




# Artificial Intelligence in Procurement

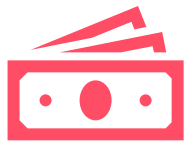
How will AI influence your future procurement processes?

Diya Nasereddin – Account Director

# Agenda

1. Facts & Figures about JAGGAER
2. What AI is and what it isn't
3. Deployment areas for AI in procurement
4. How JAGGAER uses AI
5. Developments resulting from the use of AI

	<b>2,000+ Customers</b>	<b>185 New Customers</b> in 2018
<b>\$ 250 Million</b> Revenue globally		<b>4 Million Suppliers</b> on the Platform
<b>3 Million Users</b> Across Industries, Manufacturing, Financial Services, CPG, Retail & Life Sciences		<b>20+ Years</b> Dedicated to Spend Management
<b>1,200+ Employees globally</b> Offices in North America, Europe, Middle East, Australia and Asia		<b>38 Patents</b> Dedicated to Spend



## Global Leader in End to End Spend Management Solutions



# A Recognized Leader



## JAGGAER's Vertical/Industry Strategy:

“Vendors that understand the buy-side processes, challenges, and requirements of your industry can bring more value than a generic vendor.” – Forrester

# The JAGGAER ONE Spend Management Platform



# Trusted Worldwide

**JAGGAER**

## Manufacturing



**Honeywell**

**SIEMENS**  
Ingenuity for life



## Distribution



**TRANSPLACE**

**GRAINGER**  
FOR THE ONES WHO GET IT DONE



**Con-way**

## Life Sciences

**ThermoFisher**  
SCIENTIFIC

**ECOLAB**



**AstraZeneca**

**Allscripts**

## Education



UNIVERSITY OF  
**Miami**



UNIVERSITY  
OF  
**CALIFORNIA**

## Public Sector



## Healthcare



**HCA**

## CPG

**P&G**

**Kraft Heinz**



## Retail

**STAPLES**

**Save**  
a lot  
food stores

Wendys  
Quality Supply Chain Co-op, Inc.  
**QSCC**



**Michaels**

# Agenda

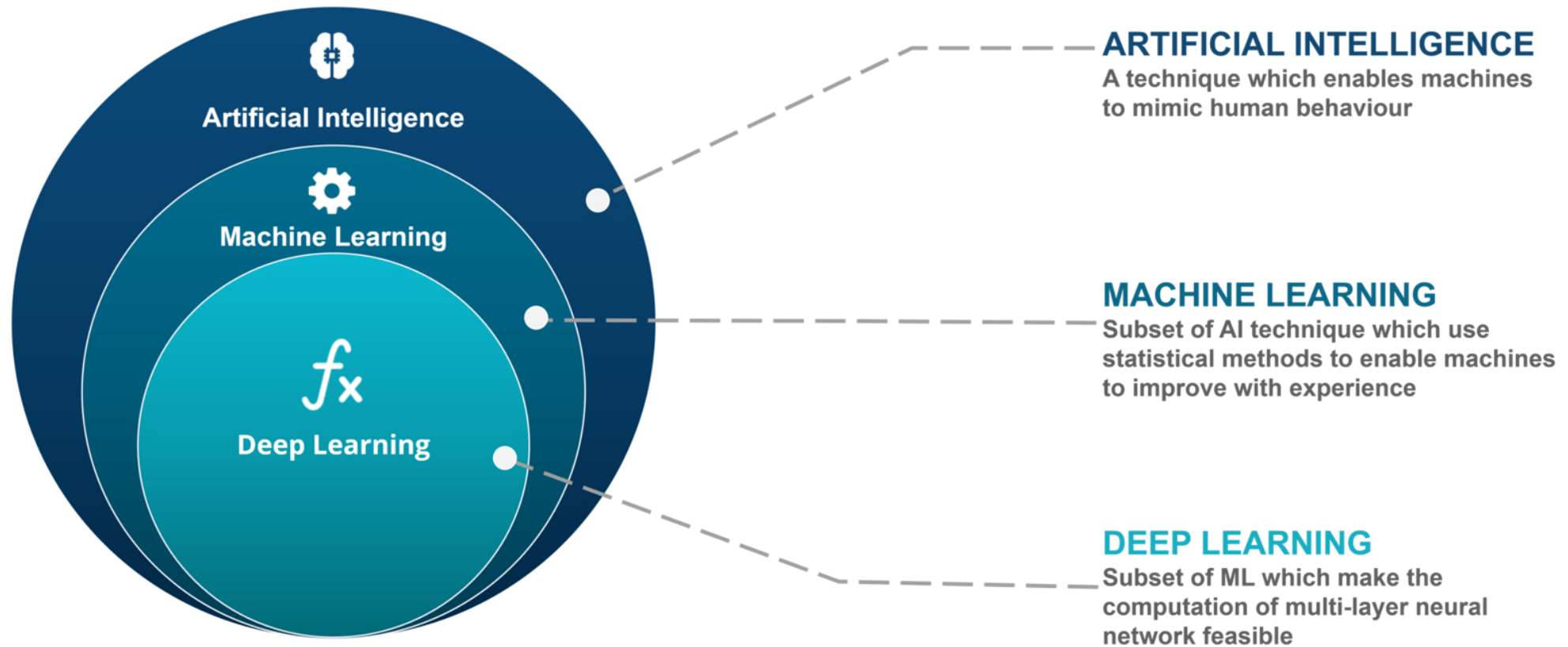
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## What AI is

- **Artificial intelligence (AI)**, sometimes called machine intelligence, is **intelligence demonstrated by machines**, in contrast to the natural intelligence displayed by humans.
- Colloquially, the term “artificial intelligence” is often used to describe **machines that mimic cognitive functions** that we associate with the human mind, such as learning and problem solving.

*(Source: Wikipedia)*

# AI / Machine Learning / Deep Learning



# Strong / Weak AI

## Strong AI:

- The aim of strong AI (also **super intelligence** or general AI) is to acquire or surpass **the same intellectual skills** as human beings.
- Strong AI does not just behave reactively, but also on its own initiative, intelligently and flexibly.
- As of today, it has not yet been possible to develop strong AI.

## Weak AI:

- Weak (or narrow) AI refers to systems that focus on **solving specific application problems**, based on the methods of mathematics and computer science, which are specially optimized for the relevant requirement.
- **All currently existing systems fall within the category of weak AI.**

There is no DATA  
like more DATA

# Examples of AI



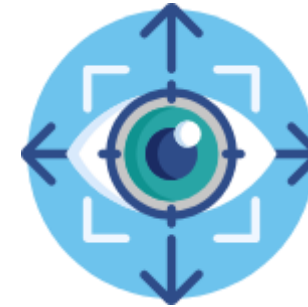
Recommendation systems

e.g.: Amazon, Spotify, Netflix



Natural language processing  
(NLP)

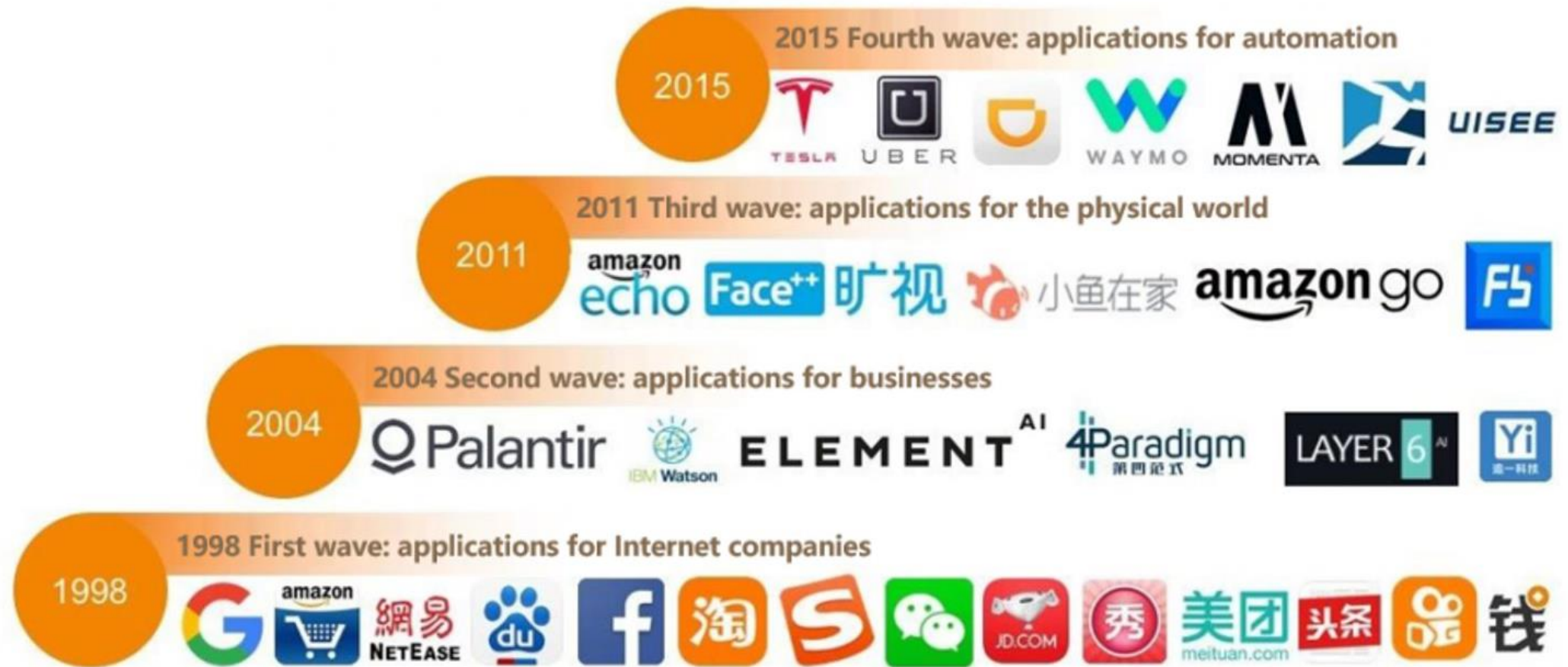
e.g.: Alexa, Siri, Cortana



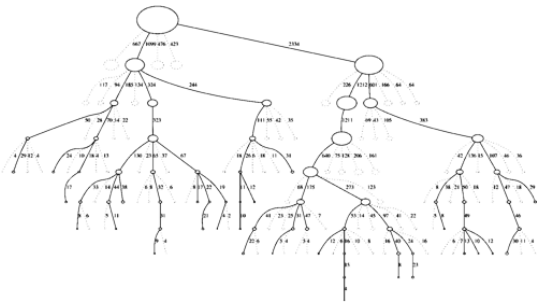
Computer vision and pattern  
recognition

e.g.: OCR, error recognition

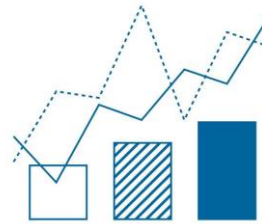
## 4 Waves of AI



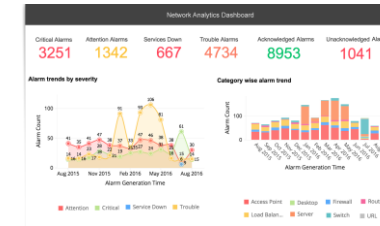
# Examples of what is not AI



Decision trees

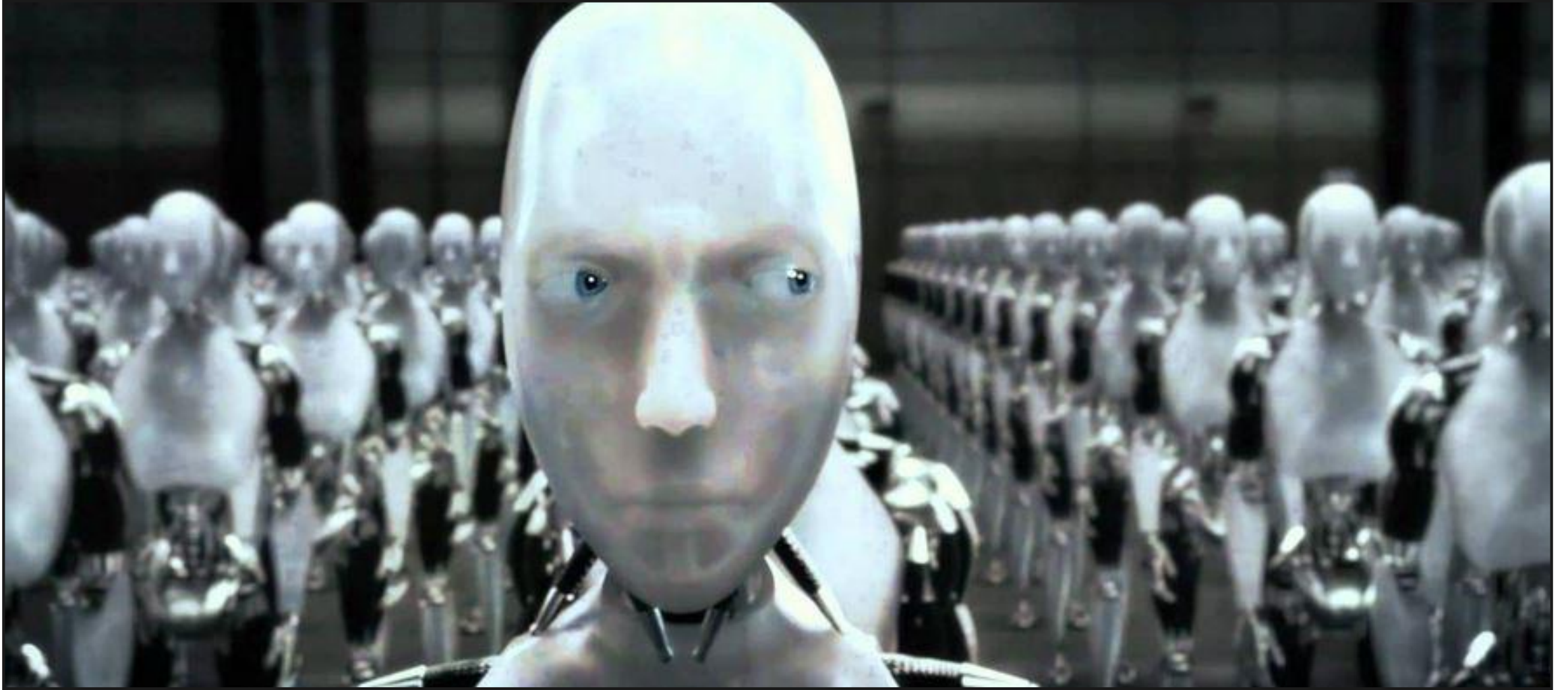


Statistics



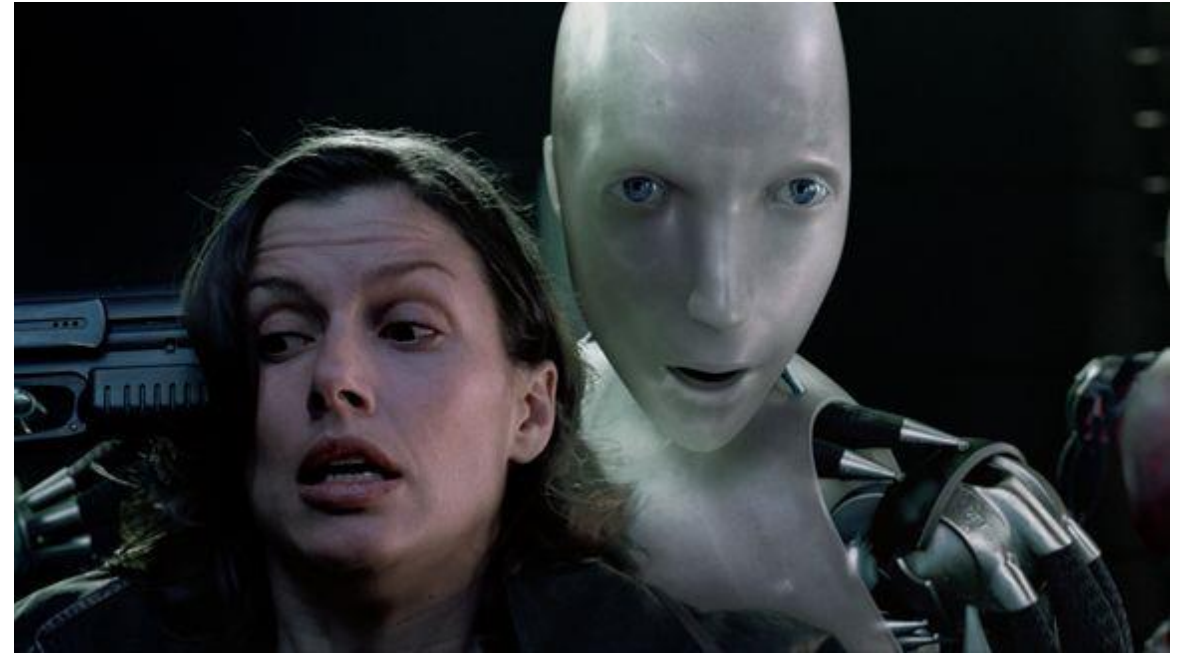
Data analytics

# Common (mis)conceptions when AI is spoken about



## Fears related to AI

- The movie industry presents AI in a negative way in blockbuster films
- Fear that jobs will be lost
- Fear of the unknown: technology is not understood
- Ethical questions, to which there are no simple answers, often provoke rejection
- Fear that human errors could turn machines against us, using AI - Value Alignment Problem
- ... and many other objections



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# Areas where AI can be deployed in procurement

## Process automation:

- Spend management
- Contract management
- Invoice checking
- Negotiation management

## User guidance:

- Smart assistants
  - Customers
  - Suppliers

## Recommendations:

- Supplier management
- Award decisions
- Category strategy
- Actions (supplier development)

## Predictions:

- Spend
- Risk management
- Supplier reliability (OTD)

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# JAGGAER & AI

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# JAGGAER & AI

## Process automation:



- Spend management
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## User guidance:



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## Recommendations:



- Supplier management



- Award decisions



- Category strategy



- Actions (supplier development)

## Predictions:



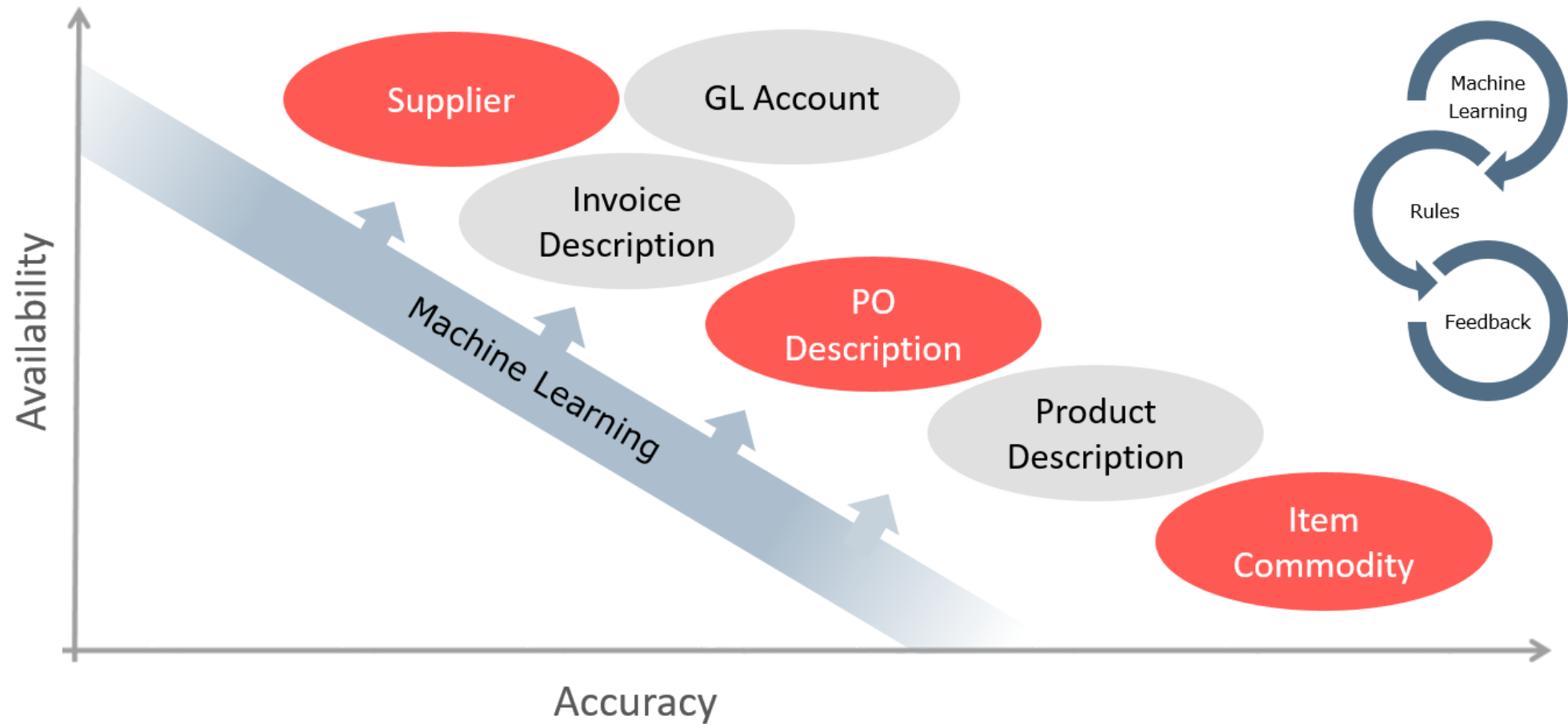
- Spend
- Risk management



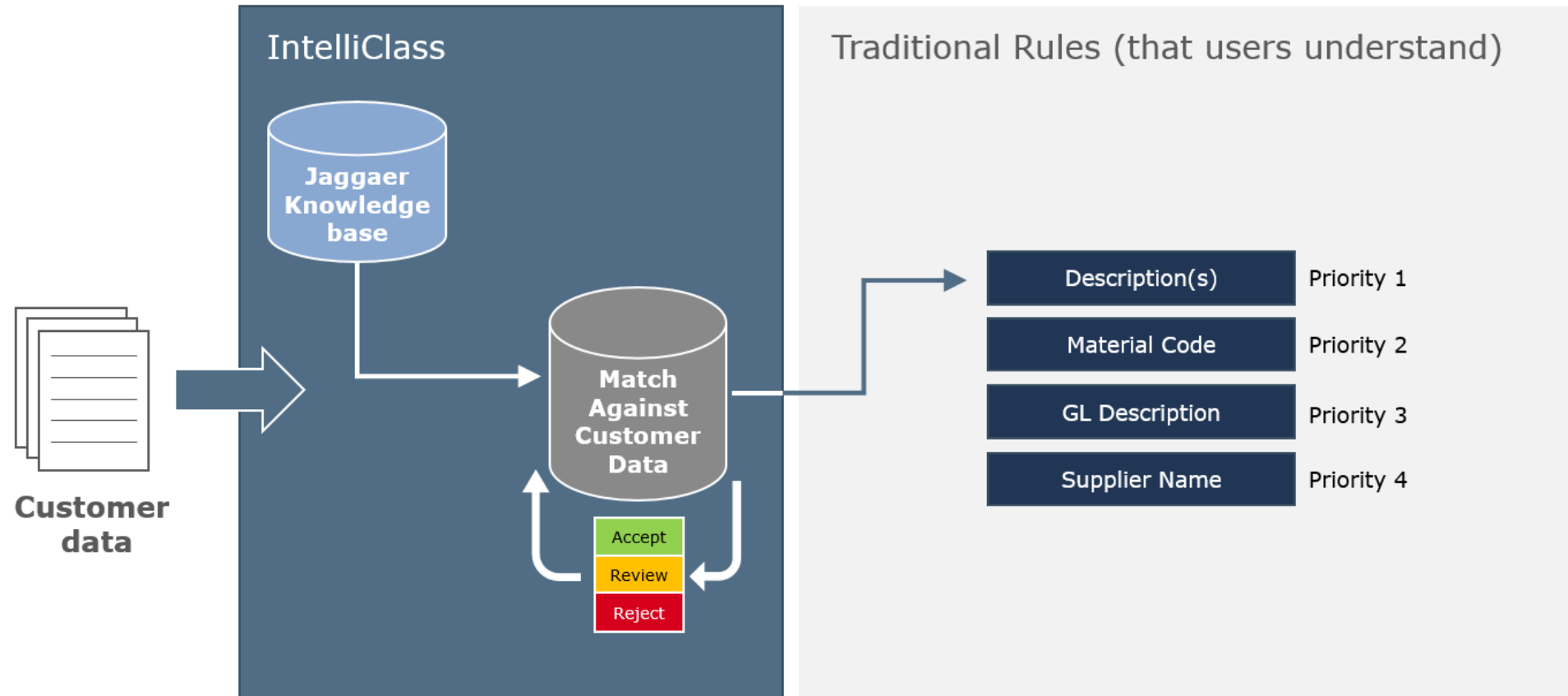
- Supplier reliability (OTD)

# Spend Management

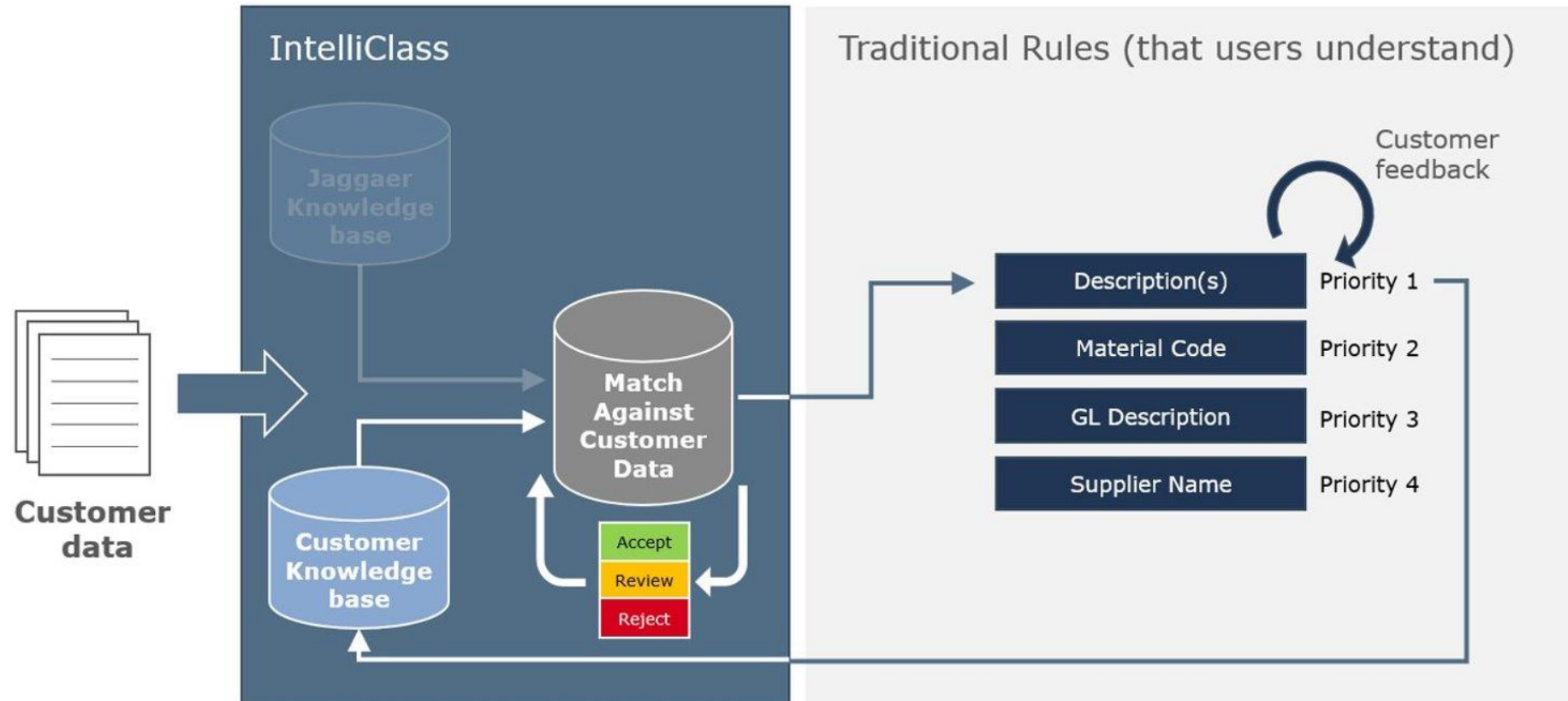
# Spend management



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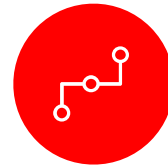
# SMART Assistant

# SMART Assistant



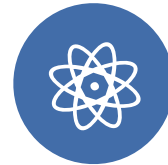
## Help

Answers the most asked questions in a predefined FAQ



## Assist

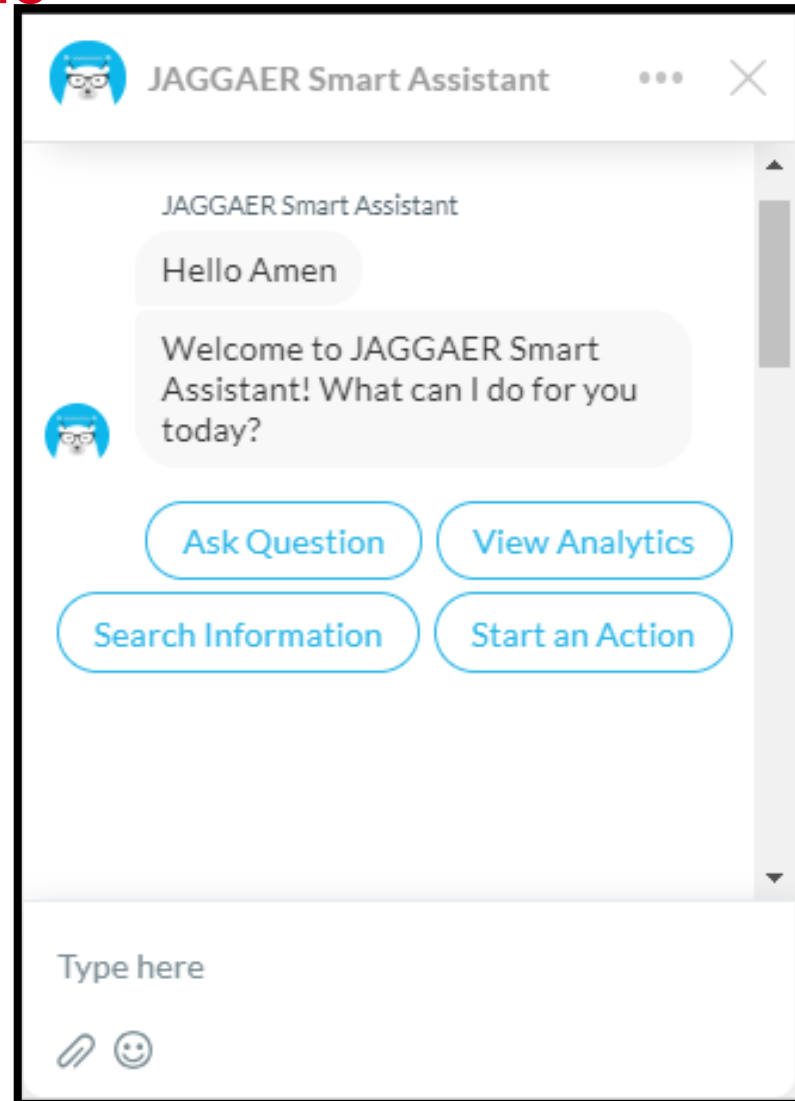
Assists the users in searching and taking actions via contextual conversations



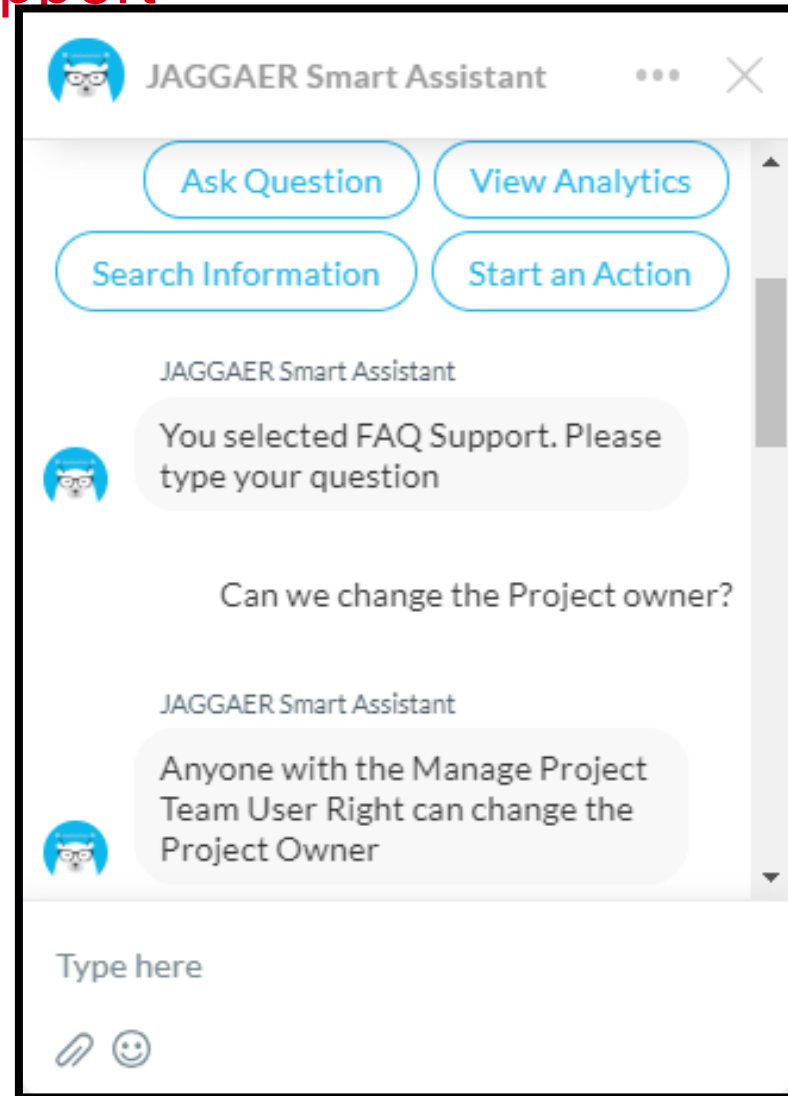
## Act

Anticipates and acts in advance of phase

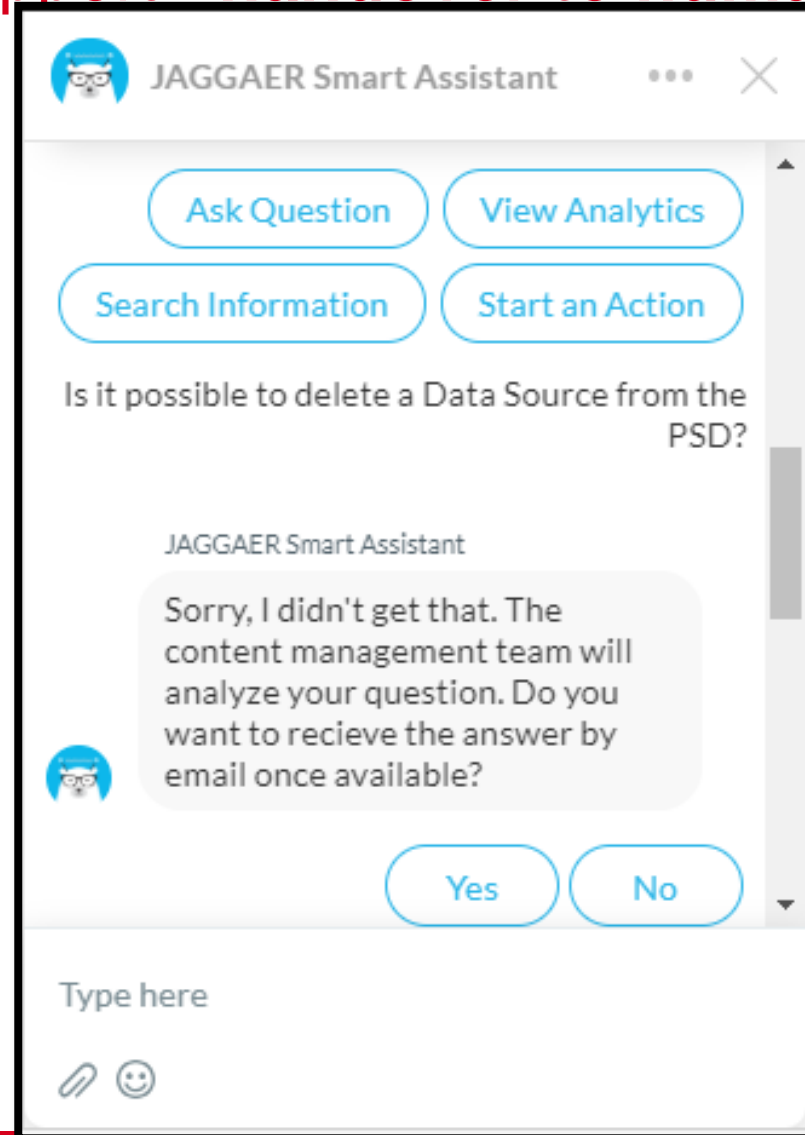
## Example flow - Welcome



## Example flow– FAQ Support



## Example flow– FAQ Support - **handover to human**



## Example flow – Take an action

New RFQ

Cancel

Create RFQ

Create new RFQ

Create from an existing RFQ

Create from an archived RFQ

Create RFQ from Template

JAGGAER Smart Assistant

Ask QuestionView AnalyticsSearch InformationStart an Action

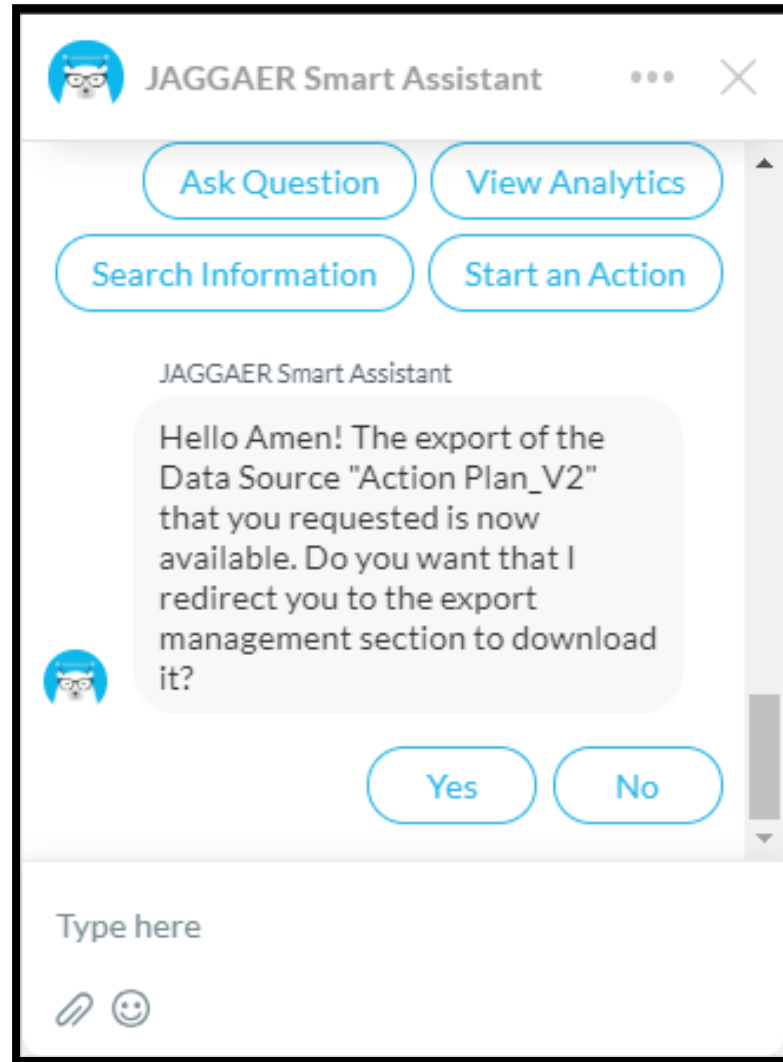
JAGGAER Smart Assistant

Please select or type the action you would like to perform

New ProjectCreate Category StrategyCreate RFQCreate ContractRegister New Supplier






Type here



## Example flow – Export notification











# Recommendations
























# Recommendations


 Search in Dashboard...    





Recommendations 7 Total Show all  



 PENDING (5)

<input type="checkbox"/>	TYPE	RECOMMENDATION	TRIGGER	ORIGIN	ASSIGNEE	PRIORITY	CREATION DATE ↓	
<input type="checkbox"/>		Contact supplier for further information	Force of nature in supplier's country	 Risk Management			01.11.2017 09:20 5 days pending	  
<input type="checkbox"/>		Extend deadline	RFQ expired without any offers	 RFQ			31.10.2017 21:39 6 days pending	
<input type="checkbox"/>		Financial audit	Financial risk	 Category Management			31.10.2017 21:20 6 days pending	
<input type="checkbox"/>		Check execution of strategies (RFQ)	Performance of dual sourcing strategy	 Category Management			31.10.2017 11:45 6 days pending	
<input type="checkbox"/>		RFQ for 368 materials	Changed raw material price	 CBD Analysis			30.10.2017 19:46 7 days pending	

 DISABLED (2)

<input type="checkbox"/>	TYPE	RECOMMENDATION	TRIGGER	ORIGIN	ASSIGNEE	PRIORITY	CREATION DATE ↓	
<input type="checkbox"/>		Check if change was announced in advance	Change of management	 Category Management			29.10.2017 06:55 8 days pending	

Examples for triggers

# Predictions

# Forecasting: OTD predictions

Overview Dashboard

Home SRM RFQ **POM**

### OTD PREDICTIONS - ON TIME

Order	Prediction	Confidence	
EO5588899	ON TIME	100 %	
EO559999	ON TIME	100 %	
EO556789	ON TIME	100 %	
EO123455667	ON TIME	100 %	
EO1234568	ON TIME	100 %	
EO1234567	ON TIME	100 %	
4500023396	ON TIME	97 %	
eo_001	ON TIME	100 %	
jv_0503_4	ON TIME	99 %	
jv_0503_3	ON TIME	99 %	
eo_2_12345	ON TIME	100 %	
jv_0503_2	ON TIME	99 %	
jv_0503_1	ON TIME	99 %	
eo_01234	ON TIME	100 %	
4500023376_011	ON TIME	100 %	

### OTD PREDICTIONS - LATE DELIVERIES

Order	Prediction	Confidence	
eo_1_12345	LATE	86 %	
4500023376_012	LATE	92 %	
4500023376_012	LATE	92 %	

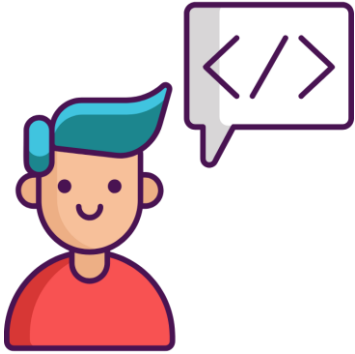
## Forecasting: OTD predictions

The screenshot displays the SAP Purchase Order (PO) 4500023397 and the Pool4tool dashboard. The SAP interface shows the PO details, including the vendor (100017 supply world) and the delivery date (11.03.2019). The PO is for a quantity of 10 units of Aluminiumgehäuse Spec. The Pool4tool dashboard shows the OTD Predictions for this PO, with a prediction of 'ON TIME' and a confidence of 98%. The dashboard also shows a list of items predicted to be on time, with the PO number 4500023397 and a predicted delivery date of 2019-03-21.

# Forecasting: OTD predictions



# Forecasting: OTD predictions



**Increase productivity**

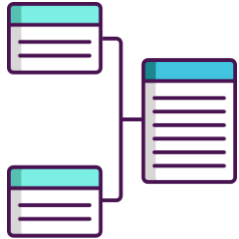
**Should rely on existing data**

**Ideally bring in value**

# Forecasting: OTD predictions



**Data mining**



**Data Science**

## Extracting data from internal database / external sources

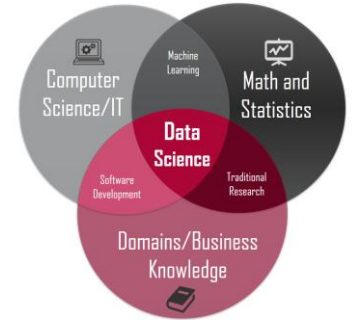
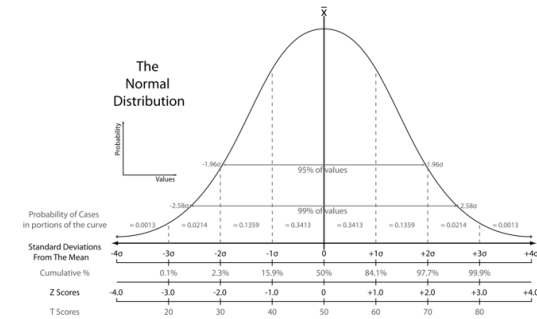
Joint operation of a person with knowledge of business and IT

## Normalizing data

Bringing features to the same scale

## Finding relevant features

We should not be concerned with the concrete instance but the pattern



# Forecasting: OTD predictions



**Training**



**Evaluation**

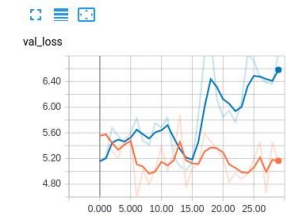
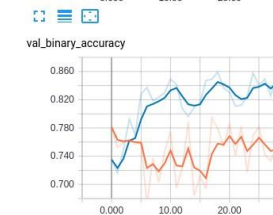
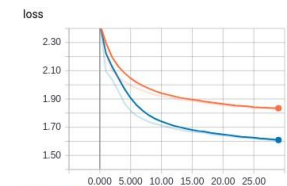
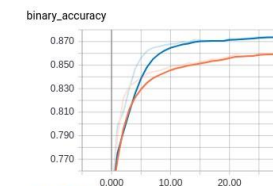
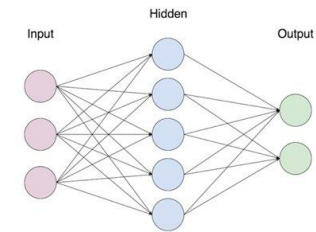
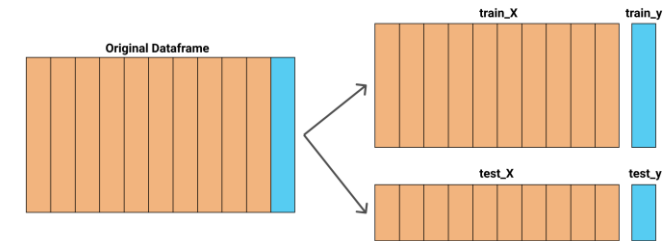
**Supervised**

**Training**

Train – Test Split

**Evaluation**

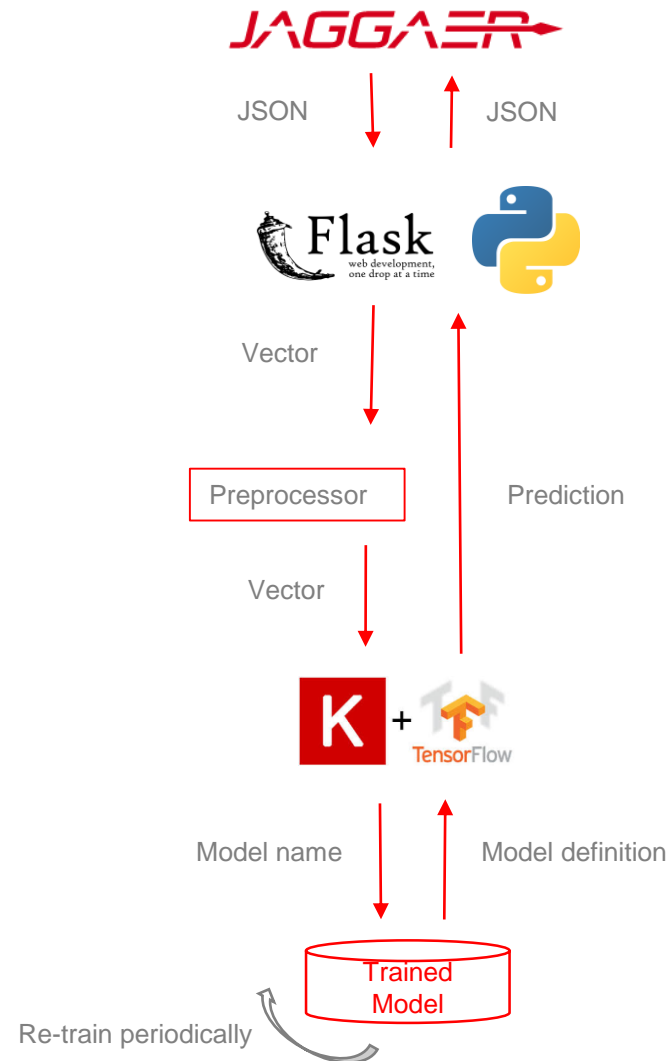
We have to be able to measure the quality of predictions



# Forecasting: OTD predictions



Production



Übersicht Dashboard

Meine Übersicht | Aktivitäten | Meine Dokumente | Zusatzinfo: | **OTP Prediction** | +

OTP PREDICTION

Auftrag	Partner #	Lieferant	ENORG	Bestellart	Vorhersage	Konfidenz	
651018886	0005160685	Tokyo Seimitsu Co., Ltd.	7003	NB	PUNKTLICH	98 %	
310204848	0005558416	RS Components GmbH	0004	ZONL	SPAT	54 %	
6810006646	0005556306	CHC Innovations Inc.	7003	ZPR	PUNKTLICH	98 %	
651018875	5556311	Brass Company	7003	NB	PUNKTLICH	98 %	
651018874	5412359	Karl Berrang GmbH Mechanik...	7003	NB	PUNKTLICH	98 %	
651018873	5506320	Automation Inc.	7003	NB	PUNKTLICH	98 %	
310204847	0005558416	RS Components GmbH	0002	ZONL	SPAT	54 %	
7260063088	5632894	Shearline Precision Engineer...	6000	NB	PUNKTLICH	98 %	
651018870	5556338	Independent Packing Inc.	7003	NB	PUNKTLICH	98 %	
310204841	0005558403	Staples Deutschland GmbH & ...	0006	ZONL	SPAT	53 %	
310204840	0005566401	Conrad Electronic GmbH	0006	ZONL	SPAT	52 %	
451087285	5580194	JAGGAER Austria GmbH	0002	NB	PUNKTLICH	98 %	
4530616396	5525722	Zollner Elektronik AG Betriebs...	0006	NB	PUNKTLICH	98 %	
310204838	0005588579	Mühlberger GmbH	0004	ZONL	SPAT	53 %	
651018859	5634769	Shanghai Shensi plastic Co. Ltd	7003	NB	PUNKTLICH	98 %	
651018858	5629046	Mercury Minnesota Inc.	7003	NB	PUNKTLICH	98 %	
651018857	0005614505	Jungseul Suling Precision Mac...	7003	NB	PUNKTLICH	98 %	
651018856	5508819	Sammina Corporation	7003	NB	PUNKTLICH	98 %	
651018855	5582028	Carl Zeiss Jena GmbH Stando...	7003	NB	PUNKTLICH	98 %	
651018853	0005558976	Nortech Systems Inc.	7003	NB	PUNKTLICH	98 %	
4580227561	0005538372	Tittel Feingertechnik GmbH...	0014	NB	PUNKTLICH	98 %	
4580227563	5538885	Euler Feinmechanik GmbH	0014	NB	PUNKTLICH	98 %	
4580227566	0005538372	Tittel Feingertechnik GmbH...	0014	NB	PUNKTLICH	98 %	
4580227549	5281525	Sico O.G.E. Simon GmbH Gum...	0014	NB	PUNKTLICH	98 %	
651018851	0005556407	Markman Metals Inc.	7003	NB	PUNKTLICH	98 %	
651018850	0005556363	Markman Metals	7003	NB	PUNKTLICH	98 %	

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# How will things develop further?

- Data will become even more decisive
- Tasks and roles will change
- The level of automation will increase continuously – autonomous systems will emerge
- People and machines will be most successful working together
- Communication: AI – people; AI - AI
- Industry 4.0: optimized with AI
- Two classes of company will emerge (with/without AI)





# Questions?

