CELTIC-NEXT
Proposers Brokerage Day

24th February 2025, Barcelona

Pitch of the Project Proposal

CLEAR-AI –Carbon Level Evaluation & Analytics in Real-time with AI

<Murat SAĞLAM / Alpata Technology>
<murat.saglam@alpata.com>

Empowering Green Manufacturing Through Intelligent, Real-Time Insights

CLEAR-AI AI-powered, real-time solutions to monitor and analyze energy consumption and carbon emissions across product, process, and equipment levels.

• **AI-Enhanced Scope 1 & Scope 2 Emissions Tracking** – Real-time monitoring and predictive analytics for direct and indirect emissions.

• **AI-Driven Data Analytics for Sustainability** – Advanced insights to optimize processes and reduce carbon footprint.

• **Automated Compliance & Transparency** – AI ensures continuous alignment with GHG Protocol standards, streamlining reporting.

• **Intelligent Operational Efficiency** – AI detects inefficiencies, predicts energy peaks, and recommends optimizations for minimal emissions.

• **Self-Learning AI Models** – The system adapts to new products and machinery, enabling continuous improvement without manual recalibration.

Organisation Profile

Established in 1998 in Eskisehir, Turkey; Alp Aviation is a privately owned company with absolute dedication to the aerospace industry and its highest standards. With its efficient operations, quality, design and lean manufacturing practices, Alp Aviation manufactures flight critical and rotating parts, systems and subsystems for various customers around the world.

Having 1500 highly qualified employees, Alp Aviation utilizes more than 250+ High Tech CNC Machine Parks and CMM quality control equipment, performs various tests including non-destructive tests, coatings and other special processes and has a wide range of laboratory capabilities. Alp Aviation has over 100 distinct special processes some of which can rarely be found throughout the world, and all approved by NADCAP and OEM customers.

Alp Aviation, together with its efficient supply chain demonstrate extensive experience in machining and processing of titanium, nickel, steel, stainless steel, copper alloys and super alloys. Alp Aviation manufactures Helicopter Dynamic Parts & Assemblies, Helicopter Tail Rotor Drive Shaft System (TRDS) Parts & Assemblies, Dynamic & Static Engine and APU Parts including jet engine Fan and Compressor Integrally Bladed Rotors, Landing Gear Parts & Assemblies, Structural Parts & Assemblies, Hydraulic and Fuel Systems and Tube Assemblies to the world's aviation giants such as Lockheed Martin (Sikorsky, LM Aero), Raytheon Technologies (Pratt & Whitney, Pratt & Whitney Canada, Collins Aerospace), Honeywell, Safran, Heroux Devtek, Turkish Aerospace (TAI), Tusas Engine Industries (TEI) and Aselsan.

Today the products proudly manufactured by Alp Aviation support several rotary and fixed wing aircraft platforms such as S-76, S-92, CH53, H-160, Boeing 737, Boeing 747, Boeing 767, Boeing 777, Boeing 787, Airbus A319/NEO, Airbus A320/NEO, Airbus A321/NEO, Airbus A330, Airbus A340, Airbus A350, Airbus A380 , Embraer 550, Gulfstream G500

Providing Solutions to Help Business Grow

We believe we can provide advanced solutions that help businesses and individuals succeed in today's ever-changing world. Our solutions are designed to make life easier, more efficient, and more productive.

Why Choose Us

Deep Industry Experience
We are committed to providing innovative solutions that will help create a better tomorrow for everyone.

Consulting Expertise
We are committed to providing innovative solutions that will help create a better tomorrow for everyone.

Advanced Technology
We are committed to providing innovative solutions that will help create a better tomorrow for everyone.

Rapid Value Creation
We are committed to providing innovative solutions that will help create a better tomorrow for everyone.

Our Services

Data Engineering
- Data Platform Installation & Configuration
- Data Lake, DataWarehouse Creation & Migration
- Analysis, Development, Deployment
- Visualisation & BI
- Managed Services

Generative AI
- Generative AI Consulting
- Generative AI Solutions Development
- Domain-specific GenAI Model & Agent Development
- Fine-tuning LLMs
- AI Agent/Copilot Development
- Generative AI Integration
- Utilization LLMOps

AI/MLOps
- MLOps Readiness Assessment
- Data & AI Maturity Assessment
- AI Design Sprint
- AI/ML Consulting
- AI/ML Solutions Development
- Utilization MLOps

Data & AI Governance
- Data Governance Framework, Data Discovery, Data Quality, Data Catalog, Data Stewardship, Data Masking, Data Archiving, Data Lineage, Data Assessment, Data Observability
- AI Governance Framework, ModelOps, Explainable AI, Model & Experiments Metadata Logging and Audit Trail Monitoring, Transparency AI, Observable AI

Proposal Introduction (1)

Carbon Level Evaluation & Analytics in Real-time with AI

🚀 Vision:

To revolutionize carbon footprint monitoring by providing manufacturers with a real-time, AI-driven tool, enabling transparent, accurate, and actionable insights for reducing GHG emissions at every stage of production.

💡 Motivation:

• Current CO_2e measurements are time-consuming and error-prone.
• ~40% of companies make misleading environmental claims.
• Need for reliable data to align with Green Deal goals and reduce Scope 1 & 2 emissions.

📊 Content & Key Features:

• Real-Time AI-Driven Monitoring (Scope 1 & 2).
• Self-Learning AI for maintenance-free setup.
• Product Carbon Labelling (CO_2e per unit).
• API Integration with carbon offsetting & compliance tools.

Capabilities of AI Agents in Carbon Footprint Tracking

- Reporting and Visualization
- Data Aggregation
- Recommender Systems
- CO_2
- Emissions Methodologies
- Anomaly Detection
- Predictive Forecasting

Proposal Introduction (2)

Impacts:
- Reduce GHG emissions across manufacturing sectors.
- Enable transparency and trust in environmental reporting.
- Support Green Deal goals by promoting sustainable production.
- Combat greenwashing with reliable, real-time data.

Expected Outcomes:
- AI-powered real-time carbon footprint monitoring system.
- Accurate Scope 1 & 2 emissions tracking at product, process, and equipment levels.
- Fully automated Product Carbon Labelling.
- API-integrated platform for carbon offsetting and compliance.
- IoT integration for machine level

Project Schedule (36 Months):
- Months 1-6: Research, requirement analysis & system design.
- Months 7-18: AI development, data integration & prototype.
- Months 19-30: Testing, optimization & pilot implementations.
- Months 31-36: Final deployment, training & dissemination.

CLEAR-AI Murat SAĞLAM / Alpata Technology murat.saglam@alpata.com

Partners

- **Partners involved / interested**

  - Turkey: Alpata Technology , Alp Aviation

- **Missing partners / expertise**

  - **Industry partners** (LE/SME) with interest in real-time solutions to monitor and analyze energy consumption and carbon emissions across product, process, and equipment levels providing relevant use cases and data

  - **Tool and technology providers** with expertise in AI/ML ,5G/6G , İoT

  - **Knowledge providers** and **Academic Partners**

Contact Info

For more information and for interest to participate please contact:

Murat SAĞLAM – Alpata Technology
murat.saglam@alpata.com

Presentation is available via: