# DIRESOC

Digitalisation and Restructuring:
which Social dialogue?

Adopting new technologies in the workplace: A human oriented bottom up approach at a Swedish manufacturing company, Sweden

**Ola Bergström**
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Abstract

The adoption of new technologies in production processes does not fail because of technological fallacies, but due to social failures in organizing and staffing production with workers who are supposed to use the new technology. This case study is about an initiative where local social partners merge their interests in a workplace development process, called "the future of industrial work". The trade unions envisaged a problem of increasingly empty manufacturing jobs, with little room for development. The employer, on the other hand, envisaged a problem of adopting and adapting to the increasing speed of change and the invasion of new technologies. The partners agreed upon setting up a pilot initiative at three workplaces to stimulate autonomy and development at the workplace level. The idea is to leave room for teams to explore the use of new technologies and take on responsibility for their own development. This is a good example of how social partners, in dialogue can merge their interests in response to digitalization. The case is not about downsizing or job losses. It is about workplace development to enhance competence, workers initiative and adoption of new technologies to gain competitiveness and thereby avoid redundancies in the future.

# Introduction

Swemantec[1] is a Swedish global firm in the automotive industry. The company employs about 115 000 people, has production facilities in 18 countries and sells its products in more than 190 markets (Annual report). The company´s ambition is to become the world leader in sustainable transport solutions. Originating in the 1920s as a car and truck manufacturing company, the company grew and later split in two companies. Expanding its activities across the world, with production in all continents, primarily through acquisitions of American and Japanese truck manufacturing companies.

The Swedish model and the establishment of a close collaboration with workers representatives has always been one of the key elements in the way the company is managed. The company has a long history of workplace reforms, trying to avoid health problems and make manual work less repetitive and standardised. In the 1970s the company became famous for its progressive and innovative approach to workplace organization, based on a new factory design facilitating the use of semi-autonomous teams.

In view of the development of good working conditions, the financial crisis in 2009 marked a significant turning point for Swemantec. In 2009 the company decided to lay off 1800 workers, loosing many of the young potential that were seen as the future of the company. Due to the LIFO principle, the most recently hired workers had to go first in cases of collective redundancies. Even if it is possible for the employer to deviate from this principle, this was not done due to the severity of the crisis and the need to respond quickly.

The return of the market implied that the company needed to recruit new employees again. However, due to the major restructuring in the manufacturing sector in general the image of working in the manufacturing industry soared. In an effort to attract new young workers, in the autumn 2012 Swemantec started an apprenticeship program (called the step) in industrial production, specifically targeting young people aged 18-22 who had completed high school and were unemployed. The programme was based on a local collective agreement between

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[1] The name of the company is anonymized.

social partners and the idea was to provide a total of 1200 young people (400 each year) with an opportunity for a paid apprenticeship and a future in the manufacturing sector (press release Swemantec, April 2012). The ambition was that every third newly recruited worker should be female and that the share of women should increase by 70 per cent in coming two years. The programme received massive attention and was seen as an example of how firms could contribute to resolve the youth unemployment in the Swedish labour market.

However, in the face of the introduction of new technologies in the manufacturing industry, the apprenticeship programme was not enough. They started to think about ways to change the attitude about manufacturing work among the young population, not as something "dirty and boring". The firm needed to attract workers with higher skills and for this purpose the beneficial working conditions and training for the young workers was not sufficient. Manufacturing jobs needed to change.

The introduction of a new CEO in 2015 is the moment where this story begins. In the face of several disruptive technologies the new CEO decided to decentralize operations, leaving more room for local adaptation to technological and market developments. To understand the story, it is necessary to understand the structure of industrial relations in Sweden. While social dialogue has a long history in Sweden, the development since the mid 1990s has been characterised by the introduction of the manufacturing sector agreement.[2] Trade union membership still remains among the highest in Europe. About 70 per cent of employees (both white collar and blue collar) are organized in trade unions and almost 90 per cent of the employers are members of an employers' association. The relatively high membership rate provides the collective agreements with the necessary legitimacy to be functional. An employer who is covered by a collective agreement must apply the agreement even for employees who are not members of the trade union who has signed the agreement. Collective agreements are regulating salaries and working conditions for more than 90 per cent of employees in the Swedish labour force.[3]

This also applies to the Swedish operations of Swemantec. Trade unions are represented in the board of directors. There is a continuing and ongoing dialogue about any matters that is concerned with the development and management of the company. Thus, the situation in which a manufacturing company undergoes major transformations in the face of technological turbulence (with several disruptive technologies at the same time) represents a peculiar social arrangement. This in turn seems to offer a suitable opportunity to study how social dialogue (in terms of agreement between social partners) contribute to the introduction of new technology in the workplace.

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[2] See DIRESOC Swedish national report

[3] Collective agreements usually contain regulations concerning:

How pay is to be determined, both minimum pay and the level of pay for more experienced workers:

- The length and scheduling of working hours
- Overtime, duty hours, standby etc and the compensation level
- Calculation of pay deductions
- Holidays and holiday pay
- Schemes for occupational pension, group life insurance, severance pay, sickness and work injuries insurances.

There are also specific collective agreements regulating the conditions for restructuring. There are two main types of collective agreements relevant for restructuring: company specific local agreements and general industry or occupational agreements.

The data used in this report are based on personal interviews with employer representatives (two HR managers and one factory manager) between June 2018 and July 2019. We also collected secondary data, such as trade union internal newsletters, power point presentations and other forms of internal documentation.

# Background

The initiative has a long history. After the financial crisis in 2008-2009 the company had dismissed more than 1000 workers and many of them were newly recruited. The outcome of the restructuring measures during the crisis was that many of the young workers were gone. Suddenly the company found itself in a generation shift. A relatively large share of the workforce was older than 35 years.

In 2012, the CEO engaged in public debates regarding what he saw as misconceptions of manufacturing work in society. In his view, the public attitude and understanding of manufacturing work posed a threat to the future of the manufacturing industry and prosperity in society.

In 2012 the local social partners started discussions concerning how the working conditions for workers could be developed. A local agreement was signed, stipulating the setting up of an apprenticeship program to attract young workers. The idea was to make it more attractive for young workers to take on jobs in the manufacturing industry and help society solve the increasing youth unemployment problem.

> The discussion about it really started around "the step". How can we make these jobs more attractive? It was an effort for unemployed young people. Making industrial work more attractive. That did not exist in Sweden. If you heard our politicians talk about industrial work then we would not have any industrial work in Sweden in the future. And that's not really our picture. We needed to put it on the map in a different way and also understand how we can make it attractive, to change the perception of the young people about industrial work as something dirty and old.

The company employed 400 unemployed youngsters with a diverse background every year and provided them with training and a temporary job. The apprenticeship program was seen as very successful and was made permanent.

> The outcome of it was that we managed to change through another way of communicating. Get them interested and totally change their view (of what it means to work in the manufacturing industry). And to be proud of that. They got inside and got to see. It was a new dimension."[HR manager]

The apprenticeship program was also a starting point for a new way of dealing with youth unemployment in the Swedish labour market. The agreement became a model for setting up similar collective agreements between central level social partners and later the government provided subsidies to stimulate employers to employ young workers.

However, the apprenticeship program was not enough. Even if it succeeded in attracting young workers to enter the manufacturing industry, it didn't change the main reason for manufacturing jobs being unattractive.

A new dialogue between local social partners was initiated. The background was the changing conditions for manufacturing work since the financial crisis in 2009. The crisis had implied several cost cutting measures and an increasing performance pressure in the factories. The blue-collar workers trade union, regarded this as a problem, not only at Swemantec, but for

the whole Swedish manufacturing industry. The fast pace in manufacturing work, was seen as undermining the possibilities for development of working conditions for workers. There was a tendency for manufacturing work to become too much specialised and routinized.

> The metal workers trade union has been working on this for several years. The trade union view of the work is that the work becomes more and more, broken up. There will be less and less work content in what you do during a normal day. It becomes more repetitive. [Factory Manager]

Thus, the trade union put pressure on the employer to do something regarding the need to develop workers in the workplace.

However, the employer side did not have any clear ideas of how to deal with these problems. At this point the emerging discourse about technological change and Industry 4.0 became a source of inspiration, creating a new platform for the dialogue.

> Then we started dialogue. Then [name of factory manager] wanted to see how this was connected to industry 4.0. How do we meet this when it comes to technology and technological change? I think so. [HR manager]

Discussions about the impact of new technologies in the manufacturing industry generated a common understanding. Technical developments imply that new skills will be needed in the future. If manufacturing work does not change it will be difficult to attract skilled workers and therefore competitiveness will be at risk in the longer term. Thus, new technologies were not only seen as changing jobs, jobs needed to change to be able to attract workers to manufacturing jobs. However, how to turn this common understanding into action was still not clear.

> We made a presentation for the CEO. It is very much just about connecting it to the business out there. It has to become something alive. And then it happens. It was very tough. It was very difficult to reach out and I felt that I was running the meetings and each meeting ended with, what is this? I felt that this is the wrong approach. [HR manager]

The discussions did not lead anywhere. But then, suddenly, conditions for social dialogue changed. A new CEO entered the stage. One of the main actions of the previous CEO had been to centralize the structure of the company, centralize business units and implement cost cutting measures. The new CEO started to turn around the organization. In his view, decisions should be decentralized and moved closer to those who have knowledge and understanding of the business.

> And then it happened that [name of the new CEO], who entered Swemantec in the end of 2015. And we, in operations, also changed several of our managers, because we had focused a lot on costs and now, we needed to develop our employees and how we work in a different way with leadership. [HR manager]

The entry of a new CEO provided a new focus on development in the company. A new local agreement was signed. The agreement led to a new initiative called "The Future Industrial Worker". The idea was to find a way to expand work content at the shop floor in order to be able to adopt new technologies. The key words were "learning to learn new things".

The idea of the initiative was to stimulate learning among workers in the factories to become more autonomous and be able to take on new technology. However, in the beginning the format of the new initiative was not clear. The trade union representatives wanted the employer to set up a structured development project, including training, clear goals and a management structure. The employer representatives were hesitant to set up a major centralised training and development project. They had already spent a lot of effort in a major

training programme to attract young workers. They did not see a possible future in continuing similar efforts. They wanted to find a different approach.

In their view, centralized projects without local involvement tend to vanish and disappear. Centrally coordinated projects are based on the assumption that someone knows what technologies to adopt and is able to determine and monitor the activities at the local level. According to the employer representatives, the conditions are very different at the local level. Therefore, it becomes almost impossible to manage development initiatives centrally.

> "It was so amazing I think when [name of manager], cracked the nut with how we would get this alive and locally rooted, it is the whole foundation of change work that you start somewhere locally but it was also Martin's philosophy and then he became so committed. "[HR manager, 2019]

After some discussions, the social partners agreed to set up pilots in three different sites in Sweden. A new way of working should be tested among a limited number of teams and then spread to other units and factories.

> He was very clear that we had to start out in the line with pilots to begin with. We also have to, because the unions wanted it earlier. That there would be big projects with steering committee meetings and so on. We felt no. We did not want it, but it became so that [name of manager], I think together with [name of manager] mediated and found the key to getting energy and commitment to this. And then it was bone hard for us that we should do something where the unions do not enter with their eyes and not the company either. "[HR manager, 2019]

The ambition was to find a common understanding of a new way of working and not to be caught in negotiations on complicated structures.

> The goal of this must be that we can jointly find our new ways of working and then we cannot get stuck in locked negotiation situations with complicated structures."[HR manager, 2019]

In mid 2017 an agreement on the structure of the initiative was settled. A coordinator of the three pilots was appointed, and a steering committee, consisting of representatives from Group management, HR and trade unions, was set up. The pilots were ready to start.

### A human oriented bottom-up process

The initiative is based on local involvement and implies that teams decide their own priorities. The teams gather in team work exercises, where they decide upon what kind of activities to be involved in. It is based on what the team members find relevant and what they are interested in doing.

> They have done a number of team work exercises where they have more or less brainstormed a number of things and identified a number of similarities and seen that we also think. So, it gets pretty natural. [Factory manager]

In one of the teams the team work exercises ended up in 20 different types of activities. For example, to go to technology fairs, to get inspiration of new technologies, to try new systems or ways of monitoring the production processes. A key idea is that the new technologies should not be dropped upon workers. New technologies should be brought in by workers at the shop floor. The principles of the initiatives were presented on a screen on the wall in the factory. Some of the words were quoted from the CEO. "This is really pleasant, I think, because this is really something that we can bring on our journey", the factory manager said:

> "Every technology we take in should develop people, and go through our people, not past, and dropped into the business": - Here you are, take this!". "We should be the world leader in how we work." Then exactly what kind of production technologies we have and so on. This is more human-oriented. I think. It

is in the how. We should be the best in safety and quality. We should have a more principle-based leadership, not like, in principle / slash values, I would say, dare to let go, give a mandate. It is the line that decides, not the support. Get the right ownership. Dare to take risks. Drive! This is good stuff to bring."[Factory manager]

The quote represents the basic idea of how and under what circumstances new technologies should be adopted in the company. The adoption of new technologies should be done through people. It should develop people, not erase people. New technologies should not be placed upon people, "dropped into the business". It should be introduced through a bottom-up processes, where the technology becomes a solution to problems identified in the workplace, not the other way around.

According to the HR manager, the new way of working implies a different way of thinking when it comes to the individual at work. It is a humanistic perspective, one of the HR managers stressed:

"It is that the way of working is to start from the individual. To be straight forward, yes, we have an individual who can actually think, very pragmatically. What does it mean? If we have factories without truck drivers in the future, what happens to the truck drivers? If we start from the individual in the change that takes place out there and see the consequences instead of coming from top to bottom and telling them what to do. That is the big difference. [HR manager]

Thus, the initiative implies a different management approach. Instead of working through big centrally coordinated projects, the development process starts with workers in the factories.


## Enlarging the scope of the industrial worker

The difference with this new initiative, according to HR managers, is the enthusiasm and curiosity about new technologies among workers.

"What happens to these pilots now is that they have probably with their enthusiasm in some way succeeded in creating a curiosity about this. We have said that we only start there and there is no one who has hit anyone in the head that you also need to run this but it has begun to mature and it has spread and people are starting to get curious. And it means that there is also, unlike what happened six years ago, a curiosity about the new technologies, new ways of working to drive my own development not just stand and say that now I have a problem. Why are they are not coming? Something in these pilots, yes, something else has happened around them, which means that you want to be on the train in a completely different way than you think."[HR manager]

Building upon the inspiration and curiosity of the workers in the teams, the bottom-up process should spread within the workplace and across units and functions and perhaps also become a working model to spread to other factories and subsidiaries across the world. Previous initiatives on autonomous teams did not continue, neither did they spread to other units and functions.

One of the potential outcomes of this development process is that the autonomous teams should take on responsibilities from technical support functions. Machine operators should be able to take on work tasks from support functions, for example maintenance of machines in the production process.

Being able to think differently in our processes. It is very interesting. If you take such simple things as maintenance and thus let these take care of the maintenance that happen today (Factory manager]

Figure 1: Enlarging the scope of industrial work
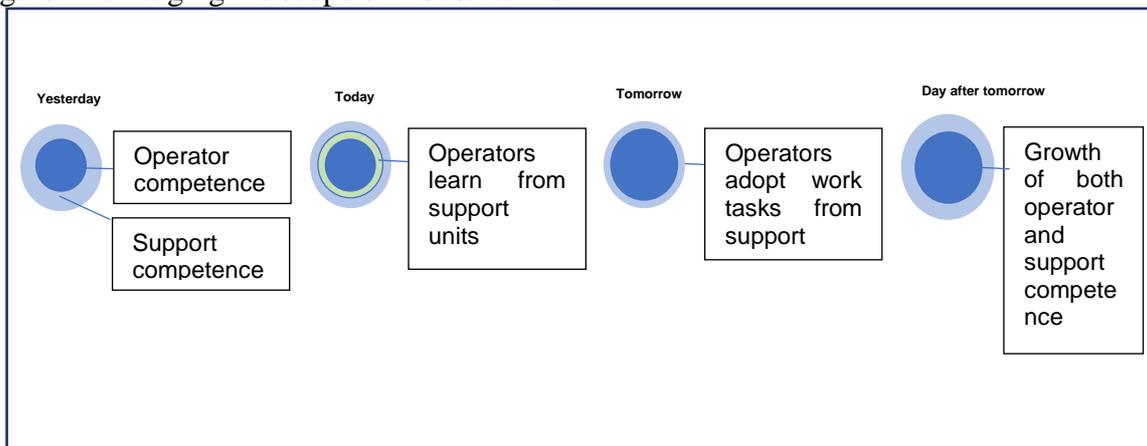


Source: Adapted from factory manager presentation.

When workers take over work tasks from other units, a chain reaction is started. Changes need to be done at the support functions.

It puts other demands on the maintenance system and this is a very typical question for us. Should we have a maintenance system that is common to all Swedish factories. Or can they do something in their own way? If we are to take it for all factories in Sweden, this is a project in three years. But we don't have that time. We need to be faster. How do we solve this then? Yes, then we have operators, who have that competence and can actually solve it, quite clearly. Then the question comes from the support function: - "I'm supposed to do that". -"No, I can do that." It's really exciting.[HR manager]

Ultimately the whole organization will change, including the way of looking at industrial work and what it means to be working in a factory.

Then it is also to visualize. We still find that there is a view, even if it is not conscious, of blue-collar workers, as in some way is a brick that one can only move in and out. Maybe not as much in Sweden, but as you can see more clearly in other countries. So, for me, it will change much more than just these biases that we talk about at times. It will affect so much more, also in our organization at least.

It comes from a central point and is lyrical about the collective employees who have thought it was very good with certain conversations and tools that we have developed centrally. You have had a lot of what you think are people who work out there and now they will drive development so much faster than some of our processes will catch up with. To safely develop things from what we have in a different way than we see today. I think this will be much greater. [HR manager]

The new technology becomes a way to change the attitude of industrial work.

The simple things can be complicated. It's about changing the mindset in a huge organization. The view of industrial workers yesterday versus tomorrow.

According to managers, the digital technologies create new conditions. It is not necessarily the blue-collar workers who are affected by digitalization. It is the workers in the support function. This is due to the speed of technical change.

Yesterday it was like this and tomorrow something completely different change that we in this industry who are used to working with improvements and development of work and responsibilities. Because it is natural to do this. We have accelerated it. There are some things that are interesting that we start but you start as well as around the industrial worker, the person who yesterday stood and screwed in screws and tomorrow the work content is larger and which ones will be affected then? Well it will be the support functions, who will be affected and it is very important too. Sometimes we just think of industrial workers, but there will be very large consequences for the entire organization. We do not just need to train industrial workers to develop, but also people in the support functions. What you did yesterday will somebody else do today and then you need to look where are you in the value chain in a different way. This is where we are today. If you connect it to the technology shift, I think we are trying to have an approach where we need to be clear about which problem the technology will solve so that we do not start at the other end that there is a flora of technology that is available. Then we see how we can use it. The starting point is that here we can solve problems. Let's see if the new technology can help us. That is what the groups are testing now."[HR manager]

When technologies change fast, a normal bureaucratic change process is to slow.

Its places demand on us as an organization. It highlights deficiencies in our bureaucratic processes. It makes it clear that perhaps we are too slow sometimes. It makes it visible, when you have taken yourself up the hill, as it has been, and it starts to roll, then we also have to be very open."[HR manager]

Setting up big change project takes long time and it requires that someone knows what new technologies to implement and that workers accept the changes implemented. The bottom-up process, thus, implies to turn everything upside down. Starting with the inspiration and curiosity of the individual worker and facilitating a change process through the organization.

## Implications for first line managers

The bottom-up process also includes particular attention to first line managers in the factory.

"The big battle, I think, in a production organization, is to bring the right people to the right place in the first line's leadership. This is where we will make a difference. All working methods, everything to be done, all ways of change, everything new, everything we should do differently. All we need to do ends up at the first line leaders. That's how it is in production. That's how it works. A security event that happens, which we must investigate. It happens there. A quality deviation. It's there. It's not with me or Anna [factory manager]. If we go up in volume. Me and Anna [as factory managers] have to reason how it looks in general, for the whole site. But it is ultimately the first line manger who must make the plan, how we should handle that volume. How many people? How much do we need? What capacity do we need to go up and so on?"[Factory manager]

According to one of the factory managers, the bottom up process requires a new type of leadership style. First line managers are seen as too much occupied with administrative burdens. The idea is to set leaders free to take on a more coaching leadership style and support the development of people and the business.

Today our leaders spend a lot of time coordinating support functions, distributing assignments and administering different things. Everything from time reporting to what it can be now. Lots of administration linked to various things we need to do. We have an administrative disease within the company. Very much needs to be documented. We have lots of different systems that occupies the leader's everyday life. What the leaders want to do and the steering group as well, as regards leadership is that we must become much more independent. We want to be able to work more independently with the challenges that we have in front of us. Sometimes it is quite top-down, telling people what to do and what

not to do. We should have a more coaching role. We will put more effort in developing people and the business together. We should not control and monitor so much. The teams should do that. To set leaders free to be more coaching, it's about putting out more responsibility to the team, maybe resolve some of the administrative nightmares that we have and actually remove them."[Factory manager]

The way of working is rather different in different factories. They talk about different sub-cultures.

We work very differently in different factories with training and our view of leadership is also different. We have different degrees of maturity. We come from different sub-cultures. We have had different organizational divisions, but…

I can only speak for this factory; we have spent time talking about what is really about leadership. We have had some local training that we worked on, which is about the mindset, about change journeys. About values and so on.

Traditionally first line managers are recruited among the operators. But the new developments imply that people with other skills may need to be recruited. According to managers, there is a need for more diversity, including more women at the workplace and taking leading positions.

Many of our leaders have gone all the way. I think that's good in many respects. The challenge we have had, if you go back five years in this factory, of all 100 production managers, three of them were women. Maybe it was five or two, but you understand. Three of them had academic experience or education. Only two of them come from the outside, maybe. 90 percent have been people who have grown from operator to leaders. It doesn't have to be wrong. But what we have done now is that we want a more diverse leadership team. We believe that we want significantly more women. We are now at 25 percent. We need to add on other abilities. We also need to look at what we can find externally. So now maybe we are 20 women.

A diverse workforce is seen as contributing with other experiences, people with other ways of thinking. This also includes people with more academic background.


### Consequences on social dialogue

The new way of working may also have consequences for the relationship between social partners and social dialogue. So far, the focus has been on getting the process going.

It is so far a small-scale format. You want to scale it up all the time. There are a lot of issues yet to be solved, for example the trade union aspects and responsibilities we try to deal with and we have not yet started a dialogue about this with the trade unions, but they are also very open to let us start rolling and then we will see where it ends.[Johan]

Social partners are not entering the collaboration from their traditional roles. They are rather looking for the outcome in the longer term. The initiative may problematise several issues, such as boundaries between different groups of workers, blue collar versus white collar workers, but these are to be dealt with at a later stage.

We do not enter this through our traditional roles but rather what is the outcome in the end. They have certainly understood that this will affect our trade union roles and boundaries and interfaces, too, in the long run. So, it is very important that we have a new way of working with this search for how our jobs will look like in the future? [HR manager]

When workers take on more responsibility there may be a need to renegotiate working conditions and borders between different units and occupational groups.

Now we have driven the pilots for just over a year and a half. Now we are beginning to learn from it. What is it that we can learn from the three different factories? What can we observe? That's where we are

today. Actually. There is a huge interest in it. There are few French colleagues and there are some colleagues. Everybody wants, to find out, like. What is this?[HR Manager 2]

According to a local Trade union leaflet, the new way of working is seen as a good initiative with clear goals.

"The trade union will be involved in shaping the industrial work of the future and working for: - developing, cross-border jobs.

- better ways to organize the work

- Training/competence development in the new technology

- organization and payroll systems that promote development and productivity

- to increase the employability among members

- the right to a functioning restructuring. "[Trade union newsletter, 3 April, 2018]

Local trade union representatives hope that the initiative will turn out to be beneficial for workers. However, there are also concerns that the process will end without much change.

"But there is a certain scepticism among the workers. "We've heard it before," is a recurring comment. But local representatives of the trade union and management really want to give them a real chance. They see risks of course. An imminent risk is that the engagement cools down, or that people do not feel that it leads anywhere, but merely becomes a public relations thing or new rationalization project. We have received signs that it is only the team leader or other manager selected who comes loose and gets the opportunity to think freely and develop themselves. We hope that this is something that the responsible person in the project will take at the time to come."[Trade union newsletter, 3 April, 2018]

## Challenges to development

The work in the factory is organized in what is called five-shift. Some teams work two shifts, i.e. morning or evening shifts. Others work night shifts and yet others work only in the weekends. This means that teams work more or less independently over the work week. They seldom meet each other. Teams are not equal in terms of the number of people working in each shift. During nights and weekends there are fewer people working in the teams.

The shift work structure creates challenges for the ambition to develop new ways of working. The everyday development initiatives only take place during day time. This means that the development is only limited to those workers who are working day shifts. Night shift and weekend workers are not involved in development activities to the same extent. This is seen as a challenge. Some workers will be more involved than others.

Those who work daytime will be more involved. There are meeting structures, people here that you can talk to about different things. This is one of the challenges we must solve. It is the daily improvement work. It's the same challenges there. It often goes better during the day. [Factory manager]

The reason is that support structures and managers are only available for those teams working day shifts.

You could probably get this started at least as good at nights and weekends. For the benefit of these shifts is that all the support structure sometimes disturbs the teams. It is because of the meeting structures. You have to go the meetings. For example, somebody's calling me and needs help with something. You can work much more independently on odd shifts. [Factory manager]

Another challenge is related to labour turnover. Labour turnover implies that new workers need to be recruited and trained. This reduces the competence level and independence of

teams. They need to keep up with the basic training, rather than taking on the more advanced work tasks.

Labour turnover varies between different units and occupational groups. Engineers and other higher educated workers are more mobile. Assembly line workers are more mobile than process operators, who are more attached to the job and the employer.

> At the assembly line we have the most, it usually is. At this site we may have a 4-5% turnover per year. At the processing unit it is not as mobile. Traditionally, it has not been as much. If you have become a Swemantec employee, you will continue to work. [Factory manager]

Development activities may take time from everyday work responsibilities. It may be difficult to give priority to development activities when there is a need to achieve production goals.

> Personally, one may think that you don't have time to do it. It takes time from production. [Factory manager]

When workers are engaged in development activities they may be temporarily replaced by workers from another unit, sometimes from a temp agency.

> I know, for example, when we talk about [name of operator], who is going to go on training with the quality unit. It takes time. Then the unit borrows an operator from another unit to cover that need. In some cases, we may have chosen to bring in an agency worker for a shorter period. [Factory manager]

To be able to create development, additional resources, in terms of additional people, are therefore important.

> We always need some extra people. Each department takes into account sickness absence, it is not always the same. On a site with three thousand people, there are always people I can take in and out. [Factory manager]

Knowledge and experience of the work tasks is an important limitation. The more advanced the work tasks and the technology, the more difficult it is to find substitutes who are able to take on the work tasks of those who are temporarily away on development activities. There needs to be some level of mobility among team members and between teams, but at the same time cost should be kept at a reasonable level.

> They must be able to. It is one of the most exciting challenges we face. To be able to work and become more independent, you have to work on improvements. You have to be away sometimes. Then you have to find some kind of mobility, to cope with it without having to put on several millions of costs. Finally, you have drawn on an increased cost and then it just gets right down the ditch. [Factory manager]

Thus, in order to create development, there is a need for some slack, to have time to do other things than performing the everyday work activities or to have additional people around that can replace workers when they are involved in development activities.

Development is in particular difficult when business cycles go down. Then there is less space to let workers engage in development activities.

> Yes, we really must, really, really care that we deal with such a situation. This puts demands. It's a challenge. Everyday. Do I really have time to do this now? [Factory manager]

The balancing between short term production goals and the need for development becomes a challenge for managers. Managers are evaluated based on the performance of production units. The performance of production units is evaluated through key performance indicators (KPI:s), production goals in terms of volume and quality.

> We set goals and always want to improve. We want a 100 percent quality outcome. All engines must be completely right every time. But if 10 percent does not, then we have to start thinking about how we

should make sure that we actually reach 100 percent. Then we must have people who work with improvement. There is no other way! It will be impossible if we do not get time for improvement work. Sometimes there will be a catch 22 situation. We need a little more people to get better, but at the same time we have to keep track of the costs. There are no simple answers to that. [Factory manager]

Managers need to dare investing in learning, skills development and improvement, potentially at the expense of delivery in relation to short term goals.

You have to balance on a slack line sometimes. The idea is that what we do here will contribute to our results that we already deliver today. It is not so much other results that we really want to achieve. We want our performance to be better and this is about more people being involved in improving our performance. We think about whether we should have some special performance indicator for this. How do we measure the progress? I think we can measure based on the KPI:s that we already have. But it just gets something extra. What we do over time will help to perform in the KPIs that we already have. [Factory manager]

The outcome of development activities is, however, difficult to measure. It is difficult to see that an extra hour spent on exploring new ideas leads to further improvement in the longer term. Therefore, it becomes a matter of faith, consider for example how one the factory manager describes his job:

We are very humble because we do not have all the answers, but we have a very strong faith. We will have learned something new in three months. We have not set a game plan for four years ahead. Not yet anyway. [Factory manager]

The adoption of new technologies in the workplace, thus, seems to be a matter of believing in the possibility that development takes place if people get a chance to explore and learn new things.

I think it is very much about developing our ability to learn new things. That's what happens, I hope, over time. When I have an ability to learn new things, then I will also be able to contribute with the other three tasks in a completely different way and I will also want it. When I have developed an ability to learn then I will find it fun. That's what I think anyway. If we, as an organization, have a very good ability to learn new things, we will manage most things. That is what we are entering into now, it is a change of skills. We can do that by putting in a number of technologies. But if we have people who do not have the ability to learn, or develop it, how good will it be then? [Factory manager]

Putting trust in people, giving them a chance to develop, offering them the freedom to learn new things also contributes to other work tasks.

Individual development is important. That's in a way where you should evaluate this project? If I work in this business and I have not developed at all, I have not been challenging myself, then there will only be empty words? It is a feeling that I am developing. I think it's really important. If I feel when I go to work and develop, I feel that there is a vision and meaning. I feel that I am involved in something. Then it'll be damn good! [Factory manager]

The future of industrial work at Swemantec is thus not a workplace where workers are controlled by or substituted by machines and new technologies. It is about empowering each and every individual to continuously learn new things.


## Discussion and conclusions

The aim of this report was to contribute to a better understanding of the conditions for adopting new technologies in the manufacturing industry and the role of social dialogue in such processes. Drawing upon interviews with HR managers and factory managers, this case study illustrates the role of social dialogue in establishing the conditions for adopting new

technologies in the workplace and at the same time improving working conditions for workers. The initiative called "the future of industrial work" was initiated through a collective agreement between local social partners. The local trade unions, on the one hand, regarded the initiative as a way to improve working conditions, to reduce repetitiveness and enhance development opportunities for workers. The employer representatives, on the other hand, regarded the initiative as a way to make industrial work more attractive and stay competitive in the automotive industry.

The case study findings show that the adoption of new technologies at the workplace level is not an easy task. There are several barriers to be overcome. First, digitalization implies that there are several new technologies available that could be implemented to improve efficiency in the production process, but it is not easy to know which one to adopt. The initiative implies that adoption of new technologies should be based on identified problems at the workplace level, not problems identified by central level engineers or managers to be "dropped down" onto the workers. Second, there is also great variation in terms of what technologies to adopt. Local workplaces are not the same and since it is uncertain what technologies to adopt it is difficult to identify training programs that would cover the specialized training needs for workers to be able to take on the new technologies at the workplace level. Instead, the initiative is based on stimulating learning and development in everyday work, for example through job rotation or job enrichment, where teams take on more responsibilities from technical support functions, e.g. Maintenance, Quality or IT-departments. Third, workers are often tied to the production process, existing responsibilities and tight production goals, leaving little room for development. The initiative therefore places heavy focus on first line managers and their role in balancing the need to achieve production goals with the need for development by leaving space and time for workers to explore new technologies and improve production processes as part of their everyday work. Thus, there are several barriers to overcome to change towards the future of industrial work.

The nature of the new digitalized technologies, however, provides new opportunities for the improvement of industrial work. While the new technologies are advanced, they are also simple, in the sense that they are easier to adopt, not always requiring technical expertise to adapt them to the production process. (For example, image monitoring devices, tablets, monitoring apps are more or less self-instructive.) This implies that the introduction of new technologies does not always have to go through the technical support functions, the technical expertise. Instead, workers are able to identify and explore what new technologies to adopt and test them in the workplace. Doing so also implies that working conditions for factory workers are improved. The adoption of new technologies in the production process is to some extent democratized. New technologies can be introduced through competent industrial workers in the workplace. The key elements in this process seems to be the curiosity in the possibilities of the new technologies among workers and for managers, it is the trust in the workers ability to develop and faith in that the process leads to long-term improvements. Without these elements, workers would only leave technological novelties to engineers and they would not be offered time and space to explore the new technologies. The future of industrial work initiative at Swemantec is, thus, interesting in several ways.

First, it contributes to our understanding of the impact of new technologies in the workplace and to the broader literature that speaks about the impact of technologies in the labour market. The findings support previous findings that new technologies have an impact on industrial work, but not necessarily in the way suggested by previous studies. As shown, the introduction of new technologies does not necessarily contribute to make work more

standardized and repetitive. (It already was) The way new technologies were introduced, as part of a solution to problems identified by workers on the shop floor may contribute to make work less standardized and repetitive, building on the technological curiosity and willingness of workers to develop themselves, their team and the business. The possibility of such bottom-up processes, is something that should be taken into consideration when accounting for the impact of new technologies in the workplace. Thus, adoption of new technologies may be driven by workers, rather than imposed upon them.

The findings also problematize the conceptualization of new technologies as a threat, possibly limiting the space of industrial workers, emphasizing the need for higher-level skills, training and demand for technical skills in the labour market. As shown, while the competence of employees was important, it was rather the mindset, the curiosity and interest among workers in exploring the possibilities of new technologies that served as the key driver in the process. Furthermore, since the initiative was based on industrial workers taking on more responsibility and work tasks from technical support functions, job loss and job destruction as a result of the introduction of new technologies in the workplace would affect technical support functions rather than operators in the factory. The findings, thus, suggest that a single focus on workers' skills and competencies and the threat of job loss for manual and lower skilled workers seem to be too limited and one-sided to fully understand the dynamics involved when new technologies are introduced in the workplace. The case study thus contributes to our understanding of the adoption of new technologies in the workplace and the labour market by offering further insights in an alternative process, not presuming that technologies deskill workers or destruct jobs. On the contrary, new technologies can be a tool for workers to improve and enlarge jobs and make industrial work more attractive.

Second, despite the enormous attention to digitalization, automatization and the impact of new technologies in the labour market, researchers and policy makers have on the whole paid little attention to how new technologies are introduced in organizations. Most studies have investigated the correlation between the availability of new technologies and labour market outcomes, such as employment, assuming that technologies have a more or less direct impact on employment. There is an emerging literature on responses to new technologies at the workplace level, however, their conceptualization is still limited as they are not taking into consideration how new technologies are introduced in the organization. This case study thus contributes to this emerging literature by offering an empirically grounded analysis of how new technologies are introduced in the organisation, allowing us to understand the specific conditions and potential effects. The impact of new technologies in the workplace is dependent on how technologies are introduced and, perhaps most importantly, who are involved in the adoption process. The case of a collaborative agreement between workers' and employers' representatives providing legitimacy and trust in a bottom-up process were workers on the shop-floor are made responsible for exploring the possibilities offered by new technologies may be an extreme case with limited applicability to other companies and industries. However, we are only beginning to understand the effects of such practices in organizations. Since new technologies are continuously introduced in organizations across the world, future studies should pay more attention to how technologies are introduced in organizations and the outcomes of different technology adoption processes. It is possible that the outcome of the adoption of new technologies is different for both workers and for employers when introduced through the involvement of workers at the workplace level, rather than through top-down implementation processes where new technologies are imposed upon workers. At Swemantec, the introduction process was turned upside down, based on workers'

willingness, curiosity, freedom and initiative, rather than being determined, controlled and limited.

This study of course has limitations. It is based on a case study with a limited number of interviews at a particular point in time. We are limited to a limited number of respondents' understanding of the initiative and do not have access to the broader impact of the initiative in the organization. The temporary limitation also means that we are not able to explore the longer-term outcomes of the process. It is possible that the ambitions of the involved actors do not materialize or that the "energy" and curiosity of workers fade out. Future studies should follow the developments that unfold among workers in the longer-term. The study may also be limited to the specific conditions of the advanced and established manufacturing industry, where technologies are rather mature and revolutionary changes in the use of technologies are rather rare. It is possible that the conditions for the adoption of new technologies are rather different in other industries or sectors. The study is also limited to the particular conditions offered by the Swedish context, with its particular constellation of collaboration between social partners and, perhaps most importantly, the trade unions' rather progressive view of change and technological investments as a way to improve working conditions for workers. In the Swedish context social partners have an important role to play, not only in wage bargaining, but also in adapting to new conditions, including establishing the foundations for introducing new technologies. In countries where trade unions have a less progressive view of the possibilities offered by new technologies, results may have been rather different. It would therefore be relevant to study how the "future of industrial work"-initiative translates to Swemantec subsidiaries in other countries, where industrial relations frameworks and social dialogue take on a rather different form.

Nevertheless, the case offers an example of the fact that there does not need to be an opposition between workers' interest and the introduction of new technologies. It is not necessarily the technologies that provide a threat to workers, it is how technologies are introduced that constitutes a threat.