



# Customer Care Support @ Swisscom: From Conventional to Generative Bots

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IEEE SWISS CONFERENCE  
ON DATA SCIENCE

Fatemeh Borran

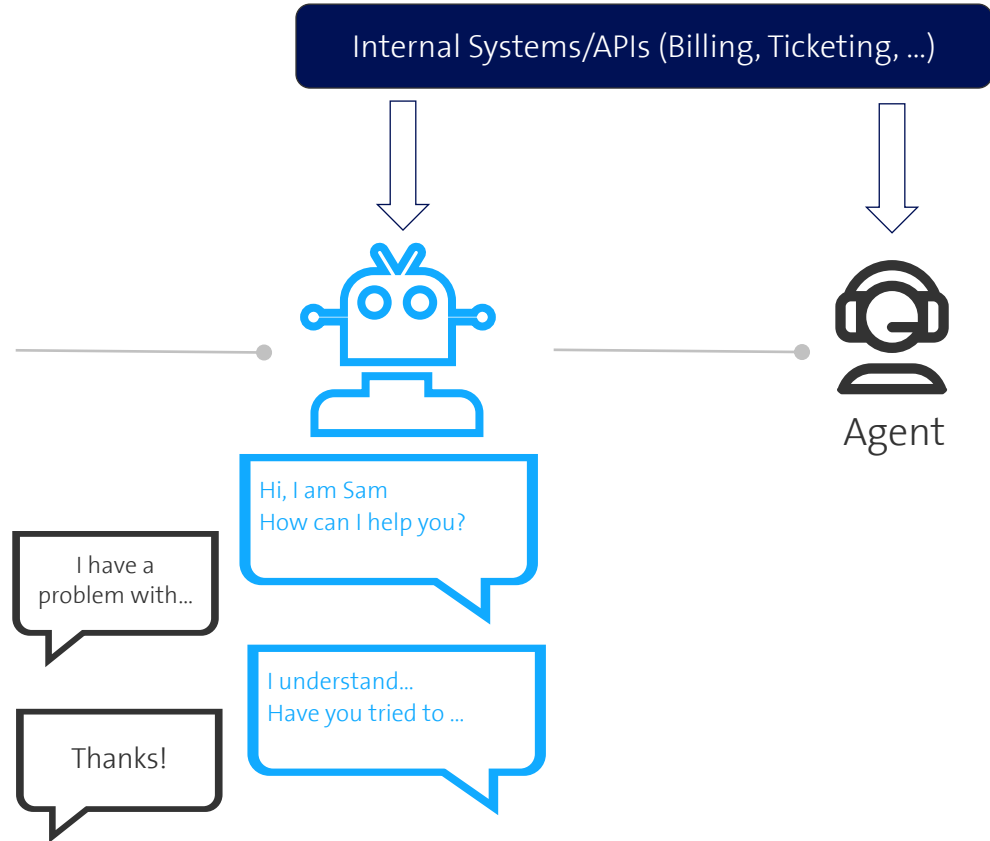
Ph.D. Computer Science – EPFL – 2011

Principal Product Owner – Conversational AI – Swisscom

swisscom



## AI for Customer Care



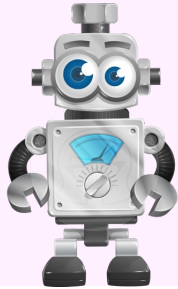


# From Conventional to Generative Bots



## Conventional Bots

First generation of bots, so called **rule-based** bots, used **decision trees** and simple **keyword-recognition** capabilities to offer **pre-defined scripted responses**.



1966 – 2009

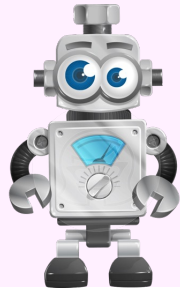


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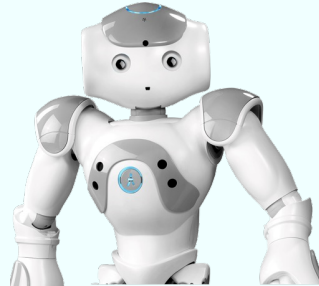


1966 – 2009



## Conversational Bots

Second generation of bots used **natural language processing (NLP)** and **machine learning (ML)** to **understand** customer requests and **intents** and offer better user experience.



2010 – 2020

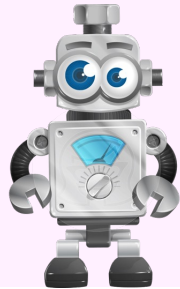


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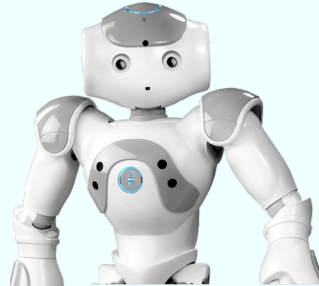


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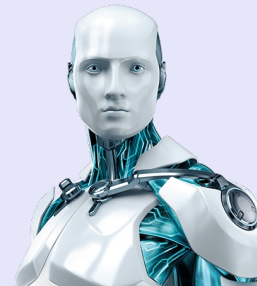


2010 – 2020



## Generative Bots

Third generation of bots use recent advancements in ML, e.g., **transformers**, to train ML models on **large datasets (LLMs)**. These models can **understand** customer requests and **generate personalized** and **human-like** conversations.



2020+



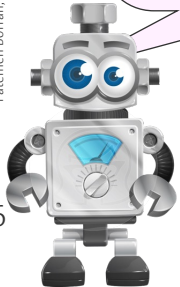
# Conventional Bot: Example

Hi, how can I help you?

Why my last invoice is so high?

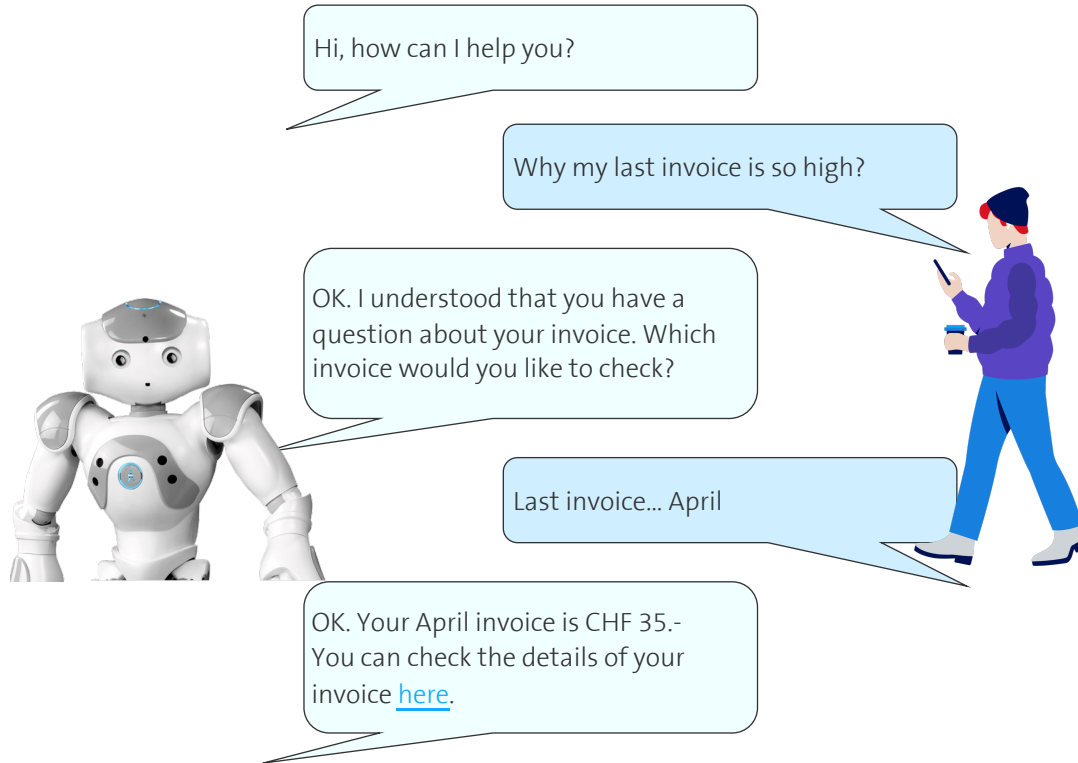
Please select below:

- Question about invoice
- Report an issue
- Place an order





# Conversational Bot: Example





# Generative Bot: Example



Hi, how can I help you?

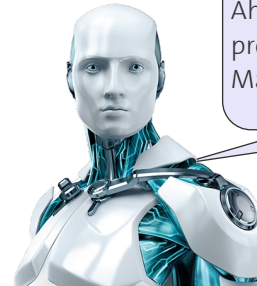
Why my last invoice is so high?

I checked your last invoice and your invoice is CHF 35.- instead of CHF 29.90 because you have an international call costing CHF 5.10.

But I have free international calls...

Ah, I see the confusion, your promotion was valid until end of March 2024.

I see. I totally forgot this...







# Conversational Chatbot Development @ Swisscom

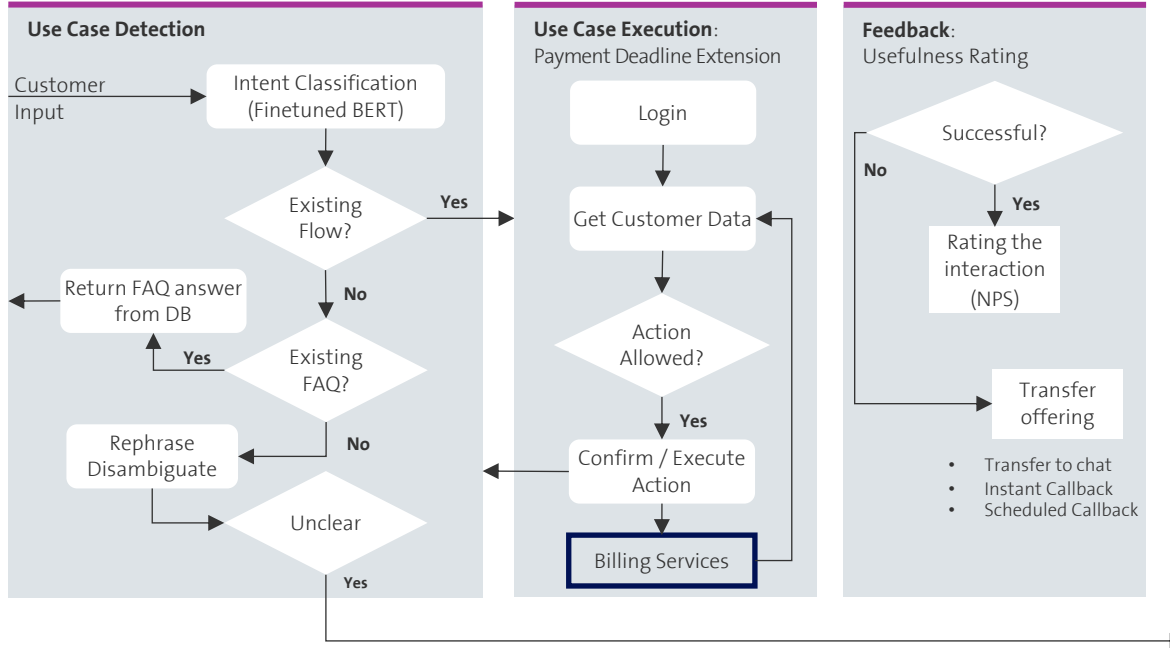
Session Start & Welcome

**Intent Recognition:**  
Classification & Disambiguation

**Solution:**  
Flow Execution

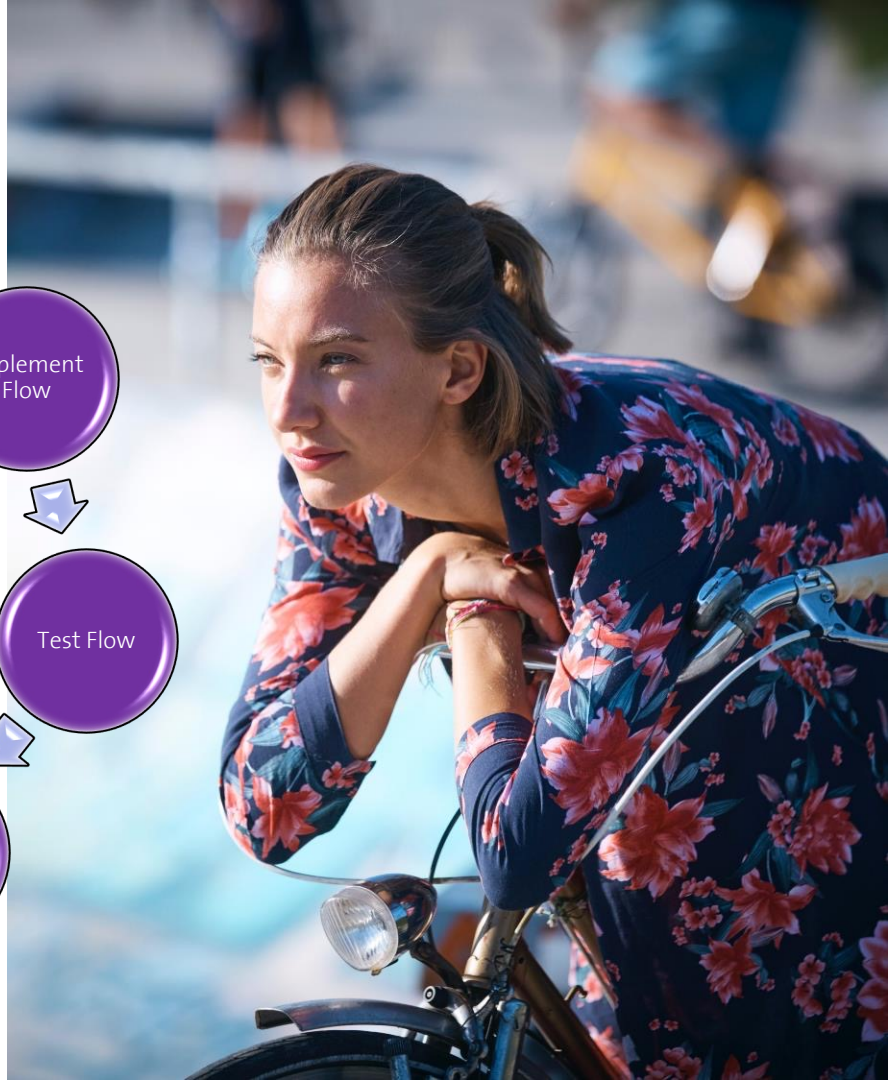
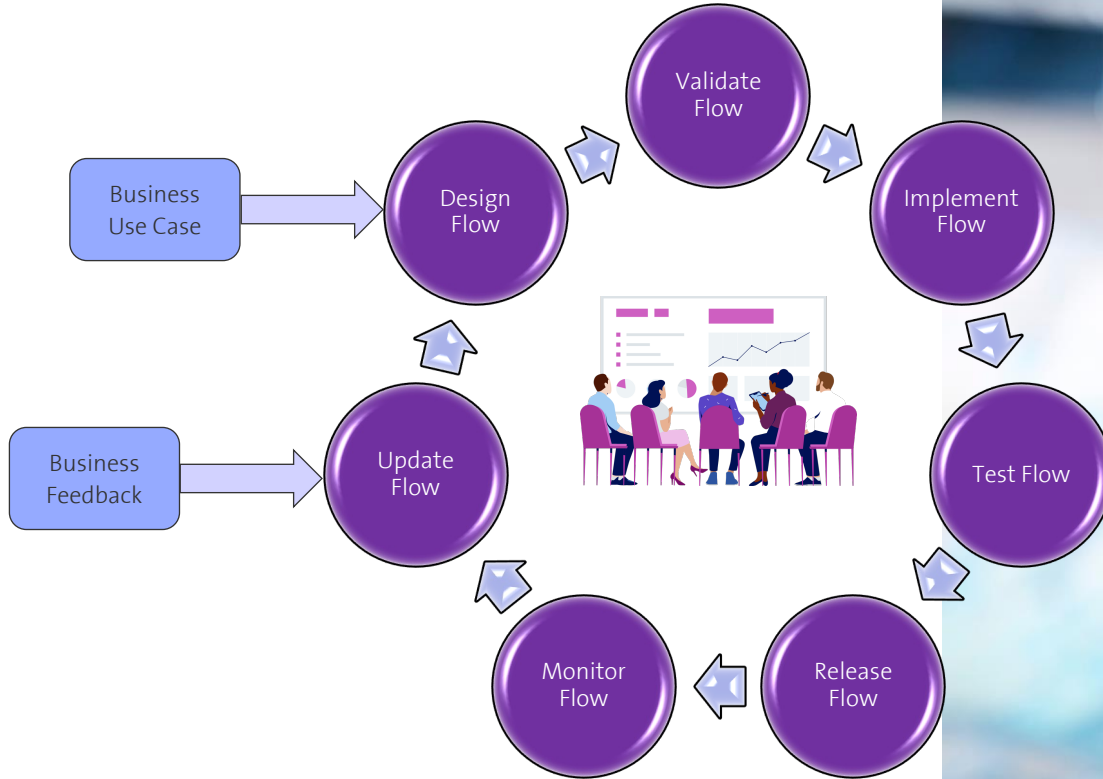
Feedback

Transfer to Assisted Agents





# Chatbot Flow Development





# Chatbot Development Evolution @ Swisscom

## Conventional Chatbots

### PROS:

- ✓ Full control over use cases & designed flows
- ✓ Easy to test flows
- ✓ Little unexpected behavior in production

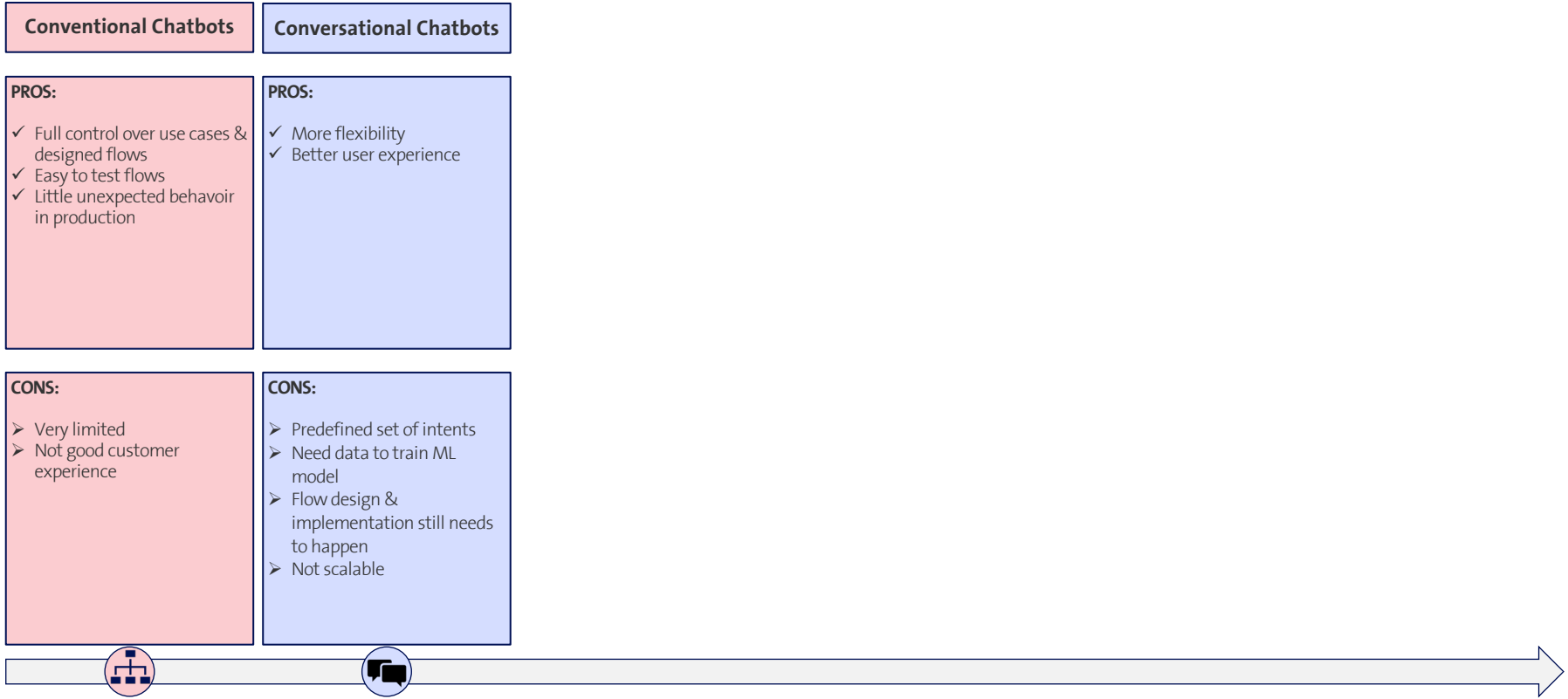
### CONS:

- Very limited
- Not good customer experience





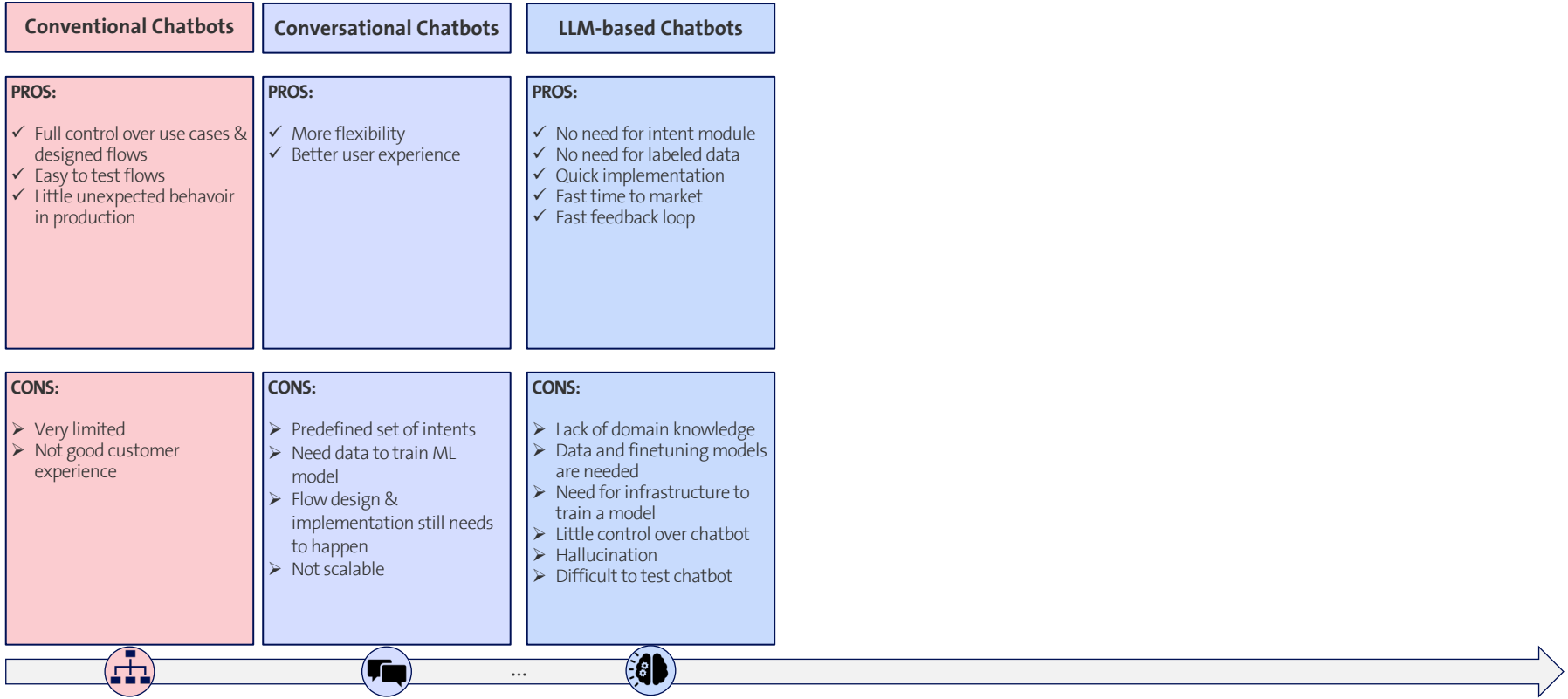
# Chatbot Development Evolution @ Swisscom



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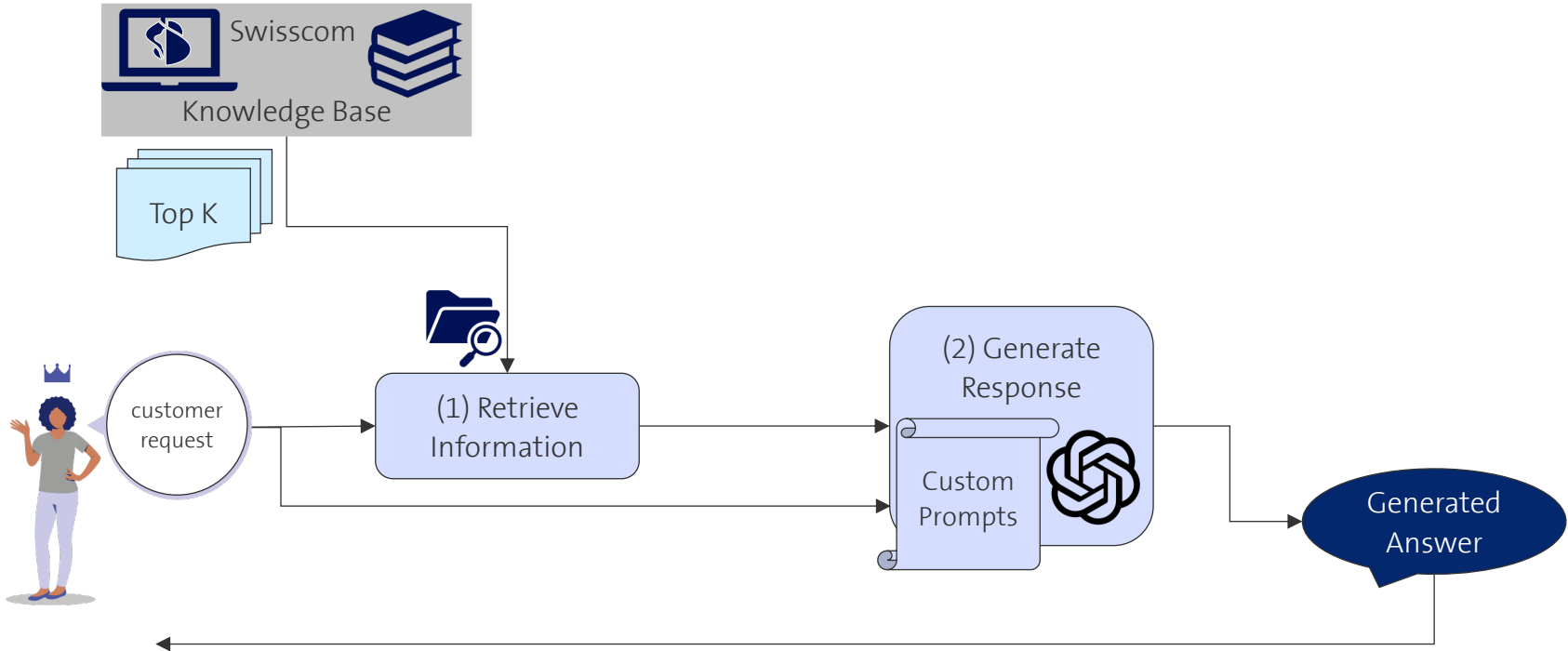
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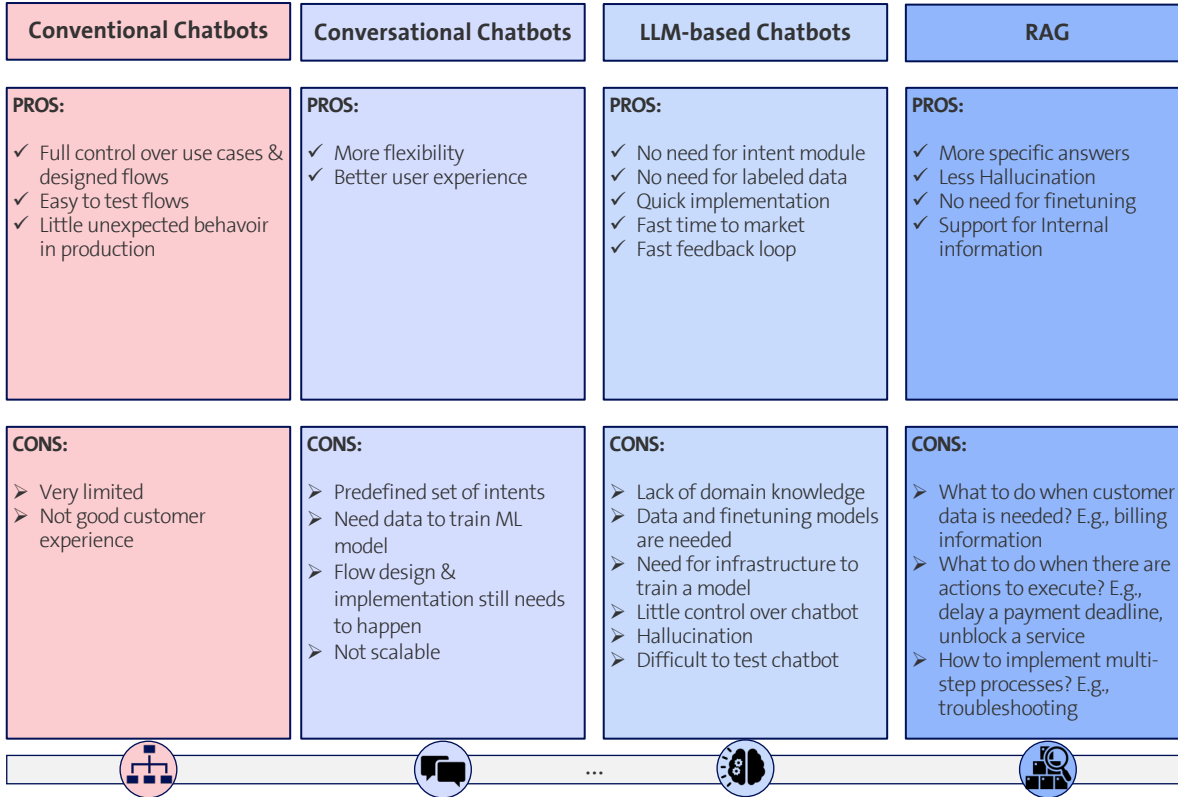


# Retrieval Augmented Generation (RAG)





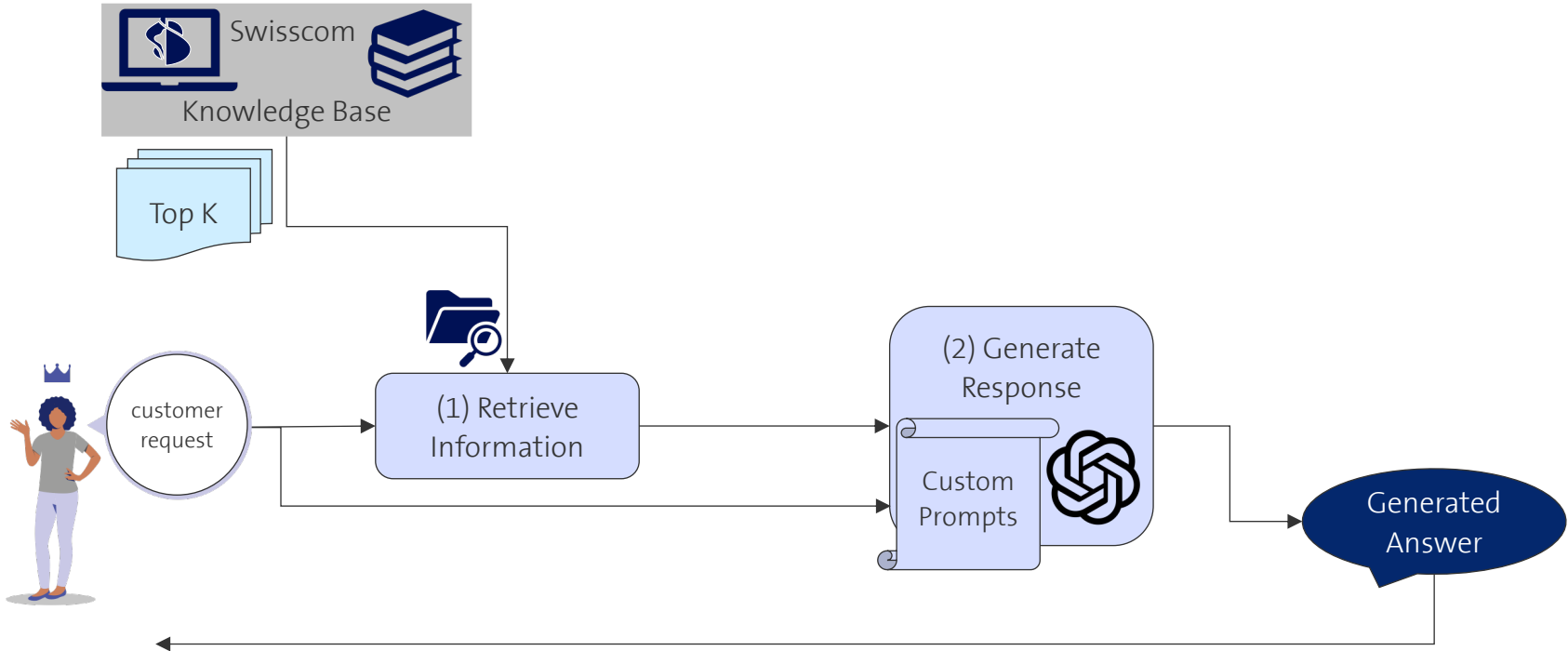
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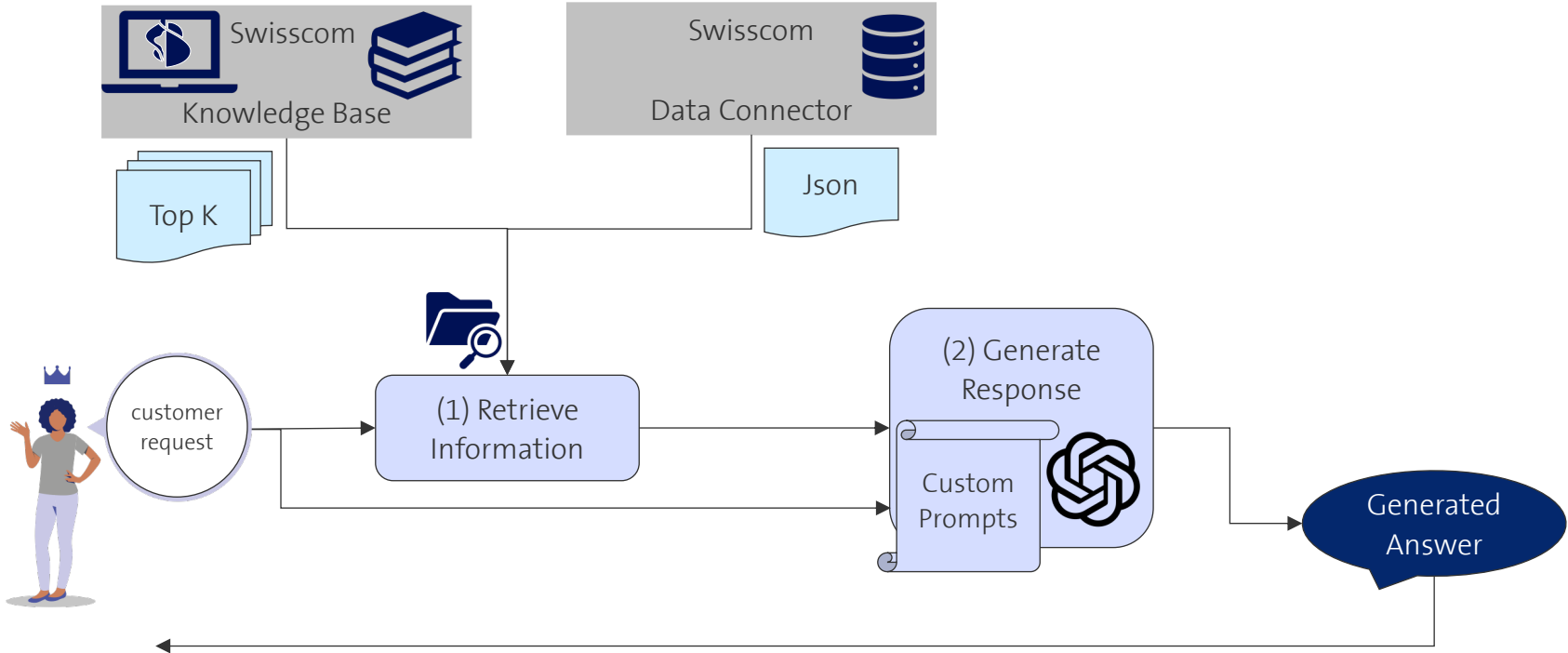
# Augmented RAG





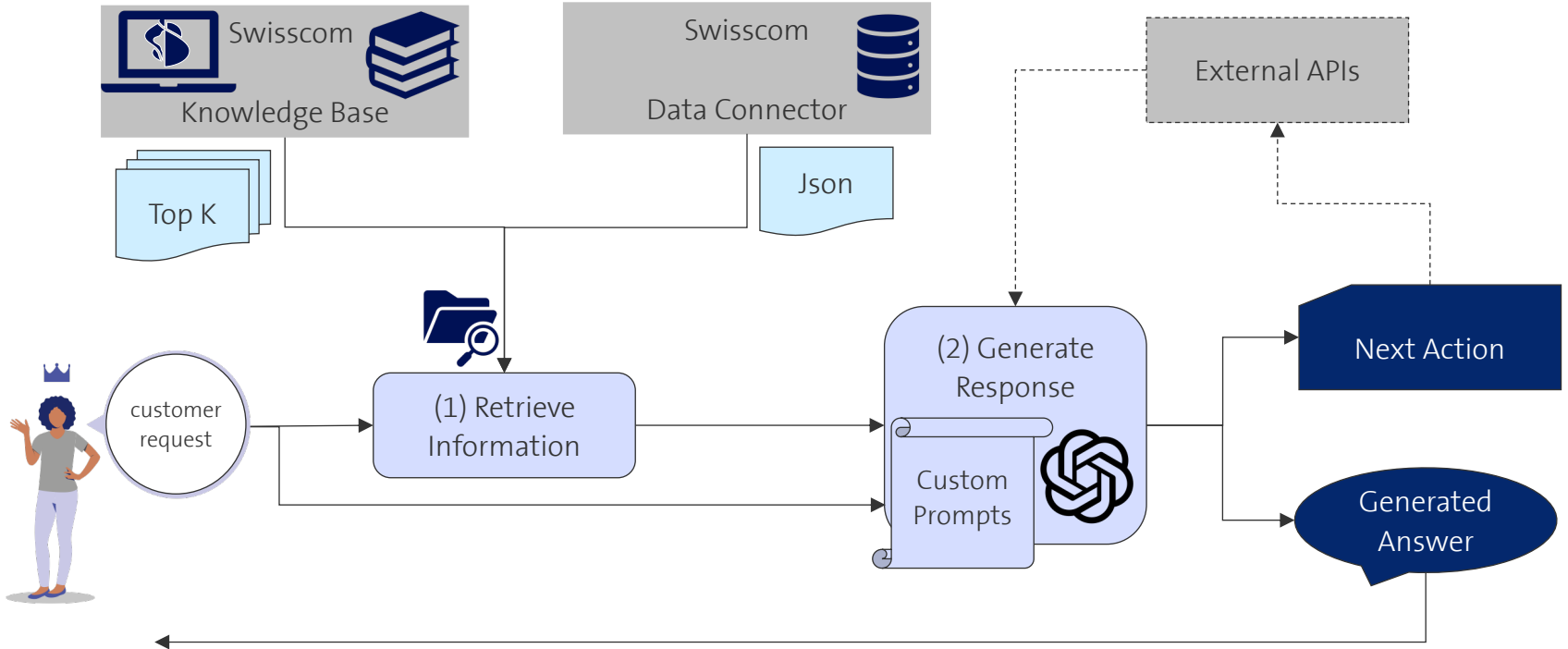


# Augmented RAG



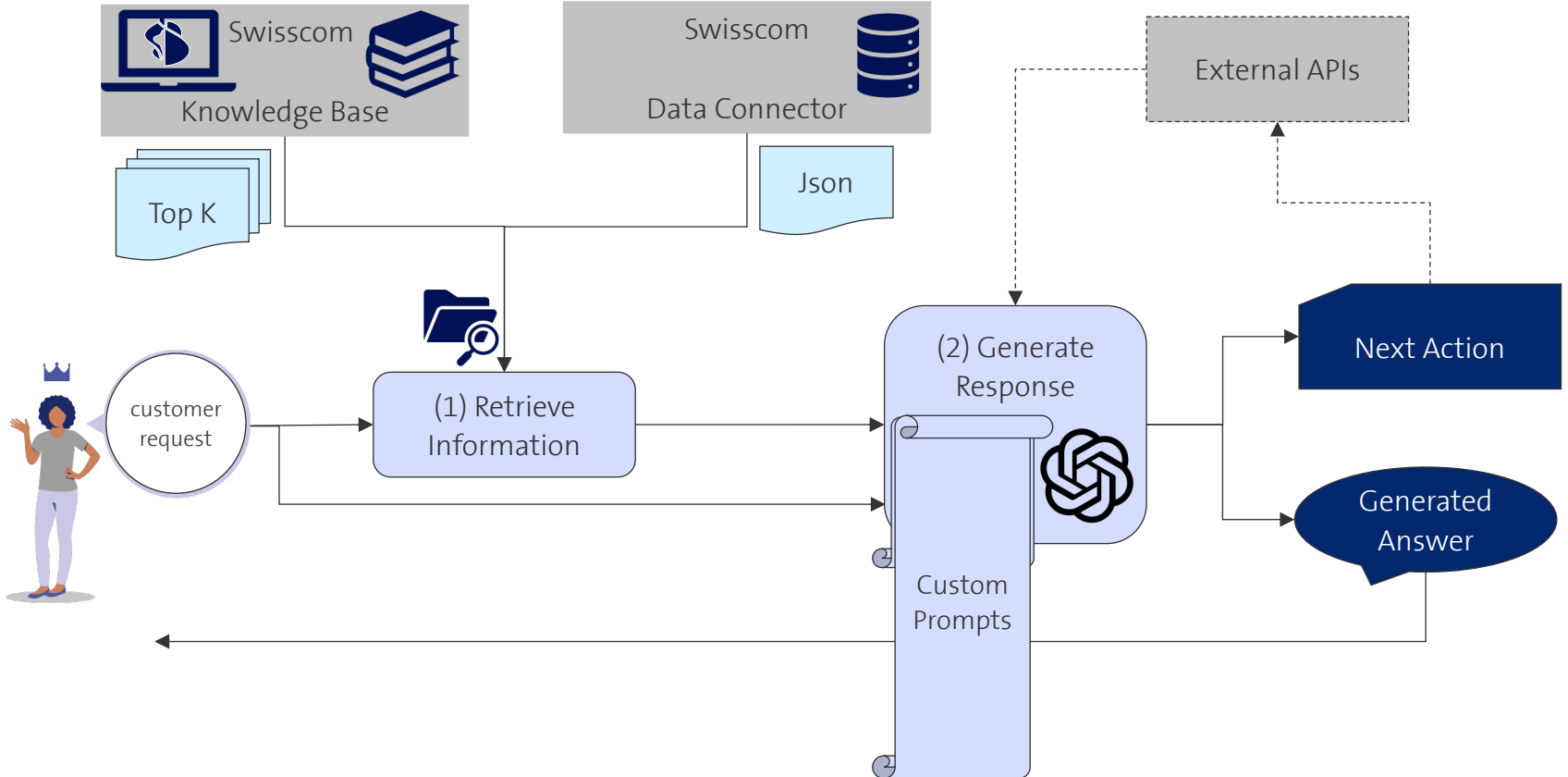


# Augmented RAG



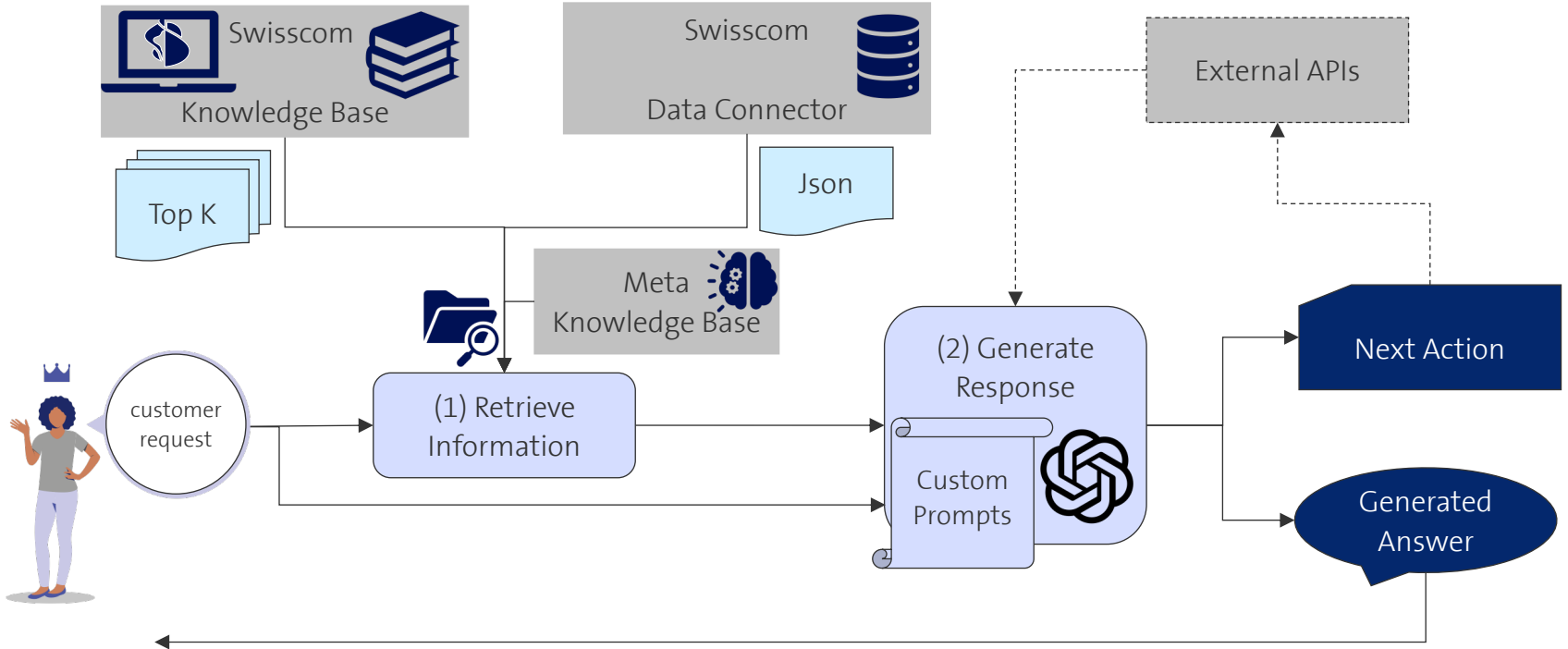


# Augmented RAG



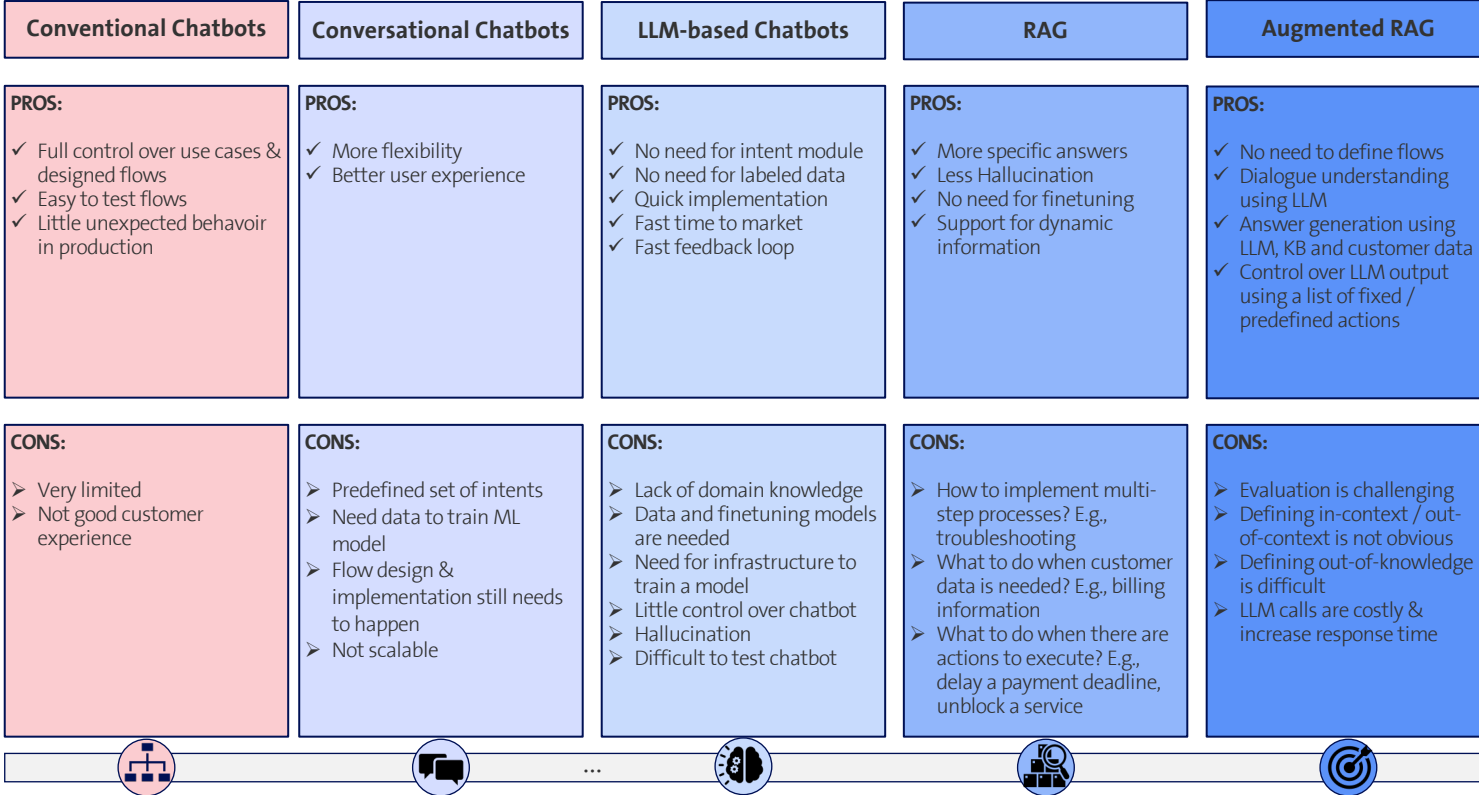


# Augmented RAG





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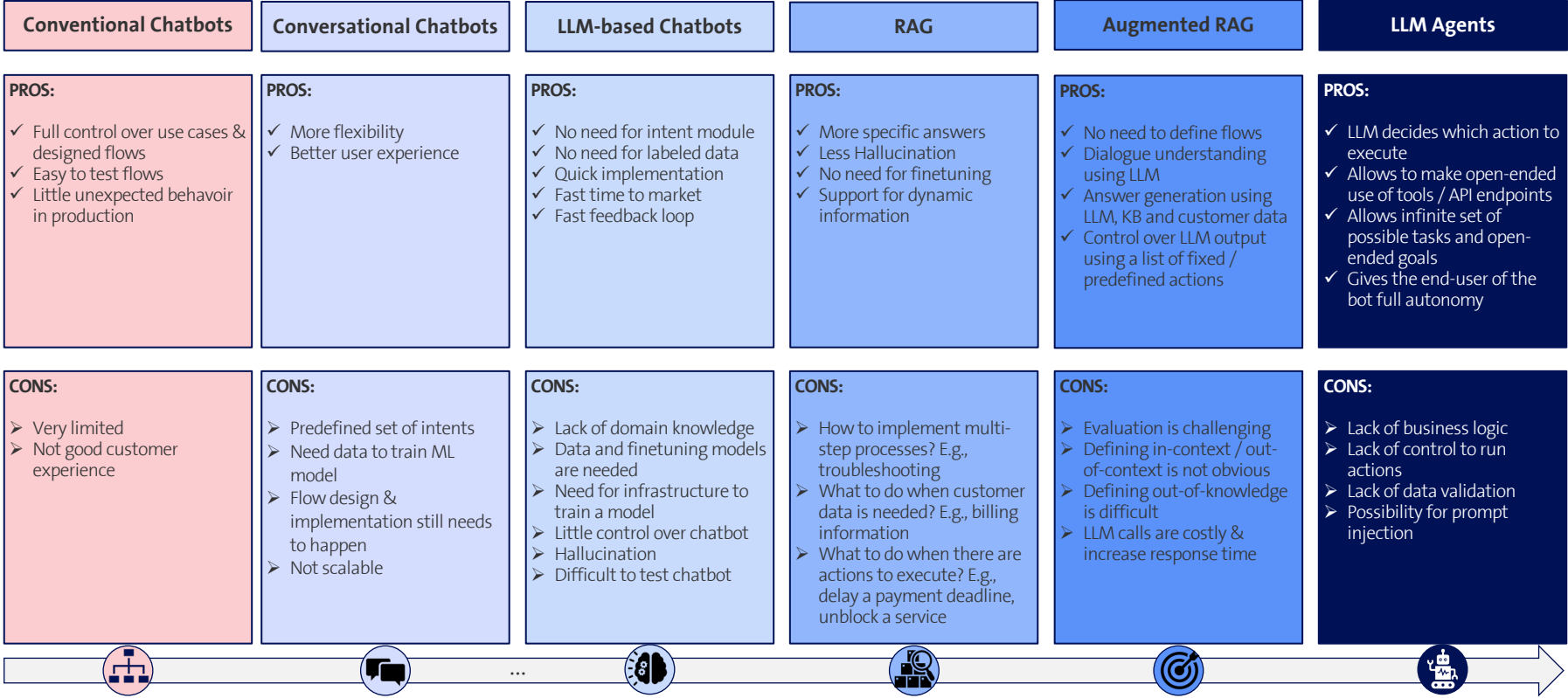


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## Experiment: One LLM use case in Prod since more than 10 weeks (~5%)

	# Request (A/B testing)	Automation Rate	Resolution Rate
Classic Chatbot	271	34%	6%
LLM-based Chatbot	553	52%	19%





# Conclusions



**Increased Coverage**



**Scalable Solution**



**Better User Experience**



**Response Time**



**Cost**



**Security & Privacy**





