

# BUILDING COLLECTIVE INSTITUTIONAL INFRASTRUCTURES FOR DECENT PLATFORM WORK: THE DEVELOPMENT OF A CROWDWORK AGREEMENT IN GERMANY

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## ABSTRACT

*Working conditions on many digital work platforms often contribute to the grand challenge of establishing decent work. While research has examined the public regulation of platform work and worker resistance, little is known about private regulatory models. In this paper, we document the development of the “Crowdwork Agreement” forged between platforms and a trade union in the relatively young German crowdworking field. We find that existing templates played an important role in the process of negotiating this new institutional infrastructure, despite the radically new work context. While the platforms drew on the corporate social responsibility template of voluntary self-regulation via a code of conduct focusing on procedural aspects of decent platform work (i.e., improving work conditions and processes), the union contributed a traditional social partnership template emphasizing accountability, parity and distributive*

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Organizing for Societal Grand Challenges

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*matters. The trade union's approach prevailed in terms of accountability and parity mechanisms, while the platforms were able to uphold the mostly procedural character of their template. This compromise is reflected in many formal and informal interactions, themselves characteristic of a social partnership approach. Our study contributes to research on institutional infrastructures in emerging fields and their role in addressing grand challenges.*

**Keywords:** Institutional infrastructure; governance; digital platforms; regulation; decent work; grand challenge

## INTRODUCTION

Digital platforms are a new form of organizing which permeate many societal domains (Cusumano, Yoffie, & Gawer, 2019; Kenney & Zysman, 2016; Sundararajan, 2017). A particularly salient form are crowdworking platforms (henceforth called platforms) that intermediate between firms requiring a workforce for a specific task (e.g., designing a new logo) and individuals constituting a crowd that is willing to work on these tasks (Gegenhuber, Ellmer, & Schüßler, 2021; Kuhn & Maleki, 2017). Some platforms specialize in work that individuals can perform online, thereby creating global labor markets (“cloud work”) (Bauer & Gegenhuber, 2015; Howcroft & Bergvall-Kåreborn, 2018). In contrast, other platforms provide an infrastructure through which individuals offer spatially bound services (e.g., providing physical services, “gig work” or “peer-to-peer sharing”) (Kirchner & Schüßler, 2019; Reischauer & Mair, 2018b). Platforms tend to emphasize the advantages of their model for crowdworkers: they provide an alternative for individuals who cannot find jobs in traditional offline labor markets or have care responsibilities (Huang, Burtch, Hong, & Pavlou, 2020). Moreover, crowdworkers enjoy a high degree of flexibility and autonomy, especially with respect to when and (at least in the case of cloud work) where to work (Ghezzi, Gabelloni, Martini, & Natalicchio, 2017).

Despite these advantages, platforms have increasingly been criticized for fueling the grand challenge of establishing decent digital work (Cutolo & Kenney, 2021; Schor & Attwood-Charles, 2017). Three issues are critical. First, especially platforms with strong bargaining power tend toward exploitative work practices, unclear governance structures and ignorance of worker concerns because of their dominant position (Barzilay & Ben-David, 2017; Wood, Graham, Lehdonvirta, & Hjorth, 2019a). Second, platforms tend to nurture low-wage jobs that reinforce existing inequalities (Wood, Graham, Lehdonvirta, & Hjorth, 2019b). Third, platforms may follow a dominant pathway of venture-capital driven “ultra-fast growth at all costs,” thereby disregarding workers’ interests in to order reduce costs (Davis, 2016).

Different actors have responded to this criticism. Public regulators on the state and local level have used a variety of more accommodating (e.g., information exchange) and more restrictive responses (e.g., bans) (Frenken, van Waes, Pelzer, Smink, & van Est, 2020; Gorwa, 2019). However, researchers have

pointed to a delay in public reactions toward rapidly growing platforms (Hinings, Gegenhuber, & Greenwood, 2018; Kirchner & Schüßler, 2020). Another set of actors responding to platforms are associations and civil society groups that develop private regulations. Examples include business associations and trade unions in established markets such as transportation (Thelen, 2018), grass-roots activism by workers, sometimes supported by consumer groups (Healy, Pekarek, & Vromen, 2020), and even collective action by workers, unions and platforms themselves (Cutolo & Kenney, 2021).

In the realm of global supply chains, sometimes seen as a precursor to the highly decentralized work relations organized by platforms (Davis, 2016; Kirchner & Schüßler, 2020), so-called private regulation of labor standards is widespread (Bartley, 2018). Whereas unilateral, voluntary self-regulation efforts of corporations are typically ineffective in ensuring decent work standards (Locke, 2013), more collective and union-inclusive governance approaches have gained traction, particularly in the garment industry (Ashwin, Kabeer, & Schüßler, 2020; Reinecke & Donaghey, 2015). To date, we know little about collective private regulatory initiatives for platform work; i.e., initiatives that go beyond the algorithmic work regimes developed by the platforms themselves (e.g., Kornberger, Pflueger, & Mouritsen, 2017), let alone collective initiatives involving trade unions. Following the call by Trittin-Ulbrich, Scherer, Munro, and Whelan (2021) to shed more light on the governance and regulation of platforms, in this article we aim to better understand how such initiatives can develop despite the facts that crowdworkers are typically not unionized, unions have little experience in organizing in non-traditional markets and platforms do not consider themselves employers and have little interest in collective work regulation.

To answer our research question, we draw on the institutional infrastructure concept. As recent advances have shown, nationally embedded actors and institutions play a strong role in governing platform work (Frenken, Vaskelainen, Fünfschilling, & Piscicelli, 2020; Hotho & Saka-Helmhout, 2017). Here a field perspective is particularly useful to understand the dynamics of contestation between platforms and established actors (Johnston & Pernicka, 2020; Kirchner & Schüßler, 2020; Wruk, Schöllhorn, & Oberg, 2020). Institutional infrastructures then point to the “cultural, structural and relational elements that generate the normative, cognitive and regulative forces that reinforce field governance” (Hinings, Logue, & Zietsma, 2017, p. 163). An institutional infrastructure is the “set of actors and structures, which have the role of judging, governing or organizing” a field (Hinings et al., 2017, p. 174). As the institutional infrastructure perspective focuses on both formal and informal rules of governance arrangements, it allows a holistic view of the purposeful actions used to reshape fields, not least those forming around platforms (Logue & Grimes, 2019).

We qualitatively examine the emergence of a collective institutional infrastructure to regulate platform work in Germany. This initiative, which we call the “Crowdwork Agreement,” was jointly developed by platforms and the German trade union IG Metall, making it a revealing case for how private collective platform regulation can develop. We trace the antecedents of this initiative

by triangulating interview, archival and observational data. We found that the Crowdwork Agreement was fueled by two drivers: platforms' motivations to avoid public regulation while, at the same time, differentiating themselves from exploitative American platforms, and the union's interest in playing a role in shaping new, digital work arrangements. In developing this agreement, the actors mobilized different "old economy" templates which were ultimately combined: the corporate social responsibility (CSR) template of voluntary self-regulation, and the social partnership template of cooperative relations between capital and labor (Behrens & Helfen, 2016). The Crowdworker Agreement is a compromise between the two templates (itself another characteristic of social partnership). We theorize these insights with regard to the literature on institutional infrastructures, platform work regulation and decent platform work as a grand challenge.

## CONCEPTUAL BACKGROUND

### *Working Toward Decent Platform Work Through Governing Labor Relations*

Decent work is one of the sustainable development goals (SDGs) developed by the United Nations and is increasingly debated with respect to working online (Berg, Furrer, Harmon, Rani, & Silberman, 2018). Introduced by the International Labor Office (ILO), this concept includes work that meets the conditions of freedom, equity, security and human dignity. As Ghai (2003) outlines, this involves distributive as well as procedural dimensions: employment, both to workers in the formal economy and unregulated wage workers or self-employed; fair remuneration, as well as social and income security; and workers' rights, particularly freedom of association, non-discrimination at work and social dialogue to negotiate work-related matters.

As noted, decent work is increasingly seen as a grand challenge that is fueled by platforms (Kirchner & Matiaske, 2020; Kaufmann & Danner-Schröder, 2021; Pittman & Sheehan, 2016). These downsides have prompted new governance approaches that address both distributive issues (such as minimum wages, social security independent of employment status and collective interest representation) and procedural issues (such as proper and transparent rules for work and remuneration processes) (Berkowitz & Grothe-Hammer, 2021; Howcroft & Bergvall-Kåreborn, 2018; Kirchner & Schübler, 2020). For each governance approach, platforms are the targeted actor as they are market organizers (Grabher & van Tuijl, 2020; Kirchner & Schübler, 2019). Two actors in particular have been important so far: First, public regulators have intervened in various ways (Frenken et al., 2020). Second, workers themselves are increasingly contesting the power of platforms by creating bottom-up associations or independent unions (Animento, Di Cesare, & Sica, 2017; Wood et al., 2019a), sometimes supported by consumer groups (Rahman & Thelen, 2019) and established actors; notably, industry associations (Thelen, 2018) and trade unions (Greef, Schroeder, & Sperling, 2020).

Private regulatory efforts are typically widespread in areas where both state regulation of work and worker power are weak, yet contestation of work practices is high (Helfen, Schübler, & Sydow, 2018; Reinecke, Donaghey, Wilkinson, &

Wood, 2018). In global supply chains, which started decentralizing and deregulating work relations long before digital platforms (Davis, 2016; Kirchner & Schübler, 2020), private regulation has, at least in some industries, progressed from a voluntary self-regulation model toward collective and even union-inclusive governance approaches (Ashwin, Oka, Schübler, Alexander, & Lohmeyer, 2020; Kaufmann & Danner-Schröder, 2021; Reinecke & Donaghey, 2015). Global union federations have played an important role in becoming a counterpart for multinational corporations and drafting global framework agreements (Fichter, Helfen, & Sydow, 2011). This research has shown that informal social dynamics play a key part in shaping such private, collective institutional infrastructures. Building an institutional infrastructure to achieve decent platform work thus not only involves reorganizing formal regulatory structures, but also informal interactions in common spaces to build trust among key players, develop a common understanding, and forge new coalitions between new and established actors, both public and private (Ashwin, Oka et al., 2020). As we show next, the institutional infrastructure perspective is a promising lens for examining both formal and informal governance mechanisms.

#### *An Institutional Infrastructure Perspective on Governing Labor Relations*

Examining settings such as forestry, impact investing or civic crowdfunding, scholars have adopted the perspective of institutional infrastructure to apprehend the conditions and dynamics of large-scale changes (Hinings et al., 2017; Logue & Grimes, 2019). Organizational fields consist of actors who consider one another in their actions; the “institutional infrastructure of organizational fields comprise the mechanisms of social coordination by which embedded actors interact with one another in predictable ways” (Zietsma, Groenewegen, Logue, & Hinings, 2017, p. 5).

Analytically, a field’s institutional infrastructures comprise both formal governance mechanisms and more informal templates and norms (Hinings et al., 2017). Examples of formal mechanisms include regulations, standards, rewards and sanctioning mechanisms, events in which these activities take place (e.g., proceedings, conferences, meetings) and associated actors, especially collective interest organizations such as unions, professional or industry associations, regulators or certification, standard bodies or media (Hinings et al., 2018; Schübler, Ruling, & Wittneben, 2014; Mair & Reischauer, 2017). These actors vary in their governance role and can have different scopes and interests and shape dominant practices in a field (Heimstädt & Reischauer, 2019). Informal mechanisms (namely, norms, values and meanings) underpin and complement formal mechanisms (Hinings et al., 2017).

The institutional infrastructure perspective is useful for examining the governance of labor relations toward decent platform work for two reasons: First, the specifics of a field and the national configuration of the employment system shape labor relations (Frenken et al., 2020; Hotho & Saka-Helmhout, 2017); for example, countries such as the United States tend to have fewer institutionalized labor relationships compared to countries with a more elaborated tradition such

as Germany, where social partnership has a strong normative foundation based on informal interactions and experiences between employers and unions, among other factors (Behrens & Helfen, 2016). Thus, we can assume that institutional infrastructures from existing fields play a role in shaping how a platform operates in a given national context (Rahman & Thelen, 2019). In this regard, platform work differs from global supply chains in that platforms affect work relations in the regulated economies of the Global North as much as in the Global South (Vallas & Schor, 2020). Second, with its emphasis on the effects of formal and informal mechanisms, the institutional infrastructure perspective allows us to carve out how to achieve large-scale, sustainable changes over time in a given context. In fact, Hinings et al. (2017) call for research that zooms in on the creation of institutional infrastructures to better understand how these infrastructures arise and evolve in emerging fields, arguing they may stem from emerging categories and cultural codes or from cross-field relations. Against this background, we ask: *How do private, collective institutional infrastructures for regulating digital platform work develop in new crowdwork fields marked by weak public regulation?*

## SETTING AND METHODS

In light of our research question, we chose a single case study design (Yin, 2009). The empirical context of our study is the crowdworking field in Germany. The term crowdworking is a shared category used by trade unions, industry associations, foundations and government alike, independently of any particular industry context (i.e., platforms operate in various industries). The core of the field's population, the platforms, share more or less similar organizing principles. For example, the German government defines services delivered by online platforms digitally for clients as "crowdworking" (German Parliament, 2014). In line with the institutional infrastructures view (Hinings et al., 2017), we conceptualize this field as having a low degree of coherence and low elaboration. There is a lack of governance at the field level and an undeveloped shared understanding about the various actors' roles and responsibilities. It is also quite young; the first crowdwork platforms emerged around 2007. This is in stark contrast to, say, the German automobile sector with its longstanding history and highly institutionalized actors such as trade unions or industry associations.

There were two actor groups behind the new institutional infrastructure: the German union IG Metall, on the one hand, and platforms and their industry association, founded in 2011, on the other. The participating platforms provide a technical infrastructure primarily for cloudworking tasks such as design, crowd-testing, content creation and micro-tasks (e.g., image tagging). With 2.27 million members, IG Metall is Germany's largest union. It has traditionally focused on organizing labor in the automobile, steel and other capital-intensive industries. In Germany, IG Metall, and, to a lesser extent, service sector union ver.di and the Hans Böckler Foundation, a foundation closely associated with trade unions, have engaged in the crowdworking field by publishing position papers, commissioning studies or offering consulting services for crowdworkers.

These actors launched a collective private regulation arrangement (i.e., an institutional infrastructure) which we refer to as the Crowdwork Agreement. As of 2019, nine platforms have joined the Crowdwork Agreement, equalling a crowd network of about 3.4 million people,<sup>1</sup> accounting for a significant share of crowdworkers in Germany. For certain activities of the Crowdwork Agreement, a crowdworker takes place on the side of the trade union.

Though currently in decline, social partnership models have a long tradition in many sectors of the German economy (e.g., [Doellgast & Greer, 2007](#)). Some of the participating platforms are still considered start-ups and come from the ICT sector with little or no social partnership tradition ([Hassel & Schroeder, 2018](#)). Hence, the idea of a social partnership model is new to platforms, who do not see themselves as employers. The same applies for the union, since the initiative departs from a legally codified means of organizing labor relations in Germany (e.g., participation in organizational governance, collective bargaining, working councils). This makes the development of the Crowdwork Agreement surprising. These features also make the case an ideal setting to explore how new institutional infrastructures for regulating work in digital work contexts emerge.

#### *Data Collection and Analysis*

We collected three types of data. First, we conducted interviews with all actor groups involved in developing the Crowdwork Agreement; specifically, actors representing the labor perspective (two union representatives (LUs) and one crowdworker) and the platform perspective (three platform representatives (PLs) and one representative of the crowdsourcing industry association). Note that we use the term PLs to refer to interview statements from platform management or the industry association and the term LUs for union activists or crowdworkers. Second, we conducted participant observations (obs.) of two meetings of the joint committee of the new initiative. Two authors participated in the meetings and held several informal conversations, while writing up two extensive research diaries. Third, we collected archival data from the participating actors' websites (e.g., ombudsoffice, platforms websites), official reports (the two published reports on the work of the ombudsoffice), and media reports (see [Table 1](#)). Since we collected from three types of data sources, we engaged in triangulation. For instance, to verify platforms' claims that other stakeholders consider the Crowdwork Agreement a role model, we consulted national and international policy documents, which corroborated this claim (see [Appendix 1](#)). Since two of the authors are closer to the empirical case, the other two authors served as devil's advocates challenging emerging findings and interpretations throughout the process ([Creswell & Plano Clark, 2011](#)).

To analyze our data, we deployed an inductive approach. In the first step, we interrogated our data with respect to our initial research question, which revolved around the regulation of crowdwork in Germany. After this, we refined our research question and turned to the literature on institutional infrastructures, labor relations and governance to inform the second round of our data analysis. In that round, we first sought to gain a more fine-grained understanding of the

**Table 1.** Case Database.

|   | Interviews                                       | Observations                      | Documents  |
|---|--|-----------------------------------|--|
| <b>Labor Perspective</b><br>(LUs & crowdworker)                                 | 3 interviews,<br>totaling 78<br>pages transcript | 6 pages research<br>diary         | 7 media reports totaling 8 pages<br>4 press releases totaling 3 pages  |
| <b>Platform Perspective</b><br>(PLs & crowdsourcing<br>industry<br>association) | 4 interviews,<br>totaling 84<br>pages transcript | 17 pages<br>research diary        | 10 media reports totaling 12 pages<br>20 press releases & blog posts totaling<br>16 pages<br>12 screenshots totaling 4 pages |
| <b>Joint committee</b>  | –  | 8 pages<br>observation<br>journal | 7 pages (reports & internal documents)<br>65 Screenshots totaling 21 pages   |
| <b>TOTAL</b>  | 162 pages  | 31 pages                          | 71 pages   |

events leading to the emergence of this institutional infrastructure and the rationales (i.e., complementary as well as conflicting goals) for each party to form the Crowdwork Agreement. Here we discovered the role of existing templates, the platforms’ “CSR” template focusing on voluntary commitment, and the union’s “social partnership” template consisting of accountability mechanisms, parity governance structures and focus on distributive labor relations issues. Second, we examined the formal governance as well as informal norms, values and practices of this institutional infrastructure. These considerations led to the development of a conceptual framework which we elaborate in the discussion section.

## FINDINGS

Below, we first examine the events leading to the emergence of the Crowdwork Agreement as an institutional infrastructure. Afterwards, we discuss the formal governance and informal aspects of this institutional infrastructure and how they draw on templates of the “old” economy.

### *The Antecedents of the Crowdwork Agreement*

In 2011, platforms established an industry association to facilitate knowledge exchange amongst themselves. As part of this association, Testbirds, a platform providing crowd-based testing services for clients, initiated a code of conduct outlining voluntary commitments to certain standards. Testbirds argues not only that treating workers well makes economic sense, but that a fair, productive culture amongst its workers is also a “*personal concern*.” The instrumental purpose of the platforms launching a code of conduct was to promote a more nuanced picture of crowdsourcing among the general public. The code was also fueled by a German trade union’s position paper on how crowdworking destroys jobs. A PL recalls:

Around 2012, the topic was really new and we noticed that crowdsourcing in general is depicted rather negatively in the media – the overall message was: crowdsourcing will reduce employment opportunities. [...] This bothered us, because this description stands in stark contrast to our perception and understanding of crowdwork as something positive. So, in response, we initiated the Code of Conduct and agreed on shared principles.



Another interview partner elaborates that the public often oversees that “crowdsourcing provides chances for those that face disadvantages on the traditional labor market (PL).” Another goal of the Code of Conduct was to distinguish themselves from what they considered the “tainted reputation” of major American competitors such as Amazon Mechanical Turk. One of the initiators explains:

Of course, there are platforms where crowdworkers suffer under extremely unfair working conditions, and in these cases, the criticism is appropriate. But crowdsourcing doesn't have to be like that and this is exactly the reason why we initiated the Code of Conduct: to show that some German platforms are different from American platforms such as Amazon Mechanical Turk.

On the trade union side, IG Metall began engaging with the platform economy in parallel. The starting point was a book published by the union's deputy chair, Christiane Benner, in 2014. IG Metall recognized that the “digital domain is a critical production facility of the future,” and that the union strives to ensure “fair working conditions along the entire value chain” (LU). Furthermore, IG Metall realized that focusing its efforts solely on its traditional target group (workers in the metal and steel industry) is too shortsighted. Many companies in these industries outsource tasks to platforms (e.g., some crowdsourcing platforms provide services to automobile corporations to train their AI for autonomous driving). Since the union pursues efforts to improve conditions for temporary workers in the automotive industry, it was a logical step to dedicate attention to the topic of platform-based work. The trade union pursues the goal of labor-friendly regulation of crowdworking across various industries. Additionally, engaging with this topic is part of a broader agenda of demonstrating to the wider public that a traditional trade union is fit to represent workers' interest in the digital age as well.

In 2015, IG Metall launched faircrowd.work, a website where legal practitioners evaluated the terms and conditions of platforms and the crowd could initially also submit reviews of platforms. This action initiated a conversation between platforms and the union. Because of the union's activities and the publication of Christiane Benner's book, the platform Testbirds (acting on behalf of the platforms that had adopted its code of conduct) contacted IG Metall. In this conversation, the platforms sought to convince the trade union that the two parties had overlapping interests. A PL recalls: “During the talks with the union, both sides realized that we share a common mind-set, which is profoundly different from the approach of many American platforms.” The union understood the platforms' rationales from early on (i.e., platforms' lack of legitimacy). A LU remembers: “The platforms wanted to demonstrate that they are different from the negative examples of crowdsourcing platforms.”

At the same time, the union recognized that pushing forward regulations addressing the workers' interest would take considerable time. By engaging in a dialogue with the platforms, IG Metall is pursuing “an immediate, pragmatic and small-step approach to improve the situation for crowdworkers.” Moreover, IG Metall saw a chance to gain direct access to the crowdworkers, which would otherwise be hard to achieve in a platform-mediated online context: “The direct contact to the crowdworkers allows us to gain an “on-the-ground” perspective.” Both parties agreed to engage in a social partnership-like dialogue. As we detail in the next section, both parties entered this dialogue with quite different templates

for governing labor relations in mind. We start by detailing the formal elements of the emerging institutional infrastructure.

### *Establishing the Formal Elements of the Crowdwork Agreement*

The code of conduct initiated by the platforms prior to their interaction with the union was based on a template that focuses on voluntary corporate self-commitment to certain standards, well-known from the CSR debate (e.g., [Kinderman, 2012](#)). The first draft of the charter came from the platforms in 2015. Voluntary self-commitment would create standards making crowdwork more socially acceptable:

We wanted to create guidelines so that this phenomenon can arrive in society and in working life. So that not everyone pokes at it wildly and creates their own rules, but that we create some kind of standards.

Fear of overregulation was a second main motivator for the platforms to initiate the charter, as another PL adds:

We want to make sure that there is no platform regulation destroying our business model because we are put in the same category as Deliveroo or Foodora which treat some drivers badly.

The code of conduct encompassed domains such as *task management* (i.e. upstanding and motivating tasks, clear and transparent task definition, planning and task acceptance process); the *nature of the contractual relationship* (crowdworkers are contractors with their own tax and social insurance obligations; at the same time, they have freedom and flexibility with regard to whether they take on tasks; rejecting tasks must not result in negative consequences); *crowdworker rights* (platforms protect the data privacy of crowdworkers and include channels for crowdworkers to ask questions); and *payment* (decent payment; rapid transfer of payment; and clear communication in advance about how much they will earn for a task). For the union, this code of conduct was insufficient. As one LU put it: “Platform’s self-commitment to meet certain principles is a good start, but it was important for us to have some enforcement and feedback mechanism.”

During negotiations for a joint agreement, the platforms and the trade union agreed on three formal pillars of the institutional infrastructure: First, there is a *charter* outlining the standards for appropriate platform behavior. Second, an *ombudsoffice* would be set up, where crowdworkers can issue complaints (e.g., regarding payment or work processes) to those platforms that signed the Crowdwork Agreement. Third, a *joint committee* brings representatives together from the platforms, industry association, IG Metall and selected crowdworkers. This committee engages in decision-making (e.g., adapting the charter; deciding who qualifies for membership). Below, we describe how each of these pillars works and analyze to what extent each pillar originates in the platforms’ CSR template or the trade union’s social partnership template.

**Charter: Setting Standards for Crowdwork.** The basis of the charter was the aforementioned code of conduct put forward by the platforms. While this means that the platforms laid the framework for the negotiations (the domains the charter covers still remain the same), the union sought to expand this framework

during the negotiations by enriching certain elements. Consider the issue of fair payment. As one LU recounts:

When I first read the section on fair payment, it was really about transparent payment. That is a good start. But what does fair mean? We suggested to have a minimum wage and we discussed that intensively with the platforms. The platforms said: How do we assess a minimum wage at task level? And there are people who are not doing it for money as a primary reason? We moved forward in the discussion by organizing workshops with platforms and their workers and asked them what are the critical issues for them. Fair payment was always the most important. So we argued: the amount of money matters to the crowdworkers. We were not able to put a minimum wage into the [charter] because of the complexity of calculating it and platforms argued that their competitors outside Germany, such as Amazon, certainly do not care at all about this issue – which would give them a disadvantage. Ultimately, we at least agreed that the wages should reflect local income levels. It is better than what was there before, but we certainly want a better solution.

By comparing two different versions of the text, the difference becomes apparent. According to the first version of the code of conduct: “Platforms pay the crowdworkers corresponding to the value of the work a fair remuneration [the text continues with transparency issues] [...].” After the negotiation, the Crowdwork Agreement states:

A platform’s calculation of remuneration should include factors such as the complexity of task, the required qualification, location-dependent aspects, including local wage levels as well as the estimated time one needs to perform such a task [...].

Nevertheless, the example demonstrates that the platforms succeeded in maintaining the mostly procedural character of their template and avoiding commitments on substantive issues, such as wages. As such, a core element of the union’s social partnership template (namely, seeking to negotiate or increase wages), plays only a marginal role in the Crowdwork Agreement.

***Ombudsoffice: Sanctioning Behavior That Violates Decent Work Principles.*** The union created the ombudsoffice to make the adopted standards more reliably enforceable: “With the ombudsoffice, we can assess whether the platforms really do what they signed up for” (LU). By establishing the ombudsoffice, the initiative created a direct and easily accessible channel for crowdworkers to voice their concerns and gain support. Another LU explained that although the Crowdwork Agreement is still a unique experiment to improve conditions for crowdworkers, the ideas behind the ombudsoffice were taking from the traditional social partnership template emphasizing parity between labor in capital in such arrangements:

We have experience with labour relations in the traditional world. Essentially, the structure of the ombudsoffice, such as that we have parity between employers and labour, comes from the traditional world. In this online world, we have new topics, new procedures, new technologies, but the structure for negotiating such issues is pretty traditional.

Indeed, the ombudsoffice consists of four members: one PL, one member of the industry association, one LU and one crowdworker. An arbiter specialized in labor law oversees proceedings and assists the two parties in the mediation process or in reaching decisions. The platforms confirm that the trade union played a

pivotal role in creating the ombudsoffice and admit that they had originally been reluctant to adopt this idea:

The suggestion for the ombudsoffice came from the union early on in the process. We were not enthusiastic [...], we were not sure whether we need this [...]. But we debated it at several meetings and found a *modus operandi* where we could say: yes, let's try this out, this does not take too much efforts [*sic.*], let's see whether it works or not.

The ombudsoffice publishes a yearly report documenting its activities. It presided over seven cases in 2017, 23 in 2018 and 14 in 2019. During the proceedings, the parties in dispute first attempt to reach an amicable, informal solution. If no consensus is possible or the case involves a fundamental topic, the ombudsoffice issues a formal decision. In 2018, the ombudsoffice reflected on the nature of its cases:

Many of the cases are about small sums of money [...] we also get cases regarding the work processes or technical problems [...] In some instances, the ombudsoffice suggested that platforms implement a crowd advisory board, so crowdworkers can participate in the process of improving work processes and functions of the platform.

A LU explains that while the cases often involve small sums of money, the crowdworkers are primarily motivated to turn to the ombudsoffice because “crowdworkers seek justice.” Cases may also arrive at the ombudsoffice simply due to technical issues.

We have cases from one platform where several workers complained that they did not get paid. We resolved this quickly, because it was clearly a bug in the system the platform was not aware of (LU).

**Joint Committee: Improving Guidelines and Defining Membership.** The joint committee is also staffed according to the parity principle: it provides a space for all parties involved (union, crowdworkers and platforms) to meet every six months. One task of the joint committee is to discuss issues arising from the activities of the ombudsoffice (e.g., discussing which conditions would be grounds platforms closing a crowdworker's account). Aside from revising guidelines, the committee's key responsibility is to decide who can become a member of the initiative. Despite the accountability mechanisms, the platforms and the union want to ensure that new members fit into the Crowdwork Agreement:

We don't like it when platforms would try to create a green image for themselves by signing the Code of Conduct. It hasn't happened yet, but if Uber or Airbnb would want to join, that would be an absolute no-go (PL).

The application process consists of the following elements: First, *the business model*, including the platform's work organization, must be in alignment with the charter's principles. For instance, one platform recalls that its use of a “winner-take-all” competitive model as a dominant work mode was a barrier to joining, but “once we changed our model to primarily working with selected creatives who receive a fixed income, we could join.” It is also not accepted for a platform to turn crowdworkers into quasi-employees, or, as a trade LU characterized it, that “they tell the people what they have to do when and where and how much money they get.” For instance, a delivery platform's work organization forcing workers

into ex-ante time commitments violates the code of conduct, barring that platform from joining this infrastructure.

Second, platforms require *community management* or “some [other] form of participation or feedback channel, [such as] doing surveys” (PL) to communicate with crowdworkers. This is because the charter demands that platforms cannot purely rely on algorithmic management of its crowd like Amazon Mechanical Turk (LU).

Third, the union insisted on *freedom of association* as a key criterion. Platforms must accept that their workers may found a works council.

If a platform tries to prevent that its employees form a work council, then we are going to tell them: this is not the USA. You are going to get kicked out of our game (LU).

Fourth, the *terms and conditions as well as data privacy* must be aligned with the charter. To assure this, joint committee representatives check the terms of conditions of each platform.

When a platform applies, the joint committee screens its “internal forum or external forum to see whether there are issues that point to a red flag” (PL). Additional steps are doing an interview with the CEO of the platform, as well as “doing interviews with people that work on the platform as a re-check,” conducting a survey with the platform’s crowdworkers or organizing a workshop (LU; PL). If the committee identifies problem areas, the platform is given the opportunity to adopt its policies.

Ultimately, the joint committee decides whether a platform can become a member. Once a platform becomes a member, it can publicly announce its membership in the Crowdwork Agreement. “In the first year we more closely watch the platform, a kind of probation year” (PL). The platforms must also commit to participate in the joint committee sessions, which take place about twice annually. However, not all platforms show the same level of commitment. Some are more active (always sending their CEOs to represent them) and others less so (either not always attending, or sending lower-level representatives) (obs.).

The admission process based on predefined criteria also allows the members to exclude parties from the Crowdwork Agreement who violate the guidelines. A PL emphasizes that a major violation of the charter has consequences:

[Crowdworkers] shouldn’t be at a disadvantage if they do not accept tasks. [...] An algorithm that works like – if you do less than three tasks a month, then we put you in a different category that impacts your income – this must not happen. If we saw something like this happen, the platform would be kicked out.

### *The Informal Aspects of the Crowdwork Agreement*

The second layer of the institutional infrastructure is informal norms, meanings and values emerging through interaction between both parties within the social partnership dialogue. These facilitate learning, trust, a consensus culture and the creation of a shared identity.

We found that regularly engaging in a space where platforms and the union met each other provides learning opportunities. A PL explained why the regular exchange with the other members was essential:

The interaction and exchange with the other members is definitely important, as it allows us to gain valuable insights into how the others deal with certain issues. You can learn a lot from that – and that change of perspective is certainly valuable.

This is echoed by another interview partner:

The interaction allows us to perceive things from a different angle, be it the union or the worker perspective. [...] For instance, we profited a lot from the union's experience in settling disputes [...] (PL).

A LU sees the regular interactions as a learning opportunity for them too:

It is very important for us to develop an understanding of the issues that the platforms are dealing with in their daily business and to gain insights into recent developments on their side. We already know from the traditional social partnership model that a regular exchange is very important, as it allows us to gain profound insights into their day-to-day practices.

Regular interaction also builds trust. Since the meetings last between one to two days, there numerous opportunities to interact informally during coffee breaks or dinners (obs.). Such activities strengthen trust, facilitating coordination beyond the formal meetings. “You meet each other at these meetings, so you develop a direct line of communication; if something comes up, you just call” (PL). This sentiment is shared by the union:

The exchange matters, you develop a relationship to people, so if there is a problem, we talk about it because we trust each other [...] Despite many differences or topics we disagree on, we know that we have a professional working relationship. This makes the whole thing work.

Both parties have also developed a consensus culture characterized by a constructive discussion climate. When reflecting on the discussion in the joint committees to improve the charter, a LU said:

Of course, there are lots of debates, but these discussions are based on facts and data. We make a proposal and evaluate in how far the platforms can implement it. The platforms evaluate internally if and how fast they can implement these changes and then we get feedback on how long it will take to implement these changes or why it is impossible to implement them. If we don't find a common ground, it usually takes six to twelve months and we re-evaluate the proposition.

A PL elaborated further: “It is always a compromise – you often meet in the middle. You evaluate the different needs from the platforms and the crowdworkers. This process is quite productive.” A LU agreed: “In many cases, we find a compromise.”

Certainly, the platforms and the union also have diverging values and interests (e.g., trade unions favor better social security and payments, which meets reluctance on the side of the platforms). Notwithstanding, their ongoing engagement as part of the Crowdwork Agreement has strengthened a shared identity, namely that both parties seek to represent the German or European way of conducting business, in contrast to the dominant American way of operating in platform markets. Observing the joint committee meetings, we noted that the union reported on their ongoing “Fairtube” campaign, which is unrelated to the work of the Crowdwork Agreement. Fairtube is a collaboration between the German union and the YouTubers Union. In this campaign, the bottom-up organizing

of the YouTubers Union, combined with the union's (legal) resources, forced YouTube to the negotiation table. The platforms acknowledged these efforts and made positive statements about this campaign (obs.).

### *Impacts of the Institutional Infrastructure*

The institutional infrastructure has three (potential) impacts: First, it promotes good platform practices; second, it creates regulatory and isomorphic pressures within the German crowdworking field beyond the participating platforms; and third, it potentially serves as a template for regulating crowdwork in other countries.

The union states that it sees the exchange between the union and platforms, and even amongst the platforms themselves, as beneficial: "We foster the spread of good platform practices, this improves working conditions." At the same time, the union argues that platforms benefit too, namely from "a higher quality of work output." Achieving better quality through decent work is a fundamental principle inherent in German industrial relations; this is further evidence of "old industry" templates being transferred to new digital workplaces.

Regarding regulatory pressures, the ombudsoffice creates legal precedents and opportunities. When it arrives at a decision, it enters "a legal new territory, and we are the first ones paving a road to this territory" (PL). Although the ombudsoffice is not a court, the general assumption is that its decisions will inform regulators and possibly also the courts. As an example, the ombudsoffice ruled in 2019 in a case of location-based crowdwork in which a crowdworker complained that they needed to take a photo of a shop window. Consequently, they went to the shop location, but were unable to photograph the window because the shop was undergoing renovation. Although they submitted a photo of the shop under renovation, they did not receive payment for the task. The ombudsoffice ruled:

If a task is clearly described and it can be completed, a crowdworker only receives the payment if the task is completed in accordance of the task description. Based on the principles of the code of conduct, namely, fair payment and task planning, it does not seem appropriate to shift the entire risk to the crowdworker if a task happens to be undoable. (doc.)

Some complaints reach the ombudsoffice concerning platforms that are not members of the Crowdwork Agreement. In one case, the union responded by getting directly in touch with crowdworkers and then using its network to support them in filing a lawsuit based on the complaint. A German court recently ruled in favor of these crowdworker ([Legal Tribune Online, 2020](#)).

Another effect is that the Crowdwork agreement puts isomorphic pressure on other platforms in Germany. One PL said:

We know that those crowdworkers who were working on a competitor's platform often asked the other platform – hey, why don't you adapt your governance practices according to the [charter]? Ultimately, they even signed the charter and became an official member.

We also observe decision makers at national and international levels turning to representatives from the platforms or the union to hear about their experiences

with the Crowdwork Agreement, indicating its potential to serve as a template for other digital work sectors and countries. Both parties are invited to speak at governmental workshops and expert committees in Germany and abroad. Inside Germany, the platforms were already active before the Crowdwork Agreement started, even organizing a roundtable to discuss the topic “The Future of Work.” The difference is that the platforms can now use the Crowdwork Agreement as a vehicle to reach policymakers. In one of the first workshops they organized jointly, the platforms and the union also invited politicians, giving them an opportunity to learn about platform variety. As a PL notes: “The first workshop was a success, because policy makers realized that there is a difference. A food-delivery driver is just not a crowdworker.”

The Crowdwork Agreement model also gains attention internationally, including the International Labor Organization:

The ILO sees our initiative as a unique example, they asked us how we created it. And in South Korea they want to copy our model. So we are a kind of role model for the world (PL).

The union values the potential for the initiative to serve as a model:

We learned that the social partnership model can also work in the digital world. People said that for this type of technical, complex and global work it is impossible to have a system fostering dialogue and exchange. We proved that this is wrong.

Policy reports from various national and international institutions (e.g., European Commission, International Labor Organization, German Parliament; see Appendix 1) refer to the Crowdwork Agreement as a good example for regulating the platform economy. At the same time, many reports caution that it is too early to fully assess the impact of such models.

## DISCUSSION

We set out to address how private, collective governance efforts emerge which seek to promote decent work on platforms. [Fig. 1](#) summarizes our conceptual framework for the creation of a new institutional infrastructure anchored in these findings.

### *Conditions for the Emergence of New Institutional Infrastructures*

With our conceptual framework, we lay out the conditions that enable the development of a new institutional infrastructure in a relatively young field, thus responding to the call of [Hinings et al. \(2017\)](#) to scrutinize these emergence processes more closely.

The first condition was unfavorable public opinions and looming regulation. In our case, platforms faced a negative public opinion of crowdwork. The negative imagery of American-based platforms would likely lead to unfavorable regulation; i.e., a formal governance structure. The second condition is Germany’s national context for governing labor relations. Platforms perceived the trade union as a critical player worth engaging with, which cannot be taken for granted in other



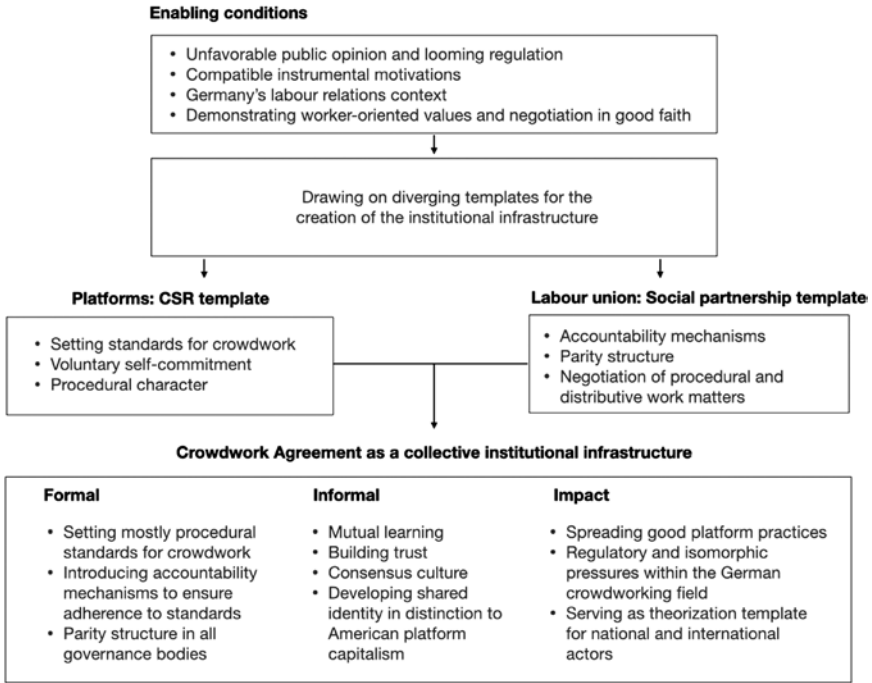


Fig. 1. The Role of Templates in the Creation of a Collective Institutional Infrastructure.

contexts. This is consistent with the unions’ desire to develop strategies for the digital economy in light of declining membership (Ilsoe, 2017). Although unions often face resistance from platforms rather than a willing negotiation partner (Vandaele, 2018), the existence of a social partnership tradition per se seems insufficient to bring about a new institutional infrastructure. The third condition, resulting from the first two, is thus compatible instrumental motivations on both sides to enter the negotiations to create a collective institutional infrastructure. Platforms saw the need to differentiate themselves from competing platforms to increase their reputation and decrease the risk of unfavorable regulation. Unions saw an opportunity to gain quick wins for improving working conditions and direct access to the new phenomenon, opportunities to learn about platforms business practices and to demonstrate to the wider public their relevance in a digital economy.

We also identified worker-oriented values as a crucial link to making interactions between unions and platforms work. The initiating platform was able to credibly communicate that it has worker-oriented values, which was crucial as both parties had no prior interaction history and platforms operate in sectors lacking a social partnership tradition. This resulted in “good-faith” negotiations. Our finding complements insights on industrial relations in small and medium enterprises (Helfen & Schüßler, 2009): management’s worker-friendly

value orientation plays an important role in shaping employee voice where such arrangements are not formally mandated. In sum, these conditions created fertile soil for talks between the platforms and the union, leading to a joint agreement.

### *The Role of Templates in Creating Collective Institutional Infrastructures*

Our research highlights the importance of templates in the creation of institutional infrastructures. While new challenges and fields might be expected to require new institutional infrastructures, in this case, old templates have been transposed. A new institutional infrastructure, like many innovations, can be recombination of something old; in this case, a combination of templates originating in the old economy (namely, the CSR and the social partnership template) took place. Our findings thus contribute to research on private models of governance (Helfen et al., 2018; Reinecke et al., 2018).

The platforms initiating the original code of conduct, which, compared with major international platforms, are small- and medium-sized firms, were willing to fill a regulatory gap (Wickert, 2016). They did so in line with a CSR template. This template is prevalent in private self-regulation mechanisms such as standards or certification schemes, which have in common that they typically lack clear accountability mechanisms and require voluntary corporate cooperation and self-commitment (Bartley, 2018). This also applies to other examples of the platform economy regulations, such as the Charter of Principles for Good Platform Work created by the World Economic Forum, which was signed by several international platforms embracing the “ultra-fast growth at all costs” model, such as Uber or Deliveroo in 2020, yet lacks enforcement and accountability mechanisms (World Economic Forum, 2020).

The Crowdwork Agreement differs from these examples. The platforms set the tone with the CSR template accentuating formalized standards as key formal governance mechanisms, which are mostly procedural in character. While this improves working conditions for crowdworkers, platforms also have an interest in enhancing relationships with crowdworkers, because this positively impacts crowdworkers’ willingness to continue working on a platform, as previous research suggests (Gegenhuber et al., 2021). Since the platforms had no prior experience engaging in agreements with a union and relied on the union’s support, the union could contribute the social partnership template of cooperative relations between capital and labor. The social partnership template is a cornerstone of Germany’s industrial relations. It was the basis for creating a collective institutional infrastructure with accountability mechanisms and parity structure in all governance bodies. In terms of accountability, the Crowdwork Agreement deploys a combination of setting standards and creating a body to handle crowdworker complaints. The parity principle means that no party can overrule the others. A neutral arbiter overseeing the proceedings ensures that both parties can arrive at a decision. There are limits to self-regulation efforts (Ashwin, Kabeer et al., 2020; Reinecke et al., 2018), in this case, platforms make progress on procedural issues, though both parties generally “agree to disagree” on distributive matters. As such, a full degree of decent work has not yet been achieved (Ghai, 2003).

*Informal Dynamics of Institutional Infrastructure and Impact*

Our findings comport with prior work on institutional infrastructures as well as industrial relations literature suggesting that both formal and informal values were critical to making the Crowdwork Agreement effective (Hinings et al., 2017). Particularly relevant are the informal interactions between actors who have a stake in the infrastructure, as these enable learning, increase trust, develop a consensus culture and strengthen a shared identity. While learning was initially an instrumental motivation for the union, the platforms realized that regularly engaging in a dialogue was a learning opportunity for them too. This in turn promoted good platform practices beyond the formal standards outlined in the charter. Prior literature has neglected this aspect of informal learning; in our view, it is an essential justification for the commitment of both parties to enter such an agreement. Positive interactions between labor and capital were beneficial to establishing trust among the parties, while maintaining an atmosphere in which the interaction could continue in good faith. Moreover, both parties developed a consensus culture, an important informal dynamic sustaining a social partnership approach between labor and capital. Lastly, our study also reveals that both parties can develop a shared identity. In this case, the actors creating and maintaining the Crowdwork Agreement in the national context of Germany are pioneers in the crowdsourcing domain, and both pride themselves on the Crowdwork Agreement being different from the “ultra-fast growth at all costs” of American platforms. This shared identity has reinforced commitment to the agreement.

In terms of impact, we find that the agreement not only promotes good platform practice in the German crowdworking field, but has regulatory relevance beyond this context. We observe that relevant policymakers theorize the Crowdwork Agreement, rationalizing its institutional infrastructure and spelling out cause-effect relationships (Lounsbury & Crumley, 2007). This in turn strengthens the informal elements of the infrastructure (namely, that the parties involved see themselves as recognized pioneers in a platform economy). Our data also indicates that other platforms want to join, which suggests that the Crowdwork Agreement can make a difference by exerting isomorphic pressures toward achieving decent work, thereby mitigating the “dark sides” of the platform economy (Trittin-Ulbrich et al., 2021).

## CONCLUSION

Our findings suggest that the collaborative creation of an institutional infrastructure can be pivotal to addressing the grand challenge of achieving decent platform work in an online world. We thereby offer insights for literature on institutional infrastructures (Hinings et al., 2017; Logue & Grimes, 2019), as well as for literature on regulating or governing platform work, particularly on shaping online work beyond a sole governmental regulation approach (Gegenhuber et al., 2021; Greef et al., 2020; Kirchner & Schübler, 2020; Reischauer & Mair, 2018a; Vallas & Schor, 2020).

Our study comes with the usual limitations stemming from a single case study. We emphasize that one limitation is that we examined actors focused on the regulation of platform work in a national context with relatively strong labor relations, at least in some sectors, questioning to what extent elements of this institutional infrastructure can be transferred and scaled up in other contexts (Dittrich, 2021). Further research should examine how infrastructures for platform work regulation emerge in other national contexts and also extreme contexts (and on other levels of analysis, examining the role of templates (e.g., on a municipal or a transnational level). Furthermore, research should examine whether and how such infrastructures that use specific locally or nationally embedded templates can be transposed to other contexts (e.g., from the Global North to the Global South and vice versa) and how they utilize intermediaries when doing so (Reischauer, Güttel, & Schüßler, 2021). These questions are particularly important in the context of grand challenges, which must be addressed in different contexts simultaneously.

Another limitation is that the governance model might not fit for all crowdworkers. In our case, crowdworkers are also formally part of the Crowdwork Agreement. The union thereby mobilizes them. However, a potential concern is that the appointed crowdworkers constitute the core (i.e., the most active workers) of the platforms for which they work. Since crowds are quite heterogeneous, this could lead to decisions that are less attentive to the interests of peripheral crowdworkers (Gegenhuber et al., 2021). However, our data does not suggest that this negatively impacts the crowdworkers' representation work. Nevertheless, some platform workers may continue to feel unfairly treated (Fieseler, Bucher, & Hoffmann, 2017). Further research should take these differences into account.

We must also consider that an informal norm of the Crowdwork Agreement is "agreeing to disagree." Both parties engage in action outside the Crowdwork Agreement, especially in those areas where labor and capital disagree. Through the ombudsoffice, the union contacted a crowdworker of a platform that is not part of the Crowdwork Agreement and helped organize a court case through its network. The court ruled that this crowdworker should effectively be considered an employee. Time will tell how this ruling impacts the Crowdwork Agreement – at least one of the platforms has a similar organizing process – and whether it poses a potential threat to the Crowdwork Agreement.

Digital platforms more broadly, and crowdwork platforms specifically, are reshaping the world of online labor and driving the grand challenge of decent work in a digital economy. As our analysis of an emerging institutional infrastructure with roots in the social partnership template of governing industrial relations shows, collaborative attempts (in our case by unions and platforms) can be a powerful vehicle for achieving decent work, particularly regarding procedural issues. Yet, it is too early to tell whether this experiment within a niche can be scaled up to a European, if not global level. Still, we hope to provide a basis for future research that fleshes out the details of building institutional infrastructures which support decent online work, and the role established actors and institutions can play in such newly emerging fields of work.

## NOTE

1. This number is based on desk research adding up the reported crowd sizes on each platform. As astute observers of the platform economy would point out, there is a discrepancy between the reported size of the crowd network on a platform and the actual number of active users for each year. If, say, 5–10% are active workers in a given year, we would arrive at a sum of 170,000–340,000 crowdworkers.

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## APPENDIX 1. CROWDWORK AGREEMENT MENTIONED AS EXAMPLE IN POLICY REPORTS

| Source                      | Institution  | Link  |
|-----------------------------|--|---|
| 2020, EU-IPOL               | European Parliament  | <a href="https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/652721/IPOL_BRI(2020)652721_EN.pdf">https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/652721/IPOL_BRI(2020)652721_EN.pdf</a> (p. 10)   |
| 2019, ILO                   | International Labor Office   | <a href="https://www.ilo.org/wcmsp5/groups/public/---dgreports/---cabinet/documents/publication/wcms_713378.pdf">https://www.ilo.org/wcmsp5/groups/public/---dgreports/---cabinet/documents/publication/wcms_713378.pdf</a> (p. 6)  |
| 2020, Bundestag             | German Parliament  | <a href="https://www.bundestag.de/resource/blob/808030/73c0b424c40f18fa94df0a5b5e94b1f7/19-11-878-SN-Wenkebach-data.pdf">https://www.bundestag.de/resource/blob/808030/73c0b424c40f18fa94df0a5b5e94b1f7/19-11-878-SN-Wenkebach-data.pdf</a> (p. 9)  |
| 2020, EU Commission         | European Commission  | <a href="https://ec.europa.eu/social/main.jsp?catId=738&amp;langId=en&amp;pubId=8280">https://ec.europa.eu/social/main.jsp?catId=738&amp;langId=en&amp;pubId=8280</a> (p. 19, 123)  |
| 2020, Hans-Böckler-Stiftung | Hans Böckler Foundation  | <a href="https://www.mitbestimmung.de/html/formen-der-beteiligung-in-der-14375.html">https://www.mitbestimmung.de/html/formen-der-beteiligung-in-der-14375.html</a>   |
| 2019, ILO                   | International Labor Office   | <a href="https://unctad.org/system/files/non-official-document/CSTD2018_p09_DamianGrimshaw_en.pdf">https://unctad.org/system/files/non-official-document/CSTD2018_p09_DamianGrimshaw_en.pdf</a>   |
| 2019, IAQ Report            | Institute for Work, Skills and Training University Duisburg Essen        | <a href="https://www.uni-due.de/iaq/iaq-report-info.php?nr=2019-05">https://www.uni-due.de/iaq/iaq-report-info.php?nr=2019-05</a>   |
| 2019, Eurofund              | European Foundation for the Improvement of Living and Working Conditions | <a href="https://www.eurofound.europa.eu/sites/default/files/ef_publication/field_ef_document/ef19045en.pdf">https://www.eurofound.europa.eu/sites/default/files/ef_publication/field_ef_document/ef19045en.pdf</a> (p. 15)   |
| 2018, ILO                   | International Labor Office   | <a href="https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_645337.pdf">https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_645337.pdf</a> (p. 99)   |
| 2018, ETUI                  | European Trade Union Institute   | <a href="https://www.etui.org/topics/health-safety-working-conditions/hesamag/the-future-of-work-in-the-digital-era/crowd-work-and-the-on-demand-economy">https://www.etui.org/topics/health-safety-working-conditions/hesamag/the-future-of-work-in-the-digital-era/crowd-work-and-the-on-demand-economy</a>   |
| 2017, FES                   | Friedrich Ebert Foundation   | <a href="http://library.fes.de/pdf-files/wiso/13164.pdf">http://library.fes.de/pdf-files/wiso/13164.pdf</a> (p. 24)   |
| 2017, EU-OSHA               | European Agency for Safety and Health at Work                            | <a href="https://osha.europa.eu/en/publications/protecting-workers-online-platform-economy-overview-regulatory-and-policy-developments">https://osha.europa.eu/en/publications/protecting-workers-online-platform-economy-overview-regulatory-and-policy-developments</a> (p. 69)   |
| 2017, BMAS                  | German Federal Ministry of Labor and Social Affairs                      | <a href="https://www.bmas.de/SharedDocs/Downloads/DE/PDF-Publikationen/Forschungsberichte/fb499-plattformoekonomie-eine-literaturauswertung.pdf?__blob=publicationFile&amp;v=1">https://www.bmas.de/SharedDocs/Downloads/DE/PDF-Publikationen/Forschungsberichte/fb499-plattformoekonomie-eine-literaturauswertung.pdf?__blob=publicationFile&amp;v=1</a> |

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|------------|---|---|
| 2017, BMAS | German Federal<br>Ministry of Labor<br>and Social Affairs | <a href="https://www.bmas.de/SharedDocs/Downloads/DE/PDF-Publikationen/Forschungsberichte/fb500-plattformoekonomie-und-crowdworking.pdf?__blob=publicationFile&amp;v=1">https://www.bmas.de/SharedDocs/Downloads/DE/<br/>PDF-Publikationen/Forschungsberichte/fb500-<br/>plattformoekonomie-und-crowdworking.pdf?_<br/>blob=publicationFile&amp;v=1</a> |
| 2017, IZA  | IZA Institute of Labor<br>Economics                       | <a href="http://ftp.iza.org/report_pdfs/iza_report_86.pdf">http://ftp.iza.org/report_pdfs/iza_report_86.pdf</a> (p. 30)   |
| 2016, ILO  | International Labor<br>Office                             | <a href="https://www.onlabor.org/wp-content/uploads/2016/05/wcms_443267.pdf">https://www.onlabor.org/wp-content/uploads/2016/05/<br/>wcms_443267.pdf</a> (p. 23)  |

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