additional suppliers and destination providers for the second and third phases of testing are being recruited.

The first pilot phase focuses on information exchanges between providers in destinations (offering accommodation and complementary services) in the region of Valencia, and suppliers (travel agencies and tour operators) in the Czech Republic, Finland, and Croatia.

To increase the roll-out and uptake of the framework, information on the interoperable framework will be distributed (for instance through a promotional video on the project website), and disseminated through the network of participating associations.

Further information & contact

- **TOURISMlink project website**: http://www.tourismlink.eu
- **Video** about the project: http://www.youtube.com/watch?feature=player_embedded&v=VnpgycKKpG8
- **Contact person**: Paolina Marone (e-Mail: marone.tourismlink@gmail.com), TOURISMlink Project Coordinator

3.5 The agro-food industry: promoting the traceability of food in the supply chain

Box 10: Assisting SMEs to connect with supply chains in the agro-food industry

The agro-food industry is an important economic sector in Europe, but many companies within it have not made the most of ICT – especially SMEs collaborating and doing business with other companies along the supply chain. The multitude of **incompatible ICT solutions and data models** often hampers electronic collaboration.
The eFoodChain project (2012-2014, http://www.efoodchain.eu/) is developing a **collaborative reference framework** to promote seamless exchange of data and information in B2B transactions along the digital food supply chain. It aims to foster the participation of SMEs and to reinforce cross-border collaboration between industry players. The framework will be validated through an Innovators and Early Adopters Scheme, which is divided into two pilot phases.
To establish the conditions for wide adoption of the reference framework in the industry, the project is **collaborating closely with standards bodies** and other European initiatives.

3.5.1 The challenge

The agro-food industry plays a crucial role in the European economy. It contributes significantly to employment and growth, and is essential for the social and environmental welfare and health of European citizens.

Despite some recent uptake of ICT in the agro-food industry, the range of incompatible data models, ICT solutions, and business standards often hinders electronic collaboration between companies along the industry's value chain, especially in cross-border collaboration.

The missed opportunity for innovation warrants intervention. Innovation, and the ICT solutions that encourage it, have become crucial factors for retaining competitiveness. They are also essential for fostering collaboration and data exchange with related business sectors, such as logistics and transport, laboratories and certification auditors, and IT companies. Currently, however, the vast potential of ICT in the agro-food industry is being underexploited. This is especially true for SMEs.

3.5.2 The solution

The EU-funded project eFoodChain aims to overcome these technical and organisational barriers by developing an interoperability framework to allow seamless transfer of electronic data along the supply chain. The ultimate goal is to create an innovative eBusiness environment that will improve the competitiveness and productivity of the sector.

The eFoodChain project is led by AGRO EDI EUROPE, an association which specialises in electronic data exchange in the agricultural sector, and it includes key associations and initiatives in the agro-food industry.

A reference framework connecting SMEs in the agro-food industry

The eFoodChain project is centred on the development of a **collaborative reference framework** to permit seamless exchange of data and information relevant for B2B transactions along the digital food supply chain – and particularly upstream. The reference framework will allow participating companies, especially SMEs, to use their existing ICT systems and solutions.

Three industry issues (business scenarios) have been singled out in a preliminary market analysis for the framework: **eInvoicing; food safety and quality; and sustainable production and products**. The project will also address a broader range of business processes in **three sub-sectors: fresh fruits and vegetables, cereals, and dairy**. A set of electronic messages and corresponding data models are being developed to help companies perform these tasks. The reference framework also addresses security issues in the transfer of electronic messages.

The reference framework development foresees testing in two pilot phases, permitting progressive incorporation of results into refinements of the framework

The pilots

The framework will be validated through an **Innovators and Early Adopters Scheme**, divided into two pilot phases and several pilot initiatives.

→ The first pilot phase will be limited in time and scope, involving only a few agro-food stakeholders and ICT providers;
→ The second pilot phase will include more participants and from more European countries. It will also involve all three target sectors as well as actors at all points of the value chain.

The project is currently in the first pilot phase and includes two pilot initiatives: the **e-documents pilot** and the **e-lab pilot**.

The e-documents pilot initiative involves French farmers and cooperatives in the cereal sector, and aims at allowing seamless electronic exchange between cooperatives, farmers, and accounting centres. The main benefits envisaged are lower costs, through paperless exchange of invoices or documents. But a successful solution will have to be easy for cooperatives and farmers to set up and use. The five cooperatives participating in the pilot are all members of Adhérents.coop, a union representing cooperatives and providing them with IT services. In addition, 10 to 20 farmers for each of the five cooperatives will take part in the pilot.

The e-labs pilot initiative aims at easier exchange of electronic messages between fruit and vegetable growers and testing laboratories, and includes a Dutch producer organisation and a laboratory. The pilot will follow three kinds of messages: companies' requests for laboratory analysis; laboratory reports on samples; and analysis reports sent by the laboratory to the company on completed tests. The pilot project initiatives are expected to report by the end of 2013.

3.5.3 Case study: Agro food Industry

1. The challenge

Despite some recent uptake of ICT in the agro-food industry, the range of incompatible data models, ICT solutions, and business standards often hinders electronic collaboration between companies along the industry's value chain, especially in cross-border collaboration.

The missed opportunity for innovation warrants intervention. Innovation, and the ICT solutions that encourage it, have become crucial factors for retaining competitiveness. They are also essential for fostering collaboration and data exchange with related business sectors, such as logistics and transport, laboratories and certification auditors, and IT companies. Currently, however, the vast potential of ICT in the agro-food industry is being underexploited. This is especially true for SMEs.

2. The solution

The EU-funded project eFoodChain aims to overcome these technical and organisational barriers by developing an interoperability framework to allow seamless transfer of electronic data along the supply chain. The ultimate goal is to create an innovative eBusiness environment that will improve the competitiveness and productivity of the sector.

The eFoodChain project is led by AGRO EDI EUROPE, an association which specialises in electronic data exchange in the agricultural sector, and it includes key associations and initiatives in the agro-food industry.

The reference framework development have been tested through two pilot phases, permitting progressive incorporation of results into refinements of the framework

The 2 pilot phases of eFood Chain project allowed to 4 main initiatives that will be detailed in the following case studies.

a) Interprofessional traceability approach

(1) Overview

Case study : *SC Trace – Interprofessional traceability approach*

- **SC trace is an initiative led in 2013 by several stakeholders (seed producers, retailers, cooperatives and traders) to implement a global traceability and tracking approach within the PPP (plant protection products) and seeds supply chain and to establish a standardised procedure for such traceability from supplier to final user (farmer).**
- **SC trace objective is to allow farmers to access in real time product information, safety instructions and to facilitate to fill in the crop data sheet.**

Project description

- **Context / issues that led to the project:**
  - The EU-funded **eFood chain** project is centred oin the development of a **collaborative framework to permit seamless exchange of data and information along the food supply chain.**
  - **Food safety and quality is one of the main issue in agrofood industry**. Key challenges faced by faced by PPP and seeds industry are to harmonize product traceability, to access product information for the professional users (farmers) and to adapt to regulatory changes
- **Objectives :**
  - To facilitate the use and implementation of traceability at all levels of the supply chain
  - To offer an organization for a homogeneous information flow from the supplier to the professional user (farmer)
- **Challenges:**
  - Widespread the use of SC trace all along the supply chain
  - Bring together all stakeholders (suppliers and distributors) at national level to have a clear recommandation to use SC trace protocol as a standard for traceability
- **Key stakeholders involved in the project :**
  - 5 suppliers (BASF, BAYER, Dow AgroSciences, Limagrain Europe and Syngenta)
  - 5 retailers (Aréa, Interra Log, Odalis, Seveal, Soufflet Agriculture)
  - 4 External stakeholders (AgroEDI, Cristal/ECPA, PhytoData, Proconseil)

Means

- **Resources :** project coordinated by AgroEDI Europe association, bringing togethers all stakeholders (suppliers and distributors)
- **Planning:** eFood Chain project started beginning of 2012, SC trace pilot took 1 year to be implemented and was launched beginning of 2013

Achievements / outputs

- **Business benefits:**
  - improve logistics chain efficiency and reliability
  - improve traceability and reply to regulatory constraints
- **Technical benefit:**
  - propose a validated protocol as a **standard for traceability in PPP & Seeds supply chain.**

(2) Project description

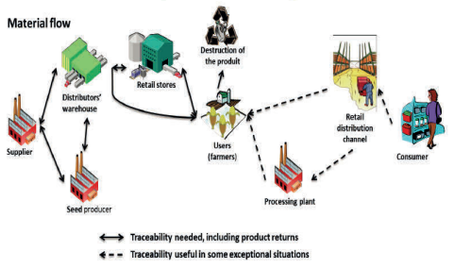
Project context

Agrofood industry plays a crucial role in European economy

- **Food supply chain connects 3 important sectors of European economy: agriculture, food processing industry and distribution**
- **Efficient functioning of the food supply chain** is particularly important amidst the current economic and financial crisis.
- **The agro-food industry is challenged with**
  - **incompatibility** in business standards, data models, ICT solutions
  - **Very low interoperability**, especially between different sectors and cross borders
- **Building a reference framework connecting SMEs in the agrofood is key for competitiveness.**
- **eFood chain project** is centred on the **development of collaborative reference framework** to permit seamless exchange of data and information relevant for B2B transactions along the digital food supply chain

Food safety and quality is one of the main issue in agrofood industry

- **Main issues of food safety and quality are**
  - To **allow and harmonize products traceability** all along the supply chain from supplier to professionnal user (farmer)
  - To **provide access to product information** to professionnal user (farmer)
  - To **adapt to regulatory changes**
- **SC Trace project objective was to implement a global traceability approach with PPP and seeds industry**

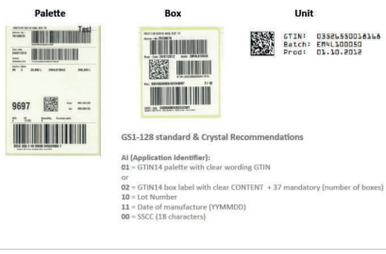


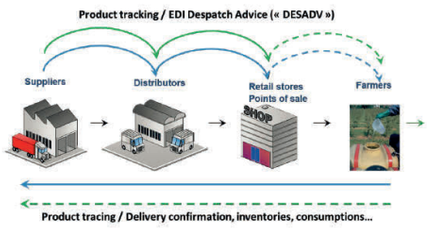
Project description

What is SC Trace ?

- **SC Trace facilitate data flows and data integration all along the supply chain through standardized messages**
- **SC Trace allows traceability of physical units**

And **allows farmers to access in real time product information through bar codes or 2D Data matrix**

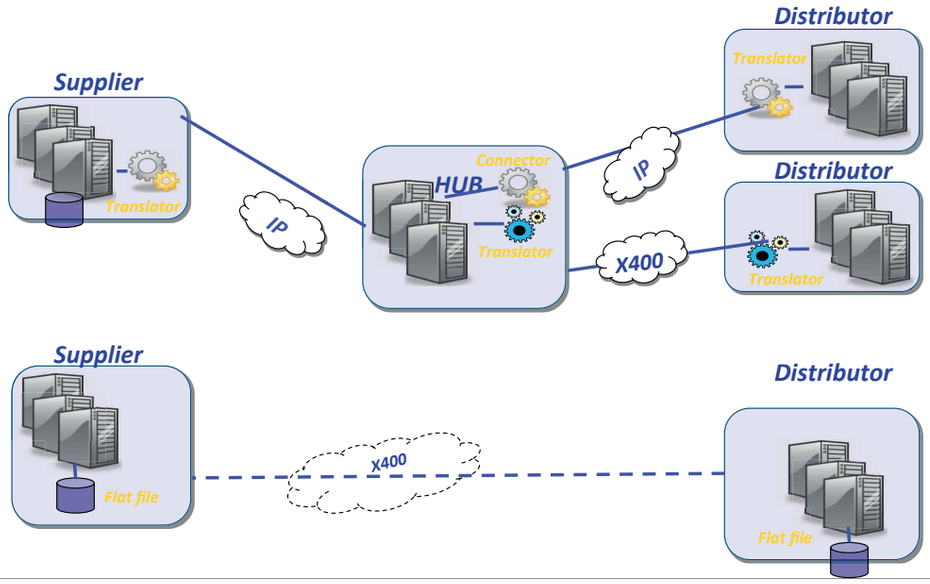




Access to product Information

(3) Solution description

Solution description



(4) Key outputs

Means of the project and key outputs

Means used	Key outputs

► **Human resources**
· SC trace project was piloted by **AgroEDI** , in charge of promoting and organizing interoperability in agrofood.
· Main stakeholders are:
  · 5 suppliers (BASF, BAYER, Dow AgroSciences, Limagrain Europe and Syngenta)
  · 5 retailers (Aréa, Interra Log, Odalis, Seveal, Soufflet Agriculture)
  · 4 External stakeholders (AgroEDI, Cristal/ECPA, PhytoData, Proconseil)
 	
► **IT equipment and implementation:**
· For manufacturers
  · Equipment of production lines
  · Product data management production batch, production dates…)
· For manufacturers and suppliers:
  · Equipment of logistic platforms
  · Implementation of EDI messages
  · Product data management and integration
· Equipment of retail stores
  · Equipment
  · Integration in IT system of distributors
 	
► **Planning :** SC trace pilot take around 1 year to be implemented and was launched beginning of 2013
	► **Benefits for the company**
	  · Improve productivity
	  · Less errors for customer
	  · Speed up transactions and data exchanges
	  · Improve quality and accuracy of inventories
	  · Respond to new regulations
	
	► **Key outputs and metrics**
	  · **Time saving:** not measured yet
	  · **Cost saving:** not measured yet
	  · **Productivity improvement :** +30% for Seveal
	
	► **Barriers**
	  · Customers or business partners have to enhance their IT system to be able to receive and transfer information to their own partners
	  · Change management and training important regarding logistics practices and processes
	  · To convince all stakeholders through the supply chain to use this new technology

Project key outputs and achievements

- **Improve logistics chain efficiency, stock quality and channel inventory**
  - saving time at any stage (storage, handling, data input and updates)
  - limit relabeling
  - reduce obsolete stocks and improve their quality
  - improving management of product return and recalls

- **Improve logistics chain reliability**
  - increasing the reliability of farmer deliveries/product returns
  - ensuring product safety
  - identifying, limiting and tracking counterfeits and thefts
  - replying to regulatory constraints of certified chains

- **Improve traceability globally**
  - improving traceability at all levels from suppliers to farmers
  - providing in real time access to product information to professional users (farmers)

3.5.4 Outlook and further information

The reference framework will be revised following the validation of the first pilot phase. The second pilot phase will involve actors along the entire digital food supply chain, including producers, collectors, food processors, retailers, distributors, standardisation bodies and organisations, such as IT companies, logistics and transport companies, laboratories and certification auditors. The projects planned for this phase include:

→ a **milk payroll** pilot, to facilitate a paperless milk payroll between collectors and their farmers;
→ a **cross-border e-documents** pilot, aimed at phasing out paper documents from exchanges between cooperatives and their producers. e-Documents should also make it easier to trace crops traded between cereal producers and their cooperatives.

Additional pilots are planned in food safety and quality, and in sustainability.

The project works closely with standards bodies and ongoing EU projects to maximise the prospects for adoption of the reference framework within the food industry. For instance, it is collaborating with the **United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT)**, Programme Development Area (PDA) Agriculture. The next step will be to create a Technical Committee, which will meet several times a year and present its findings to the UN/CEFACT PDA. The project will also liaise with the agriculture electronic working groups of ISO SC 23/TC19.

eFoodChain is also developing a Governance Model for Maintenance of the Reference Framework for the food industry, and policy recommendations.

Further information & contact

→ **eFoodChain project website**: http://www.efoodchain.eu
→ **Contact persons**: Bruno Prépin (e-Mail: bruno.prepin@agroedieurope.fr), Project Coordinator, AGRO EDI EUROPE / Catarina Azevedo (e-Mail: catarina.azevedo@inovamais.pt), Project Manager, INOVA+

3.6 Construction: using ICT to improve document exchanges in large construction projects

Box 11: Facilitating document exchanges between companies in the construction industry

A generally low level of ICT adoption among SMEs and a complex supply chain involving a multitude of actors pose major structural problems to communication between companies in the construction industry. Add to this the variety of – often incompatible – ICT solutions that have evolved so far, and the result is a general lack of digital co-operation within the industry.

The project Connect & Construct[11] (2013-2014, http://www.connectandconstruct.eu/) will develop a B2B interoperability framework to support the seamless electronic exchange of information between construction companies. The framework will be suited to all companies, irrespective of size, position in the supply chain, or the ICT solution and standards they use. It will be tested, validated, and further improved through pilot actions.

Each of two pilot phases will involve construction companies along the value chain, along with ICT companies and standardisation organisations. Close co-operation with industry stakeholders and associations is designed to bolster acceptance of and support for the framework. Integrating these stakeholders will also ensure that the framework will meet industry needs and expectations.

3.6.1 The challenge

The **limited and slow adoption of ICT** and e-business practices is a problem within the construction sector, and particularly for SMEs, which constitute the vast majority of companies in the industry. Low adoption levels reduce productivity, limit innovation, and promote a market environment focused on price rather than innovation. These risks are all the more pronounced given that the construction sector has been hit particularly hard by the recent economic crisis.

The complex structure of the B2B supply chain in the construction industry constitutes an additional challenge to closer integration. The supply chain has a **multitude of actors** in the distinct phases of the construction life-cycle. The main contractors are usually large companies, which tend to collaborate closely with numerous subcontractors – mainly SMEs. The main contractor and the subcontractors interact with a large number of suppliers of material and equipment, as well as with technology providers. In addition, public authorities and consultants are often involved in construction projects. Public authorities are at times clients, but also act as regulators. In addition to the complexity in the resultant exchanges, many of these relationships are short-term, often limited to the duration of a specific construction project.

Smart use of ICT can increase the productivity of construction companies (in particular SMEs), foster collaboration between them, and enhance their competitiveness. Throughout the construction life-cycle, companies face sector-specific challenges in exchanging documents electronically (for example, construction drawings and information on building material are usually provided in different formats, utilising different ICT systems). For companies to work efficiently, information needs to be both **understandable** (provided in the same "language" or standard) and **technically accessible** (accessible by the different IT solutions in use).

11 The direction of the framework or the way that pilots will be organised may change given the early stage of development.

3.6.2 The solution

An interoperable Reference Framework

The EU-funded project Connect & Construct will create an **interoperable framework** architecture that will allow companies along the B2B construction supply chain to exchange information with each other, regardless of their ICT systems and solutions. The initiative is led by Capgemini Consulting—a provider of strategic consulting, technology, and outsourcing services—as well as key organisations in the industry.

The framework will focus on the requirements specific to the construction industry's supply chain. For instance, the exchange of electronic information and transactions between companies is multi-faceted, ranging from initial expressions of client interest, to design, contracting, construction, operation and maintenance, refurbishment and replacement. Accordingly, many kinds of data and information exchanges between actors need to be considered:

- Means of communication
- Internal and external e-collaboration
- e-Sourcing and e-procurement
- Online marketing and sales
- Construction and design support
- Operation and maintenance support

Although the interoperability framework focuses on **technical information**, it will also address administrative information and the interface between technical and administrative information. In view of the variations in ICT systems and solutions across the industry, interoperability is pivotal if data and information are to be exchanged seamlessly along the value chain and between different actors. The framework therefore aims to fit in with existing ICT solutions and standards in the industry.

The envisaged benefits to construction companies are to:

- decrease the risk of errors and improve the quality of business data transmission;
- exchange business messages more rapidly;
- improve co-operation between construction companies; and
- minimise administrative work and costs.

The pilots

The interoperability framework is to be tested and validated in two pilot phases, each involving construction companies along the value chain, ICT companies and standardisation organisations. In particular the pilots will:

- validate the interoperability of business processes and information flows along the construction supply chain;
- develop real-world reference business cases demonstrating how different systems can inter-operate in order to fully exploit the potential of ICT in the sector; and
- assess the contribution to business integration, collaboration, and exchange within the construction value chain.

3.6.3 Case study: Construction

Executive summary

Case study: *Veste Naarden*

- **BIM Full Circle (BFC) is an architect company that shifted to a "digital manager" role with 10 years of experience on complex and large size integrated BIM projects.**
- **BFC is involved in the entire building process and has conducted the pilot in which the C&C Platform was used as a virtual office**

Project description

Project Context

- The project is about the construction of a home for elderly people in Netherlands which is the first part of a total of nine projects to come.
- A project from the design to the construction phase.

Objectives

- To connect all people involved in the project with the least amount of effort
- To facilitate and secure communication flows between stakeholders
- To coordinate and follow up communication flows to avoid versioning issues
- To promote re-use of information

Key people

- The European Commission launches the pilot phase of C&C to boost the smart use of ICT in the construction Industry, coordinated by Cap Gemini Consulting.
- BIM Full Circle and its partners involved in the project

Means

- **Budget of the project:** platform was free of charge during the course of this project
- **Planning:** phase 2: April - August 2014

Achievements / outputs

Impacts

- 20K€ of cost saving by avoiding to print models
- Less people necessary in the construction phase
- 17% time saving on the construction calendar days duration

Qualitative results

- Reduction of rework
- Storing 3D model digitally
- Better clash detection
- Substantial drop in data error
- Improved project management
- Reduced intensity of interaction

BIM Full Circle

Company Description

- BIM Full Circle is a very small architect company that is active in the full building process.
- BFC is both in charge of the project management and the content of the project
- BFC also acts as a "digital manager" to collect all information in a digital format and connect all organizations involved in projects
- BFC has 3 employees.

Company context and issues

- BFC is a digitally mature company which is not the case of the other partners involved in the project.
- In the whole supply chain, documents and 3D models are constantly changing and exchanged very often. This puts at risk the information symmetry between stakeholders.

Project description

Project Context	Description of the project

Project context:
- BFC was implied in C&C project during the phase 2
- The C&C Platform was used on an ongoing construction project about social housing during the entire building process.
- The project allowed to check the ability of the C&C Platform to:
  - provide connected, validated, accessible and understandable information
  - Facilitate re-use of information
  - Check the Principles & Rules of the C&C Framework
	Content of the project
	- Considering the relatively low digital maturity of BFC's partners, the pilot was focused on the use of the DMS and the IFC-library of the C&C Platform.
	  - Digital exchange of data/information/ 3D Models
	  - Collaboration among BFC, partners, and the client
	Objectives of the project:
	- Make sure everyone is connected and provided with validated and up-to-date information
	- Increase operational efficiency
	- Management of existing knowledge

Key results of C&C

- **Less people necessary in the construction phase**
- **On average, 2-3 hours to get acquainted with the platform:**
  The ease-of-use of the C&C Platform helps BFC to convince others stakeholders to work with the C&C Platform.
- **All information in one place**
- **Manage versioning issues**
- **Issues on site solved thanks to latest available information (3D) at any time**

- **Time saving:**
  15% less rework during the project
  17% time saving on the construction calendar days duration
- **Cost reduction:** 20K€ of cost saving by avoiding to print models
- **Indirect Impact:** The budget of the client was reduced by 1 million € (~6%)

3.6.4 Outlook and further information

The first phase of pilot testing will start in late 2013, when the first version of the reference framework is available.

The results of the pilots will be incorporated into the interoperability framework to refine it before its presentation to the industry at a **European Conference** at the end of 2014. This will also be the opportunity for stakeholders to sign a **Memorandum of Understanding** expressing support for further pursuit of adoption of the framework.

The framework will be developed in close co-operation with construction industry players and the following stakeholders:

- An **Expert Group**, which includes market players/companies and sectoral organisations representing the collective interests of the industry;
- **Construction industry networks and initiatives** (both public and private);
- **Sectoral organisations and associations** at national, European, and international level, representing large companies and SMEs in the industry;
- **Standardisation bodies and organisations**: while the project will not develop new standards, it will be possible for standardisation to have their standards integrated and tested in the framework.

The involvement of these stakeholders will help bring the framework in line with the needs and expectations of industry. It will also help disseminate the project results to companies and players throughout Europe.

Further information & contact

- **Connect & Construct project website**: http://www.connectandconstruct.eu
- **Contact person**: Sander Oudmaijer (e-Mail: info@connectandconstruct.eu), Project Leader, Capgemini

4 Lessons learnt from the uptake campaign

4.1 Barriers and obstacles to accelerate the smart use of ICT by SMEs

Introduction

Lessons learnt come from many sources. On one hand, the fifteen seminars organised across Europe with Ministries in charge of the coordination of ESIF and OP Managing Authorities, and on some occasions with business organisations and SMEs, taught us many things. On another hand, the 25 training sessions with businesses, key experts and Ambassadors identified to promote the best practices issued from the pilot projects developed during the experimentation phase were also useful. The combined lessons learnt are the following:

→ For SMEs, financing digital transformation is a big challenge especially regarding direct costs (expenditure) and indirect costs (internal men days allocated) related to the identification, development, purchase and integration of appropriate ICT solutions to perform the following objectives:
- Facilitate B to B relationship by integrating large companies supply chain;
- Improve capacity to reinforce B to C business;
- Accelerate access to market and internationalisation;
- Improve the operating model regarding the company management, client relationships (CRM), supply chain optimisation;
- Reduce operating cost and increase competitiveness; etc.

→ In that perspective, SMEs cannot afford to allocate too much time and money to digital transformation which can justify the reason why a very small percentage have already invested in a smart use of ICT.

→ A large majority of SME is not aware at all about ESIF opportunity and even they have never heard about the financial instrument they have no clue about how do ESIF work.

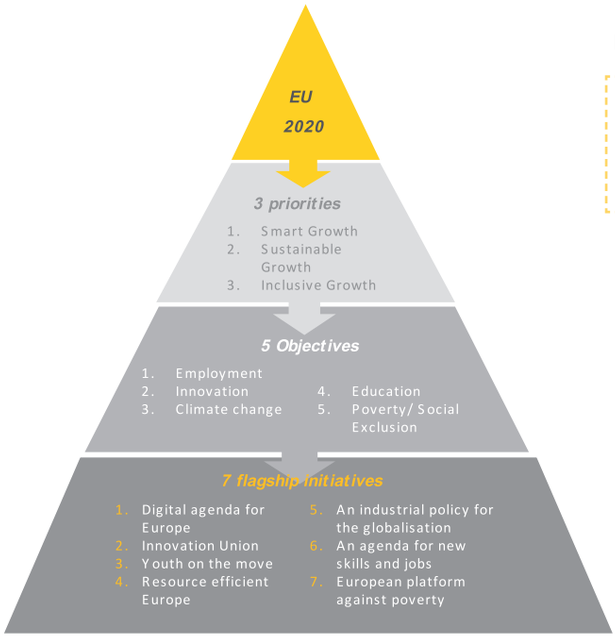
→ For a large number of the most advanced SMEs which have already applied a solution to be more digitally oriented, they went through isolated solution instead of going through an integrated solution at ecosystem level. The isolated solution method is used in the case studies experimented with by DG GROW for the 6 sectors mentioned in this guide book.

4.2 European Structural and Investment Funds (ESIF) can support SME digital transformation

ESIF are the financial instruments through which EU Cohesion Policy is implemented, with 352 billion euros representing one third of the total EU annual budget. This funding is a strong pillar of the cohesion policy to support regional development and one of the key drivers for the implementation of the EU 2020 strategy, its five strategic objectives and the seven flagships as illustrated in the graph below.

It supports more particularly:

→ Smart Growth
→ Competitiveness and innovation
→ Digital agenda for Europe



ESIF focus on the following 11 thematic objectives:

1. Research & innovation
2. Information & Communication Technologies
3. Competitiveness of Small and Medium-sized Enterprises (SMEs)
4. Shift towards a low-carbon economy
5. Climate change adaptation & risk prevention and management
6. Environmental protection & resource efficiency
7. Sustainable transport & removing bottlenecks in key network infrastructures
8. Employment & supporting labour mobility
9. Social inclusion & combating poverty
10. Education, skills & lifelong learning
11. Institutional capacity building & efficient public administrations

The three first thematic objectives are fully matching with SME digital transformation.

T01: Research & Innovation
It will co-finance projects in R&I projects and the development of new applications to be applied in specific industries.

T02: Information and Communication Technologies
It will co-finance ICT digital solution developments and purchases to support the ICT sector and traditional industries' digital transformation.

T03: Competitiveness of SMEs
It will co-finance any new process, business model and investments to foster SME competitiveness and development acceleration.

4.3 SME digital transformation, a driver for regional growth and jobs

The European Commission initiative to support the smart use of ICT with a budget of € 10mn of the CIP programme, touching over 20.000 SMEs shows:

Results:

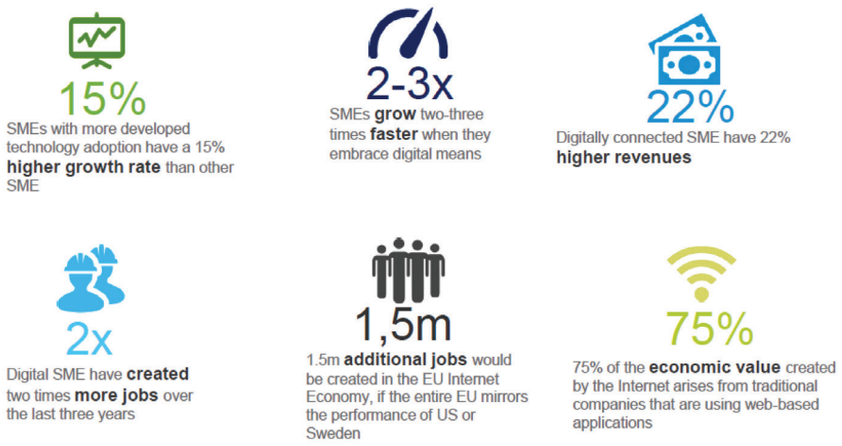
- Easier entry to the market: SMEs get connected in less than one day with low-cost, easy to use, interoperable solutions;
- 80% cut of manual data entry, fewer errors, lower operational costs;
- 60-80% reduction in telephone and fax inquiries for stock availability;
- 30% increase in staff productivity;
- Business agility: immediate information on products and their availability help to select best suppliers and respond to customer needs; and
- Wider market opportunities: source from a larger network of suppliers, find new customers in new locations in Europe and beyond.

High level impact on the following macro and micro-economic factors:

- ICT is key enabler of competitiveness and innovation;
- By 2016, the Digital Economy will reach 3.2 trillion Euros in the G-20 economies;
- More than 75% of the value added created by the Internet is in traditional industries, due to higher productivity;
- SMEs grow two-thirds faster when they embrace the digital economy;
- ICT creates jobs: for every job destroyed by the emergence of the Internet, 2.6 new jobs were created in the EU.
- ***The transformative power of digital*** – Digital technologies are fundamentally changing the way people live, work, communicate and play;
- ***An enormous growth potential*** – Companies making use of a newly available set of accelerating technologies are performing **10 times better than their peers**;
- ***Adding social value*** – Technology-driven solutions can solve problems in key areas such as health, education and employability, environmental sustainability.

Six key reasons to support SME digital transformation:

Digital matters to European economy



4.4 How to proceed with ESIF as an SME looking for co-financing solutions?

EU Cohesion Policy Guidelines

The EU Cohesion Policy is first of all an investment policy aimed at reducing economic, social and territorial disparities between regions in Europe. Its budget is the second largest after that of the Common Agricultural Policy (CAP) and directly targets projects on the ground.

It supports job creation, competitiveness, economic growth, improved quality of life and sustainable development. These investments support the delivery of the Europe 2020 strategy.

Supporting the creation and growth of businesses are key ways by which Cohesion Policy helps to boost regional economies.

The Cohesion Policy (2014-2020)

The 2014-2020 Cohesion Policy will concentrate funding on a smaller number of priorities in line with the Europe 2020 Strategy, focus more on results and increase the use of conditionalities. SMEs are on top of the agenda for smart sustainable and inclusive growth.

The Common Strategic Framework (CSF) defines key actions to address EU priorities, provide guidance on programming applicable to all Funds, and promote a better coordination of the various EU structural instruments.

The Europe 2020 Strategy sets out Europe's Objectives from 2010 to 2020 to achieve smart sustainable and inclusive growth.

Within the new Cohesion Policy, smart specialisation has been proposed as an 'ex-ante conditionality'. This means that every Member States and region have to have such a welldeveloped strategy in place, before they can receive EU financial support through the Structural Funds for their planned innovation measures.

11 objectives that drive ERDF strategy

1. Research & innovation
2. Information & Communication Technologies
3. Competitiveness of Small and Medium-sized Enterprises (SMEs)
4. Shift towards a low-carbon economy
5. Climate change adaptation & risk prevention and management
6. Environmental protection & resource efficiency
7. Sustainable transport & removing bottlenecks in key network infrastructures
8. Employment & supporting labour mobility
9. Social inclusion & combating poverty
10. Education, skills & lifelong learning
11. Institutional capacity building & efficient public administrations

The tools of the EU Cohesion Policy

The EU Cohesion Policy is financed by three main funds:

- the European Regional Development Fund (ERDF),
- the European Social Fund (ESF), both referred to as "Structural Funds"
- and the Cohesion Fund (CF).

These funds are based on the principles of co-financing and shared management. EU financial support always runs alongside national public or private financing. Depending on a number of socio- economic factors, the co-financing may vary between 50% and 85% of the total cost of interventions. The guidelines for ERDF and ESF actions are designed at European level, whereas implementation on the ground is managed by the relevant national or regional authorities in each Member State.

EUROPE 2020: AN OVERVIEW

HEADLINE TARGETS

- Raise the employment of the population aged 20-64 from the current 69% to at least 75%.
- Achieve the target of investing 3% of GDP in R&D in particular by improving the conditions for R&D investment in the private sector, and develop a new indicator to track innovation.
- Reduce greenhouse gas emissions by at least 20% compared to 1990 levels or by 30% if the conditions are right, increase the share of renewable energy in our final energy consumption to 20%, and achieve a 20% increase in energy efficiency.
- Reduce the number of Europeans living below national poverty lines by 25%, lifting 20 million people out of poverty.

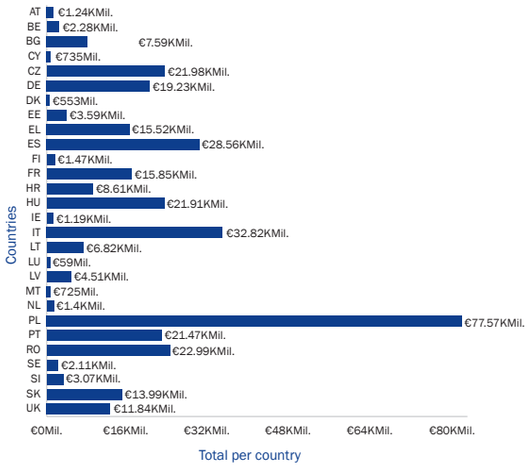
SMART GROWTH	SUSTAINABLE GROWTH	INCLUSIVE GROWTH
INNOVATION EU flagship initiative 'Innovation Union' to improve framework conditions and access to finance for research and innovation so as to strengthen the innovation chain and boost levels of investment throughout the Union.	**CLIMATE, ENERGY AND MOBILITY** EU flagship initiative 'Resource efficient Europe' to help decouple economic growth from the use of resources, by decarbonising our economy, increasing the use of renewable sources, modernising our transport sector and promoting energy efficiency.	**EMPLOYMENT AND SKILLS** EU flagship initiative 'An agenda for new skills and jobs' to modernise labour markets by facilitating labour mobility and the development of skills throughout the lifecycle with a view to increase labour participation and better match labour supply and demand.
EDUCATION EU flagship initiative 'Youth on the move' to enhance the performance of education systems and to reinforce the international attractiveness of Europe's higher education.	**COMPETITIVENESS** EU flagship initiative 'An industrial policy for the globalisation era' to improve the business environment especially for SME's, and to support the development of a strong and sustainable industrial base able to compete globally.	**FIGHTING POVERTY** EU flagship initiative 'European platform against poverty' to ensure social and territorial cohesion such that the benefits of growth and jobs are widely shared and people experiencing poverty and social exclusion are enabled to live in dignity and take an active part in society.

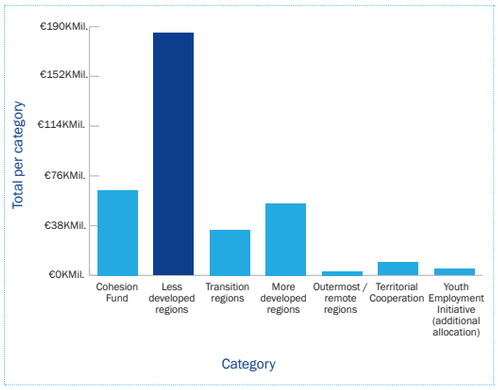
For project initiators it is crucial to refer to the broader Europe 2020 objectives in the application in order to ensure optimum adequacy.

The budget breakdown for 2014-2020

Allocation by Member State

Total EU allocations of Cohesion Policy 2014-2020 (million €, current prices)





The European Regional Development Fund (ERDF)

The ERDF supports the development and structural adjustment of regional economies, including the conversion of declining industrial regions. Funds can either be allocated as grants or financial instruments.

The ERDF contributes to all thematic objectives (see page 3), while establishing a number of investment priorities (IP) set out in the article 5 of Regulation n°1301/2013. In the context of SME policies the following thematic objectives are of particular interest:

- **Objective n°1:** strengthening research, technological development and innovation
  - IP1: enhancing research and innovation (R&I) infrastructure and capacities to develop R&I excellence, and promoting centres of competence, in particular those of European interest;
  - IP2: promoting business investment in R&I, developing links and synergies between enterprises, research and development centres and the higher education sector.
- **Objective n°2:** enhancing access to and use and quality of Information and Communication Technologies (ICTs)
  - IP1: extending broadband deployment and the roll-out of high-speed networks and supporting the adoption of emerging technologies;
  - IP2: developing ICT products and services, e-commerce, and enhancing demand for ICT;
  - IP3: strengthening ICT applications especially for e-government.
- **Objective n°3:** enhancing the competitiveness of SMEs
  - IP1: promoting entrepreneurship, in particular by facilitating the economic exploitation of new ideas;
  - IP2: developing and implementing new business models for SMEs;
  - IP3: supporting the creation and the extension of advanced capacities for product and service development;
  - IP4: supporting the capacity of SMEs to grow in regional, national and international markets, and to engage in innovation processes.
- **Objective n°8:** promoting employment and supporting labour mobility
  - IP1: supporting the development of business incubators and investment support for self-employment, micro- enterprises;
  - IP2: supporting employment-friendly growth through the development of endogenous potential as part of a territorial strategy for specific areas;
  - IP3: supporting local development initiatives and aid for structures providing neighbourhood services to create jobs.
- **Objective n°9:** promoting social inclusion and combating poverty
  - IP1: investing in health and social infrastructure which contributes to national, regional and local development, reducing inequalities in terms of health status...
  - IP2: providing support for physical, economic and social regeneration of deprived communities in urban and rural areas;
  - IP3:providing support for social enterprises;
  - IP4: undertaking investment in the context of community- led local development strategies.

Another key feature of the legislation is the increasing importance of financial instruments. Financial instruments can be loans, guarantee, equity, etc.

The scope of support from ERDF specifically includes (according to article 3 of Regulation n°1301/ 2013):

(a) Productive investment which contributes to creating and safeguarding sustainable jobs, through direct aid for investment in SMEs;

(b) Productive investment, irrespective of the size of the enterprise concerned, which contributes to the investment priorities set out in points (1) and (4) of Article 5, and, where that investment involves cooperation between large enterprises and SMEs, in point (2) of Article 5;

(c) Investment in infrastructure providing basic services to citizens in the areas of energy, environment, transport and ICT;

(d) Investment in social, health, research, innovation, business and educational infrastructure;

(e) Investment in the development of endogenous potential through fixed investment in equipment and small-scale infrastructure;

(f) Networking, cooperation and exchange of experience between competent regional, local, urban and other public authorities, etc.

Go to the DG Regio projects database for example of project financed by the ERDF: ec.europa.eu/regional_policy/projects/stories/index_en.cfm

Projects involving stakeholders across borders

European Territorial Cooperation

Cohesion policy encourages regions and cities from different EU Member States to work together and learn from each other through joint programmes, projects and networks.

The objective is financed by the European Regional Development Fund (ERDF) with a total budget for the period 2014-2020 of €9.6 billion. There are three strands:

- Cross-border cooperation (INTERREG A) is the collaboration between adjacent areas across borders to promote integrated regional development. INTERREG A is by far the largest strand in terms of budget and number of programmes. During the last programming period 2007-2013, INTERREG IVA had 52 operational programmes, each covering part of a border area between EU Member States.
- Transnational cooperation (INTERREG B) involves non-contiguous regions from different countries that cooperate because they experience joint or comparable problems. During the last programming period 2007-2013, INTERREG IVB was divided in 13 different Operational Programmes (OPs). Each OP is led by a Secretariat and covers a specific part of the EU territory.
- Interregional cooperation (INTERREG C) was designed to improve the effectiveness of regional development policies and instruments through large-scale information exchange and sharing of experience (networks). it covers all regions in the EU.

How Dual-Use technology projects can be part of cross-border programmes?

INTERREG A supports the creation of cross-border clusters such as Biovalley, the tri-national life sciences cluster co-financed by the Upper-Rhine programme, which gathers 600 companies. It supports research and development (R&D) as with the interdisciplinary research and transfer project TKV FO co-financed by the Deutschland – Nederland programme as well as the creation of new activities and the maintenance of a strong industrial fabric of SMEs through the Benefits project co- financed by the France (Channel)-England programme.

Transnational cooperation within OPs

Interregional cooperation can also be included in ESF and ERDF OPs either using a horizontal approach (allowing for interregional cooperation in all areas covered by the OP) or through a dedicated priority axis (providing for interregional cooperation in one specific area). Including interregional cooperation in OPs allows for increased flexibility as project holders do not need to wait for the publication of an INTERREG call to present an application and have more room for manœuvre when choosing their partners.

What's in it for Dual-Use Technology players?

INTERREG B facilitates innovation and entrepreneurship in South Eastern Europe by fostering evaluation competencies in research, technology and innovation through the Eval-Inno project. It encourages i-labs and entrepreneurial creativity at large with the CREA NET 2.0 project co-financed by the South West Europe programme.

How are structural funds managed?

Whereas the guidelines for European Structural Funds actions are designed at European level, implementation on the ground is managed by the relevant national or regional authorities in each Member State. These authorities prepare the OPs and select and monitor the projects. The decentralized management of Structural Funds implies that they are available through the Member States and regions and do not fund projects directly from Brussels. Funds are administered at national and/or at regional level. Applications should therefore not be sent to the EC but to the ERDF managing authority in your region or country.

Operational programmes (OPs) are multiannual programmes agreed on at national or at regional level and then negotiated with the European Commission. These programmes establish the funding priorities for the specific policy area or region and the amount of money from the different funding instruments that will be made available. OPs are either thematic or regional and are implemented through a wide range of organisations, both in the public and private sector. These organisations include national, regional and local authorities, educational and training institutions, non-governmental organisations (NGOs) and the voluntary sector, various representative organisations for enterprise such as the various Chambers (namely the Chambers of Commerce, Chambers of Crafts etc.) as well as social partners, for example trade unions and work councils, industry and professional associations.

The managing authority (MA) is the department bearing the overall responsibility for an OP. MAs are organised either on a national, regional or local level and can be a public authority or a public/private body. They are responsible for the effective and efficient implementation of the Funds which implies a number of functions related to programme management and monitoring, financial management and controls as well as project selection. They are supported by one or several intermediate bodies. Together with Member States, MAs are responsible for ensuring that the communication strategy is implemented in a way to reach all citizens. MAs act as a contact point for the European Commission, certifying and auditing authorities as well as for project holders or potential beneficiaries.

Applications for ERDF investment are generally invited in response to time-limited calls for proposals issued by the MAs. However, the use of calls is spread in varying degrees across Europe and it is sometimes also possible to present a project in the framework of on-going programmes.

Know your MA!

The managing authority is the reference point for region-specific up-to-date information on how exactly to apply for funding in your region. Indeed, application procedures vary according to countries and even from one region to another within the same country. Contact your managing authority, not only to know the priorities set in the operational programmes but also to be aware of open calls and of application procedures. To identify your managing authority, see Phase 2 page 15.

Methodology overview to apply for ERDF

1 Draft the Project Factsheet

Who?
- Project stakeholders

What?
- Scope of the project and value

Why?
- The context of the project (EU, MS, region)
- The project objectives
- The relevance of the project to EU Policies, Regional Smart Specialization and the OP priorities

Where?
- Location of the Project (Region where the project will be located)
- For Whom?
- Direct and indirect beneficiaries

How?
- Project Management and team
- Calendar
- Budget (Income and charges)

Outcome expected?
- Deliverables
- Direct and indirect economic, social and environmental impacts

2 Identify the funding measure and assess the project eligibility

Track the appropriate funding measure
- Identify the most appropriate Region to develop the project
- Identify the right European Structural Funds priority: ERDF, Transnational / Cross Border Cooperation
- Identify the Operational Programme and the right priority
- Identify the appropriate funding measures in the OPs
- Identify the specific eligibility rules and priority indicators

Analyse the eligibility
- Check the timing of the application process
- Check the alignment of the project characteristics with the eligibility rules and priorities
- Control with the Managing Authority the project compliance with the Funding measure eligibility rules and selection priorities

Control the compliance
- Check the compliance of the project with State aids rules

3 Draft, test and submit the Application Form

Fill-in the Application Form

Fill-in the 10 sections
- Identification of the Project Holder
- Project details
- Project Applicant
- Delivery partner
- Strategic Fit
- Rationale
- Estimated deliverables (Outputs/ results/ Impacts), Costs and Fundings
- Project management capacity and risk
- Compliance
- Applicant declaration and certification

Check the compliance
- Meet the Managing Authority to check whether the project matches with eligibility criteria and selection priorities
- Adapt the project
- Check the compliance of the project with all EU requirements (publicity requirements, feasibility and market studies, environmental impact assessment and cost benefit analyses for large projects - above EUR 50 M)

Submit the Application Form
- Submit the application in due time
- Answer any requests for clarifications

1 Draft the Project Factsheet

2 Identify the funding measure and assess the project eligibility

3 Draft, test and submit the Application Form

The Project Factsheet to fill in will provide data and information required to track the appropriate funding measure and check the compliance with the eligibility criteria and selection priorities.

Who

Description of the project holder (status, size, activities, consortium members' description for collaborative projects).

What

The main scope of the project, the budget, proposed co-financing arrangements, the objectives. Details of income and charges.

Why

Present the context, the rationale and the project value proposal. Describe the overall and the specific objectives of the project. Define how the project will support:

- the EU 2020 strategy: smart, sustainable and inclusive growth;
- the regional smart specialization (S3): each region will focus on a limited set of priority areas, in which it has already a competitive advantage. These smart specialisation strategies will help regions to tap into their innovation potential and build on particular assets and strengths;
- the OP, specific priorities and objectives.

Where

Where will the project activities be located? Why has this location been selected? Other alternative locations?
The location of the project to be funded must be consistent with the regional smart specialization (S3) (see page 13).

For whom

What are the direct and indirect targets of the project (beneficiary groups)? Direct targets are the first beneficiaries of your action and directly affected by the project activities. Indirect targets will be affected by the project as well. Be very precise about how each target group will be impacted by the project activities and outcome.

How

Which activities and means should be undertaken to achieve your qualitative and quantitative objectives? This data will be further developed at a later stage to provide details (human resources, method, action plan, equipment, etc). You will describe the project management to deliver the project in the best conditions of quality and to limit the risks related to three criteria: timing, budget and technical specifications.

For which results

What concrete outcomes do you expect to achieve? Please note that these results should be measurable, i.e. deliverables. What criteria could be used to measure the success of each action? Try to demonstrate the projects added value with quantitative and qualitative indicators.

Compliance assessment

Check the specific eligibility indicators and selection priorities. Verify the status and the size of eligible project orders, eligible charges, co-funding rate and beneficiaries.

1 Draft the Project Factsheet

2 Identify the funding measure and assess the project eligibility

3 Draft, test and submit the Application Form

Phase 2 is composed of three steps:

Track the appropriate funding measure

- Identify the most appropriate region to develop the project and get cofunding
- Identify the right European Structural Funds priority: regional competitiveness and employment (National Level), European Territorial Cooperation (Transnational / Cross Border Cooperation) in your country / region
- Identify the Operational Programme and the right priority
- Identify the appropriate funding measures in the OPs
- Identify the specific eligibility rules and priority indicators

Analyse the eligibility

- Check the timing of the application process
- Check the alignment of the project characteristics with the measures eligibility rules and priorities
- Control with the Managing Authority the project compliance with the Funding measure eligibility rules and selection priorities

Control the compliance

- Check the compliance of the project with State aids rules

Check the compliance of the project with the regional smart specialization:

1. Identify potential locations where the project could be developed:
   - The project must have a legal entity in the region to be selected.
   - The region selected must have a smart specialization strategy matching with the project.
2. Analyse the S3 platform website to identify the best region. according to project specificities and regional smart specialization
3. Select the final location to develop the project and get the co-funding.

Use the InfoRegio web portal to find information

A good starting point is to use the European Commission's central web portals (which are available in EU languages, although some of the downloadable documents have limited language availability) to research funding opportunities. You will find information on OPs, categories of regions and legislation, for the kind of initiative you would like to set up to support SMEs or entrepreneurship in your region.

http://ec.europa.eu/regional_policy/index_en.cfm

Practical exercise

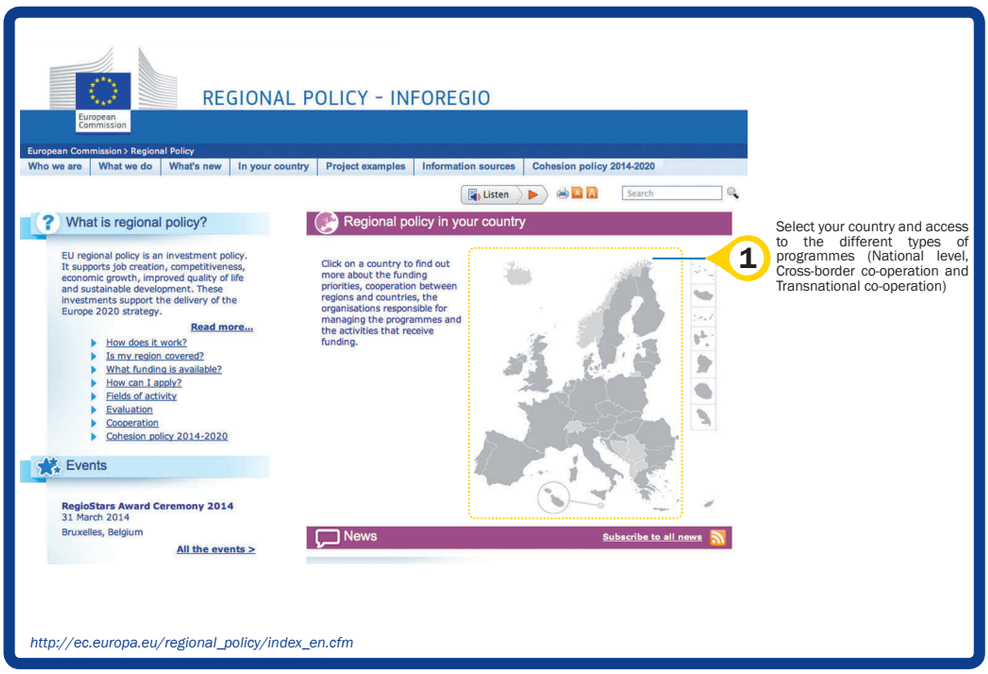
S3 Platform, JRC website provides all information and details to analyse the most appropriate regions

The website provides presentation of smart specialisation strategies of the regions that have participated in the S3 Platform Peer reviews and in most cases background material that provides context to the cases and direct link to the Region's website.

The underlying rational behind the Smart Specialisation concept is that by concentrating knowledge resources and linking them to a limited number of priority economic activities, countries and regions can become — and remain — competitive in the global economy. This type of specialisation allows regions to take advantage of scale, scope and spillovers in knowledge production and use, which are important drivers of productivity.

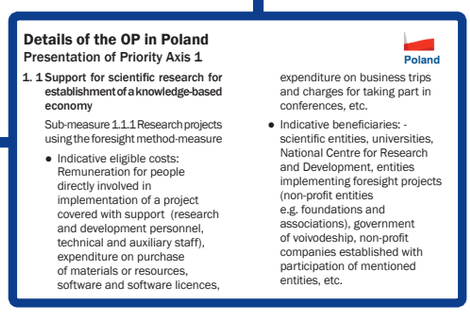
http://s3platform.jrc.ec.europa.eu/regions/PL61/tags/PL61

Inforegio: the first source to track ERDF fundings



http://ec.europa.eu/regional_policy/index_en.cfm

Source: http://ec.europa.eu/regional_policy/atlas2007/index_en.htm



InfoRegio website constitutes the first source of data and information for European Structural Funds. In parallel, Member States have developed information platforms fully dedicated to European Structural Funds in local languages including specific national rules and priorities.

This example is elaborated on the datas from the last programming period 2007-2013 as the information is not yet published on the website for the current period.

1 Draft the Project Factsheet → 2 Identify the funding measure and assess the project eligibility → 3 **Draft, test and submit the Application Form**

Fill-in the Application Form*

Fill-in the 10 sections

- Identification of the Project Holder
- Project details
- Project Applicant
- Delivery partner
- Strategic Fit
- Rationale
- Estimated deliverables (Outputs/ results/ Impacts), Costs and Fundings
- Project management capacity and risk
- Compliance
- Applicant declaration and certification

** For an example, check out the Outline Application Form Guidance ERDF-GN-2-001 available on the internet.*

Check the compliance

- Meet the Managing Authority to check whether the project matches with eligibility criteria and selection priorities
- Adapt the project
- Check the compliance of the project with all EU requirements (publicity requirements, feasibility and market studies, environmental impact assessment and cost benefit analyses for large projects - above EUR 50 M)
- Submit the Application Form

Submit the application in due time

- Answer any requests for clarification

Project application procedure differs from countries

Project application procedures differ substantially from one region to another. To fill-in the sections of the Application Form, check which guides and users' manuals have been established in your region / country.

In order to provide potential project holders with real-life examples. The applications are published in the original language together with an English translation and are available under the following link: http://ec.europa.eu/enterprise/policies/sme/regional-sme-policies/applicationexamples.

4.5 ICT Innovation Voucher, a fast track to finance SME digital transformation

4.5.1 What is an ICT innovation voucher?

→ It's a small credit line dedicated to micro, small and medium-sized enterprises (SMEs) to help them innovate their existing business through ICT uptake.

→ The voucher could be funded through the EU Structural Funds (ERDF). The implementing body delivers vouchers to SMEs who buy ICT services from local providers.

4.5.2 Who are the beneficiaries?

→ Microenterprises and SMEs already established companies, or single traders located in the regions where the voucher scheme is deployed.

→ ICT knowledge/Service Provider Company or public body registered in the European Union able to deliver the services required at market price identified by the implementing body.

4.5.3 What are the services offered under the ICT Innovation Voucher?

→ "From No-web to Low-web" for SMEs seeking a presence on the web and/or with low ICT knowledge.
→ From Low-web to Medium-web": SMEs that want to innovate by using the web and other ICT tools to expand their production/sales processes.
→ From Medium-web to High-web": SMEs pushing ICT innovation to its limits.

Examples of services: ICT design and development, e-Commerce, e-skills, business solutions services, evaluation of processes or product design, product testing, validating, prototyping, certifying and R&D demonstration, new ICT-based business models.

4.5.4 How does it work for an SME?

Step 1: Request for the voucher
The SME applies for the ICT innovation voucher to the implementing body based on a concrete plan to use ICT services in order to introduce ICT innovation in their business model. The plan should include the estimated cost of the ICT-related services chosen and may refer to a list of ICT service providers.

Step 2: Allocation of the voucher
The Implementing Body evaluates the project based on defined selection criteria and, in case of a favourable decision, provides the ICT innovation voucher to the SME on a "first come-first served" basis. The timeframe for approval/rejection of applications should be a matter of few working days.

Step 3: Use and redemption of the voucher
The SME buys the ICT services eligible for funding from accredited ICT knowledge/service providers in exchange for the voucher. Depending on the local implementation rules, the SME or the ICT service provider will seek reimbursement of the voucher from the implementing body.

4.5.5 How does it work for a Region?

Definition of the scheme
The managing authority includes the ICT innovation voucher scheme in its Operational Programme supporting ICT or business innovation policies. Other actions like mentoring, coaching, networking can be combined with the scheme in support of SMEs and in view of building their relation with the ICT providers.

Identification of the implementing body
The managing authority might outsource the implementation of the vouchers scheme to intermediaries, i.e. Regional Development Agencies, Innovation Agencies, Chambers of Commerce, Universities, cluster organizations.

Tailor the scheme
The scheme is tailored taking into account the economic realities of the region and the potential targets. The key issue is to keep the scheme "fast and light". The implementing body monitors the performance and impact of the scheme.

4.5.6 The Pilot phase of the scheme

Two regions from Spain, Region of Murcia and Extremadura, accepted to be part of the Pilot phase of the ICT Innovation Vouchers scheme. The scheme is expected to be launched in other EU regions in the funding period 2014 - 2020.

For further information
http://bit.ly/ICTvouchers
CNECT-INNOVATION@ec.europa.eu

4.6 Suggestions

Based on lessons learnt during the smart use of ICT by SMEs uptake campaign, we suggest ESIF (ERDF) managing authorities to foster communication toward SMEs to accelerate the smart use of ICT for digital transformation.

All material developed during the uptake campaign, including the database of key stakeholders, will be offered to Managing Authorities and public and private entities such as local governments, chambers of commerce, clusters and business organisations to support SMEs digital transformation and a co-financing of SMEs investments related to.

We also suggest replicating at large-scale level regional and national workshops and training sessions by bringing together all stakeholders across Europe, to spread out the best practices, raise market awareness and facilitate access to financing.

We encourage ERDF Operational Programmes Managing Authorities, especially the ones in charge of TO 2 focus on Information and Communication Technology and TO 3 dedicated to SME competitiveness, to be proactive and positive with SMEs willing to go for a digital transformation and to get a financial co-financing to make it.

5 Conclusions and recommendations: How to use the results of the EU initiative in support of SMEs in your region

5.1 Conclusions

The smart use of ICT works in practice – for SMEs too!

The **smart use of ICT** by companies – in manufacturing and in services – is critical for innovation, competitiveness and growth. The results include **improving data flows between companies** in the supply chain, and avoiding (or at least significantly reducing) paper-based and manual data processing. But creating integrated digital supply chains is a challenge – notably in overcoming the persistent **lack of interoperability** between systems, formats and standards for electronic data exchange. This is a particular problem for SMEs (see Section 2 for details).

The **EU initiative** on "Stimulating innovation for European enterprises through smart use of ICT" has been addressed this challenge since 2007. It funded **six industry-specific projects** ("demonstration actions") aimed at harmonising business processes, data exchange architectures and standards within these sectors. Three projects have been completed, and three are still underway. All the projects followed a similar pattern – developing a common framework for data exchange in each sector, and pilot-testing feasibility and benefits.

The results are remarkable. The projects have demonstrated that an SME-friendly solution can be developed to allow smart data exchange between partners in the supply chain regardless of the different ICT systems in place. In other words, **interoperability is possible** – if the stakeholders are willing to agree on a common framework. The projects also showed that these frameworks offer **significant benefits for SMEs** (see Section 3 for details).

The solution is available, but it needs to be deployed: an opportunity for promoting regional competitiveness and innovation

The **deployment** of these frameworks for the smart use of ICT is still **in an early phase**. The successful pilots in specific regions are not yet well-known (and, therefore, not much used) elsewhere.

To avoid a loss of momentum when funding of the projects ends, and to seize an **opportunity to boost innovation and competitiveness** across regions and industries, this guidebook proposes **making intensive and creative use of the results** of the initiative, and notably by launching national or regional follow-up initiatives. Regional and national authorities can be coordinators and initiators of such projects, as the European Commission has done at the European level. The following sections of this guidebook present ideas on leveraging the results to date, and some examples of projects planned or already underway.

5.2 Suggestions for regional and national authorities

There are several ways that regional and national authorities can make use of the resources generated by the EU initiative described in Section 3. The most obvious approach would be to focus on the deployment of the already developed frameworks, for instance through **regional pilots** (see Section 5.2.2), or – going a step further – through **comprehensive national or regional implementation projects** (see 5.2.1), as in the example of the CAR4SME project planned in Germany. In addition, authorities could also use the EU initiative as a template and launch **new demonstration projects** aimed at developing a framework for data exchange for an industry not yet covered by the EU initiative (see 5.2.5). Authorities could also encourage companies in their sector to **liaise with the initiatives still underway** (see 5.2.4), or prompt stakeholders to **contribute to the maintenance** and further development of the frameworks (see 5.2.3).

These ideas are not mutually exclusive. A regional follow-up initiative could combine them: for instance, an initiative could start with regional pilots of an existing framework (first phase), then focus on the sector-wide deployment (beyond the pilot companies) in the second phase.

5.2.1 Supporting national or regional implementations of the frameworks

A straightforward option for member states and regions to exploit the results of the EU initiative for their own benefit is to launch national or regional implementation projects, based on the outcomes of the EU demonstration projects described in Section 3. The planned "CAR4SME" project in Germany is a perfect example (see Box 12). The advantage is that this type of action can be perfectly framed as an innovation project (involving different work packages, activities and partners). It is suited for being financed from **ESIF**, or in the framework of **regional/ national innovation programmes** (as in the case of CAR4SME). A project of this sort should be eligible for funding under any programme or fund which has action lines such as promotion of innovation among SMEs or regional competitiveness.

Projects would typically consist of:

- an **analysis of the specific situation** in the respective region, identifying the current practices, challenges and needs of different stakeholders;
- the planning and implementation of one or several **regional pilots** (similar to the projects of the EU initiative);
- based on the results of the pilots, an **adaptation** – if needed – of parts of the framework (with the minimum compromise possible to overall compatibility with the "standard" framework);
- the development of a **communication and dissemination plan** and promotion of **widespread adoption** of the framework in target regions.

National or regional implementation projects can also go further than promoting the adoption of the common framework, by, for example, setting up a value-added service such as a **web-based platform** for data exchange, using the specifications of these frameworks to ensure interoperability. The EColTex® project in France, which focuses on the textile industry and makes use of the eBIZ architecture (see Box 13), is a good example.

Such comprehensive deployment projects will involve representatives of all relevant stakeholders. In particular, it is important to engage intermediaries such as industry associations or regional clusters, who can act as "**multipliers**" during the dissemination phase.

Box 12: CAR4KMU – a national implementation initiative in Germany

"CAR4KMU" (CAR4SMEs) is an idea for a project aiming to improve the framework conditions for SMEs in the German automotive industry to participate in digital supply chains. The project would build on the (proven) framework architecture developed by auto-gration (see Section 3.1) and promote the wider adoption of this architecture among SMEs in the sector. The project was proposed under the "e-Standards Initiative" of the German Federal Ministry of Economics and Technology, and is currently under evaluation. If it is selected for funding, the project could start in autumn 2013, and run for two years.

The proposal was developed by **Fraunhofer IAO** in Stuttgart, Germany, in a consortium that also includes:

- Rotas Automotive Services GmbH (an **IT service provider** focusing on the automotive industry);
- two **regional automotive clusters** as multipliers to reach SMEs in the sector: automotive.saarland (http://www.automotive.saarland.de) and the Automotive Cluster RheinMainNeckar (http://www.automotive-cluster.org/);
- associated partners, in particular further regional clusters (to provide a greater regional coverage) and VDA, the German Association of the Automotive Industry (as the national representative of Odette (an industry organisation specifying standards for e-business in the automotive industry) and the auto-gration standard in Germany).

The project addresses the following challenges for SMEs:

- **lack of experience** in implementing e-business messages, and – as a result – an excessive manpower burden in dealing with these issues without support;
- **lack of technology** (notably interfaces and IT systems) for introducing e-business messages in exchanges with business partners.

To promote the deployment of auto-gration in the German industry, CAR4KMU proposes:

- a **baseline analysis** of technical and business requirements for successful adoption of auto-gration for SMEs, ICT service providers and multipliers in the automotive supply chain and aftermarket (mainly through interviews with stakeholders);
- developing a **practical guideline** for SMEs on implementation of auto-gration, focusing on the specific needs of SMEs (as identified in the baseline interviews);
- the development of a **marketing and dissemination plan** with specific measures for promoting the use of auto-gration, in particular though multipliers (automotive clusters);
- **pilots** for some of the planned measures (feasibility check) and, if needed, refinement of the plan;
- dissemination, including through **extending the network of multipliers** (for instance by cooperating with further clusters).

Contact person for CAR4KMU:

- Dr.-Ing. Holger Kett MBA (e-Mail: Holger.Kett@iao.fraunhofer.de),
  Head of Competence Team "Electronic Business Services",
  Fraunhofer-Institut für Arbeitswirtschaft und Organisation IAO, Nobelstr. 12, 70569 Stuttgart, Germany
  http://www.ebusiness.iao.fraunhofer.de

Box 13: EColTex® – Echanges Collectifs Textiles

The EColTex® project in France (http://www.ecoltex.com) aims to facilitate electronic data exchanges in the national textile and clothing industry, by establishing and operating a **web-based platform for data sharing** which can be used by all players from the sector. The platform makes use of the common framework for data exchange in the textile industry that was developed by the eBIZ-TCF project (see Section 3.2).

The two-year project which started in late 2011 has been funded by DGCIS, the General Directorate for Competitiveness, Industry and Services, in the framework of its TIC-PME 2015 ("ICT and SMEs 2015") programme. EColTex® is managed by UIT, L'Union des Industries Textiles, with the technical support of Schaeffer Productique, an ERP solution provider focusing specifically on the textile industry, and other partners.

The EColTex® platform offers the following advantages for its users:

- The shared platform **accelerates the flow of information** between companies, enabling data exchanges in real time; this helps to reduce administrative cycles (the goal is to halve the time for administrative tasks).
- Using the platform for sharing data **reduces error rates,** since manual re-entry of data is no longer necessary at successive stages of the process (as is often the case in traditional paper-based document exchanges).
- EColTex® improves the **transparency** of business processes (through easy tracking of messages and documents) and is **convenient for archiving** data from past exchanges.
- Access to the web-based platform requires no special technology, making it particularly **convenient for small firms** that lack advanced ICT systems. Even small companies can **exchange data in a structured way** (using standardised messages based on the eBIZ common framework).

The EColTex® platform allows member companies to **create and host their own database** on the shared platform. They can then share data with other members or with external users by providing them with an access code to their database.

After developing and setting up the platform, the project conducted **pilots** in three French regions (Alsace, Rhône-Alpes, Lorraine) involving more than 40 SMEs, including spinners, weavers, finishers and merchants. As of July 2013, more than 70 companies are already using EColTex® for sharing / exchanging data. The plan is to have about **150 users** by the end of the project and then to continuously expand the user base, with an eventual target to attract 500 regular users.

Contact person for EColTex®:

- Ms. Emmanuelle Butaud-Stubbs (e-Mail: ebutaud@textile.fr), UIT – Union des Industries Textiles

Both CAR4KMU and EColTex® are good examples of initiatives which could be considered by regional and national authorities. They could initiate similar innovation projects for their region, making use of means from European Structural Investment funds or in the framework of **regional/national innovation programmes**, and exploiting synergies with the underlying EU initiative on stimulating the smart use of ICT.

5.2.2 Initiating new regional pilots

Another promising - and simpler - option to exploit the results of the EU initiative for boosting the smart use of ICT by regional SMEs would be to **set up new regional pilot actions**. This approach is related to that described above (pilots are an element in comprehensive national/regional implementation projects as well), but is more limited and therefore **suitable for projects with a smaller budget** and scope. The main idea is to persuade some lead users in the region to test the framework architecture in real business exchanges with suppliers and/or customers. If tests are successful, the solution is likely to remain in use after the pilot, which could create a **cumulative effect** in the regional supply chain.

Projects can **draw from the experience** of the pilots carried out by the projects funded under the EU initiative. These pilots have been evaluated and are well documented (see Box 14); the most successful of them could serve as **templates for other regions**, reducing significantly the effort for the conceptual development. The main task would be to promote the project among regional stakeholders and convince them of the business case.

These regional pilots could also easily be framed as an innovation project. The scope is very flexible; a "project" could consist of a small pilot action involving only a few companies, or a larger pilot involving many companies (possibly even cross-border), or as a series of pilots conducted in parallel. The management could be funded from European Structural Investment Funds or other innovation funding schemes; companies participating in the pilots could be further motivated through incentives (such as partial funding of the set-up costs).

Box 14: Regional pilots – learning from successful examples

Regional authorities can find inspiration for possible pilot actions from the three already-completed projects in the EU initiatives: auto-gration, eBIZ, DiSCwise. The pilot actions conducted within them have been evaluated, with ample documentation in reports and presentations available on the project websites (see also Section 3):

- **Automotive industry**: several successful pilot actions were presented at the Auto-gration Conference in Stuttgart in March 2012. The presentations are available at http://www.auto-gration.eu/downloads/public-information/conference-growing-the-extended-enterprise; an overview report with information about the pilots is available at http://www.auto-gration.eu/downloads/project-deliverables.
- **Fashion industry**: Information about the pilot actions carried out by the eBIZ project is available on the project website: http://www.ebiz-tcf.eu/index.php/ebiz/the-pilot-phase-2010
- **Transport and logistics**: documentation of the pilot actions organised by the DiSCwise project, including the most successful pilot, in Poland, is available on the project website at http://www.discwise.eu/project-downloads.

5.2.3 Supporting the further development and advancement of the frameworks

It could be the case that one of the framework architectures for data exchange, as developed under the EU initiative, lacks an element which is particularly important for the companies in a specific region or country. So in parallel to deployment of the existing architecture, a follow-up initiative could be considered to **develop and pilot the "missing" element**, such as specifications of a business message not yet part of the framework. Creation of a material certificate message as a new component of the auto-gration solution for data exchange (see Box 15), carried out as part of the maintenance of this framework architecture, is an example.

The frameworks have been developed with a focus on key business messages, to test the essential feasibility of the framework. Now that the proof of concept has been delivered, the time has come to expand the scope of the framework. The development of such new modules could **add value to deployment and piloting** initiatives as described in the previous sections. They could also result from a piloting initiative; if pilots show that companies in a region approve of the framework in principle, but miss certain functionalities, the development of those functionalities could be supported, so as to further enhance the smart use of ICT.

Initiatives of this sort could follow the "open source" philosophy. Different projects and initiatives would take the (free and openly available) common frameworks and develop add-ons for specific needs, which can then be used by others. The obvious issues of governance mechanisms between central maintenance of the frameworks and local work on extension; should not undermine activities in this field.

Box 15: Dematerialising material certificate information

Information related to material certificate for steel products is crucial for **quality assurance** in the automotive and other mechanical engineering industries. The **material certificate**, also known as inspection document, is the official manufacturer's commitment about the product compliance to the customer order requirements. These documents are **usually transmitted in a paper-form** or sent by e-mail (with PDF attachments) or fax. Each certificate may consist of several pages of business transaction and partners' description, product information, test results and validation. Dematerialising material certificates through e-business therefore represents a huge opportunity for process efficiency and quality throughout the supply chain.

Based on the work of the auto-gration team and CETIM, the French Technical Centre for the Mechanical Industry, who had specified a material certificate message, a nine-month pilot project was launched in early 2013. The objective is to prototype exchanges between companies of the newly defined auto-gration material certificate message, to assess the organisational and technical impact for the organisations, and to evaluate the effort and benefits for further deployment. The project is managed by CETIM with the support from Odette, the European organisation for e-business standards specifications in the automotive industry.

Several scenarios have been developed and will be prototyped with volunteered companies. One of them is involving Arcelormittal as steel mill, and Bowden, Arcelormittal's customer and product manufacturer. Two IT services provider are involved as well, Infodev as Bowden's ERP system provider, and SBS Studio which has developed for CETIM the demonstrator for managing and exchanging e-certificates.

Contact person:
→ Mr. Patrick Marchand (e-Mail: Patrick.Marchand@cetim.fr),
CETIM – Technical Centre for the Mechanical Industry in France

5.2.4 Liaising and connecting with the demonstration projects

At the time when this guidebook was prepared, some of the sector-specific projects were still in progress. They were on the point of developing and piloting the technical frameworks to facilitate data exchanges in their respective sectors (the food, tourism and construction industry, see Sections 3.4 – 3.6). For stakeholders willing to react fast, this presents an opportunity to **become part of these initiatives** early on, benefiting from **first-mover advantages**. For instance, companies could apply to participate in pilot actions, or regions could liaise with the demonstration actions and initiate their own regional pilots (in close consultation with the EU-funded projects).

If businesses from the sector or other stakeholders **become involved early on** in these initiatives, they may gain the opportunity to contribute actively to refining the frameworks so as to better align them to their own requirements. Ideally, this will be achieved through active participation in the pilot phases, as the framework solutions can then be tested in real-life settings. If it should be too late to join the pilots conducted as part of the projects, additional regional pilots could be initiated (as proposed in Section 4.2.2).

Another way of initiating a liaison with the projects funded under the EU initiative is to **contribute to the maintenance and further development** of the frameworks. Each of the six initiatives has its own means and mechanisms of maintenance (see Section 3 for details), and they are open to active involvement from other interested parties.

5.2.5 Using the EU initiative as a template to initiate projects in new sectors

A very ambitious, but nonetheless feasible and promising approach would be to launch a completely new demonstration action in a sector which has not yet been covered by the EU initiative. Because such initiatives need critical mass, they could be framed as a national project (or, in larger countries, involve at least several regions).

Initiatives of this type would not benefit from existing and proven technical frameworks (since the key objective would be to develop a new framework), but they could still benefit from the EU initiative, because they could **use as a template the conceptual framework of the EU initiative**, which has proven to be successful. National (or regional) authorities that launch such an initiative could use and adapt:

→ The calls for tender used by DG Enterprise and Industry for selecting the consortia that would implement the sector-specific demonstration actions (rationale, structure of the working parties, description of tasks).
→ The reports of the six projects (as templates for the type of deliverables expected from the consortium).

While such a completely new project involves a **high risk** (the framework might fail to deliver the promise), it also holds a **significant opportunity** in terms of achieving competitive advantage. The proven approach could be applied to developing a new framework which is precisely adapted to the specific requirements of the companies in the country or regions.

An important question is whether there are any **further sectors which are suitable** for this type of activity. The six sectors already covered by the EU initiative were carefully selected, based on consultations with stakeholders, as promising the highest potential for improving framework conditions for e-business through a common framework. But authorities considering a project are advised to **carefully select and specify the sector** or niche segment to focus on (see also recommendation by the evaluation study, Box 16).

Box 16: Recommendation for an extension to further sectors

"A possible expansion of the (...) initiative to new industry sectors or segments of sectors should be preceded by a careful analysis of the existing need and demand for interoperable data exchange formats that would foster supply chain integration. This selection procedure can be based on the previously applied good practice of conducting consultations of all potentially relevant sectors to test the commitment of the industry players. (...) This analysis should explore opportunities and potential bottlenecks for the development and deployment of a common framework architecture, and identify the specific segments in a value chain that are expected to have the highest potential for process efficiency gains and opening up market opportunities for SMEs."

Source: empirica GmbH / Technopolis Group Ltd. (2012): Evaluation of the EU initiative on "Stimulating innovation for European enterprises through smart use of ICT". Study for DG Enterprise and Industry.

5.3 Watch out: critical success factors for follow-up initiatives

The experience of the EU initiative has identified some critical success factors. This final section of the guidebook highlights three important lessons, and makes related recommendations. Authorities that initiate and fund such projects, as well as the consortia implementing them, could use them as a checklist. Complying with these recommendations is no guarantee of success in itself, but the project is likely to experience significant difficulties if it fails on these points.

Obtaining the commitment of all relevant stakeholders

The involvement and commitment of all relevant stakeholders in the supply chain is probably the single most critical success factor for the effectiveness and longer-term impact of such initiatives. This includes **primary stakeholders** (SMEs and large companies from the sector), and **secondary stakeholders** (such as other supply chain partners and ICT vendors).

The projects demonstrated that securing engagement is possible, as a harmonised framework can bring advantages for all stakeholders (see Box 5); but it also became clear that the "business case" for each stakeholder must be convincing and well communicated in order to motivate.

Recommendations to win the commitment of stakeholders:

→ **Consortia** implementing such projects or follow-up initiatives should, ideally, **include representatives** from all major stakeholder groups.
→ Projects should start with a thorough **stakeholder analysis**, which describes the main groups of stakeholders, their interest in the project, how they are affected by it and how the project will interact with them.
→ Projects need to develop a convincing, easy-to-understand **business case** for all relevant stakeholder communities: what is the benefit for the respective group? why should they participate in pilots and use the framework?
→ **Showcasing success stories**: in later phases of the project, it helps to present success stories (for instance pilot actions which proved the benefit of the solution for SMEs) to peers from the industry. This was successfully practised by the auto-gration project, which showcased numerous pilots in a large conference at the end of the project.

Co-operation with multipliers / intermediaries

This is closely linked to the previous point. Because projects are rarely in a position to establish direct contact individually with all target companies (there are usually too many SMEs), they depend on "multipliers" who **help to communicate and advertise the initiative**. These may be industry associations, regional clusters, regional development agencies or other SME support organisations.

Recommendations for cooperating with multipliers:

→ **Consortia** implementing such projects or follow-up initiatives should, ideally, **include intermediaries**.
→ The key multipliers whose support is needed should be **identified and contacted** early on; it should be specified how they can get committed towards the goals of the initiative.
→ National industry associations could get involved already **before the actual start** of the project, as part of a **feasibility check**. They can help to assess the current use, opportunities and barriers for a wider use of reference architectures by their members, and by proposing measures that would support roll-out.

Focus on specific business segments and scenarios

For regional follow-up initiatives, a focus is recommended on specific segments of a sector and specific scenarios. The more specific, the more likely it is that the solution and the configuration of the pilots can be adapted to specific needs. In particular in heterogeneous sectors (such as transport and logistics, or tourism), it is easier to focus on deployment in a specific segment rather than trying to address and cover the whole industry at once.

Recommendations for focusing on industry segments:

→ **Pilots**: develop pilots for specific business scenarios in the value chain (for example for transactions between a manufacturer and its material supplier) and for specific business messages.
→ **Use a modular approach**: start with piloting exchanges in a specific segment, then expand to other segments or sectors.
→ Identify the segments and processes where **improvements in the work flow** promise the highest benefits and start with those.

6 References

→ Connecting Smart and Sustainable Growth through Smart Specialisation – A practical guide for ERDF Managing Authorities (November 2012)

→ Connecting Universities to regional Growth : A practical guide (September 2011)

→ empirica GmbH / Technopolis Group Ltd. (2012): Evaluation of the EU initiative on "Stimulating innovation for European enterprises through smart use of ICT". Study for the European Commission, DG Enterprise and Industry. http://ec.europa.eu/enterprise/sectors/ict/ebsn/digital_supply_chains/study_en.htm

→ European Commission (2010): An Integrated Industrial Policy for the Globalisation Era. Putting Competitiveness and Sustainability at Centre Stage. Communication from the Commission, COM(2010) 614. http://ec.europa.eu/enterprise/policies/industrial-competitiveness/industrial-policy/files/communication_on_industrial_policy_en.pdf

→ European Commission (2010): Europe 2020 Flagship Initiative. Innovation Union. Communication from the Commission, COM(2010) 546, 6.10.2010. http://ec.europa.eu/research/innovation-union/pdf/innovation-union-communication_en.pdf

→ European Commission (2010): A Digital Agenda for Europe. Communication from the Commission, COM(2010) 245, 26.8.2010. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0245:FIN:EN:PDF

→ European Commission (2010): EUROPE 2020. A strategy for smart, sustainable and inclusive growth. Communication from the Commission, COM(2010) 2020, 3.3.2010. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF

→ European Commission (2010): ICT and e-Business for an Innovative and Sustainable Economy. 7th Synthesis Report of the Sectoral e-Business Watch. http://ec.europa.eu/enterprise/archives/e-business-watch/key_reports/documents/EBR09-10.pdf

→ European Commission (2009): eBSN report 2003-2009: How public policies help SMEs to thrive by fostering ICT-enabled innovation. http://ec.europa.eu/enterprise/newsroom/cf/_getdocument.cfm?doc_id=5471

→ European Commission (2008): eBusiness Guide for SMEs. eBusiness Software and Services in the European Market. http://ec.europa.eu/enterprise/newsroom/cf/_getdocument.cfm?doc_id=5334

→ European Commission (2008): Towards an increased contribution from standardisation to innovation in Europe. Communication from the Commission, COM(2008) 133 final. Brussels, 11.3.2008. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0133:FIN:en:PDF

→ European Commission (2007): Sectoral e-Business Policies in Support of SMEs. Innovative approaches, good practices and lessons to be learned. A study by empirica, Databank and IDATE. http://ec.europa.eu/enterprise/newsroom/cf/_getdocument.cfm?doc_id=5337

→ Guide to Research and Innovation Strategies for Smart Specialisation (2012)

→ OECD (2004). The Economic Impact of ICT. Measurement evidence and implications. http://browse.oecdbookshop.org/oecd/pdfs/free/9204051e.pdf

→ OECD (2008): Measuring the Impacts of ICT Using Official Statistics. OECD Digital Economy Papers No. 136. http://www.oecd-ilibrary.org/docserver/download/5kz84nns3gvc.pdf?expires=1373874104&id=id&accname=guest&checksum=B6090F7FAAF3723EBF7AA8D350260159

→ Regional Policy for smart growth in Europe 2020 (May 2011) http://ec.europa.eu/regional_policy/information/brochures/index_en.cfm#5

Disclaimer

This guidebook has been produced by the European Commission and was prepared by Hannes Selhofer and Andreas Strasser from the InnovationLab of Salzburg Research GmbH, Jakob-Haringer-Straße 5/3, 5020 Salzburg, Austria (http://www.salzburgresearch.at), with editorial support from Peter O'Donnell.

The information in this guidebook is based, to a large extent, on source documents and results of the EU initiative on "Stimulating innovation for European enterprises through smart use of ICT", which was launched by the Commission's eBusiness Support Network in 2007. In particular, it draws from results of an impact assessment study about this initiative carried out in 2012 by empirica GmbH, Bonn, and Technopolis Group Ltd., Brighton (see http://ec.europa.eu/enterprise/sectors/ict/files/ebsn/best-practices/ebsn-study_final-report_en.pdf).

The objective of this guidebook is to strengthen the deployment and sustained, longer-term impact of the EU initiative by encouragingv and advising Member States and Regions on how to initiate follow-up activities with support of means from the European Structural Investment Funds (ESIF).

Although the work has been carried out under the guidance of European Commission officials, the views expressed in this document do not necessarily represent the opinion of the European Commission.

For further information please contact:

European Commission
DG Internal Market, Industry, Entrepreneurshup and SMEs
Unit Key Enabling Technologies and Digital Economy
e-mail : ENTR-KETS-AND-DIGITAL-ECONOMY@ec.europa.eu
URL: http://ec.europa.eu/growth/index_en.htm