

Reinforcement Learning Automation (RLA) Platform Collaborative AI Automation (CAIA) In Action

1. Introduction to Collaborative AI Automation (CAIA)

Collaborative AI Automation (CAIA) is a cutting-edge approach that revolutionizes optimization challenges across industries by combining human intelligence with advanced Reinforcement Learning (RL) agents. This synergy addresses the inherent limitations of traditional optimization technologies such as Operations Research (OR) and Linear Programming (LP), which struggle to keep up with today's dynamic and fast-paced value chains characterized by uncertainty, complexity, and volatility.

1.1 Key Aspects of CAIA

1.1.1 Human and RL Agent Collaboration

- Human Intelligence:

Leveraging human intuition, experience, and domain expertise to guide and enhance decision-making processes.

- **RL Agents:** Utilizing advanced RL algorithms that autonomously learn from experience, adapt strategies through trial and error, and optimize long-term rewards.

1.1.2. Optimization Beyond Traditional Methods

- Dynamic Optimization:

Capable of developing novel strategies that surpass traditional methods, handling any number of constraints with ease.

- **Volatility and Uncertainty:** Expertly navigates unpredictable environments, making real-time adjustments to rapidly changing problem states.

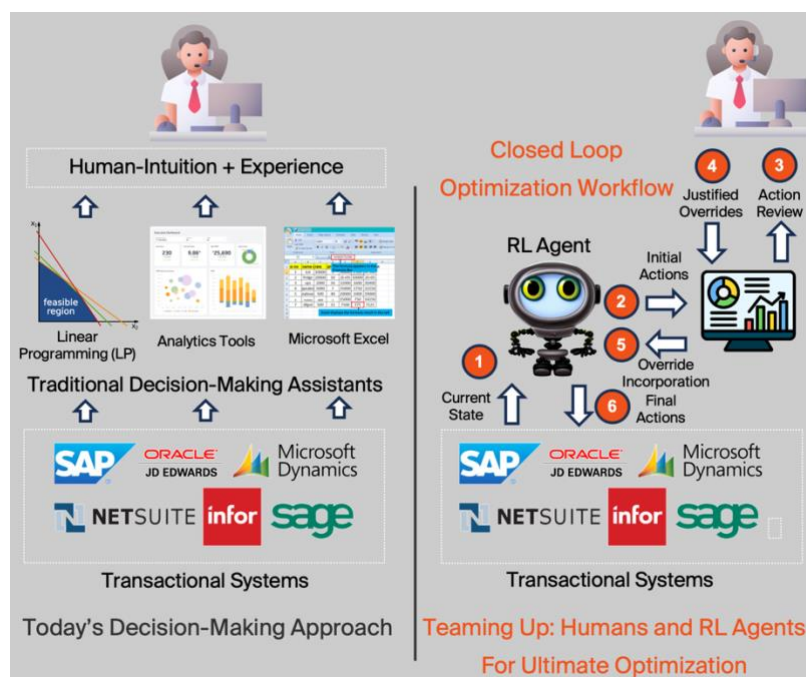
1.1.3. Autonomous Adaptation

- **Continuous Improvement:** RL agents continuously refine their strategies without explicit programming, learning from new data and human feedback to improve recommendation accuracy.

- **Scalability:** Effective in handling high-dimensional and large-scale optimization problems, making it suitable for complex operational environments.

1.1.4. Closed-Loop Integration

- **Seamless Integration:** Integrates effortlessly into existing processes and transactional systems, creating a closed-loop system where human feedback and RL agent outputs continuously inform each other.



- **Autonomy with Human Oversight:** While RL agents operate autonomously, human operators retain full control, enabling justified overrides and continuous improvement through human feedback.

1.1.5. Wide Applicability

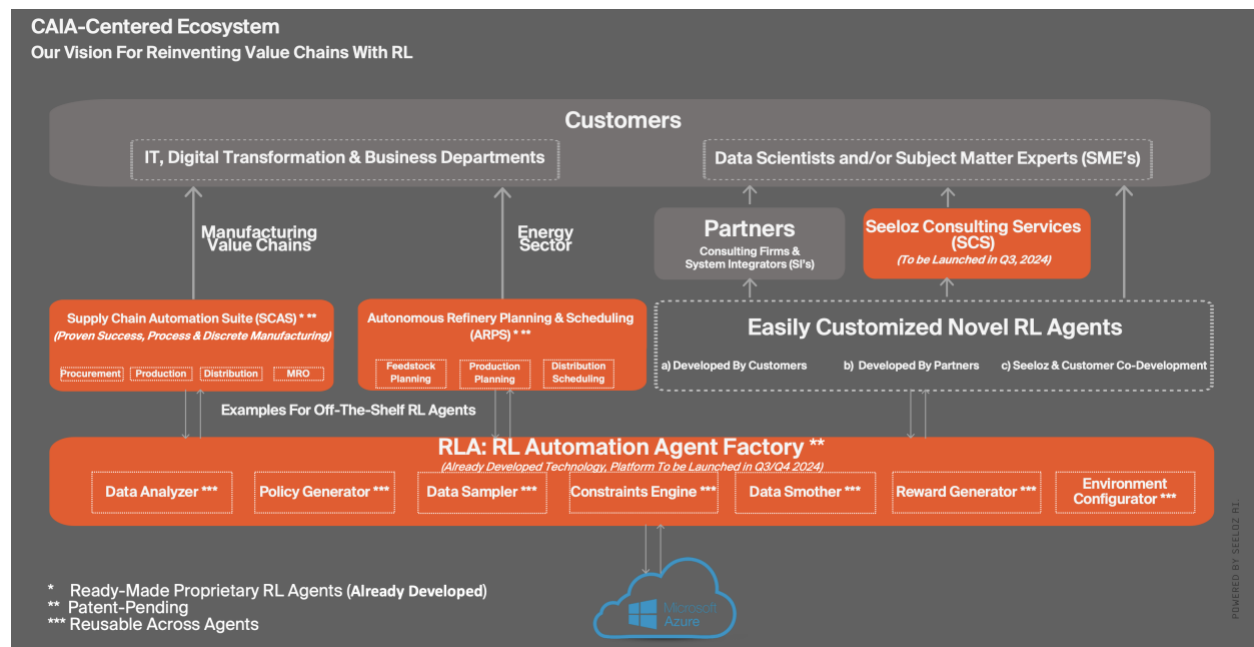
- **Cross-Industry Relevance:** CAIA is applicable across various sectors including manufacturing, distribution, energy, and healthcare, making it a versatile solution for diverse optimization challenges.
- **Flexible Deployment:** The CAIA framework can be deployed on cloud or on-premises environments, running on top of any transactional system (e.g., ERP, CRM, MES).

1.2. Benefits of CAIA

- **Enhanced Decision-Making:** Combines the strengths of human intuition and advanced RL algorithms to achieve superior decision-making capabilities.
- **Increased Efficiency:** Optimizes operational processes, reducing costs, and improving resource utilization.
- **Resilience and Adaptability:** Provides robust solutions that adapt to changing conditions and unexpected events, ensuring sustained performance and resilience.
- **ROI-Driven Initiatives:** Focuses on delivering tangible ROI, ensuring that AI investments are maximized and aligned with business objectives.

2. Reinforcement Learning Automation (RLA) Platform

Seeloz's Reinforcement Learning Automation (RLA) platform, *pronounced as "arla"*, is the world's first comprehensive CAIA platform. Through a combination of off-the-shelf RL agents & the ability of seamlessly packaging any custom-built RL agents, RLA is well-positioned to be the perfect optimization platform choice across sectors and industries.



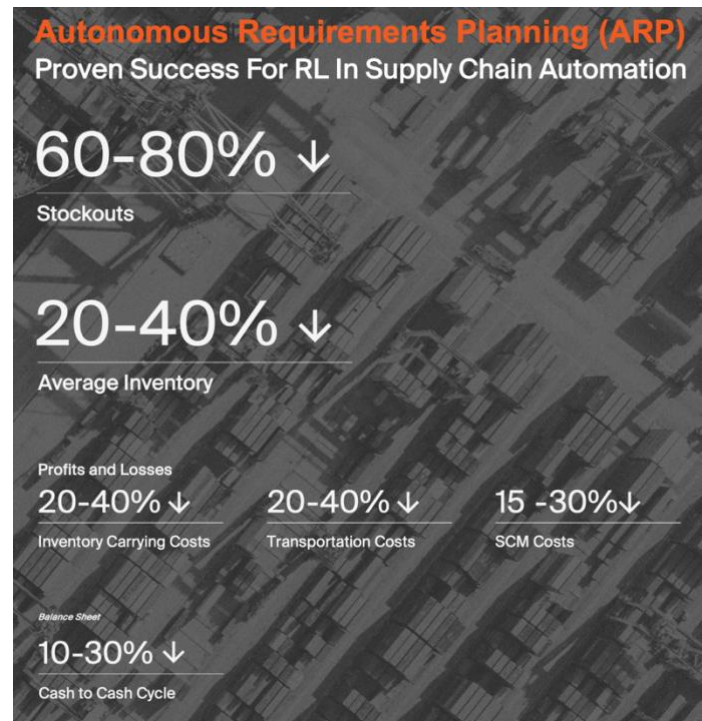
2.1. Differentiation

The RLA platform stands out by handling the complexities and uncertainties which traditional optimization technologies struggle with. Key differentiators include:

Optimizing the Future Together: Humans and RL Agents

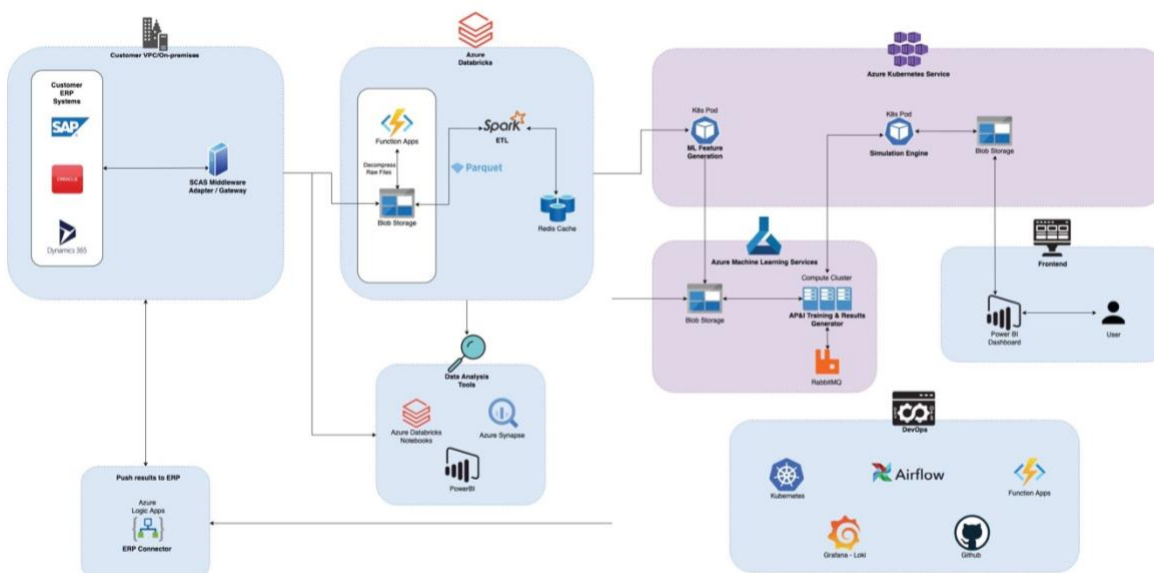
SEELOZ

- **Dynamic Optimization for Multi-Objectives:** Handles multiple potentially conflicting objectives and optimizes under *numerous constraints*, developing novel strategies that are unattainable through traditional optimization.
- **Adaptiveness:** RL adapts in real-time to current states, ensuring no reliance on canned or precomputed solutions.
- **Closed-Loop Optimization:** Consumes current state data and recommends actions autonomously, creating a self-improving system.
- **Autonomous Operation:** Minimizes heavy dependence on human intuition, biases, and ensures decisions are data-driven and precise.
- **Seamless Integration:** Embeds smoothly into existing ERP, CRM, and MES systems, enhancing operational efficiency without overhauling current infrastructures.



Additionally, RL complements Generative AI by providing the decision-making framework that dynamically adjusts to evolving conditions, while Generative AI can create content, design solutions, and provide insights. Together, they offer a powerful combination where RL optimizes operational decisions, and Generative AI enhances creativity and strategic planning.

3. Technical Architecture on Microsoft Azure



Website: www.seeloz.com

Email: contact@seeloz.com

Address: 5201 Great America Pkwy Suite 320 Santa Clara, CA 95054, USA

Although RLA is both hosting-agnostic and cloud-agnostic, the platform has been optimized to run on the Microsoft Azure Cloud. In this section, we detail the multiple components comprising a typical RLA implementation for a customer from any vertical.

3.1. Transactional Systems Integration

3.1.1. Transactional Systems (CRM, ERP, Financial Systems, etc.): Examples: SAP, Dynamics 365, Salesforce, QuickBooks, custom transactional systems.

3.1.2. Integration Middleware: Facilitates communication between transactional systems and cloud services.

- **Azure Service:** Azure API Management, Azure Logic Apps
- **Open-Source Equivalents:** Apache Camel, WSO2, n8n

3.2. Data Ingestion and ETL

- **Azure Databricks:** Used for data engineering and ETL processes.
- **Open-Source Equivalent:** Apache Spark
- **Azure Functions:** For processing real-time data and decoupling.
- **Open-Source Equivalent:** Apache OpenWhisk, Kubeless
- **Azure Blob Storage:** For storing raw and processed data.
- **Open-Source Equivalents:** MinIO, OpenStack Swift
- **Apache Spark:** For data processing and ETL tasks.
- **Open-Source Equivalent:** Apache Spark
- **Azure Cache for Redis:** For caching data to speed up processing.
- **Open-Source Equivalent:** Redis

3.3. Data Processing and Machine Learning

- **Azure Kubernetes Service (AKS):** Manages containerized applications for ML and other services.
- **Open-Source Equivalent:** Kubernetes
- **Azure Machine Learning:** RLA is built on a fully proprietary framework, but further optimized for training, deployment, and management by seamlessly leveraging Azure Machine Learning services
- **Open-Source Equivalents:** TensorFlow, Scikit-learn, MLflow
- **Compute Cluster:** Scalable computing for intensive tasks.
- **Open-Source Equivalent:** Kubernetes
- **RabbitMQ:** For messaging between system components.
- **Open-Source Equivalent:** RabbitMQ

3.4. Data Storage and Analysis

- **Azure Blob Storage:** For scalable object storage.
- **Open-Source Equivalents:** MinIO, OpenStack Swift
- **Azure Synapse Analytics:** For data warehousing and analytics.
- **Open-Source Equivalents:** Apache Hadoop, Apache Hive, Presto
- **Power BI:** For data visualization and reporting.
- **Open-Source Equivalents:** Metabase, Apache Superset

3.5. Frontend and User Interaction

- **Dashboards:** Custom-built dashboards for data visualization.
- **Open-Source Equivalents:** Grafana, Metabase, Apache Superset
- **Power BI Dashboards:** For interactive reporting and analytics.
- **Open-Source Equivalents:** Metabase, Apache Superset

3.6. DevOps and Orchestration

- **Azure Kubernetes Service (AKS):** For container orchestration.
 - **Open-Source Equivalent:** Kubernetes
- **Azure Data Factory:** For orchestrating and automating data workflows.
 - **Open-Source Equivalent:** Apache Airflow
- **Azure Functions:** For serverless computing and automation.
 - **Open-Source Equivalents:** Apache OpenWhisk, Kubeless
- **GitHub:** For version control and collaboration.
 - **Open-Source Equivalent:** GitLab (Community Edition)
- **Grafana + Loki:** For monitoring and logging.
 - **Open-Source Equivalents:** Grafana, Loki

3.7. Integration with Transactional Systems

- **Azure Logic Apps:** For automating workflows and integrating with various systems.
 - **Open-Source Equivalents:** n8n, Apache Camel
- **API Management:** Managing APIs for secure and scalable access to transactional systems.
 - **Azure Service:** Azure API Management
 - **Open-Source Equivalents:** Kong, Tyk

These services and tools ensure the architecture can handle integration, data processing, machine learning, and analytics for any transactional system, providing scalability, efficiency, and flexibility.

4. Crawl-Walk-Run Adoption Model:

- **Crawl:** A *Business Radar* is a comprehensive assessment of business processes to identify potentially applicable RLA agents and develop a concrete milestone-driven rollout strategy.
- **Walk:** Undertake a *Discovery Phase* for each agent, showcasing ROI and feasibility.
- **Run:** Gradually roll out agents with proven ROI, emphasizing soft change management and upskilling to optimize success.

5. Capital-Efficient Business Model

Seeloz offers two flexible and capital-efficient business models tailored to meet the diverse needs of our clients: Basic & Advanced. Customers picking the Advanced model will automatically get all advantages of the Basic model.

5.1 Basic - Annual Per-Agent Subscription

5.1.1. Description: Under this model, customers subscribe to individual RLA agents on an annual basis. This subscription provides continuous access to a specific agent, ensuring that the agent is maintained, updated, and enhanced by Seeloz (with no need to give Seeloz access to any confidential information that the agent is exposed to).

5.1.2. Benefits:

- **Continuous Improvement:** Seeloz continuously updates and enhances the agents to ensure they remain cutting-edge.
- **Low Upfront Costs:** Customers can start with specific agents without a large upfront investment.
- **Scalability:** Easily scalable by adding new agents as needed without disrupting existing operations.
- **Maintenance:** Seeloz takes full responsibility for the maintenance and performance of the agents.

5.2 Advanced - Annual Platform License

5.2.1 Description: In this model, customers deciding to pay an additional annual license to get access to the entire RLA platform. It allows customers to independently update the already launched agents and create new agents. Eventually, each new agent will be subject to a fixed per-agent annual subscription.

5.2.2 Benefits:

- **Autonomy:** Customers have full control over the RLA platform, enabling them to update existing agents and develop new ones based on their specific needs.
- **Cost Efficiency:** After the initial platform license fee, the cost per new agent is fixed and predictable, facilitating budget planning.
- **Flexibility:** Provides the flexibility to tailor and customize the agents according to the unique requirements of the business.
- **Innovation:** Empowers customers to innovate and rapidly deploy new optimization strategies without relying on external updates.

6. Multiple Long-Term Agent Maintenance & Enhancement

To ensure the RLA agents remain effective and up-to-date, Seeloz offers a comprehensive enhancement process tailored to the chosen business model:

6.1 Basic - Seeloz-Driven Enhancements (Per-Agent Subscription Model)

- **New Feature Addition:** Seeloz continuously works on adding new features and improvements to the agents based on industry trends, technological advancements, and customer feedback.
- **Performance Optimization:** Regular updates are provided to enhance the performance and accuracy of the agents, ensuring they deliver optimal results.
- **Customer Support:** Dedicated support is provided to address any issues and incorporate feedback for continuous improvement.
- **Seamless Updates:** All updates and enhancements are seamlessly integrated, minimizing downtime and disruption to the customer's operations.

6.2 Advanced - Customer-Driven Enhancements (Platform License Model)

- **New Feature Development:** Customers have the autonomy to develop and add new features to the agents based on their specific business needs and strategies.
- **Independent Updates:** Customers can independently update and refine the agents, leveraging their in-house expertise and resources.
- **Customization:** The platform allows for extensive customization to tailor the agents to unique operational requirements and business processes.
- **Support and Collaboration:** While customers have the independence to enhance the agents, Seeloz provides collaborative support and resources to ensure successful implementation and optimization.

7. Team Quality:

Our Seeloz team brings a wealth of experience and expertise across various industries and domains. The team has a track record of driving successful AI-driven transformation with multinational industry players spanning a variety of sectors.