

# **e-Business Standardisation in the Automotive Sector – Role and Situation of SMEs**

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## ***Abstract***

*Successful co-operation between the large manufacturers and their suppliers is a crucial aspect especially in the automotive industry. Such mutually beneficial co-operation not least requires a certain level of integration and inter-operation of the partners' IT and e-business systems. This paper looks at two different approaches to achieve this goal – sector-specific harmonisation (in the form of electronic market places) and international, committee-based standardisation. The paper shows that SMEs are facing a severe disadvantage in both cases. This is, however, less pronounced in formal standards setting, where capabilities of the individual representatives are more important, at least at working level.*

## **1 Introduction**

The automotive industry is facing a number of challenges to the established relations between its players. Issues to be addressed include, for instance, shorter product life cycles, increasing cost pressure in stagnant markets, and higher complexity of the embedded electronic systems. To meet the associated production requirements, standardisation of processes, systems, and data is inevitable. This industry is characterised by vertical integration in terms of the business relationship structures between OEMs<sup>iii</sup> and suppliers. (Lamming, 1993), (Adolphs, 1996). A current trend in manufacturing is that OEMs attempt to co-operate with fewer suppliers, but on a world-wide scale. As a result, small and medium sized suppliers become suppliers to tier 1 or 2 suppliers, rather than directly to the OEMs.

The use of ICT related technologies, particularly e-business systems, facilitates the creation of a network of relationships within a supply chain. Yet, such inter-organisational integration requires interoperability that cannot be achieved without widely agreed standards. But who has a say in the standardisation process? This has already led to a range of transformations in the structure of the automotive supply chain. Large OEMs have been forced to create networks to replace the existing one-to-one relations with their suppliers (which are typically SMEs<sup>v</sup>). According to a study of nexolab in 2001, standards were a major headache for SMEs. 75% of the suppliers saw the lack of standardisation as a major obstacle for closer collaboration. Therefore, it might be useful for companies to rethink their standardisation strategies.

In many cases an SME supplier does business with more than one OEM. In this situation, bi-lateral standardisation to improve the co-operation between OEMs and suppliers, and between different suppliers, respectively, is inefficient. Still, this has been the approach of choice in many cases. However, possible alternatives are available, including sector-specific harmonisation (e.g., in the form of an electronic market place) and, particularly, international, committee-based standardisation.

However, the challenges and the pressure for collaboration has led organisations in the automotive sector to become involved in a range of projects by means of inter-organisational systems (IOS). Examples include electronic collaboration projects, the integration of engineering processes, and electronic catalogue projects to present product and service data. Such IOSs are adopted not only to achieve operational effectiveness by reducing co-ordination costs and transaction risks (Kumar & van Dissel, 1996) but also to improve communication and information presentation. Collaboration and integration shift the emphasis from ‘stand-alone’ initiatives to the development of standardised and integrated solutions (Koch & Gerst, 2003). In this context, one form of IOS that fulfils the criteria of collaboration and integration are business-to-business/supplier portals incorporating standardised business processes. Covisint, an e-marketplace, founded in 2000, by large OEMs, is a very good example to analyse the standardisation process in an industry, which is characterised by a large number of SMEs.

The remainder of the paper is structured as follows: using the automotive industry as an example, this paper looks at two approaches towards standardisation, both of which involve large companies and SMEs. One approach is based on the use of international standards, and pro-active participation in the open standards-setting process by all relevant stakeholders. The alternative comprises a standardised, albeit sector-specific electronic marketplace. The design and development was pushed by a group of large car manufacturers. It turned out that the situation of SMEs was not very favourable in either case – both processes were largely dominated by the big guys. Nonetheless, the paper makes some recommendations how this situation may be changed for open standards setting.

## **2 Some Background**

### **2.1 The Automotive Industry**

According to a study by McKinsey (2003), the automotive industry will in the next ten years be shattered by a third ‘revolution’, following the invention of the assembly-line production by Henry Ford and the lean production of Toyota. Customers are expecting better value for the same money, resulting in continuous cost pressure and innovation marathons for OEMs.

This has led to a range of transformations in the automotive supply chain. For example, in order to improve customer satisfaction and increase revenue growth and shareholder value, large OEMs and their suppliers started establishing large automotive networks. Yet, the added value of these collaborative networks is beginning to shift from the OEMs to suppliers and to other business partners such as system integrators (see Figure 1).

In the 1980s, the relations between an OEM and its suppliers were similar. In the 1990s this changed to a ‘tier-x’ structure, where the main collaboration partners of an OEM were the tier-1 suppliers which, in turn, collaborated through tier-2 suppliers, and so on. Today, OEMs are not only collaborating with their supply base but also with other business partners, for example system integrators. In the future, the relations between OEMs and their suppliers are expected to change dramatically (Gerst & Bunduchi, 2004).

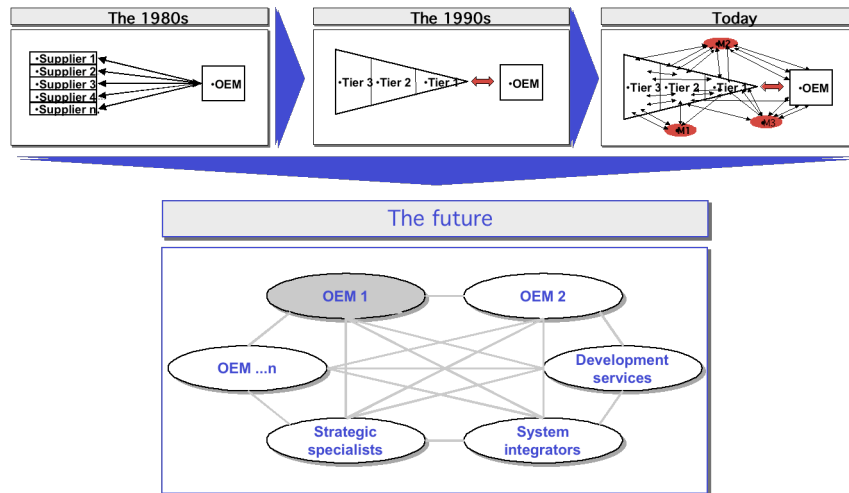


Figure 1: Automotive networks determine future collaboration. Source: BMW

Apart from shifts in the value chain, the industry is confronted with a number of transformations that challenge the established relations between industry players. The automotive industry is characterised by extremely complex processes, and the standardisation of processes and data is inevitable in order to meet production requirements. Driven by challenges such as shorter product life cycles, increasing cost pressure in stagnant markets, and higher complexity of the electronics embedded in modules and systems, OEMs gradually increase the outsourcing of manufacturing, which is expected to rise from 25% to 35% within the next 10 years (McKinsey, 2003).

The supplier community is also undergoing major changes as the result of this pressure. Increasingly, platforms and model varieties require advanced deals and project management capabilities. This means that in terms of innovation management suppliers have to be able to provide leading-edge technology and efficient simultaneous engineering processes. This change affects primarily the tier-1 suppliers which are taking over systems integration responsibility and management of the supply chain from the OEMs. At the same time, they also take an increasing share of risk, which used to be incurred by the OEMs. As a result, the industry is forced to collaborate more closely, e.g. by adopting portal technology.

## 2.2 Standardisation

### 2.2.1 Standards Setting in General

Over the last three decades, the world of IT standardisation has become extremely complex. Figure 2 gives an impression of the situation in the seventies (not complete, though). Back then, standards setting bodies were few, national bodies contributed to the work of CEN/CENELC<sup>vi</sup> at the European level and to ISO/IEC<sup>vii</sup> at the international level. These bodies were responsible for all areas of standards setting, with the exception of the – then highly regulated – telecommunication sector, which was the realm of the CCITT<sup>viii</sup>. The only other international organisation of some importance was ECMA<sup>ix</sup>.

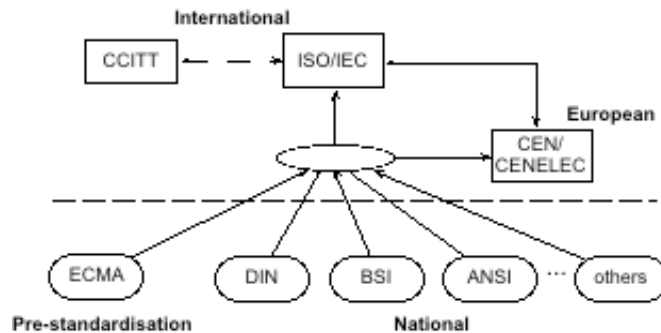


Figure 2: The IT standardisation universe in 1970 (excerpt)

Since then the situation has changed dramatically, especially for the IT and e-business sectors. Figure 3 depicts an excerpt of the situation that may today be found in these sectors. In addition to the newly established regional Standards Developing Organisations (SDOs; e.g. ETSI<sup>x</sup> in Europe, TIA<sup>xi</sup> in the US, etc), a considerable number of standards setting industry fora and consortia have been founded as well (W3C<sup>xii</sup>, OASIS<sup>xiii</sup>, etc; a recent survey found around 190 such entities (ISSS, 2004)). In a way, these organisations have successfully created a ‘parallel universe’ of standards setting, which is partly in competition with the older, ‘formal’ bodies, partly in co-operation, and partly without any relations to them at all.

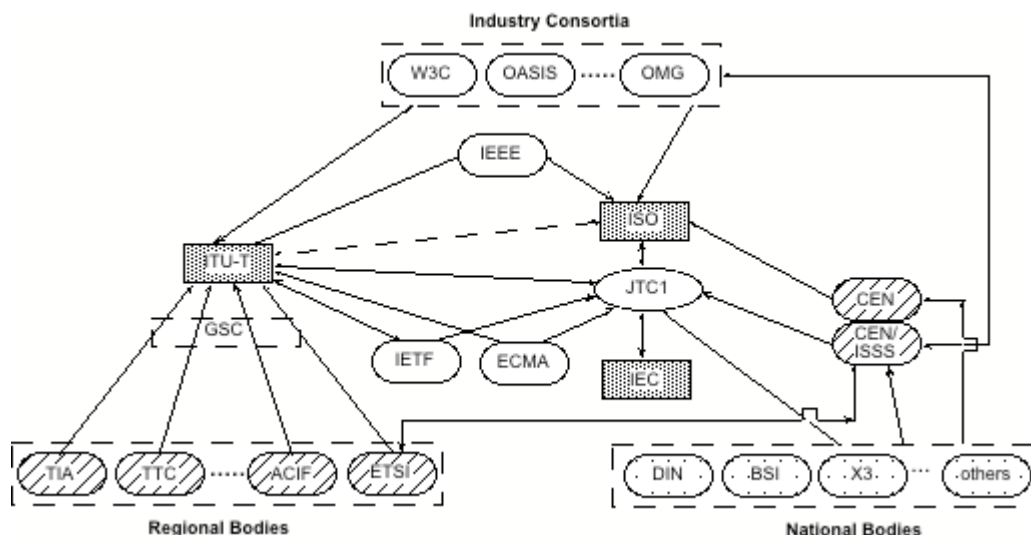


Figure 3: The IT standardisation universe today (excerpt)

The complexity of this environment represents a major obstacle for those who are considering active participation in standardisation, and most notably for SMEs. In most cases they neither have the resources nor the knowledge necessary for a meaningful participation in this highly complex process. Questions they need to address include why, how, where, and when to participate.

At first glance, “Why participate at all?” seems to be a very valid question. After all, standardisation is a costly business and time consuming, and the return on investment is uncertain in many cases. This is not normally a major problem for large vendors and manufacturers, who may want to push their own ideas, prevent success of competing specifications, or who are just driven by the desire to gather intelligence in the work groups.

Things look very different for user companies and SMEs. They cannot easily commit considerable resources to activities with very intangible direct benefits. Yet, all users need to recognise that they will suffer most from inadequate standards. Such standards will leave them struggling with incompatibilities, which at the end of the day may well drive them out of business. On the other hand, they will reap major benefits from well-designed standards addressing real needs. In addition, at least large and/or well-off users may find a standards committee a very suitable platform for co-operation with vendors and manufacturers. Here, technical requirements can be mapped onto system capabilities at a very early design stage (in fact, this is rather more a pre-design stage), thus making the process far more efficient.

Accordingly, (SME) users who participate in standards setting will be driven by the wish to (Jakobs, 2003)

- **Avoid technological dead-ends**

Users want to avoid purchasing products that eventually leave them stranded with an incompatible technology. A number of issues need to be considered in this context. For instance, it has to be decided if and when a new technology should be purchased, and which one should be selected. Too early adoptions not only bear the risk of adopting a technology that eventually fails in being successful in the market, but also ignore the considerable time and money that have gone into the old technology. It has to be decided if and when to switch from a well-established technology to a new one. Investments in the old technology need to be balanced with the prospective benefits potentially to be gained from this move. On the other hand, late adopters may lose competitive advantage while being stuck with outdated technology.

- **Reduce dependency on vendors**

Being locked in into a vendor-specific environment is increasingly becoming a major risk for a user, despite the advantages that can be associated with integrated proprietary solutions. In particular, problems occur if a vendor misses an emerging development, and its users are forced to switch to completely new (and different) systems; a very costly exercise. Accordingly, standard compliant products from a choice of vendors appeal to the users, who can pursue a pick-and-mix purchasing strategy, and also stand to benefit from price cuts as a result of increased competition.

- **Promote universality**

Ultimately, users would like to see seamless interoperability between all hardware and software, both internally (between different departments and sites) and externally (with customers and business partners). With the ongoing globalisation of markets this can only be achieved through international standards. Clearly, this holds especially for communications products. Ideally it should not matter at all which vendor or service provider has been selected; interoperability should always be guaranteed. This implies that user needs and requirements are met by the standards (and the implementations). In addition to seamless communication – and the business value that lies herein alone – there is another major economic benefit to be gained: the costs of incompatibility may be tremendous.

The next issue to be considered is “How to participate?”. In general, there seems to be consensus that large users, especially those with an urgent need for standardised systems or services should participate directly in the technical work. In fact, some do. However, especially for smaller companies, there are obvious barriers to this form of participation, which are largely rooted in the lack of sufficient financial resources and knowledgeable personnel. Here, participation via umbrella organisations would be an option, as would be

participation at national level with a mandate for the national representatives to act as the voice of these SMEs in the international arena.

Considering the complexity of the IT standardisation universe, "Where to participate?" is another relevant question. Equivalent systems may well be standardised in parallel by different SDOs and consortia, and participation in all these work groups is well beyond the means of all but the biggest players. The correct decision here is crucial, as backing the wrong horse may leave a company stranded with systems based on the 'wrong' (i.e., non-standard) technology. This holds for both users and manufacturers.

Especially SMEs and users should also ask themselves "When should we participate?" In most cases 'the standardisation process' is viewed as an atomic entity, which cannot be subdivided any further. Yet, the standards life cycle depicted in Figure 4 suggests otherwise. Participation in profile development, for example, would be the option of choice if interoperability of implementations were to be assured. On the other hand, there is little point in specifying a profile for a base standard that does not meet the requirements in the first place.

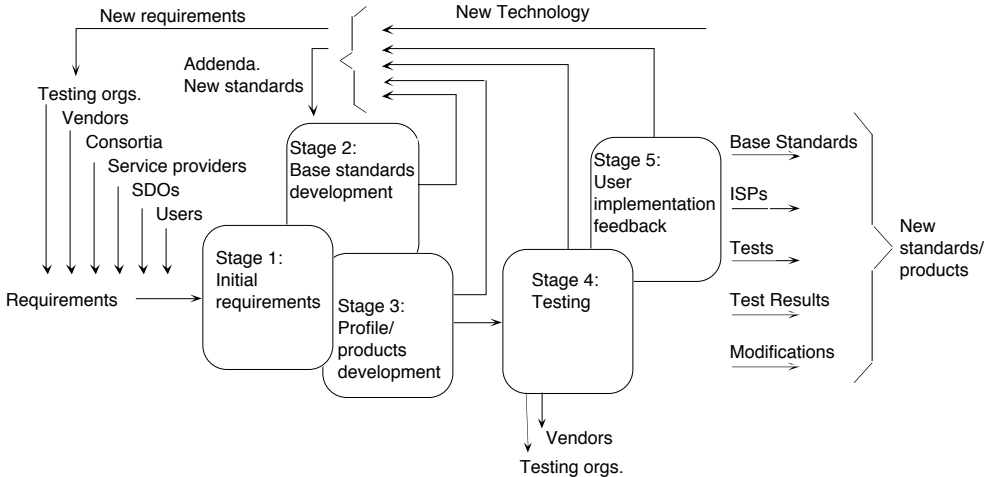


Figure 4: Summary of the comprehensive standards life cycle

2.2.2 Standards in the Automotive Industry

Standardisation in the automotive industry has a long tradition. According to Thompson (1954), engineers and industrialists in the American automobile industry initiated in 1910 the first time an extensive programme of inter-company technical standards. Technical standards made parts interchangeable so that mass production was facilitated which led to production economies. In relating the growth of inter-company technical standards in the automotive industry up to about 1930, the study of Thompson attempts to show the influence of changing business conditions on standardisation and hence on the mechanical technology of a car (Thompson, 1954).

Some decades later, in the 'era of the rising technology age', the launch of Electronic Data Interchange (EDI), was the next step of the automotive industry to collaborate closer with suppliers by means of Inter-Organisational Systems (IOS) (Graham et al., 1995). IOS refer to the computer and telecommunications infrastructure developed, operated and/or used by two or more companies for the purpose of exchanging information that support a business application or process (Cunningham & Tynan, 1992). These companies can be suppliers and

customers in the same value chain, strategic partners or even competitors in the same or in a related market. The integrative potential of networked computer systems enabling information sharing and facilitating collaboration of hitherto competing organisations was well recognised (Williams et al., 1993, Webster, 1995, Monse & Reimers, 1995).

Contemporary IOSs are complex Information and Communication Technology (ICT) systems and incorporate a multitude of standards. Consequently, for a company, the decision to integrate business partners with IOS requires an initial strategic decision whether to implement standardised technology that supports standardised business processes, or to implement and customise off-the-shelf proprietary systems. The latter, of course, means to stick to the ‘home made’ processes and systems. This decision is influenced by various factors (e.g. economical, organisational, technical, social) and actors (e.g. players of internal business units, software suppliers, consultants) situated in a highly dynamic environment.

Today, SMEs in this sector are under enormous pressure from their – frequently large – customers to deploy e-business systems (and the necessary underlying ICT infrastructure) which are compatible with the customers’ respective systems. Yet, as these systems typically differ, SMEs would accordingly have to set up and maintain a number of different such systems. This is hardly a realistic option, and the use of standards-based systems is an SME’s only chance to keep both its ICT environment manageable and all customers happy.

Unfortunately, few standards take into account SMEs’ unique requirements. Major standards setting initiatives have already failed because of this<sup>xviii</sup>. Thus, it seems to be about time to have a closer look at the current standardisation practice with respect to SMEs’ needs.

### **3 SMEs Between a Rock and a Hard Place**

#### **3.1 SMEs in Standards Setting Bodies**

For SMEs, a potential route towards standards that also cover their specific needs and requirements would be through participation standards setting bodies (SSBs) producing open specifications. In the following, we will have a closer look at the prospects of SMEs in this environment. This section will, therefore, analyse what would have to be done to make standards setting in the ICT domain more accessible, and useful, for small and medium enterprises.

The study on the role of SMEs in committee-based standardisation is based on desk research and several (smallish) studies. Here, data were collected through different questionnaires, each comprising a number of open-ended questions. Qualitative methods have been deployed to analyse the data.

##### **3.1.1 Motivation**

Today, the standards setting processes in the Information and Communication Technologies (ICT) and e-business sectors are very much dominated by the large companies and other financially potent stakeholders. As a consequence, there is a real danger that standards – and thus, ultimately, policies – are based on the needs and requirements of a comparably small – albeit powerful – group of stakeholders. The action plan for innovation ‘Innovate for a Competitive Europe’ – rightly – says, “*Voluntary standards, properly used, can help establish the compatibility of innovative concepts and products with related products and so can be a key enabler for innovation. ... SMEs should be more involved in standardisation, to exploit their potential for innovation and to enhance the accountability, openness and consensus-based character of the European standardisation system.*” (European Commission, 2004).

Yet, the Working Groups (WGs) of almost all standards setting bodies are populated by representatives of large, multi-national companies. The comparably few representatives of Small and Medium Enterprises (SMEs) typically come from highly specialised vendors or manufacturers. (SME) users – i.e. those who ‘merely’ deploy ICT systems – are hardly represented at all, and neither are their umbrella organisations.

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### 3.1.2 Some Background

There seems to be general agreement that participation of all stakeholders – particularly including users – is a sine qua non for an ICT standardisation activity to be successful. In fact, increased user participation is often considered as the panacea for all problems.

Typically, SMEs opt for readily available ‘off-the shelf’ systems and services, which need to be inexpensive and easy to install, maintain and use. Proprietary systems are also used frequently where SMEs are compelled to do so by e.g. a major business partner (with all associated problems). The non-use of many standards-based services by SMEs is largely due to the fact that insufficient knowledge and resources are available to employ these systems, which are perceived as being extremely complicated to deal with. In fact, this perception, may be considered as a major impediment to a more successful uptake of standards based systems by SMEs. This exemplifies an urgent need for simpler standards.

The procedures adopted by the individual standards setting bodies suggest that the degree of control over, and influence on, the standards setting process is about equally distributed between the different stakeholders (see Figure 5).

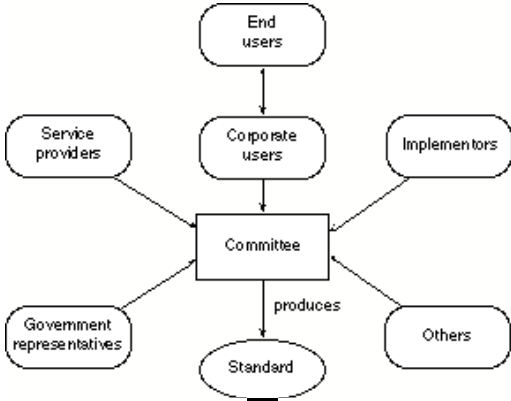


Figure 5: The Naive View of a Standards Setting Process (Jakobs, 2004)

Unfortunately, this does not quite capture reality. Especially, the assumption of an equal influence of all stakeholders appears to be flawed (Swann, 2000). In fact, it appears that so far development of IT standards has almost exclusively been technology driven. This can largely be attributed to the fact that relevant standardisation committees have typically been dominated by vendors and service providers. Accordingly, a more realistic model is called for, which will be presented in section 5.

### 3.1.3 SMEs in Standards Setting – A Small Study

As part of a project co-funded by the European Commission one of the authors did a small study of selected ITU and ISO working groups, to learn about some issues relating to SME users in standards setting<sup>xxi</sup>. In summary, it became clear that both ITU and ISO are indeed dominated by large companies. SME representation (if any, that is) occurs primarily through small consultancy firms, as opposed to actual users. Also, the influence ‘real’ SMEs (i.e., excluding consultants) have on the process is said to be very limited

Respondents’ opinions were split about SMEs’ influence at the technical level. A sizeable minority basically stated that in many cases influence is related to market power. This holds particularly for the voting level, where appropriate (and perhaps national) strategies are playing an important role. Obviously, SMEs – if represented at all – stand little chance of competing with the big multi-nationals here.

Things look slightly different at the working level, though (i.e., in the working groups, where the actual technical standardisation work is being done). The majority of respondents noted that the individual capabilities of the representatives (i.e., technical skills, language proficiency, willingness to take on responsibility, etc) are the deciding factor here.

SME participation would broaden technical expertise of a WG, as they are frequently closer to state-of-the-art technical development than big companies, and less bound by internal rules and administrative procedures. Also, they would be welcome as a counter-weight to the interests of the big companies. This holds particularly if they represented fora or some other form of umbrella organisations. However, it was also noted that the typical sporadic/infrequent participation of SME representatives might lead to inadequate familiarity with both technical aspects discussed as well as procedures, thus causing unnecessary delays to the process.

Cost of participation is considered the major obstacle SMEs will face if they want to become active in standards setting. Suggestions how this could be overcome include increased deployment of electronic media to replace meetings, lower or waived fees for SMEs, provision of dedicated travel money. In addition, it was suggested that SMEs join forces and co-sponsor representatives.

## 3.2 Electronic Marketplaces: Two Examples

So far, we have looked at the role SMEs may play in the context of largely proprietary, sector-specific standardisation processes, driven and dominated by large companies. An additional case study about the development of standardised business processes of two electronic marketplaces in the automotive industry will describe if and how SMEs, which supposed to be the main target audience for the use of such marketplaces, were involved in the development of standardised business processes of those marketplaces.

Each OEM has an extensive network of suppliers. They, in turn, frequently supply more than one OEM. In this situation, bi-lateral standardisation of the complex processes and technology that enable the co-operation both between OEMs and suppliers and between different suppliers is less than effective, as it would leave suppliers with the need to maintain one system per OEM. Still, this is the approach of choice in many cases. This is the reason why sector-specific electronic marketplaces absolutely would make sense.

### 3.2.1 Introduction

To enable increased collaboration and outsourcing, since the 1980s, all large OEMs have launched a number of strategic programs to ensure the networking across their entire value

chain, including electronic collaboration in the form of EDI systems and electronic catalogue projects. The implementations of IOS such as EDI have been strongly linked with the need to move away from the competitive supply chain relationships, and towards closer, collaborative relationships. EDI implementations were thus seen to support the changes towards higher outsourcing and collaboration in the industry (Webster, 1995). Despite their advantages, EDI systems adoption was limited to large companies (OEMs and tier-1 suppliers), with small suppliers lagging behind. One of the reasons was the significant investment associated with EDI deployment which impeded the ability of smaller suppliers to participate in the 'EDI game' and reap the benefits.

The expectations of the OEMs were built around a vision to standardise intra- and inter-organisational processes, in an effort not only to reduce costs, but also to increase the efficiency of information exchange on a global basis by taking advantage of leading edge technologies. To support this vision towards global collaboration, during the late 90s OEMs have begun to deploy Internet based portals to integrate applications and give real-time data access to their suppliers.

### 3.2.2 Example One: Covisint

In 1999, the Internet hub Covisint<sup>xxii</sup> (**C**onnectivity, **V**isibility, **I**ntegration) was founded by a number of large OEMs such as DaimlerChrysler, Ford and General Motors and software companies such as Oracle and Commerce One. The aim of Covisint was to connect the automotive industry to a global exchange marketplace with the offer of 'one single point of entry' to all connected applications and functionalities. It thus aimed to represent a de-facto industry standard for the entire automotive industry. First of all, Covisint offered different own e-services, for example e-auction or e-collaboration tools. Second, the e-service offer aimed to improve the interconnection between, and integration of OEMs and suppliers through standardised portal technology. This technology provided uniform personalised access from any location and any device between networked organisations. The functionality and infrastructure that characterises such open architecture allowed the integration of diverse interaction channels. To a large extent, the supplier community is the same for all OEMs. Concretely, the same suppliers were using the same OEM-own applications which always needed different log-ins and different passwords. Therefore, the 'big picture' behind Covisint was the idea of one single point-of-entry for suppliers of every company size to facilitate and enable integration and collaboration. The vision behind Covisint was to enable the connection of the entire automotive industry to a single, global exchange marketplace with one single point of entry, standardised business processes and standard applications. Covisint thus aimed to represent a de-facto industry standard and open integration framework for business process integration.

The development process was characterised by an iterative approach. Before Covisint started to develop and implement the standardised portal technology, one of the OEMs founders had already started to develop a portal registration process, one of the core processes in a supplier portal (based on the best practice in the industry: the development of standards has benefited from the development of portals by other organisations before). As all the founders were very interested in taking the most benefit out of Covisint on a short-term basis, they were highly motivated to develop standard processes, which later could be implemented in their own organisations.

In a first instance, standards development was related to best practices in the industry and had been worked out by a limited number of specialists from the OEMs that were involved in Covisint. In a later stage, this small group approach to standard development has been

replaced by a consortium of the Covisint stakeholders and the software companies which delivered pieces of software to complete the offer of the Internet hub. The consortium approach was more similar with the typical approach to standard development, following specific procedures and having different working groups that met regularly. Additionally, industry experts of associations were invited to presentations and workshops to contribute to the standards development. In a second phase, in order to increase legitimacy among suppliers, they were included in the process. However, participation in the consortium was closely controlled, and the working procedures were less rather than more transparent and open. Only well known, mostly tier-1 suppliers, who already had been participated in other pilot projects, were asked about their input in form of commentary feedback to already developed processes. The restrictions in participation, the lack of transparency and openness regarding the work within the consortium could be explained by the desire of the OEMs to achieve the initial goal of a standardised industry solution.

Due to the ‘fast-to-market’ strategy of Covisint, the standards were developed in parallel with systems development and implementation. The emphasis of the standardisation itself was on speed and on finding compromise solutions that fitted all parties rather than on long-term quality solutions. The development phase of the standardised portal was very complex with regard to the existing complexity of already existing IT infrastructure itself and the difficulty to integrate all different systems and applications in an overall company architecture. The overall inconsistent strategy of the OEMs with respect to the implementation of the e-collaboration tools, particularly online bidding, significantly affected the suppliers’ negative perception of portals in general. Whereas some of the OEMs preferred the standardised industry solution managed by an electronic marketplace, others such as for example the VWGroup, voted for the ‘in-house’ option which meant not to draw on a third party service.

According to a representative of a tier-1 supplier the supplier community was “*deeply concerned and felt threatened*” by the sheer market power concentration. One result of these concerns was SupplyOn, founded by a number of large tier-1 suppliers. It became one of the major competitors of Covisint in the field.

### 3.2.3 Example Two: SupplyOn

Whereas Covisint was envisaged by its founders to ‘streamline’ the business processes of all participants and to enable them to ‘collaborate seamlessly’ across organisations’ borders, this was not necessarily the perception of the suppliers. There were two reasons for this.

First, the suppliers were excluded from the early development process, with only a few of the largest and most powerful tier-1 suppliers being asked to become involved during a later stage of the development phase. However, even at this stage the suppliers’ involvement was mainly limited at providing feedback over the OEMs decisions, rather than actively participating in negotiations. The decisional power remained almost entirely with the OEMs. As a result, by and large suppliers’ requirements were neither part of the ‘Covisint vision’, nor included into the development of the standardised technology. Therefore, despite the acclaimed aim of Covisint to address the costs and risks reduction pressures across the entire industry, the development stage included the requirements and visions of only a limited number of OEMs.

Second, suppliers already struggled with the administration of a number of such ‘standardised’ portals and the suppliers who has been approached at an early stage showed mixed feelings regarding the OEMs’ approach to volume bundling and pricing.

The development of Covisint was the trigger for the tier-1 supplier community to set up ‘SupplyOn’ to counterbalance the OEMs obvious power consolidation and the ‘Goliath gigantic-like marketplace’. In April 2000, the tier-1 suppliers Robert Bosch GmbH,

Continental AG, INA Werk Schaeffler oHG, SAP AG and ZF Friedrichshafen AG signed a Letter of Intent and kicked off a new e-marketplace business – ‘SupplyOn’.

The basic vision behind SupplyOn was the same as for Covisint, namely to join forces, to bundle know how, and in a collaborative effort to set up industry wide standards, for example for logistic processes. However, whereas the initial objective of SupplyOn was the same than the Covisint approach to the development of standardised business processes, in the end, it diverged from the original vision. In contrast with Covisint which followed the US management model, the founders of SupplyOn made explicitly clear from the beginning that they denied the ‘American way’ of doing business, opting in contrast an approach based on smaller but concrete step-by-step efforts and results rather than big visions which, they argued, were often impossible to implement. SupplyOn was thus positioning itself in direct competition with Covisint, representing the suppliers’ approach to the development of standardized industry wide portal.

However, even SupplyOn had been the brainchild of suppliers, one should take into consideration that large tier-1 suppliers initiated a competing ‘standard’ pretending that they would better understand the business requirements of the supplier world. But as in the case of Covisint, SMEs were not very involved in the SupplyOn development process either. SME participation was reduced to feedback as well.

#### 3.2.4 Summary

Today, most would agree that both electronic markets, Covisint and SupplyOn, by and large failed, or at least struggled to set-up a de-facto industry standard for business processes for a number of major reasons of organisational, economical and technical nature<sup>xxiii</sup>. And certainly SMEs played a weighty role in the whole ‘e-game’: they simply did not participate, even tried to escape the new electronic (and supposed to be better) world offered by the OEMs.

Organisationally, SMEs did not have a great say in development processes of the e-marketplaces. This holds despite the fact that the original idea of electronic marketplaces in general, and sector-specific marketplaces such as Covisint and SupplyOn in particular, was to integrate all suppliers, particularly SMEs. Covisint did not fulfil the expectations of the industry; most members of the supplier community were disappointed about the way Covisint was set-up. In particular, tier-1 suppliers feared the dominance of Covisint (and the resulting power of the participating OEMs), and consequently formed an own marketplace, SupplyOn. In the case of Covisint, the relation between the founding OEMs and Covisint was difficult to handle for the OEMs (in terms of roles and responsibilities) and difficult to understand for SME suppliers. An SME supplier had a business relationship with his OEM, manifested in a written contract. With Covisint this relation was getting more complex in two ways: first, the use of Covisint required the supplier to become a member of Covisint. Although initially the participating OEMs paid the membership fee for their suppliers, a lack of enthusiasm was clearly shown by the supplier community because they (rightly) feared additional cost of participation in a later phase. Second, some of the OEMs forced their suppliers to sign an additional document called ‘e-marketplace contract’ to avoid warranty claims of suppliers in the case of the non-availability of Covisint.

Another important organisational issue was to harmonise the business processes of the different consortium partners. The requirements of the participating companies were very difficult to understand for third parties. This led, for example, to difficulties in the development of the portal registration processes. For SME suppliers working on an international basis it turned out to be difficult to register with Covisint due to an inadequate

registration processes (despite the promise that internet technologies would help to simplify business and make it faster).

As a result, this ‘quick to market’ approach led to incomplete solutions (at a technical level), which were difficult to integrate into already existing IT infrastructures, and were expensive to realise. Here as well SME suppliers mistrusted the OEMs, fearing larger investments for their back-end integration.

Economically, the inability of Covisint to manage the business and the technology development and standardisation, as well as the inability of its founders to attract the potential users to buy-in into the Covisint vision, led to the formation of two competitive standardised solutions in the industry, with the majority of SME suppliers favouring SupplyOn. Neither the founding OEMs nor Covisint were able to clearly explain the distribution of benefits of working with Covisint. Suppliers did not see a ‘win-win’ situation. Thus, when severe technical problems and intractable project management issues arose later during the implementation of Covisint, suppliers withdrew their support for Covisint altogether.

Another reason for the lack of participation could be the fact that both e-marketplaces were sector-specific, and from a certain tier level on most SMEs did not only business with the automotive sector but with other industries as well.

In conclusion, the development of the standardised electronic marketplaces had been much more complex in organisational, technical and economic terms than was expected by the founders of both Covisint and SupplyOn. In the case of Covisint, OEMs had significant difficulties to adapt their internal processes to the marketplace. Moreover, the integration of the portal’s different components into an overall standardised architecture was extremely difficult. Additionally, because of the organisational and technological difficulties to integrate the often divergent OEMs’ business requirements within a standardised approach, the benefits of adhering to the standardised processes associated with using the portal were not directly evident to potential users, and led to the formation of SupplyOn.

## **4 Discussion**

Today, according to the study, active participation in ICT and e-business standards-setting is largely limited to large, multi-national companies. In particular, SMEs hardly stand a chance to make their voice adequately heard. As standardisation and policy-making are mutually dependent, this is an extremely unsatisfactory situation. Ultimately, it means that the influence of globally acting multi-nationals on European policy is out of proportion with e.g. the number of jobs they provide in Europe. In a way, SMEs are part of a modern-day ‘Third Estate’ with respect to their capability to influence standardisation and thus, ultimately, policy making. This holds despite the fact that there are over 20 million SMEs in the EU.

Standardisation processes should provide a platform where opportunities of technologies, requirements of various types of companies from all sectors, consumer preferences, and other societal needs, e.g. protection of the environment, are efficiently mediated. Standards that are useful for all relevant stakeholders should be the outcome of these processes.

Unfortunately, it appears that so far development of IT standards has almost exclusively been technology driven; with standards produced solely reflecting providers’ and implementers’ priorities like, for example, manageability rather than usability. Most other stakeholders, including the general public, consumer organisations and, most notably here, SME users, constitute what one might call the ‘Third Estate’ of IT standards setting (see Figure 6).

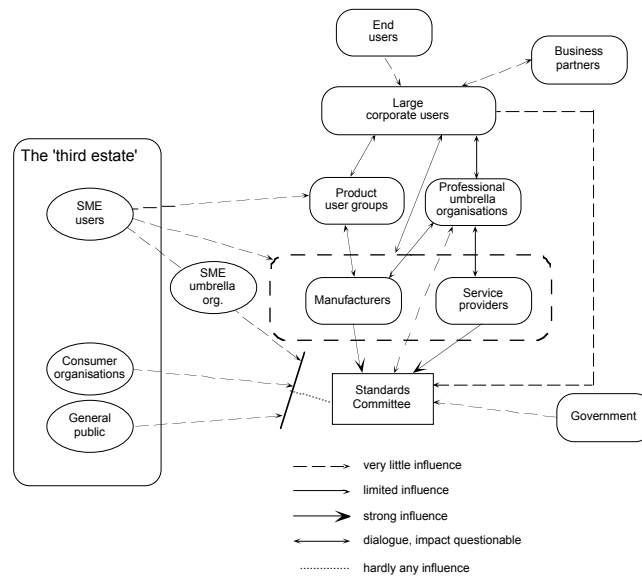


Figure 6: Relations between stakeholders in standardisation

The figure shows that the members of the ‘Third Estate’ – and specifically SMEs – are largely separated from the key players, with SME umbrella organisations perhaps located somewhere in between. Although they represent the vast majority of standard users these groups have an extremely little say in the standards setting process. This holds despite the fact that organisations such as ANEC, the ‘European Association for the Co-ordination of Consumer Representation in Standardisation’, and NORMAPME, the ‘European Office of Crafts, Trades and SMEs for Standardisation’, are actively participating in selected standard working groups on behalf of their constituency.

Four reasons for the current less than adequate representation of (individual) SMEs in ICT standards setting may be identified – inadequate technical expertise<sup>xxiv</sup>, very limited interest, lack of funding, dependency from vendors. The former two are interrelated. A minimum of technical expertise and sophistication are required to make meaningful contributions to standards setting. Thus, limited expertise significantly contributes to the considerable lack of SMEs’ interest in active participation in standards setting that may be observed today. Moreover, such active participation is very unlikely to offer any short-term return on investment. Thus, getting involved in standardisation is simply not economically feasible for many SMEs.

‘Inadequate technical expertise’, ‘lack of funding’ and, particularly, ‘dependency from vendors’ could be overcome if SMEs with similar interests and/or in a similar situation joined forces. It is, for example, easily conceivable that a group of tier-1 or tier-2 suppliers in the automotive industry joined forces to fund a standards specialist to represent them in the relevant working groups. In addition to a better representation at the technical level the combined economical power should also lead to a more adequate representation at the strategic decision level.

Moreover, user and SME representatives may have to prove their ‘credibility’, i.e. to demonstrate that they are actually representing a constituency broader than just one single company (i.e., e.g., the SME community as such, as opposed to just their respective employer). This was never demanded from ‘technical’ people representing large vendors, manufacturers, or service providers; it may be expected that the representative of an SME umbrella organisation would not face this problem, either.

It has frequently been observed that individuals may drive, and direct, the activities of an entire standards working group, at least at the technical level (see e.g., (Jakobs et al, 2000) and (Egyedi et al., 2003). Being represented by such an individual would not only solve (or at least reduce) the credibility problem, but would also allow a group of SMES (or an umbrella organisation) to punch well above its weight.

The Covisint study shows that standardisation efforts are triggered by a complex array of non-technical and technical considerations. The case illustrates that ICT standardisation is not only about bridging the gap between the technologies and business processes of different companies, but also about bridging across complex social processes.

As suggested by the SST perspective, this vision of industry wide collaboration has been actively used by OEMs to mobilise resources internally and to attract suppliers into buying into Covisint. However, a number of factors have shaped the OEMs – and suppliers’ – choices during the development and implementation of the standardised technology, which have eventually led to a very different outcome than that envisaged initially by the founding OEMs.

Each of the founding OEMs has an extensive network of suppliers. They, in turn, frequently supply more than one OEM. In this situation, bi-lateral standardisation of the complex processes and technology that enable collaboration both between OEMs and their suppliers, and between the different suppliers is less than effective, as it would leave suppliers with the need to maintain one system per each OEM. Moreover, market pressures were forcing OEMs to reduce costs, increase the efficiencies in the industry and enhance collaboration with their suppliers. Therefore, the idea to join forces in order to provide a ‘single point of entry’ and set an industry standard seemed advantageous for both groups. Furthermore, when the Covisint idea emerged in late 1999, the use of leading-edge Internet technology to reorganise internal and external business processes to support collaboration across the entire supply chain was on every company’s agenda. Consequently, the foundation of Covisint was a natural step to increase the effectiveness of the industry through a collaborative effort of the largest industry players. Indeed, such collaboration was required to share the risks and costs between a number of players.

The three founders showed their commitment to the Covisint vision through an initial investment of about \$500 million. However, due to the distribution of power that historically characterised the relations between OEMs and suppliers, the latter were apprehensive of Covisint. They saw it as just than another exercise to intensify OEMs’ power pressure. Some suppliers also feared that Covisint would require significant additional resources and investments from their side, whereas the benefits would mostly materialise at the OEMs’ side.

However, on the OEM side significant resources involving not only additional budget but also extra human resources were required to address the pending integration issues. The need for these additional resources led to negotiations concerning their allocation across different Bus (Business Units) within the OEMs. As a result of these negotiations, some application owners (the BUs within the participating OEMs) abandoned the idea of adopting standardised business processes, and started blaming Covisint for not providing mature, workable solutions. It was even claimed that suppliers already working with the applications did not see any of the benefits. Consequently, far from reaching stabilisation and closure, the choices made by the OEMs further deepened the disagreement regarding the approach to an industry wide standardised portal, which was deserted not only by suppliers but even by some of the BUs within the founding OEMs.

The above seems to indicate that SME suppliers were not particularly satisfied with the standardised solution developed by their large customers. Yet, it would appear that SMEs do not necessarily fare any better in today's open standards setting processes.

## 5 Conclusion

Regarding the role of SMEs in open standards setting – “*Standardization is a prerequisite for a broad deployment and use of ICT, and will trigger and enable new business.*” ((PWC, 2004); see also Blind (1999) and Swann (2000) for similar accounts). With the creation of new businesses high on the agenda in Europe, it would be extremely unhelpful if SMEs which, after all, form the employment and growth engine of the EU, were excluded from shaping this infrastructure upon which they very much rely.

However, there is no ‘one-size-fits-all’ solution to give SMEs a greater say in actively participating in standardisation development. One possible approach here would be to provide funding for suitable SME umbrella organisations (we are not even starting to think about the potentially resulting, or at least claimed, distortion of competition). It would then be their task to identify those standards committees whose work is of particular relevance to SMEs, and to represent their constituency's interests there. Yet, in this case two problem areas need to be addressed.

For one, SME users are not a homogeneous group. Accordingly, something needs to be done about the problem of diverse and context-specific user requirements (see e.g. Jakobs et al., 1998). In particular, there is a need for a mechanism to align these requirements. This should ideally happen prior to the actual standardisation process. Dedicated ‘SME user groups’ might be an option worth considering, despite the problems that have to be associated with this approach (Jakobs, 2000).

Along similar lines, sector-specific standards may be a way to raise the interest of SMEs to actively participate in standards setting, as such standards might be closer to their specific business interests. This approach, however, carries the risk of introducing incompatibilities between different sectors.

Here, the sectoral organisations such as, for example, the ‘Verband deutscher Automobilindustrie (VDA)’ at the German level, or the ‘Organisation for Data Exchange by Tele Transmission (ODETTE)’ at the European level, could actively take part in informing and influencing their members (mainly SMEs). In the past, they struggled to reach a common position regarding the development and the implementation of internet-based technologies and their standards, and the related consequences for suppliers. Such organisations reach a large number of suppliers of all sizes, and therefore have the chance to not only inform but to educate SME suppliers. Moreover, provision of additional information (through websites or brochures) could help to keep suppliers informed about developments of standards in their area. Regional associations might also consider to redefine their role and try to actively represent the interests of their members in European organisations.

This would, of course, imply the need for a mechanism to guarantee inter-sector interoperability. Another, related option would be to deploy the national standards bodies to a greater extent as SME representatives in the – far more important – international arena. Lower travel budgets and the prospect of communicating in their native language might be an incentive for more SMEs to participate in standards setting, and let the national bodies represent them in the international/global arena. This might also, at least partly, resolve the problem of requirements alignment.

The task of developing and implementing standardised business processes to collaborate more effectively across the full supply chain is more challenging than ever. Supplier portals are one of the options to collaborate more closely and harmonise cross-company business processes. Apart from the technical issues surrounding the development of standardised business processes across the entire industry (i.e. the complexity of technology, integration issues and security concerns), a range of organisational, social and economic factors have influenced the OEMs' and the suppliers' choices and actions, which have eventually led to the undesired outcome of failing to accomplish the initial vision of industry wide collaboration supported by common industry wide standards.

However, given the failure of the large portals, the industry should at least consider turning to committee-based standards in the future instead. Such standards could be developed under the responsibility of a Standards Setting Body, based on consensus and due process, and with all stakeholders having the chance to participate and to contribute their ideas and needs.

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## Endnotes

- <sup>iii</sup> Original Equipment Manufacturers.
- <sup>v</sup> Small and Medium-sized Enterprises.
- <sup>vi</sup> The European Committee for Standardization / The European Committee for Electrotechnical Standardization.
- <sup>vii</sup> The International Organization for Standardization / The International Electrotechnical Commission.
- <sup>viii</sup> The International Telegraph and Telephone Consultative Committee, later to become ITU-T (see below).
- <sup>ix</sup> The European Computer Manufacturers Association.
- <sup>x</sup> The European Telecommunications Standards Institute.
- <sup>xi</sup> The Telecommunications Industry Association.
- <sup>xii</sup> The World Wide Web Consortium.
- <sup>xiii</sup> The Organization for the Advancement of Structured Information Standards.
- <sup>xviii</sup> General Motor's 'Manufacturing Automation Protocol' (MAP) and Boeing's 'Transport and Office Protocol' (TOP) are particularly instructive cases in point. At that time, specifically GM had to spend millions of dollars annually to interconnect incompatible IT systems at their plant floors. Thus, the idea behind MAP and TOP was to precisely define the individual protocols and optional protocol features of the then popular OSI protocol stack (Open Systems Interconnection) to be implemented in plant floors and office environments, respectively. This was not least due to the fact that only very large companies (like the two initiators) participated in the initiative. In particular, no SMEs were involved, despite the fact that they represented the majority of suppliers. As a consequence, their needs and requirements were largely ignored. Yet, SME were not able to implement this highly complex technology, and the initiative eventually failed dramatically (see also e.g. (Dankbaar, 1992)).
- <sup>xxi</sup> The full Report may be found at [http://www-i4.informatik.rwth-aachen.de/~jakobs/grant/Final\\_Report.pdf](http://www-i4.informatik.rwth-aachen.de/~jakobs/grant/Final_Report.pdf).
- <sup>xxii</sup> In 2004, Covisint was bought by Compuware which still offers some e-marketplace functionalities, including the portal functionality.
- <sup>xxiii</sup> In general, most of the electronic marketplaces, whether or not they were sector-specific, were not successful in the sense of making money out of the 'e-marketplace business model'; for example, Connextrade (Swiss e-marketplace for commodities) and Answork (French e-marketplace for commodity buying of banks), did not fare very well, either.
- <sup>xxiv</sup> With the possible exception of specialist vendor, see e.g. (Jakobs, 2004).