Goals of the Enhanced Manufacturing and Maintenance Assistant

System integration across tool boundaries

We sucessfully developed bridging components to integrate across speach-to-text, 3d generated avatar, fluent-speech language models, vectorized databases for super fast information retrieval and vector converters to implement new web-based knowledge.

Multi modal reasoning A.I. and physical presence in the real world

We greatly improved the A.I.s reasoning by merging audio, video and scanning technologies. Our Enhanced Manufacturing and Maintenance Assistant can adapt her answer according to the non-verbal communication of her dialogue partners.
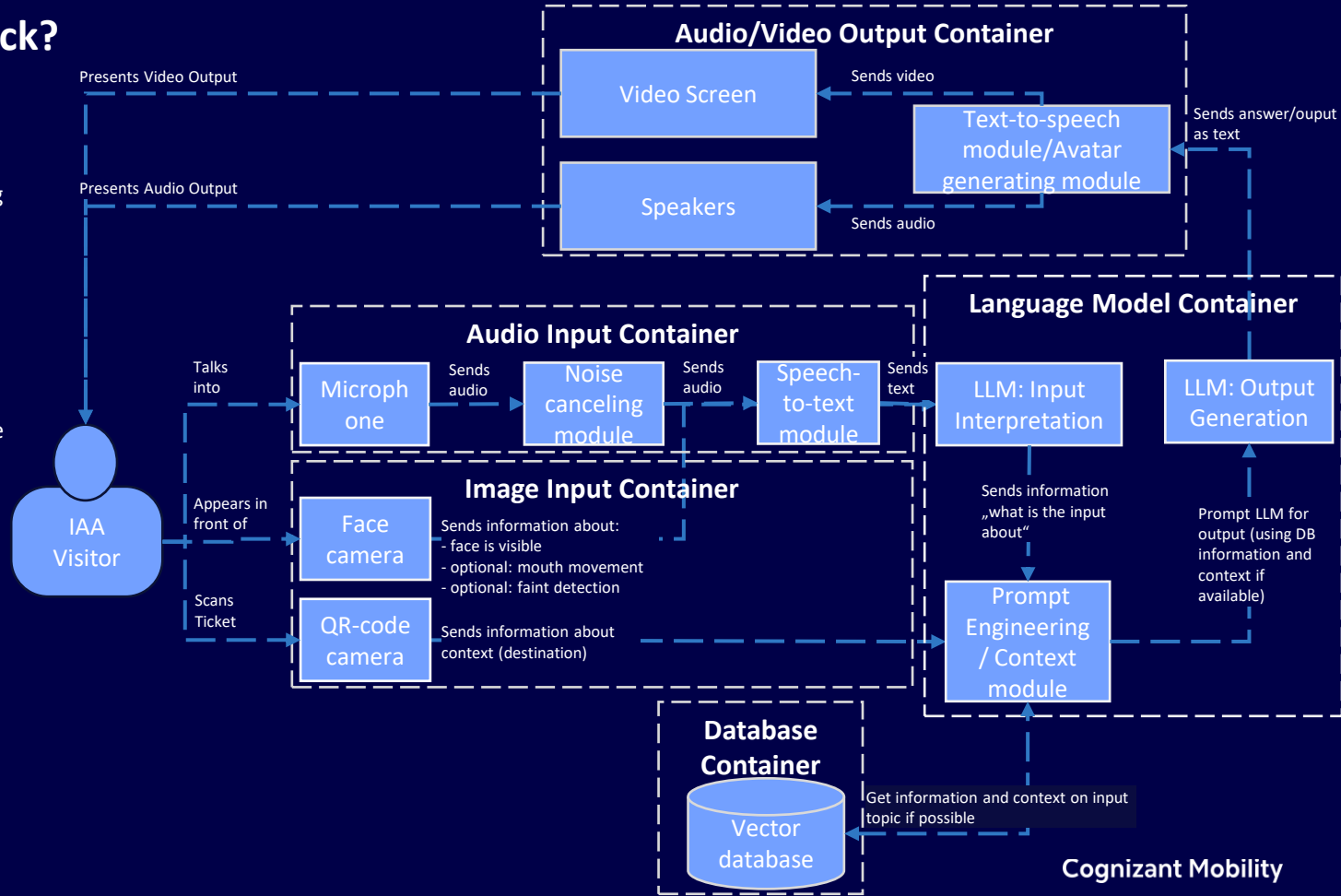
Distinct design decision against „hallucination"

To strenghten our Enhanced Manufacturing and Maintenance Assistant against hallucination (reasonable but incorrect answers), it uses our own human-adapted language model in cases where a vector retrieval for a correct answer is still not good enough.

How does EMMA tick?

- Once EMMA detects a person, she starts the conversation by greeting them

- The user can then freely interact with her and ask her questions

- If the user stops speaking EMMA converts the user's speech to text and starts generating her response

- Use case specific information is provided via our custom vector database

- If no sufficient information was found in the vector database, a special prompt is send to the LLM directly to answer the question

Audio/Video Output Container
- Video Screen
- Speakers
- Text-to-speech module/Avatar generating module
- Presents Video Output — Sends video
- Presents Audio Output — Sends audio
- Sends answer/ouput as text

Audio Input Container
- Microphone — Sends audio — Noise canceling module — Sends audio — Speech-to-text module — Sends text
- Talks into

Image Input Container
- Face camera — Sends information about:
  - face is visible
  - optional: mouth movement
  - optional: faint detection
- QR-code camera — Sends information about context (destination)
- Appears in front of
- Scans Ticket

Language Model Container
- LLM: Input Interpretation
- LLM: Output Generation
- Prompt Engineering / Context module
- Sends information „what is the input about"
- Prompt LLM for output (using DB information and context if available)

Database Container
- Vector database
- Get information and context on input topic if possible

IAA Visitor

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Contact us for a DEMO

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