



Interactive workshop on trends: The changing scene of Industry 5.0

The Future of Workplace Innovation

International Conference

2024 | Oct. 1st to 3rd in Donostia-San Sebastian | Spain



Welcome



- Aims of this session
- Part of future-oriented analysis in Bridges 5.0
 - Scenario-building, policy discussion
- Content discussion
 - A discussion on broad developments and trends in and around industry
 - Relevant in an I5.0 perspective, without direct focus on only on I5.0
- Interactive process
 - Getting your perspective, interpretation and insights for your particular context
- Tangible result
 - Mentimeter survey



Trends analysis so far

- Trends in academic literature
 - Systematic literature review
 - R&D Management Conference – exchange
- Trends in grey literature
 - Search criteria, criteria for inclusion
 - Detailed screening and selection of a total of 95 sources (129 suggested)
- Iterative rounds - project team
 - Clustering and reduction
 - Rephrasing
- The Future of Workplace Innovation - International Conference, San Sebastian (ES)
 - Interactive trends workshop
 - Open up discussion



Further agenda

- Intro
- Technological and economic trends
 - 1st round of STEEV presentation and discussion with firms and audience
 - 1st round of survey and discussion
- Environmental, social, value trends
 - 2nd round of STEEV presentation and discussion with firms and audience
 - 2nd round of survey and discussion
- Closing



Technological trends



- **Robotics & Automation.** The adoption of automation is increasing, also in SMEs. There is a growing emphasis on factories for full automation
- **Immersive technologies**, including VR & AR, are increasingly being used to address skills gaps and to increase productivity
- **Advancements & use of AI** is a BIG game changer in industrial transformation, allowing more automated and autonomous industrial processes , including coding
- **Increased connectivity.** 5G/6G & the IoT are becoming integral, leading to fabs with real-time data monitoring, M2M communication, and supply chain visibility
- Growing importance of **cyber risks and cybersecurity.** The use of AI for stronger cyber protection is a key trend

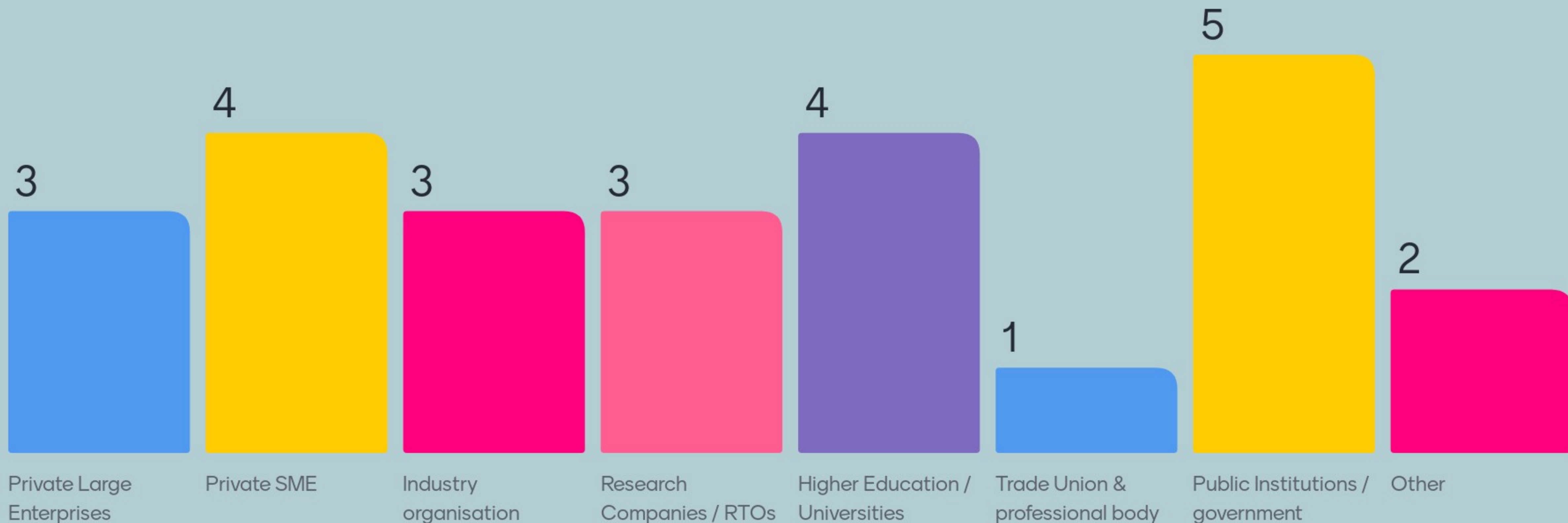


Economic trends

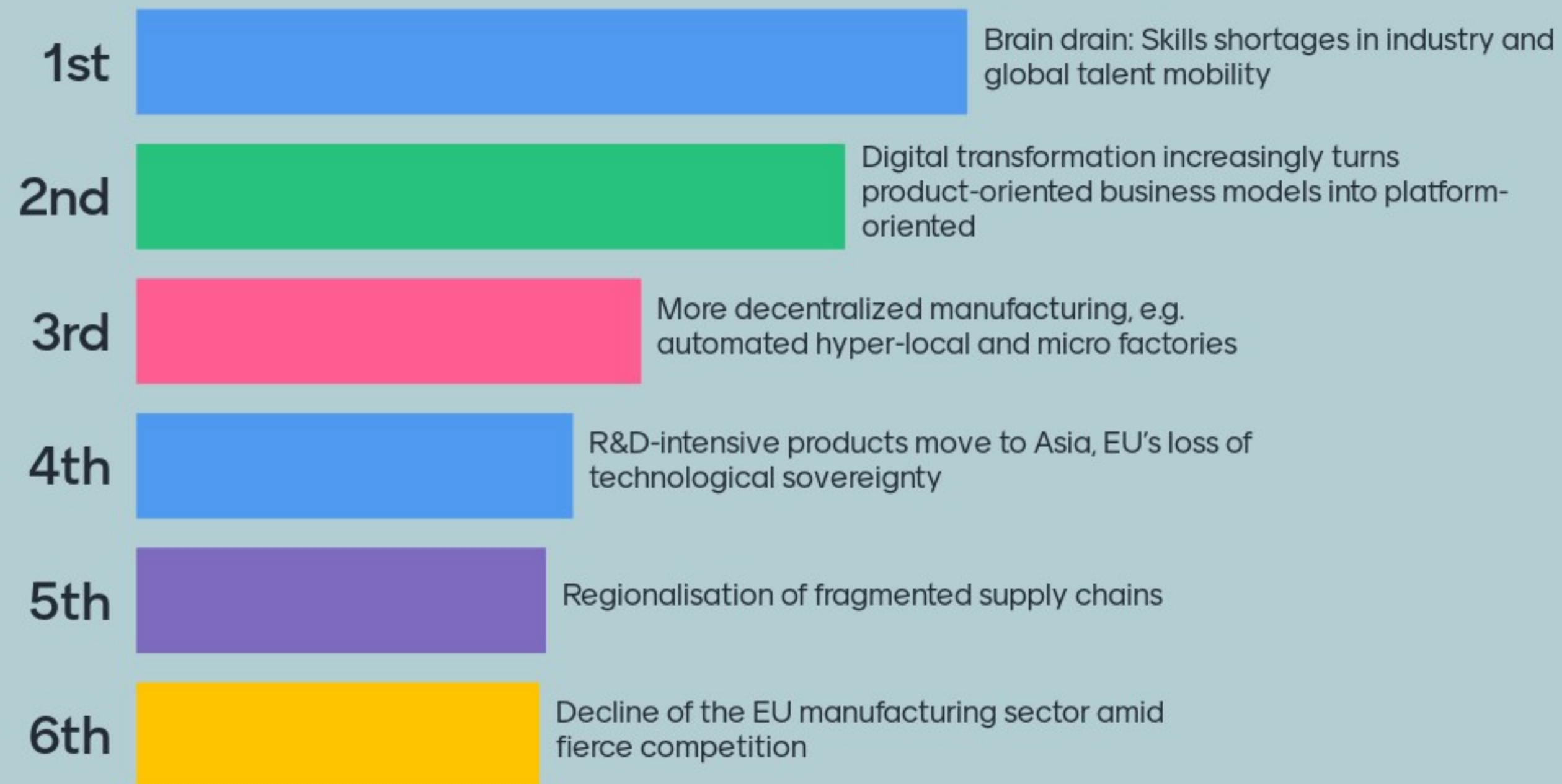


- **Supply chains.** Regionalisation of fragmented supply chains occurs
- **Change in business models.** Digital transformation increasingly turns product-oriented business models into platform-oriented business models (Platform as a Service - PaaS)
- **Decentralised production.** Shift towards decentralized manufacturing, such as automated hyper-local and micro factories
- **Changes in the size and nature of labour markets (brain drain).** Skills shortage in industry; talent global mobility
- **Deindustrialisation.** Decline of the EU manufacturing sector due to fierce competition
- **Global shifts in R&D: R&D intensive products shift to Asia.** EU loses technological sovereignty

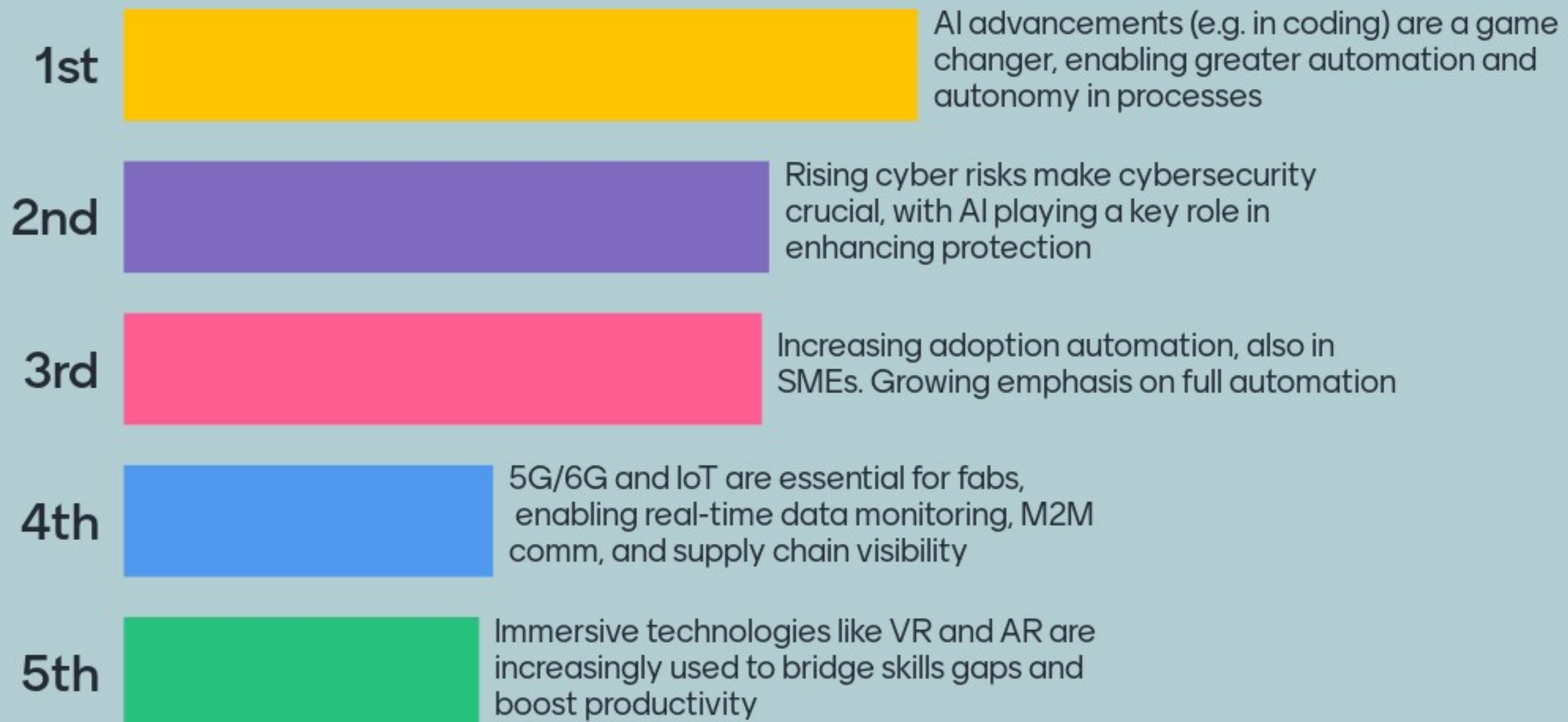
Which type of organisation do you represent?



Rank (economic) trends from high to low based on how much impact they have for firm practices, jobs and skills



Rank (technology) trends from high to low based on how much impact they have for firm practices, jobs and skills



Environmental trends



- **Green innovation and product development:** Increased focus on environmental R&D for new products but also sustainability in all products
- **Industrial symbiosis:** Challenges of e.g. circular production due to needs of restructuring organisational processes, actor cooperation and expertise
- **Adoption of green solutions:** High levels of inclination but low adoption due to expense, customer inertia, lack of awareness, convenience
- **Slow energy transition in industry:** Low speed of investment, R&D, product and infrastructure development, and availability of alternative energy sources
- Low prices and high volumes and flexibility of **producers in Asia accelerate the green transition in Europe** (electric vehicles, photovoltaics etc)

Social trends



- **Changing demographics:** Increasing impact of population's age structure and other characteristics on workforce composition
- **External stakeholder pressure:** Investors, consumers and others outside firms increasingly shape technology through e.g. environmental and cultural sensitivities
- **Expectations around job quality:** Increased expectations around job content, job satisfaction, meaningfulness, development opportunities, conditions and terms of employment.
- **Remote and hybrid work models:** Increasing social effects on individuals, their work, social and family relationships
- **Mental health impacts increase** through automation, workplace monitoring, job insecurity, job flexibility

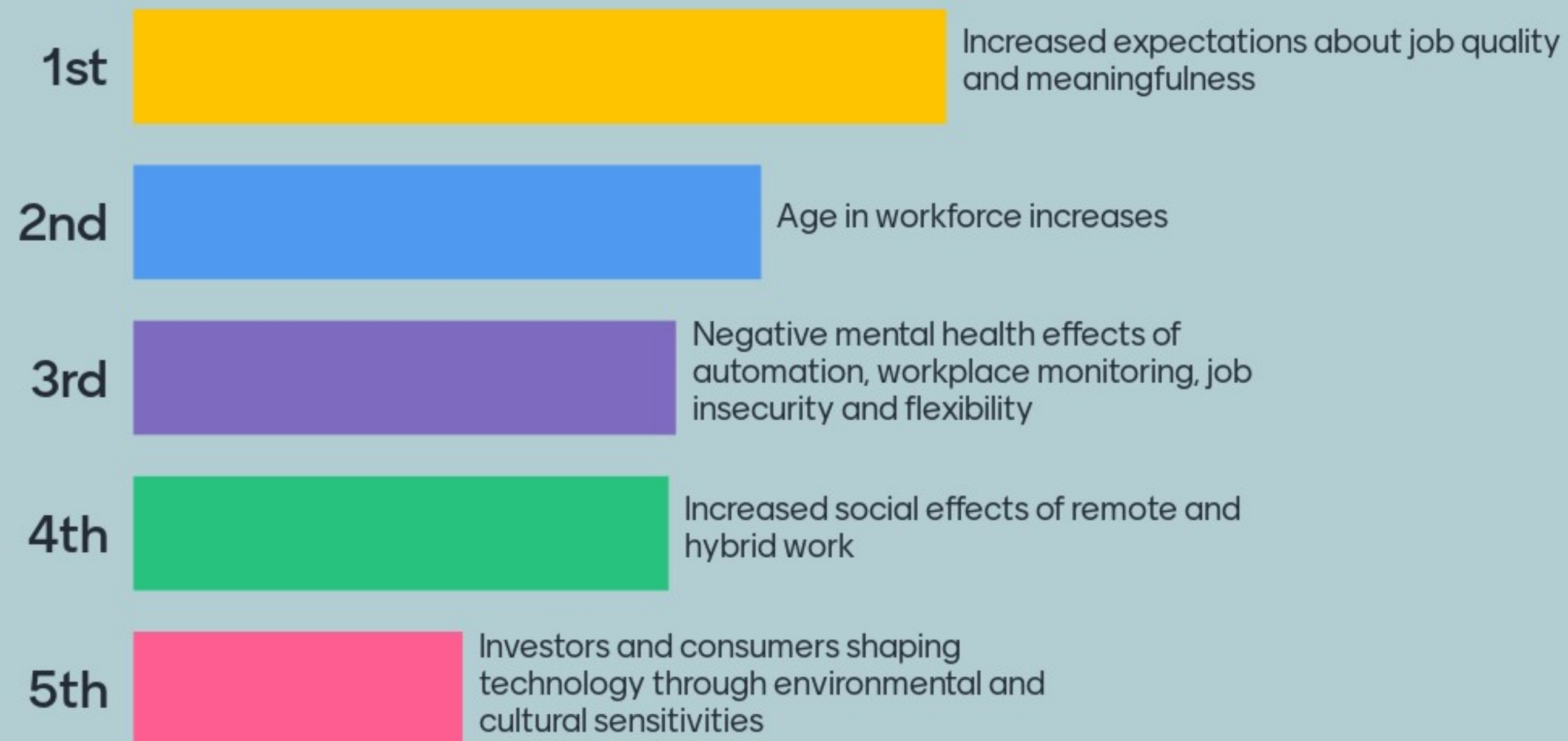


Value trends



- **Acceptance of technology:** Growing challenges of topdown managing the selection, installation and implementation of technology within organisations
- **Ethical and transparent business practices:** Effective ethical leadership and communication skills of managers when deploying new technologies are increasingly required
- **Shaping of technology and work practices:** Increasing involvement of workers in making decisions around technologies they work with
- **Technology design for inclusion and diversity:** Technologies are increasingly designed for inclusion of a broad spectrum of people
- **Trade union involvement:** Falling trade union membership reduces their influence in technology investments

Rank (social) trends from high to low based on how much impact they have for firm practices, jobs and skills

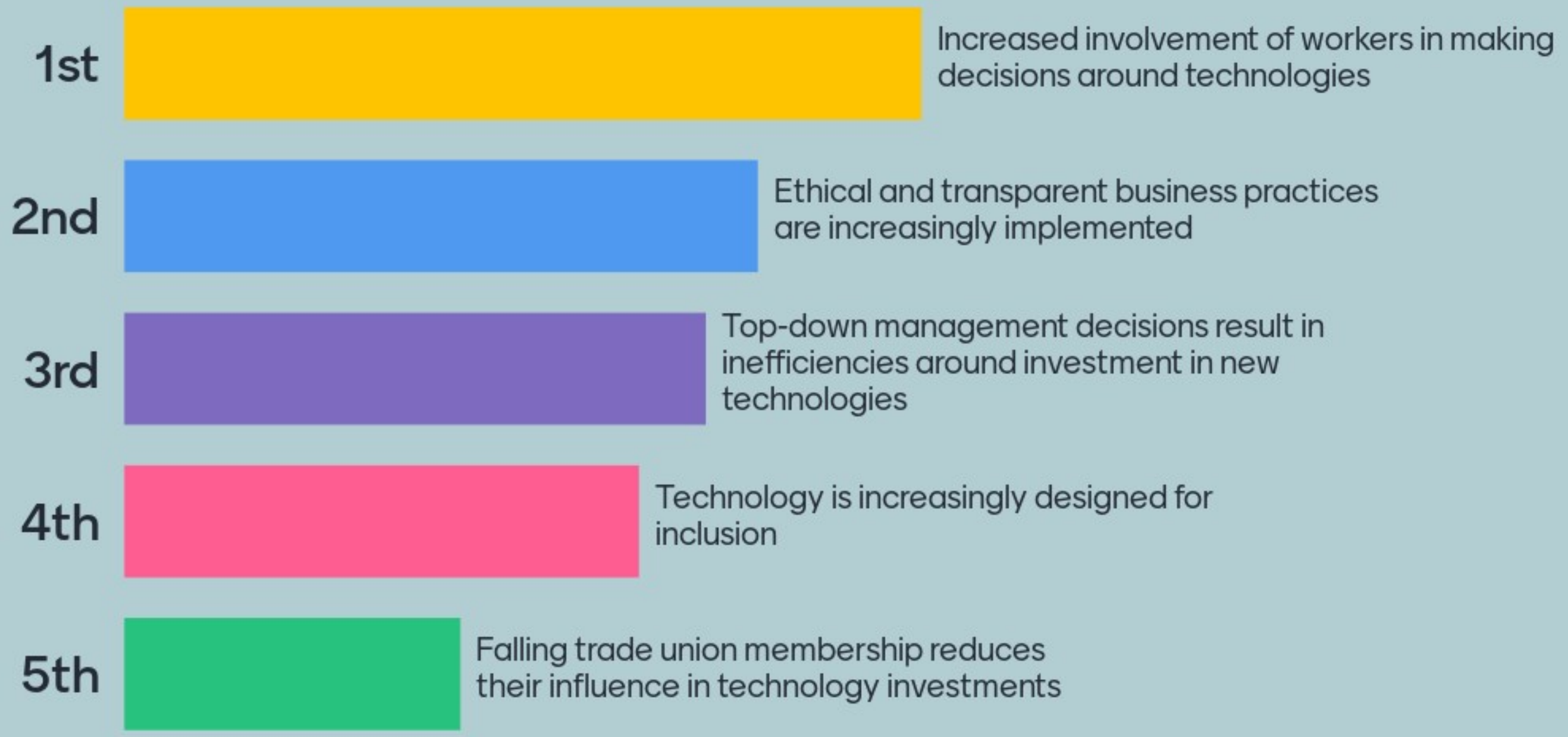


Rank (environmental) trends from high to low based how much impact they have for firm practices, jobs and skills





Rank (value) trends from high to low based on how much impact they have for firm practices, jobs and skills



What are possible unforeseen events with high impact on firm practices, jobs and skills (events with low probability but massive impact, e.g. crisis)

Environmental disasters like flooding

1. Inaction on climate emergency
2. War involving superpowers

Russia expands war to NATO countries

International conflicts

Biological disasters

Changing political landscape leading to not meeting Paris climate agreement

EU falling apart

Unforeseen: if Ukraine loses the war and Russia comes to the next border

Closing

- Meet us on freshthinking labs
- <https://freshthinkinglabs.com/>
- Industry 5.0 Open Lab with
 - Tab “Trends Survey”
- Next steps
 - Scenario-building exercise

