



World Association
of News Publishers

Data Science Day 2025 at Süddeutsche Zeitung

Workshop 2: GenAI and User Needs

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Chief AI Officer

smart**o**ct 

Agenda

- The User Needs Model 2.0
- Goals of User Needs Analysis
- Prompt Engineering for User Needs
- RAG Framework for User Needs
- smartocto.ai System Design and Implementation
- GenAI enhanced smart analytics and recommendation in the newsroom



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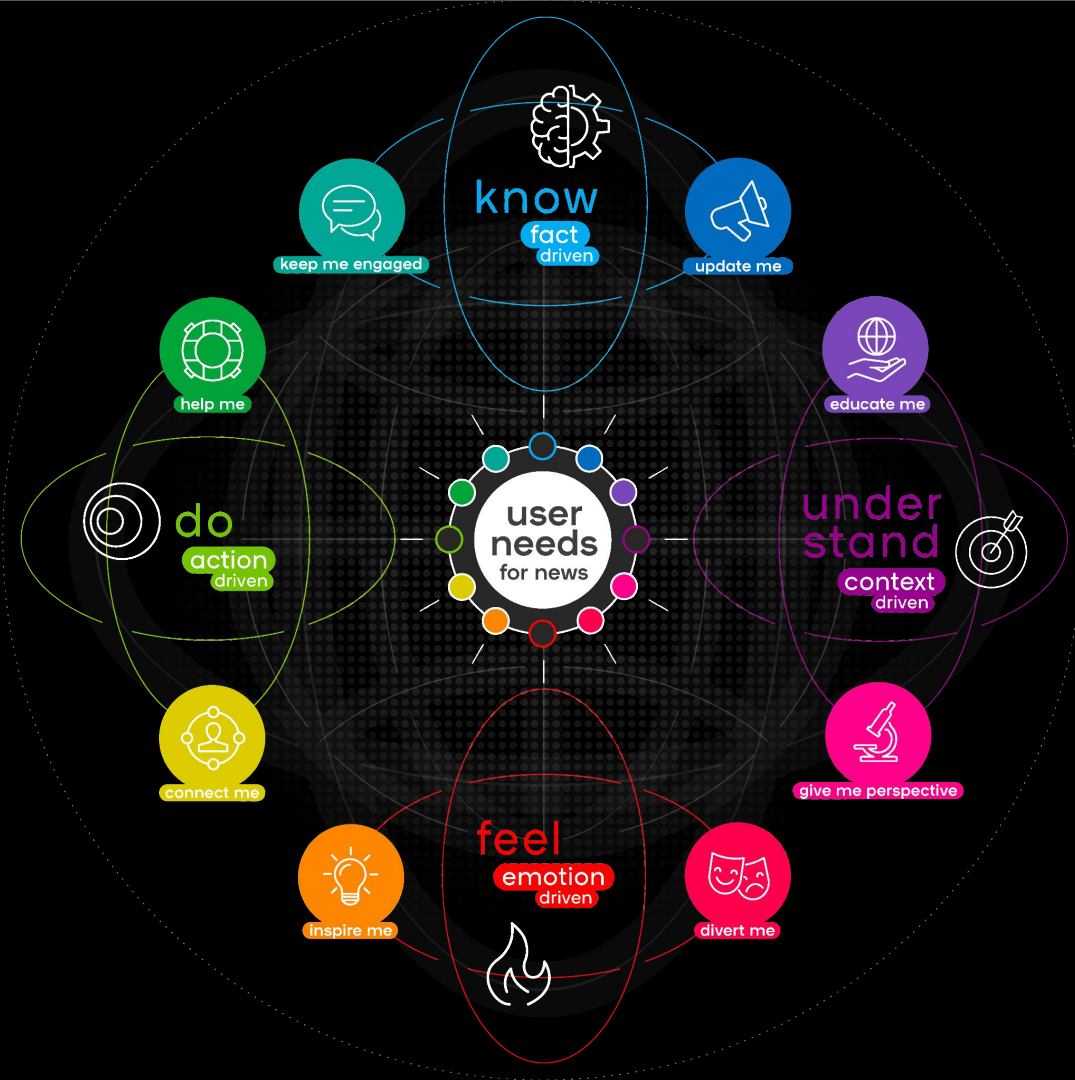


The User Needs Model 2.0

Eight different reasons why people consume news.

These needs go beyond just getting the facts, and stem from basic human desires:

understanding the world around them, **being able to join in on the conversation**, **share information with others** and **determine whether something is bad or good, wrong or right**.



The User Needs Model 2.0

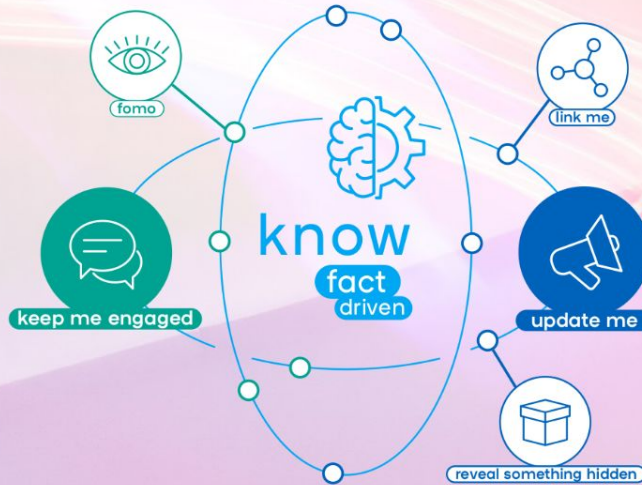
if you choose to go for the KNOW side you can ask

Is there a TV documentary or special edition of a newspaper about the flood? Are people reacting to something about the topic on social media?

Report about the most impressive tweets or comments. Remark how the newspapers cover this historical event. Collect remarkable things in the news about the coverage of the topic.

headline

Documentary shows the flood's impact is still felt: 'I fear water'



Do we know what kind of events will take place to commemorate the disaster?

Create a timeline or plain news article where you can read what will happen, when and where.

headline

The Netherlands commemorate the great flood

The User Needs Model 2.0

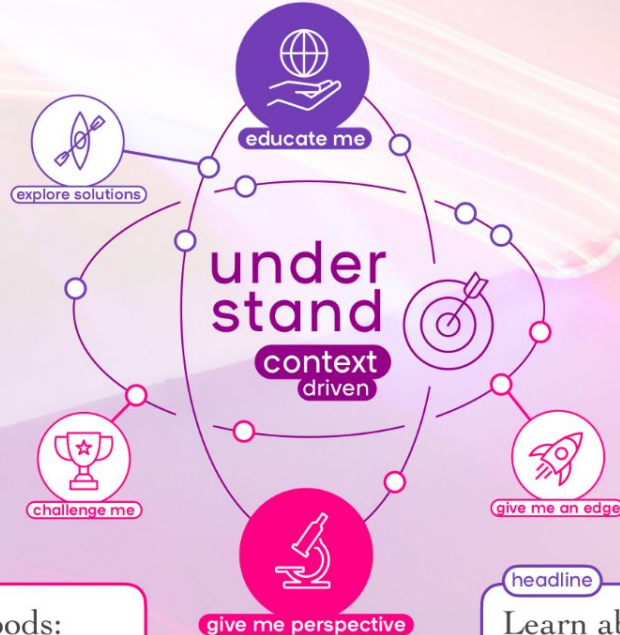
if you choose to go for the UNDERSTAND side you can ask

Is there reason to worry that a similar flood will happen in the (near) future?

Let analysts explain if this threat is reasonable or not - from climate standings, technical standings, data (how much does the level rise each year and what does that mean? Or even take a look at disappearing islands across the globe.

headline

Experts worry about new floods:
'Climate change makes us vulnerable'



Is there anything that is complex or needs to be explained about this topic?

Make an explainer of the sea level in the Netherlands, explain how dykes work, what the function of a lock is, how the delta work functions etc.

headline

Learn about the Netherlands' ingenious sea protection

The User Needs Model 2.0

if you choose to go for the FEEL side you can ask

Can I find survivors who want to talk about this and share their lessons?

Make a personal interview on what happened and how it changed their lives.

headline

John (91) saved 35 people during flood: 'There was no time for crying'

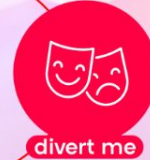


feel
emotion
driven



Do I have footage of what has happened?

Create a slideshow of pictures before and after showing the immense impact the flood had on people, houses and the country as a whole.



headline

The devastating impact of the flood in 20 images.



The User Needs Model 2.0

if you choose to go for the ACT side you can ask

Is a stronger societal movement necessary? Is something happening that makes your audience proud of their environment?

Try to find a movement or create one. We have volunteers that watch the dykes and also level the water in various canals, rivers etc. Report about the volunteers and invite your audience to join them.

headline

More volunteers needed for the water check weekends



Is there anything to help people with on a personal level?

The main question in this story could be: are people well prepared for a flood nowadays? How? Write an article about the things you should have in your home to overcome a new flood. Show good escape routes for local societies if necessary.

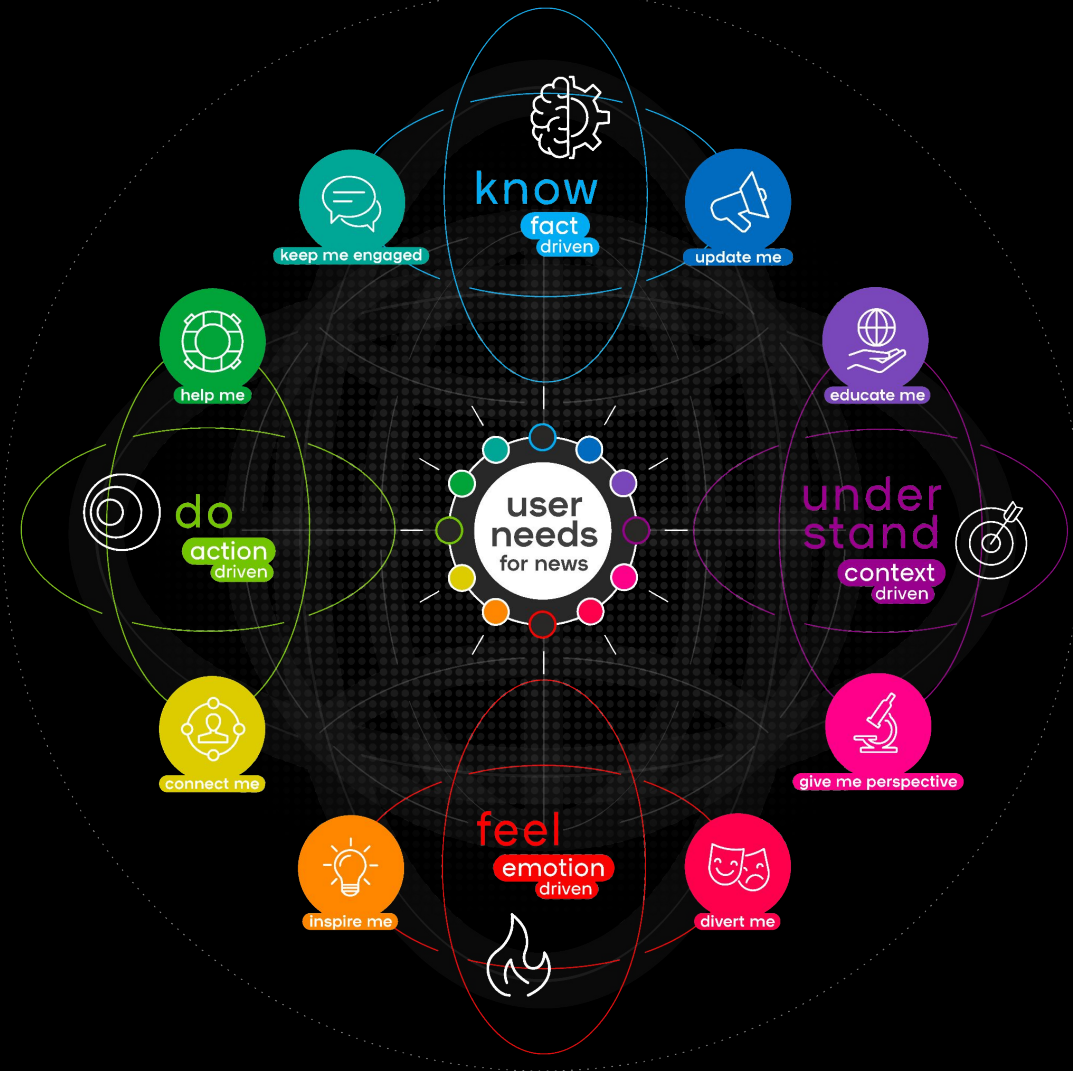
headline

Here are 5 surprising and simple tips to survive new floods

The User Needs Model 2.0

It is not a content-based categorisation.

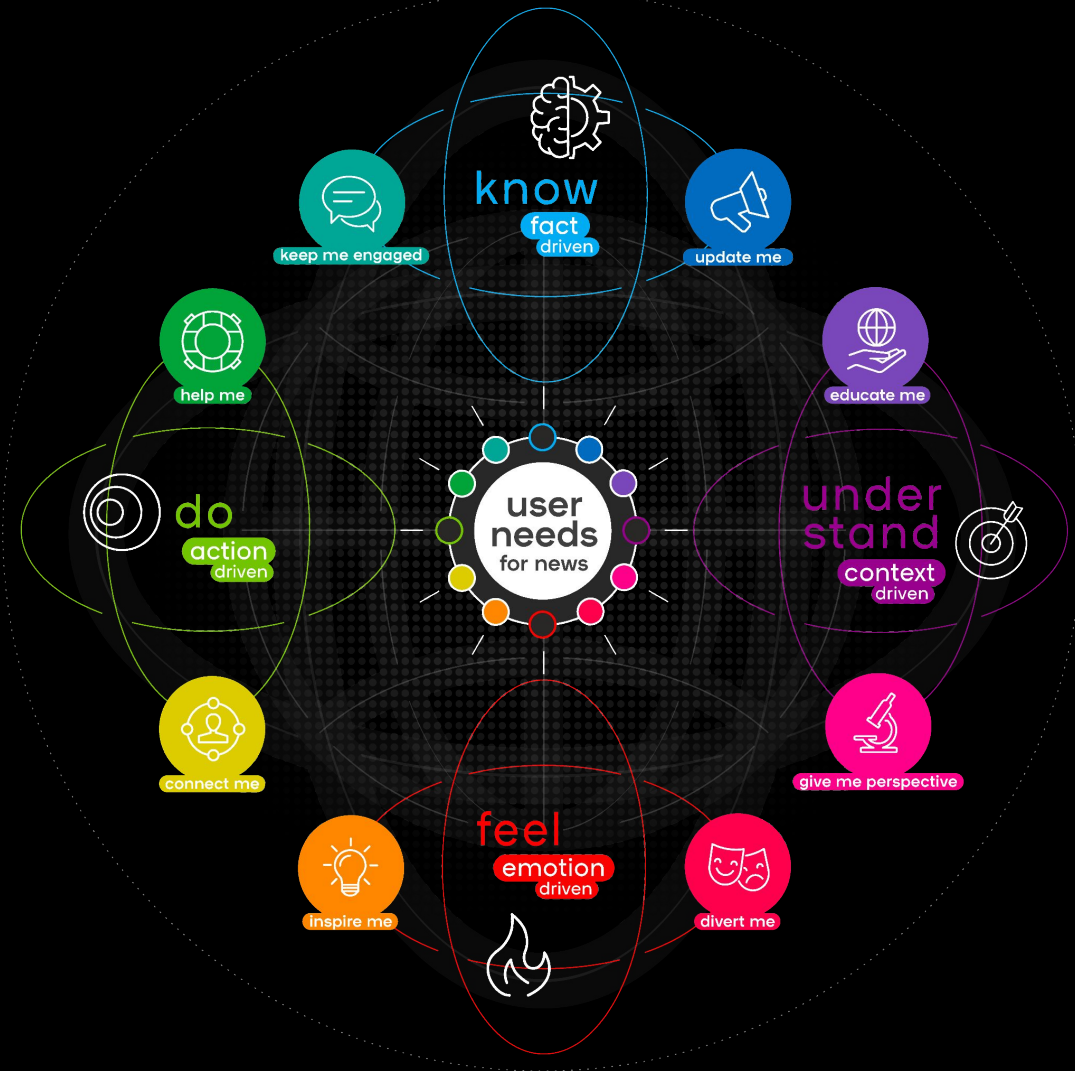
Content semantics will not help you: any topic can be approached from any User Needs axis when appropriate!



The User Needs Model 2.0

“That is why the question of how to computationally recognise which user needs an article satisfies cannot be resolved solely by analysing the meaning - the semantics - of the words and phrases in the text; it requires analysing how the author uses the language in the text, how it addresses different audiences, what its goal is, what effect it wants to achieve, and what reaction it aims to provoke.”

Goran S. Milovanović, smartocto, “*User needs and AI: a deep dive in the data bunker*”



This Workshop

In an era where Artificial Intelligence (AI) reshapes how newsrooms interact with their audiences, the integration of sophisticated tools like the User Needs Model and AI-driven recommendation systems has become crucial.



This Workshop

This workshop explores the strategic implementation of these technologies using a deep dive into the User Needs Model and the innovative application of AI, particularly through the development and utilization of Large Language Models (LLMs).



This Workshop

We also address the ethical considerations and the balance required between AI-driven automation and human editorial oversight to maintain journalistic integrity.



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Goals of User Needs Analysis

Post-publication goals

- **Automatic recognition (tagging)** of published articles to determine the User Needs they satisfy:
 - Qualitative (**categorization, explanation**)
 - Quantitative (**scores** across User Needs axes)

Pre-publication goals

- **Recommendation on how to rewrite** a draft (or already published) article written in one to a different User Needs axis (qualitative)

Not a goal

- ~~**Content production**~~
 - We do not use, and do not plan to use generative AI systems (LLMs) to provide content production (e.g. automatic writing) systems.
 - In smartocto we are very aware of the limitations of the currently available AI systems.

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Prompt Engineering for User Needs

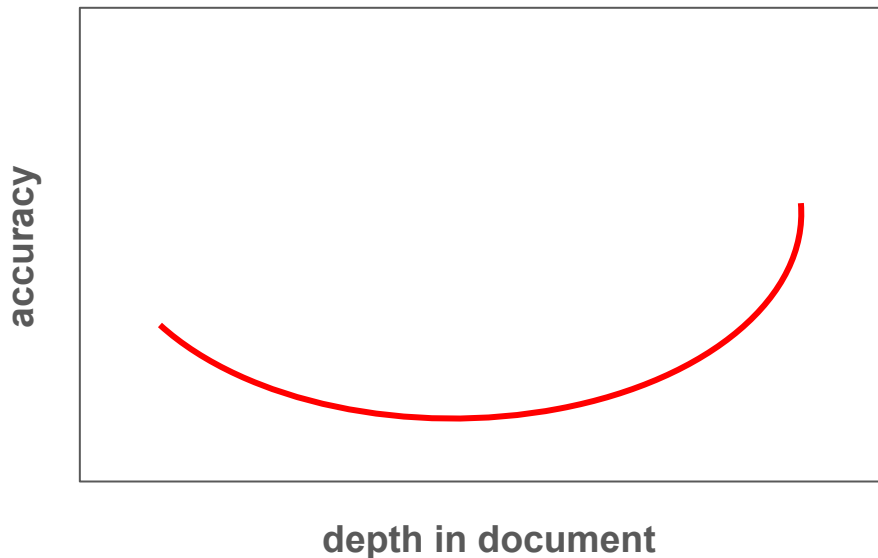
- **Goal:** taming the non-deterministic generative beast
- The 0th rule: **do not use zero-shot prompts**
 - New versions of popular LLMs (OpenAI, Anthropic) are “aware” of the User Needs model in their associative memory
 - Do not be impressed by the power of aCoT (automated Chain of Thought models, e.g. ChatGPT-4o, DeepSeek) that automatically involve internet search - **that is something that you probably do not want in production (because it is impossible to control it)**
- **Build a Retrieval Augmented Framework (RAG) while enhancing your prompts with expert knowledge + client specific information**

Prompt Engineering for User Needs

- Build a Retrieval Augmented Framework (RAG) while enhancing your prompts with expert knowledge + client specific information
 - In smartocto we use lengthy, detailed prompt instructions
 - that are enriched by task relevant expert knowledge in a RAG framework
 - and enriched by client-specific information (their goals, audience, the nature of their publication, typical topics, writing style description, etc)
 - **Drawback:** you end up with lengthy prompts (and you need to manage that problem somehow) ← **"Lost-in-the-middle" effect**

Prompt Engineering for User Needs

- **Drawback:** you end up with lengthy prompts (and you need to manage that problem somehow) ← **"Lost-in-the-middle" effect**



*Evaluating Language Model
Context Windows: A "Working
Memory" Test and
Inference-time Correction*

Amanda Dsouza, Christopher
Glaze, Changho Shin, Frederic
Sala

arXiv:2407.03651

Prompt Engineering for User Needs

- **JSON response parsing:** yes, some models now have parameters that “enforce” a valid JSON response.
- **Still, you will be parsing and repairing that JSON response. Trust me.**

```
{
  "completion_tokens": 794,
  "prompt_tokens": 4789,
  "request_id": "1737532491201",
  "response": [
    {
      "article_id": "54321",
      "response": {
        "action_driven": {
          "connect_me": 37,
          "help_me": 63,
          "score": 20
        },
        "context_driven": {
          "educate_me": 59,
          "give_me_perspective": 41,
          "score": 30
        },
        "emotion_driven": {
          "divert_me": 25,
          "inspire_me": 75,
          "score": 10
        },
        "explanation": "...",
        "fact_driven": {
          "keep_me_engaged": 43,
          "update_me": 57,
          "score": 40
        }
      },
      "status": "success"
    }
  ],
  "status": "success"
}
```

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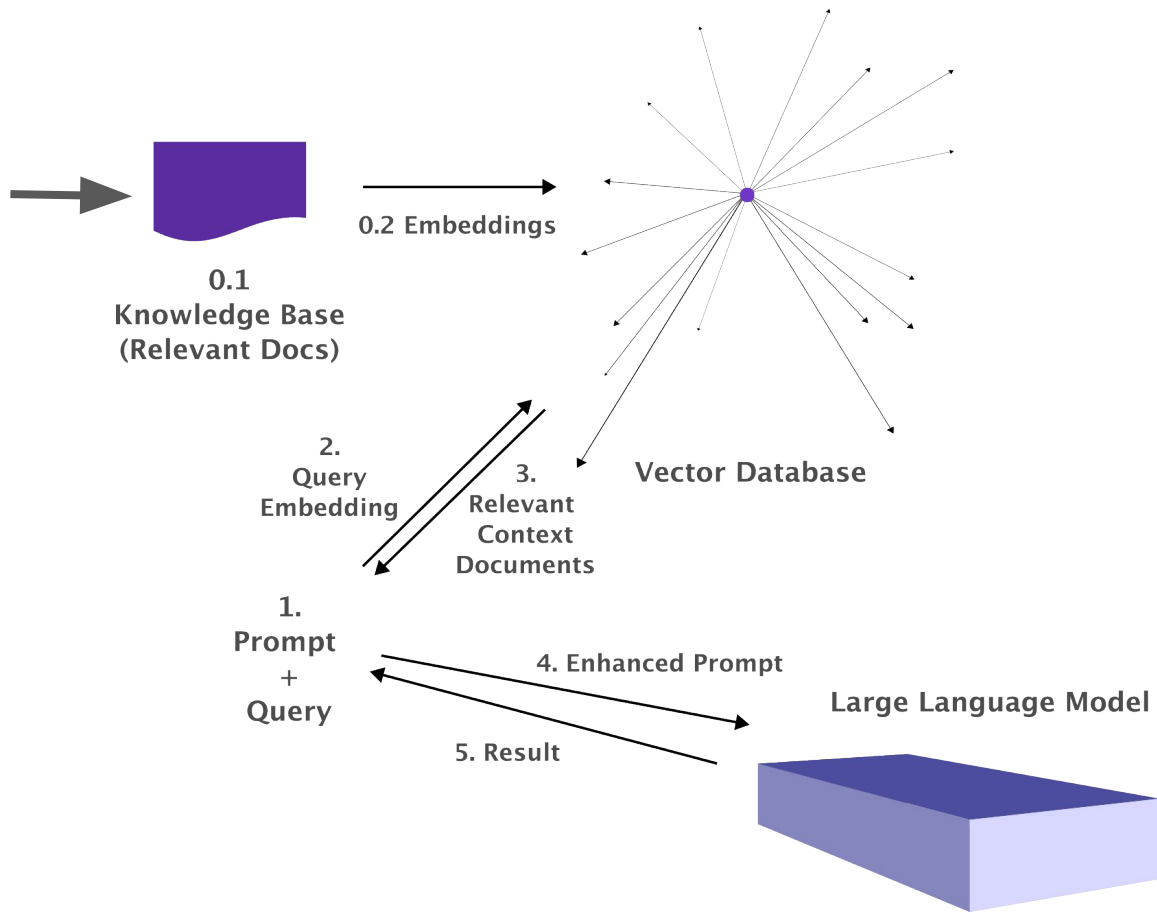
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RAG Framework for User Needs

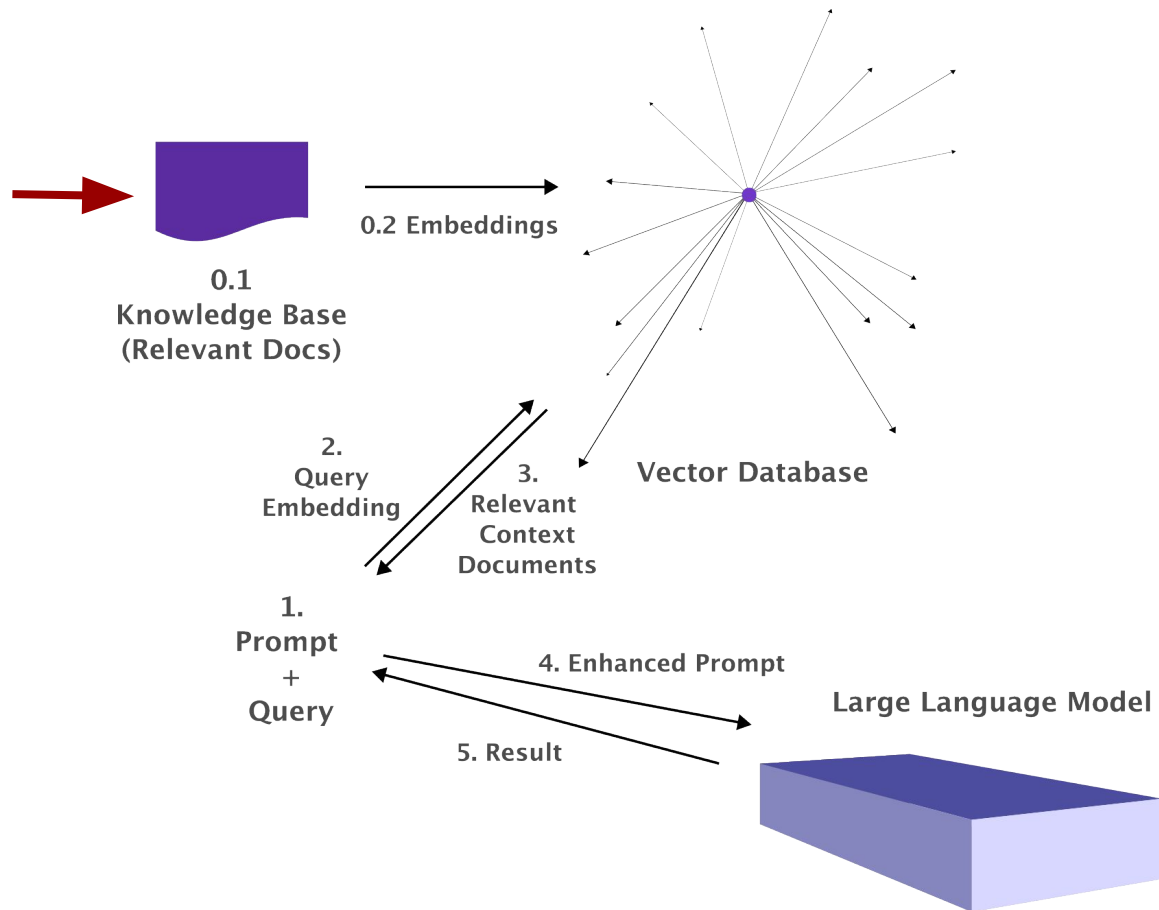
Knowledge Engineering - the design of the knowledge base that you embed for similarity search in your RAG - is the crucial step.

This step is undoubtedly more important than all the quality of your software engineering.



RAG Framework for User Needs

We have practically organized all available knowledge about the User Needs model, analyzed it, divided it into manageable, smaller segments that can function as independent units, carefully considering what kind of prompt and what kind of query - the content to be analyzed - can, in a retrieval operation, activate a specific segment of theoretical and practical knowledge about the model.



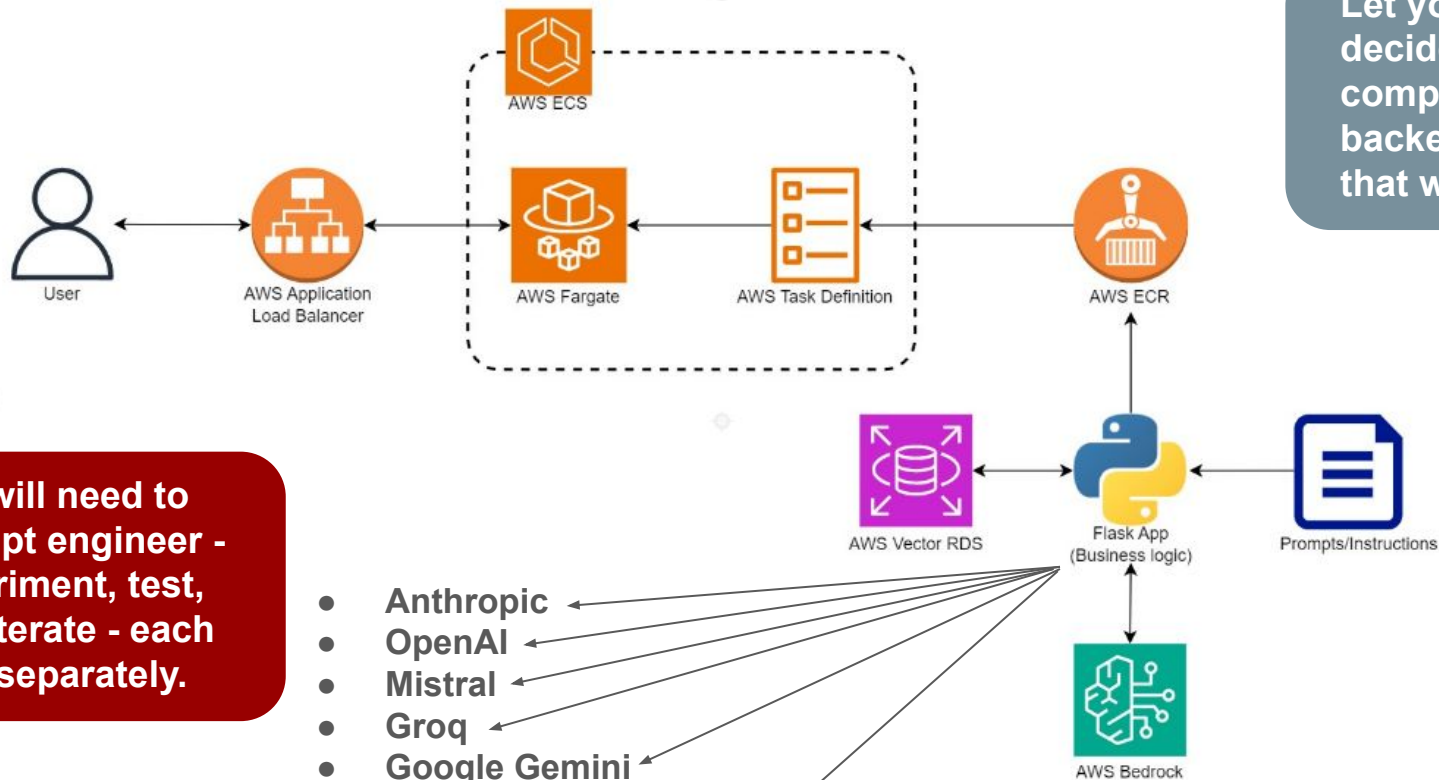
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smartocto.ai System Design and Implementation

Let your clients decide on the compute backend (genAI) that will be used.



You will need to prompt engineer - experiment, test, and iterate - each LLM separately.

- Anthropic
- OpenAI
- Mistral
- Groq
- Google Gemini
- DeepSeek (coming soon)

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GenAI enhanced smart analytics and recommendation in the newsroom

Home

For me


Media

Going out

More

Thief drives away in a car that is running hot

Today at 13:09 • Modified today at 13:50



File photo.

Read aloud

EN

ai

Advice

smartocto AI deeply analyzed this story, and this is how it sees it:
The article is about a car theft and is written in an informative, news style. It does not contain any emotional elements or personal stories that might inspire or entertain the reader. It is a factual account of an incident and is not intended to arouse emotions in the reader.

To turn this into the emotion-driven story you want it to be, these are the steps you can take:
To make the article more emotional, the journalist could add personal details about the people involved, such as the car driver or the thief. Describe their feelings, reactions, and experiences during the incident. Also, add more descriptive details to make the scene more vivid and engage the reader. Focus on the human side of the story instead of just stating the facts.

To help you out, let smartocto AI give you some examples here:
For example, instead of just saying that the thief tried to steal the car, you could write: 'With a pounding heart and sweaty palms, the 28-year-old man quickly...

Learn more about:

userneed: emotion driven

983 requests 871/2000 credits

North Star: pageviews

Optimise: story

Goal: user needs

User need: emotion driven

Suggestions

Based on pageviews

23-jarige TU/e-student uit India al bijna drie weken spoorloos
Na een grote piek blijft dit verhaal al een dag...

Schip vaart tegen sluisdeuren:
scheepvaartverkeer voorlopig gestremd
Mensen klikken in het afgelopen uur relatief...

Grote brand transportbedrijf: man (24) opgepakt voor ranselen tieners
Het verhaal verschijnt in tijdschriften, maar er...

smartocto v2.4.8.0

GenAI enhanced smart analytics and recommendation in the newsroom



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