

From Frameworks to Folksonomies: AI-assisted Competence Mapping for a Flexible and Evolving Skills Ecosystem

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As digital credentials, learning offers, and job descriptions increasingly depend on structured skill definitions, frameworks such as European Standard Classification of Occupations (ESCO) and Lightcast provide an essential foundation. Yet their static and centralized nature can limit responsiveness to emerging or community-specific needs. This presentation introduced an approach that combines artificial intelligence (AI)-assisted mapping with community-driven contributions to create a flexible competence taxonomy that supports both interoperability and innovation in open recognition ecosystems. It also helps educators define and reflect more clearly on the skills they aim to develop.

At the core is a toolset developed within the Open Educational Badges (OEB) and badgau.net project. It allows educators, training providers, and employers to map badges, courses, and job profiles to structured taxonomies—and vice versa. Using natural language processing, the AI assistant analyzes free-text inputs, suggests alignments with ESCO, Lightcast, or other frameworks, and identifies missing concepts. Users can then add new competences or clusters, creating a community-validated layer that extends and enriches the core data model.

The AI-assisted badge editor goes beyond simple skill tagging by using the full ESCO taxonomy to cluster related skills and visualize connections between competences. This enables the creation of clearer and more coherent competence profiles. Built on the ESCO data model, the system remains open and extendable, allowing users to enrich, adapt, and link competences to other frameworks. AI supports not only mapping but also the creation of new competences and clusters, guided by user feedback and real-world needs.

This hybrid approach ensures structured, high-quality data for services such as learning path recommendations and skill matching, while keeping the system open and responsive. The result is a more user-friendly badge process and a dynamic, practice-based understanding of competences.

This session presented the conceptual model, technical implementation, and early insights from participatory design workshops and usability testing with educators and badge issuers. It highlighted how AI support affects badge quality, issuer motivation, and

competence clarity, with particular attention to the user interface and the editing of AI suggestions.

The presentation was relevant for practitioners, policymakers, and technologists interested in how AI and collective intelligence can make skills data more meaningful and how flexible taxonomies can enhance the recognition of learning. It also showed how the system connects to the broader OEB ecosystem, including the learner-facing Wallet, creating a transparent infrastructure for competence-based learning. By combining AI, open data practices, and participatory design, the contribution outlines a path for recognition technologies that bridge structured frameworks and lived learning realities.

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