

SPEAKER: A PRIVACY PRESERVING SPEECH ASSISTANCE PLATFORM „MADE IN GERMANY“

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Who are we?

Fraunhofer: Largest organization for applied research in Europe

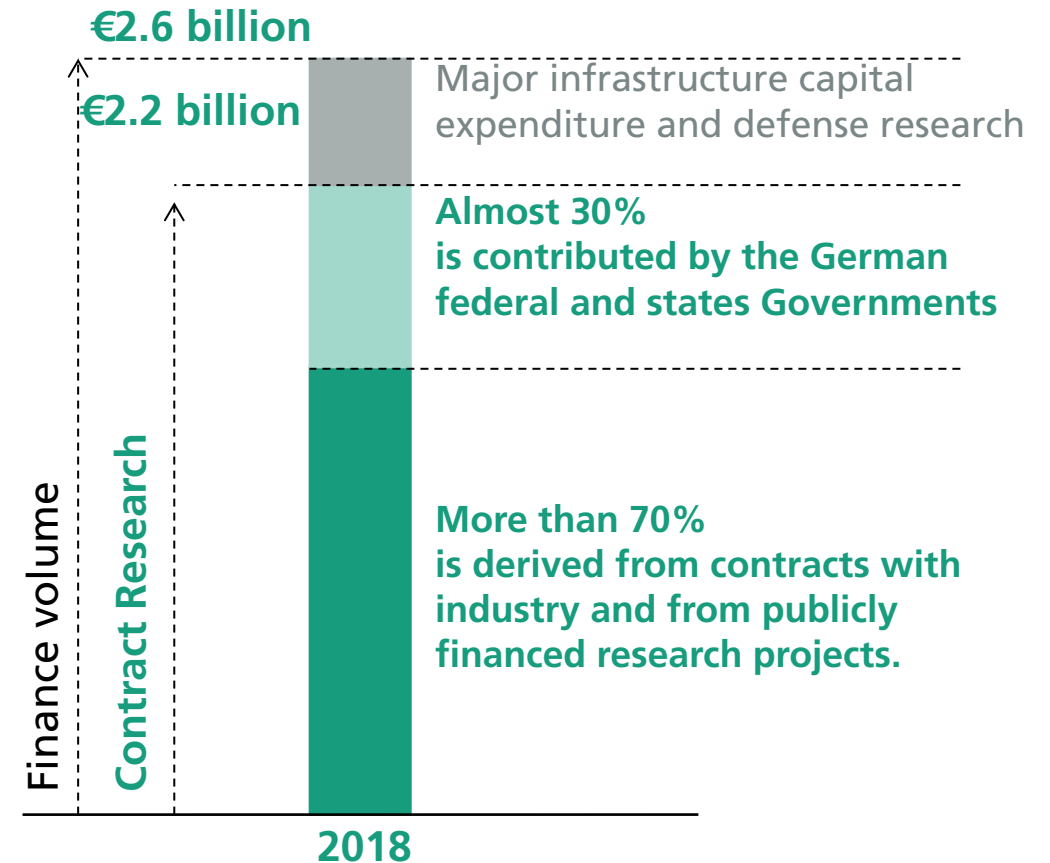
The Fraunhofer-Gesellschaft undertakes applied research of direct utility to private and public enterprise and of wide benefit to society.



26,600 staff



72 institutes and research units



Who are we?

Fraunhofer IIS and Fraunhofer IAIS



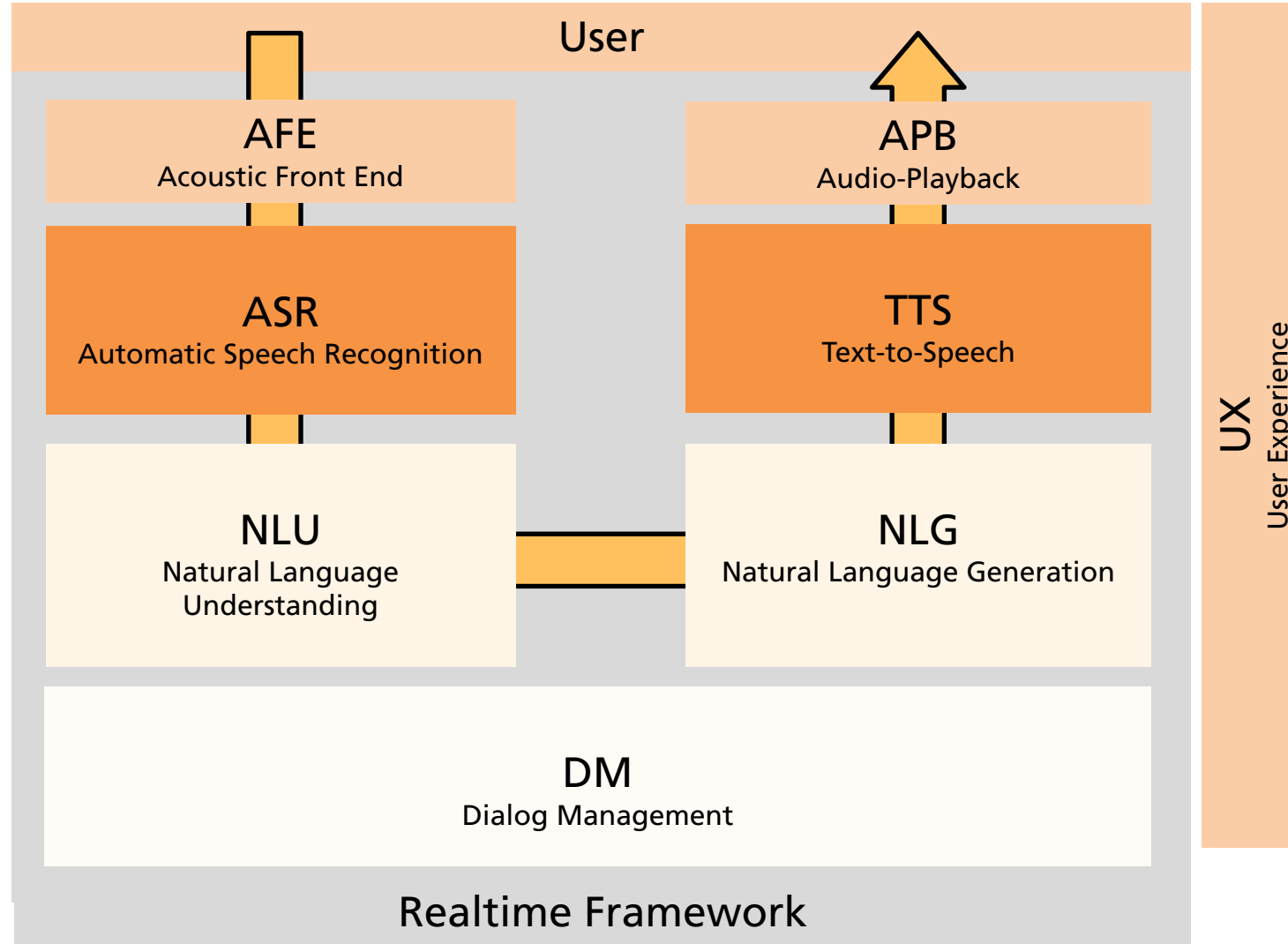
Founded in 1998,
250 employees,
budget of €18,57 M.



Founded in 1985,
1048 employees,
budget of €165 M.



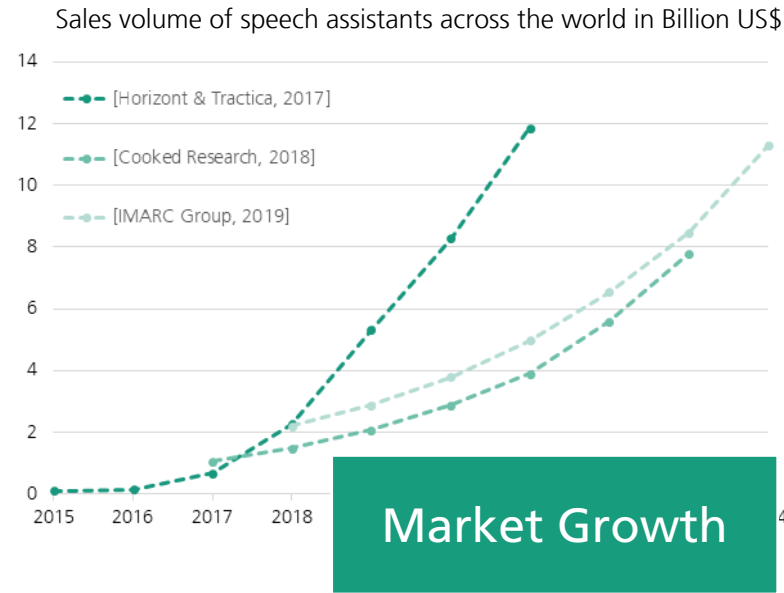
What is speech assistance?



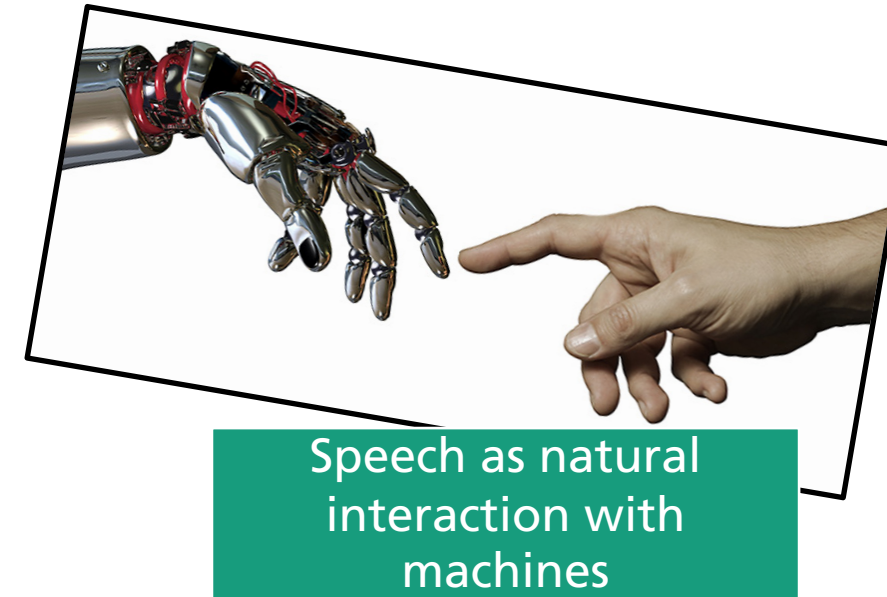
Why do we want to build a privacy preserving speech assistance platform?



Speech assistants from the US (Siri, Alexa, Google) often disregard data protection; there is no control in B2B contexts; their systems are closed

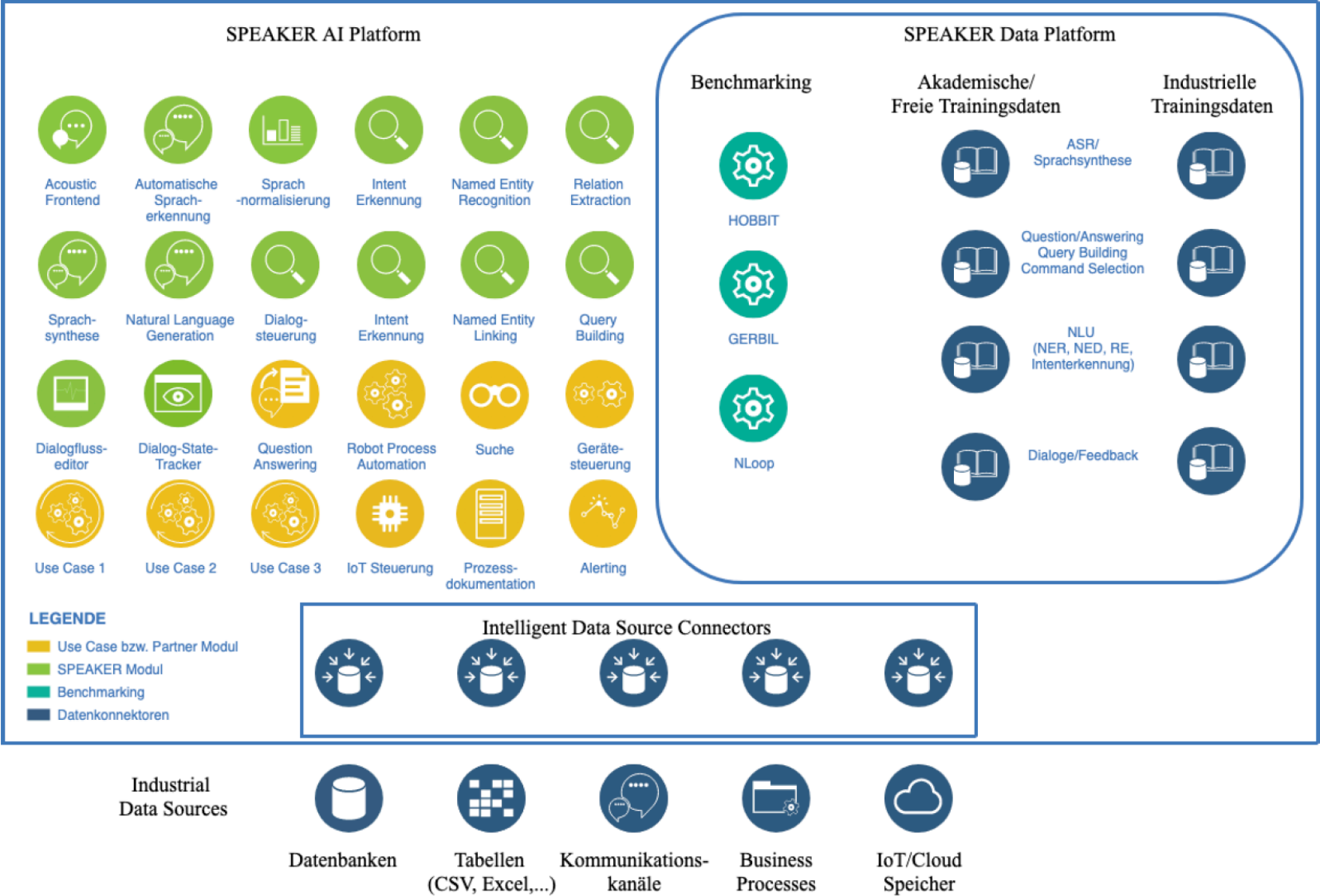


25% growth per year; Billion \$ market according to various studies (see for example <https://voicebot.ai/voice-assistant-market-data-news/>)



High expectations of: ASR quality, complex dialogues and questions, Context-related advances in AI / ML (see study wik 2019: "Intelligence from tins, language assistants in Germany")

What is our platform vision?



What's our financing?

German Ministry for Economy 12 Mio. Euro

Fraunhofer Stiftung 10 Mio. Euro

Now

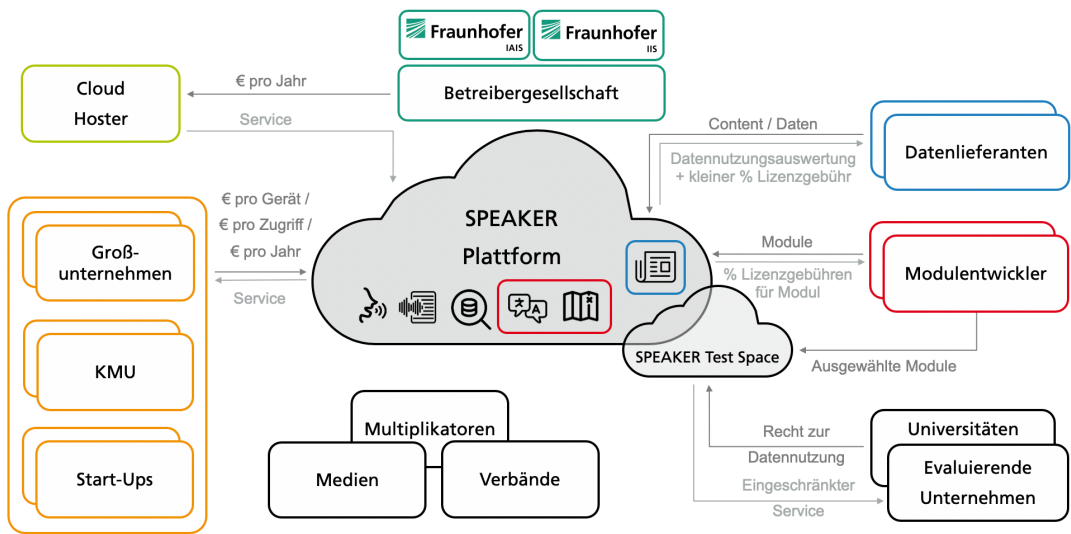


Bundesministerium
für Wirtschaft
und Energie



Fraunhofer
STIFTUNG

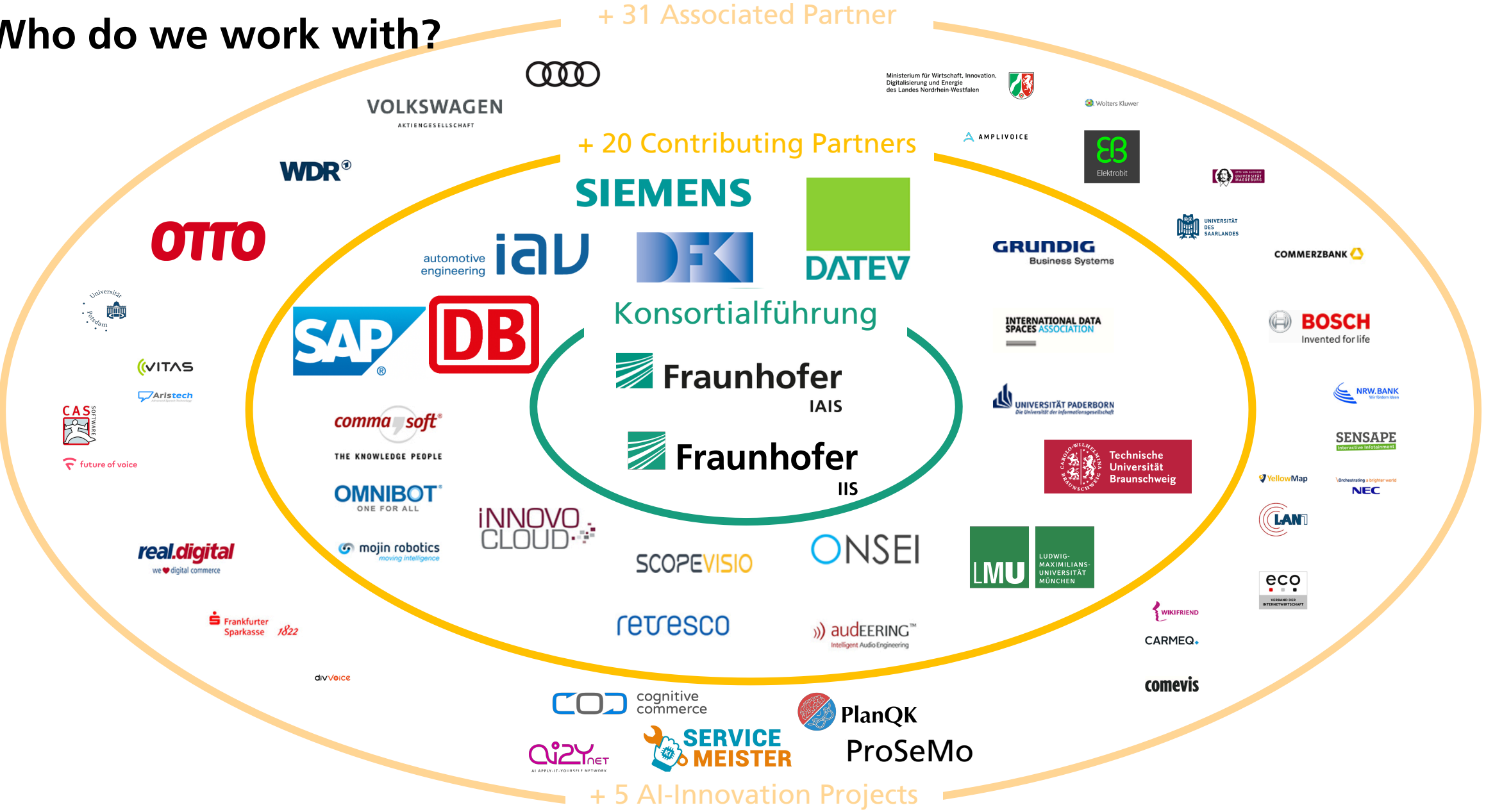
Licensing business model



In 3-5 years

Who do we work with?

+ 31 Associated Partner



What are these speech assistance privacy scandals about?

Human in the loop...

...is part of standard **quality assurance**
of speech assistants

...**violates** user **privacy**

How can speech assistance be privacy preserving?

Technology

User
Experience

Standards
and Norms

Legislation

Politics

...

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How can speech assistance be privacy preserving?

Technology	Implications for privacy	Implications for system quality	Implication for functionality
Federated Learning	✓	✓ if users cooperate	✓ if users cooperate
Embedded speech assistance	✓	✗	✗
Voice ID obfuscation	✓	✓	✗
Sanitize sensitive information	✓	●	●
Voice Cookies ...	●	✓	✓

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How can speech assistance be privacy preserving?

Build **trust**.

Competence: I can do what I say.

Consistency: I do what I say.

Benevolence: I care for you (the customer)
and that shows in what I say
and how I say it.

What should a speech system say about privacy?

- What technologies do we use to preserve privacy? What are benefits and deficits of these technologies?
- What are my options on data protection? What are implications of these options?
- When does the speech system record me? When can I be sure that it doesn't record me?
- What happens to my data? Who can see them? For how long?
- How can I delete my data?
- ...

How should a speech system talk about privacy?

In your answers, be clear and concise
and do not require users to switch modalities.

Take Away

- There are **major challenges in building a privacy preserving speech assistance platform.**
- If you are interested in working with us on this, you can become a partner of SPEAKER.
- Also we are hiring.

Thank you for your attention.