Extract meaning from your documents

ABD BVD Atelier 2018

Bibliothèque royale de Belgique

Olivier Ceulemans

IRIS Luxembourg

IRISNext Product Manager

I.R.I.S.
Document to Knowledge
A CANON COMPANY

Canon
CANON GROUP

IRIS Presentation

IRIS: A strong group built on knowledge & expertise

Founded in
1987
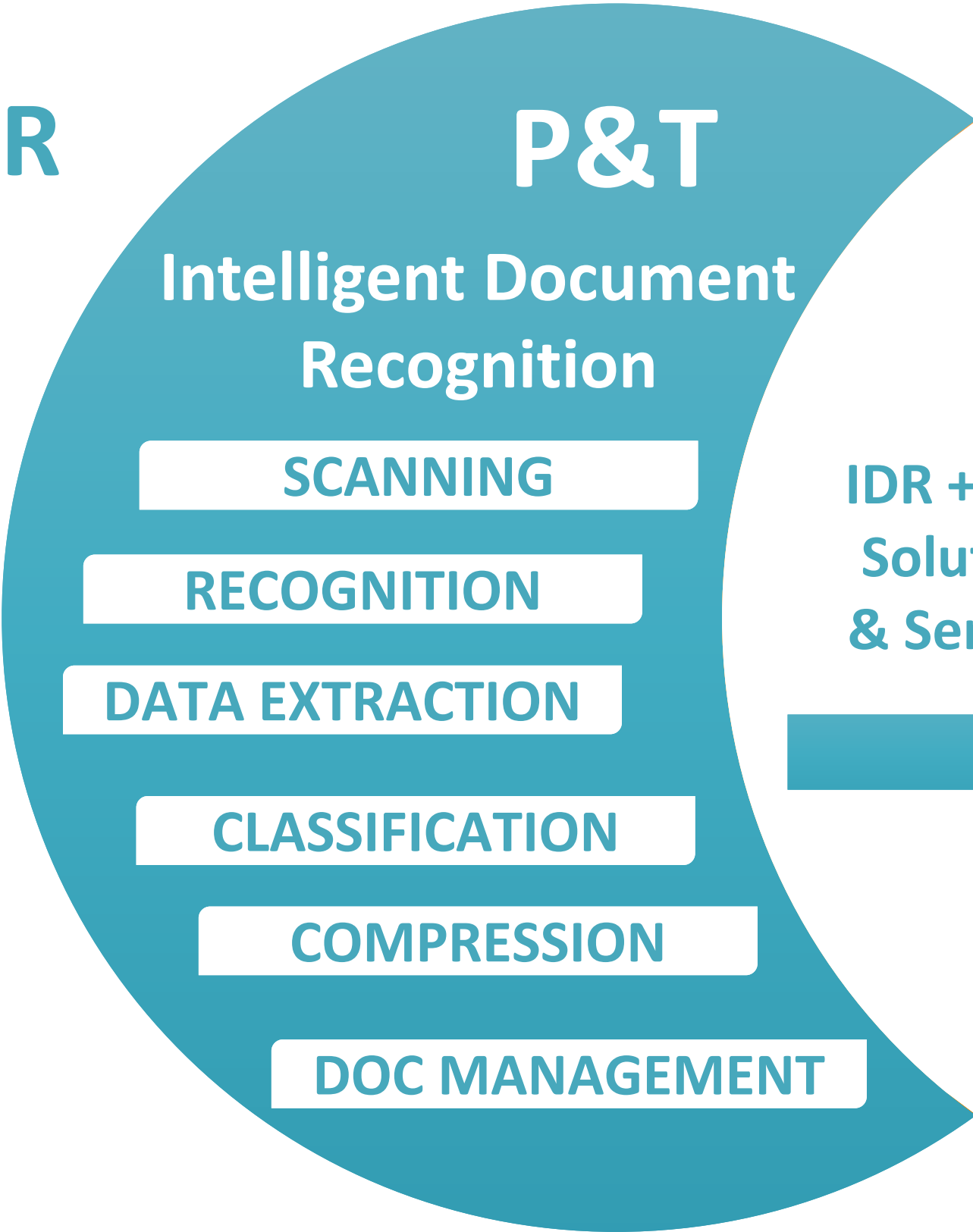

9
Countries
(HQ in Belgium)

100M€
revenue

615
employees

The unique IRIS profile

SW EDITOR

INTEGRATOR

P&T

PS

Intelligent Document Recognition
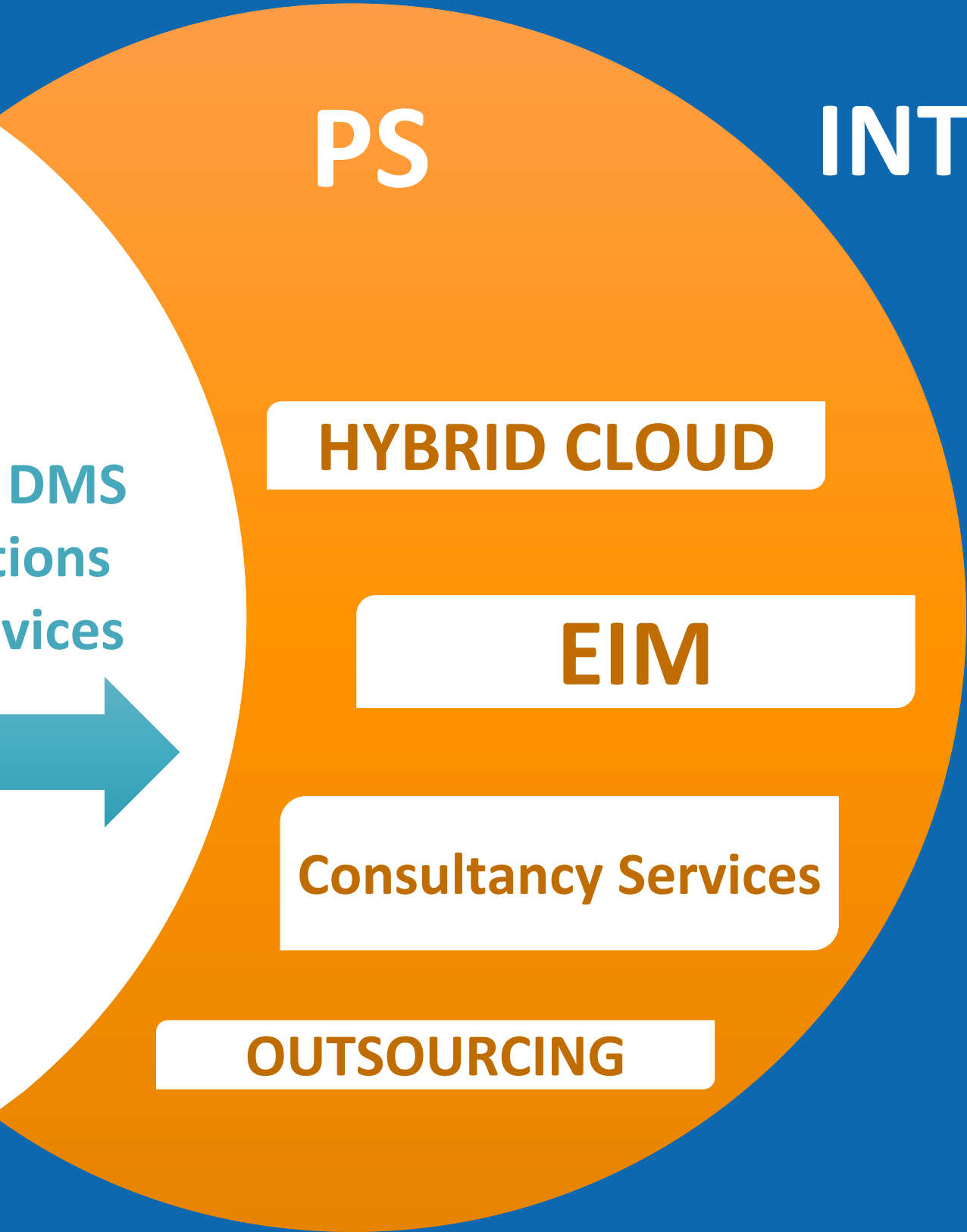
- SCANNING
- RECOGNITION
- DATA EXTRACTION
- CLASSIFICATION
- COMPRESSION
- DOC MANAGEMENT

IDR + DMS Solutions & Services

- HYBRID CLOUD
- EIM
- Consultancy Services
- OUTSOURCING

IRIS Solutions – business experience

Investment & real estate	Finance & Insurance	Medical & healthcare	Manufacturing & industry	Government & Public	Others
Habitationmoderne	Ackermans & van Haaren	CHR CITADELLE	INEOS	ORES OPÉRATEUR DES RÉSEAUX GAZ & ÉLECTRICITÉ	Jacques Delens
Befimmo	Santander	CHC	Nexans	Provincie Oost-Vlaanderen Voor ieder van ons	D'Ieteren
SOGEPA CHANGE · MANAGEMENT · INVESTMENT	L'Ardenne Prévoyante COMPAGNIE D'ASSURANCES	CHU AMBROISE PARÉ	Umicore	SCHAERBEEK 1030 SCHAARBEEK	KREFEL
	Record Bank	FEDRIS	SOLVAY	vrt	Arsia asbl
	ABN·AMRO	MLOZ IT	ENGIE	CRÉDOC	Trustteam PURE TRUST PURE IT
	Allianz	fmp bz	GAZPROM	TEC	actiris.brussels au coeur de l'emploi
		UNMS NVSM	techem caloribel	ibz	pôle emploi
		CHRISTELIJKE MUTUALITEIT	PRECIMETAL PRECISION CASTINGS	Police	
			Ansell	BXL GIAL	
			AGC GLASS UNLIMITED		

IRIS
Document to Knowledge
A CANON COMPANY

Canon
CANON GROUP

IRIS Product & Solutions Portfolio

IRIS Portfolio

iDRS 15.4 toolkit
Integrated in all IRIS products
NEW: HQOCR and
Smartphone support

IRISNext 9.0
Fully web-based Enterprise
Information Management (EIM)
system including workflow and legal
archiving

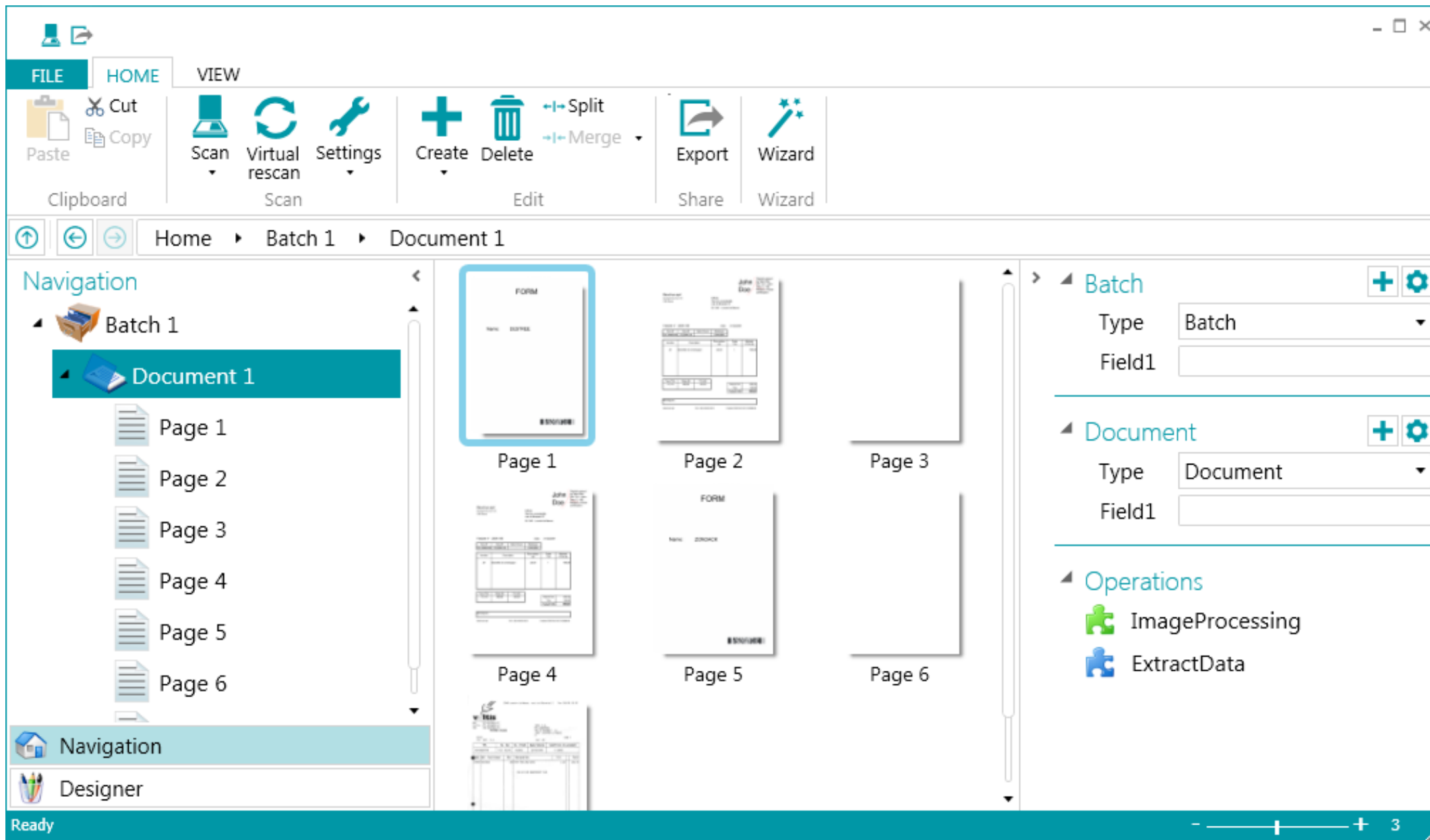**IRISPowerscan 10.5**
Workstation for imaging and
data capture

IRISXtract 5.0
Classification and data capture:
invoice and order processing, HR,
Supplier Records…

XMailFetcher 4.1
Electronic document capture: email
fetching and conversion

Case Management

OCR & Compression

EIM/DMS

Capture

IDR

e-doc Capture

IRISPowerscan

User-friendly scan workstation

Multi-stream architecture

Image enhancement

Intelligent document separation

Automatic metadata capture

IRISXtract

Scan/Import	Processing		Export
Mobile	**Classification** ●●●	**Data extraction** ●●●	ECM ●●●
Scanners	Mailroom/postroom automation	Hybrid forms processing	Workflow ●●●
E-Mail	Legal case management	Invoice processing	ERP ●●●
Watched Folders	HR records classification	Purchase Order processing	Cloud ●●●
Cloud	Customer records classification	●●●	Etc. ●●●
	●●●		
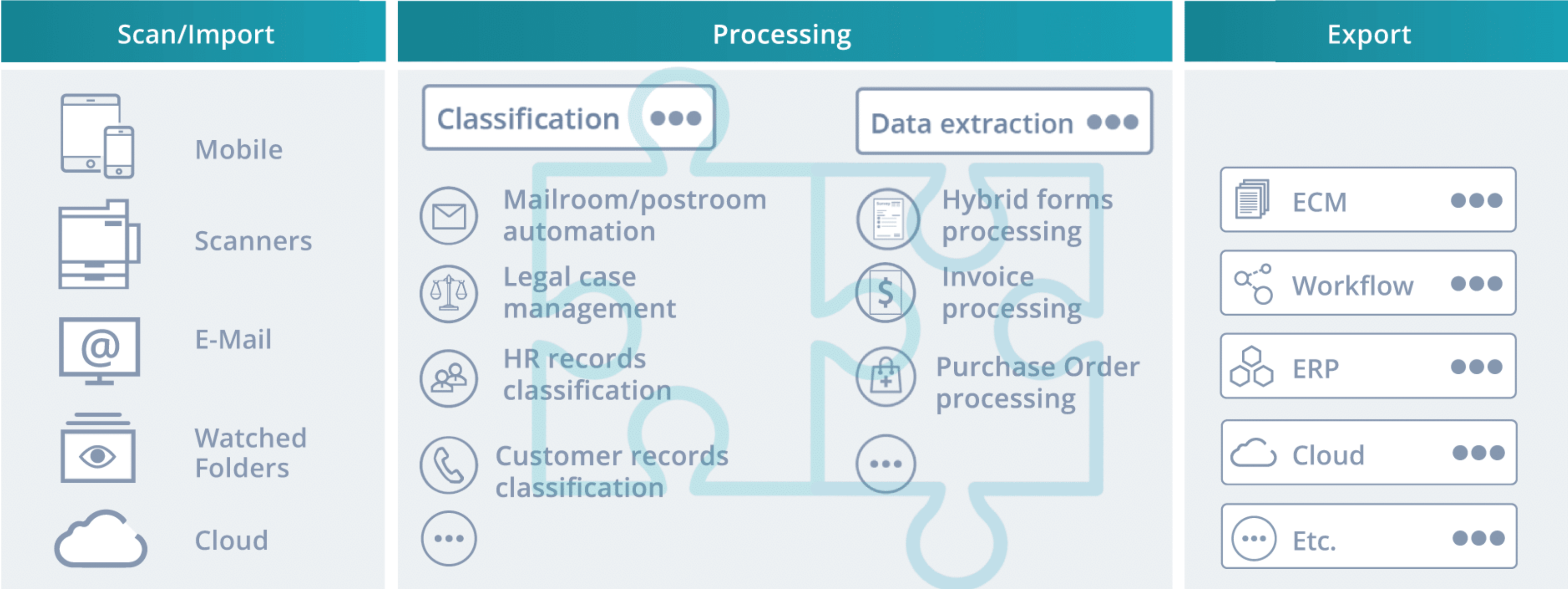
IRISNext

Web upload and IDR integration	Workflow	Office integration	Legal archiving and web retrieval	Document creation and compression	Integration and extension
Folder Scanner Database Mailroom **IRISXtract™** **IRISPowerscan™**	**⦿ Workflow ●●●**	DOC PNG PDF JPG Invoice XLS @ ZIP	Contracts Purchase Orders Forms Invoices **Archive**	PDF XML TXT DOC PDF **Compressed PDF Files**	Webservices, hyperlinks
Automated document classification & data extraction	Collaborative processes and tasks, purchase-to-pay and case management solutions	Documents are easily created, edited, annotated and versioned (check in/out)	Four types of search are available: quick, predefined, custom and full-text search	With the Rendition Server you can do OCR compression, transformation and document conversion	IRISNext™ is customizable thanks to its open platform

Highly scalable

Web-based

Legal archiving

Customizable workflows

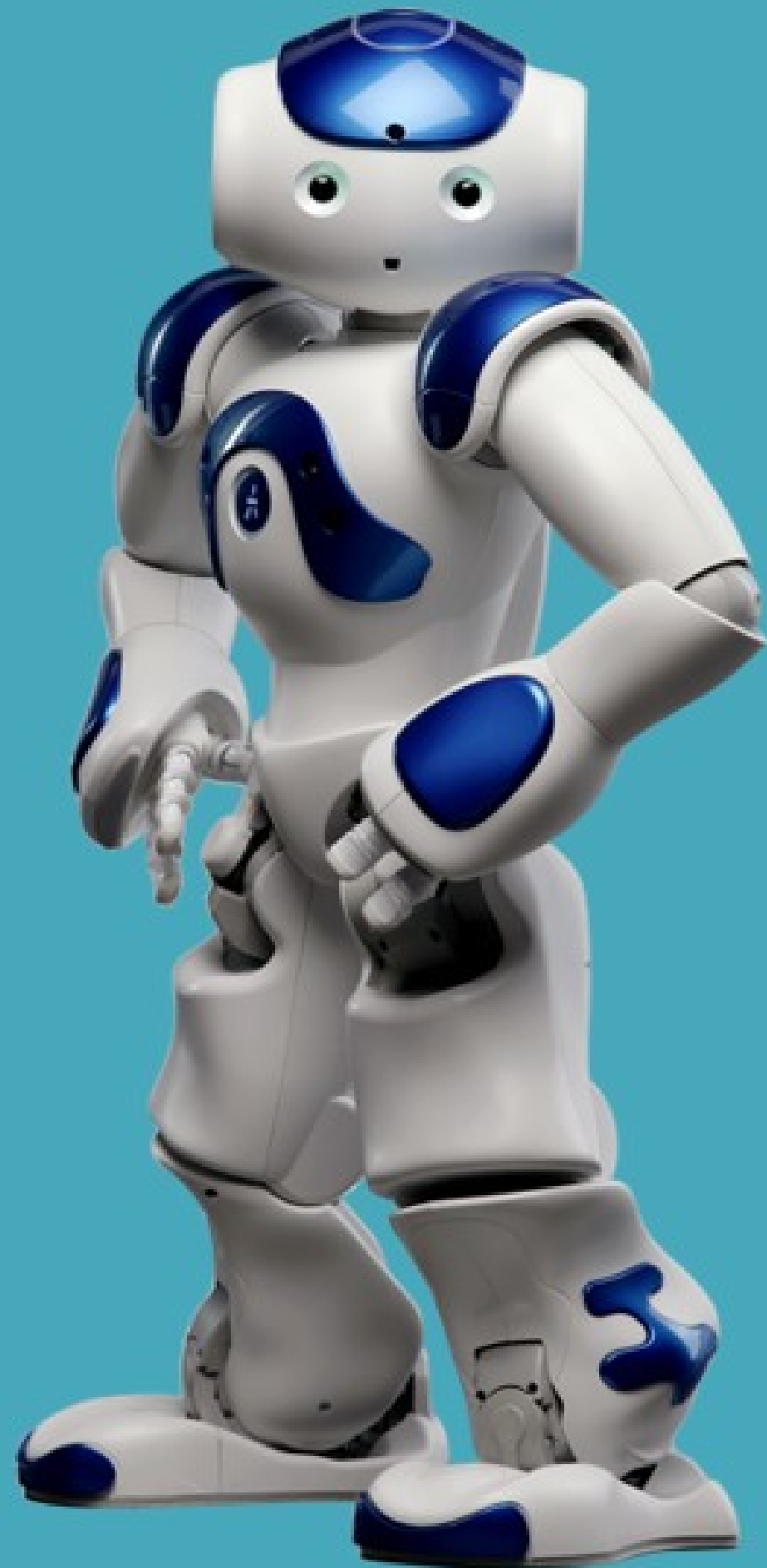Integrated with Office

Case management

IRISNext 9: New features

- Technological Update - HQOCR

- Digital Signature

- Mobile Document Capture

- Support for Canon multi-functions devices (printer/scanner/copier/…)

- Improvement in the UI
 (Dashboard, Thumbnails, Responsive Forms & Layouts, …)

Roadmap: IRISPulse

Web Service

3rd Party Services (e.g. AI, BI, OCR, ICR)

On Premise   Hybrid   Cloud

IRISPowerscan/
Webscan

IRIS Mobile
Capture

XMailFetcher

IRIS MEAP

Web Portal

Data
Analytics

| OCR | IRISXtract | IDR |
| ADS | | iHQC |

Web Service

Process
Templates e.g.:
Accounts Payable
Hospitals
City administration

WF/Archive

Web Service

VAR, BPO,
User
Interface

ERP

**IRISPulse
platform for process automation**

Web Basket

Web Verify

Web Retrieval

Canon
CANON GROUP

Outlook on actual developments

Why do we talk about AI in these days?

ARTIFICIAL INTELLIGENCE

Early artificial intelligence stirs excitement.
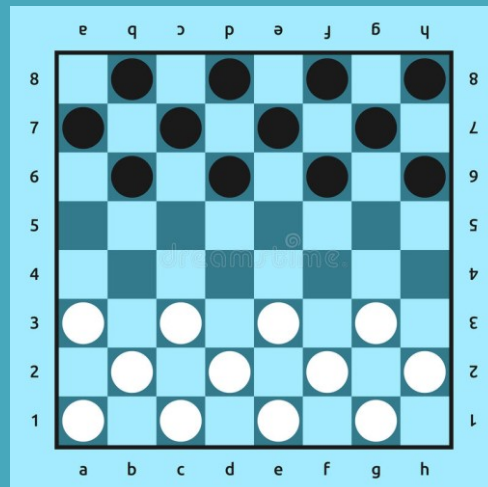
MACHINE LEARNING

Machine Learning begins to florish.
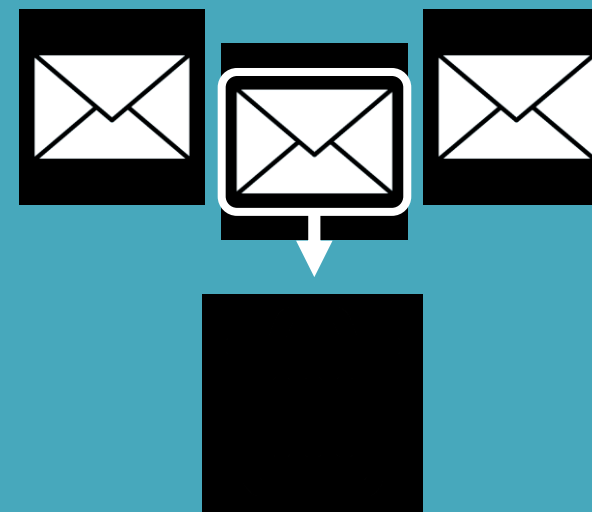
DEEP LEARNING

Deep Learning breakthroughs drive AI boom.

1950's 1960's 1970's 1980's 1990's 2000's 2010's

(Source: NVIDIA blog 2017)

The true drivers of AI in the background

How many calculations per second can you buy for 1.000 dollars?

(Source: https://en.wikipedia.org/wiki/FLOPS 2017)

How many bytes of memory can you buy for 1 dollar?
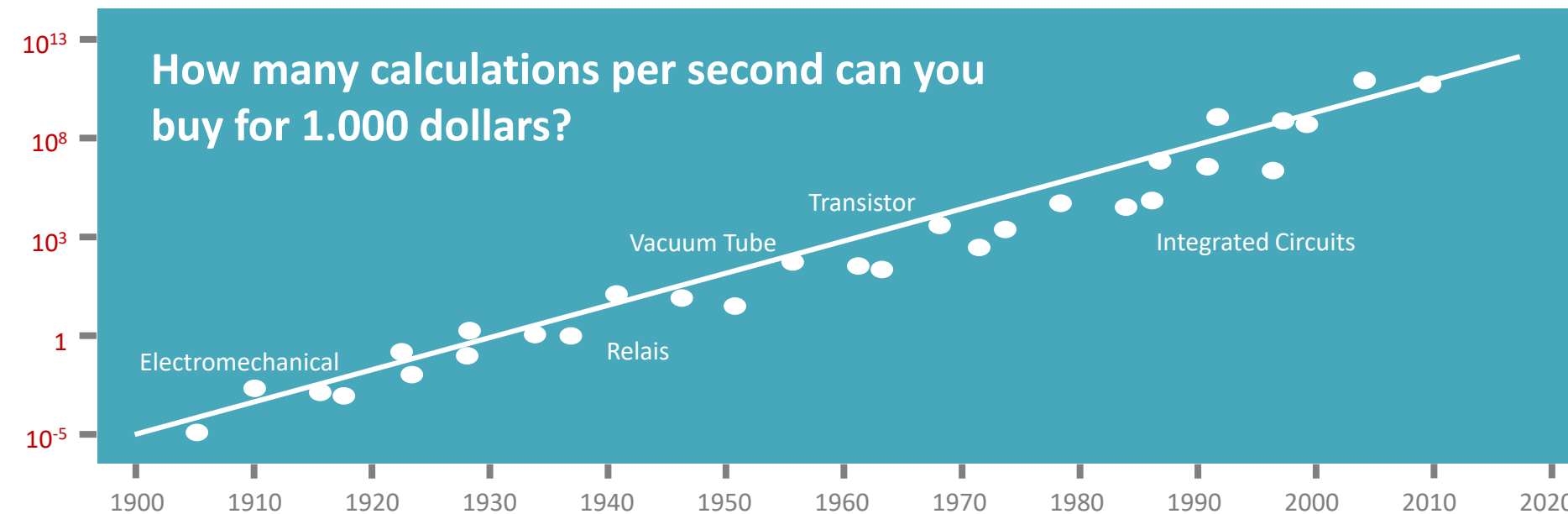
(Source: www.jcmil.net/memoryprice.htm 2017)

- Since the year 1900, the cost of floating point operations per second **has been halved** every few years.

- Over the past six decades memory has been cheaper by half every few years. Hard disks were **100 million times** cheaper, RAM was incredible **10 billion times** cheaper.

AI is enabled by memory and FLOPS
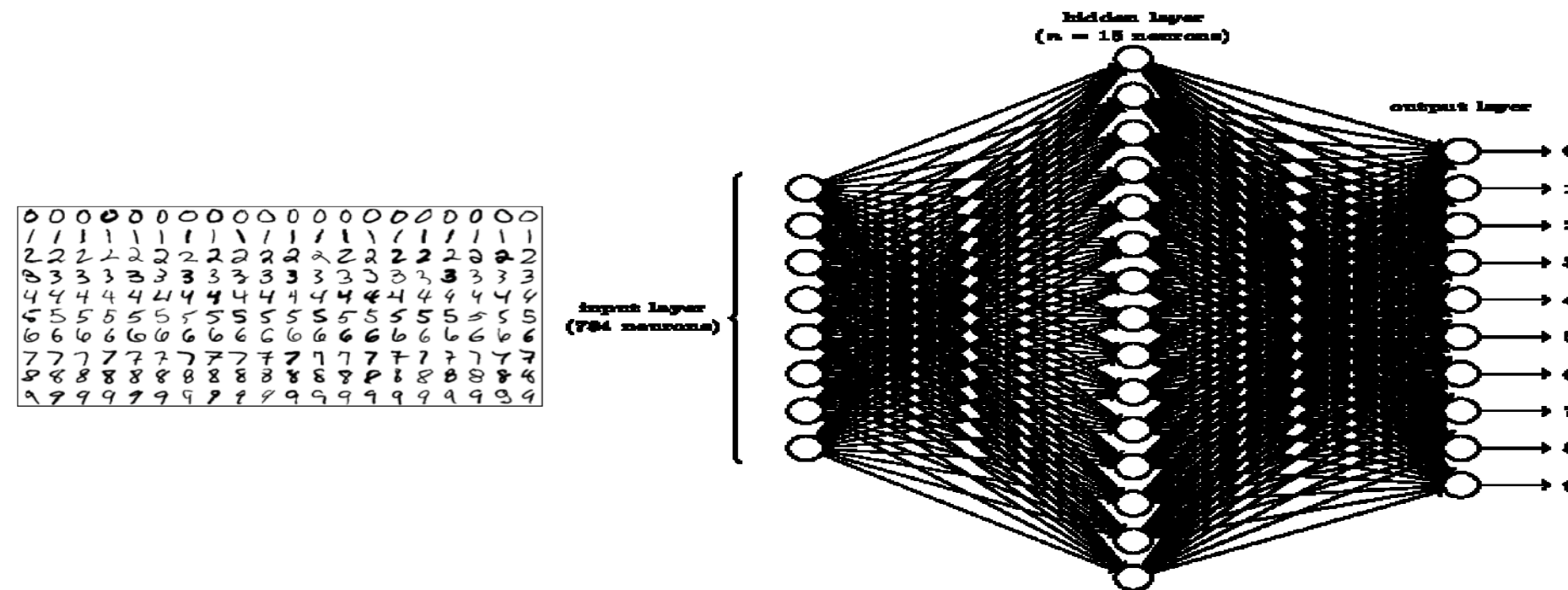
1980: A simple network consists of some layers and perhaps some thousand neurons. In the given example normalized handwritten digits are classified.
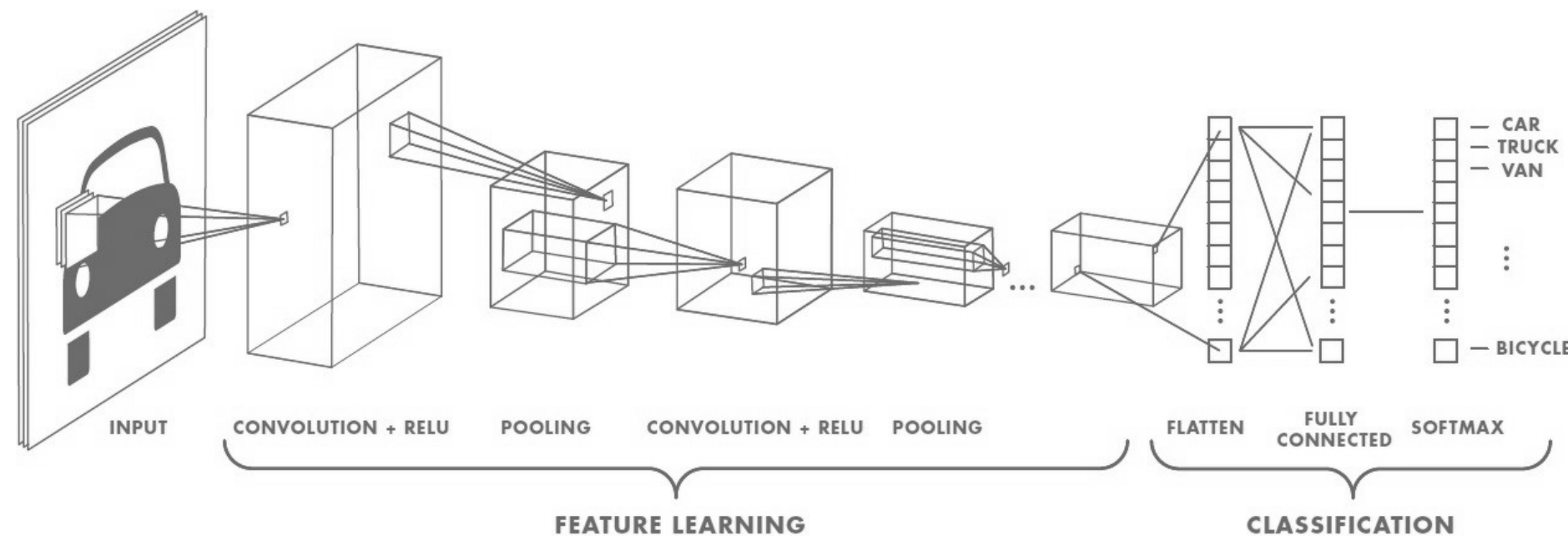
2015: A deep learning architecture consists of several sub networks involving hundrets of layers and perhaps some million neurons. In the given example vehicles are classified in a natural scene.
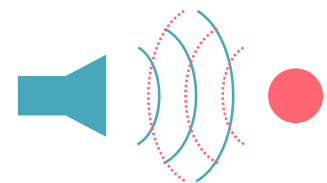
IRIS Technological Services

We consider technological services as a collective term for AI and other high technologies operated within the IRIS product portfolio that can ...

$$\sum_{k=0}^{n} \binom{n}{k} x^k$$ Do calculations smarter than their conservative counterparts

Sense their contextual environment and user input

Observe, learn and think

Take action in response to what they're sensing and their process objectives

Many customers already benefit from IRIS technological services
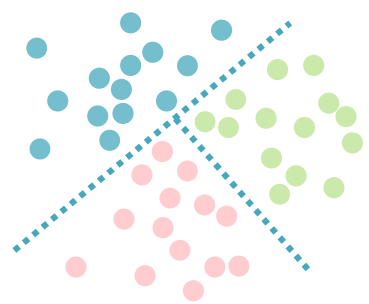
Cognitive document type analysis (PARAGON)
A self-learning set of classifiers for the automated classification of documents with mostly textual content (logistic regression)

HQ-OCR (ADOBE)
Optimizing OCR results by incorporating NNs for the voting of the outcome of different internal recognition algorithms

Pictorial classification (DMI)
Enhancing of the existing bag-of-words document classification by neural networks trained for true pictorial document content (CNNs)

Many customers already benefit from IRIS technological services
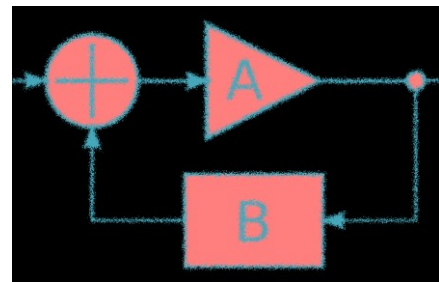
Adaptive field training (AUSTRIAN POST)
Supervised self-learning by observing user interaction during manually document validation

**Structural layout comparison (DOUGLAS)**
Calculation of similarity between layouts of many different documents based on 2D-correlation of document structures
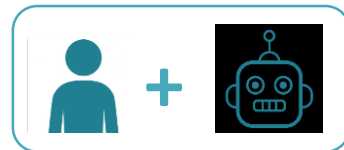
Semantic image compression (ALLIANZ)
Image compression by irrelevance and redundancy reduction preserving important data based on a model of human perception

IRISPulse Process Automation Platform
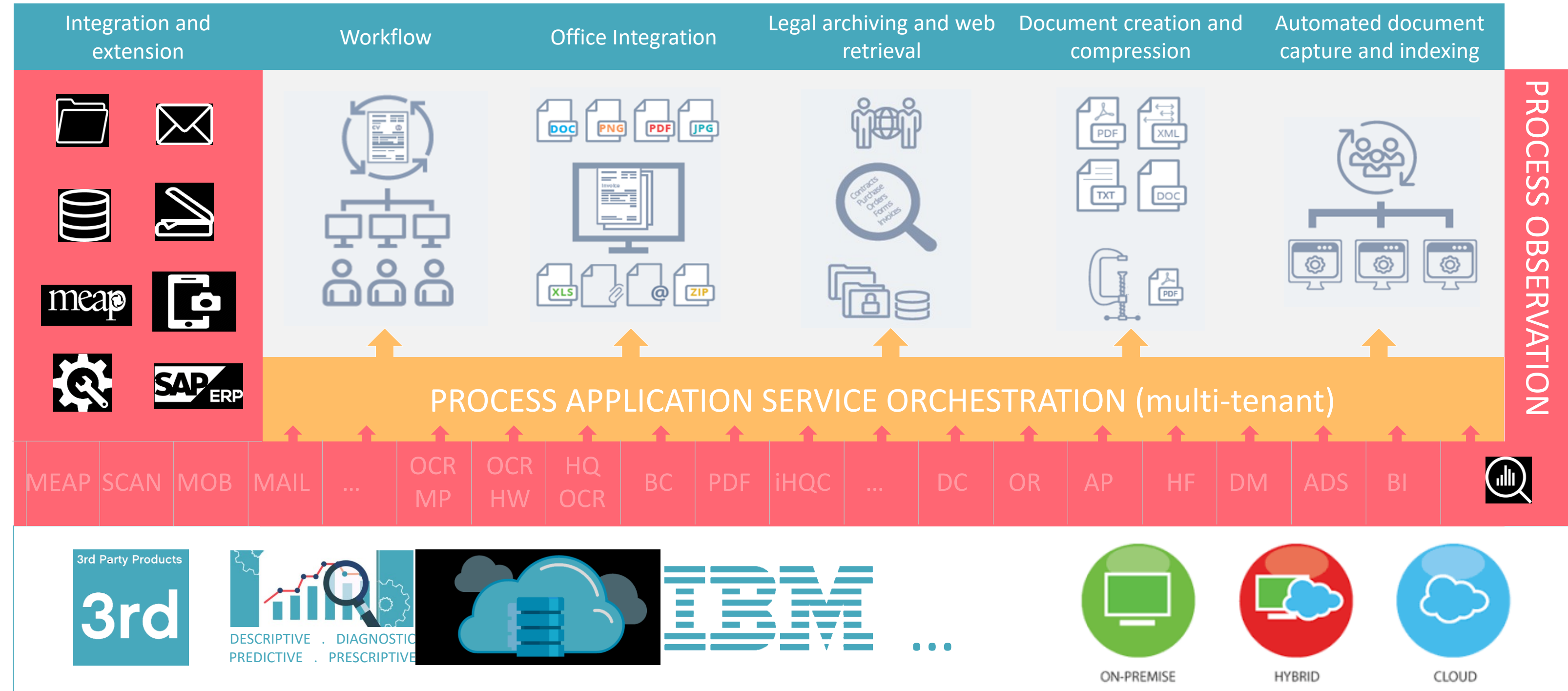
Possibilities of IRISPulse are staggering

Assisted intelligence

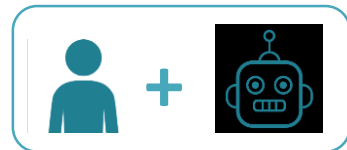Incorporation of pattern recognition working similar to human perception to enhance and ease information search

Automatic completion of user input based on the textual content of currently displayed documents

Possibilities of IRISPulse are staggering

Today & Tomorrow

Augmented intelligence

Automated data capture for incoming invoices, fully integrated with the approval and accounting process

Automated role-based anonymization of document content according to GDPR compliance
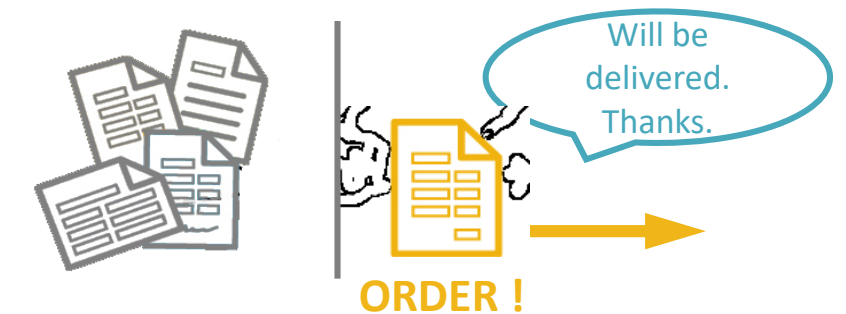
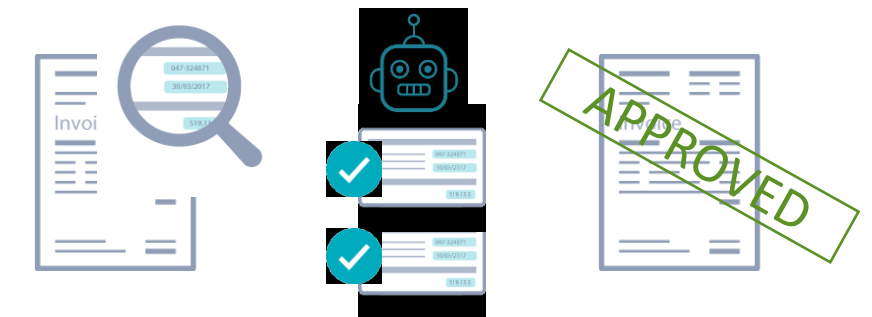# Possibilities of IRISPulse are staggering
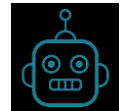
Today & Tomorrow   **Automated intelligence. Why not …**
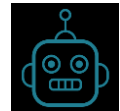
… automatically sense incoming documents, prompt a customer feedback and trigger the workflow?

… automate the accounting process by observing manually user interaction and learning the accounting rules or cost center assignments?

Possibilities of IRISPulse are staggering

Future **Autonomous intelligence. Why not …**

… automatically capture incoming customer requests and escalate or even process the case end-to-end?

… robotize repetitive manually data entry not only on structured but also unstructured information by learning?

RPA
UNSTRUCTURED

Natural Language Processing

Natural Language Processing

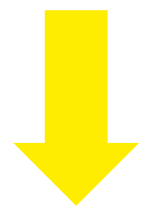**P**art **O**f **S**peech tagging is the problem of assigning each word in a sentence the part of speech that it assumes in that sentence.
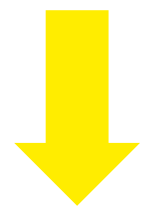
They refuse to permit us to obtain the refuse permit.
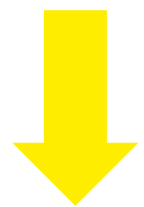
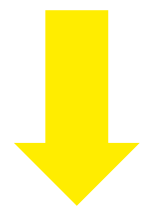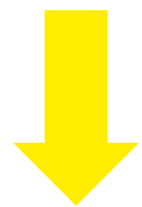⬇ ⬇ ⬇ ⬇ ⬇ ⬇ ⬇ ⬇ ⬇ ⬇
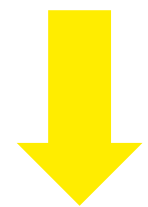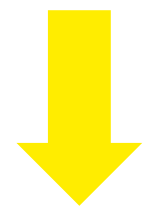
PRP VBP TO VB PRP TO VB DT NN NN
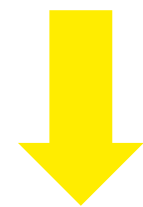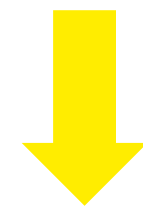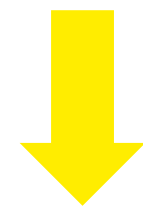
Natural Language Processing

Entity and **R**elationship extraction

Donald Trump is the 45th President of the United States. He was born in New York City.
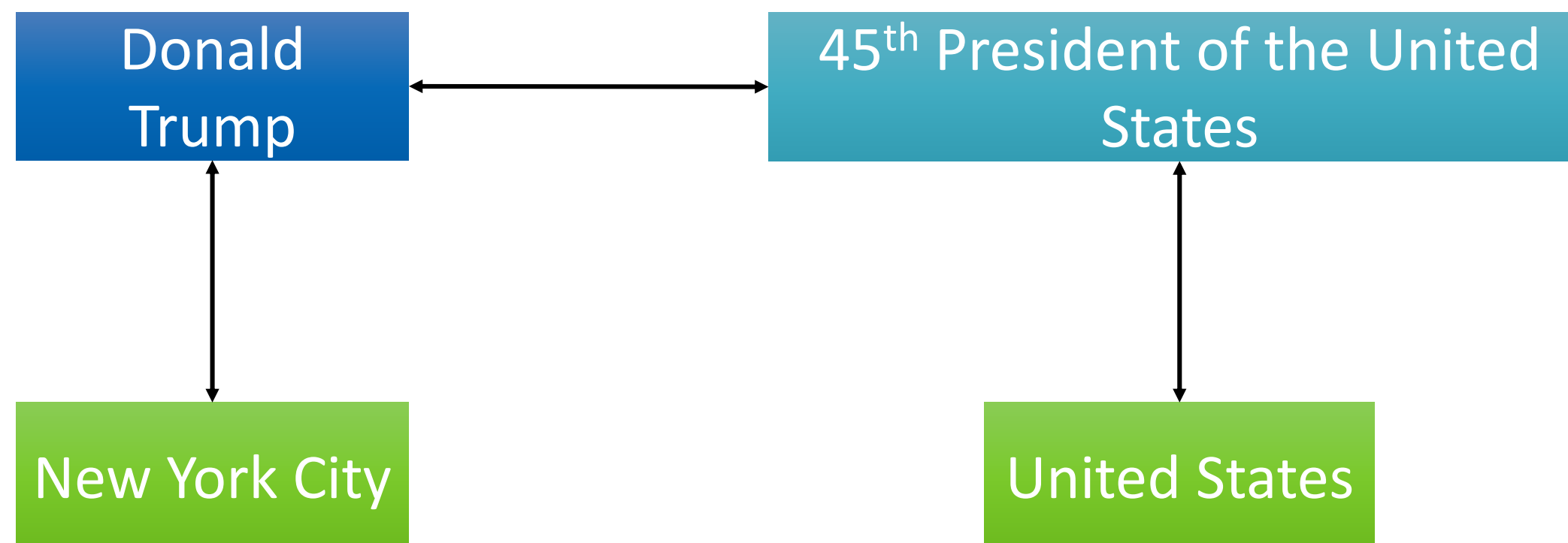
Natural Language Processing

Sentiment Analysis

The taste of this ice cream is absolutely wonderful. **+92%**

The taste of this ice cream is very good. **+80%**

Yesterday I ordered an ice cream. **0%**

I couldn't eat that ice cream. The smell was horrible. **-72%**

The taste of this ice cream was not good. **-87%**

Our recommendations...

Language Support is important...

Expectations...

Gartner Hype Cycle diagram titled "Expectations..."

Phases (top labels): On the Rise · At the Peak · Sliding Into the Trough · Climbing the Slope · Entering the Plateau

Bottom axis labels: Technology Trigger · Peak of Inflated Expectations · Trough of Disillusionment · Slope of Enlightenment · Plateau of Productivity

Annotations:
- Activity beyond early adopters
- Supplier proliferation
- Mass media hype begins
- Negative press begins
- Early adopters investigate
- Supplier consolidation and failures
- First-generation products, high price, lots of customization needed
- Second/thrid rounds of venture capital funding
- Startup companies first round of venture capital funding
- Less than 5 percent of the potential audience has adopted fully
- Methodologies and best practices developing
- High-growth adoption phase starts: 20% to 30% of the potential audience has adopted the innovation
- Third-generation products, out of the box, product suites
- Second-generation products, some services
- R&D

Axis labels: expectations (vertical) · time (horizontal)

Textrazor

- "Based in London England, TextRazor is a startup providing software that helps developers rapidly build text analytics into their applications. Our tools offer state-of-the-art performance out of the box while offering customization options to help optimize for any use case."

- "The TextRazor API is growing rapidly, currently handling millions of daily requests from hundreds of applications across a range of verticals. Major use cases include social media monitoring, enterprise search, recommendation systems and ad targetting."

- "The company was founded in 2011, and has been operating profitably since 2013 with no institutional investment"

IBM Watson

Natural Language Processing

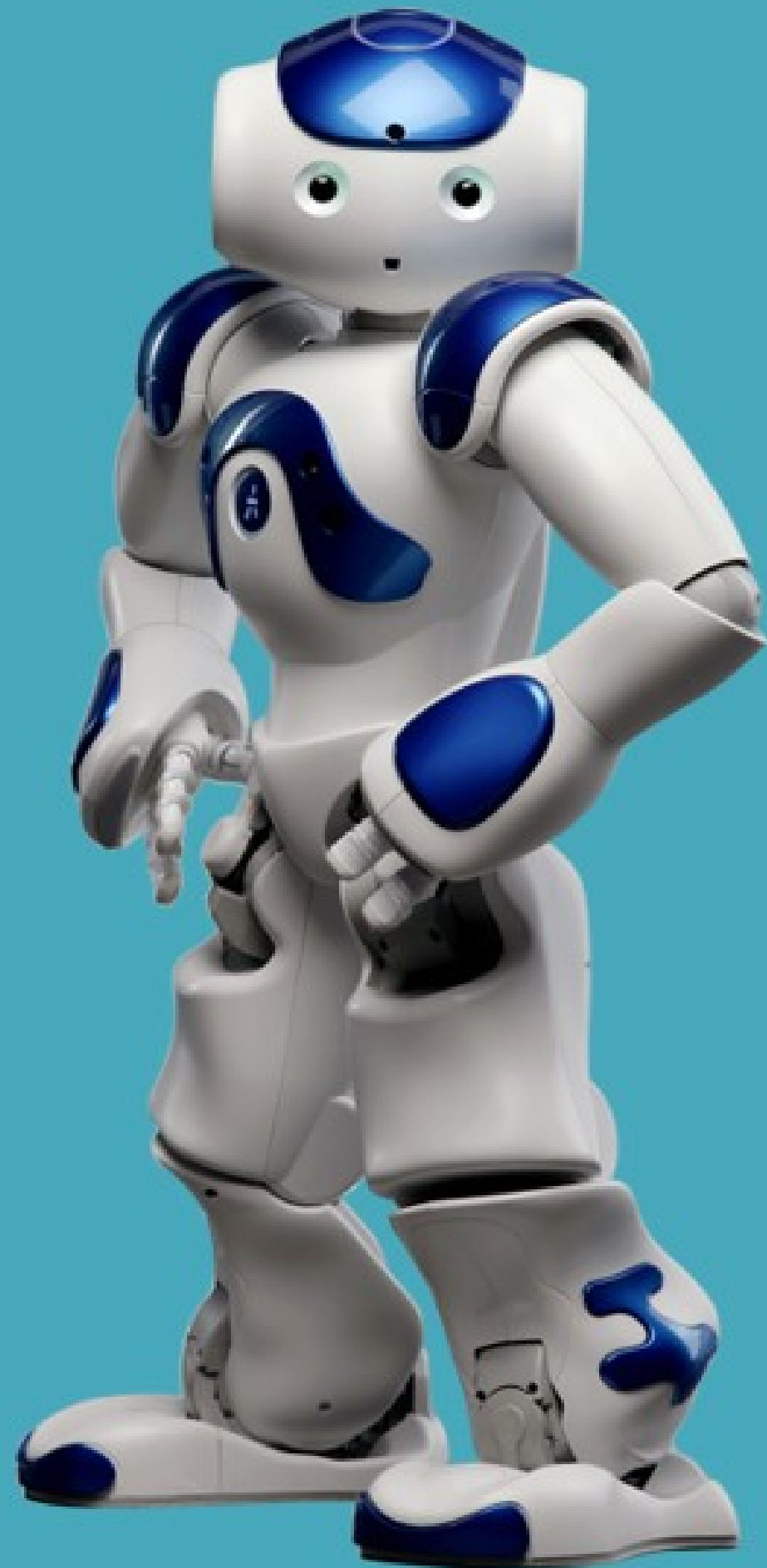|	
N-L Understanding	Extract concepts, entities, relationships, keywords, categories, sentiments, emotions.
N-L Classifier	Text classification (=can be used to answer questions)
Conversation	Chatbots, dialog management.
Translator	Machine translation of texts.
Personality Insights	Discover the profile of someone by analyzing what he writes (CV, social networks, …)
Retrieve and Rank	Tunable search engine
Tone Analyzer	Analyze the tone of a short message

Demo

ABD BVD Atelier 2018

Bibliothèque Royale de Belgique