### The structure of jobs & element complexity

Another way to explore how elements connect is with graph visualization. The interactive graph below shows the degree of relatedness (normalized co-occurrences) level between different elements. It means that if a worker shows a strong level in a given element, (s)he can easily move to another one. Skill-relatedness has been shown in the literature to be a powerful predictor of future skilling and upskilling and labor market resilience. We can observe again the very sharp divide between the left side (manual) and right (cognitive) sides of the graph. The colors indicate the level of complexity of elements. More reddish colors indicate a high level of complexity, while bluer colors indicate less complexity. The complexity here uses a structural indicator from the field of economic complexity1. This structural indicator can be seen as an interesting proxy to think about the quality of jobs in the context of rapid task automation. Complex elements are the ones that are highly in demand by many but are hard to train humans and machines for.

<iframe src="https://www.paballand.com/asg/fow/element-space.html" height="405" width="910" style="border: 1px solid #464646;" allowfullscreen="" allow="autoplay" data-external="1"></iframe>

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### Complex elements are associated with better working conditions

Complex skills are the future of AI-human work but what is interesting is that the cluster of complex skills forming with elements such as complex problem solving, judgement & decision making and deductive & inductive reasoning is strongly associated with the appreciation cluster that combines recognition, achievement, working conditions or independence. Complex skills tend correlate with excellent working conditions because leverage is on the side of workers. Therefore, accelerating the development of complex skills and tasks is the only way to improve human-AI complementarity rather than substitution.

<iframe src="https://www.paballand.com/asg/fow/comp-app-elements.html" height="505" width="910" style="border: 1px solid #464646;" allowfullscreen="" allow="autoplay" data-external="1"></iframe>

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### Where are good jobs in Europe?

Assuming one does a good job in measuring the quality of jobs, a maybe bigger question is good jobs for whom? Or where the good jobs are located. To produce the interactive map below we combine the previous data with the EU Labour Force Survey of the International Labor Organization at the regional (NUTS2) level. What is clear is that there are smaller than expected national border effects. In fact, it is hard to even distinguish national borders - leading to the idea that good job policy should also be a matter of higher level of governance (EU, US, China levels) together with the local level (urban areas and regions). Another striking result is the clear West/East divide, with jobs requiring complex elements concentrating in the West and less complex ones concentrating in the East. To a much lesser extent but also visible is a North/South divide. But maybe the most striking patterns of all is the extreme concentration of good jobs in the capital cities. This is true for all countries, but the pattern is even stronger in less developed countries.

<iframe src="https://www.paballand.com/asg/fow/EU-map.html" height="605" width="910" style="border: 1px solid #464646;" allowfullscreen="" allow="autoplay" data-external="1"></iframe>

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