



UNIVERSITY OF AMSTERDAM

**AI FOR BUSINESS CHALLENGE:**  
**HOW CAN AI CONTRIBUTE TO MAKING MKB's**  
**SALES PROCESS MORE EFFICIENT?**

**By**

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### **Statement of Originality**

This document is written by student Duc Quan Nguyen who declares to take full responsibility for the contents of this document. I declare that the text and the work presented in this document are original and that no sources other than those mentioned in the text and its references have been used in creating it. The Faculty of Economics and Business is responsible solely for the supervision of completion of the work, not for the contents.

## Abstract

This study investigates how Retrieval-Augmented Generation (RAG) combined with Large Language Models (LLMs) can streamline cold-email outreach for recruiting small and medium-sized enterprises in innovation projects. In a real-world case with De MKB Werkplaats, this research applied the CRISP-DM methodology. The core research question was whether a RAG-augmented model could produce contextually persuasive recruitment emails that effectively engage SMEs in collaborative challenges. In the modeling phase, OpenAI's GPT-4 (via the LangChain framework) was used with a vector-based retrieval of project information. Each project data was segmented and embedded in a FAISS vector store, enabling retrieval of relevant context to inform the prompt. The LLM, which has been prompt-tuned, together with the user query and retrieved context generate personalized cold emails in schema-driven manner through the retrieved challenge and SME details. The final deliverable, a web-based interface, successfully drafts outreach emails that are grounded in the selected project context and tailored to each SME. Domain-expert evaluation (using a rubric for content quality, tone, and personalization) indicated that the RAG-generated emails scored highly on relevance, and coherence, while persuasiveness remains subjective. Nevertheless, RAG-augmented generation can effectively automate the creation of personalized B2B outreach messages, improving efficiency without sacrificing persuasive quality.

## **Table of Contents**

Statement of Originality

Abstract

Table of Contents

1. Introduction
2. Literature review
  - 2.1. Roles and Benefits of AI in the Sales Process
  - 2.2. Retrieval-Augmented Generation (RAG) and LLM Architecture
  - 2.3. Natural Language Processing (NLP) and Text Personalization
  - 2.4. Evaluation Metrics for RAG-LLM Systems
  - 2.5. Persuasion Theory in Marketing Communication
3. Methodology
  - 3.1. Business Understanding
  - 3.2. Data Understanding
  - 3.3. Data Preparation
  - 3.4. Modeling
  - 3.5. Evaluation
  - 3.6. Deployment
4. Results and Deliverable
5. Discussion
  - 5.1. Limitations
  - 5.2. Future Research
6. Conclusion

Statement of Work

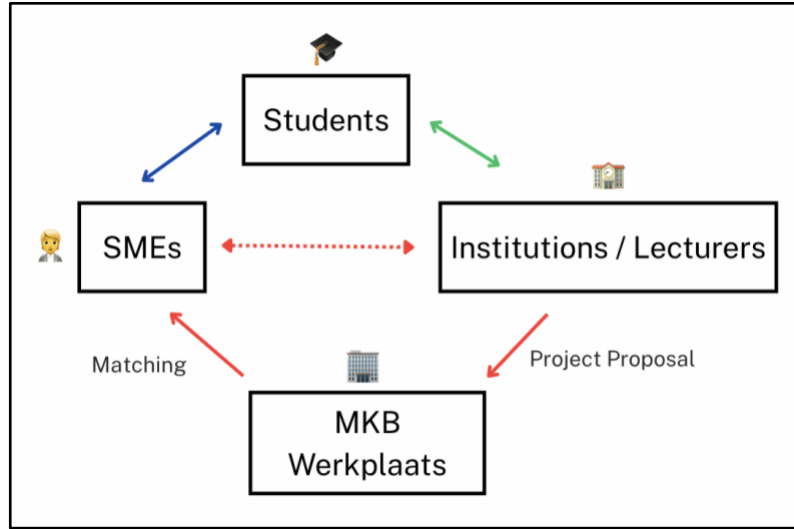
References

Appendices

## **I. Introduction**

In recent years, the rapid advancement of Gen-AI has changed the way companies run marketing campaigns. As companies seek to automate and personalize their outreach strategies to enhance the efficiency of the sales process, Retrieval-Augmented Generation (RAG) models, combined with the generative power of Large Language Models (LLMs), represent a significant shift in how promotional content can be generated.

The MKB Werkplaats is a public-private initiative that combines academic expertise from Knowledge Institution (KI) and small and medium-sized enterprises (SMEs) innovation needs. Its mission is to make SMEs benefit from innovation by placing students in real-world business challenges concerning numerous entrepreneurial domains. MKB Werkplaats functions as a partnership between companies (Preneurz, KplusV, and Innovate Today) and multiple Dutch knowledge institutions, in addition to UvA, VU, HvA, etc. The program is publicly financed through the National Growth Fund and supported by the Province of North Holland, the Municipality of Amsterdam, and Rabobank (De MKB Werkplaats, n.d.). MKB Werkplaats facilitate matchmaking, monitor stakeholder satisfaction, and maintain long-term collaboration between them and businesses.



*Figure 1: Project Ecosystem*

As depicted in [Figure 1](#), the operational model of MKB Werkplaats centers on a multi-actor collaboration in which MKB acts as a middleman: (1) institutions and lecturers provide criteria and requirements for challenges (2) SMEs provide real-work projects that meet those criteria (3) students deliver practical and tailored solutions. For the purpose of this thesis, we are matched with the challenge “AI for sales efficiency” where we’ll be working closely in collaboration with MKB Werkplaatsen. Their flowchart ([Appendix 1](#)), which outlines their complete sales and sourcing workflow from the intake of new projects with knowledge institutes to the final matching of SMEs and KI, will form the basis of our research and suggestions.

We will investigate to what extent a RAG-augmented LLM can produce contextually persuasive recruitment emails that successfully engage SMEs in collaborative challenges. Practically, it addresses a tangible business problem: how to streamline B2B outreach with automated systems that do not compromise message relevance, credibility, or persuasiveness. The study is situated within the broader context of AI-driven sales optimization. The following

will explore the integration of retrieval-based personalization, natural language processing, and persuasive communication theory into a unified framework.

*To what extent can a RAG-augmented LLM produce contextually persuasive recruitment emails that successfully engage SMEs in collaborative challenges?*

## **II. Literature Review**

The thesis is based on 5 literature reviews. First, the roles and benefits of AI in the sales process pipeline will be explored. Second, the RAG-LLM architecture is analyzed to understand how external document retrieval enhances generation relevancy. Third, natural language processing (NLP) techniques for text personalization are reviewed to contextualize how retrieval-augmented systems can improve message targeting without requiring extensive user data. Fourth, the study evaluates existing metrics for assessing RAG-generated outputs. Finally, persuasion theory in marketing communication is explored to identify the levers that contribute to conversion.

### **1. Roles and Benefits of AI in the Sales Process**

Artificial intelligence (AI) has emerged as a transformative force in modern business, offering tools that enhance decision-making, automate routine tasks, and personalize interactions (Upadhyaya, 2024). Within the sales process, AI is being increasingly leveraged to streamline workflows and support agents throughout the entire customer journey. From prospecting to delivering the end product, Fischer et al. (2022) reported that 40% of sales tasks could be automated and that “AI can be applied in every sales process step” (Fischer et al., 2022). In practice, this means AI now enable sales teams to focus on complex, high-value work.

In the early funnel stage, AI helps identify and acquire potential customers (lead generation and qualification). Machine learning algorithms can be used to flag which characteristics correlate to the highest chance of conversion. Once leads are identified, AI carries out personalized outreach. Routine tasks like scheduling meetings or sending cold emails and follow-up emails can be automated with AI agents, freeing the sales force's time (Paschen et al., 2020). AI chatbots also handle routine inquiries up to 3x faster than human agents (Intercom, 2019). Even in later stages, AI adds value. In post-sale follow-up, AI automates and manages post-order communication (Paschen et al., 2020).

AI capabilities span several specific AI technologies. Natural Language Processing (NLP) allows systems and models to parse and generate human language (e.g., analyzing customer emails, extracting intent or sentiment) (Paschen et al., 2020). Machine learning and deep learning enable powerful predictive analytics and recommendation engines. AI-powered recommendation systems are used in sales to suggest the best products and content for each lead based on their preferences and characteristics (Paschen et al., 2020). Overall, AI handles data-intensive, repetitive functions while revealing insights and patterns that humans alone would miss, thereby increasing the efficiency, scalability, and effectiveness of the sales process.

Although it seems like AI is replacing human sellers, Paschen et al. emphasized that AI extends agents' capabilities rather than replacing them. The concept "Collaborative intelligence" mentioned throughout Paschen et al.'s article highlights how AI and people bring complementary strengths (Paschen et al., 2020). Human judgment remains critical; for instance, false positives could very well appear, and sales representatives must review AI-generated lead



lists and filter them out. Challenges remain when deploying AI for the sales process. Trust and transparency are major concerns: customers and sales teams may distrust AI decisions unless the models are explainable and engineered thoroughly enough. Even powerful generative-AI tools “cannot fully replicate human strengths like trust-building, creativity, and nuanced decision-making” (Anbu & Tummalapalli, 2025).

Artificial intelligence (AI) plays an increasingly vital role in the sales process by automating routine tasks, enhancing decision-making, and enabling personalized customer engagement. AI technologies such as machine learning, NLP, and recommendation systems support every stage of the sales funnel—from lead generation to post-sale follow-up—by delivering insights, optimizing outreach, and managing communication efficiently (Paschen et al., 2020). However, challenges around trust, explainability, and the need for human oversight persist, highlighting the importance of collaborative intelligence between AI and sales professionals.

## **2. Retrieval-Augmented Generation (RAG) and LLM Architecture**

Retrieval-Augmented Generation (RAG) and Large Language Models (LLMs) are two key AI architectures that intersect to enable more contextually rich text generation. LLMs are advanced neural networks trained on massive corpora to produce human-like text. They excel at fluent language generation but operate primarily on pre-trained internal knowledge. This makes them powerful yet constrained when it comes to incorporating new or domain-specific information. RAG, in contrast, is an approach that combines an LLM with a retrieval mechanism to fetch relevant external documents or data during generation (Lewis et al., 2020). By grounding

the language model's output with retrieved evidence, RAG can enhance factual accuracy and contextual relevance.

Modern LLMs like OpenAI's GPT-3 weigh the importance of tokens to capture linguistic context (Fan et al., 2024). This architecture has enabled remarkable performance in text generation and understanding tasks (Zhang et al., 2025). However, LLMs on their own have inherent limitations in knowledge access and reliability. One of them is fixed context windows which refers to how much input a model can "remember" (Ferraris et al., 2025). Additionally, because an LLM's knowledge is stored in its model parameters up to its training, the model might lack information on any data occurring after that point (Fan et al., 2024). Even within training coverage, large models can hallucinate, producing information that sounds plausible but is false or made up (Ferraris et al., 2025). Arslan et al. (2024) noted these hallucinations appear "particularly when data is sparse" (Arslan et al., 2024). Lewis et al. (2020) highlighted that while pre-trained LMs do contain factual knowledge, "they cannot easily expand or revise their memory" and struggle to provide verifiable sources (Lewis et al., 2020). The lack of source or evidence for the model's output can become problematic in highly context-dependent tasks.

Retrieval-Augmented Generation (RAG) directly addresses the above limitations by equipping the LLM with a form of "open-book retrieval-based approaches" (Lewis et al., 2020). In a RAG setup, the LLM is paired with external databases or knowledge sources for retrieval (Lewis et al., 2020). The pipeline can be described as follows:

- Retriever: During text generation, the model first retrieves documents or document chunks, imported by the user, that are relevant to the prompt or user query, and then

conditions its output on this retrieved evidence. This reduces hallucinations and enhances the quality and accuracy of the output (Arslan et al., 2024).

- Knowledge Store: Retrieved documents are processed and drawn into a vector database by an embedding model. The advantage of a vector store is that it enables semantic retrieval (Ferraris et al., 2025)
- Integration with the LLM and Generator: The model then was trained to attend to the retrieved evidence texts when generating the output (Lewis et al., 2020). The final component is the Large Language Model itself.

Furthermore, RAG has the ability to update the knowledge base without retraining the language model. New documents can be added to the retrieval index continually, allowing the system to incorporate new information as needed (Lewis et al., 2020).

Retrieval-Augmented Generation (RAG) effectively mitigates key limitations of standalone Large Language Models (LLMs)—notably hallucinations, fixed context windows, and outdated knowledge—by integrating an external retrieval mechanism. This architecture grounds generated outputs in semantically relevant, updatable documents, enhancing both factual accuracy and contextual relevance. As such, RAG offers a scalable and adaptive solution for domain-specific text generation, particularly in applications demanding up-to-date information.

### **3. Natural Language Processing (NLP) and Text Personalization**

Effective personalization is at the heart of any persuasive communication (Berkovsky et al., 2012). In the context of Natural Language Processing (NLP), personalization means tailoring the generated text to the specific user or audience characteristics – such as their preferences,

background, or prior interactions. The goal is to make the generated text feel uniquely relevant to the recipient, thereby increasing engagement and the likelihood of conversion (Zhang et al., 2025). For email marketing, a personalized approach can make the difference between an email that feels like spam and one that genuinely resonates with the SME's interests.

Researchers have developed a variety of techniques to layer language models with personalization. Broadly, we can categorize personalization methods into 2 groups (Zhang et al., 2025): (1) prompt-based personalization, and (2) retrieval-augmented personalization. These approaches differ in how they incorporate user-specific information into the text generation process:

- Prompt Engineering: One straightforward approach is to include user information in the prompt or context given to the LLM (Zhang et al., 2025). By incorporating user or audience data as context, the model can generate output that directly accounts for those details (Zhang et al., 2025). This method requires no parameter change to the model. All it is doing is leveraging the model's ability to follow instructions and conditions on provided prompt. Prompt-based personalization is inviting because it is easy to implement and flexible, one can adjust the prompt for each recipient dynamically. However, it relies on the model correctly interpreting and using the contextual info, and there is a limit to how much detail can be packed into a prompt before hitting context length constraints. In practice, careful prompt design, known as prompt engineering, is needed to guide the model's behavior and content effectively.

- Retrieval-Augmented Personalization: This approach blends into the RAG concept discussed in the second literature review. Zhang et al. (2025) described personalization via RAG as using “user information as an external knowledge base” and retrieving it with embedding-based search to inform the model’s output (Zhang et al., 2025). The benefits are similar to those of RAG for factual knowledge: flexibility and up-to-datedness.

These techniques are not mutually exclusive. In practice, a system would use a combination of them. Indeed, much recent research focuses on efficient personalization, seeking methods that provide a tailored experience with low data and GPU memory usage (Zhang et al., 2025).

While the techniques above show great potential, implementing personalization in NLP comes with significant challenges:

- Data Sparsity and Personalization Depth: Another challenge is the cold-start problem, many SMEs simply do not have a large corpus of text data to learn from (Zhang et al., 2025)). RAG can partially alleviate data sparsity issues by allowing the model to leverage any available context instead of requiring extensive training. Moreover, by keeping it general, RAG-LLMs allow the use of related data: if the specific SME’s data is sparse, the model could pull related industry information or similar company cases to enrich the content. Of course, this needs to be done carefully to remain accurate to the specific recipient, or hallucinations could very well appear (Arslan et al., 2024).
- Evaluation of Personalized Outputs: Determining whether a personalized email is successful is not obvious. In academia, personalization of LLMs is often evaluated either by intrinsic measures (how well does the output match known user data or preferences) or

extrinsic outcomes (does it improve click-through rates, user satisfaction, etc.) (Zhang et al., 2025).

In conclusion, with a RAG-augmented approach, we are able to personalize LLMs that are capable of producing contextually persuasive marketing emails to a considerable extent. It leverages the latest advances in knowledge-grounded text generation and incorporates them with context conditions by user-specific data. There is also the matter of balancing between personalization and generation: the retrieved facts need to be generated into the text in a natural, convincing way. Therefore, it still requires careful attention to some of the limitations mentioned.

#### **4. Evaluation Metrics for RAG-LLM Systems**

Retrieval-Augmented Generation (RAG) combines information retrieval with Large Language Models (LLMs) to produce outputs grounded in external knowledge. A core question is how to evaluate the success of such a RAG-augmented LLM. This entails evaluating both retrieval quality and generation quality.

Yu et al. (2025) proposed the RGAR framework across three dimensions: Retrieval, Generation, and Additional Requirements for analyzing RAG evaluation benchmarks. Retrieval is assessed by relevance (how well documents match the query) and accuracy (whether relevant documents are ranked correctly). Generation is evaluated by relevance, faithfulness (staying true to the retrieved sources), and correctness (alignment with a known answer). Additional criteria include aspects like clarity, linguistic quality, and response time, tailored to specific use cases.

However, we should prioritize holistic-level evaluation, this is because focusing on only one component in isolation can be misleading because “the entire system’s performance cannot be fully understood by evaluating each component in isolation” (Yu et al., 2025). This means that a perfect retrieval does not guarantee a good final answer if the generation model fails to use the information well. So the model’s output should be evaluated and components are in turn refined.

Nevertheless, human evaluation remains the gold standard for these qualitative evaluations. Some benchmarks explicitly include human ratings for dimensions like Consistency, Clarity, and Coverage (Yu et al., 2025). Jovic & Mnasri (2024) investigated using structured feedback with the help of “elaborate rubric, allowing for a systematic assessment of LLMs' performance” (Jovic & Mnasri, 2024). However, human evaluation is expensive and not scalable for every iteration of a model. Yu et al. (2025) acknowledged significant limitations in how RAG-LLMs are evaluated today. One major issue is that current benchmarks largely focus on objective tasks (like factual question answering or knowledge-grounded dialogue) and use metrics tied to those tasks (Yu et al., 2025). Persuasive email generation for SMEs is a noticeably different challenge – success is defined by conversion, which is hard to reduce to an automatic metric. There is no single “ground truth” persuasive email to compare against, and what resonates with one recipient may not with another.

In conclusion, while significant progress has been made in developing frameworks for evaluating RAG-augmented LLMs—such as RGAR—current methods fall short when applied to subjective, task-specific domains like persuasive email generation. Standard metrics emphasizing factual accuracy, retrieval precision, and generation reliability are insufficient to capture nuances

like emotional resonance, relevance to recipient context, or conversion. Therefore, holistic evaluation approaches that assess end-to-end system performance are essential. Despite their cost and scalability issues, human evaluations remain indispensable for assessing qualitative factors.

## 5. Persuasion Theory in Marketing Communication

Persuasion is the art of influencing beliefs or actions, and it lies at the heart of marketing communications. Email marketing in particular has become a staple way for strategic persuasion, with company emails (promotional, relational, alerts) all reflecting subtle attempts to sway customers (Thomas et al., 2022). We examine key “levers for persuasion”, forces that affect conversion success, and discuss their theoretical implications for designing a GenAI system that can generate persuasive text using convincing arguments (Hunter, 2018). In particular, we review six levers which are inter-connected identified by Hunter (2018):

- Rationality of Argumentation: Logical (rational) appeal is based on facts (i.e., logic in the message’s arguments) such as evidence of return on investment, successful case studies from past collaborations, or data about market opportunities.
- Persuasion Techniques: Techniques like social proof, scarcity, and authority exploit cognitive shortcuts to influence decisions more effectively and are widely used in strategic communication.
- Argument Style: Style includes the language, tone, structure, and narrative form of the communication tailored to the nature of the prospect.
- Framing: Framing refers to the way information is presented and what aspects are emphasized. This means that how you phrase the negative consequences, or positive benefits can convince the audience differently.



- Personality of the prospect: No persuasive effort is one-size-fits-all, the recipient's personality and disposition strongly mediate what will be convincing. This lever involves tailoring the message to the characteristics of the prospect
- Emotion: Emotional appeal is a timeless lever of persuasion and can outweigh factual and rational ones. Emotions can create urgency, connection, and memorability.

Ensuring the LLM uses these levers might involve prompt-engineering or fine-tuning with examples and clear structure (AIDA principle) of persuasive communications (Jovic & Mnasri, 2024). A RAG-LLM could become a powerful tool for crafting recruitment emails that successfully engage SMEs – by sending the right message to the right recipient in the right way. According to the theories reviewed, such a system can increase engagement by making each SME feel understood, informed, and genuinely excited or concerned about the opportunity presented.

### III. Methodology

This research follows the Cross-Industry Standard Process for Data Mining (CRISP-DM) (Shearer, 2000; IBM Corporation, 2021) as the methodology. CRISP-DM provides a structured guideline by dividing the project into six phases: Business Understanding, Data Understanding, Data Preparation, Modeling, Evaluation, and Deployment.

#### 1. Business Understanding

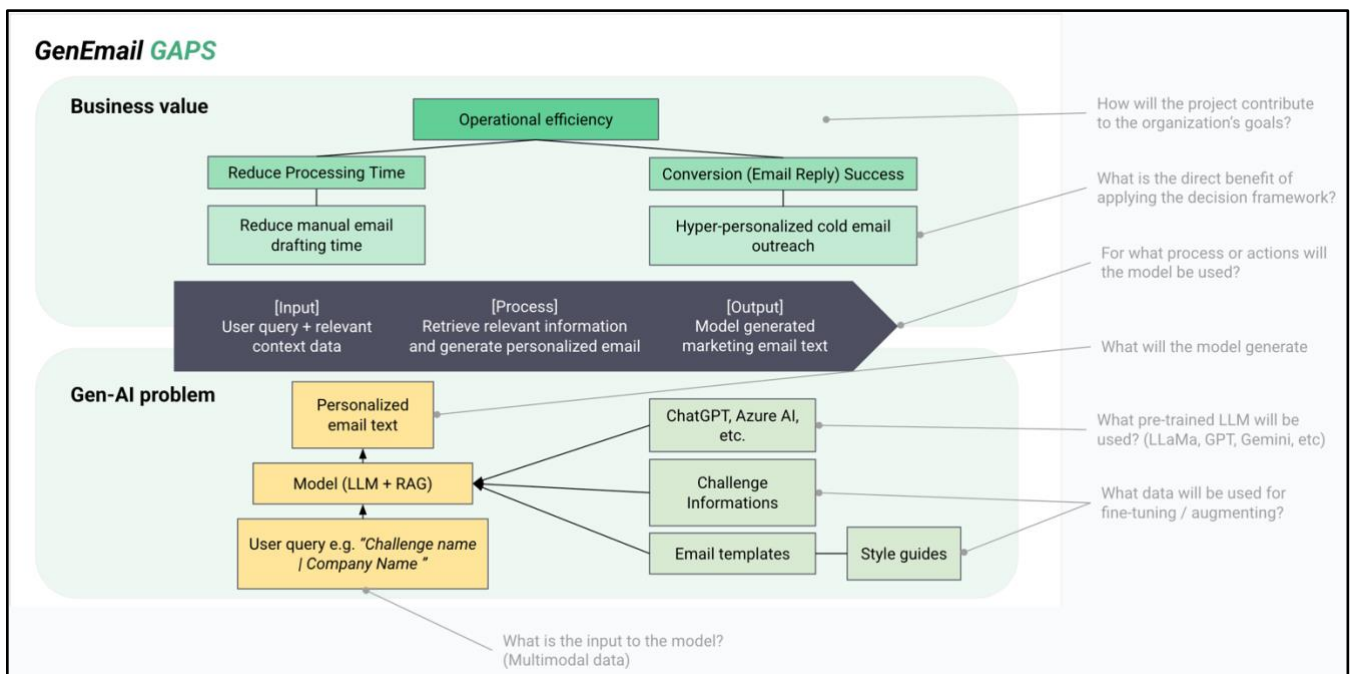


Figure 2: Gen-AI Problem Structure

Prior to this project, MKB Werkplaats Account Manager (AM) manually drafted recruitment emails for each new challenge, using the project details and the target SME. This process was time-consuming, and the drafted templates lack personalization. They faced several challenges and constraints: (1) Scalability & Efficiency - as the number of projects and SMEs grows, manually personalizing emails for each SME does not scale well, (2) Persuasion - less

than 6% of SMEs actually opens and responds to the marketing emails sent. AMs were involved in this phase to align on objectives and constraints. They emphasized that the GenAI model must maintain a professional tone, protect any sensitive data, and ultimately be approved by a human before sending. These inputs shaped the project requirements that's been mapped out in [Figure 2](#) and helped for a data-driven solution aligned with the organization's outreach workflow.

The central goal was to build a RAG-augmented LLM model that can produce tailored recruitment emails incorporating relevant project context and SME information (Wu et al., 2025). In particular, the model should use contextual retrieval so that each email it generates references details of the project challenge and the SMEs to make the invitation compelling. Another goal was to evaluate the persuasiveness, relevance and quality of these AI-generated emails against human standards.

## **2. Data Understanding**

In this phase all the data relevant to the email generation task was collected. Three main components were assessed: (1) SME Challenge Information, (2) SME Metadata, and (3) Historical Email Templates, all provided by MKB Werkplaats.

A collection of qualitative descriptions of past and current collaborative projects that SMEs could participate in was manually exported from MKB's website and organized into an Excel file for convenience. The identified headings that repeat on the website are Topics, Challenge, Knowledge Institution, Description, Key Features, Criteria, Process, Challenge Examples, End product, and Planning. Currently, 15 projects make up the Excel sheet (while 53

in total). The project description is typically composed of a couple of small paragraphs, whereas the rest of the headings are bullet points. The project description, varied by topics and challenges, highlighted key points like the problem statement, the expected contribution of the students to the SME that they will be matched with, and the potential impact of the project.

The metadata of Small and Medium-sized Enterprises (SMEs) is maintained by MKB in an Excel file, which is subsequently imported into the Pipedrive CRM system. Pipedrive, a sales-oriented Customer Relationship Management (CRM) platform, is specifically designed to optimize sales workflows and enhance deal closure efficiency. While the full metadata can provide valuable context for personalized outreach, the company name is particularly effective for generating customized content, such as personalized greetings or contextual references within the email. Although leveraging real-time or detailed company-specific insights—such as recent stock performance or company news—could further enhance relevance, incorporating such information would require a significantly larger and more complex knowledge base, potentially exceeding the practical capabilities of the language model. Instead, utilizing the SME’s industry domain emerges as a more scalable and impactful approach for tailoring email content, as it allows for relevant and targeted messaging without introducing excessive computational complexity. Consequently, SME’s metadata isn’t of much use, only their industry and domain.

Additionally, a set of previous recruitment emails that were manually drafted by MKB were used as templates (Figure 3). These emails provide examples of writing style, email structure, and which headings information is to be used to not overwhelm the email with details.

On reading the past emails, a fairly consistent structure was observed – personalized greeting, opening hook, challenge summary, benefits to the SME, examples of past projects, and call to action. The tone was professional and encouraging while keeping it not too academically technical. Some persuasive elements were present, e.g., highlighting mutual benefits, creating urgency (upcoming deadlines), and personalization (SME’s name and referencing their domain). As a result, an understanding of what “good” recruitment emails look like was built and what structure should be outputted the RAG-LLM. Consequently, this forms a basis for the prompt engineering process.

Beste {{firstName}},

Wilt u efficiënter werken, de klantervaring verbeteren of operationele processen optimaliseren? Doe mee aan het *Hospitality Research Lab van de Hogere Hotelschool Den Haag / Amsterdam*, een volledig gesubsidieerd project – kosteloos en zonder verplichtingen – waarin getalenteerde derdejaars studenten samen met u werken aan concrete verbeteringen voor uw bedrijf.

**Waarom deelnemen?**

- **Frisse perspectieven en innovatieve oplossingen:** Studenten werken aan praktijkgerichte uitdagingen binnen uw bedrijf.
- **Concreet resultaat binnen 10 weken:** U ontvangt een volledig verbeterplan met resultaatanalyse en implementatiemogelijkheden.
- **Minimale tijdsinvestering:** Uw betrokkenheid vraagt slechts 1 uur per week.
- **Directe impact:** Studenten voeren hun analyses en verbeteringen op locatie uit en meten direct de resultaten.

**Voorbeeldprojecten:**

- Verminderen van voedselverspilling of plastic.
- Optimaliseren van incheckprocessen in hotels of restaurants.
- Verbeteren van gastbeleving en servicekwaliteit.
- Creëren van nieuwe inkomstenbronnen voor leegstaande ruimtes.
- Motiveren van gasten om afval correct te scheiden of hartige producten te bestellen.

**Wat vragen wij van u?** Uw enthousiasme en openheid voor verbeteringen. Studenten werken gedurende 2 weken fysiek op uw locatie om data te verzamelen en verbeteringen te testen.

**Waarom meedoen?** Dit is een unieke kans om te profiteren van de nieuwste inzichten en kennis uit de hospitalitybranche. De oplossingen die onze studenten bieden zijn praktisch, vernieuwend en direct toepasbaar in uw bedrijf.

**Meld u nu aan!**  
De plaatsen zijn beperkt, dus wacht niet te lang. Reageer op deze e-mail voor een vrijblijvend intakegesprek. Samen tillen we uw horecabedrijf naar een hoger niveau!

Met vriendelijke groet,  
MKB Digital Workspace team

Figure 3: Example of an email draft in the Hospitality domain

Data quality verification was crucial since the model’s performance depends on the reliability of the input data. Completeness in each data component was checked. Since all the project information was manually drafted from the MKB’s website, no issues appeared.

### 3. Data Preparation

Based on the understanding gained, which parts of the data would directly get fed into the model was picked: only 7 out of the 11 aforementioned headings were exported and organized into an Excel file (Figure 4): Topics, Challenge, Knowledge Institution, Description, Key Features, Challenge Examples, and Planning columns were used as the core knowledge base about the content for communication.

	Topic	Challenge	Knowledge Institution	Description	Key Features	Criteria	Process	Challenge examples	End Product	Planning
1	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...
53	...	...	...	...	...	...	...	...	...	...

Figure 4: Representation of challenge information's Excel sheet (only the columns highlighted in yellow were used)

SME's name combined with the challenge topic (which refer to the SME’s industry) were used as dynamic inputs to the prompt, to enable personalization. The provided email templates were not used to directly train the LLM (since GPT-4 via API rather than fine-tuning a model was used). However, they served our prompt engineering and evaluation criteria. For instance, a particularly well-written marketing email from the past was identified and used as a style guide when crafting the prompt. In the prompt, the model was instructed to adopt a similar tone and structure. Due to the context length limitations and because GPT-4 is very capable with proper

instructions, for a zero-shot approach was opted with a carefully written instruction prompt rather than consuming a lot of tokens on examples (Woźniak et al., 2024).

Before feeding data into the modeling pipeline, necessary cleaning steps were performed. All the project information was reviewed for any encoding issues and, in turn, normalized. Any non-essential newline characters, emojis and formatting that are only relevant from the website's viewpoint were removed. An alternative approach to structuring the challenge data would involve converting each column entry into continuous phrases, thereby avoiding bullet points and line breaks for effective semantic parsing by the language model. However, for efficiency purposes, the challenge information was directly copied and pasted from the MKB website into the Excel file without further preprocessing. Since there isn't any way of exporting the information directly from the website to an Excel file, this process is already lengthy in itself. This method ensured a streamlined data entry process while still preserving the core informational content required for downstream tasks.

#### **4. Modeling**

Given the problem nature (generating a persuasive marketing email that is grounded on specific context), RAG-LLM as our modeling approach was chosen. RAG is particularly suitable here because it allows an LLM to access an external knowledge base during generation, addressing potential knowledge gaps or hallucinations of the model (Wu et al., 2025). The core of the model is OpenAI's GPT-4, a state-of-the-art LLM known for its advanced language generation capabilities (OpenAI et al., 2024). GPT-4 was selected as the text generation model due to its advanced performance on many language tasks and its ability to produce fluent,

nuanced text that can be highly persuasive. Using GPT-4 via the OpenAI API meant that training the language model from scratch wasn't needed but the right context and instructions was provided.

Some challenges have a lot more information than others. To enable effective retrieval of relevant contextual information, the challenge descriptions were divided into smaller and more manageable chunks using LangChain's `RecursiveCharacterTextSplitter()` function. This method allowed the data to be divided into chunks with a maximum length of 1000 characters and a 10% overlap between consecutive segments. Larger chunks risk noise and high memory use, while small ones may lose context (Megahed et al., 2024). The overlapping ensures that information across chunk boundaries remains coherent, thus preserving contextual continuity and semantically meaningful paragraphs.

Once split, these text chunks were encoded using OpenAI's embedding model, `text-embedding-ada-002`, which transforms each segment into a high-dimensional vector representation. The `text-embedding-ada-002` model uses a sophisticated tokenization process that captures words, or phrases based on linguistic context, enabling accurate semantic encoding across languages. Unlike basic tokenizers, it preserves nuanced meaning, improving the quality of embeddings for both short and long texts (Megahed et al., 2024). This embedding process enables semantic similarity search by capturing the meaning of the text, allowing the model to later retrieve the most contextually relevant chunks during the email generation process. This model was chosen for its strong performance and cost-effectiveness – it combines multiple embedding capabilities



into one and outperforms previous models like Davinci on similarity search tasks while being much cheaper to use (OpenAI, 2022).

Additionally, [FAISS](#) (Facebook AI Similarity Search) was used to create a vector store that can store the embeddings of the text chunks. This choice was made because of its robustness, efficiency and speed in similarity search (Jegou et al., 2017). These embeddings capture the semantic content of the project information, allowing us to later find which project is the most relevant to a given query or context. Given that each row in the Excel file represents a distinct challenge, the full text of each challenge is segmented into overlapping chunks, and each chunk is embedded into its own vector and stored in a vector database using [LangChain](#) and [FAISS](#).

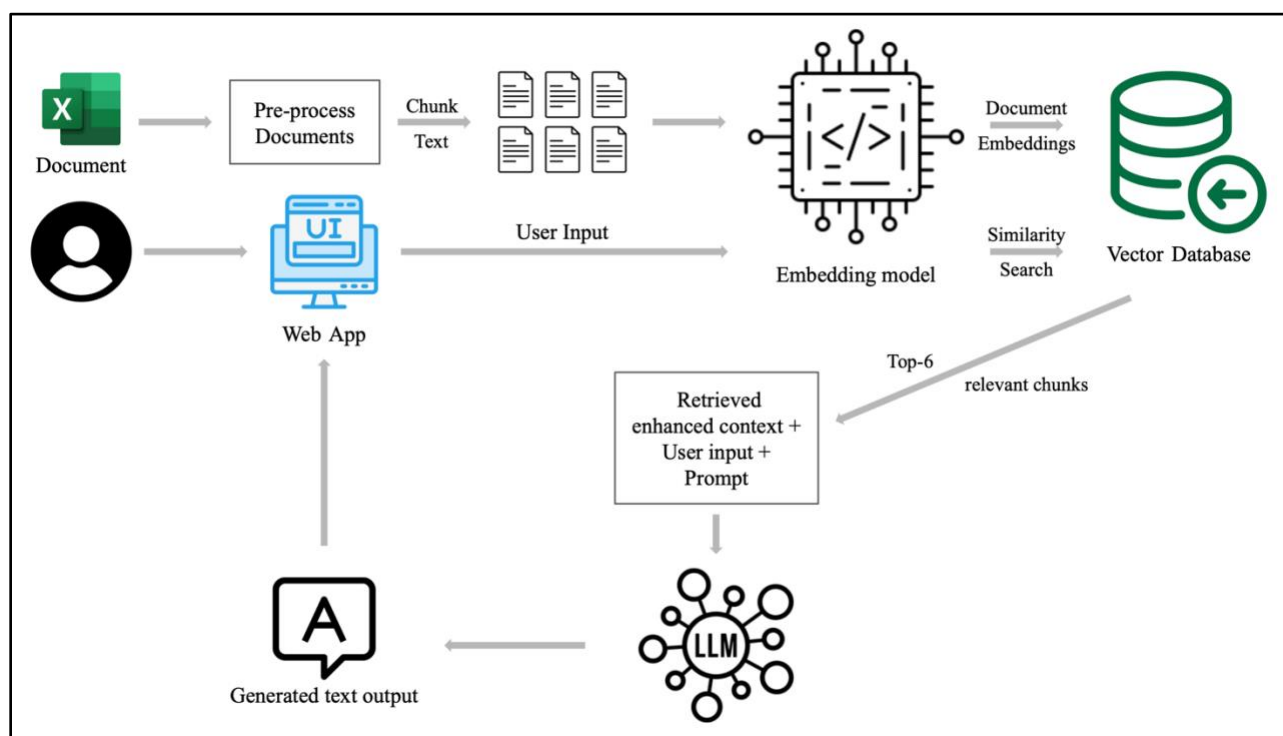


Figure 5: RAG-LLM pipeline

OpenAI's GPT-4 API via the LangChain framework was also implemented. LangChain is a development framework that simplifies linking LLMs with external data and tools (LangChain, 2025). Using LangChain, a pipeline (Figure 5) was set up that does the following:

1. Take an input (i.e., challenge and SME's name)
2. Initializes the GPT-4 model to handle both extraction and email generation tasks
3. Perform the retrieval step to get the relevant challenge (embedded in our vector store) and SME's domain
4. Generate a hash of the Excel file to detect changes and avoid unnecessary vectorstore rebuilds
5. Format the output with the prompt and the retrieved text and metadata, then
6. Call the GPT-4 model API to generate the email.

The use of LangChain allowed us to treat these steps as one coherent pipeline. It also ensured that if swapping components was needed (e.g., use a different vector store or model), it could be done with minimal changes. To ensure all inputs to the model were correctly formatted and the output could be captured in a useful format, prompt engineering needed to be refined. Depicted in Figure 6 is the prompt that have decided to go with. While the prompt appears lengthy, GPT-4 supports up to 128,000 tokens per interaction (including input and output). At approximately 1,000 tokens (~1,500 words), when counted using OpenAI's [tiktoken](#) tokenizer, our prompt

remains well within this limit, ensuring sufficient capacity for model-generated output (Milvus, n.d.).

```
1 email_prompt = [  
2     SystemMessage(content="""  
3         **Role & Objective:** You are professional recruiter specialized in persuasive email communications. Your task is to draft a personalized **cold email invitation in Dutch**  
4         that encourages a Small or Medium-sized Enterprise (SME) to participate in a knowledge institution-led **educational innovation challenge**.  
5         The email must be engaging, tailored to the SME's industry, and convincingly explain the opportunity.  
6  
7         **Structure** Use AIDA Framework:** Follow the **AIDA** model (Attention, Interest, Desire, Action) to structure the email content.  
8         Ensure each part of the email aligns with this framework: first grab attention, then build interest, create desire for participation, and finally prompt action.  
9         *(This ensures the email is logically persuasive, moving the reader from an initial hook to a clear call-to-action.)*  
10        - **Attention (Opening):** Start with a strong hook that immediately grabs the reader's attention. This includes a **compelling subject line** and an opening line that addresses a  
11        key industry trend or challenge relevant to the SME. *(This draws the reader in by showing the email is relevant to their interests or problems.)*  
12        - **Interest (Challenge Summary):** In the next 1-2 sentences, **introduce the innovation challenge** and who is organizing it (the knowledge institution). Explain briefly what the  
13        challenge is about and how it connects to the SME's industry or goals. Keep this section concise and engaging, focusing on aspects that would interest the SME.  
14        *(This sustains the reader's interest by framing the challenge in a context that matters to them.)*  
15        - **Desire (Benefits & Examples):** After introducing the challenge, **build desire** by outlining the **benefits** and value for the SME. Use simple, **benefit-focused language**  
16        to describe what the SME stands to gain – for example, access to new ideas, collaboration with experts/students, networking opportunities, solutions to a problem, or positive publicity.  
17        Emphasize that participation is **low-effort**, **requires minimal time**, and comes at **no financial cost** (output in bold) to them, while offering practical value.  
18        *(Highlighting low commitment and high reward addresses common SME concerns about limited time and budget.)*  
19        - **Examples:** If relevant **examples or success stories** from past challenges are available, include 3 or more in the email to add credibility.  
20        *(Including a real example demonstrates tangible outcomes, making the opportunity more convincing.)*  
21        - **Call to Action (CTA):** Conclude with a clear and enthusiastic **call to action**. Politely invite the SME to take the next step – for example, to reply to this email, schedule a call,  
22        or sign up via a provided link https://www.mkbwerkplaats.nl/contact – to learn more or get involved. Phrase the CTA in a way that feels encouraging and pressure-free.  
23        *(This final part should motivate the reader to respond or act, without using high-pressure language.)*  
24  
25        **Tone and Language:** Write in a **warm, enthusiastic, and professional** tone. The email should sound genuinely excited about the collaboration opportunity and **optimistic about the  
26        SME's potential involvement**, while maintaining professionalism and respect. **Adapt the language to the company's industry:** use terms and examples that make sense for their field, so the  
27        email feels personalized and relevant. **Avoid jargon and overly technical language**  
28  
29        **Use of Retrieved Context:** You have access to a vector database (knowledge base) with information about these projects and challenges. **Leverage this data to enrich the email:**  
30        - **Personalization:** Incorporate any specific information provided about the SME (e.g. name, company, industry details) and **relevant facts from the knowledge base**.  
31        - Whenever you use retrieved information, **integrate it seamlessly** into the text.  
32        - **Do not include the raw sources or citations** in the email. The retrieved content should read as part of the email's narrative. *(The goal is to personalize and substantiate the  
33        invitation, not to overwhelm with data or appear auto-generated.)*  
34  
35        **Output Format:** Provide the final email in a **ready-to-send format** with a catchy **Subject line** and a polished email body. Use "we" as pronoun instead of "I". The email should contain:  
36        - A brief, attention-grabbing **Subject:** line (50 characters or less if possible). It should hint at an exciting opportunity or benefit to pique curiosity  
37        (e.g., "Innovate in Industry! Join Our Challenge" as a rough example).  
38        - A personalized **greeting** using the provided company name followed by the **hook** (Attention) in the first sentence or two.  
39        - A brief **introduction regarding De MKB Werkplaats:** "The MKB Werkplaats helps small and medium-sized enterprises (SMEs) in the Netherlands innovate by connecting them with students  
40        from vocational (MBO), applied (HBO), and academic (WO) institutions. Through these collaborations, students support SMEs with practical, low-threshold solutions in areas like digitalisation,  
41        circular economy, AI, and marketing, while gaining hands-on experience."  
42        - Separate short **paragraphs** for the challenge summary (Interest), benefits and challenge examples (challenge voorbeelden) (Desire), and closing/CTA (Action).  
43        (Each paragraph should ideally be 2-5 sentences long for readability.)  
44        - A **closing line** with an expression of enthusiasm (e.g., "Looking forward to possibly working together on this initiative") and a **sign-off** (e.g., "Sincerely, De MKB Werkplaats").  
45  
46        **IMPORTANT:** Always use the exact company name provided in the greeting and throughout the email where appropriate. This makes the email ready to send without manual editing.  
47  
48        Ensure the final email is **cohesive and flows naturally** from one part to the next. The reader should not feel that it's segmented or formulaic, but it should subtly follow the  
49        AIDA progression. **Double-check that the tone remains positive and encouraging**, the language is tailored yet clear, and all included facts from the knowledge base are relevant and  
50        enhance the message. The end result should be a **convincing, easy-to-read invitation** that makes the SME worthwhile and excited about the opportunity.  
51        """)  
52 ]
```

Figure 6: Final version of the System Prompt (Post Feedback)

## 5. Evaluation

Before fully deploying the model, a way to test the model's performance was needed. A sample of projects and SMEs was selected to serve as our test cases. Specifically, five distinct challenge projects (from different domains) were chosen for each project. Structured feedback was drafted in the form of a rubric-based assessment form that would be evaluated by an Account Manager (AM) to gather feedback. After the rubric scoring, gathering the needed

insights and modify the prompt accordingly were efficient. The testing was conducted in a controlled setting: all test emails were generated in one session (to ensure consistency in model version and prompt parameters), compiled, and then provided to the AM.

An evaluation form was employed, structured around three main sections: Content Quality, Suitability, and Personalization & Engagement ([Appendix 2](#)). This structure enabled a varied assessment that aligns with the project's objectives: (1) to personalize marketing emails, and (2) to maintain high communicative standards of effective cold email marketing.

Content Quality focused on five core criteria: relevance to the selected challenge, clarity of the message, structural coherence, articulation of value propositions for the SME, and the clarity and persuasiveness of the call-to-action. Each generated email was reviewed to determine whether it correctly referenced challenge-specific details, avoided ambiguity, followed a logical AIDA-like structure, and convincingly communicated mutual benefits.

Suitability was evaluated linguistic appropriateness, including Dutch grammatical accuracy, tone, formality, and vocabulary choice. Given the professional nature of B2B outreach, attention was paid to whether the model output balanced institutional formality with non-technical academic language suitable for the SME contact person. Briefly, the evaluation assessed whether the message avoided being overly technical while still conveying credibility.

Personalization & Engagement examined how well the email accounted for the target audience. Metrics here included the inclusion of industry-specific references, adaptation to the perceived interest of the SME, and overall warmth of the tone. This section reflects whether the generated emails felt personally inviting, warm, or instead robotic, generic, and spammy.

Each of these categories was rated on a 5-point Likert scale by an account manager, Ellen Spithoven, who is familiar with De MKB Werkplaats communication style. Additionally, qualitative comments were also given and acted as guidance for prompt refinement, ultimately improving the relevance and persuasive strength of model outputs.

Additionally, to assess the role of retrieval, the model was prompted to output the relevant extracted information before generating the email text. This approach enabled identification of whether all necessary and relevant information was used in drafting the email.

## **6. Deployment**

Following the positive evaluation results, deployment of the solution was planned within MKB's operational environment. The deployment goal was to create a tool that De MKB Werkplaats staffs can use to generate recruitment emails for challenges tailored to relevant SMEs with maximum efficiency and minimal technical hassle. The app is hosted on <http://localhost:8501> by default. De MKB Werkplaats will need the Streamlit's source code and its dependencies available locally, and only then they can launch it.

## **IV. Results and Deliverable**

The final outcome of the project is a simple web-based interface that De MKB Werkplaats account manager can use to generate personalized cold-emails for SME outreach. In operation, an account manager selects a challenge (project) and specifies the target SME (in the format: Challenge Name | Company Name), then clicks “Generate Email”. A marketing email will be generated in under 20 seconds. An excel file with all the project description, in the needs to be uploaded for retrieval. This means that the database is not integrated on the website, account managers can upload up-to-date challenge information for better efficiency. Overall, the deliverable functions as intended: it simplify email drafting by automatically composing information that are contextually grounded in the selected project and appear tailored to the SME, meeting the project goal of efficiency and relevant outreach.

## **V. Discussion**

### **1. Limitations**

Despite the system’s potential, several technical and practical limitations are inherent to its current alpha-stage status as a proof of concept:

1. Model and Data Constraints: Although GPT-4 offers advanced generative capabilities, it is limited by a finite context window and susceptibility to hallucinations or omissions. Prompt engineering mitigates these risks to an extent, but the model struggles with highly detailed or extensive source material (e.g., MKB has in database, information of 4000+ potential SMEs).

2. Evaluation Limitations: Persuasiveness was assessed using a limited sample of generated emails evaluated by a single account manager. This introduces subjectivity, as no universally accepted ground truth exists for persuasive communication, and engagement metrics cannot be directly measured; the evaluation relied on rubric-based criteria (relevance, tone, personalization) without input from SMEs.
3. Deployment Challenges: Practical adoption is hindered by the need for human review of AI-generated drafts to ensure compliance and professionalism, since after each session a different email draft will be generated even if the same challenge and company are inputted. Factors such as user trust, integration with organizational workflows, and governance frameworks remain critical barriers to scaling.
4. Domain-Specificity and Localization Needs: Accurate personalization still requires categorization of the SME's domain to know which challenge to match with. Additionally, as the tool is currently tailored for Dutch institutions, broader adoption would require integration with a comprehensive Dutch SME database via additional APIs.
5. Randomized Output: Despite fixed inputs, the RAG-LLM's stochastic decoding can produce different email drafts on each run with varying sentence structure and emphasis. This affects consistency in tone and formatting, despite the effort of prompt engineering, forcing users to review and standardize each draft rather than relying on a single, repeatable template.

## **2. Future Research**

To address these limitations, several extensions are suggested. First, deeper personalization could be pursued. The current system uses only the SME's name and industry, future work might incorporate richer company profiles or behavioral data (e.g., past engagement history) into the retrieval base. Second, an automatic feedback loop would enhance the system's learning. For example, actual response rates or opened-email analytics could be fed back to the model so that the LLM learns which phrasing or content yields better engagement over time. Finally, better CRM integration should be explored. Embedding the email-generation function directly into De MKB's CRM (so that project and SME data flow seamlessly into the prompt) would streamline usage and ensure records of generated emails. These enhancements – improved user modeling, dynamic learning and system integration – would build on the present results to make the tool more robust and widely applicable.

## **VI. Conclusion**

In conclusion, the RAG-augmented email generation LLM achieved its objectives: it produced professional cold emails incorporating specific project context and, to an extent, SME details. Expert evaluation by the MKB account manager confirmed that the generated drafts were relevant, coherent, and persuasive (although subjective), meeting the quality and tone expected in outreach. The web-based tool substantially reduced manual effort by automating draft composition, demonstrating that contextual retrieval can enhance automated outreach. A survey indicated that employees require an average of 5 minutes and 30 seconds to draft an email,



whereas the proposed system is capable of generating a complete draft in under 20 seconds (Wooten, 2023). Therefore, generative AI is seen as a means to expand outreach efficiency and lead engagement. Given its hallucinations and information omission limitations, it should augment rather than replace human effort (Paschen et al., 2020). Our results illustrate this balance: the RAG-LLM handles routine content creation, but the final reviewer remains essential to maintain trust and compliance. Academically, this thesis serves as a case study linking RAG-based personalization with persuasion theory in a B2B context and provides an evaluation framework for AI-generated marketing content. Practically, it delivers a working prototype and implementation insights for De MKB Werkplaats and any business on integrating AI into their sales processes. The prototype exemplifies how RAG-LLMs can make SME sales outreach more scalable and efficient, illustrating both the potential benefits and the need for careful design.

### **Statement of Work**

This thesis includes both individual and collaborate elements. The following (sub)sections are predominantly based on group work:

- Section 1 on Introduction (case background and figure)

All the other sections in this thesis are my individual contribution. I, Duc Quan Nguyen, take full responsibility for all work presented in this thesis irrespective of it being based group or individual work.

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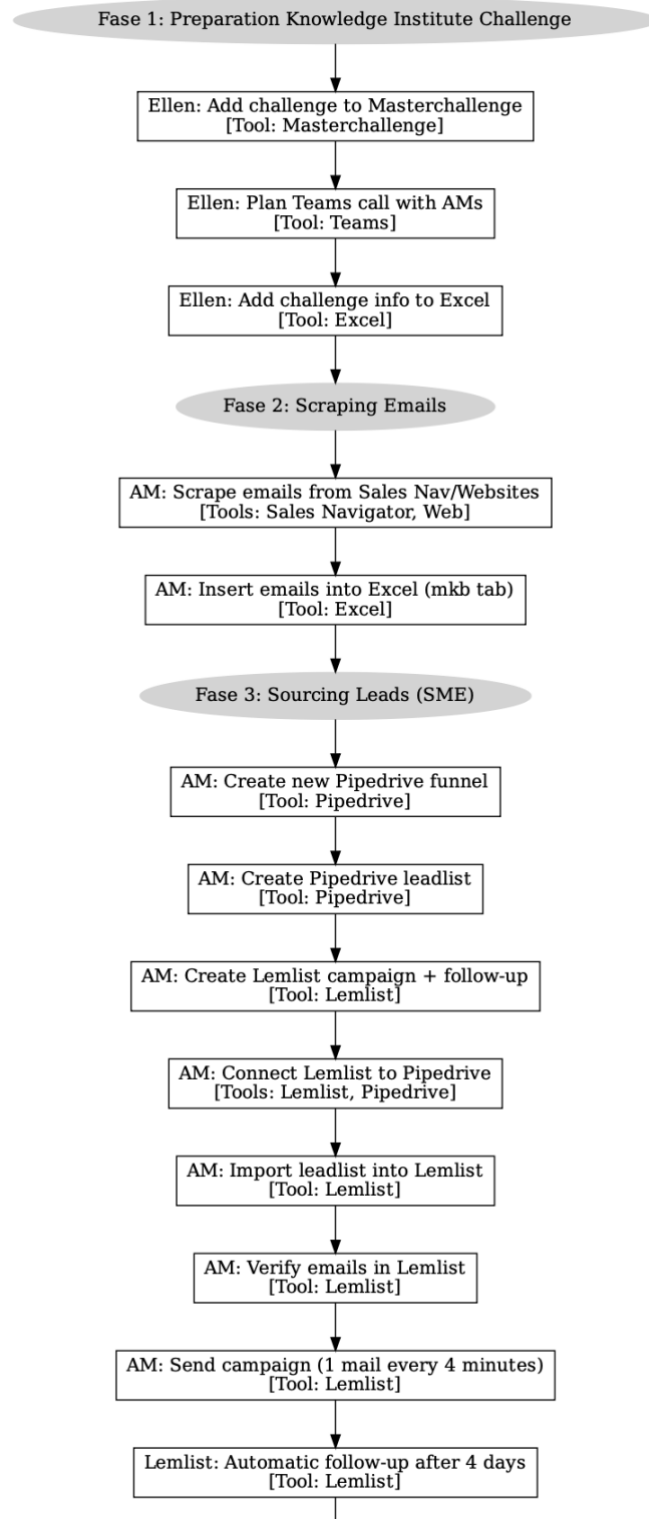
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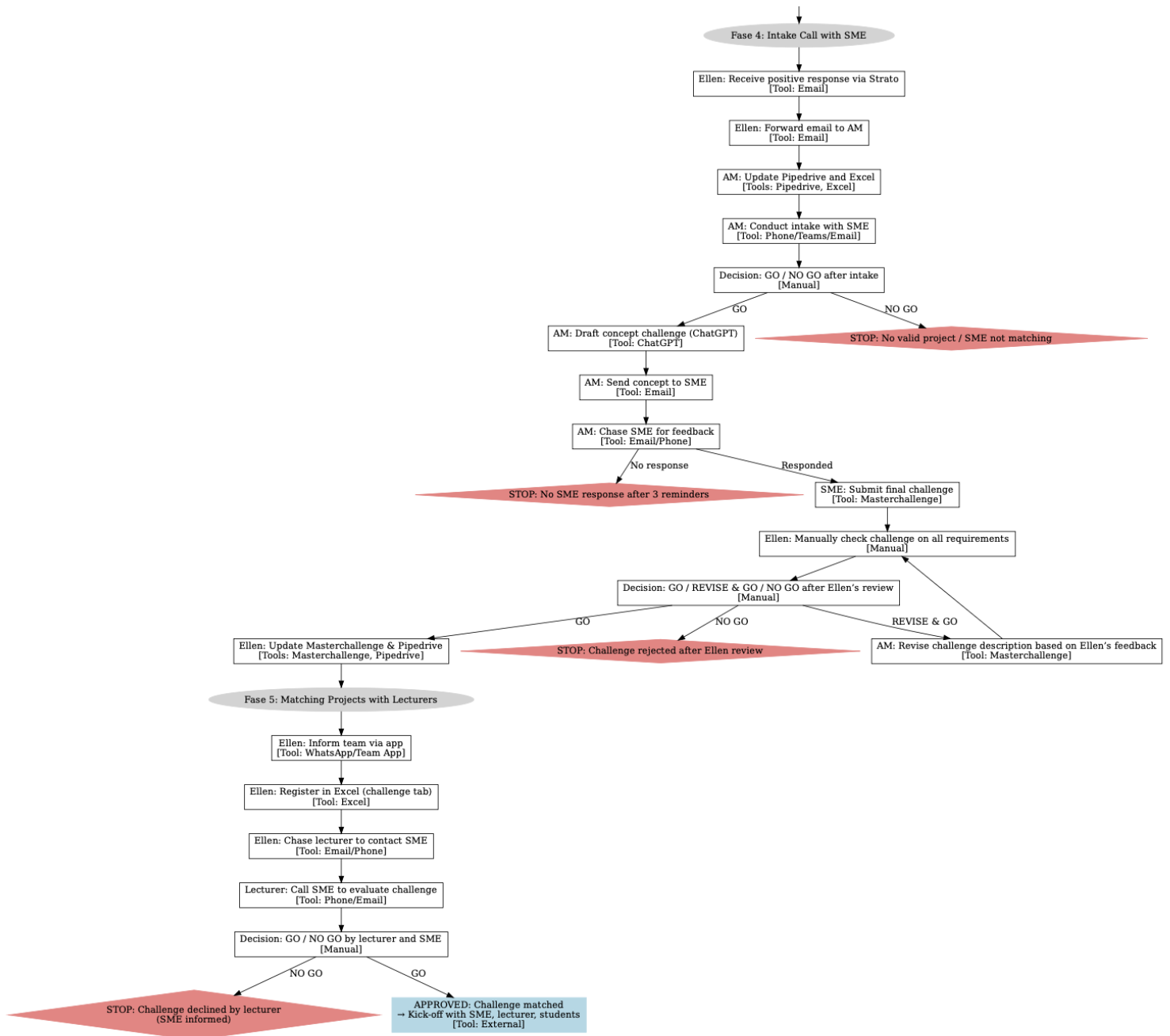
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## Appendices

### Appendix 1. MKB's sales flowchart





## Appendix 2. Structured Feedback / Evaluation Form

Purpose: Evaluate the quality of email output generated to recruit SME to join a specific challenge.

*Please rate on a scale from 1 to 5, where 1 indicates the lowest rating and 5 the highest.*

### Content Quality

Description:

- Relevance: Does the email clearly refer to the correct challenge? Are the key details from the challenge mentioned accurately?
- Clarity: Is the email easy to understand?
- Structure: Does the email follow a coherent structure for cold emailing?
- Benefits to SME: Are the value propositions of joining the challenge stated clearly and persuasively?
- Call to Action: Is the CTA clear and compelling? Does it guide the recipient toward the next step?

Challenge	Relevance	Clarity	Structure	Benefits to SME	Call to Action
1	4	4	4	3	<ul style="list-style-type: none"><li>- Add bullet point: Completely free</li><li>- Missing the example projects</li></ul>
2	4	4	4	3	<ul style="list-style-type: none"><li>- Add bullet point: Completely free</li><li>- Missing the example projects</li></ul>
3	4	4	4	3	<ul style="list-style-type: none"><li>- Add bullet point: Completely free</li><li>- Missing the example projects</li></ul>
4	4	4	4	3	<ul style="list-style-type: none"><li>- Add bullet point: Completely free</li><li>- Missing the example projects</li></ul>
5	4	4	4	3	<ul style="list-style-type: none"><li>- Add bullet point: Completely free</li><li>- Missing the example projects</li></ul>

### Suitability

Description:

- Grammar: Does the email follow correct Dutch grammar?
- Formality: Is it too casual or too stiff?
- Vocabulary: Is the wording too technical for someone unfamiliar with academic or institutional terms



Challenge	Grammar	Formality	Vocabulary
1	4	4	4
2	4	4	4
3	4	4	4
4	4	4	4
5	4	4	4

*AM Comment: Only the first word of the subject sentence should have a capital letter.*

### Personalization & Engagement

#### Description:

- Audience Awareness: Does the email include elements like challenge-specific hooks, or target sector relevance?
- Engagement Potential: Does it read like a “spammy” email or like a genuine invitation? Would you respond to this?
- Warmth: Does the message feel robotic

Challenge	Audience Awareness	Engagement Potential	Warmth
1	4	3	4
2	4	3	4
3	4	3	4
4	4	3	4
5	4	3	4

*AM Comment: Should we add some small info regarding the Werkplaats in the email? In the current set up we just jump into the challenge and new leads won't know who we are or what we do.*

### Appendix 3. Five Generated Email Subjected to Evaluation / Feedback

Email #1: Webapplicatie (Make IT Work)

**Subject:** Innovatief Project: Ontwikkel Samen Met Top IT-Talent

**Beste [Naam ondernemer],**

Hoe zou het zijn om samen te werken met een team van leergierige IT-talenten en tegelijkertijd een waardevol prototype te ontwikkelen voor jouw bedrijf?

Bij de Hogeschool van Amsterdam (HvA) nodigen wij ambitieuze bedrijven zoals die van jou uit om deel te nemen aan “**Make IT Work**”, een innovatieproject waarbij onze studenten zich richten op het bouwen van webapplicaties. Dit unieke traject brengt ondernemers en aanstormende full-stack software engineers samen om innovatieve oplossingen te creëren die direct relevant zijn voor jouw sector.

Deelnemen aan dit project biedt jouw organisatie:

- **Frisse ideeën en innovatieve oplossingen:** Denk aan maatwerk-applicaties zoals een vacatureplatform, een duurzame-producten-app of zelfs een maatwerkapplicatie op basis van jouw vraag.
- **Kosteloze samenwerking zonder financieel risico:** Er zijn absoluut geen kosten verbonden aan deelname.
- **Efficiënte tijdsinvestering:** Jouw input is nodig in slechts een paar korte sessies, zoals sprint reviews (fysiek of online).
- **Toegang tot kennis en expertise:** Onze studenten worden begeleid door ervaren docenten en combineren actuele IT-inzichten met ontwikkelingstechnieken zoals Agile/Scrum, database-ontwerp, front- en backendtechnologieën, en security.

Bij eerdere edities hebben bedrijven enorm geprofiteerd van deze samenwerking, zoals de ontwikkeling van een **cryptobank-app** of een **duurzaamheidstool voor verpakkingsmaterialen**. Wie weet wordt jouw idee de volgende inspirerende case!

**Wil je meedoen of meer informatie?** We plannen graag een gesprek om te bespreken hoe dit traject voor jouw organisatie kan werken. Je kunt ons bereiken via deze link:  
<https://www.mkbwerkplaats.nl/contact>.

We kijken ernaar uit om samen met jouw organisatie technologische innovatie een boost te geven.

**Met vriendelijke groet,**

[Naam]

De MKB Werkplaats

## Email #2: Logistiek 2

**Subject:** Boost Uw Logistieke Innovatie: Doe Mee met HvA's Challenge!

**Beste [Naam van SME Contactpersoon],**

De logistieke sector verandert razendsnel. Of het nu gaat om efficiëntere bevoorrading van supermarkten of duurzamer stadsvervoer, innovatie binnen supply chains is de sleutel tot succes. Uw expertise als [branche/specifieke sector SME] maakt u dé perfecte partner voor de **Logistiek 2 Challenge**, georganiseerd door de Hogeschool van Amsterdam (HvA).

In deze praktijkgerichte uitdaging werken vierdejaars studenten Logistiek samen met bedrijven zoals het uwe om processen te optimaliseren en waarde te creëren binnen de keten. Gedurende twee sprints van elk zeven weken (september 2025 – januari 2026) krijgt u toegang tot frisse inzichten, een concreet advies op maat én de kans om talentvolle professionals in de dop te ontmoeten.

**Wat levert het u op?**

- **Praktische oplossingen:** Studenten brengen uw processen haarscherp in kaart, benoemen knelpunten en presenteren een helder actieplan om waarde toe te voegen.
- **Minimale tijdsinvestering:** Slechts 1 uur per week benodigd voor overleg met het studententeam – zonder financiële kosten.
- **Nieuwe ideeën & talenten:** Profiteer van innovatief denken én draag bij aan onderwijs door praktijkervaring te delen.
- **Concrete resultaten:** U ontvangt een professioneel advies en onderzoeksraamwerk gericht op uw specifieke bedrijfsbehoeften.

Ondernemingen die eerder aan vergelijkbare uitdagingen deelnamen, waren lovend over de frisse perspectieven en innovatieve oplossingen die deze samenwerking opleverde.

**Zin om mee te doen?** Laat ons weten of we een vrijblijvend gesprek kunnen plannen om de details en uw mogelijkheden te bespreken. Neem contact op via [email] of schrijf u direct in via [link: <https://www.mkbwerkplaats.nl/contact>].

We zijn enthousiast om te zien hoe uw bedrijf kan floreren binnen deze challenge en kijken ernaar uit om samen waarde te creëren!

**Met vriendelijke groet,**

[Uw Naam]

De MKB Werkplaats

### Email #3: Circular ontwerpen

**Subject:** Doe Mee met Ons Circular Design Project – Innovatie met Impact!  
**Beste [Naam van de Onderneming],**

Hoe kun je meer waarde halen uit reststromen terwijl je bijdraagt aan een meer circulaire economie? Als uw onderneming ook bezig is met duurzaamheid en innovatie, hebben we een unieke kans voor u om die ambities verder vorm te geven.

#### **Ontdek de Kracht van Circulair Ontwerpen**

Via het vak Circular Design aan de Hogeschool van Amsterdam (HvA) werken onze tweedejaarsstudenten Engineering: Product Ontwerpen in teams aan creatieve oplossingen voor concrete uitdagingen van externe opdrachtgevers zoals u. Deze projectchallenge focust op innovatieve ontwerpen die reststromen omzetten in functionele producten — terwijl er rekening wordt gehouden met gebruiksproblematiek, productieprocessen én verdienmodellen.

Tijdens dit traject (sep-nov) begeleidt u als opdrachtgever de studenten minimaal (ongeveer 10-15 uur) terwijl u waardevolle prototypes, frisse concepten en een innovatieve blik op uw reststromen ontvangt. Het project wordt afgesloten met een expositie waar studenten hun werk presenteren en u inzichten kunt delen met andere betrokkenen.

#### **Waarom Meedoen?**

- **Toegang tot Innovatie:** Ontvang verrassende ideeën en praktische prototypes gericht op uw organisatie.
- **Nieuwe Talenten:** Werk samen met enthousiaste studenten die ondersteund worden door deskundige HvA-docenten.
- **Netwerk en Publiciteit:** Verhoog uw zichtbaarheid tijdens de expositie en versterk connecties binnen Amsterdamse innovatienetwerken.
- **Minimale Inspanning:** Uw tijdsinvestering blijft beperkt tot ca. 10-15 uur over 10 weken.

Eerdere deelnemers hebben gerapporteerd dat de frisse perspectieven van studenten hen geholpen hebben om concrete uitdagingen op vernieuwende manieren aan te pakken. Dit is een kans om nog meer uit uw reststromen te halen én maatschappelijke impact te maken.

#### **Doe Mee en Zet de Eerste Stap**

We zouden graag overwegen hoe we uw onderneming bij dit inspirerende project kunnen betrekken. Klik hier: <https://www.mkbwerkplaats.nl/contact> om uw interesse te registreren of stel gerust vragen via een reactie op deze e-mail. We denken graag met u mee!

Met enthousiasme kijken we uit naar een mogelijke samenwerking. Laat dit onderdeel zijn van uw innovatie en impact in 2023!

**Met vriendelijke groet,**

[Uw Voornaam en Achternaam], De MKB Werkplaats

#### Email #4: Minor Strategisch ondernemerschap

**Subject:** Innovatiekansen voor uw Bedrijf: Gratis Strategisch Advies  
**Beste [Naam van de ondernemer],**

Heeft u interesse in concrete oplossingen om uw bedrijfsactiviteiten duurzamer of meer circulair te maken? Wij bieden u een unieke kans om uw organisatie te versterken door samen te werken met een team van gemotiveerde studenten in de **Minor Strategisch Ondernemerschap**, georganiseerd door Aeres Dronten.

**Wat is de uitdaging?** In deze minor werken vierdejaars Bachelorstudenten Agrifoodbusiness gedurende 20 weken aan een strategisch vraagstuk binnen uw bedrijf. Denk aan thema's zoals investeringsbeslissingen, technologische innovaties of certificeringsprocessen. Als resultaat ontvangt u een professioneel strategisch adviesrapport met praktische handelingsperspectieven, afgestemd op uw specifieke doelen.

#### **Waarom deelnemen?**

- **Inspirerende inzichten:** Ontdek innovatieve ideeën en oplossingen vanuit een frisse blik.
- **Hogere duurzaamheid:** Maak uw bedrijf klaar voor de toekomst door concrete stappen te zetten richting meer circulaire bedrijfsvoering.
- **Gemakkelijk en haalbaar:** Uw tijdsinvestering is zeer beperkt (gemiddeld slechts 15 minuten per week) en deelname is volledig gratis.
- **Krachtige samenwerking:** U werkt samen met ambitieuze studenten en deskundige begeleiders van Aeres.

Vorig jaar werkte [voorbeeld-casus: als beschikbaar] een agrarische onderneming succesvol mee en realiseerde oplossingen voor [Resultaten indien beschikbaar, bv. duurzame verpakkingen of efficiëntieverbeteringen]. Dit toont de praktische waarde van deze samenwerking.

**Kom in actie!** Bent u klaar om samen met ons impact te maken? Meld uw bedrijf eenvoudig aan of stel uw vragen via [naam en telefoonnummer/contactpersoon] of via deze link:  
<https://www.mkbwerkplaats.nl/contact>

Wij kijken ernaar uit om meer over uw bedrijf te horen en samen aan duurzame oplossingen te werken.

**Met vriendelijke groet,**  
[Uw Naam]  
De MKB Werkplaats

## Email #5: Studio Social Impact apps

**Subject:** Boost Innovatie en Maatschappelijke Impact met Studenten van HvA

**Beste [Naam Bedrijf/Contactpersoon],**

Heeft uw organisatie een idee voor een applicatie met maatschappelijke impact, maar mist u de tijd of middelen om het te realiseren? Wij hebben een kans om uw ambitie tot leven te brengen en tegelijkertijd jong talent te stimuleren: **de Studio Social Impact Apps challenge**.

In dit project werken teams van ambitieuze **HBO-ICT studenten** van de **Hogeschool van Amsterdam (HvA)** samen met organisaties zoals die van u. Hun missie? Het ontwerpen en ontwikkelen van innovatieve (web)apps, mobiele oplossingen en andere digitale producten die impact maken. Of u denkt aan een compleet nieuwe applicatie, een verbetering van een bestaand systeem of het toepassen van opkomende technologieën zoals **AI**, **VR** of **serious gaming** – onze studenten staan klaar om uw uitdaging aan te pakken.

**Wat levert dit uw organisatie op?**

- **Maatwerkoplossingen:** Studenten vertalen uw wensen en doelen in concrete producten, zoals gebruiksvriendelijke apps, innovatieve dashboards of UX/UI ontwerpen.
- **Innovatief denken:** Frisse ideeën vanuit verschillende expertises, zoals Front-end development, Creative Technology en Digital Business Engineering.
- **Kansen voor samenwerking:** Een laagdrempelige samenwerking zonder financiële kosten, waarbij uw team tijd bespaart en direct profiteert van innovatieve inzichten en prototypes.
- **Make an impact:** Draag bij aan onderwijs en maatschappelijke innovatie door uw expertise en uitdagingen te delen.

Deelnemers aan eerdere HvA-projecten hebben al indrukwekkende resultaten geboekt, zoals functionele apps, geoptimaliseerde websites en krachtige digitale business oplossingen die direct toepasbaar waren voor de partnerorganisaties.

Bent u geïnteresseerd om mee te doen? Dan horen we graag van u! Neem een kijkje op <https://www.mkbwerkplaats.nl/contact> voor meer informatie, of stuur ons een korte reactie terug. Wij helpen u graag verder en denken met u mee over een passende uitdaging voor deze speciale innovatie-studio!

**We kijken ernaar uit om samen iets moois neer te zetten.**

Met vriendelijke groet,

[Uw Naam]

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