RFID IN THE SUPPLY CHAIN: HOW TO OBTAIN A POSITIVE ROI
The Case of Gerry Weber

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Abstract: Although the use of Radio Frequency Identification (RFID) in supply chains still lags behind expectations, its appeal to practitioners and researchers alike is unbowed. Apart from technical challenges such as low read rates and efficient backend integration, a major reason for its slow adoption is the high transponder price. We deliver a case study that investigates the financial, technical and organizational challenges faced by an apparel company that is currently introducing item-level RFID to monitor their supply chain. The company has developed an implementation strategy based on cross-company closed-loop multi-functional use of RFID transponders. This strategy leads to a positive ROI in their case and could serve as an example for other companies considering the introduction of item-level RFID.

1 INTRODUCTION

Radio Frequency Identification (RFID) is a technology, whose impact on supply chain management has been rising steadily. Apparel companies have shown a particularly high interest in the RFID-based tracking of their products to improve logistical operations (Loebbecke and Huyskens, 2007). This high interest can be explained by the fact that apparel has a number of properties that make the application of RFID tags attractive. First, reading out data on RFID transponders applied to cartons containing apparel or the labels attached to garments is already feasible with today's RFID reader technology. Second, most clothing items have higher margins as compared to fast moving consumer goods. On the one hand, this makes tag prices appear a less crucial financial constraint. On the other hand, high product margins increase the attractiveness of RFID-based theft prevention. Third, being able to monitor the movements of items on the shop floor has long excited the imagination of marketing professionals in the apparel sector. For instance, innovative retail applications such as the RFID-enabled changing room are under consideration among fashion retailers. However, the commercial success of any application directly interfacing with the end-consumers in a proactive way crucially depends on their acceptance. In the case of RFID-based applications, upfront technology acceptance has turned out to be rather low due to fears regarding privacy intrusion (Günther and Spiekermann, 2005).

The initial euphoria about RFID's potential has recently made way for a more down-to-earth view of its benefits in the supply chain. Companies who consider using RFID usually conduct a conservative preliminary analysis of the financial impact of such an investment. These analyses typically focus on three types of benefit expected from RFID: The reduction of labour, capital and non-conformity costs such as costs caused by wrong deliveries. Labour and capital costs can be decreased by RFID-enabled process speedups, while non-conformity costs can be reduced by detecting mistakes made during the distribution process and taking appropriate action to prevent them. Given the still relatively high cost of passive RFID transponders (currently about 7 Eurocents), the use of disposable transponders on the item level represents a significant increase of variable costs in the short run. Based on the authors' knowledge gained in several RFID projects, the one time use of RFID transponders to support standard distribution processes (e.g.

picking, packing, shipping etc.) is hardly justifiable in financial terms.

There are two interdependent reasons for the sluggish item level introduction of RFID: high transponder prices and low demand. In 2006, the biggest share of RFID transponders produced worldwide (556 million) went to products such as 'smart' cards, keys, passports and tickets (IDTechEx, 2007). Only 153 million of them were sold for the purpose of identifying goods including drugs, tools, books, apparel and other consumer products. Roughly 235 million transponders went to the identification of logistical units such as packages, cases and pallets. The market price of RFID transponders is the pivotal parameter of most profitability calculations. The efficiency gains achievable in the logistics operations of organizations such as labour cost savings and prevention of process errors has to outstrip RFID transponder and infrastructure costs. Otherwise, the vision of pervasive RFID tagging is unlikely to become a reality. According to industry experts, the RFID market is supposed to take off as soon as item level tagging in logistics applications becomes economically viable. On the other hand, economies of scale in producing RFID transponders cannot be fully realized since no large-scale item level RFID implementations exist so far. In this case study, we present an approach which could enable first movers from the apparel industry to overcome this deadlock.

The RFID strategy of our case company is based on the repeated cross-company and combined use of RFID transponders. The implementation of their strategy results in a positive ROI even when using conservative assumptions with respect to expected costs and benefits. The supply chain participants share the transponder cost while realizing RFID's full potential in applications along the chain. Used transponders are fed back into the system by taking them off sold products and putting them onto the new ones. In addition to that, specific inter-organizational benefits such as the detection of problems in upstream stages of the supply chain can be realized. This application is known as Supply Chain Event Management (SCEM) and has oftentimes been implicated with the RFID technology. Compared to singular use of RFID transponders within one company, their repeated use across firm boundaries involves additional technical challenges and a high coordination effort.

The motivation for this work is to show a feasible way out of the transponder price deadlock. We analyze the potential of item-level RFID in the fashion supply chain by conducting a case study in the apparel industry and explore the challenges involved in implementing cross-company closed-loop RFID applications.

Our paper addresses the following key research questions:

- What are the advantages and disadvantages of the cross-company closed-loop use of RFID transponders compared to single-company open-loop usage?
- Which challenges are involved in realizing such RFID applications on the organizational and technical level?
- How does the case company plan to deal with these challenges?

The paper is structured as follows. We begin with a review of the related literature followed by a justification of our methodology. Section 3 contains a description of the case. Section 4 summarizes our findings and concludes the case study.

2 RELATED LITERATURE AND METHODOLOGY

The use of RFID in supply chains has received increasing attention among researcher in the field of information systems and operations management in recent years (Ngai et al., 2008). While the potential of transponder technology in manufacturing has long been acknowledged and also realized in many cases, the use of item-level tagging in the distribution of finished products is still rare (Schmitt and Michahelles, 2008). Most of the research conducted on RFID in distribution so far focuses on the ex-ante assessment of RFID benefits. Within this stream of research, most attention has been paid to efficiency gains enabled by RFID (Gaukler and Seifert, 2007). While authors with an industry or consultancy background usually strived to be more comprehensive in terms of benefit estimation, academic research has concentrated on specific types of benefit but has stayed more general (Lee and Özer, 2007). (Chappell et al., 2003) for instance, for the case of a major consumer market, came to the conclusion that RFID could save up to 3% of sales. Academic researchers from the operations management field have investigated primarily the impact of more accurate information and information sharing on supply chain management (Lee and Özer, 2007). Researchers from the information systems and computer science communities have focused more on the technical aspects of RFID such as data management (Chawathe et al., 2004) and security (Juels, 2006).

Although many RFID benefits in distribution operations have been described and estimated in monetary terms, hitherto not much research has been published based on actual item-level tagging cases. In particular, real world challenges have not been discussed in the information systems community. This lack of practical research can be partly attributed to the transponder price deadlock discussed above: since item-level adoption rates are low, practical experiences with the technology are rare. However, the existence of 'best practices' based on real world experiences with new technology applications are oftentimes crucial determinants for their adoption (Wu et al., 2006). One of the main inhibitors of RFID adoption is seen in technology uncertainty, in particular the risk of not being able to integrate RFID infrastructures with existing ERP solutions (see Figure 1). Therefore, more research on this issue is warranted. Especially, applied research taking into account real world challenges should be of great value to practitioners as well as to researchers in the field.

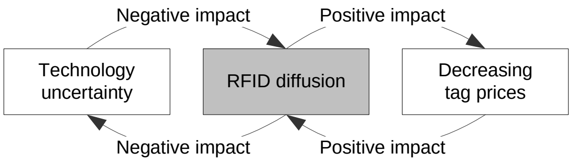

Figure 1: Influencing factors on the diffusion of RFID, based on (Strassner, 2005).

In this paper we use a case study approach to come closer to answering the research questions stated in Section 1. Case studies are popular both in operations management and information systems research (Voss et al., 2002) since they offer insights into the activities and experiences of a particular company. As we mentioned above, research about RFID applications in SCM hitherto focusses on the ex-ante estimation of benefits. Given today's low RFID adoption rates, empirical investigations of the benefits and challenges involved in the application of RFID in distribution processes would not be very fruitful at this time. In contrast to that, the analysis of single RFID adoption cases already makes sense taoday and should be the preferred research method until adoption has spread further. Case study research can be used for exploratory, descriptive and explanatory purposes (Schmitt and Michahelles, 2008). In contrast to quantitative research methods, case studies serve to analyze single or multiple cases with respect to several dimensions of relevance. The case presented in this paper serves to explore financial, technical, and organizational challenges involved in the design, implementation and deployment of item-level RFID in the goods distribution process.

3 CASE STUDY

3.1 Company Profile

The Gerry Weber International AG (GW) is a globally operating apparel company based in Germany. GW's primary business consists of the design and marketing of women's fashion. Currently about 82% of sales are generated by the wholesale channel, i.e. the lion's share of GW's products are sold to end customers by fashion retailers. The remaining 18% are either sold by GW's own brand stores or GW franchisees. GW plans to increase the revenue generated by its own shops to at least 50%. With about 2,000 employees, GW realized a turnover of over 507 million Euros and an EBITDA margin of 12.2% in the fiscal year 2006/2007, which is well above industry average. GW's recent success has been attributed to a fundamental optimization process which among other things resulted in the outsourcing of logistics operations.

While the physical operations such as manufacturing, transportation and warehousing have been outsourced, supply chain management activities are orchestrated from the GW headquarters. GW sources globally: 63% of the suppliers are located in the Far East, another 23% in Turkey and the rest in Eastern Europe. The focal target of GW's supply chain management is to assure the reliable delivery of products to wholesale customers and their own points of sale. Logistic operations have recently moved to the centre of attention because it has to keep pace with a recently introduced marketing strategy: product life cycles in the retail channel have been reduced to two weeks in order to improve the customer buying experience and increase the average number of store visits. GW has been working on concepts of RFID usage in their supply chain for several years. In 2007 the decision to introduce RFID on the item level was made.

3.2 The Supply Chain

3.2.1 The Flow of Goods

GW products are designed in the GW headquarters. When the major wholesale customers have placed their orders, GW routes manufacturing orders to contract manufacturers around the world. Besides a small number of 'never out of stock'-products (e.g. dark-coloured business suits), which are replenished on a regular basis, all products are ordered in one big rush ahead of their respective selling season and are produced and distributed according to a predefined schedule. Suppliers can be distinguished into two groups (large and small) according to the size of production orders placed with them: Large suppliers fill whole sea containers or trucks, whereas the shipments of small suppliers get consolidated and filled into containers at consolidation sites near harbours or airports by the long-haul transportation providers. Depending on the location of suppliers, merchandise is transported by truck, sea or air to distribution centres located in Germany by major long-haul transportation providers. Since long-haul transportation services for apparel are only provided by a small number of major logistics companies, the probability that GW uses the same logistics provider repeatedly is relatively high. In places with big concentrations of contract manufacturers of apparel such as the Shanghai area, long-haul transportation providers operate large consolidation centres where all products destined for overseas are assembled to shipment lots.

The distribution centres in Germany are operated by logistics service providers specialized on the apparel industry. These providers also conduct centralized quality assurance (QA) and picking of shipments destined for wholesale and GW's brand stores. Since the consumer segment addressed by GW is very sensitive to the quality of products, GW closely monitors the QA process in order to prevent negative impacts on revenue. The commissioning process conducted in the distribution centres is demanding due to two reasons. Firstly, the array of selling points being served is very heterogeneous in terms of batch sizes, packaging and accounting requirements. Secondly, GW reserves the right to interfere in the distribution process up to the last minute in order to efficiently steer the distribution of goods. In case of inconsistencies of the actual supply process with schedules, GW's management can take immediate action in order to optimize the allocation of the available garments to stores. The actual transportation from distribution centres to stores and between stores is done by several short-haul transportation providers. GW products can be divided into two categories: Hanging and lying garments. Hanging garments are transported on hangers while lying goods are put into cartons.

3.2.2 The Information Flow

In this section we outline which data is received and sent by the different members of the supply chain during the production and distribution of GW products. We focus on information objects which are directly associated with physical items. In particular, this includes production orders and Advance Shipment Notices (ASNs).

Production is initiated by sending a production order to a supplier. The production order contains exact information about the type and quantity of all garments to be produced. Upon receipt of a production order, the supplier incorporates it into its production schedule. The supplier is able to access and modify the order data objects representing the production orders using GW's SCM system. Among other things, production progress is recorded in the form of milestones along the garment production process (dyeing, cutting, sewing, washing) while the expected time to finish an order is constantly updated. Finally, when a supplier prepares a batch of finished products for shipment, an Advance Shipment Notice (ASN) is created by GW's SCM software. This ASN provides an overview of all items contained in the shipments prepared to leave the supplier's site. The items listed by the ASN can be physically distributed over several containers and/or truck loads and be packaged in cartons and hanging packs. The information contained in the supplier's ASN only refers to the item type, not the individual garments. Without item-level RFID there is no way to tell which carton contains which items and inside which container or truck load a certain hanging pack or carton is shipped. The garment lots received from the small suppliers are consolidated into shipment lots by the long-haul transportation providers. When transportation batches have been determined, the long-haul transportation providers send an ASN via GW's SCM system. Changes of transportation status are also recorded by the system. Figure 2 describes the structure of the logistical data processed in GW's supply chain using an UML notation.

The logistics service providers that operate the DCs receive the ASNs of the long-haul transportation providers as soon as they are available within the SCM system. The DC processes have to be adapted to the type and quantity of incoming deliveries. Therefore, the ASN information helps the DC operators to optimize their processes. For instance, if the ASNs indicate that a larger than expected delivery will arrive, capacity can be added in order to deal with the situation. The information which GW receives from the DC operators includes the quantity of garments received, the results of the quality control which is conducted shortly after shipments are received, as well as the results of the picking process. The deliveries received by the DC are counted either manually or automatically on a 100 per cent basis, i.e. the data received by GW allows them to determine whether the suppliers have shipped the agreed quantity. The information provided on the quality assurance process gives GW the chance to react based on the number of production lots which have not passed the tests. For instance, if a significant number of garments are spoilt, the store orders need to be reviewed and scheduled shipment

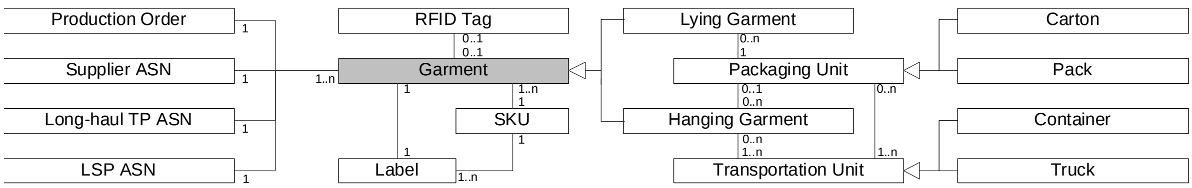

Figure 2: Structure of logistical data.

quantities have to be revised. The information about the outcome of the picking process serves to create the ASN of the logistics service provider (LSP ASN) which is sent to customers. It is also used to proof to the short-haul transportation provider how many items have been handed over at the DC in case garments are lost on the way.

3.2.3 The Potential of RFID

In the case of Gerry Weber, the main 'hard' benefit expected from RFID is the reduction of wrong deliveries. The completeness and timeliness of shipments will be monitored by the use of RFID scanners at several steps in the supply chain. Reaction to delays or mistakes can therefore be carried out more timely and accurately in the future; for instance, mistakes made in the picking processes can be identified promptly which improves the chances to correct the mistake before it can cause problems and additional work. Another source of quantifiable benefit is the reduction of administrative overhead at GW's own stores. For instance, sales employees have to count incoming and outgoing goods either manually or by scanning the SKU barcode. With RFID, these processes will take a fraction of the time and enable employees to pay more attention to the customers.

A number of RFID benefits expected by GW cannot be quantified in monetary terms but have nevertheless been taken into account. In particular, GW's general management perceives the introduction of RFID as a strategic investment since their wholesale customers may also demand tagged products soon.

The decision to introduce item-level RFID was made based on an economic analysis which considered the 'hard' savings mentioned above, i.e. the reduction of non-conformity costs at the DCs as well as the labour cost savings at the stores. The initial ROI calculation assumed the use of stand-alone RFID transponders for one-time use. Since this assessment resulted in a less beneficial ROI, GW's management searched for ways to increase benefits and/or reduce costs.

3.3 Cross-Company Closed-Loop Integrated Use of RFID

GW came up with three changes to the initial investment plan:

- Cross-company RFID infrastructure: RFID data will be used along the whole supply chain in order to further reduce non-conformity costs.
- Closed-loop application: RFID transponders will be covered in plastic hard cases so that they can be used several times in order to reduce transponder costs.
- Integration of RFID with EAS: beside the RFID transponder, every hard case will also have Electronic Article Surveillance (EAS) functionality.

Although special transponders that can be reused are more expensive than transponders for one-time use, using the same tags multiple times leads to significant cost savings. GW anticipates that each transponder will circulate 8 to 10 times on average. There are three reasons for this conservative estimate: (1) the surface of the plastic tags wears out over time which could have a negative effect on the perceived quality of GW's products when being presented on the shop floor; (2) the functionality of the RFID transponders may suffer over time; (3) transponders may get lost in the supply chain.

The savings resulting from the repeated use of transponders are diminished by the additional expenses for shipping the transponders upstream. However, these expenses are comparably small because the capacity of containers and trucks on their way back to the production sites in Eastern Europe, Turkey and the Far East are usually not utilized and therefore relatively cheap.

Another advantage of closed-loop applications is that object identification does not require globally unique identifiers such as Electronic Product Codes (EPCs). Although GW is a member of the leading RFID industry consortium EPCglobal and also pays fees for the use of European Article Numbers (EANs), actually using the EPC numbering system with full service would result in additional licensing fees. Therefore the EPC is not used for now.

EAS tags are currently attached to the garments in the European distributions centres. By combining EAS and RFID, no additional RFID tagging process is required. Moreover, both EAS and RFID functionality can be added at the manufacturing sites where labour is a lot cheaper than in the distribution centres.

The additional benefits realized by the combination of cross-company, closed-loop and integrated use of RFID resulted in a sufficiently positive ROI. However, the additional requirements imposed by cross-company closed-loop integrated use of RFID transponders also lead to a number of critical challenges in terms of system and process design. These will be discussed together with the envisaged system design in more detail in the following section.

3.4 Design and Scope of the RFID System

The design and development phase of GW's RFID project is almost completed by now. In collaboration with their service provider IBM, they have specified detailed use cases as well as hardware and network infrastructure for the following processes:

- Virtual association at suppliers, consolidation sites, distribution centres, and retail stores (UC1)
- Goods issue at suppliers, consolidation sites, distribution centres, and retail stores (UC2)
- Goods receipt at distribution centres and retail stores (UC3)
- Localization of unassociated garments at distribution centres (UC4)
- Disassociation of items at distribution centres and retail stores (UC5)
- Stock taking at retail stores (UC6)

All use cases have to comply with the above-average complexity and diversity of GW's supply chain processes. For instance, they have to be designed both for automatic and manual distribution centres, for hanging and lying garments, for the described reusable and also one-time use tags (possible requirement in the future), and for different locations. Figure 3 provides an overview of the information flow within GW's supply chain, the involved information systems and the scope of the planned RFID system. Due to space limitations we will concentrate on the two most critical RFID processes. We will point out the challenges involved in their implementation and how the system architects plan to cope with them.

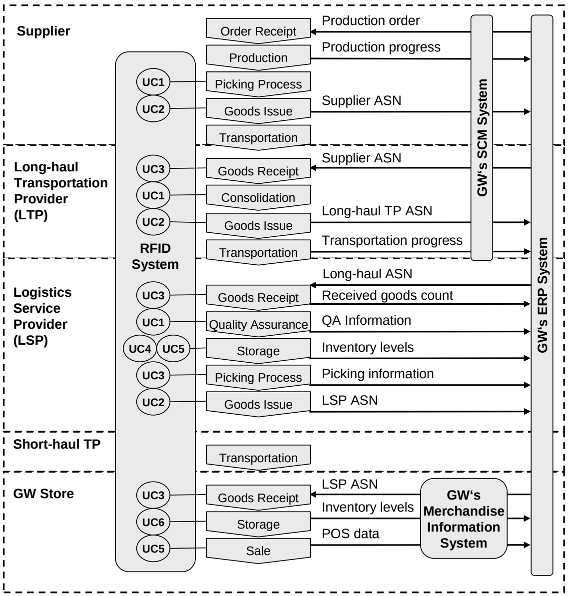

Figure 3: Information flow and scope of the RFID system.

3.4.1 The Virtual Association Process

In order to reuse RFID transponders, garments have to be associated both physically and virtually. Physical association means that a transponder gets physically attached to a garment; virtual association means that by an appropriate database operation a transponder ID is associated with a garment stock keeping unit (SKU), the ID of the transportation unit it is transported in and the context data object (e.g. a production order) it belongs to. Whereas the association of transponder ID and SKU ID is a basic necessity for connecting read events with the appropriate context data stored in the IT backend, the association of transponder ID with the IDs of transportation units and context data objects is required to enable the effective tracking of the flow of goods; in particular, these associations can be used to identify tagged items which have not been observed at a particular RFID checkpoint although they should have been observed there according to the schedule. In addition, GW plans to validate the completeness of garment lots already during the association process: based on a real-time matching of association data and available business context data workers will be instructed to take corrective action if necessary.

Both association types (physical and virtual) can be conducted at several sites throughout the supply chain (at large suppliers, consolidation sites, DCs) in order to make sure that 100% of the garments which leave the distribution centres are physically as well as virtually associated (otherwise, the intended store use cases such as stock taking could not be carried out). To this end, the association status of every shipment, i.e. 'untagged', 'tagged', 'tagged and virtually associated', is captured and relayed so that each of the following supply chain partners can react accordingly.

The RFID reader devices which will be used at the work stations responsible for conducting virtual association will be able to read both barcodes and the data stored on RFID transponders. Each station will accommodate a dedicated server which will temporarily buffer RFID-related data such as the business context data required in the association process and the results of the association process. For hanging garments, a handheld device will be utilized, whereas the virtual association process for lying garments will be performed on a specially designed RFID packing table which enables ergonomic and fast processing. While associating the garments, the items will be merged into logistics units (either plastic bags or cartons). Thereby, they will also be virtually linked to the number of the respective logistical unit.

Physical association is straight-forward since it is similar to other standard labelling processes that are already conducted along the supply chain (such as the application of price labels). There are, however, a number of specific challenges involved in the management of the EAS-RFID hardcase tags as well as in the implementation of the virtual association process.

The RFID implementation strategy implies that transponders are shipped to the large producers, the consolidation sites and the DCs at the right time and in a sufficient quantity. GW expects that each transponder is used two to three times per year depending on the country it is shipped to, the transportation mode used, etc.. The calculation of the total number of required tags is not straight-forward since it has to take buffer stock of tags into account.

Concerning the virtual association, the application, among other things, has to be robust with respect to the following exceptions:

- Non-readable RFID transponders
- Several RFID transponders in detection area
- Non-readable barcode
- Missing business context data
- Bypassing of predetermined processes by employees

Whereas the first three issues can be solved pragmatically (e. g. by replacing an RFID tag; shielding or containment of the detection area; regeneration of barcode label), the remaining two cannot be coped with that easily: In case of missing business context (such as purchase orders, ASN, etc.) immediate access to the central RFID platform is required in order to perform the planned quantity control. If the Internet connection to the RFID system cannot be established, the business logic has to be designed in a way that conducting the virtual association without quantity control is still feasible. Furthermore, the process either has to be able to mitigate the faulty virtual association of garments or at least detect it and notify subsequent stages of the supply chain so that the association process can be selectively repeated later on.

3.4.2 Goods Issue Process

When garments have been prepared for goods issue at an RFID-enabled site, they have to be both physically and virtually associated as well as packaged in plastic bags (hanging garments) or cartons (lying garments). The goods issue marks the last opportunity to ensure the completeness of a shipment and the correct association of RFID transponders with garments. In GW's supply chain RFID hardware has to comply with special environmental conditions. For instance, the goods issue process can be conducted manually, via suspension rails, with pallets or on conveyor belts. In order to satisfy this requirement, different RFID hardware solutions are necessary. Warehouse operators can for instance choose to use handheld devices or a fixed RFID gate. Another challenge regarding the RFID-enabled goods issue process is to read the data stored on many transponders at the same time: since reading reliability can still not be guaranteed, ways to make the process robust to below 100% reading rates had to be found. To this end the allocation of transponder IDs and logistical unit IDs is used: if all items packaged in the same carton or pack can be inferred from the database, reading one transponder ID suffices to conduct a full count at the goods issue.

Similar to the virtual association process described above, GW will realize value added at the goods issue by detecting potential deviations from the distribution schedule. Warehouse operators will have access to the RFID-based real-time loading status and can be alerted if a shipment is incomplete. The RFID system will be able to display to workers which items or logistic units are missing in order to complete a shipment.

3.5 Project Management

The design and implementation of the described RFID application will be carried out by one main contractor (IBM) and several subcontractors (hard- and middleware suppliers) supervised by IBM. The advantage of this organizational model for GW is to have one single point of contact for managing all of its RFID operations. IBM is responsible for the design, trial, rollout, and operation of the RFID system.

In order to minimize the financial risk involved in realizing the RFID application, GW decided to advance in four steps. After each of these steps the continuation of the project will be re-evaluated. In the first step, the RFID solution is designed, tested and implemented in four distribution centres and two retail stores. In the second step, the solution is rolled out in all of GW's retail stores. The international rollout of the solution is initiated in the third step by equipping two consolidation sites in China and Turkey with RFID technology. In the final step, all remaining consolidation sites in the Far East will be included which will enable the maximum item-level visibility that can be achieved using RFID.

4 CONCLUSIONS

This paper described the current state of Gerry Weber's RFID project. GW is one of the first companies in the apparel industry that has decided to introduce RFID on the item level. Based on the description of the flow of goods and information, our case study disclosed the benefits GW expects from the introduction of RFID. The case description gives insights into the processes taking place along GW's supply chain and the data being exchanged between the supply chain partners. GW has outsourced most of their logistics operations but at the same time has to face the increasing complexity of their supply chain. Therefore they are interested in monitoring the flow of goods more closely in order to diagnose possible exceptions remotely. Besides typical RFID benefits such as labour cost and error reduction, RFID is expected to play a key role in providing accurate monitoring data, which will be used by sophisticated decision support systems.

The case shows how the ROI of RFID hardware can be improved by closing the tag loop and efficiently combining RFID with extant technologies such as EAS. Two RFID use cases that play a crucial role in the implementation of GW's RFID strategy were analyzed: the virtual association and the goods issue process. The corresponding advantages and challenges were outlined. The approach of using RFID in a closed loop and integrating it with extant EAS processes is not necessarily restricted to the apparel industry. It could also be applied to other retail products of relatively high sales value (e.g. consumer electronics). In our opinion, the approach of increasing the ROI of item-level tagging outlined in this paper has the potential to foster the diffusion of large-scale item-level RFID applications. If more RFID transponders are sold their price will eventually drop due to the economies of scale realized in their production. This in turn will eventually also make open loop applications economically viable. Although GW will start to use RFID transponders in a closed loop, the system architecture that is currently being implemented can easily be expanded to an open-loop application: when GW's wholesale customers start calling for RFID tagging, GW will be ready to serve their request.

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