

WHOELSE?



Make AIs talk to each other!

Universal Grammar for Conversational AIs

Tobias Martens tm@whoelse.ai
Mobile: +49 159 0107 9491

whoelse UG @ Hubraum
Winterfeldstr. 21, 10781 Berlin

A new kind of gatekeeper war: Who owns the touchpoint



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

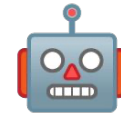
Solutions providers like Intel, MediaTek, NXP and Qualcomm to develop hardware and reference solutions that support multiple wake word engines



Discoverability Problem

Users recall only Ø 3.7 brands

Deloitte

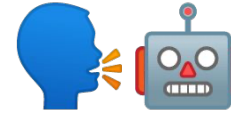


Namespace System

Trigger words: Hey Alexa..

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

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 Whittrtraditional brand

Amazon relies more on TV service via voice

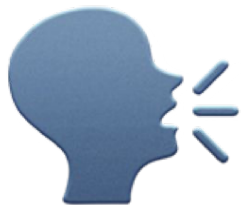
Talking to the TV more often instead of using the remote control is part of Amazon's vision for the TV future. For the first time, a TV set microphones for voice assistant Alexa integrated. It bears the name of a German traditional brand.

BMW GROUP THE NEXT 100 YEARS



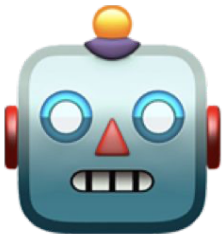
Chatbots, cars, smart speaker, fridges, wearables, hotlines, ticket machines..

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



Voice becomes UI #1

words replace buttons & keys



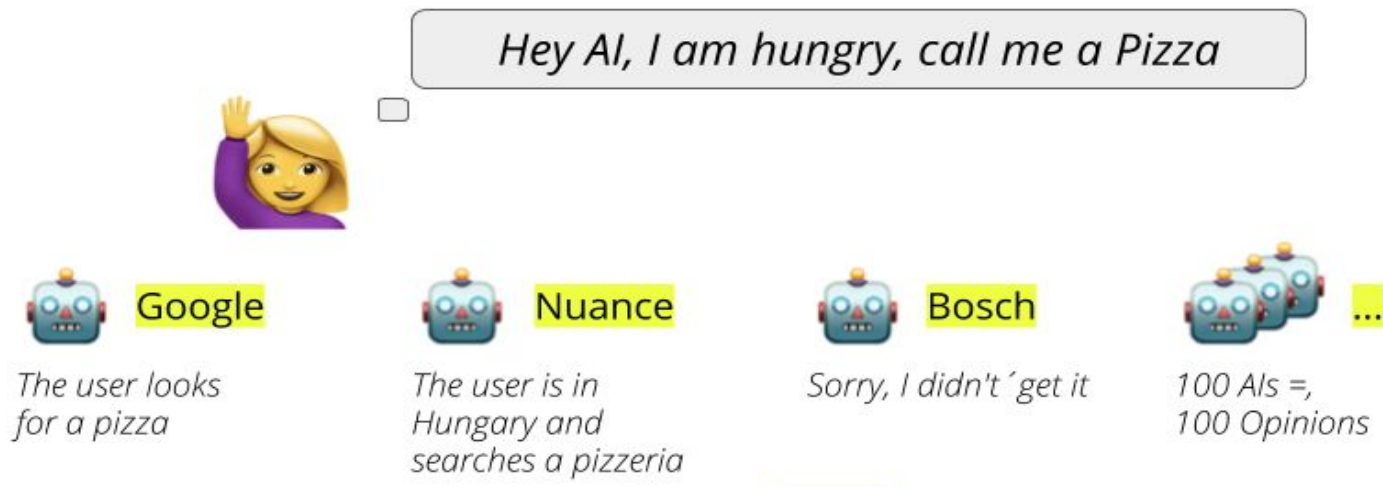
\$55bn e-commerce opportunity

in conversational AIs

Gartner

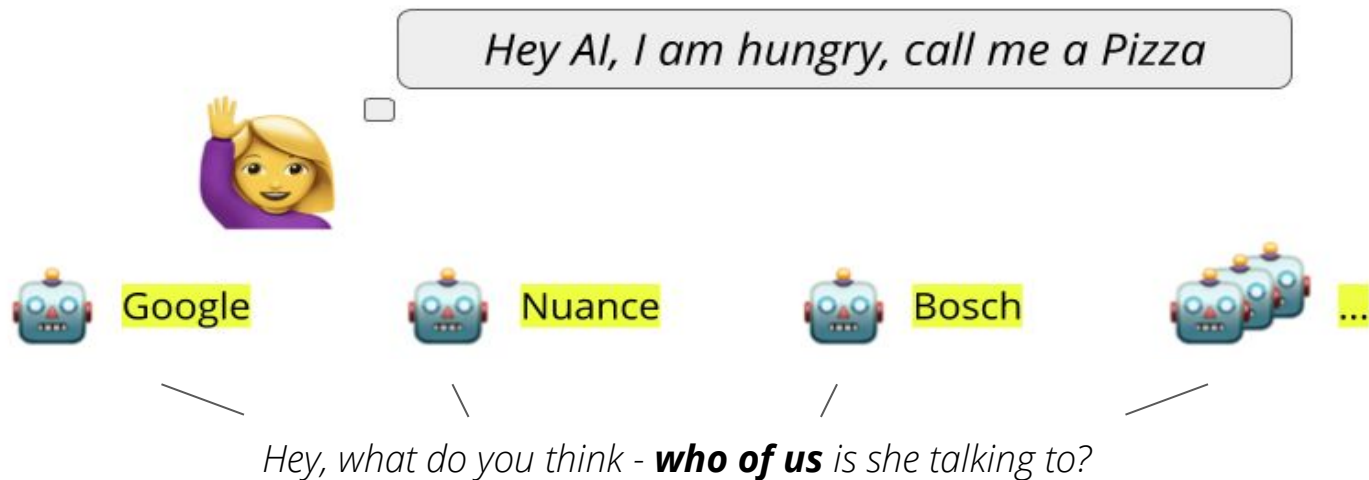
But "Voice Internet" is right now only a linguistic usability mess..

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 AI



AI, I need a ride to the Airport!



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

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



Germany planning to access voice assistant data to tackle crime

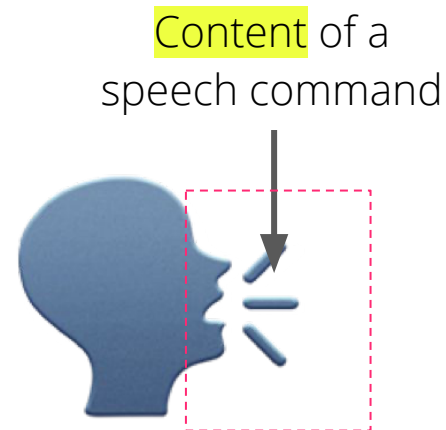


41% of voice assistant users have concerns about trust and privacy, report finds

Must have: **Protection of biometric information**

And in the end...

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



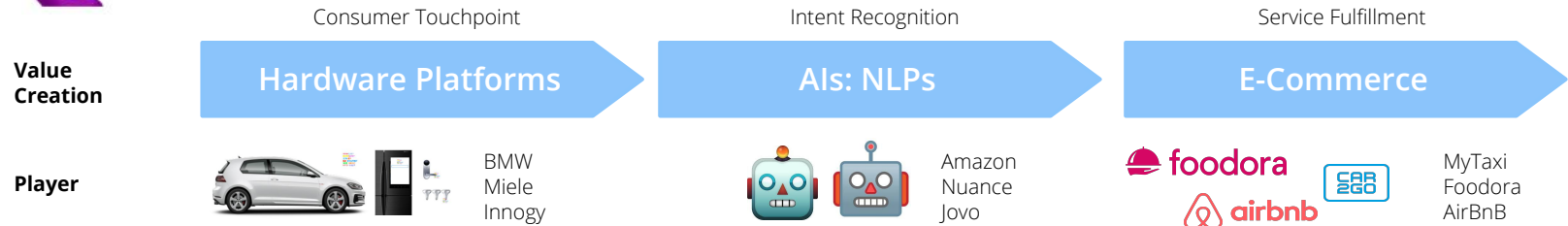
~~How do you say it = Individual syntax, slang, vocabulary~~

Why do you say it = Requested result

To do: Reduce complexity!



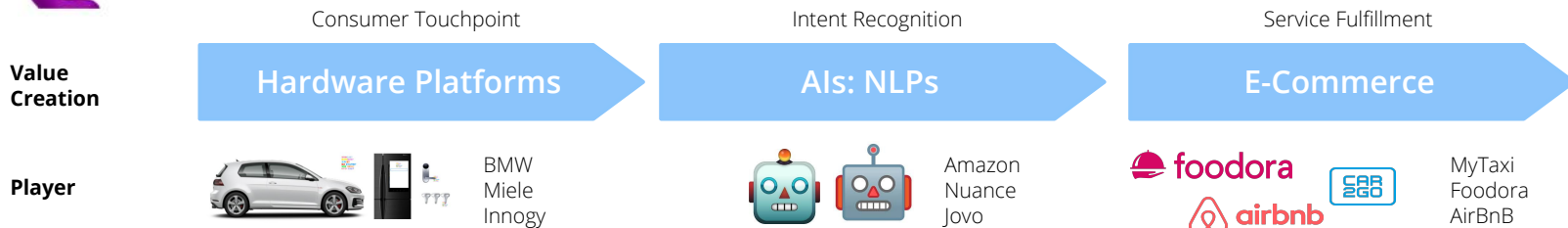
AI, I need a ride to the Airport!



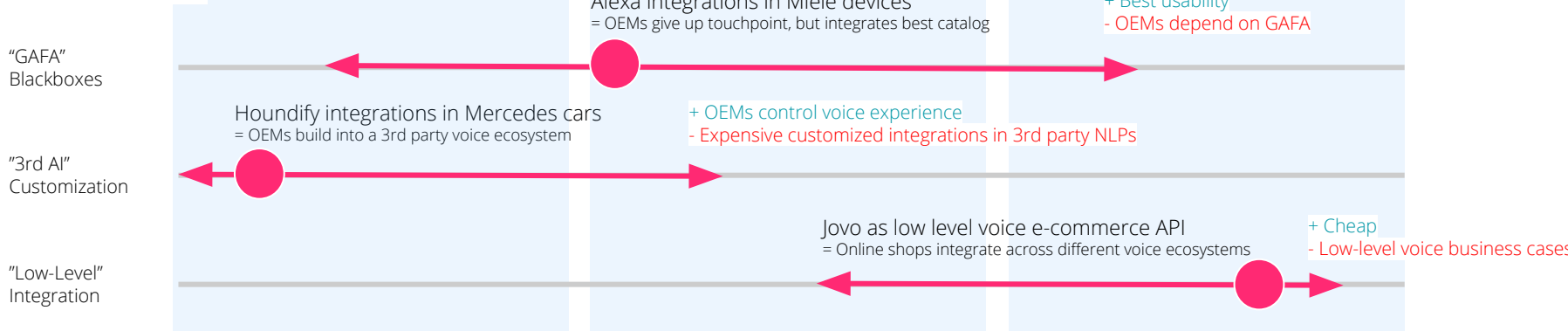
Current siloed ecosystems disappoint



AI, I need a ride to the Airport!



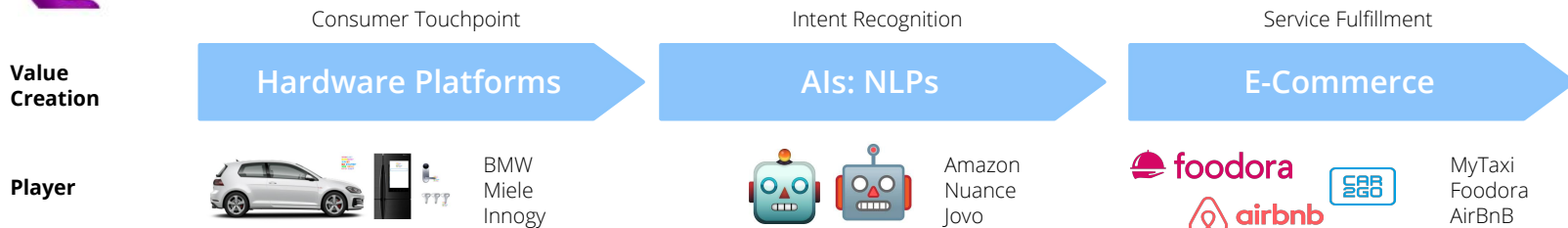
Who controls which part of the value creation chain?



whoelse.ai simplifies NLP APIs



AI, I need a ride to the Airport!



WHOELSE?

Taxi
who else?

Product: Universal Grammar as Protocol for NLPs

DIN ISO

Enabler: NLP API Interoperability Standard Initiatives

Innovation: A **simplified protocol** to encode spoken intents

Mindmeld



Rasa



Fraunhofer



Houndify



Watson



Mycroft



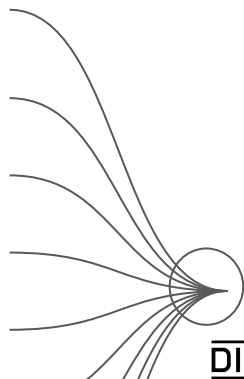
Omnibot



Houndify



Bosch



DIN

WHO ELSE?

NLP API Interoperability Standards

Speech to Text, Recognized Intent, Content, Metadata

ACCOUNTANT who else?	CYCLE who else?	HOSTEL who else?	RENOVATION who else?
APARTMENT who else?	CYCLE COURIER who else?	HOTEL who else?	RENTALS who else?
ASSISTANT who else?	CYCLES SHOP who else?	HOUSE who else?	REPAIRSHOP who else?
ASTRONOMY who else?	DATE who else?	INSURANCE who else?	RIDESHARE who else?
BABYSITTER who else?	DELIVERY who else?	JANITOR who else?	SALE who else?
BAND who else?	DELIVERY who else?	JOB XYZ who else?	SCHOOL who else?
BANK who else?	DOCTOR who else?	KINDERGARTEN who else?	SCHOOL who else?
BARBEER who else?	DOG-SITTING who else?	LAUNDRY who else?	SCOOTER who else?
BARBEER who else?	DONATIONS who else?	LAWYER who else?	SCOUTS who else?
BOARD GAME who else?	E-SCOOTER who else?	LEGO who else?	SECURITY who else?
CLUB who else?	EVENT who else?	LOAN who else?	SEX who else?
FOOD who else?	FASTFOOD who else?	MINI BUS who else?	SKILL XYZ who else?
FLAT-SHARE who else?	FLAT-SHARE who else?	MOVE who else?	SPORTS who else?
CAR CHARGING who else?	FLEA-MARKET who else?	MUSIC who else?	STARTUP who else?
CHILD CARE who else?	FOOD-SHARING who else?	NOTARY who else?	STREET who else?
CINEMA who else?	FOUND&LOST who else?	NURSE who else?	TAILOR who else?
CITY who else?	GARAGE who else?	OPERA who else?	TAXI who else?
CLEANER who else?	GARDENING who else?	PAINTER who else?	THEATRE who else?
CLIMATE CHANGE who else?	GAS STATION who else?	PHYSICIAN who else?	TIMBERMAN who else?
CLOTHING SWOP who else?	GAY who else?	PHYSICIAN PAIR who else?	TOYS who else?
CONCERT who else?	GYM who else?	PHYSICIAN PAIR who else?	TRAINER who else?
COPYSHOP who else?	HACKERS who else?	PHYSICIAN PAIR who else?	TRAVELLING who else?
COUSINE who else?	HAIRCUT who else?	PHYSICIAN PAIR who else?	UNIVERSITY who else?
COWORKING who else?	HELPDESK who else?	REFUGEE who else?	WORKERS UNION who else?
CRAFTSMAN who else?	HOBBY who else?	RELIGION who else?	WORKSHOP who else?

Universal Language Namespace

A catalog in a simplified language to store spoken intents in a harmonized format

Examples

whoelse.ai

Unified grammar between human & machine intelligence

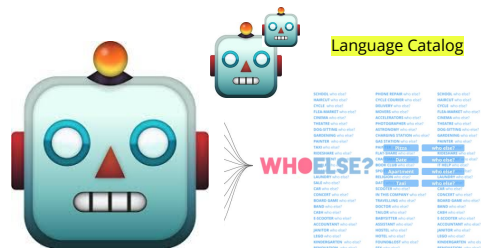


Natural Language Input

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

WHO ELSE?

Protocol Convention

Intent Encoding

Metadata

Cab (or) Driver

in 20 Minutes

Tegel Airport

2 People

who else?

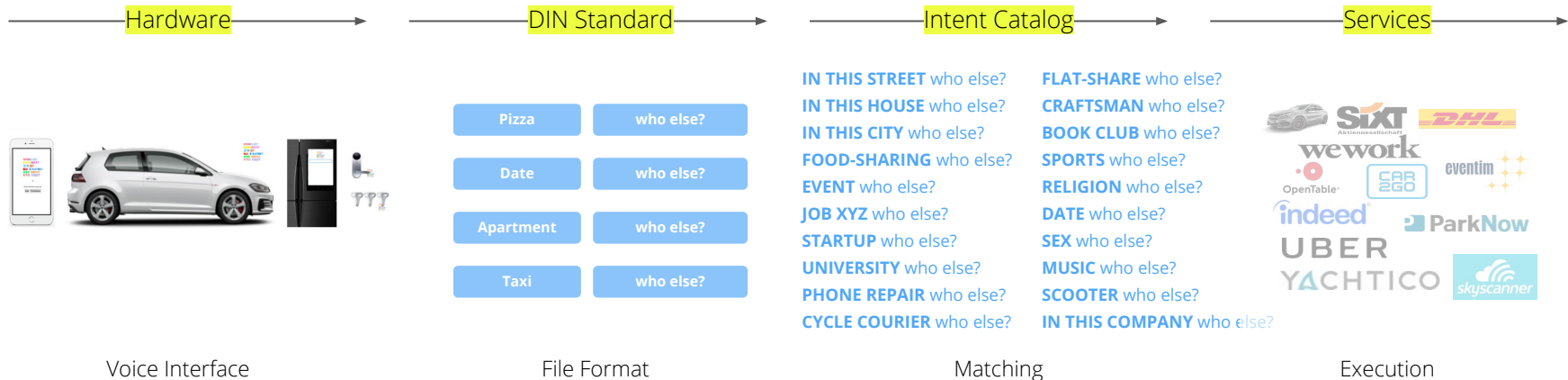
WHO ELSE?

Our APIs enable NLPs to store natural language in a standardized format

Language API: NLPs request universal grammar encoding to store intents in a standardized format

Namespace API: OEMs can trade intents received from users by NLP integrations

Solution: Standardized protocol for intents



Dream: fulfilled 😎

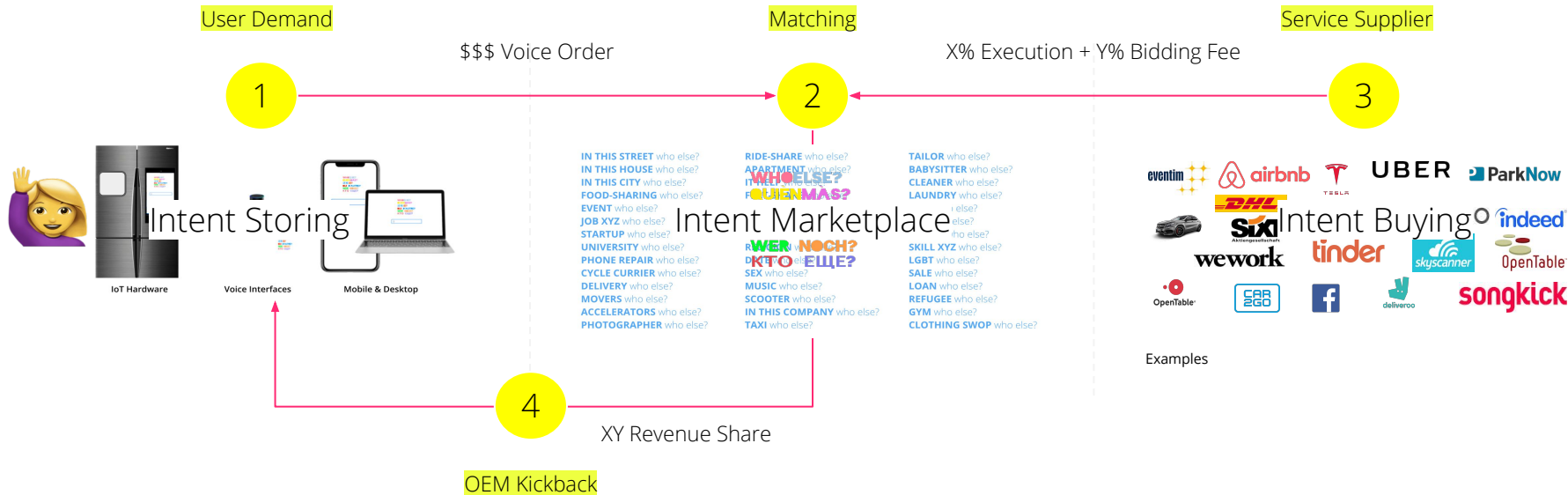


AI, I need a ride to the Airport!

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



Monetization: Marketplaces to trade speech-based requests



Business model: Lead generation from voice commands

Food Delivery

Parcel Service

Mobility

User Request

1

Hey AI,
I want to order a cheese pizza!

Assistant, where is the next
package box?

Hey device, I need to get from
here to Munich

NLP Encoding

2

Pizza Delivery who else?

Logistics Delivery Box who else?

Ride Munich who else?

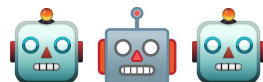
Service Matching

3

Rev. Share \$\$



R+D advantage: Faster localization of voice technologies



1

IoT Interface

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

2

NLP Selection

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

3

Namespace Integrations

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

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

1. Example: Personalized voice assistants for every user

OEMs integrate services by affiliate partners from the intent namespace

Picture: Telekom Magazine

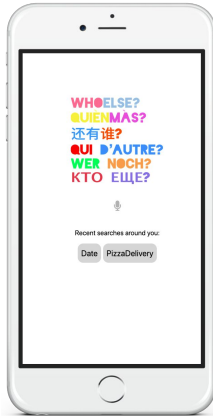
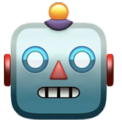


Hey speaker, I want to book a flight to Paris

Domestic Flight

who else?

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



Order Book: Users can manage voice search requests

Preferences: Users assign preferences for voice requests

2. Example: Voice interfaces in public places

OEMs integrate voice features in public infrastructures

Picture: Vinci Energies Smart Street Pole

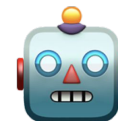


Hey lamppost, I need a parking ticket for the campus

Parking Ticket

who else?

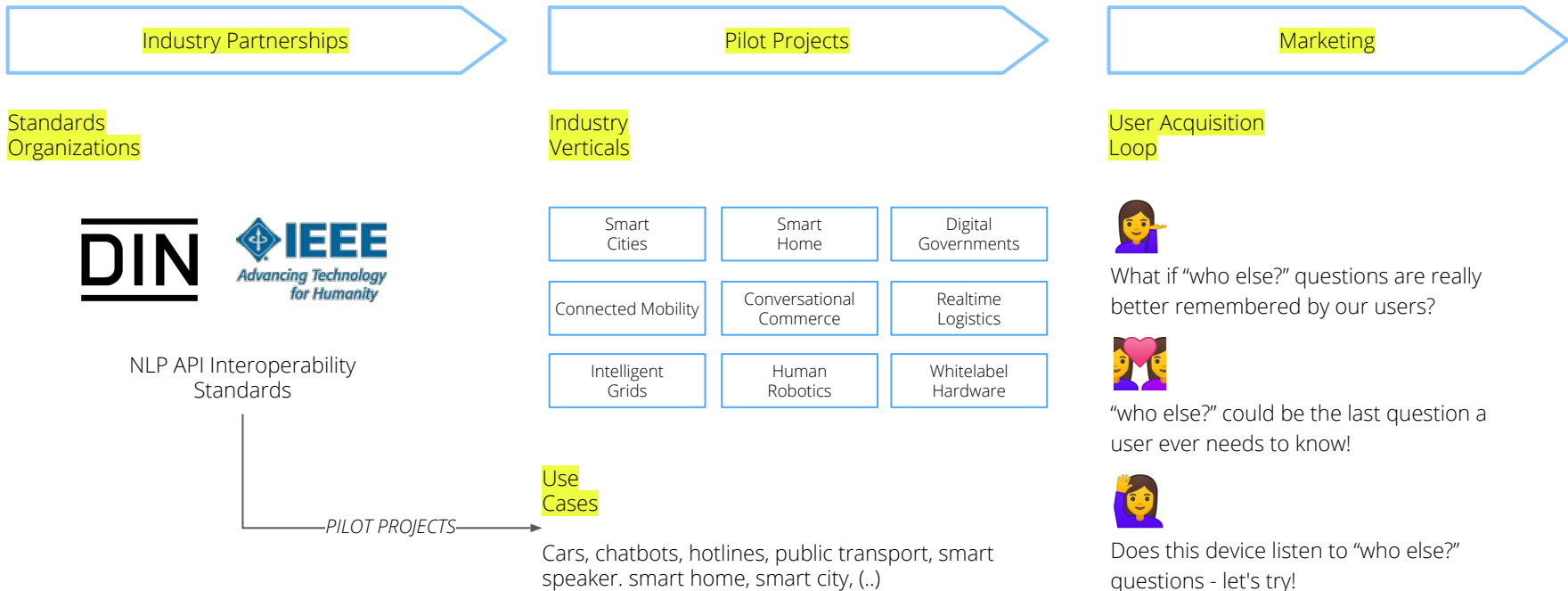
Open your who else? app to pay



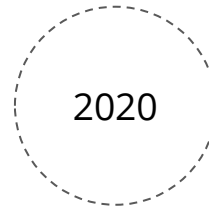
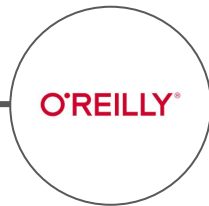
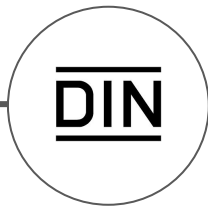
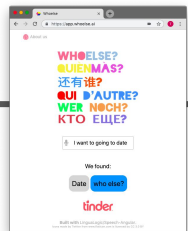
— **Voice Profiles:** Sign-in with your biometric fingerprint

— **Accounts:** Payment wallet for voice-activated services

Market entry: B2B partnerships as growth driver



Traction: AAA+ partners, pilots, and media attention



09-12/2018

Namespace
Prototype

50+ services
integrated

app.whoelse.ai

01/2019

DIN
Commission

12+ confirmed partners
25+ in update loop

din.de

03/2019

Angel
Supporter

TLD entrepreneurs
.whoelse.ai in 2021

dotzon.com

10/2019

O'Reilly AI
Europe

Announcement of
protocol initiatives

oreilly.whoelse.ai

11/2019

whoelse.ai x
Telekom

Winter 19 intake of
Hub:raum (AI Track)

hub4um.whoelse.ai

2020

OEM Partnerships

Goal 1: Launch of consumer product
integrations: Smart speaker, cars..

Goal 2: Go live of developer API,
integration of 10+ NLP APIs

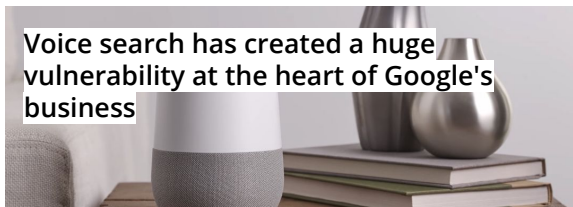
Goal 3: Launch of smart city pilots:
Public voice interfaces, visual analytics..

Seed Round: \$/€ 1.5m

Exit: Companies with voice business models risks

Scenario 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](#)

Scenario 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](#)

Scenario 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](#)

Assets: Intent revenues, voice interface brand, OEM partner consortium, marketplace technology, team

Secret sauce: Language hard-wired in humans



Old: Users ask for features and install brands as apps

WHOELSE?
QUIENMÁS?
还有谁?
QUI D'AUTRE?
WER NOCH?
KTO EЩЕ?

Taxi who else?
Car Charging who else?
Rideshare who else?

New: The only question a user ever needs to know

“who else?” questions are a new proof of Chomsky's Universal Grammar. As language hard-wired in the human thinking we are better suited than any other name to brand AIs.

Read more: whitepaper.whoelse.ai

Learn more: x O'Reilly AI Europe 2019

O'REILLY Artificial Intelligence Conference

14-17 Oct 2019
London, UK
oreillyai.com
#OReillyAI

Idea: A new standard to encode intent

Mindmeld
Rasa
Fraunhofer
Houndify
Watson
Mycroft
Omnibot
Houndify
Bosch

WHO ELSE?

Integratable API
Search
Speech-to-Text
Navigation/Intent
Context
History

A language catalog to store intents in a standardized format

Contents: **NLP Bias**
Why will there always be multiple NLP standards?

Universal Grammar
Why is "who else?" a better name for voice interfaces?

Slides: [AlconEU.whoelse.ai](https://alconeu.whoelse.ai)

WHOELSE?



Make AIs talk to each other!

Universal Grammar for Conversational AIs

Additional information are available at:

<http://whoelse.ai/dataroom>

Password:

whoelse

Tobias Martens tm@whoelse.ai

Mobile: +49 159 0107 9491

whoelse UG @ Hubraum

Winterfeldstr. 21, 10781 Berlin