

People and technology: working together

Key points

En route to a digital society



Society is becoming increasingly digitised. Technology influences our work and our personal lives. What does digitisation actually mean, what are its consequences, and how should we deal with them? The Dutch government asked the Social and Economic Council of the Netherlands (SER) to explore these questions. Our answers can be found in *People and technology: working together*. We begin by outlining the context of the discussion.

Ongoing development of IT

There is nothing new about living in a changing world. The digitisation of society is sometimes referred to as the fourth industrial revolution. In other words, society has already been through three previous revolutions. Each time, employers and employees, policymakers and the general public have had to decide how to deal with changing circumstances.

The most recent major change – the third industrial revolution – was the rise of information technology (IT). By now IT has penetrated every sector of the economy and society. What lies ahead are new, sweeping changes that will see an intensification of the use of IT. Advances in artificial intelligence and robotisation will allow machinery and software to take over more tasks from people. We can already see the first examples of this, for example robots that rapidly sort waste into categories for recycling.

Two perspectives in the discussion

Fierce discussion is taking place worldwide about the potential consequences of digitisation. Some commentators are optimistic about the new opportunities that digitisation offers, while others fear it will lead to massive job losses, in part because robots are in fact already taking over jobs.

The SER analyses both perspectives. Digitisation is not an either/or question but involves both new opportunities and job losses. Not everyone will benefit from the new opportunities. That is why policymakers need to prepare for both eventualities. The SER has assessed the consequences of digitisation by looking at three criteria: balanced economic growth with support for sustainable development; the highest labour participation rate possible; and a reasonable distribution of income. It is vital that both new and existing employment should qualify as ‘decent work’.

In 'People and technology: working together' employers' associations, unions and the SER's crown members present their joint analysis of the changes we are facing and provide a set of basic guidelines for dealing with those changes in the short and longer term.

Structure of the publication

The SER's 'People and technology: working together' summarises insights presented in academic papers and other publications and answers the following questions:

- What technological advances are we talking about?
- What impact can we expect these technological advances to have on work?
- How will they impact employment in terms of job numbers and job distribution?

The sections below will look in detail at these questions.



2

Sweeping technological changes



Technological advances will make sweeping changes to the way we work and our way of life in the years ahead. But what changes are we actually talking about, and how do they fit in with previous technological advances?

The first three industrial revolutions

The intensification of information technology (IT) is sometimes called ‘the fourth industrial revolution’.

The first three industrial revolutions were: the invention of the steam engine; the introduction of steel, chemical technology and electricity; and the development of the computer and IT.

On balance, each previous industrial revolution resulted in more jobs and more prosperity, but they also brought about dramatic changes in many sectors.

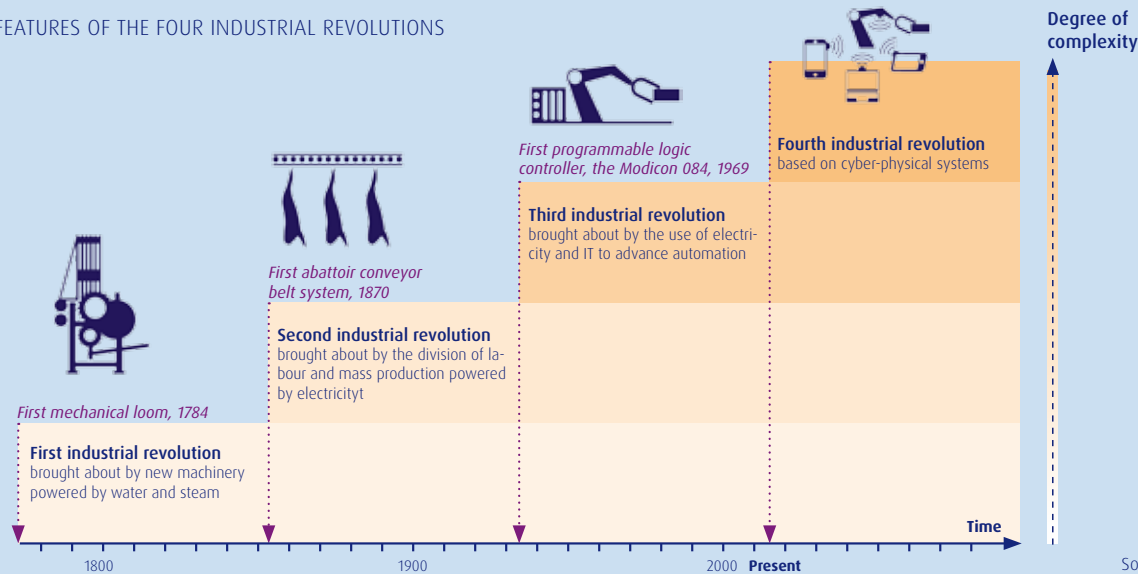
Not so long ago, for example, the rise of the personal computer made office typing pools obsolete. Two thirds of all employees now use computers and the internet regularly.

The fourth revolution: new IT applications

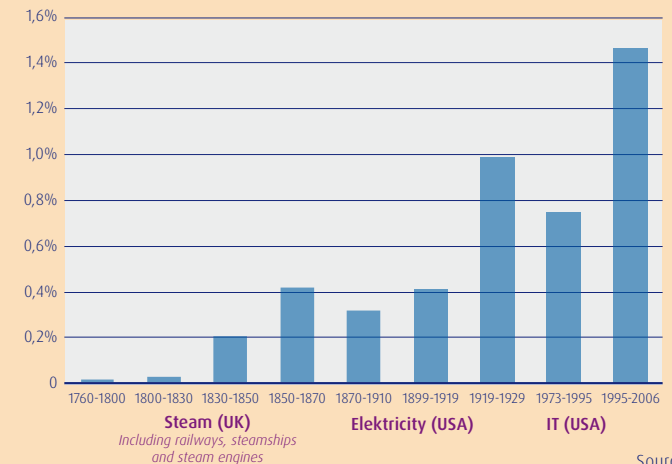
The introduction of IT has increased labour productivity more rapidly than the first two industrial revolutions did, largely owing to the mass use of IT and the enormous potential that it represents. In the United States, for example, the widespread use of IT led to annual productivity growth of approximately 1.5 percent between 1995 and 2006.

It is precisely its broad applicability that makes IT the vehicle of the fourth revolution, which will introduce even more sweeping changes. Examples include devices that communicate with one another (the ‘internet of things’), robots equipped with IT and sensors that carry

FEATURES OF THE FOUR INDUSTRIAL REVOLUTIONS



CONTRIBUTION OF GENERAL PURPOSE TECHNOLOGIES (GPTs) STEAM, ELECTRICITY AND IT TO INCREASE IN LABOUR PRODUCTIVITY IN THE UK AND USA, 1760-2006





Sharing economy

Digital technologies support the sharing economy. The term 'sharing economy' refers to the phenomenon of consumers sharing one another's consumer goods, either at no cost or for payment. Suppliers and users find each other on digital platforms. Airbnb (room or house rentals), Peerby (e.g. to lend or borrow tools) and BlaBlaCar (ride-sharing for payment) are well-known examples.

Suppliers and users both benefit from the sharing economy. Airbnb, for example, is a new source of income for home owners and gives users an inexpensive place to stay overnight. There are no guarantees as to quality, safety, working conditions or tax payments, however. In the case of Airbnb, these difficulties remain. The taxi service UberPop has now been banned in the Netherlands because it was thought to lead to unfair competition between licensed and unlicensed taxi drivers.

out tasks (semi-)independently, digital platforms that match supply and demand, and 'big data' processes for collecting and analysing large quantities of information.

Contribution to solving societal problems

New digital technologies not only make new revenue models possible, but can also help solve society's problems. For example, digitisation and robotisation can help sort waste more efficiently and match the supply of raw materials more closely to demand, bringing the circular economy – in which all raw materials will be reused or recycled – a step closer.

IT can also make mobility more sustainable, for example in the form of self-driving cars or digital platforms for car sharing. Health care is another sector that can benefit from IT advances that improve the quality and affordability of care. For example, big data can help in the search for effective remedies and 3D printers may soon be turning out custom prosthetics.

Excellent position

The Netherlands is in an excellent position to profit from the rise of new IT applications. It is a well-functioning constitutional democracy with an outstanding system of education and sensible intellectual property rights legislation. The Netherlands also performs well in international benchmarks, in part because it is a wellspring of innovation. It has a digital infrastructure that scores above average and a population that is generally well acquainted with IT, according to European benchmarks. The rise of new technologies makes it especially important for the Netherlands to retain this leading edge. If it does not keep up with the pace of digitisation, it could quickly plummet from its position at the top. Risk factors include a shortage of skilled IT and other workers, businesses that trail behind in deploying new technology, stagnating investment in the IT infrastructure, and the growing danger of new technologies being used for malicious purposes (cyberthreat). It is further important for more new companies to keep growing and for the sectors that lag behind to make better use of digitisation.

3

Consequences for working practices

New technologies are changing the way work is distributed and organised. They are also influencing the relationship between employers and employees. In this section, we explore the specific impact of digitisation and robotisation on working practices.

Businesses are changing

The transition to a more digitised way of working has not been entirely smooth sailing. Business may have *transition problems* along the way, for example because they lack knowledge, their employees do not have the right training, or the investment risks are too high. Businesses are increasingly dividing *jobs* into tasks. That happens when part of a job has been automated and the relevant employees only need to perform the ‘remaining’ tasks. New tasks can also be added, for example programming.



Social innovation

Technological change often produces the best results when it is accompanied by *social innovation*. The focus then is on introducing a new way of working, organising or managing that the new technology has made possible.

We have identified four forms of social innovation:

- **Dynamic management:** by giving employees more responsibility, they gain more scope for self-motivation, creativity and entrepreneurship
- **Working smarter:** allowing employees more leeway to do what they are good at and to determine where and when they can best do their work
- **Flexible organisation:** making better use of the wide variety of knowledge and skills within an organisation, for example by working in multidisciplinary project teams
- **Co-creation:** cooperating with external parties to identify new revenue models

Digitisation has also led to businesses adopting a *project-based* approach that cuts across the boundaries of specialist divisions. This allows them to adapt working processes to changes in the environment or in their own work.

Flexible labour

More and more people work on flexible employment contracts nowadays. There are many reasons for this trend: globalisation, the growing desire of working people for autonomy, the after-effects of the economic crisis, and – last but not least – the rise of digital technologies. The Netherlands is ahead of other countries when it comes to flexible employment. Experts believe that is largely owing to Dutch legislation. Flexible labour has one important advantage: it makes an organisation more adaptable. But there are also disadvantages. On average, flexible workers show less commitment and often have training deficiencies. There is a risk of their skills and competencies becoming so inadequate that they can no longer participate fully in the labour market.

The quality of work is changing

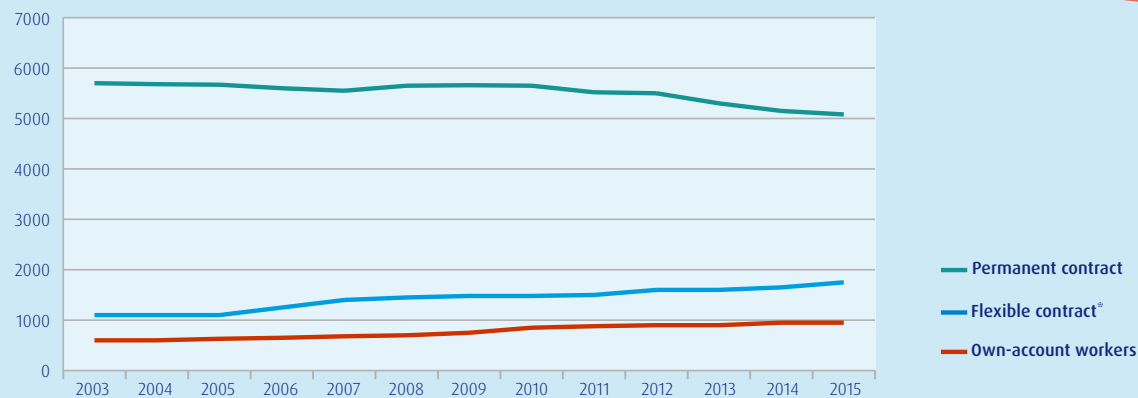
The arrival of new technologies is also impacting the quality of work. By quality, we mean the work content, working conditions, employment terms, employment relations, working times and employee perceptions. Digitisation can have both a positive and a negative impact. A positive impact would be that employees have more scope for professionalism and autonomy, or that low-skill employees can easily receive training and move up to a more senior level. But it is also possible for employees to feel that their autonomy has been curtailed and that their work is more limited than before.



Whether digitisation and robotisation have a positive or negative impact depends on the sector and the occupation, as well as on the way in which new techniques are introduced. That is why it is important to monitor changes closely in each sector and business and to involve employees, so that adjustments can be made when new technologies threaten the quality of work. Sound employment relations are needed to give employees a say in such matters. In fact, new digital tools can even foster forms of employee participation in decision-making.

Another important factor in the quality of work is the work/life balance. IT has blurred the boundary between working life and private life. People can now work whenever and wherever they like. There are important advantages to this, but it can also lead to more stress. That is why some businesses have drawn up internal rules about email correspondence outside of working hours, for example.

NO. OF EMPLOYEES WITH PERMANENT AND FLEXIBLE JOBS AND OWN-ACCOUNT WORKERS (x1000), 2003-2015



*Flexible contracts include all types of temporary contract (including those leading to a permanent contract), on-call and substitute contracts, temporary staffing contracts, and permanent contracts with no fixed hours. Source: constructed from CBS Statline, July 2016.



The job requirements are changing

Technological advances may change the very nature of the work we do. Employees therefore need more and different skills to be able to do their jobs properly. Besides specific occupational skills, employees need to be flexible, keep their general skills up to scratch, and show themselves willing to learn. ‘Lifelong learning’ is an important tool for employees who wish to ‘futureproof’ themselves after completing initial training.

On average, the Netherlands performs well when it comes to ‘lifelong learning’. Some older workers, low-skill workers, flexible workers and people with health issues are at risk of lagging behind, however.

Extra training will not always be the answer for some groups. That is why it is important to have the option of creating new forms of employment in the skilled trades and personal services that match the training such groups have received.

Tata Steel

Tata Steel Netherlands manufactures high-value steel. It strives constantly to improve its product. Its Product Development and R&D divisions work closely with the employees in the plant, who are free to make suggestions for improvements and test new products or applications. As a result, the educational level of its plant employees has continued to rise in recent years. They are trained at Tata Steel’s own training academy.

Tata Steel has its own employment pact in which it has committed itself to retaining employees. If jobs are eliminated and new jobs created, employees will be retrained and placed in the new positions wherever possible. If they cannot be placed, they receive job-to-job guidance. The employment pact thus contributes to employee job security and technological progress.

4

The consequences for job numbers and job distribution



New technologies are leading to changes in businesses and in working. But what do the new technologies mean for the total number of jobs and how they are distributed? It is almost impossible to say anything definite about this, except that there are no guarantees that everyone will ultimately benefit from the fourth industrial revolution.

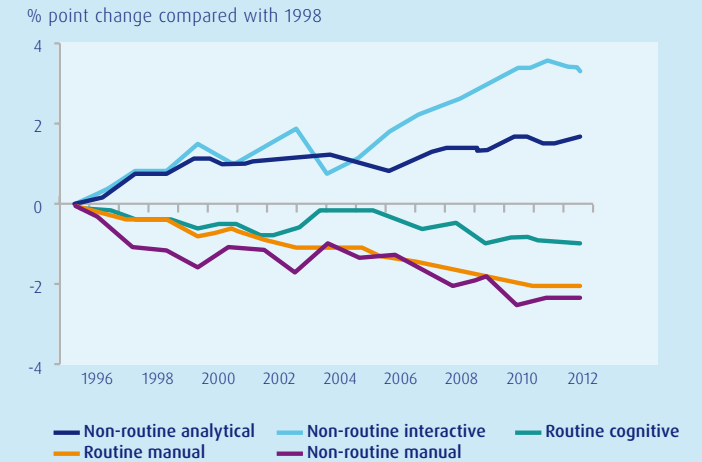
Rising employment rate

Will new technologies lead to more jobs, or fewer? Some experts forecast economic growth, job growth and an acceptable distribution of wealth. Others expect new technologies to result in less work on balance and, as a result, in a rising level of income inequality. History teaches us that the arrival of new technologies has always led to more jobs; the employment rate in the Netherlands increased dramatically in the past century. Whether that will happen again is uncertain. Statistics on the growth of IT – the third industrial revolution – show that it has benefited many low-skill workers. The rise of webshops, for example, has led to a sharp increase in postal deliveries. But IT is leading to job losses and new jobs in sectors that employ many workers in the middle segment. The impact on high-skill workers differs from one sector to the next. On balance, then, there is less work about for those in the middle segment, and more for both low-skill and high-skill workers. Job polarisation has therefore increased in the Netherlands, but not as much as in other countries.

Tasks are being taken over

There is no guarantee that new technologies will lead to more jobs again this time around. Some studies show that the deployment of robots creates more jobs, while others reveal that digitisation will eliminate one out of ten jobs.

CHANGES IN TASKS

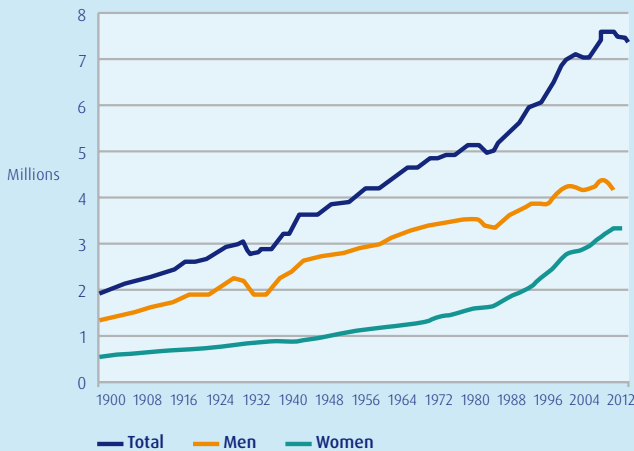


Source: CPB (2015) *Berekeningen en achtergrondinformatie over baanpolarisatie in Nederland*

Tablets, smartphones, solar panels, smart thermostats and robot vacuum cleaners have all led to new jobs in recent years. It is difficult to predict which products or services will do the same in the years ahead.

What we do know, however, is that work is *changing* because automated systems are taking over tasks. That is probably why the group in the middle segment is being hit hardest; a relatively large proportion of their jobs can be substituted by devices or software (see graph). The unemployment (or partial unemployment) rate is already relatively high among low-skill workers. They are also vulnerable because technological advances only aggravate their existing disadvantages. High-skill workers may benefit soonest from the growing demand for knowledge generated by digitisation.

EMPLOYMENT IN THE NETHERLANDS SINCE 1900 (EMPLOYED WORKING POPULATION)



Source: Goos, M. (2015) in: *De mens tussen mens en machine*, KVS, 2015.

Achmea

Automation and digitisation have eliminated jobs at insurance company Achmea. The work content has also changed, with jobs and roles becoming more flexible and work being tackled more often in multidisciplinary teams. Jobs that required vocational training have given way to jobs requiring a higher professional or academic qualification.

Achmea promotes long-term employability. It offers training and support in such areas as vitality, health and career guidance to ensure that employees can position themselves favourably both inside and outside the company or in the labour market. Employees who have trouble utilising these facilities on their own receive coaching to help them improve their employability.

The transitional phase

Many Dutch people are in paid work and the Dutch labour force is very productive. That puts the Netherlands in a good position to transition to a more digitised, robotised labour market. The unemployment rate may increase (temporarily) during the transitional phase because certain groups will not be able to make the switch (immediately) to new jobs, new tasks and the new, required competences.

To get through the transitional phase, working people must be adaptable, i.e. able to respond quickly to changes. That adaptability depends on their having digital skills, a flexible attitude and general cognitive skills, for example in language and maths. They must also be willing to learn (lifelong). It is important to

strike the right balance between adaptability on the one hand and work and income security on the other.

Three groups of employees will need particular support during the transitional phase because they are vulnerable in the changing labour market: people who have already lost their jobs to digitisation in recent years, older workers who have become unemployed, and low-skill workers. These groups will benefit most from training, although that will not be enough in every case.

Plenty of work ahead

Government and the social partners can limit the negative impact of job losses by concentrating on promising sectors, including new ones. One good example is the push for a sustainable economy and

energy supply. The Energy Agreement for Sustainable Growth signed in 2013 under the SER's guidance has already created thousands of new jobs. The Energy Agreement includes agreements to retain employees who lose their jobs due to sustainability measures. New employment is also being generated by efforts to create a circular economy that reuses or recycles raw materials.

Besides sustainability, IT and technology, growth is also anticipated in the health care sector, the market for personal services and the skilled trades, with innovation and technology creating new opportunities that cannot, as yet, be foreseen. Once again, legislation and agreements between the social partners can help guide the changes in the right direction.



5

How can we key into digitisation?

'People and technology: working together' presents a joint analysis by Dutch employers' associations and unions of the transition to a labour market in which digital technologies will play a growing role. In this closing section, the SER suggests a policy agenda for the short and longer term and sketches its own work agenda for the years ahead.

Short term: tackle urgent problems

The precise effect that digitisation will have on work and employment is uncertain. What is clear is that some groups of workers are already struggling with transitional problems. Not only must they have access to suitable welfare provisions, but government must actively support reintegration and employability. Some of the solutions that merit consideration are early training, early consultations between employers and employees, and localised, tailor-made solutions for specific sectors or businesses.

In addition, regional advisory centres meant to provide job-to-job guidance can help mitigate transitional

problems. In its advisory report *Limiting, preventing and insuring against unemployment* (2015), the SER argued in favour of such centres.

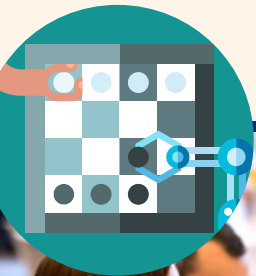
Agenda for the longer term

By pursuing a dynamic, targeted longer-term policy, the Netherlands can take advantage of the opportunities of digitisation: new forms of employment, greater prosperity and wellbeing, and solutions to societal problems. The more we can maintain our leading position in innovation, the greater our chance of profiting from new technologies. To achieve this aim, government, the social partners, educational institutions and other stakeholders must work together.

The SER sees four routes by which the Netherlands can attain this aim:

Support innovativeness

- Launch action programmes such as Smart Industry (focusing on new technological applications)
- Study the connection between the sharing economy and the organisation of work
- Promote public-private partnerships
- Have government take the lead in procuring and delivering digital services
- Make legislation technology-proof
- Invest in research & development



Make the organisation of work forward-looking

- Have the social partners engage in intensive dialogue about the introduction of new technologies, for example the introduction of social and technological innovation simultaneously where possible
- Monitor the quality of work closely
- Strike the right balance between adaptability and security for both employees and employers
- Promote a good work/life balance

Utilise opportunities for new employment

- Adapt institutions to new circumstances without delay
- Monitor the impact of digitisation on various groups
- Act decisively if too many jobs disappear or are at risk

- Where necessary, invest in more work or a different distribution of work

Equip people through learning and professional development

- Encourage lifelong learning, i.e. continuing to learn while in work or in addition to working after initial training

The SER's work agenda

The SER is currently (november 2016) working on its work agenda for the next government's term of office.

The agenda will cover issues that share common ground with digitisation. That common ground is already apparent in several of the advisory projects that the SER is currently working on.

The SER intends to address the following issues in its work agenda:

- how to promote sustainable economic growth
- how to boost the position of the Netherlands in the world
- how to deal with societal unease and promote trust in the future
- how to build an inclusive labour market
- how to strike the right balance between adaptability and security in the labour market

By pursuing this work agenda, the SER will help create policy ensuring that digitisation leads to more prosperity for all.

Would you like to know more?

Read the entire text (in Dutch) ⇒ [verkenning Mens en technologie: samen aan het werk](#)



SER

Social and Economic Council of the Netherlands

Bezuidenhoutseweg 60

Postbus 90405

NL-2509 LK Den Haag

T +31 (0)70 3499 525

communicatie@ser.nl

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