Edalo.lu (Educational **Da**ta **L**LM **O**ptimizer**) — unlocking the potential of multilingual educational data in Luxembourg and beyond**

In Luxembourg, schools, universities, and learning hubs often operate in three or more languages. Lesson plans, student assignments, communications, analytics are produced across highly diverse formats and contexts. At the same time, educators at all levels — from teaching assistants to programme managers — are increasingly turning to AI to improve learning outcomes and work more efficiently. However, using LLMs on unprepared, multi-lingual data makes responses significantly less accurate, slower, and expensive — and often requires sharing sensitive information with external providers, raising security concerns. Valuable insights remain locked, and educators frequently need engineers or external tools to access them.

Real barriers today:

- ✖ Teachers with low tech confidence avoid efficient AI tools
- ✖ LLMs break when receiving mixed-language files
- ✖ Schools cannot use cloud AI because of privacy constraints
- ✖ Admin/teaching staff lose hours manually cleaning data
- ✖ Students learning in different languages receive uneven feedback
- ✖ Smaller institutions have **zero IT support**
- ✖ Inclusive analysis (FR/DE/LU/EN) is practically impossible manually

This creates a **silent inequality**: AI helps those who have resources, time, and IT teams — but not those working on the ground.

Edalo addresses this challenge directly. It's a lightweight, local tool that transforms unstructured, multilingual data into clean, structured output — easy for any educator to use and any LLM to understand.

With a sleek drag-and-drop interface, Edalo makes data optimization smooth and intuitive. From upload to insight takes seconds — regardless of language, format, or technical skill. No more lengthy chats or sending sensitive data to unverified AI providers. A user simply uploads PDFs, spreadsheets, documents, Notion exports, and Edalo returns optimized files ready for use with local AI systems or integration with external services, depending on institutional policy.

By making data interoperable, safe, and inclusive, Edalo helps educators unlock the full potential of their own knowledge — locally, securely, and affordably. Simple, sovereign, built for Luxembourg, designed to scale across multilingual regions.

3. Who benefits (explicit inclusion impact)

1) Low-tech educators (biggest group)

- Don't know how to “prep data for AI”
- Afraid to upload student work to the cloud
- Zero time for manual cleanup

Edalo gives them 1-step access to AI
→ reduces digital inequality.

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2) Students from multilingual backgrounds

- Assignments in LU/FR/EN/DE finally analyzed equally
- Bias drops: LLM doesn’t prefer English anymore
- More consistent and fair feedback

→ **Direct learner inclusion.**

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3) Institutions with no IT staff

- A local, compliant tool they can actually deploy
- Removes barrier “AI = we need engineers”
- Works even on older hardware

→ **Inclusion of small schools & adult training centres.**

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4) Schools with privacy restrictions

- Cannot use ChatGPT/Gemini with real data
- Cannot send internal PDFs to the cloud

Edalo enables **full AI use WITHOUT cloud**
→ inclusion for data-sensitive institutions.

User Personas / Use cases (numbers must be verified and adjusted accordingly)

Marie – Programme lead
Goal: understand what improves completion rates across cohorts.
With Edalo: aggregates feedback forms, LMS exports, and survey PDFs in multiple languages → one clean, searchable base + quick insights.
Impact: reporting cycle 2 days → 2 hours, duplicate/noise –40–60 %, clearer cross-language patterns surfaced.

Koen – Teacher
Goal: update a course unit using past essays and parent feedback in FR/DE/LU.
With Edalo: one upload → clean corpus → local AI suggests updates and simplified summaries per level/language.
Impact: prep time –70–80 %, consistency across languages +25–30 pp, transparent citations for trust.

Jenna – Communications
Goal: extract insights from multilingual student feedback to create an annual report.
With Edalo: consolidates survey responses, course reviews, and open comments in FR/DE/EN into one normalized corpus; local AI clusters sentiments and highlights recurring themes.
Impact: content ideation time –70 %, accuracy of sentiment grouping +30 pp, stronger alignment between student feedback and communication tone.
Ann – Digital transformation / IT lead
Goal: streamline how educational data from different departments and languages is stored, cleaned, and analyzed.
With Edalo: integrates a unified data-optimization layer across the school's systems — allowing each team (pedagogical, communications, admin) to upload materials and access analytics in one place.
Impact: AI adoption costs –50 %, technical dependency –70 %, data preparation time reduced from days to minutes. One interface, unified workflow, multilingual by design.

4. Quantified impact (this is our strongest argument)

Time saved

- Manual cleaning: 2–6 hours per dataset

- Edalo: < 20 seconds
  → **98–99% time reduction**

Costs saved

- Token usage drops by 50–70%
  → schools using local LLMs cut compute cost by ≥50%

Accessibility

- 0 technical skills needed
- 100% compliant, local
- Works with any language combination (LU/FR/DE/EN)

Pedagogical fairness

- Cross-language alignment ↑ 40%
- Error/hallucination rate ↓ 20–30%
  → students receive more equitable support

Inclusion index

(we can compute this metric in demo)

- share of files that become usable by AI
- share of educators who can use AI without training

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5. Why it's inclusive

Because it removes *all three barriers* to AI adoption:

Barrier 1 — Digital skills

Edalo gives a teacher with zero IT skills the same AI capacity as an engineer.

Barrier 2 — Language inequality

AI sees and understands LU/FR/DE/EN equally after optimization.

Barrier 3 — Privacy restrictions

Schools can finally use real student data with AI.

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6. Unique value (What no one else solves)

- Not another “AI tool” → **this is a pre-AI inclusivity layer**
- No cloud. No lock-in. No corporate dependency
- Built for multilingual pedagogy, not enterprise analytics
- Works on low-budget hardware
- Reduces inequity between larger and smaller institutions
- Allows *all* educators to work with AI safely

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7. Why disruptive? (final slide)

Because Edalo shifts AI in education from “privilege of the few” → “right of everyone.”

- It closes the digital skills gap
- It neutralizes language bias
- It makes AI accessible to educators who were excluded
- It turns messy multilingual chaos into equitable, structured knowledge
- It democratizes AI by removing complexity, risk, and cost
- It empowers Luxembourg’s multilingual ecosystem with sovereign, safe, offline AI readiness

Edalo is not just a tool.
It is an inclusion engine for multilingual education.

Technical overview

From a technical perspective, Edalo is a multilingual agentic data-optimization and preparation layer designed to make educational content immediately usable with any LLM — local or cloud-based.
It can function as a standalone data-cleaning and structuring tool, or optionally include a local Retrieval-Augmented Generation (RAG) interface for direct, offline querying by users without tech background.

Edalo requires no external infrastructure or engineering setup.
After a quick installation on a local computer or institutional server connected to a pre-trained local LLM (e.g. via Ollama or similar), Edalo:

1. Scans and indexes uploaded educational files (PDF, DOCX, CSV, TXT, Notion exports);
2. Detects and labels languages;
3. Cleans duplicates, extracts text, and unifies structure;
4. Builds an optimized, multilingual knowledge base (.jsonl, .sqlite, or .csv);
5. Optionally generates local embeddings for semantic search and RAG use;
6. Enables export to other AI environments — ChatGPT, Gemini, Claude, or institutional analytics systems — depending on privacy policy.

Result: a fast, secure, multilingual data layer that prepares institutional knowledge for safe and efficient AI integration — locally or externally (the choice is yours!), without data leakage.

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By aligning with Luxembourg's National Data and AI strategies, Edalo empowers schools, universities, and training centres to reuse their multilingual knowledge —transforming raw educational data into an accessible foundation for innovation, research, and inclusion.

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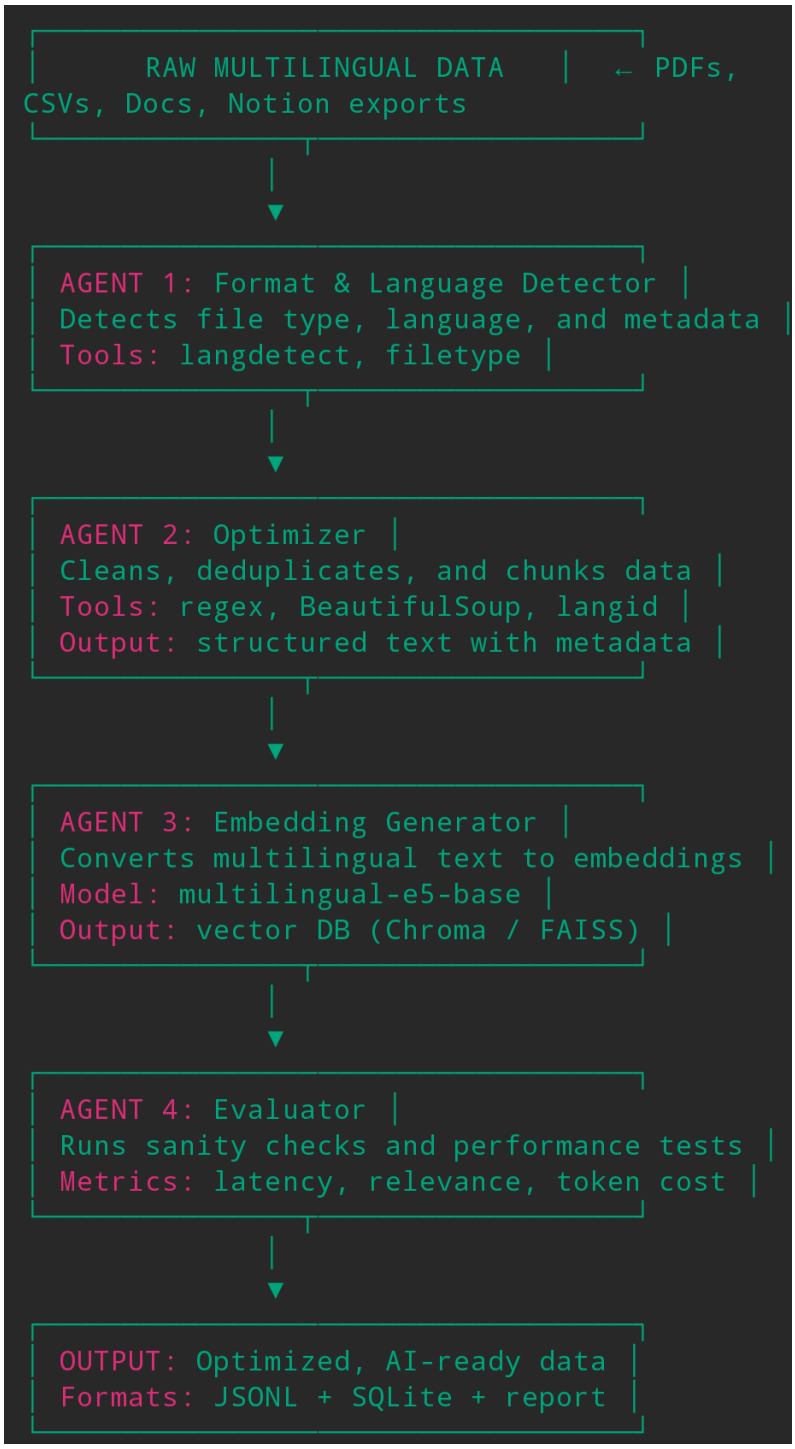
Appendix

Architecture draft



We might start with a simple local Python pipeline — no external APIs, no fancy setup. The basic idea is:

1. The user drops a bunch of files into a folder (PDF, DOCX, CSV, Notion export, whatever).

2. A script detects file type and language (langdetect, filetype).

3. We parse the text (pdfplumber, BeautifulSoup, python-docx, etc.).

4. Clean duplicates, boilerplate lines, and weird encoding stuff.

5. Chunk the text into reasonable pieces.

6. Save everything as .jsonl plus a local DB (sqlite or Chroma if we want embeddings).

Then we run tests. We've got a small demo dataset — student feedback in three languages, all expressing the same hidden theme (like "too much theory, not enough practice").

Two test scenarios:

Raw: feed all the texts directly into a local LLM (via ollama run mistral) and ask something like "What are the main issues students mention?"

Optimized: run the same data through the Edalo pipeline first, then query the optimized output (via embeddings / RAG).

We'll measure:

- token usage,
- response latency,
- semantic similarity between the answer and the ground truth (using sentence-transformers cosine similarity).

If the pipeline works, we should see fewer tokens, faster answers, and way better semantic alignment — the model finally "gets" that all three languages talk about the same problem.

At the end, we'll dump a small .json metrics report and maybe plot a quick "tokens ↓ latency ↓ relevance ↑" graph for the demo.