GRAG

BUSINESSPLAN

GRAPH RETRIEVAL AUGMENTED GENERATION

The name GRAG originated from the acronym for Graph Retrieval Augmented Generation, which is becoming increasingly popular. Retrieval Augmented Generation describes the process of providing a Large Language Model with suitable context for answering a query. With GRAG, we extend this process with concepts & ontologies, which we prepare in a knowledge graph and transform information into knowledge.

Foreword

Imagine standing in front of a mountain of documents, product catalogs, technical documentations, and printed emails. How do you extract valuable insights from them? This question initiated our research project nearly two years ago. At that time, large language models already appeared to be a highly promising solution.

So, we researched what was already possible and what might work. We applied for a research fund named Distr@l and were ready to launch in December 2022. However, at the end of November, the release of ChatGPT shook the entire digital world. Suddenly, everything seemed achievable, and the previously massive barriers of what's possible appeared to dissolve overnight into a landscape of limitless opportunities.

However, as the initial euphoria subsided, it became clear that very real limitations still existed, such as hallucinations. While the world continued to engage with ChatGPT, we delved deeper into the technology behind it. We realized that the true power lies not only in the model itself but in how it is fed with context. In the months that followed, this field exploded. Open-source models like Llama and Mistral entered the market, and vector databases became the hot topic. The technology was democratized. Riding the wave of momentum and excitement generated by this movement, we seized the opportunity to advance our vision.

Today, we automate the structuring of organizational knowledge into knowledge graphs and mirror unstructured text data in a vector database. The result? An incredibly powerful symbiosis. A system that doesn't just blindly search for keywords but understands concepts, relationships between objects, and their associated information. It retrieves product information as precisely as it does medical expertise or technical documentation. It abstracts search queries, connects information, and generates truly relevant answers. But we don't stop at the application layer—we go even further.

In collaboration with hessian.AI, we released four German open-source models in January. These models are specifically designed to generate conclusions only within relevant context. With 3 million synthetically enriched datasets, we are laying the foundation for an open technological revolution—made in Hessen, made in Germany. Within GRAG, we combine these models with synthetic data enrichment and the resulting structured knowledge to create the universal system for handling complex queries.

To bring this vision to life even faster, we need your support. With your investment this year, we won't just build a company—we will shape entire industries.

The future of AI is already at our doorstep. Let's take the next step together—with GRAG, with you, for a better and more exciting AI future in Germany.

Thank you.

Marcel Rosiak

Executive Summary

GRAG is an innovative technology company specializing in the development of advanced conversational AI solutions. Our unique business model merges cutting-edge advancements in artificial intelligence with tailored industry requirements. We deliver customized AI-driven platforms built on the synergistic integration of knowledge graphs and vector databases. This foundation enables us to create precise and contextually relevant large language model (LLM) solutions for a wide range of industries.

Product/Service:

Our core product is a state-of-the-art conversational AI platform based on open-source LLMs. This platform allows our customers to adapt the LLMs to their specific needs and requirements through targeted fine-tuning. Our solutions are designed to enhance the efficiency of customer communication, create personalized user experiences, and conduct complex data analyses. Particular emphasis is placed on the multilingual capabilities of our platforms and compliance with strict data protection regulations, such as GDPR, to ensure maximum security and compliance for our customers.

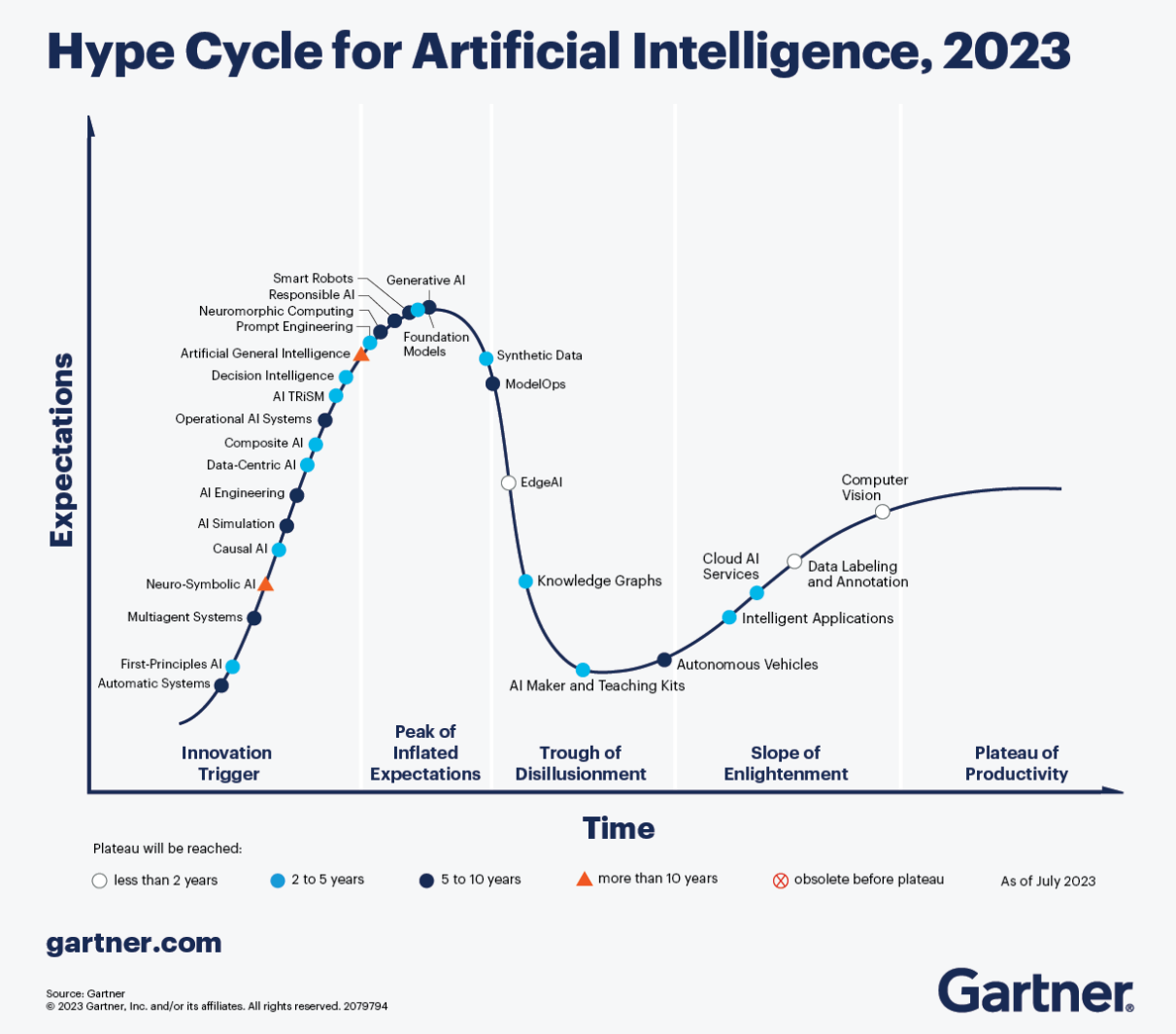
Market:

GRAG serves a broad market, ranging from technology and IT companies to financial service providers, healthcare, retail, e-commerce, and the education sector. Our offering caters to a diverse customer base, including large enterprises requiring robust and scalable solutions, medium-sized businesses seeking cost-efficient and personalized AI solutions, as well as start-ups and innovators who prefer agile and adaptable technologies.

Business Development:

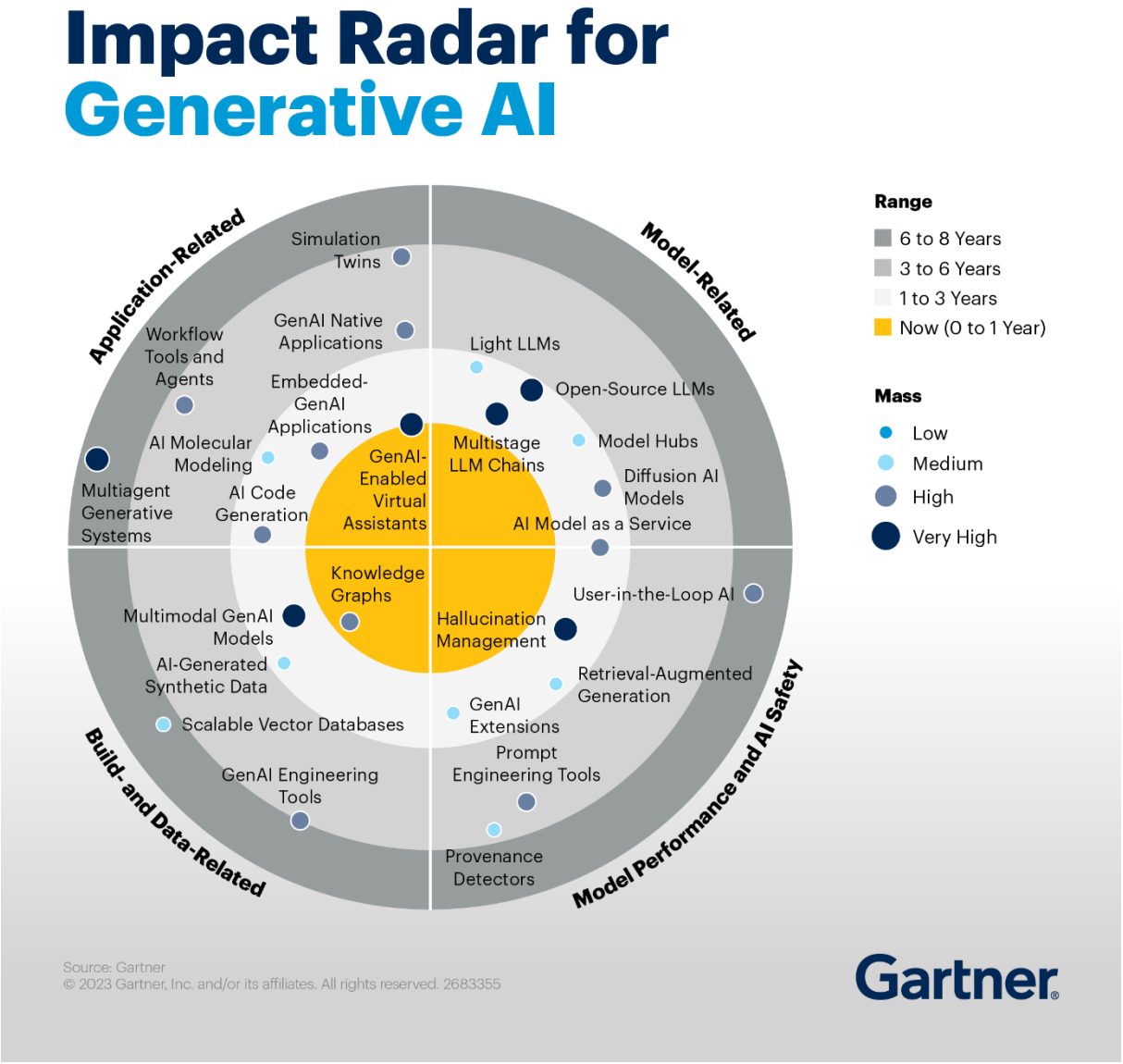
Our development plan focuses on continuously enhancing our product and adapting to the dynamic demands of the market. This includes expanding our language processing capabilities, introducing advanced personalized customization options based on individual user behavior and specific customer requirements, and consistently updating our security and privacy measures to comply with the latest legal regulations. As a pioneer in AI technology, GRAG is firmly committed to establishing a leading position in the market through continuous innovation, high-quality products, and exceptional customer service. Our vision is to drive progress and redefine industry standards with our solutions.

GRAG im Gartner Hype-Cycle



Looking at the 2023 Gartner Hype Cycle, several challenges addressed by GRAG are evident, all of which we tackle with our system. We leverage these technologies synergistically, such as using constructed knowledge graphs as foundational data to generate additional synthetic datasets for model training. These models can also be deployed as edge AI, eliminating the need for expensive GPU servers. Instead, they run directly on the user's device via web GPU integration through their browser.

GRAG in the view of the Gartner Impact Radar for Generative AI



Examining the core area of the Impact Radar highlights the significant relevance that knowledge graphs will have in the near term within the field of generative AI. The retrieval process using knowledge graphs also reduces potential hallucinations, as results are pre-filtered based on concepts. With the structured data in the knowledge graph, we generate synthetic training data for query processing within the graph, utilized by our virtual assistants. This also supports the handling and presentation of information tailored to specific domain use cases.

Our systems operate with lightweight, small-scale open-source LLMs and can be seamlessly embedded into any web application, enabling executable actions directly within those applications.

Business Concept

Vision and Mission:

GRAG was born from the vision of revolutionizing how companies communicate with their customers through the use of advanced AI technologies. Our mission is to be a leader in providing customized, intelligent & efficient communication solutions that help businesses strengthen and deepen their customer relationships.

Innovative Technology Integration:

At the core of GRAG lies the innovative integration of knowledge graphs and vector databases with large language models (LLMs). This combination enables advanced comprehension and accuracy in natural language processing, far surpassing traditional chatbots. Our platform can interpret complex queries and generate contextually relevant, precise responses, unlocking a new level of customer interaction.

Customization & Flexibility:

A key element of our offering is the adaptability of our platform. By fine-tuning open-source LLMs to meet the specific requirements of our customers, we deliver solutions precisely tailored to the needs of various industries and languages. This flexibility makes our platform particularly appealing to a wide range of businesses, from start-ups to multinational corporations.

Data Privacy & Compliance:

In light of stringent data protection regulations in Europe, particularly the GDPR, we have developed our platform with a strong focus on privacy and compliance. We ensure that all data processing operations adhere to the highest security standards and respect user privacy. This provides a significant competitive advantage by enhancing customer trust and supporting them in meeting legal requirements.

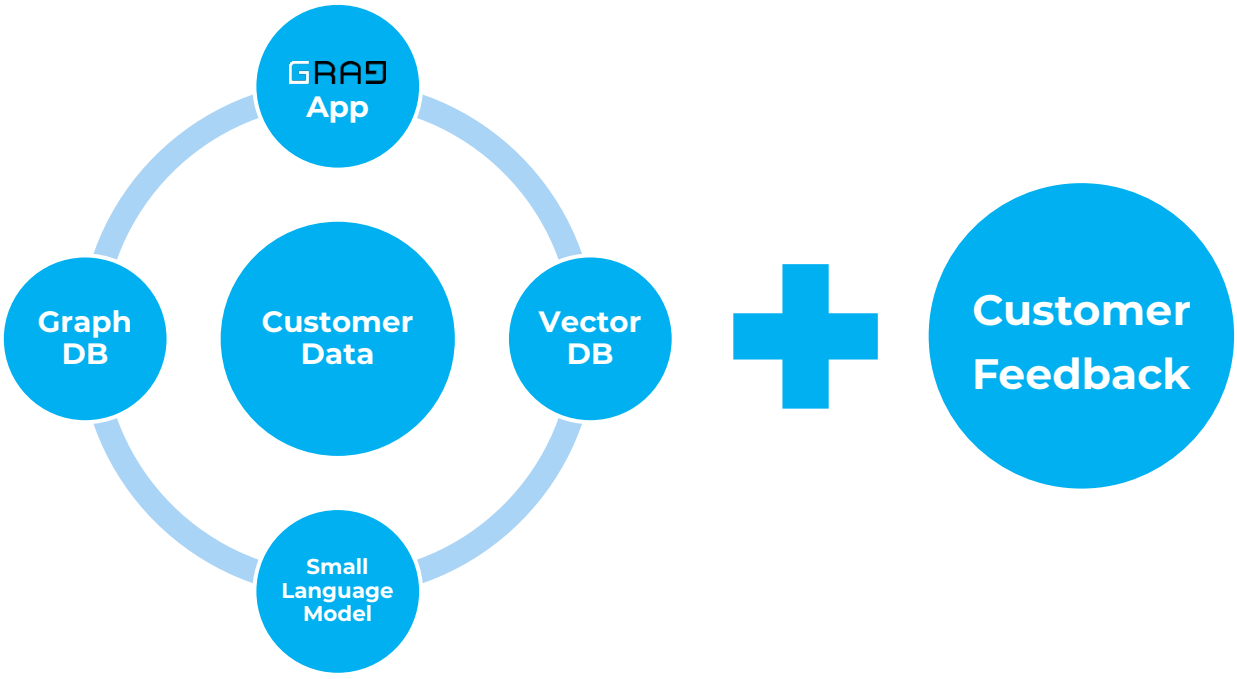
Industry-Specific Solutions:

GRAG understands the unique challenges and requirements of various industries. Our platform is designed to deliver industry-specific solutions, whether in finance, healthcare, retail, or education. This ability to provide tailored solutions positions GRAG as the preferred partner for companies seeking effective and specialized AI-driven communication solutions.

Customer-Centric Development:

Our development strategy is strongly customer-focused. We work closely with our clients to gather feedback and continuously enhance our products. This close collaboration allows us to proactively respond to market trends and ensure our technology remains at the forefront of innovation.

Overall, GRAG's business concept offers a unique combination of technological innovation, customer focus, and strict adherence to data protection standards. Together, these factors create a clear competitive advantage and position GRAG as a leading provider in the world of conversational AI.



Business Idea

Our Offering: A Comprehensive Solution

GRAG provides an advanced conversational AI platform designed to transform communication between businesses and their customers through intelligent technology. This platform is built on a synergistic integration of open-source large language models (LLMs), knowledge graphs, and vector databases.

Reasons for Open-Source Language Models:

Customizable Small Language Models (SLMs):

Individual Finetuning: Customers can tailor SLMs specifically to their use cases and target audiences. This enables more precise and relevant communication across various languages and dialects.

Versatile Applications: These customized SLMs can be deployed across a wide range of domains, including customer service, marketing, internal communication, and more.

Sustainability & Security in Focus

Every day, we are dedicated to the sustainable and secure use of these technologies. Our solutions contribute to greater climate justice, secure data management, and the strengthening of digital sovereignty. The specific impacts of these efforts are detailed below.

CO2-Emissions & Resource Consumption

Large models like OpenAI's GPT or Google's PaLM-2 consume enormous amounts of energy and water for training and operation. Resource demands increase with model size. In most cases, internal processes do not justify the use of such extensive models.

Hardware Requirements

The training and operation of large language models require extensive and costly hardware resources. These resources must either be maintained locally or sourced through cloud services.

Data Sovereignty

Choosing models from major U.S. corporations like OpenAI and Google often entails uncertainty regarding data handling, as data is typically processed and stored in the data centers of predominantly U.S.-based providers.

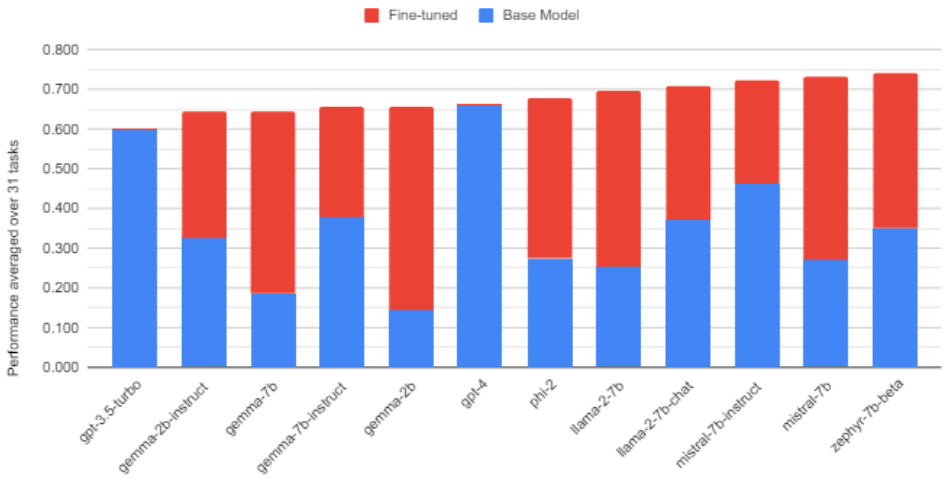


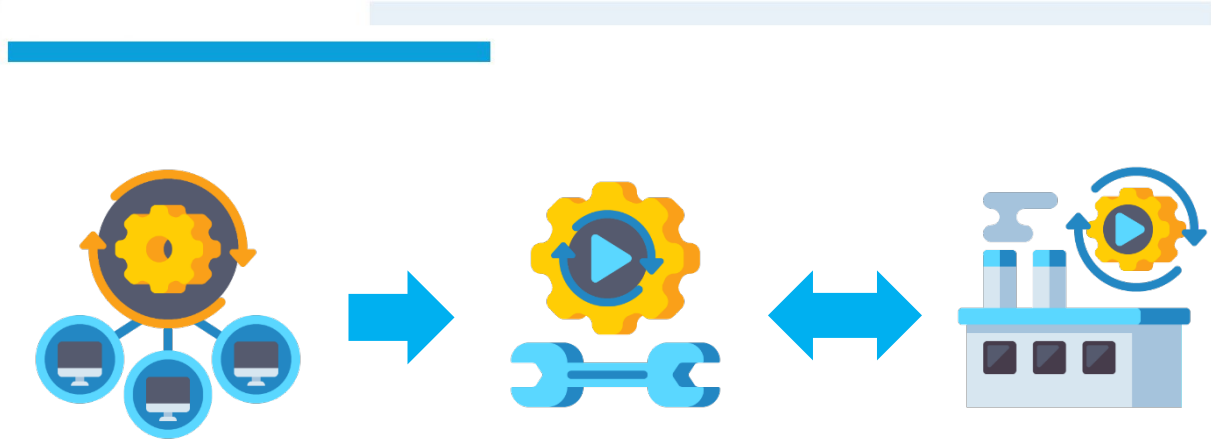
Figure 1: Average model performance for GPT-3.5, GPT-4, and 310 LLMs, before and after fine-tuning with LoRA, across 31 different tasks and 10 different base models. Zephyr-7b and Mistral-7b models exhibit the best performance after LoRA-based fine-tuning.

LoRA-Land: 310 Fine-tuned LLM's that Rival GPT-4 | https://arxiv.org/pdf/2405.00732

A study by Predibase, a pioneer in optimized deployments of multiple fine-tuned models, reveals that small, efficient models with 2–7 billion parameters can outperform current state-of-the-art models from OpenAI across 31 different tasks when fine-tuned.

GRAG: Scalable & secure Language Model Solutions

GRAG provides scalable solutions for enterprise deployment of language models, minimizing CO2 emissions, reducing hardware requirements, and ensuring full data sovereignty and GDPR compliance. GRAG develops proprietary models that are up to 600 times smaller than GPT-4 while delivering comparable high-quality results, depending on the use case. Our models are highly versatile and can be used free of charge and locally under an open-source license.



Integration of Knowledge Graphen:

Enhanced Contextualization:

The use of knowledge graphs enables the platform to better understand the context of queries, thereby delivering more accurate & relevant responses.

Improved Data Connectivity:

This technology helps identify and leverage relationships between various datasets, significantly enhancing the quality of user interactions.

Utilization of Vector Database:

Efficient Data Processing:

The vector database enables the efficient analysis and processing of large volumes of unstructured data.

Advanced Search Capabilities:

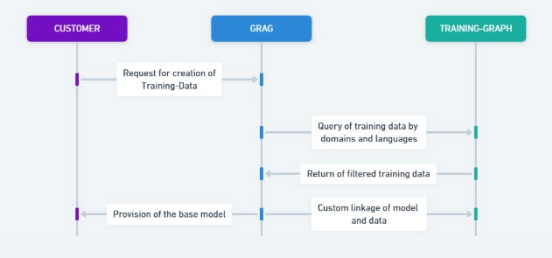
It enhances the platform's ability to quickly locate and respond to specific information.

Training Database for Domain-Specific and Multilingual Content:

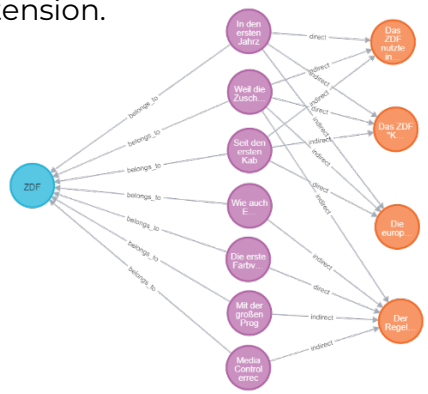
Enhanced Data Connectivity:

The use of graphs with semantic search allows for the targeted generation of training data in six different languages and specified domains at the push of a button. This extracted data can also be stored within the graph, providing full traceability of the data used to train the base model.

This enables us to identify and leverage relationships between different datasets, significantly improving the quality of overall user interactions. These contents are freely available under the CC BY-SA 4.0 DEED license and may be used commercially without approval after extension.



Sequence for query of Trainingdata



Trainings-Graph Structure

Unique Selling Points & Advantages:

High-Level Personalization:

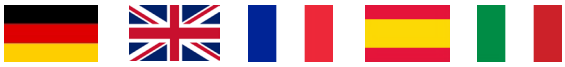
Our technology enables businesses to tailor their communication with customers, creating a unique and personalized customer experience.

Scalability for Any Business Growth:

Whether a start-up or a large corporation, our platform scales seamlessly to meet the evolving needs of the business.

Multilingual Communication:

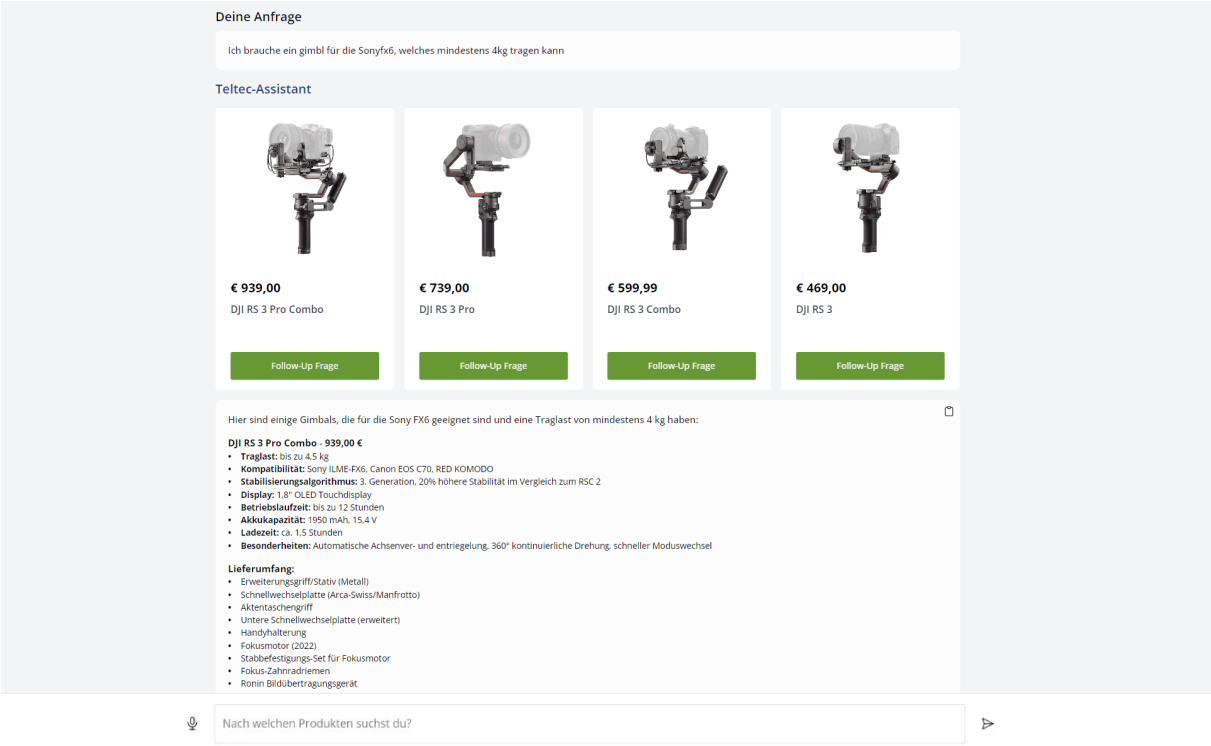
The platform supports multiple languages, making it ideal for global businesses.



Strict Adherence to Data Protection Standards:

GRAG places great emphasis on data privacy and compliance to ensure the security of customer data at all times.

These unique features position GRAG as one of the most advanced solutions in the conversational AI market. We provide not only cutting-edge technology but also a strategic advantage for businesses aiming to thrive in an increasingly digital and data-driven world.



Prototype oft he Chat-Interface for GRAG

Core Capabilities

Retrieval Augmented Generation (RAG) Systems

Retrieval Augmented Generation (RAG) represents an advanced approach in developing AI-driven communication systems. RAG systems combine the retrieval of information from a data source with the generation of responses through an AI model. At their core, these systems utilize relevant, existing information to generate accurate and context-aware responses.

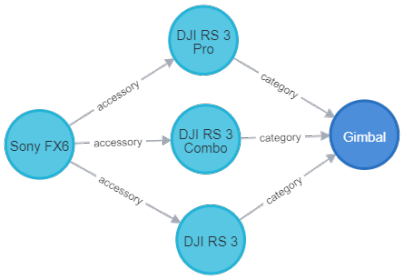
Integration of Knowledge Graphs & Vector Databases:

The Integration of Knowledge Graphs and Vector Databases in a RAG- System offers significant advantages:

Enhanced Fact-Based Responses:

Knowledge graphs enable the system to capture complex relationships and contexts between different data points. This is especially useful for providing accurate and fact-based information.

Vector databases enhance the efficiency of identifying and retrieving relevant information from large datasets.



"I need a Gimbal for the Sony FX6"

Reduction of Hallucinations:

Unlike purely generative AI models, which can sometimes "hallucinate" or produce irrelevant information, a RAG system relies on actual retrieved data. This minimizes the risk of inaccurate or fabricated responses.

The combination of retrieval and generation results in balanced answers that provide both precise information and a natural conversational tone.

Advanced Customization Options:

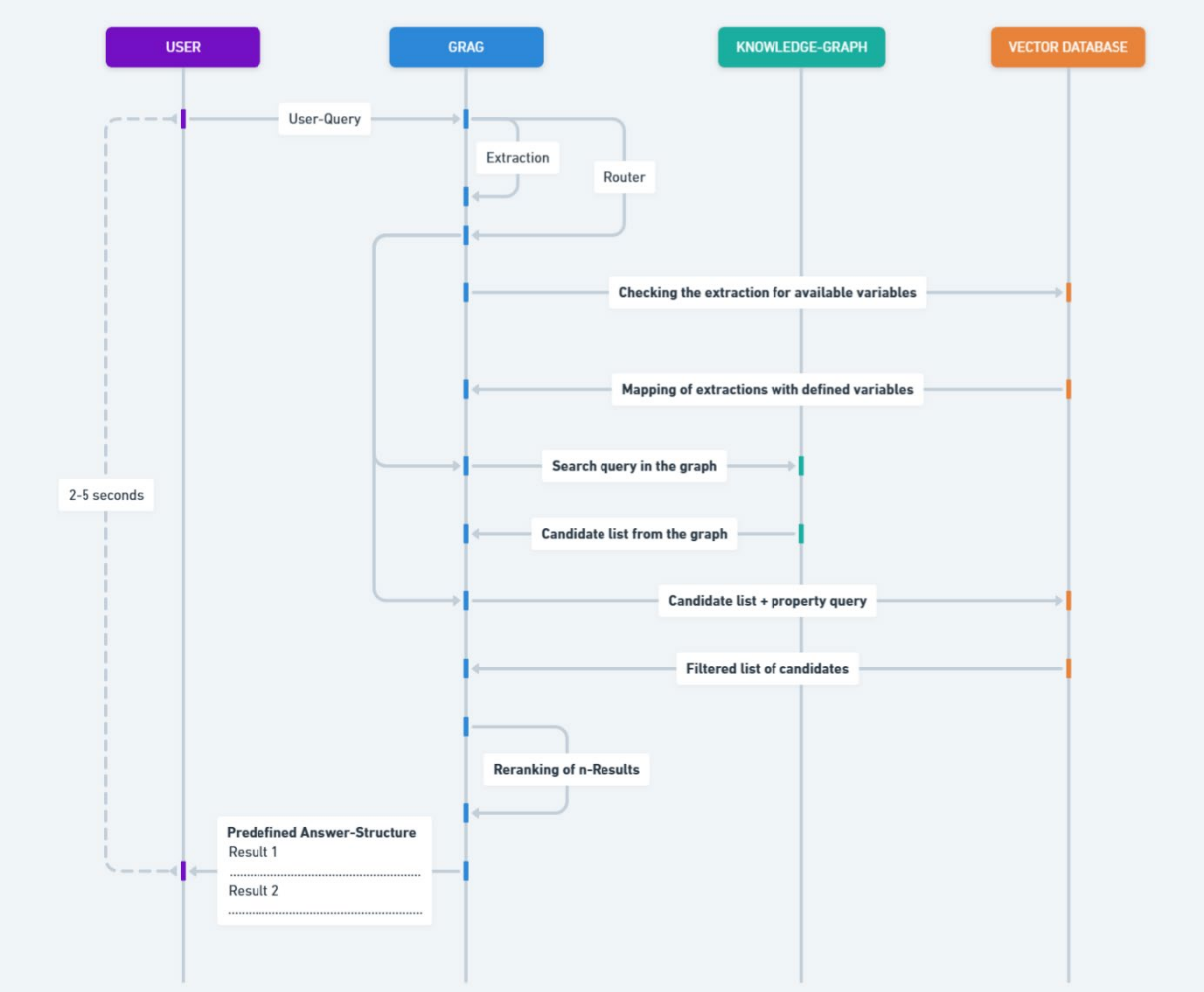
By tailoring the retrieval components, GRAG can integrate specific knowledge sources for various applications and industries. This enables greater relevance and accuracy of responses within specific contexts.

Scalability & Flexibility:

The scalability of vector databases allows the RAG system to keep pace with increasing data volumes, while the flexibility of knowledge graphs enables continuous expansion and adaptation of the knowledge base.

Pracitical Application at GRAG:

At GRAG, the RAG system is employed to ensure highly accurate and reliable customer communication. By combining comprehensive retrieved knowledge with the ability to translate this knowledge into fluent, natural language responses, our platform delivers an unparalleled level of intelligence and user-friendliness.



Simplified Visualization of System Interaction

With this system structure, we can organize vast amounts of data into concepts and make them semantically searchable. This means we can establish relationships between pieces of information, construct knowledge from them, and make this knowledge searchable in two ways: by dependencies (linked via X to Y) and by semantic meaning (allowing search queries to use similar descriptions rather than exact phrasing).

Sales & Competition

Target Market:

GRAG focuses on companies seeking advanced AI solutions to enhance communication and optimize processes. The market includes industries such as financial services, healthcare, retail, e-commerce, education, and the public sector. The need to improve customer communication and internal processes drives demand in these sectors.

Customer Segments:

Corporations / Large Enterprises:

Large enterprises require robust, scalable solutions for global operations and prioritize efficiency and data security..

Hidden Champions:

This group seeks cost-efficient, personalized AI solutions to support their digitalization efforts..

Start-Ups & Innovators:

Start-ups and innovators are interested in flexible, adaptable technologies that enable rapid development and market entry.

The market for conversational AI is growing rapidly, driven by the need for efficient customer communication and the automation of business processes. As AI technology advances, this market continues to expand.

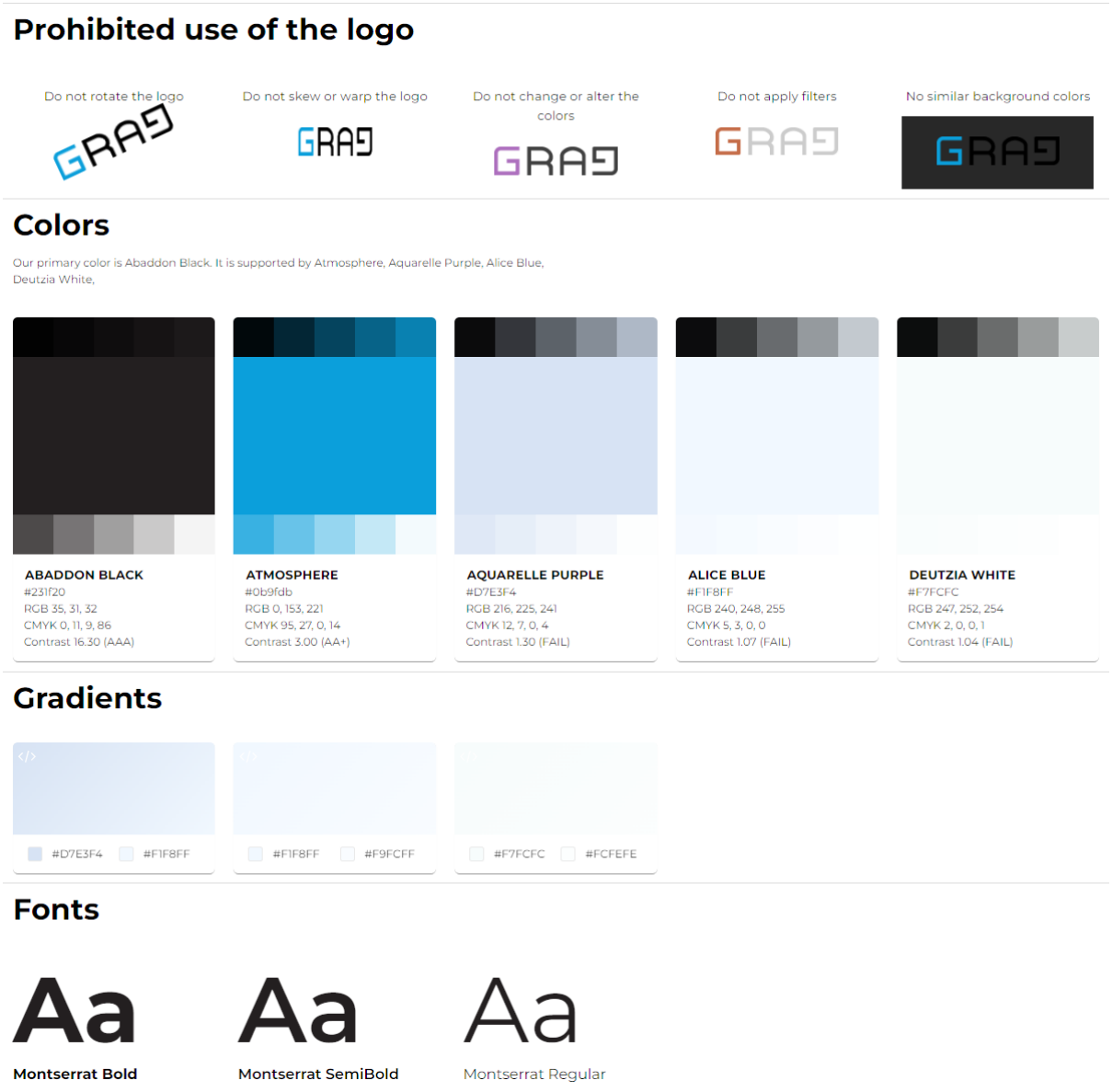
Sales & Communication Marketing-Strategy

Target Audience Analysis:

Our product addresses the specific needs of large enterprises, hidden champions, and start-ups/innovators. For large enterprises, we provide scalable solutions that enhance efficiency and ensure data security. Mid-sized companies benefit from our cost-efficient and user-friendly products that support their digitalization efforts. For start-ups and innovators, we offer flexible and innovative tools that enable the rapid development and market introduction of new ideas.

Branding:

Our brand represents innovation, trustworthiness, and technological excellence. We are committed to reflecting these values in all our communication and marketing materials. Our brand identity is defined by a strong focus on customer-centricity and forward-thinking technologies.

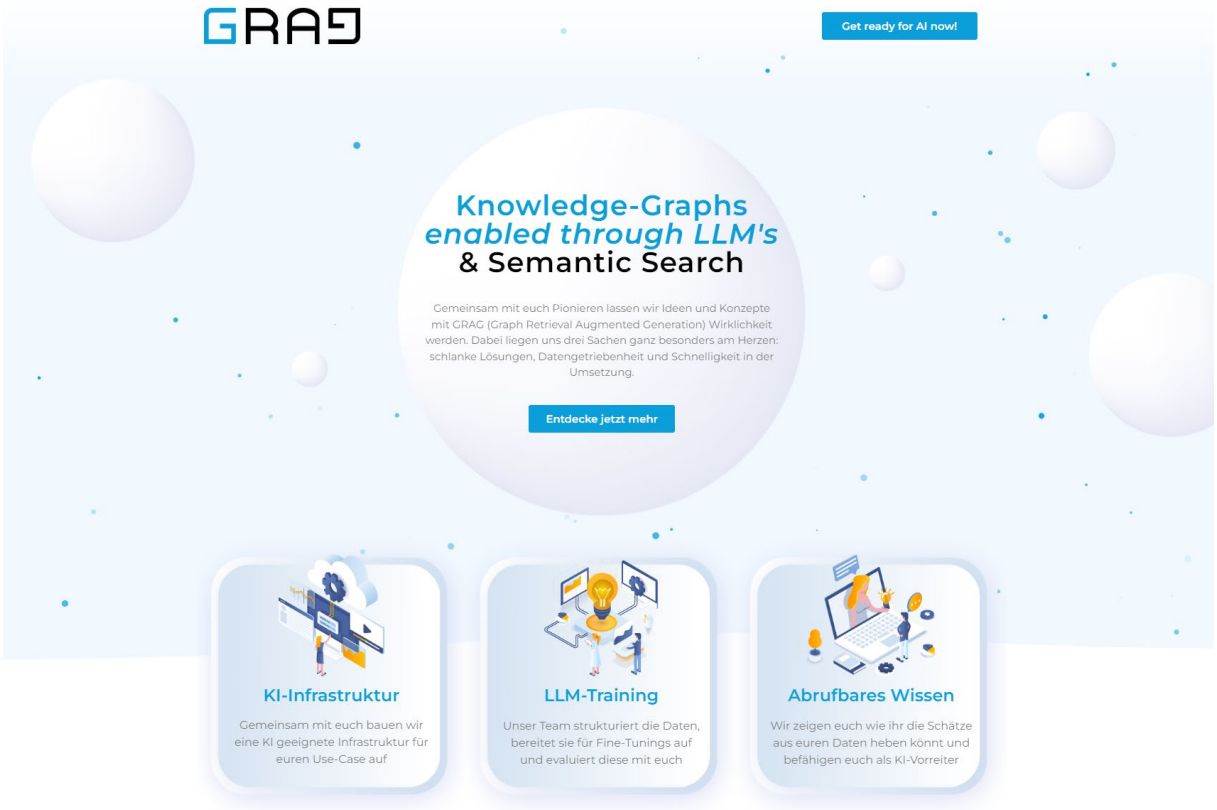


Preview of Brandbook: https://baseline.is/brand/dULXzHnhZHLJuttV8C3ZcF

Logo Variations:

Positioning:

Positioning GRAG as a leading pioneer in AI-driven communication, offering flexibility, adaptability, and multilingual support.



Screenshot: GRAG.ai Website Header Homepage

On the website, in advertisements and content offers, the joint work on the use cases with the customer is emphasized. Only in close cooperation can the domain- & company-specific knowledge be properly prepared and it is precisely this uniqueness of each customer that we emphasize in all our communication.

„The Data & Knowledge of the Customer is KING".

Content Marketing:

On the website, in advertisements, and in content offerings, we emphasize collaborative work on use cases with our customers. Only through close cooperation can domain- and company-specific knowledge be properly structured. We highlight this uniqueness of each customer throughout all our communications.

Sales-Channels:

Direct Sales:

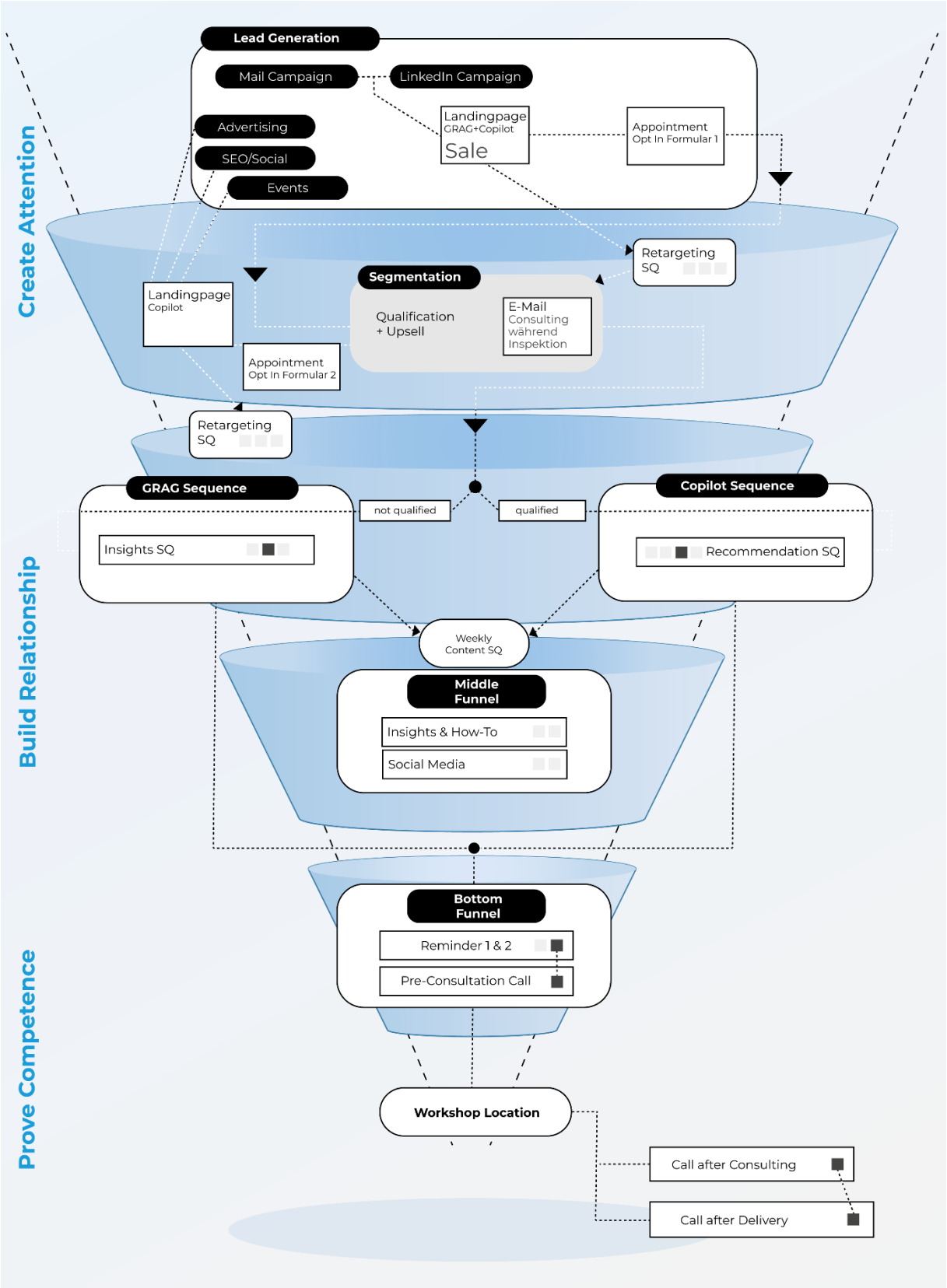
Personal sales meetings and presentations tailored for large and key customers.

Online-Sales:

Providing an easy way for customers to book consultations about GRAG through the website.

Partner-Network:

Establishing partnerships with established companies and technology providers to expand reach.



Pricing:

Development of a competitive pricing model focused on the value provided to the customer. Offering tailored pricing packages for various market segments.

1. Consulting
Daily Rate Data & Training: **1.600 €**
Daily Rate Generative KI: **2000 €**

2. Paid-Webinare
Setup Fee: **15.000 €**
Occasion for Consulting / Webinar: **5**

3. Conversational AI GRAG (Group)
Setup Fee: **15.500 €**
Monthly Fee: **1.500 €**

4. Conversational AI GRAG (external)
Setup Fee: **28.000 €**
Monthly Fee: **1.500 €**

5. Conversational AI Copilot (Group)
Setup Fee: **15.500 €**
Monthly Fee: **1.000 €**

6. Conversational AI Copilot (external)
Setup Fee: **20.500 €**
Monthly Fee: **1.000 €**

Partnerships:

Establishing strategic partnerships with technology providers, system integrators, and consulting firms to open additional sales channels and increase market penetration.

PR-Strategies for GRAG

Thought Leadership:

Content: Developing and publishing expert articles, blog posts, and whitepapers that provide insights into AI technology and industry trends. The goal is to position GRAG as a thought leader in the AI industry.

Plattformen: Sharing this content on the company website, in industry journals, sector-specific blogs, and on LinkedIn.

Medienarbeit:

Press Releases: Regularly publishing press releases about new product features, partnerships, and company achievements.

Media Contacts: Building and maintaining relationships with journalists and influencers in the technology and business sectors.

Events & Conferences:

Participation & Sponsoring:

Active participation and sponsorship of industry conferences, trade fairs, and webinars.

Own Events:

Organizing workshops, webinars, and roundtable discussions to connect with potential customers and partners and provide them with valuable information.

Case Studies & Customer References:

Developing case studies that showcase the success and effectiveness of GRAG in practical applications.

Collecting customer references and testimonials for use in marketing materials and public relations efforts.

Social-Media Campaigns:

Maintaining an active presence on platforms such as LinkedIn, Twitter, and potentially YouTube. Sharing industry news, company updates, and professional content. Engaging with the community through comments, discussions, and polls.

Influencer-Marketing:

Establishing partnerships with industry influencers and thought leaders to expand reach.

Coordinating influencer activities such as interviews, guest contributions, or social media mentions.

Award-Submissions:

- Submitting GRAG for relevant industry awards and recognitions, leveraging award wins as PR opportunities.
- CSR-Initiatives (Corporate Social Responsibility):
- Participating in social and environmental projects
- Communicating these activities to promote a positive corporate image

Crisis Communication:

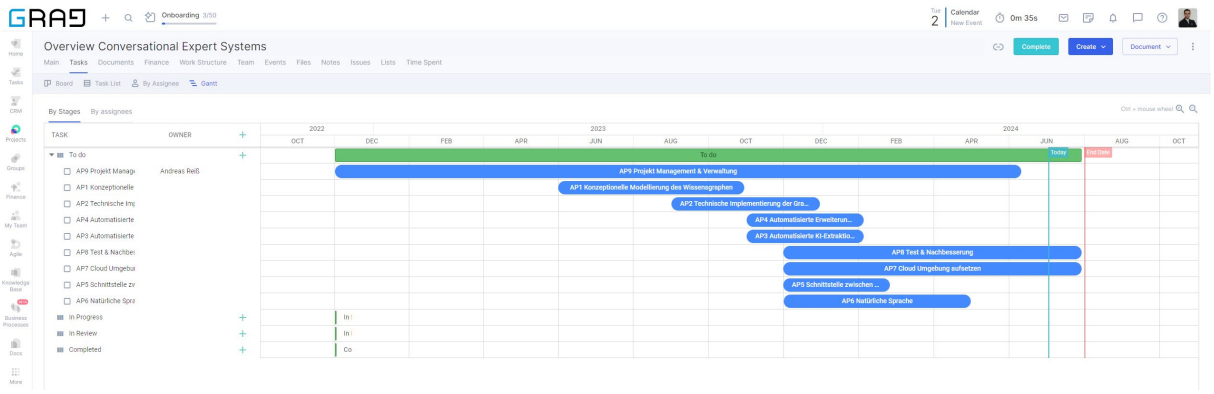
Developing a crisis communication plan to address potential negative events or challenges.

By implementing these PR strategies, GRAG can establish a strong brand presence, enhance credibility, and ultimately increase customer interest and drive revenue growth.

Implementation and Measurement of Effectiveness

- Systematic introduction and integration of marketing and sales strategies.
- Training and adaptation of staff to new tools and processes.
- Ongoing monitoring and adjustment of strategies in response to market changes.
- Establishment of a feedback system for the continuous improvement of marketing and sales activities.
- Implementation of KPIs and metrics to measure effectiveness and ROI.

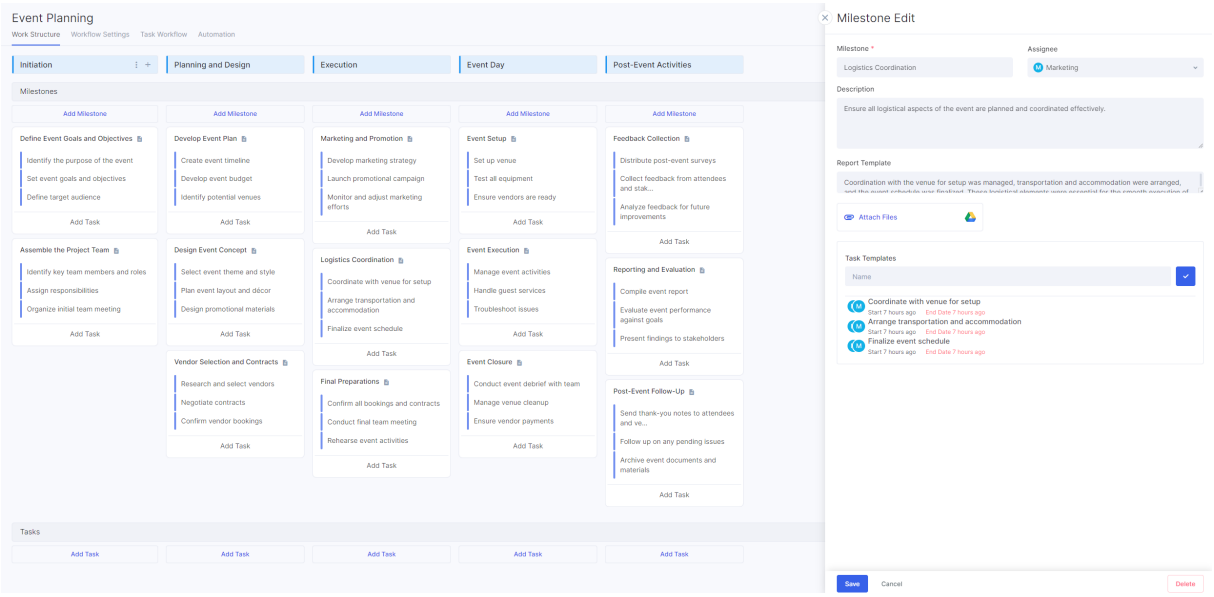
Business-Management: Controlling of Marketing, Sales & IT



Screenshot Business Management Software (CRM, Marketing-Automation & Projectmanagement)

The business management software used at GRAG is a comprehensive solution designed to simplify work management, covering all aspects from customer projects to internal processes. This software offers a wide range of features, enabling GRAG to efficiently manage and optimize all business operations.

The CRM module provides extensive capabilities for managing sales opportunities and pipelines, tracking customer interactions, and planning future activities. Email communication can be centrally stored, ensuring seamless customer support. Additionally, project templates can be created to streamline workflows and improve efficiency:



Additionally, the software includes a dedicated area for information exchange with clients, freelancers, or contractors, enabling seamless collaboration and elevating the business model to the next level.

Market & Competition

Market-Size & Growth

According to Expert Market Research, the global market for conversational AI is projected to grow at a rate of 22.9% from 2024 to 2032, reaching an estimated market value of $61.9 billion by 2032. This growth is driven by increasing demand, decreasing development costs for chatbots, and the adoption of AI-powered customer support solutions.

> *The global conversational AI market size reached approximately USD 9.69 billion in 2023. The market is projected to grow at a CAGR of 22.9% between 2024 and 2032, reaching a value of around USD 61.90 billion by 2032.*

Source: https://www.expertmarketresearch.com/reports/conversational-ai-market

Competitive Landscape

Large Technology Companies:

These companies offer similar solutions but often with less flexibility and customization.

Specialized AI Start-Ups:

They provide innovative solutions but may lack the scalability or global reach of larger competitors.

Technological Developments

NLP & Machine Learning: The fusion of Natural Language Processing (NLP) and Machine Learning (ML) is revolutionizing interactions in the field of conversational AI.

Multilinguale AI: Advancements in supporting multilingual experiences are crucial for meeting global and European market demands.

Multimodal AI: The integration of speech, vision, gestures, and gaze tracking enables immersive, multi-layered conversational experiences.

Personalized Marketing Strategy: Conversational AI facilitates highly personalized marketing, leading to stronger customer engagement and loyalty.

Market Prioritisation Matrix

MPI (Market Potential Index) Calculator to find out which markets you should be exploring next.

Current Market(s)

DACH-REGION

Criteria **Region Scoring**

Parameters	DACH-REGION	English-Speaking	Spanish-Speaking	French-Speaking
Total Market Size	7	9	6	5
Market Growth	6	8	7	5
Customer Base Size	7	9	8	8
Customer Demand	8	7	8	7
Customer Payability	7	8	6	5
Competition	6	9	7	6
Relative Value	7	8	6	5
Access to Resources	7	9	6	5
Partner & Allies	7	9	6	6
Distribution Options	7	9	6	7
MPI (Market Potential Index)	69	85	66	59

DACH-REGION

English-Speaking

Spanish-Speaking

French-Speaking

German Companies in the General LLM Landscape:

Aleph Alpha:
Focused on organizations that rely heavily on trustworthy, accurate information.

- Specializes in building proprietary models such as Luminous.
- Provides LLM services in five languages.

mindtwo GmbH:
A digital agency offering a variety of applications using the OpenAI API.

Services include:

- Content Creation,
- Data Analysis,
- Personalized User Experiences,
- Real-Time Speech Translation,
- Automation of Back-Office Tasks

Deepset.ai:
Provides open-source tools for creating natural language processing systems.

- Enables enterprise clients to understand complex datasets through simple language queries.

Coqui.ai:
Utilizes generative AI to create voice content for various applications, from video game development to dubbing and post-production.

Jina AI:
Specializes in a powerful multimodal AI platform, allowing comprehensive searches across diverse data types globally.

Qdrant:
Offers a high-performance vector database for AI applications. Stores data as vectors to represent complex datasets.

German Companies in the Conversational AI Landscape:

PM Agentur [Link]

Technology & LLM-Providers:

Specific details about the technologies and LLM providers used by PM Agentur are not directly available.

Products & Services:

Consulting, MVP Development & AI-Assistants.

Ontolux [Link]

Technology & LLM-Providers:

Information on the specific technologies and LLM providers utilized by Ontolux is not directly available.

Products & Services:

Consulting, MVP Development & AI-Assistants & Workflows for Content Generation.

Anexia [Link]

Technology & LLM-Providers:

Anexia focuses on software development services, including backend development, app development, and specialized solutions like machine learning. Specific information on LLM usage or technology providers is not mentioned.

Products & Services:

Offers a variety of software solutions, including mobile app development, smart TV app development, and AI solutions like machine learning. However, details on specific LLM or AI technologies are not disclosed.

Startup Creator [Link]

Technology & LLM-Providers:

Startup Creator uses modern AI technologies and frameworks such as OpenAI for chatbot creation and TensorFlow for machine learning.

Products & Services:

Provides AI solutions including machine learning, natural language processing, image recognition, and chatbot development. Their services also include workshops, development, and consulting for AI implementation in various business areas.

Ultimate.ai [Link]

Technology & LLM-Providers:

Uses generative AI technology integrated into their platform, similar to ChatGPT. They rely on external providers for LLMs and have developed an internal search engine to optimize data flow within their AI models.

Products & Services:

Offers customer support automation, including a chatbot service called UltimateGPT. Their platform automates up to 60% of customer inquiries across various digital channels and provides tools for scalability, efficiency, and customer engagement..

Parloa.com [Link]

Technology & LLM-Providers:

OpenAI / Microsoft

Products & Services:

Combines generative AI with robust language models to help businesses improve customer service and agent support efficiency.

Ansoff-Matrix – Market Entry Barriers:

Market Penetration

- Medium / High competition in the market
- Establishing trust
- GDPR-Compliance (DSGVO)

Market Development

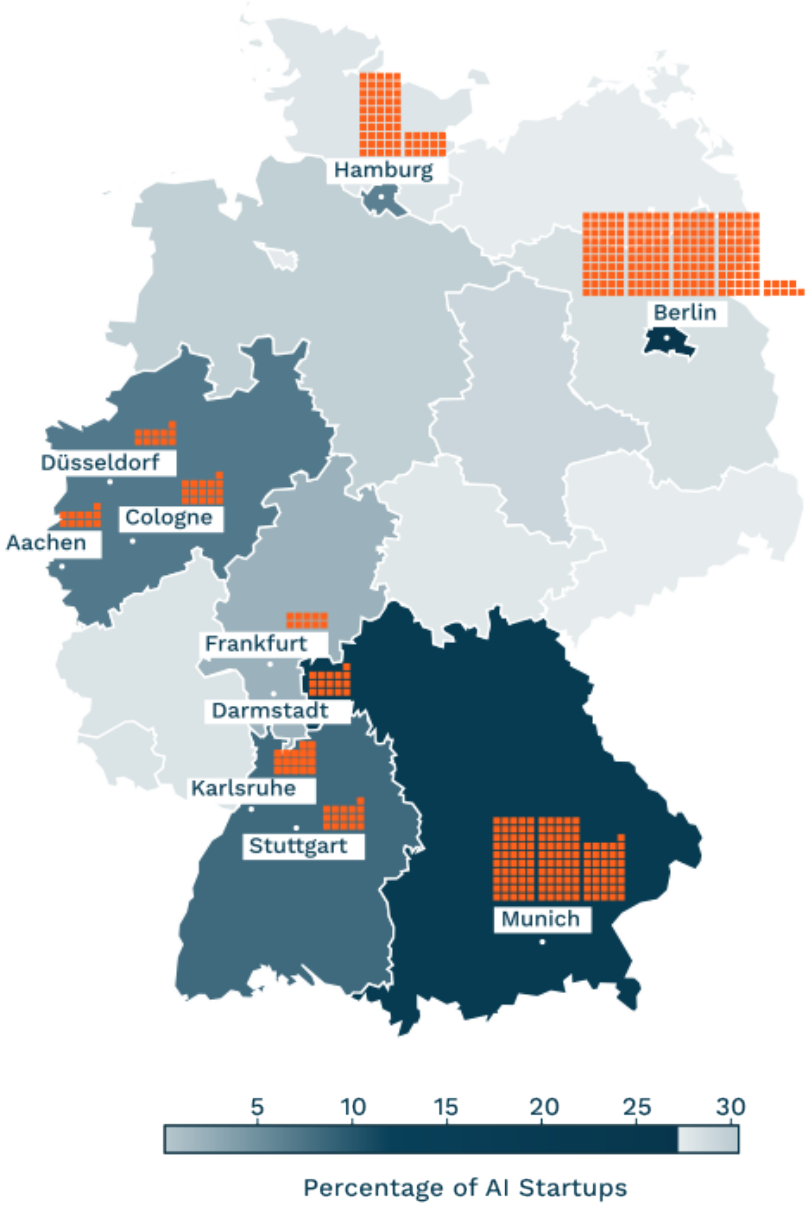
- Linguistic adaptations
- Local regulatory requirements
- Cultural differences

Product Development

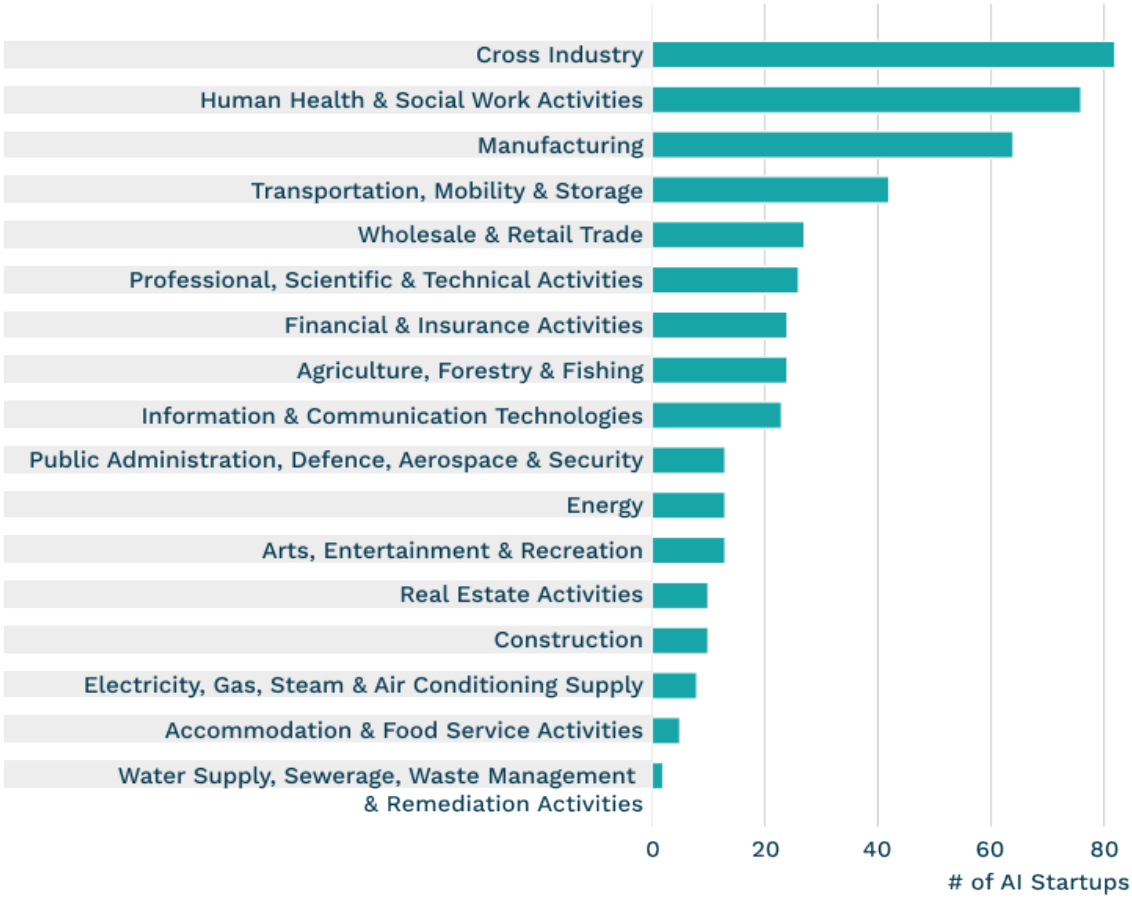
- Continuous innovation required
- High R&D costs
- Technical complexity

Diversification

- Unknown market needs
- High investment costs
- Lack of industry expertise



AI-Start-Ups Germany: Quelle: https://www.appliedai-institute.de/hub/2024-ai-german-startup-landscape



Industry-Overview: Source: https://www.appliedai-institute.de/hub/2024-ai-german-startup-landscape

German AI startups are particularly active in the areas of operations (70), production (53), research and development (51), customer service and support (34), IT and security (27), and sales (26). Many of these areas have seen significant growth compared to the previous year. For example, the number of AI startups in operations and production has more than doubled, highlighting the growing potential for efficiency improvements, cost reduction, and quality control in manufacturing and operational environments.

This trend reflects a shift towards practical, industry-specific AI applications that deliver tangible benefits for companies across various sectors of the German economy. Notably, almost all analyzed AI startups focus on B2B solutions. Only about 5% are exclusively involved in B2C or B2G activities, underscoring a strong emphasis on serving business clients.

The study also reveals that one in five AI startups operates in the generative AI domain, emphasizing the rapid adoption of generative AI technologies within the startup ecosystem.

Europäische Unternehmen:

Mistral AI (Frankreich):
Focuses on developing open-source foundational models with European values.
Aims to create a European alternative to U.S.-based companies training LLMs.

Stability AI (UK):
Known for developing Stable Diffusion.
Provides an open-source image/video generative AI tool.

Sana (Schweden):
Uses third-party models like GPT-4 to offer AI-driven enterprise solutions.
Has secured deals with leading scale-ups such as Kry and Klarna.

Dust (UK):
Utilizes a range of third-party LLMs.
Works on new use cases for LLMs in workplace environments.

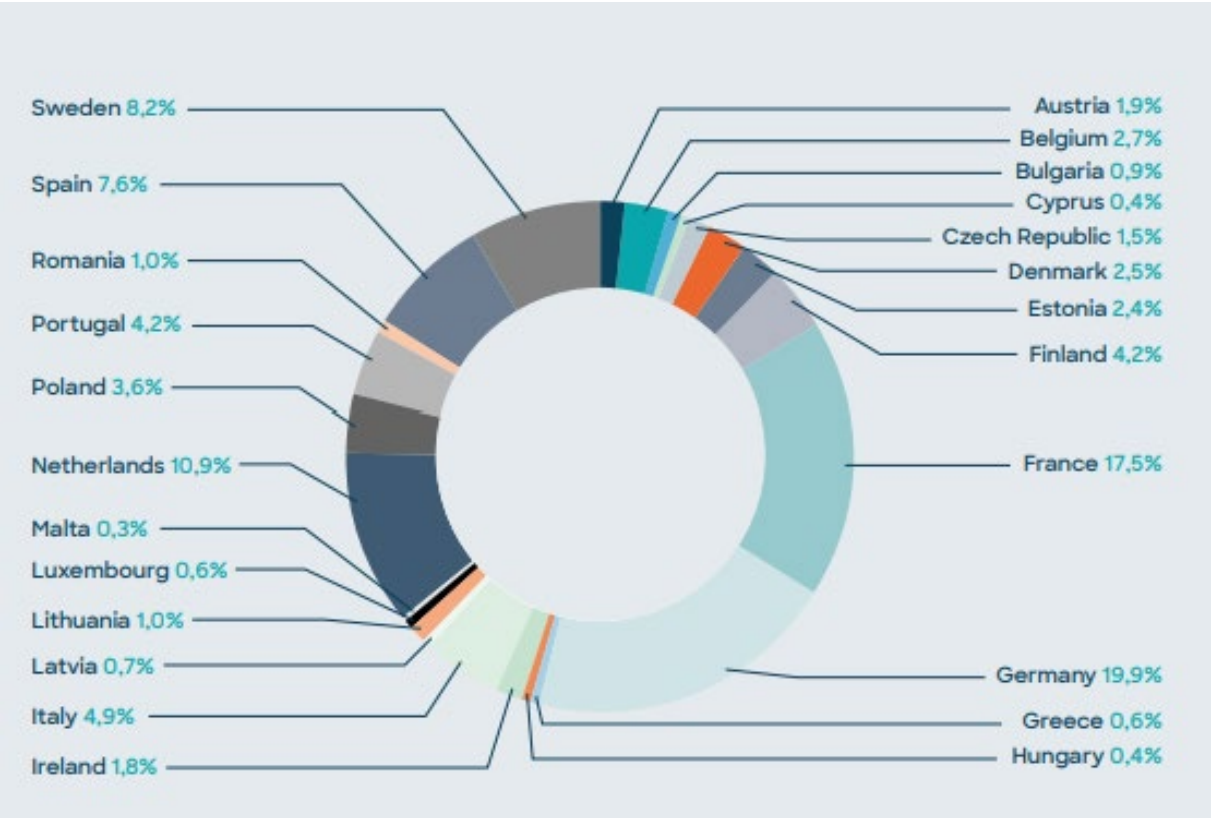
Silo AI (Finnland):
A profitable company creating AI products for clients since 2017. Launched a new GenAI service based on LLMs in 2023.

Lighton (Frankreich):
Started with hardware components before shifting focus to building LLMs.

Contributed to the development of Bloom and became the first European company to create a GenAI model in Arabic for a client in the UAE.

Medusa (Dänemark):
Targets the commerce tech stack, offering modules for building digital commerce experiences.

Categories of Generative AI Startups in Europe Working on Foundation Models:



Source: Study_Generative_AI_in_the_European_Startup_Landscape.pdf |

https://www.appliedai-institute.de/hub/2024-generative-ai-study

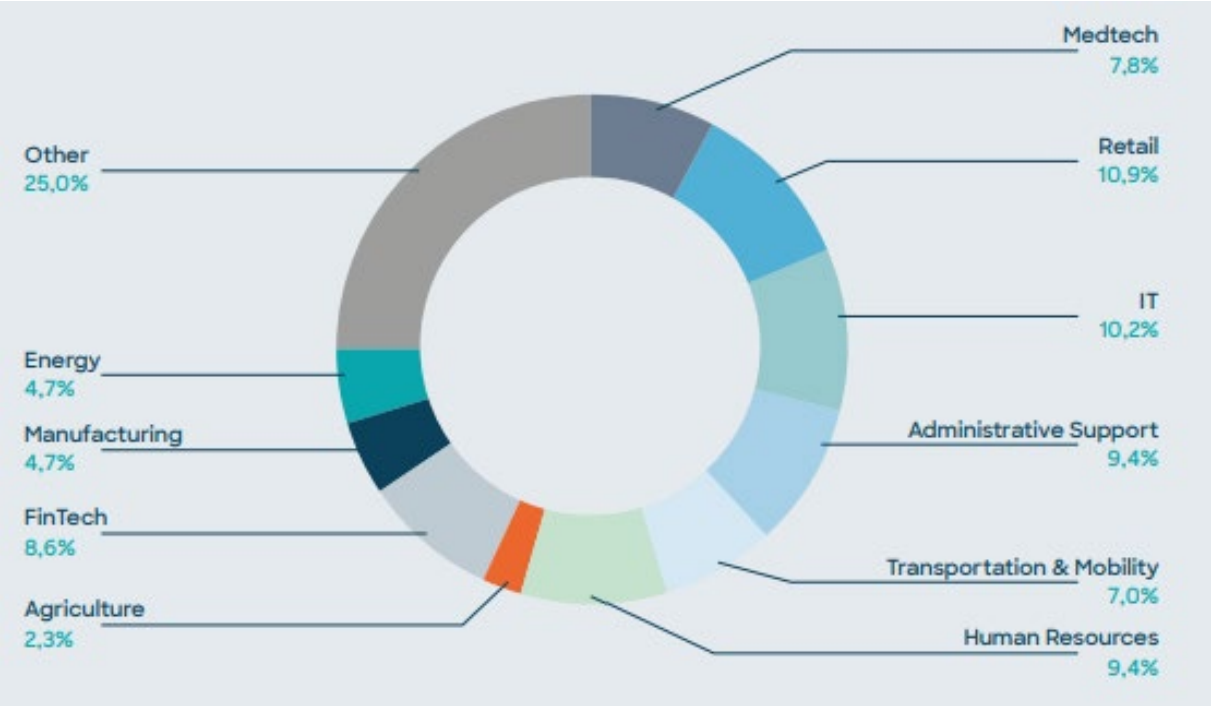
Multimodality:

Multimodal foundation models are designed to process and understand information from various modalities or sources. These models can handle and generate content that extends beyond text, such as video or audio. Multimodal models are particularly valuable in real-world scenarios where information is conveyed in multiple forms, enabling more natural and flexible interactions with users and diverse data sources.

Mehrsprachigkeit:

Multilingual foundation models specialize in understanding and generating content in multiple languages. With 24 official languages in the European Union, advancements in this area are critical to addressing this linguistic diversity. A multilingual model trained on data from various languages can comprehend and produce text across multiple languages, reflecting the rich multilingual diversity in Europe.

Branchenspezialisierung:
Domain-specialized models, also known as vertical foundation models, are tailored to specific industries or application areas. These models are initially trained on domain-specific data and then fine-tuned on application-specific datasets. The advantage of these vertical models lies in their high level of specialization compared to general pre-trained models without an industry-specific focus. This enables more precise and relevant applications in various industrial and sector-specific contexts..



Source: Study_Generative_AI_in_the_European_Startup_Landscape.pdf |

https://www.appliedai-institute.de/hub/2024-generative-ai-study

Synthetic Data:
Foundation models require large volumes of data, which are often unavailable. Consequently, the creation and use of synthetic data are becoming increasingly important. Synthetic data are artificially generated datasets that replace "real" data to protect privacy and confidentiality, particularly when dealing with sensitive information. These data are utilized in various applications, including research, training machine learning algorithms, data analysis, and software testing.

Development Tools and Infrastructure:
European generative AI startups working on development tools and infrastructure can be categorized as follows:

Workflow-Automation:
AI-powered development tools for workflow automation are transforming how businesses and individuals optimize processes and enhance efficiency. These tools

leverage artificial intelligence to intelligently automate routine tasks and decision-making processes, minimizing manual intervention. Over time, AI-driven workflow automation tools can learn and adapt, improving their ability to handle complex tasks and respond to changing business needs.

Scalability & Performance:
The development of scalable infrastructures is critical for deploying and operating generative AI models. Robust training pipelines and deployment solutions are essential to meet the computational demands of advanced AI systems. These infrastructures aim to streamline and enhance the development process, enabling developers to create and deploy generative AI models efficiently and effectively.

Strengths	Weaknesses
• Symbiosis of graphs and vector databases • Focus on open-source LLMs • Multilingual support • Strong emphasis on data privacy and GDPR compliance • Experienced team • Strategic partnerships • Use of synthetic training data	• Intense competition • Limited financial resources • Dependence on technology partners • Challenges in scaling
Opportunities	**Risks**
• Growing market for conversational AI • Increasing demand for compliant apps • Potential for expansion into new industries • Development of new AI use cases • Growing acceptance of AI	• Intense competition | Big Tech vs. Start-Ups • Rapid technological changes • Regulatory challenges • Potential security risks • Economic uncertainties • Ethical concerns and public skepticism

GRAG's strengths lie in its innovative technology that combines knowledge graphs, vector databases, and large language models, as well as its focus on open-source LLMs and customized, multilingual solutions. Its main weaknesses include its relative novelty in the market and potentially limited financial resources compared to larger competitors.

The expanding market for conversational AI and the rising demand for privacy-compliant AI solutions present significant opportunities for growth and innovation. However, the biggest risks include intense competition, rapid technological advancements, and potential regulatory challenges.

Team & Partner

Management-Team

Geschäftsführung (CEO):

Marcel Rosiak

Responsible for overall strategy, company leadership, and investor relations.

Technischer Leiter (CTO):

Soumya Paul

Background: Deep expertise in AI, software development, and system architecture.

Responsible for technological vision, product development, and leading the engineering team.

Head of R&D:

Siavash Mollaebrahim

Background: Experience in leading research projects in artificial intelligence and machine learning.

Responsible for directing research and development activities, managing innovation, and overseeing patent strategies.

Advisory Board

The advisory board could consist of industry experts and seasoned entrepreneurs who provide strategic insights and guidance.

The GRAG management team combines extensive experience in AI, technology, business management, and customer service. This mix of skills and knowledge is crucial for achieving GRAG's ambitious goals and successfully positioning the company in the market.

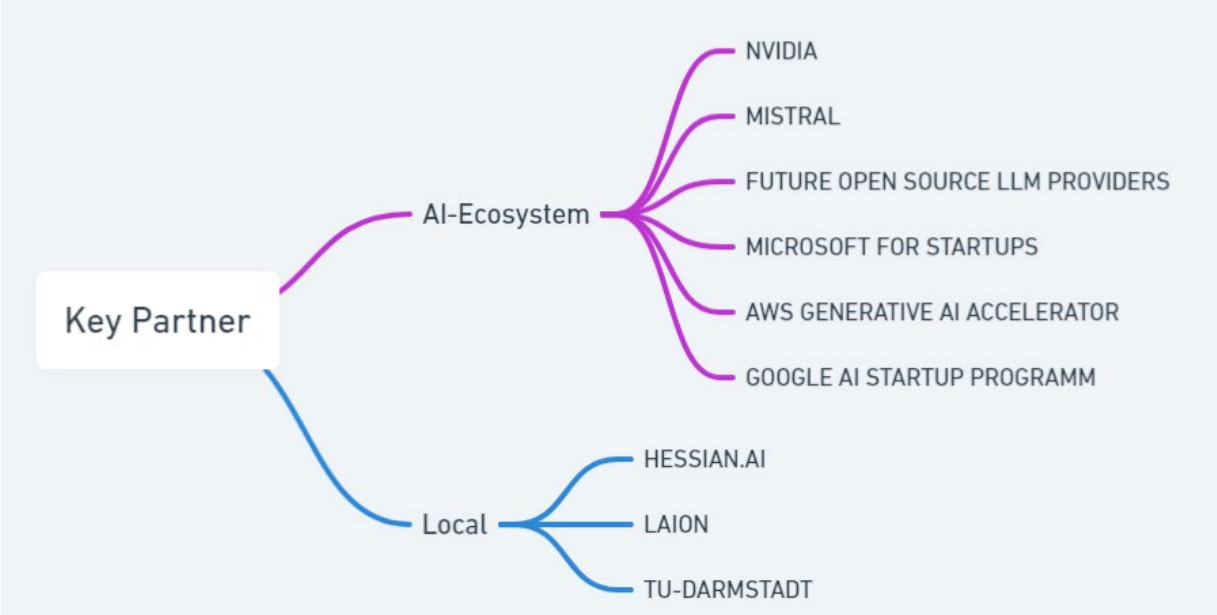
Values

GRAG was born from the vision of revolutionizing how companies communicate with their customers through advanced AI technologies. Our mission is to lead in delivering tailored, intelligent, and efficient communication solutions that help businesses strengthen and deepen their customer relationships.

We prioritize three key aspects: streamlined solutions, data-driven approaches, and speed in execution. As a team, we embody these principles through strategies such

as keeping it simple, maintaining direct communication channels, and fostering open collaboration across areas of responsibility.

Key Partners



AI-Ökosystem

- NVIDIA Inception Program (10.000$ Credits + Visibility)
- MISTRAL
- MICROSOFT StartUp Founders Hub (150.000$ Credits)
- AWS Generative AI Accelerator (300.000$ Credits)
- GOOGLE AI StartUp Program (350.000$ Credits)
- FUTURE OPEN SOURCE LLM PROVIDERS

Local

- HESSIAN.AI (Strong ties to regional AI development initiatives.)
- LAION (Cooperation on large-scale open datasets.)
- TU-DARMSTADT (LOEWE FÖRDERLINIE 3) (Academic partnership)

Porters Five Forces:

New Entrants

- Low entry barriers.
- Increasing number of AI startups.
- High market attractiveness.

Bargaining Power of Suppliers

- Dependence on tech giants.
- Availability of open-source solutions.
- Limited pool of specialized AI talent.

Threat of Substitute Products

- Traditional solutions as alternatives.
- Potential for in-house developments.
- Possibility of disruptive technologies.

Bargaining Power of Buyers

- Strong negotiating power of large enterprises.
- Increasing number of available providers.
- High switching costs for customers.

Rivalry among existing Competitors

- Numerous competitors in the market.
- Rapid innovation cycles.
- Need for differentiation to maintain competitive advantage.

Company

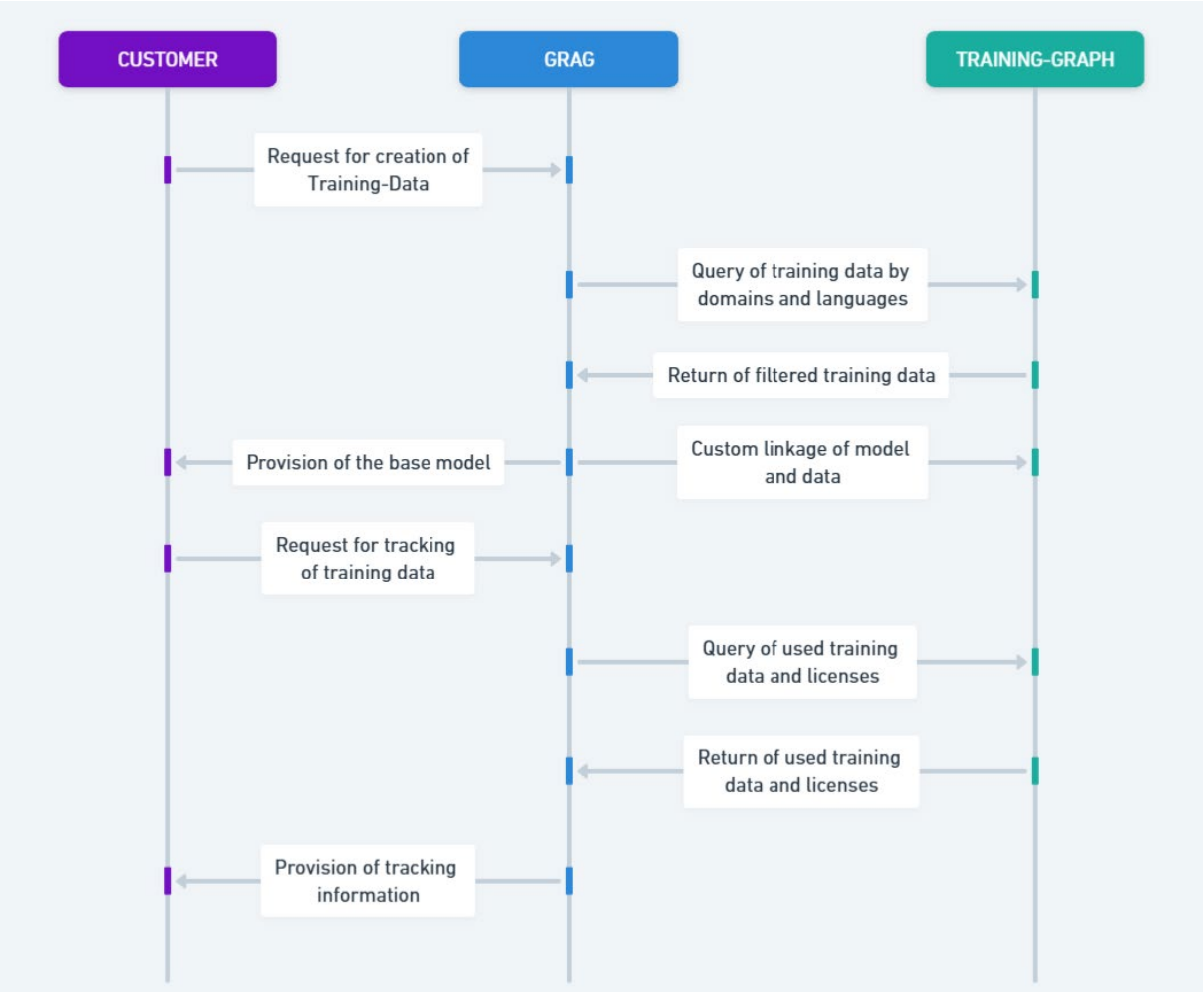
Production (Core Activities)

Our first prototype was developed through a Distr@l project. During this initiative, we gained extensive experience in training (250+ models) and merging (20+ models) large language models (LLMs). Additionally, during this research phase, we created a training database specialized for RAG use cases (Retrieval Augmented Generation).

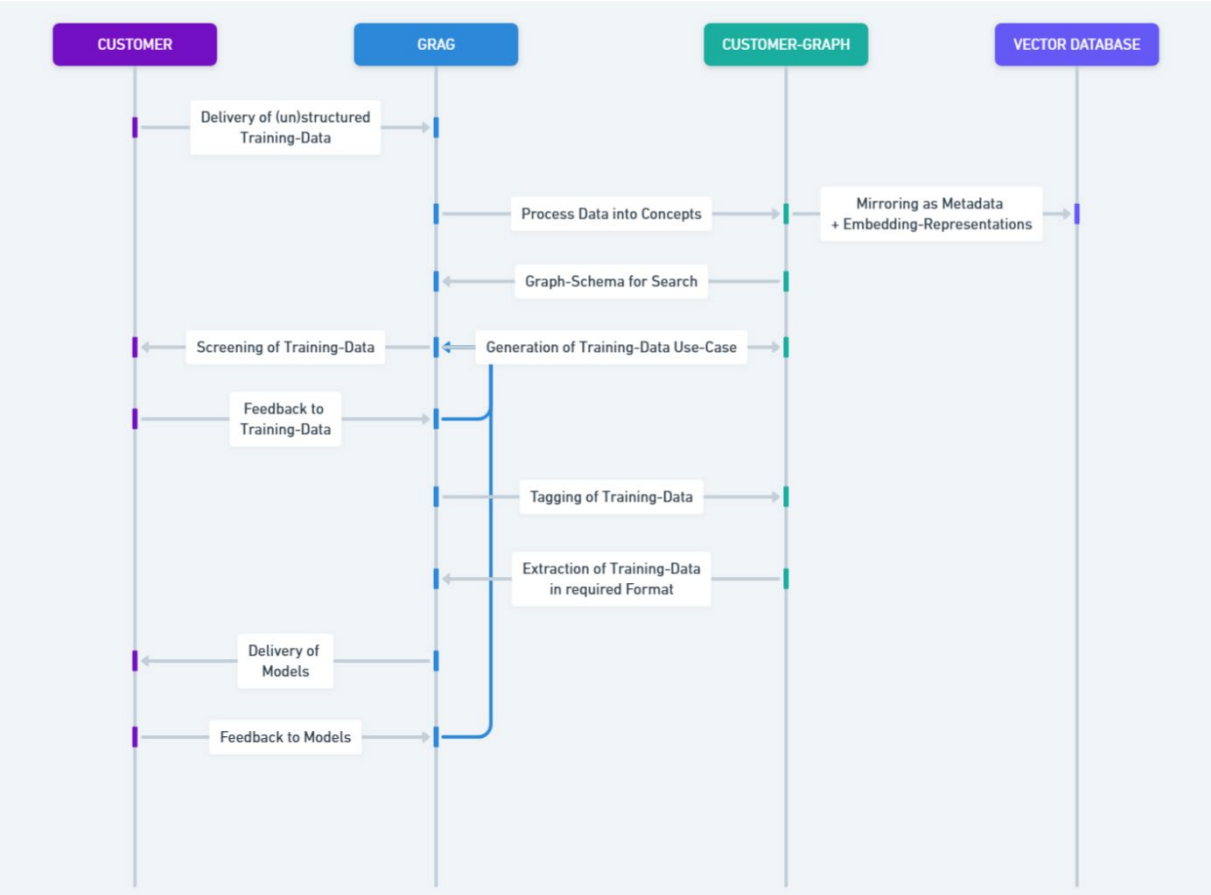
This database enables the generation of training data at the push of a button, allowing us to select data by domains and languages. This provides customers with a base model that is both linguistically and domain-specific, reflecting foundational knowledge of their market.

By semantically querying data from a graph, we can also achieve traceability of the training data, demonstrating which content and licenses were used for model

training. This capability is aligned with the requirements of the EU AI Act and anticipated international regulations, ensuring compliance and transparency.)



This ensures that no data outside the applicable licensing rights is used for the customer's custom model. From this base model, subsequent training iterations are conducted using the customer's curated datasets, synthetic data, or a combination of both.

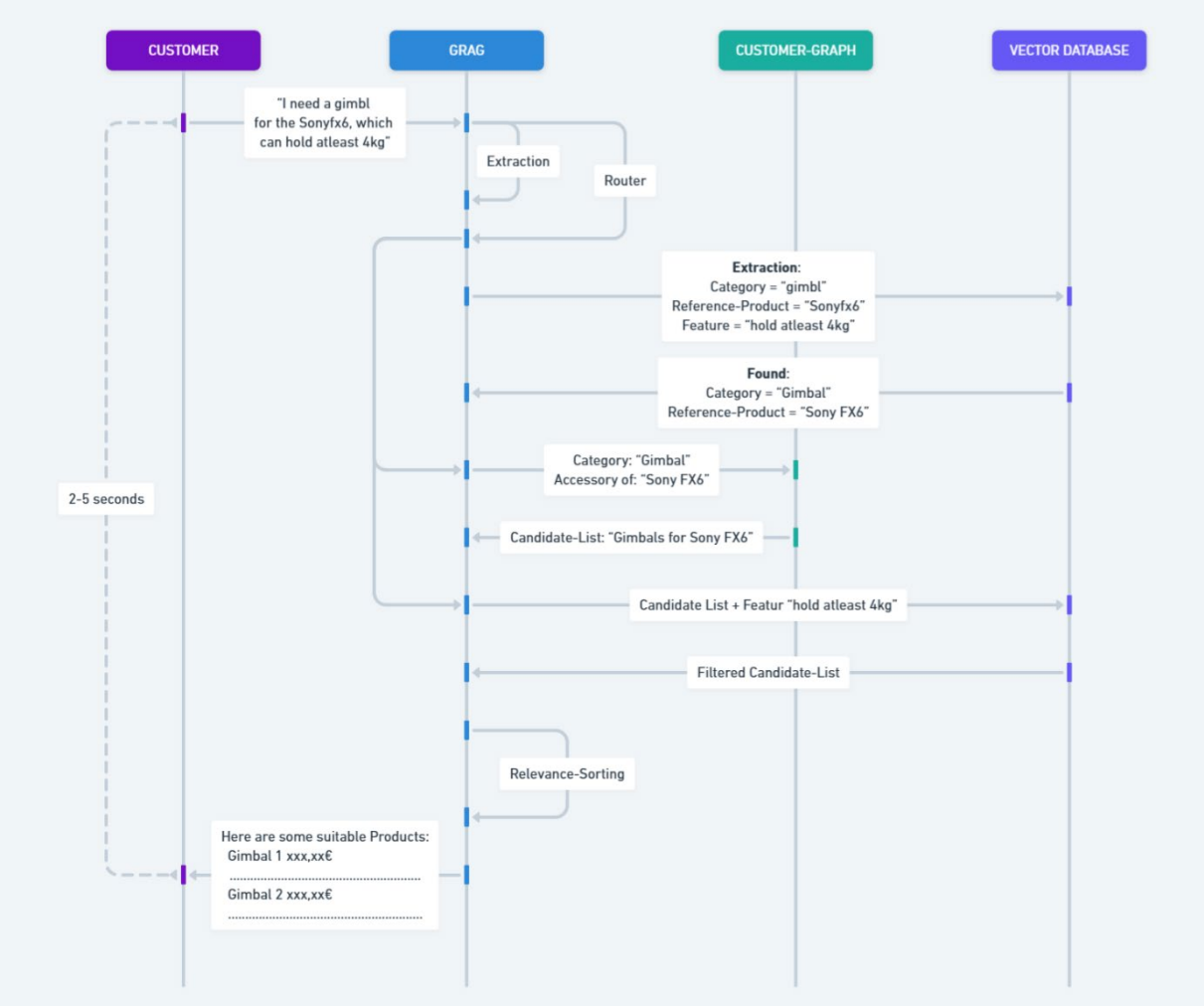


In preparation, a Data and AI workshop is conducted to determine which data is available and suitable for training the model and how this data could be supplemented synthetically. The synthetic data is generated using a proprietary open-source model, which is subject only to GRAG's own licensing terms. This data is then organized within a knowledge graph.

Subsequently, custom data generation for the customer begins, carried out in two steps. Approximately halfway through the planned data volume, a trial run is conducted. Based on this, adjustments to training parameters or synthetic data generation are identified and implemented.

Once the dataset is complete, training begins on three models, which are then evaluated. One model specializes in RAG-based chat completion, providing responses to chat inquiries based on context. Another model focuses on entity extraction, identifying entities such as categories, product names, prices, brands, etc. This entity extraction model is required for contextual queries within the knowledge graph.

Once the two models achieve valid test results in the evaluation phase, they are hosted on a GPU node. These endpoints are then integrated into the application code for the chatbot/virtual assistant. The system is hosted behind a security gateway or login and made available to the customer for testing.

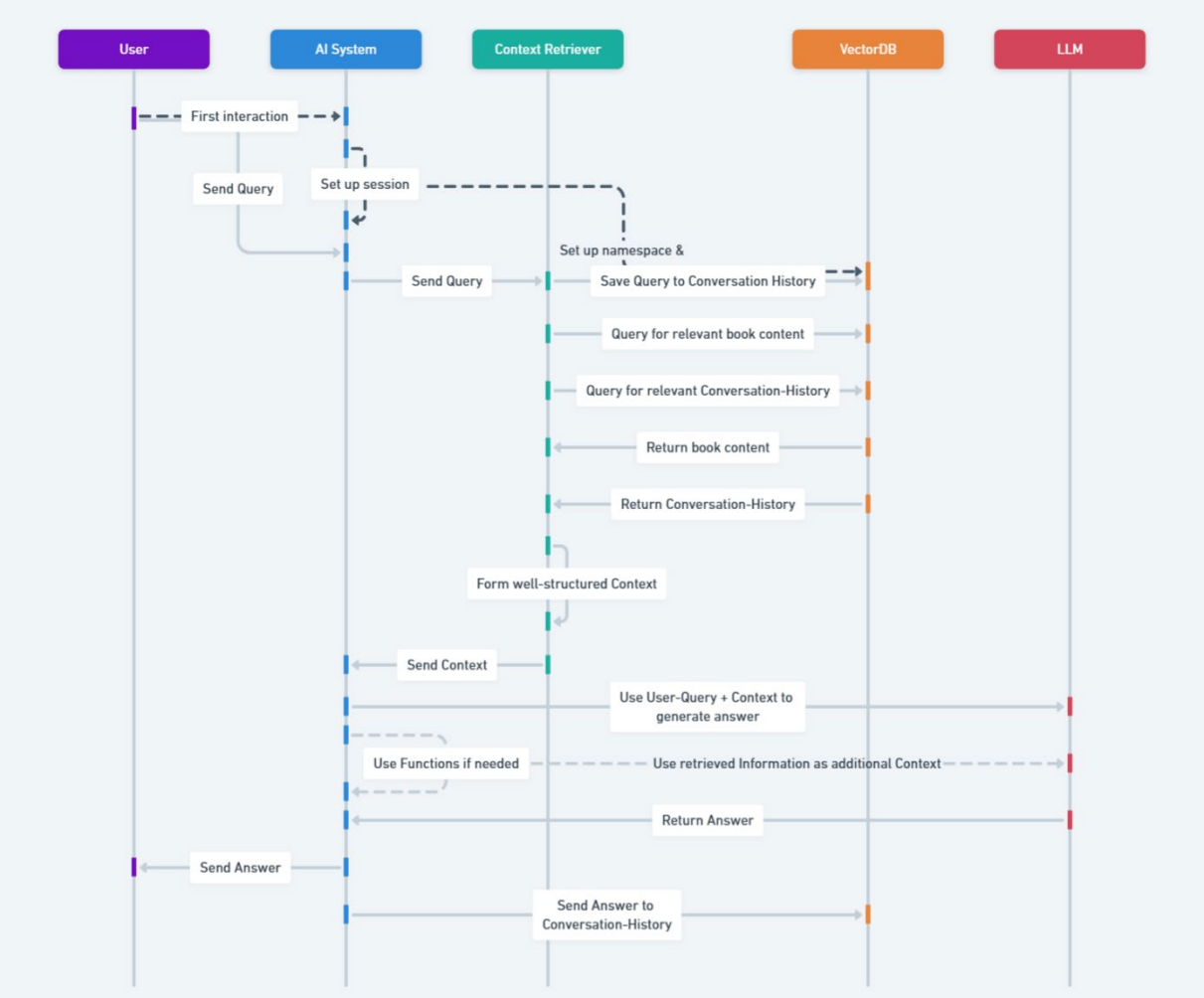


The chat system itself includes a feedback function, allowing users to rate each step—entity extraction and chat completion—with a thumbs-up or thumbs-down, along with a text comment. This dataset from the testing phase is subsequently used for fine-tuning the models, teaching them to handle the final outliers and special cases effectively.

This process can be repeated up to two times until the models achieve a 95% accuracy rate. Once this benchmark is met, the customer receives the model weights along with a hosting Docker container, allowing them to host the model on their own GPU servers. Support for setting up these servers can be booked as an additional service.

GRAG itself does not operate its own GPU servers except for generating training data, training, or testing models.

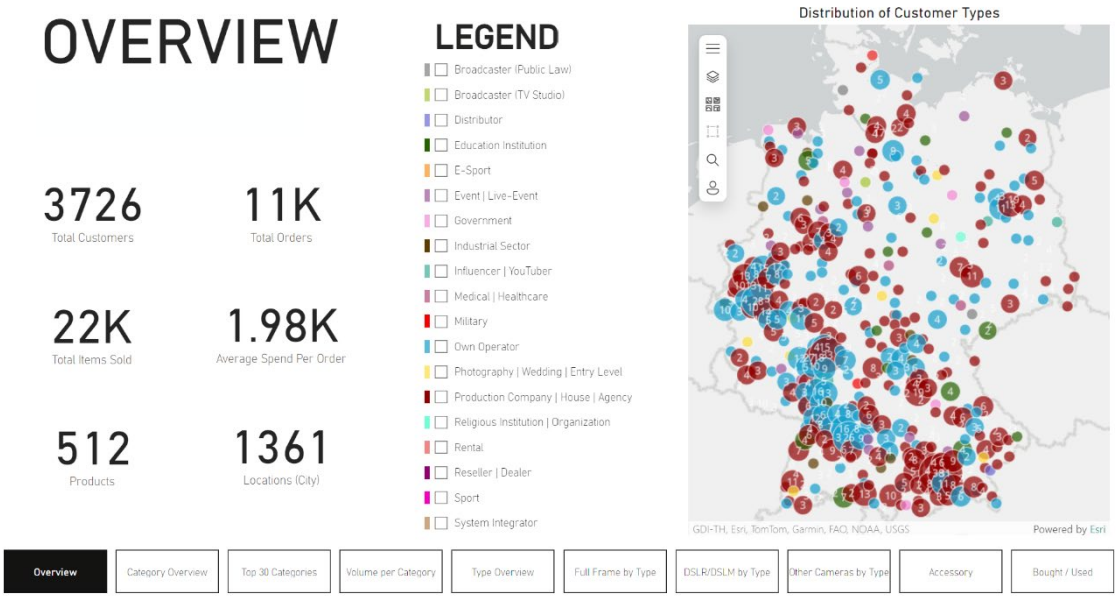
In addition to these custom-built systems, we also offer "turnkey" chatbots with memory and custom knowledge databases. These chatbots can execute actions within web applications, be integrated into any web application, and, for example, embedded within Microsoft Teams:

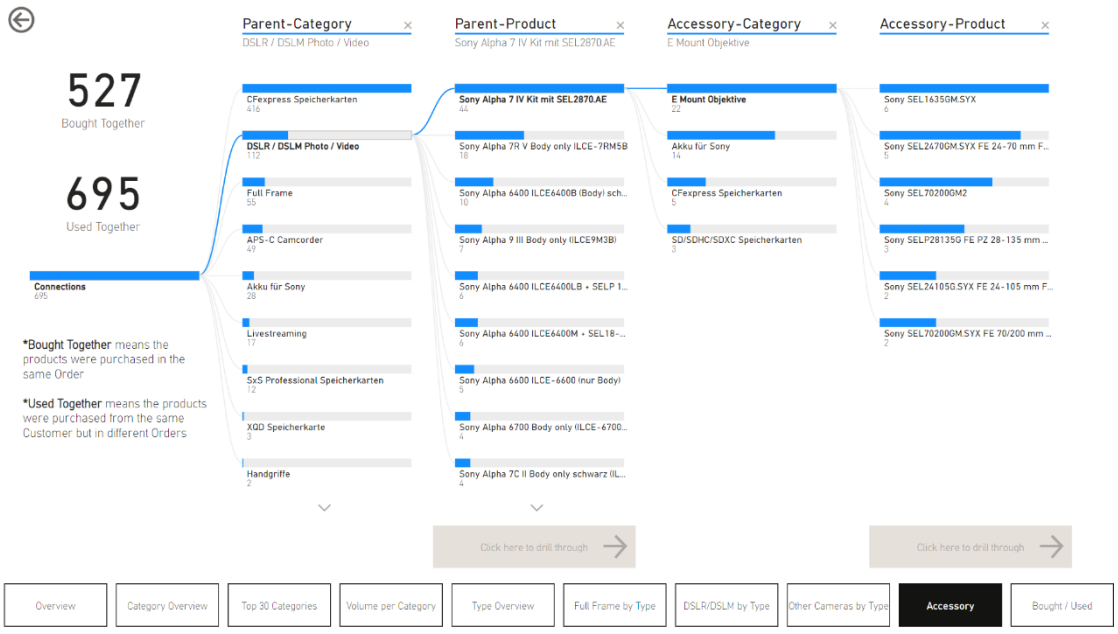


The sequence diagram illustrates the process we have developed for handling user queries within an AI system. It depicts the interactions between various system components, including the user, the AI system itself, a context retriever, a vector database (VectorDB), and a large language model (LLM). This system allows us to ingest diverse data sources from our clients as context, remember user preferences, and configure future outputs accordingly.

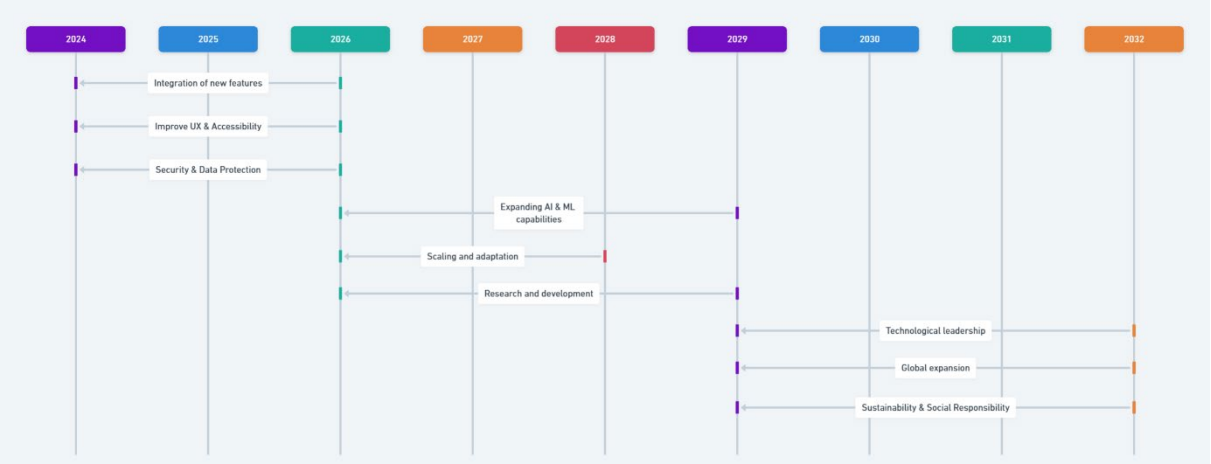
The system is integrated into the existing web interface of the GRAG application and is highly adaptable to customer needs in a quick and efficient manner. The chat interface supports displaying not only text but also files, audio, video, diagrams, and more.

With the available infrastructure and our curated datasets, we can also generate follow-up tasks such as data analyses and interactive dashboards, providing extended value to our clients.





Technology-Roadmap



Short-Term Goals (1-2 Years):

Integration of new Features:

- Develop and integrate advanced language processing capabilities.
- Implement additional multilingual support.
- Include enhanced personalized customization options based on user behavior and requirements.

Improve UX & Accessibility:

- Improve the user interface and overall user experience.
- Develop simpler integration tools for third-party systems.

Security & Data Protection:

- Strengthen data security measures.
- Ensure compliance with new data protection laws and regulations.

Mid-Term Goals (3-5 Years):

Expanding AI & Machine Learning Capabilities:

- Integrate more advanced AI technologies such as machine learning and deep learning to improve response quality and context recognition.
- Develop proprietary AI models tailored to solving specific problems for industries in Europe.

Scaling & Adaptation:

- Expand the platform to support a larger user base and a wider variety of use cases.
- Flexibly adapt the platform to meet the needs of different company sizes and industry requirements..

Research & Development:

- Invest in research and development to explore new technologies and innovations in AI.
- Establish partnerships with academic institutions and research laboratories.

Long-Term Goals (5+ Years):

Technological Leadership:

- Position GRAG as a market leader in developing innovative AI solutions.
- Create an ecosystem of products and services built on GRAG's AI technologies.

Globale Expansion:

- Increase presence in international markets.
- Adapt products to meet specific regional requirements and cultural nuances.

Sustainability & Social Responsibility:

- Develop AI solutions that contribute to addressing social and environmental challenges.
- Adhere to sustainability standards across all areas of the company..

This technology roadmap provides a structured plan for the development and scaling of GRAG's AI technologies. It aligns with the company’s short-term and long-term objectives, ensuring that GRAG remains at the forefront of technological innovation.

Consideration of Trends in Conversational AI & Open-Source LLMs

Natural Language Processing & Machine Learning Hybrid Models:

The combination of NLP and ML enables better understanding of human language and supports more natural, context-aware interactions.

Multilingual & Multimodal AI-Systems:

Advances in multilingual support and the integration of multiple modalities, such as speech, vision, and gestures, are enhancing the versatility of AI systems.

Personalized Marketing Approaches:

Conversational AI facilitates highly personalized marketing experiences, strengthening customer engagement and loyalty.

Security and Privacy Considerations:

Ensuring compliance with data protection regulations and implementing robust security protocols remains a priority.

Democratization of Conversational AI Development:

Low-code/no-code platforms and open-source frameworks empower non-technical domain experts to develop conversational AI solutions, broadening accessibility and innovation.

Self-Improvement and Continuous Learning:

Conversational AI systems are increasingly capable of self-improvement and continuous learning, enhancing their adaptability and performance over time.

Location

The company will be headquartered in Frankfurt am Main, Hessen. Its proximity to Hessian.AI, government ministries, and the local open-source community provides advantages for collaboration, alignment, and the execution of closely coordinated projects.

Legal Structure & Regulations

GRAG will be established as a GmbH (limited liability company). Additionally, a non-profit subsidiary (gGmbH) with the same name will be created later to focus on the release of open-source models for the public.

Regulatory Compliance:

When developing advanced conversational AI solutions, regulatory compliance is a critical factor that must not be overlooked. GRAG must ensure that its operations, technologies, and platforms adhere to all relevant laws, regulations, and ethical standards.

1. Data Protection & Privacy:

GRAG must prioritize data protection and privacy to build trust with its customers and users. Compliance with regional data protection regulations such as the General Data Protection Regulation (GDPR) in the EU and the California Consumer Privacy Act (CCPA) in the US is essential.

- Implement robust security measures.
- Obtain explicit consent for data collection and processing.
- Provide clear data privacy policies to all stakeholders.

2. Intellectual Property Rights:

GRAG must respect and enforce intellectual property rights when developing its AI platforms and solutions.

- Secure necessary licenses, permissions, and patents to protect its IP.
- Ensure it does not infringe on the IP of others.
- Conduct regular audits and stay up-to-date with copyright changes.

3. Ethical Considerations:

GRAG should address ethical concerns related to AI solutions.

- Mitigate biases and ensure fairness in data collection and algorithmic decision-making.
- Develop transparent and explainable AI models to avoid discriminatory practices.
- Implement clear policies and compliance protocols to protect users from unethical use of their data.

4. Industry-Specific Regulations:

GRAG should comply with industry-specific regulations that may affect its AI solutions.

- For healthcare-related conversational AI, adhere to regulations such as the Health Insurance Portability and Accountability Act (HIPAA) in the US to secure sensitive patient information.

5. Anti-Money Laundering (AML) & Know Your Customer (KYC) Compliance:

For industries like financial services or e-commerce, GRAG should implement appropriate AML and KYC measures to prevent fraudulent activities.

- Conduct background checks on customers.
- Monitor transactions and report suspicious activities as required by authorities.

6. International Compliance:

To operate globally, GRAG must comply with international regulations and laws governing AI technologies.

- Understand cross-border data transfer restrictions and export control regulations.
- Ensure adherence to local laws in various regions to avoid legal complications and ensure smooth operations.

Steps to Ensure Compliance

- **Dedicated Legal and Compliance Team:** Monitor regulatory changes, conduct regular audits, and provide ongoing training to employees.
- **Transparency:** Engage in open communication with customers, regulatory bodies, and stakeholders to address concerns and maintain trust.
- **Proactive Approach:** Staying informed about emerging regulations and adapt quickly to maintain compliance.

By prioritizing regulatory compliance, GRAG can minimize legal risks, gain a competitive edge, and build trust with its customers and users, paving the way for long-term success in the evolving field of conversational AI solutions.

Risiken

Risk Analysis & Management

Scenario Analysis:

- Develop various financial scenarios to assess the impact of market changes, new competitors, or shifts in business strategy.
- Maintain flexibility in financial planning to adapt to different market conditions.

This financial planning serves as a critical foundation for GRAG's strategic direction and long-term growth. It aids in setting financial goals, allocating resources effectively, and proactively managing financial challenges.

Market Opportunities:

- Increasing demand for AI solutions across various industries presents a significant opportunity for GRAG.
- Technological advancements, especially in generative AI, provide avenues for product innovation.
- The global market offers expansion potential, particularly in regions with growing technology adoption.

General Risks:

- **Intense Competition:** The AI market is highly competitive, with established technology giants and emerging startups.
- **Technological Challenges:** Continuous innovation and adaptation to new trends are necessary to remain competitive.
- **Privacy and Security:** Ensuring compliance with stringent data protection laws is critical.
- **Dependency on Technology Trends:** Reliance on evolving technology trends poses the risk of rapid product obsolescence.

By proactively addressing these risks and leveraging market opportunities, GRAG can strengthen its position in the competitive landscape and achieve sustainable growth.

Strategies:

GRAG can gain an advantage through continuous innovation and a strong focus on specific market needs. Expanding into new markets should be strategically planned to enable global growth. Partnerships and collaborations can help leverage synergies and expand the product offering.

Risk Management:

Diversification of the product portfolio can minimize the risk of market dependency.

Regular monitoring of technological trends and adapting the product strategy are essential.

Data protection and security measures should always be kept up-to-date and aligned with legal requirements.

Financial Risks

Investments & Market Valuations: AI startups, including those in the conversational AI domain, face challenges in securing investments and achieving favorable market valuations. There is a growing tendency for investors to adopt a more cautious approach, particularly following the hype cycle associated with AI technologies.

Liquidity Management: Efficient liquidity management is crucial to cover ongoing operational costs and navigate the company through various market phases.

Technological Risks

Security of AI Tools: As AI tools become more widespread, security teams must address challenges such as data poisoning and model inversion.

Cyber Threats: The democratization of AI tools may lead to more advanced attacks targeting firmware and hardware.

Over-Reliance on AI: Excessive dependence on AI-generated content without human oversight can result in misinformation and a lack of accountability.

Ethics & Compliance

Ethics and Fairness: There is a pressing need to minimize biases in AI models and ensure ethical AI practices.

Regulatory Challenges: The rapid evolution of AI poses difficulties for regulatory frameworks to keep pace.

Market & Industry Risks

Competitive Intensity: The AI market is highly competitive, with large technology companies and emerging startups vying for dominance.

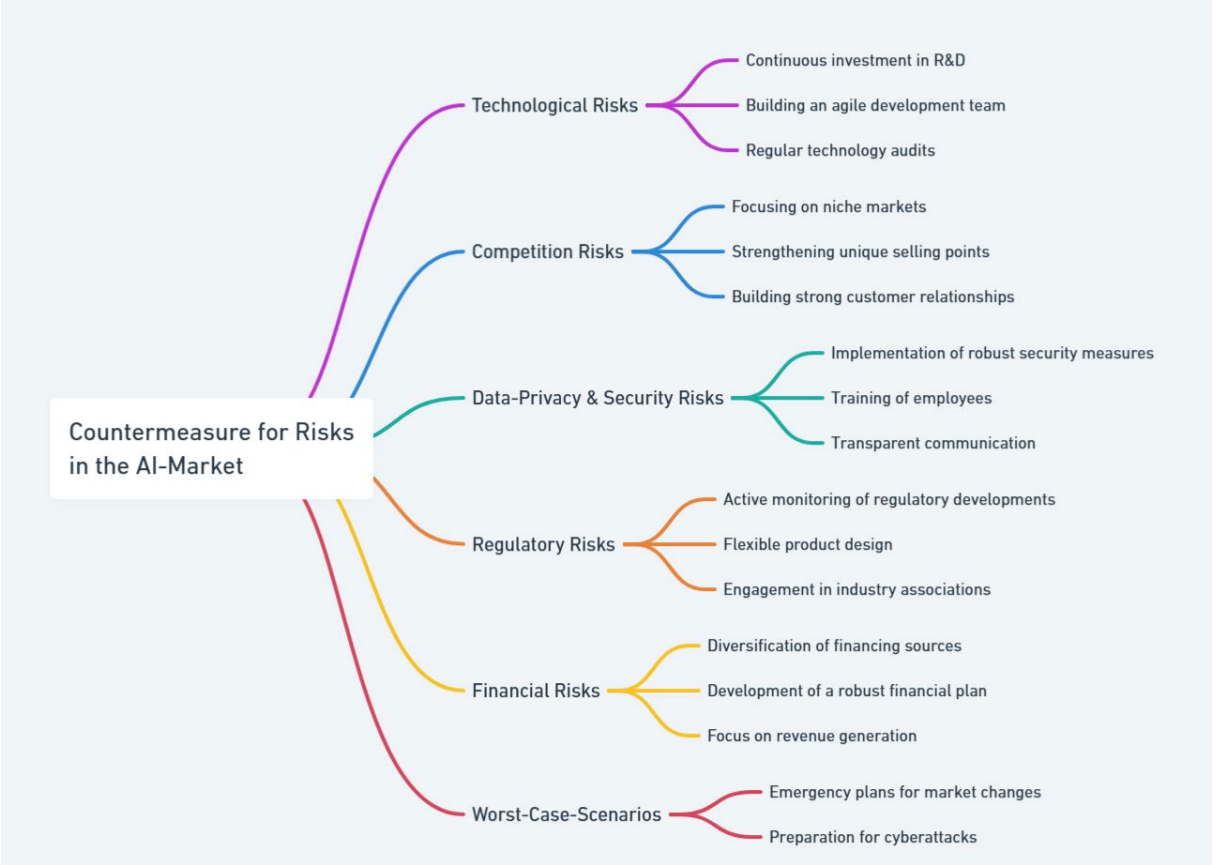
Technological Challenges: Continuous innovation and adaptation to new trends are crucial for maintaining relevance.

Risk Mitigation Strategies

Diversification: Diversifying the product portfolio can minimize dependency on specific markets.

Technology Monitoring: Regular monitoring of technological trends and adjusting the product strategy accordingly are essential.

Data Protection Measures: Updating data protection and security protocols to comply with legal requirements is critical.



Worst-Case-Scenarios

Emergency Planning:

- Develop contingency plans for various market changes or technological breakthroughs by competitors.
- Prepare for potential cyberattacks and devise strategies for rapid response and damage mitigation.

GRAG will continuously create emergency plans to address market shifts or technological advancements by competitors:

Countermeasures for Risks

Technological Risk

Impact: Loss of competitiveness

Countermeasures:

- Continuous investment in R&D
- Building an agile development team
- Conducting regular technology audits

Data Protection and Security Risk

Impact: Reputational damage, legal consequences

Countermeasures:

- Implementing robust security measures
- Training employees
- Transparent communication

Financing Risk

Impact: Slowed growth

Countermeasures:

- Diversifying funding sources
- Developing a robust financial plan
- Focusing on revenue generation

Competitive Risk

Impact: Loss of market share, price pressure

Countermeasures:

- Focusing on niche markets
- Strengthening unique selling points
- Building strong customer relationships

Regulatory Risk

Impact: Required product adaptations

Countermeasures:

- Actively monitoring regulatory developments
- Designing flexible products
- Engaging with industry associations

Detailed Risk Analysis

1. Market Risk

The conversational AI market is highly competitive and rapidly evolving. GRAG will face competition from established tech giants and emerging startups. To stay ahead, GRAG must differentiate itself and continuously adapt to changing market needs.

2. Technology Risk

Developing advanced conversational AI solutions requires expertise in natural language processing, machine learning, and knowledge graph integration. Keeping up with the rapidly changing technological landscape is challenging. GRAG must invest continuously in research and development to stay ahead of emerging technologies and maintain a competitive edge.

3. Data Protection and Security Risk

GRAG will handle large volumes of sensitive data, including customer interactions and personal information. Ensuring data privacy and security is critical to gaining and maintaining customer trust. GRAG must invest in robust data protection measures, comply with relevant regulations, and conduct regular security audits to minimize the risk of data breaches.

4. Quality and Accuracy Risk

GRAG aims to deliver precise and contextually relevant conversational AI solutions. Consistently achieving high-quality and accurate results can be challenging. Errors in language processing, knowledge graph integration, or data analysis may result in incorrect or irrelevant responses. GRAG must implement thorough testing procedures and continuous quality assurance measures to ensure the reliability of its AI models.

5. Customer Adoption Risk

Convincing businesses to adopt GRAG's AI solutions and overcoming skepticism or resistance is essential. Effectively communicating the value and benefits of conversational AI, addressing concerns about implementation and integration, and showcasing success stories will drive customer adoption. GRAG should allocate resources to develop strong marketing and sales strategies focused on education and engagement.

6. Regulatory and Ethical Risk

The use of conversational AI raises ethical concerns about privacy, data usage, and AI bias. GRAG must adhere to relevant regulations and uphold ethical standards. Staying informed about regulatory developments, practicing transparency in data

handling, and addressing potential bias issues are crucial to mitigating regulatory and ethical risks.

7. Dependency and Partnership Risk

GRAG may rely on external partners or technology providers for certain resources, algorithms, or data sources. This dependence poses risks such as supply chain disruptions, contract breaches, or difficulties in conflict resolution. GRAG should develop contingency plans, conduct due diligence when forming partnerships, and establish backup options to address potential disruptions.

8. Financial Risk

As with any business endeavor, financial risks are inherent in founding and scaling GRAG. Investments in research and development, talent acquisition and retention, marketing and sales, and operational costs require significant financial resources. GRAG must manage its finances carefully, secure adequate funding, and maintain a strong financial position to withstand unexpected economic downturns or setbacks.

Conclusion

By addressing and mitigating these risks, GRAG can significantly improve its chances of success in the dynamic and competitive conversational AI industry. A proactive and adaptive approach, combined with a commitment to innovation and customer satisfaction, will be critical in overcoming challenges and seizing opportunities in this fast-paced market.

Financial Planning

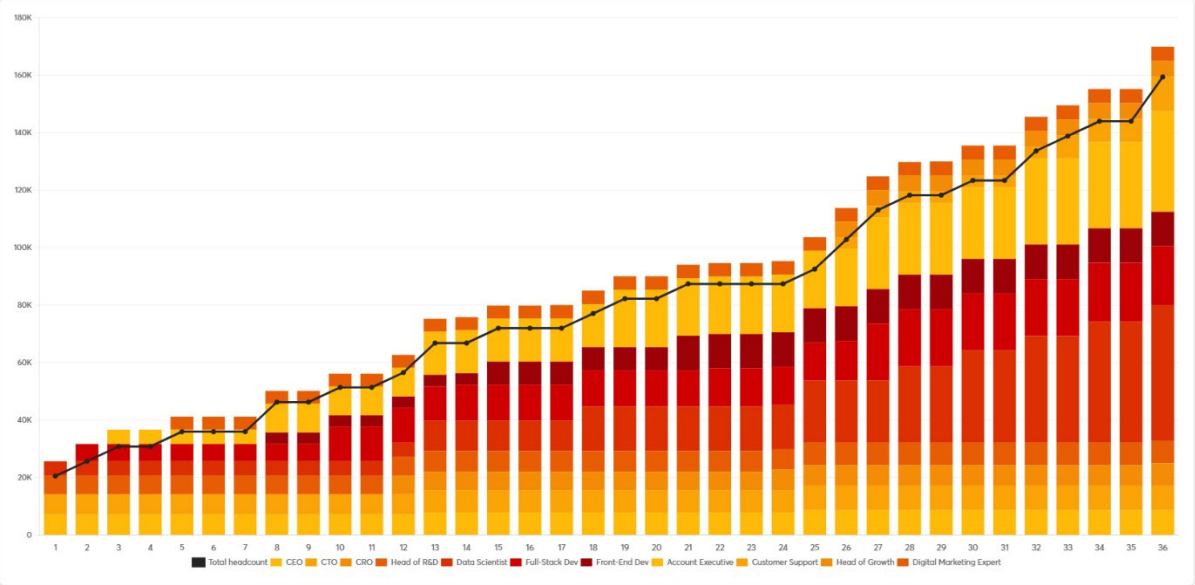
Assumptions (Basis-Scenario)

The following outlines the key assumptions for the revenue streams and cost centers that form the foundation for GRAG's financial projections. The modeling assumes an initial focus on Germany in the first year, expansion to the DACH region in the second year, and further growth into the EU region starting in the third year.

Personnel

The team from the research project will transition into the new startup and be assigned new roles. GRAG will start with a core team of four experienced members, who have already spent 1.5 years researching and developing a prior AI project together. This ensures a strong foundation of collaboration, expertise, and readiness to scale the business.

Name	Position	Gehalt
Marcel Rosiak	CEO	7.200€
Soumya Paul	CTO	7.000€
Siavash Mollaebrahim	Head of R&D	6.500€
Zain Ul Haq	Data Scientist	5.000€



The salaries of team members at the time of founding will increase by 10% annually to account for market trends and employee retention.

The management team will have the opportunity to receive additional stock options from the employee pool upon achieving predefined milestones.

Over the next 36 months, the following positions will be filled:

Position	Salary	Employment-Turnus
		Months of Employment
Full-Stack Developer	6.000€	**2, 10, 27**
Front-End Developer	4.000€	**8, 15, 21**
Data Scientist	5.000€	**13, 18, 25, 28, 30, 32, 34, 36**
Account Executive	5.000€	**3, 8, 13, 19, 27, 32, 36**
Customer Support	4.000€	**26, 34, 36**
Digital Marketing Expert	4.500€	**5**
Head of Growth	5.500€	**26**
Chief Revenue Officer (CRO)	6.500€	**12**

The salaries of team members who join after the founding will increase by 5% annually to account for market adjustments and to ensure employee retention. The management team, specifically the Chief Revenue Officer (CRO) and Head of Growth, will have the opportunity to receive additional stock options from the employee pool upon achieving predefined milestones. Their salaries will increase by 10% annually to reflect their critical contributions and leadership roles.

Position	Year 1	Year 2	Year 3
CEO	86.400,00 €	95.040,00 €	104.544,00 €
CTO	84.000,00 €	92.400,00 €	101.640,00 €
CRO	6.500,00 €	78.650,00 €	86.515,00 €
Head of R&D	78.000,00 €	85.800,00 €	94.380,00 €
Data Scientist	60.000,00 €	161.000,00 €	387.100,00 €
Full-Stack Dev	84.000,00 €	152.400,00 €	227.640,00 €
Front-End Dev	20.000,00 €	104.000,00 €	144.000,00 €
Account Executive	75.000,00 €	210.000,00 €	320.000,00 €
Customer Support	-	-	64.000,00 €
Head of Growth	-	-	60.500,00 €
Digital Marketing Expert	36.000,00 €	55.800,00 €	58.590,00 €
Total Personnel Costs	529.900,00 €	1.035.090,00 €	1.648.909,00 €
Total additional Wage-Costs	94.190,05 €	177.044,06 €	280.802,69 €
TOTAL COSTS	**624.090,05€**	**1.212.134,06€**	**1.929.711,69€**

Marketing & Acquisition Streams

To estimate customer acquisition, several assumptions regarding conversion rates from different channels have been made. Industry-standard rates were used as an initial benchmark:

Acquisition Stream: Advertising

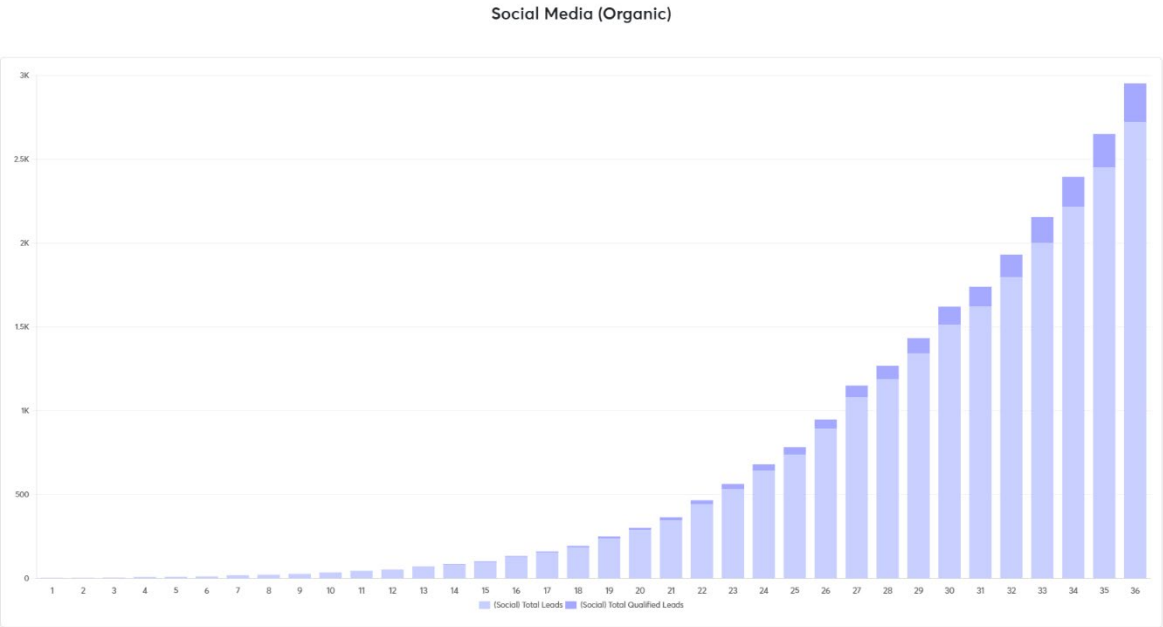
The advertising budget will start with a daily amount of €30 and will increase by 10% each month. The conversion rate from visitor to lead will start at 5% and will increase by 3% monthly until reaching a maximum target of 12%. The conversion rate from lead to qualified lead will start at 15% and will increase by 2% monthly until reaching a maximum target of 25%. These assumptions ensure a gradual improvement in customer acquisition efficiency and provide a structured approach to scaling marketing efforts.

Konvertierung	Conversion	Conversionrate
Besucher zu Lead	**VISITOR to LEAD**	**6%**
Lead zu qualifiziertem Lead	**LEAD to QUALIFIED LEAD**	**20%**

Interest-Type	Year 1	Year 2	Year 3
Visitors (Ads)	**5.301**	**11.671**	**25.693**
Lead (Ads)	**361**	**1.008**	**2.812**
Qualified Lead (Ads)	**75**	**299**	**682**

Acquisition Stream: Social-Media (Organic)

For our social media channels, we will begin with an initial follower base of 20 followers each for LinkedIn, Facebook, and Instagram. For Twitter, we will start with 10 followers, including 5 Medium followers. We plan to publish an average of 3 posts per platform at the start. The average number of posts will increase by 1 post per quarter, but will not exceed 10 posts per platform. The conversion rate from visitor to lead will start at 3% and will increase by 2% monthly, up to a maximum target of 10%. The conversion rate from lead to qualified lead will start at 3% and will increase by 5% monthly, up to a maximum target of 10%. This strategy ensures steady growth in audience engagement and lead generation through structured and scalable social media activities**.**

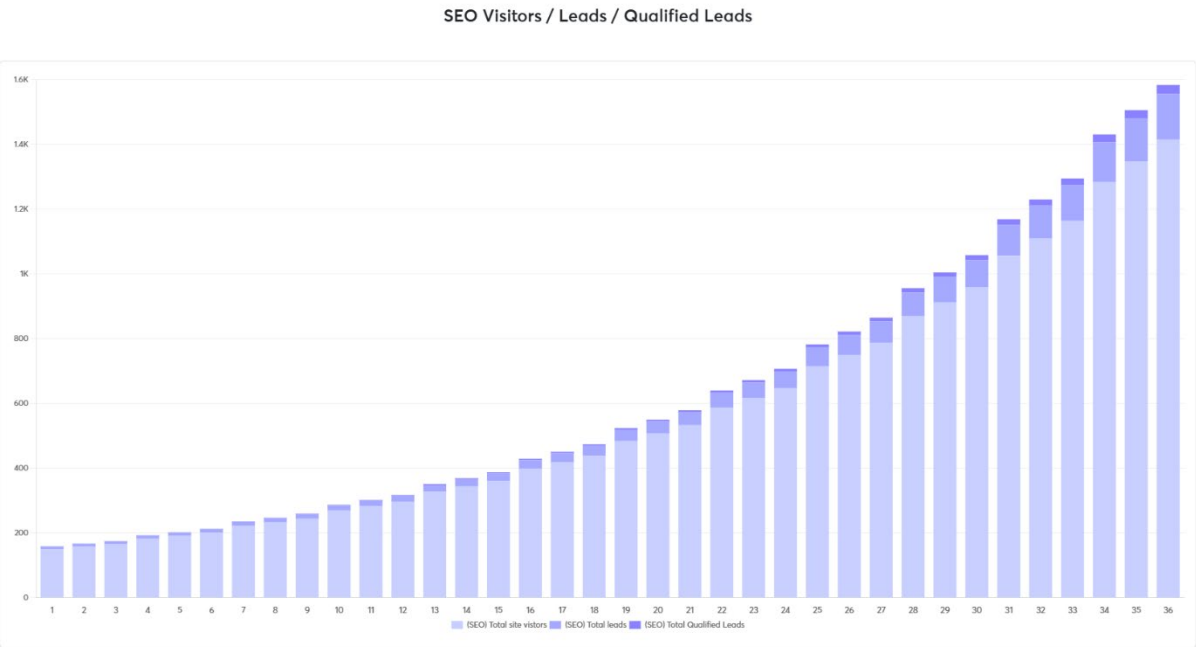


Konvertierung	Conversion	Conversionrate
Besucher zu Lead	**VISITOR to LEAD**	**2%**
Lead zu qualifiziertem Lead	**LEAD to QUALIFIED LEAD**	**3%**

Interest-Type	Year 1	Year 2	Year 3
Reach (Social)	**10.720**	**108.868**	**533.384**
Lead (Social)	**250**	**3.213**	**19.575**
Qualified Lead (Social)	**8**	**173**	**1.465**

Acquisition Stream: SEO (Organic)

For the organic growth of the website, we estimate that approximately 5,000 monthly search queries for terms such as "Graph Retrieval Augmented Generation," "Graph-RAG," and "GRAG" can be expected in the German-speaking region, based on Google search frequency data. We assume that 3% of users who see our Google search result will convert into visitors to our website. From these visitors, we estimate a conversion rate to leads of 5%, given the high relevance of our messaging to the visitor's problem. This conversion rate is planned to improve by 3% each month, up to a maximum of 20%. Among these potential leads, we expect that 10% will convert into qualified leads, assuming they have a concrete need for the solutions we offer. This conversion rate is planned to improve by 2% each month, up to a maximum of 20%. This approach leverages the organic search potential to create a structured pipeline of leads and qualified opportunities, focusing on optimization over time to maximize impact.

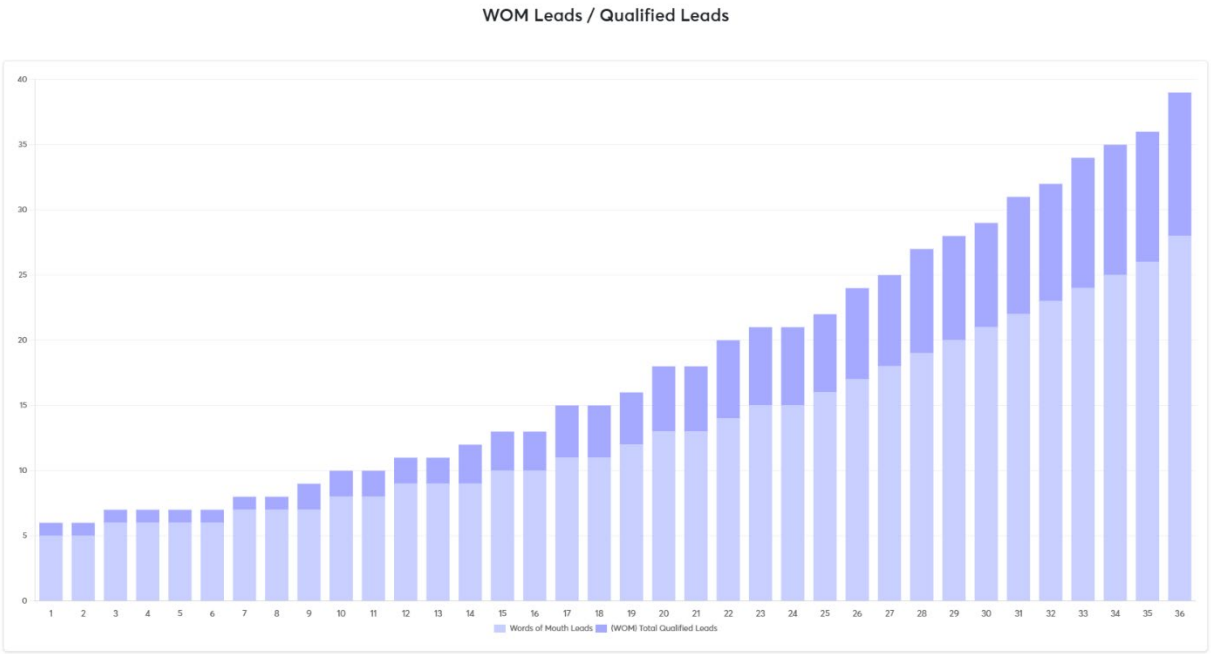


Konvertierung	Conversion	Conversionrate
Suchansicht zu Besucher	**IMPRESSION to VISITOR**	**3%**
Besucher zu Lead	**VISITOR to LEAD**	**5%**
Lead zu qualifiziertem Lead	**LEAD to QUALIFIED LEAD**	**10%**

Interest-Type	Year 1	Year 2	Year 3
Website Visitor (SEO)	**2.595**	**5.665**	**12.368**
Lead (SEO)	**147**	**410**	**1.128**
Qualified Lead (SEO)	**16**	**59**	**207**

Acquisition Stream: Word-of-Mouth (WoM) / Network (Organic)

For contacts originating from our network, we estimate an initial 5 contacts per month. This number is expected to increase by an average of 5% per month through referral marketing efforts. The conversion rate from network contacts to leads is assumed to start at 20%. This rate will improve by 5% each month, up to a maximum of 40%. This strategy leverages the power of referral marketing to drive consistent growth in high-quality leads while optimizing conversion rates over time.

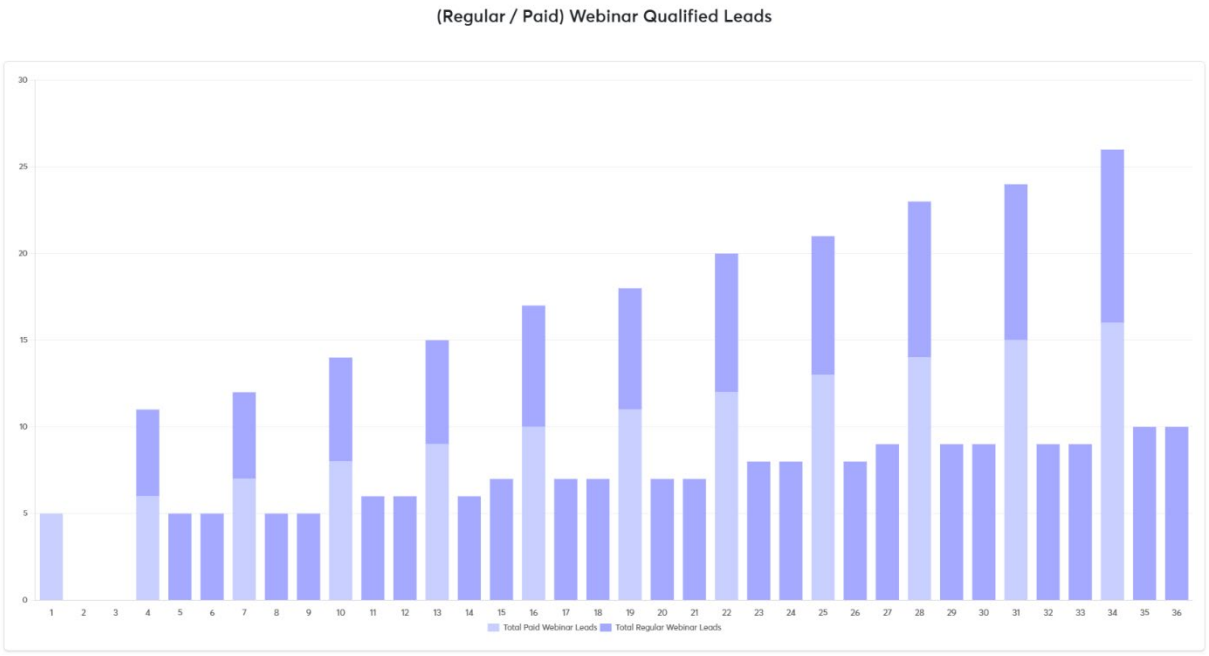


Konvertierung	Conversion	Conversionrate
Lead zu qualifiziertem Lead	**LEAD to QUALIFIED LEAD**	**15%**

Interest-Type	Year 1	Year 2	Year 3
Lead (WOM)	**80**	**142**	**259**
Qualified Lead (WOM)	**16**	**51**	**103**

Acquisition Stream: Webinar (Paid / Organisch)

For contacts generated from paid webinars, we estimate an average of 5 contacts per webinar. For our own organically hosted webinars, starting from the fourth month, we anticipate an average of 5 contacts per webinar. Additionally, we project an increase of 1 contact every six months for organically hosted webinars. This approach ensures a steady flow of contacts through both paid and organic webinars, with a structured plan for growth in organically generated leads over time.



Sales

In sales, we calculate future customer acquisition based on assumed conversion rates from qualified leads to customers. These rates are derived from industry-standard values and insights from the software companies within the group.

The **consulting income stream** applies to all advisory activities, both within and outside the group. Additionally, there are two income streams for the various services offered, divided into **project-based contracts** and **subscriptions** (recurring models). These are further categorized into, **Group-based contracts:** GRAG – Group & Copilot Group, **externally generated contracts:** GRAG – Extern & Copilot Extern. For every completed project, a **maintenance and support contract** will be signed, represented in the respective "Subscription" income stream. The acquisition stream from regular and paid webinars deserves special attention, as we expect to acquire approximately **5 qualified leads per webinar**. These leads are ideal candidates for **upselling** into the consulting income stream.

This structured sales model ensures a diversified revenue base while leveraging cross-selling and upselling opportunities from various acquisition channels.

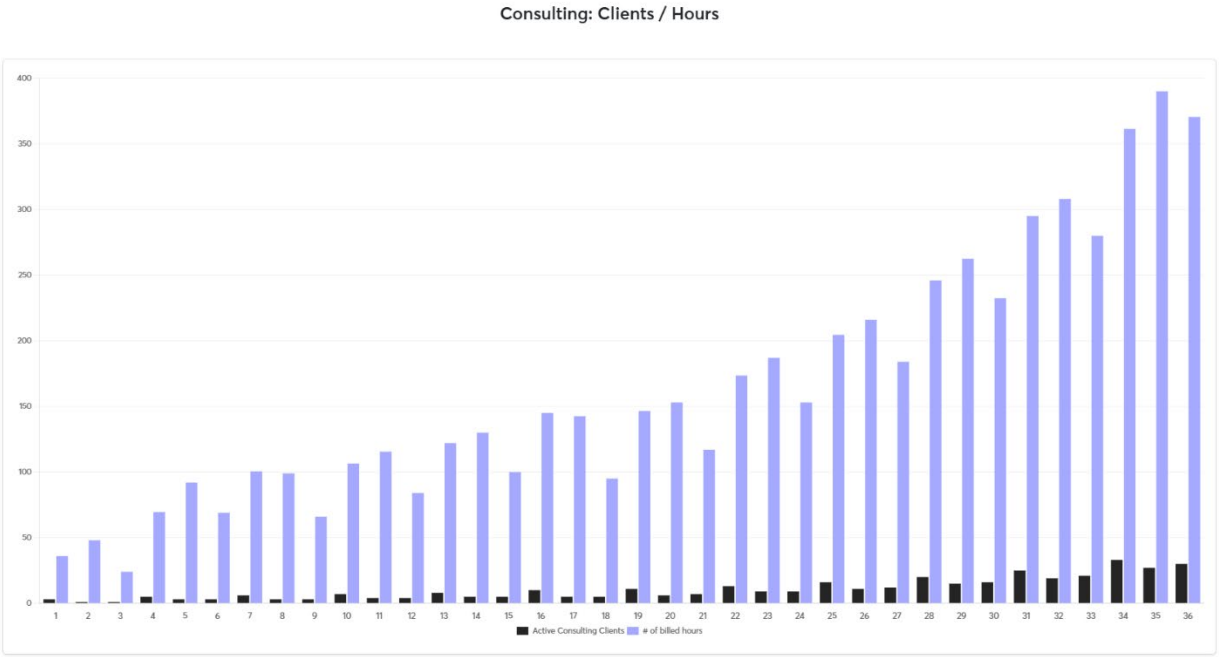
Customer Stream: Consulting

For the customer stream of consulting services, we assume that 15% of qualified leads will convert into customers. This conversion rate is planned to be optimized by 2% each quarter and capped at a maximum conversion rate of 25%. To estimate the average value of a consulting engagement, we assume that the total consulting time at the beginning will average around 24 hours, and we aim to reduce this by 1 hour per quarter but will never provide less than 4 hours of consulting. The consulting services are divided into data consulting and consulting for generative AI. In addition to the other acquisition streams, the contacts acquired through webinars will also be subsequently consulted.

Konvertierung	Conversion	Conversionrate
Qualified Lead to Customer	**QUALIFIED LEAD to CUSTOMER**	**15%**

Interest-Type	Year 1	Year 2	Year 3
Qualified Lead to Customer	**43**	**93**	**245**

Consulting: Hours	Year 1	Year 2	Year 3
Count of billed Hours	**910**	**1.664**	**3.350**



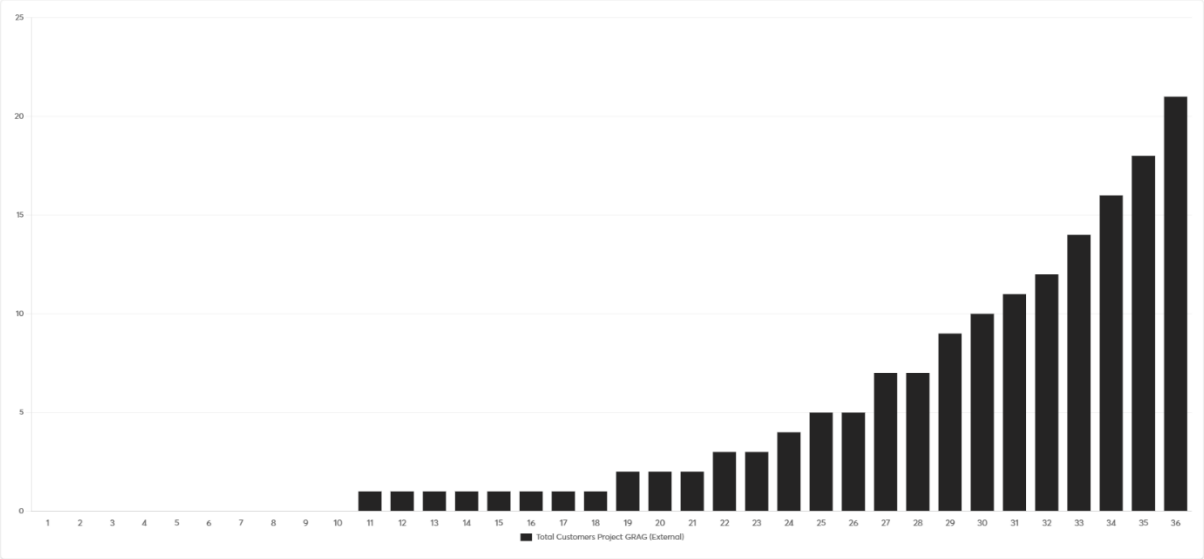
Customer Stream: GRAG (External)

For the customer stream "GRAG (external)," we assume that 6% of qualified leads will convert into customers. This conversion rate is planned to be optimized by 2% each quarter starting from the 12th month. We assume an initial churn rate of 10%, with the expectation of reducing the customer churn rate by 5% each quarter.

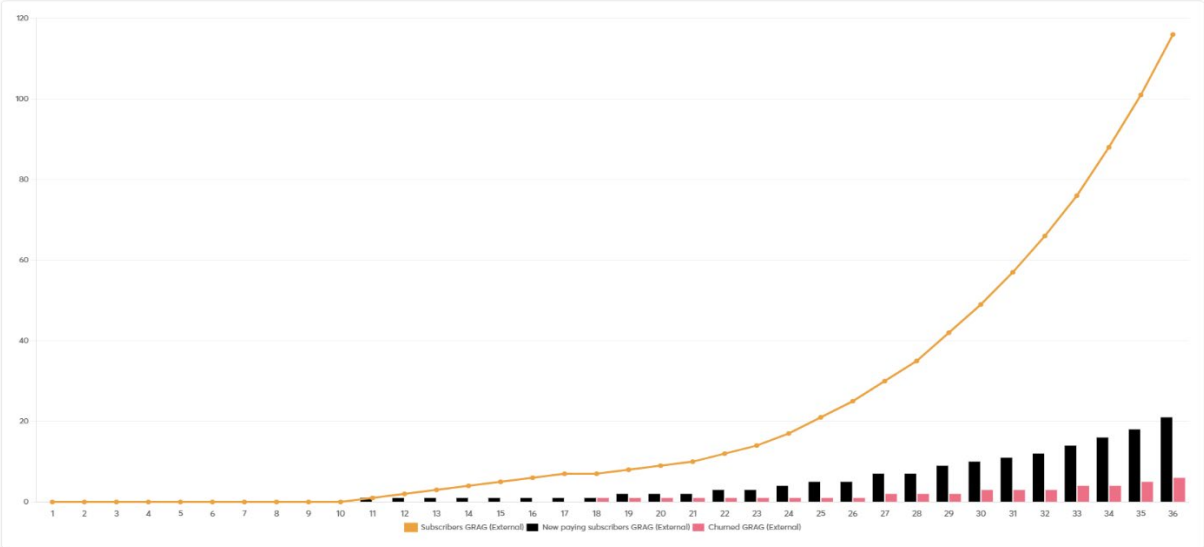
Konvertierung	Conversion	Conversionrate
Qualified Lead to Customer	**QUALIFIED LEAD to CUSTOMER**	**6%**

Interest-Type	Year 1	Year 2	Year 3
Qualified Lead to Customer	**2**	**22**	**135**

Project-Based New Customers:



Accumulated Subscribers:



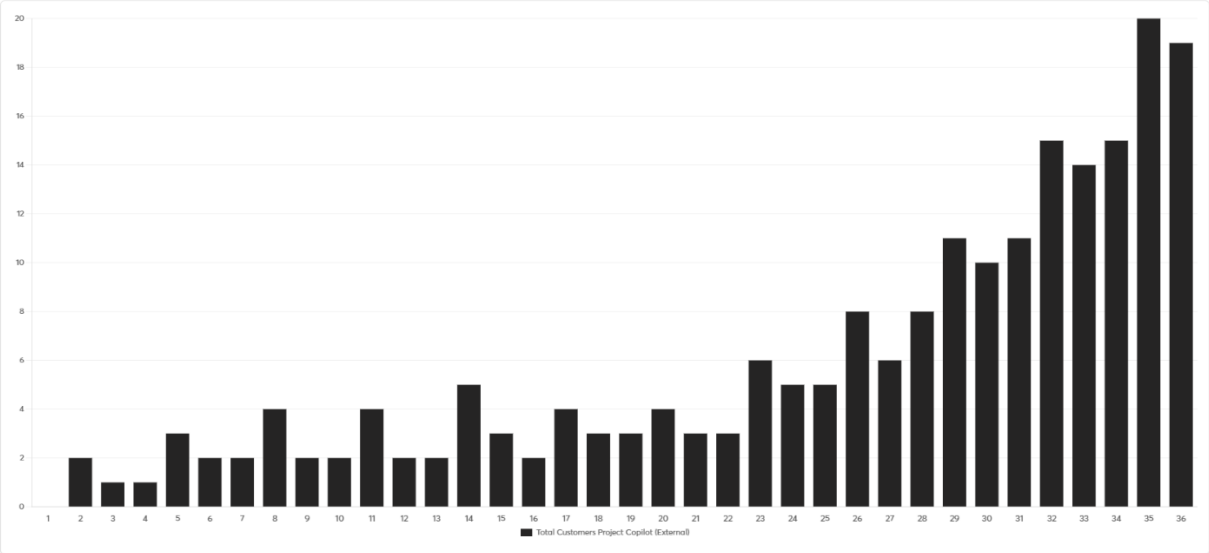
Customer Stream: Copilot (External)

For the customer stream "Copilot (external)," we assume that 7% of qualified leads will convert into customers. This conversion rate is planned to be optimized by 2% each quarter.

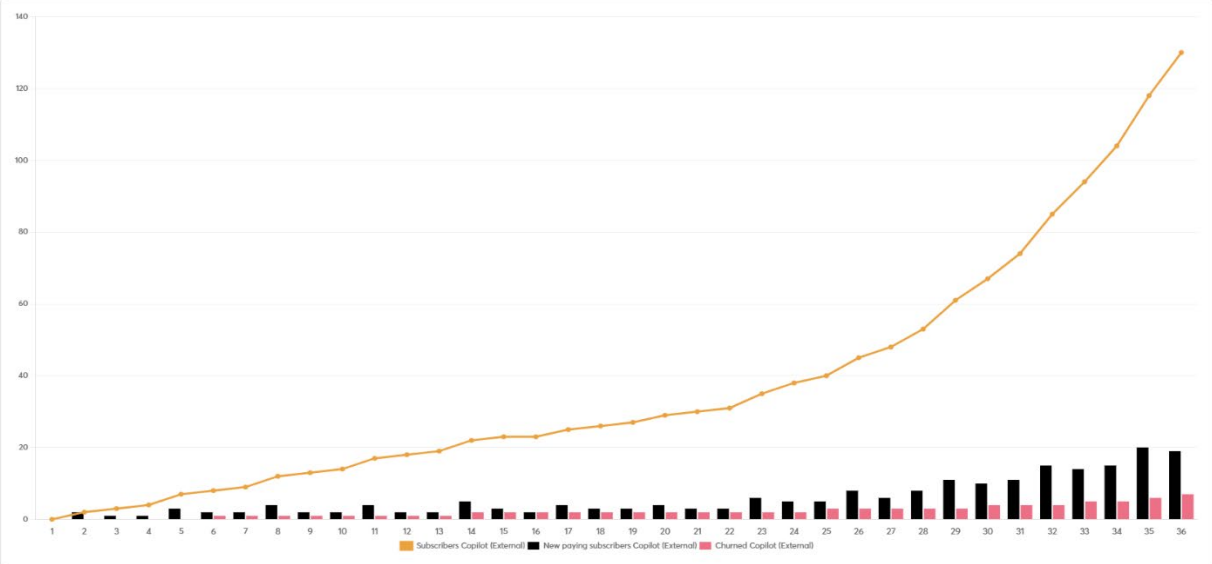
Konvertierung	Conversion	Conversionrate
Qualified Lead to Customer	**QUALIFIED LEAD to CUSTOMER**	**7%**

Interest-Type	Year 1	Year 2	Year 3
Qualified Lead to Customer	**25**	**43**	**142**

Project-Based New Customers:



Accumulated Subscribers:

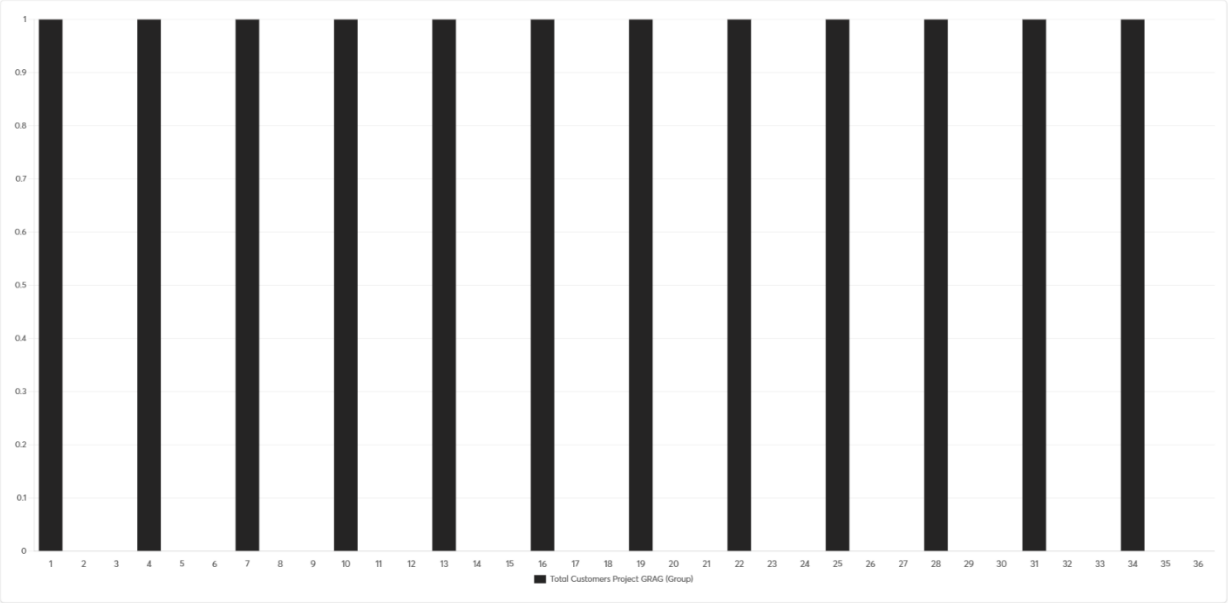


Customer Stream: GRAG (Group)

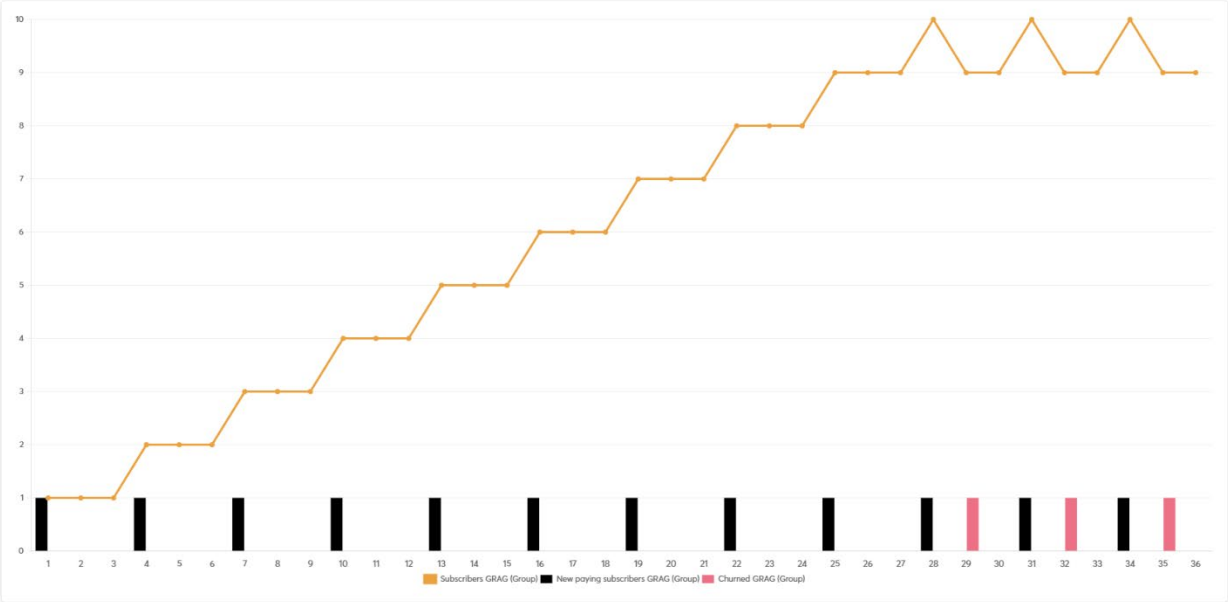
For the customer stream "GRAG (Group)," we assume that a project within the group will be commissioned every 3 months. We assume an initial churn rate of 10%, with the expectation of reducing the customer churn rate by 5% each month until reaching a minimum of 5%.

Interest-Type	2025	2026	2027
Qualified Lead to Customer	**4**	**4**	**4**

Project-Based New Customers:



Accumulated Subscribers:

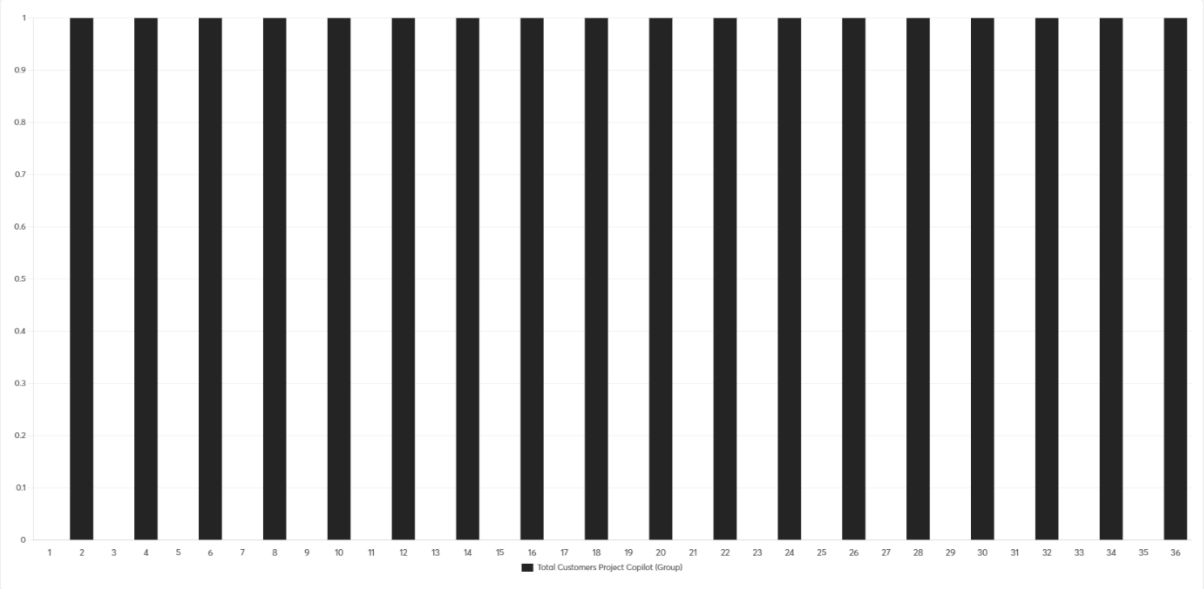


Customer Stream: Copilot (Group)

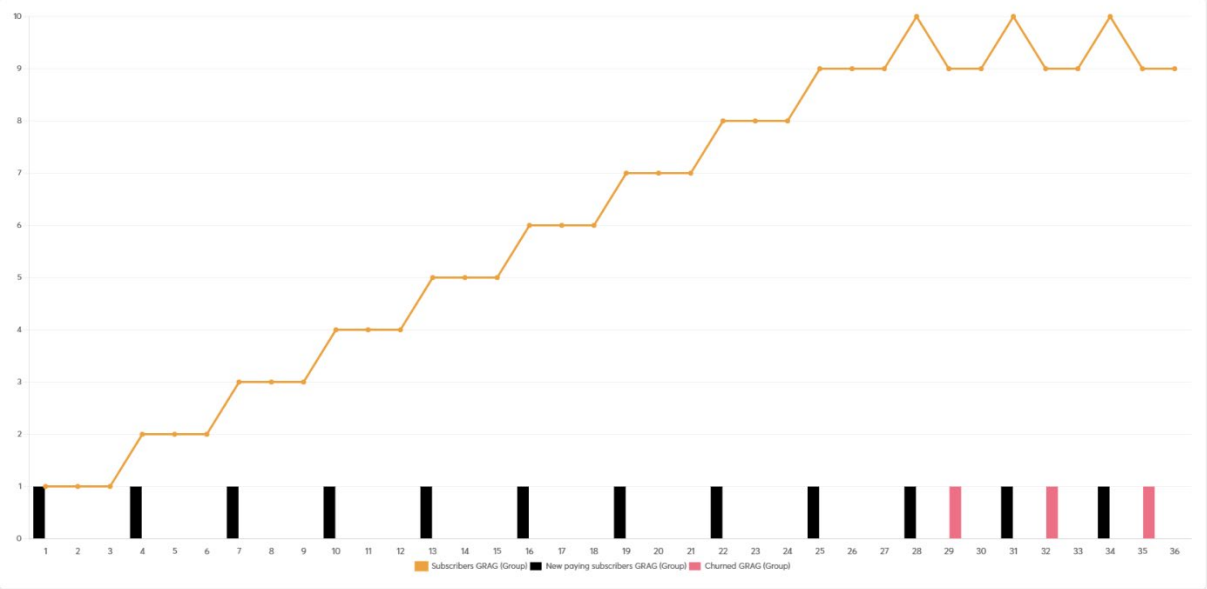
For the customer stream "Copilot (Group)," we assume that a project within the group will be commissioned every 2 months. We assume an initial churn rate of 10%, with the expectation of reducing the customer churn rate by 5% each month until reaching a minimum of 5%.

Interest-Type	Year 1	Year 2	Year 3
Qualified Lead to Customer	**6**	**6**	**6**

Project-Based New Customers:



Accumulated Subscribers:



Income Stream: Consulting

For the income stream of consulting services, we assume that the total consulting time will initially average around 24 hours. This duration will be reduced by 1 hour per quarter but will never drop below 4 hours. The consulting services are divided into two types: data consulting and consulting for generative AI. For data consulting, we assume an hourly rate of €150 and that it will account for 20% of the total consulting services. For consulting for generative AI, we assume an hourly rate of €200 and that it will account for 80% of the total consulting services. In addition to other acquisition streams, the contacts acquired through webinars will also be subsequently consulted.

Beratungstyp	Anteile	Price/Stunde
Data & Training	**20%**	**200€**
Generative AI	**80%**	**250€**

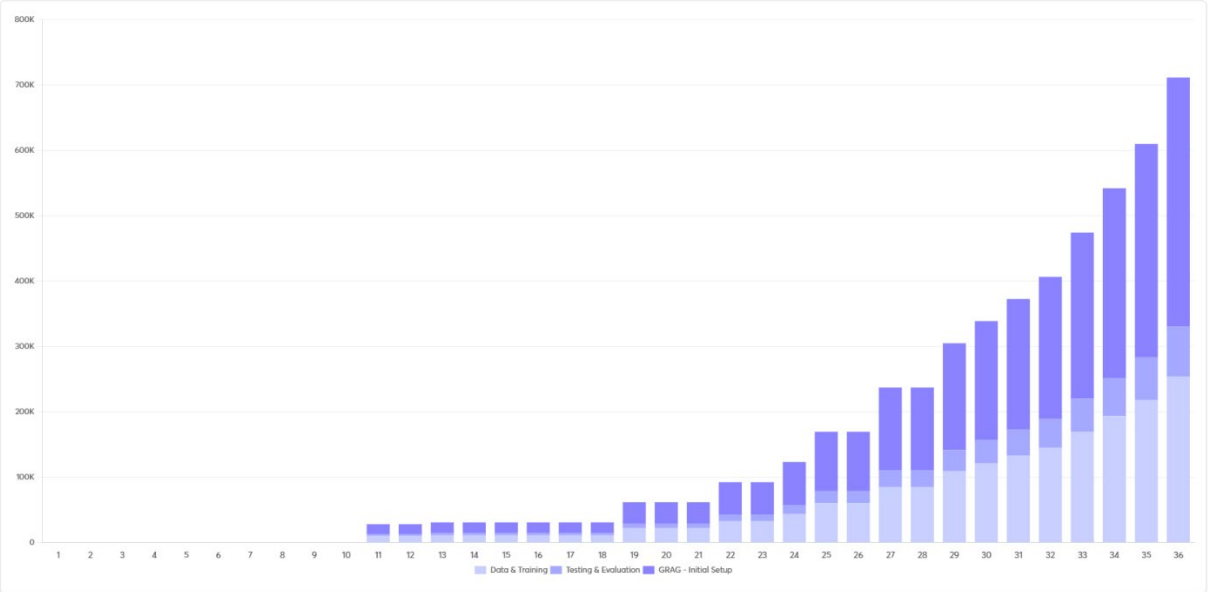
Consulting: Revenue	Year 1	Year 2	Year 3
Count of billed Hours	**910**	**1.664**	**3.350**
Full-Time-Equivalent (1760 Hrs / Year)	**0.51**	**0.94**	**1.90**
Revenue Consulting	**218.400€**	**399.480€**	**804.120€**
Count of Employees	**11**	**17**	**31**

Income Stream: GRAG (External)

For the income stream "GRAG (External)," we assume a project volume of €28,000. The largest portion of this amount is allocated to the setup of the application at €15,000, followed by data and training at €10,000, and finally €3,000 for testing and evaluating the models and application. We plan to increase these prices by 10% annually.

Project-based Revenue:

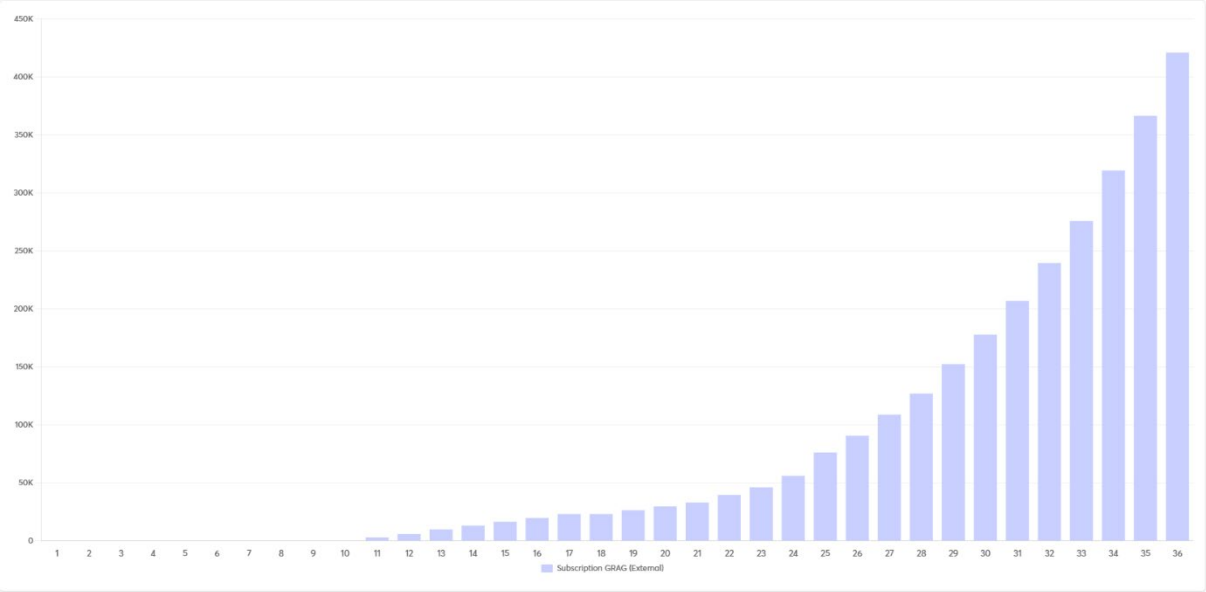
Sub-Products	Payment Terms	Price
Data & Training	**One-Time-Fee**	**10.000€**
Testing & Evaluation	**One-Time-Fee**	**3.000€**
GRAG - Initial Setup	**One-Time-Fee**	**15.000€**



Projekt Revenue	Year 1	Year 2	Year 3
Data & Training	**20.000€**	**242.000€**	**1.633.500€**
Testing & Evaluation	**6.000€**	**72.600€**	**490.050€**
GRAG - Initial Setup	**30.000€**	**363.000€**	**2.450.250€**
Revenue Projekt	**56.000€**	**677.600€**	**4.573.800€**
Count of Employees (Total)	**11**	**17**	**31**

Subscription-based Revenue:

Sub-Products	Payment Terms	Price
Subscription GRAG (External)	**(monthly)**	**1.500€**
Subscription GRAG (External)	**(yearly)**	**18.000€**



Subscription Revenue	Year 1	Year 2	Year 3
Revenue Subscriptions	**9.000€**	**336.600€**	**2.562.780€**
Account Executives	**2**	**4**	**7**
Customer Support	**-**	**-**	**3**

TOTAL Revenue GRAG (External):

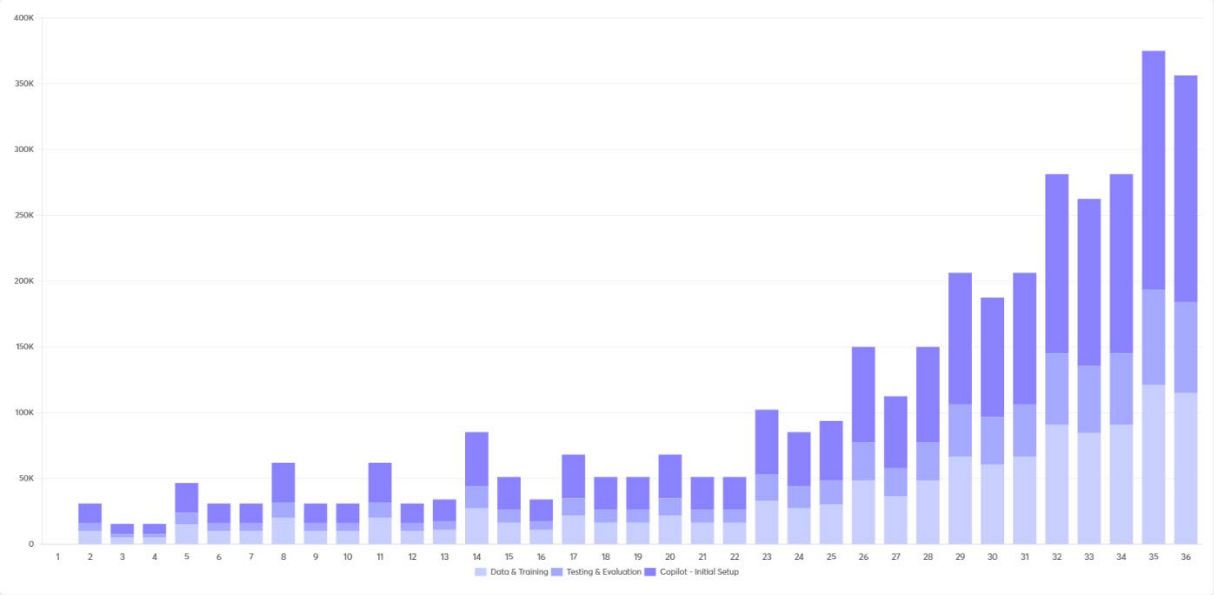
GRAG (External): Revenue	Year 1	Year 2	Year 3
Revenue Project	**56.000€**	**677.600€**	**4.573.800€**
Revenue Subscriptions	**9.000€**	**336.600€**	**2.562.780€**
REVENUE TOTAL	**65.000€**	**1.014.200€**	**7.136.580€**

Income Stream: Copilot (External)

For the income stream "Copilot (External)," we assume a project volume of €20,500. The largest portion of this amount is allocated to data and training at €10,000, followed by the setup of the application at €7,500, and finally €3,000 for testing and evaluating the models and application. We plan to increase these prices by 10% annually in total.

Project-based Revenue:

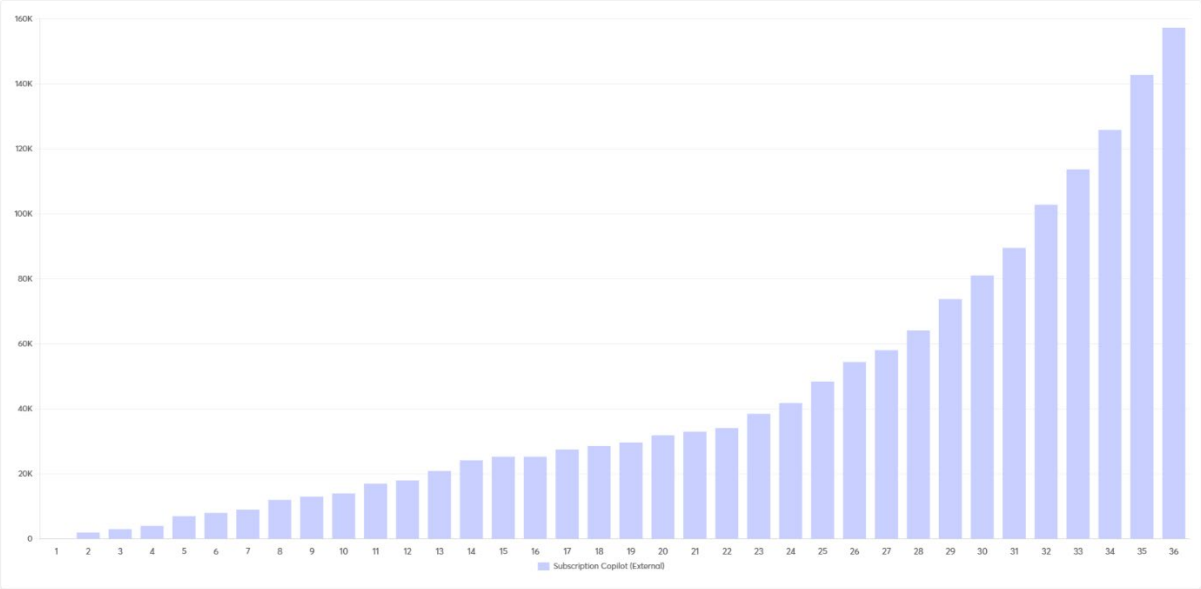
Sub-Products	Payment Terms	Price
Data & Training	**One-Time-Fee**	**10.000€**
Testing & Evaluation	**One-Time-Fee**	**3.000€**
Copilot - Initial Setup	**One-Time-Fee**	**7.500€**



Project Revenue	Year 1	Year 2	Year 3
Data & Training	**125.000€**	**236.500€**	**859.100€**
Testing & Evaluation	**75.000€**	**141.900€**	**515.460€**
COPILOT - Initial Setup	**187.500€**	**354.750€**	**1.288.650€**
Revenue Project	**387.500€**	**733.150€**	**2.663.210€**
Count of Employees (TOTAL)	**11**	**17**	**31**

Subscription-based Revenue:

Sub-Products	Payment Terms	Price
Subscription Copilot (External)	**(monthly)**	**1.000€**
Subscription Copilot (External)	**(yearly)**	**12.000€**



Subscription Revenue	Year 1	Year 2	Year 3
Revenue Subscriptions	**107.000€**	**360.800€**	**1.111.990€**
Account Executives	**2**	**4**	**7**
Customer Support	**-**	**-**	**3**

TOTAL Revenue Copilot (External):

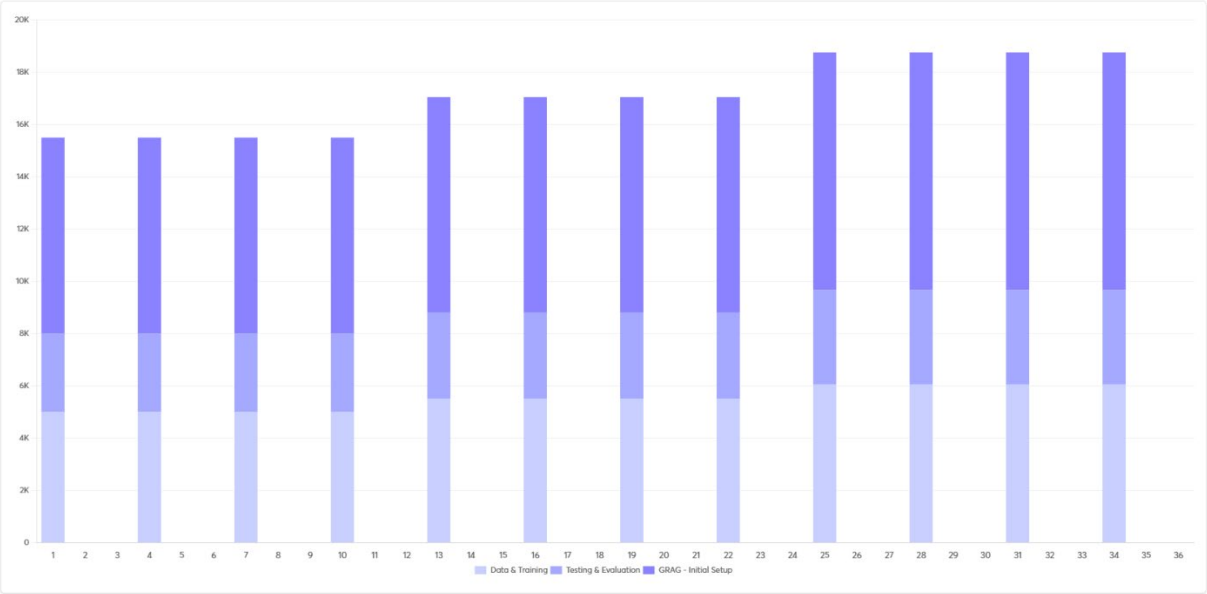
Copilot (External): Revenue	Year 1	Year 2	Year 3
Revenue Project	**387.500€**	**733.150€**	**2.663.210€**
Revenue Subscriptions	**107.000€**	**360.800€**	**1.111.990€**
REVENUE TOTAL	**494.500€**	**1.093.950€**	**3.775.200€**

Income Stream: GRAG (Group)

For the income stream "GRAG (External)," we assume a project volume of €15,500. The largest portion of this amount is allocated to the setup of the application at €7,500, followed by data and training at €5,000, and finally €3,000 for testing and evaluating the models and application. We plan to increase these prices by 10% annually in total.

Project-based Revenue:

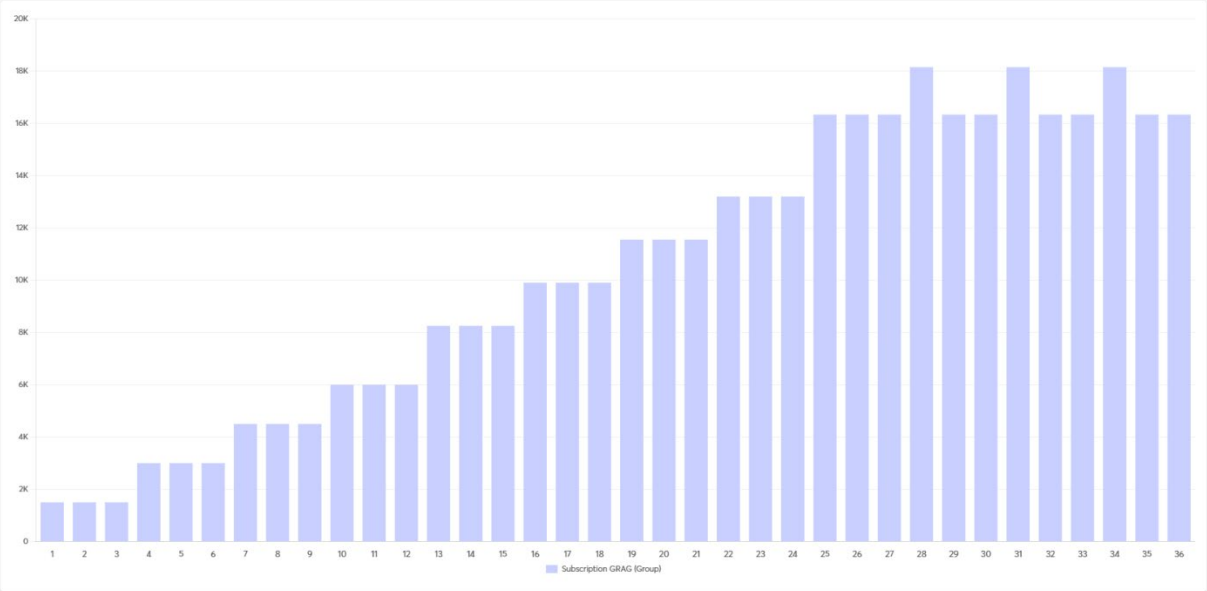
Sub-Products	Payment Terms	Price
Data & Training	**One-Time-Fee**	**5.000€**
Testing & Evaluation	**One-Time-Fee**	**3.000€**
GRAG - Initial Setup	**One-Time-Fee**	**7.500€**



Project Revenue	Year 1	Year 2	Year 3
Data & Training	**20.000€**	**22.000€**	**24.200€**
Testing & Evaluation	**12.000€**	**13.200€**	**14.520€**
GRAG - Initial Setup	**30.000€**	**33.000€**	**36.300€**
Revenue Project	**62.000€**	**68.200€**	**75.020€**
Count of Employees (TOTAL)	**11**	**17**	**31**

Subscription-based Revenue:

Sub-Products	Payment Terms	Price
Subscription GRAG (Group)	**(monthly)**	**1.500€**
Subscription GRAG (Group)	**(yearly)**	**18.000€**



Subscription Revenue	Year 1	Year 2	Year 3
Revenue Subscriptions	**45.000€**	**128.700€**	**201.465€**
Account Executives	**2**	**4**	**7**
Customer Support	**-**	**-**	**3**

TOTAL Revenue GRAG (Group):

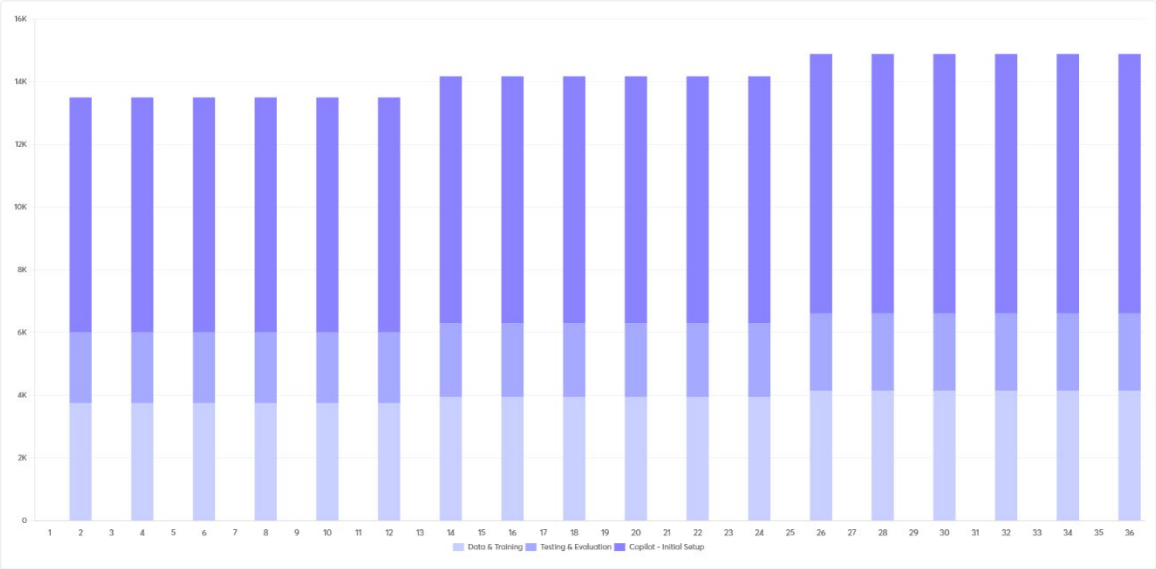
GRAG (Group): Revenue	Year 1	Year 2	Year 3
Revenue Project	**62.000€**	**68.200€**	**75.020€**
Revenue Subscriptions	**45.000€**	**128.700€**	**201.465€**
REVENUE TOTAL	**107.000€**	**196.900€**	**276.485€**

Income Stream: Copilot (Group)

For the income stream "Copilot (Group)," we assume a project volume of €15,500. The largest portion of this amount is allocated to the setup of the application at €7,500, followed by data and training at €5,000, and finally €3,000 for testing and evaluating the models and application. We plan to increase these prices by 10% annually in total.

Project-based Revenue:

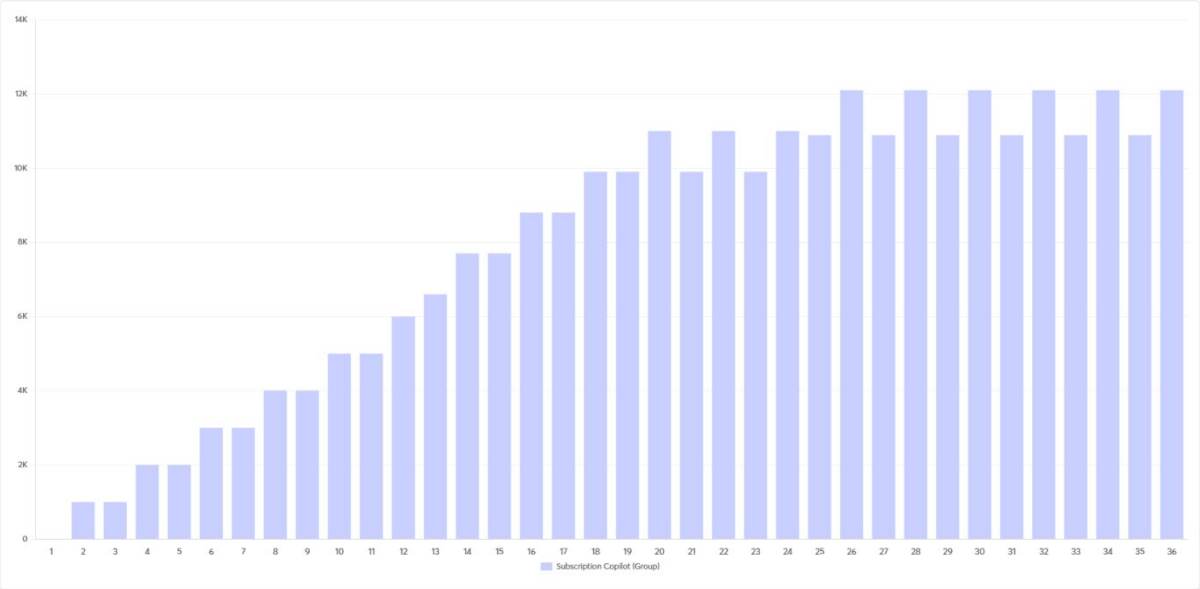
Sub-Products	Payment Terms	Price
Data & Training	**One-Time-Fee**	**5.000€**
Testing & Evaluation	**One-Time-Fee**	**3.000€**
Copilot - Initial Setup	**One-Time-Fee**	**7.500€**



Project Revenue	Year 1	Year 2	Year 3
Data & Training	**22.500€**	**23.625€**	**24.806€**
Testing & Evaluation	**13.500€**	**14.175€**	**14.884€**
GRAG - Initial Setup	**45.000€**	**47.250€**	**49.612€**
Revenue Project	**81.000€**	**85.050€**	**89.302€**
Count of Employees (TOTAL)	**11**	**17**	**31**

Subscription-based Revenue:

Sub-Products	Payment Terms	Price
Subscription Copilot (Group)	**(monthly)**	**1.000€**
Subscription Copilot (Group)	**(yearly)**	**12.000€**



Subscription Revenue	Year 1	Year 2	Year 3
Revenue Subscriptions	**36.000€**	**112.200€**	**138.940€**
Account Executives	**2**	**7**	**2**
Customer Support	**-**	**3**	**-**

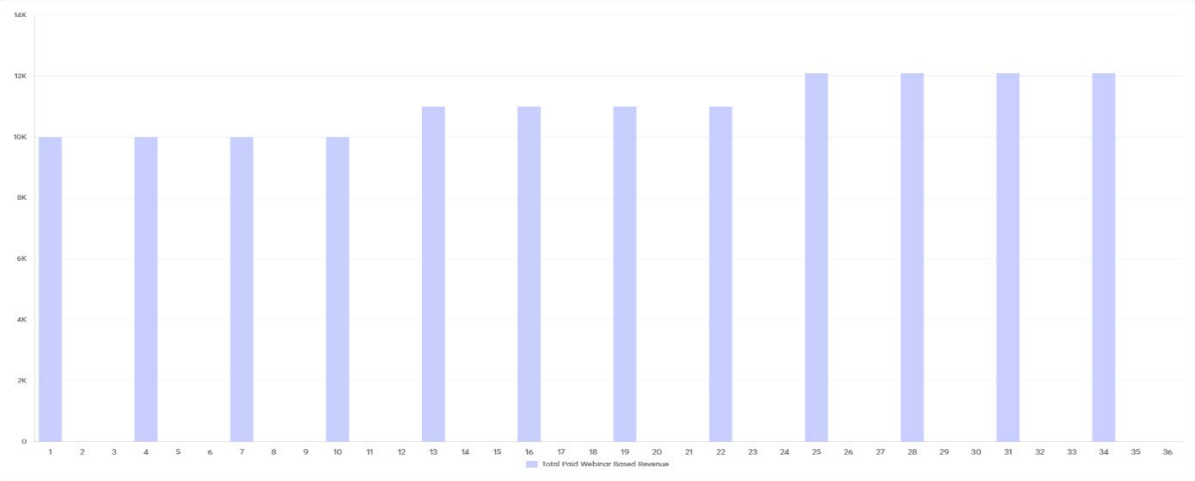
TOTAL Revenue Copilot (Group):

Copilot (Group): Revenue	Year 1	Year 2	Year 3
Revenue Project	**81.000€**	**85.050€**	**89.302€**
Revenue Subscription	**36.000€**	**112.200€**	**138.940€**
REVENUE TOTAL	**117.000€**	**197.250€**	**228.242€**

Income Stream: Paid-Webinare

For the income stream "Paid Webinars," we assume that we can offer the webinars at a price of €400 per participant. These webinars will be conducted in collaboration with our experienced data protection expert (the group's Data Protection Officer). Based on his experience, we expect an average of 50 participants per webinar. Since both data protection and AI topics are addressed, the revenue will be split 50/50, resulting in €10,000 per paid webinar. The cost per webinar is planned to increase by 10% annually.

Sub-Products	Payment Terms	Price
Webinar-Share out of Privacy-Coop.	**One-Time-Fee**	**10.000€**



Paid-Webinars Revenue	Year 1	Year 2	Year 3
Revenue Paid Webinars	**40.000€**	**44.000€**	**48.400€**
Count of Paid Webinars	**4**	**4**	**4**

EINKOMMENSSTRÖME: TOTAL

TOTAL Revenue	Year 1	Year 2	Year 3
Revenue Consulting	**218.400€**	**399.480€**	**804.120€**
Revenue GRAG (External)	**65.000€**	**1.014.200€**	**7.136.580€**
Revenue Copilot (External)	**494.500€**	**1.093.950€**	**3.775.200€**
Revenue GRAG (Group)	**107.000€**	**196.900€**	**276.485€**
Revenue Copilot (Group)	**117.000€**	**197.250€**	**228.242€1**
Revenue Paid Webinare	**40.000€**	**44.000€**	**48.400€**
REVENUE TOTAL	**1.041.900€**	**2.945.780€**	**12.269.027€**

Expenses & Cost Accounting

The overview of expenses and cost accounting is divided into COGS (Cost of Goods Sold), SG&A (Selling, General, and Administrative Expenses), and CAPEX (Capital Expenditures). At the end, all cost items are summed up and supplemented by personnel costs.

COGS (Cost of Goods Sold)

COGS refers to the direct costs associated with the production or provision of our products and services:

COGS	Year 1	Year 2	Year 3
Website Hosting	**600€**	**660€**	**726€**
Prototype Hosting	**6.000€**	**6.900€**	**7.935€**
Test LLM Copilot (External)	**10.000€**	**17.200€**	**56.800€**
Test LLM GRAG (External)	**2.400€**	**26.400€**	**162.000€**
Test LLM Copilot (Group)	**2.400€**	**2.400€**	**2.400€**
Test LLM GRAG (Group)	**4.800€**	**4.800€**	**4.800€**
Data & Training Copilot (External)	**20.000€**	**30.200€**	**68.600€**
Data & Training GRAG (External)	**4.800€**	**47.200€**	**237.600€**
Data & Training Copilot (Group)	**4.800€**	**4.200€**	**3.000€**
Data & Training GRAG (Group)	**9.600€**	**9.200€**	**7.600€**
Hosting Copilot Application (External)	**42.800€**	**144.320€**	**444.796€**
Hosting Copilot Application (Group)	**7.200€**	**22.440€**	**27.588€**
Hosting GRAG Application (External)	**1.650€**	**61.710€**	**469.843€**
Hosting GRAG Application (Group)	**10.500€**	**30.030€**	**47.008€**
TOTALKOSTEN COGS	**127.550€**	**407.660€**	**1.540.696€**

General Costs

General expenses refer to costs such as website and prototype hosting, which cannot be directly attributed to specific customers but must be allocated across all customers.

Website-Hosting

We assume website hosting costs of €50 per month, with an annual cost increase of 10%.

Prototype-Hosting

We estimate prototype hosting costs at €500 per month, with an annual cost increase of 15%.

Project-/Customer-based Costs

Project and customer-specific costs refer to expenses directly attributable to the number of projects or customers.

Test-LLM GRAG

The cost for testing language models for GRAG applications is estimated at €1,200 per project. Starting in the 22nd month, this cost will decrease by €200 annually, with a final cost of €1,000 per project.

Test LLM Copilot

The cost for testing language models for Copilot applications is estimated at €800 per project. Starting in the 17th month, this cost will decrease by €200 annually, with a minimum cost of €400 per project.

Data & Training GRAG

The cost for synthetic data generation and model training for GRAG applications is estimated at €2,400 per project. Starting in the 17th month, this cost will decrease by €400 annually, with a minimum cost of €1,600 per project.

Data & Training Copilot

The cost for synthetic data generation and model training for Copilot applications is estimated at €800 per project. Starting in the 17th month, this cost will decrease by €200 annually, with a minimum cost of €400 per project.

External Hosting

External hosting costs arise for additional server resources provided by embraceable Technology GmbH or a cloud provider of choice.

Hosting GRAG Application

External GRAG application hosting costs are estimated at €550 per month, with an annual cost increase of 10%.

Hosting Copilot Application

External Copilot application hosting costs are estimated at €400 per month, with an annual cost increase of 10%.

Hosting Group

Group-internal hosting costs are lower, as no additional server resources are required. However, maintenance and support contracts for Docker applications still result in direct costs for GRAG per subscription customer.

Hosting GRAG Application

Internal GRAG application hosting costs are estimated at €350 per month, with an annual cost increase of 10%.

Hosting Copilot Application

Internal Copilot application hosting costs are estimated at €200 per month, with an annual cost increase of 10%.

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SG&A (Selling, General & Administrative Expenses

Unlike COGS, which are directly tied to the production of goods or services, SG&A includes the indirect costs associated with operating GRAG. This also includes personnel costs.

General & Administrative

General & Administrative	Year 1	Year 2	Year 3
Office	**18.000€**	**36.000€**	**54.000€**
Additional Office Costs	**3.000€**	**6.000€**	**9.000€**
Utilities	**4.550€**	**10.065€**	**17.787€**
Telephone & Internet	**4.550€**	**10.065€**	**17.787€**
Collaboration Software	**4.550€**	**10.065€**	**17.787€**
Travel expenses	**29.315€**	**79.918€**	**269.316€**
Legal & Professional fee	**6.400€**	**6.400€**	**6.400€**
Insurance	**9.600€**	**9.600€**	**9.600€**
Accounting / Bookkeeping / Finance	**12.000€**	**12.000€**	**12.000€**
Consulting Partner Share	**43.680€**	**79.896€**	**160.824€**
Advertisement & PR	**27.846€**	**40.769€**	**59.690€**
Leasing Cars	**9.000€**	**14.400€**	**14.400€**
Contributions to guilds, chambers	**1.800**	**1.890€**	**1.984€**
Paid: Social ads	**19.245€**	**60.401€**	**189.566€**
TOTALKOSTEN G&A	**193.536€**	**377.469€**	**840.142€**

Office

For office space costs, we assume €1,500 per month for the initial space and plan to add an additional room or location every 12 months at the same price. For example, by the end of the second year, we would have a total of 14 employees, who would no longer all fit into the initial office space simultaneously.

Mitarbeiteranzahl	Year 1	Year 2	Year 3
Count of Employees (TOTAL)	**11**	**17**	**31**
Offices	**1**	**3**	**4**

For utility costs associated with office spaces, we estimate €250 per month per office, which will also increase by €250 every 12 months, at the same time as the office space costs are increased.

Employee-Related General Costs

Our employees will require consumables such as paper, printer cartridges, and writing utensils. Additionally, they will need access to collaboration software and phone or mobile contracts. We estimate €50 per employee per month for all three categories combined, with an anticipated 10% annual increase in these costs.

Employee-Costs	Year 1	Year 2	Year 3
Count of Employees (TOTAL)	**11**	**17**	**31**
Utilities	**4.550€**	**10.065€**	**17.787€**
Telephone & Internet	**4.550€**	**10.065€**	**17.787€**
Collaboration Software	**4.550€**	**10.065€**	**17.787€**

Consulting Partner Share & Consulting Travel Costs

An additional and significant cost block is the "Consulting Partner Share", which is deducted from all our consulting engagements. This cost arises because we aim to comprehensively cover all consulting processes in collaboration with our Data Protection Officer.

Our customers receive advice both on the technical aspects from us and on legally relevant data protection areas from the Data Protection Officer. For this collaboration, we allocate 20% of the consulting revenue to the Data Protection Officer.

Consulting: Costs	Year 1	Year 2	Year 3
Count of billed Hours	**910**	**1.664**	**3.350**
Consulting Customers	**43**	**93**	**245**
Revenue Consulting	**218.400€**	**399.480€**	**804.120€**
Consulting Partner Share 20%	**-43.680€**	**-79.896€**	**-160.824€**
Consulting Travel Costs	**-29.315€**	**-79.918€**	**-269.316€**

For each consulting customer, we estimate additional travel costs of €600 per customer, which are expected to increase by 2% each month.

Leasing Vehicles

For leasing vehicles, we assume a cost of €300 per month per vehicle.

Leasing-Kosten	Year 1	Year 2	Year 3
Count of Employees (TOTAL)	**11**	**17**	**31**
Count of Leasing Vehicles	**2**	**3**	**3**
Leasing Costs	**9.000€**	**14.400€**	**14.400€**

Other general Costs

Other general costs include accounting, legal consultations, insurance, chamber fees, general advertising and public relations, as well as general marketing expenses.

Other General Costs	Year 1	Year 2	Year 3
Legal & Professional fee	**6.400€**	**6.400€**	**6.400€**
Insurance	**9.600€**	**9.600€**	**9.600€**
Accounting / Bookkeeping / Finance	**12.000€**	**12.000€**	**12.000€**
Advertisement & PR	**27.846€**	**40.769€**	**59.690€**
Contributions to guilds. chambers	**1.800**	**1.890€**	**1.984€**
Paid: Social ads	**19.245€**	**60.401€**	**189.566€**

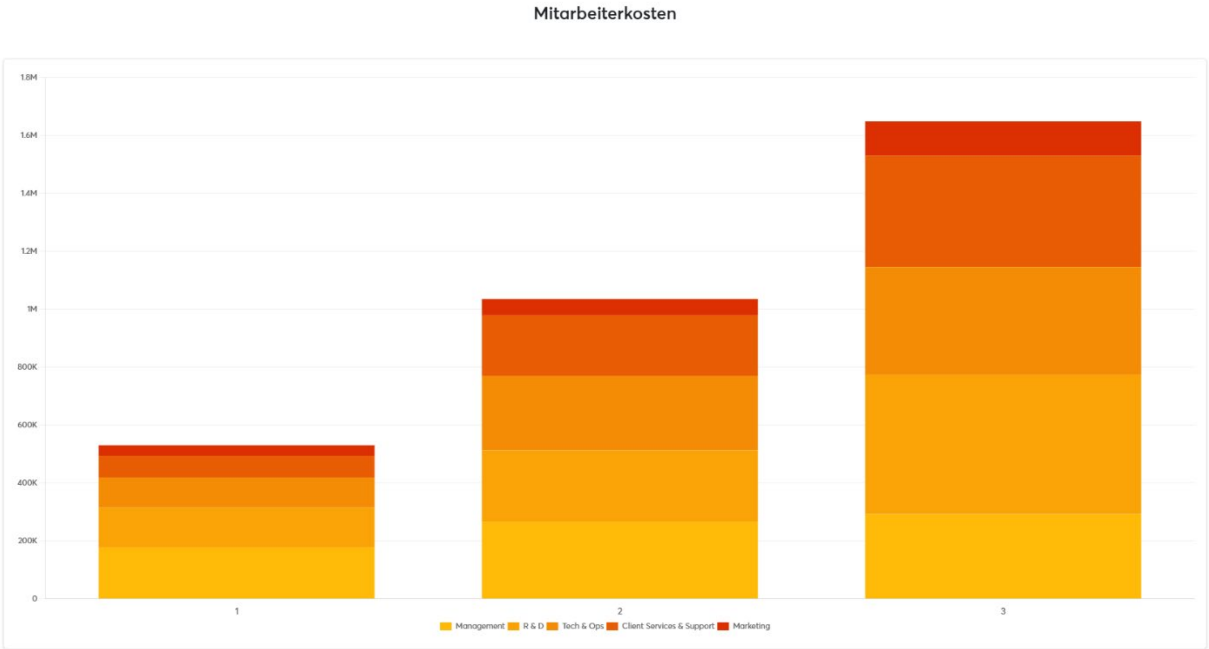
For **legal consultation**, we estimate costs of **€1,600 per month**. For **insurance**, we plan for **€800 per month**. For **accounting, bookkeeping, and financial statements**, we estimate an average of **€1,000 per month**. For **general promotion of the company and PR activities**, we plan to spend **€2,000 per month**, with a **10% increase each quarter**.

Additionally, there are advertising costs from campaigns, starting at **€30 per day** or **€900 per month**, which are expected to increase by **10% each month**.

Employee Costs

Employee Costs	Year 1	Year 2	Year 3
Count of Employees (TOTAL)	**11**	**17**	**31**
Management	**176.900€**	**266.090€**	**292.699€**
R & D	**138.000€**	**246.800€**	**481.480€**
Tech & Ops	**104.000€**	**256.400€**	**371.640€**
Client Services & Support	**75.000€**	**210.000€**	**384.000€**
Marketing	**36.000€**	**55.800€**	**119.090€**

Position	Salary	Employment-Turnus
		Month of Employment
Full-Stack Developer	6.000€	**2, 10, 27**
Front-End Developer	4.000€	**8, 15, 21**
Data Scientist	5.000€	**13, 18, 25, 28, 30, 32, 34, 36**
Account Executive	5.000€	**3, 8, 13, 19, 27, 32, 36**
Customer Support	4.000€	**26, 34, 36**
Digital Marketing Expert	4.500€	**5**
Head of Growth	5.500€	**26**
Chief Revenue Officer (CRO)	6.500€	**12**



In addition to salaries, wage-related ancillary costs must be listed separately, as they are handled differently in terms of disbursement:

Personnel + Wage Costs	Year 1	Year 2	Year 3
TOTAL Personnel Costs	**529.900€**	**1.035.090€**	**1.648.909€**
TOTAL Additional Wage Costs	**94.190€**	**195.915€**	**280.802€**
TOTALKOSTEN	**624.090€**	**1.231.005€**	**1.929.711€**

TOTAL COSTS SG&A

SG&A TOTAL	Year 1	Year 2	Year 3
General & Administrative	**193.536€**	**377.469€**	**840.142€**
Personnel Costs	**529.900€**	**1.035.090€**	**1.648.909€**
Additional Wage Costs	**94.190€**	**195.915€**	**280.802€**
TOTAL COSTS	**817.626€**	**1.608.474€**	**2.769.853€**

CAPEX (Capital Expenditures)

CAPEX, or capital expenditures, refers to expenses for long-term assets that are acquired, upgraded, or maintained to support GRAG's business operations. These expenditures aim to support the company's future growth or enhance its operational efficiency.

CAPEX	Year 1	Year 2	Year 3
Gründungskosten	**1.800€**	**1.800€**	**1.800€**
Trainings-PC	**3.333€**	**3.333€**	**3.333€**
Training-Server	**16.665€**	**39.999€**	**39.999€**
TOTALKOSTEN	**21.799€**	**45.132€**	**45.132€**

Founding Costs

For the founding costs, including notary fees, commercial register entry, and legal consultation, we estimate a one-time expense of **€5,400**.

Training-PC

To enable local model training without relying on on-demand services, we plan to acquire a **training PC** at the beginning (**Month 1**). This will allow us to process highly sensitive data locally without concerns about temporary storage on external on-demand platforms.

The **training PC** is priced at **€9,999** and offers **48GB VRAM** and **128GB RAM**, providing sufficient computational power for training small to medium-sized models. We assume a **useful life/straight-line depreciation period of 3 years**.

Training-Server

In addition to the training PC, we plan to expand our local resources with a **training server** in the **8th month**. This server will be integrated into the network of embraceable Technology GmbH and accessible through a web interface from any location.

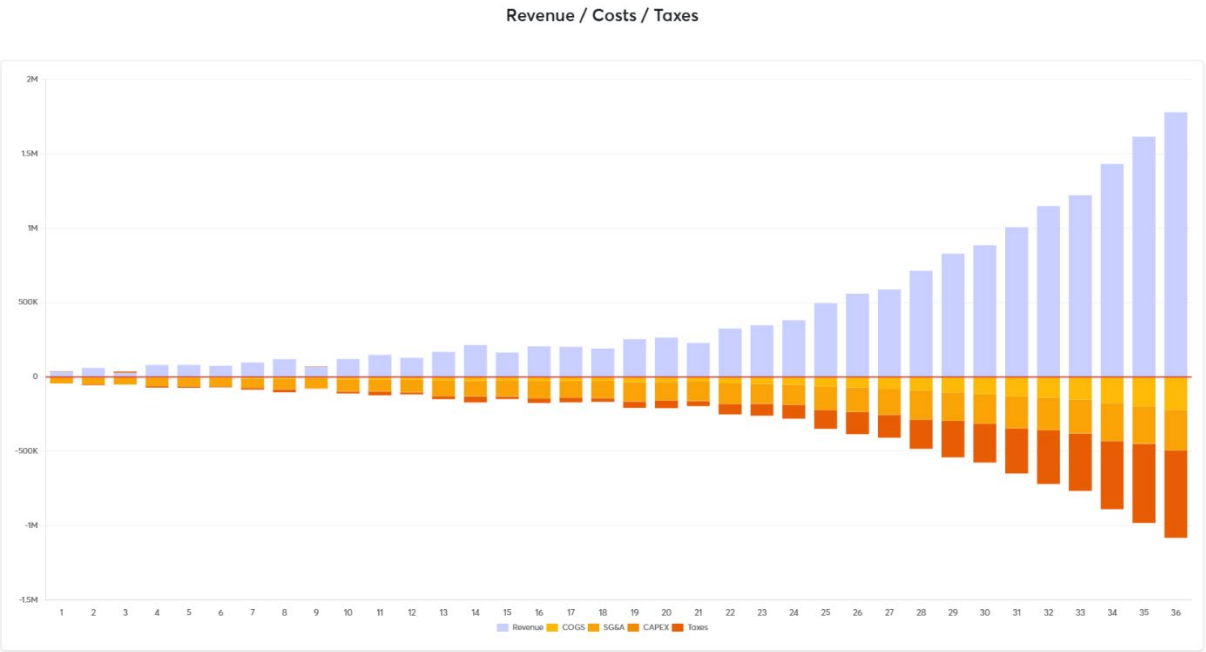
The cost of the **training server** is currently **€120,000**, with an assumed **useful life/straight-line depreciation period of 3 years**.

KPI (Key Performance Indicator)

In the following section, various key performance indicators (KPIs) are provided to closely examine the overall development of the company.

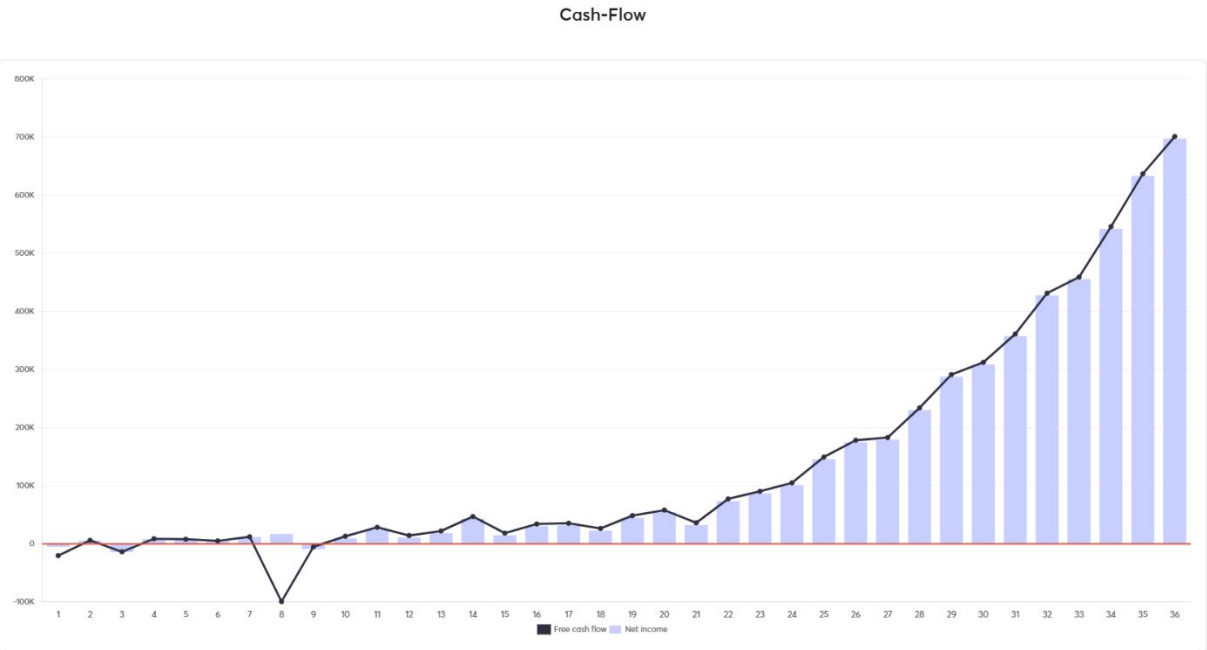
Income / Revenue / Costs / Taxes

	Year 1	Year 2	Year 3
REVENUE	1.041.900,00 €	2.945.780,00 €	12.268.027,50 €
COGS	-127.550,00 €	-407.660,00 €	-1.540.696,50 €
SG&A	-723.437,34 €	-1.412.560,81 €	-2.489.052,28 €
CAPEX	-21.799,65 €	-45.132,96 €	-45.132,96 €
TAXES	-94.629,14 €	-523.404,58 €	-3.751.927,24 €
INCOME	74.483,87 €	557.021,65 €	4.441.218,52 €

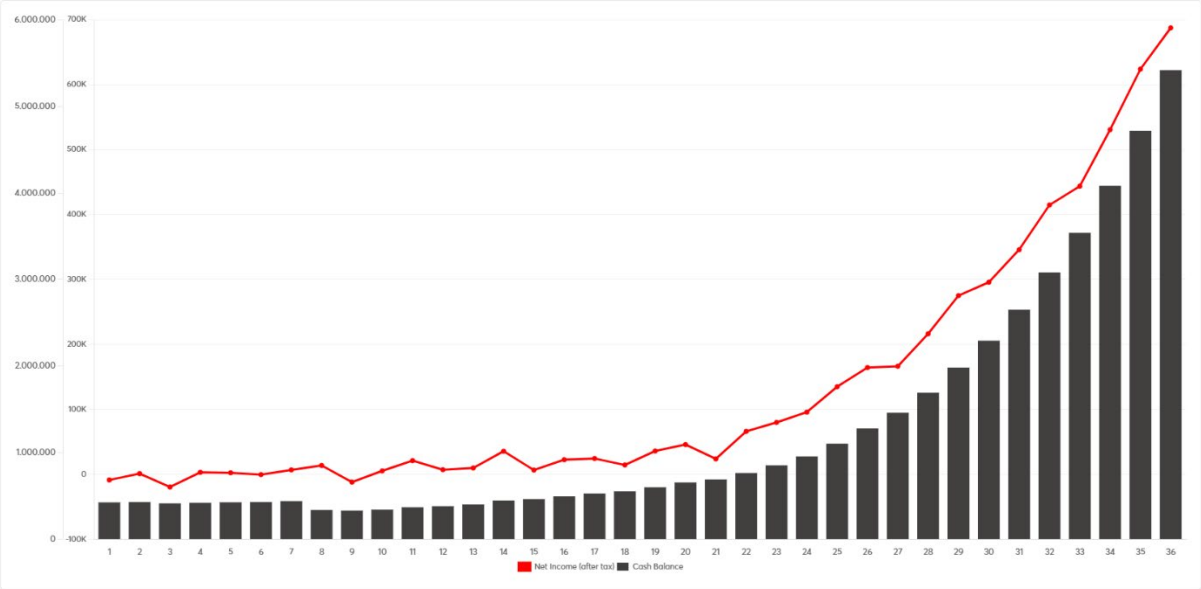


Cash-Flow

Cash-Flows	Year 1	Year 2	Year 3
Operating Activities			
Net Income	70.157,20 €	553.585,35 €	4.438.706,83 €
Depreciation	21.799,65 €	45.132,96 €	45.132,96 €
Operating Cash-Flow	91.956,85 €	598.718,31 €	4.483.839,79 €
Activities Assets			
CAPEX	135.399,00 €	0,00 €	0,00 €
Free Cash-Flow	-43.442,15 €	598.718,31 €	4.483.839,79 €
Financing Activities			
Net Borrowings	125.000,00 €	0,00 €	0,00 €
Debt Repayment	23.149,44 €	24.039,81 €	24.964,43 €
Investors	324.500,00 €	0,00 €	0,00 €
Net cash flow financing	426.350,56 €	-24.039,81 €	-24.964,43 €
Cash Flow			
Net Cash Flow	382.908,41 €	574.678,50 €	4.458.875,36 €
Beginning Cash Balance	370.514,49 €	854.700,41 €	4.717.493,65 €
Ending Cash Balance	382.908,41 €	957.586,91 €	5.416.462,27 €



Cash-Balance / Net-Income (after Taxes)



Cash / Income	Year 1	Year 2	Year 3
Net Income (after Taxes)	**70.157,20 €**	**553.585,35 €**	**4.438.706,83 €**
Net Cash-Flow	**382.908,41 €**	**574.678,50 €**	**4.458.875,36 €**

The cash flow analysis demonstrates a positive financial trajectory for GRAG from the first to the 36th month. In the initial months, the company exhibits a slightly declining cash flow, attributed to initial investments and lower revenues. However, starting in 2025, a significant improvement begins, accelerating sharply by the third year.

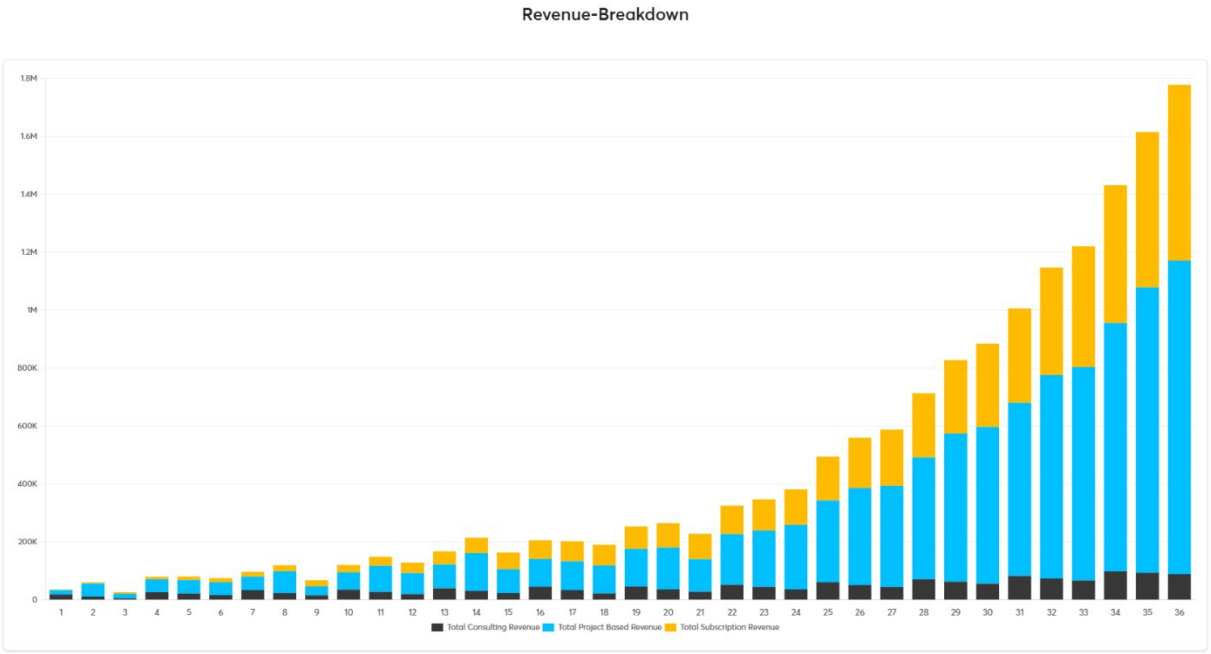
Operating Cash Flow: The operating cash flow increases substantially from **€91,956.85 in the first year** to **€4,483,839.79 by the end of the third year**. This reflects the rising net income, which grows from **€70,157.20 in the first year** to **€4,438,706.83 in the third year**. Depreciation further stabilizes the operating cash flow.

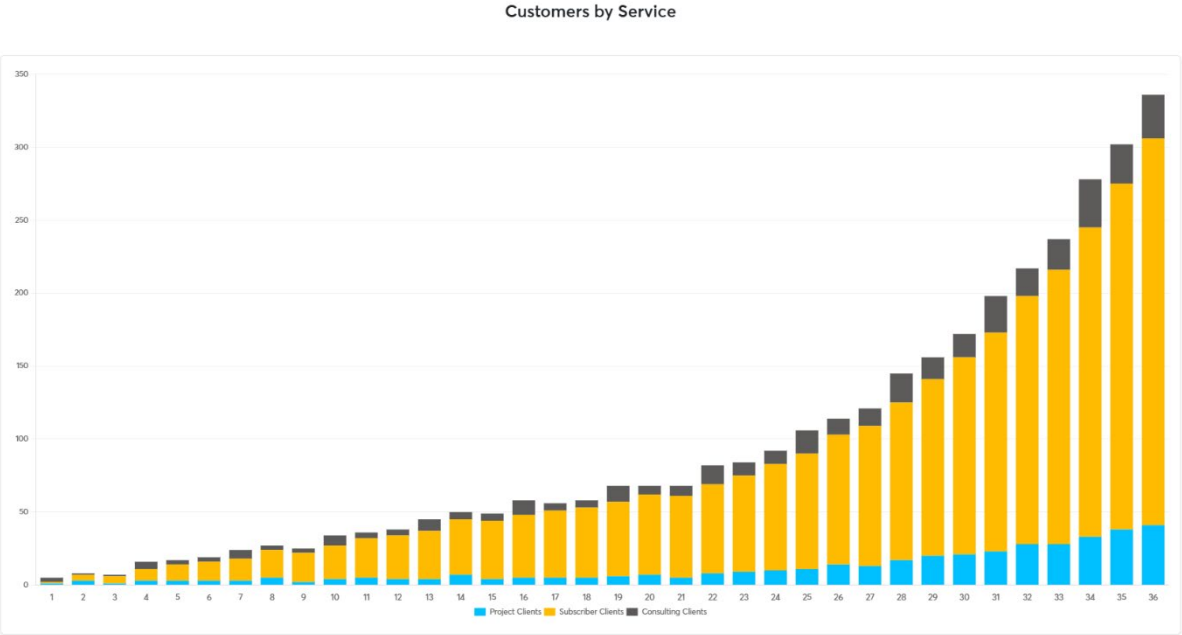
Financing Activities: In the first year, the ERP start-up loan from KfW and investor funds amounting to **€125,000.00**, **€250,000.00**, and **€62,000.00**, respectively, are secured to finance initial investments. Starting in the first year, GRAG begins repaying these debts, slightly reducing the cash flow from financing activities. Nevertheless, the net cash flow remains positive and grows significantly through the end of the third year.

In summary, the cash flow projection highlights a robust financial development that enables GRAG to finance future investments through operational business while building a significant liquidity reserve. This underscores the company's financial stability and its ability to successfully implement planned growth strategies.

Revenue-Breakdown

REVENUE-TYPES	Year 1	Year 2	Year 3
Total Consulting Revenue	**258.400 €**	**443.480 €**	**852.520 €**
Total Project Revenue	**586.500 €**	**1.564.000 €**	**7.401.332 €**
Total Subscription Revenue	**197.000 €**	**938.300 €**	**4.014.175 €**
TOTAL REVENUE	**1.041.900 €**	**2.945.780 €**	**12.268.027 €**



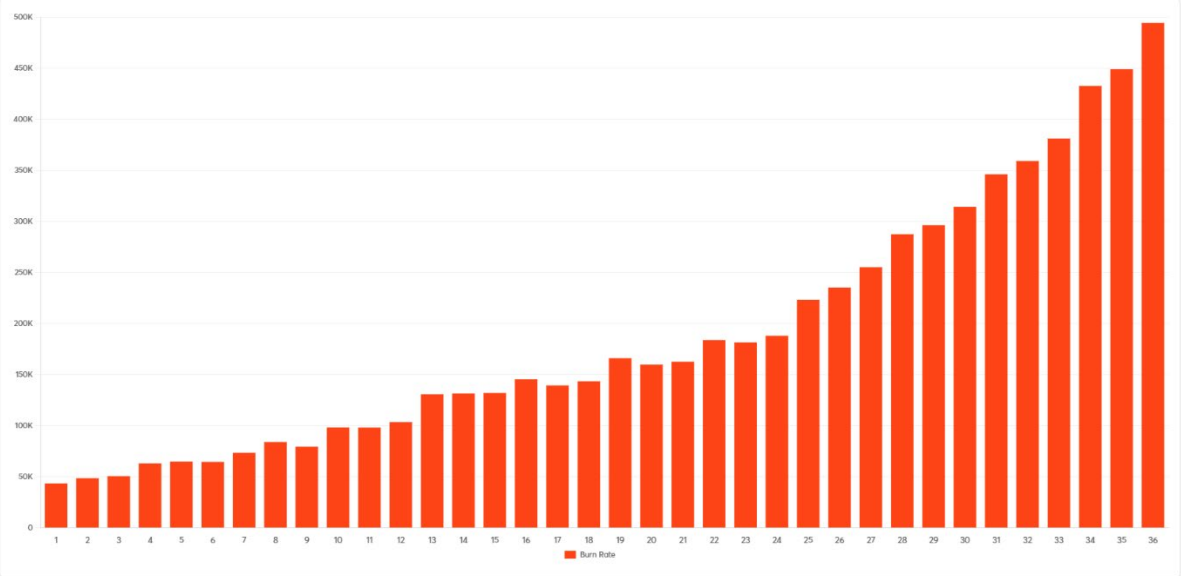


CLIENT-TYPES	Year 1	Year 2	Year 3
Total Consulting Clients	**43**	**93**	**245**
Total Project Clients	**37**	**75**	**287**
Total Subscription Clients	**30**	**73**	**265**
TOTAL CLIENTS	**110**	**241**	**797**

We plan to drive future growth not only through the acquisition of new customers but also by implementing targeted cross-selling strategies. Consulting clients will be systematically converted into project clients by offering additional services beyond pure consulting. These project clients, in turn, have the potential to be transitioned into subscription clients through long-term retainer contracts that ensure continuous support and development.

Through these cross-selling strategies, GRAG will be able to maximize the lifetime value of each customer, generate stable and recurring revenue, and strengthen customer loyalty.

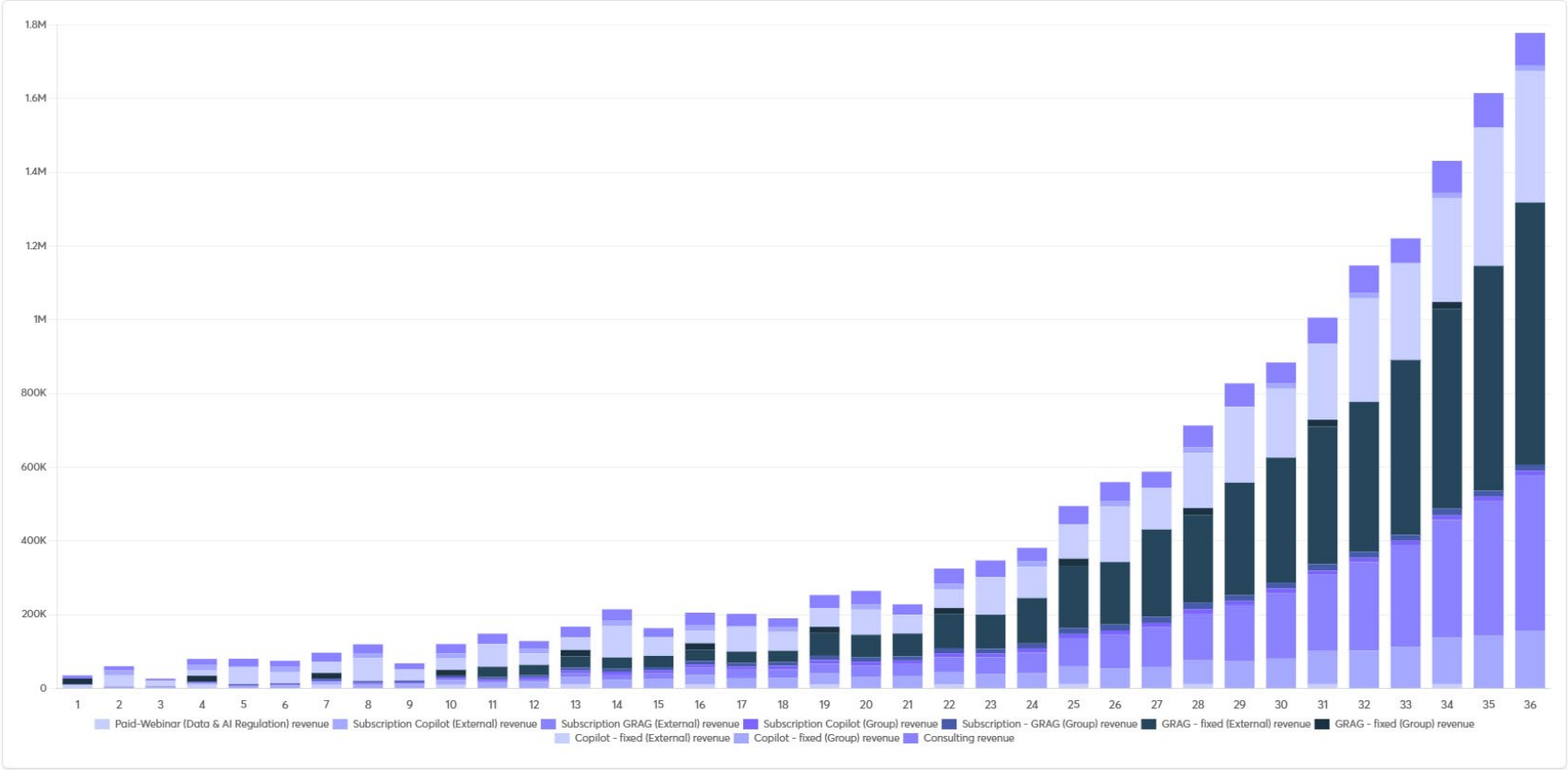
Burn-Rate



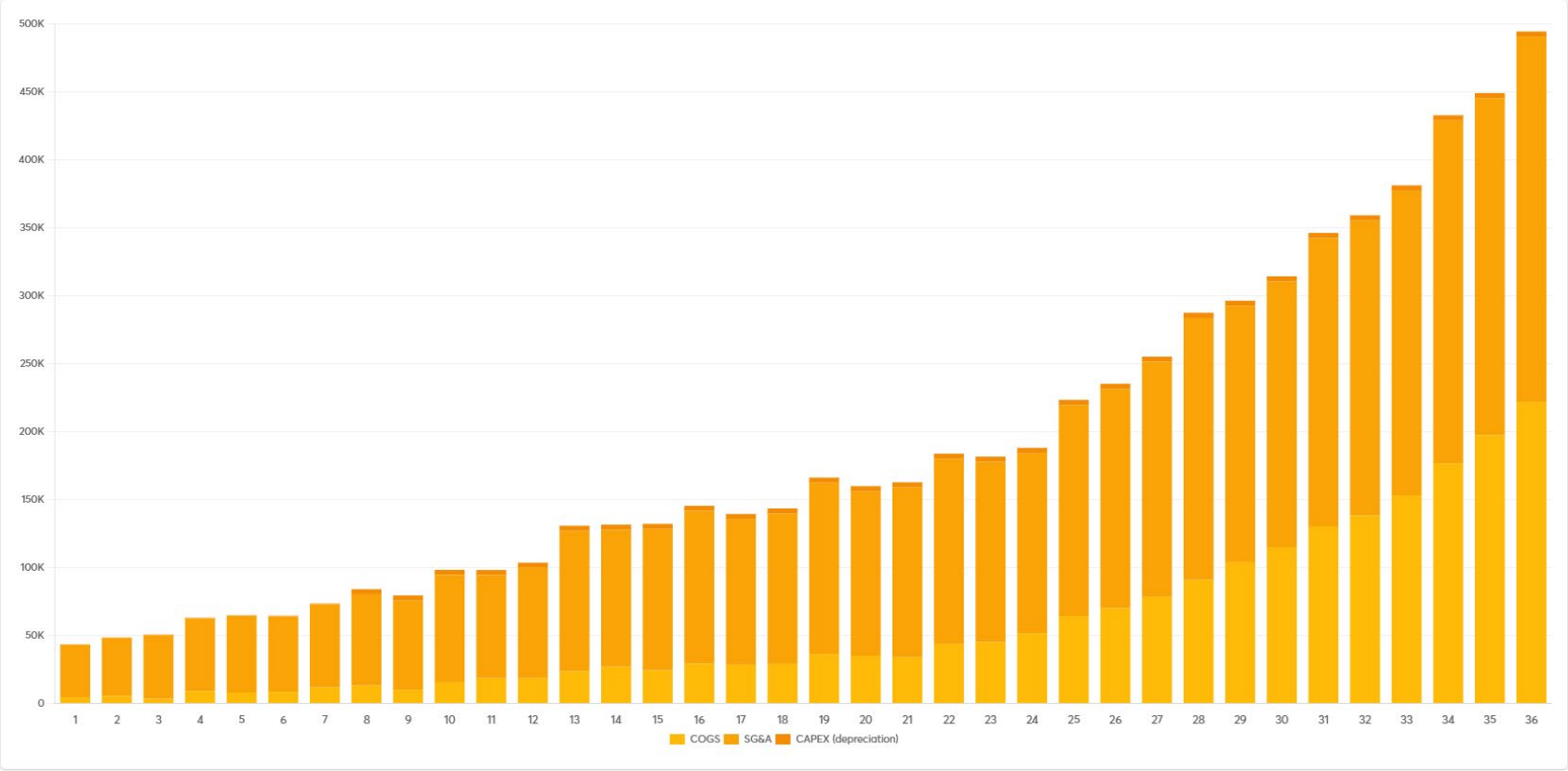
BURN-RATE	Year 1	Year 2	Year 3
BURN-RATE / YEAR	872.786€	1.865.353€	4.074.881€

NET-INCOME	Year 1	Year 2	Year 3
NET-INCOME / YEAR	70.157,20 €	553.585,35 €	4.438.706,83 €

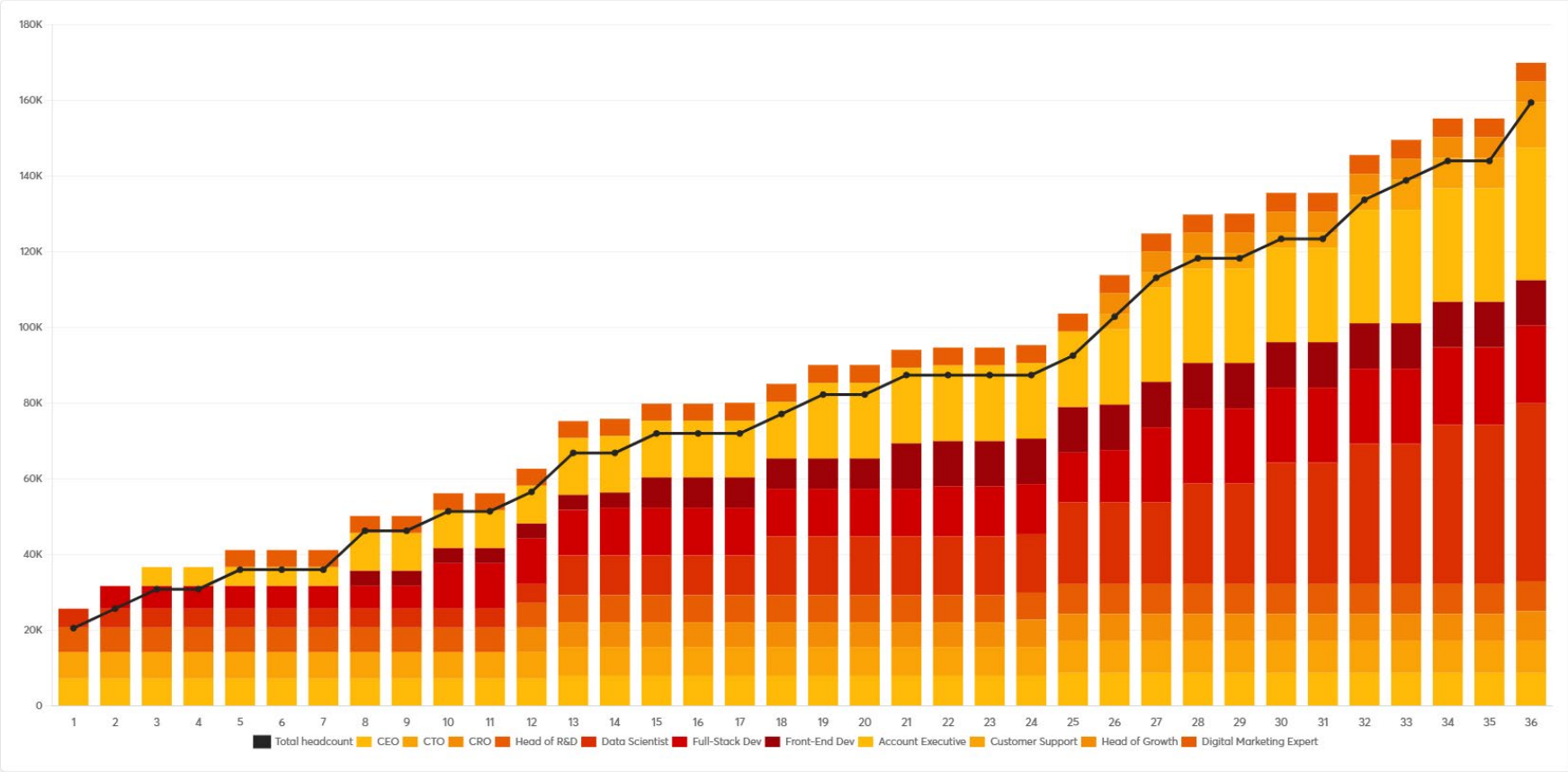
GRAG Revenue-Breakdown Monthly



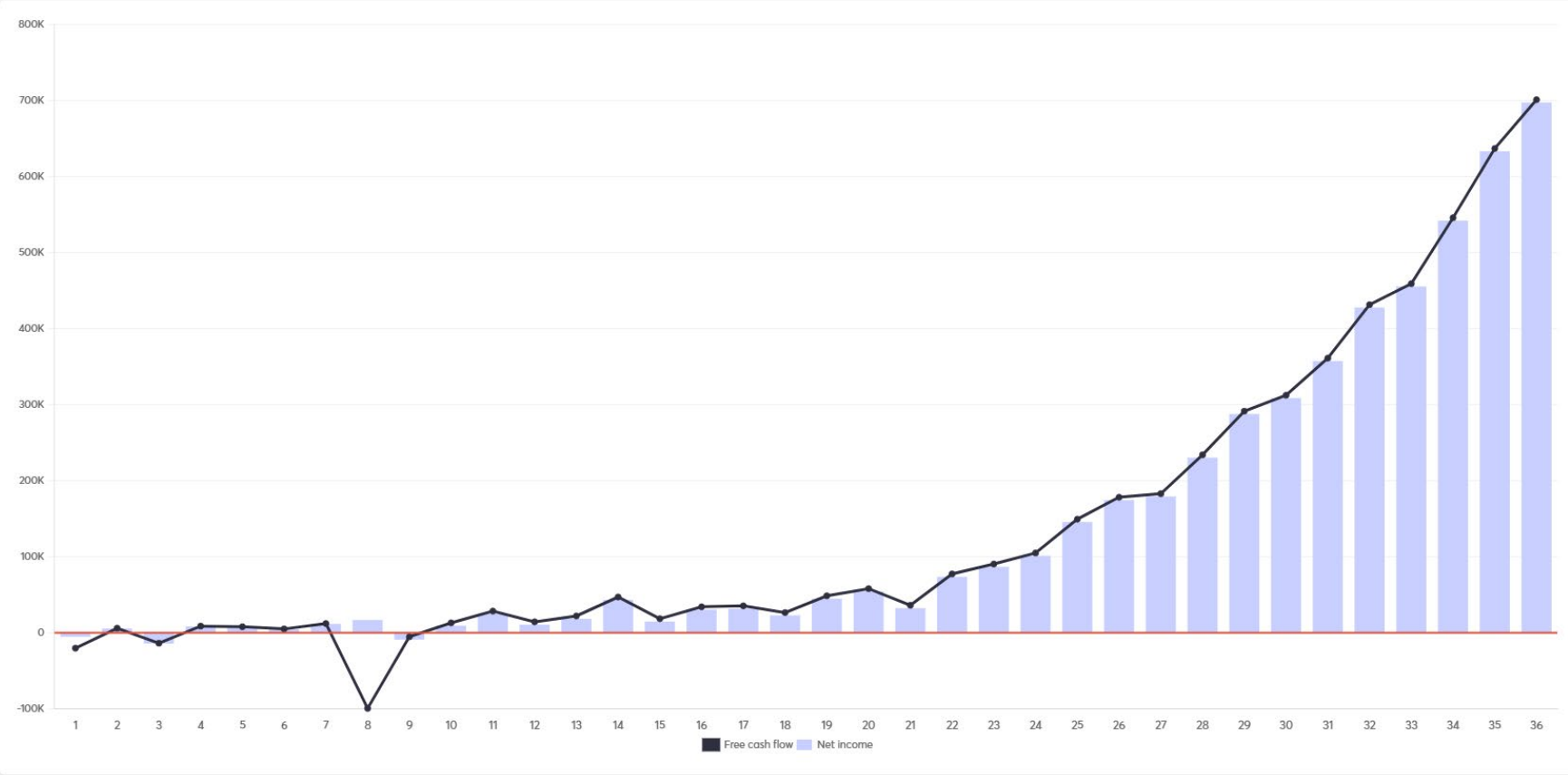
GRAG Costs-Breakdown Monthly



GRAG Personal Breakdown Monthly



GRAG Cash-Flow Monthly



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