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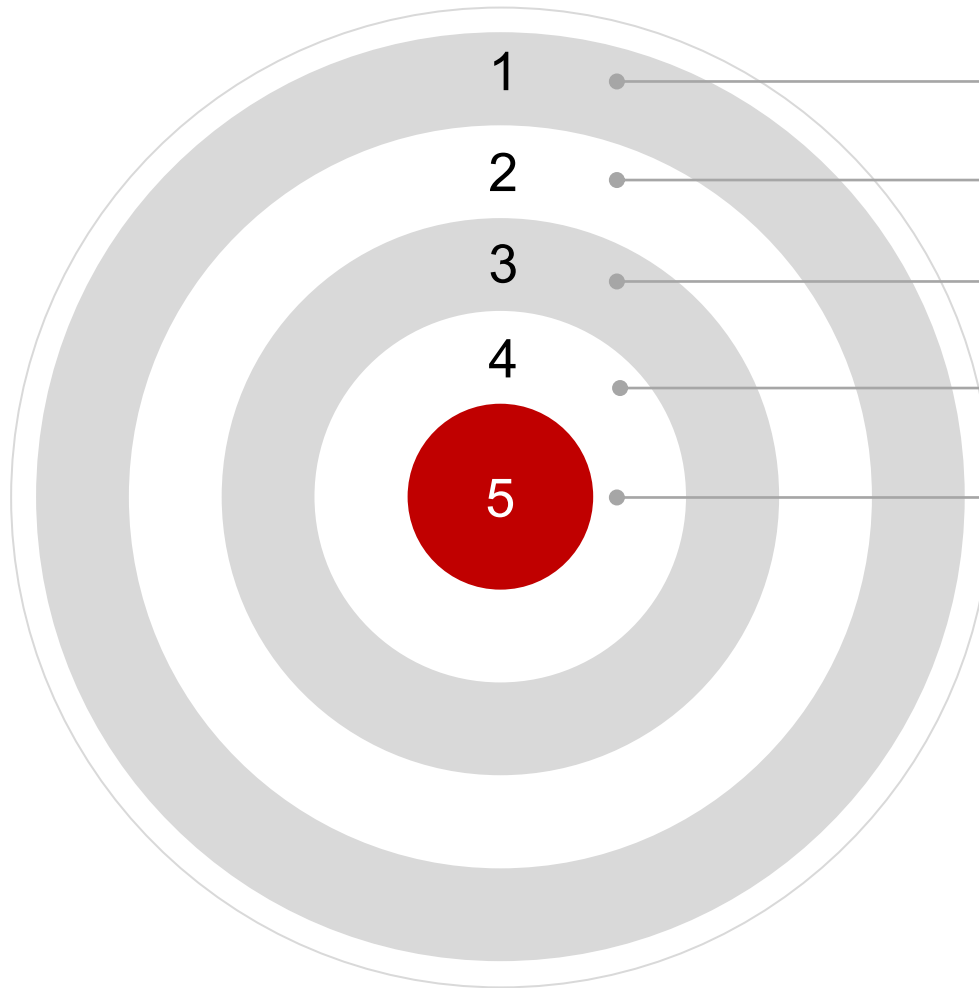
Project «Evolution Data Matching»

WAPES Conference

Lugano, Switzerland, 4 September 2024

Thomas de Buman, Project manager

Project goals

1 — Identification and evaluation of **optimisation paths** related to today's **data matching** in job placement within the regional centers (RAV)

2 — **Comparison** of the benefits of **new** search and matching **technologies** and methods, including **machine learning**

3 — Assessment of the **added value** of **skills** for data matching.
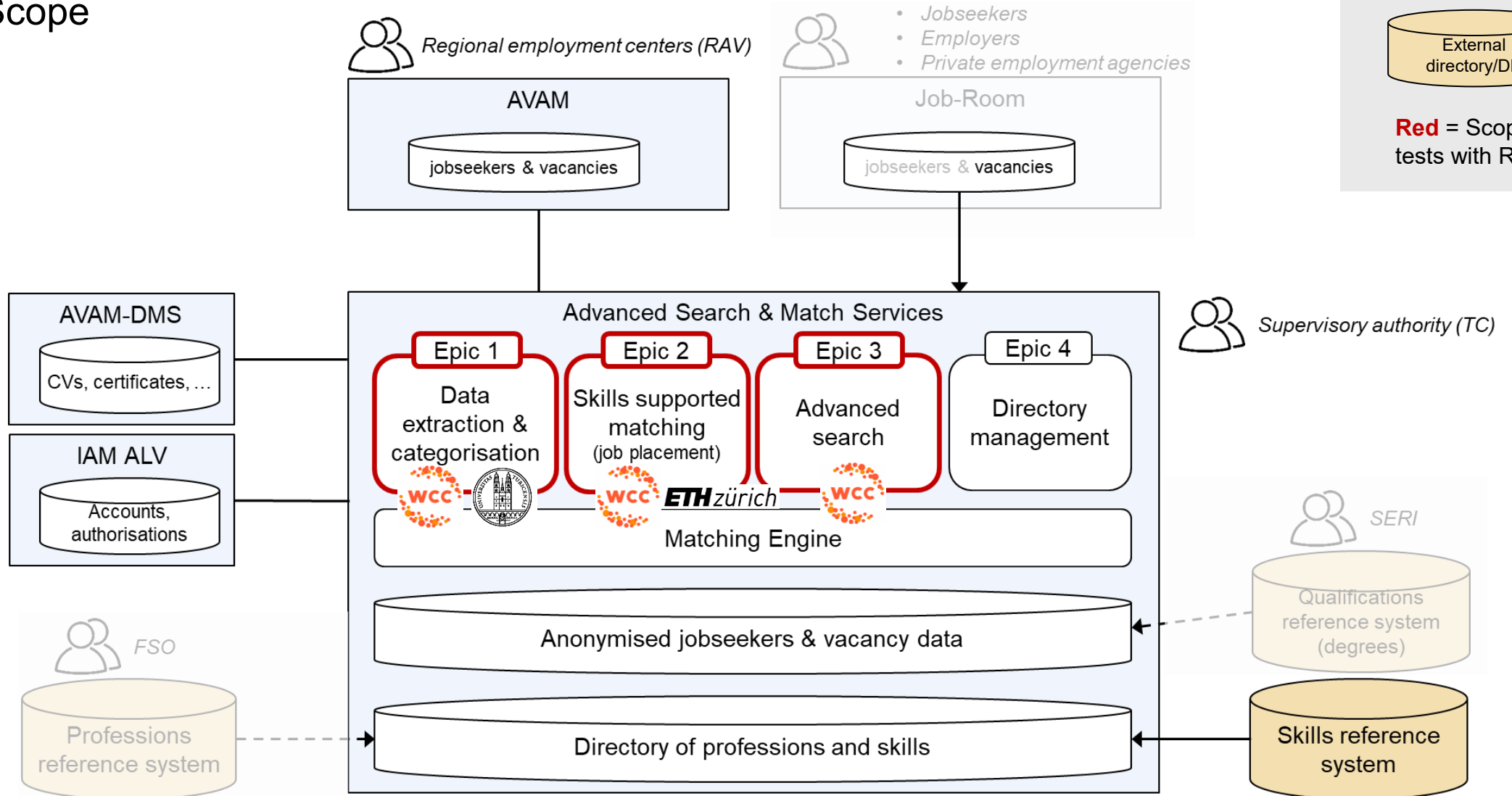
4 — Ensuring more **effective and efficient placement** of jobseekers (process optimisation)

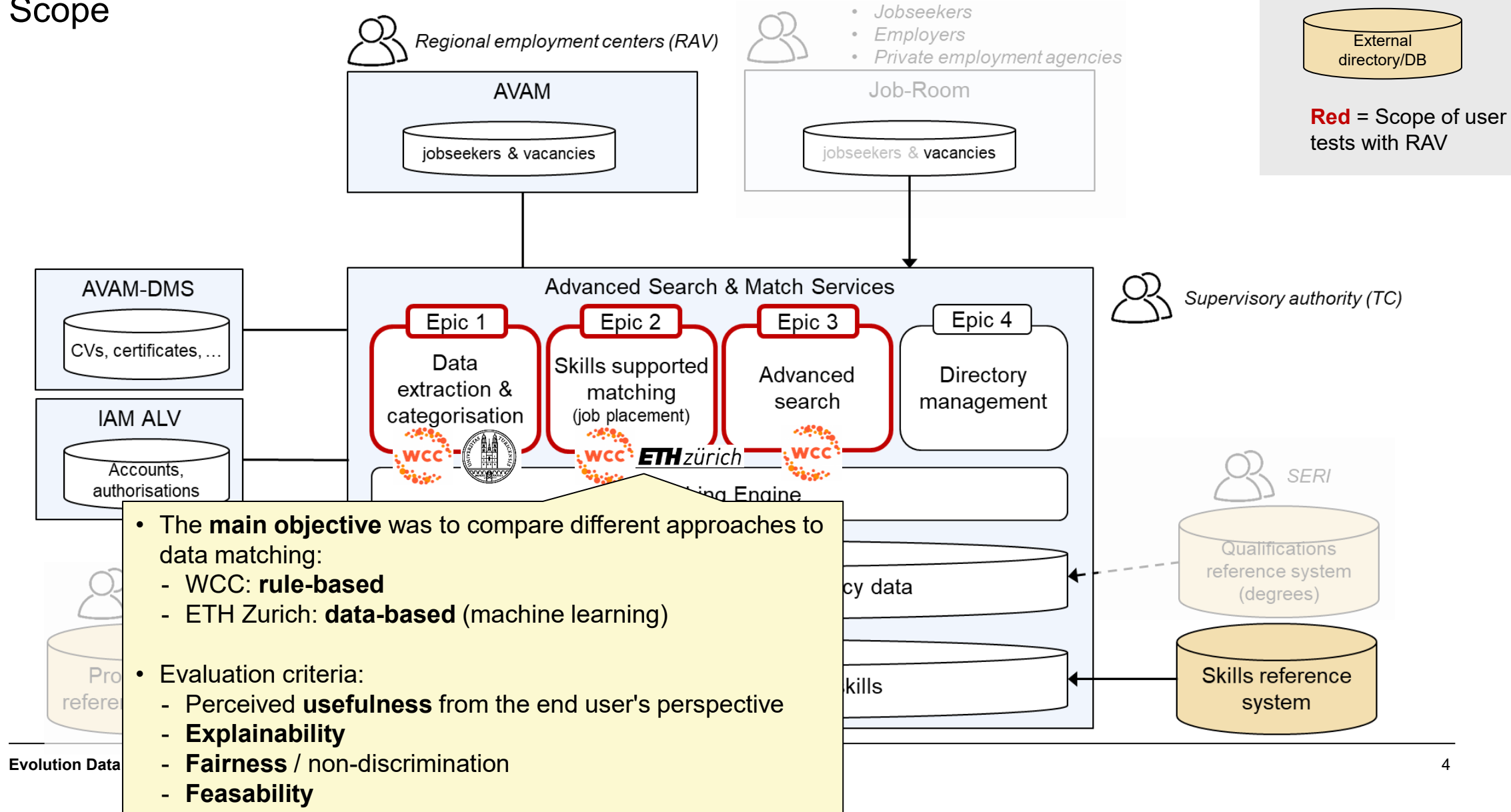5 — Broad **acceptance** and integration of **stakeholders**

Proof-of-Concept

Scope

Proof-of-Concept

Scope

Legend:

Internal Systems (SECO)

External directory/DB

Red = Scope of user tests with RAV

Regional employment centers (RAV)

- Jobseekers
- Employers
- Private employment agencies

AVAM

jobseekers & vacancies

Job-Room

jobseekers & **vacancies**

AVAM-DMS

CVs, certificates, ...

IAM ALV

Accounts, authorisations

Advanced Search & Match Services

Supervisory authority (TC)

Epic 1	Epic 2	Epic 3	Epic 4
Data extraction & categorisation	Skills supported matching (job placement)	Advanced search	Directory management

WCC

WCC **ETH**zürich

WCC

SERI

Qualifications reference system (degrees)

Skills reference system

- The **main objective** was to compare different approaches to data matching:
  - WCC: **rule-based**
  - ETH Zurich: **data-based** (machine learning)

- Evaluation criteria:
  - Perceived **usefulness** from the end user's perspective
  - **Explainability**
  - **Fairness** / non-discrimination
  - **Feasability**

Proof-of-Concept

Key findings

Epic 1

Data extraction & categorisation

- **Skills** from job advertisements can be **recognised satisfactorily** for the most part (ca. 53%).
- **Manual verification** and completion is advisable.
- The **highlighting** of recognised text segments significantly **improves traceability**.
- **Performance** can be improved through **additional training data** and feedback mechanisms (**user ratings**).
- **ESCO** is only **partially adapted** to the Swiss labour market (e.g. terminology).
- Many **job descriptions** are of **insufficient quality** to extract relevant job-specific skills.

Epic 2

Skills supported matching
(job placement)

- From the user's perspective, **both prototypes** (ETHZ and WCC) generated **slightly better matching results** than the AVAM (status-quo).
- **No significant differences in performance** between rule-based and machine learning were found.
- The matching with the additional consideration of **structured skills** in rule-based matching is generally perceived as useful, but does **not** lead to **any improvement** in the matching results.
- Match **sorting** by degree of match (score) and **filter** functions were rated as particularly **user-friendly**.
- Additional **convenience functionalities** desired (e.g. must/can criteria, watch lists, notifications)

Epic 3

Advanced search

- The **semantic search** was **rated positively**.
- Provides advantages for searches in occupational fields with a wide range of **specialised vocabulary**.
- **Language-independent** search possible.
- Advanced **filter functions** such as geographical search radius or travelling time desired

Catalogue of proposed measures (draft version)

Priority 1

Relevant sorting logic (rule-based)	Improved control of matching and search results	Identical vacancy data in AVAM and Job-Room	Matching based on machine learning (ML)	Promotion of intercantonal job placements
Continuous fairness and performance monitoring	Reducing discrimination risks in the GUI	Improving data quality	Semantic Search	Ensuring skill sources

Priority 2

Expanding skill sources	Job alerts	Watch lists	Individual matching profile	Matching according to skill-like professions

Priority 3*

Semantic Matching	Automated data extraction

* Measures with priority 3 will be pursued outside of the present project if the requirement is confirmed.

Thank you for listening!

Questions?