Hypatos

Cognitive process automation for document-based back office tasks

Hypatos company introduction for investors

Hypatos offers deep learning tech to automate document-based back office tasks
to improve work and
make organisations more efficient

Back office process automation addresses >$2 tn of annual corporate spending

Situation

Back office work in many industries and functions is defined by manual document processing

Examples:

- All industries – **Purchase to pay**
- All industries – **Order to cash**
- All industries – **Travel& expenses**
- Banking – **Loan applications**
- Insurance – **Claims**
- **Many others ...**

Complication

Manual document processing is...

⚠ expensive

⚠ slow

⚠ error-prone

⚠ demotivating

...and causes **>$2 tn annual spending**

Solution

Back office work can be automated with:

Robotics (RPA)

Rule based automation of repetitive, simple tasks through Robotic Process Automation – e.g. transfer documents between systems

Machine Learning

Automation of more complex human processing tasks that require human understanding with Machine Learning – e.g. document processing

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Back office process automation has 2 trillion USD market potential

Total spending on back office business processes, 2019, USD

Industry agnostic processes

- Accounts payable
- Order-to-cash
- Travel & expenses
- Tax
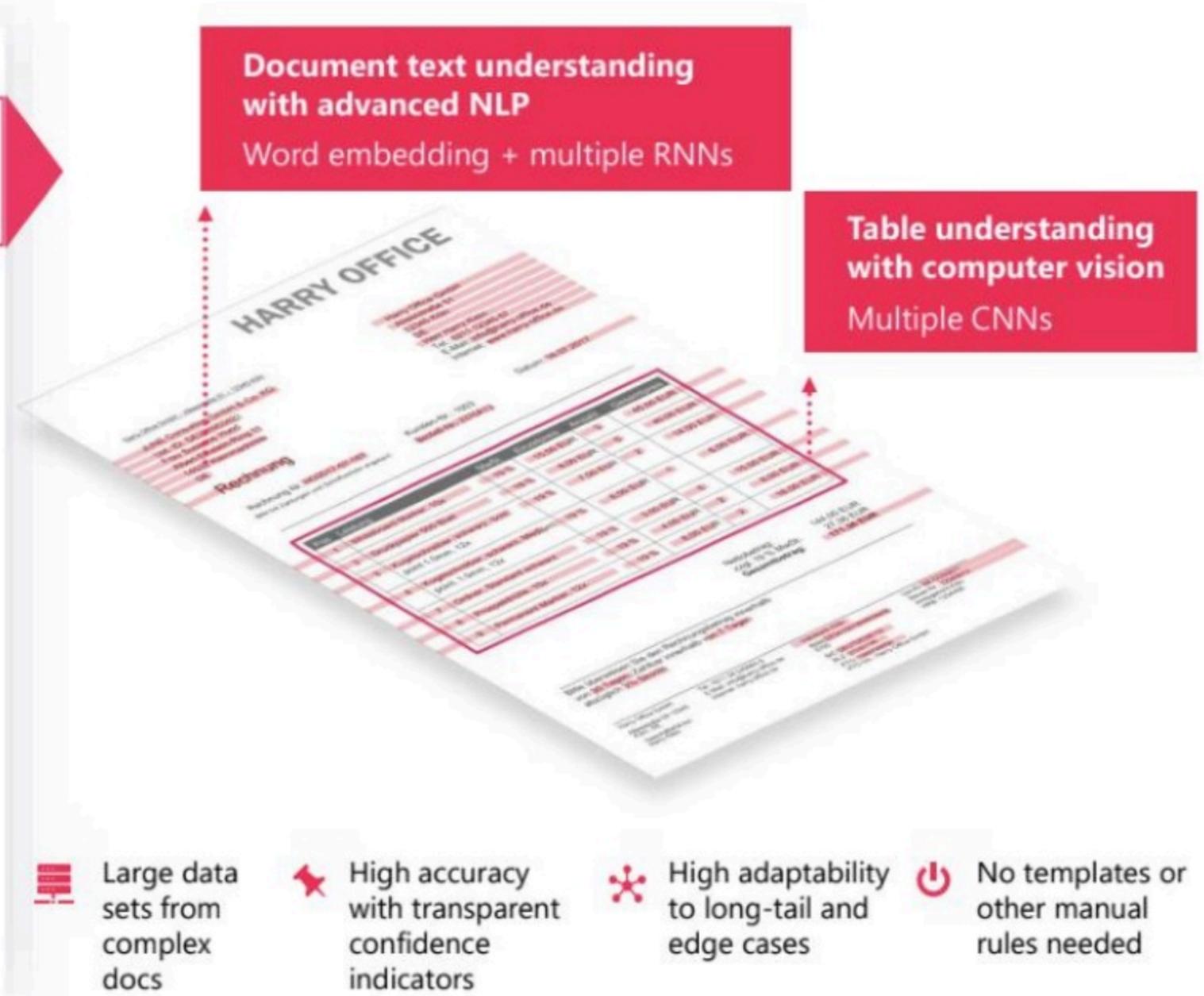- Recruitment
- ...

2 tn

Industry specific processes

- Unsecured loan /mortgage processing
- Loan / credit card applications
- Insurance claims
- Medical prescriptions
- ...

1.6 trillion USD top down market estimate is based on total outsourcing market (195bn USD; Grandviewresearch; 2017), share of companies that use outsourcing in HR, Finance, Procurement and Tax (50%; Deloitte; 2016) and assumption on share of oursourced processes (25%; correcting for IT and legal). Share of key processes is based on number of documents per process and Hypatos' client information on cost per process / document.

Hypatos combines computer vision with NLP tech to offer powerful automation services for integration in existing systems

Offering

Automation services	**Document understanding**	Combination of RNN- and CNN-based deep learning models to capture rich data-sets and "understand" semi-structured documents
	Content Validation	Advanced validation of document content with heuristics and machine learning to identify inconsistent and non-compliant data
	Document Enrichment	Machine learning to predict attributes for document processing, e.g., case specific workflows, financial accounts
Model training	**Hypatos Studio**	Machine learning pipeline software to optimize models with client data and train new automation models
Delivery	**System Integration components**	User and license management, API, document and data collectors, human in the loop UI and monitoring, system connectors
	Deployment options	(Multi) public cloud, private/hybrid cloud and on-premise installation and orchestration of software services

Document text understanding with advanced NLP

Word embedding + multiple RNNs

Table understanding with computer vision

Multiple CNNs

HARRY OFFICE

- Large data sets from complex docs
- High accuracy with transparent confidence indicators
- High adaptability to long-tail and edge cases
- No templates or other manual rules needed

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DEMO: Pre-trained machine learning models for A/P automation and Hypatos Studio for model training

DEMO 1: Pre-trained automation model services

Pre-engineered and trained machine learning models for automation of complex document based back office tasks. Delivered as backend services for integration in existing ECM, ERP, RPA or CRM systems.

```
class TemporalBlock(nn.Module):
    def __init__(self, n_inputs, n_outputs,
        super(TemporalBlock, self).__init__


        self.conv1 = nn.Conv1d(n_inputs, n_
                              stride=strid
        self.chomp1 = Chomp1d(padding)
        self.relu1 = nn.ReLU()
        self.dropout1 = nn.Dropout2d(dropou


        self.conv2 = nn.Conv1d(n_outputs, n
                              stride=strid
        self.chomp2 = Chomp1d(padding)
```

DEMO 2: Hypatos Studio

Machine learning pipeline software to annotate or complete document data and train machine learning models. Cloud and on-premise delivery to efficiently train models while protecting confidential data.

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We are looking for a EUR ~10mn round to continue with product work, client acquisition and delivery for next 24 months

Use of funds:

Machine learning

- Hiring additional data scientists for significant investment in research
- Further automation of ML pipeline
- Develop automation models for new document use cases and more models for international applications

Engineering

- Further build-up of engineering team
- Advance Human in the Loop tool-set
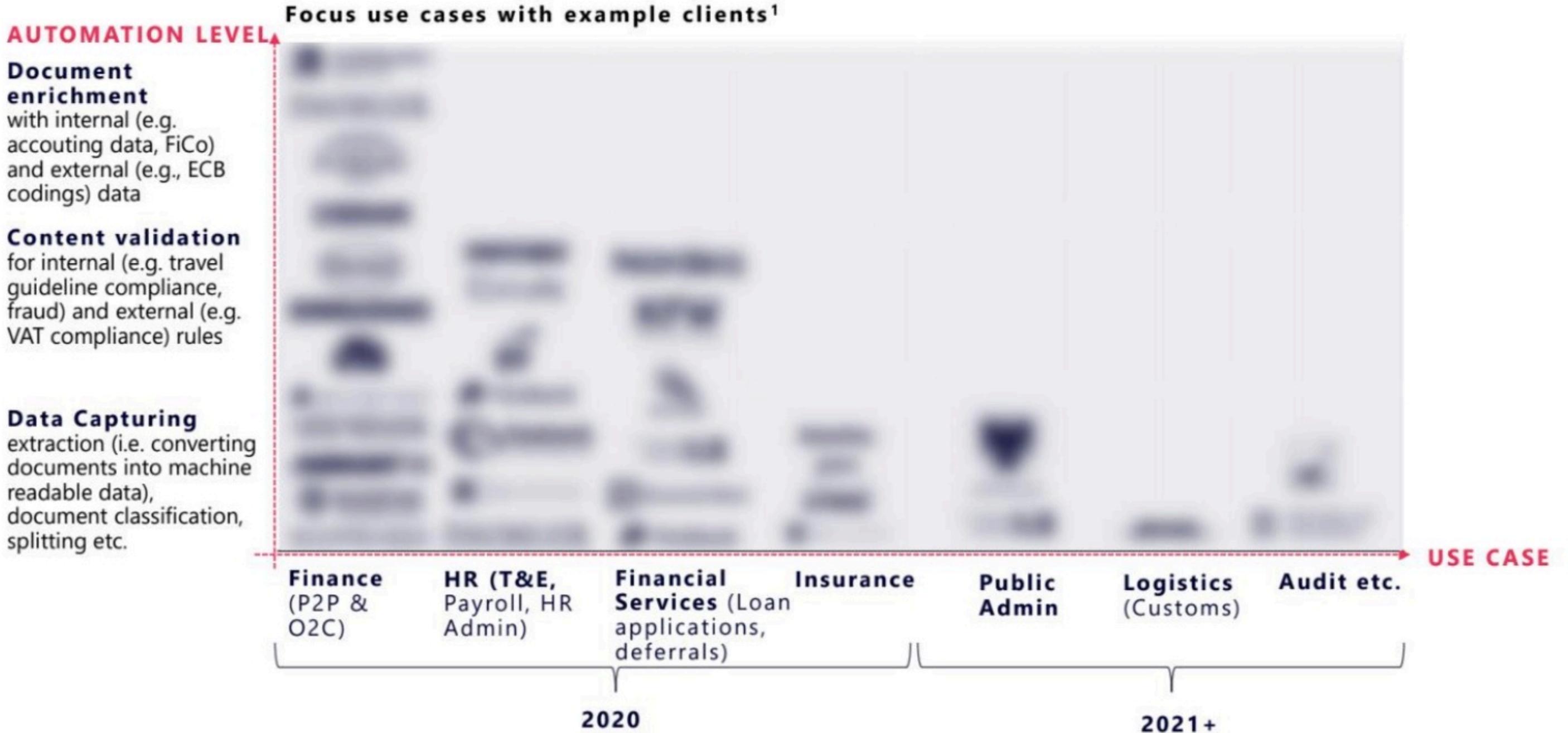- Build integrations with more platforms (ERP, CMS, RPA)

Delivery team

- Hiring and build-up of delivery team for pre-sales and delivery project management
- Addition of solution architects for pre-sales support
- Increasing technical support staff for clients

Go to market

- Hire marketing manager, additional sales reps & invest in PR
- Increase organic reach via targeted content creation

Hypatos focuses on the largest back office process use cases involving semi-structured documents

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Focus use cases with example clients[1]

AUTOMATION LEVEL

Document enrichment
with internal (e.g. accouting data, FiCo) and external (e.g., ECB codings) data

Content validation
for internal (e.g. travel guideline compliance, fraud) and external (e.g. VAT compliance) rules

Data Capturing
extraction (i.e. converting documents into machine readable data), document classification, splitting etc.

USE CASE

| **Finance** (P2P & O2C) | **HR (T&E,** Payroll, HR Admin) | **Financial Services** (Loan applications, deferrals) | **Insurance** | **Public Admin** | **Logistics** (Customs) | **Audit etc.** |

2020

2021+

Meet our international team and advisors

Dr. Uli Erxleben

Founder & MD

Previous roles:

- McKinsey & Company in Berlin & Palo Alto
- MD of Rocket Internet SE for North America
- MD for early stage corporate venturing activities of ProSiebenSat1 Media SE
- Serial Entrepreneur & Angel Investor

Cem Dilmegani

Chief Commercial Officer

Previous roles:

- McKinsey & Company
- Head of integration at regional telco
- Principal at Solon
- Founder of AIMultiple

He Zhang, PhD

VP of machine learning

Previous roles:

- Head of Data Science at Lesara GmbH,
- Lead Data Scientist at HelloFresh SE
- Theoretical physicist at Max-Planck- Institut

40+ Data scientists, engineers and delivery professionals in Berlin and Warsaw with research degrees from among others Harvard and Oxford

150 years of cumulative tech work experience

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