



```
struct uv__fd_hash_bucket_s {
```

```
    size_t size;
```

```
    entry_ptr->info = *info;
```

```
    bucket_ptr->size -= 1;
```

```
#define FIND_COMMON_VARIABLES
```

```
FIND_IN_BUCKET_PTR();
```

```
if (entry_ptr == NULL) {
```

```
    bucket_ptr->size % UV__FD_HASH_GROUP_SIZE;
```

```
static uv__fd_hash_t uv__fd_hash;
```

```
#define UV__FD_HASH_SIZE 256
```

```
#define FIND_IN_GROUP_PTR
```

```
if (entry_ptr != NULL) {
```

```
    *info = entry_ptr->info;
```

ROI-Guided Innovation using Artificial Intelligence

We build AI that works for you, from data to deployment — seamless, scalable, and impactful

AI-driven Innovation

With Real-World Impact Focus

Many ambitious AI/ML projects never see the light of day – due to challenges ranging from misaligned data architectures and vision vs. reality to scalability quandaries.

For over 20 years, enterprise engineering leaders have trusted us to deliver mission-critical software with unmatched quality.

Our clients benefit from our expertise in solving complex challenges at the intersection of AI/ML and hardcore software engineering, ensuring their projects succeed.

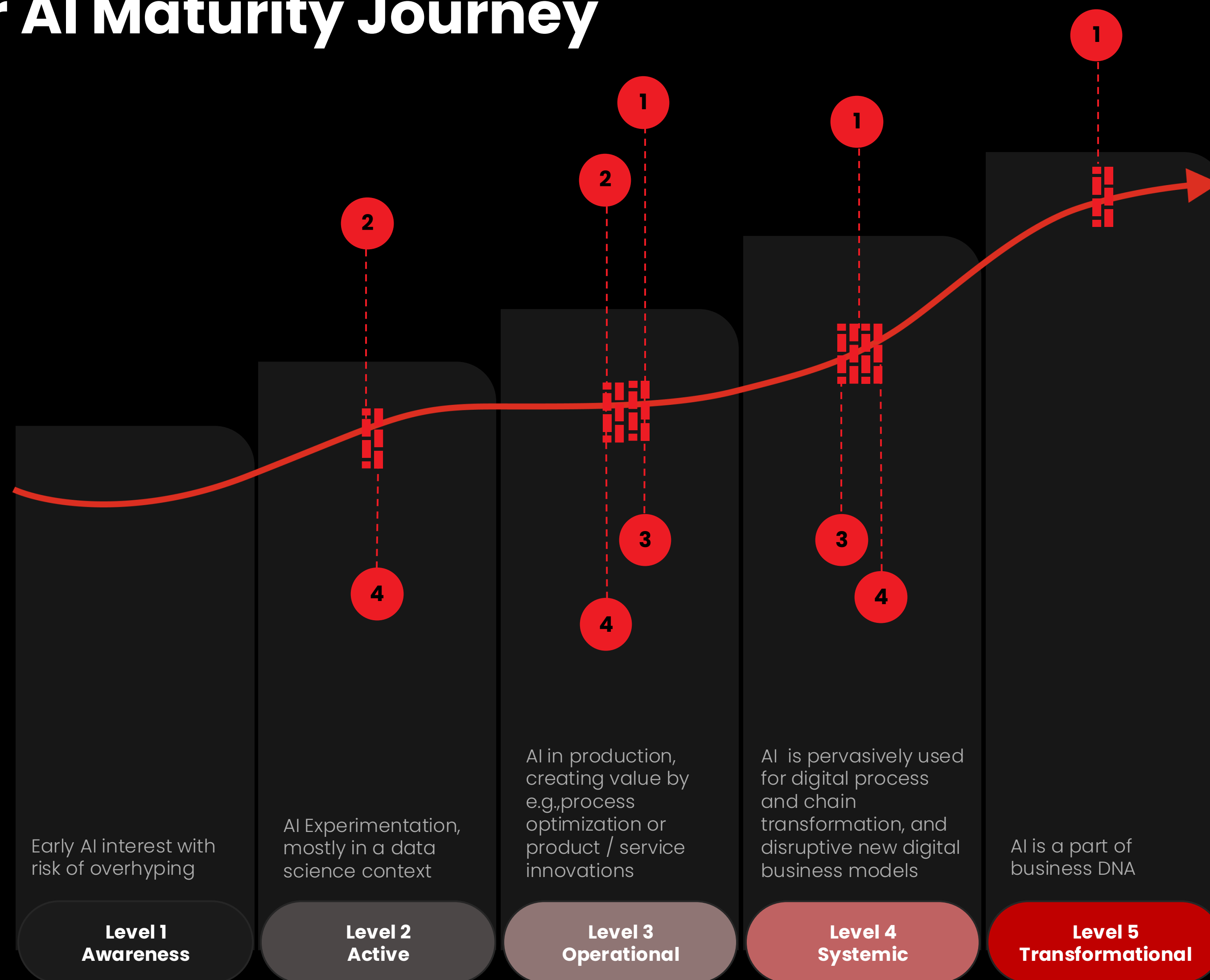
Notable clients



Critical Challenges

Companies Encounter on Their AI Maturity Journey

- 1 Future-Proofing Data Engineering, Architecture, and Infrastructure**
 As AI initiatives grow, the underlying data engineering and infrastructure must be robust and adaptable. Without a future-proof foundation, scaling and sustaining AI projects becomes increasingly difficult, leading to potential bottlenecks and inefficiencies.
- 2 Achieving Speed and Precision in AI PoCs Validation**
 Research and development efforts often struggle to validate AI-driven proof of concepts quickly. Challenges include managing complex datasets, ensuring model accuracy, and integrating AI into existing workflows, which can delay innovation.
- 3 Maximizing Impact and Speed to Market of ML Projects and Features**
 Scaling and optimizing machine learning projects, whether niche or large-scale, is critical to achieving maximum efficiency and performance. Bringing AI-driven features to market quickly and ensuring they deliver the intended value is a complex challenge. This requires not only robust ML frameworks but also continuous monitoring, refinement, and strategic integration into existing operations.
- 4 Building and Identifying Dev Tooling and Frameworks for AI/ML Success**
 Tools & frameworks tailored to AI/ML projects are essential for efficient development & deployment. Finding the optimal mix of custom-built tools, existing solutions, & open-source options is critical to the success & efficiency of AI initiatives. However, poor or mismatched tool selection can substantially increase project costs & the risk of failure, underscoring the importance of a strategic approach to tool and framework choices.



Janea Systems' Impact on Maximizing ROI in AI Initiatives



Data & AI Architecture Implementation

- **We build robust architectures required to support AI initiatives:**
Infrastructure and architecture design: we develop scalable and efficient AI infrastructure tailored to organizational needs, ensuring seamless integration with existing systems.
- **MLOps Implementation:**
we implement robust AI/ML operations to ensure solutions are scalable, efficient, and reliable, optimizing every stage of the AI lifecycle from data pipelines to model deployment.
- **Advanced Data Engineering:**
we build and optimize data architectures that serve as the backbone of AI initiatives, making sure that data is accurately collected, properly formatted, and well-structured to fuel AI/ML models.



Adoption of Best Practices, Standards, and Frameworks for AI Governance

We establish strong governance frameworks to organize AI teams and set up routines and practices that ensure transparency, predictability, and scalability of AI initiatives. This service ensures secure AI implementation while providing full visibility into project execution.



Intelligent Solution Development

We design and develop AI-powered solutions tailored to specific challenges. From concept to deployment, the focus is on delivering innovative solutions that integrate seamlessly into operations, with a strong emphasis on optimizing deployment and continuous monitoring for maximum impact.



Building High Performing AI Teams

We assemble and enhance AI teams by augmenting existing talent and creating dedicated units. This service ensures that teams are equipped with the necessary skills and expertise to drive AI success.



AI Strategy, Transformation, and Consulting

We guide our clients through their AI maturity journeys with strategic consulting aligned with business objectives. Services include setting ROI-guided, business-aligned KPIs, selecting the best use cases for investment, and reducing risks associated with scaling non-feasible use cases. The goal is to transform AI visions into actionable plans, ensuring a seamless transition from strategy to execution.

FinTech Leaders Trust Us



To Drive Data and AI Transformation



Actionable Real-Time Customer Data For AI-Enhanced Collections

Client:
Akuvo

Our impact:

We supported the development of a cloud-native data management solution for a next-generation collections platform. Designed to integrate customer core data, personal profiles, and third-party information, this platform enhances collections management, resolves credit disputes, and expands AI/ML capabilities. Our strategy empowered data scientists and engineers to access actionable, real-time data, driving future business impact.



Future-Ready Middleware for Core Banking Modernization

Client:
QCash

Our impact:

We created middleware as an abstraction layer between legacy core banking systems and modern FinTech applications. This solution enabled the integration of multiple banking cores and reduced the complexities of outdated systems. The result was a flexible, scalable, and secure architecture that not only streamlined data exchange but also laid the foundation for AI-driven innovations, driving operational efficiency and lowering costs.

Global AI Game Changers



Rely On Our Expertise



AI on the Edge: Boosting PyTorch with ARM64 Support

Client:

Microsoft (for Meta)

Our impact:

We enabled PyTorch support on ARM64 architecture, facilitating AI development on new Windows machines. This advancement supports AI on the edge applications, allowing for deployment on devices such as Raspberry Pi and certain mobile phones, thus reducing reliance on server/cloud-based infrastructure.

Future-Proofing PyTorch: Enhanced Performance on Windows

Client:

Microsoft (for Meta)

Our impact:

We collaborated with the PyTorch community to future-proof the PyTorch framework on Windows platforms. Our engineering team optimized performance and resolved critical compatibility issues, ensuring PyTorch remains a top choice for AI development. This initiative resulted in improved processing speeds and strengthened framework reliability, enhancing the development experience for software engineers using Windows.

Global AI Game Changers

Rely On Our Expertise



NLP for Bing Maps: Deep Learning Inference for Enhanced Spelling Correction

Client:
Bing Maps

Our impact:

We integrated advanced NLP models into Bing's geocoding system to enhance spelling correction capabilities. This involved transitioning from rule-based to machine learning approaches, utilizing TensorFlow for model development, which streamlined updates and improved overall accuracy.

Automating Data Collection for Bing Maps

Client:
Bing Maps

Our impact:

Our team automated the collection of malformed query data for Bing Maps using a PowerShell script, significantly enlarging their testing dataset. We optimized key modules, reducing processing times by up to 7x, thereby improving debugging efficiency, overall system performance, and reducing operational costs.

Tech Giants Choose Us



To Pioneer Advanced AI Tools

Microsoft PowerToys: Advanced Paste Tool

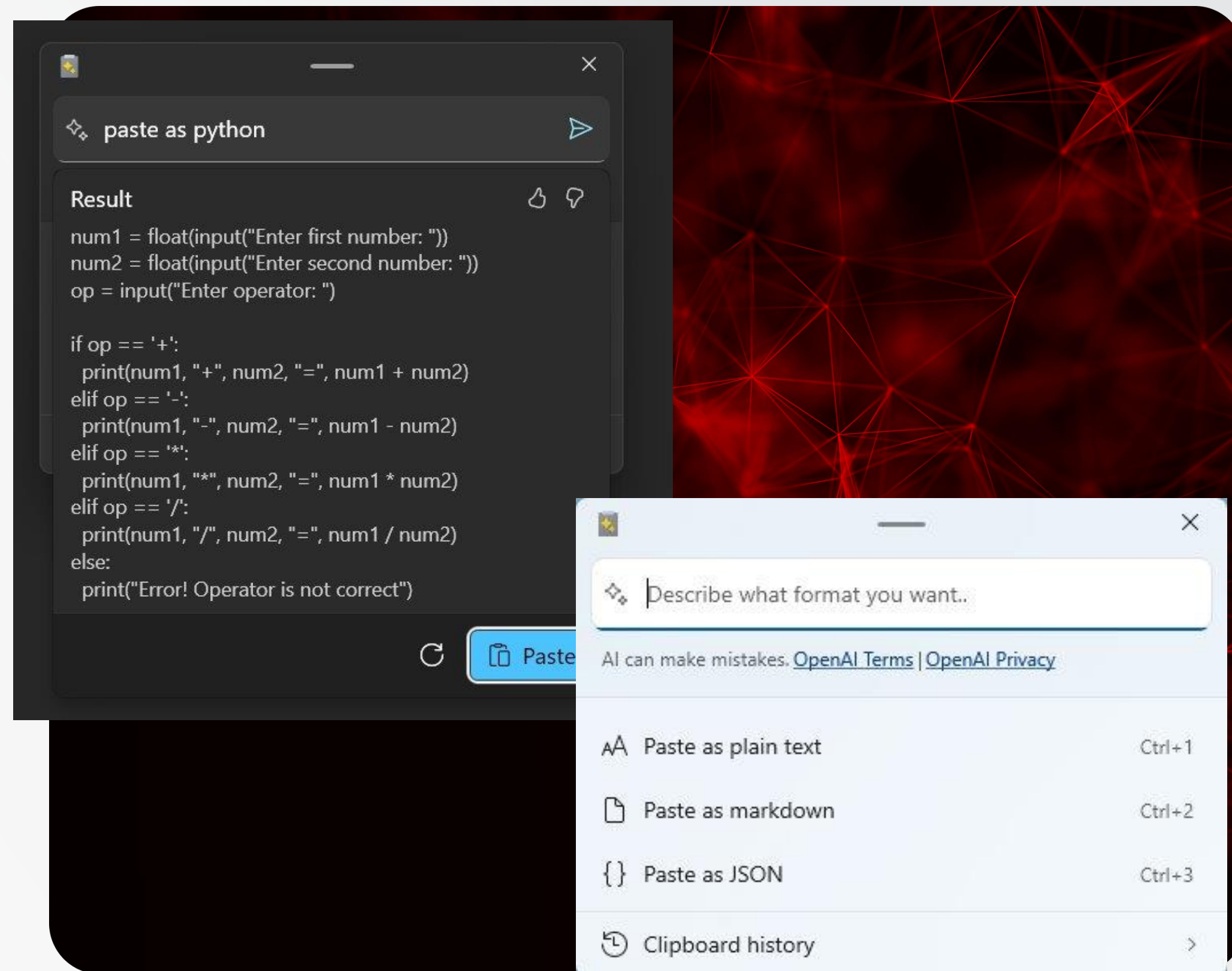
Client: Microsoft PowerToys

Our impact:

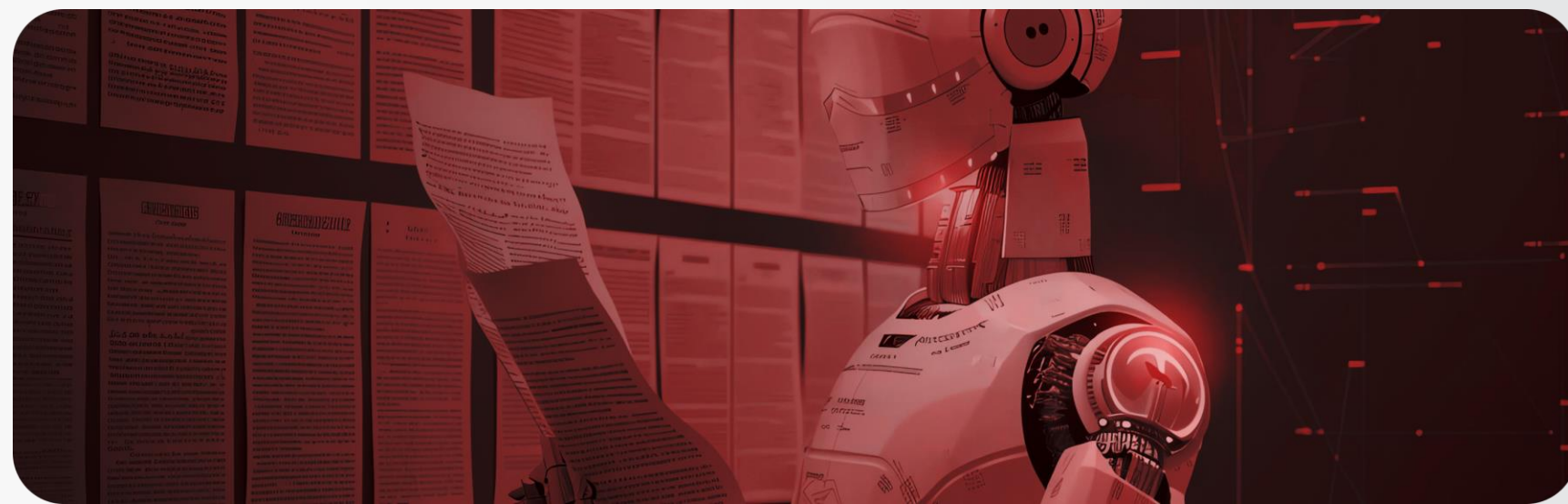
As a long-time partner of Microsoft, Janea Systems has played a pivotal role in developing PowerToys, which has been downloaded over 3 million times. Our contributions include the development of the Advanced Paste tool, which uses generative AI to transform clipboard content into formats such as plain text, JSON, and Markdown. We facilitated the integration of ChatGPT, enhancing functionality and enabling smarter content transformations.

Key Highlights of Our Impact:

- **Generative AI Integration:** Enhanced content transformation with ChatGPT.
- **Boosted Productivity:** Streamlined format conversions for developers.
- **Ongoing Support:** Provided continuous management and innovation.



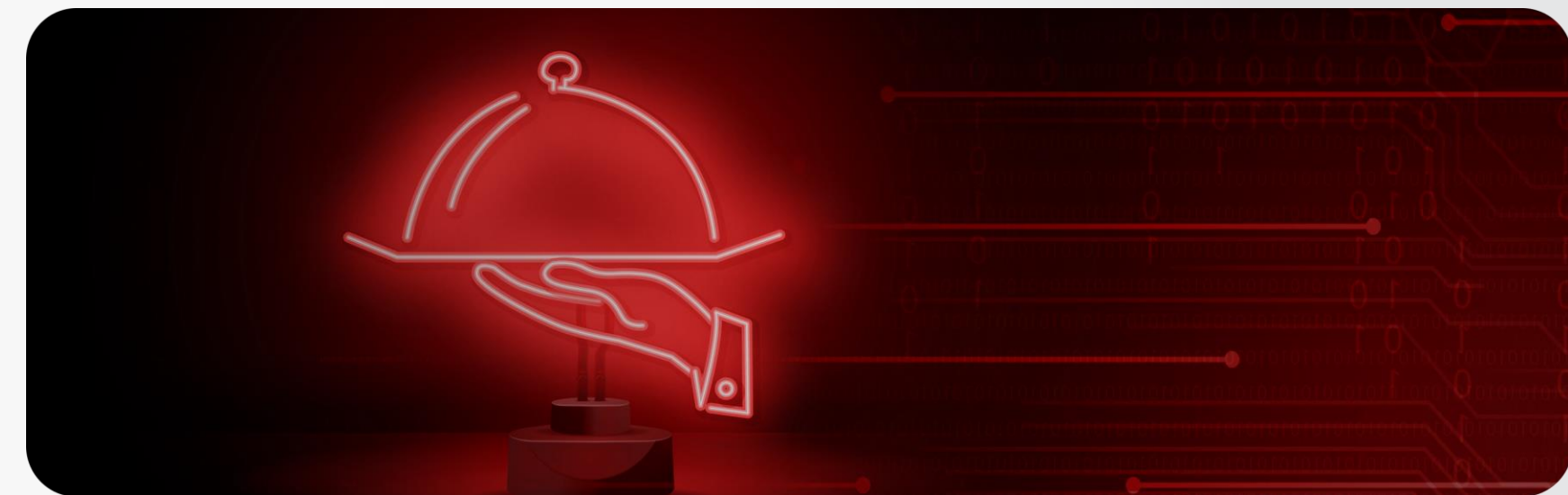
We Enhance AI-Driven Software For Exceptional Performance



Enhancing AI Document Processing with Industry-Tailored Data Engineering

Client:
Docugami

Our impact:
Our team helped Docugami to enhance their AI document processing through automated data extraction. The goal was to tailor the solution for Real Estate and Healthcare industries. Using C# and .NET, we developed custom XPASS scripts to accurately extract data from various documents, catering to the peculiarities of the target markets. Our solution reduced manual effort and increased Docugami's accuracy, ultimately making their product more competitive.



AI-Driven Dining Experience: Custom Data Solutions for Restaurant Recommendations

Client:
Dynery by Trofimo

Our impact:
We fueled Trofimo's AI-driven restaurant recommendation app, Dynery, with a top-notch data engineering solution. Our team designed an AI-driven approach using a distilled version of Facebook's BART model, which increased data classification speed tenfold, significantly reducing the need for manual labeling. The zero-shot classification model supported generating user-specific dining recommendations. Using Python and FastAPI, we built REST APIs for robust app integration. This solution helped to significantly improve the app's recommendations, setting the stage for Dynery's market expansion.

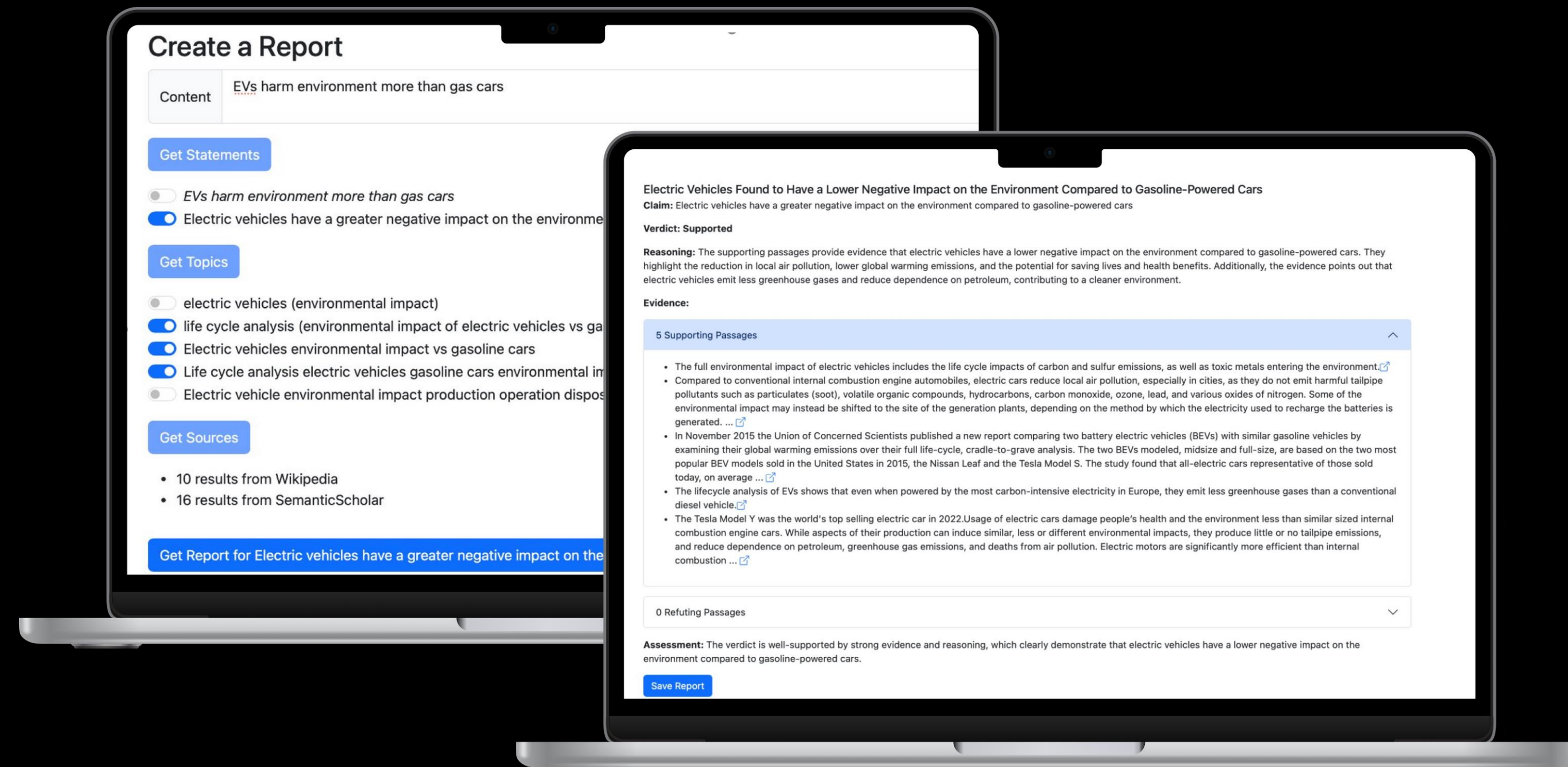
We Turn AI Ideas Into Working PoCs

LLM, RAG, and Conversational AI for Seamless and Secure Fact Checking

Client:
NDA

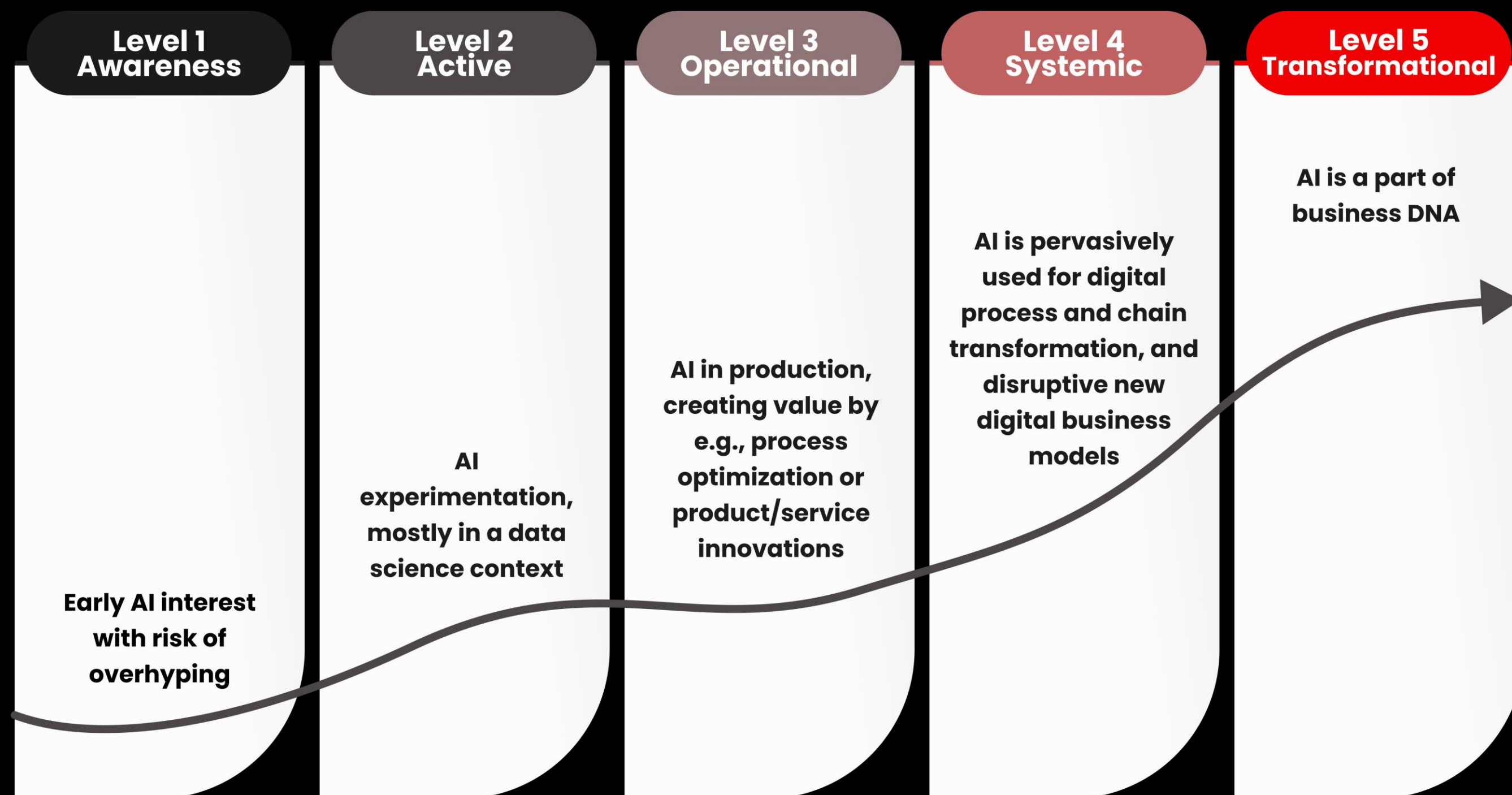
Our impact:

We developed an AI-driven fact-checking tool, leveraging ChatGPT, RAG, and Conversational AI principles. The system automates data extraction and can integrate with any type of information database, both open and closed. Designed for scalability and security, it can be hosted in the cloud or on-premise. The tool fetches information based on user requests to find evidence related to specific statements and performs rapid fact-checking. It also decomposes statements into topical relations, helping users standardize and reuse information. The architecture, built on serverless infrastructure, ensures efficient and accurate verification processes.



Your AI Maturity Boost

Delivered by Elite AI Experts



Source: Gartner

Whether you are just starting with AI or looking to optimize existing models, our experts are here to help.

From identifying the best use cases to ensuring data quality and enhancing model performance, we offer practical, actionable support tailored to your needs.

We offer a series of workshops for each crucial stage of your AI maturity journey to give you an effective boost to the next level.

Unlock High-Impact AI Use Cases

The workshop offer

Challenge:

Many organizations struggle to identify the most impactful AI use cases aligned with their business goals. This can lead to wasted investments and missed opportunities for growth.

Our Impact:

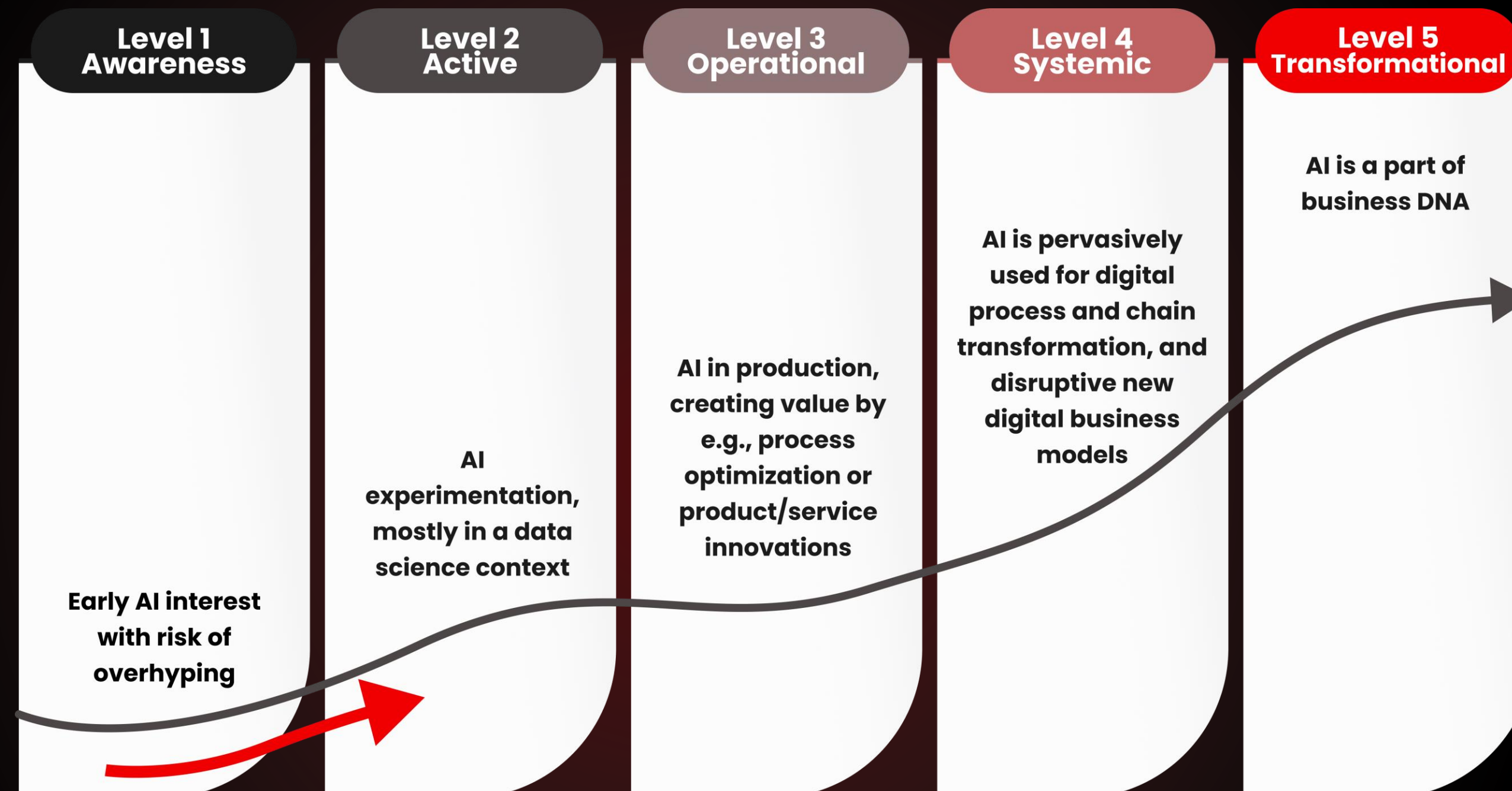
In just 3 business days, our experts will analyze your business processes and data to pinpoint the top 3 AI use cases with the highest ROI potential.

Deliverables:

- Detailed report with prioritized AI use cases
- Data architecture readiness and use case feasibility assessment
- Investment justification and cost-benefit estimation

Timeframe:

3 business days



Actionable Data Quality & Structure Assessment

The workshop offer

Challenge:

Ensuring that data is accurately collected, properly formatted, and well-structured is a major hurdle. Poor data quality and loss of data can significantly hinder AI performance and scalability. Missing or incomplete data sets can result in missed opportunities and inaccurate insights, turning potential gold mines into lost opportunities.

Our Impact:

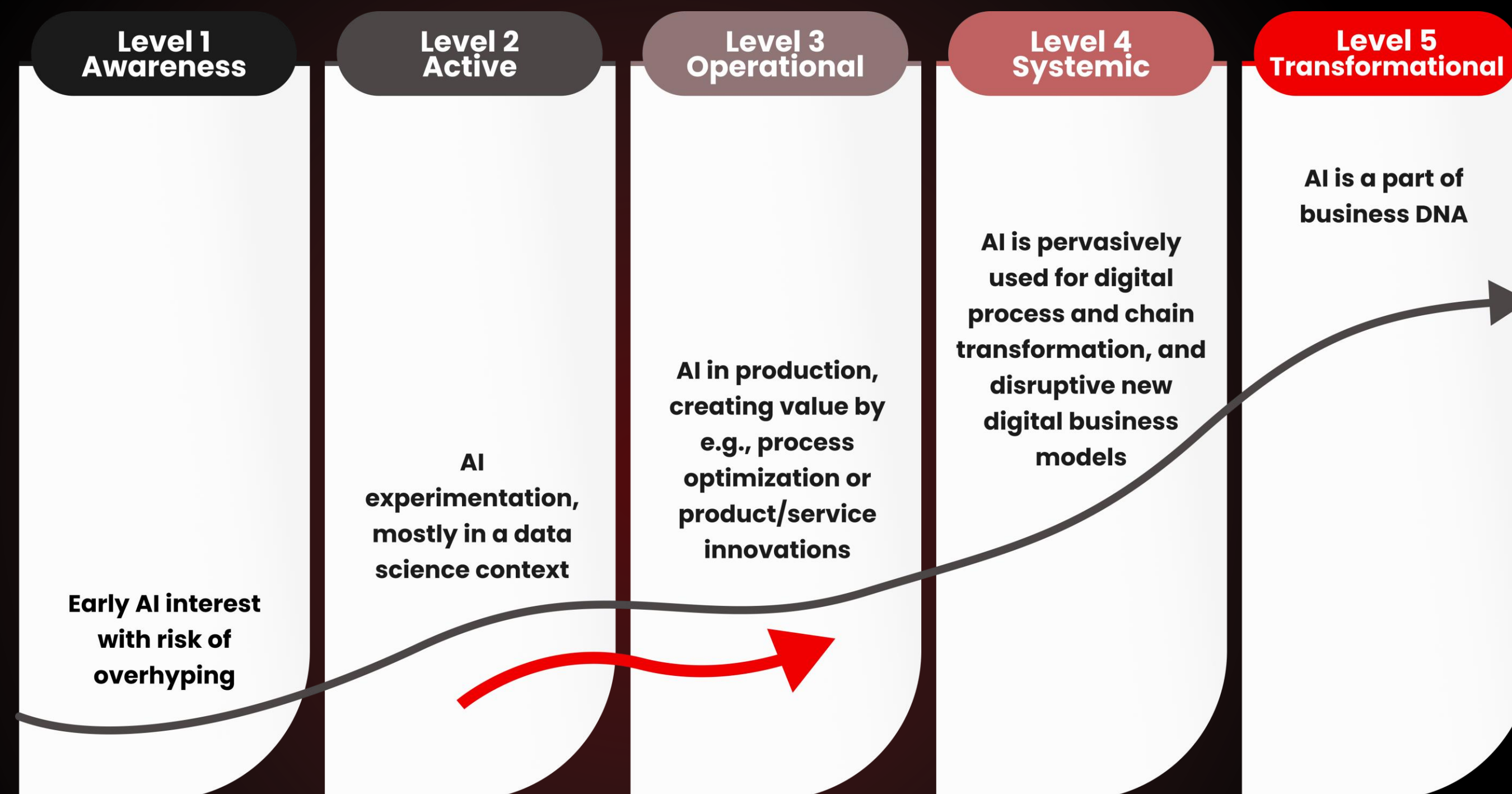
In 6 business days, we'll assess your data collection processes and structure, providing actionable steps for improvement.

Deliverables:

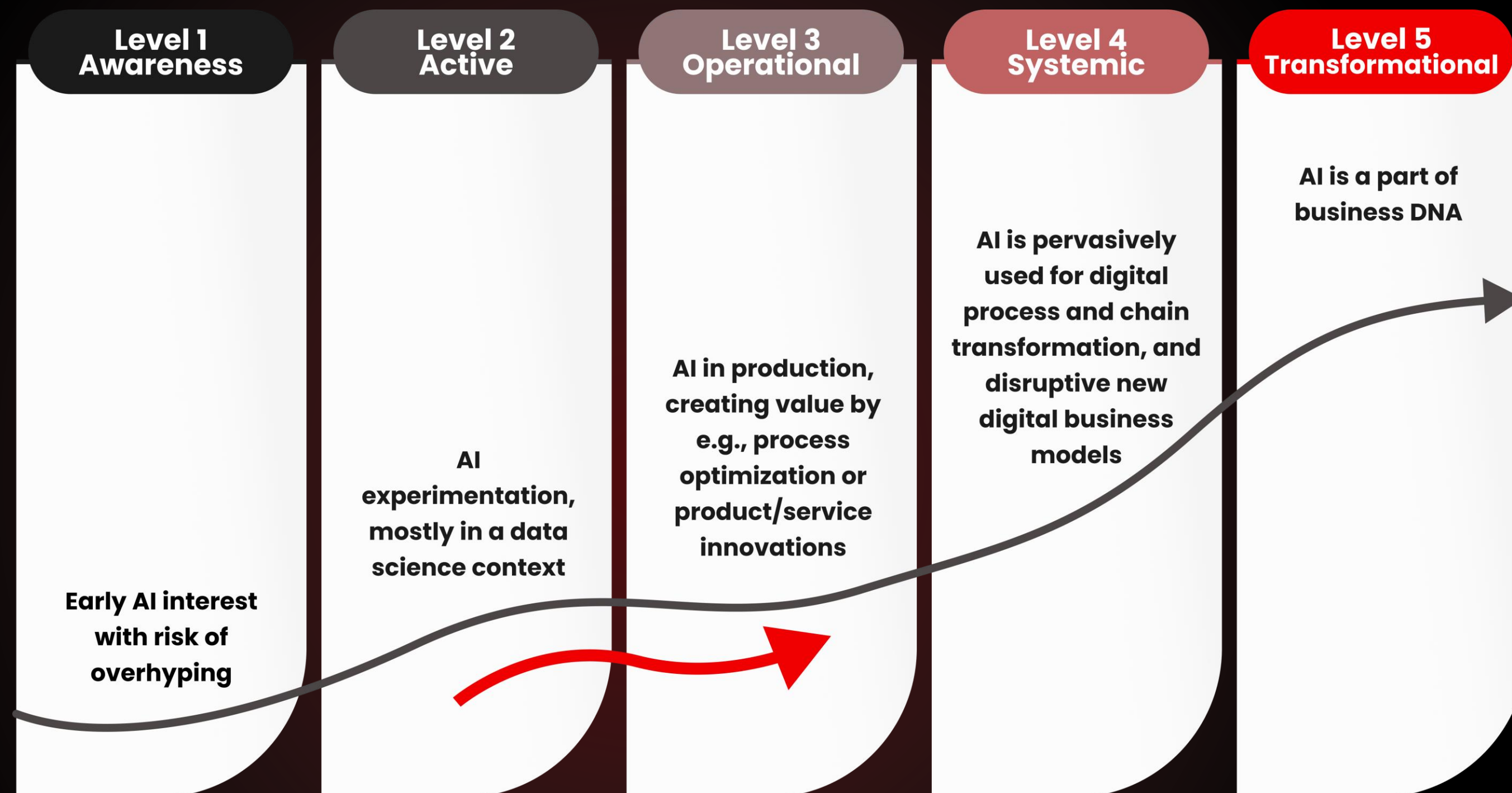
- Data quality assessment report
- Recommendations for data collection improvements
- Data structuring strategy
- Executive buy-in justification with cost and timeframe estimates

Timeframe:

6 business days



Deployment Framework for Cost-Efficiency and Scalability



The workshop offer

Challenge:

Deploying AI models efficiently and at scale is challenging. Organizations often face issues with cost, scalability, and integration with existing systems.

Our Impact:

In 6 business days, we'll design a deployment framework that balances performance and cost-effectiveness.

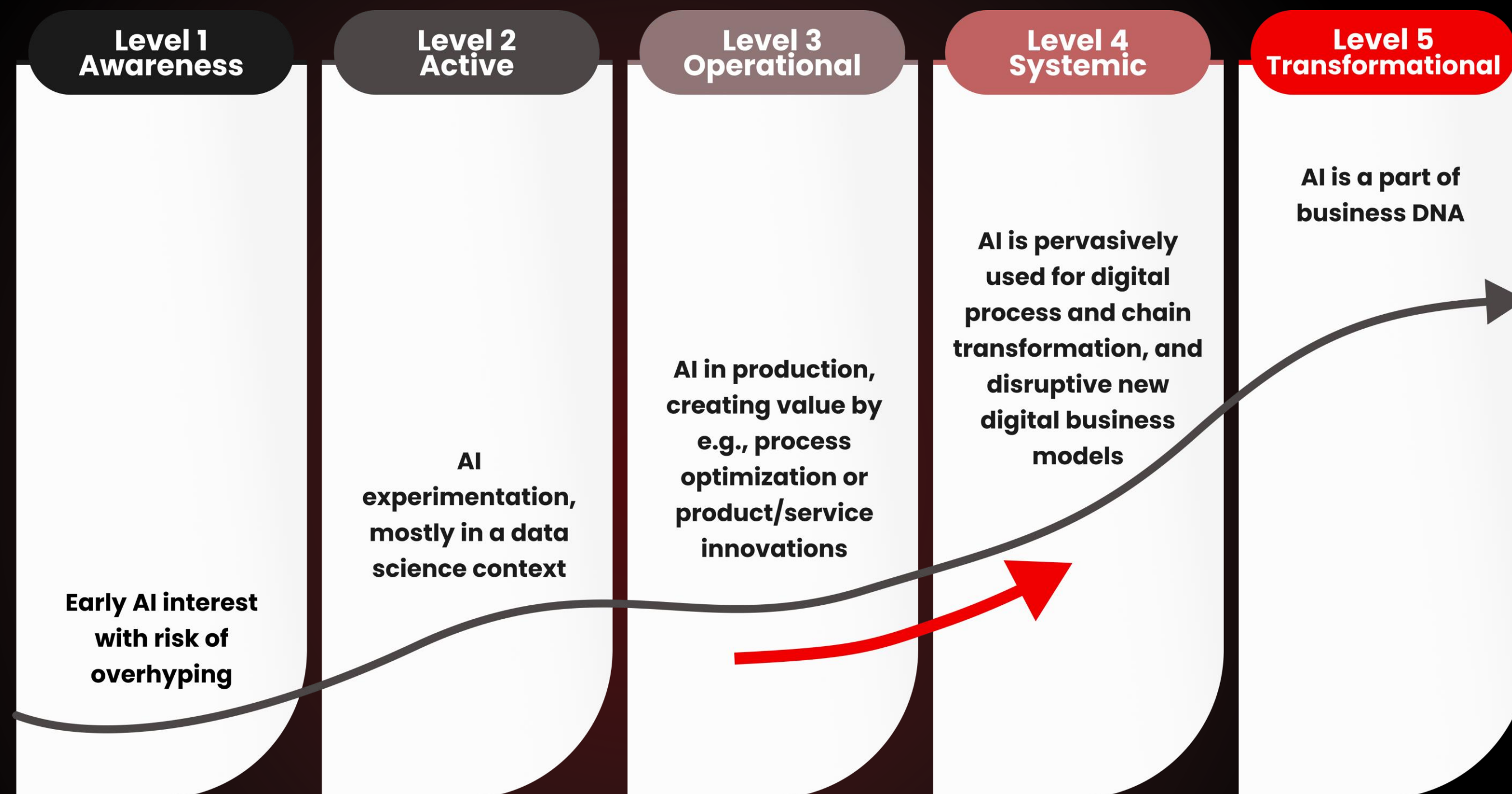
Deliverables:

- Deployment framework
- Cost-benefit analysis
- Scalability plan
- Executive buy-in justification with cost and timeframe estimates

Timeframe:

6 business days

Continuous Monitoring and Optimization Protocol



The workshop offer

Challenge:

Maintaining peak performance of AI models requires continuous monitoring, retraining, and optimization. Without a robust process, models can degrade over time.

Our Impact:

In 6 business days, we'll set up a monitoring and optimization protocol tailored to your AI models.

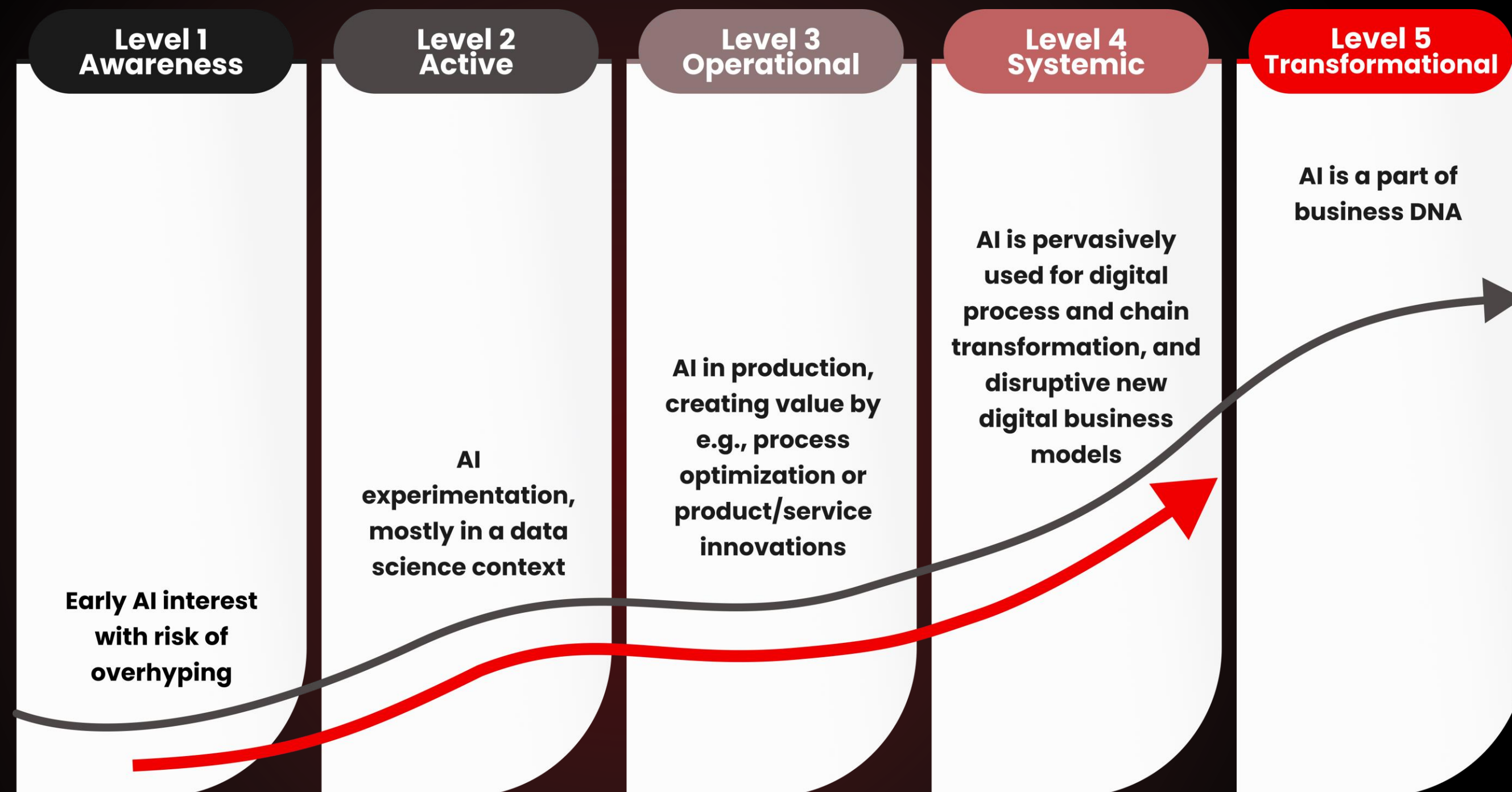
Deliverables:

- Monitoring protocol document
- Retraining schedule
- Optimization recommendations
- Executive buy-in justification with cost and timeframe estimates

Timeframe:

6 business days

MLOps Acceleration: 15-Day Comprehensive Assessment & Strategy



The workshop offer

Challenge:

Organizations often struggle to scale AI due to a lack of integrated MLOps capabilities. This can lead to inefficiencies and slower time-to-market for AI solutions.

Our Impact:

In 15 business days, we'll conduct a comprehensive assessment of your MLOps capabilities and provide a strategic plan to enhance your data quality, model deployment, and continuous optimization.

Deliverables:










- Data Quality Assessment Report
- Deployment Framework
- Monitoring and Optimization Protocol
- MLOps Integration Plan
- Executive buy-in justification with cost and timeframe estimates

Timeframe:

15 business days

Maximize your AI success with Janea Systems



Workshop offering	Deliverables	Timeframe	Janea Systems investment
Identifying use cases	<ul style="list-style-type: none">• Prioritized AI use cases report• ROI analysis• Data architecture readiness assessment	3 days	 Full investment
Data quality and structure assessment	<ul style="list-style-type: none">• Data quality assessment• Recommendations• Effort estimation	6 days	 Partial investment  Full investment
Model deployment framework	<ul style="list-style-type: none">• Deployment framework• Cost-benefit estimation• Scalability plan	6 days	 Partial investment  Full investment
Monitoring and optimization	<ul style="list-style-type: none">• Optimization strategy• Executive buy-in justification• Implementation estimation	6 days	 Partial investment  Full investment
MLOps acceleration	<ul style="list-style-type: none">• Comprehensive assessment• Integrated MLOps strategy• Full effort and cost estimation	15 days	 Partial investment  Full investment

At Janea Systems, we are dedicated to advancing your AI maturity journey. Based on your current stage and objectives, we offer flexible investment options: a fully funded workshop (our treat) or a joint investment workshop (shared cost).

Let’s explore how we can collaborate to achieve your AI objectives!

Let’s discuss your
AI initiatives

Send eMail