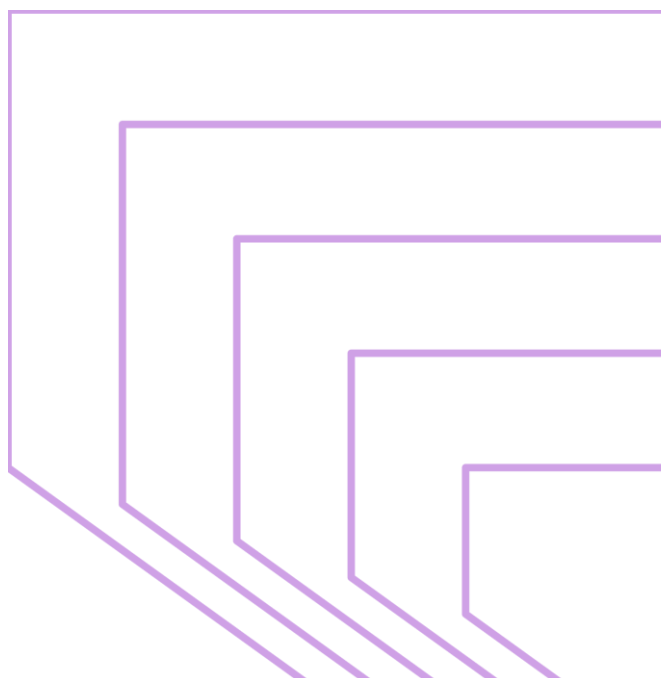




Executive Summary

WP2: Knowledge Recovery and Methods Framework

Countries covered: Austria, Ireland, Lithuania, Sweden, Spain, Ukraine



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Executive Summary

The transnational report examines the development and implementation of Artificial Intelligence (AI), Virtual Reality (VR), and Augmented Reality (AR) in career guidance systems across Austria, Ireland, Lithuania, Sweden, Spain, and Ukraine. The analysis combines desk research, country case studies, expert interviews, and focus groups with career counsellors. The report identifies both shared European trends and significant national differences regarding the integration of digital technologies into career guidance and employment services.

Across all analysed countries, the use of AI, VR, and AR in career guidance is increasing, although these technologies differ significantly in maturity and level of implementation. AI is currently the most developed and widely used technology. It is increasingly integrated into public employment services, career platforms, digital matching systems, and chatbot-based guidance services. VR is mainly used for immersive career exploration and employability preparation, while AR remains comparatively underdeveloped and is mostly limited to experimental projects or educational contexts.

A common trend across all countries is that digital technologies are used to complement rather than replace traditional guidance services. Public Employment Services, educational institutions, regional guidance providers, and private partners remain central actors. Digital tools mainly support information provision, labour-market orientation, career exploration, and decision-making processes. At the same time, all countries emphasise that human guidance remains essential. Counsellors continue to play a key role in providing emotional support, contextual understanding, ethical oversight, and interpretation of AI-generated outputs.

AI-supported services represent the most important application area. Common AI functions include job matching, recommendation systems, career information chatbots, CV and cover-letter support, labour-market analysis, and skills profiling. In many countries, AI tools are integrated into employment-service ecosystems and digital guidance platforms. Austria and Ukraine demonstrate particularly strong institutional integration of AI systems, while Spain, Ireland, and Lithuania rely more on decentralised or project-based approaches. Sweden combines advanced AI-supported matching systems with strong governance and ethical frameworks.

Virtual Reality is mainly applied in career exploration and employability training. VR allows users to experience workplaces, simulate occupational tasks, and explore vocational environments through immersive technologies. VR applications are particularly relevant for

vocational education and training, young people, adults in career transition, migrants, and socially disadvantaged groups. Most VR systems operate through on-site headset experiences, although browser-based and mobile-accessible versions are also increasingly used. The report highlights that VR increases motivation, engagement, and understanding of occupational environments. It also improves accessibility for individuals who cannot easily visit workplaces due to geographical, financial, or organisational barriers.

In contrast, Augmented Reality currently plays only a minor role in career guidance systems. AR applications are mainly linked to broader immersive learning environments, technical simulations, and innovation projects. AR is rarely implemented as a standalone guidance technology and remains experimental in most countries.

The report also identifies important differences between countries. Ukraine is described as a frontrunner in rapid digital transformation and systemic AI integration. AI-based systems are strongly embedded within national digital ecosystems and labour-market services. Austria and Sweden show highly institutionalised and structured approaches, with strong integration into public employment services and well-developed cooperation frameworks. Spain and Ireland demonstrate more practice-oriented and project-based innovation models, often supported by regional initiatives or European funding programmes. Lithuania represents an emerging digitalisation model with increasing integration of AI into employment services and the development of innovative career exploration centres.

The country case studies provide concrete examples of these developments. Austria's Berufsinfomat and Berufe VR demonstrate strong institutional embedding of AI and VR tools. Spain's VIROO platform illustrates immersive vocational education approaches, while Ireland focuses on socially inclusive VR and AI initiatives for vulnerable groups. Sweden combines AI-driven competence matching with immersive workplace exploration. Ukraine demonstrates highly integrated AI-supported labour-market systems alongside experimental VR and AR projects. Lithuania's Ema virtual assistant and Karjeras centre represent examples of digital public employment services and interactive career guidance environments.

Expert interviews and focus groups conducted with 110 career counsellors across the six countries confirm the growing importance of digital technologies in guidance practice. Counsellors in all countries reported high awareness of AI-driven recruitment systems, automated CV screening, algorithmic matching, and digital career tools. However, preparedness levels vary significantly. Sweden and Austria show comparatively strong institutional support and professional training opportunities, while practitioners in Spain, Ireland, Lithuania, and Ukraine often rely on self-learning and experimentation.

Across all countries, counsellors identified a growing need for new competences. Frequently mentioned requirements include digital literacy, AI literacy, prompt engineering, critical media competence, data interpretation, virtual communication skills, and ethical awareness. At the same time, practitioners stressed that technological competence alone is insufficient. Human-centred counselling skills such as empathy, communication, adaptability, and critical reflection remain essential.

The report also highlights several common challenges. These include digital inequalities, lack of access to technology, ethical concerns regarding bias and data protection, insufficient professional training structures, and limited scalability of VR and AR initiatives. Vulnerable groups such as older workers, migrants, refugees, people with low digital literacy, and socially disadvantaged individuals are seen as particularly at risk of digital exclusion.

Ethical considerations play a central role throughout the report. Counsellors across all countries expressed concerns about algorithmic bias, lack of transparency, misinformation, over-reliance on automation, and unequal access to digital services. Sweden demonstrates the strongest focus on governance and ethical regulation, while Austria emphasises critical media literacy. Spain and Ireland focus strongly on social inequality and accessibility, and Ukraine raises concerns related to data security and psycholinguistic profiling systems. Overall, the report concludes that career guidance systems across Europe are moving toward hybrid models that combine digital technologies with human counselling. AI is already transforming guidance services and labour-market systems, while VR and AR are still emerging technologies with growing but uneven implementation. The report stresses that the transformation of career guidance is not only technological but also professional and organisational. Career counsellors increasingly act as mediators between digital systems and users, requiring continuous competence development and institutional support. The future of career guidance is therefore seen in the successful integration of human expertise, ethical reflection, and digital innovation within inclusive and accessible guidance systems.

This executive summary is based on the full version of the transnational report:

<https://virtual-job.eu/project-results/>