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Challenges and Potentials of IIoT for Co-Determination in Companies

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Abstract. The advent of the Industrial Internet of Things (IIoT) brings about special challenges for works councils. By revealing their hopes and fears in a qualitative interview study, we shed light on challenges and opportunities for participation from a workforce perspective. We argue that IIoT should not be introduced one-sided: The potential benefits for workers should be always kept in mind in order to make IIoT an accepted technology that contributes to the process of solving conflicting interests between works councils and management in its function as mediating measure.

Introduction

While differing in its extent, the concept of co-determination is a central part of employees' rights and obligatory by law in many western societies. On the international level, Germany takes a pioneering role with a comparatively high number of secured rights by the "Betriebsverfassungsgesetz" (Works Constitution Act) (Niederhoff, 2005). Still, similar legislation in other countries also determines the work areas and tasks to be fulfilled by works councils (Wirtschafts- und Sozialpolitisches Forschungs- und Beratungszentrum, 2005).

The concept of co-determination in companies exists in the following areas, whereby the rights vary from the right to information to actual co-determination rights: For example, work councils are representing the workforces' interest in terms of social affairs, workplace design and work processes themselves. Additionally, the works councils sometimes have a say in the area of human resources management, including vocational training, individual personnel

measures, and notices of termination. In larger organizations, they may even be included in the economic affairs of the corporation (Niederhoffs, 1977).

In addition to the legal basis, there are also individual approaches to organizing companies even more democratically for e.g. by granting employees shares in the company or by having grassroots democratic structures of decision-making (Zeuch, 2015).

The introduction of IIoT has the potential to change work processes profoundly, even to automate them completely and to make many aspects of working life traceable in a directly or indirectly way. There are two sides to this coin, as those developments may be in favor for the employee or even harm his work life (Atzori, Iera, & Morabito, 2010; Sattelberger, Welppe, & Boes, 2015). In this area of tension, works councils are in the special position of representing the interests of company's employees while needing to acknowledge economic potentials and necessities from a management point of view. For a better understanding of how not only workers, but also works councils are perceiving the balance of threats and benefits with regard to IIoT, we conducted four interviews in companies from the car trade, the sector of telecommunication and the manufacturing industry. Additionally, we included an interview with a works council consultant as well.

Works Councils' Reflection on IIoT

The size of the companies that build the basis for the underlying interviews, is ranging from roughly one hundred employees up to workforces that number several thousand workers in all. Except for the consultant, the interviewees were all either chair or deputy chair of the works council. All of the seven interviewees were male and had several years of experience in the field of co-determination and as a works council. Besides the range of industrial sectors, in which the works councils are experienced in, the interviewed consultant allowed us to include experience from a multitude of companies from several fields, and thus further broadened the picture for this investigation.

The analysis of the interviews produced three topics of interest within the theme of this workshop paper:

1. The subjects were aware of possible threats and expressed fear towards the upcoming changes that IIoT will bring:

"There will also be winners, of course, but when you think about how many jobs are actually in danger, through digitalization, which people do not even suspect yet can become frightening. In Germany too. Tesla is such a great example here - Highly acclaimed! They're building factories where there's no workers left, only robots (...)"

The interviewee mentions the positive and negative effects of new technologies on work methods as well as the demand for labor and criticizes the race for the automated factory running without human agency.

2. The subjects also have a sense for the alteration of their organizational tasks:

"One cannot oppose technical developments with co-determination rights, but one must always deal with them and always shape what is tolerable for employees and staff and what is not. I don't think there's a panacea for that either."

They acknowledge the necessity for technological change for their own and their companies' well-being and thus do not see any reason to behave as luddites and avert digital transformation by use of their given co-determination rights.

3. At the same time, the work councils were aware of the importance of their active work and the use of their rights:

"But at least as a works councilman, you've got it all under control. "

To a certain degree, the interviewees criticize the changes and acknowledge that there will be negative effects on the workforce yet know that as a works council they can still act and creatively alter the developments to come in a favorable way.

The consultants' experience showed that many works councils have problems with staying up to date in the world of IIoT and struggled with assessing potentials and consequences of digital transformation within their companies and for their co-workers:

"The role is however, to be at the pulse of time and actually to be much more active, proactive and not to wait for something to happen. As far as Industry 4.0 is concerned, they are sensitized Germany-wide, but there is still not happening enough, they still can't get a grip. And they have to keep their finger on the pulse of time, may even reinvent themselves and also reinvent co-determination within the company."

The Interviews clearly showed that works councils contemplate and pay attention to the changes that IIoT will have on their own work as well as on the work of the workforce they represent. They know they are not able to prevent IIoT yet see their ability to creatively shape the developments in accordance to their function as works councils.

Mediating Corporate Goals and Worker Interests

Whereas the legal groundwork for co-determination in companies typically exists in many western societies, a central challenge often is found in the enforcement of rights. Works councils are sometimes perceived as an opponent by

management – as an inhibitor to company goals, which is partly actively opposed by the management (the so called “union busting”) (Rügemer & Wigand, 2014).

The key challenges of IIoT, as perceived by our interview partners, are the monitoring and automation potentials of these new techniques, which potentially influence privacy or may lead to machines performing tasks formerly done by humans and thus replacing the workforce. Especially when introduced one-sided by a top-down management decision, work councils foresee or have already experienced conflicts. On the other hand, IIoT also provides measures and tools for countering foresaid challenges and provide the workforce with potentials to improve their work life. Cooperation of the management and the works council at eye level can be seen as a necessary pre-requisite for an effective introduction of IIoT in a company.

From our interviews, we see the following aspects as potentially helpful strategies for anchoring IIoT economically and socially successful in the company:

- Consideration of privacy needs and management interests. The works council is obliged to balance these two in order to ensure the longevity of the company. This view has of course to be shared by the management.
- The works councils need to have an overview and an assessment of consequences of the introduction of IIoT within their company to act according to their interest rather than to react to decisions already made. This will help them to stay on top of changes and developments to come and thus being able to communicate necessary steps with the workforce, which will in return yield in a higher support among their voters.
- Creation of advantages through IIoT not only for the company but also for the employees. As mentioned above IIoT can have positive effects on the work by assisting the human workforce and thus making work safer and reducing health risks. In return, this can have positive effects on the profitability of the company.

Regarding the two points mentioned above, it has been shown in CSCW and HCI research that this topic is concerned with the design of assistance and monitoring systems to support people in this analysis and the associated use of data. It is of high importance to take into account the different contexts of use as well as the abilities and mental models of the individual users (Bellotti & Edwards, 2001; Castelli u. a., 2017; Fekete, 2004; Lieberman, Paternò, Klann, & Wulf, 2006; Rohde, Brödner, Stevens, Betz, & Wulf, 2017).

In conclusion, we suggest providing usable tools for visualizing existing and future corporate data collection and means for works councils to better evaluate the introduction of IIoT. Finally, we call for respecting the demand for safeguarding the work force in terms of privacy and automation. We believe that IIoT should not solely be implemented for a direct return of invest but must always keep an eye on

the aspect of how to possibly provide benefit for the work force as well to raise acceptance and become a win-win-technology.

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