



Vision statement

The transition towards a digital society: a comprehensive policy agenda

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Contact

Peter Van Humbeeck	pvhumbeeck@serv.be	+32 2 209 01 01
Mieke Valcke	mvalcke@serv.be	+32 2 209 01 17
Sandra Hellings	shellings@serv.be	+32 2 209 01 91
Tim Buyse	tbuyse@serv.be	+32 2 209 01 23
Wim Knaepen	wknaepen@serv.be	+32 2 209 01 05
Kristel Bogaerts	kbogaerts@serv.be	+32 2 209 01 98



Content

1. Preamble	4
2. Vision statement	5
3. Towards a comprehensive policy agenda	7
3.1 Future-oriented skills and competences	8
3.2 A well-functioning labour market	10
3.3 Adequate social protection and inclusion	13
3.4 Infrastructure and regulation of data and platforms	14
3.5 Innovation, entrepreneurship and organisational support	17
3.6 Modern public services	19
3.7 Customised policies and legislation	21
4. Policy directions and actions in priority areas	23

1. Preamble

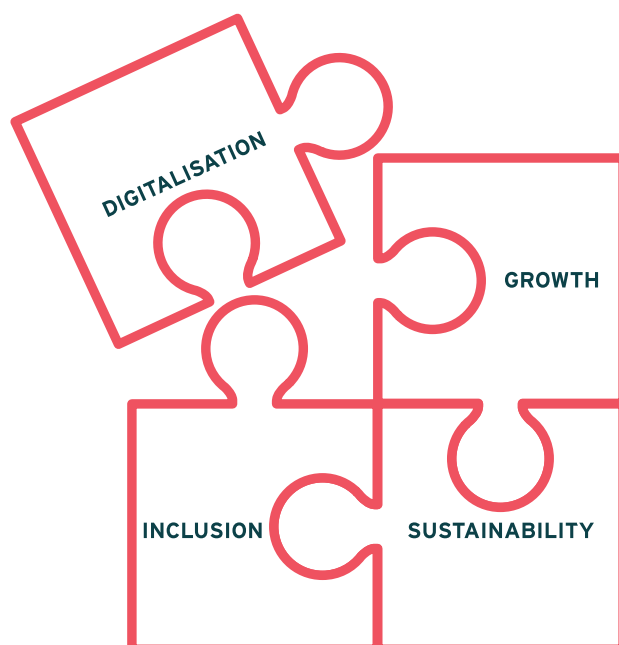
In their agreement of 23 November 2016 on education and training for workers¹, the social partners of Flanders stated that “the increasingly rapid and profound transformations require future-oriented solutions within a changing context. We want to cooperate constructively to create the required frameworks and framework conditions for a sustainable transition that backs people and businesses while offering perspective within a disruptive environment. We will do so by organizing internal and external consultations and by concluding agreements, primarily to help build a dynamic labour market that offers opportunities for every citizen. (...) In the coming weeks and months, the Flemish social partners will investigate and hold consultations on the economic and social challenges we are facing.”

These challenges are described in the SERV platform text 2030 of 8 February 2016². One of the most important challenges is the transition to a digital society. On that topic, the SERV published a so-called starting note on 3 May 2017³. This note summarises the main opportunities and challenges of digitalisation for the Flemish economy and labour market. On 28 and 29 June 2017 and on 10 November 2017, the SERV organised three roundtables⁴ with experts and industries about the impact of digitalisation and robotisation and issued a report and recommendation on e-commerce on 9 May 2017⁵. Earlier in the process, the SERV consulted the Flemish transition managers for the transition areas within the government’s Vision 2050 ‘industry 4.0’, ‘circular economy’ and ‘lifelong learning’ (3 February 2017) and representatives of the Centre for Work and the Centre for Educational Research concerning the foresight studies on work and education (31 May 2017).

The Flemish social partners are now moving forward. In this document, they develop a vision for the future and a basis for a comprehensive policy mix that addresses the opportunities and challenges of digitalisation for the economy and labour market in Flanders⁶.

This document is not yet complete. In the next couple of weeks, the SERV will be working on the selection and assessment of policy directions and actions within specific priority areas. The final output will thus consist of three elements:

1. a vision statement (chapter 2)
2. a comprehensive policy agenda (chapter 3)⁷
3. policy directions and actions in priority areas (chapter 4)



1 <http://www.serv.be/serv/persberichten/vlaamse-werkgevers-en-werknemers-zijn-eens-over-aanpak-opleiding-en-vorming>

2 <http://www.serv.be/serv/publicatie/platformtekst-vlaanderen-2030>

3 <http://www.serv.be/serv/publicatie/economie-en-arbeidsmarkt-toekomst-startnotas>

4 <http://www.serv.be/serv/evenement/serv-rondetafel-digitalisering>

5 <http://www.serv.be/serv/publicatie/advies-e-commerce-vlaanderen>

6 The term ‘digitalisation’ will be used in the broad sense of ‘digitalisation and robotisation’.

7 Linkages between different parts of the text are indicated as follows: **5** refers linkages between specific buildings blocks of the comprehensive policy agenda (in this example there is a link with building block 5).

2. Vision statement

Opportunities and challenges

As every region or country, Flanders is facing a new major technological revolution. The digital transformation affects all aspects of social life. It has consequences that reach far beyond those of societal transformations in the past, not only in terms of size, but also in terms of speed and complexity. Digitalisation creates new opportunities for growth, jobs, efficiency, prosperity and well-being and may contribute to the solution of various societal challenges. Not falling behind is crucial to exploit these opportunities, as an individual, a business, organisation or region. However, digitalisation also defies the organisation of education, the labour market, economic and innovation policy, privacy and security, social justice and inclusion, regulation and legislation, the functioning of government etc. Digitalisation thus intensifies many existing challenges, while also offering new opportunities to address them.

Well-targeted policy choices to control and steer digitalisation in the right direction

The above-mentioned developments and effects depend not solely on the technological possibilities of a region or country. Indeed, many societal and technological evolutions can be controlled, supported or even regulated such that these developments have socially desirable consequences or outcomes or move the economy towards more growth, inclusion and sustainability. Our belief is that the solution can, and must be, a positive one. The policy challenge is threefold: exploiting the opportunities offered by digitalisation, steering developments in the desired direction (and drawing boundaries where necessary) and mitigating adverse effects. Policies should aim at realising and strengthening win-wins, with complementarity between man and technology/robots as a central concept.

An active role for governments and social partners

Companies, workers, citizens, governments and organisations must, to the best of their possibilities, be able to reap the benefits offered by digitalisation and avert the threats. This is partly an individual responsibility. The extent to which one is open to innovation, responsive to opportunities, agile and willing to learn ... determines the extent to which one can exploit the advantages and opportunities of digitalisation. But, the government and social partners also have a big role to play. They must provide the framework conditions that allows individuals or organisations to develop and take-up their responsibilities. They must also provide guidance and perspective while creating the right conditions for a smooth transition to a digital economy and society with more growth, inclusion and sustainability. Social partners, and an intense and well-functioning social dialogue between them and the government, have a decisive role in this while responsibilities are shared between governments, employers, workers and all citizens.

The need for a comprehensive policy agenda

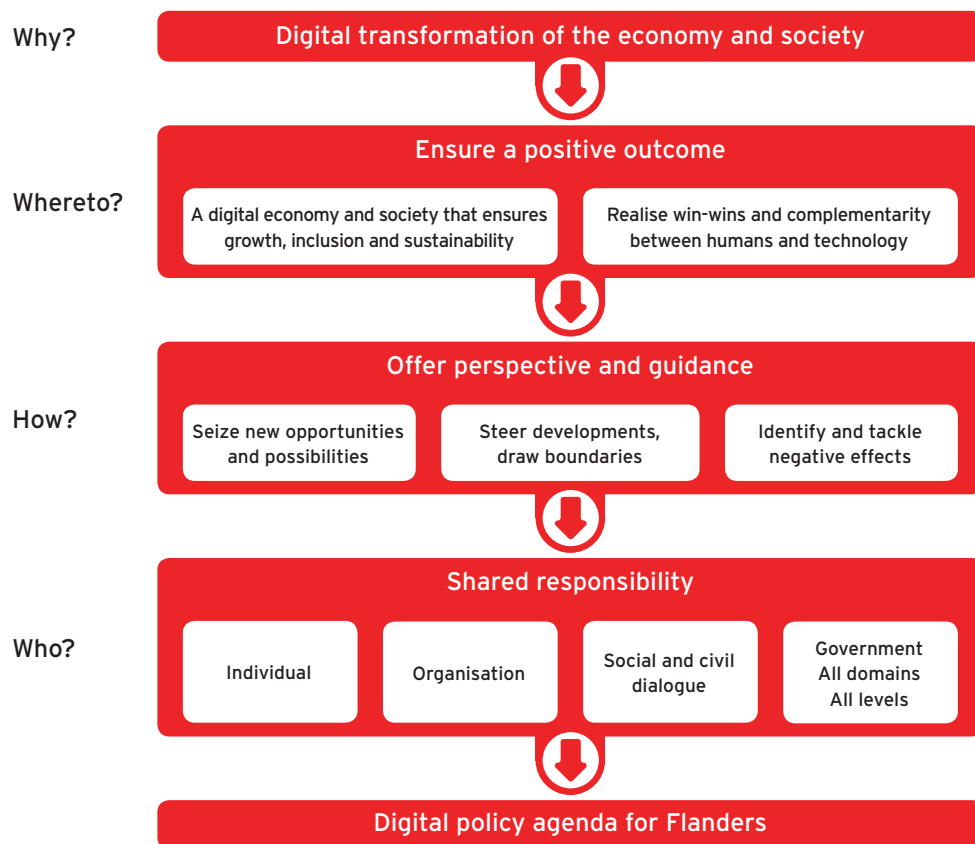
Assuming responsibility as a government and as social partners is crucial and urgent. Various measures have already been taken by both the Government of Flanders and the Flemish social partners to accommodate the outlined challenges and opportunities. In addition, the SERV has developed opinions or advices about many of those policy challenges. Unfortunately, however, many existing (policy) instruments are not adapted to the digital era. Moreover, the pace at which new technologies become available and affordable is often greater than the rate at which people (and their skills), organisations (and their activities, business models, structures, processes), governments (and their policy, legislation, procedures) and education (curricula, training and formation) are able to adapt to these changes. This gap between 'technology 4.0' and 'policy 1.0' requires immediate action based on a comprehensive, coherent and coordinated policy agenda. Such an agenda should be developed in close dialogue with social partners and other stakeholders involved and should subsequently be implemented, evaluated and updated regularly.

First steps towards a comprehensive policy agenda and specific policy actions

Unlike many other regions and countries, Flanders has no comprehensive digital strategy. The Flemish social partners want to present such a strategy with the vision statement in this document. Nevertheless, this vision for the future is still preliminary and incomplete. Indeed, the future is surrounded by much uncertainty. Moreover, a broad cooperation, input and involvement of various actors and all levels of government are required to set-out and implement such a desired and comprehensive agenda. In the meanwhile, the responsibility for many policies and policy areas are located at the international, European, national or local government level. As a result, some topics and sections in this document will be less developed than others. Moreover, while some questions still require more study and analysis, other, more specific actions must be conferred with stakeholders (e.g. education actors, sectors ...).

Impact of digitalisation on the process of social dialogue

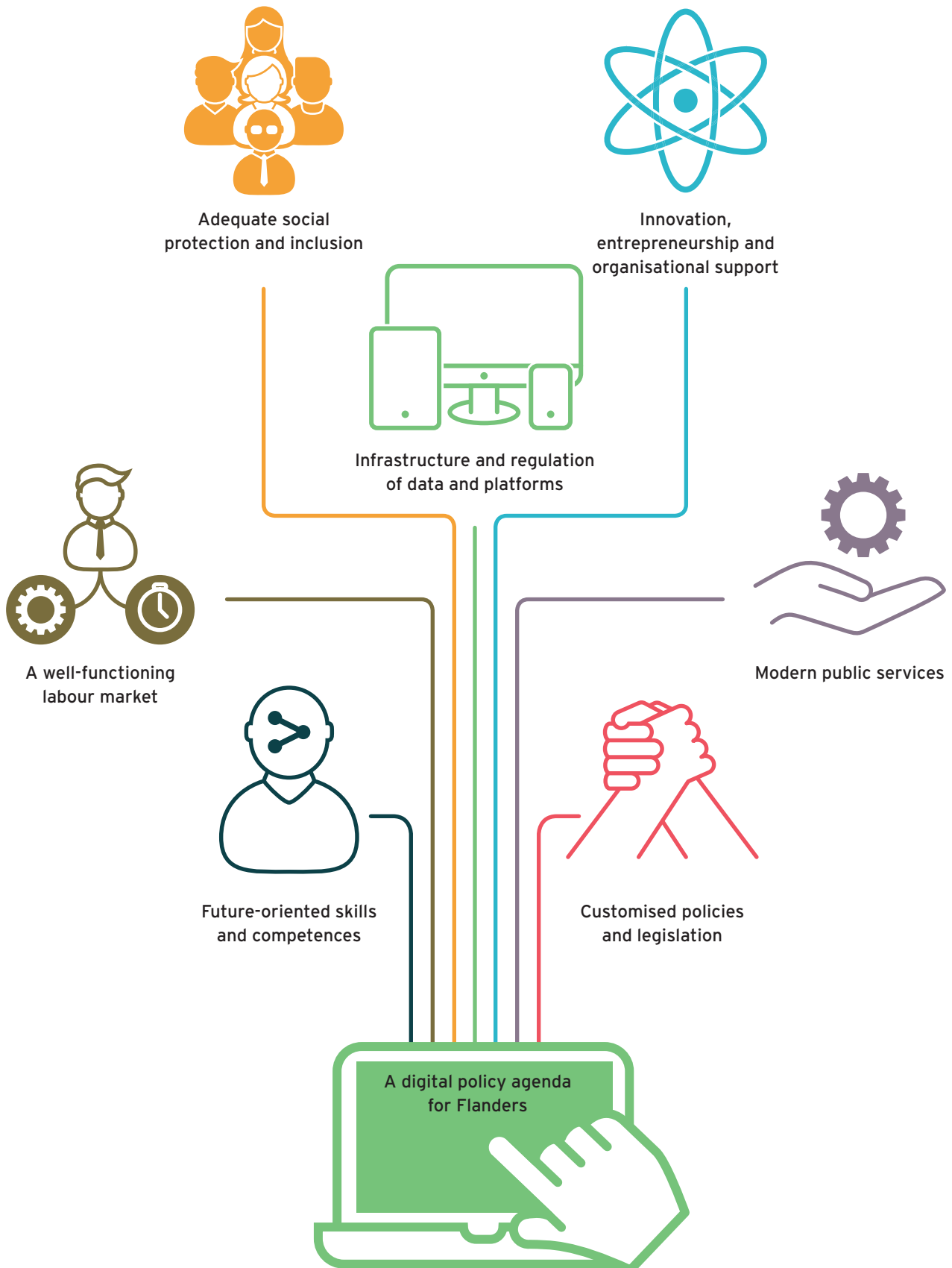
With this vision statement, the social partners put digitalisation on top of the agenda of the Flemish social dialogue. Similar processes occur at other levels, however. For instance, in the implementation of the IPA⁸ 2017-2018, the social partners at the Belgian federal level have extensively studied the impact of digitalisation both within the NAR and the CRB. On the European (EESC) and international (ILO) level, initiatives are also being taken and the same holds for the sectoral level, at which social dialogue remains crucial to exploit the opportunities and implications for businesses and to guide employees through the transformations that accompany digitalisation. Simultaneously, the Flemish social partners also want to analyse the implications digitalisation poses for the process of social dialogue itself. Some developments may have an important impact on this process, such as the blurring of sector boundaries, the emergence of new forms of employment (e.g. within the platform economy), or the speed at which work changes due to disruptive technologies. The social partners of Flanders will reflect on the existing structures and processes of social dialogue in our country and will initiate a debate on the room for manoeuvre that governments give to social partners in their aim to find negotiated solutions to societal problems within democratically defined outlines.



⁸ An interprofessional agreement is a program or framework agreement that the representatives of the social partners from the private sector conclude every 2 years.

3. Towards a comprehensive policy agenda

In what follows, the social partners of Flanders formulate fifty important building blocks for a comprehensive policy agenda on digitalisation. The goal is to broadly indicate the areas that should be considered (what?). Policy directions and specific actions (how?) within a selection of priority areas are later to be added in Section 4.



3.1 Future-oriented skills and competences



Digitalisation causes major changes in the required skills of workers and in the expiration date of existing skills and qualifications. Major challenges exist in order to achieve a true learning culture and to develop a career-long focus on re- and ongoing training or, in other words, lifelong learning. One question is how prolonged periods of intense learning, and possibly reorientation towards new jobs, can be effectively organised. In any case, a debate should be held on the allocation of the burden of these considerable training efforts. There are shared responsibilities for achieving an increase in education participation, lifelong and life-wide learning, especially for those participating less today. Not only the individual but also companies or organisations and even the collective level (sectors, governments) must take up this responsibility. As careers will no longer coincide with predictable trajectories within one specific organisation, citizens

must also manage their own intellectual development, look for new opportunities, think about their own skills and future, advertise career expectations, etc. Nevertheless, collective arrangements and support from the government, industry associations and companies do remain crucial.

The provision of education and training must be more agile and responsive to the impact of digitalisation and robotisation on society and the labour market. To achieve this, we require more intense dialogue, knowledge sharing and collaboration between education and training providers, companies, industries and research institutes. From the demand side, strong incentives are needed to develop the right future-proof skills.

1 Invest in competence forecasts

Competence forecasts must provide a range of education and training provisions that are well-developed and continuously meet the changing needs within the labour market. Rapid technological developments make it difficult to properly predict the required skills of the future. Therefore, changes in required skills must continuously be identified. Developing an education and training system that is future-proof requires an information model that allows to get better and faster insight into the key competencies for society, the economy and the labour market. (Redesigned) sectors or clusters are well-positioned to invest in such an information system that identifies the main trends and translates them into changes in work organisation and job classifications. Sectoral training funds⁹, for instance, could play an important role in monitoring and qualification within their sectors. The blurring of sector boundaries does call for more intense cooperation⁶ and customised (horizontal) measures.

2 Strengthen key competencies and develop new skills

Within education and study curricula, more attention should go to future-oriented skills, knowledge and attitudes. An important part are the so-called '21st century skills' that include digital, social, technical and entrepreneurial skills in addition to employee

status (flexible adaptability, creativity, attention to their own employability, career skills ...). Moreover, specialised domain-specific knowledge is also important. This explains the notion of 'T-shaped skills' at the organisational level, where the horizontal line refers to a combination of broad knowledge and the vertical line to specific experience and expertise, and to generic and transferable skills. All this also requires other, new forms of learning³, such as 'deeper learning', and innovative models to acquire new skills.

3 Promote new forms of learning in order to learn while working and work while learning

New forms of learning and learning programs that combine working and learning should be promoted intensively. Especially for current workers, a large offer is required that is both geographically diversified and takes into account the needs and career development prospects of trainees. This assumes a wide range of entry levels, more accessible starting dates and learning paths (personalised, modular, with the possibility of achieving partial qualifications). Learning methods¹⁰ must also evolve through time, making use of the digital opportunities⁹ and must regularly be evaluated with respect to their effectiveness. The more diverse the offer is, the more fruitful it can be in terms of participation, qualification, personal development and employability.

9 Sectoral training funds (STFs) are used to finance continuing vocational education and training (VET). They are jointly managed by employers and employee organisations, are regulated by existing social agreements signed by social partners and are financed by social contributions.

10 Examples are trails with short learning opportunities linked to 'micro-experiences' of people teach themselves things, e-learning via MOOCs (massive open online course) and SPOCs (small private online courses), blended learning with online distance learning with traditional education with contact hours and learn together ..., learning and guidance methods such as digital learning environments, interactive games, individual monitoring, self-assessment, formative assessment, adaptive learning and learning (formal and informal training, job rotation, job learning, second-chance education ...).

4 Encourage learning throughout the career

Putting more emphasise on learning throughout the career must enable a career-long focus on retraining and being reskilled. To achieve a better matching of supply and demand on the labour market one requires future-oriented educational choices as well as sustainable career paths. This should not be taken for granted in a rapidly changing society. A greater appreciation of and guidance to vocational and technical (higher) education, including STEM, is crucial. The existing gap between compulsory and secondary education should be reduced. More workers must be able to participate in regular (higher) education and advanced training **3**. All providers of adult education have an important role to play: not only public and private players (including Monster and Syntra) but also colleges (offering higher professional education) and universities should focus more on adult and working students (see also the so-called 'Extended Universities'). Supervision and guidance is of great importance to match individual needs with a good education or training offer. This can be achieved by, for instance, 'learning shops' that actively engage people, learning coaches, consultants, etc.

5 Focus on informal learning and improve accreditation of prior learning

To acquire the right future-oriented skills, a renewed focus on informal and non-formal learning is needed as digital technologies imply that education and learning is less time and place dependent. The accreditation of informal and prior learning (APL) requires an easy, transparent and comprehensive framework and less ad hoc assessment than is the case today.

6 Promote partnerships

Partnerships are important to ensure the provision of training that responds to the considerable training needs that arise and that can meet the rapidly changing business and social reality in the future, including those changes driven by increasing diversity. This implies that the offer results from collaboration with various stakeholders and needs coordinated initiatives **32**. Examples include sectoral programs for training and retraining; tripartite agreements between employers, employees and government on education and training; the provision of high-quality work-learn-programs in enterprises; supervision of people throughout their careers by employee organisations, retrain the trainers programs in collaboration with sectoral and technological institutions ... Intensified cooperation requires consensus among the various actors (formal education, training providers, businesses) concerning everyone's task and responsibilities. Some sectors and organisations record that students do know the latest techniques,

which is undoubtedly positive, but nevertheless lack the technical knowledge to apply these techniques correctly in practice. Schools should broaden their focus and establish partnerships with related sectors. Professionalisation requires economies of scale and more autonomy as well as more coordination between the various types of learning processes, partnerships and educational providers.

7 Reach out to and involve vulnerable groups of today and tomorrow

Digitalisation should not lead to increasing inequality in education, learning careers and sustainable employment opportunities **16**. Special attention must go to lower-skilled and older workers, who are often less familiar with ICT. This also applies to medium-skilled workers and employees in (service) functions or other jobs that are prone to be taken over by robots and artificial intelligence **17**. Retraining is not always easy due to differences in learning abilities and costs (time and money) that depend on the labour market position of citizens (degree of control over their own working hours, training in the company ...). Key policy objectives should be to increase literacy, avoid unqualified outflow and decrease the number of young people that are not in training or work. Functional illiteracy on the Flemish labour market remains high. A certificate of, especially vocational and technical, secondary education does not guarantee sufficient (digital) literacy. Positive learning experiences and skills acquired at an early age, however, form the foundation for lifelong learning and the acquisition of complex skills. In order to acquire digital skills within compulsory education, free access to learning materials seems important to help those with less financial means to develop digital competences.

8 Provide strong incentives for businesses and renew organisations to develop and use skills and competences

Strong incentives must ensure that businesses invest in appropriate and ongoing training for their employees and motivate their employees to continue their individual learning process. Strong incentives for those self-employed and for workers must ensure that these groups are challenged to continuously develop their own skills and provide them with the time and financial resources to do so. Tools that focus on the employee or the employer are bonuses, leave schemes, favourable tax measures ... However, new measures and incentives are imperative. Job seekers' specific training needs must be clearly defined so that they can be guided towards the right educational offer. Participation in education should be supported by labour market and education policies. A key question is how participation can be supported also by the social security system and the labour law. An added value can be found in the way work is organised

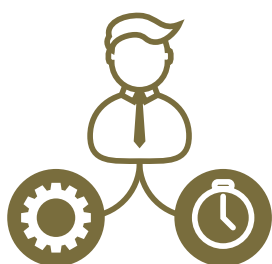
and employees are empowered within companies. An innovative work organisation **37** encourages, attracts, retains and develops talent. It acts as a lever for increasing the innovation focus, productivity and lifespan of businesses. Organisation models that offer perspective, such as 'skill intense workplaces', facilitate learning while working and vice versa, enable people to use their knowledge and talents and give them autonomy. Too often, underutilisation of existing knowledge and skills is a problem which results in the loss of opportunities for innovation and productivity gains and for the development of employees.

9 Innovate and invest in future-oriented training infrastructure

Education and training institutions need investment in organisational culture and new learning methods, need to promote a true learning culture and invest in a future-oriented training infrastructure. The role of teachers and trainers shifts from solely offering new knowledge to designing, supervising and supporting learning and coaching the students and trainees in their development.

This requires different didactics **3**. Teachers have an individual responsibility to continue learning, ideally with a strong culture of experimentation, diversity and innovation. Life-long learning and continued education should focus more on strengthening (informal) networking and collaboration with external partners and stakeholders, sharing good teaching practices among school teams, peer-to-peer learning, dual education systems for teachers, co-teaching, etc. The learning environment should be technology-intensive and trainers must have sufficient digital skills **2**. The design of school buildings must be adapted to these new learning approaches (e.g. flexible and open work spaces for collaborative learning environments ...) which will require substantial investment in modern infrastructure, technology and ICT applications. Partnerships between schools, universities and businesses can contribute. ICT makes it easier to offer tailor-made learning materials, curricula, assessment procedures and feedback. It can stimulate networking between schools, teachers and other stakeholders and facilitate communication. Moreover, ICT and big data can be used to gather useful information about training and education policy **40**.

3.2 A well-functioning labour market



Digitalisation thoroughly reshapes the future of jobs and work. The impact and opportunities will be substantial, for the size and structure of employment, job descriptions, competencies and skills of workers, types of employment and labour relations, the quality of work ... While new industries and jobs will be created, leading to a shortage of specific employee profiles, other jobs will disappear. In the future, parts of other jobs will become obsolete or will be performed by machines or algorithms. Many people warn for more or new types of job polarisation as the number of high-skilled vacancies increases, the number of low-skilled jobs stagnates and the number of middle-skilled jobs decreases. Although much is still uncertain, most jobs will probably look very different in the future and the impact of digitalisation will be substantial. The tasks of many professions in various sectors will

change radically, as will the required skills to perform these tasks. As a result, the future of work is not only a question of which jobs will survive and which will not, but also a question of the nature, characteristics and organisation of work.

Employment and job policies of the future must formulate an answer to these challenges and detect possible opportunities. In the VESOC¹¹-agreement of 17 February 2012 the Flemish social partners and the Government of Flanders have already pinpointed multiple challenges. Digitalisation will - along with other developments such as aging and globalisation - further intensify these challenges. Specifically, a good labour market policy must focus on:

- revised competence requirements and skills (see above);
- career transitions: it prepares individuals for this transition and ensures rapid and sustainable re-employment after job loss (transitional career);
- the quality of work and workable work, including emphasis on innovative work organisation;
- new types of work and atypical working arrangements (associated with digitalisation), considered also as an opportunity to step into the labour market;
- labour shortages: it predicts which profiles are required and aims for swift filling of vacancies for these scarce profiles in order to attract and retain talent (i.e. elimination of mismatches on the labour market);
- specific needs (and focus on laggards): it is committed to an inclusive labour market in which as many people as possible have the opportunity to make a productive contribution and where businesses, entrepreneurs, workers and jobseekers who lack knowledge of digitalisation are supported and strengthened.

¹¹ VESOC is the Flemish Economic and Social Consultative Committee. In addition to the advisory role, the SERV also supports and assists the trilateral discussions between trade unions, employer's associations and the Flemish Government within VESOC. Consensus agreements closed in VESOC are binding for the Flemish Government, while social partners participate in their implementation.

10 Steer digitalisation towards higher employment

Employment and job policies of the future must proactively guide technological evolutions and look at how these new technologies can contribute to employment, i.e. more jobs, different jobs and better working conditions. In the near future, and also in Belgium, digitalisation may result in economic growth and productivity gains combined with a low risk of job destruction (and perhaps even job creation and net increases in employment). This requires that Belgium and Flanders properly handle the transition and continue to play their role as digital precursor, that technological advances and diffusion are embraced, that novel technologies are used to produce new innovative and creative products and services [30](#). It also demands that (current and future) employees are trained and retrained taking into account the future of labour (new jobs, other job content and a new mix of skills and competencies required) [2](#) while detecting the opportunities of job creation arising from the developments of new markets (and user needs). The challenge is to ensure that the productivity gains achieved by digitalisation go hand in hand with economic growth and rising employment. Technological innovation should be deployed so that more people are at work.

11 Use digitalisation to optimise welfare, well-being and workable work

Good labour market and job policies should employ the digital opportunities to optimise the workers', entrepreneurs' and citizens' welfare [18](#). This means that automation and digitalisation are used for the purpose of society and workers (i.e. human-centred automation and digitalisation). Technology should be aimed towards upgrading employment and work conditions. As a society, we should not undergo technological changes but instead search for complementarity and adaptive automation and strive for inclusive digitalisation. The aim cannot be to replace as many workers as possible by robots, but to focus on and invest in those technologies and robots that make people more productive. Technology should be adapted to humans to ensure a more equal distribution of workload between man and machine. As such, robots can help people and perform routine tasks, physically demanding or dangerous work and contribute to better working conditions and higher-quality jobs. Several

examples from the mainstream and social economy show that such complementarity between man and robot is not a dream. Co(ro)bots (already) work with people as flexible team players in some domains¹². In any case, the aim of creating better working conditions and more workable work must be taken into account when developing new technologies.

One way to promote this complementarity is to develop applications in a process of co-creation (engineers/human scientists/users) [46](#). We should also carefully consider which tasks or functions we would like to see humans perform in the future (although robots could also successfully perform them) and which tasks robots will not be able to take over. There is a need for a comprehensive monitoring and strategy with respect to workability and longer working lives, with attention to new forms of organisation and atypical working arrangements that may be associated with digitalisation. Research has shown that the effects of digitalisation (and robotisation) on the quality of work and workability can be very diverse.

12 Reconcile the diverse range of new and atypical types of (flexible) work with sustainable and qualitative employment

The diverse range of new and atypical types of work and (more flexible) working arrangements must be reconciled with sustainable, qualitative employment. Digitalisation goes hand in hand with new developments in work organisation (such as digital platforms, networks, horizontal structures) and more flexible working arrangements (such as flexible contracts, agency work, pooling of labour, shared workspaces, project work ...), in addition to increased cooperation with freelancers and independent service providers. Labour is much more hybrid than it used to be and work is more time- and location-independent and more diverse in terms of duration and autonomy, etc.

This creates opportunities for specific skill profiles, such as for individuals that seek more autonomy in their job or for those who look for a better work-life balance or combination with a second job. Analysis on how these new types of work and atypical working arrangements offer opportunities for people with a greater distance from the labour market, could also be interesting for

¹² The Smart.Production.Lab at Volkswagen Group has developed an intelligent robot application in Wolfsburg in which a man and a robot make a gearbox together. The robot responds to gestures of the staff, thanks to artificial intelligence. The goal of Volkswagen is to develop a factory of the future where people can perform complex tasks with a higher level of specialist expertise, creativity and problem solving skills. Through close cooperation with smart robots employees can better focus on their work. At the Audi factory in Ingolstadt a robot works together with the assembly staff in a real production environment.

Mary Stone, a tailoring business from Gits, focusing on technology and ICT applications in the workplace. The focus is especially on the complementarity between technology and humans and on sustainable employment. This occurs through cognitive labour support and clever projection of work instructions and through the use of cobots. Via these high-tech and people-centric solutions, the company is trying to respond more flexibly to market demand (including through the realization of smaller production series and more product variants). See also <https://mariasteen.be/nieuws/balans-tussen-hoog-technologische-en-mensgerichte-oplossingen>

these groups, these types of employment can, for instance, be a stepping stone towards a more stable job. As such, digitalisation contributes (indirectly) to a higher employment rate and better labour market matching. This also calls for attention to digital literacy **7**.

On the other hand, developments such as digitalisation and new types of work put increasing pressure on existing social rights, create new questions (concerning responsibilities, liabilities ...) and pose a challenge to our current social model where pay and promotion are linked to seniority and experience **23**. This calls for an open and extensive policy debate with input from the various policy levels **45**. Indeed, it is important that these changes occur within a legally secure and high-quality regulatory framework to secure qualitative employment. Sufficient social rights and security must be guaranteed during all kinds of work. Moreover, both employers and workers must be able to reap the benefits from these new developments. The degree of flexibility must be tailored to the nature of the work and meet a real need in the organisation. Finally, the importance of social dialogue in general and negotiated flexibility should also be strongly emphasised.

13 Shape careers of the future

Careers should continue to fill both existing labour shortages and be future-proof. In other words, it is important to detect both current bottlenecks on the labour market and future priorities. The impact of digitalisation is, however, not completely predictable. Companies cannot fully understand or estimate in what direction demand for labour in the (distant) future will evolve, i.e. which worker profiles they will need in the future **1**. Besides, several bottlenecks already exist in the labour market today. A good labour market must aim at a double goal and realises the largest possible group of 'winners'¹³: assess the current shortages in the labour market through better guidance of existing job seekers towards these (bottleneck) vacancies and the development of a long term vision and strategy on careers and education and training policy **8**. Comparability, complementarity, adaptability, resilience, agility and versatility (for companies, independent entrepreneurs and current and prospective employees) are key words in such a strategy. This requires timely reskilling, retraining and ongoing training in order to identify potential opportunities and avoid unwanted career transitions (i.e. periods of unemployment).

14 Ensure smooth and sustainable career transitions

Job-to-job career transitions should be supported by appropriate policy instruments. Today, the predicted and sharp increase in labour mobility has not yet erupted completely in Flanders. The focus does shift from job- to career security. The more workers change jobs frequently or become an entrepreneur, the higher the relevance of supporting work-to-work career transitions. When jobs are lost, a fast, smooth and sustainable re-employment is essential. Sustainable employability is part of this discussion. Transitions from one job to another should be meaningful and future-oriented. Current policy instruments (including career cheques and education and training for workers) should be evaluated with respect to this goal and adjusted if necessary **8**. Additionally, careers can be designed differently, allowing for instance for more variation between working and learning or more space for retraining, and ongoing training **3**. Furthermore, matching supply and demand on the labour market more quickly, more effectively and more efficiently is also important. New technologies (including big data, artificial intelligence) can support job search and recruitment and contribute to further professionalisation and personalisation of services to employees, job seekers, businesses and organisations **38**. At the same time, possible adverse effects such as the risk of reduced human contact and quality and accessibility of services should be detected and suppressed.

15 Develop, attract and retain talent

Efforts need to be made to develop, attract and retain scarce talent. Digitalisation, but also aging, imply that certain job profiles are likely to become even scarcer, including those that are more technical and ICT-oriented. Already today, Belgian companies have difficulties in recruiting ICT specialists, more so than companies in other OECD countries. The number of ICT workers, researchers and schools is too limited. The proportion of graduates in computer sciences in Belgium is among the lowest in the OECD. Attracting and retaining talent is essential. This requires initiatives on different tracks. First, the existing employment potential should be better addressed, including through guiding vocational and educational choices but also through training, re-training and ongoing training **4** and by means of targeted activation **14**. Second, the labour pool from other EU-countries should be properly guided towards

¹³ The most obvious winners of digitalisation are individuals in functions that require specialised technical skills of the future (such as technology-design skills, expertise in cloud technology, systems integration, big data, Internet of Things). It also concerns individuals that possess skills that are complementary to digital instruments (e.g. leadership, communication and negotiation skills, problem solving), people who can adapt the quickest to new technologies and those who are versatile. On the other hand, there are employees whose duties are similar to and thus more easily replaceable by robots. Employees who perform routine tasks will be among the first to be replaced. These may be low-, medium or even high-skilled workers.

Flanders. Third, the Government of Flanders should develop a sound economic migration policy towards non-EU-countries that is suited to the specific needs of the Flemish labour market. It may be noted also that new forms of 'digital labour migration' are created by cross-border outsourcing of tasks and activities. Much of the current and future tasks can be performed online. A major challenge is thus how to avoid new types of unfair labour competition and social dumping.

16 Pay attention to disadvantaged and vulnerable groups

Continuous attention should be paid to vulnerable groups and to people that have a risk of future vulnerability ¹⁷. In the short term (that is, during the transition phase of the digital revolution), it is likely that labour will adapt only partially and that mismatches between supply and demand will occur. Presumably, frictional unemployment will be the result because not every individual is capable of moving smoothly into new activities, jobs or tasks. Limiting frictional unemployment to a minimum such that transitional problems and adjustment costs do not evolve into structural problems, is a major challenge. The low-skilled, long-term unemployed, disabled individuals,

older people, people from ethnic minorities and those on long-term sick leave are precarious groups in the labour market. A crucial task for the government is to support and assist these people and to detect potential problems in a timely manner ⁷. In Flanders, especially the low-skilled seem particularly vulnerable. This group is characterised by a high unemployment rate and the gap between employment of high- and low-skilled workers is among the highest in Europe. Industrial sectors, which account for the major part of employment of low-skilled workers, will also be most prone to job losses due to digitalisation. Without a suitable policy answer, there is an additional threat for displacement of low-skilled by medium-skilled workers who do not find a job that fits their own skill level. A digital agenda for low-skilled workers therefore seems very important. In addition to the existing vulnerable groups of people, there is also a group of the 'new vulnerable'. Businesses, the self-employed, unemployed and those workers who lag in the field of innovation and technology require special consideration. Furthermore, employees whose duties are similar to, and thus easily replaceable by, new digital technologies or robots (i.e. routine tasks) have a higher chance to lose from digitalisation. In this respect, not only the low-skilled jobs, but also the jobs of medium- and high-skilled workers could be affected.

3.3 Adequate social protection and inclusion



Digitalisation entails challenges and opportunities for the organisation of social protection and solidarity in society, employment, health care, etc. The existing relationships between groups of people are changing. Some individuals see their jobs disappear or becoming scarcer because they can (partially) be replaced by new technologies. Other individuals will be able to find a job more easily thanks to new technologies. Also, many individuals will have to make an effort to keep their skills up to date. Digitalisation, and the resulting changes in employment, will furthermore have its impact on wages and relative income. These challenges require an extensive debate about the securing and promotion of social cohesion, the type of social protection and solidarity (benefits, health care and welfare) we want to develop in the future, the right to such protection and solidarity and the financing of social expenditures.

17 Develop a transversal policy to combat polarisation

Enhancement of inclusion and broad horizontal policy measures are needed to accommodate the impact of digitalisation and robotisation on the labour market and society. Such policies influence education, employment, integration, health, poverty, equal opportunities, etc. ⁴⁴. The profound changes that digitalisation and robotisation (will) have on the labour market poses a threat due to increased polarisation between those individuals and families that are able to reap the benefits of these changes and those who cannot. On the one hand, digitalisation creates opportunities for a more inclusive society, including through the empowerment of citizens,

increased transparency, democratic control and social protection (e.g. automatic entitlement of certain rights), in particular also for some vulnerable groups (e.g. social economy, health care ...). On the other hand, digitalisation also creates new risks of discrimination as not everyone is digitally literate or has equal possibilities to cope with the threats and opportunities that arise in a digital society. As such, the social impact of digitalisation does not only result from changes in wages and participation on the labour market, but may also create differences in development and learning opportunities, health, (healthy) housing, civil democracy ... Vulnerable groups in terms of use of digital technologies and media partially overlap with the 'classical' vulnerable groups defined at the socio-economic level.

18 Provide adequate social protection, health and welfare

Adequate social protection, health and welfare and constitutional rights must be secured and remain accessible for every civilian. This goes beyond the provision of replacement benefits but also implies ensuring access to affordable care and welfare. Policy should also focus on those who have insufficient security at certain new types of flexible statutes or jobs **12** and on those that have fewer opportunities for retraining or ongoing education **7**.

19 Safeguard e-inclusion

Every individual must have the opportunity to participate fully in the digital society. The use of digital technologies should be facilitated and guaranteed for everyone. This is however not enough. E-inclusion also touches media wisdom, the development of e-services with explicit focus on skills of (also vulnerable) target groups (e.g. 'user-centred design'), the use of e-services, strengthening digital skills, empowering citizens and consumers...

20 Seize the opportunities of digitalisation for inclusion and protection

There are opportunities to evaluate and rethink administrative processes and cooperation among health actors. For example, in the administration of health care and within the whole chain of preventive, curative

and rehabilitation care, barriers can be eliminated and opportunities exist when it comes to the automatic allocation of rights by sharing information and re-using data or applying the only-once principle **38**. Provided that the use of new technologies is well-controlled, a positive effect on workable work is possible, both physically and mentally (less accidents, less health inequality, better work-life balance). As such, digitalisation in terms of workable work may prove to be a win-win for employers, workers and care recipients **11**.

21 Safeguard the funding and optimal distribution of social protection

Even if most policy options do not fall under the responsibility of the Government of Flanders, it is important to think about shaping the future of social security ensuring the financial stability of the Flemish instruments in social protection, health and welfare policies. Digitalisation challenges both the income and expenditure side of social security. In a first step, it is important to monitor these evolutions. On the revenue side, effects can be expected on the funding base, while on the expenditure side one must take into account possible effects from entitlement requirements, allocation of rights and the architecture of benefits, care and welfare systems. However, digitalisation might also result in savings in social security expenditures that result for instance from a more efficient use of staff and equipment and that can justify increased spending in other areas (due to better take-up of rights, more prevention ...).

3.4 Infrastructure and regulation of data and platforms



Ensuring readiness for the digital revolution also implies creating the right ambient conditions that allow to seize the opportunities from the digital transformation. In general terms, we refer to well-functioning capital, goods, services and labour markets. It is also essential to dispose of a world-class digital infrastructure (communication, data, networks, platforms ...) and to safeguard an equal level playing field (for access, competition, regulations ...). Regulation of data is also crucial, along with the necessary trust and regulatory frameworks. Indeed, uncertainty hampers businesses and citizens to invest in digital technologies or adopt digital applications. Measures are needed with respect to the issues of security, privacy and consumer protection.

22 Create a world-class digital infrastructure

Creating a world-class digital infrastructure is essential for all business processes and data flows in the economy. The digital infrastructure faces increasing demands. This infrastructure determines the innovative power and attractiveness of a region and the speed of diffusion of digital applications and the 'Internet of Things' (IoT).

This relates primarily to ICT and telecom infrastructure (high speed broadband, mobile broadband, next-generation networks ...), but also to the integration of energy networks and mobility infrastructures. Not only investments in such infrastructure is needed, but also reliable services and equal and affordable access to those services must be created through the instalment of regulatory IoT standards, monitoring of competition, information and infrastructure sharing, etc. **25**

23 Ensure adequate and fair competition within an equal level playing field

The emergence of new digital platforms and players augments the need for adequate supervision, sufficient competition and an equal level playing field. Digital players - search engines, marketplaces, social media, creative content, app stores, online advertising, payment systems, and some platforms - meet a real need in the digital economy and society. They support growth in productivity and customer satisfaction by providing greater choice for consumers and better access to services. They create and shape new markets and enable data-driven innovation. In most cases, problems do not really occur and platforms work best when given the space to develop their activities. In some cases, however, there is a risk of concentration of market power due to network effects and low scale-up costs. This is particularly the case in markets where consumer depend on large digital players that have no or little competitors. This can cause problems such as exclusion, loss of purchasing power, price discrimination etc. Therefore, supervision and promotion of an adequate level of competition remains important [25](#), in addition to the role consumer associations may play. Control and monitoring of complex software systems and algorithms are also increasingly important, especially when they are used to support or even take decisions. A particular challenge lies in the existing regulatory and supervisory tools which still focus mainly, if not exclusively, on the analogue economy. Another important but unanswered question is whether ex-post instruments aimed at avoiding abuse of dominant positions is sufficient to maintain competition in markets with large data-driven digital players and if ex-ante instruments such as unbundling or mandatory data sharing would be more successful. In some cases, platforms operate in a regulatory and fiscal twilight zone and offer adverse wage and working conditions. A level playing field in terms of taxation, statutes and other legal provisions [12](#) is required. Finally, large commercial online platforms pursuing market dominance through their business, should at best be regulated at the European level [45](#).

24 Regulate data

Measures need to be taken to invest in the collection of data, to encourage sharing and reuse of data and to regulate the responsibilities and liabilities in its management data. The importance of data will increase even further in the future. Innovation and value growth is increasingly coming from information networks and products and services are more data-driven than ever (data-driven innovation in smart industry, smart cities, smart agriculture, smart care, etc.). Ownership, management, sharing and opening-up and recycling of all kinds of data deserves a broad policy debate [25](#). At the moment, it is often unclear who possesses, stores or analyses which information. Data ownership is rarely

concentrated within one organisation but often involves various organisations, both public and private. The sharing of data is often problematic in practice due to the existence of data silos, obsolete IT systems, lack of sufficient quality and security guarantees and lack of incentives to share data. There may also be tension with regulation of intellectual property and confidentiality of commercial information. Finally, data stewardship also deserves attention, for instance through the development of a common framework about responsibilities in the chain of data processing, about joint measurement tools and standards for the management of data or about access to monitoring systems. Data markets and licensing models can facilitate access to data and make quality insurance possible. Finally, the important role of the data controllers is yet to be assigned.

25 Strengthen the role of regulators

Flemish regulators, such as the BIPT, VRM, CREG or VREG, should cooperate more intensely and broaden their knowledge base as digital developments have implications for the tasks and their required competences. They should help ensure that regulation keeps pace with the actual dynamics. Important policy questions that should be answered concern the responsibilities of the regulators and those of the regulated, the financing of new regulatory infrastructure [22](#) and who can benefit from the developed public infrastructure and the data potential that new infrastructures entail. Moreover, previously divided sectors such as telecommunications, broadcasting, ICT or energy are becoming more intertwined and this also holds for the regulatory aspects related to investment, access, competition, privacy and security [23](#). Current regulations are, by contrast, mostly sector specific and thus risk to fall behind rapidly. As digitalisation influences various sectors differently, it will simultaneously interfere the enforcement authority of different regulators. This requires new knowledge and skills which are not always sufficiently present yet at the conventional regulators. This might explain the international trend towards more cooperation between regulators in the form of among others "convergence reviews" to modernise legislation, mergers of regulators aimed at more effectiveness, coherence, economies of scale and the development of a one-stop shop for market participants [44](#).

26 Support cybersecurity

Governments must guard the security of the ICT infrastructure and data flows and help businesses and citizens to manage cyber risks. Cybercrime, incidents and data leaks can have far-reaching and even systemic consequences. The stakes are high because current prevention techniques for cybersecurity evolve more slowly than the threats. Controlling these risks should occur at the same rate at which businesses and

governments roll out their digital innovations or services. Security of all personal or business data, data flows and critical infrastructure remains a major challenge. Companies should be guided and supported to ensure that data protection and cybersecurity become an integral part of every organisation.

27 Protect privacy

Protection of privacy must remain on top on the policy agenda. This is crucial in a world where data, software objects, networks and robots are linked and where people are little or not aware of the risks sharing of personal data holds. Organisations should be more transparent about their data usage and it is required that individuals keep control of their personal data and its usage. The European General Data Protection Regulation (GDPR) is the current frame of reference ⁴⁵ but still requires to be implemented in practice (e.g. the principles of 'privacy by design' and 'privacy by default') ⁴⁶. All stakeholders and, in particular, SMEs need to be informed and sensitised about the importance of data protection and the scope of the GDPR.

28 Investigate privacy at the workplace

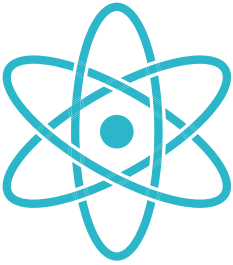
A specific privacy concern relates to the workplace. As new technologies offer companies opportunities for monitoring of employees in order to increase productivity, safety, efficiency of material use etc., such control may also lead to an unwanted loss of autonomy, privacy and decreasing workability for the employee ¹¹. This issue should be further examined by social partners at the appropriate levels.

29 Protect consumers

Effective consumer protection, for instance with respect to personal and financial consumers' data, is a third requirement, next to security and privacy, to ensure confidence from consumers and citizens. Its importance grows as the backlog of vulnerable users grows, problems of asymmetric information increase, companies use algorithms to apply drip pricing, dynamic pricing and personalised pricing in online sales, etc. Transparency is crucial and requires a balance between the need to ensure cyber security, adequate privacy and consumer protection on the one hand, while creating enough room for innovation on the other hand. Rules must be proportionate and feasible to prevent the creation of unnecessary new barriers to innovation or entrepreneurship ⁴⁷.



3.5 Innovation, entrepreneurship and organisational support



Digital technologies such as the use of big data, cloud computing, the 'Internet of Things' (IoT) and artificial intelligence (AI) are reshaping industrial production and services. These technologies allow to reorganise business processes (supply, production, distribution, administration ...) at various levels (companies, government organisations ...) to increase their efficiency, to effectively fulfil customer needs and sustain productivity. This offers opportunities for both existing and new businesses. Every organisation is faced with a more complex and competitive landscape as competitive forces are now felt from different angles as sector boundaries between producers, retailers and consumers disappear. Existing business models, value chains and economic systems have to be reorganised. Developments are swift due to technological innovations and international competitive pressure. Innovativeness

and entrepreneurship should be strengthened so that companies are supported in their successful transformation allowing Flanders to take the lead in the development and implementation of digital technologies. This assumes a digital strategy that promotes innovation and encourages the use of digital technologies. 'Innovation' must be interpreted broadly, both in terms of target group and content. Attention should be paid to both knowledge- and non-knowledge-intensive companies, to the manufacturing industry, agriculture, the services sector and the social profit, and to both technological (products and technologies) and non-technological innovation (business models, market approaches, work organisation, financing mechanisms ...).

30 Sensitise and support enterprises in the implementation of digital technologies

It is essential that various actors (governments, employers, unions, sector funds ...) continue to raise awareness in order to intensify and accelerate the implementation of digital technologies, particularly for SMEs. Yet, a major challenge in several sectors is to convince organisations, and especially smaller businesses, of the advantages. The benefits for smaller companies are often unclear. The adoptive capacity and use of ICTs varies greatly between large and small companies. SMEs face specific barriers as they have fewer resources to attract appropriate skill profiles or to manage cyber risks adequately. Entrepreneurs in small companies often find it difficult to see the benefits of investing time and resources in digitising and optimising their ICT policy and tailoring it to their specific products and market demand. A specific problem with the implementation of ICT and digital technologies in companies lies in the distribution of costs and benefits within the value chain: the question is how to ensure that those who bear the costs receive a fair share of the benefits (24). Nevertheless, postponing such changes may imply that SMEs miss the boat and have difficulties surviving. Other important domains on which SMEs should be supported include cloud computing, e-commerce, cyber security and privacy. In any case, it is important that the relevant legislation takes into account the characteristics of and feasibility for small businesses 29. Finally, as the stance of the economy improves, it also becomes harder to convince larger companies or organisations to continuously innovate and transform.

31 Drive social innovation

Innovation policy must steer public needs and outcomes. Digitalisation can contribute to the solution of many issues such as qualitative and affordable health care, a more rational use of scarce energy, raw materials and supplies, mobility, security, food, etc. It also means that innovation is no longer measured solely with the usual technological and economic indicators such as the number of patents, spending on R&D and labour productivity growth. Additional criteria to express the social value of innovation and to identify the learning ability and creative potential of a society must be developed. In a next step, economic policy instruments should be used to steer innovation in a socially desirable direction and to achieve complementarity between man and technology, creating win-wins for companies and employees. The government has a number of levers in its economic policy sphere to realise these objectives: innovation-proof regulation 47, economic innovation and scientific support instruments with incentives for fundamental, experimental and scientific research, innovative procurement policy 49, etc. This requires a broad involvement of civil society actors, including employers and employees, in the design of innovation policies and structures.

32 Realise true (inter)sectoral cooperation

Intersectoral collaboration and partnerships should be strengthened. Digitalisation blurs the boundaries of traditional sectors, activities of companies are increasingly difficult to classify according to traditional sectoral limits while at the same time numerous technologies and challenges are common (e.g. block chain, big data analytics, cyber security ...). This increases the

need for partnerships between companies, universities and governments **6** **44** within cluster networks (smart specialisation), business networks or regional networks (e.g. in the context of 'smart cities') **43**. ICT is a common interest that cluster networks must address together. So-called 'Factories of the Future' can act as a role model for digitalisation of manufacturing processes both from the perspective of technology and in terms of innovative organisation and business models. Good practices should be extensively shared across sectors (e.g. IoT roadmap in healthcare, B-Hive in the financial sector, and the Flanders Make and the Made Different program in manufacturing ...).

33 Increase user involvement

Within open innovation processes and clusters, users should be given a central role, in addition to businesses, knowledge institutions and the government (quadruple helix). Due to new digital technologies and various new possibilities of involving citizens, innovation increasingly becomes a process of co-creation with input from employees, users and the crowd that generate data and ideas, evaluate concepts and develop new businesses together **11**. Companies and knowledge institutions become process facilitators that facilitate the input of citizens and users outside the own organisation. This demands for new types of innovation processes with, for instance, experiments, test pilots and living labs in which products and services are developed from prototype to product taking into account the interim evaluation and experiences of users ('design thinking'). This in contrast to the traditional linear innovation processes in which knowledge is developed solely within R&D departments **44**.

34 Ensure sufficient involvement of employees

Sufficient involvement of employees must be safeguarded when new technologies are implemented or adopted. Digitalisation of processes and procedures require adjustments in workplaces, work organisations and job content **37**. When technological advances and organisational changes are implemented, the involvement of employees is essential, not only to ensure that the consequences for workers are positive but also to guarantee that new technologies and processes actually lead to increases in productivity and win-wins. This can be achieved by early involvement of employees and by providing information about the nature and impact of new technologies on the future of the company, on the required additional skills and training and on the organisation of labour in the workplace.

35 Encourage start-ups and company growth

Economic policy should pay particular attention to start-ups and overall company growth. The growth rate of the digital economy is highly dependent on the number of starting enterprises (start-up) which launch innovative digital products and to the extent to which they can grow and transcend national or European borders (scale-up). This requires an entrepreneurial culture where risk-taking is encouraged and business creation is appreciated. Networking through business incubators, accelerators, innovation hubs and corporate venturing is interesting as it allows to realise mutual benefits for start-ups and existing companies and leaves room to experiment. Larger companies can act as mentors to help start-ups grow faster financially, legally and in terms of human relations. Conversely, starters can introduce new innovations and agility in larger companies. Access to capital for innovative SMEs remains a bottleneck. A greater range and better knowledge of diversified financial instruments is essential. New financial instruments (FinTech), financing methods (e.g. crowdfunding, credit unions ...) and access to foreign capital should be incentivised. Finally, there is a need to ensure the presence of a strong ICT sector, an area at which Belgium is not performing well **15**. Solutions may be found in financial and non-financial incentives and training programs focused on the ICT sector itself (for instance via 'ICT of the Future' research programs, measures aimed at creating the capacity for data analyses ...) or from indirect measures aimed at supporting start-ups and SME projects (including business accelerators and incubators).

36 Promote entrepreneurship

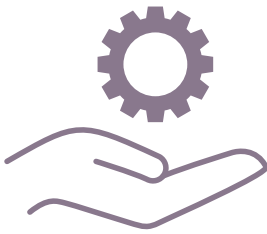
Existing policy instruments to promote entrepreneurship should be continuously evaluated. Stimulating entrepreneurship and entrepreneurs' willingness to change is crucial in a digitised world. Existing policy instruments should take digital evolutions into account. Entrepreneurship must be interpreted in a broad sense, also including active citizen communities and cooperative businesses. Apart from the traditional focus on subsidies, increasing attention should be paid to developing and maintaining a stimulating entrepreneurial ecosystem **2** **38** **41** **47** **48**. Such a policy is much more effective in enhancing entrepreneurship, removing barriers to entrepreneurship, and creating a favourable business climate.

37 Commit to innovative organisational change

We need a policy that is committed to organisational renewal and that is aware of the importance of organisational characteristics and management skills. International comparative research shows that Flanders is not among the best performing countries in these areas. The realisation of digital readiness requires appropriate organisational, management and entrepreneurship capabilities. The digital transformation is not just about technology, but also about the way in which these technologies are combined with other changes and investments within companies and organisations **8** **11**.

The way in which companies organise work and coach and empower employees is important. Innovative work organisations are essential to develop, attract and retain talent **15**. They also leverage the innovation focus, productivity and longevity of businesses. Conversely, digitalisation may also simplify the development of self-managing work teams and lead to a reduction in the number of hierarchical levels within organisations. Digitalisation gives employees more time to think about new business processes and allows faster innovation that is based on experimentation and collaboration between business departments rather than being developed solely by the traditional R&D departments **34**.

3.6 Modern public services



An important task for the government is to steer the digital transformation and to support and guide the various areas that were discussed above. Digitalisation also influences the public sector itself and can act as a leverage for better public services, productivity gains, new services and increased user involvement. ICT applications facilitate the collection, processing, management, use, protection and sharing of information. They also expand opportunities for transparency, interaction, collaboration and partnerships in public services. Open data and big data can provide innovative products and services to both governments and other actors. It is therefore crucial that governments follow the digital developments and become forerunners in putting things in motion. This means that many of the tasks and challenges in the fields of skills, entrepreneurship, organisational

models and work organisation, e-inclusion or open innovation etc. apply to civil servants. Investments in training and education of data scientists in government administrations is urgent.

38 Further digitise public services

Online and digital public services require an upgrade and improve the accessibility, quality and efficiency of public services. It leads to easier access to those services (7 on 7, 24/24, also available on mobile devices), more personalised services (such as automatic allocation of rights), time savings through reduced administrative burden (because some operations and checks occur automatically or because digital exchanges entails data), simplification of procedures and information flows (e.g. via one-stop shops, the only-once principle ...), efficient enforcement and lower enforcement costs (e.g. by risk-based checks using big data), etc. **17**. The aim, however, must go beyond the creation of a digital portal, the digitalisation of existing processes or even the creation of state-of-the-art digital applications with innovation-friendly regulatory procedures. Block chain applications, for instance, can enable 'out of the box'-solutions within government. Beside further digitalisation, further measures are required to ensure the accessibility and usability of public services for all types of users, including those who are not, or less, digitally literate **19**. In addition, a policy is needed in the field of information security to protect (privacy-sensitive) information against all forms of illegal use **26**.

39 Strengthen open data policy

Existing 'open data' policies must be strengthened. Information is a strategic resource in a knowledge-driven economy. Governments dispose of huge amounts of information. Examples include geographical data, healthcare and educational data, social and economic data, mobility and space data, environmental and meteorological information. These data should be shared and used publicly. Access to data is not only a basic right of every citizen, it can also drive innovation and growth. By reusing and linking data with other data, new products and services emerge with interesting uses and market opportunities for both governments and other actors. Furthermore, governments should actively encourage citizens, businesses and organisations to propose applications that can use such data (either by the government or by themselves) **33**. Opening up data and linking all types of data files and data (i.e. data mining) is not sufficient. At least two other elements are crucial to realise the full potential of open data: the ability to analyse data using algorithms and achieve intelligent links to other files (data analytics) and the design of the user interface (data design in a user interface, i.e. how the data are presented). These steps have yet to be taken.

40 Collect data and develop a big data strategy

There is a need for a strategy with respect to data collection and big data and for investments in data analysis ('government 4.0'). As owner and operator of numerous systems and databases, the government disposes of a massive amount of data. Because many of these databases are so-called data-silos, various opportunities to improve policy (and monitoring, services ...) are missed. In key areas, critical data is lacking while digitalisation requires new statistics and indicators. Better data collection and data analysis allow for significant upgrades throughout the policy cycle (monitoring, design, implementation, enforcement and evaluation of policies). Therefore, a policy on the structure of data, statistics, indicators and time series and on the platforms that provide quick access to that information, is key. It should be guaranteed that the necessary structural data collection occurs systematically and scientifically correct, even if data collection (using apps like) takes place by public-private-partnerships [44](#). The ideal is an integrated data management system in which all other data management systems at all policy areas and levels of government can be embedded. Other specific elements of concern are that existing data should be made available more easily for scientific purposes and research and that data that arises from research funded by the government is readily accessible.

41 Promote co-creation and open innovation within government

The ambition should be to transcend the concepts of e-government and i-government and aim for approaches in which governments are reorganised towards user expectations and needs. This requires a true introduction of the concepts of co-creation and open innovation in public services and the conviction that the private sector, academia, the social profit sector and the public in general can achieve more when they cooperate. The government then acts more as a facilitator and data steward (i.e. government as a platform): it offers institutional and non-institutional actors the opportunity and platform to create and (re)use ideas and data, and to search for new solutions to societal problems or questions [33](#). The government must set up intensive partnerships with other governmental actors as with the social profit and private sector to become a catalyst for the further digitalisation of society.

42 Increase public transparency and interaction

Authorities must explain to citizens and businesses which data it disposes of and which (personal or economic) information it has collected about them. One must be able to consult these data, ask for rectification and, optionally, pass them on for reuse to other organisations [27](#). Through increased transparency of public services, citizens and businesses should also be able to improve their understanding of the ongoing processes within the government that affect them. Digital technologies should be used to increase participation of citizens in policy planning, budgeting and policy-making (e-democracy) [17](#). Digital technologies further increase the opportunities for co-creation and for reciprocal communication with citizens through various channels [41](#). This requires a cultural and organisational changes. It is vital that the emphasis is put on profound participation and consultation instead of maximizing the use of digital technologies through, for instance, open internet consultations. Indeed, the latter are not a suitable alternative for more tailored consultation methods aimed at specific stakeholders and definitely not for recommendations or advices from advisory councils.

43 Support smart cities

The bottom-up dynamics that are linked to initiatives of smart cities should be supported more strongly. In smart cities, different opportunities and challenges are connected and linked to specific achievements in practice. The smart use of ICT technologies and large amounts of data are at the foundation of smart cities. But smart cities also deal with the combination of technology and people. The real intelligence occurs when governments create cities that respond to the real needs of its citizens. Open innovation processes in which citizens are truly involved in their role as entrepreneurs, workers, athletes, parents ... are necessary. Simultaneously, cooperation, division of tasks and exchange of knowledge with other (including foreign) cities has to be insured while other questions must be dealt with at higher policy levels in order to avoid double work and achieve economies of scale. In any case, a comprehensive 'smart city-strategy' should be developed in the near future.

3.7 Customised policies and legislation



All actors must seize the opportunities offered by digitalisation in terms of growth, jobs, efficiency, prosperity and welfare. Governments need to support the economy and society in the digital transformation, steer these developments and provide the necessary protection and security. Existing institutions, policies and instruments must be adapted to these transformations. The speed of change requires that policies and regulations keep pace with real-life developments. Globalisation of technology and markets require that governments cooperate more. In order to proactively steer the technological evolution, instead of undergoing it, continuous assessments of the ethical and social impact of new technologies and of the distribution of the benefits of digitalisation are needed.

44 Achieve a cooperative management culture

Digitalisation requires a culture of collaboration and coordination within and between governments and stakeholders. A comprehensive digital agenda and strategy must receive government-wide support. Many, if not all, policy areas and levels must collaborate to respond to the opportunities and challenges posed by digitalisation. Transversal opportunities and issues triggered by digitalisation exacerbate several existing policy challenges, such as the need for an attractive investment climate, an efficient infrastructure, a well-functioning labour market, education and training system and a powerful governance and regulation. It is therefore important to link the policy strategy on digitalisation with other social objectives in terms of innovation, employment, education, inclusion, poverty, health care, climate change, mobility, etc. In addition, facilitating the use and sharing of data and information is essential [40](#), as is the encouragement of innovative initiatives and a creative mind-set, more dialogue, co-creation and partnerships with non-state actors [41](#), inspirational leadership for new roles, processes and procedures, etc. The challenge for governments is much broader than solely the introduction of digital technologies within the public administrations and public services (e-government). It involves a comprehensive transformation that is probably more cultural than technical.

45 Promote international cooperation

A solid framework with clear rules needs to be developed at the European level, and implemented and executed at the national and local levels. Digitalisation reinforces the need for cooperation between countries and regions to effectively and efficiently address common challenges. Many policy issues do have an international dimension. The internet, for instance, is a global network and growing operations and transactions occur over the internet. This hampers successful regulation at the local or national levels for infrastructure, access, security, privacy, consumer protection, adequate competition, prevention of abuse of competitive power, social rights etc. These

issues require an international response, for instance at the European level. At the global level, organisations such as the OECD, the ILO and the WTO play an important role.

46 Perform technology assessments

We need to perform technology assessment that focus on the ethical and social impact of new technologies and that analyse the co-creation potential of new technologies (by engineers and social scientists, by technologists and the future employees that will use the new technology) to make sure that automation and digitalisation will be at the service of society and employees [11](#). The relationship between robots and artificial intelligence on the one hand, and people on the other should be analysed with respect to such issues as safety, environment, health, privacy, dignity, autonomy, ownership (data), liability, etc. [24](#) [26](#) [27](#). Moreover, technology assessments should not only look at potential adverse consequences, but also at which benefits it offers and how it could lead to more health, better care, less pollution, better work, higher and better distribution of wealth, etc. [10](#) [11](#) [18](#). Finally, strategic foresight studies can improve anticipation of digital evolutions by all the actors involved.

47 Deploy new policies and regulations

Governments should make policies and regulatory processes that respond better and more quickly to new developments. The rapid social changes resulting from digitalisation challenge existing regulatory frameworks. New rules are required to avoid problems such as the distortion of competition, insecurity or undesirable social consequences [12](#) [23](#). This means that existing policies and regulations should respond quickly to new developments and changing circumstances. Legislation should be innovation-friendly and future-proof and able to better cope with the inherent uncertainty and speed of innovation. Flexible and adaptive regulation (such as right to challenge, non-mandatory policy instruments, postulation of targets instead of means ...) increases the freedom of action, makes room for innovation and enables better tracking of technological developments without

having to adjust the legislation itself. This requires an adequate choice of instruments (some flexible regulations indeed have disadvantages) with continuous attention to the impact of regulation on innovative behaviour. Ex-ante, when developing new rules or legislation, the impact on innovation can be explicitly taken into account, while ex-post innovation deals can be used to help remove barriers in existing legislation. Presumably, the most advanced and disruptive digital developments and applications (e.g. self-driving vehicles, robots, AI ...) will require totally new kinds of standardisation and legislative methods.

48 Stimulate the use of experiments, test pilots and living labs

An adequate regulatory framework is required to stimulate the use of experiment legislation and regulatory free zones. Due to the speed, uncertainty and unpredictability of digital developments, it seems obvious to construct policies while learning from experiments or test pilots. In advance, it is often not clear what opportunities and threats a new digital application entails and which policy is most desirable. At the same time, society increasingly demands legislation that leaves room for new ideas, initiatives and experiments in health, energy, mobility, cities, security, privacy, FinTech, block chain, etc. In this respect, experimental legislation and regulatory free zones could also be useful. Experimental legislation fits within the goal of more evidence informed policy: new legislation is first tested in practice (and in different variations) to see what works best. Regulatory free zones meet the demand for less barriers to innovation. In such a framework, it is possible to deviate from existing laws and regulations and apply them differently. In any case, a policy framework is required to make sure that such deviations can occur without eroding basic rights, specific legal principles or protection.

49 Develop a pioneering role for the government

The government should play a pioneering role by stimulating research for the application of new concepts and technologies in public services and through public procurement and tendering [31](#). As a (large) buyer of innovative ICT products and services and as a supplier of digital services to citizens and businesses, the government must support innovation leaders domestically and promote the development and (international) distribution of innovative solutions.

50 Monitor the environmental impact

The predicted growth in energy use and consumption of rare raw materials as a result of digitalisation should be kept under control. Computer intelligence and robotics can accelerate the transition towards a sustainable low carbon society as automation, sensors, virtual reality, big data and other ICT applications encourage sustainable behaviour and make existing processes more efficient. For example, considerable savings in energy use, raw materials and emissions are possible. Nevertheless, servers, data centres and applications such as block chain currently require a lot of energy to be manufactured and maintained. In addition, the consumption of (rare) raw materials and chemicals is also a sore point, together with the large amounts of electronic scrap. There are also concerns about, among others, the radiation impact of digitalisation on the environment and health.

4. Policy directions and actions in priority areas

In the coming weeks, the comprehensive policy agenda that is presented above will be deepened by detecting policy directions and actions within specific priority domains.

These specific policy directions will not be exhaustive. The goal is to zoom in on clearly defined areas and issues that the Flemish social partners want to tackle within the responsibilities of the Government of Flanders. They will take the form of:

- policies or solutions that implement certain parts of the digital agenda, with proposals to adapt existing policies or regulations;
- issues that require further research and consultation;
- actions by the social partners of the SERV in terms of further consultation, advice and research;
- invitations to other stakeholders to join the dialogue with the Flemish social partners;
- ...



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