

Business

Understanding

Crypto Fund Due Diligence

Automation

Status In progress

Timing Jan 25, 2025 12:00 AM to Feb 4, 2025

# Overview

The **Due Diligence** Project is a comprehensive system designed to enhance transparency and decision-making in the cryptocurrency and digital asset domain. By integrating advanced data collection, validation, and Generative AI (GenAI) techniques, the project ensures accurate analysis, robust insights, and dynamic reporting for stakeholders.

# Current Market Challenges ➕

- Traditional due diligence processes are time-consuming and manual

- Cryptocurrency markets operate 24/7, requiring real-time analysis

- High risk of human error in data collection and analysis

- Lack of standardized evaluation frameworks for crypto assets

- Complex regulatory landscape requiring constant monitoring

# **Aligned Business and Data Science Goals for Crypto Due Diligence Automation**

## **1. Multi-Source Data Integration** ✅

**Business Goal:** Consolidate data from 20+ sources including blockchain analytics, market data, and regulatory databases to provide a complete view of each crypto fund's operations and compliance status.

**Data Science Goal:** Develop data integration architecture using Pandas and NumPy for preprocessing, implementing RAGAs for multi-document retrieval, and creating a unified database schema for consistent data access and analysis.

## **2. Automated Document Analysis** ✅

**Business Goal:** Reduce manual document review time by 70% through automated extraction and analysis of crypto fund documentation, including whitepapers, audit reports, and regulatory filings.

**Data Science Goal:** Implement document processing pipeline using Tesseract OCR for text extraction, PDFMiner for structure analysis, and Apache Tika for metadata extraction, with validation through cryptographic hashing for document authenticity.

## **3. Intelligent Question Bank Generation**✅

**Business Goal:** Create comprehensive due diligence questionnaires that adapt to each crypto fund's unique characteristics, ensuring 100% coverage of regulatory requirements and risk factors.

**Data Science Goal:** Develop an AI system using LangChain and RAGAs to automatically generate and rank relevant questions, like implementing “ GPT-4 “ for question formulation and BERT for relevance scoring with 90% accuracy.

## **4. Q&A System Development** ✅

**Business Goal:** Provide accurate, contextual answers to due diligence queries within 30 seconds, with a user satisfaction rate of 95% and coverage of all regulatory and compliance domains.

**Data Science Goal:** Build a hybrid Q&A system using OpenAI API and Hugging Face Transformers, enhanced with RAGAs for multi-document retrieval, achieving >85% answer accuracy and <5 second response time.

## **5. Automated Report Generation**✅

**Business Goal:** Deliver standardized due diligence reports within 10 minutes of request, incorporating all key metrics, risk assessments, and compliance checks in a professional presentation format.

**Data Science Goal:** Create an automated reporting system using python-pptx for PowerPoint generation, integrating DashPlotly for dynamic visualizations and MLflow for workflow management, ensuring consistent formatting and branding.

## **6. Real-Time Risk Assessment 💡**

**Business Goal:** Enable 24/7 monitoring of crypto fund performance and risk metrics, with automated alerts for any anomalies or compliance issues within 5 minutes of detection.

**Data Science Goal:** Build real-time data pipelines using Flask/Django and yfinance for cryptocurrency data collection, implementing MLflow for tracking metrics and DashPlotly for live visualization of risk indicators.

## **Innovative Component & SDG Alignment**

### **Automated Crypto Fund Due Diligence System**

1. **SDG 9: Industry, Innovation, and Infrastructure** 
   * Leverage advanced AI and data pipelines to modernize financial evaluation tools
   * Build sustainable infrastructure for the cryptocurrency ecosystem
   * Promote technological advancements in data engineering and AI
   * Support building reliable and scalable due diligence systems
2. **SDG 16: Peace, Justice, and Strong Institutions**
   * Enhance accountability and transparency in financial transactions
   * Support digital asset management through robust due diligence
   * Combat fraud and promote ethical practices
   * Enable fair and transparent investment processes
3. **SDG 17: Partnerships for the Goals**
   * Foster collaboration between industry experts, regulatory agencies, and researchers
   * Share insights and enhance transparency in cryptocurrency investments
   * Facilitate knowledge sharing and best practices
   * Build sustainable partnerships within the crypto ecosystem

## 

## **Target market & Stakeholders**

| Category | Type | Target Groups |
| --- | --- | --- |
| Primary Users | Investment Firms | Hedge funds, Asset managers, VCs, PE firms |
| Fund Managers | Crypto fund admins, Portfolio managers, Trading desks |
| Due Diligence Teams | Compliance officers, Risk analysts, Legal teams |
| Key Stakeholders | Regulatory Bodies | Financial authorities, Securities commissions, AML agencies |
| Investment Committees | Board members, Decision makers, Risk committees |
| Tech Partners | Data providers, Analytics firms, Security auditors |

# **Competitive Advantages**

## **Technical Advantages**

1. **AI-Powered Solutions**
   * Advanced question generation and Q&A systems
   * Real-time risk assessment
   * Automated report generation
2. **Data Processing**
   * Multi-source data integration
   * Real-time market analysis
   * Cross-chain analytics
3. **Automation**
   * 70% faster document review
   * Automated compliance checks
   * Continuous monitoring

## **Market Advantages**

1. **Crypto Expertise**
   * Deep digital asset knowledge
   * Industry-specific solutions
   * Custom risk frameworks
2. **Flexible Platform**
   * Adaptable reporting
   * Configurable dashboards
   * Custom alert systems
3. **Compliance Focus**
   * Built-in regulations
   * Real-time updates
   * Cross-jurisdiction support

# Roles

| Role | Name |
| --- | --- |
| Project Lead | [mehdi zaiem](mailto:mehdizaiem@hotmail.fr) |
| Project Manager | [hamza.chaieb00@gmail.com](mailto:hamza.chaieb00@gmail.com) |
| Architect | [zghal.nour@esprit.tn](mailto:zghal.nour@esprit.tn) |
| Data Scientist | [Maryem Essaidi](mailto:maryemessaidi8@gmail.com) [Nesrine Louati](mailto:nesrinelouati62@gmail.com) |