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GLEICHSTELLUNGSBERICHT

Shaping digitalisation in a gender-equitable way

Summary of the Expert Opinion of the Third Gender Equality Report of the Federal Government

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More information about the Expert Commission:
www.dritter-gleichstellungsbericht.de/de/topic/57.expert-commission.html

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From the mandate to the report

From the mandate to the report

In January 2021, Prof. Dr. Aysel Yollu-Tok, Chairwoman of the Expert Commission, presented the Expert Opinion for the Third Gender Equality Report of the Federal Government to the Federal Minister for Family Affairs, Senior Citizens, Women and Youth, Franziska Giffey. The mandated brief read: "What steps need to be taken to shape the developments of the digital economy in such a way that women and men gain equal capabilities?"

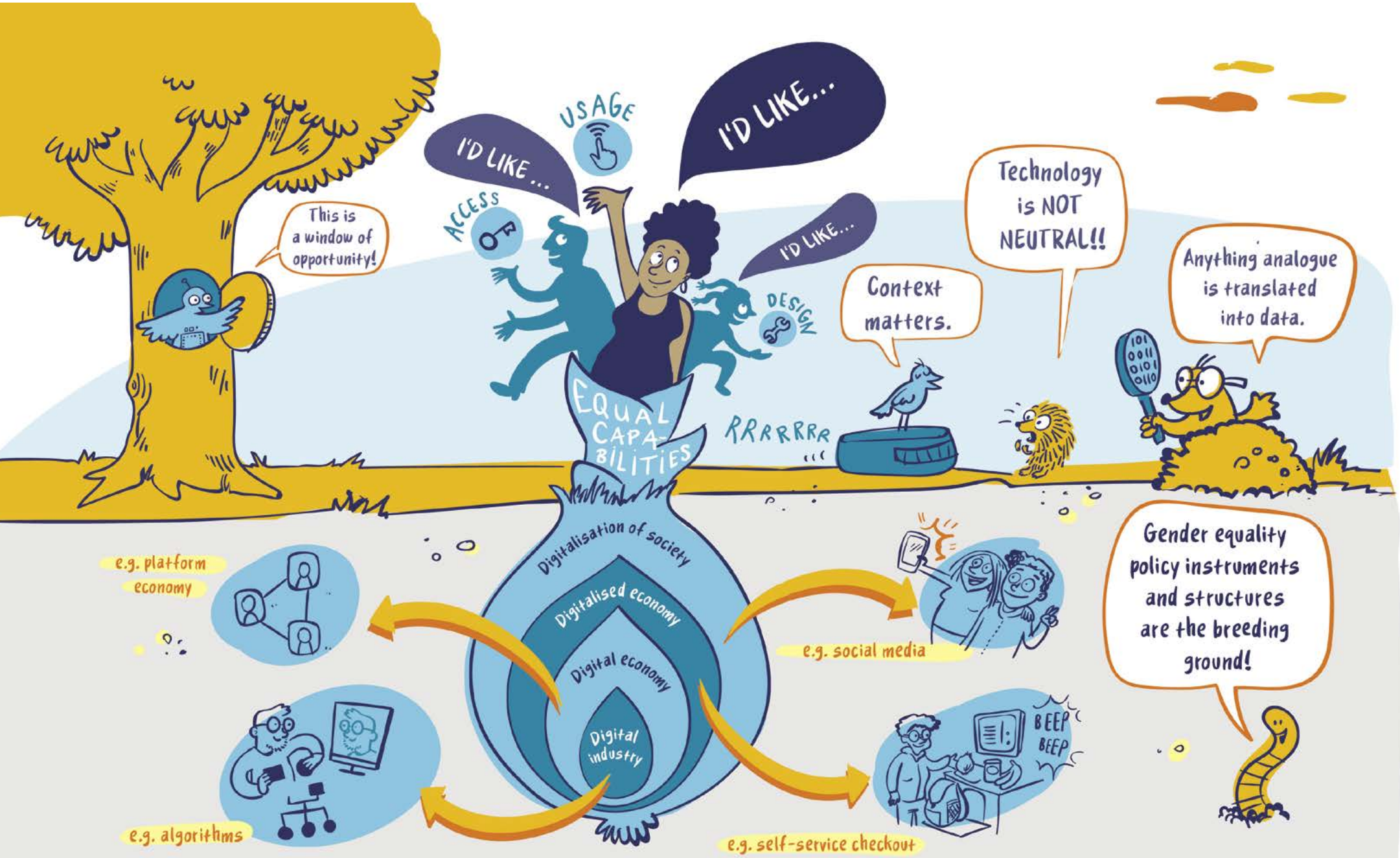
With its reference to these equal capabilities regardless of gender, the present Expert Opinion follows on from the Federal Government's First and Second Gender Equality Reports – but for the first time focuses on one key issue. However, this does by no means reduce the amount of topics to be dealt with. After all, digitalisation is undoubtedly a development that affects all areas of society and must therefore be thought of in conjunction with gender equality in a universal and multi-layered way.

This present brochure explains the main contents and recommendations of the extensive Expert Opinion, which comprises almost 200 pages and 101 recommendations for action. The Expert Opinion is the result of one and a half years of intensive work by the Expert Commission. The Commission had been tasked with drafting the Expert Opinion by Federal Minister Franziska Giffey on 5 April 2019. Since digitalisation is a process that by far exceeds and transcends the competence of individual disciplines, the Expert Commission was comprised of members from a diverse set of disciplines. Bringing together such diverse perspectives as economics, law, computer science, sociology and social pedagogy was undoubtedly a challenge. However, this also led to many exciting and fruitful discussions about terminology and approaches.

In the course of one and a half years of intensive work, the experts engaged in a lively exchange in a variety of formats. The work of the Expert Commission was supported scientifically and organisationally by the Agency for the Third Gender Equality Report of the Federal Government, which was likewise multi-disciplinary in composition. In addition to the regular working meetings of the Expert Commission, a multitude of Expert Meetings with representatives of various bodies dealing with digitalisation took place: external experts from science, associations and institutions were invited to specific hearings in which current research questions were discussed. The experts also commissioned a series of reports on the respective focal points of the Expert Opinion. Last but not least, the experts discussed their own findings and recommendations as speakers at events. Without this professional exchange and the inclusion of current research, the Expert Opinion would not have been possible in its present form and including its current complexity of multi-layered perspectives. For the sake of readability, this summary does not cite the relevant sources. They are, however, all referenced in the Expert Opinion.

With the first impacts of the pandemic in early 2020, many people suddenly found themselves directly confronted with the opportunities but also the challenges of digitalisation. All people involved in the preparation of the Expert Opinion of the Third Gender Equality Report felt this as well. The shift of work into virtual spaces as well as the challenges for the reconciliation of paid work and (unpaid) care work did their part in drafting the title of the report, which is also to be understood as a mandate: shaping digitalisation in a gender-equitable way!

Gender equality in digitalisation: access, usage, design



Gender equality in digitalisation: access, usage, design

In debates about algorithms, social media or the working environments of the future, it becomes clear that the advancing process of digitalisation requires smart design. The German Federal Government has already initiated a number of measures in this regard. This includes, among other things, the implementation strategy "Shaping Digitalisation". At the same time, the government is committed to the goal of promoting equality between men and women and reducing existing disparities (article 3 (2) of the Basic Law [Grundgesetz]). To bring the shaping of the digital transformation process in line with these constitutional obligations, it is essential to take a close look and identify where and how digitalisation affects gender relations – and how gender relations affect digitalisation.

The implementation of the Expert Opinion's mandate along the "onion model"

The Federal Government's mandate for the Expert Opinion of the Third Gender Equality Report was: what steps need to be taken to shape the developments of the digital economy in such a way that women and men gain equal capabilities? Following on from this, the Expert Commission first differentiated relevant areas with regard to digitalisation. The Expert Opinion considers the digital industry, the digital economy, the digitalised economy and the digitalisation of society as such.

The Expert Commission structures these areas according to the shape of a sliced onion.

In detail, the layers of the onion can be described as follows:

At the core of the onion is the **digital industry** (information and communication technology). This is where digital technologies – i.e. goods and services such as computer hardware/software and network infrastructure – are being produced.

In the next layer, the **digital economy**, it is not the production of the technology that is at the centre of economic activity, but its usage. These are new business models that would not exist without prior developments in the digital industry. An example of this is the platform economy.

The next layer, the **digitalised economy**, includes all economic activities in which information and communication technologies are increasingly used. As a result, existing business processes are undergoing significant changes. Developments like digital warehouse management, self-service checkouts in supermarkets or electronic documentation systems in care work come to mind here.

With the outer layer, the **digitalisation of society**, the Expert Commission is expanding its view beyond the sphere of business and economy. After all, digital technologies permeate all aspects of social life. Digital networking creates new connections and transcends boundaries between paid work and private life. This is illustrated in particular by the massive spread of remote work/working from home and home-schooling due to the COVID-19 pandemic. Additionally, life outside of paid work and employment is increasingly shaped by digitalisation: one may think of social media, apps or gaming, for example.

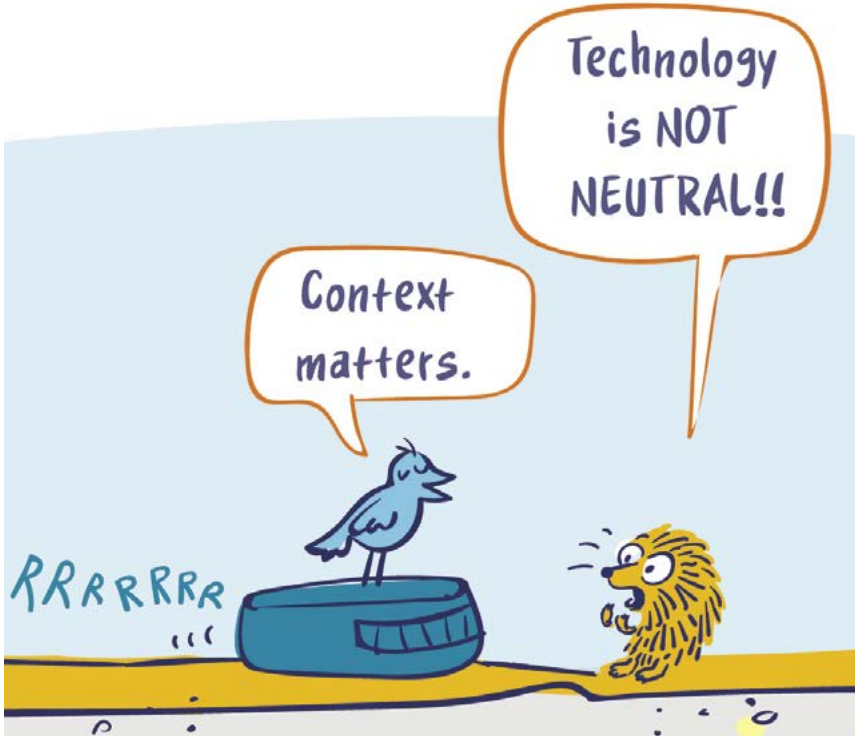
Last but not least, policy structures and instruments advancing gender equality constitute the "breeding ground" for the onion. Wherever the digital transformation creates new barriers and challenges, gender equality policy goals, structures and instruments must be adapted in order to realise equal capabilities.

Digitalisation from a socio-technical perspective

Digitalisation means adapting and shaping the world in a certain way for computers. Computers are calculating machines that process data. On the one hand, information becomes data in order to make it computationally processable. On the other hand, images, words, sounds – in short: everything analogue – is sensory-captured and translated into data and processed further by using computing methods. All this data is ultimately represented with only two characters, zero and one, in the dual number system. Computational processing steps (algorithms) change existing and create new data. Since digitalisation has become a part of everyday life and has fundamentally changed people's lives in recent decades, it is also seen as a social transformation, the so-called digital transformation.

If you have ever translated something from a foreign language, you know that words only make sense in their respective context. Translations thus always imply an interpretation of the context. There is something similar about the "mathematical translation" of the world into data and algorithms: it happens out of a specific context. The world is "interpreted" in the form of data and their mathematical processing by means of algorithms. In algorithmic systems, a large number of algorithms often intertwine and interact in several data processing procedures, which can also work on different hardware components. The final results emitted by algorithmic systems are in turn interpreted by machines or by humans.

Even everyday computer-controlled objects like autonomously driving robotic mowers already show such a translation of the world into data and its interpretation via algorithms. With the help of various sensors, for example optical, tilt or ultrasonic sensors, such data are supposed to detect distances to obstacles or inclinations of the device. However, the signals detected by the sensor do not differentiate between, say, a pile of leaves and a hedgehog curled up in a ball. What makes work easier for gardeners can thus become a deadly risk for hedgehogs if their habitat is ignored as an important context for data interpretation.



ACCESS

USAGE

DESIGN

Therefore, automated processes or algorithmic systems are not and do not act "neutral". That is, they are not and do not act independently of the social context. This means: if the digital transformation process is approached without a specific social context – i.e. purely technology-centred and/or purely market-oriented – errors will occur. This leads to technological applications being introduced without taking into account societal needs. In fact, the applications may even counteract such societal needs.

The Expert Commission therefore advocates a socio-technical perspective on digitalisation, and also applies this itself. Technological developments are thus viewed, assessed and actively shaped in the respective social context. With respect to gender equality issues, this means: just as society is shaped by gender relations, digitalisation is shaped by gender relations. In turn, digitalisation affects society, including gender relations. Digitalisation and gender relations thus influence each other reciprocally. In addition to gender, other intersectionally entangled social inequalities and categories are important. For example, a Black woman is exposed to different forms of discrimination than a Black man or a white woman. The Expert Commission understands gender intersectionally, also and even in parts of the Expert Opinion where an intersectional reference is not explicitly emphasised.

Digitalisation opens a window of opportunity to make prevailing gender relations visible, to question role attributions, and to re-negotiate power relations. The extent to which gender equality increases or decreases in the course of technological change depends decisively on the respective framework conditions of the digital transformation and on the design of transformation processes.

Equal capabilities

Just as within the framework of the First and Second Gender Equality Reports, the Expert Commission defines the goal of equality as achieving a society that provides for equal capabilities for all people, regardless of gender: a society in which opportunities as well as risks are equally distributed throughout the life course. Equal capabilities - as defined in Armatya Sen's approach - do not only mean equal starting conditions. Rather, the goal is to eliminate structural inequalities that may exist despite seemingly equal starting conditions. These structural inequalities often run along gender lines. This can be seen, for example, in the poorer prospects for female founders of receiving financial support from business angels, venture capital and also state subsidies.

Depending on the phase in the life course, people's capabilities can change. Classic transitions in the life course include starting school, progressing to training or university, entering working life, the birth of the first child, professional transitions, the need to care for a relative, marriage or divorce. For the respective people, their possibilities and opportunities for action are realigned in these transition moments.

Social transformation processes can change the course of people's lives and their opportunities as well. This is the case, for example, when the acquired profession disappears in the course of technical innovations or when new professions emerge: for example, in cities such as Berlin or Munich at the end of the 19th century, there was a widespread pneumatic post system that was predominantly operated by women, the pneumatic post clerks. When the telephone became widespread, this profession disappeared. Within a short time after the introduction of the technology, the telephone switchboard operator became an occupation again predominantly carried out by

women. The so-called "Fräulein vom Amt" [Miss from the office] disappeared herself in the 1960s, when the dialplate became the norm.

Capabilities and their potential for realisation must thus be continually put to the test. The corresponding political, economic and social framework conditions must be adapted. Only in this way can policymakers, the economy and society ensure that capabilities be distributed and achieved regardless of gender – for every person, in every phase of life, and especially in any processes of social/societal change.

Access, usage and design

Often, equality in the digital transformation process is merely discussed in terms of equal access to digital technologies, such as laptops for mobile and remote working. Yet access to resources such as time sovereignty is also important. Time sovereignty enables people of all sexes to better plan paid work, (unpaid) care for others and self-care.

Beyond access, the issues of usage and design are also relevant.

Gender-equitable usage means that all people, regardless of gender, can equally make use of and benefit from the possibilities of digitalisation. This is not necessarily just about women's access to the digital industry, but also about equal working conditions: so far, women's tenures in the industry have been much shorter than those of men, for example. Another example is social media: women and LGBTIQ+ people who are often intimidated and threatened with gender-based violence on social media use it more cautiously or even withdraw completely.

For one, the question of gender-equitable design relates concretely to technology design: who programs software and how is this done, for instance? How can algorithmic systems be designed to not have a negative impact on equality and equal capabilities?

To illustrate how quickly such a negative effect on equality can occur, take the example of learning algorithms: The research couple Özlem Türeci and Uğur Şahin worked with the Mainz-based company BioNTech and the pharmaceutical company Pfizer to develop a vaccine to protect against COVID-19. In autumn 2020, they achieved a breakthrough. This news was picked up with great interest by the media. The focus of the coverage was on Uğur Şahin. The algorithm of the largest search engine in Germany – correctly – highlighted Uğur Şahin as the CEO of BioNTech, while Özlem Türeci was in turn only identified as Uğur Şahin's wife, not as the head of the Clinical Development Department at BioNTech.

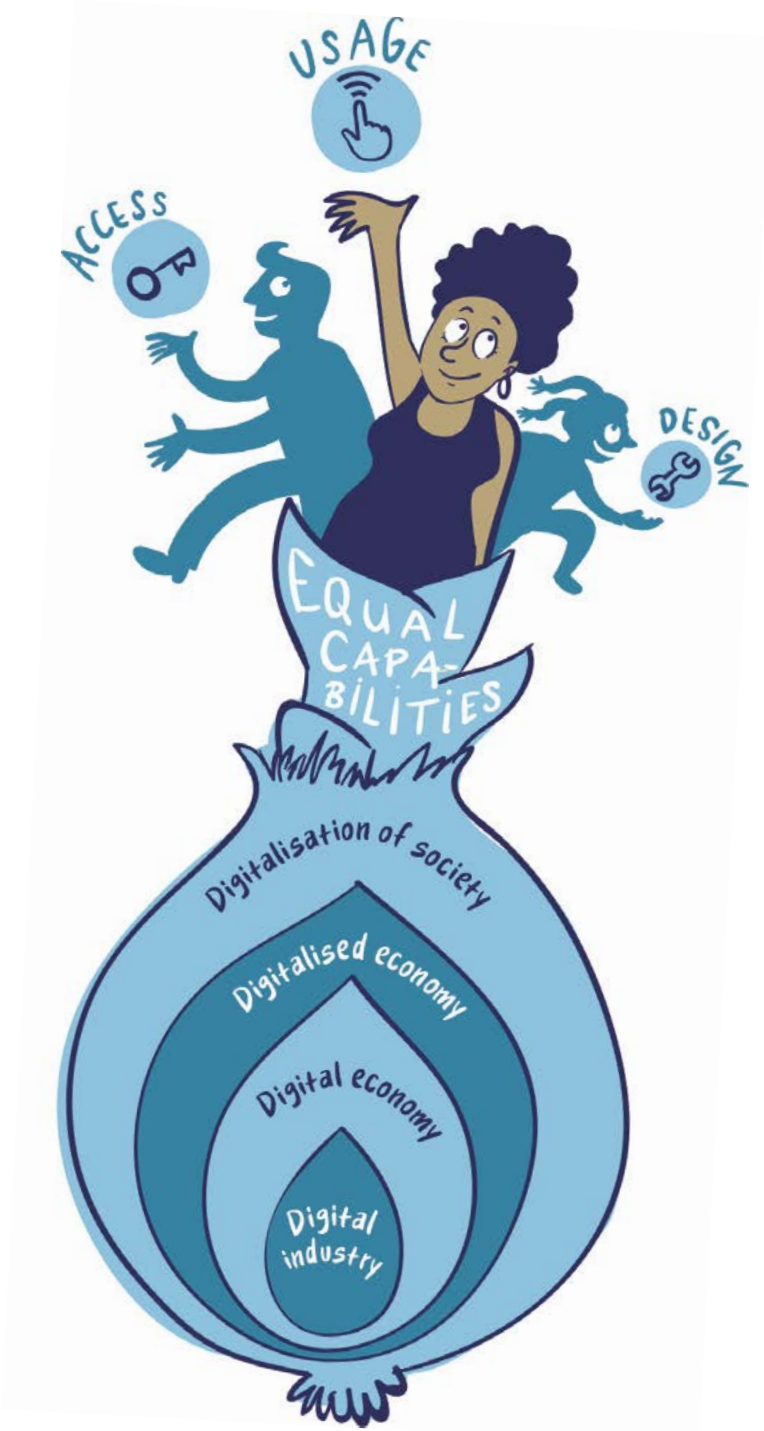
Second, the issue of gender-equitable design relates to the design of digitalisation as a whole: who decides, for example, which technologies should be funded? Who decides on the criteria for funding business ideas? Who decides which work processes are changed in a company?

After all, digitalisation is not a natural phenomenon, it can and must be controlled by people – and not exclusively by technology and/or market processes.

Overall, it should be maintained that the digitalisation process must be analysed, evaluated and shaped with the help of socio-technically oriented perspectives. With regard to equal capabilities in this process, access to as well as usage and design of digital technologies and decision-making processes in particular must be reflected from a gender perspective and pro-

moted in the interest of equality. This requires data and research in many areas. In this regard, the Expert Commission highlights considerable gaps and recommends in particular research in the areas of:

- Business establishment in the digital industry,
- gender relations in platform work,
- labour market, digitalisation and gender,
- algorithms and staff recruitment,
- gender-based digital violence, including a study on prevalence and under-reporting, as well as
- data and fundamental rights.



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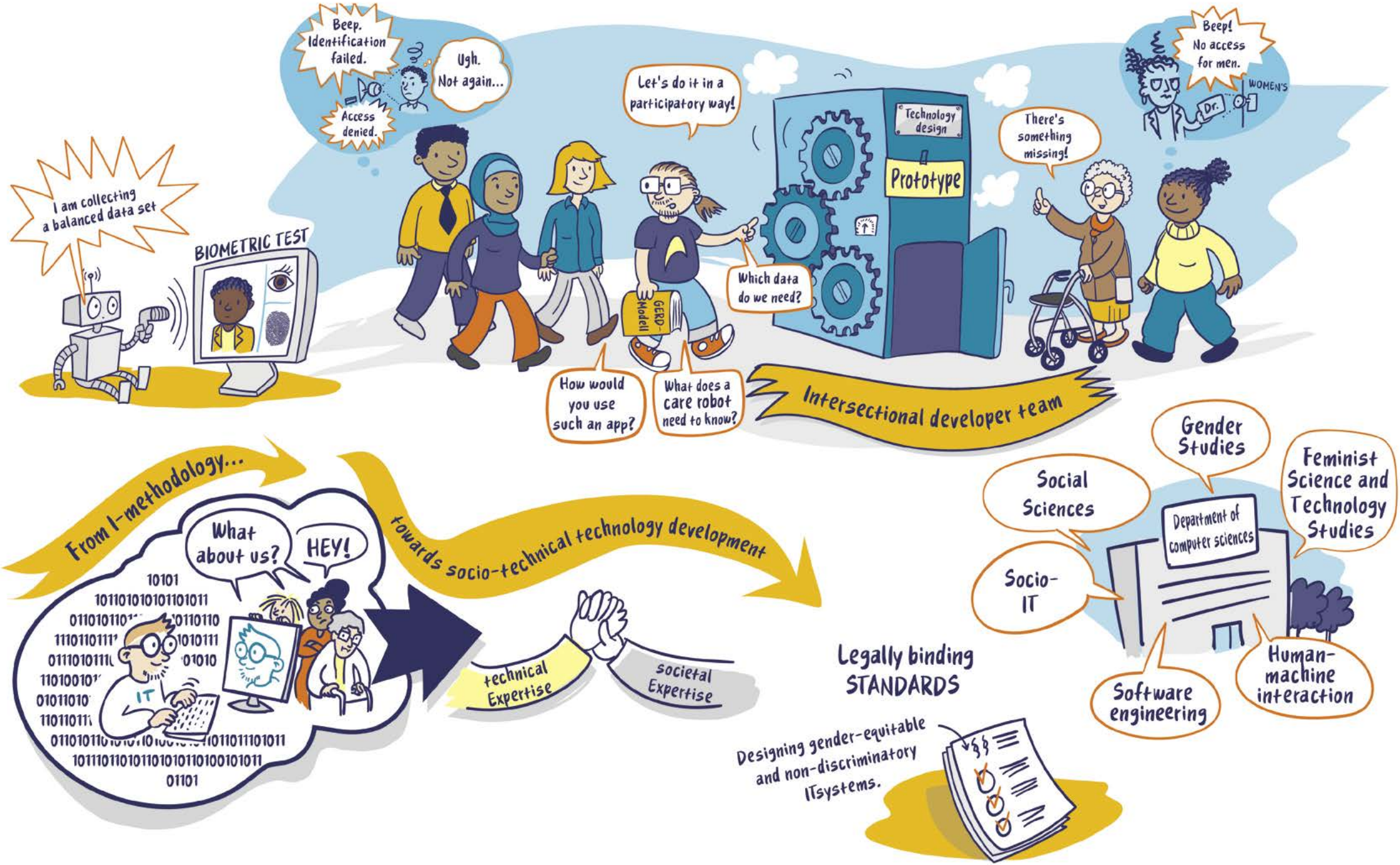
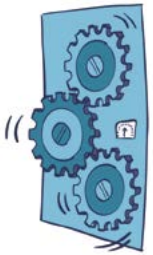
Technology design and gender-equitable digitalisation



Technological design for gender-equitable digitalisation



Already in the development stages of digital technology, diverse perspectives must be included in order to do justice to the diverse life realities of all people. Methods for developing non-discriminatory and gender-equitable information and communication technology (ICT) systems must be standardised for practical application and systematically implemented.

The design of digital products is the foundation for the way they are used as well as for their acceptance: if a website is difficult to read on a smartphone, people will give up reading it. If an online form loses all the data that was painstakingly entered when it is paused for a longer period of time, this frustrates users and they refrain from further use. It is particularly problematic if people are discriminated against through the use of technology. Joy Buolamwini, a Ghanaian-American computer scientist, describes how her face was only recognised by common facial recognition systems when she used a white mask. In another example, an automatic access system denied women with PhDs access to the women's locker room at the gym because the system assigned the doctoral title degree exclusively to men.

Errors in the system: discrimination by digital technology

Digital applications may discriminate. This is the case when biometric access systems recognise Black people poorly or differently from white people or when job advertisements for "truck driver" on a social platform are formulated in the generic masculine and primarily shown to men, while those for "educator" are primarily shown to women, for instance.

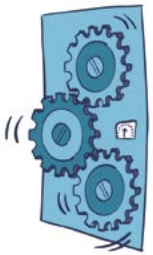
Discrimination-related pitfalls exist, for example, when data is obtained that is used to train algorithmic systems for application in the field of Artificial Intelligence. This also applies when data is compiled, classified, modelled and processed. For instance, if skin colour or gender are not fed in a balanced way into a data set for training a biometric recognition system, the system will recognise the unrepresented or less represented groups equally more poorly. Therefore, a conscious discrimination-sensitive pre-selection is necessary for the end result, i.e. the digital system or product, not to discriminate against any of its users. So far, common software development methods such as Scrum, Extreme Programming, Feature Driven Development, the V-Model, etc. have not paid particular attention to the development of non-discriminatory technology.

Data must be chosen carefully, as an example from Austria shows: in the algorithmic system of the country's public employment services, the labour market chances of the registered unemployed persons are calculated. The equations used for this purpose were created on the basis of historical data on the previous employability of all unemployed persons. Variables such as age, gender, level of education and nationality are included in the calculation with a certain weighting. The classification of the labour market chances of unemployed persons into one of three categories - easy, medium or difficult to place – is intended to support the human employment counsellors in deciding on the type of assistance for the respective job-seeking person. The calculation of the labour market chances of an older migrant woman would show that she is considered "difficult" to place – solely on the basis of previous statistics. In this way, existing structural discrimination is perpetuated.

Technology design from a socio-technical perspective

To prevent such undesirable developments, it is sensible to involve potential users in the development processes of digital products. It is even better to *actively* involve users in the development process – that is, to use participatory design methods. In the development of technology, developers and decision-makers have so far been guided primarily by themselves, by their own experiences and their own realities. However, the digital industry is particularly characterised by a low participation of women and a lack of diversity. There are thus direct consequences for technology development if these limited perspectives are not actively complemented by other perspectives. If technology developers and decision-makers only take themselves and their own experiences as being representative for future users, and if prototypes are only tested in their own team (the so-called I-methodology), there is a risk that the existing perspectives in this team and the stereotypes that go with them will be translated into technology and thus be perpetuated.

Moreover, developers often lack knowledge about social inequalities which leads to the development of technologies that do not meet the diverse needs of society. The more extensively digital technology is used, the more important it becomes to interweave social and technical Expert Opinion. However, social and technical worlds are still rarely thought of jointly when it comes to the training and education of computer scientists.



Methods for non-discriminatory and gender-equitable technology development

There are now many approaches to technology design that could take into account protection against discrimination and support for gender equality in development processes. These approaches range from participatory design of the 1970s via collaborative methods to value-sensitive and anti-oppressive design. However, these methods have so far hardly been used in practice.

The Gender Extended Research and Development model (GERD) is designed for easy access in ICT research and development. It describes the aspects that should be reflected in a software technology development cycle, such as work culture, conception of humans, benefits, and power relations, amongst others. For each phase, there is a catalogue of questions that makes it possible to take a look at the technical product to be developed from many perspectives of diverse groups and individuals of different gender, but also of different ethnicity, sexual orientation or other social categories. In the analysis phase for reflection on the conception of human beings behind a product, it is for instance asked which people will not be able to use the product, or which models of human behaviour are included. In order to establish development models such as GERD in practice, states and governments could set a good example when funding ICT projects by including such models in their calls for proposals or within the respective funding conditions.

Recommendations for action

In order to do justice to different life circumstances and realities, and to avoid discrimination by technologies, it is necessary to start at the development stage.

The Expert Commission recommends:

Taking into account gender and intersectionality in data systems

For the development of non-discriminatory algorithmic systems, relevant actors such as clients and developers must be brought together and sensitised to the potential discriminatory effects of ICT, for example in the form of campaigns, workshops, think tanks, seminars or hackathons. To do this, actors from different fields, including law, gender equality and software companies, need to work together. Data sets must be diversified in terms of groups of people and contexts. Developers need to be made aware of the different effects that data collection, lack of visibility and classifications have on people that are already at risk of discrimination.

Considering gender-equitable and non-discriminatory technology design when awarding public IT projects

The German Federal Government's Digital Strategy should anchor gender-equitable and non-discriminatory technology development as a strategy in its field of action "Innovations and Digital Transformation". When awarding publicly funded ICT projects, requirements to design ICT systems in a gender-equitable and non-discriminatory manner should be implemented.

Establishing gender-equitable and participatory technology design in research and education

Intersectional, inclusive expertise on gender research must be interlinked with computer science and engineering. To this end, existing structures at universities and other institutes of higher education must be promoted and missing structures established, e.g. through chairs with gender research denomination in the engineering sciences and the interweaving of technical and social aspects in curricula. In particular, questions of informational self-determination and (gender-related) discrimination should become an integral part of education in the field of algorithmic systems.

Setting legally binding standards for gender-equitable and non-discriminatory ICT systems

Government and private sector standards for the design of technology must be formulated taking into account gender equality and non-discrimination. It should be suggested that the findings from gender-responsive technology design should be transferred to industrial standards, analogous to the industrial standards for usable, human-centred design. Private standardisation by DIN, ISO, IEC and the likes is not legally binding. If standards are to be incorporated into state legal standards, references or administrative regulations, care must be taken to ensure that these standards were drafted in a gender-equitable and non-discriminatory environment.

Considering restrictions for high-risk technologies

A ban on the use of certain technologies such as biometric systems must be considered as they can have high-risk consequences, especially for vulnerable and marginalised persons. In addition to high data protection hurdles for the use of biometric systems, a ban on biometric facial recognition in the context of public surveillance should be considered.

Gender-equitable access to and continuation within the digital industry

Gender-equitable access to and continuation within the digital industry

Access to the digital industry is still unequally distributed. Moreover, women are more likely to leave these fields of work again. To break down barriers, the work culture must become more open and inclusive. It is not the women who have to change, but the enterprises ("fix the company" instead of "fix the women").

Be it school, training, studies or vocation: there are still too few women choosing subjects like (computer) science, technology, engineering and mathematics (STEM). More than three quarters of the people who study computer science and engineering are men. In mechanical engineering, the figure exceeds 90 percent. In vocational training, the respective proportions of women are even lower. A central barrier to access are gender stereotypes, which are internalised from an early age. Parents and educators in particular play a central role when it comes to sparking, promoting and also appreciating interest in STEM subjects among boys and girls alike.

The digital industry is still strongly male-dominated. The workforce is comprised of more than 80 percent men (17 percent women on average). Moreover, women rarely rise to (top) management levels (keyword: glass ceiling) and they leave the industry much more often than men (keyword: high employee turnover rate).

Unattractive work environment for women?!

The fact that women are less likely to enter the digital industry and leave it more quickly is due in particular to the work culture: cultivating a "hero culture", employees are often expected to "save" projects with overtime work or by doing extra work in one's free time. Such a work culture promotes competition within the company. However, it also leads to a lack of boundaries, because it is implicitly assumed that employees are available for work around the clock. This form of workplace culture is particularly difficult to reconcile with care obligations. The prevailing culture also explains the low proportion of part-time work in the digital industry. The average weekly working hours of women are higher than in other professions. Part-time work is rare.

This is exacerbated by a problematic working environment. Whether sexual harassment, bullying or stereotyping: 42 percent of employees in the digital industry experience discriminatory treatment based on gender or other characteristics. This is ten percent more than among employees in other sectors. Female employees are sexually harassed more often than male employees, LGBTIQ+ employees are particularly often bullied, and people of colour experience stereotypical attributions and inherent devaluations.

Across all employment sectors, the gender pay gap averages 19 percent in Germany. In the ICT sector, in contrast, the gap between the average gross wages of women and men is comparatively low at seven percent. However, this varies greatly depending on the type of employment and the size of the company. In programming occupations, especially in micro-enterprises with up to nine employees, the difference is much greater than in larger companies. Here, women earn on average 34 percent less than men.

There are now many measures in place to attempt to increase the proportion of women in the ICT sector. Strategies are being developed to promote gender equality in training, individual mentoring programmes are offered to women, as is diversity training to men. However, these approaches are clearly not sufficient to bring about fundamental change.

Fix the company, not the women

To bring about change in the digital industry, a paradigm shift is necessary: it is not women who need to be made fit for the STEM sector ("fix the women"). Rather, the work, organisational and training culture must be made gender-equitable to enable more diversity ("fix the company"/"fix education").

A first leverage point could be the agile management methods which are widespread in the digital sector. They enable more direct communication, faster utilisable products and flatter hierarchies. A clear separation and designation of all tasks to be done in a project makes it more visible who is doing which work. This is good for everyone whose work often remains invisible. In addition, the regular, binding and time-limited consultation and evaluation cycles may benefit employees with care responsibilities.

However, such agile methods can also create disadvantages for women if they are stereotyped as being particularly good at communicating and are therefore given mainly moderating roles (e.g. Scrum Master). In addition, agile teams are staffed as interdisciplinarily as possible, but not according to gender or ethnic criteria. The fixed time windows of the consultation and evaluation cycles may also have a detrimental effect. There is a danger that internalised stereotypical ways of thinking are not reflected due to time pressure and thus influence decisions, which are usually made quite quickly.

New forms of digital communication such as intra-company communication platforms and digital networks also play an essential role in the digital industry. Certainly, digital communication platforms in companies can promote employee participation. However, this may also become problematic if the use of such software is confused with co-determination and if organised interest groups, which could advance gender equality issues, are no longer considered up to date.

Digital networks also change communication within companies. This leads to three central problems: first, if managers are reading along on such platforms, minorities may not want to express themselves openly there. In the digital industry, this includes women. Second, constantly new or updated communication channels can overwhelm employees. Third, they can reinforce existing inequalities. Colleagues who are already well connected, working on interesting projects or have a lot of information are particularly visible in these kind of networks as well.

Recommendations for action

Central aspects for equal capabilities in the digital industry are a dismantling of gender stereotypes and the promotion of a gender-equitable work and organisational culture. The Expert Commission thus recommends:

Developing and implementing gender-equitable, agile methods

In the digital sector, agile methods should be intertwined with approaches of participatory technology design (for example GERD). Only then is the possibility of gender-equitable, inclusive and participatory design power given. To this end, it is necessary to introduce new roles such as "Gender Diversity Masters" into existing agile methods. These should explicitly pay attention to a gender- and diversity-balanced composition of the team as well as detect and eliminate stereotypical exclusion dynamics as obstacles to the work process.

Designing new means of communication within companies in a participatory way

In view of the gender-related risks of in-house communication platforms, it is important to close the existing gap in research on this topic. It is also necessary to examine the extent to which employees can be supported through participatory and gender-equitable introduction processes and long-term learning processes.

Establishing state companies and agencies as role models for the approach of "fix the company"

Gender-equitable working and organisational practices in the field of information and communication technology (ICT) are to be developed and implemented in the public service. In this way, this work and organisational culture can serve as a role model.

Supporting specialised gender competences

In the long term, programmes that link the teaching of subject-related ICT skills in (vocational) schools with gender and diversity competences should be promoted. The strategy "Education in the Digital World" of the Standing Conference of the Ministers of Education and Cultural Affairs should be expanded to include modules on gender competence. The Federal Institute for Vocational Education and Training (BIBB) should include gender and diversity competences as a component in its training curricula when developing existing and new ICT occupations.

Specific women's degree programmes in STEM subjects have by now become an important instrument for reducing gender-related barriers to access. The impact of these programmes should be scientifically investigated in order to enable the development of additional offers for universities and schools.

Business establishment in the digital industry

Business establishment in the digital sector

Women have so far been underrepresented in start-ups in the digital sector and in the digital economy. Gender-related barriers to entry must be dismantled, especially in terms of access to capital.

Start-ups and the establishment of new companies are considered a key driver of growth. They offer potential for all sectors, as they expand general economic activity with new products, processes and markets. New businesses in the digital sector and in the digital economy have a significant influence on the digital transformation.

Many things apply to start-ups in the digital sector and in the digital economy that also apply to other sectors: one of the central problems, for instance, is the insufficient social security for self-employed people with low incomes. The latter are often female solo self-employed. In the sector, more than two-thirds of female start-ups are solo enterprises, compared to just under a quarter of initiatives started by men. In the digital sector, there are further problems that make it difficult for women to start up businesses. Although there have been few gender-related analyses of digitalisation start-ups to date, existing studies show that women are heavily underrepresented. The Expert Commission attributes this in particular to stereotypes, access to capital, and the understanding of innovative business.

Young, male, daring – the stereotypical founder

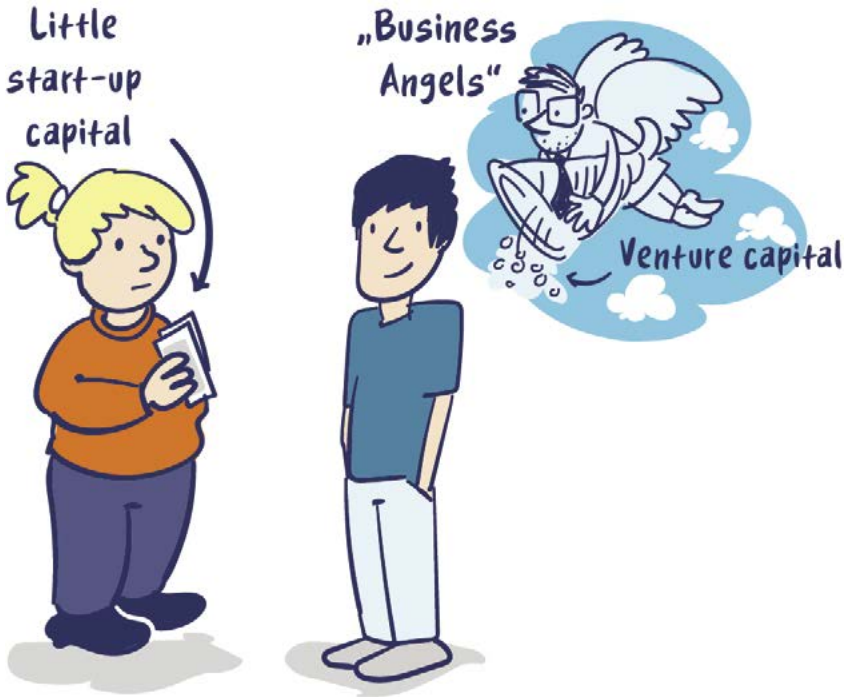
The environment of digitalisation-related start-ups, the so-called start-up ecosystem, is characterised by values that are deemed "masculine". The stereotypical image of the male risk-taking and assertive founder is very dominant in the digital sector and the digital economy partly because it has its origins in the venture capital-fuelled "Silicon Valley model". In this model, a successful business is associated with an almost exclusive focus on fast growth – and less with sustainable economic success.

This male connotation also seems to apply to Germany. In surveys, founders in the digital sector and the digital economy often cite existing gender stereotypes and a lack of role models as major hurdles for women. Among other things, many wish for greater visibility of female entrepreneurs and more intensive media coverage.

Less access to venture capital

The most important prerequisites for start-ups include financing and, above all, start-up capital. Men are supported significantly more often by so-called "business angels", i.e. business people or investors, with know-how but also capital: 22 percent of men's teams receive capital from business angels, compared to just under ten percent of women's teams. The same applies to venture capital. Even in the case of state funding, male teams are ahead with almost 36 percent compared to female teams with 21 percent. Access

to funding sources, whether private or public, is also made more difficult for women by stereotypical ideas of ideal male start-up personalities. For example, when applying for capital, women are more often asked about potential challenges in the start-up process – up to and including questions about the wish to have children or the reconciliation of paid start-up work and (unpaid) care work. In the German funding ecosystem, there is moreover a lack of measures to promote gender equality and concepts that ensure an equality-oriented distribution of financial resources, for instance via the appointment of the respective decision-making bodies.



The need for an extended understanding of innovation

Access to funding for female founders is also made more difficult by the common understanding of innovation. In the context of digitalisation-related start-ups, there is often a lack of a socio-technical perspective. The social/societal context of innovations often takes a back seat in the competition for funding and capital. Technology is understood as a purely neutral and universal instrument. This view also shapes the debate on the concept of innovation. Up to now, turnover and/or employment growth have been emphasised as the goals of successful innovation. Social or ecological sustainability, on the other hand, are rarely taken into account. This also shapes research on digitalisation-related start-ups.

The motives of women and men to found a company and what the goals of their company are differ often. While three quarters of male founders state economic success as the goal of their business, only two thirds of female founders do so.

Female founders focus more on solving social problems and also place more value on contributing to/benefitting the community with their digital start-ups. Half of the female founders classify themselves as social entrepreneurs, compared to only one third of the male founders. “Social entrepreneurship” refers to an entrepreneurial activity that is innovative, pragmatic and dedicated to solving social problems in the long term. An example of this is the GRETA app developed by a start-up, which enables barrier-free cinema for the blind and deaf by providing audio descriptions and subtitles via their own smartphone.

Recommendations for action

In order to give women and men equal opportunities to start a company in the digital industry, the course must be set to make start-up ecosystems more diverse and to strengthen female role models.

The Expert Commission recommends:

Establishing gender-equitable support programmes

In the interest of equal access to start-up capital, funding programmes must be evaluated from a gender perspective and adapted in an equality-oriented manner; this applies in particular to the allocation procedures (of funding and capital) and the composition of the committees that decide on funding programmes and allocation.

Setting up, establishing and expanding coordinated support services

A comprehensive and coordinated funding strategy must be developed by the Federal Government and the states (Länder) in order to break down gender-related barriers to digitalisation-related start-ups and to promote successful start-ups.

Supporting research on solo self-employment of women in the digital sector and the digital economy

More research is needed on solo self-employment of women and marginalised groups in the digital sector and the digital economy. So far, there are no robust and generalisable findings on this issue.

Increasing the visibility of female founders and strengthening networks

Campaigns, events and networks increase the visibility of female founders in the digital sector and in the digital economy and counteract gender stereotypes. Therefore, sector-specific networking of female founders from the digital sector and the digital economy is important. The sector-specific networking of digitalisation-related start-ups should be strengthened by involving relevant actors such as start-up centres, funding programmes and universities.

Designing gender-equitable analogue spaces for digitalisation-related start-ups

Co-working spaces are an important infrastructure for digitalisation-related start-ups. If public funds are used in the establishment of co-working spaces or similar spaces, a respective care infrastructure must be planned and implemented as well in order to promote a better reconciliation of care work and self-employed paid work.

Developing and promoting a national action plan “Socio-technical innovation hub Germany”

A national action plan “Socio-technical innovation hub Germany” must be established. In addition, a civil society debate initiated by the Federal Government with companies, science and associations is necessary to better understand innovative start-ups in the context of digitalisation.

Platform economy

Platform economy, new forms of work and gender relations

As long as the legal status of platform workers is not clarified and platform work does not enable independent, livelihood-securing and non-discriminatory work including comprehensive social security, platform work is bound to be a dead end in the life course – especially for women.

With the spread of digital technologies not only the way people communicate with each other is changing, but also the way work is distributed and organised. One example of this are digital platforms for the procurement and brokering of work. In the past, if you wanted to have a bathroom modernised, you contacted various companies for heating and plumbing installations by phone. Today, it is possible to advertise the job on a digital platform for tradespeople and select a company from the received offers.

Platforms for finding work are ubiquitous in many people's everyday lives. In addition to manual work, services such as food delivery, cleaning, translations or software development are often brokered online. Platform work, also known as click-, crowd-, or gig-work, is a prime example of how the world of work is changing due to technological developments and how a new form of work organisation and allocation is emerging.

Brave new working world?

Although platform work is becoming more and more relevant economically, its effects on gender relations have hardly been studied for the German context so far. From an equality policy perspective, platform work seems to have some advantages: it is flexible in terms of time and often not tied to a specific location. It could thus potentially facilitate the reconciliation of paid work and unpaid care work, for instance when returning to work after maternity leave, and especially in rural or structurally weak regions. However, the available studies – especially from the US – point to significant risks of discrimination.

Discrimination risks due to algorithms

The brokering of work and placement of orders via platforms is largely automated and thus seemingly objective. However, the use of algorithmic systems harbours considerable potential for discrimination.

Discrimination can result from automated rankings of contractors, which are decisive for the awarding of contracts as well as income opportunities. Rankings are created by algorithmic systems based, among other things, on the evaluations of the clients. Prejudices of clients with regard to gender or ethnic background of the contractors may influence ratings – which leads to poor ratings and consequently has an impact on the automated ranking.

In some cases, algorithmic systems also use personal data such as age, gender or ethnicity to target potential clients or contractors. It is thus suggested that there is a correlation between gender and certain characteristics or skills: for example, women could be considered as particularly good cleaners or men as more skilled craftsmen. In this way, prejudices are perpetuated instead of promoting equal capabilities independent of gender.

Rating systems and online reputation

Good ratings from clients or the platform operator are important for platform workers to win jobs and gain higher prices/hourly wages. The reputation someone builds online shows the qualifications and experience gained on the platform. These can also be relevant for work on other platforms or for future jobs. In this respect, rating systems should not be seen as fundamentally critical, but may actually open up career prospects. At the same time, such online reputation harbours risks of discrimination because, unlike references for which there are at least a set of formal criteria, the evaluations are *subjective* assessments by the evaluators which, as already described, may reflect prejudices.

In addition, the possibilities of taking along the reputations acquired on a particular platform are limited (portability). This can lead to dependencies on individual platforms (lock-in effect). If platform workers are sometimes arbitrarily blocked, if they want to leave the platform due to suddenly imposed new obligations or if the platform ceases operations, the acquired reputation is lost. This can ultimately deprive those affected of their economic livelihood.

Gender Pay Gap – also in the platform economy?!

Assessments by the International Labour Organisation (ILO) show that work on platforms is often poorly paid. There is no meaningful data on the platforms that are particularly relevant in the German context. Meanwhile, legal regulations on the minimum wage in Germany only apply if the activity mediated by the platform is a dependent employment. However, this is often not the case.

US studies also point to gender-based differences with regard to pay on platforms, even if the platform worker's gender is not visible. The reasons for this are manifold. An evaluation on the platform Upwork, for example, shows that women earned on average 26 percent less than men. This difference is mainly due to the fact that women work in lower-paid jobs, such as translations, administration or customer services. Men, on the other hand, often offer their services on this platform in better-paid fields of activity, such as IT and communication, architecture, engineering or programming. The example of Upwork shows that in the digital economy – just as in the regular labour market – there is a strongly unequal distribution of women and men across different fields of activity, which then also leads to differences in income. A study conducted for the platform Amazon Mechanical Turk also shows that women, due to care responsibilities, usually chose less complex or less time-consuming tasks and interrupted their work more often. Men, on the other hand, completed many tasks in succession and thus achieved learning and economies of scale, which ultimately led to better pay. There are also examples of pay differentials in favour of women, though. On the cleaning platform Helpling, for instance, women demand four percent higher hourly wages than men. The various causes of gender-related income differences on platforms have not yet been sufficiently investigated.

Furthermore, it is not clear how the gap between the earnings of men and women (Gender Pay Gap) should be calculated for the very different working and remuneration structures on different platforms.

Better prospects for reconciliation?

For people who can only work irregularly due to family commitments, platform work promises better reconciliation of paid work and unpaid care work than the regular labour market, thanks to its high degree of flexibility

in terms of time and location. Platform work therefore seems to open up employment opportunities especially for women. However, this assessment often ignores the structures and framework conditions of platform work.

For instance, if time availability is limited due to care responsibilities, this tends to lead to short-term, small-scale and rather basic activities that have a negative impact on job opportunities and income prospects. Moreover, due to the competition with other platform workers, the pressure to be constantly available is even higher than for dependently employed workers working from home. Last but not least, platform workers who are considered self-employed are not covered by the respective labour and social protection regulations.

Gender-based violence and sexual harassment

In the context of platform work, the risk of gender-based violence and sexual harassment increases as well. This applies both to activities that take place "offline" in private spaces, like cleaning services, as well as to online work. Due to the privacy, the anonymity and the lack of support from the platform operators, assaults have reached a new quality. The crossing of boundaries is often not perceived as such or rather tolerated. Reasons are the precariousness of the activity, the weak legal status of the workers and the comparably short duration of the activity. The casual manners and the sense of community often created by platforms also blur boundaries. On the one hand, there is a lack of legal clarification of the platforms' obligations with regard to protection against gender-based violence and sexual harassment. On the other hand, there is also a need for increased education of platform workers about already existing protection rights.

Insufficient social security

Platform work is often considered self-employment. With this contractual arrangement, platform operators not only evade labour law requirements that include protection against discrimination and violence. They also avoid social obligations that apply to regular employees, including the payment of social security contributions. Many platform workers are therefore not sufficiently protected against risks such as unemployment, illness or old age. For self-employed women, there is also a lack of adequate maternity protection.

The well-known gender-related risks of solo self-employed people with low incomes, who are often women, are thus perpetuated in platform work. Just as in the regular labour market, the regulations on social security via a spouse or partner or the possibilities of marginal employment set false incentives. What may seem economically sensible in the immediate, short-term situation leads to poverty in old age, among other things.

Lack of co-determination, advocacy and representation of interests

Last but not least, the drafting of contracts on platforms circumvents labour law requirements of co-determination in companies. As a result, co-determination structures and collective representation of interests are usually lacking. This also hinders the implementation of gender-equitable working conditions and effective protection against gender-based discrimination and violence. That being said, there are initiatives aimed at strengthening the interests of platform workers. Examples are the Code of Conduct of the German union IG-Metall or the cross-national initiative "Fair Crowd Work". However, gender-related inequalities are hardly addressed in these initiatives.

Recommendations for action

The unclear legal status of platform workers is one core problem of platform work, which also has an impact on gender-related (equal) capabilities. With legal clarifications, many of the equality-relevant problems of platform work, such as the lack of protection in the case of (gender-related) discrimination, could be solved.

The Expert Commission thus recommends:

Clarifying the legal status of platform workers and safeguarding social protection

The legal status of platform workers must be as easy to determine as possible. To this end, a legal presumption for the existence of a dependent employment relationship should become the standard and a general procedure for determining the status, for example within the framework of a mandatory certification, should be established. Furthermore, platform workers who are in fact self-employed must be fully included in social insurance systems. Platforms should be made responsible for financing the social security of platform workers. This could be done, for example, through a monetary contribution to be paid by the platform operators.

Including platform workers in the General Act on Equal Treatment

To ensure legal certainty and comprehensive protection against employment discrimination, the General Act on Equal Treatment *(Allgemeines Gleichbehandlungsgesetz, AGG)* must be amended to include all platform workers, regardless of their legal status, in its scope of application. This could be achieved by redrafting section 6 (3) of the *AGG*. Furthermore, section 12 *AGG*, which obliges employers to take effective measures for protection against discrimination, including gender-based violence, should be applicable to platform workers as well.

Providing better protection against algorithm-based discrimination

The "algorithmic distribution of tasks in platform work" is to be included in the positive list of operations pursuant to article 35 (4) of the EU General Data Protection Regulation (GDPR) for which a data protection impact assessment is to be carried out. In addition, the content of this impact assessment must be expanded to include discrimination risks. Due to the non-transparency of algorithmic systems, section 22 *AGG* should stipulate that platform operators bear the burden of proof that they do not violate provisions of the *AGG* when using these systems.

Reforming the rating/reputation system and facilitating transitions to the regular labour market

Platform workers should be given the opportunity to build on their existing online reputation when moving to another platform, e.g. through a binding entitlement to proof of activity or by means of interoperability of platforms' reputation/rating systems. Workers should also be able to formally prove their experience and (digitalisation-related) competences from platform work via a standardised procedure. Such a procedure or system would still have to be developed. At the same time, it must be ensured that this data of platform workers is not passed on to third parties such as insurance companies, but is used exclusively for the purpose of assessing work performance.

Providing better protection for platform workers against gender-based violence

Platform operators must fulfill their already existing obligation under section 241 (2) of the German Civil Code *(Bürgerliches Gesetzbuch, BGB)* to ensure the protection of the rights and interests of platform workers. This includes effectively preventing digital and analogue gender-based violence.

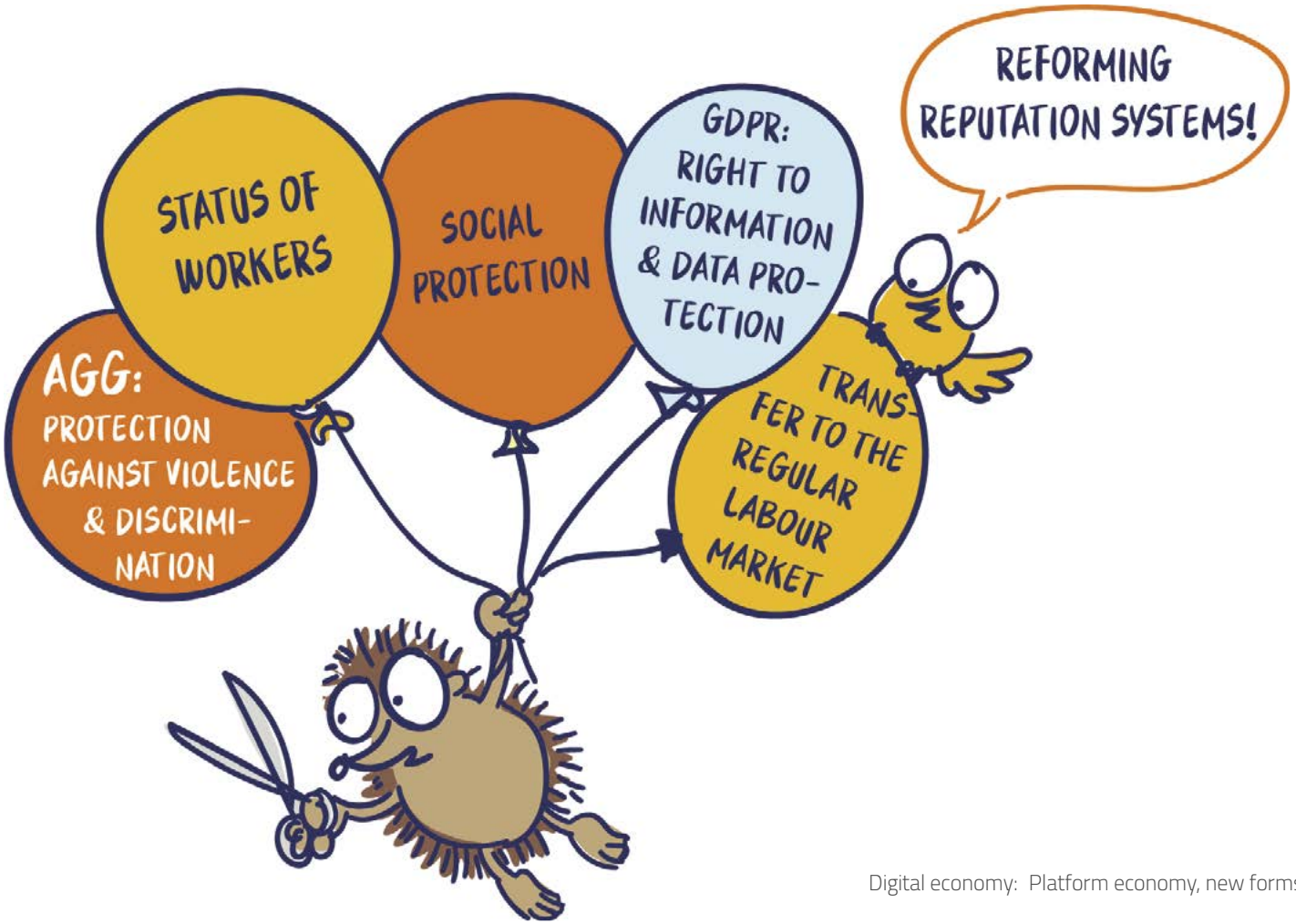
Legislators should furthermore clarify that the general standard section 618 *BGB*, which obliges employers/contractees to protect the life and health of service and work providers, also applies to platform work.

Ensuring equal pay

The legal right to equal pay for equal work and work of equal value must also apply in the platform economy. In addition to the inclusion in the protection against pay discrimination according to *AGG*, studies must be commissioned for this purpose. They should deal in depth with gender-related income and remuneration structures. Furthermore, a concept for calculating income differences on platforms must be developed.

Introducing support mechanisms

The exercise of trade union rights and co-determination must be made possible, regardless of the legal status of the platform workers. This includes, among other things, possibilities for virtual communication and the introduction of contact, complaint and arbitration bodies.



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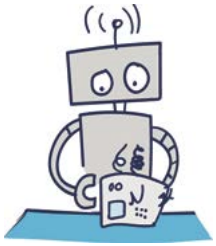
Work and labour market in the digital transformation process

Work and labour market in the digital transformation process



Digitalisation in itself does not challenge the generally accepted equality policy goals for paid work/employment, nor does it solve the existing problems. However, if the process of digitalisation in the labour market is actively shaped, for example through the systematic and obligatory use of gender-equitable job evaluation procedures, this process would certainly have the potential to improve equal capabilities.

Digitalisation has changed the world of work across all sectors and professions: in the field of outpatient care, digital tools take over the route-planning of care workers. In supermarkets, fully automated self-service checkouts do the work of cashiers. In the wake of the COVID-19 pandemic, office workers have integrated video conferencing tools and the use of cloud systems into their daily work. Everywhere, digital technologies have created new opportunities to complement, support – and in some cases replace – human labour. This is also having an impact on the labour market.

The computer: colleague or competitor?

One of the most frequently debated topics is what is subsumed under the term "substitutability potential": namely, the amount of occupations and activities that can be replaced by computers or computer-controlled machines. The debate about the impact of this potential substitutability is not unique to digitalisation. In the course of all technological change in recent centuries, such effects on employment have always been discussed. However, studies show that the danger of a large-scale reduction in employment in the overall economy as a result of advancing digitalisation can be regarded as low. This is because technological development is always only one factor among many that influence developments on the labour market. Ultimately, it is the interplay of technical and institutional as well as organisational conditions that determines the actual extent of changes.

From a gender equality perspective, the question arises whether the genders will be affected differently by digital automation. Generalisations are not possible in this regard. Rather, it is necessary to take a closer look at the specific sectors, occupational fields and activities. This is due to the fact that the German labour market is highly segregated along gender lines: the majority of men and women still work in different occupational fields (horizontal segregation). At the same time, career opportunities are unequally distributed between the genders, and women are underrepresented in leadership positions (vertical segregation). In addition, women are more strongly represented in mini-jobs and part-time work than men.

Substitutability potential meets a gender-segregated labour market

The effects on the substitutability potential resulting from the gender segregation of the labour market become clear in the following example: in the occupational segment of business management and organisation, the overall share of women is 64 percent. The occupations that are mainly carried out by women (such as secretary or office manager) consist of activi-

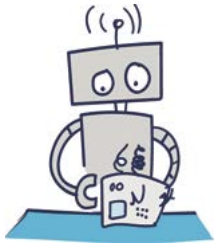
ties that are considered substitutable by an average of 63 percent. Men, on the other hand, are more often found in managerial positions, with lower substitutability potentials of 47 percent.

With regard to different forms of employment, it can be observed that substitutability potentials are significantly lower for part-time employees and for marginally employed persons than for full-time employees subject to social security contributions. The first two forms of employment have a high proportion of female workers. At the same time, the figure for jobs subject to social security contributions, which are mainly performed by men, is 34 percent, and for jobs that are mainly performed by women, 15 percent. This shows that generalisations with regard to substitutability potential are hardly appropriate.

Overall, the substitutability potential in many occupations predominantly performed by women is just under 70 percent; in occupations predominantly performed by men it is just over 70 percent. In this respect, no fundamental, but only gradual differences can be identified with regard to gender-related effects.

The future of the labour market is undecided

All in all, it is currently hardly possible to make reliable statements about changes in gender-based labour market structures due to digitalisation. This applies, for example, to changes in women's opportunities for job advancement or in the distribution of occupations between the genders. The further development regarding the Gender Pay Gap is also hardly foreseeable. However, it is to be feared that this gap will tend to widen, as women are underrepresented in fields such as the digital industry with its rather positive development forecasts.



It is not yet foreseeable which activities and which skills required for them will gain or lose importance in the ongoing process of digitalisation. What is foreseeable, though, is that they will change. In order to be as broadly prepared as possible for all developments and to be able to react flexibly, it is therefore particularly important to design transition paths between professions. In terms of equal capabilities, these transition paths must be enabled and be designed independently of gender.

Digitalisation as an opportunity for re-designs

The digitalisation of the labour market can certainly be an opportunity to improve equal capabilities. To achieve this, the right course must be set, especially within companies. The constant assessment and monitoring of the actual requirements of individual jobs in terms of skills and knowledge, the modernisation and adaptation of job profiles and job descriptions as well

as job evaluation procedures are important starting points in this regard. At the same time, existing and utilised digitalisation-related competences in the various occupations must be made visible. These are often underrepresented in job evaluation. This is particularly true in fields where they have hardly been recognised so far, such as care work. On the other hand, competences perceived as "female" (such as psychosocial requirements) must also be adequately taken into account and remunerated accordingly.

A participation-oriented design is particularly important. Here, the commitment of actors in co-determination at the workplace, such as works councillors and gender equality officers, is particularly important.

Digitalisation: an issue for all groups and professions!

In principle, all genders must benefit equally from digitalisation-related innovations in the labour market. This presupposes that technological improvements are also considered in people-related service professions such as care professions – i.e. professions that are predominantly practised by women – whose technical components are often not perceived entirely. If such professions are disregarded or disadvantaged in the debate, this leads to barriers to access to (digital) technology for those employed in these fields. Such barriers must be dismantled by taking a differentiated look at occupational requirements, competences and technology-based opportunities. Here, socio-technically oriented needs analyses and participatory technology design are required throughout. Otherwise, there is a danger that employees in these sectors will be additionally burdened instead of supported and relieved when it comes to the introduction of new technologies.

Recommendations for action

In order to shape the technological changes in the labour market in a gender equality-oriented way, a gender-equitable (re)evaluation and remuneration of work is needed, across all sectors and professions. The Expert Commission recommends:

Developing and implementing new work evaluation processes

The (re)evaluation and remuneration of work requires analyses of job descriptions as well as job evaluation procedures that ensure a gender-equitable description, evaluation and remuneration of a work activity, taking into account the necessary digitalisation-related requirements and competences. For this purpose, it is recommended to award a public contract for the development of a corresponding job evaluation procedure, which will be tested and finally implemented in the digitalised economy within the framework of a broadly based model project.

Extending the German Transparency in Wage Structures Act

As an important instrument for occupational gender equality the German Transparency in Wage Structures Act must be further developed concerning a gender-responsive digitalisation. Changes are required in particular with regard to an expanded coverage of companies that are considered to be subject to reporting requirements, with regard to standardisation and bindingness, as well as a corresponding readjustment of the envisaged audit obligations with regard to wage regulations.

Supporting socio-technical research in care professions

Especially research that takes into account the complexity of work organisation and design in people-related fields of employment should be promoted. In particular, the effects of digital technologies with regard to equal capabilities of employees should be considered.

Requirements for competences and skill acquisition

Requirements for competences and skill acquisition

All people should be able to participate equally in the digitalisation of society and help shape it. Nevertheless, there are still too high gender-related access barriers in all phases of education, especially in advanced vocational training. Furthermore, educators and teachers in all educational institutions, from nursery schools to universities, need adequate digitalisation-related competences that also include knowledge relevant for gender equality.

Developments on the labour market also lead to changing requirements for the employees. People need digitalisation-focused skills in order to cope with a digitalised society – in particular on the job market – and to shape processes themselves as well. Digitalisation-related requirements must therefore be considered as a cross-sectional task within all educational programmes. All people, regardless of their gender, must be able to acquire such digitalisation-related skills. For this, they need access to further education and vocational training, amongst other things.

Digitalisation-related competences – more than just utilising technology

Digitalisation-related competences and skills are a mixed bag. They are not limited to the ability to use certain computer programmes or to connect the office computer to the WiFi printer. Rather, they also include the competence to search for information online and to evaluate it with regard to its seriousness and credibility. They furthermore encompass the ability to communicate via digital channels or to produce digital video and audio formats. A basic understanding of the functioning, programming and the limitations of information technology systems is also important. The same goes for knowledge of data and privacy protection as well as how to deal with dangers in the digital space. Users must also be able to reflect on images and profiles in social media in the context of economic, social and political interests.

In this respect, having digitalisation-related competences means being able to adopt a socio-technical perspective – i.e. to understand *that* and *how* technology and society are interrelated.

Opportunities and risks of digitalised training

Digitalisation-related competences are needed in many occupational fields. Digitalisation is not only changing the type of competences needed, but also the way in which they are acquired. This presents new opportunities for gender equality: by using digital technologies, the acquisition and further development of competences and skills can be made more flexible in terms of location and time. Digitalised education offers, such as online courses and learning materials, are now offered more frequently; and some of them are made available free of charge (so-called Open Educational Resources, OER).

Offers free of charge can lower the access threshold. However, there are hardly any findings on the quality and actual use of OER – including from

a gender equality perspective. It is also problematic that purely digital formats increase the risk of dropping out of offers, especially for women.

Closing the gaps in training and education

The risk of dropping out is increased for women not only in digital but also in analogue education/training formats. So far, there are only few findings on the question of why people drop out of vocational training. In order to close gaps in the existing training system, the reasons for this increased dropout risk of certain groups must be analysed.

Nonetheless, the overall participation in vocational training programmes has risen. Men participate in such training measures more often than women, though. In addition, men participate in economically more viable trainings and more often in company-based initiatives. Women are more likely to take advantage of commercial training offers – and more likely to bear the costs themselves.

When it comes to digitalisation-related skills, there is often a lack of public offerings aimed at women and other underrepresented groups. In this situation, community-oriented actors in the field of advanced/vocational training fill a gap in the market. There are a number of providers who explicitly address girls and/or women with their courses and workshops on programming and digitalisation. Others offer counselling, coaching or vocational training for women or organisations with a focus on ICT and media skills. They thus contribute to more gender equality in access to digitalisation-related skills.

Against this backdrop, the National Skills Strategy (Weiterbildungsstrategie), adopted in 2019, also plays an important role. With a view to the digital transformation, it specifies action goals for improving vocational training provisions and access to these. However, it does not include a specific gender perspective.

(Vocational) training – but in a gender-equitable way!

In order for teachers to be able to design and organise the acquisition of digitalisation-related competences in a gender-responsive way, they themselves need digitalisation-related gender competences and the necessary technical, financial and time resources. This applies to all areas of education, be it nursery schools, schools, universities, vocational trainings or other further education.

Digitalisation-related gender competences include knowledge by information, willingness by sensitisation and ability by application. These include:

knowledge about gender relations in the context of technology design, knowledge about the discrimination potential of algorithms and about forms of digital violence,

reflection on one's own (gender) role in relation to digital technologies,

the ability to use gender- and diversity-sensitive language, images and other materials, to implement violence protection concepts and to apply and teach data protection-compliant practices.

The acquisition of these competences must be given sufficient space: skills must be developed, tested and consolidated. This is a continuous process – just like technological development and progress.

Recommendations for action

Digitalisation-related and gender-related competences as well as the possibility to acquire them over the entire course of life are decisive for making digitalisation gender-responsive by means of education and training.

The Expert Commission recommends:

Teaching digitalisation-related skills in all phases of the life course, regardless of gender

Digitalisation-related competences must be taught in a gender-competent manner throughout the entire life course, from early childhood education, in school education, at vocational schools and universities to general and in-company (advanced) trainings. The Federal Government must establish a separate, long-term research focus with the aim of expanding the concept of digitalisation-related gender competence.

Anchoring and emphasising socio-technical perspectives in informatics classes in school

School classes on informatics/computer science should prominently address the role of digitalisation when it comes to the realisation of equal capabilities. This also includes reflection on technology, gender and society.

Implementing digitalisation-related gender competences in the qualification of teachers in all educational sectors

The federal and *Länder* governments must in accordance with their respective responsibilities develop the digitalisation-related gender competences of teachers and educators. For the professionals within the different educational sectors, it is necessary to develop their own further training concepts and to expand existing ones.

Designing the National Skills Strategy in a gender-equal way

This strategy needs a consistent gender perspective to make it possible for all people to take advantage of continuing education or vocational training – regardless of gender and at any time in the course of life.

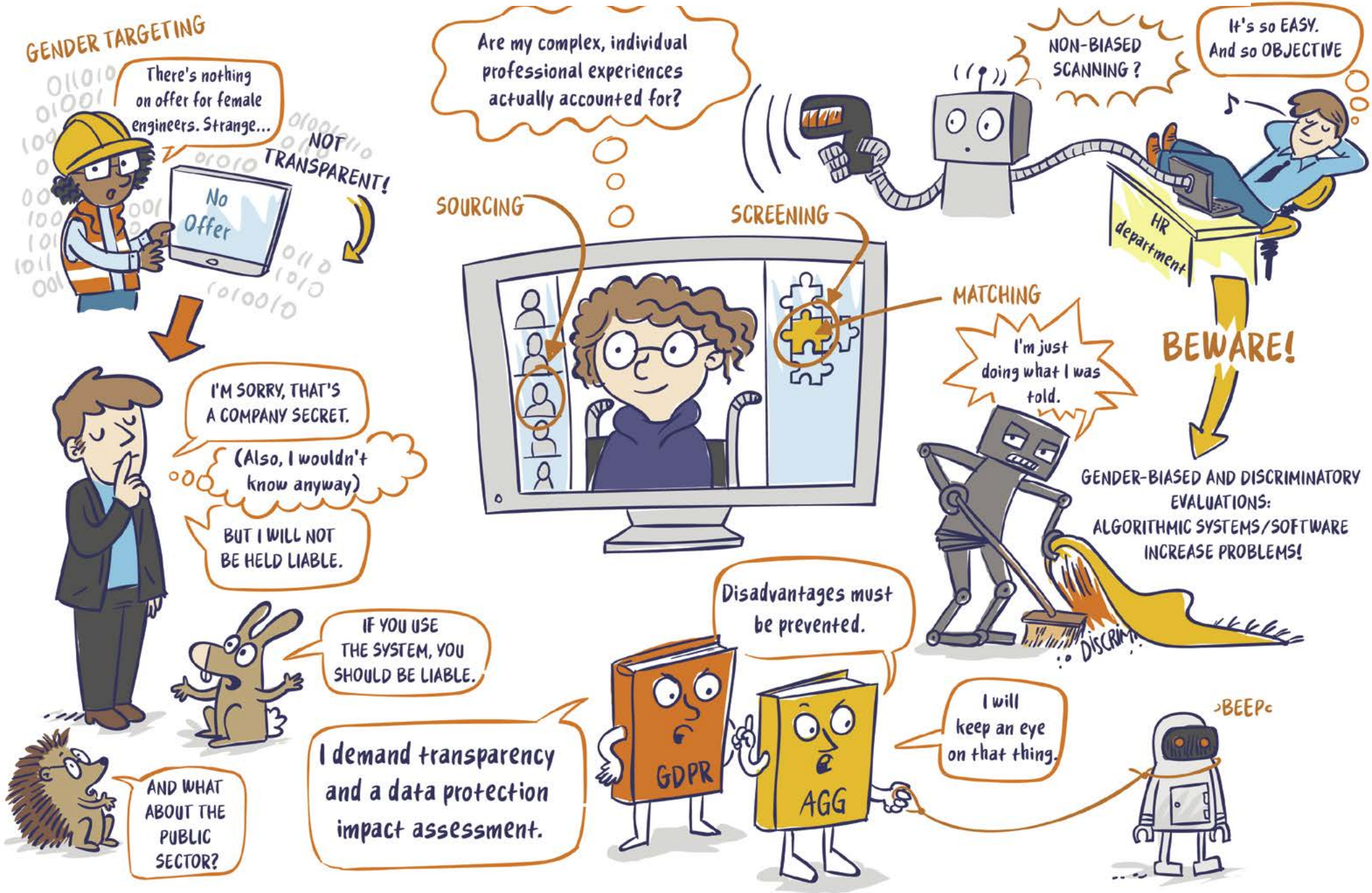
Supporting providers adding to the common good and general interest

Existing providers and initiatives in the field of digitalisation-related training fill gaps that result from the otherwise unequal gender distribution of access. This contributes to more equality, especially in the digital sector, which is based on digitalisation-related competences. Such providers should therefore be supported financially and with personnel, and further programmes should be developed.

Researching OER and designing them in a transparent and gender-equal way

Projects and organisations that check the quality of freely accessible teaching, learning and research materials (OER) and make them transparent should be supported. This applies in particular to projects and providers that make high-quality OER available in a gender-equal manner.

Algorithms and staff recruitment



Algorithms and recruitment

Algorithmic systems to support personnel selection processes bear considerable discrimination potentials. Moreover, the functioning of systems that are supposed to support staff decisions is usually non-transparent and thus hard to verify.

When organisations, companies and public administrations recruit and hire staff, this usually takes place in three stages: sourcing, screening and selecting. Algorithmic systems are increasingly often used for all three stages:

(1) The market for the search for potential candidates (*sourcing*) is dominated by large platforms. These include specialised career portals such as LinkedIn or Xing. On such portals, people display their profiles and CVs in order to be better found by potential employers or to receive matching job advertisements.

(2) There are now numerous digital products for viewing and checking application documents (*screening*). With their help, candidates can be filtered from a pool of applicants based on certain search criteria. In this way, it is possible to calculate how well a candidate fits the searched profile (matching). Information from various sources on the internet can be included for this.

(3) The *selection* of applicants in interviews or recruitment tests can also take place in the digital space: for example, the speed of speech, choice of words or looks can be automatically evaluated according to psychological guidelines. This way, predictions can be made about how well an applicant would fit into the team.

The use of algorithmic systems in recruitment and staff selection is often accompanied by the promise that the most suitable candidates will be found from an (however large) pool of applicants. This should be done with the least possible effort and as unbiased as possible. In fact, though, there is considerable potential for discrimination in every phase of automated personnel selection.

Software that can check whether job advertisements are truly formulated in a gender-neutral way do already exist. So far, however, such programmes are hardly used to really mitigate or prevent discrimination.

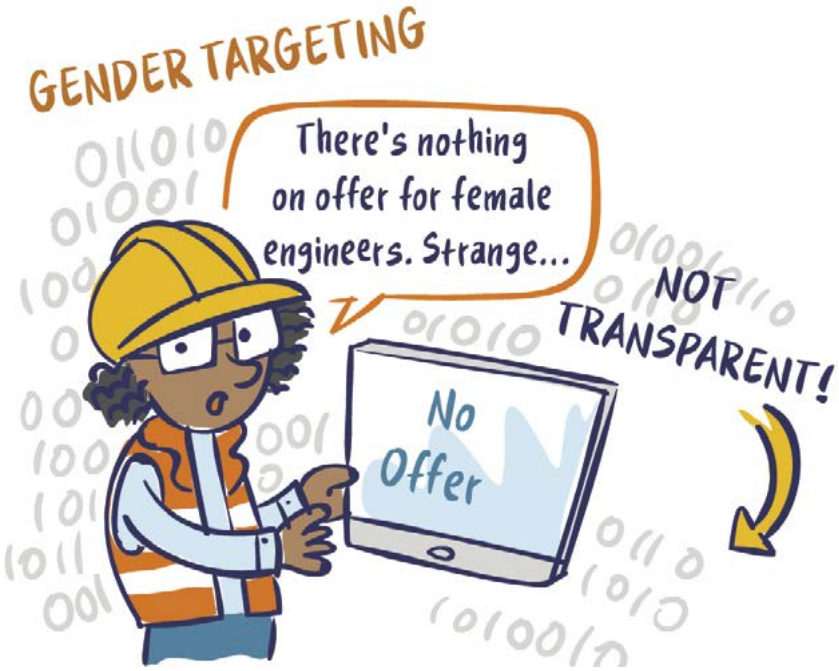
Discrimination risks when using algorithmic systems

The use of algorithmic systems in human resources in general and in the staff selection process in particular is accompanied by considerable gender-related risks. These arise from three aspects in particular:

(1) Generalisations

Complex individual professional or life experiences are hard to map in machine-readable data. There is thus a certain risk that not all information will be fully taken into account. At the same time, the responsibility for staff selection decisions is (partially) delegated to a machine.

If weighted selection criteria are obtained from data on soft skills or CVs by means of statistical procedures, it is at the same time not transparent and comprehensible from the outside which information from the applicants'



data is in fact taken into account. For example, it remains open how "gaps in the CV", such as those caused by the birth of a child, are evaluated. The weighting of data such as name or date of birth also remains opaque. Based on this information, the gender and age of applicants could play a role in the selection process – even though such personal data must not be taken into account in the application process.

The EU's General Data Protection Regulation (GDPR) prohibits decisions to be made exclusively by automated means and also grants special rights of objection against the processing of personal data. Beyond that, however, there is a lack of regulations on automated decisions. In addition, there are numerous exceptions with which protective mechanisms are circumvented, for instance if an applicant consents to the processing of their data or if the processing is ultimately necessary for the conclusion of a contract. In addition, there are no specific regulations on automated decisions in the area of employee data protection that go beyond articles 21 and 22 of the GDPR.

(2) Gender-related disadvantages

In job portals or on social media, it is possible to display job advertisements specifically for one gender (gender targeting/targeted advertising), which are then only visible to men, for example. In addition, specific job offers can only be offered to holders of paid premium accounts. This puts people with higher incomes at an advantage when looking for employment.

Also, when gender data is collected and processed as part of personal data in job portals or as part of staff selection systems, it suggests that this is relevant for assessing a person's work performance. This can lead to gender-based disadvantages due to stereotypical attributions.

(3) Lack of transparency

In general, it is not transparent and comprehensible from the outside how the technologies existing on the market work exactly. Emphasis on business/commercial secrets prevents transparency in this respect. Additionally, only experts can usually provide more detailed information of how the specific systems work, and even they can often only explain certain aspects. To make matters worse, algorithmic systems can change constantly due to new versions, modified sub-modules and new data bases.

Often, even the HR decision-makers who use the systems do not understand how they work. Even the disclosure of the algorithms does not mean that

users can comprehend them, recognise disadvantages or take action against them. There is research into better explanation and comprehensibility of algorithms. However, this is not yet reflected in practice.

As a result, applicants who have been rejected in an algorithm-supported selection process do not usually know which criteria were decisive for the personnel selection. Discrimination can therefore hardly be proven and is difficult to sue, for example with reference to a violation of the *AGG*. At the same time, claims for information and disclosure under data protection law are controversial in this context, among other things because of the protection of company and business secrets.

Moreover, it is unclear who is liable for wrong decisions or unexpected errors in the systems.

Special requirements for the public sector

The potential for discrimination as well as the lack of transparency and objectivity have so far stood in the way of the use of algorithmic systems in public sector staff selection. The public sector is subject to much stricter legal regulations than the private sector. For instance, the so-called principle of selection according to section 33 (2) of the Basic Law must be taken into account in all staff selection decisions.

Accordingly, personnel must solely be selected on the basis of a person's suitability, qualifications and professional performance. The use of algorithmic systems in the selection process may thus only deal with data that is related to performance.

The equality laws of the federal state and the *Länder* impose further restrictions on the use of algorithmic systems. These restrictions result, among other things, from regulations for the advertisement of positions and the selection of applicants that go beyond the *AGG*, as well as additional specifications for selection and assessment criteria.

Recommendations for action

To protect people from discrimination when using algorithmic systems in staff selection, legal loopholes must be closed. This applies above all to the provisions in the General Act on Equal Treatment (*AGG*) and the General Data Protection Regulation (GDPR).

The Expert Commission recommends:

Risk assessment of software systems

The Expert Commission agrees with the recommendations of the Data Ethics Commission for an independent risk assessment of software systems with five criticality levels. Such a risk assessment can be carried out by the supervisory authorities or other public institutions if they have the necessary resources and equipment. A classification of certain algorithmic systems in the highest criticality level ("applications with unacceptable damage potential") cannot be ruled out, especially in staff selection procedures. Therefore, even a ban of the respective systems may be advisable.

Safeguarding transparency of automated staff selection systems and prohibiting full automatisation

Companies developing algorithmic systems must ensure that their technical specifications, programming requirements, lists of requirements, documentation and source codes are disclosed as much as possible. Being technologies with a high potential for discrimination, algorithmic staff selection systems must not be trade secrets. In order to change this, but at the same time protect the professional and property rights of developers and companies, so-called in-camera procedures could be considered. In this case, selected specialist circles are granted access and inspection options – under the obligation of confidentiality.

Beyond article 22 of the GDPR, a national employee data protection law should prohibit the complete automation of parts of a decision-making process without taking individual circumstances into account.

Processing of gender-related data only in exceptional cases

The processing of data revealing gender or other legally protected categorisations such as sexual orientation should generally be prohibited in the work context and only permitted in exceptional cases regulated by law. Exceptions to the processing of such data may be appropriate, for example, if existing and structural disadvantages are to be compensated by gender-related promotion measures (section 5 *AGG*).

A GDPR-compliant labour law also requires regulations that provide clear and limiting specifications on the processing of employee data during the entire period of employment, including hiring and dismissal.

Requiring data protection impact assessments in order to protect against discrimination

The use of algorithmic systems in staffing decisions should be included in the list of processing operations in which a data protection impact assessment is mandatory (see article 35 (4) GDPR). The systems must be checked for compliance with data protection requirements of the GDPR and discrimination requirements of the *AGG* at least once a year. The use of algorithmic systems should be explicitly regulated in the *AGG*. Employers

must be obliged to disclose the use of algorithmic systems. They must also ensure that such systems exclude discrimination on the grounds of the categories mentioned in section 1 of the *AGG* that are particularly protected against discrimination.

Clarifying information rights regarding data protection and strengthening respective institutional provisions

In staffing decisions, the existing data protection rights to information must be concretised for the use of algorithmic systems. In particular, information and disclosure obligations must be created. Employees and applicants must be granted the right to demand an examination of the respective algorithmic system.

In order to ensure effective monitoring of all protective regulations, institutional precautions must be strengthened. To this end, anti-discrimination bodies and associations must be given further competences and powers. This includes, in particular, a right of associations to take legal action, with which they can also take action against discrimination without any identifiable victim.

Educating works and staff council representatives

When introducing and using algorithms in human resource management, the participation rights and information claims of the works council or staff council according to the Works Constitution Act must be taken into account. Accordingly, works councils also have the task of monitoring compliance with the ban on discrimination. In the event of violations, they have the right to take legal action for the removal or omission of such violations. However, in order to be able to detect and understand such violations in the use of complex algorithmic systems in the first place, the actors of the collective representation of interests must have sufficient digitalisation-related competences and discrimination sensitivity. It must thus be ensured that staff representatives and works councils attend appropriate training courses.

Recognising and respecting special requirements in the public sector

When using algorithmic systems in the public sector, the regulatory particularities regarding the protection against discrimination must be taken into account. Gender equality officers and staff councils can only recognise discrimination risks if the procedures carried out are comprehensible and transparent. Traditional as well as digitally supported and fully automated procedures must be accompanied by appropriately designed processes, systems, documentation as well as persons who are sensitised to discrimination risks and specialised in detecting them. The risks of transparent systems can often only be detected after specific (technical) training.

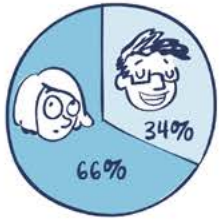
Supporting interdisciplinary and practice-oriented research

In the fields of machine learning and data sciences, research on non-discriminatory algorithmic systems in human resources should be promoted. This could include a model project in which such technologies are tested in staff recruitment and criteria for the technologies' use are formulated.

DRITTER GLEICHSTELLUNGSBERICHT

Reconciliation of paid work and unpaid care work

GENDER CARE SHARE*



*The difference even increases when working from home!

"SWITCHING" CAN SUPPORT RECONCILIATION - BUT CONSTANT AVAILABILITY FOR THE JOB MAY ALSO LEAD TO STRESS.

Reconciliation of paid work and unpaid care work

The reconciliation of paid work, (unpaid) care work and self-care is essential for people's capabilities, regardless of their gender. The question is: how can the new opportunities that digitalisation brings make it possible for all people to coordinate these different spheres in a self-determined and satisfactory way?

In many professions, digital devices such as computers or smartphones make it possible to carry out at least part of the work outside the workplace. Care work can thus be coordinated or supported more easily. In the course of the digital transformation, the opportunities for location- and time-flexible paid work and unpaid care work are thus expanded.

Currently, women in Germany do most of the unpaid care work for others. This includes child-rearing and childcare tasks, caring for relatives, housework, voluntary work and unpaid care tasks for people in other households.

The Gender Care Gap was developed as an indicator in the Second Gender Equality Report. It describes the gap in the overall social time usage of men and women for unpaid care work. The Expert Opinion of the Third Gender Equality Report supplements this with a new indicator, the Gender Care Share. This describes the distribution of care work in heterosexual couple households and measures the percentage of the total hours of care work performed by women within these couple households.

The Gender Care Share in Germany averaged 66 percent in 2017, which means that women performed about two-thirds of the care work in the household. Remote work has led to both men and women doing more care work. However, men increased their time for care work in the home office by 0.6 hours – whereas for women, the increase was at 1.7 hours. With increased remote work, the Gender Care Share thus rises to 67.2 per cent.

Remote work – risk or opportunity?

The reconciliation of paid work and unpaid care work as well as their allocation/distribution in couple relationships is influenced by digitalisation. Remote work has become possible for increasingly more professions, thanks to digital technologies. This can contribute to better reconciliation and thus increase the capabilities of all genders. However, research shows that access to digital devices and remote work differs by gender. For example, a study surveyed employees at office workplaces: almost half of the women are not provided with a digital device or corresponding equipment by their employers. In turn, such a situation only applies to one fifth of men. Another barrier to access is the work culture. Women are more likely to fear that remote work will put them on the sidelines in their professional career.

Meanwhile, members of some occupational groups are left out of the discussion on remote working. It is assumed that their work does not allow for flexible organisation in terms of time and place (e.g. medical staff, mechanics, educators). However, prematurely excluding these occupational groups from considerations on remote work also minimises capabilities in these areas. The discussion should be conducted openly and it should

be considered that, for instance, medication plans, shift plans or quality reports can also be written at home.

The COVID-19 pandemic has given digitalisation an additional boost. According to various data sources, around 30 percent of working mothers and fathers with children under 16 worked from home during the pandemic. Both fathers and mothers expanded their care work during the pandemic and during remote work. On average, fathers increased their care work from two to four hours, mothers increased their care work from five to seven and a half hours per day – meaning that the relative increase is significantly higher for fathers, but mothers continue to shoulder the higher absolute additional workload.

"Switching" between different areas of life

However, the expanded opportunities for reconciliation thanks to digitalisation as described above also mean that the boundaries between paid work, unpaid care work and self-care are diminishing. This brings new opportunities as well as risks: on the one hand, briefly "switching" to private tasks at work, such as a call to the daycare centre, can contribute to reconciliation. On the other hand, constant professional accessibility on the mobile phone, even outside the workplace, may lead to stress and, as a consequence, health impairments.

The same applies to unlimited accessibility during work. Through telecare and digital technology at home, carers can, for example, be informed about the situation at home at any time via smartphone. This may relieve them with regards to their reconciliation efforts. At the same time, the blurring of boundaries between home care and paid work should be viewed critically. Studies show that paid work is often a consciously used self-care resource for family carers to cope with the care situation.

In order for the expanded information and service offerings around care to be used independently of gender, it must be ensured that all people with care responsibilities have equal access to them and gain the same digitalisation-related skills to access the offerings. The long-term care insurance funds play an important role within the framework of their duty to provide general and, to an even greater extent, individual counselling.

Recommendations for action

Remote work is changing the everyday lives of many people. Legal regulations are necessary for it to benefit everyone and to be able to relieve people with caring responsibilities without them having to accept disadvantages.

The Expert Commission recommends:

Regulating remote work

Remote work has to be regulated by law. In 2020, the Expert Commission published a position paper with concrete proposals in the following areas: anchoring and supporting the legal right to remote work, ensuring that remote work is voluntary, guaranteeing occupational, health and working time protection, guaranteeing data protection, guaranteeing protection against indirect discrimination and against discrimination due to the uptake of remote work, providing workplace equipment and reimbursement of expenses, anchoring accident insurance for remote work, especially in the home office, and expanding tax deductibility.

Introducing the right to elective working time

A right to elective working time has to be introduced. All employees should be given the opportunity to organise their working time flexibly and in a way that is "conducive to reconciliation". They should be able to change the time allocation of their working hours and interrupt their work for "reconciliation breaks" – even at short notice – in order to fulfil care obligations. To this end, the scope for flexibility in labour law must be expanded. This also includes a legal clarification to secure a right to reconciliation-friendly work organisation.

How the capabilities that become conceivable through switching can be anchored in the legal system has not yet been discussed in the labour (time) law debate in Germany. In principle, the protection of the family, among other things, is anchored in constitutional law. Just as the protection of health and the right to informational self-determination in the employment relationship have been concretised in Basic Law - for example, through the Occupational Health and Safety Act and data protection law - the right to protection of family structures and the reconciliation of work and family in working life must also be anchored in Basic Law.

Ensuring health protection for flexible work

Flexible forms of work and the resulting dissolution of boundaries are ambivalent. They can serve the purpose of better reconciliation but at the same time entail health risks due to stress and additional strain. The ambivalence of flexible forms of organisation for the health of employees must be dealt with within the framework of current occupational health and safety regulation, workplace health promotion, the qualification of managers and HR managers and the information of employees. Under the umbrella of occupational health management, it is important to promote a humane working environment in order to make flexibilisation instruments available in a health-friendly way.

Expanding the uptake of social benefits to promote reconciliation

It should be examined to what extent the legal regulations for better reconciliation of family, care and work can also benefit those who, with their form of employment (for example, in the area of the platform economy), do not yet fall within the scope of the aforementioned laws. In addition, long-term care insurance funds should be legally obliged to work towards granting benefits in a way that promotes reconciliation.

DRITTER GLEICHSTELLUNGSBERICHT

Gender stereotypes and social media

Gender stereotypes and social media

Social media are a relatively new, rapidly growing and yet little studied phenomenon. So far, social media do not adequately reflect gender diversity, but transport mostly traditional images of men and women. In order to strengthen diverse gender images in social media, it is necessary to promote role models and positive examples, to change production cultures and to expand media education.

Social media are digital networks in which users can maintain social relationships, publish and share information. In this way, they no longer just passively consume content on the internet, but actively participate in shaping it. Social media are used, for example, for leisure activities, for political opinion-forming and for job hunting.

Social media now have great social significance. In Germany, 43 million people use them. In a study by Initiative D21, 39 percent of the men and 34 percent of the women surveyed believed that one had to be present in certain apps or on social media in order not to suffer professional or private disadvantages.

The use of social media varies according to gender and age: youtube is used at least weekly by 95 percent of men and 68 percent of women aged 14-29 in Germany. Instagram is used several times a week or daily by 71 percent of female and 59 percent of male young people. TikTok is the medium with the youngest users: it had one million users aged 6-19 in 2019. Twitter, on the other hand, is mainly used by young adults between 20-30 years of age; and slightly more often by men than by women.

(No) space for diversity

Social media enable interaction and creation. They open up space for diverse representations of gender and (political) opinions. An example of a successful project in this area is the gender magazine www.meintestgelaende.de, which invites young people to produce their own contributions on gender issues. Social media can also provide access to communities and safe spaces that enable exchange, provide a feeling of belonging as well as positive feedback and can increase self-esteem. LGBTIQ+ youth and (young) adults experience gender and/or sexual representation on social media – for example through non-binary influencers – that they may not experience offline.

Nevertheless, social media do not reflect gender diversity at all, but rather transport traditional images of men and women for the most part.

Image-based platforms like Instagram (re)produce gender-normed body images. 94 percent of women and 87 percent of men make at least one tweak to their images. In concrete terms, this means that before posting, the photo is edited with filter apps to conform to a female or male ideal of beauty. Influencers, i.e. people who use social media as a self-promotion strategy, play an important role in this regard. They often serve as role models for users who “follow” them in what they do and which products they promote. Hashtags like #fitspiration or #thinspiration, under which people post pictures of their seemingly optimal bodies, can in the worst case lead to damage to mental and physical health and promote eating disorders or addiction to muscle development. However, there are also

critical discussions about such phenomena: examples are hashtags like #nofilter, #bodypositivity or #fatpositivity. Numerous organisations that deal with issues such as feminism, diversity, anti-racism and homophobia also use social media as central communication tools and thus set important and critical accents. Examples are www.maedchenmannschaft.net, missy-magazine.de or "Pink Stinks".

Causes and reasons for uniformity

In current research literature, four central problems are named as causes of the still dominant gender stereotypes in social media:

Stereotypical representations of gender are financially supported by advertising. For example, female influencers refinance themselves better as partners of fashion and cosmetics companies than through cooperation with the gaming industry.

Discriminatory recommendation algorithms reinforce stereotypes. For instance, Twitter's image previews show *white* faces more often than faces of *Black* people.

Social media production cultures are still male-dominated, which is also reflected in content. Male-produced content is standard, just like in traditional media.

People who do not conform to traditional, heterosexual and binary gender images are subject to digital violence, and their freedom of expression and opinion is impaired.

Recommendations for action

The diversity of gender concepts and lifestyles is currently not reflected sufficiently in social media. Appropriate measures must be taken not only at the individual, but above all at the structural level.

The Expert Commission thus recommends, amongst other initiatives:

Supporting role models and positive examples

Young people in particular need diverse representations of gender, bodies and lifestyles to orient themselves. Therefore, projects and campaigns that convey these representations should be promoted.

Altering production cultures

Production cultures in social media are characterised by sexism and discrimination. Therefore, measures such as codes of conduct and equal participation procedures need to be developed and implemented in the digital media and advertising industry.

Checking and regulating recommendation algorithms

There is an urgent need to make social media recommendation algorithms less gender-biased and discriminatory. It must be examined how the use of recommendation algorithms can be highlighted and implemented in principle. Manufacturers of services and software that contain recommendation algorithms must use suitable tests to ensure that the potential for gender-based discrimination is minimal, and test procedures and results must be transparent before purchase or use.

Increasing media education

Young users need media competence. Corresponding offers should include the reflection of gender roles and convey body positivity, i.e. a positive relationship to one's own body. Furthermore, they must enable a reflective approach to social media. Since many users of social media are pupils, schools, teachers and parents must be addressed.

Expanding protection mechanisms

Tight legal guidelines for platforms are needed to regulate social media content that has been proven to promote disease, such as the pro-ana movement, more strictly. The legal protection of children and young people in media must be aligned with today's digital media reality and needs the respective structural preconditions for this.

In addition, protected public and pedagogically supervised spaces in social media must be further expanded. These are spaces in which people can articulate, position themselves and exchange with peers beyond gender stereotypes and in all their diversity.

Gender-based digital violence

Gender-based digital violence

Many forms and instruments with which gender-based violence is perpetrated only became possible with digitalisation. Therefore, it is justifiable to speak of a new quality of violence that comes with new challenges.

Gender-based digital violence occurs in all areas of society and goes far beyond hate speech in social media. It is characterised by some peculiarities: data is long-lasting ("the net does not forget"), easily replicable and quickly disseminated (also commercially). Space and time barriers are broken, anonymity and identity theft make it difficult to prosecute attacks, internationality and the possibility of concealment challenge regulation and law enforcement. These particularities must be taken into account when trying to combat them.

Gender-based digital violence – a very real problem

Digital violence is not a phenomenon detached from analogue violence, but rather continues and complements it. Many instruments with which digital violence is exercised are new and cause the transitions between the "virtual" or digital space and the "real" or material space to become increasingly blurred. This can be illustrated by the example of video surveillance of a flat/house via mobile phone app.

Violence by means of digital technology and in digital space massively restricts the capabilities of women in particular: in their private lives, in their working lives and with regard to participation in democratic decision-making and expression. This can be illustrated using four areas of society:

Politics and volunteering

Platforms like Facebook, YouTube or Twitter offer the possibility to express oneself publicly, to network with like-minded people and to act politically. The digital space has become an essential prerequisite for freedom of expression and democratic participation. At the same time, women in particular experience digital violence online. Hate speech is a particularly widespread form. Women more often than men receive comments that do not attack their opinion, but them as a person. In addition to individuals against whom misogyny is directed, general goals such as equal rights and equal capabilities are often attacked and discredited. This also affects people who are not professionally active online, or who are not active at all, such as women's and gender equality officers.

At the same time, digital technology can be used to protect against violence. In Switzerland, for example, there is a project that uses an algorithm called "Bot Dog" to detect hate speech on newspaper platforms and in social media; members of the project community try to defuse hate speech, for example through targeted fact-based counter-speech, and thus encourage other participants in the discussion to do the same.

Paid work and public life

With the development of digital work and communication tools, gender-based violence at work is changing and appearing in new forms, too. A study commissioned by the German Federal Anti-Discrimination Agency

shows that sexual harassment in the workplace is increasingly taking the form of cyberharassment. This involves, for example, emails or messenger messages with sexualised or pornographic content.

All people who use the internet professionally or commercially are thus exposed to the risk of humiliation, harassment and violence through hate comments and targeted hate campaigns. Influencers or journalists who expose themselves publicly and experience a broad reception online are particularly affected. Female YouTubers, for instance, receive more negative video comments (including sexist, racist and sexually aggressive hate speech) than male YouTubers.

In professional life, gender-based digital violence acts as forced subordination ("showing someone their place") and as a means of stabilising traditional gender roles. In addition to the emotional and psychological consequences, it also leads to economic losses for those affected. These can be considerable if for example breaks and time off, career or even identity changes become necessary.

Private social sphere

In the closer social environment, digital violence is mainly used to make people – mostly women – submissive and to control them. Often the perpetrators come from the immediate social network, for example ex-partners, family members or "friends". Harassment happens, for example, through unwanted contact via email or messengers. There is also the threat to publish personal data or pictures ("doxing", "revenge porn"). Identity theft and the creation of fake profiles are further forms of digital violence.

Digital control by means of stalkerware now plays a major role in the context of violence in relationships. Spy apps on internet-connected devices such as smartphones or laptops enable attackers to monitor their victims almost indefinitely. Here, violence is intensified through technology.

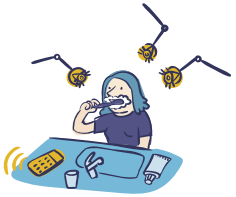
Gaming occupies a special position in various respects. Regarding the gaming industry and e-sports (electronic sports), there are increasingly many publications reporting sexual harassment, assaults and a problematic culture that particularly affects women. Some companies in the sector are said to have a male "buddy culture" that is in urgent need of reform in terms of its impact on digital violence.

Public space

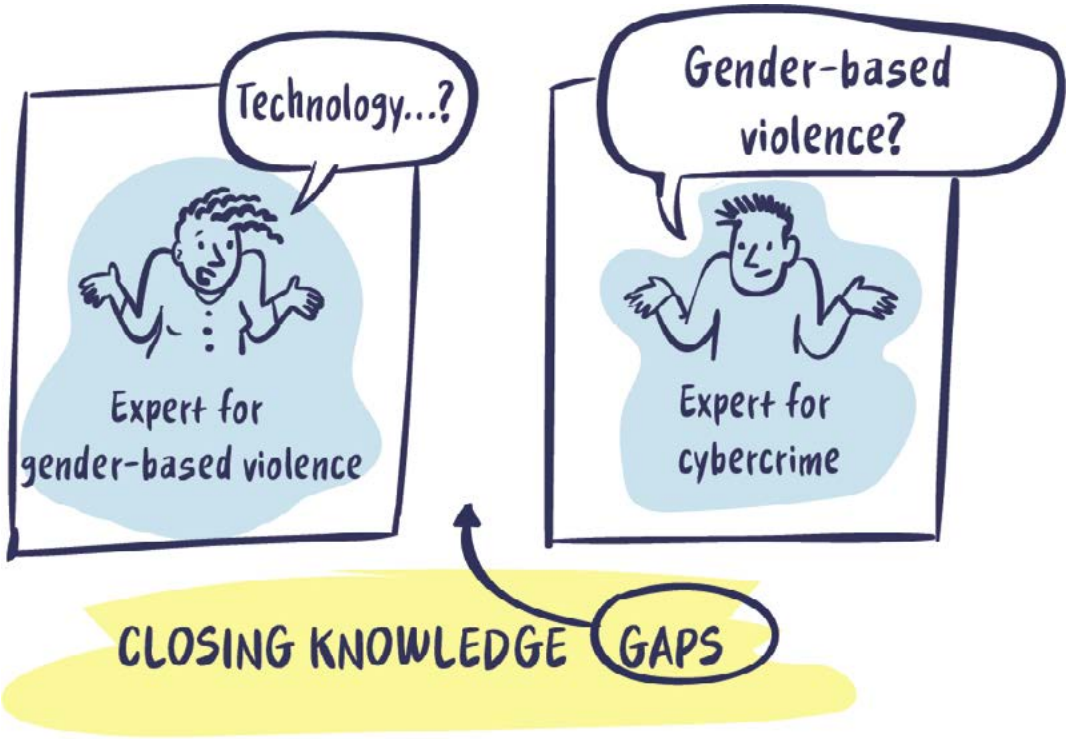
Examples of voyeurism and unwanted intimate images of women show how assaults in real public space and digital violence can interact. Both are not new phenomena. However, digital technology adds a new dimension of gender-based violence to them. Digital cameras are ubiquitous and so small that they easily go undetected; they make it very easy for perpetrators to take unauthorised images or films and mass-distribute them online without permission. A well-known example is the phenomenon of "upskirting", meaning women being unknowingly photographed under their skirts in order to take pictures of their private parts.

Protection and help systems: the gap between protection and cybercrime

There is an enormous need for research on the scope and extent of gender-based digital violence in order to record the causes, manifestations and prevalence of gender-based digital violence and to develop strategies for action to protect those affected. Corresponding obligations of the Istanbul Convention of the Council of Europe (Art. 11: data collection and research) must therefore be implemented urgently.



It is particularly alarming that experts on gender-based violence still have too little technical knowledge and that experts on digital technology and cybercrime are not familiar with gender-based violence. There is seldom cooperation between the respective responsible agencies. The result is serious gaps in knowledge at the interfaces of technology and violence. The same holds true for specialised counselling centres, police and law enforcement agencies.



Recommendations for action

To counter gender-based digital violence, it is important to apply measures that take into account the new quality of this form of violence.

The Expert Commission recommends:

Developing indicators for detecting and monitoring digital violence

When implementing the Istanbul Convention, digital violence should be comprehensively considered and systematically observed (monitoring). For this purpose, measurable indicators must be developed and used in order to better grasp the new dimension of digital violence and to be able to take appropriate measures, including legal measures if necessary.

Adjusting violence protection and help/support systems

The violence protection and support systems must be adapted to the challenges of gender-based digital violence. Sustainable support structures must be created in specialised counselling centres as well as in police, law enforcement and regulatory authorities and in the judiciary. Competences in relation to digital violence must be developed and expanded. In addition, civil society initiatives and projects must be extended and supported.

Setting up a commission on the issue of anonymity versus identification in the digital space

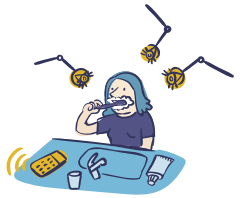
A scientifically-based and civil society-supported debate on how anonymity protection versus traceability of statements can be rebalanced should be promoted. This may include the development of decentralised registration formats, technical safeguards and weighing specifications. To this end, an independent expert commission should be commissioned to ensure high procedural safeguards. The aim should be to prevent the further use of identity data that is no longer compatible with the original purpose of securing freedom of expression.

Expanding legal protection measures

Platform operators must be made responsible for protecting people from (gender-based) digital violence and for strengthening victim protection. In addition to measures to delete and block certain content, measures must be taken to better identify perpetrators and hold them criminally responsible. To this end, the German Network Enforcement Act *(Netzwerkdurchsetzungsgesetz)* must be amended in accordance with the constitution. Hate speech in the digital space should be prosecuted as an offence of libel even without a criminal complaint by the offended person. In addition, legal actions by associations and legal standing must be made possible. Extended compensation regulations must be introduced for victims of hate speech.

Designing and establishing a protective shield against digital violence

It should be examined whether and how people who are affected by gender-based digital violence or have a high risk in this regard can be protected quickly and without high bureaucratic costs. This could be done, for example, on the basis of a risk analysis by an independent body that initiates the necessary steps together with the affected person, authorities and companies, such as securing evidence, deleting hate comments, protecting verified accounts and initiating a speedy blocking of the account register.



Developing and implementing hybrid processes to detect hate speech

Research should be funded which investigates the extent to which it is possible to delete hate speech by means of an algorithm-controlled detector or via hybrid methods (interactive machine learning) without restricting freedom of expression (overblocking).

Advancing worker protection

Worker protection must be further developed with a view to digital violence. To this end, it must be clarified, among other things, that cyber harassment as well as other forms of sexual harassment in working life fall under the protection against discrimination under the General Act on Equal Treatment (*AGG*). In addition, protection gaps within the scope of the *AGG* must be closed, for example with regard to (digital) sexual harassment against (solo) self-employed workers.

Utilising technology designs against digital violence

Software companies and technology providers must be made more accountable for using gender-responsive, participatory technology development and design as means against digital violence. In this way, the risks of abuse, violence and surveillance of new technologies can be assessed, potential threats identified early in the development process and the respective countermeasures can be taken.

Fighting cyberstalking

It should be examined whether and, if so, which stalking apps should be banned and how concrete steps can be taken to ban them.

In addition, programmers and developers should be obliged to take precautions for legal monitoring software that is misused for the surveillance and use of digital violence. Such uses should be excluded and prevented. This may include, for instance, informing users of the inadmissibility of certain forms of use when updates are made.

Developing a gaming culture free of violence

Companies and platforms in the gaming industry should work to change their basic cultural norms. First and foremost, operators must (self-)commit to promoting a fair, non-discriminatory gaming culture. Design measures on platforms and in gaming environments have the potential to minimise violence and discrimination. Gaming companies and platform operators should expand the interaction options to include features that offer protection against harassment, abuse and violent behaviour.

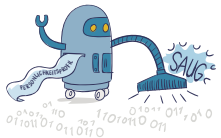
Evaluating a ban on upskirting

The implementation of the new section 184k of the German Criminal Code ("Recording of intimate images") must be evaluated and an extension of the prohibition to include images of unclothed bodies must be examined.

In principle, it must be checked where further regulations are necessary in the area of sexual harassment and digital violence. In particular, it should be legally clarified whether gender-based digital violence such as upskirting should in future be defined as sexual harassment, even if there is no physical contact.

Data and basic rights

Data and basic rights



All people, regardless of their gender, have the right to determine for themselves what information they make available to others about themselves and their lives. Personal data must not be used to discriminate against people because of their gender, descent, race, language, home and origin, faith, religious or political views or disability. The state is obliged to promote the actual implementation of equal rights in the digital space and to protect specific groups from discrimination.

Shopping online, transferring money or applying for a job: personal data is collected, stored and processed during all online activities. A large part of this data is collected on social media. Without the knowledge of the persons concerned, entire personality profiles can be compiled and disseminated without it being possible to trace where, for what purposes and for how long these data are stored and processed.

Two fundamental rights guarantee the protection of citizens' personal data: the right to informational self-determination and the right to guarantee the confidentiality and integrity of information technology systems (IT security fundamental right). These fundamental rights are derived from the general right of personality, which is based on the protection of human dignity (article 1 (1) of the Basic Law) and the right to free development of the personality (article 2 (1) of the Basic Law). These fundamental rights give rise to a right to data protection. The protection of personal data is also enshrined in article 8 of the European Charter of Fundamental Rights. The EU's General Data Protection Regulation (GDPR) contains specific regulations to protect this right.

The fundamental rights are supplemented and concretised by article 3 (2) and (3) of the Basic Law. Discrimination on the grounds of gender, descent, race, language, homeland or origin is prohibited. Moreover, the state is obliged to promote the actual implementation of equal rights and to provide special protection for specific groups against discrimination by private individuals. Data protection must therefore also ensure protection against (gender-related) discrimination.

The guarantee of the right to informational self-determination and the fundamental right to IT security in combination with article 3 (2) and (3) of the Basic Law must always be re-examined in practice. The state and private companies are constantly discovering new ways to exploit the vast amounts of digital data that accumulate online. The right to informational self-determination is also linked to the right to informational self-portrayal: according to this, every person is guaranteed the fundamental freedom to determine for themselves which personality image they convey of themselves. This freedom may become impaired if statistical values and personal data of a person are combined in algorithmic systems. The creation of profiles and the targeted linking of metadata can endanger the right to informational self-determination of persons who, for example, deliberately use a pseudonym because of their sexual orientation in social media in order to protect themselves from hate comments.

The right to informational self-determination also means that people can without discrimination access and participate in discourses within digital media such as social platforms. Accordingly, the supposedly free provision of digital opportunities is problematic if it is actually counter-financed by the collection, Aggregation, recombination, analysis and sharing of personal data, as is the case in the data-versus-service model. It is particularly

problematic when IT infrastructures are lacking and commercial applications are used in educational institutions that do not protect students' personal data, as they are partly subject to different legal conditions than those of the European legal area. In addition, there is a lack of public interest-oriented platforms that enable democratic participation online and prevent discrimination. A threat to fundamental rights and the democratic foundations of the state can also arise from the formation of so-called filter bubbles or fragmentation within social media. These are promoted by recommendation algorithms and the possibility of one-sided and uncritical selective online media consumption.

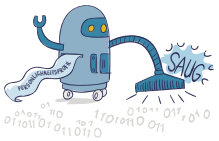
Recommendations for action

Protection against discrimination and the promotion of equality must be guaranteed in the digital space, too. This requires, in particular, comprehensive data protection that includes not only legal regulations but also technical measures such as data access rights or encryption so that data cannot be accessed and/or falsified by unauthorised third parties.

The Expert Commission recommends:

Implementing the recommendations of the Data Ethics Commission in an equality-oriented manner

The recommendations of the Expert Opinion of the Data Ethics Commission of the Federal Government, presented on 23 October 2019, are to be supported. Particularly noteworthy are references to minimising discrimination risks in the handling of data and in the use of algorithmic systems. These recommendations for action must be implemented promptly and in an equality-oriented manner.



Ensuring comprehensive controls of algorithmic systems

Due to the variety of potential causes of discriminatory effects in the use of algorithmic systems, comprehensive controls are necessary. The data basis of an algorithmic system (input control), its evaluation by algorithms (algorithm control) and the final decision of the algorithmic system based on it (output control) must be controlled. This applies in particular to automated profiling and surveillance, regardless of whether state or private actors use the respective algorithmic system.

Implementing the state's protection mandate in terms of fundamental rights

In order to do justice to the objective legal value dimension in the context of fundamental rights relevant to data protection, it is necessary to promote not only the digital infrastructure, but also a practice of handling data that leads neither to an all-encompassing nationalisation nor to an all-encompassing marketisation of personal data. Data economy, strong purpose limitation, IT security, decentralisation and the restriction of the use of data serve such an implementation.

Intensifying research and fostering IT security

Research on the realisation of fundamental rights in the course of digitalisation must be promoted. In this context, there should be a focus on inequality categories such as gender. In particular, the right to guarantee the confidentiality and integrity of information technology systems as a so-called IT security fundamental right has so far been neglected with regard to its content and effects. The Federal Government, Länder governments and other state institutions have to work towards recognising and implementing the important areas of authenticity, confidentiality and access protection. This includes: supporting EU initiatives to protect IT security; strengthening cryptographic protection against unauthorised access; sup-

porting research in the area of applied IT security and data protection both financially and structurally; and preventing the installation of targeted security loopholes for use for state purposes.

Aligning state/public contracts with data protection and IT security

In public procurement practices and specifications, it should be included that digitalised services, products, software and hardware are non-discriminatory and that they are not only compliant with data protection and IT security, but *promote* both.

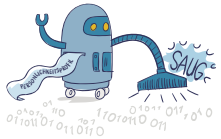
Creating infrastructure and promoting services and products that are compliant with data protection and IT security

Public institutions should provide an infrastructure oriented towards fundamental rights. This includes a platform for basic digital services and political participation that is gender- and intersectionality-conscious and oriented towards the common good. In schools and educational institutions, applications should be used that guarantee data protection and IT security and also prevent the transfer of pupils' and teachers' data as well as connection/linking to commercial social networks. The provision and use of open source applications is recommended.

Alternatives to the data-versus-service model should be promoted in a targeted manner so that all people can participate in digitalisation – free from concerns about discrimination, surveillance/spying and lack of protection.

Sensitising institutions for data protection and IT security with regard to discrimination aspects, and equipping them accordingly

Supervisory authorities and data protection officers must be specifically sensitised to the fact that data protection also and especially serves the protection and participation of disadvantaged groups – for example, people who do not conform to the heteronormative gender model. Corresponding effects are to be included in the assessment of data processing processes. The competent authorities must be equipped accordingly.



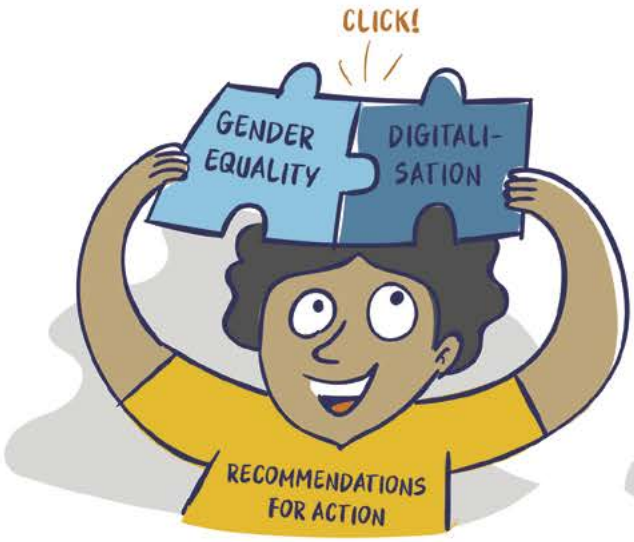
Expanding education that does justice to data protection and IT security, and sustaining social meeting spaces

Education on data protection and IT security must be provided throughout the entire life course, i.e. in early education, in schools as well as in vocational training and general further education programmes. This holds also true for the Federal Government in the field of vocational education. In order to avoid fragmentation and filter bubbles, social meeting spaces must be maintained in public as well as private educational institutions. These are spaces where different realities of life exist and can be perceived.

Proactively implementing requirements of the GDPR and the ePrivacy Regulation

The provisions of the GDPR must be implemented and enforced proactively. In contrast, extensive state and private data exploitation instruments (e.g. data retention, profiling, far-reaching data exchange procedures, establishment of central data collection points) must be avoided. For the use of data, strict purpose limitations must be ensured, going even beyond the GDPR. Central data storage with a variety of further uses and little binding purpose as well as processing of the data is to be explicitly rejected. With regard to the EU's planned ePrivacy Regulation, Germany should advocate for the following measures: strict opt-in solution for (unnoticed) data evaluations; strict obligation and liability of software manufacturers regarding compliance with the GDPR and the ePrivacy Regulation; privacy-by-design; effective and user-friendly do-not-track provisions; end-to-end encryption; clear limitation of profiling and scoring; prohibition of personalised, dynamic advertising and pricing.

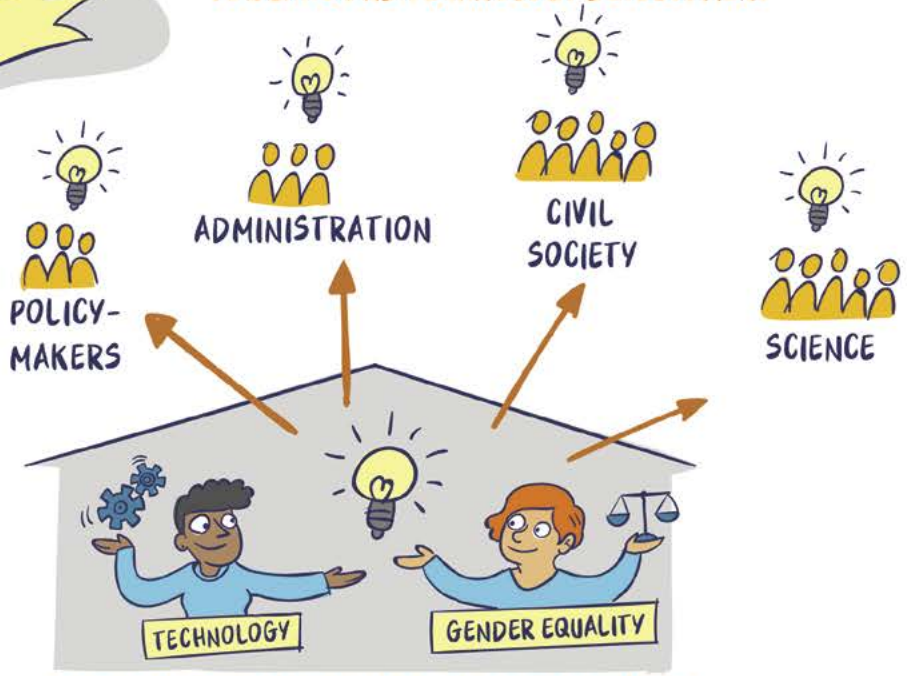
Strengthening structures and tools in gender equality policy



CROSS-DEPARTMENTAL STRATEGIES

EQUALITY-ORIENTED IMPACT ASSESSMENTS FOR LAWS AND TECHNOLOGY DEVELOPMENT

GENDER BUDGETING



FEDERAL FOUNDATION FOR GENDER EQUALITY

Strengthening structures and tools in gender equality policy

The already existing gender equality policy instruments and structures must be used more effectively on the one hand, and be adapted to the requirements of a digitalised society on the other.

The digital transformation process affects people's lives: questions of existing gender inequality have to be posed in a new and different way. Promoting equal capabilities of all people in this process is an urgent and challenging task. On the one hand, this refers to gender equality policy as a policy field in its own right, which is the responsibility of the Federal Ministry for Family Affairs, Senior Citizens, Women and Youth (BMFSFJ). On the other hand, gender equality policy is always a cross-cutting policy and therefore affects all ministries.

Aiming for equal capabilities: converging digitalisation and gender equality

Existing gender equality policy instruments and structures are the "breeding ground" that feeds the metaphorical onion: they create the framework conditions for the actual implementation of equal capabilities, also in the context of digitalisation.

Some instruments have already been launched. These include gender equality reporting, within the framework of which this Expert Opinion was written. Other building blocks are the interdepartmental gender equality strategy published in July 2020 and the planned Federal Foundation for Gender Equality. Other instruments, such as gender-responsive budgeting and equality-oriented impact assessment, are not systematically anchored or are hardly implemented.

In detail:

Overarching strategies

Equal rights of women and men enshrined in article 3 (2) of the Basic Law affect all political areas and related responsibilities. This also applies to digitalisation, which itself affects all areas of society.

Therefore, it is important to draft and realise an interdepartmental gender equality strategy in interlinkage with the Federal Government's implementation strategy "Shaping digitalisation". Other digitalisation-related strategies should also be systematically examined and adapted in terms of their gender equality impact – for instance strategies on the topic of Artificial Intelligence or digital learning.

It is important that the relevant bodies dealing with digitalisation have gender parity. Only then can different perspectives and experiences be incorporated into their work and decisions. This will make them more effective and fairer.

In this sense, the recommendations for action of the Expert Commission combine the topics of gender equality and digitalisation and form a basis for further development of respective strategies.

Gender-responsive budgeting

Gender budgeting aims to raise and spend government revenues in a gender-sensitive way. Budget decisions can have a significant impact on gender equality. This is particularly relevant in the context of digitalisation, where considerable financial resources are made available.

For example, the German Federal Government's economic stimulus and crisis management package Fighting corona consequences, securing prosperity, strengthening future capability made it possible to bring forward investments in the digitalisation of public administration, security and new defence projects to the tune of up to ten billion euros. This tends to benefit sectors in which men are predominantly employed, though. In contrast, for the care sector with its high proportion of female employees, there is hardly anything in the government's billion-euro package, although it too has some catching up to do in digitalisation – and in fact plays a central role in the fight against pandemics.

This example shows: without a systematic, impact-oriented and gender-responsive budget policy, there is a risk that existing gender inequalities will become entrenched or may even worsen.

Gender-responsive law and technology assessments

Impact assessments are relevant for good legislation in general and for the promotion of capabilities in particular. Gender equality-focused impact assessments have so far been carried out only irregularly. Assessments are mostly superficial and often merely refer to whether gender-equitable language has been used.

In the context of digitalisation, technology impact assessment in particular is gaining in importance, as technological innovations can bring about unintended risks. One example is smart home devices that are used by stalkers to terrorise and/or spy on ex-partners.

The quality of technology assessment should be measured by the fact that, in addition to technical aspects, political and social framework conditions as well as people in their diversity are taken into account. Another example: crash test dummies are mostly oriented towards men and do not take into account the safety needs of pregnant women, among others. This is underlined by the fact that commercially available three-point seat belts can endanger a foetus. A Swedish car manufacturer already includes such gender aspects in the development of its technologies by using "pregnant" dummies in its computer-simulated test series.

Institutional knowledge transfer/Federal Foundation for Gender Equality

Knowledge about the complex and extremely dynamic digital transformation is predominantly available in disciplines such as computer science. In contrast, it is precisely the connections between gender equality and digitalisation and the associated opportunities and challenges that are often *not* known. This gap at important interfaces underlines the need for knowledge transfer. The planned Federal Foundation for Gender Equality is intended to edit and process the specific knowledge of specialised fields that is highly relevant for administration and civil society, among others.

Recommendations for action

Gender equality policy structures and instruments are to create framework conditions for the actual implementation of equal capabilities. This also applies in the context of digitalisation.

The Expert Commission recommends:

Interlocking equality and digitalisation

The cross-departmental gender equality strategy must be reviewed, revised and adapted to the digital transformation. The targets and indicators must be updated and concretised on the basis of the Expert Opinion and recommendations for action in the Third Gender Equality Report.

The guiding principle of equality must be implemented in the national implementation strategy "Shaping digitalisation". The strategy must be scientifically evaluated, and an accompanying project must be commissioned to support the implementation of the guiding principle of equality in the Federal Government's digitalisation strategy.

It should be examined whether the federal digital bodies should be designated as essential bodies within the meaning of the Federal Act on Appointment to Bodies (section 5 (1) GremBG). This would mean that all bodies dealing with digitalisation would have to be staffed with gender parity.

Last but not least, the BMFSFJ, as the lead ministry for gender equality, needs adequate personnel and funding to be able to support department-specific as well as cross-departmental processes.

Advancing gender budgeting

Financial resources for the promotion of digitalisation are to be distributed in an equality-oriented manner. The digitalisation-related expenditures in the 2021 federal budget are to be examined within the framework of a gender budgeting analysis. The aim should be to develop guidelines for future budget drafting. In addition, a compulsory gender equality check should be developed to ensure gender equality-oriented allocation of funds even in the case of short-term measures such as economic stimulus packages, which are developed and adopted under time pressure. In principle, a better data basis for gender budgeting analyses must be created: the collection and processing of gender-disaggregated data is often lacking to really provide for a gender equality-oriented analysis of the allocation of budget funds. Structures for the gender equality-oriented allocation of public funds must be strengthened. The Expert Commission welcomes the "update of the working aid for gender mainstreaming in (non-statutory) funding measures" announced in the government's equality strategy.

Strengthening gender-responsive law and technology assessments

Equality-oriented impact assessment must be strengthened and regulated in a more binding manner. The Expert Commission highlights/reminds of the recommendations in the Second Gender Equality Report to make the application of the working aid for gender equality-oriented impact assessment binding for the respective competent department/ministry and to provide the necessary technical support.

In addition, a gender equality-oriented perspective must be integrated into technology assessment as well. Standardised procedures for gender equality-oriented technology assessment, such as checklists, should be (further) developed and made compatible.

In addition to technical aspects, technology assessment should take into account political and social framework conditions and include gender aspects already during the development of technologies. Gender equality-oriented technology assessment should keep pace with accelerated technology development by being widely applied, including in basic research.

Structurally anchoring a gender perspective in the institutions and procedures of technology assessments

The gender perspective should be structurally anchored in the existing institutions and procedures of technology assessments. This also applies to parliamentary-regulatory technology assessments. For instance, the Office of Technology Assessment at the German Bundestag should take gender competence into account and promote it among its staff as well as external experts.

Anchoring digitalisation as a topic in the Federal Foundation for Gender Equality

With a Federal Foundation for Gender Equality that can live up to the tasks of networking, providing information, strengthening gender equality practice on the ground and developing innovative gender equality approaches, gender equality can be implemented sustainably in digitalisation.

A digitalisation unit should be established within the Federal Foundation for Gender Equality. This unit must be equipped with the appropriate staff and sufficient resources to fulfill its tasks.

The Third Gender Equality Report of the Federal Government online

The Third Gender Equality Report of the Federal Government is available (in German) for download on the website of the Federal Ministry at https://www.bmfsfj.de/gleichstellungsbericht. The Report is comprised of the Expert Commission's opinion, the Federal Government's position/comment on the Expert Opinion and a reception analysis of the Second Gender Equality Report.

In addition, you can find further information on the Agency for the Third Gender Equality Report's website at https://www.dritter-gleichstellungsbericht.de/. This includes, in particular, factsheets that concisely present selected aspects from the Expert Opinion in short, all scientific expert opinions concerning specific aspects of digitalisation commissioned by the Expert Commission, as well as a documentation of hearings with external experts that were conducted in the course of preparing and drafting the Expert Opinion. The latter documentation also provides an insight into the current research situation on gender and digitalisation-related issues.

Already before the official publication of the Expert Opinion, the Expert Commission had positioned itself with a separate and independent proposal regarding the important issue of legal regulation of remote work. You will find this proposal for download on our website as well.

You are cordially invited to follow the activities of the Expert Commission and the Agency for the Third Gender Equality Report on Twitter. You find us at @gleichgerecht.

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