

FAKTION

LISA

**Language Intelligence Services
for Automation**

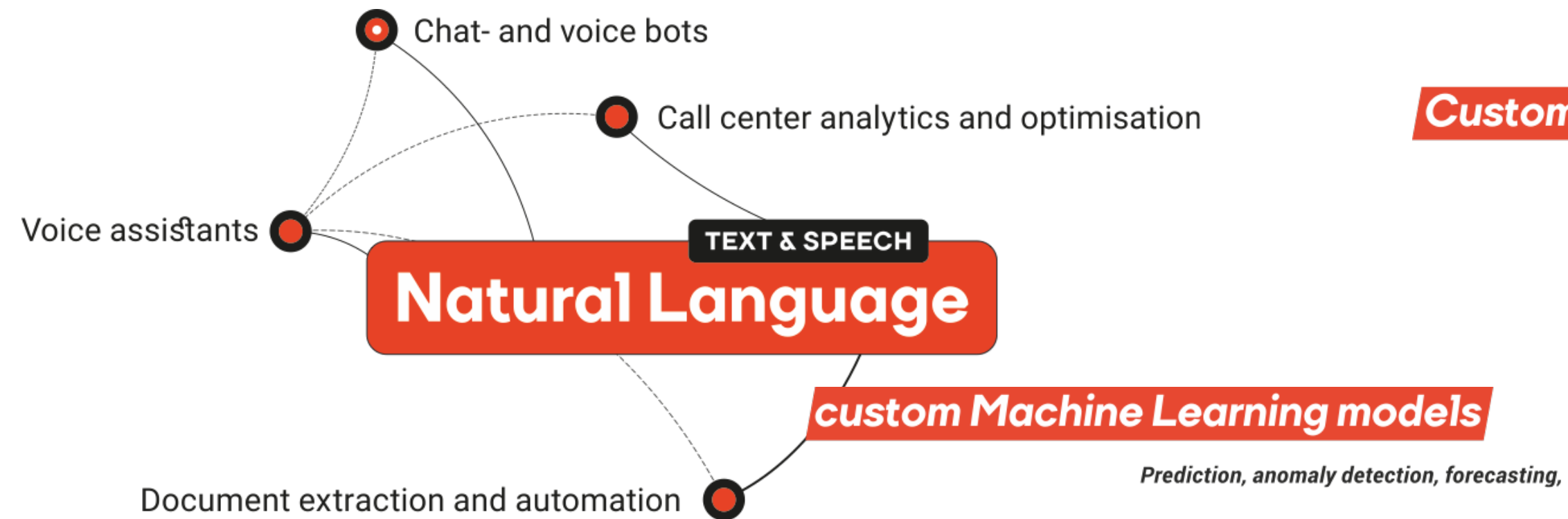


FAKTION
June, 2019

**WE BUILD
DEEP LEARNING,
MACHINE LEARNING AND
ARTIFICIAL INTELLIGENCE
SOLUTIONS**

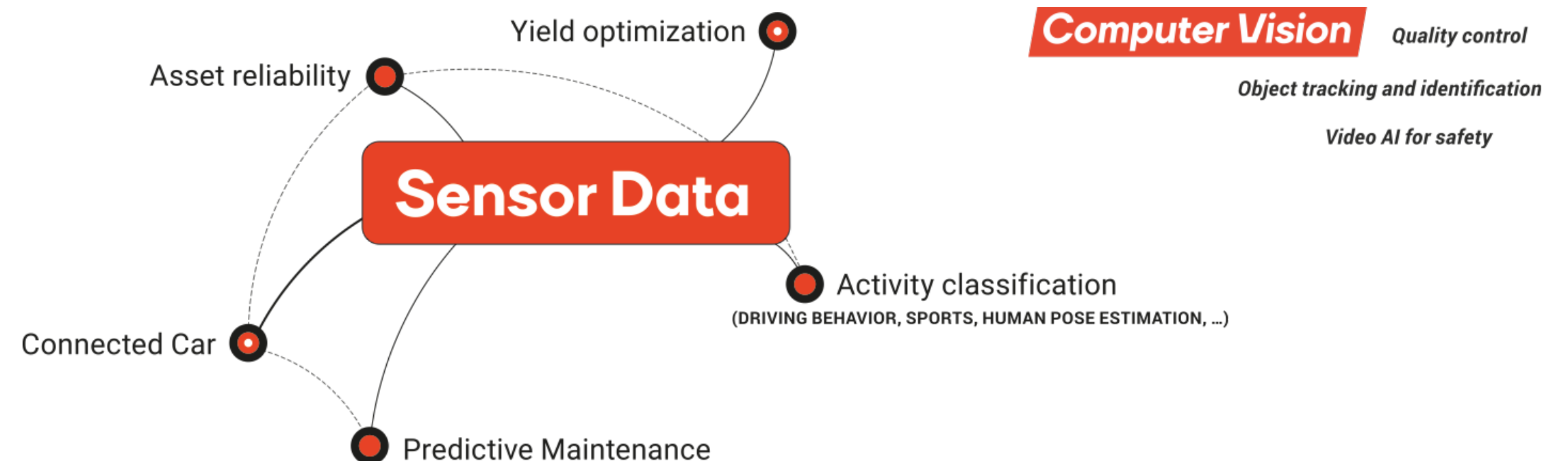
Artificial Intelligence is confusing. We know. Truth is, there is money to be made by selling hype. Contact us when you need a partner that delivers results instead.

FAKTION — “we put thought in everything”



Faktion is an applied AI service provider. We build custom software applications with Machine and Deep Learning technology.

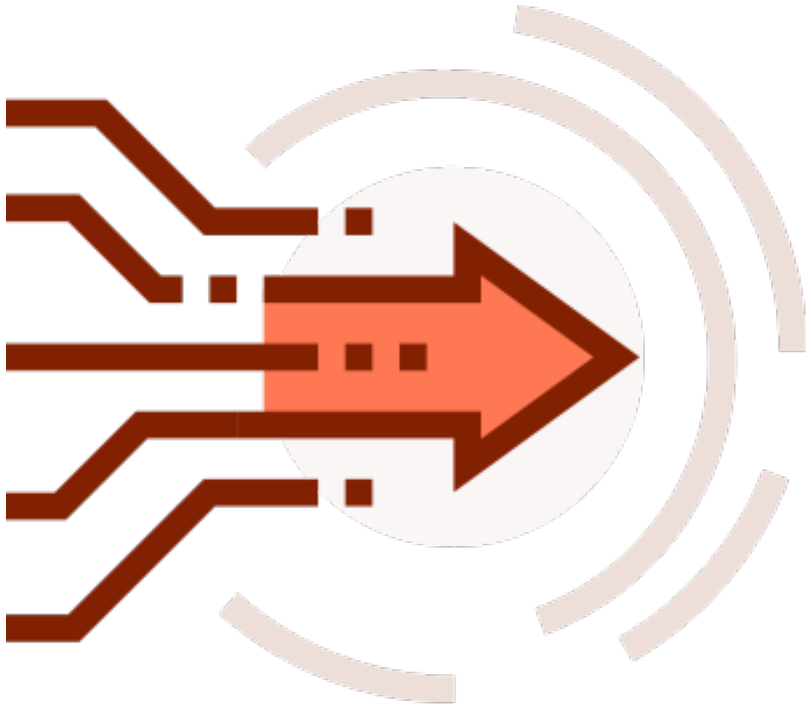
Due to the strong extent of our experience, we share that by means of strategic consulting.





OUR BELIEF

At Faktion, we believe that both the content and context of spoken, handwritten and typed language can be perfectly understood by intelligent algorithms. This belief comes from years of research in the field of artificial intelligence, deep learning and computational linguistics.



OUR MISSION

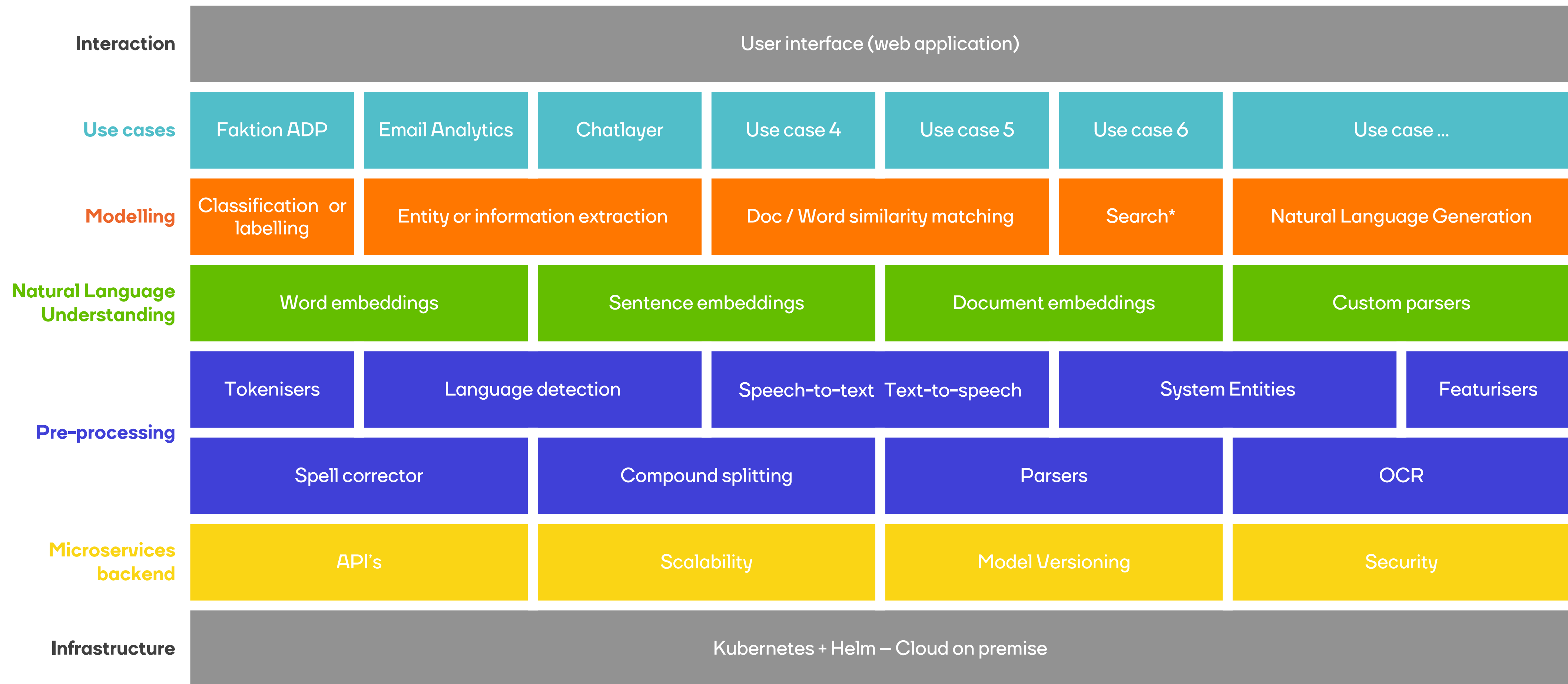
Our NLU solutions support intelligent process automation for the financial industry as we build an artificial intelligence model that is capable of interpreting, enriching, and understanding natural language.

HOW

**YOU CAN GET
STARTED**

Faktion LISA framework

Flexible and reusable components for NLP in Flemish, French, German, English, Italian and Spanish



Faktion LISA Management Interface

MANAGE YOUR NLP APPLICATIONS VIA THE FAKTION NLP MANAGEMENT UI

☰

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⬆️

📄

Documents

Identifier Name Type Status Created Date Range

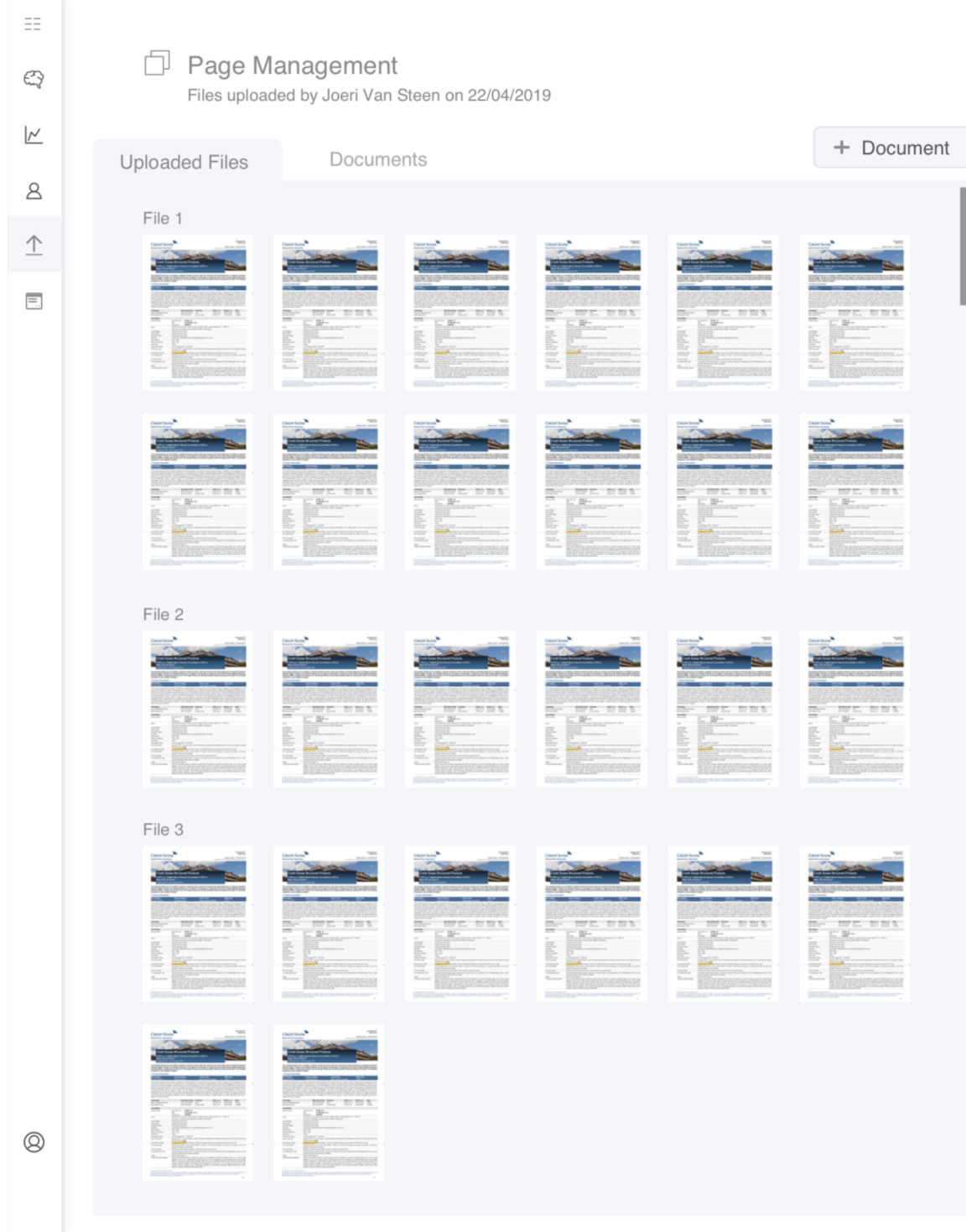
🔍 Search identifier 🔍 Search name 📄 Select types 📄 Select statuses 📄 Select Date Range

Identifier ↕	Name ↕	Type ↕	Status ↕	# files ↕	# revisits ↕	Created ↕	
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123456	document name	Bound	DONE	2	2	22/04/2018	✎️ 🔄 🗑️
123456	document name	Bound	DONE	10	1	22/04/2018	✎️ 🔄 🗑️
123456	document name	Equity	DONE	1	1	22/04/2018	✎️ 🔄 🗑️
123456	document name	Equity	DONE	3	3	22/04/2018	✎️ 🔄 🗑️
123456	document name	Equity	DONE	7	2	22/04/2018	✎️ 🔄 🗑️
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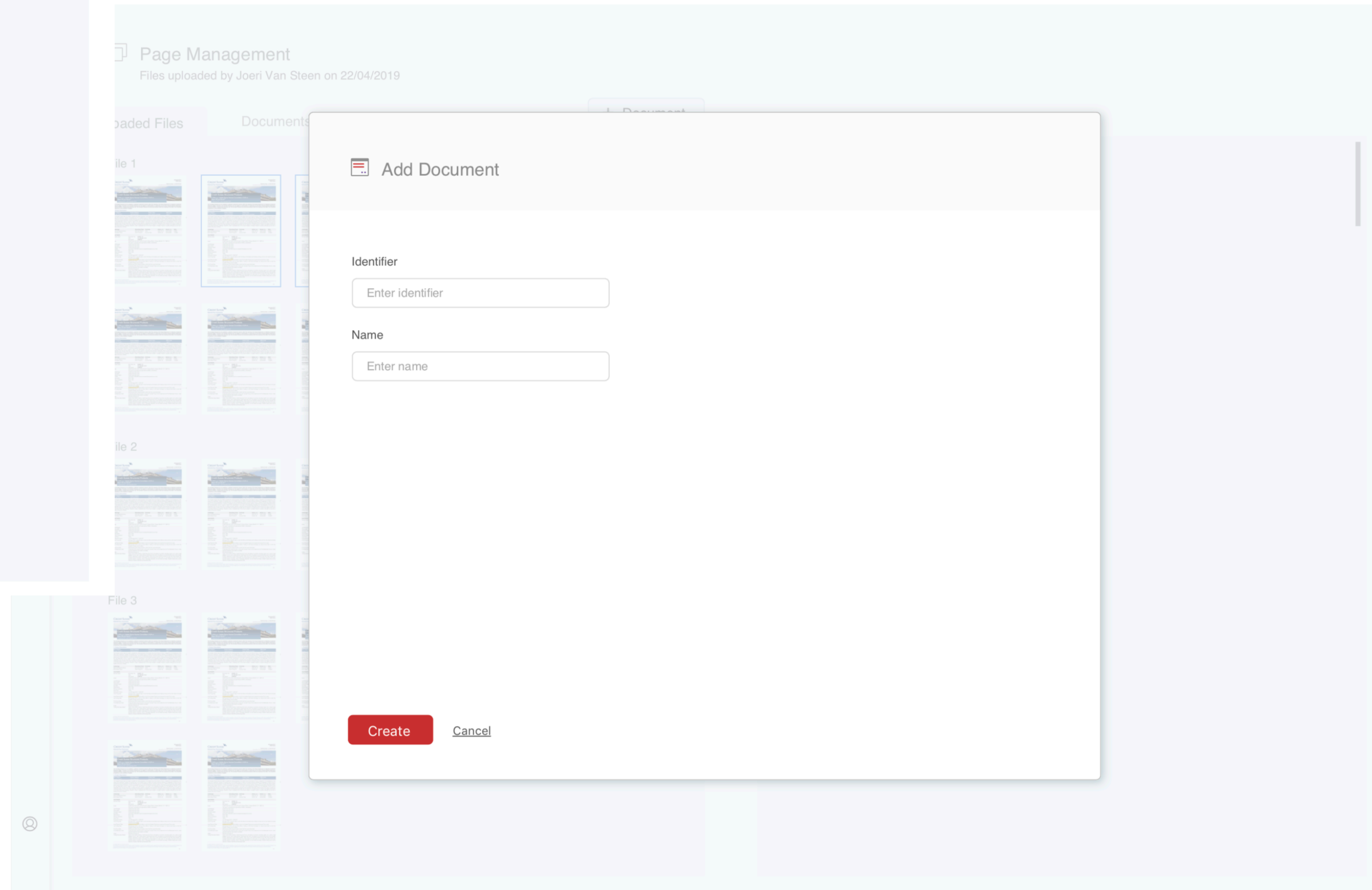
1-12 of 102 documents < >

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Faktion LISA Management Interface



Create a first document and drag files



Faktion LISA Management Interface

DATA LABELLING
MADE EASY.

“U.S. Government Securities Business Day” means:

Any day except for a Saturday, Sunday or a day on which The Securities Industry and Financial Markets Association (formerly The Bond Market Association) recommends that the fixed income departments of its members be closed for the entire day for purposes of trading in U.S. government securities.

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(b) Discontinuation or Revision of the Index

(i) If **MMD** discontinues publication of the Index and MMD or another entity publishes a successor or substitute index that the Calculation Agent determines, in its sole discretion, to be comparable to the discontinued Index (such index, a “Successor Index”), then the BMA Rate for each BMA Observation Date occurring after such discontinuance will be determined by reference to the level of such Successor Index. If a Successor Index is selected, the Successor Index will be substituted for the Index for all purposes. Upon any selection by the Calculation Agent of a Successor Index, the Calculation Agent will cause written notice thereof to be promptly furnished to the Issuer and to the trustee, which will provide notice to the holders of the notes.

(ii) If MMD discontinues publication of the Index and the Calculation Agent determines, in its sole discretion, that no Successor Index is available, then following such discontinuance until the earlier of (a) the Maturity Date or (b) the date on which the **Calculation Agent determines that a Successor Index is available**, the Calculation Agent will determine the BMA Rate for each BMA Observation Date occurring after such discontinuance in accordance with the procedures for and method of calculating the Index last in effect prior to such discontinuance.

(iii) If the BMA Rate for any BMA Observation Date is subsequently revised or amended after its publication, such revision or amendment will not be effective for purposes of any calculation with respect to the notes, except in the event of manifest error (as determined by the Calculation Agent in its sole discretion).

Todo (5)

- Coupon type
- Coupon frequency
- Interest commencement date
- Coupon type
- Interest rate

Single Value (2)

Entity	Value	Parsed
Fixed cash amount	500000	
Day count fraction	twenty	20

Multi Value (1)

Entity	Value	Parsed
Interest payment date	2018-06-08 2018-09-08 2018-12-08 2018-01-08	quarterly

Faktion LISA Management Interface

DATA LABELLING
MADE EASY.

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Todo (5)

- Coupon type
- Coupon frequency
- Coupon type
- Interest commencement date
- Interest rate

Labelled Data (3) + Group

Single Value (2)

Entity	Value	Parsed	
Fixed cash amount	500000		<input type="checkbox"/> ↻ ✎ 🗑
Day count fraction	twenty	20	<input type="checkbox"/> ↻ ✎ 🗑

Multi Value (1)

Entity	Value	Parsed	
Interest payment date	2018-06-08 ↻ 2018-09-08 ↻ 2018-12-08 ↻ 2018-01-08 ↻	quarterly	✎ 🗑

Predicted Data (2)

Single Value (2)

Entity	Value	Parsed	
Fixed cash amount	500000		↻ ✎ 🗑
Day count fraction	twenty	20	↻ ✎ 🗑

Multi Value (0)

Faktion LISA

Setting the benchmark for Natural Language Processing

NLP models capture and classify the meaning of the transcripts. These deep learning-based AI models are used to tag, label and extract information and entities from unstructured text.

FAKTION LISA

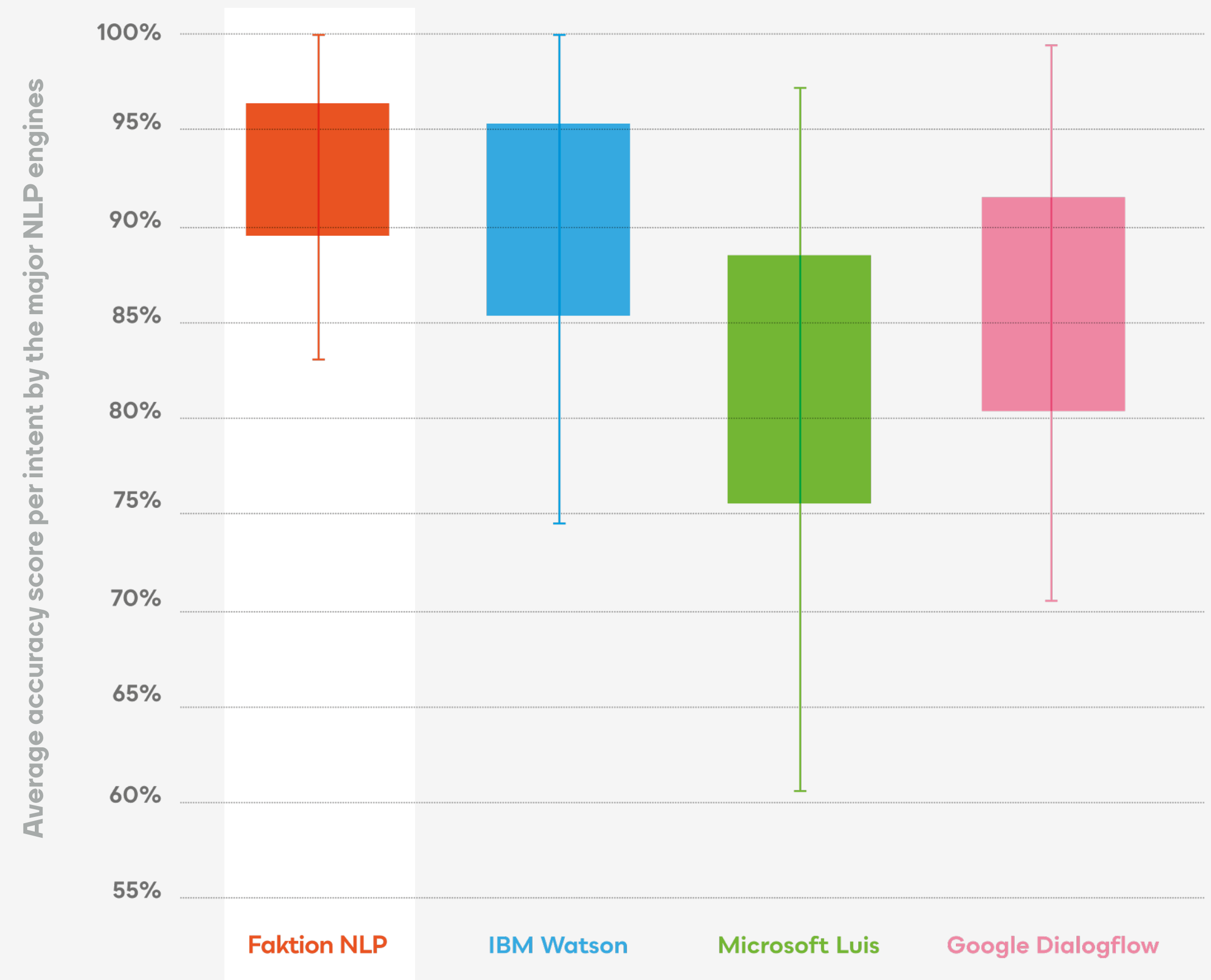
Run on premise or in a private cloud. There is no need to send your data to external parties in the US. Call center data is sensitive, so inherent GDPR compliance is necessary.

Best-in-class accuracy for Flemish, French, English and German. Other additional languages on request.

Accuracy is all that matters.

A team of 9 developers – of which 6 PhD's in a relevant field – constantly improve the NLP.

Faktion conducts continuous research into newer and better techniques in NLP and in this way implements proven innovations in the framework.



Other Notable Features

SYSTEM ENTITIES

- › E-mail, Ordinal, Phone number, Date, Time, URL, Belgian style address, Numerals

INCREMENTAL RE-TRAIN

- › Ensures quick training times

SELF-ADAPTING TO INPUT LENGTH

- › short < 5 words
- › sentences 5 - 30 words
- › paragraphs 30 - 200 words
- › documents > 200 words

SENTIMENT ANALYSIS

- › Five class or valence based

CUSTOM VOCABULARY

- › Smart and automatic treatment

ANALYTICS

- › confusion matrix
- › training data diversity metrics
under development

MULTI-TENANCY ENABLED

Continuous Research and Improvement – NLU Roadmap



- » Training data analytics
- » Active learning interface
- » PDF document labelling interface
- » Model management

- » Training data generation
- » Python and Node.js SDK
- » Self-service access
- » Integration with crowd-sourcing platform
- » Additional languages
- » OCR for handwritten text
- » Workflow management
- » Hybrid rule management

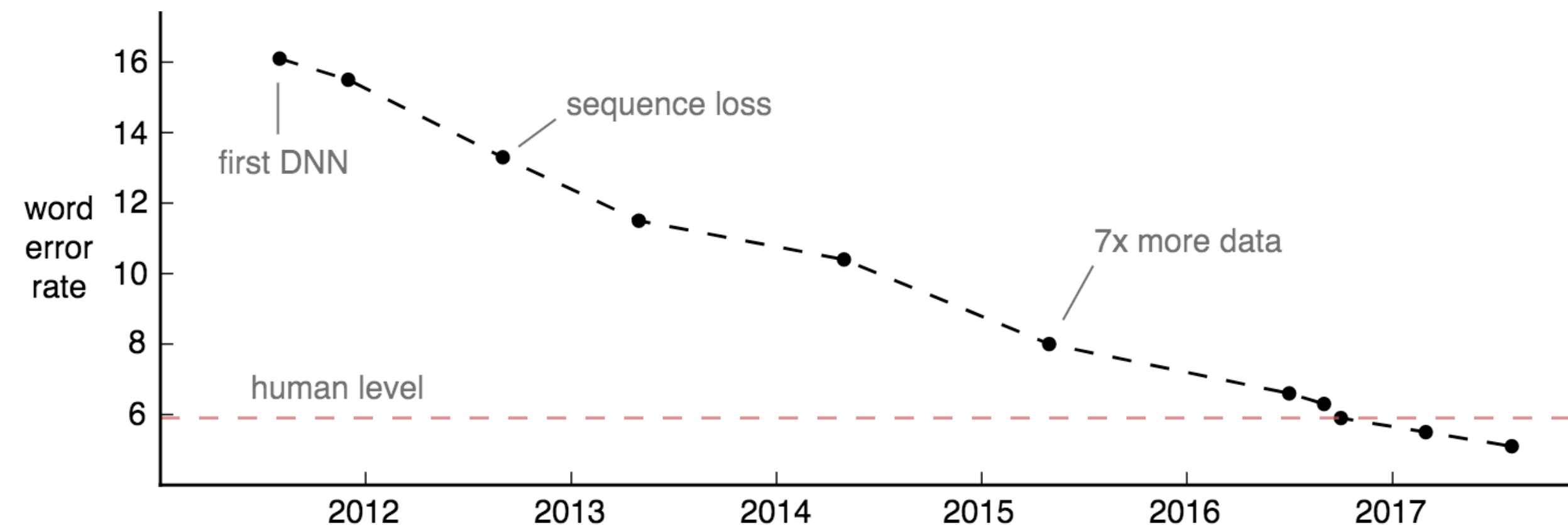
- » Multi-lingual models
- » Demographics and psychometrics
- » Search
- » Monitoring dashboard
- » Handwriting support
- » RPA integration

- » Goal-seeking natural language generation
- » Encrypted learning
- » Standard plugins for e-mail, social media
- » Mixed-structure extraction models

Faktion speech recogniser

Voice to text models

Speech recognition – automatic transcription – has recently surpassed human levels in terms of both accuracy and speed. This makes it possible to transcribe all your conversations.



FAKTION SPEECH RECOGNIZER

Run on premise or in a private cloud. There is no need to send your data to external parties in the US. Currently ready to use for Flemish and English.

PRIVACY BY DESIGN

Call center data is sensitive, so inherent GDPR compliance is necessary.

Data scrubbers are used to automatically delete sensitive information like names, phone numbers, account numbers, credit card numbers, ... Personal data is never stored or even transcribed unless there is a big need

Adding value, above expectations

Streamlining the flow of information from scattered/unorganised to a structured model that provides crisp-clear insights

Gathering data from different types of sources

Processing data, in accordance to the sourcetype and always with a remarkable level of understanding

Analysing (massive amounts of) data fast and reliable; often beyond human ability.

Providing big overview, deep insight and precise prediction on business (-processes, -decisions, -markets, -trends, -perceptions, ...)

Digital written text

emails, social media messages, mobile texting, online reports, ...

Scanned documents

fax, prints, pictures, ...

Audio

recordings, live streams, phonecalls, smart speaker input, ...

OCR

Speech to text

Audio Analysis

NLP driven analytics

Entity and information extraction	Automated processing and replies
Intent recognition	Quality control
Mood and sentiment profiling	Tagging, labeling, categorisation

Audio driven analytics

Lie and stress detection	Sales Coaching
Voice pattern profiling	

Business decisions / Company integrations

CRM	Information campaigns
Marketing material update	Dashboards

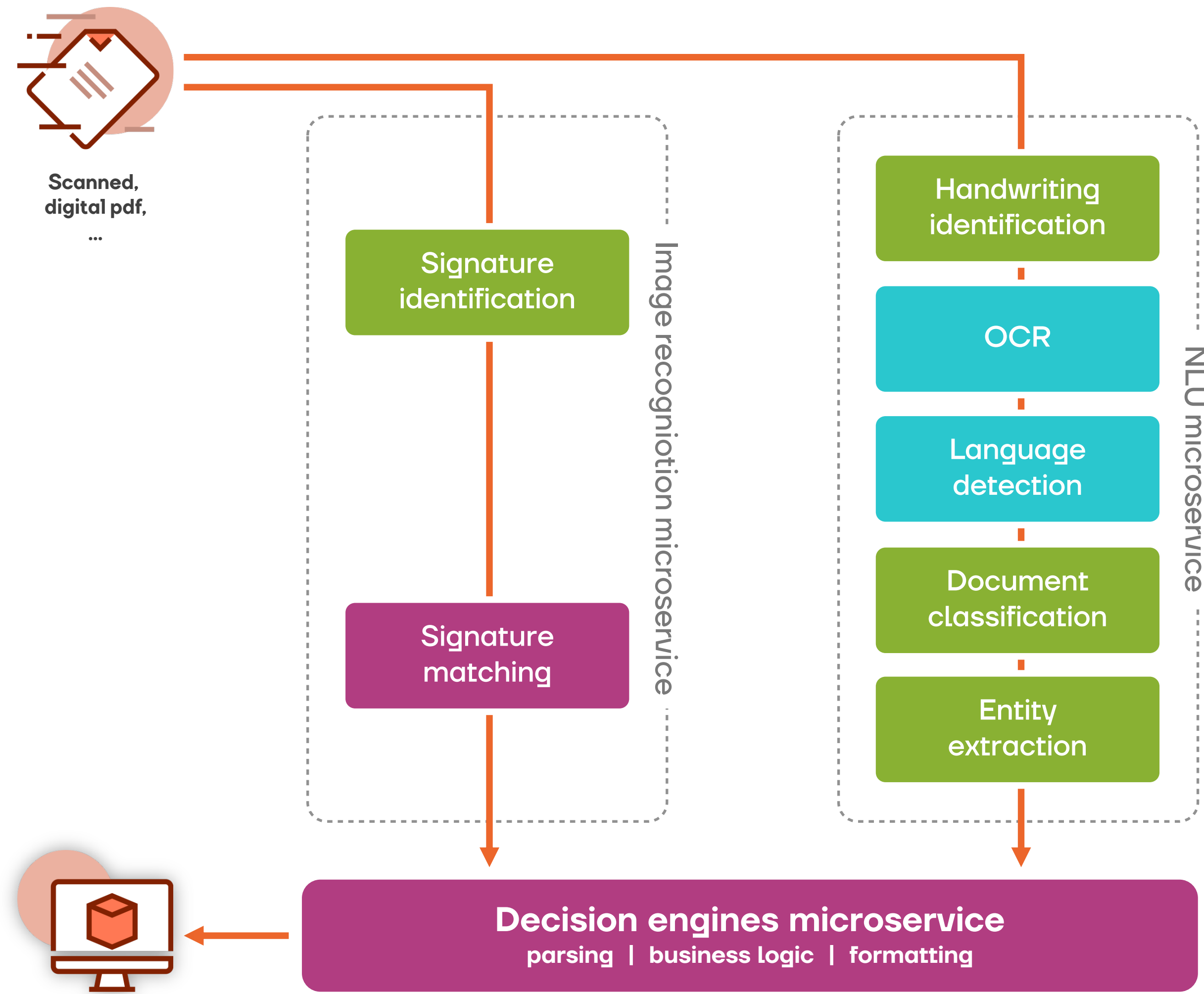
Data sources

Processing

Applications

Results

Automated document processing & info extraction



This block shows a screenshot of the OCR and Entity extraction interface. On the left, a document image is processed by OCR, showing a form with fields like 'aard', 'periode', 'opgesteld op', and 'munteenheid'. Below this is a table of 'BASISGEGEVENS VAN DE BEREKENINGEN' and a table of 'PRESTATIES EN BEDRAGEN'. On the right, the 'Entity extraction' interface shows two fields: 'Statute' with a dropdown menu set to 'arbeider' and 'Occupation' with a dropdown menu set to 'Heftruckchauffeur'. There are 'Approved' and 'Save changes' buttons, and a timestamp 'Automatically extracted on 9/9/2018 at 11:23'.

Application forms - Waiting on review

This block shows a screenshot of a dashboard for 'Application forms - Waiting on review'. It features a search bar and a 'Verification' button. Below are two application entries:

Customer	Application	Fields found	Confidence	Action
Customer 0123456	payslip application.pdf	26/32	93%	Open >
Customer 0123456	payslip application.pdf	32/32	98%	Open >

Robotic Process Automation vs Intelligent NLP

Many software providers promise “intelligent” solutions, but deliver only a basic level of automation – which you can hardly call smart

The main differences between two types of automated document processing solutions

RPA

Requires **structured input** that is based on templates

Changes in document formats or layouts require manual input to recognize because the robot’s **memorize the layout**

Static performance over time

INTELLIGENT NLP

Can handle **unstructured input** like text, e-mails, chat, documents, ...

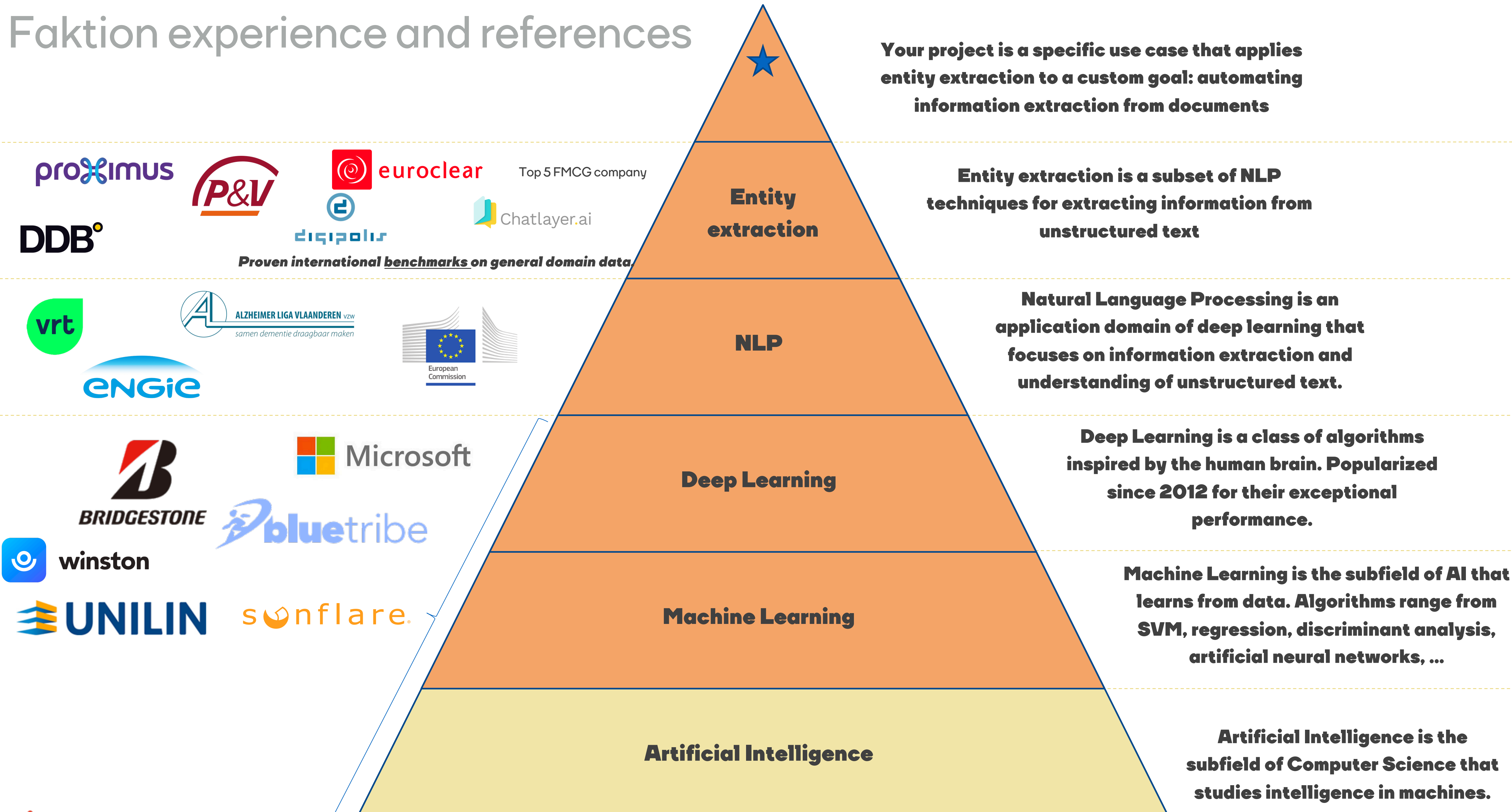
NLP **learns from context** and is flexible to input format changes because it interprets text and layout, not just memorizes it

Self learning models **improve** over time

CASES

WHAT WE'VE BEEN
DOING LATELY

Faktion experience and references



Use cases

- » Automatic routing of e-mails, possibility to automatically answer standard questions
- » Document processing and information structuring
- » Digital voice assistants
- » Creating and making of searchable knowledge databases
- » Smart chatbots
- » Call center analytics

Email processing

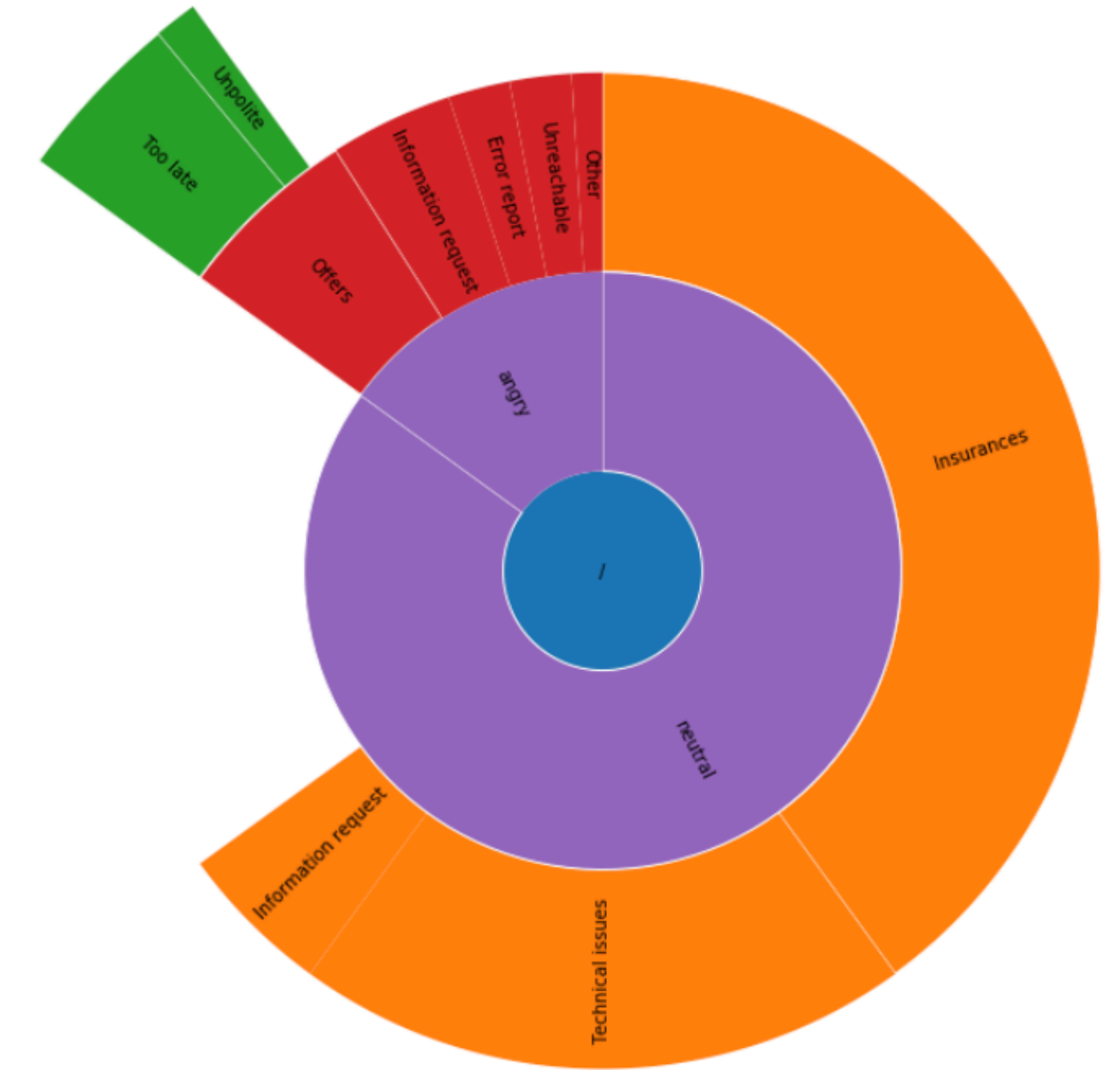
Advanced analytics and automation

Prioritising / Labeling

Automatic & intelligent reply (preparation)

Routing and distribution

Sentiment analysis



Extracting data in the lab

Optimizing the work of lab workers by automating the administrative processes

Our client noticed that a lot of technical data was missing. Laborants had to write the information down when they had finished the tests, which was an inconvenient procedure, prone to errors.

Thanks to Faktion's speech-to-text technology and an easy to use interface, we managed to make the process more accurate while saving time as well.

The screenshot shows the Faktion interface. At the top, there is a 'Processing...' status and a language dropdown set to 'American English'. The main area contains a table with the following columns: Ingredient #, Premix?, Barcode, Weight (g), pH, Comment, and Action. The first row has the value '1' in the 'Ingredient #' column and 'a' in the 'Premix?' column. Below the table, there are three input fields: 'Final pH' with a value of 'pH measurement', 'pH meter ID' with a value of 'pH meter ID', and 'Balance ID' with a value of 'Balance ID'. The Faktion logo is in the top right corner.

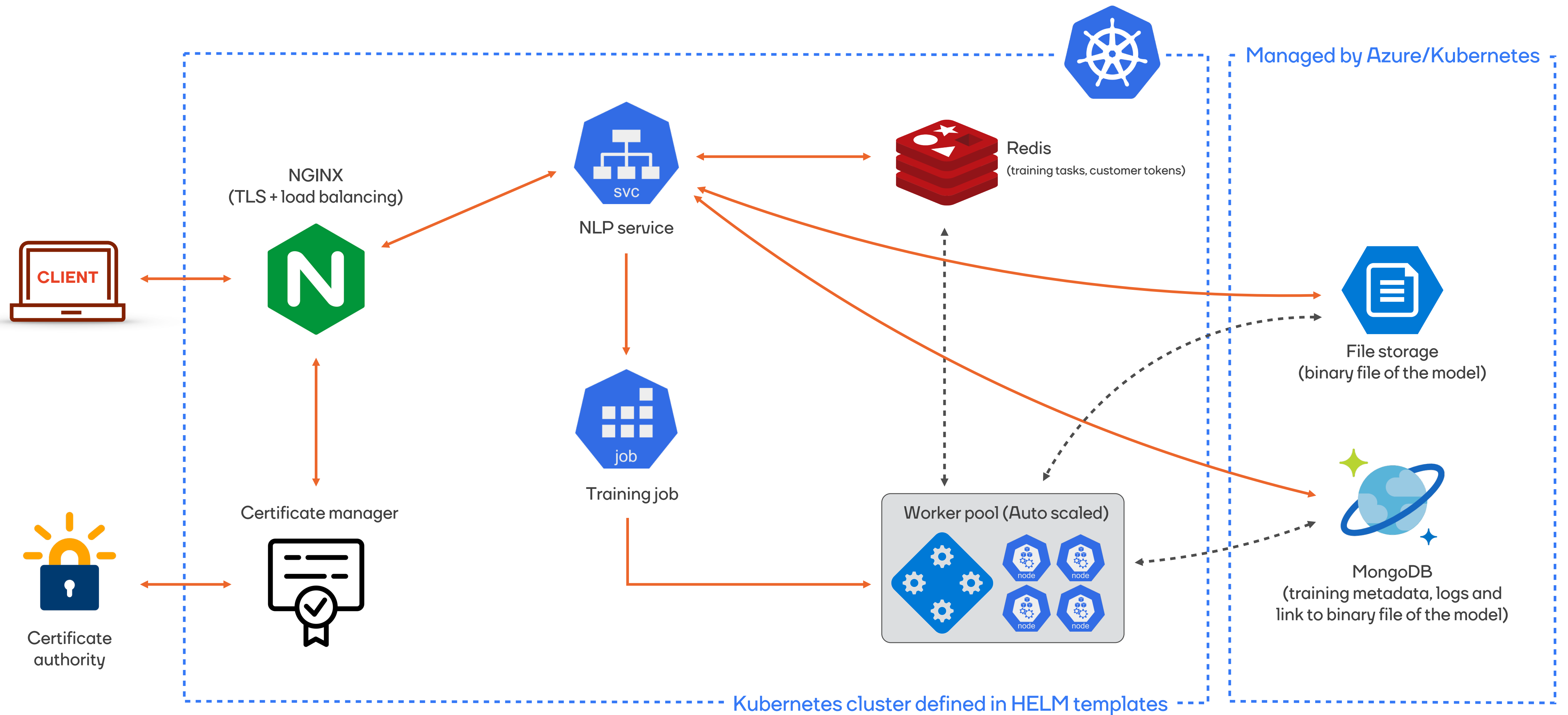
Ingredient #	Premix?	Barcode	Weight (g)	pH	Comment	Action
1	a					

To start and stop processing press button. To save results press button. To delete a row in the table press button.

To start a new row in the table simply say: **start ingredient 1** for instance. To switch and update a row in the table simply say: **update ingredient 1.**

To fill-in any cell in an active row simply say something like: **barcode 'C1234567'** or **weighed '10.23' grams** or **pH measurement '11.23'**. To fill-in input fields say: **pH meter ID is '12'** or **balance ID 'Z12345'** or **final measurement is '11.23'** or **final comment 'gobbledygook'**. The 'quoted' values will be imputed.

Architectural Overview – Azure



Faktion LISA

**A reusable AI framework
that can easily be
extended to dozens of
other use cases**

CONTACT US

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No more bullsh*t !

“Faktion was a great partner for us due to their willingness to think with us and educate us in Machine Learning, which was a new topic for us.

Communication was always open and warm, and they really are a trusted and long-term partner for us.”

Johan Van Langendonck

Strategic Lead Digital Strategy team at Bridgestone

