competentnl

A data driven system for exploring labor market information trough Hybrid AI

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Topics

Introducing: competentnl

Finding new skill descriptions

Detecting bias in new skill descriptions

Network analysis

Further work

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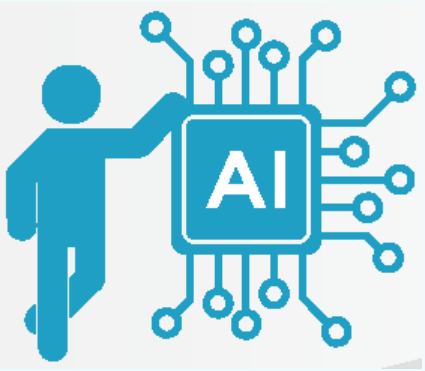
CompetentNL is a new **skills** ontology for the labour market of the Netherlands

Skills in relation to occupations and qualifications

Collaboration financed by Ministry of Education, Culture and Science and Ministry of Social Affairs and Employment

A public, **shared** skills language to improve labour market **efficiency**



TNO innovation for life

uwv

beroepsonderwijs bedrijfsleven

- Hard skills / tasks
- Softskills (competences)
- Knowledge elements
- Working conditions

- Adjust machines
- Monitor production proces
- Develop ICT-applications

- Plan and organize
- Adapt to change
- Present

- Risk Management
- Tender procedure
- Communication techniques

- Standing
- Variable work schedule
- Work at high altitude

Finding new skill descriptions

RobBERT
A Dutch RoBERTa-based Language Model

extract → labour market documents

recommend → labour market skill descriptions

verify & standardize → suggestions of new skill descriptions

expert verified skill descriptions

+

update

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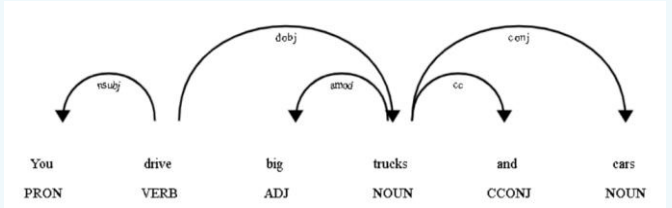
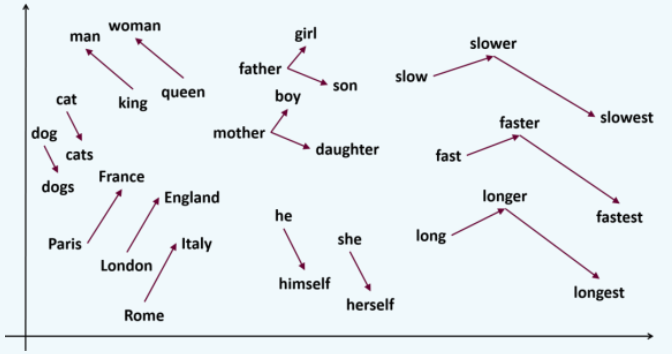
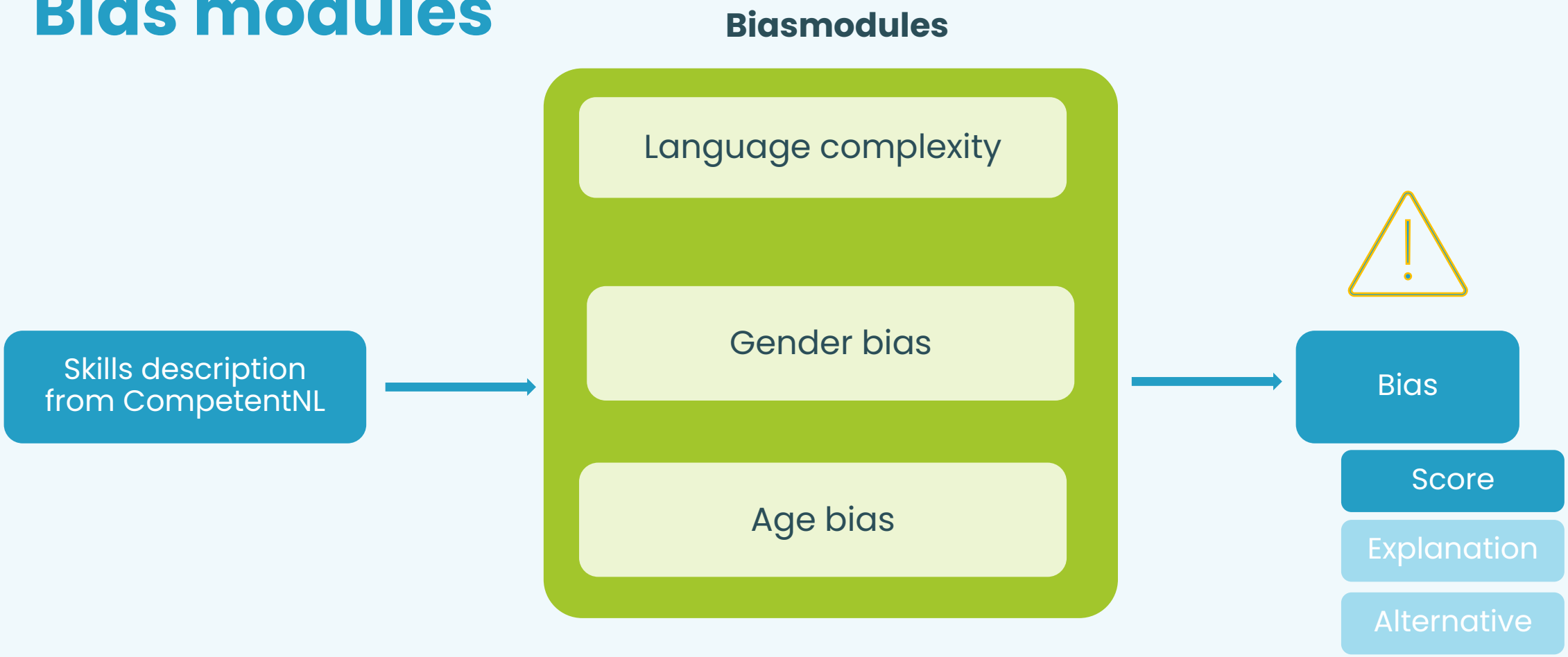
WordGraph2Vec

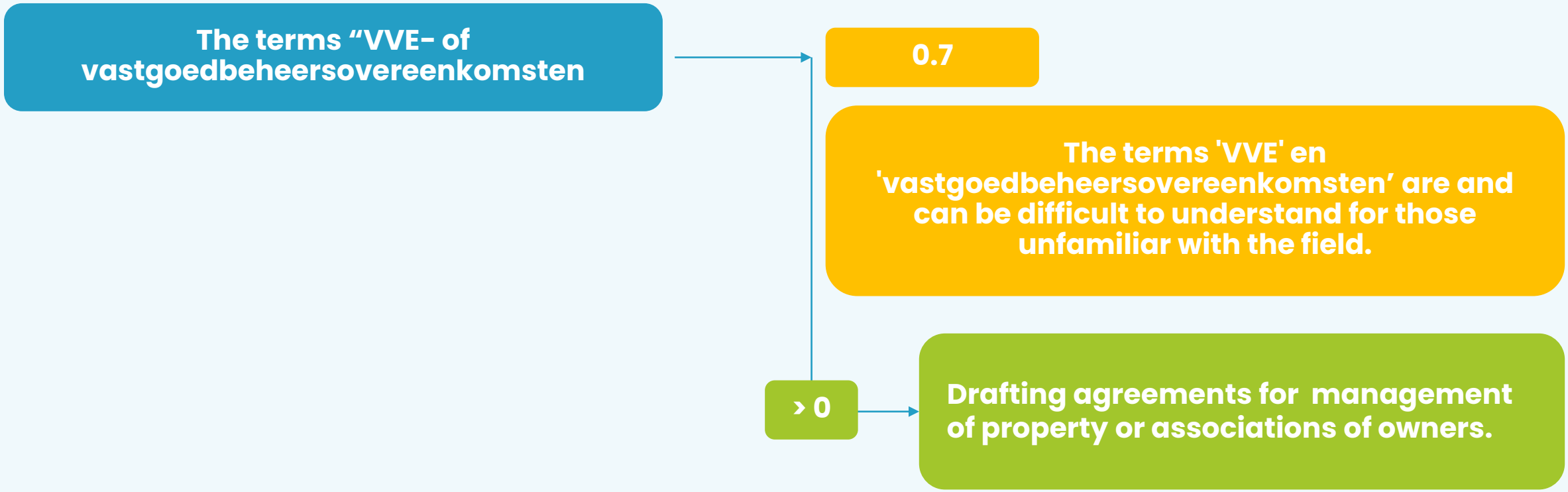




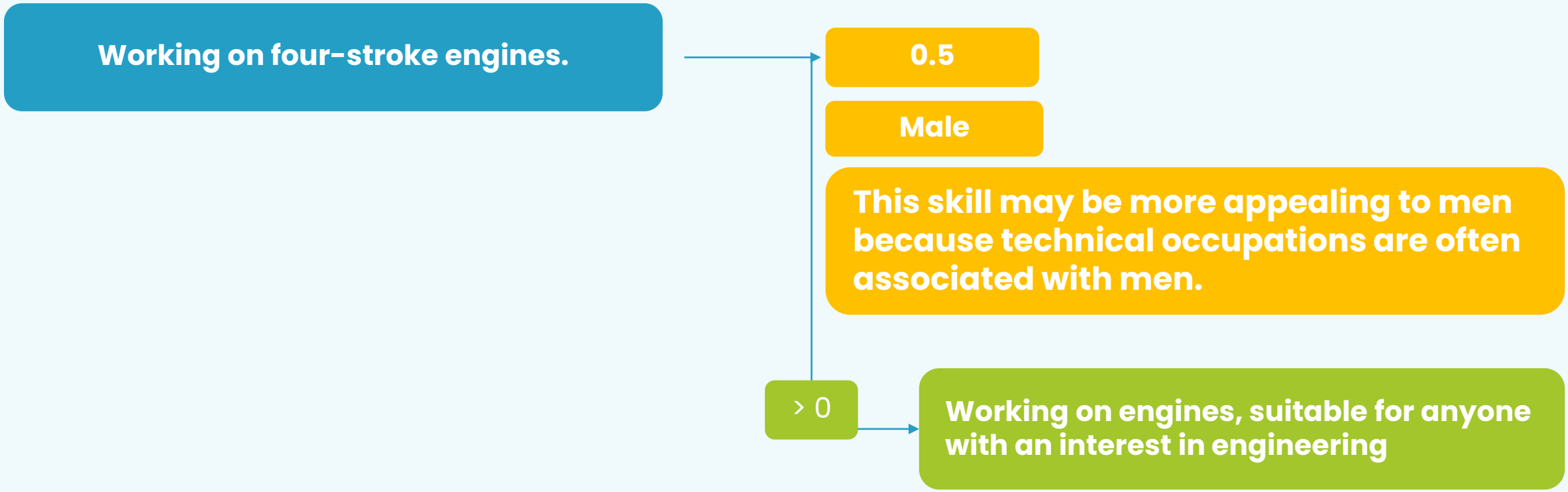
Bias modules



Example Language complexity

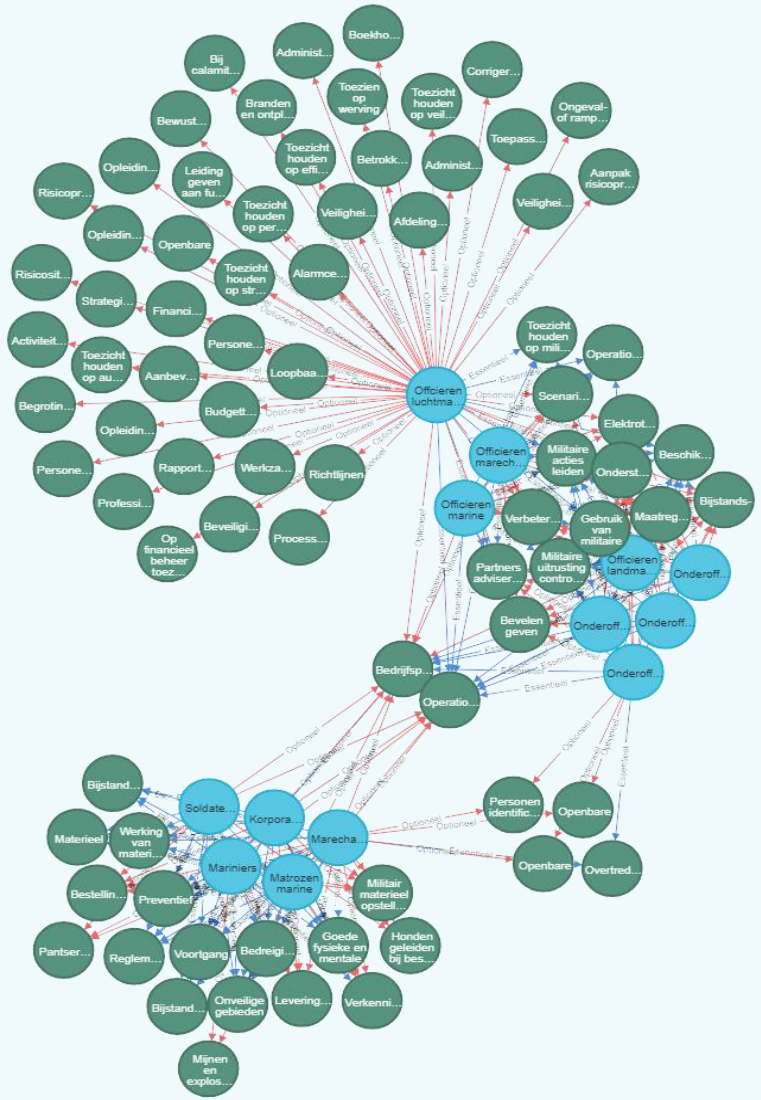


Example of gender bias

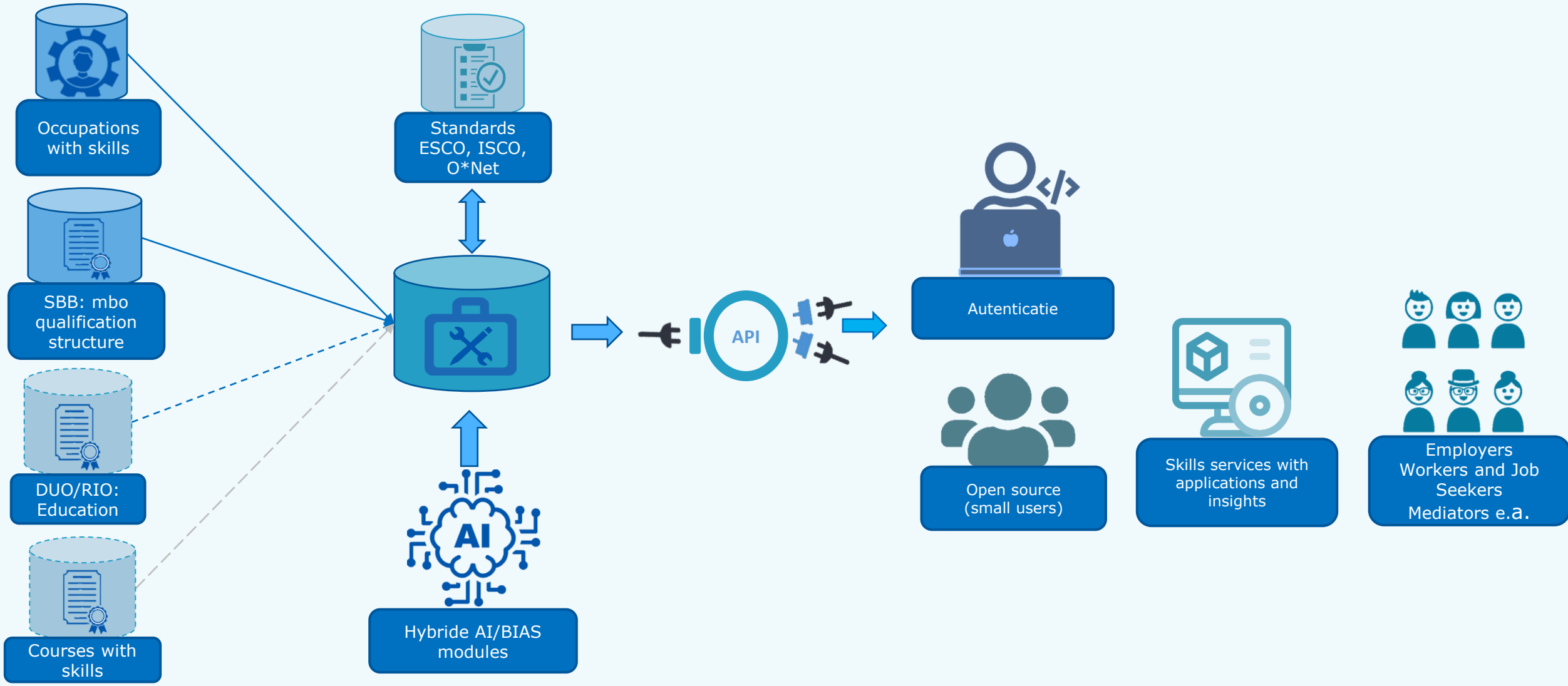


Network analysis

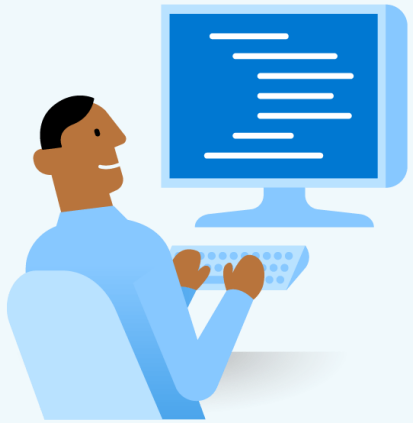
- Jobseeker change jobs by different reason
- How are skills related to each other
- When does transversality or gaps occur?
- Skills mapped to educational qualifications
- Combine CompetentNL data with Labour market information (PES Netherlands)



Pipeline


Occupations with skills
SBB: mbo qualification structure
DUO/RIO: Education
Courses with skills
Standards ESCO, ISCO, O*Net
AI
Hybride AI/BIAS modules
API
Autenticatie
Open source (small users)
Skills services with applications and insights
Employers Workers and Job Seekers Mediators e.a.

Skills is a start



Further outlook

- Market review
- Continue the use AI/Machine learning job vacancy data
- Map/crosswalk to other occupational standards (O*net, ESCO skills)
- Linked to qualification structure
- Launch of API services 2024
- Research on skills similarity’s

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LinkedIn

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Thank you