WHOELSE?

🤖💬🤖 Make AIs talk to each other!

A shared language for conversational AIs

Tobias Martens
tm@whoelse.ai

whoelse UG @ Hubraum
Winterfeldstr. 21, 10781 Berlin

New normal: People talk to machines 🗣️🤖

HORIZONT

FIRE TV

Amazon and Grundig announce the first Alexa TV

from HORIZONT Online / dpa
Thursday, September 05, 2019

Theme pages for this article:
AmazonAlexaGrundigremote Controlstreaming
Marc Whittentraditional brand

Amazon relies more on TV service via voice

Talking to the TV more often instead of using the remote control is part of Amazon's vision for the TV future. For the first time, a TV set microphones for voice assistant Alexa integrated. It bears the name of a German traditional brand.

BMW GROUP THE NEXT 100 YEARS

Chatbots, cars, smart speaker, fridges, wearables, hotlines, ticket machines..

A new kind of gatekeeper war: Who owns the 🤖🎤

amazon

Press release

Amazon and Leading Technology Companies Announce the Voice Interoperability Initiative

September 24, 2019 at 11:04 AM EDT

Amazon, Baidu, BMW, Cerence, ecobee, Microsoft, Orange, Salesforce, SFR, Sonos, Spotify, Sound United, Tencent, Verizon and more to promote customer choice by supporting multiple, interoperable voice services on a single device

With multiple, simultaneous wake words, customers can access multiple voice services by simply saying the corresponding wake word – from Alexa and Cortana to Orange's Djingo, Salesforce's Einstein, and more

Solutions providers like Intel, MediaTek, NXP and Qualcomm to develop hardware and reference solutions that support multiple wake word engines

Standard Agreement

🤖 **Namespace System**

AIs are selected by trigger words:
Hey Alexa! Hey BMW! Hey Magenta!

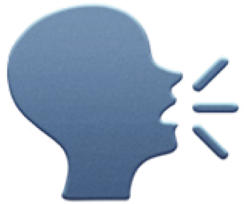
Problem

🗣️ **Verbal Discoverability**

Users recall less than ∅ 3.7 brands

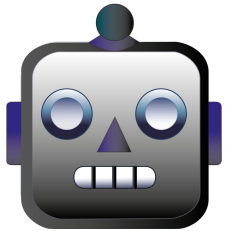
Q.: How will Mercedes and BMW agree who owns the command "ride-sharing"?

Year 2025: Every 1st customer contact will be a bot



Voice becomes UI #1

words replace buttons & keys



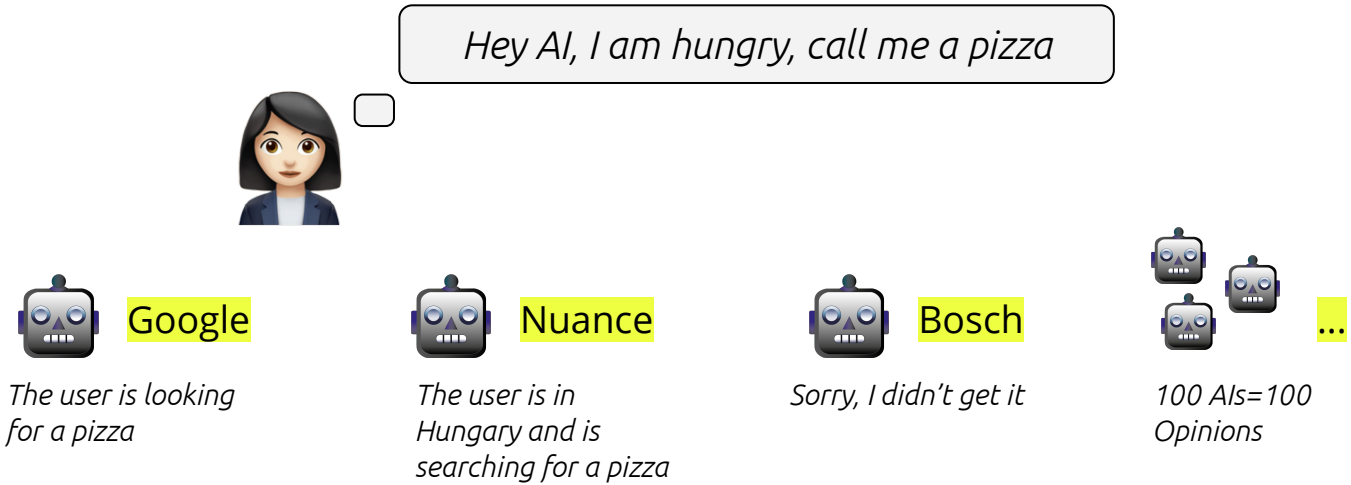
$55bn e-commerce opportunity

in conversational AIs

Gartner

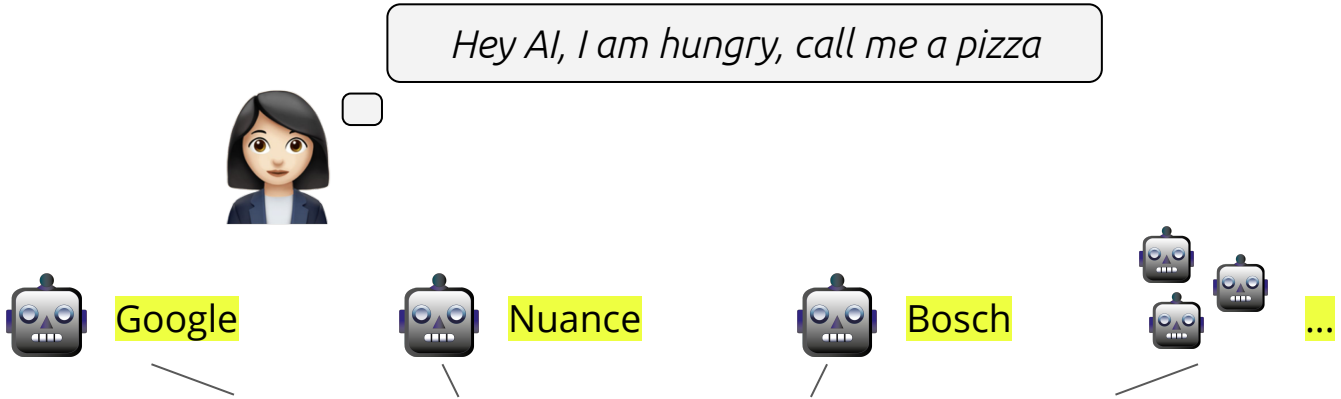
But "Voice Internet" is right now only a linguistic usability mess..

Problem: AI bias. And: Every AIs has a different bias!



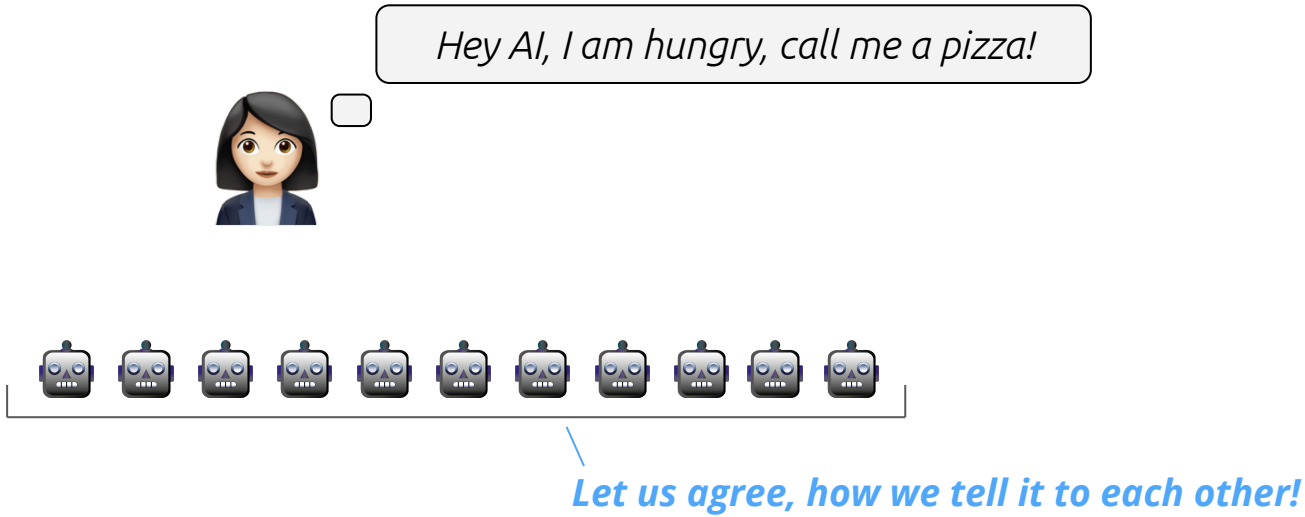
Problem 1: All NLPs understand human speech slightly different

...and how will different AIs communicate about 1 intent?



Problem 2: Concurring data about user voice inputs

Dreaming of: A unified language for AIs



Wish: The Esperanto of AI - a shared language across NLPs

And we could also use some privacy!

Bloomberg

Amazon´s “Always on” patent: The future will be recorded, on your smartspeaker

REUTERS

Germany planning to access voice assistant data to tackle crime

TC

41% of voice assistant users have concerns about trust and privacy, report finds

Must have: Protection of biometric information

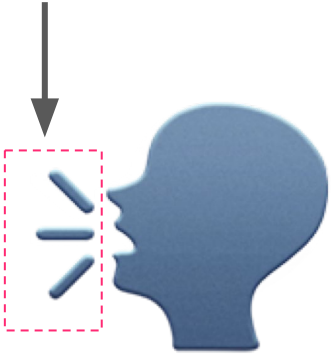
And in the end...

...it's all about **intent!**

~~How do you say it = Individual syntax, slang, vocabulary~~

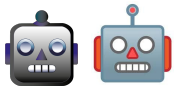
Why do you say it = Requested result

Content of a speech command



To do: Reduce complexity!

I need a ride to the airport!

	Consumer Touchpoint	Intent Recognition	Service Fulfillment
Value Creation	Hardware Platforms	NLP-AIs	E-Commerce
Player	 BMW Miele Innogy	 Amazon Nuance Jovo	foodora airbnb CAR2GO MyTaxi Foodora AirBnB

Current siloed ecosystems disappoint

I need a ride to the airport!

	Consumer Touchpoint	Intent Recognition	Service Fulfillment
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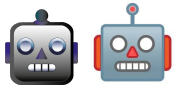
Player	 BMW Miele Innogy	 Amazon Nuance Jovo	foodora airbnb CAR2GO MyTaxi Foodora AirBnB

- **Who controls which part of the value creation chain?**

"GAFA" Blackboxes
- Alexa on Miele devices
  OEMs give up touchpoint, but integrates best catalog
  + Best usability
  - OEMs depend on GAFA

"3rd AI" Customization
- Houndify integrations in Mercedes cars
  OEMs build into a 3rd party voice ecosystem
  + OEMs control voice experience
  - Expensive customized integrations of 3rd party NLPs

"Low-Level" Integration
- Jovo as low level voice e-commerce API
  Online shops integrate across different voice ecosystems
  + Cheap
  - Low-level integrations

Solution: whoelse.ai simplifies language-based AI services

I need a ride to the airport!

	Consumer Touchpoint	Intent Recognition	Service Fulfillment
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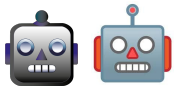
Player	 BMW Miele Innogy	 Amazon Nuance Jovo	foodora airbnb CAR2GO MyTaxi Foodora AirBnB

WHOELSE? Taxi who else?

Product Universal Grammar as shared protocol for NLPs

DIN ISO

Enabler NLP API interoperability standard initiatives

Product: A standardised language as shared AI namespace

Examples

Mindmeld

Rasa

Fraunhofer

Houndify

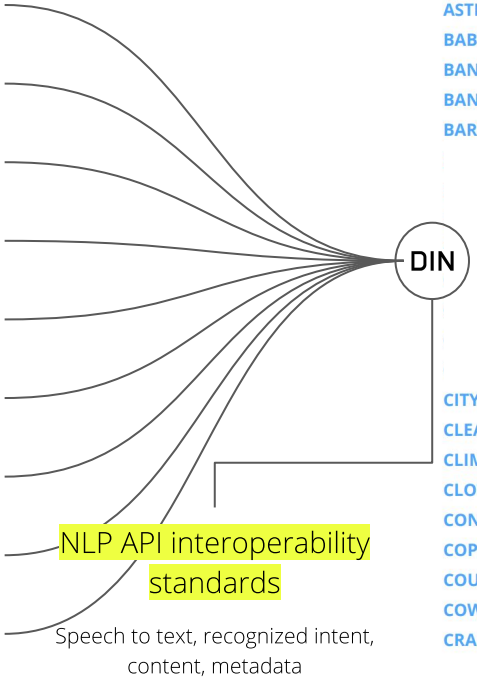
Watson

Mycroft

Omnibot

Houndify

Bosch



ACCOUNTANT who else?
APARTMENT who else?
ASSISTANT who else?
ASTRONOMY who else?
BABYSITTER who else?
BAND who else?
BANK who else?
BARBEER who else?

CYCLE who else?
CYCLE COURIER who else?
CYCLESHOP who else?
DATE who else?
DELIVERY who else?
DELIVERY who else?
DOCTOR who else?
DOG-SITTING who else?

HOSTEL who else?
HOTEL who else?
HOUSE who else?
INSURANCE who else?
JANITOR who else?
JOB XYZ who else?
KINDERGARTEN who else?
LAUNDRY who else?

RENOVATION who else?
RENTALS who else?
REPAIRSHOP who else?
RIDESHARE who else?
SALE who else?
SCHOOL who else?
SCHOOL who else?
SCOOTER who else?

WHOELSE?

Pizza who else?
Date who else?
Apartment who else?
Taxi who else?

CITY who else?
CLEANER who else?
CLIMATE CHANGE who else?
CLOTHING SWOP who else?
CONCERT who else?
COPYSHOP who else?
COUSINE who else?
COWORKING who else?
CRAFTSMAN who else?

GARAGE who else?
GARDENING who else?
GAS STATION who else?
GAY who else?
GYM who else?
HACKERSPACE who else?
HAIRCUT who else?
HELPDESK who else?
HOBBY who else?

OPERA who else?
PAINTER who else?
PETSITTING who else?
PHONE REPAIR who else?
PHOTOGRAPHER who else?
PLAYGROUND who else?
PSYCHOLOGIST who else?
REFUGEE who else?
RELIGION who else?

TAXI who else?
THEATRE who else?
TIMBERMAN who else?
TOYS who else?
TRAINER who else?
TRAVELLING who else?
UNIVERSITY who else?
WORKERS UNION who el
WORKSHOP who else?

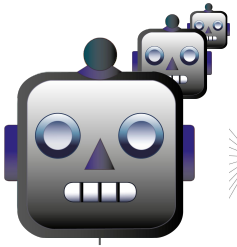
Technology: Keyword search catalog for spoken language

Natural Language

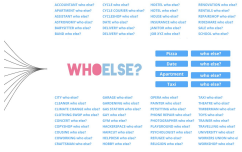
Hey AI, um.., I need a ride to the Airport.

For me and my friend.

We need to be there at 16:45. Can you do that?



Language Catalog



Intent Encoding

Protocol Convention

Metadata

Cab (or) Driver	in 20 Minutes	Tegel Airport	2 People	who else?

WHOELSE? APIs

Universal Grammar (UG) NLPs request a data schema to encode intents in a standardized format

Language Namespace (LNS) OEMs trade intents received from users by NLP integrations with e-commerce vendors

Rollout: Market entry by NLP API industry standards

Hardware → DIN Standard → Intent Catalog → Services

Pizza	who else?
Date	who else?
Apartment	who else?
Taxi	who else?

IN THIS STREET who else?
IN THIS HOUSE who else?
IN THIS CITY who else?
FOOD-SHARING who else?
EVENT who else?
JOB XYZ who else?
STARTUP who else?
UNIVERSITY who else?
PHONE REPAIR who else?
CYCLE COURIER who else?
FLAT-SHARE who else?
CRAFTSMAN who else?
BOOK CLUB who else?
SPORTS who else?
RELIGION who else?
DATE who else?
SEX who else?
MUSIC who else?
SCOOTER who else?
IN THIS COMPANY who else?

Voice Interface | File Format | Matching | Execution

Dream: fulfilled 😎

Let us agree, how we tell it to each other!

B2B use case: Interoperability between conversational AIs

Example: Voice concierge and check-in services in hotels, rental cars, smart homes (..)

OEMs → whoelse.ai

Indian User · Services · Smart Home · E-Commerce · Encoding → DIN

- Motel 1, check me in!
- Motel 1, set the room temperature to 26 degrees!
- Omnibot AI: Ok, will do!

→ OEM-based services

- AI, find me a concert tonight!
- AI, I want to eat Greek today
- Delivery Hero AI: Sure, here are nearby restaurants options!

→ On-demand platforms

- AI, how do I file VAT reimbursements?
- AI, I am relocating, who handles migration cases in Germany?
- PWC AI: I put you in touch with our lawyer..

→ Conversational niche expert AIs

- AI, order me a iPhone charger
- AI, order me a Taxi for tomorrow
- MyTaxi via Alexa: Your taxi pick-up has been scheduled

→ GAFA-based services

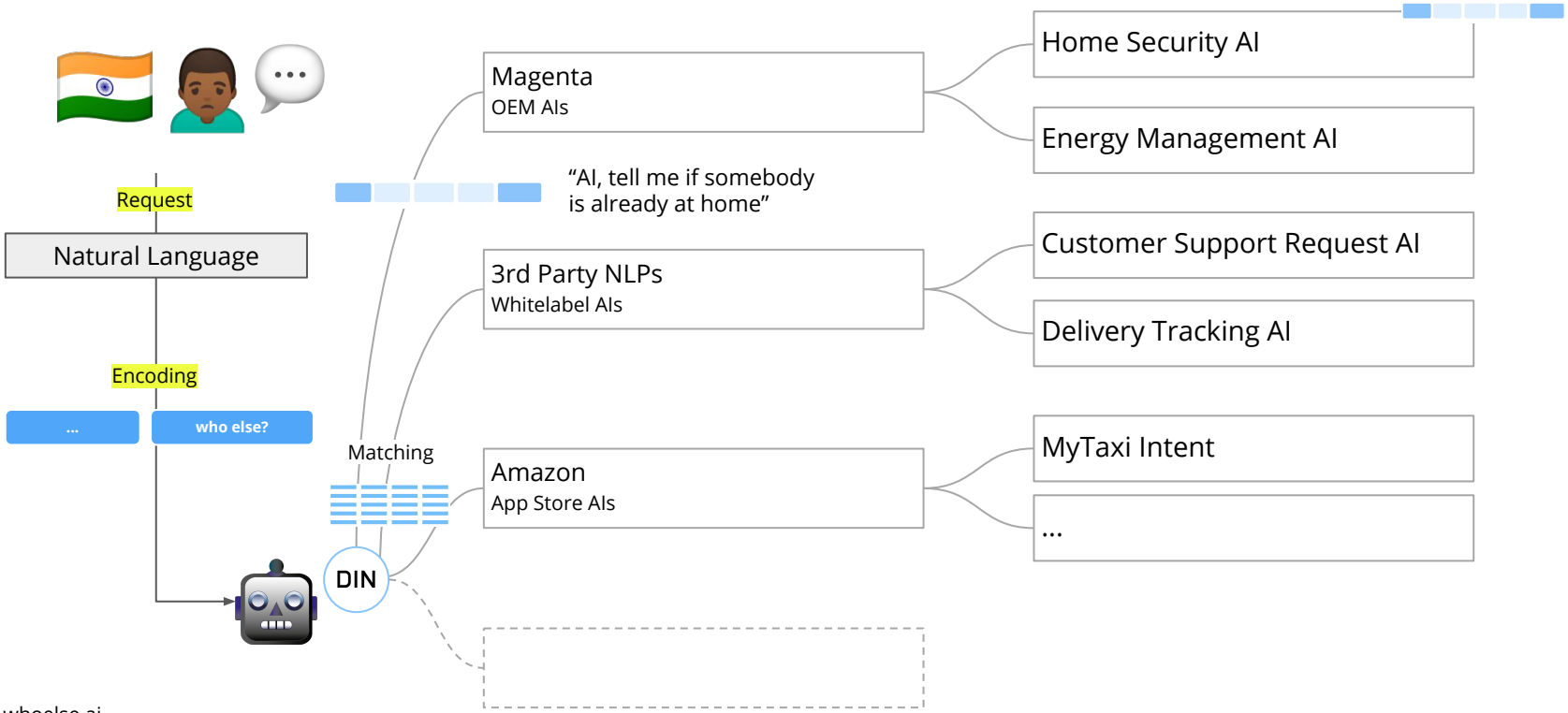
Challenge

Users speak in foreign language for multiple types of intents

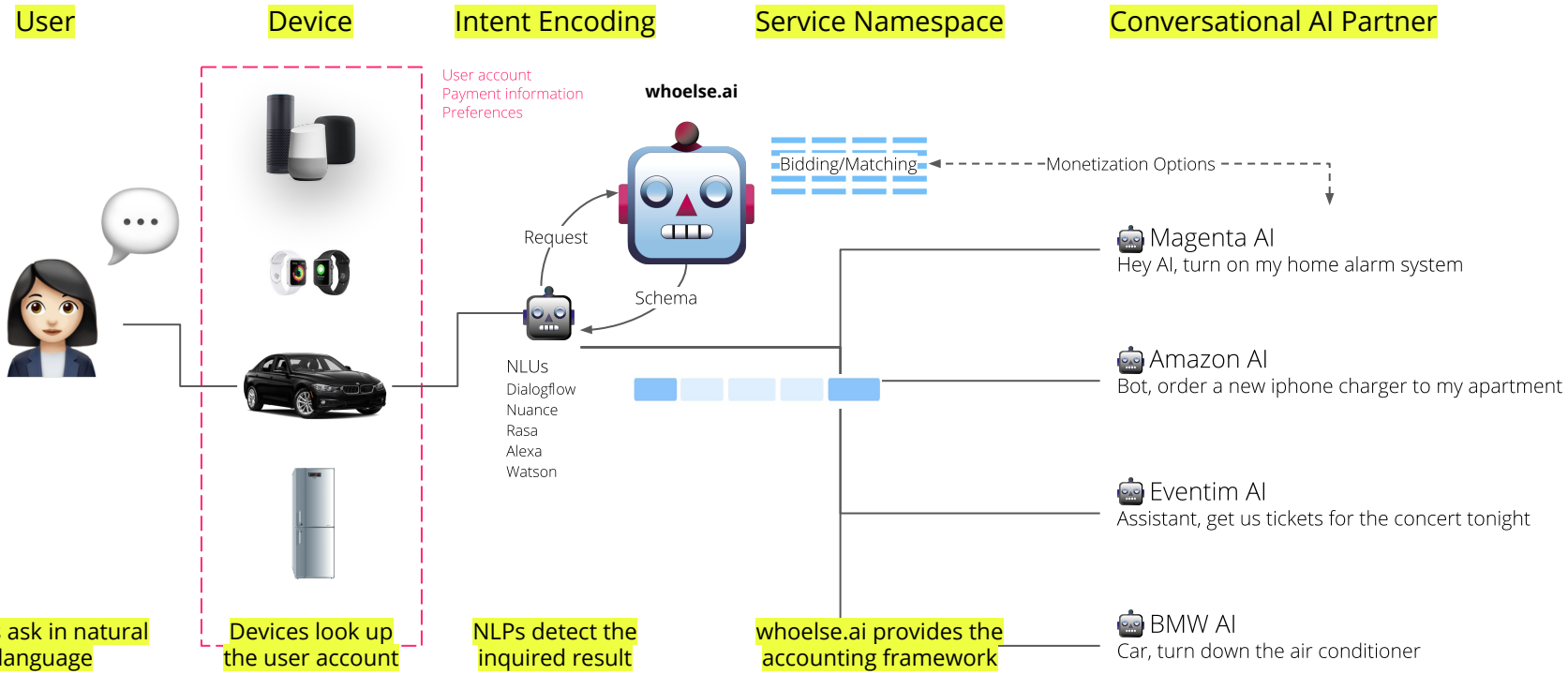
Solution

Interoperability of conversational AIs and e-commerce solutions

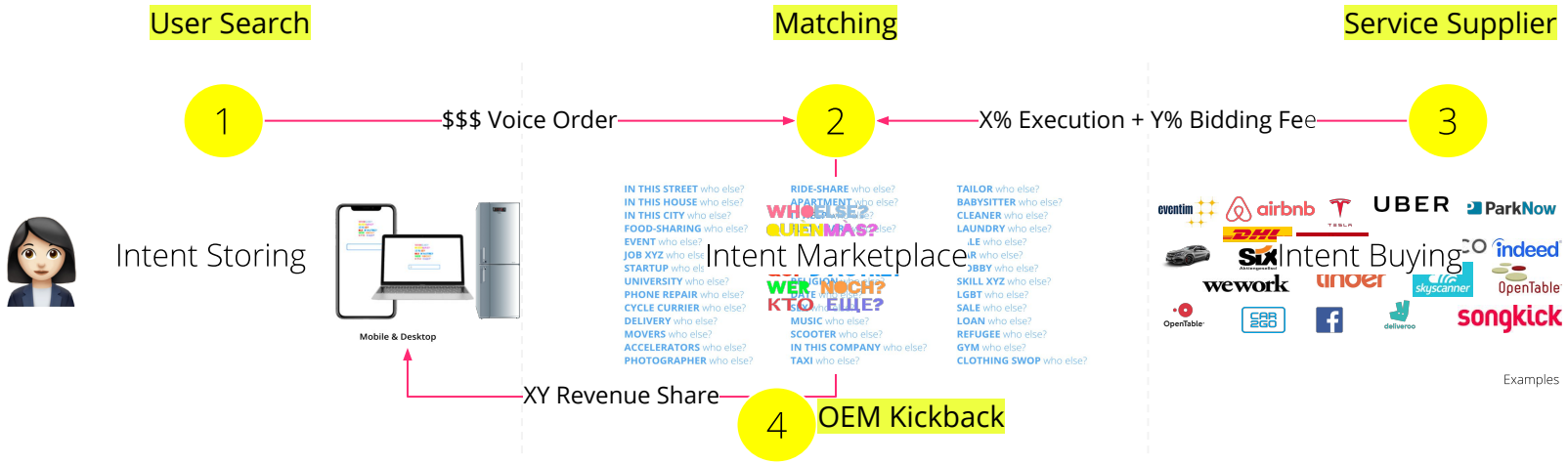
Advantage: Voice AIs use a shared protocol for service requests



Innovation: Voice AI search and user account systems



Monetization: Marketplaces to trade speech-based requests



Request

"Hey fridge, order Indian food for me!"

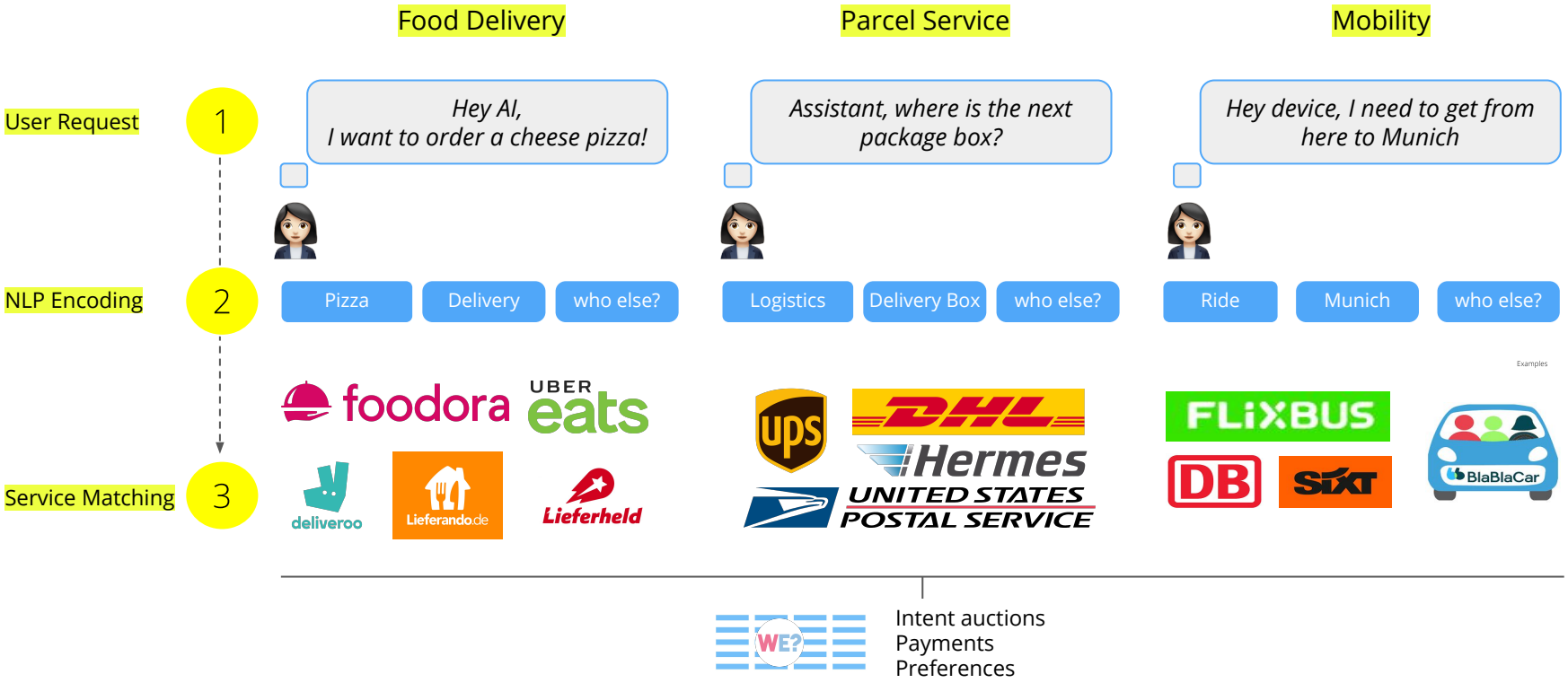
Order Value	$ 15.00 USD
Kickback OEM 5%	$ 0.75 USD
Kickback WE 5%	$ 0.75 USD

Auction

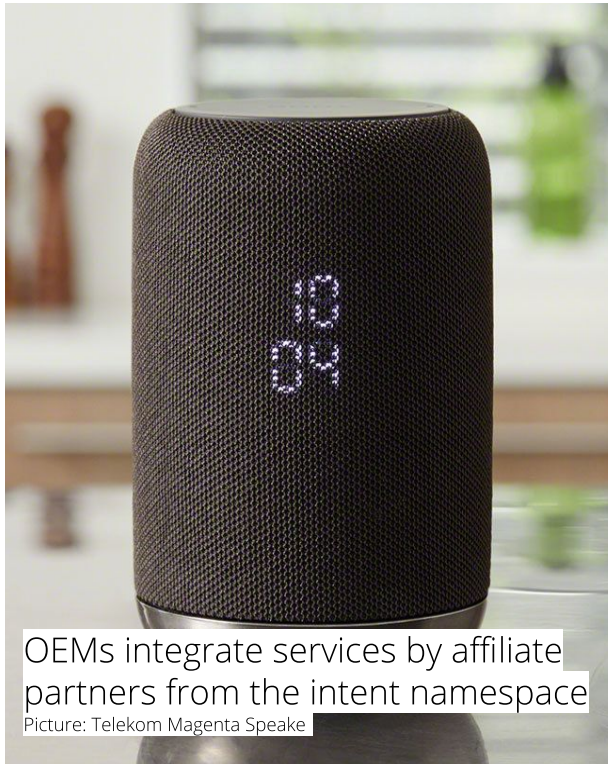
E-commerce providers bid on intents

Vendor A	7%
Vendor B	10% ✓
Vendor C	5%

Business model: Lead generation from voice commands

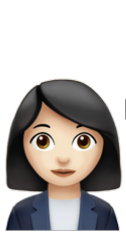


1. Example: Personalized voice assistants



OEMs integrate services by affiliate partners from the intent namespace

Picture: Telekom Magenta Speake

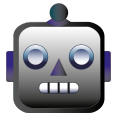


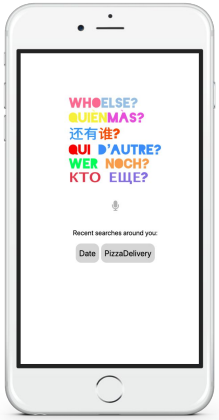
Hey speaker, I want to book a flight to Paris

Domestic Flight

who else?

We will send you matching offers to your phone in 30 minutes





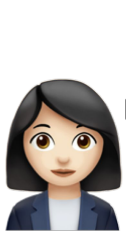
Order Book Users can manage voice search requests

Preference Management Users assign preferences for voice requests

2. Example: Voice-enabled services in public places

OEMs integrate voice-based services in public infrastructures

Picture: Vinci Energies

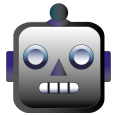


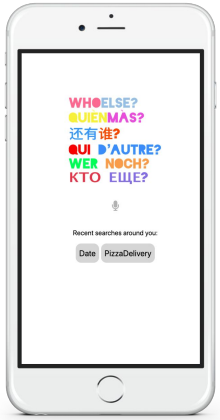
Hey lamppost, I need a parking ticket for the campus

Parking Ticket

who else?

Open your who else? app to pay

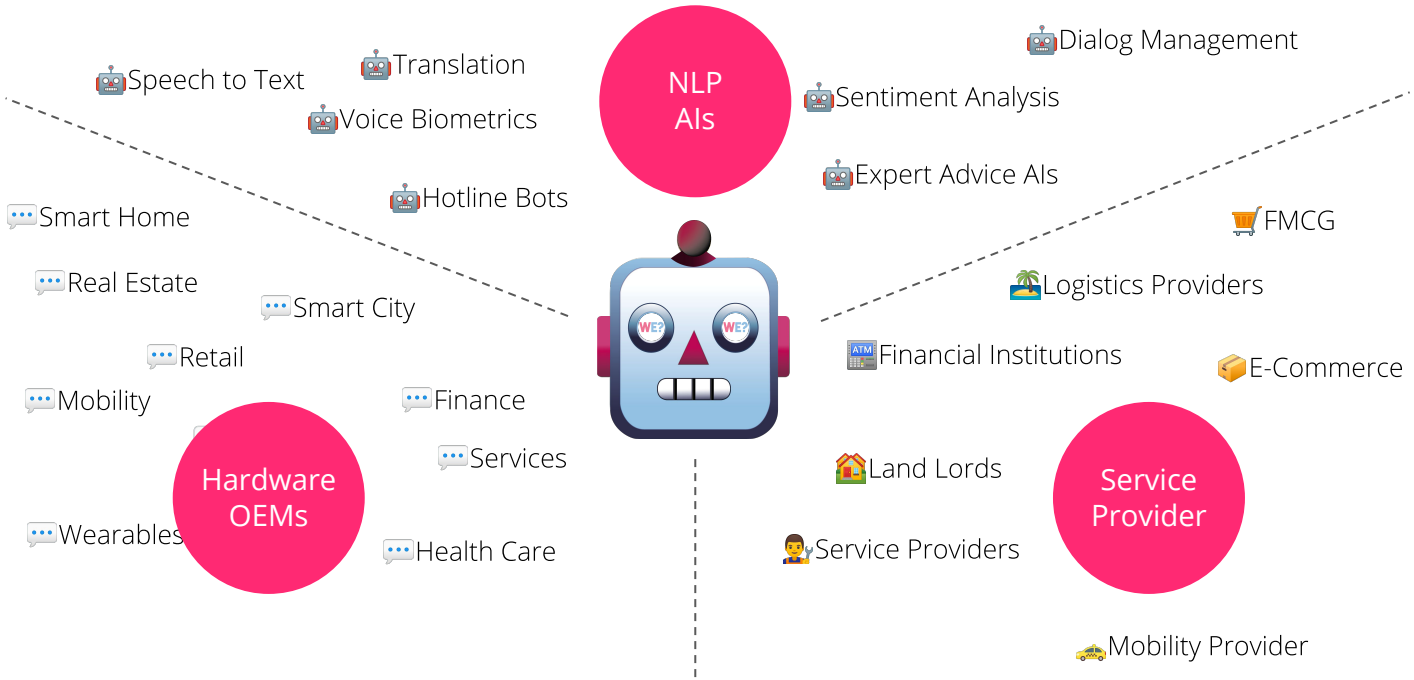




Voice Profiles Sign-in with your biometric fingerprint

Accounts Payment wallet for voice-activated services

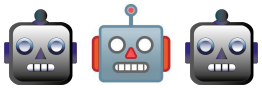
Ecosystem: Together towards interoperable AI e-commerce



R+D advantage: Faster localization of voice technologies

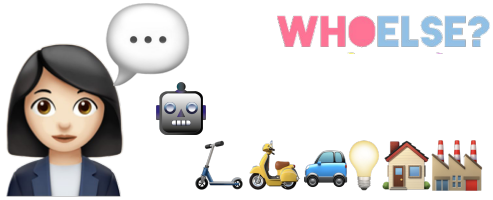
1 Devices with voice interface potential

- Cars
- Real Estate
- Appliances
- Shared Mobility
- Logistics
- Charging Stations
- Logistics
- Electricity
- Car Sharing
- Smart Home



2 Selection of NLP technologies

- Energy Efficiency
- Multimedia Services
- Industry Applications
- Model Adaptability
- IoT Applications
- Fraunhofer
- Houndify
- Bosch
- Rasa
- McCroft



3 Integration with namespace services

- **IN THIS STREET** who else?
- **IN THIS HOUSE** who else?
- **IN THIS CITY** who else?
- **FOOD-SHARING** who else?
- **EVENT** who else?
- **JOB XYZ** who else?
- **STARTUP** who else?
- **FLAT-SHARE** who else?
- **CRAFTSMAN** who else?
- **BOOK CLUB** who else?
- **SPORTS** who else?
- **RELIGION** who else?
- **DATE** who else?
- **SEX** who else?

Enabler: DIN, ISO, IEEE (..) standards

Market entry: B2B partnerships as growth driver

Industry partnerships

Pilot projects

Marketing

Standards organizations

NLP API interoperability specifications

PILOT PROJECTS

Industry verticals

Smart Cities	Smart Home	Digital Governments
Connected Mobility	Conversational Commerce	Realtime Logistics
Intelligent Grids	Human Robotics	Whitelabel Hardware

Use cases

Cars, chatbots, hotlines, public transport, smart speaker. smart home, smart city, (..)

Acquisition loop

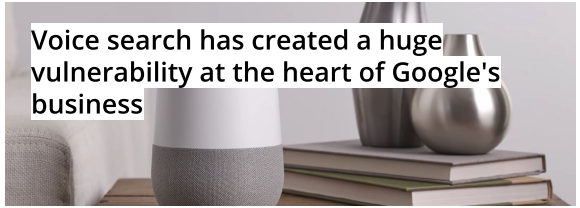
What if “who else?” questions are really better remembered by our users?

“who else?” could be the last question a user ever needs to know!

Does this device listen to “who else?” questions - let's try!

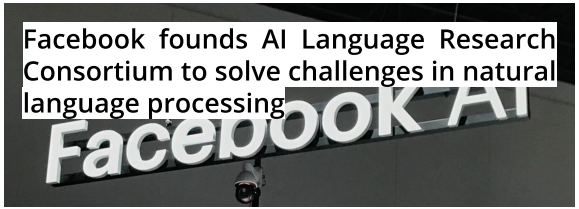
Exit paths: OEM acquire us for brand and/or patent IP

(1)
Companies (search engines, classifieds) with voice discoverability risks



When the world shifted from desktop to smartphones, one thing didn't change: the existence of a screen on both devices. The screen shrunk, but it remained the medium through which we interact with computers. For Google, that meant its core online advertising business — visible search ads on a webpage — remained intact and lucrative. Today, Google may be at the beginning of a new shift — one toward artificially intelligent virtual assistants, in which we use our voice to interact with technology instead of our eyes. The problem with voice assistants is they don't have a screen on which to display ads.
Business Insider

(2)
As multi-industry AI IP research lab (c.f. OpenAI)

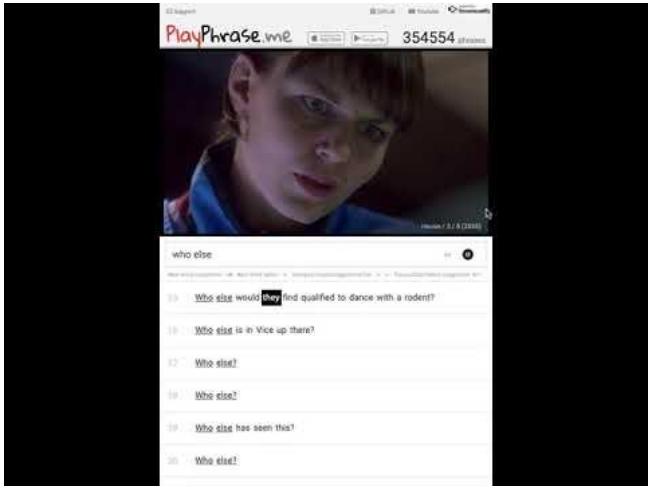


Roughly three months ago, Facebook launched a $ 25m call for research proposals in three subfields of natural language processing (NLP), the cross-disciplinary study of linguistics and AI concerned with computer-language interactions. It specifically sought "robust" deep learning approaches for NLP and computationally efficient NLP in addition to neural machine translation for low-resource dialects, ultimately in the pursuit of advancing cutting-edge research in machine translation. That was just the start, it would seem. In a blog post today revealing 11 winning proposals among the 115 submitted from 35 countries, Facebook announced the AI Language Research Consortium, a community of partners it says will "work together to advance priority research areas" in NLP.
Venturebeat

(3)
To OEMs and/or technology standards alliances

(..) Ideally, IoT devices would simply have a standard way to communicate, so users wouldn't have to worry about making sure every product works together. Some companies, such as Microsoft, Qualcomm, Samsung, and Intel, are now trying to figure out how to make that happen. Even so, the ambitious goal of a common Internet of Things language is starting to seem like a Tower of Babel. Over the last year, tech titans like Apple, Google, and Amazon have built up their own ways of connecting to vast numbers of smart home products, and these companies have shown little interest in standardization. As these platforms gain traction, is it too late for a unified language to take hold?
Fast Company

Secret sauce: Language hard-wired in the human



WHOELSE?

Universal Grammar (UG) is a theory that suggests that some rules of grammar are hard-wired in the brain, and manifest with being thought.

Who else? Wer noch? Quién más? (..) questions exhibit properties of UG. It is language that is universal understood and available to everybody.

Read more: http://whitepaper.whoelse.ai