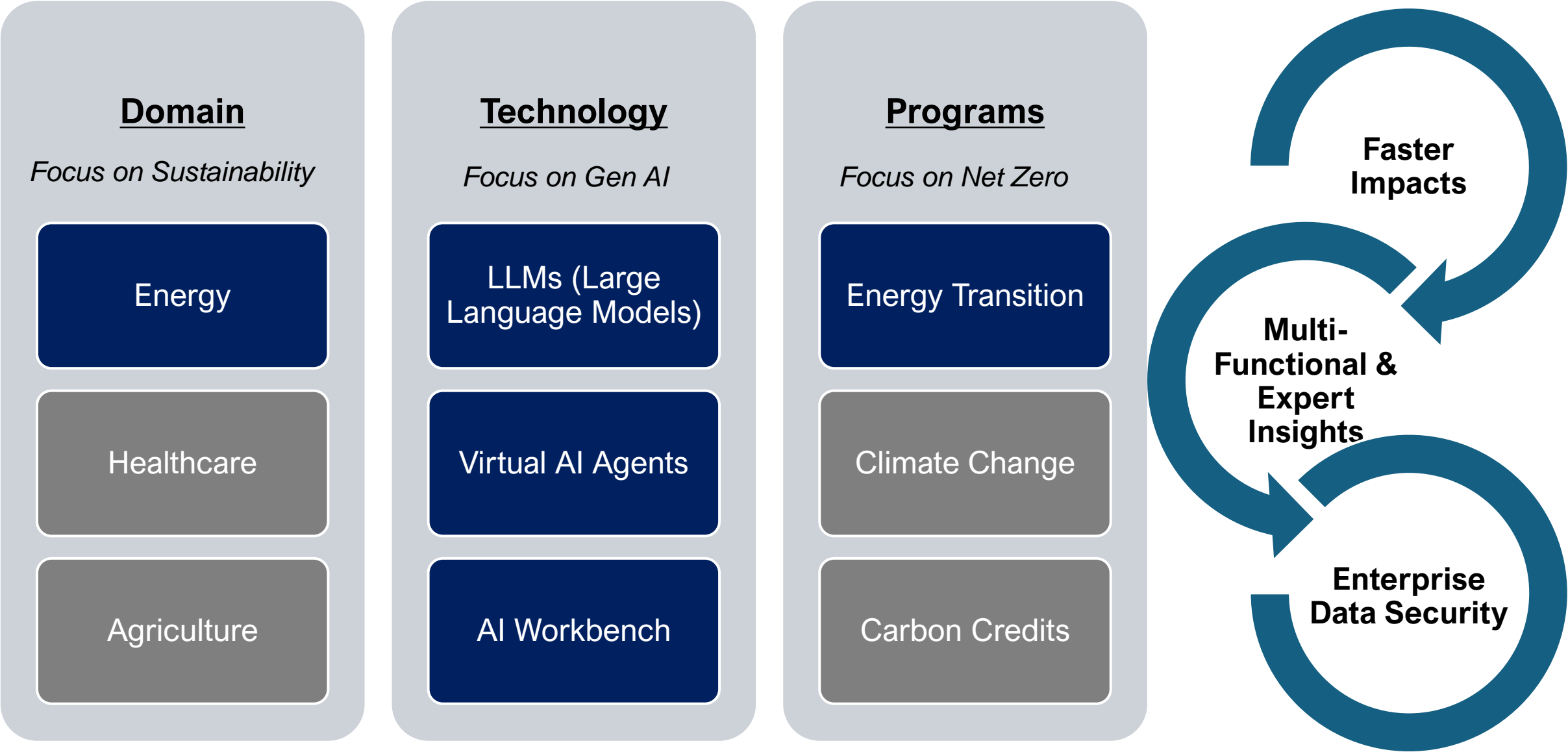


Monetizing Sustainability using Gen AI **PAiSE** (Performatica AI for Sustainable Enterprises)



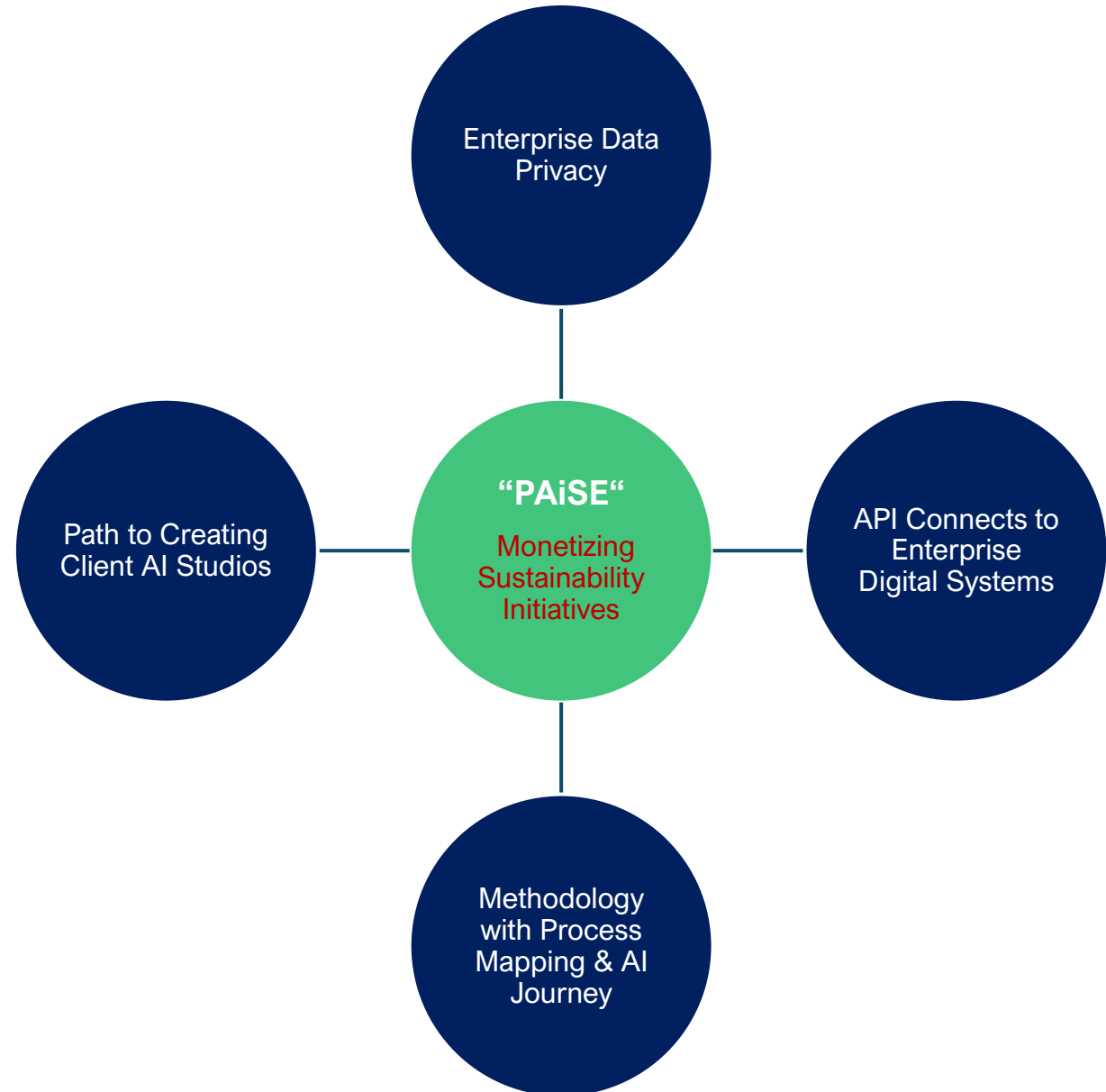
Setting the Context



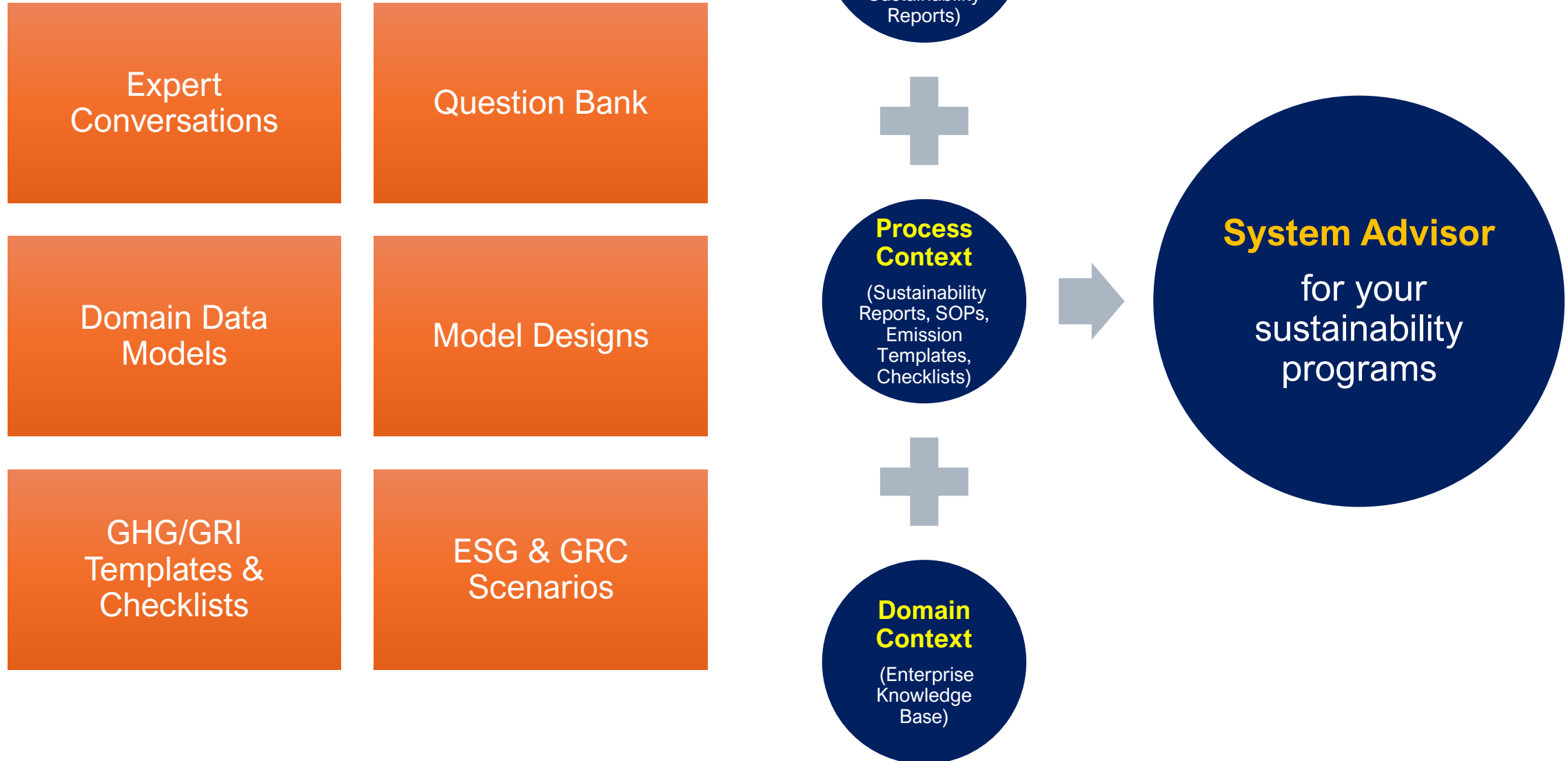
Key Design Considerations

- ✓ Gen AI Sustainability App Store
- ✓ Client experts curated Data
- ✓ Virtual Agents/ Question Banks
- ✓ Multiple Source Data processing, WFs
- ✓ On Premise/Cloud Availability
- ✓ Drive innovation productivity with 3As

Automation→Analytics→Augmentation



Deriving Insights from Resident Experts



Sustainability Monetization Use Cases using Gen AI

Track	Use Case	Active Project	Proposed Gen AI Implementation	Suggested Technical Approach
Sustainability Scorecards for Investors	A firm develops ESG scorecards for investors to assess sustainability metrics.	A North American energy major integrates carbon reduction and ESG data into annual reports	Gen AI automates the generation of detailed scorecards by pulling data from sustainability metrics, helping investors track performance in real-time.	Natural Language Processing (NLP): NLP-based models extract and summarize relevant ESG data from reports and automatically generate structured scorecards.
Enhanced Regulatory Reporting	An oil company automates regulatory reports for methane and carbon emissions compliance.	The Petra Nova CCS project in Texas reports capturing 1.6 million tonnes of CO ₂ annually	Gen AI automates compliance reporting, improving accuracy and consistency across large operations, reducing the risk of non-compliance fines.	Automated Compliance Monitoring: Gen AI uses rule-based engines to automatically collect data from sensors and systems, creating standardized compliance reports.
ESG Reporting for Stakeholders	A company tracks supplier sustainability metrics to meet global standards.	A European oil giant integrates sustainability metrics into its supply chain through digital platforms	Gen AI automates supply chain data analysis, offering real-time insights into ESG compliance and predicting potential supply chain risks.	Supply Chain Data Integration: AI models analyze structured and unstructured data from suppliers to track ESG metrics, providing real-time compliance updates.
Data-Driven Carbon Management	An integrated oil and gas company operates a Carbon Capture and Storage (CCS) project to capture and store CO ₂ , earning carbon credits.	A project in the U.S. Midwest retrofits ethanol plants with carbon capture, storing CO ₂ in geologic basins	Gen AI can optimize carbon capture operations by analyzing real-time data to predict capture efficiency and boost revenue from carbon credits.	AI-Powered Predictive Models: Gen AI uses deep learning models on CO ₂ capture efficiency data, optimizing storage timelines and predicting capture rates.
Predictive Maintenance for Emissions	A company uses methane leak detection to prevent emissions and minimize operational costs.	A digital monitoring platform is used for methane emissions in oil fields across the U.S. Gulf Coast	Gen AI can predict failure and maintenance needs using equipment data, reducing the risk of methane leaks and associated penalties.	Sensor Data Integration: Gen AI analyzes IoT sensor data (pressure, temperature, etc.) using anomaly detection algorithms to flag early leak warnings.
Tailored Climate Risk Analysis	A company provides climate risk assessments for operational infrastructure.	A Norwegian energy firm develops climate-resilient infrastructure for European CO ₂ storage	Gen AI predicts climate risks using environmental data, helping companies build resilience against extreme weather events and operational disruptions.	Climate Data Modeling: Gen AI uses historical climate data to build predictive models that assess the impact of extreme weather on infrastructure and operations.
Energy Transition Optimization	A company integrates renewable energy with oil production, optimizing the energy mix.	The Ascension Clean Energy Project produces blue hydrogen and ammonia in Louisiana, linked with carbon capture	Gen AI can simulate and forecast the optimal mix of renewables and fossil fuels to minimize emissions and maximize operational efficiency.	Simulation-Based Optimization: AI algorithms (e.g., reinforcement learning) simulate different energy mix scenarios to optimize transition strategies.
Carbon Credits and Offset Marketplaces	A company earns carbon credits through reforestation or other nature-based solutions.	A Middle Eastern firm sequesters CO ₂ in saline reservoirs using carbon mineralization	Gen AI predicts carbon sequestration potential and optimizes carbon credit generation by evaluating the effectiveness of each offset project.	Remote Sensing Analysis: Gen AI uses satellite imagery and remote sensing data to monitor reforestation or CO ₂ sequestration projects, predicting carbon offset value.
Green Energy Certification and Tracking	A company certifies green hydrogen production for export markets.	A joint venture in Alberta produces blue hydrogen, exporting it to international markets	Gen AI certifies and tracks renewable energy production, ensuring transparency and facilitating participation in green energy markets.	Blockchain Integration: Gen AI tracks renewable energy production and carbon savings using blockchain for transparent certification and carbon credit validation.

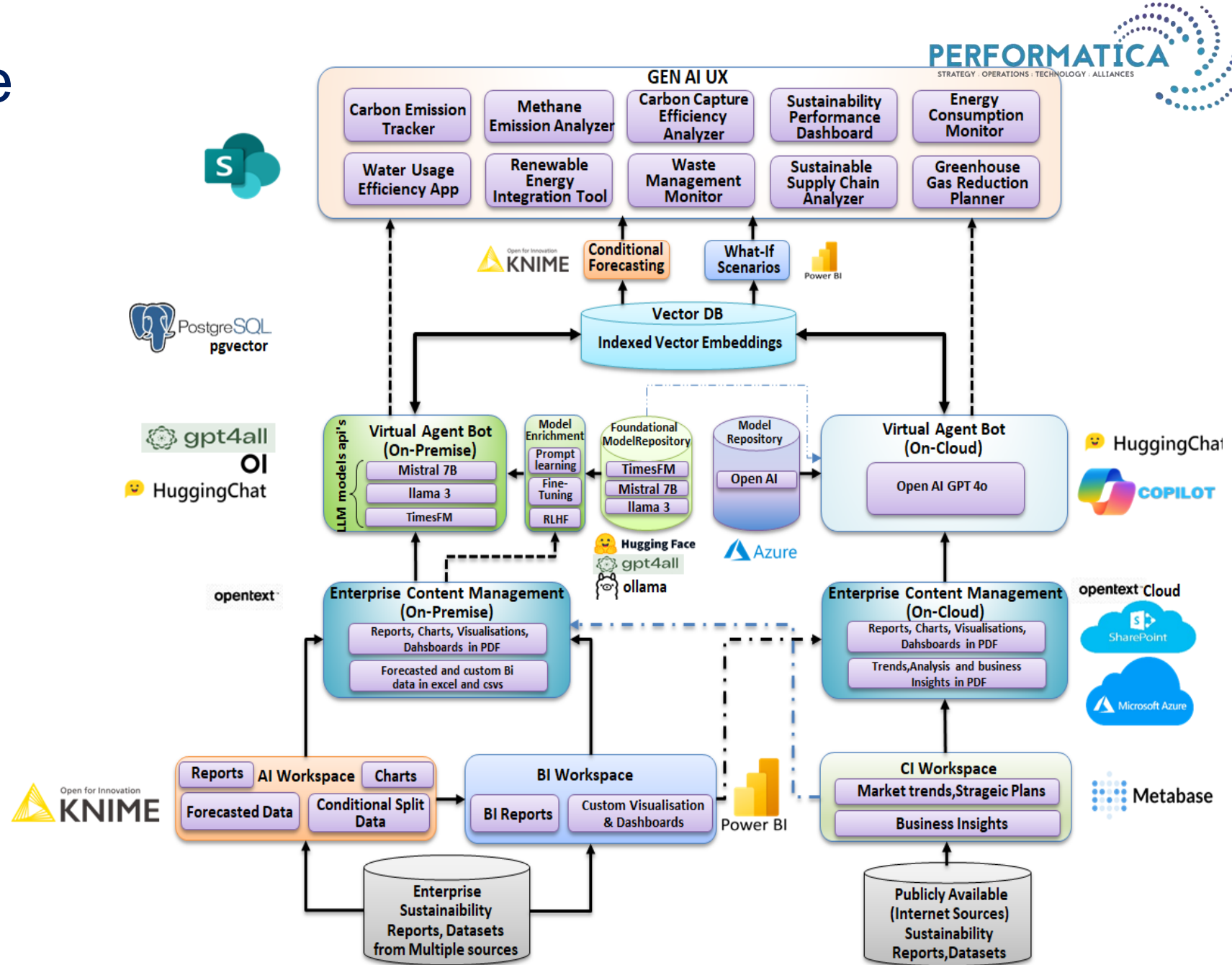
Technical Architecture

On-Premise

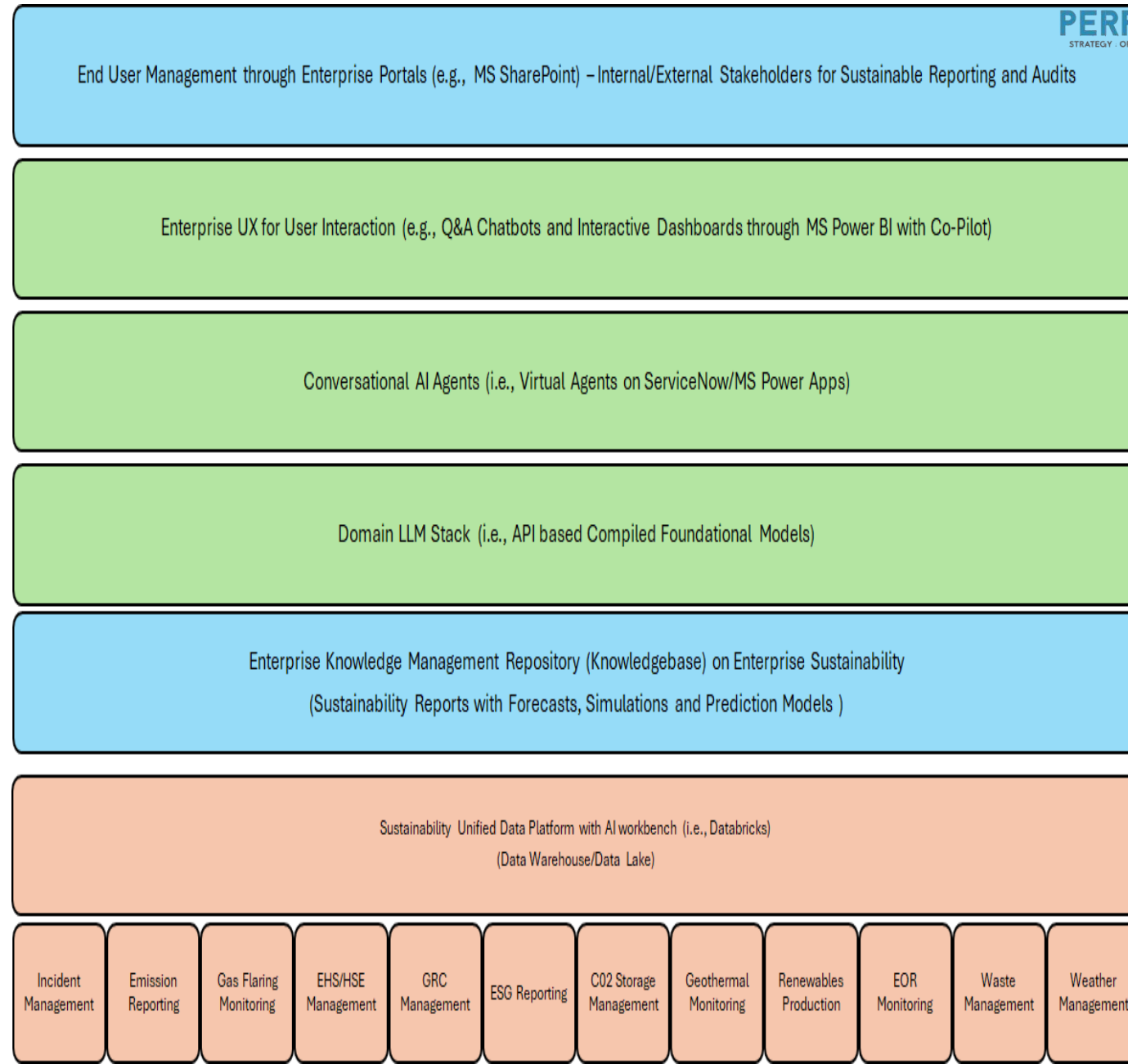
- GPT4All
- OpenWebUI
- Custom

Cloud

- HuggingChat
- MS Power Virtual Agent
- Custom



Sustainability Analysis – Functional Stack



“PAISE”-
Performatica AI for Sustainable Enterprises
(Commercial/ Social)

Sub-Systems

Section	Key Focus Areas
Sustainability Strategy	2030/2050 goals, Paris Agreement alignment, emission reduction, strategy integration.
Emissions & Climate Change	Scope 1-3 emissions, net-zero progress, carbon capture, methane management, renewables.
Energy Transition	Role in energy shift, renewable investments, green hydrogen, balancing fossil fuels, transition challenges.
Environmental Impact	Ecosystem protection, water use, biodiversity, environmental risks, responsible decommissioning.
Social Responsibility	Community engagement, social programs, human rights, diversity, local economy support.
Regulatory Compliance	Environmental regulation compliance, transparency, risk management, accurate reporting.
Financial Performance	Balancing sustainability with finances, renewable impact, sustainability-linked financing.
Technology & Innovation	Investments in sustainable tech, AI, blockchain, emission-reduction technologies.
Challenges & Outlook	Sustainability challenges, decarbonization, market adaptation, long-term strategy.
Stakeholder Engagement	Stakeholder collaboration, feedback incorporation, prioritizing concerns, industry partnerships.



Automated Data Aggregation and Analysis - The AI collects and processes information on greenhouse gas emissions, energy usage, and waste management across all sites. The system then generates a detailed sustainability report that highlights emission hotspots and energy inefficiencies, allowing the company to implement corrective actions quickly and reduce manual reporting efforts by 60%.

Scenario Analysis and Predictive Modeling - The AI models the potential impact on the company's production costs, operational efficiency, and overall sustainability goals. By analyzing these scenarios, the company can proactively adapt its operations and investment strategies to mitigate risks and ensure compliance.

Benchmarking and Comparative Analysis - The AI analyzes data on carbon emissions, water usage, and energy efficiency, comparing the company's performance to that of its competitors. The resulting report identifies areas where the company is performing well, such as reducing flaring activities, and highlights opportunities for improvement, such as enhancing energy efficiency in refining operations.

Regulatory Compliance Reporting - The AI continuously monitors changes in local and international environmental laws, automatically updating the company's reporting procedures and templates to reflect new requirements. The AI-generated reports are then reviewed and submitted to regulatory bodies, ensuring that the company remains compliant and avoids potential fines or legal challenges associated with non-compliance.

Benefits from PAiSE Platform

Sustainability Navigator: Insights Powered by LLMs

- Unlock the full potential of your ESG data with **Sustainability Navigator**, powered by cutting-edge Large Language Models (LLMs) and Retrieval-Augmented Generation (RAG). This tool transforms how you interact with your sustainability data by enabling **natural language queries**.

Sustainability Variance: AI-Driven Metrics & Accuracy

- Achieve unparalleled accuracy in sustainability reporting with **Sustainability Variance**. This feature leverages **intelligent automation** and **AI-powered variance analysis** to detect discrepancies in your data and resolve inaccuracies that may arise from manual processes. Streamline your data workflows and ensure your sustainability metrics are always reliable and precise.

Sustainability Gap Analysis: Targets & Scenario Planning

- Bridge the gap between where your company is and where it needs to be. **Sustainability Gap Analysis** evaluates your current operations against your sustainability targets, offering comprehensive **scenario analysis** and **what-if options**. Identify actionable steps to close the gap and achieve your environmental goals, while exploring potential future outcomes.

PAiSE Specifications

Real-time Analytics: Delivering real-time data analysis & visualization capabilities for monitoring sustainability metrics.

Comprehensive Reporting: Generating detailed sustainability reports to support decision-making and regulatory compliance.

Carbon Footprint Calculation: Assisting in calculating & tracking the carbon footprint of various operations.

Sustainable Recommendations: Offering recommendations to improve sustainability practices and reduce environmental impact.



Data Privacy: Ensuring that sensitive data never leaves the organization's premises by running the model locally.

Compliance: Facilitating compliance with data protection regulations (e.g., GDPR, CCPA) by keeping data on-premises.

Seamless Integration: Providing APIs for easy integration with existing enterprise systems, tools, and workflows.

Interoperability: Ensuring the model can work seamlessly with other sustainability tools and platforms (e.g., *energy management systems, carbon accounting*).

Efficient Resource Use: Optimizing the model for high performance & efficient use of computational resources.

Scalable Solutions: Enabling the solution to scale according to the organization's needs, from small-scale deployments to large enterprise-wide implementations.



Empowering Futures,
Sustaining Impact :
Making Enterprises Sustainable

PERFORMATICA
STRATEGY : OPERATIONS : TECHNOLOGY : ALLIANCES

Thank You

Performatica LLC
marketing@performatica.net

<https://performatica.net/>