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## Interview with Benjamin Scheffler on “The Future of Waste Management”

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The interview was translated from German.

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**BISE:** Mountains of garbage, broken glass and tipped over trash cans in public places – the central importance of waste management companies, especially in conurbations such as Frankfurt, has rapidly moved into the public focus during the Corona pandemic. Headlines referring to the challenges for cleaning and waste management service providers have dominated recent press coverage. In which way does this dynamic impact your work at FES?

**Scheffler:** So far, FES has been able to provide its services to the people of Frankfurt during the Corona crisis without any restrictions at any time. The many people who were at home during the lock down have noticed this and expressed their gratitude in many ways. For example, children have written “Thank you garbage collectors” on the street with chalk. Furthermore, waste disposal and street cleaning were officially recognized as “system-relevant”.

**BISE:** Your 2018 sustainability report states that FES is the regional market leader, with 1,840 employees and a turnover of €238.3 million. Furthermore, according to a study by the Institute for Management and Economic Research (IMWF), FES enjoys an outstanding reputation among German waste management companies. What are the key success factors that contribute to your performance?

**Scheffler:** As a public–private partnership, we combine the best of both worlds: public administration and the private sector. FES stands for customer orientation, service quality, sustainability and attractive jobs. Based on long-term contracts, we can plan and invest strategically. FES supports the city of Frankfurt am Main in achieving its climate goals and our private partner Remondis helps us to close material cycles.

**BISE:** How does FES currently react to market pressure and in which areas does FES invest?

**Scheffler:** We have been facing tough competition in our business for years now. Thus, the fact that with our long-term contracts we have a secure economic foundation on which we can work should not tempt us to become lazy – quite to the contrary. We need to make large investments to expand our business and develop new business models – and, of course, we need to constantly improve our work.

Due to our cost-structures, it is difficult for FES to compete in labor-intensive business. Then again, we have advantages in capital-intensive areas, since we have been able to sustain a strong balance sheet. In other words: I see potential primarily in the areas of plant technology, automated separation and sorting. Digitalization in general is of course another great investment opportunity. Unlike some of our competitors, we have the potential to take certain calculated risks and learn from our investments. If some individual projects from our portfolio should fail – especially against the backdrop of the “human factor” in innovation projects – this does not necessarily spell the end for FES.

**BISE:** In terms of „digital readiness“, the German waste management industry is far behind other sectors according to a report of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. What do you think are the main reasons for this deficit and what role does digitalization play at FES?

**Scheffler:** The German waste management industry is known for being not very innovative. The fact that mankind has thus far reliably produced increasing amounts of waste, can lead to the assumption of an inexhaustible business model for waste management. Therefore, the incentive to change processes and create new services has been missing. In the past, FES has also been rather unwilling to make changes. The company lacked the readiness to scrutinize processes on a larger scale and to be open to significant changes. We have a saying here in our company: “The garbage collectors drive in circles all day long – with IT and without IT”. However, this fails to recognize the potential of digitalization which also exists for our industry. In 2019, we thus introduced an Innovation Management team as a separate organizational unit, which now has three employees and directly reports to the executive board. In fact, we should have become active much earlier – about five to ten years ago. Our industry is chronically “non-innovative”. If you look back at what has really changed in the waste management industry over the last 20 years, you don’t need the fingers of one hand to enumerate it! And some of the so-called innovations are not even self-induced, but rather the result of external pressure.

For FES, digitalization plays an important role today. It offers us the opportunity to strengthen customer relations – not only in the commercial, but also in the public sector.

While in the legal sense the city of Frankfurt is our customer, the citizens as the end clients are at the center of our efforts. Direct communication, customer accounts or apps can be used to achieve much more intensive customer interaction. We have a customer base of 750,000 Frankfurt residents and can interact with them through digital channels – that is something that we were never able to do before. In the commercial sector, the opportunities are even greater. What is important here – and this is new territory for us – is that a much greater share of new customers will be acquired through digital channels. Therefore, I think that the classic cold calls by sales representatives will become less important. This does not mean that we will no longer have a sales force in the future. Our business is too complex for that, even if it may not be obvious to outsiders at first glance. There are many pitfalls in waste disposal and there is a very tight legal framework to be observed. In the future, our sales force will thus concentrate on advising commercial customers on how to improve efficiency and environmental sustainability, while the major part of new customers will be acquired via digital platforms.

**BISE:** In this context Remondis, for example, has developed the “Redoo” platform. Do you see potential for other waste management companies to compete with platforms of this kind?

**Scheffler:** Remondis has addressed the topic of digitalization at a particularly early stage and, among other activities, conducted extensive market research on the digital appearance of German waste management companies. They concluded that practically all retrievable websites were not integrated with the companies’ IT systems and that the possibilities for placing direct orders through the websites were rather limited. What did not exist until then – and Remondis tried to fill this vacuum with “Redoo” – was a platform that could serve as a mediator for customer orders, as we know it from other industries. While Remondis runs the central platform for matching customers and companies, they do not mind who executes the order. That is what makes their platform business model so special – and you can imagine that not everyone within the Remondis Group takes a positive view of these activities. However, the strategic approach behind this idea is that if digitalization ultimately leads to a disruption in our industry, then we should be the ones to cause it and not the victims.

**BISE:** So beyond numerous opportunities, digitalization and increasing connectivity towards an Industry 4.0 obviously also bears risks for incumbent firms. In other industries, many established companies are currently struggling to keep their position in the market. Do you see the fourth industrial revolution more as an opportunity or more as a risk for FES and for your employees?

**Scheffler:** FES is in the comfortable situation that a large part of its business is based on long-term contracts with the city of Frankfurt. This protects us to some degree against existential market risks and allows us focus on the opportunities of Industry 4.0. In fact, I see the greatest risks within the company: the management of FES must convince the workforce that it is worthwhile to leave the comfort zone and to find the courage to make some far-reaching changes.

**BISE:** How do you motivate your employees – especially your garbage collectors – to leave this comfort zone?

**Scheffler:** “Comfort zone” probably is the wrong term for our garbage collectors – we do not want to make their work more difficult than it already is, but rather the opposite. It is the force of habit. If we want to succeed, we will need to overcome such habits. However, I am quite optimistic here. I am firmly convinced that the vast majority of our employees is much more open to new technologies than we might think. Perhaps the societal change is one reason for this openness. Overall, our employees appreciate the feeling that they have a modern workplace at FES.

**BISE:** In the context of a modern workplace, one could also think of technologies that employees might be rather skeptical about – for example, autonomously operating machines. What do you think will be necessary to create a consensus on rather controversial technologies?

**Scheffler:** The key to success is intensive information – that is talking to employees and persuading them. I think that employees will ultimately perceive autonomous systems as a support for their daily work and not as rivals. An autonomous sweeper, for example, can facilitate the job of a team of workers. Especially, since future working groups will have to be smaller because we won’t be able to fill all the positions and at the same time the amount of work to be done will not decline. As a result of demographic change, we will have more and more problems to fill vacant positions with adequate quality. In fact, we have already experienced the antecedents of such effects. For example, for years we have had a constant shortage of drivers, which we have only been able to overcome by providing intensive training ourselves. If we hadn’t done that, we would be in a very bad position today.

**BISE:** In other words, at the end of the day, the success of autonomous and also digital systems depends on whether they can convey a tangible benefit to the employee. So, the challenge is to design systems that provide an intuitive and direct value for employees.

**Scheffler:** Our employees will not accept anything that they feel does not provide them with a benefit. If an employee has the impression that “this makes my work harder”, he or she will reject it. In the past, we unfortunately experienced IT projects in the FES Group that failed

badly – I do not want to say on account of opposition from our employees – but rather because we failed to involve and inspire them during the project itself and also after the Go Live. We thus missed an important opportunity to explain why new technologies and changed processes are ultimately beneficial to every single employee and how one can benefit from both. That simply did not happen. Hopefully we will not make the same mistake a second time.

**BISE:** In public discourse, the concepts of digitalization and sustainability often go hand in hand. What do you expect from digitalization in terms of sustainability – both ecological and social?

**Scheffler:** I assume that digitalization will enable us to further optimize logistics, so that overall fewer trucks will need to cover a shorter distance in the city. This implies both lower energy consumption and fewer emissions such as exhaust fumes and noise. In addition, there are social developments with an impact on the waste management industry that have not directly been caused by digitalization but are facilitated by it – for example the trend towards a sharing economy. FES is currently in the early stages of a project with the aim of returning disposed, but still fully functional, electrical appliances back to the second-hand market. We consider this to be an important contribution to a more sustainable way of life.

**BISE:** Let us look 20–30 years into the future – both for the waste management industry in general and for FES in particular. What will the future of waste management companies look like in a digitally connected Smart City with an established circular economy?

**Scheffler:** All the technologies needed to connect waste containers, customers and waste management companies in real time already exist today. In the future, this could facilitate a needs-oriented and predictive waste management. However, I am not sure if in the light of all the relevant circumstances this will actually create additional value for all stakeholders. Today’s system of household waste collection is inflexible but highly productive. Whether a system based on demand can be operated at the same efficiency and cost level remains to be proven. The situation is different when it comes to emptying public garbage cans and removing wild deposits, because potential additional costs can be outweighed by a significant increase of cleanliness in public spaces.

**BISE:** What does it take to ensure that in the future companies like FES will continue to be recognized as “outstanding” by the city of Frankfurt and its citizens?

**Scheffler:** We need to assure the city of Frankfurt that we as a company are willing to support the achievement of the city’s goals. Also, in future, the city of Frankfurt will be facing some major challenges. According to current forecasts, the city will continue to grow during the next

20 years. We now have more than 750,000 citizens. That will be easily topped by another 100,000. All these citizens generate waste and dirt – we will thus need to support the city of Frankfurt in managing this situation. In addition, digitalization will give us the opportunity to create added value. Some of the prospects for the future include camera- and AI-based detection of damages in streets, dirty or overgrown traffic signs and the like. In a city as large as Frankfurt, it is quite challenging to maintain an up-to-date overview of public infrastructure. Today, the administration is obviously struggling, if you look at the number of dirty and broken signs or holes in the street. I think that with the help of digital infrastructure and our truck fleet, we can give the city a pretty good overview with relatively little effort in the first step. As a follow-up, we could jointly develop strategies to remedy the identified problems within a reasonable period of time. Overall, there are many relevant areas of application, for example, the irrigation of green areas in the city where we currently have no effective system for optimally using the available resources. We can thus support the city by collecting the relevant data in order to better understand the impact of certain measures.

**BISE:** So, this means that waste management companies will need to change and expand their field of activity?

**Scheffler:** Our goal will be to establish an even closer connection with the city of Frankfurt than we already have today by offering additional services. We are successful in taking the citizens of Frankfurt am Main very seriously in their role as our most important customers and we will continue to do so.

**BISE:** Following up on this, I would like to turn to the topic of the circular economy. You have now spoken of regarding citizens as customers. In order to achieve the waste separation and recycling targets, it will probably be necessary to involve citizens even more in the future. What do you expect to be the role of citizens in future waste management and especially recycling systems?

**Scheffler:** I think that if we want to be even more successful in terms of separate waste collection, we must make things easier for the citizen. Very few citizens are willing to accept significant extra efforts, for example, to dispose of small electronic or electric devices properly. In many cases they choose the comfortable way and simply throw things like electric shavers into the residual waste. To prevent that, we need to improve our service. My statement however – to be even “more successful” in terms of separate waste collection – should be put in quotation marks, because – and Frankfurt is no exception – we are not that good. We know from sorting analyses of the residual waste bins’ contents that a major proportion of the material contained is not residual waste at all. In particular, there is a lot of organic waste but also paper and other materials such as plastics, metals, wood, which should be collected

separately in order to facilitate adequate recycling. However, a problem in larger cities which is *inter alia* responsible for the amount of recyclable material in the residual waste, is that on many properties there is simply not enough space for installing different garbage cans. That is why the connection rate, even for paper bins, is only about 80% to the best of my knowledge. There are properties in densely populated areas where there is actually only one garbage can – a residual waste can – and instead of only once a week, we empty it several times! So, the challenge is to create opportunities that are comfortable enough for the citizens to accept them. We need to give the people who live in such a building the opportunity to separate their waste and then to also dispose of it separately without too much extra effort. If you think of where people go regularly, where they pass by anyway – and I think that this is a basic requirement: “no detours for disposal” – the answer might be supermarkets and hardware stores for example – then of course companies, offices, authorities, etc., bus stops, local public transport. These are all places where people regularly pass by, and I think there would be a potential willingness of people to take the aforementioned electric shaver with them on a Saturday for shopping – at least if they knew that there was a recycling island in the parking lot. Under such circumstances, I might not only take the electric shaver but also the broken energy saving lamp, which I didn’t throw in with the residual waste, but kept in a drawer in the hall.

**BISE:** Can you imagine how information systems in the broader sense could support this scenario?

**Scheffler:** Yes, of course! As a citizen, you first need to know where exactly you can dispose of different types of waste. Furthermore, due to the limited space for setting up containers and also the limited container volume itself, we would have to be informed about filling levels in real-time to be able to empty the containers when needed. Both could be supported by information systems.

**BISE:** From personal experience, I know that with regards to waste separation quite a few people would believe that the statement “in the end everything will be burned anyway” is true. This sometimes prevents even those who are willing to separate from using the existing separation systems. What are your thoughts on this matter? Do we need better education, information formats or learning opportunities?

**Scheffler:** In fact, we have already addressed these issues in our public relations work. However, the truth is that even today we are actually burning more than should be burned. The biggest issue in this context, which has been discussed again and again, is plastics. We haven’t really made much progress in this area in the last 20 years – on the contrary. There is a trend towards complex plastic packaging which by no stretch of the imagination can be

recycled – simply because it contains too many different types of plastic. This will only change if the legislator takes decisive action. I believe that currently there are more citizens who are willing to separate waste than there are realistic possibilities to further process the various types of rather complex packaging. From my point of view, consumers could still improve the recycling process by avoiding such non-recyclable packaging. My wife and I personally try to buy plastic products that can be properly separated. For example, there are yoghurt cups where you tear off the aluminum lid – in fact, you should tear it off and not leave it attached to the plastic cup, so that it can be separated in a sorting machine – and then the cup is not printed on, but there is a paper or cardboard sleeve which you can dispose of separately. As a result you usually have a pure plastic cup which can be recognized and separated fully automatically, if the corresponding sorting technology is connected downstream and if the cup in fact consists of only one type of plastic and not a composite material.

**BISE:** Does that mean that you would also like to hold the manufacturers accountable in a way that the experience gained from the recycling process must inform the design of products so that proper separation is facilitated?

**Scheffler:** Yes. I think it will not work otherwise. That is the Cradle to Cradle approach, which for many years now has been very strongly represented here in Germany and many other countries by Prof. Braungart. Products must be designed and built in such a way today that they can be easily recycled afterwards.

**BISE:** So, in conclusion, someone has to bring all stakeholders together and ensure that data and information from waste management is merged with the data from product design, production and usage. As a result, we would have a platform for the necessary end-to-end information to close the process chain. Do you think that this might be a possible field of activity for the future – maybe supported by research efforts?

**Scheffler:** It certainly makes sense to connect manufacturers of raw materials, plastics, products and also waste management companies by creating joint databases, where product properties and other relevant information for individual types of plastics can be viewed by everyone. For the citizen – as a very decisive link in the chain – such a platform would however be of no use. For the end consumer, it has to be much simpler. I am a great fan of product information on packaging – even if, with increasing age, I find it more and more difficult to decipher what is printed on the packaging in rather small letters. I look at this information and try to adjust my purchase decision –

especially in the food sector but also with other products – accordingly. For example, I consider where a product has been manufactured, or what a food product contains. I take a very close look at that. If someone introduced some kind of mark or label to show how recyclable a product is, for example by color code or value scale, I would take that into account.

**BISE:** The Information Systems research community has scarcely addressed the waste management sector in the past. The most recent reference to FES and other waste management companies in the BISE Journal was in 2011. From your point view, how could Information Systems research meaningfully support the waste management industry in the areas of digitalization and sustainability?

**Scheffler:** The optimal planning of garbage truck tours in a large city like Frankfurt am Main with over 300,000 waste bins is an extremely complex challenge that requires consideration of many influencing factors, some of which are constantly changing. As far as I know, there is no software so far that could provide an optimal planning based on real-time data within a reasonable period of time. The classical algorithms of Operations Research fail despite the constantly increasing computing power. Therefore I think we will need new approaches, such as simulation. Beyond that, it is very important to design these planning tools in a way that not only highly specialized computer scientists can handle them, but also our dispatchers.

**BISE:** In other words, an important question is how the available data can ultimately be prepared in a user-oriented manner – that is, which user interfaces need to be offered so that the information can be used by those affected.

**Scheffler:** Precisely.

**BISE:** That was really interesting – thank you very much for your time and for the exciting interview!

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