

Photo credit: BASF SE

# OUR FUTURE **WORKPLACE** DIGITAL TRANSFORMATION IN THE CHEMICAL INDUSTRY



The European social partners of the chemical, pharmaceutical, rubber and plastics industry, industriAll European trade union and the European Chemical Employers Group (ECEG) manage activities for a two-year project cycle within their sectoral social dialogue. The project is called “Our Future Workplace - digital transformation in the chemical industry” and lasts from January 2018 until December 2019.

## ABOUT US

The ECEG and industriAll Europe are **European sectoral social partners** representing employers and workers in the **chemicals, pharmaceuticals, rubber and plastics industry**. Since **2004**, they meet regularly within their Sectoral Social Dialogue Committee and jointly manage projects with financial support of the European Union.

### European Chemical Employers Group (ECEG)



The **ECEG** represents the chemical, pharmaceutical, rubber and plastics industries in Europe. As a Brussels-based social affairs organisation it is a recognised social partner on the EU-level and a consultation body of the European Institutions and other stakeholders. With approximately 3.3 million direct employees in more than 94.000 enterprises, the sector is one of the biggest and most dynamic industries in the EU.

### IndustriAll European Trade Union

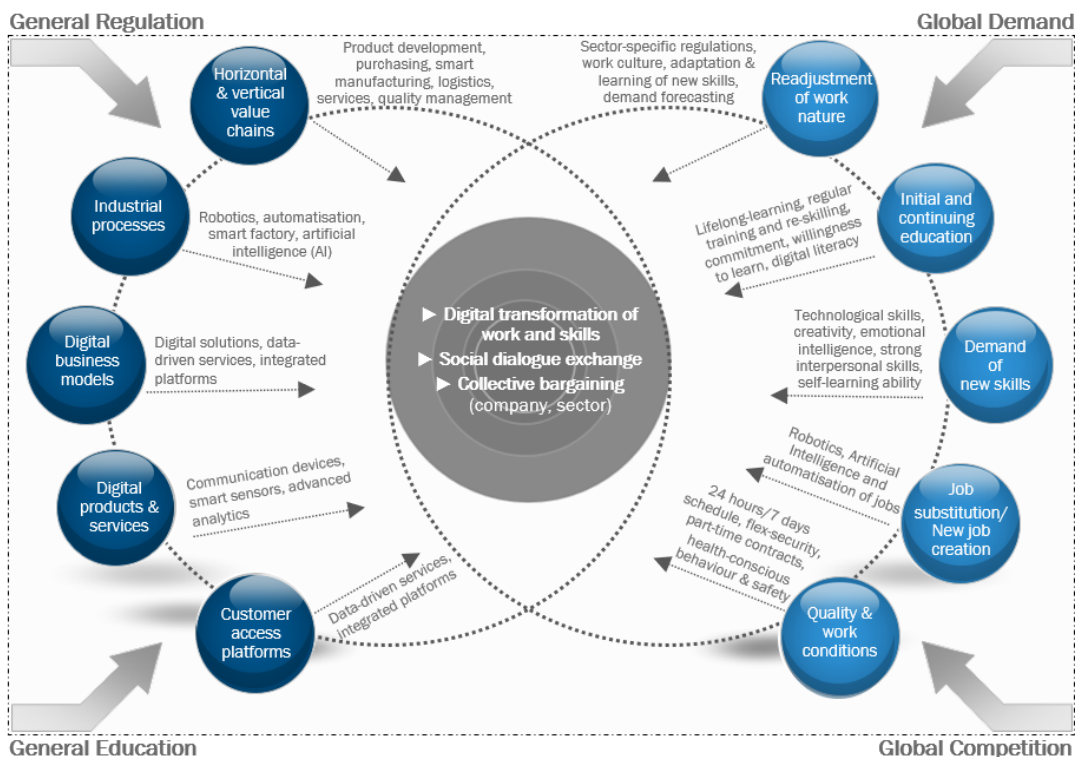


**IndustriAll European Trade Union** represents 6.9 million working men and women across supply chains in manufacturing, mining and energy sectors across Europe. IndustriAll Europe aims to protect and advance the rights of these workers and is a recognised European sectoral social partner.

## Digital Maturity Model

### Key drivers and determinants of digital transformation in the workplace

The Figure below shows the **main pillars of the digital transformation** in the European chemical sectors. On the left side, **business related transformations** are shown. On the right side, **transformations of the working environment** are depicted. The centre represents their interaction.



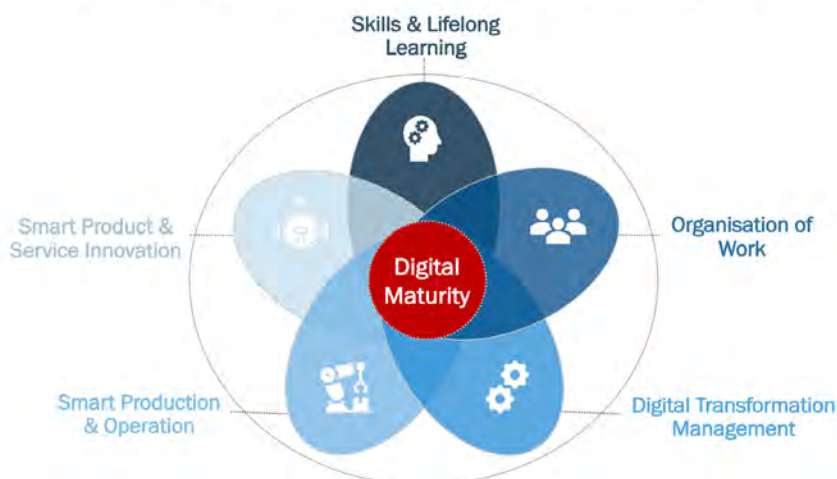
From a technical point of view, digitalisation is already today changing processes along the chemical **value chain**. As a result of this digital transformation, value chains and production in the chemical industry could resemble what is known as a **“smart factory”**.

The use of the latest digital technologies may also lead to new opportunities in terms of **digital business models** and enable chemical companies to offer new digitalised products and services. Thanks to the digital transformation, chemical companies have the possibility to interact and include the **end-consumer** in the decision-making process, through **interaction platforms**. Hence, digitalisation and the resulting visible **end-to-end connectivity** introduce structural changes to all industrial processes, business models and parties involved.

This is inevitably also influencing the **workplace** and impacts other issues such as the level and quality of employment, wages, skills and the need for continued education, work conditions and social protection. The digital transformation is already changing and influencing the **work environment** in the chemical industry. Digitalisation requires employees to remain up to date with new technologies, causing a continued need to **reskill** to remain competitive on the employment market. **Education and work** are likely to change from the linear pattern of schooling, training, employment and the entitlement to a pension, to a constant switch between work, (re-) training and new positions in one's work life. All parties involved – companies, trade unions and works councils – have to consider the possible future scenarios and **anticipate the changes** that the digital transformation entails in the workplace. These issues and concerns must be addressed from an **early stage** through communication, **constructive social dialogue** and **transparent information exchange**, so that the interests of all parties are considered, and **co-determination rights** are promoted.<sup>1</sup>

## Digital Maturity Model

Dimensions of the Digital Maturity Model for the European Chemicals Sector

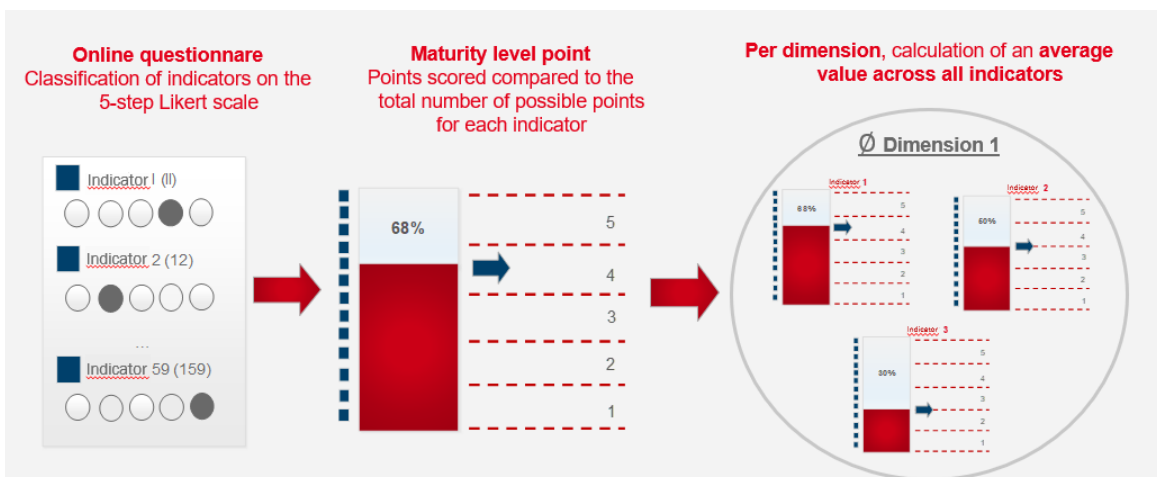


A concept and corresponding parameters have been developed to measure the “digital matureness” of the chemical industry and its different sectors. The digital maturity model is based on **five dimensions**, each represents a critical aspect of the digital

<sup>1</sup> Hans-Böckler-Stiftung (2018): ARBEITEN 4.0 – Diskurs und Praxis in Betriebsvereinbarungen – Teil II, Düsseldorf.

transformation of the industry and the corresponding changes in the workplace (see Figure in the previous page). Behind these dimensions, a set of **20 related indicators** define in more detail the important issues that need to be considered when assessing the digital maturity of a company or the whole industry.

For each dimension, a group of situations/statements, analogous to the indicators, were formulated for which survey participants were asked to indicate their agreement on a five-step Likert scale from “does not apply at all” to “fully applies”. Each statement was formulated in such a way that it represented a situation where the company or industry of the survey participant would have the highest possible digitalisation level. In addition, all statements were adapted to the position of the survey participant (e.g. manager, employee, union representative, etc.). In order to assign a maturity level and to make results comparable across all dimensions and indicators, a scoring procedure was applied (see Figure below):



# Digital transformation of work: skills, working patterns, health & safety

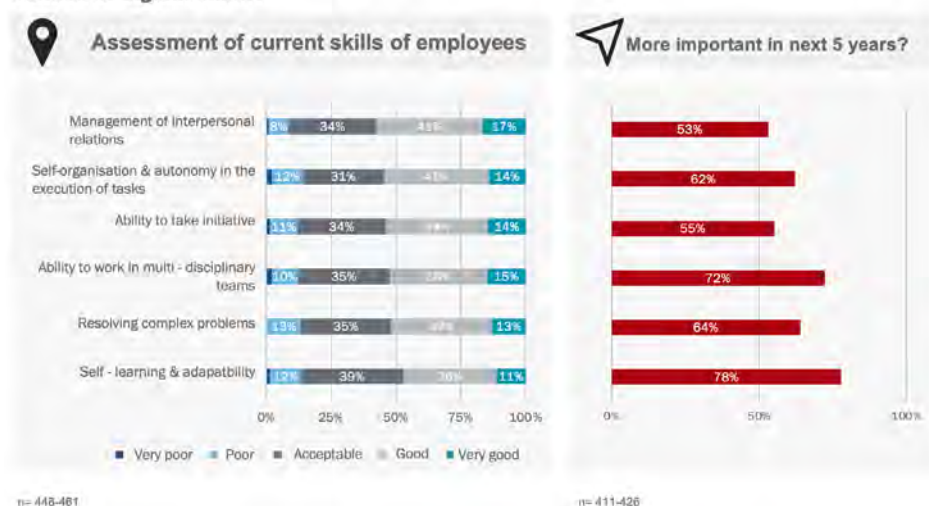
Progressing digitalisation is inducing structural changes in all spheres of society and, therefore, it is changing business models, industrial processes and the workplace itself. As the division of labour between employees and digital technology is being redefined by digitalisation, it has implications for the working environment, safety and health, and may create new job opportunities.

## Skills & training in the digital age

Three distinct types of skills-sets related to digitalisation were identified: **technical**, **social** and **transversal skills**.

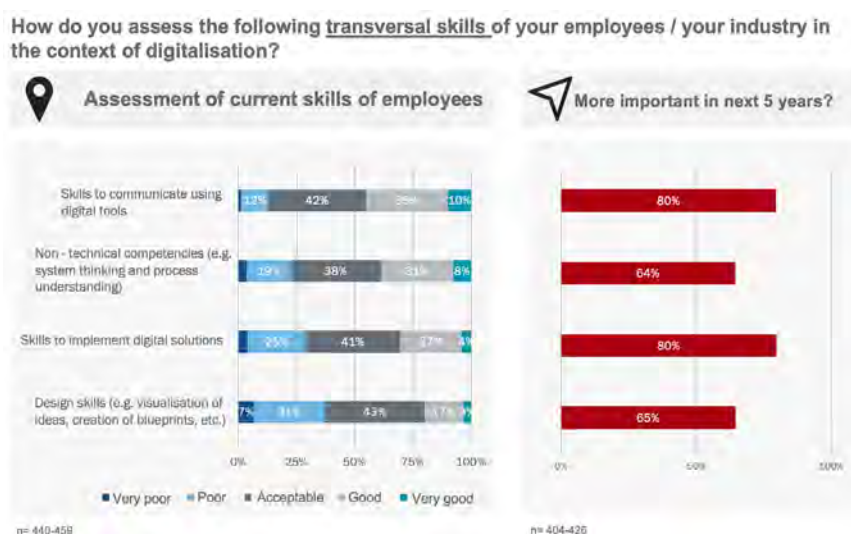
The results of the research showed that technical skills are needed to directly apply digital tools. **Basic technical skills** are already **widely established** across the chemical workforce. However, more **advanced digital skills**, like programming or **IT-skills for the complex analysis** of large data sets **require more attention**. These advanced digital skills will become more and more important for employability in the coming five years, thus indicating a potential lack of skills in the industry.

How do you assess the following social skills of your employees / your industry in the context of digitalisation?



Beyond technological competences, analytical abilities and the capacity to communicate and cooperate within and across teams, organisations and cultures are key to solving problems collaboratively. Moreover, self-organisation and autonomy, as well as self-learning are pivotal skills in order to adapt to a changing working environment. These **social skills** enable and enforce technical or other skills. A broad set of social skills was assessed during the study. For the skills surveyed, at least 85% of the respondents gave an acceptable or **good assessment**. In the coming 5 years, particularly **self-learning and multi-disciplinary work** will **gain importance**.

In addition to social skills, **transversal digital skills**<sup>1</sup> are a complementary concept more closely linked to digital technology. For example, business communication, which includes internal communication with colleagues as well as external communication with customers, partners and suppliers, is already being delivered by digital tools through multiple channels (i.e. Email, Skype, WhatsApp, Slack, etc.). In this context, successful interpersonal communication depends on the ability to use these tools adequately as well as to manage and prioritise multi-channel communication. The overall assessment indicates that **requirements will be increasingly focused on transversal digital skills**.



Within a mobile working environment, where spatial and temporal ties between team members are changing, these skills will become progressively more important. Likewise, **skills to implement digital solutions** are rated to become more important in the next five years (80%).

In sum, a **skills shift is clearly visible**. Generally, the chemical job of the future will require less manual and basic cognitive skills, and more advanced digital and complex transversal digital skills that require at least some basic technical and digital knowledge. Training and upskilling will gain further relevance against the backdrop of both the digital as well as the demographic transformation that are taking place in Europe.

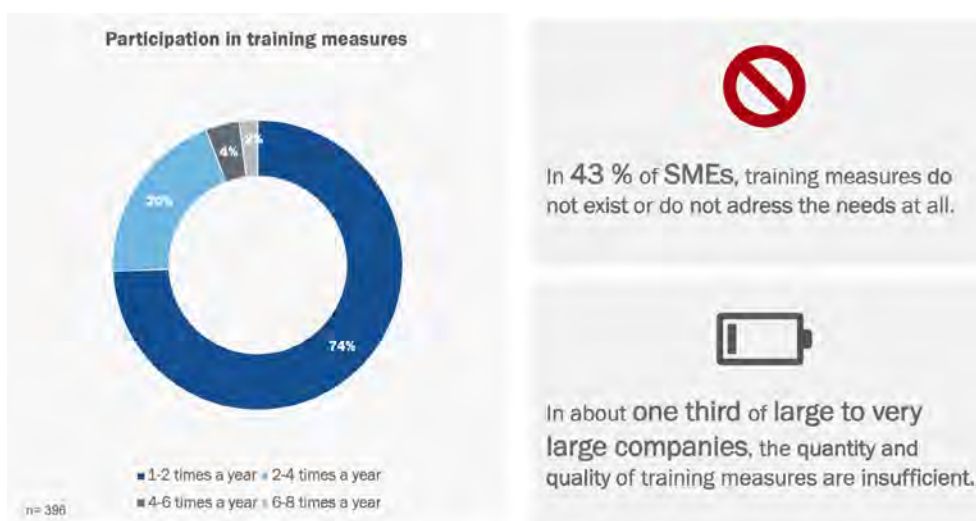
The **sharing of responsibilities** between public and private actors and between companies and employees on the distribution of costs and the definition of content are central issues in the **field of training**. The analysis shows that both managers and employees recognise their responsibility to invest time and/or financial means for digital up-skilling. In this context, the **social partners** play a crucial role in raising the awareness of employees of all levels for the need to actively participate in training measures.

<sup>1</sup> *Transversal skills are skills that are typically considered as not specifically related to a particular job, task, academic discipline or area of knowledge and that can be used in a wide variety of situations and work settings (e.g. critical and innovative thinking).*

Furthermore, managers as well as employees find that the **government and other public institutions** can play an important role in securing digital skills – i.e., by providing incentives or investments for training programmes. There is still potential for **improving quantity and quality of existing training schemes**.

**Specific findings on skills and training related to company size**

SMEs face different skills base challenges than large enterprises in the digital transformation. Generally, large enterprises can draw on a larger pool of resources, whether they be monetary resources or human capital. This is also confirmed by the analysis of **skills** across company sizes, which shows a **digital skills gap between SMEs and large enterprises**.



**Job substitution & job opportunities in the digital workplace**

Regarding the **risk of workforce reduction, digitalisation bears (high) risks for some job profiles, but also brings many new opportunities**, as most job profiles will not become fully obsolete or redundant. Technology will take over several routine tasks and complement existing tasks by providing additional information when it comes to analysis and decision making. Thus, most jobs in the European chemical industry will change with new technologies as they become available, which will require an updated skillset.

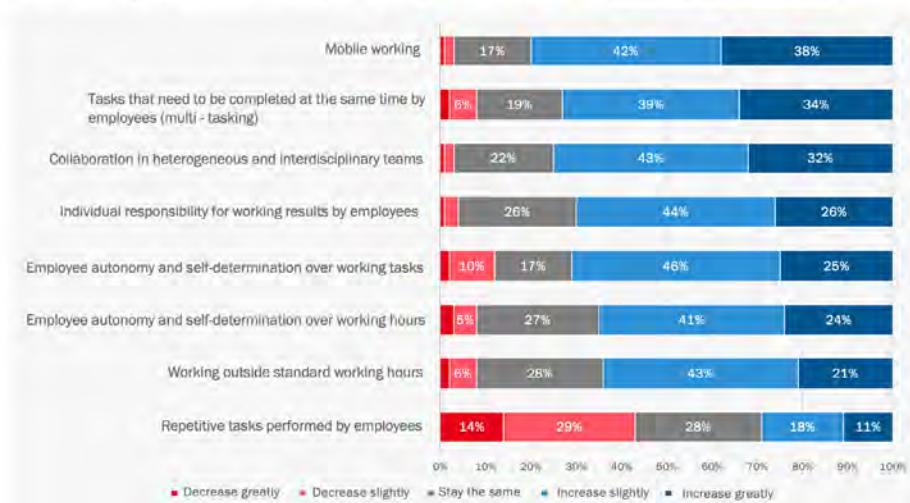




**Irrespective of company sizes, managers see more opportunities with digitalisation, whereas employees emphasize risks.** This shows the importance of sound communication strategies between management and employees on the profound changes that occur with the digital transformation: it calls for a clear communication about actual risks by clarifying how a company and its workforce can embrace the transformation and reduce existing uncertainties.

## The digital working environment and its health & safety implications

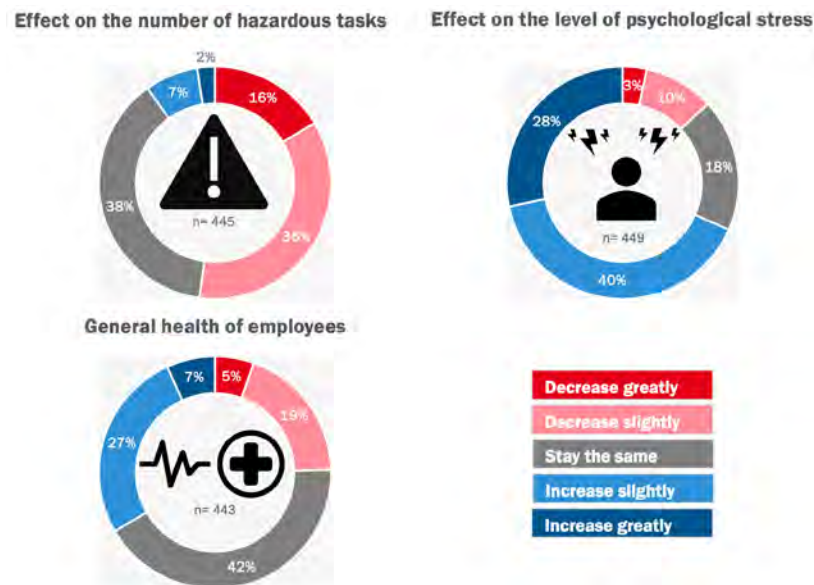
How would you assess the impact of digitalisation on the working environment?



The digital transformation contributes to the evolution of the **working environment** and changes the way activities are performed by both managers and employees. With different intensity across company departments, one of the predominant changes is related to mobile working (see Figure on the left). This trend will have an important impact on the **organisation of work**, since spatial and temporal ties between workers are changing. On the one hand, the possibility of working outside the company can contribute to a better reconciliation of work and private life or to enhance productivity during travel times. On the other hand, mobile working not only raises new challenges regarding the safety of data and ergonomics of work. It also requires a fundamental trust between employers and employees and comes with an increasing responsibility of and autonomy for employees how they handle their working tasks, working hours and working results.

As an increasing share of tasks will potentially be carried out by digital tools and technologies, 43% of respondents expect that their **share of day-to-day simple and repetitive tasks will further decline**. At the same time, new technologies enable workers to carry out a greater number of more diversified activities: 73% of respondents see an increase (of which 34% a strong increase) in multi-tasking and, potentially, in the complexity of their work. **The increase of collaboration in heterogeneous and interdisciplinary teams**, which has been affirmed by three-

quarters of the respondents, is further evidence for greater work environment complexity in all chemical sectors. One example is the situation where chemical process engineers need to cooperate with computer scientists and data analysts to improve current production processes. In this context, the ability to cooperate across disciplines and occupations is a central skill to find optimal solutions for complex issues.



These changes in the working environment also have an impact on **health** issues. Through developments in automation and new technical assistance systems, digitalisation will help to **decrease the number of hazardous tasks**, thereby reducing the risk of working accidents and physical injuries in the sector, according to around half of the respondents.

However, increased demands for self-autonomy, multi-tasking and multi-channel communication make employees, managers and other industry representatives expect a significant increase in psychological stress at work (see Figure on the right). This was also confirmed by expert interviews, which indicated that unions and companies are recognising the need for clear agreements and supporting employee resilience.

Overall, there is a balanced and rather positive assessment of the impact on the general health of the workforce. Around 34% of respondents expect an increase in general health of the workforce, compared to 24% that expect an overall decrease. Most respondents (42%), however, see no major overall changes.

### ***Specific findings on the digital working environment related to company size and sector***

Changes in the working environment of European chemical companies can be observed in all sectors and across all enterprises of different sizes, **while the magnitude of the expected impacts of some aspects vary**. Concerning the working environment, working outside standard hours, mobile working and collaboration in heterogeneous teams are expected to increase more strongly in larger firms. Different **magnitudes of change in the working environment may also imply a different impact on health issues, such as psychological stress**: 74% of participants from very large enterprises expect an increase, whereas only 52% of participants from SMEs expect this.

Regarding **hazardous tasks**, there are no remarkable differences by company size, while sector participants especially from the rubber and plastics as well as the specialty chemicals sector expect hazardous tasks to decrease (slightly or greatly).



The project events are organised from January 2018 to December 2019. Whereas the Steering Group meetings are exclusively organised for selected members of both project partners, the stakeholder conferences are open to a wider audience. This allows fruitful discussions and exchange among members of the ECEG and industriAll Europe, as well as experts from other sectors, policy makers and regional stakeholders.

## EVENTS



Over a period of 24 months, **16 experts** from eight EU Member States steer the project, each bringing their specific sectoral knowledge and experience from national trade unions and employer associations in the areas of social dialogue, digital transformation and employment policy. There are overall **5 Steering Committee meetings** under the project.

The Steering Group jointly decides on project content, communications strategy, research activities, event organisation, etc. In detail, six experts from national employer associations meet with six experts from national trade union federations. They are supported by four staff members of the European secretariats of ECEG and industriAll Europe.

Moreover, the project foresees **two stakeholder conferences**.

During the first conference around 80 participants from all over Europe discuss the outcomes of the online survey, expert interviews and desk research. At the

panel discussions and good practice presentations, participants exchange on how digital transformation impacts the world of work in our sector.

In the beginning of 2019, based on the Tallinn conference outcomes, the Steering Group members formulate a social partner joint action plan as to how to anticipate, prepare and manage change in the workplace as a result of innovation and digital transformation in three domains: skills, working patterns and health & safety. The action plan and member activities are presented during the second and final European conference in the beginning of Autumn 2019 in the Netherlands.

## SEVEN EVENTS STRUCTURE THE IMPLEMENTATION OF THE PROJECT ACTION:



**Kick-off meeting,  
19 January 2018**

European social partners of the chemical industry launched their new social partner project on digital transformation in Brussels, Belgium.



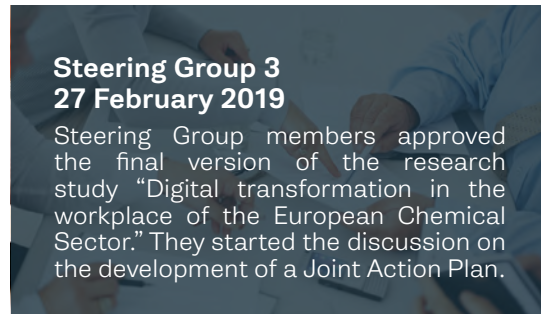
**The project takes shape,  
18 May 2018**

Steering Group members approved the final version of the research study “Digital transformation in the workplace of the European Chemical Sector.” They started the discussion on the development of a Joint Action Plan.



**Stakeholder conference,  
18-19 October 2018**

Over 80 experts from sector, policy makers, company and trade union representatives discuss digital transformation and its impact on the workplace in the chemical industry.



**Steering Group 3  
27 February 2019**

Steering Group members approved the final version of the research study “Digital transformation in the workplace of the European Chemical Sector.” They started the discussion on the development of a Joint Action Plan.



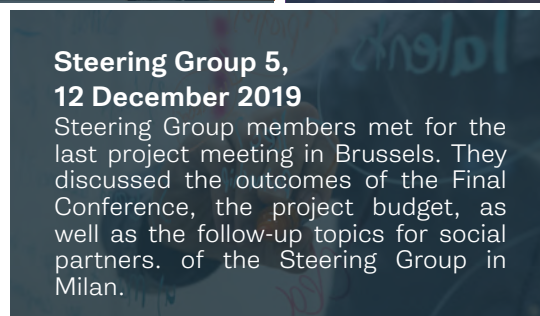
**Starting the organisation of the  
Final Project Conference,  
10 May 2019**

Formal adoption of the research report, discussion on the Joint Action Plan and organisation of the Final Project Conference were one of the main topics of the Steering Group in Milan.



**Stakeholder Final Conference,  
7-8 November 2019**

Over 80 experts from sector, policy makers, company and trade union representatives discuss digital transformation and its impact on the workplace in the chemical industry.



**Steering Group 5,  
12 December 2019**

Steering Group members met for the last project meeting in Brussels. They discussed the outcomes of the Final Conference, the project budget, as well as the follow-up topics for social partners. of the Steering Group in Milan.



On 18 and 19 October 2018, European Social Partners in the chemical industry held a conference on the digital transformation in the chemical, pharmaceutical, rubber and plastic industries. Around 80 delegates gathered in Tallinn, Estonia, on this occasion, representing the European Commission, the European Parliament as well as the member associations of both the ECEG and instriAll European Trade Union. The stakeholder conference took place in the framework of a two-year project financially supported by the European Union on “Our Future Workplace - Digital Transformation in the Chemical Industry.”

## STAKEHOLDER CONFERENCE 2018

### European Social Partners discuss digital transformation in the European chemical industry

**Preliminary research results** show that job transformations are more likely than job reductions for the chemical, pharmaceutical, rubber and plastics industry. While workforce in some company divisions is at risk (especially administration and accounting), new job opportunities are likely to arise in IT-services, R&D, or management. The working environment will move towards an increase of mobile working and collaboration in heterogenous and interdisciplinary teams. Digital transformation in the sector is expected to reduce the number of hazardous tasks and might increase the level of psychological stress. Overall, the general health of employees is expected to stay the same or to improve slightly. Moreover, in the framework of collective agreements working-time flexibility and mobile working are among the topics which will increase in relevance in the next five years. At the same time, qualification, data protection and performance monitoring will need greater consideration as well. Finally, the preliminary results show that a skills shift is clearly visible. Whereas basic digital skills broadly exist, more advanced digital and transversal skills will require more attention. Especially the importance of following social, technical and transversal skills will rise in the next 5 years:

- **Social skills:** The ability to work in multi-disciplinary teams, self-learning and adaptability
- **Technical skills:** Use of IT-tools (use of software to process and store information) and Big Data analysis (skills for in-depth analysis and interpretation of large amounts of data)
- **Transversal skills:** Skills to implement digital solutions and skills to communicate using digital tools

Those results will be confirmed at the SSDC plenary meeting of chemical industry on 3rd December with the publication of the **final report**.

**Ulla Saar**, Head of Working Life Development Department, Ministry of Social Affairs, Estonia, welcomed the conference participants to Tallinn. She highlighted that *“in the digital revolution, workers and their well-being should not be left behind. They are the backbone of our companies”*. She emphasised that *“only via Social Dialogue can we ensure that the digital transformation is a win-win story.”*

**Isabelle Laurent**, European Commission, congratulated the ECEG and industriAll Europe for a very productive social dialogue committee.

*“As social partners with a long history of joint cooperation, we can shape the digital transformation in the way that would meet the needs of employers and employees. We believe that the chemical industry is here to stay and is an important solution provider to the future challenges of the society”*, declared **Yves Verschuere**n, President of the **European Chemical Employers Group**.

*“There can be no successful digitalisation or industry 4.0 without a full focus on the human factor. Workers need to receive upskilling and retraining programs. We need a work to be organised well. The best way to get through these transitions is through meaningful social dialogue and collective bargaining – these will be key,”* stated **Luc Triangle**, Secretary General of **industriAll European Trade Union**.

Delegates had the opportunity to exchange with a wide range of stakeholders, such as company representatives (chembid GmbH & Co. KG, Clariant GmbH, Continental AG, BASF SE), trade union and employer representatives coming from 17 EU member states and youth representatives (European Young Chemists Network and industriAll Europe Youth Group), who touched upon changes related to the numerous impacts of digitalisation on the future generation of workers and the manufacturing industry in Europe.

Through their current actions and commitments, the social partners aim to make an effective and long-lasting contribution to the future of the European manufacturing industry.

**Conference Documents**

**Ms Ulla Saar**, Estonian ministry of social affairs, [key address](#)

**Dr Jan-Philipp Kramer**, Prognos, [research study](#)

**Mr Ralf Bender**, Clariant

*The photos of the event can be found [here](#).*





On 7 and 8 November 2019, European Social Partners in the chemical industry held a joint conference in The Hague on the digital transformation in the chemical, pharmaceutical, rubber and plastic industries. The event was the culmination of the two-year project “Our Future Workplace - Digital Transformation in the Chemical Industry,” which took a deep dive into the views of industriAll Europe and ECEG’s members, company representatives, and experts, and gives concrete and constructive areas for future cooperation and effort.

## STAKEHOLDER FINAL CONFERENCE 2019

### European Social Partners signed “Joint Recommendations on Digital Transformation in the Workplace for the European Chemicals, Pharmaceuticals, Rubber and Plastics Sectors”

In light of the results of the **study** conducted by the research institute Prognos AG, **ECEG** and **industriAll Europe** designed the **programme** of the Final Project’s Conference in order to have a deeper look at some of the topics that were dealt with in the survey but merited further attention:

- health and safety (with a focus on mental health),
- skills and skills development,
- change management, and
- challenges for small and medium-sized enterprises.

Each panel, was structured in order to have a balanced representation of employers’, workers’ and experts’ views and at the end of the first day of Conference, Presidents and Directors General of the European Chemical Employers Group (ECEG) and industriAll Europe Trade Union signed the “**Joint Recommendations on Digital Transformation in the Workplace for the European Chemicals, Pharmaceuticals, Rubber and Plastics Sectors**”.

In the document, the European Social Partners recognise the importance of digital transformation and come up with key recommendations in order to effectively address the major challenges.

Managing the transition and involving and engaging the workforce are the broadest challenges found in the process of digital transformation. With this in mind, specific recommendations include **mobile working and flexible time arrangements, performance monitoring, qualifications, modern safety challenges, work-life balance, and employee buy-in and participation.**

The project found that an initial wave of integrating new technology (**phase 1**) has already taken place, including developments such as digitising analogue data and deploying cloud solutions. Now, industry players are taking on **phase 2**, which includes innovations like the Industrial Internet of Things, artificial intelligence, and virtual and augmented reality. Utilizing and profiting from these technologies will require a digitally skilled and capable workforce.

Emma Argutyán (ECEG's Director General) and Maike F. Niggemann (industriAll Europe's Policy Adviser) expressed their willingness to further explore challenges and opportunities of the digital transformation in the future and to exchange on the progress made related to these recommendations, sharing best practices in the years to come.

*“While today we are at the final stage of our project, we look forward to continuing our joint work on mastering the challenges of digital transformation and skills needs in the chemical industry”.*

**Jitka Hrudová**, European Commission, congratulated the ECEG and industriAll Europe for a very productive social dialogue committee.

Looking beyond these conclusions and the final conference, the social partners of the chemical, pharmaceutical, rubber and plastics industries are determined to continue their work in this area.

*Joint Recommendations can be also downloaded in [FR](#), [DE](#), [IT](#), [ES](#).*

*Conference Documents:*

**Digital transformation in the chemical industry** – Emma Argutyan (ECEG), Maike Niggemann (industriAll Europe)

**Expert contributions – Digital skills and Skills development**

**Dr Kristina Dervojeda**, Leader PwC, Innovation Research Centre (Netherlands)

**Juho Korpela**, Head of Digital Transformation, Neste

**Sören Tuleweit**, Foundation of Labour and Environment, IGBCE

**Expert contributions – H&S and mental health**

**Dr Anita Tisch**, Federal Institute for Occupational Safety and Health in Germany

**Dr Johanna Schönrok-Kuczynski**, BAVC

Sector specific examples: **European Plastic Converters' project on digital transformation** – Marjan Ranogajec, EuPC (Plastic Converters)

**Expert contributions – Change management**

**Professor Tale Skjølsvik**, Institute for Information and Technology, Oslo Metropolitan University

**Jonas Hagelqvist**, IKEM

**Workshop results of the Merck Euroforum Annual Meeting** – Thomas Pein (Merck Group), Iris Gürtler (Merck Euroforum)

**Panel discussion on digital transformation in SMEs**

**Georges Scheiber**, Transformation & Public Relations Director, ADISSEO

**Luciano Tramannoni**, Femca Cisl

**The Danish labour market model, the Social Partners tripartite agreement on adult education and continual training and the perspectives of lifelong learning**, Henrik Bach Mortensen, Executive Director, Lederne

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**Emma Argutyan**, Director General European Chemical Employers Group

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*The photos of the event can be found [here](#).*

# RESOURCES

[SUMMARY OF THE FINAL RESULTS OF THE EU SOCIAL PARTNER PROJECT](#)

[FINAL CONFERENCE AGENDA – 07-08 NOVEMBER 2018, THE HAGUE](#)

“DIGITAL TRANSFORMATION IN THE EUROPEAN CHEMICALS SECTOR” –  
[FULL RESEARCH REPORT](#)

“DIGITAL TRANSFORMATION IN THE EUROPEAN CHEMICALS SECTOR” –  
[ONE-PAGE SUMMARY](#)

“DIGITAL TRANSFORMATION IN THE EUROPEAN CHEMICALS SECTOR” –  
[MANAGEMENT SUMMARY](#)

RESEARCH REPORT “DIGITAL TRANSFORMATION IN THE EUROPEAN  
CHEMICALS SECTOR” – [PRELIMINARY FINDINGS](#)

[TALLINN CONFERENCE AGENDA](#)

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