AI Unplugged: bilanciare innovazione, explainability e sostenibilità

ITALIAN INSURTECH SUMMIT

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Agenda

Expert.ai & Insurance

Paradox of Energy, Ethics, and Technology in AI

Sustainability, Explainability, Trust, and Transparency: The Foundations for AI Adoption
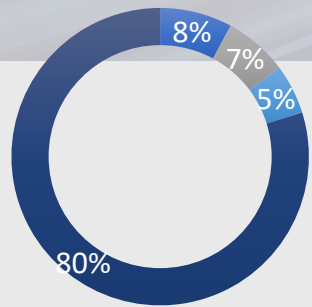
Hybrid Model: The Key to Ensuring the Foundations of Adoption

Towards a Sustainable Future: Final Reflections and Perspectives

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Expert.ai delivers enterprise AI solutions driving measurable business value

EXAI:IM Listed on the Euronext Growth Milan market since 2014

Offices & AI Labs over 6 Countries; more than **130** Data & AI professional

Industries Coverage
6

Years of NLU experience
30+

AI Delivery Success
100%

8%

7%

5%

80%

- GUM Group S.p.A.
- Ergo s.r.l
- Sofia Holding S.r.l.
- Market

Business Model

✣ **Solutions**
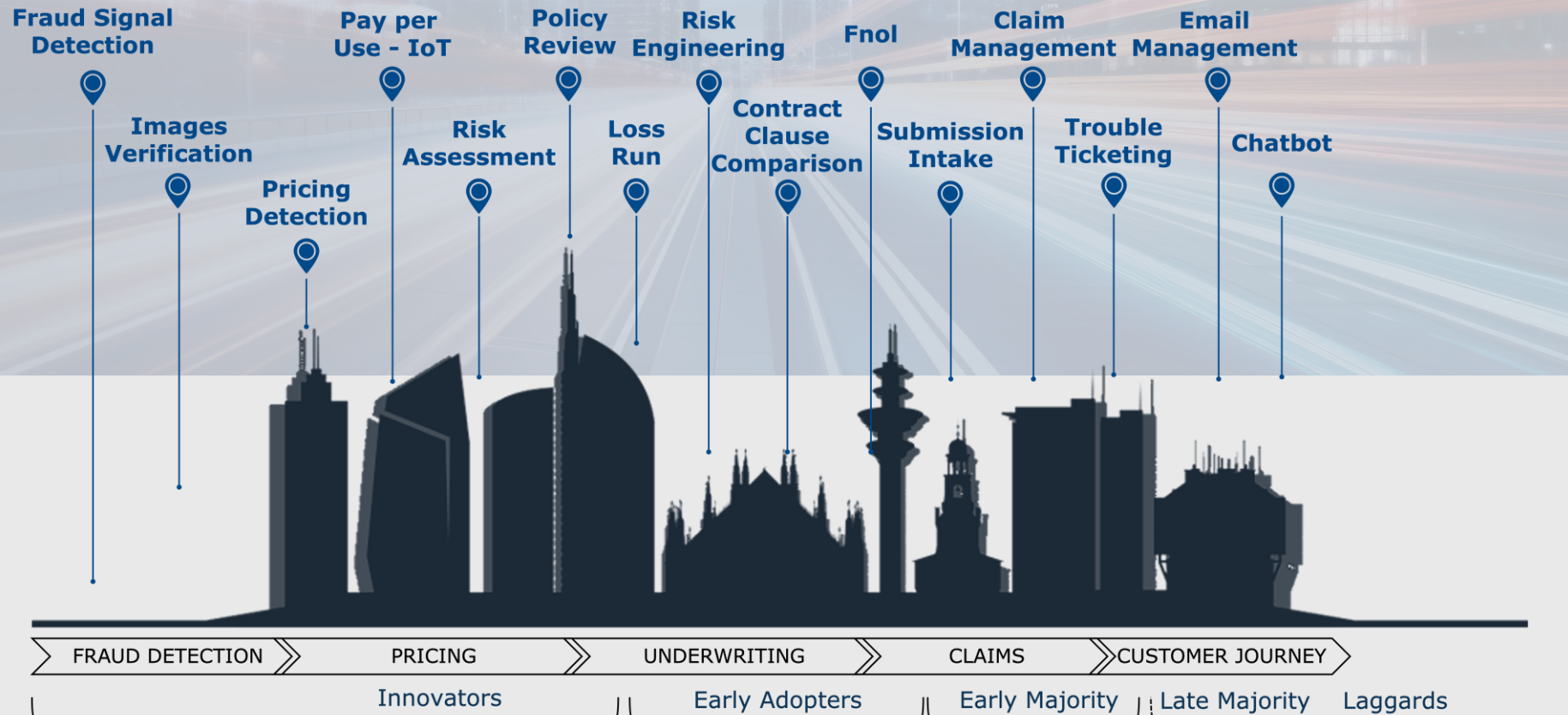
Delivering Value through Breakthrough Solutions

🚀 **Technology**

Anticipating and Adapting to Market Evolution

⚙ **Services**

Fostering a Culture of Continuous Improvement

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Insurance Experience

Fraud Signal Detection

Images Verification

Pricing Detection

Pay per Use – IoT

Risk Assessment

Policy Review

Loss Run

Risk Engineering

Contract Clause Comparison

Fnol

Submission Intake

Claim Management

Trouble Ticketing

Email Management

Chatbot

FRAUD DETECTION PRICING UNDERWRITING CLAIMS CUSTOMER JOURNEY

Innovators Early Adopters Early Majority Late Majority Laggards

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AI PARADOX: Energy, Ethics, and Technology

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ENERGY

The energy consumption of data centers is projected to double from 2022 to 2026, creating an urgent need for sustainable energy sources.

Google has partnered with Kairos Power to construct seven small nuclear reactors, expected to generate 500 megawatts of power by 2035. This initiative aims to provide a reliable and carbon-free energy source for its AI data centers, with the first reactor anticipated to be operational by 2030.

Microsoft has made headlines by agreeing to restart operations at the Three Mile Island nuclear facility, which was previously shut down following a significant accident in 1979. This agreement is part of a broader strategy to secure clean energy for its AI infrastructure.

Amazon has also announced plans to acquire a nuclear-powered data center in Pennsylvania, further illustrating the tech sector's shift towards nuclear energy as a solution for rising electricity demands.
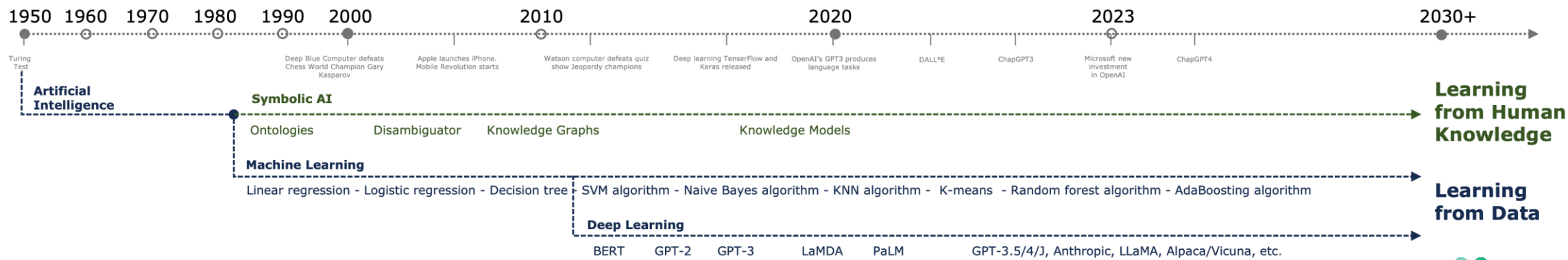
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ETHICS

As AI technologies evolve, the need for robust ethical frameworks and regulations becomes increasingly critical.

Collaboration Between Humans and AI

Job Transformation Rather Than Elimination

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TECH

| 1950 | 1960 | 1970 | 1980 | 1990 | 2000 | | 2010 | | | 2020 | | | 2023 | | 2030+ |

Turing Test

Deep Blue Computer defeats Chess World Champion Gary Kasparov

Apple launches iPhone. Mobile Revolution starts

Watson computer defeats quiz show Jeopardy champions

Deep learning TenserFlow and Keras released

OpenAI's GPT3 produces language tasks

DALL°E

ChapGPT3

Microsoft new investment in OpenAI

ChapGPT4

Artificial Intelligence

Symbolic AI

Ontologies · · · Disambiguator · · · Knowledge Graphs · · · Knowledge Models

Learning from Human Knowledge

Machine Learning

Linear regression - Logistic regression - Decision tree · SVM algorithm - Naive Bayes algorithm - KNN algorithm - K-means - Random forest algorithm - AdaBoosting algorithm

Learning from Data

Deep Learning

BERT · GPT-2 · GPT-3 · LaMDA · PaLM · GPT-3.5/4/J, Anthropic, LLaMA, Alpaca/Vicuna, etc.

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The Foundations for AI Adoption
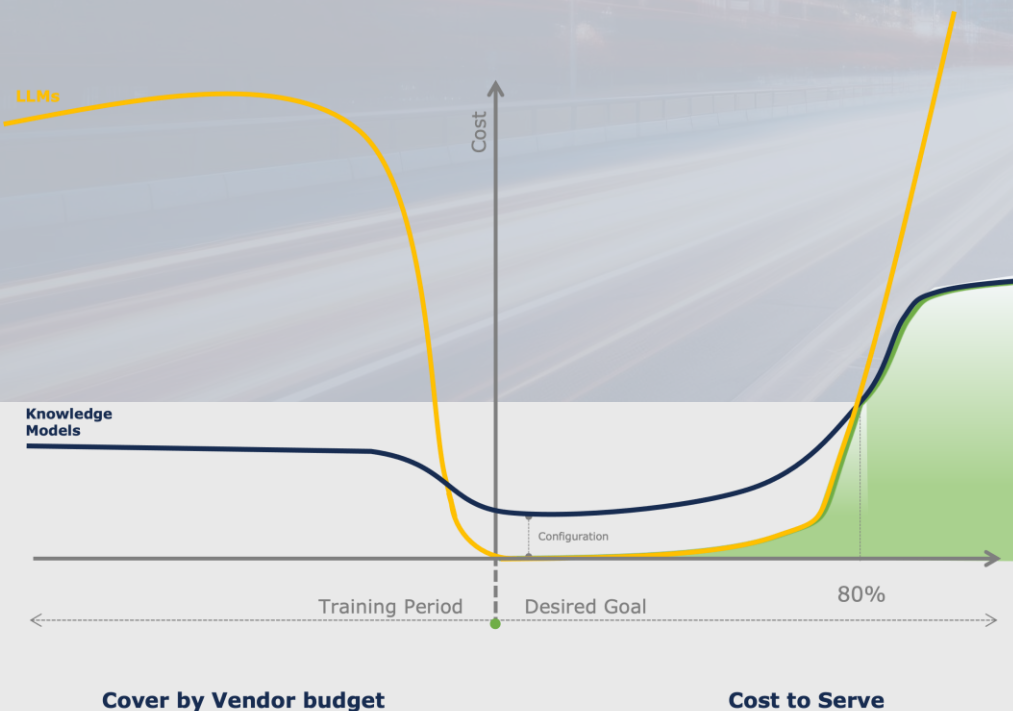## Sustainability, Explainability, Trust, and Transparency

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Sustainability

Less computing = less energy = lower carbon footprint.

To exceed 80% of our targets - *whether qualitative or quantitative* - the cost of using LLMs significantly skyrocket because of the sheer volume of tokens involved.

By blending in symbolic technology, we're able to keep those costs in check, ensuring a more balanced and efficient solution.

LLMs

Cost

Knowledge Models

Configuration

Training Period   Desired Goal   80%

Cover by Vendor budget   **Cost to Serve**

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Explainability

Explainability encompasses the methodologies and processes that enable human users to understand and trust the outputs generated by machine learning algorithms.

Building Trust

Error Detection and Improvement

Regulatory Compliance

Ethical Considerations

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Trust & Transparency

Trust and transparency are essential pillars in the design and implementation of artificial intelligence (AI) systems.

Data Transparency

Model Transparency

Process Transparency

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Hybrid Model
The Key to Ensuring the Foundations of Adoption

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Why Hybrid

1 order
of magnitude cost saving on significant processed document amounts

x1.8
speedup without quality loss

Enhance coverage within the AI pillars

~25%
reduction on the chance of hallucinations

Accuracy

Explainability

Truthfulness

Human Knowledge

Formal Correctness

Ready to use

— ML   — LLM   — ELMs   — Knowledge Models

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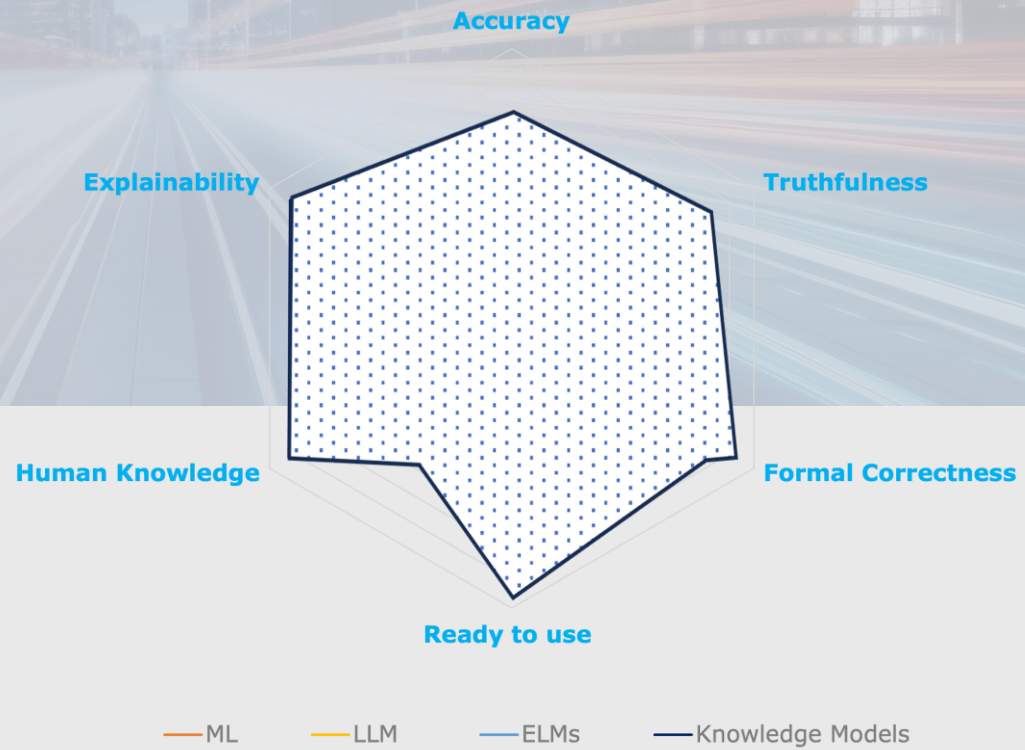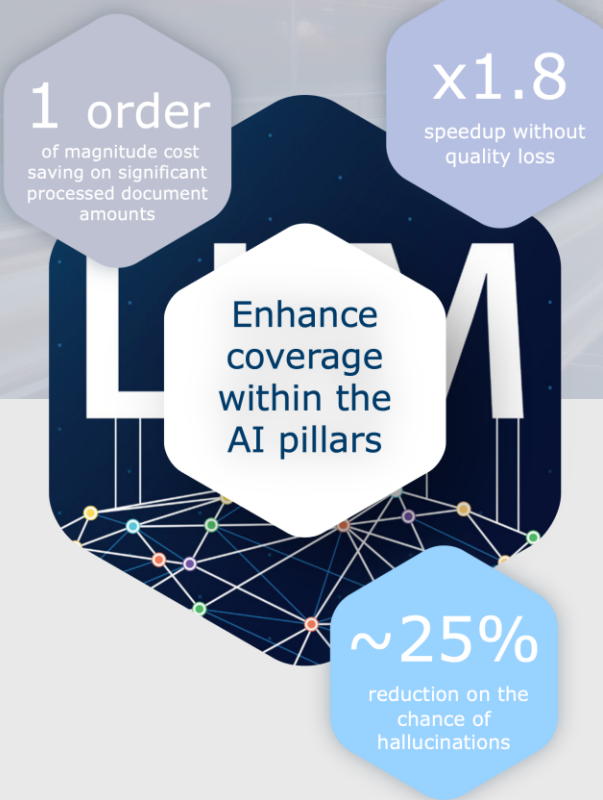
Why Hybrid

Advanced IDP
Knowledge Models
KM powered prompt engineering
Document collection, cleaning, labeling

Symbolic Based content filtering
Ground truth Validation
Hallucination Control

Knowledge

Guard Railing

START AI Journey
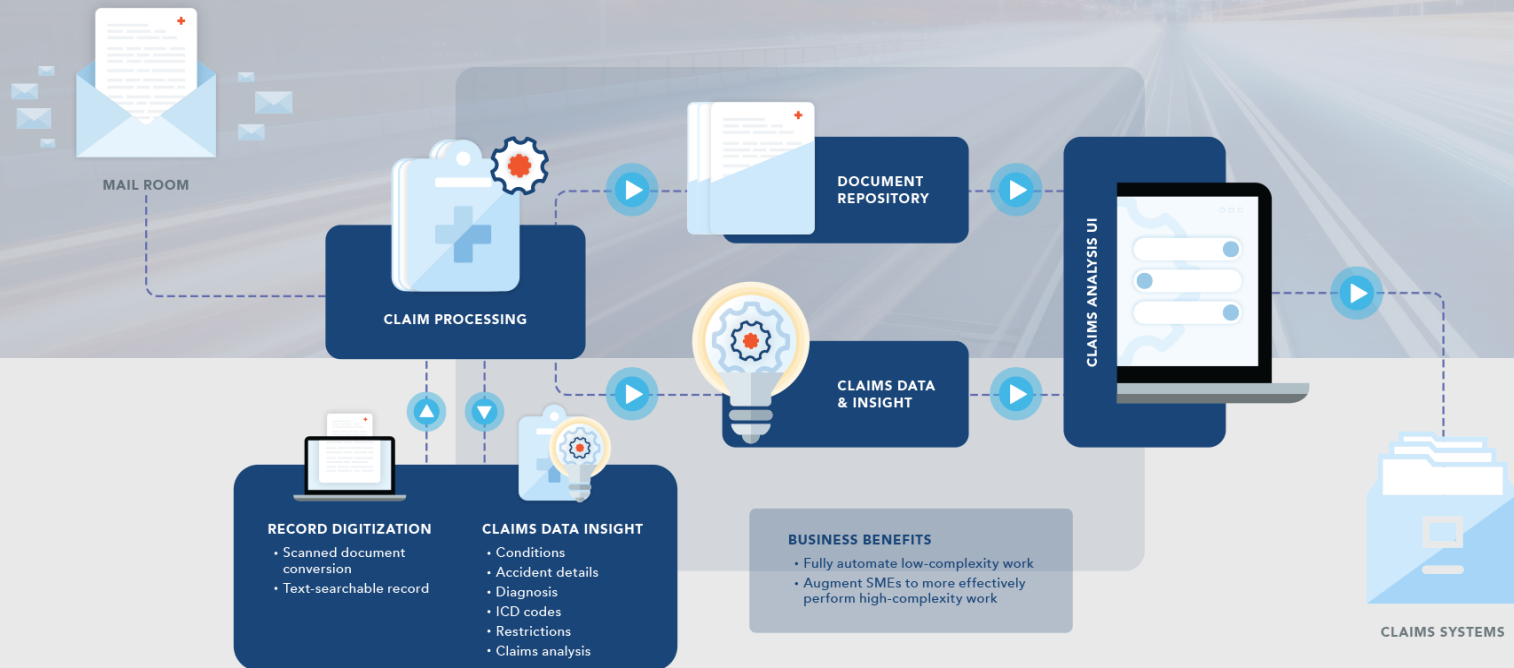
Data

GenAI

Architecture

Data Sourcing Availability
Data Privacy
Dataset Generation

Enterprise Language Models
Large Language Models

Flow Control [Boolean, Sequence, Conditional]
Shared Work environment [Low Code – No code]
Analytics [Quality control, regression check]

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Claim Experience

MAIL ROOM

CLAIM PROCESSING

DOCUMENT REPOSITORY

CLAIMS DATA & INSIGHT

CLAIMS ANALYSIS UI

RECORD DIGITIZATION
- Scanned document conversion
- Text-searchable record

CLAIMS DATA INSIGHT
- Conditions
- Accident details
- Diagnosis
- ICD codes
- Restrictions
- Claims analysis

BUSINESS BENEFITS
- Fully automate low-complexity work
- Augment SMEs to more effectively perform high-complexity work

CLAIMS SYSTEMS

A *REAL* USE CASES FROM THE INDUSTRY

Automatically extract & summarise critical content needed to accelerate claims processes (e.g. Workers Compensation) and enable subject matter experts to focus on high-value tasks.

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Why Hybrid

Medical Claim Package

Every day, new packages of randomly formatted claims documents arrive as inbound mail, often in arbitrary order:

- **Demand Letter**
- **Medical Reports**
- **Worker Status Note**
- **Diagnostic Study**
- **Claim Forms**

Manually reviewing large volumes of unstructured data presents challenges to ensuring accuracy, quality, and timely processing.

Families of Templates: **23**
Total Number of Fields: **58**

Data Processor
IDP (OCR++)
Acquisition | Conversion

Business Rules
77% **76%**
Precision Recall

LLM
79% **82%** **100%**
Precision Recall #Token

Data Processor
Custom IDP

Neuro-Symbolic Approach
Knowledge Models

Business Rules
86% **79%**
Precision Recall

LLM
89% **87%** **85%**
Precision Recall #Token

HYBRID
92% **89%** **45%**
Precision Recall #Token

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LIVE DEMO

Front-End & Back-office Environment

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Business Value

Business Stakeholders	**Reduce Combined Operation Rate (COR)** Revenue generation | Operational cost saving | Strategic Priority	**$1,000,000/month** in "work avoided" Saving **"CIO of the Year"**	
KPI	OPERATING MARGIN	**1200+** Active system user **40%** Processing time saving per Claim **30%** Documents eliminated from review	
	FTE Reduction | EFFICIENCY | TCO		
Process Metric	**Success Delivery Time** Throughput | Implementation | Elapsed	**Accuracy** Precision | Recall | F-measure	**95%** Accuracy over 58 parameters **5** Months Delivery time Project
Data Metric	Structured Data Quality Accuracy | Domain Knowledge richness | Domain Data Fitting Models | Model Response Reliability	**5M** Medical Report Processed Annually **4** Type of AI models used **100%** Explainability	

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Towards a Sustainable Future
Final Reflections and Perspectives
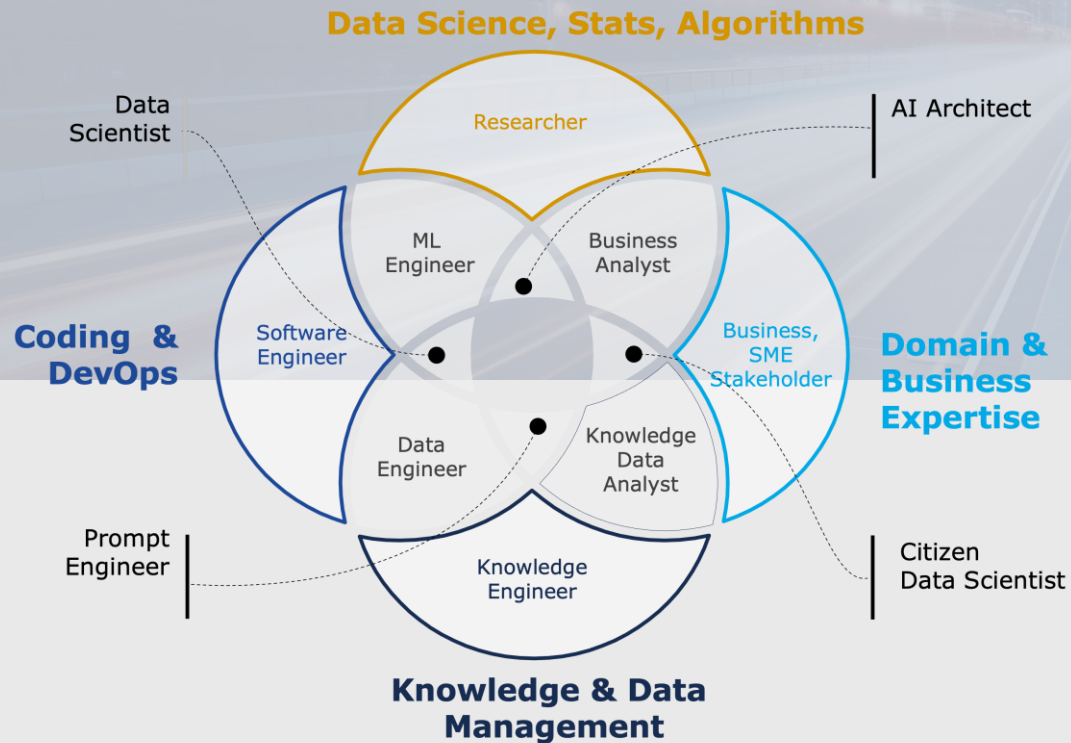
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AI ADOPTION

AI adoption is rapidly increasing across industries, driven by advancements in generative technologies and a commitment to leveraging AI for competitive advantage.

The future of work will likely see an evolved landscape where human-AI collaboration enhances productivity and innovation

People   **Process**

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Ai Professional Team

Data Science, Stats, Algorithms

Data Scientist

Researcher

AI Architect

ML Engineer

Business Analyst

Coding & DevOps

Software Engineer

Business, SME Stakeholder

Domain & Business Expertise

Data Engineer

Knowledge Data Analyst

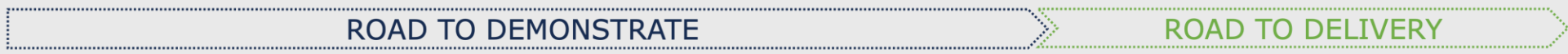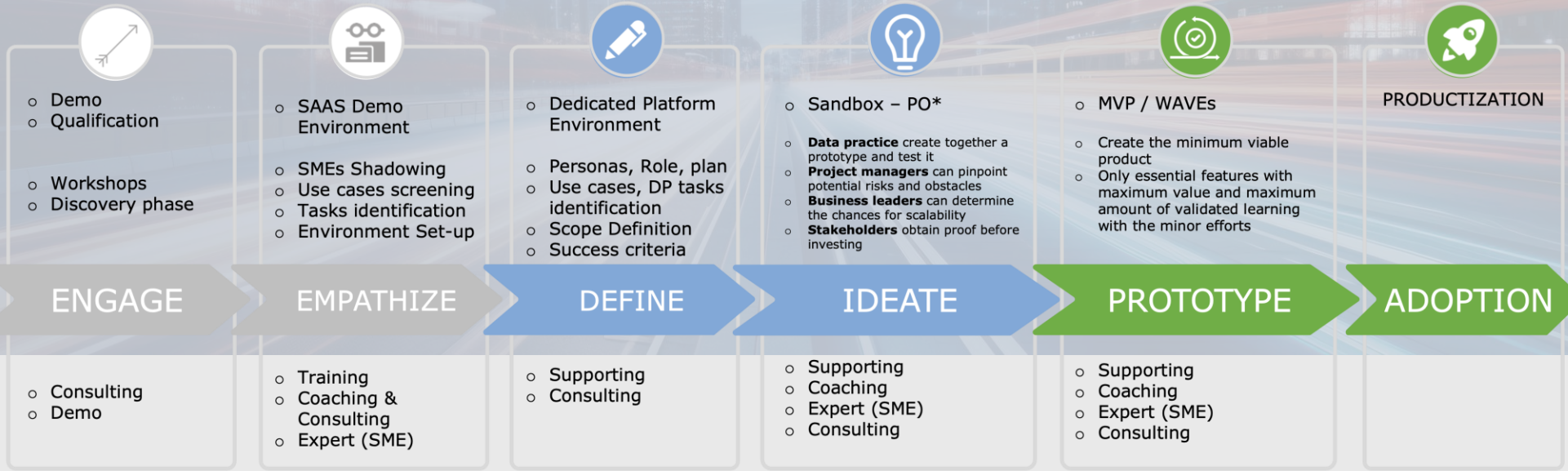Prompt Engineer

Knowledge Engineer

Citizen Data Scientist

Knowledge & Data Management

Empowering AI adoption with a team of 130 experts, mastering everything from data management to data science and domain expertise, all driven by **Never Stop Learning** *mindset.*

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AI ADOPTION

ENGAGE	EMPATHIZE	DEFINE	IDEATE	PROTOTYPE	ADOPTION
o Demo o Qualification o Workshops o Discovery phase	o SAAS Demo Environment o SMEs Shadowing o Use cases screening o Tasks identification o Environment Set-up	o Dedicated Platform Environment o Personas, Role, plan o Use cases, DP tasks identification o Scope Definition o Success criteria	o Sandbox – PO* o **Data practice** create together a prototype and test it o **Project managers** can pinpoint potential risks and obstacles o **Business leaders** can determine the chances for scalability o **Stakeholders** obtain proof before investing	o MVP / WAVEs o Create the minimum viable product o Only essential features with maximum value and maximum amount of validated learning with the minor efforts	PRODUCTIZATION
o Consulting o Demo	o Training o Coaching & Consulting o Expert (SME)	o Supporting o Consulting	o Supporting o Coaching o Expert (SME) o Consulting	o Supporting o Coaching o Expert (SME) o Consulting	

ROAD TO DEMONSTRATE   **ROAD TO DELIVERY**

2 weeks	2 weeks	4 weeks	4 weeks (each)

Customer Onboard   Kick-off   Validation Gate   GO - LIVE

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Let's drive your AI adoption journey ... together

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Thank You

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