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Atypical employment and disability in the Digital Economy:
Accountability gap leaves disabled app developers' rights unprotected

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Atypical employment and disability in the Digital Economy: Accountability gap leaves disabled app developers' rights unprotected¹

Abstract: Although the employment situation of disabled people has widely been identified as in need of improvement, progress in this area remains slow. While some progress has been made in including the physically or sensory disabled in the workplace, other types of disability have been largely neglected. This applies particularly to disabled workers in atypical employment, such as those whose workplace is the Digital Economy. In this article, we discuss the case of disabled app developers as a significant example of how the current regulatory framework fails to be inclusive in its attempts to protect the rights of disabled Digital Economy workers. We identify two problems that are at the heart of this: first, a continuing failure to collect relevant and comprehensive data on disability, and second, a lack of accountability towards disabled workers in atypical employment. Consequently, we call for better data collection and argue for urgent policy changes to close the existing accountability gap.

Keywords: technology regulation, algorithms, digital economy, disability rights, soft law, platform regulation, atypical employment

1. Introduction

When Stack Overflow, the operator of the largest developer community platform, released its annual Developer Survey results in 2017, for the first time it contained a question relating to the disability status of the participating developers.² That this was a novelty highlights the general lack of awareness of disability within the Digital Economy, despite increasing focus on diversity and inclusion.³ In its European Disability Strategy 2010-2020, the European Commission committed itself to the empowerment of disabled people, to enable them to enjoy their full rights and benefit fully from participating in society.⁴ The Strategy builds on the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), which seeks to ensure that disabled persons are not discriminated against and that disadvantages are compensated, in recognition of the fact that the systemic makeup of society is largely based on the needs of the majority.⁵ In line with this, policies have been widely introduced to encourage

¹ Following the recommendations of the Autistic Self Advocacy Network (ASAN), Identity-first language is used in this article: Autistic Self Advocacy Network, 'Identity-First Language' (*Autistic Self Advocacy Network*) <<http://autisticadvocacy.org/about-asan/identity-first-language/>> accessed 15 July 2018.

² 'Stack Overflow Developer Survey 2017' (*Stack Overflow*) <<https://stackoverflow.com/insights/survey/2017/#developer-profile>> accessed 15 July 2018.

³ Chandler Puritty and others, 'Without Inclusion, Diversity Initiatives May Not Be Enough' (2017) 357 Science 1101.

⁴ European Commission, 'European Disability Strategy 2010-2020: A Renewed Commitment to a Barrier-Free Europe' COM(2010) 636 final <<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0636:FIN:en:PDF>> accessed 15 July 2018.

⁵ 'Convention on the Rights of Persons with Disabilities [A/RES/61/106] | United Nations Enable' <<https://www.un.org/development/desa/disabilities/resources/general-assembly/convention-on-the-rights-of-persons-with-disabilities-ares61106.html>> accessed 15 July 2018.

a more inclusive and diverse environment, yet progress remains slow. This is particularly notable with regard to one of the key objectives identified in the European Disability Strategy: improving employment. The case of disabled app developers provides a significant example of how the current regulatory framework fails to be inclusive in its attempts to protect the rights of disabled Digital Economy workers. This is the topic of this article, in which we argue that two problems are at the heart of this:

- 1) a continuing failure to collect relevant and comprehensive data on disability; and
- 2) a lack of accountability towards disabled workers in atypical employment.

We propose that urgent policy changes are required to remedy the present situation and solve problem (2). The starting point must be the identification of the group that is affected, with sensitivity to its heterogeneity. This involves collecting relevant data in ethically acceptable ways, thus solving problem (1).

2. Data on Work and Disability in Europe

The need to collect differentiated data on disability and work was recognised in the European Disability Strategy. This included the explicit objective of introducing a disability specific indicator in the Employment Committee (EMCO) indicators, which are used to monitor the EU employment strategy.⁶ This is yet to happen. According to the 2017 Progress Report on the Disability Strategy, only two of the deliverables within the employment objective have been completed in the seven years since its launch.⁷ One of the achievements is the 2011 Labour Force Survey Ad Hoc Module on disability (LFS), but the insights it provides are modest, mainly because the data is insufficiently comprehensive.⁸ Work on the introduction of further sub-groups had not even started when the progress report was published, making it near impossible to determine the number and characteristics of people affected. The fact that the latest available data on disability is the 2011 LFS ad hoc module further undermines the possibility of meeting the objectives, given that the labour market is rapidly changing, as the example of the gig economy demonstrates.⁹ The Digital Economy, which refers to the economy based on digital computing technologies,¹⁰ is one of the fastest growing industries, but little is known about the people involved behind the scenes in this growth.¹¹ It has so far remained relatively unscrutinised, while the gig economy has come under fire through a range of

⁶ 'Employment Committee - Employment, Social Affairs & Inclusion - European Commission' <<http://ec.europa.eu/social/main.jsp?catId=115>> accessed 15 July 2018.

⁷ European Commission, 'Progress Report on the Implementation of the European Disability Strategy (2010 - 2020)' Commission Staff Working Document SWD (2017) 29 final <<http://ec.europa.eu/social/BlobServlet?docId=16995&langId=en>> accessed 15 July 2018.

⁸ 'Discover - Labour Force Survey Ad Hoc Module Eurostat Dataset, 2011' <<https://discover.ukdataservice.ac.uk/catalogue/?sn=7688>> accessed 15 July 2018.

⁹ 'The Online Gig Economy Grew 26% over the Past Year' (*The iLabour Project*, 10 July 2017) <<http://ilabour.oii.ox.ac.uk/the-online-gig-economy-grew-26-over-the-past-year/>> accessed 15 July 2018.

¹⁰ D Tapscott, *The Digital Economy: Promise and Peril in the Age of Networked Intelligence* (McGraw-Hill 1996).

¹¹ Max Nathan and others, 'Measuring the UK's Digital Economy with Big Data' [2013] London: NIESR. The size and growth rate of the Digital Economy is dependent on how it is measured and it has been argued that traditional GDP measures are not appropriate for the Digital Economy: Andrew Sheehy, 'GDP Cannot Explain The Digital Economy' (*Forbes*, 6 June 2016) <<https://www.forbes.com/sites/andrewsheehy/2016/06/06/gdp-cannot-explain-the-digital-economy/>> accessed 15 July 2018.

controversies surrounding private hire company *Uber* and the food delivery service provider *Deliveroo*, including several high-profile court cases.¹² In one instance, disability rights clashed with the gig economy when a Chicago-based disability group sued *Uber* over an alleged violation of wheelchair accessibility laws.¹³ A major difference between the Analogue and the Digital Economies lies in the invisibility of the online world: what happens in the virtual workplace may easily be left unseen, which makes it all the more important to collect data on disabilities within the Digital Economy, if inclusion is to be taken seriously and any labour market inequalities are to be addressed, as the European Union has set out to do.¹⁴ Currently, the 2011 LFS merely indicates that – of the 12.7% self-employed respondents within the occupational group of “software and applications developers and analysts,” – 26.2% had a “longstanding health condition or disease”.¹⁵ The subset is too small for further analysis, but the latest Stack Overflow Developer Survey (2018) provides more nuanced data at least for the group of software developers: over 11% of the 100,000+ respondents identified as having a “mental difference”, such as a mood or emotional disorder, anxiety disorder, attention disorder, or autism, while less than 2% reported a “physical difference”.¹⁶ This is a sizeable group and suffices to support the case for investigating current policies with regard to the protection of disabled workers in the Digital Economy, who are not protected through the course of ordinary employment.

The UK was recently criticised by the UN Committee on the Rights of Persons with Disability for its lack of data collection efforts concerning the situation of disabled persons and noted a failure routinely to collect these data in surveys and censuses.¹⁷ The Committee also noted the persistent employment and pay gaps, which reveal the severity of the labour market inequalities. The employment gap between disabled and nondisabled people of working age is currently at 20 and 40 percentage points for the EU and the UK respectively.¹⁸ In the UK, this gap rises to almost 55 percentage points where the disability relates to a mental illness or nervous disorder.¹⁹ Besides the financial implications for the British economy, which is

¹² ‘It’s a Tough Gig: Uber Drivers and Deliveroo Riders Fight for Employees’ Rights | Business | The Guardian’ <<https://www.theguardian.com/business/2017/jul/09/its-a-tough-gig-uber-drivers-and-deliveroo-riders-fight-for-employees-rights>> accessed 15 July 2018.

¹³ ‘Chicago Disability Group Sues Uber over Wheelchair Access’ *Reuters* (14 October 2016) <<https://www.reuters.com/article/us-uber-lawsuit/chicago-disability-group-sues-uber-over-wheelchair-access-idUSKCN12D2W6>> accessed 15 July 2018.

¹⁴ European Commission (n 4).

¹⁵ ‘Disability Statistics - Labour Market Access - Statistics Explained’ <http://ec.europa.eu/eurostat/statistics-explained/index.php/Disability_statistics_-_labour_market_access#Further_Eurostat_information> accessed 15 July 2018.

¹⁶ ‘Stack Overflow Developer Survey 2018’ (*Stack Overflow*) <<https://insights.stackoverflow.com/survey/2018#demographics>> accessed 15 July 2018.

¹⁷ UN Committee on the Rights of Persons with Disabilities, ‘Concluding Observations on the Initial Report of the United Kingdom of Great Britain and Northern Ireland’ (2017) CRPD/C/GBR/CO/1.

¹⁸ ‘Disability Statistics - Labour Market Access - Statistics Explained’ (n 15).

¹⁹ ‘Key Statistics on People with Disabilities in Employment - Commons Library Briefing - UK Parliament’ <<http://researchbriefings.parliament.uk/ResearchBriefing/Summary/CBP-7540#fullreport>> accessed 15 July 2018.

estimated to lose £13 billion annually,²⁰ the failure to improve employment prospects for disabled people is ethically and legally problematic.

3. The Rights of Disabled People

Article 27 of UNCRPD requires State Parties to “protect the rights of persons with disabilities, on an equal basis with others, to just and favourable conditions of work, including equal opportunities and equal remuneration of equal value, safe and healthy working conditions, including protection from harassment, and the redress of grievances”.²¹ Article 27 is not limited in scope to employers but applies to any kind of work, although State Parties usually defer these obligations to employers through national legislation.²² This latter point is crucial, because it effectively leaves those without a (formal) employer unprotected, a situation that is affecting increasing numbers of people, given the trend towards “atypical employment”.²³ A significant case, given the analysis developed in this article, is represented by disabled app developers.

3.1 Disability in the Digital Economy

Where work is done outside traditional employment settings, for instance through freelancing or self-employment, no procedure for recording a disability status is in place, because such duties are typically part of employment regulations. For independent workers in the Digital Economy there is no such employer who can be held responsible for the protection of disability rights. In addition, the lack of jurisdictional clarity due to cross-border working arrangements means that legal protective mechanisms, in the form of national laws, fail to take effect. In the gig economy, courts have started to force quasi-employer status on companies such as *Uber* to ensure workers are protected under employment law.²⁴ Having recently lost its appeal against the ruling that its drivers should be classed as workers with certain rights. *Uber* will now take its case to the Court of Appeal, after its attempt to take the matter directly to the Supreme Court was rejected.²⁵ This means that the final outcome is still pending but, even if the companies’ workers were to be deemed employees in the legal sense, this might still fall short of providing full protection of the rights of disabled digital workers reliant on internet companies

²⁰ ‘Disability, Skills and Work: Raising Our Ambitions’ (*Social Market Foundation*)

<<http://www.smf.co.uk/publications/disability-skills-and-work-raising-our-ambitions/>> accessed 15 July 2018.

²¹ ‘Convention on the Rights of Persons with Disabilities [A/RES/61/106] | United Nations Enable’ (n 5).

²² Equality Act 2010.

²³ Publications Office of the European Union, ‘Atypical Employment and the Role of European PES : An Exploratory Paper.’ (12 October 2017) <<https://publications.europa.eu/en/publication-detail/-/publication/2fb24306-afc1-11e7-837e-01aa75ed71a1/language-en/format-PDF>> accessed 17 October 2017.

²⁴ Rob Davies, ‘Uber loses appeal in UK employment rights case’ (*The Guardian*, 10 November 2017) <<https://www.theguardian.com/technology/2017/nov/10/uber-loses-appeal-employment-rights-workers>> accessed 15 July 2018.

²⁵ ‘Uber’s Bid to Appeal Driver Case to UK Supreme Court Rejected’ (*The Independent*, 5 December 2017) <<http://www.independent.co.uk/news/business/news/uber-appeal-driver-uk-supreme-court-union-a8092306.html>> accessed 15 July 2018. ‘The Court of Appeal hearing will be on October 31 and November 1: see <<https://www.gmblondon.org.uk/news/date-set-for-uber-court-of-appeal-hearing>> accessed 30 August 2018

headquartered in the US and the Republic of Ireland, two relevant countries that have not ratified the UNCRPD,²⁶ as is the case with app developers.

3.2 App distribution platforms as workplaces

App developers have limited choice when it comes to distribution platforms, as the app market is divided mostly between Google and Apple, making it de facto duopolistic.²⁷ Google in particular is well-known for its data automation and algorithm-driven operations and prides itself with a business model based on algorithmic decision-making, in which human interaction is severely limited. This also applies to its app distribution platform, the Google Play Store, with important implications for app developers. The Google Play Store operates under a number of developer program policies, to which any developer has to agree in order for an app to be accepted for distribution by Google.²⁸ The individual policies seem reasonable, and are largely based on common principles for good online behaviour, in addition to legal rules around copyright and child protection. Examples are given to assist developers in designing fully compliant apps. However, there is an important caveat: acceptance into the Play Store does not imply compliance with the policies, as Google operates under a kind of self-regulation policy, whereby the developer assumes full responsibility for compliance with the Google policies at all times. This means that it is possible for an Android™ app to be identified as in breach of one or more policies *after* it has become available to end users through the Play Store. This can occur at any point after initial acceptance and the company does not offer a service to have an app formally reviewed and approved as compliant prior to submission to the Play Store. Contrast this with the submission process to Apple's iTunes Store, which ensures that every app is reviewed internally *before* becoming available for distribution.

Where a (supposed) breach is discovered, Google's enforcement process entails an automated email notification "with the specific reason for removal" to the developer,²⁹ but the specificity ends at the broad category of policy infringement, which may or may not be exhaustive. The developer, upon receipt of such notification, is left to work out what exactly is wrong with the app, which may be straightforward, if a breach is obvious or deliberate, but which may be virtually impossible to ascertain in other cases. Where the app is suspended, the developer loses all user-related data, such as download statistics, app reviews, and ratings. This can have a devastating effect, as both popularity and reputation of an app feed into the algorithm determining the rank and availability in the store versus any competitors. In addition, any associated advertising account also becomes suspended and revenues earned through in-app adverts are frozen until Google rescinds its decision and reinstates the app, or permanently, if the original decision to remove is upheld. The entire process is a black box since Google does

²⁶ 'OHCHR | Committee on the Rights of Persons with Disabilities'

<<http://www.ohchr.org/EN/HRBodies/CRPD/Pages/CRPDIndex.aspx>> accessed 15 July 2018.

²⁷ Statista, 'App Stores: Number of Apps in Leading App Stores'

<<https://www.statista.com/statistics/276623/number-of-apps-available-in-leading-app-stores/>> accessed 15 July 2018.

²⁸ 'Developer Policy Center' <<https://play.google.com/about/developer-content-policy>> accessed 15 July 2018.

²⁹ 'Enforcement - Developer Policy Center' <<https://play.google.com/about/enforcement/>> accessed 18 July 2017.

not disclose how the supposed policy infringement was discovered, which might, in some cases, be through a complaint by a user, copyright holder or competitor, but which is most often the result of an automated process, through an algorithm that identifies potential policy breaches. This information will, however, be known to the company. A developer who feels that an app has been wrongfully suspended can appeal through the developer console and is given the opportunity to upload supporting documents. This works reasonably well in cases of assumed copyright infringements, where a licensing agreement or contract can provide the necessary evidence for rightful use, but it does not help with more dubious policy breaches. An example is a violation of Google's impersonation and intellectual property policy, which covers a range of violations from pretending to be someone else (impersonation) to the improper use of trademarks (trademark infringement).³⁰ The latter includes improper use of Google's own branding, which means that a typographical or formatting error in referring to one of the Google products is sufficient to be caught under this policy, regardless of whether this was intentional or accidental. The devil really is in the details. For example, "Our app is now available from Google Play" will lead to suspension, while "Our app is now available on Google Play" will not.³¹ Google claims that a response will be given within two business days, but it has been known frequently to take a week or longer.³² For a developer gaining a living through the sale of Android apps this can have a devastating effect and cause a real problem, in addition to feelings of frustration at the unfair treatment by a commercial partner, who takes a 30% share of the price of any app sold.³³ Given this relationship, expecting some assistance with resolving issues seems reasonable and calls for "consistency, frequency, and swiftness in handling developer requests have been made vigorously".³⁴ Although the same process applies equally to all app developers, it is most problematic where the developer is disabled, for two reasons.

3.3 Disabled app developers

First, if the disability involves a cognitive, affective or psychiatric condition, it is often an intrinsic feature of that condition that defending one's rights and interests in such a dependent relationship is particularly challenging. This applies to mood or emotional disorders, such as depression or bipolar disorder, anxiety disorder, as well as autism – conditions reported by 8.5%, 7.8% and 2.1% of respondents, respectively, in the most recent Stack Overflow Survey.³⁵ Many Autistics, for instance, struggle with interpreting language and find it difficult to understand vagueness or abstract concepts, and require clear and consistent communication.³⁶

³⁰ 'Impersonation and Intellectual Property- Developer Policy Center' <<https://play.google.com/about/ip-impersonation/>> accessed 15 July 2018.

³¹ 'Google Play Badges – Google' <https://play.google.com/intl/en_us/badges/> accessed 15 July 2018.

³² 'Reddit.Com: Search Results - Google App Suspended' <<https://www.reddit.com/search?q=google+app+suspended>> accessed 15 July 2018.

³³ 'Transaction Fees - Play Console Help' <<https://support.google.com/googleplay/android-developer/answer/112622?hl=en>> accessed 19 September 2017.

³⁴ Mishaal Rahman Rahman, 'Dear Google Play Review Team, Please Don't Be Evil' (*xda-developers*, 5 February 2016) <<https://www.xda-developers.com/dear-google-play-review-team-please-be-more-transparent/>> accessed 15 July 2018.

³⁵ 'Stack Overflow Developer Survey 2018' (n 16).

³⁶ 'Asperger Syndrome - NAS' <<http://www.autism.org.uk/about/what-is/asperger.aspx>> accessed 15 July 2018.

Where spoken language or written word is not unambiguous, this poses a significant hurdle to communication and can result in serious frustration leading to a “meltdown”, an extreme response to an overwhelming situation.³⁷ The reason, amongst others, might be a “build-up of things”³⁸ or “any change or disruption to normal routine”.³⁹ Whatever the underlying cause, in a high-stress situation such as where an unexpected notification of suspension is received, it is an impossibility for an Autistic developer carefully to draft a response to Google appealing the decision. Similarly, a depressed or anxious developer will struggle with this task, and the depression or anxiety may even become aggravated through the incident. Accessibility is key here, but this goes a lot further than the removal of physical barriers. In the Internet era, it centres on the use of technology for people with physical and/or sensory impairments to access online services more easily, which includes many elderly people who now also use digital services in their everyday lives. The example of Autistics illustrates another side to accessibility, which is rarely addressed and which applies to a range of people, from those with mental health problems,⁴⁰ learning disabilities or developmental disorders: technical solutions will often help those with physical or sensory difficulties, but where the difficulty is of a psychosocial nature, very different support is required for a workplace to become inclusive. It almost appears as if there is some kind of ‘physical exceptionalism’ at play, where only *physical* disabilities and the corresponding *physical* adjustments are addressed, as was the case with the 2017 Stack Overflow survey, which made no mention of other types of disability or nonphysical adjustments to the work environment.⁴¹ The physical characteristics of a workplace play only a subordinate role in the Digital Economy, not least because many digital workers have their own setup and work from home. For the distribution platforms to become more inclusive for all developers, a more responsive and approachable customer service would be required, assisting disabled developers in the app review process. In addition to being a profession of choice for many, for some disabled developers app development may also be one of the limited sources of income available to them, as it comes with fewer structural challenges and allows for self-directed work.⁴²

Second, disability is still all too often described exclusively in terms of deficits or sufferings, but increasingly another side to the disability story is being told.⁴³ Neurodiversity conceptualises neurological differences as normal variations in the human genome, rather than a condition meriting treatment or cure.⁴⁴ Recent years have seen a shift from a medical model

³⁷ Sara Ryan, “‘Meltdowns’, Surveillance and Managing Emotions; Going out with Children with Autism’ (2010) 16 *Health & Place* 868.

³⁸ ‘What a Meltdown Feels Like for Someone With Autism’ (*The Mighty*)

<<http://themighty.com/2015/04/what-an-autism-meltdown-feels-like/>> accessed 15 July 2018.

³⁹ ‘Life on the Spectrum: UK Autism Charity’ (*Life on the Spectrum*) <<http://www.lifeonthespectrum.net>> accessed 15 July 2018 .

⁴⁰ Mental Health Act 1983; Mental Health Act 2007.

⁴¹ ‘Stack Overflow Developer Survey 2017’ (n 2).

⁴² Olivia White, ‘This Is My Back: Being a Game Developer Is Just about the Only Thing I Can Do’ (*Polygon*, 17 February 2016) <<https://www.polygon.com/2016/2/17/11035050/owl-cave-chronic-pain-game-development>> accessed 15 July 2018.

⁴³ A Solomon, *Far From the Tree: Parents, Children and the Search for Identity* (Scribner 2012).

⁴⁴ Steve Silberman, *NeuroTribes: The Legacy of Autism and How to Think Smarter about People Who Think Differently* (Atlantic Books 2017).

towards a social model of disability, led by UNCRPD,⁴⁵ which asserts that the social setup largely determines to what extent a person can participate in society and who is classed as ‘disabled’ within any given social framework.⁴⁶ Accordingly, society is responsible for making the necessary adjustments, including in the workplace, to allow full participation and inclusion of disabled people. In the case of “mental difference”, the unique characteristics of some neurodiverse conditions may make them particularly well-suited for Digital Economy work, such as programming, which explains the high rate of developers among Autistics.⁴⁷ However, the social structure and culture of companies remains a challenge for many disabled workers. This means that any traditional employment setting will require some accommodations to be made to provide a work environment where disabled developers can flourish. An example is the “Autism at Work” programme run by SAP since 2013,⁴⁸ and more recently a programme launched by Microsoft, to recruit specifically from the Autistic community.⁴⁹ Apple and Google too profit from the skills of disabled developers, but currently only the former two companies are held accountable for the protection of disability rights. This accountability gap is not justified and needs to be addressed.

4. Accountability

Since private companies are not parties to the Convention but only states are, it would fall on the respective government of the country in which the disabled developers reside to ensure the protection of disability rights. Specifically, it might involve urging platform providers such as Google to put a process for the redress of grievances in place, which goes beyond communication of algorithmic decisions and reflects the specific needs of disabled workers. In the example above, this might include displaying some lenience towards dyslexic developers who use the incorrect preposition for the Play Store and giving them the opportunity to correct their mistakes, as well as providing clearer information about the particular policy infringement. However, since algorithms struggle with interpreting grey areas of communication in a similar way as Autistics, this process would currently necessitate human involvement. This would seem in line with current developments in Europe, where the General Data Protection Regulation (GDPR) prohibits subjecting individuals exclusively to automated decision-making where this has a substantial effect on the individual concerned.⁵⁰ Although the GDPR is concerned with the use of personal data, it seems that the broader protection of individuals from algorithmic unfairness, especially where this has significant life

⁴⁵ ‘Convention on the Rights of Persons with Disabilities [A/RES/61/106] | United Nations Enable’ (n 5).

⁴⁶ Allen Buchanan, ‘Choosing Who Will Be Disabled: Genetic Intervention and the Morality of Inclusion’ (1996) 13 Social Philosophy and Policy 18.

⁴⁷ Silberman (n 41).

⁴⁸ ‘Differently Abled People | Diversity & Inclusion’ (SAP)

<<https://www.sap.com/corporate/en/company/diversity/differently-abled.html>> accessed 15 July 2018.

⁴⁹ ‘Microsoft Wants Autistic Coders. Can It Find Them And Keep Them?’

<<https://www.fastcompany.com/3062835/microsoft-autism-hiring>> accessed 15 July 2018.

⁵⁰ ‘REGULATION (EU) 2016/ 679 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL - of 27 April 2016 - on the Protection of Natural Persons with Regard to the Processing of Personal Data and on the Free Movement of Such Data, and Repealing Directive 95/ 46/ EC (General Data Protection Regulation)’
<https://ec.europa.eu/info/law/law-topic/data-protection_en> accessed 15 July 2018.

consequences, is one of its key principles. There is also a strong ethical argument for addressing the current policy gap and to hold non-employer work providers accountable for the protection of those *doing work* for them, albeit in a non-employee relationship. Reasons for this include the inequality in bargaining power between platforms and developers, who have very few (Google) or no (Apple)⁵¹ alternatives in choosing the distribution platform providers. Another reason is the unfairness in being subjected to opaque automated decision-making without proper redress. It is important to note here that the companies are not acting charitably in providing their platforms but that they derive significant income from the fees they collect every time an app is purchased, or an advert is displayed in an app.⁵² So it is in their financial interests as well to minimise disruptions when these are due to solvable problems. Furthermore, the relationship between app developers and platform providers is a commercial one, with developers effectively working *for* the platforms. This view is supported by the fact that all financial transactions with end users are handled by the platforms according to their own policies, on which the individual app developers have no influence (e.g. if and when to issue a refund), and developers cannot communicate with the users of their app directly. In many ways, this comes close to being a dependent work relationship and raises some important legal questions with regard to disability rights in such a work context.

5. Conclusion

We urgently need to make visible those who are currently falling through the gaps when it comes to the protection of their rights and to ensure that they finally enjoy equal rights, especially in the context of work. In the absence of such hard data, the evidence is easily dismissed as anecdotal. However, the systemic failures to protect disabled persons' rights are exposed when reviewing the current setup, which means that disability rights are inadequately protected where a person is not in a conventional employment setting. In the case of disabled app developers, this could be relatively easily remedied. The first step would be to allow developers to notify the platforms of their disability, with relevant details about the type of adjustments required. This would provide some much needed insight to the magnitude of the problem by making the invisible visible. Ideally, this information would then be used for a disability-friendlier assessment process, as well as specific support services where these are required by a disabled developer, throughout the app review process and for the redress of any grievances. If concerns arose about illegitimate claims of disability being made in order to access better customer services, proof could be required. Apple currently requires a government-issued photo ID for identity verification from anyone enrolling in the Apple

⁵¹ In the ongoing monopoly case against Apple, the Solicitor General was recently asked for his opinion, as the issue was one of great complexity and is still not considered settled even after the judgment in *Pepper et al v Apple Inc.* earlier this year: 'Pepper v. Apple Inc., No. 14-15000 (9th Cir. 2017)' (*Justia Law*) <<https://law.justia.com/cases/federal/appellate-courts/ca9/14-15000/14-15000-2017-01-12.html>>, and 'Apple Inc. v Robert Pepper' (14-15000) <<https://www.supremecourt.gov/docket/docketfiles/html/public/17-204.html>> both accessed 15 July 2018.

⁵² 'Global App Downloads & Consumer Spend Hit Record Levels: Q3 2017 Recap' (*App Annie Content*) <<https://www.appannie.com/en/insights/market-data/global-app-downloads-consumer-spend-hit-q3-2017-recap/>> accessed 15 July 2018.

Developer Program⁵³ and a similar process could be implemented for checking the legitimacy of a disability claim.

The Digital Economy as a workplace would appear to offer an opportunity for those who do not easily gain access to conventional employment, either due to the severity of their impairment or a lack of appropriate adjustments to accommodate them. It provides great and sometimes unique opportunities for gaining a living to many who cannot currently work within conventional work settings, for instance in the form of self-employment. It should support and facilitate the fair development of such opportunities. The current regulatory setup leaves an accountability gap for disabled app developers' protection, and although hard law might be used to enforce these rights as a last resort, it is hoped that an ethical stance might encourage platform providers to implement better policies to address the current accountability gap. This would also make the overall process fairer for all developers in a de facto duopolistic market.

⁵³ 'Identity Verification - Support - Apple Developer' <<https://developer.apple.com/support/identity-verification/>> accessed 15 July 2018.