



Tunisian Software
Qualification Board

Using LLMs in Test Automation

Dr. Klaudia Dussa-Zieger
20.11.2025



Journée
Tunisienne des
Tests Logiciels

5^{ème} ÉDITION



Dr. K. Dussa-Zieger | 2025-11-20 | Journée Tunisienne des
Tests Logiciels

Dr. Klaudia Dussa-Zieger

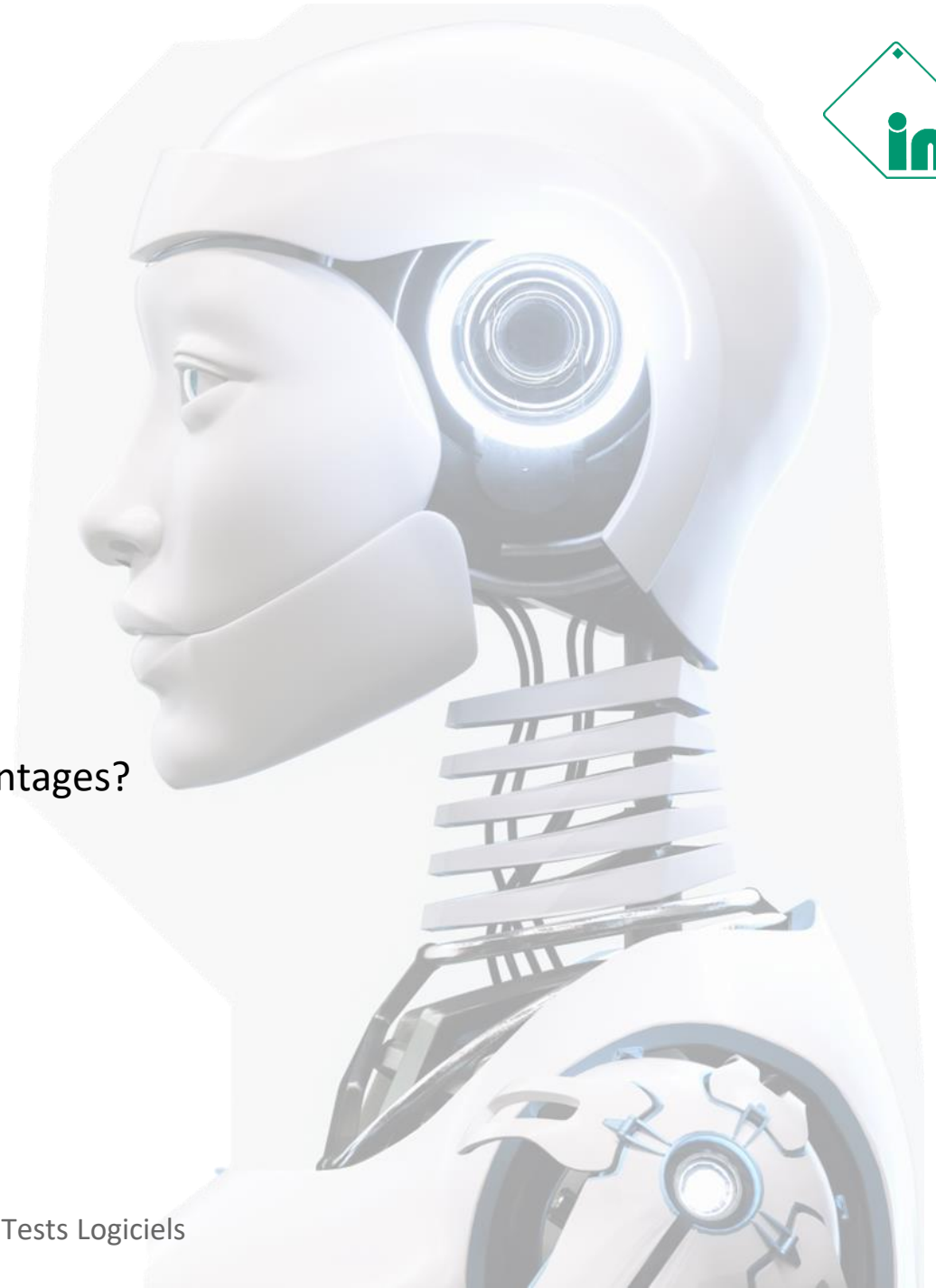


- ISTQB President
- Product Owner of ISTQB CT-AI
- Vice-President GTB
- Chairwoman of DIN WG „Software and Systems Engineering“
- Head of consulting at imbus AG



Introduction to LLMs

How does an LLM work? What are advantages and disadvantages?



AI Classification



Artificial Intelligence

„Solving problems that require people to act intelligently“

Machine Learning

“Learning from pattern in data”

Artificial Neural Networks (ANNs)

„Learning by means of connectionist models“

Deep Neural Networks

„Learning by ANNs with lots of layers“

Generative AI

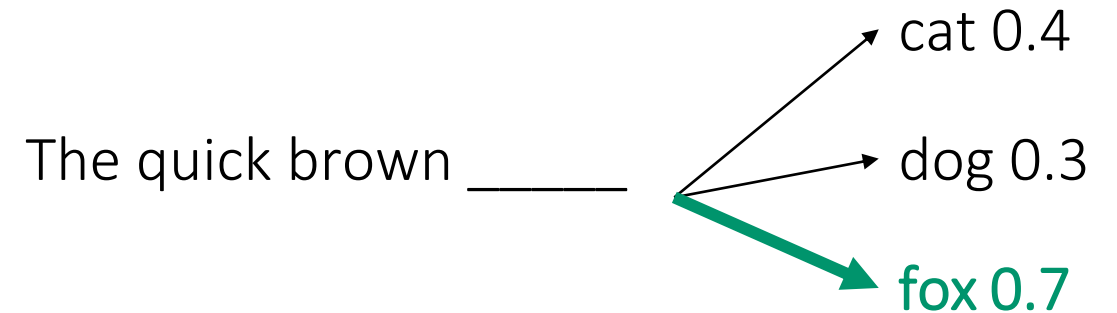
„Learning and generating“

Large Language
Models (LLMs)

Large Language Models (LLMs)

- Typically implemented with neural networks
 - with billions of parameters
- LLMs were trained with huge amounts of data
 - OpenSource data
 - GenAI generated data

Example



➤ LLMs predict the next word!

LLMs

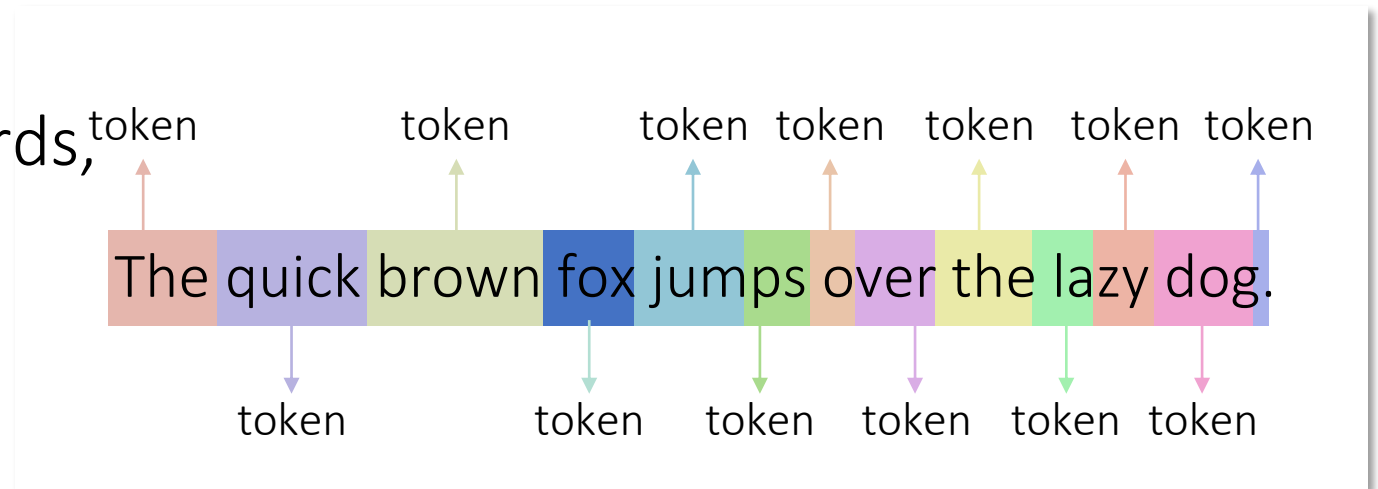


How does it work?

- LLM breaks down text into tokens

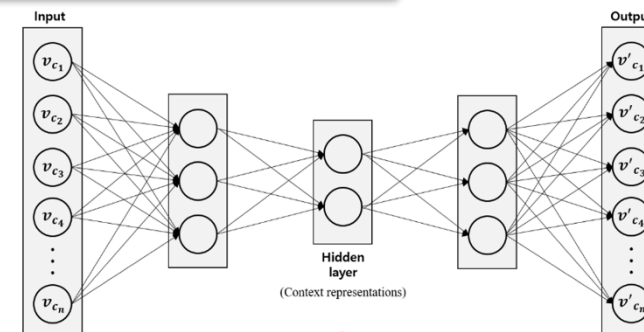
- Tokens can be words, partial-words, letters, ...

→ **1 Token** is roughly equivalent to **0,75 words**



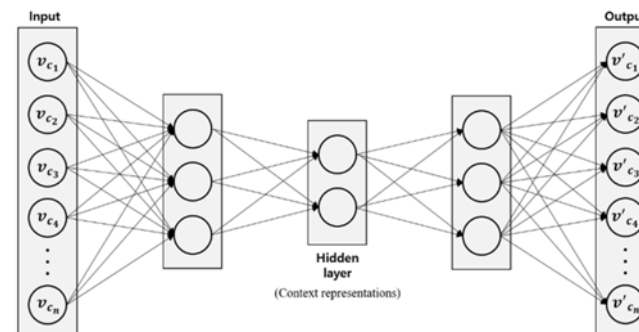
- Different tokens for different languages for different LLM
- The context of an LLM is defined by number of tokens

Neural Network 1



Context propagation / Processing

Neural Network 2 ... n



Transform to

Final Context Vector

0.5	<i>Then</i>
0.4	<i>How</i>
0.44	<i>And</i>
0.42	<i>But</i>
0.41	<i>A</i>
0.32	<i>There</i>
0.30	...
0.29	...
0.2	...
0.15	...
0.11	...
0.09	...
0.09	...
0.08	...

Characteristics of an LLM

Strengths

- very good understanding of language
- versatile in use
- fast once trained
- can adapt

Weaknesses

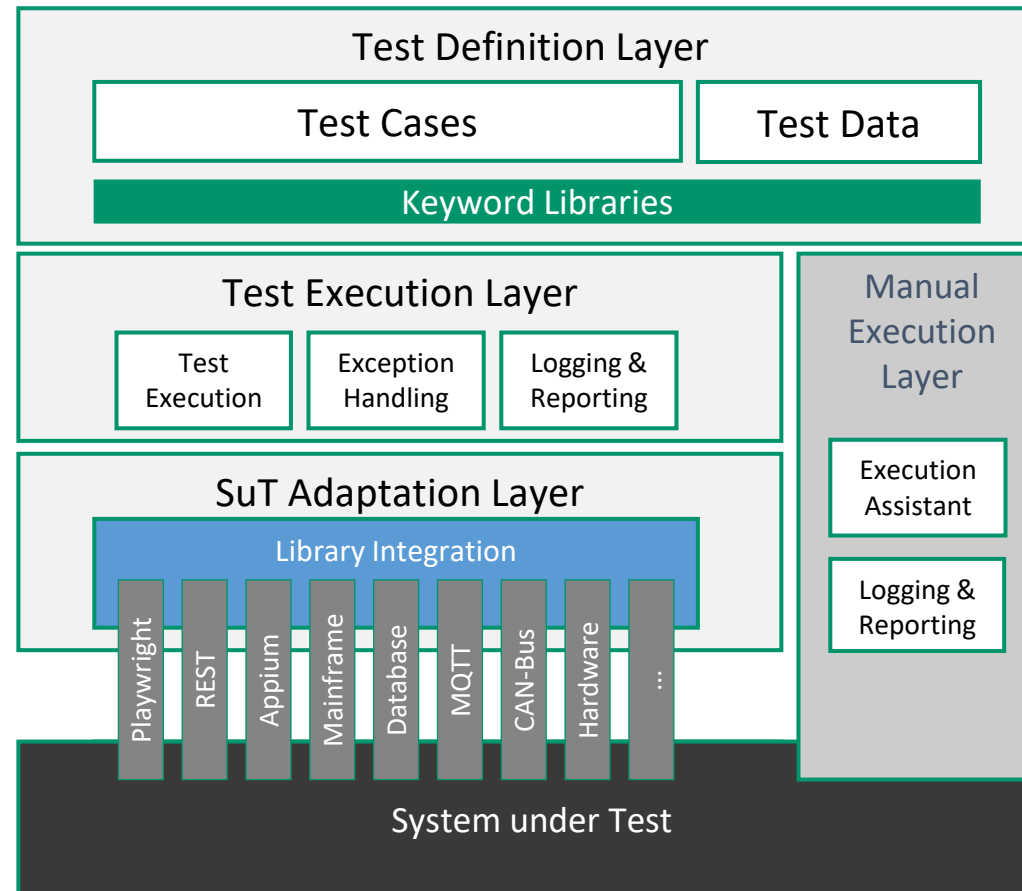
- quality depends on training data
- need to provide context
- „loss of the middle“
- hallucinations

- Be aware of strengths and weaknesses of an LLM
- An LLM doesn't think!
- It is a language model, not a calculator!

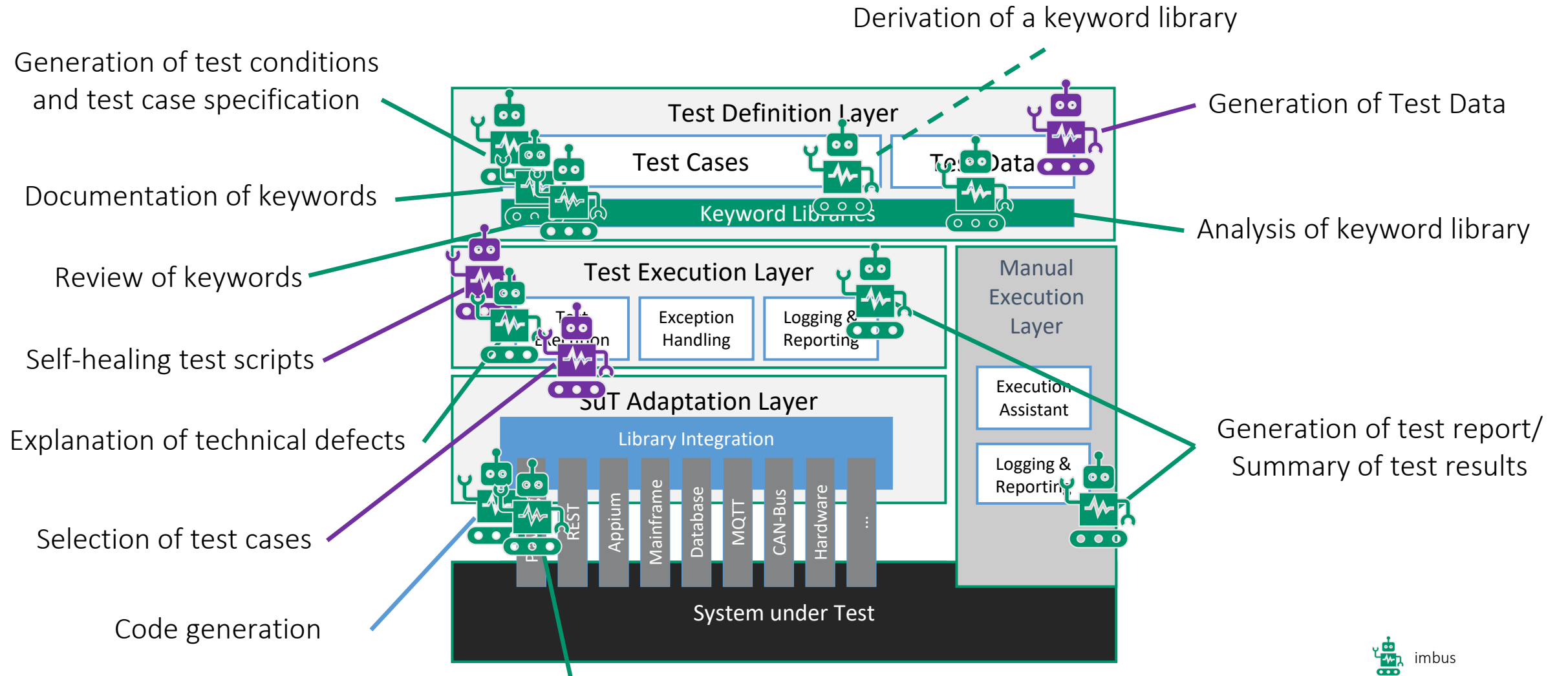
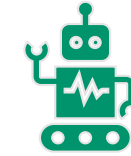
LLMs and test automation

How can LLMs support test automation? Examples

Generic test automation architecture



Generic test automation architecture and LLMs



Infrastructure as a code

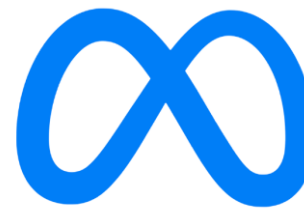
AI-generated test specification



Goal: Save time and money during test specification



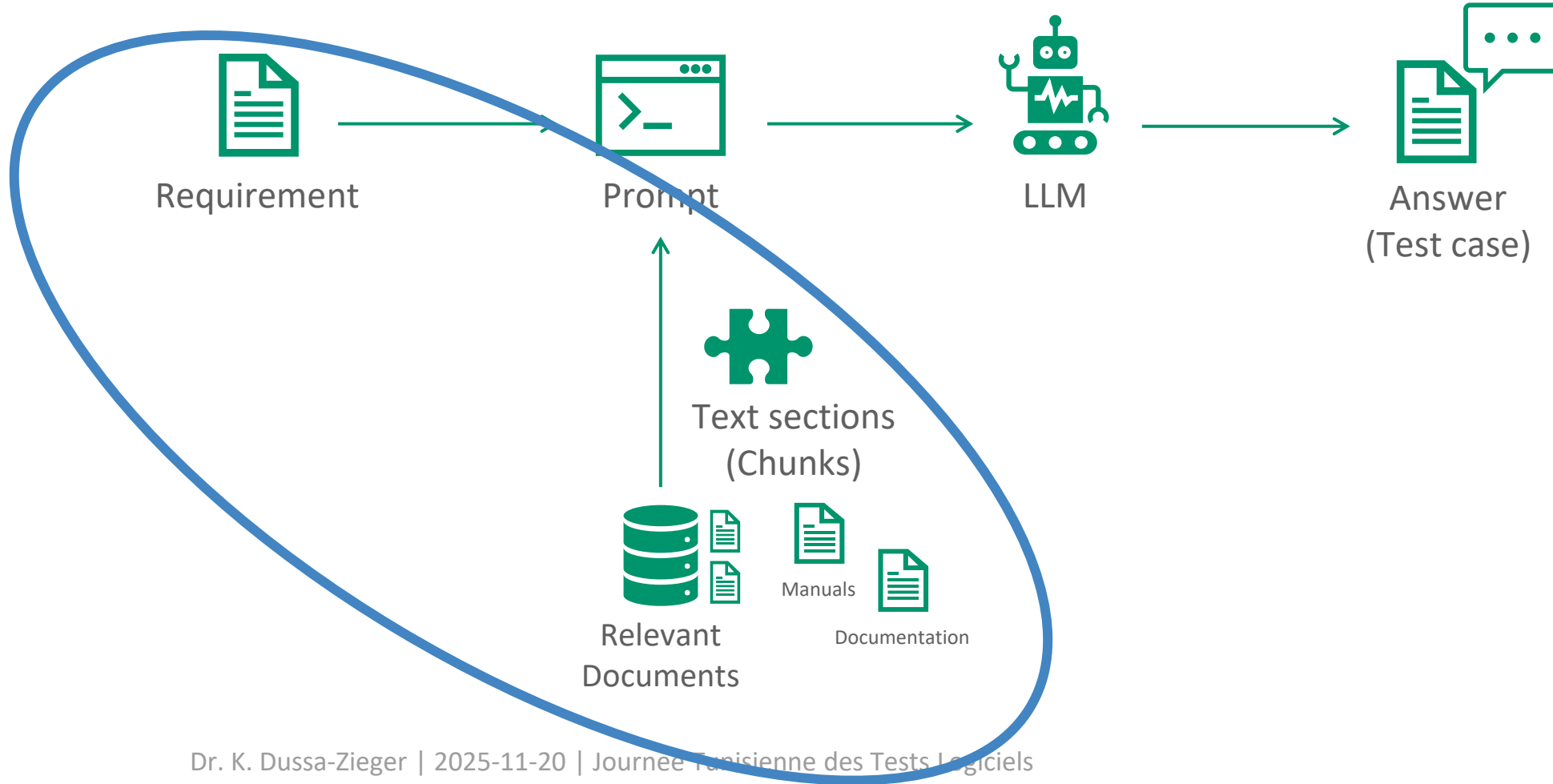
- Test case generation based on requirements in the medical device domain
- Basic model supported by an Retrieval Augmented Approach (RAG)
 - Include customer knowledge without further training/fine-tuning
 - Use of user manual, design documents, ...
- Open source LLM Llama 3.1 / Claude 3.5 Sonnet
- Self-implemented Retriever
- Execution in a private cloud



Claude

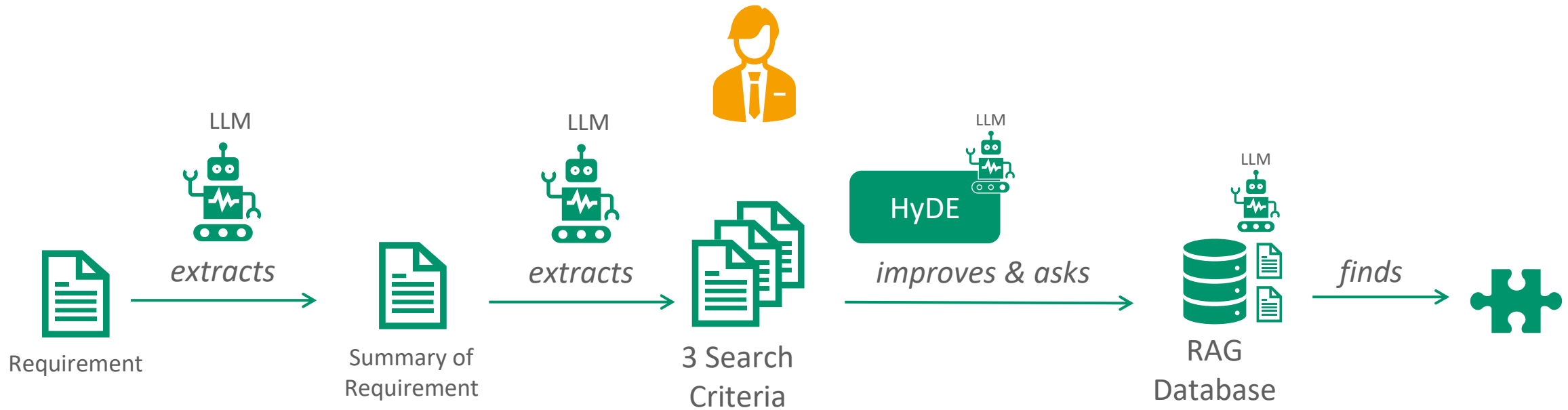
AI-based test specification

Retrieval Augmented Generation (RAG) - Process



AI-based test specification

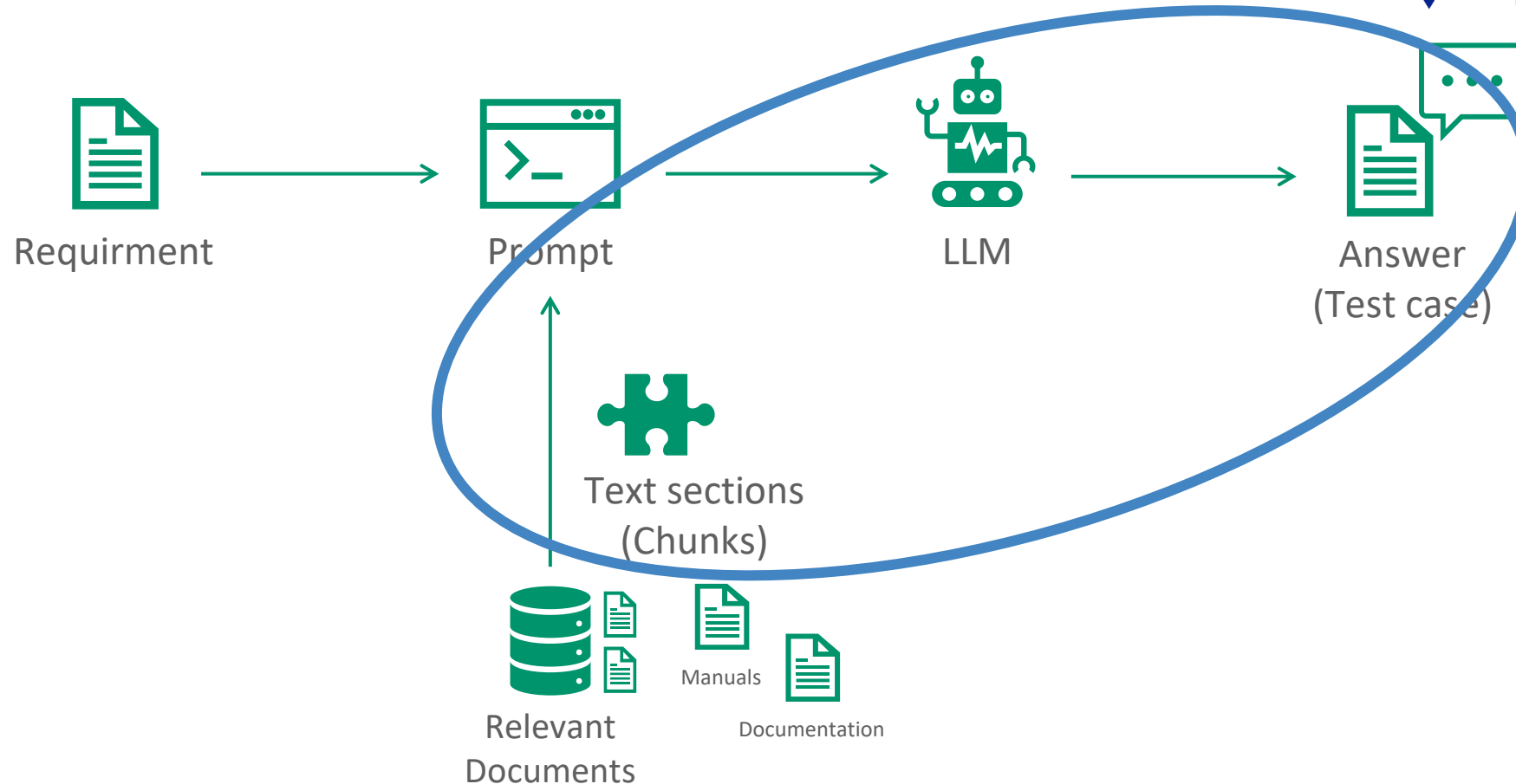
Phase 1 – Select text sections



AI-based test specification

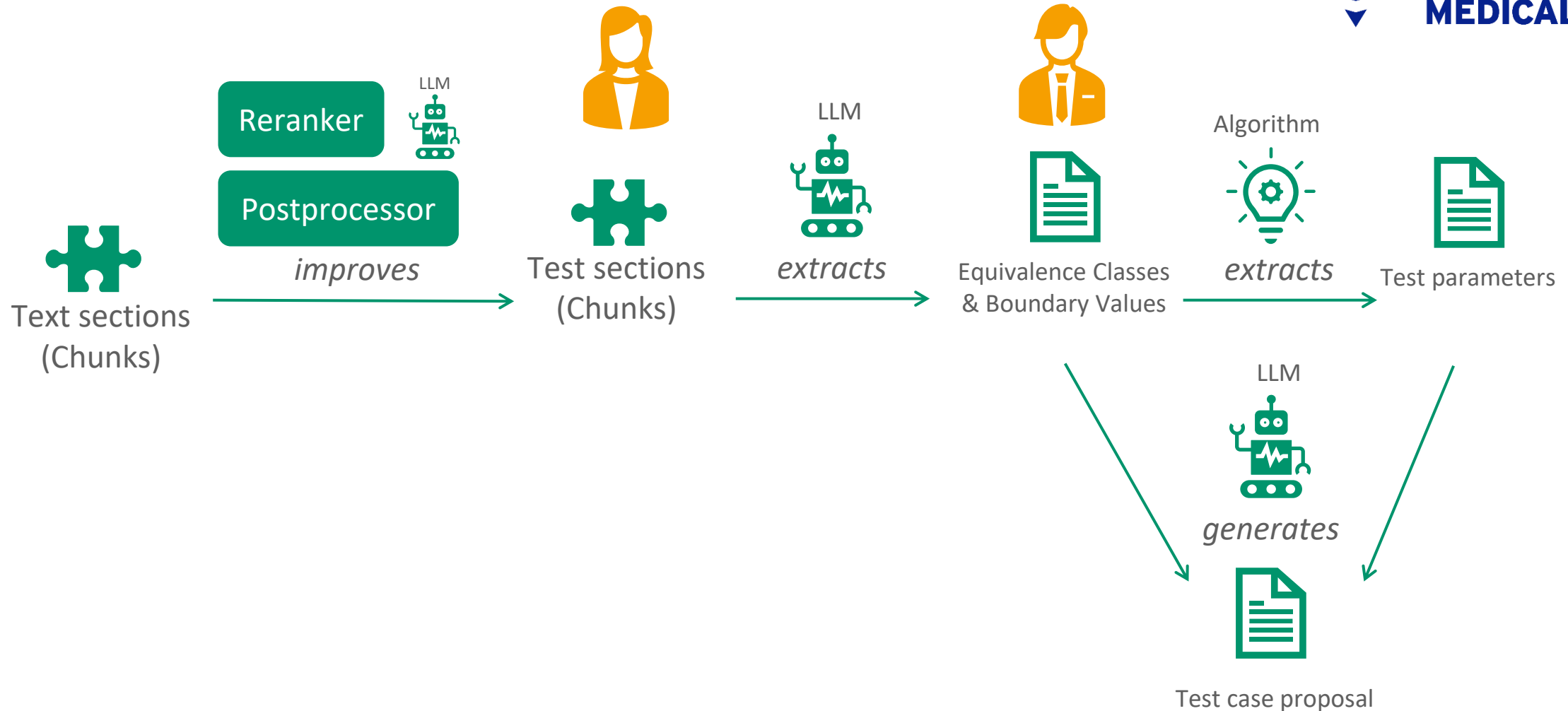


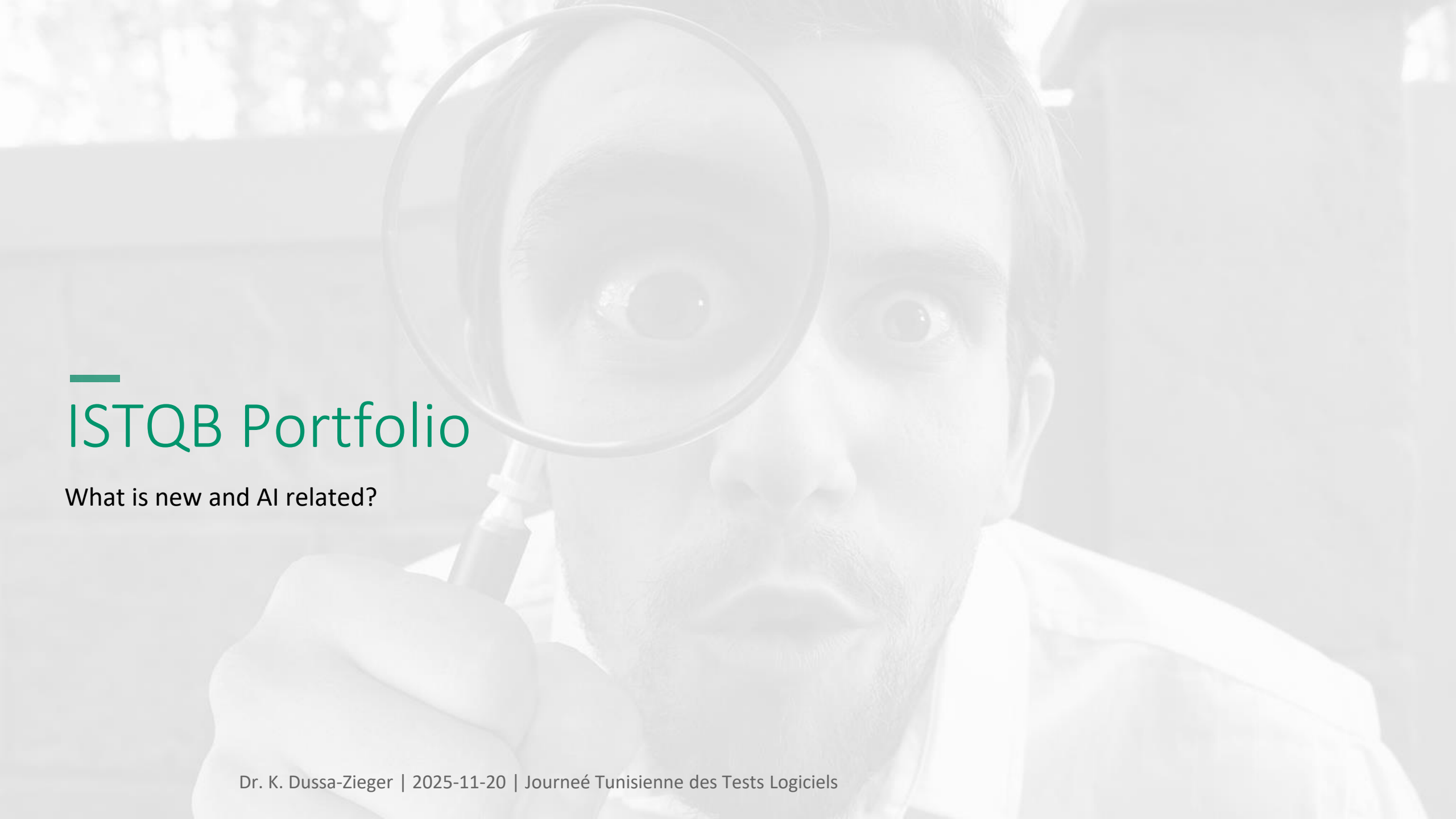
Retrieval Augmented Generation (RAG) - Process



AI-based test specification

Phase 2 – Generates test case

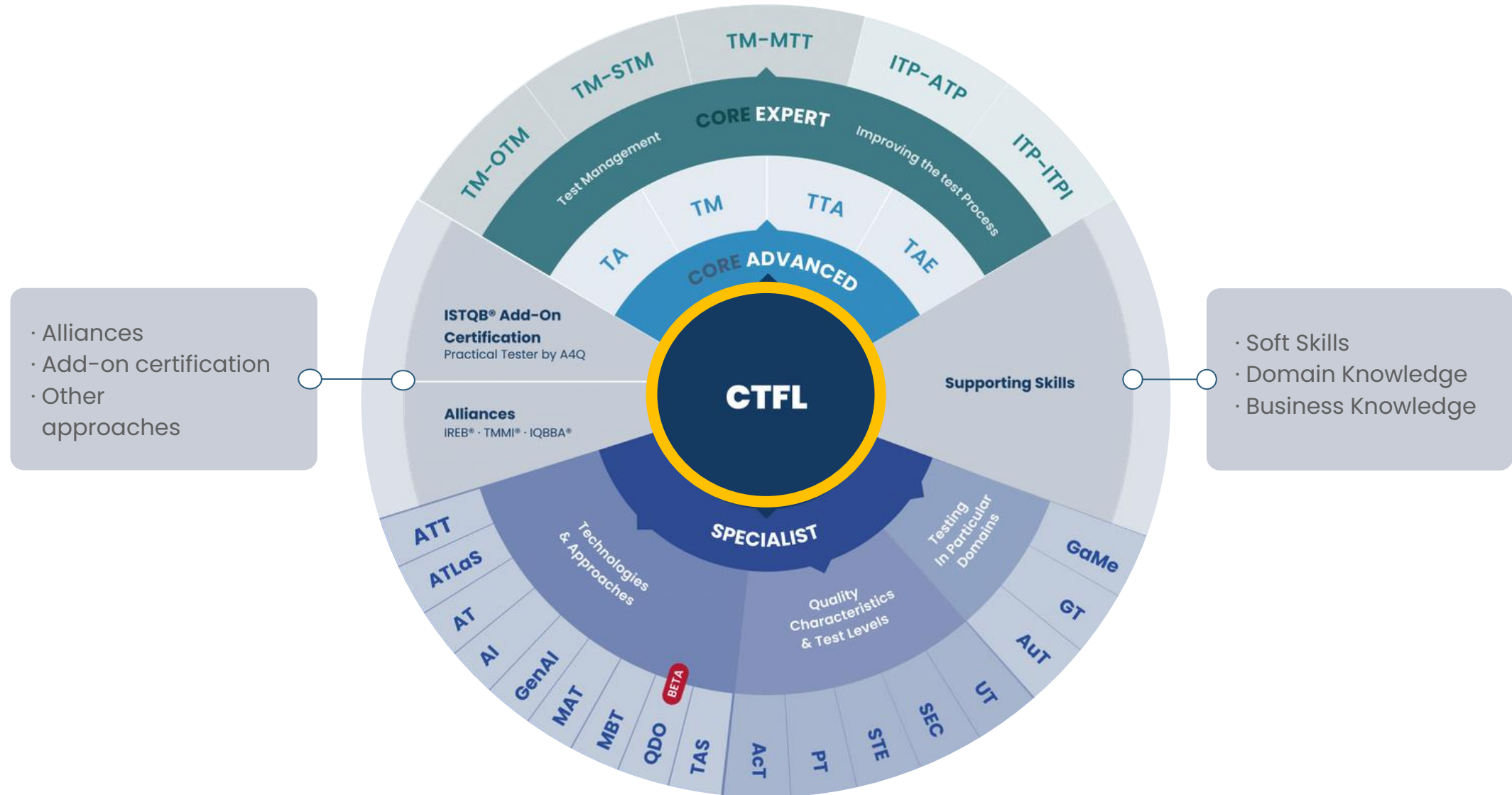




ISTQB Portfolio

What is new and AI related?

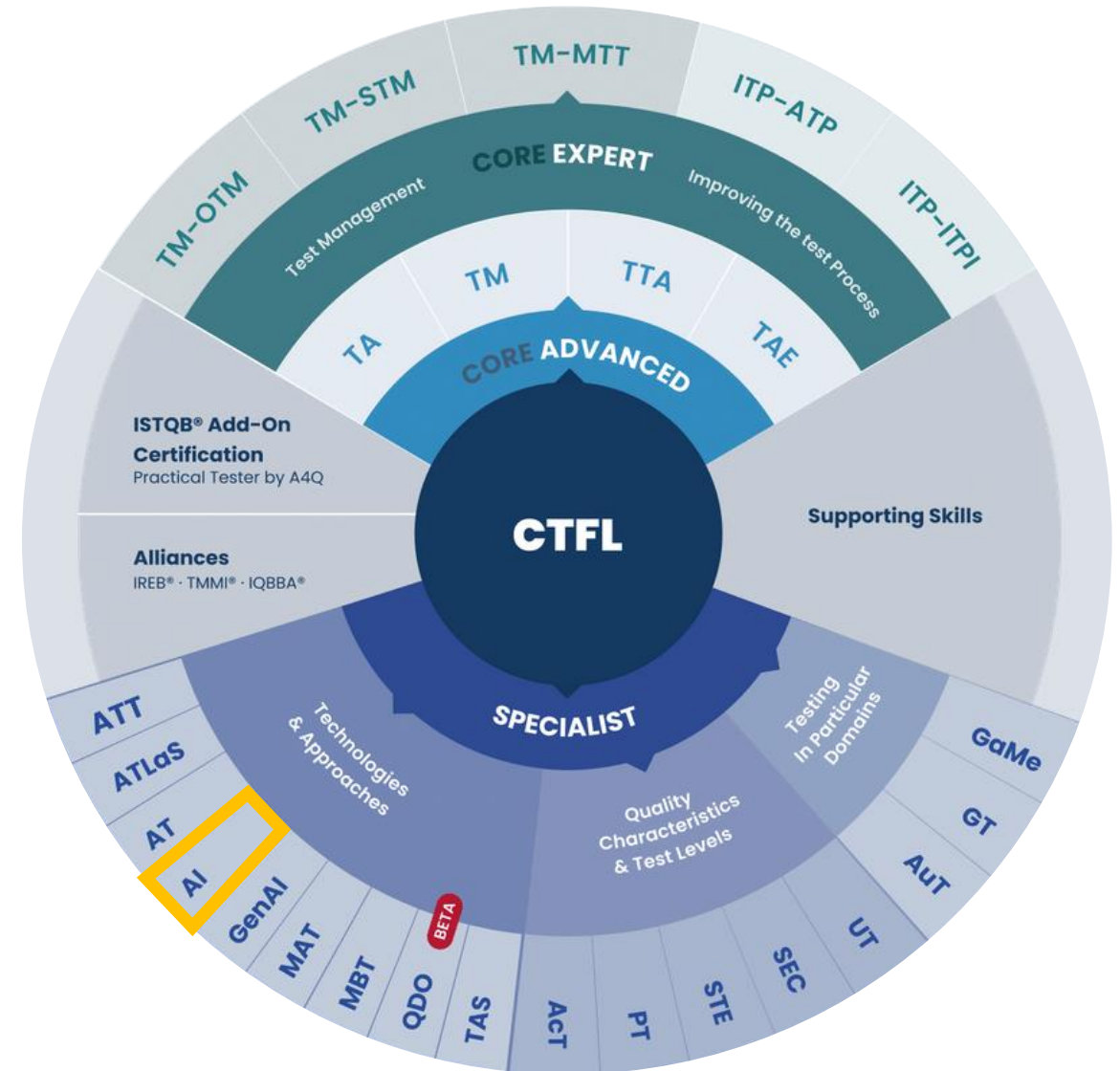
New ISTQB Portfolio



ISTQB Portfolio

Certified Tester AI Testing

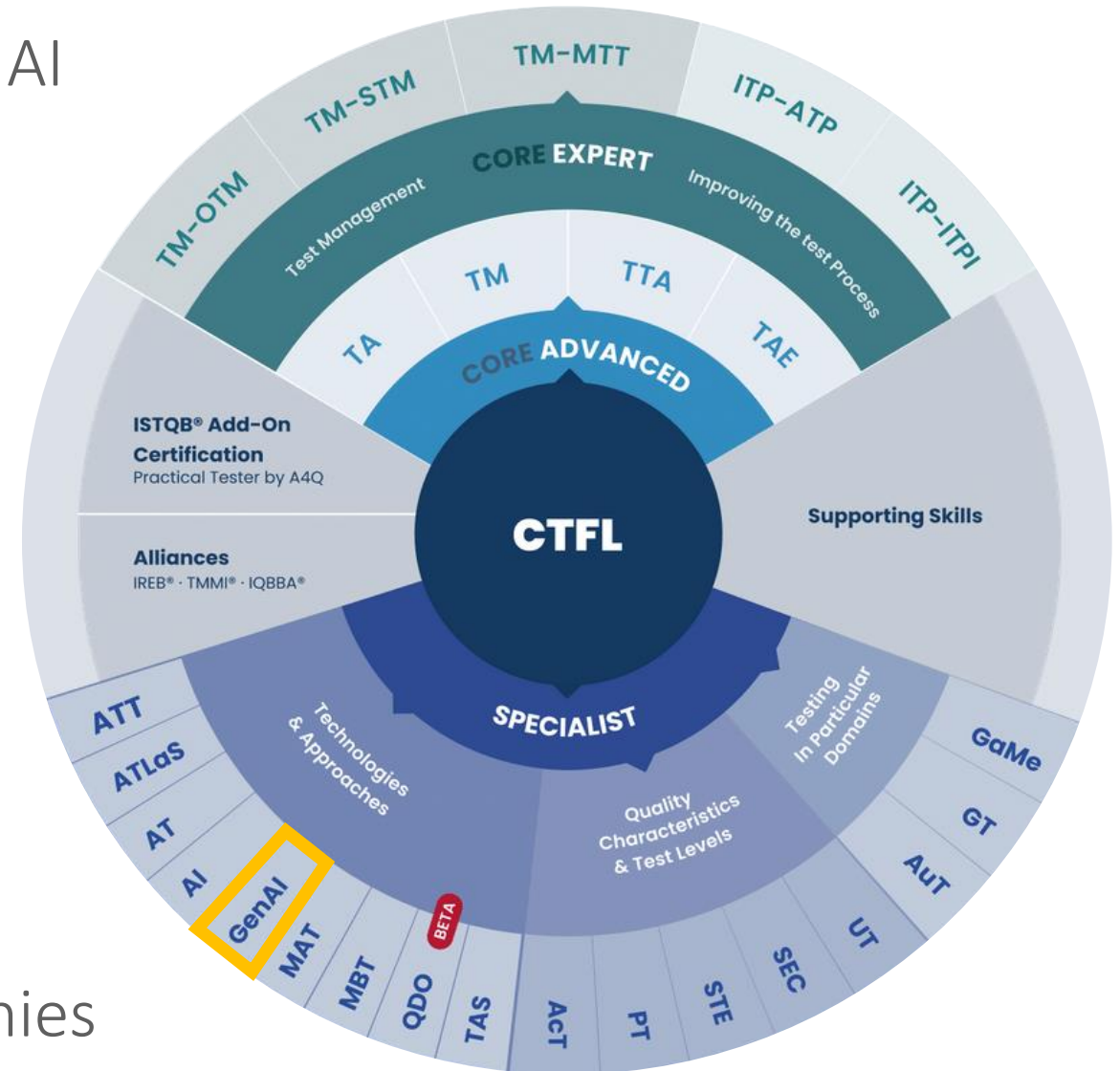
- Based on three „AI+Test“ syllabi from the ISTQB ecosystem
- Released in October 2021
- Introduction into AI/ML
- Testing of AI-based systems
- Testing with AI
- Currently in rework



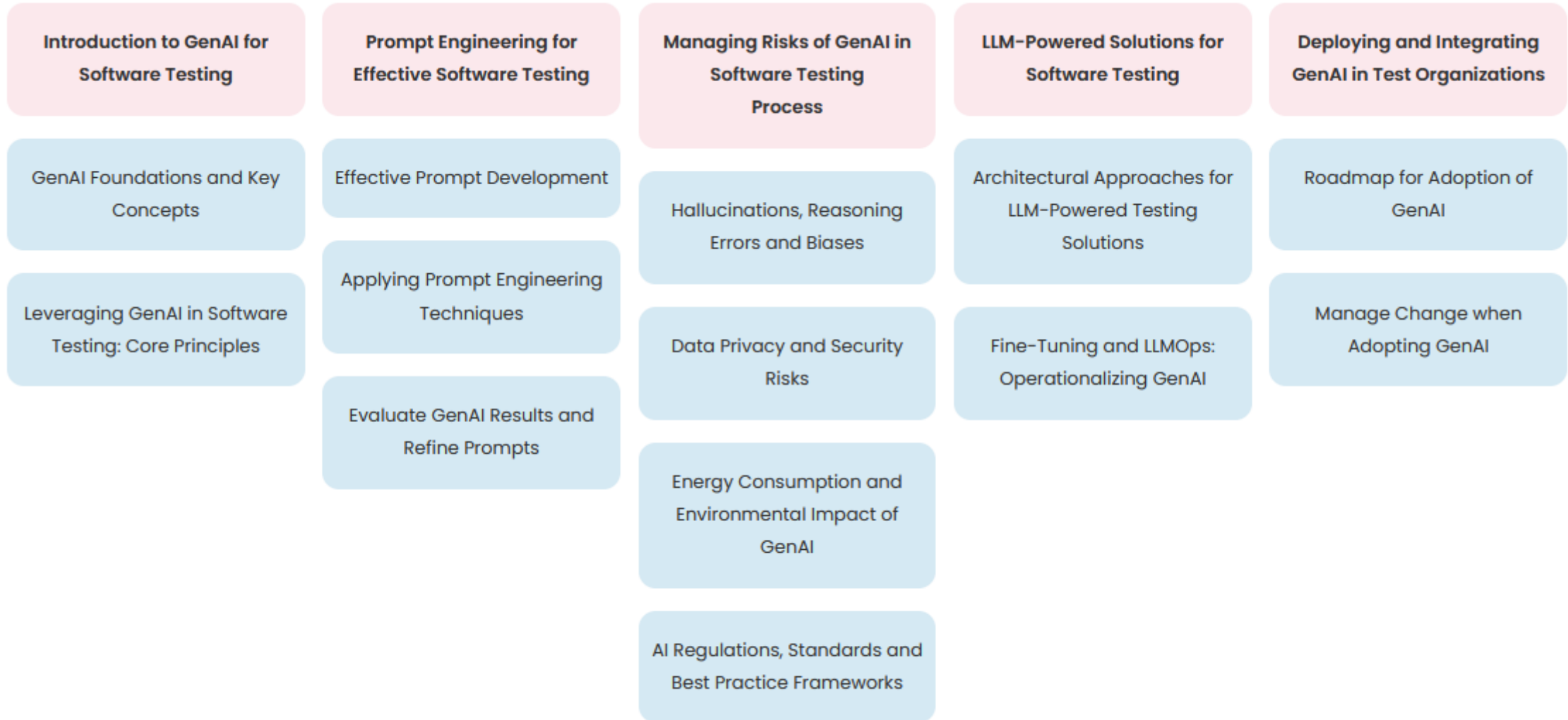
ISTQB Portfolio

Certified Tester Testing with Generative AI

- Released in July 2025
- Practical 2 day training
- Understand the principles of generative AI
- Develop practical skills in prompting
- Understand risks of generative AI
- Roadmap of adopting GenAI in companies



Testing with Generative AI (CT-GenAI)



— Takeaways

Takeaways



- Use GenAI / LLMs like a diligent, but dumb co-worker
- Reflect before using LLMs what you want them to do
- Stay in the driver's seat
- Check the results before using them

- AI is not going to go away - Use it to support testing
 - Work on your knowhow and skills
 - Human intelligence and guidance is needed

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***Merci
pour votre
attention***