

Case Study

Reimagining Learning in the AI Era

Designing an AI Learning Companion for
Real, Lasting Growth

About me

I'm a Senior Digital **Product Designer** with **10+ years of experience** across **B2C and B2B digital services**.

I'm passionate about **combining design, technology and user insight** to **create purposeful experiences** across industries.

I specialize on **web/mobile apps, AI tools, IoT** and **digital transformation**, working with **medium/large companies and startups**.



1 dog + 3 cats

My background:

- Laurea Magistrale in **Computer Engineering @ Politecnico di Milano** (110/110 cum laude)
- M.Sc. in **Computer Science @ University of Illinois at Chicago** (4.0 GPA)
- Certified **AWS Developer Associate** (2019-2024) → Experienced in **cloud architectures** and **serverless microservices**
- Previous Jobs: **Research Assistant** (1.5 years @ UIC), **Web/Mobile Frontend Software Engineer** (2 years)
- **UX/UI Courses @ Interaction Design Foundation** + **9+ years of hands-on experience designing digital products**

Daily tools: Figma, FigJam, Excalidraw, Notion, Jira, Slack and GitHub (+ human brains!)

Today's Agenda

Introduction

Project Team

Project Overview

Design Process

Empathize

Define

Ideate

Prototype

Test

Wrap Up

Project Team

Provider: Nautes, a digital innovation company specializing in designing and developing tailor-made digital products for businesses.

Design & Development Team:

- 1 Senior Designer (me): Lead design, UX strategy and AI experience design
- 1 Junior Designer: Back-office design, research and codesign support
- 6 Developers: Frontend, Backend, AI integration, QA engineering



Client: Futureberry, HR company that helps organizations transform their culture through strategic change management, talent development and active imagination.

Client Team:

- 1 Project Lead: Coordination, stakeholder alignment, and approvals
- 2 University Professors: Content design & learning methodology
- 1 Entrepreneur: Strategic vision & market alignment

Project Budget: 200,000€

Reimagining Learning in the AI Era

In today's fast-moving information economy, companies need more than static training modules — they need adaptive learning ecosystems that align with both organizational identity and individual growth paths.

This case study follows the journey from identifying that challenge, to designing and delivering **Cosmo**: an **AI-powered training platform** that **dynamically generates and personalizes learning content**, using a maieutic approach **tailored to each user's** learning style **and company culture**.

My role as a **Senior Product Designer** in the project:

- **Framed the problem space** through research and user immersion
- Defined design principles **aligning AI capabilities with human learning behavior**
- Shaped the **UX/UI for onboarding, content delivery and AI interactions**
- Worked with engineers and stakeholders to make sure the platform was **secure, privacy respectful and adaptable to user needs**
- **Prototyped and tested multiple iterations**, validating with target users and refining based on behavioral data
- Ensured that the design **aligned with organizational knowledge values**, not generic AI output
- Advocated for an **experience that is smart, easy to use and emotionally engaging**
- Worked alongside a junior designer, **mentoring** him through UX decisions while owning the overall design direction.

Design Thinking Phase

Empathize

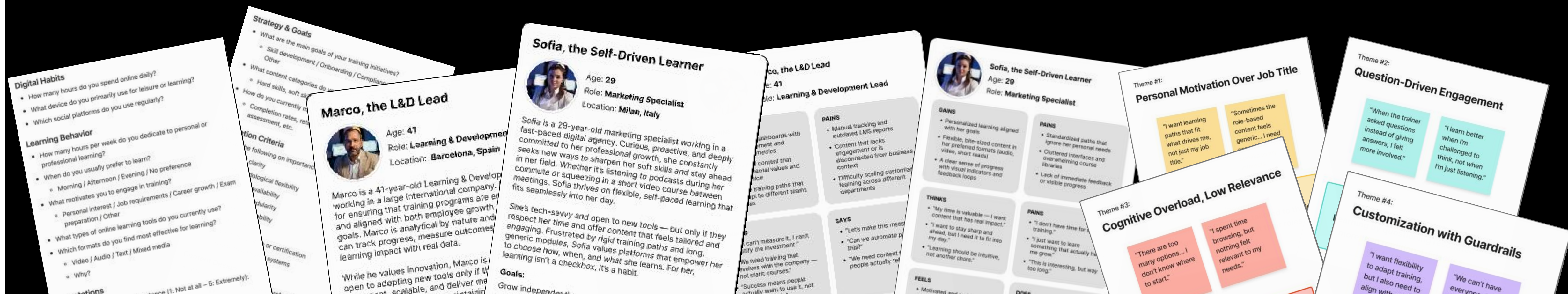
Understanding Learning Beyond Content

PROBLEM STATEMENT

“Why do so many corporate e-learning platforms feel boring, forgettable and uninspired?”

Design activities to gather insights:

- Conducted contextual user interviews with new hires, L&D leads and HR managers
- Embedded myself in real training sessions across different pilot company organizations



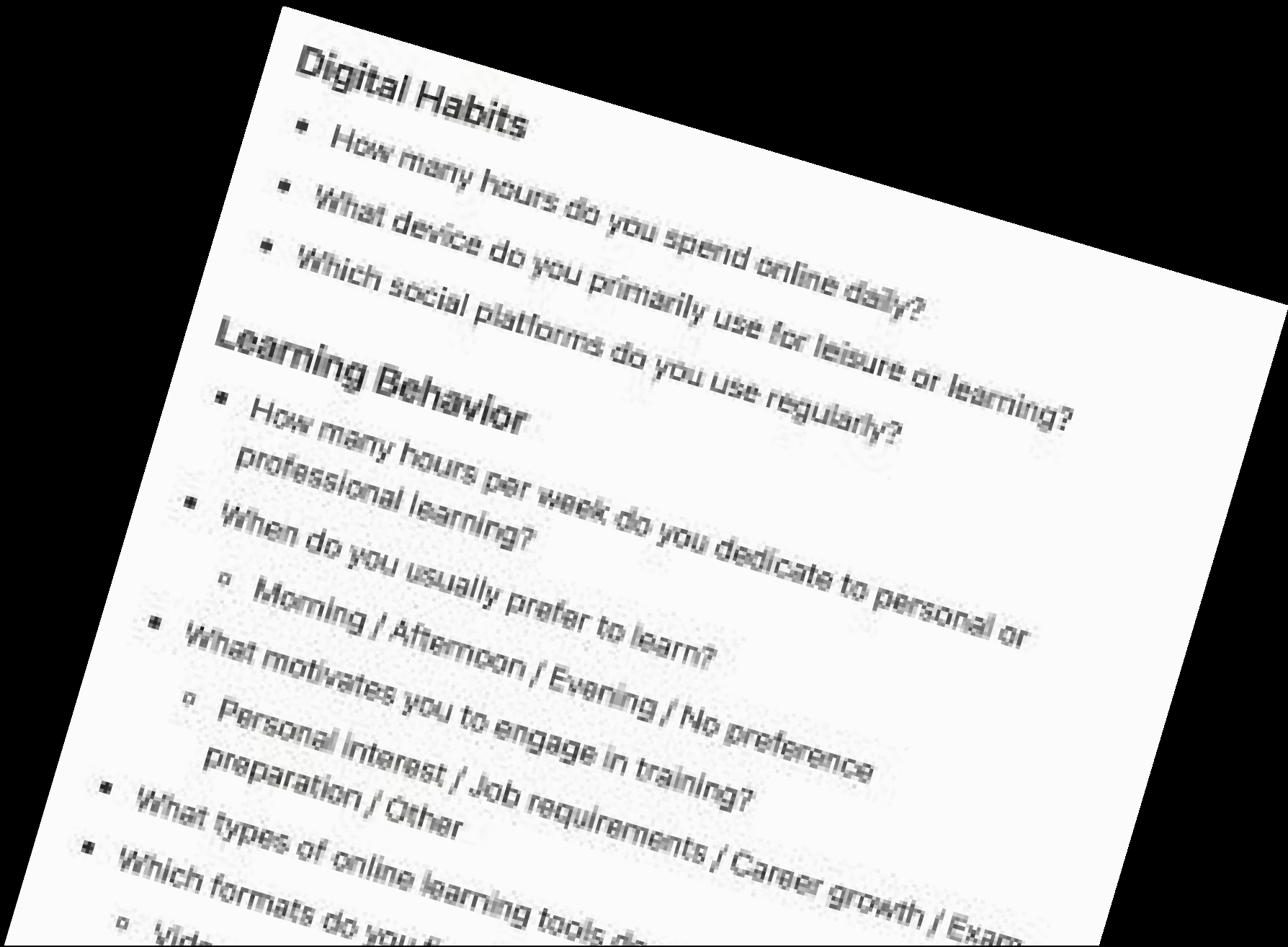
Understanding Learning Beyond Content

INTERVIEW SCRIPTS

LEARNERS

Objective: Understand habits, motivations, and expectations around digital learning

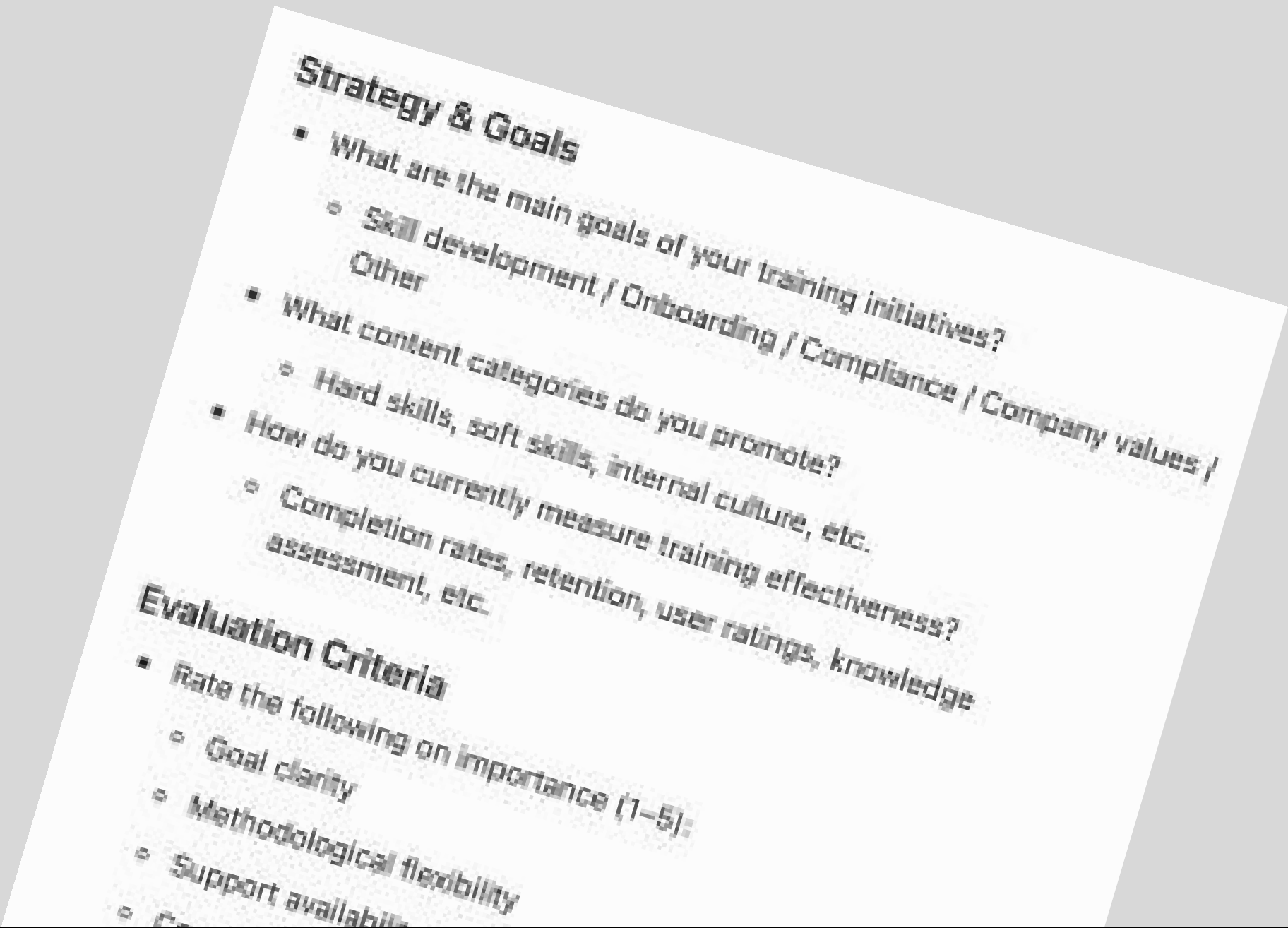
Learner Interview Template (Notion)



ORGANIZERS (HR, L&D Managers)

Objective: Explore expectations and strategic views of digital learning

Organizer Interview Template (Notion)



Design Thinking Phase

Define

Understanding Learning Beyond Content

PERSONAS & EMPATHY MAPS

PERSONAS



Marco, the L&D Lead
Age: 41
Role: Learning & Development Lead
Location: Barcelona

Marco is a 41-year-old Learning & Development Lead working in a large international company. He is responsible for ensuring that training programs are effective and aligned with both employee and business goals. Marco is analytical, detail-oriented, and values data-driven decision-making. He can track progress, measure learning impact with relevant metrics, and is open to adopting new technologies to improve the learning experience.

While he values innovation and is open to adopting new technologies, his biggest challenge is ensuring that content is relevant and engaging across diverse audiences. For Marco, learning is a business lever. He focuses on content adoption, and ensuring that employees have the skills for tomorrow.

Goals:

- Grow independently
- Improve soft skills
- Stay relevant in a fast-evolving industry

Devices:

- Smartphone (while commuting)



Sofia, the Self-Driven Learner
Age: 29
Role: Marketing Specialist
Location: Milan, Italy

Sofia is a 29-year-old marketing specialist working in a fast-paced digital agency. Curious, proactive, and deeply committed to her professional growth, she constantly seeks new ways to sharpen her soft skills and stay ahead in her field. Whether it's listening to podcasts during her commute or squeezing in a short video course between meetings, Sofia thrives on flexible, self-paced learning that fits seamlessly into her day.

She's tech-savvy and open to new tools — but only if they respect her time and offer content that feels tailored and engaging. Frustrated by rigid training paths and long, generic modules, Sofia values platforms that empower her to choose how, when, and what she learns. For her, learning isn't a checkbox, it's a habit.

Goals:

- Grow independently
- Improve soft skills
- Stay relevant in a fast-evolving industry

Devices:

- Smartphone (while commuting)

EMPATHY MAPS



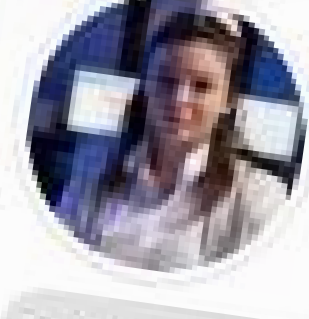
Marco, the L&D Lead
Age: 41
Role: Learning & Development Lead

GAINS

- Centralized dashboards with clear engagement and completion metrics
- AI-assisted content that reflects informal values and tone of voice
- Scalable training paths that can adapt to different teams and roles

THINKS

- "If I can't measure it, I can't justify the investment."
- "We need training that evolves with the company, not static courses."
- "Success means people actually want to use it, not just complete it."



Sofia, the Self-Driven Learner
Age: 29
Role: Marketing Specialist

GAINS

- Personalized learning aligned with her goals
- Flexible, bite-sized content in her preferred formats (audio, video, short reads)
- A clear sense of progress with visual indicators and feedback loops

THINKS

- "My time is valuable — I want content that has real impact."
- "I want to stay sharp and ahead, but I need it to fit into my day."
- "Learning should be intuitive, not another chore."

FEELS

- Motivated and curious, but quickly frustrated by dull or rigid training
- Uneven or underestimated when content is too generic
- Empowered when she has control over how and what she learns

DOES

- Browses multiple platforms to find the best-fit experience
- Saves interesting content to revisit during breaks or commutes
- Skips lessons that feel redundant

PAINS

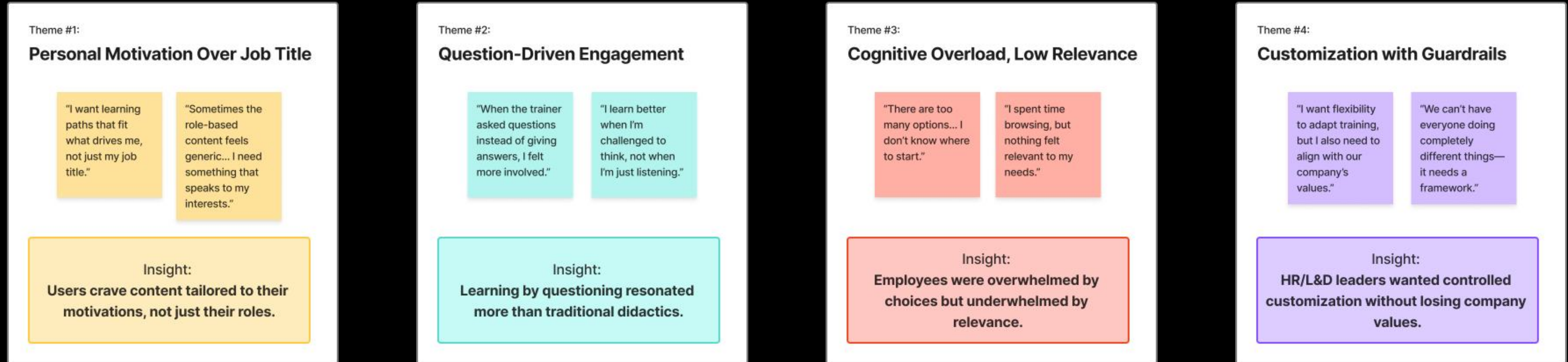
- Standardized paths that ignore her personal needs
- Cluttered interfaces and overwhelming course libraries
- Lack of immediate feedback or visible progress

PAINS

- "I don't have time for useless training."
- "I just want to learn something that actually helps me grow."
- "This is interesting, but way too long."

Understanding Learning Beyond Content

KEY BEHAVIORAL INSIGHTS FROM RESEARCH



- **Users crave content tailored to their motivations**, not just roles
- **Maieutic learning (learning by questioning)** resonated more than traditional didactics
- Employees were **overwhelmed by choices**, but **underwhelmed by relevance**
- HR leaders wanted **controlled customization without losing company values**

Crafting the Learning DNA

DESIGN CHALLENGE (POV)

“How might we design a learning experience that adapts to each user’s preferences and pace, while staying deeply aligned with a company’s identity?”

From there, we distilled four **design principles** that would guide every decision moving forward:

- **Personalization at scale using AI — but with editorial soul.**
- **Multimodal content delivery (text, audio, video, map) based on user preference.**
- **Reflect company culture — not generic internet knowledge.**
- **Frictionless UX with progressive onboarding and goal-driven navigation.**

Design Thinking Phase

Ideate

Designing Around Curiosity

I hosted design sprints with AI trainers, developers and user researchers to explore:

- Onboarding experiences that “learn the learner”
- Dynamic daily goals & progress indicators
- Conversational AI prompting
- Discovery feed powered by user’s “knowledge gaps”

Key concepts that emerged:

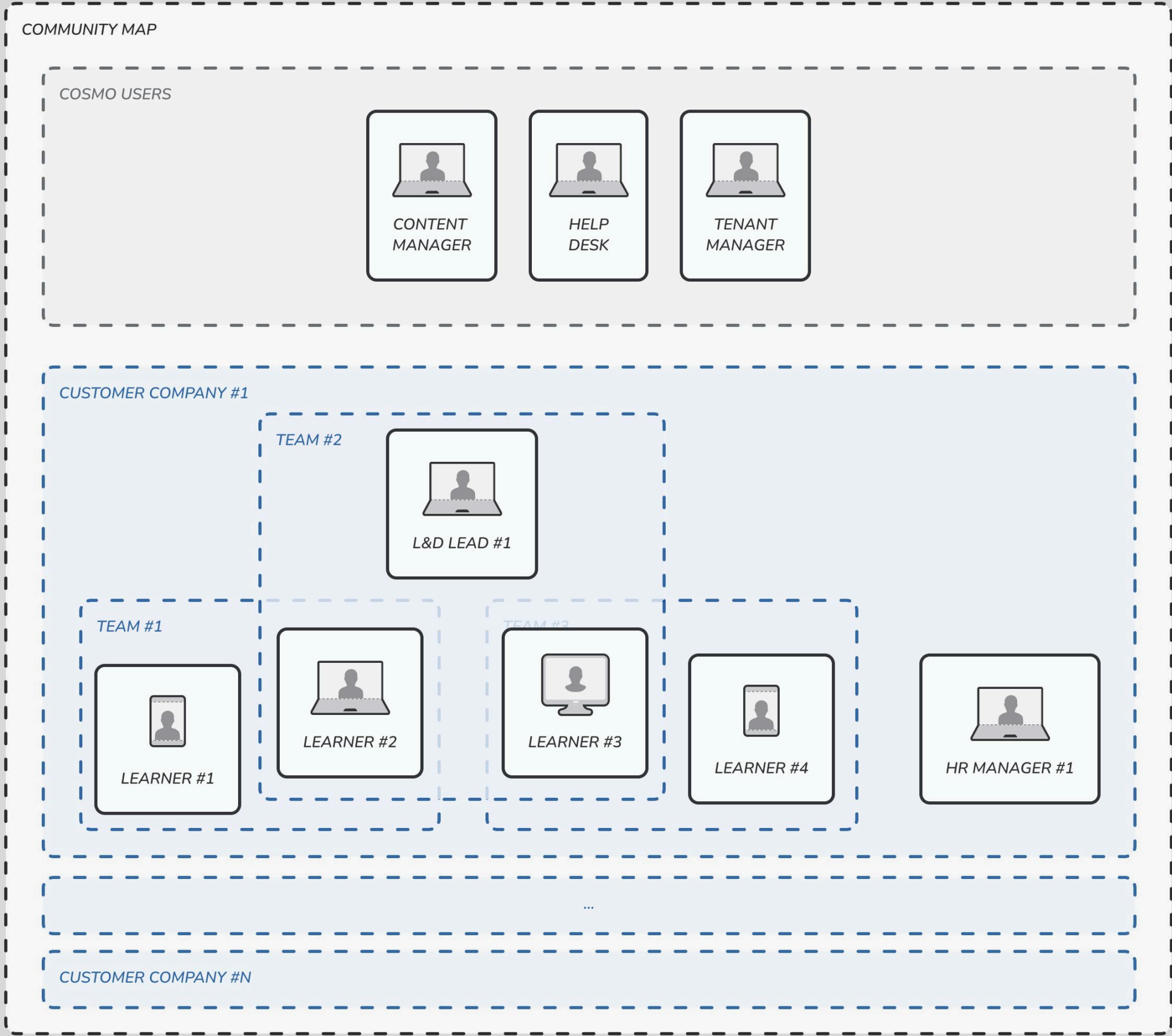
- **Gamified learning progress:** making advancement visible and rewarding to sustain motivation.
- **Maieutic prompts:** thought-provoking questions that stimulate self-reflection and deeper understanding
- **Personalized daily learning loops:** small, adaptive learning cycles tailored to each user’s goals and pace
- **A proactive learning companion:** shifting from a static dashboard to an AI that actively guides, suggests, and engages

Designing Around Curiosity

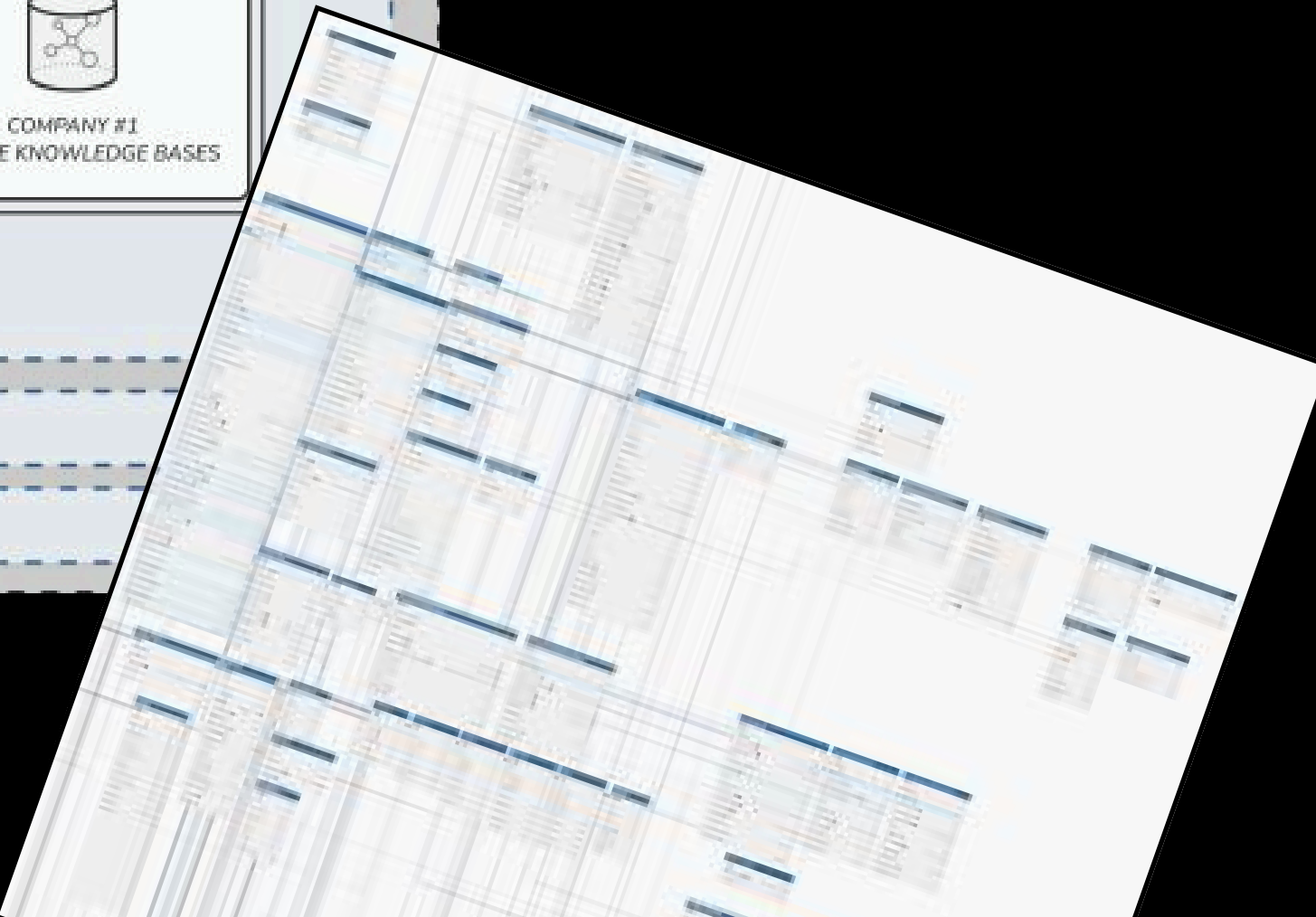
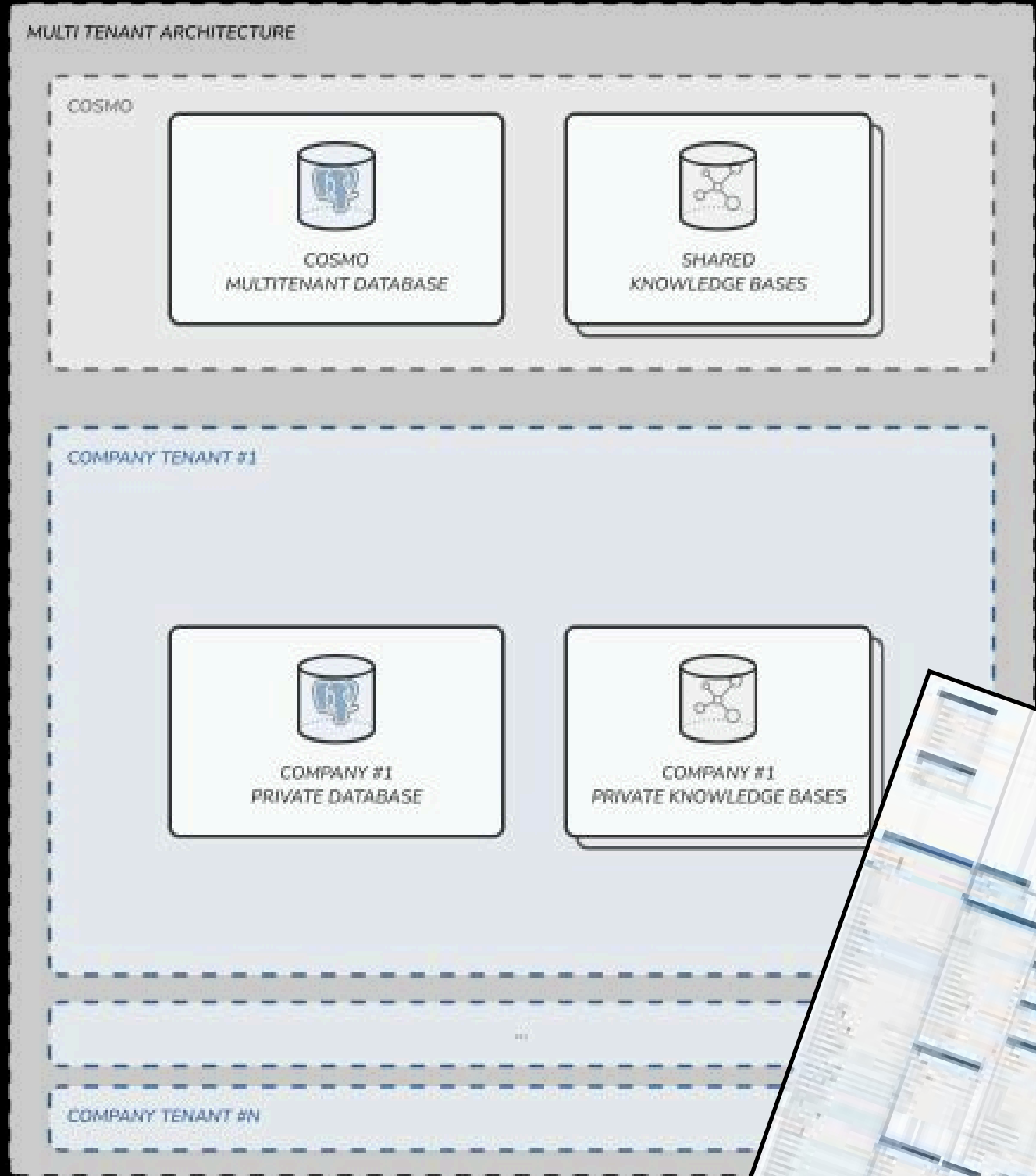
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IDEATE

COMMUNITY MAP



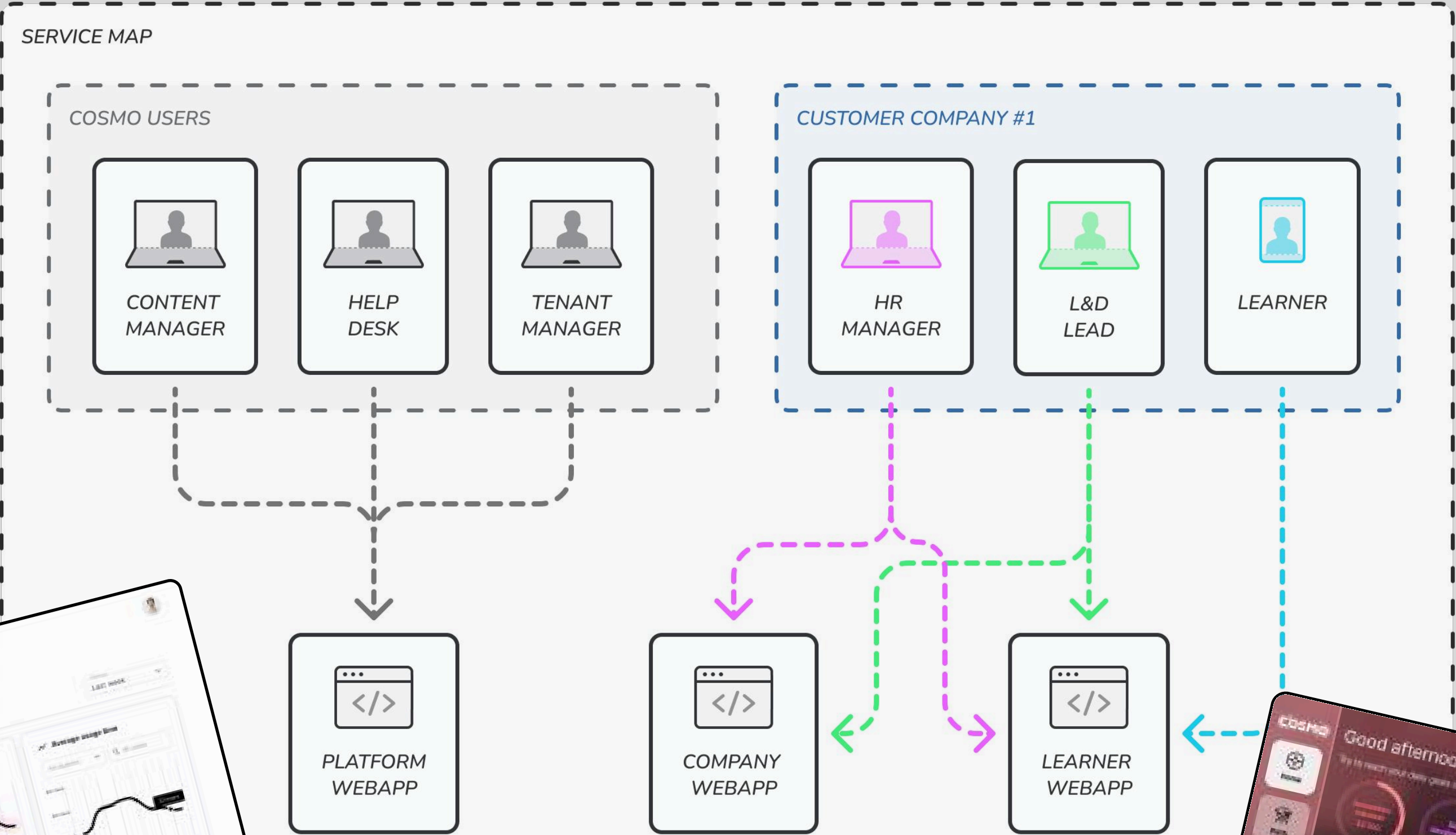
INFORMATION ARCHITECTURE



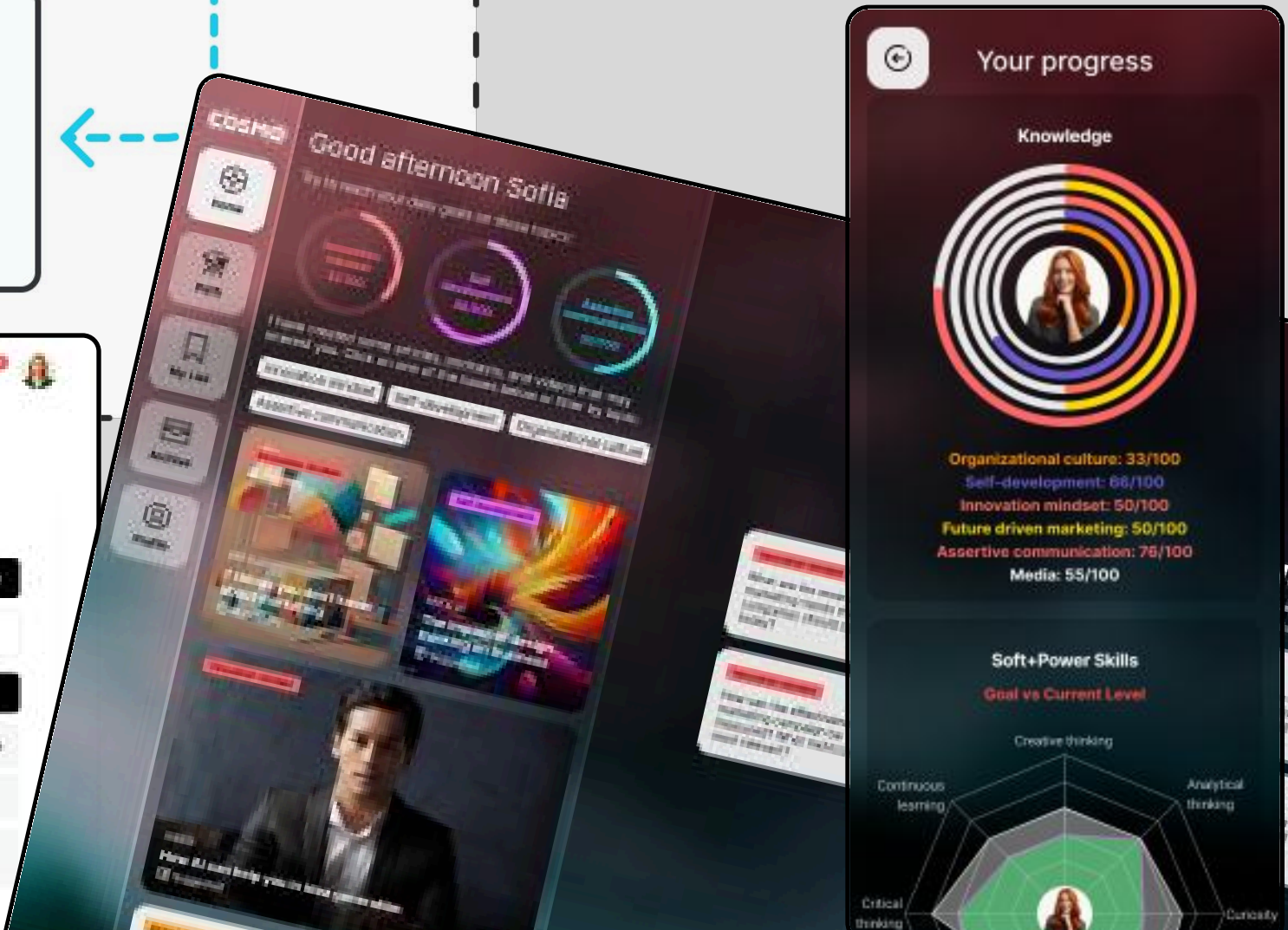
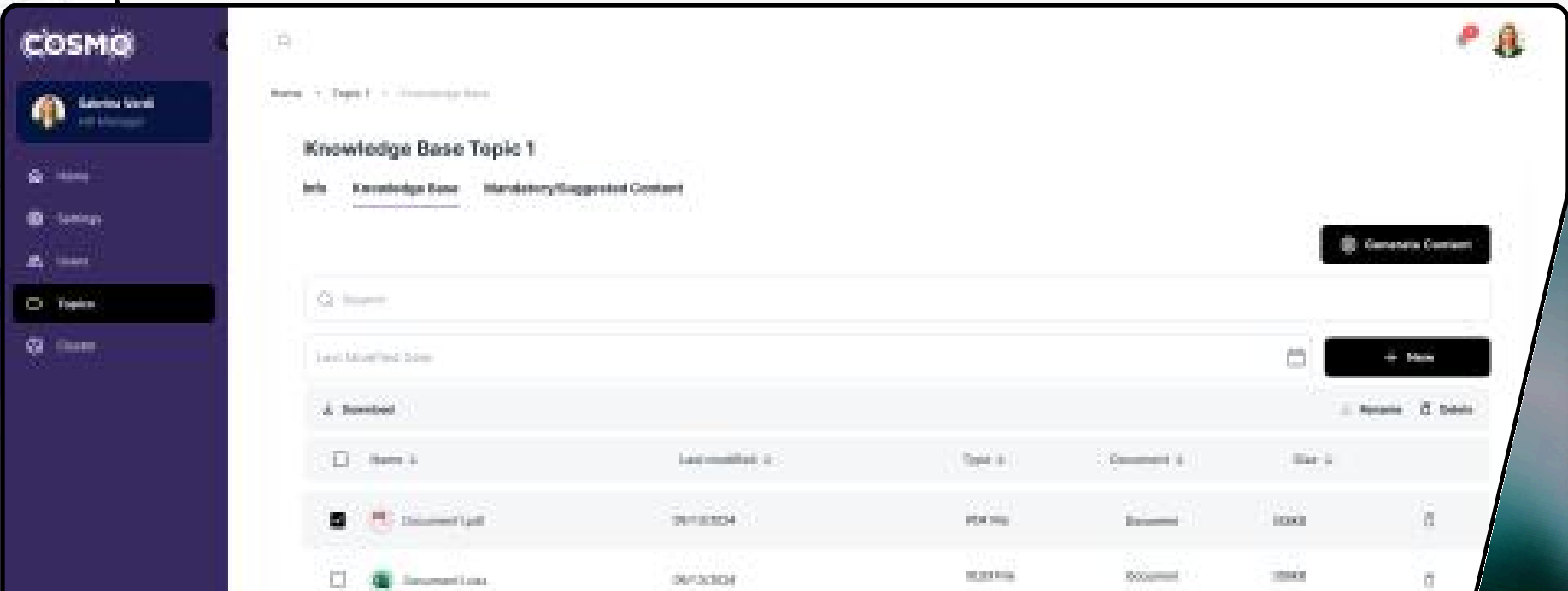
Designing Around Curiosity

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SERVICE MAP



IDEATE



EMPATHIZE

DEFINE

IDEATE

PROTOTYPE

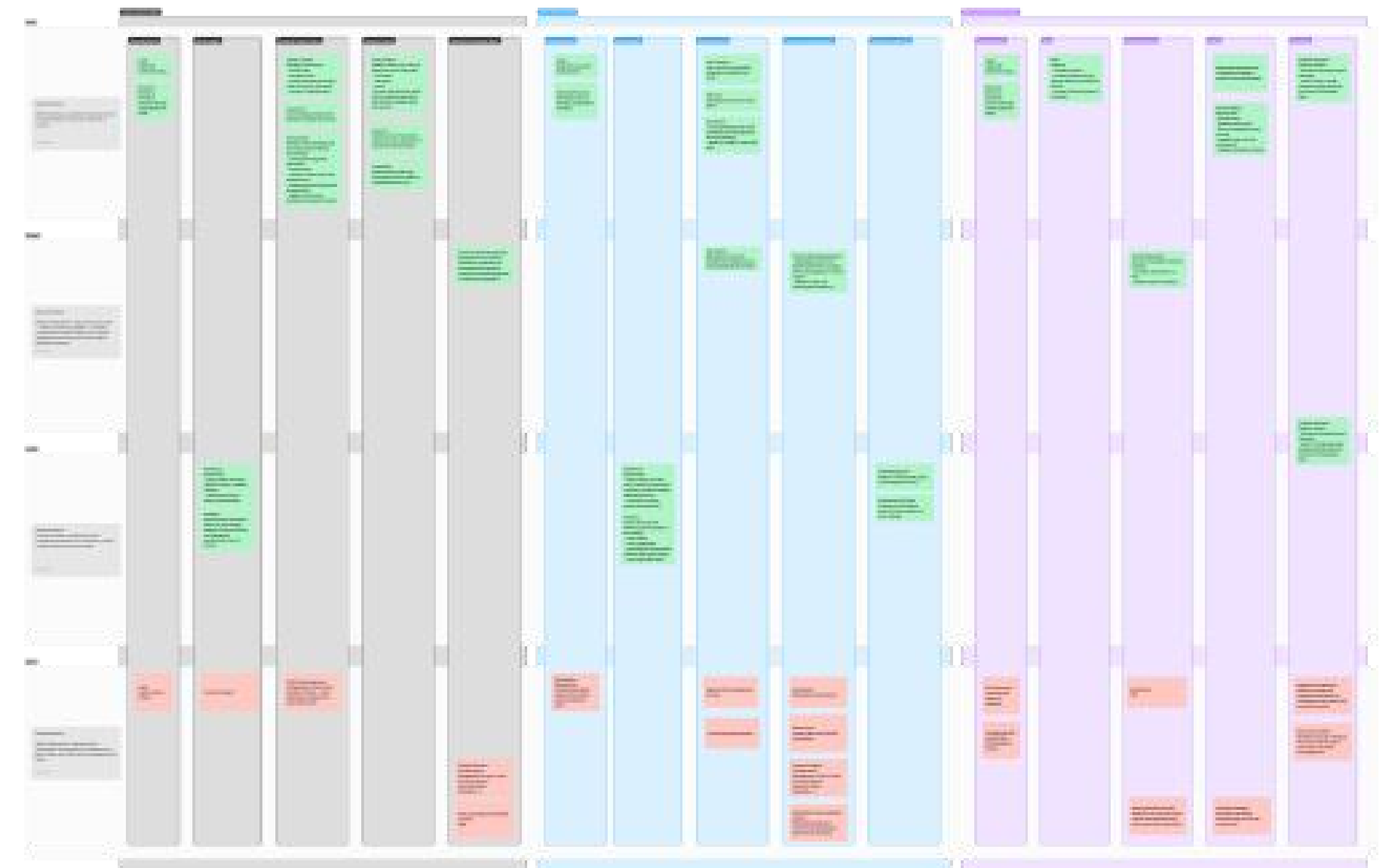
TEST

Crafting Tangible Learning Moments

Before moving into detailed prototyping, I **defined and validated the MVP boundaries** through co-design workshops and a prioritization framework.

I applied the **MoSCoW (Must, Should, Could, Wont) method** to organize all features by user type (Learner, L&D/HR manager, KB Curator) and implementation priority.

The initial goal was to **identify and prioritize core features** that deliver user value, support AI capabilities and **align with business and technical feasibility**.



<https://www.figma.com/board/yEIM4F2EQ0Mv8co5ukNC3D/Cosmo---Features-mapping-for-user-stories?node-id=40000004-114&t=7ADK6gaeumfrnuNk-1>

Design Thinking Phase

Prototype

System Architecture: Where AI Meets Identity

I worked with developers and data scientists to shape a 3-layer AI architecture:

- **User Knowledge Graph Engine** (tracking gaps and preferences)
- **Company Knowledge Base Index** (custom-trained GPT retrieval augmented generation)
- **Generative Output Layer** (multimodal responses: articles, concept maps, audio, video, follow up questions, quizzes, assignments, etc.)

Privacy & ethics were core:

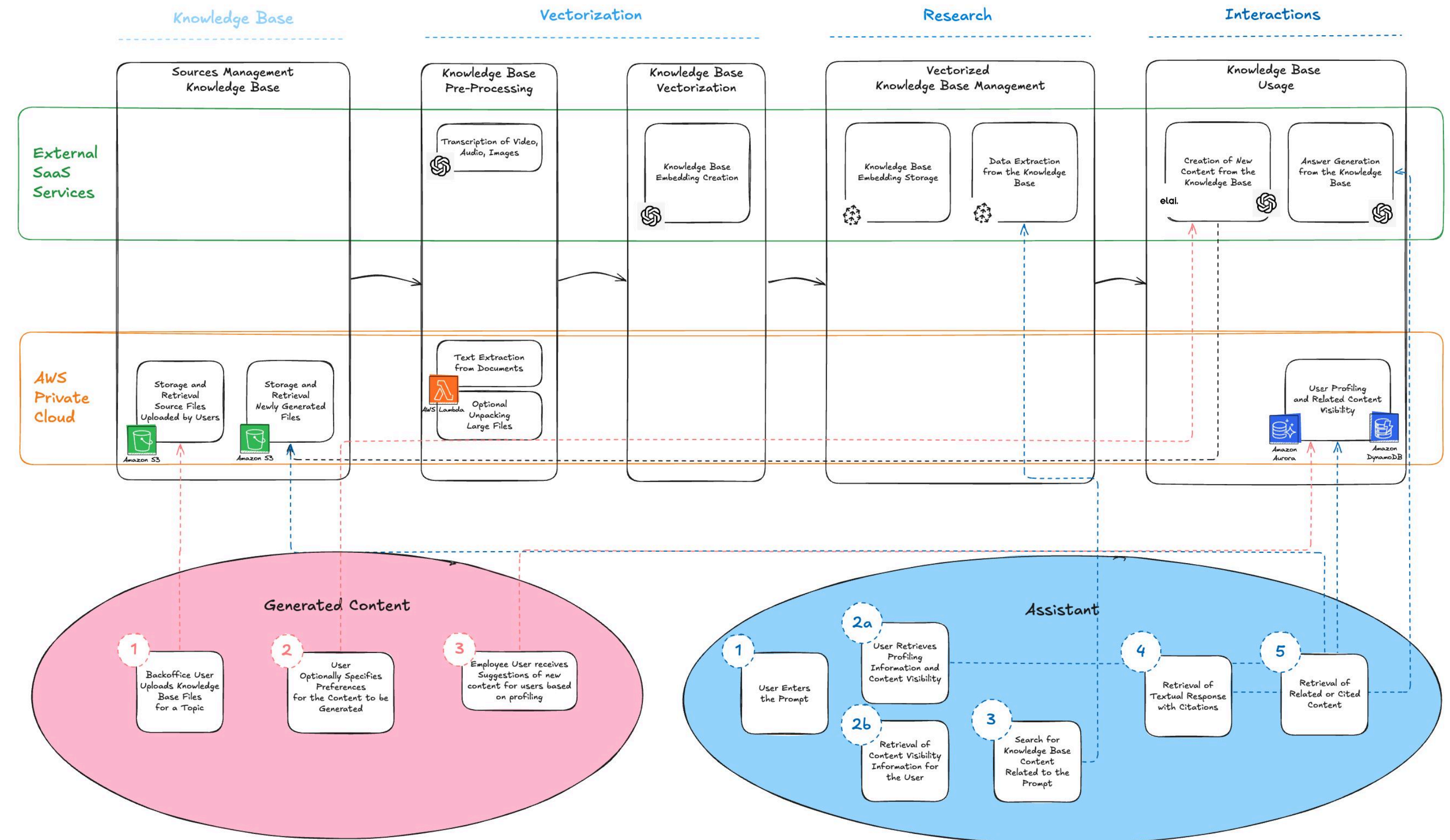
- **AI model grounded in verified, internal learning assets**
- **Role-based access to sensitive analytics**
- **No third-party access to identifiable personal data**

System Architecture: AI UX and AI Pipeline

To deliver a truly adaptive and personalized learning experience, I designed a modular **AI pipeline** that **blends UX needs with technical architecture**.

This diagram captures the **end-to-end flow of knowledge ingestion, vectorization and user interaction**.

User data was carefully handled to ensure that **personal content was processed securely within a private cloud environment**.



System Architecture: Designing AI Agents

AI Agent “Croco”: Content Creator

Role: Generates multimedia learning materials

Scope:

- **Input:** Knowledge base (courses,books,video lessons,quiz and responses,...)
- **Output:** Learning material (videos, articles, podcasts, maps)

AI Agent “Plasma”: Smart Planner

Role: Builds development plans and defines learning objectives

Scope:

- **Input:** Learning material, Onboarding data, Synthetic profile, L&D/HR objectives
- **Output:** Learning path (combination of learning objects)

AI Agent “Mint”: AI Mentor

Role: Dialogues, guides, explains

Scope:

- **Input:** User Conversation, Learning Path, Synthetic profile
- **Output:** Answers to content-related questions

AI Agent “Eva”: Evaluator

Role: Corrects and provides feedback

Scope:

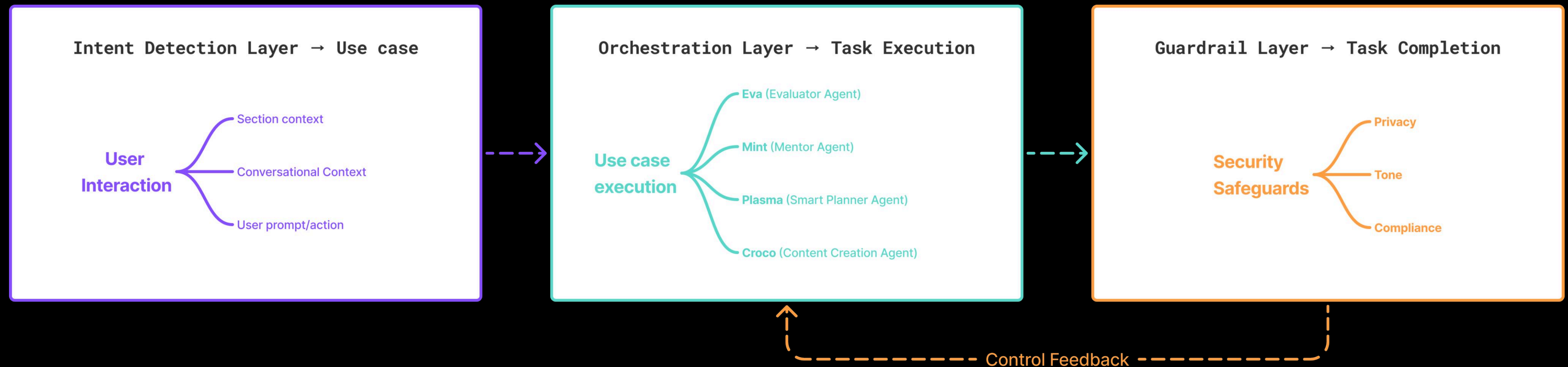
- **Input:** Answers to quizzes and open-ended assignments
- **Output:** Feedback and corrections, Quiz and Assignment grading

System Architecture: AI Agents Orchestration

We implemented an orchestration layer to **coordinate the different AI agents**.

Archie, the orchestrator, maintains state and context for the user, **manages the workflow** between agents and **applies guardrails** for privacy, tone and compliance.

This modular orchestration allowed us to improve individual agents without breaking the overall system, while keeping the user experience consistent, coherent and trustworthy.



System Architecture: Business Sustainability

I made a detailed **cost breakdown across the end-to-end AI pipeline**, from data ingestion and vectorization to content generation and assistant interaction. Each step includes **estimated usage volumes, pricing parameters** (e.g., tokens, minutes, storage) and associated third-party services (OpenAI, AWS, Pinecone).



Crafting Tangible Learning Moments

LOW FIDELITY PROTOTYPING

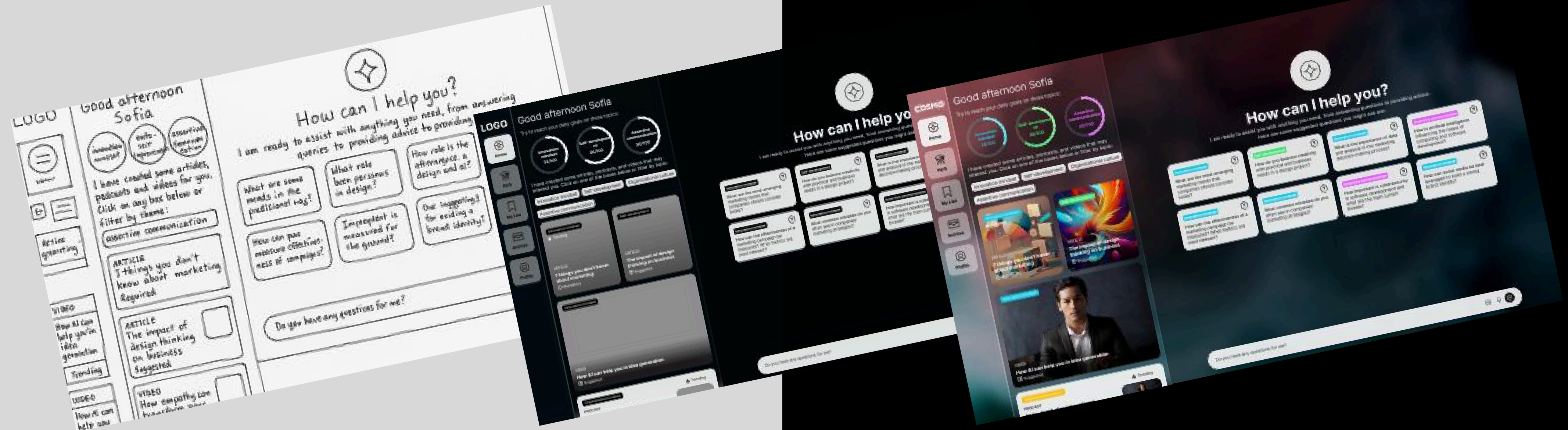
Starting with **sketches and wireframes** exploring:

- User onboarding and profiling
- Home layout with knowledge exploration
- Conversation AI interactions
- Personal learning goals

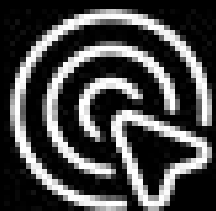
HIGH FIDELITY PROTOTYPING

Interactive Figma prototypes featuring:

- Onboarding Wizard
- Learning Dashboard with suggested content
- AI Tutor, for real-time content queries
- Personal dashboard and gamifications







Design Thinking Phase

Test

Deliver & Iterate: Getting new feedback

BETA TESTING

GETTING OUT OF THE BUILDING

To validate the platform in a real-world setting, we **launched the beta version** at the We Make Future innovation fair. The event gave us the opportunity to **observe spontaneous user interactions and gather early insights**.



GETTING TO KNOW NEW USERS AND CUSTOMERS

Visitors explored the product in an interactive, hands-on setting. We even made it fun to **leave a feedback** at the fair booth (and getting stickers!) by placing some **sticker-based feedback totems**.



Deliver & Iterate: What Worked

WELLPERFORMING METRICS (AI-BASED vs STATIC LEARNING)

- **32% increase in average daily learning interactions**
- **47% improvement in content completion vs legacy style LMS**
- **Average time to answer training user queries dropped by 65%**
- **86% positive feedback on tone/style of AI-generated content**

LESSONS LEARNED

- **A conversational UI works better than a conventional LMS navigation in driving engagement**
- **Users trust content more when sounds like their organization and fits the company culture**
- **Lightweight personalization (progress rings, tone selection, content type filter, ...) help users feel seen, supported and in control, which improves satisfaction and stickiness**

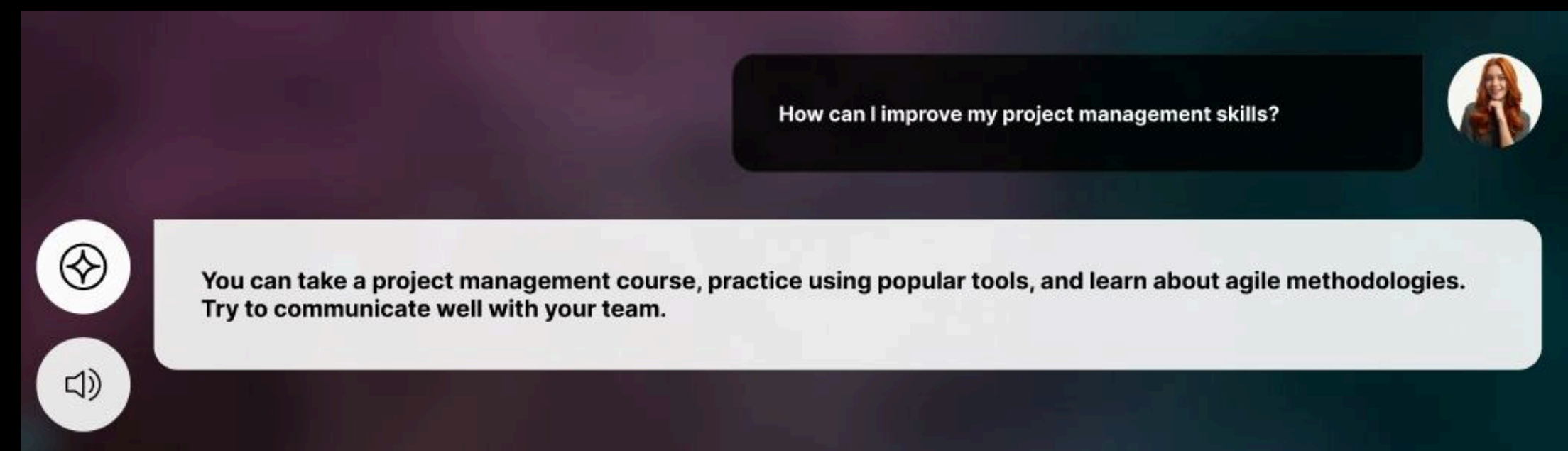
Deliver & Iterate: What Didn't Work

UNDERPERFORMING METRIC: AI MENTOR ANSWERS

Early AI answers scored 3.6/5 average in perceived usefulness

*The feedback we collected indicated that, while the answers were correct, they often felt **too generic**.*

*Users expected a **domain-specific tone**, with vocabulary and **examples that reflected their company's own way of working**.*

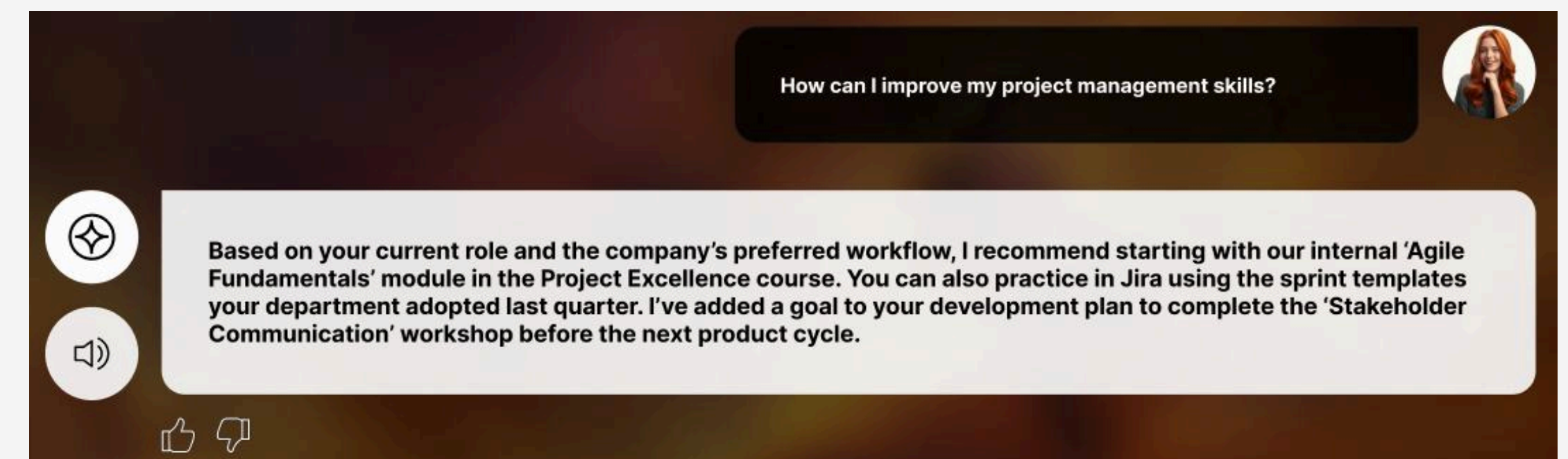


FROM GENERIC TO CONTEXT-AWARE

*Improved prompt engineering by injecting **richer company context into the AI queries**.*

*Implemented a **feedback tagging system** for **flagging useful, partially useful or irrelevant answers**, creating a loop to continuously fine-tune the knowledge base.*

*→ **After two tuning cycles, we saw a clear improvement: average content ratings rose to 4.3 out of 5**, and qualitative feedback confirmed that responses felt more relevant to the specific learning context.*

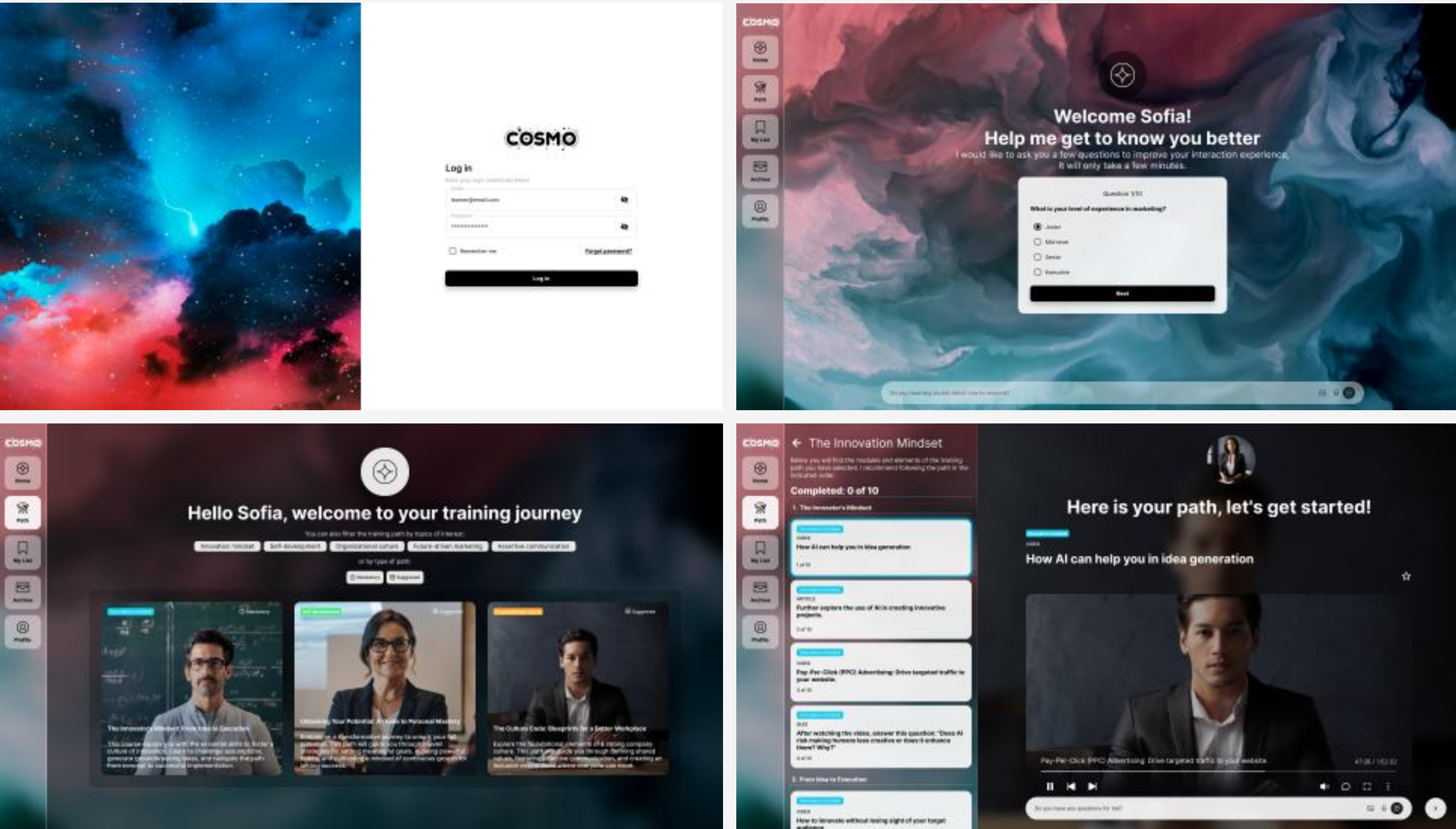


Deliver & Iterate: What Didn't Work

UNDERPERFORMING METRIC: ONBOARDING

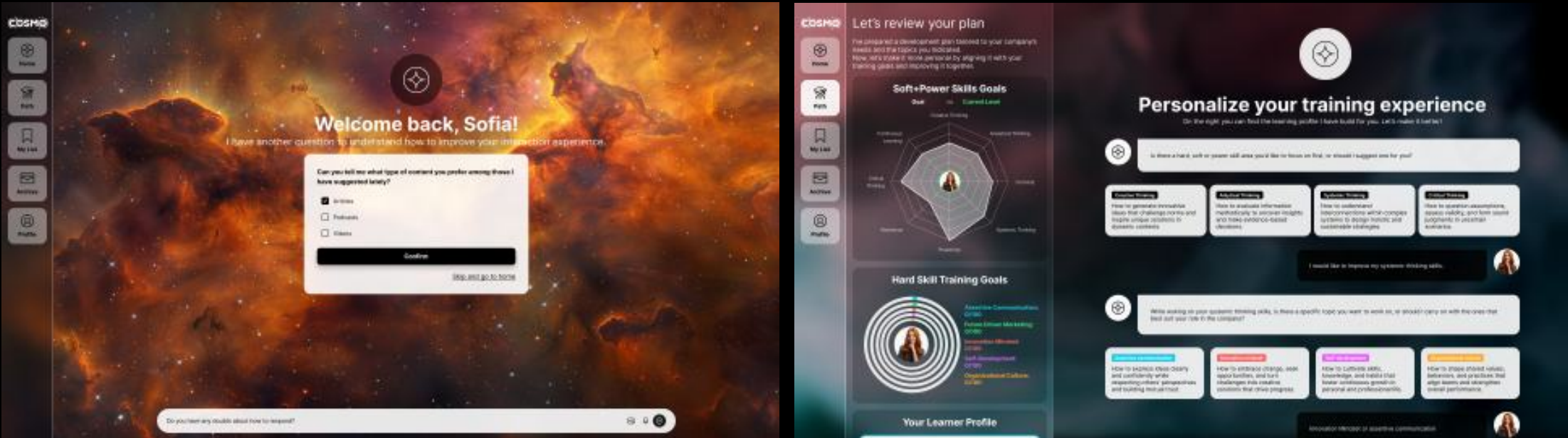
22% of users abandoned the onboarding before completing their learning profile

Too many upfront questions (10) and unclear immediate value



ONBOARDING REDESIGN

- Reduced the onboarding question to 3 + Skip
- Added 1 welcome back question once a week after login
- Switched to a conversational development plan agent with real time updated goals



→ 56% reduction in drop-offs + improved early engagement significantly

Final Thoughts

The real success of this new digital service lies in creating an **emotionally intelligent learning environment**, not just a content delivery platform.

By integrating design thinking with AI system design, we were able to build a **product that thinks, adapts and grows with its users**. A tool that **feels both smart and familiar**, aligns with organizational culture and **delivers meaningful, lasting knowledge**.

This project reinforced my belief that:

- **Great design is not just about usability, it's about trust, curiosity and connection**
- **Personalization doesn't need to be complex to be powerful**
- **Cross-functional collaboration is key when designing with emerging technologies like generative AI**

As we continue to evolve digital learning platforms, I'm excited to **apply these insights to future-facing, human-centered products** that think beyond the screen and **empower people to grow with purpose**.

Thanks!