



#16

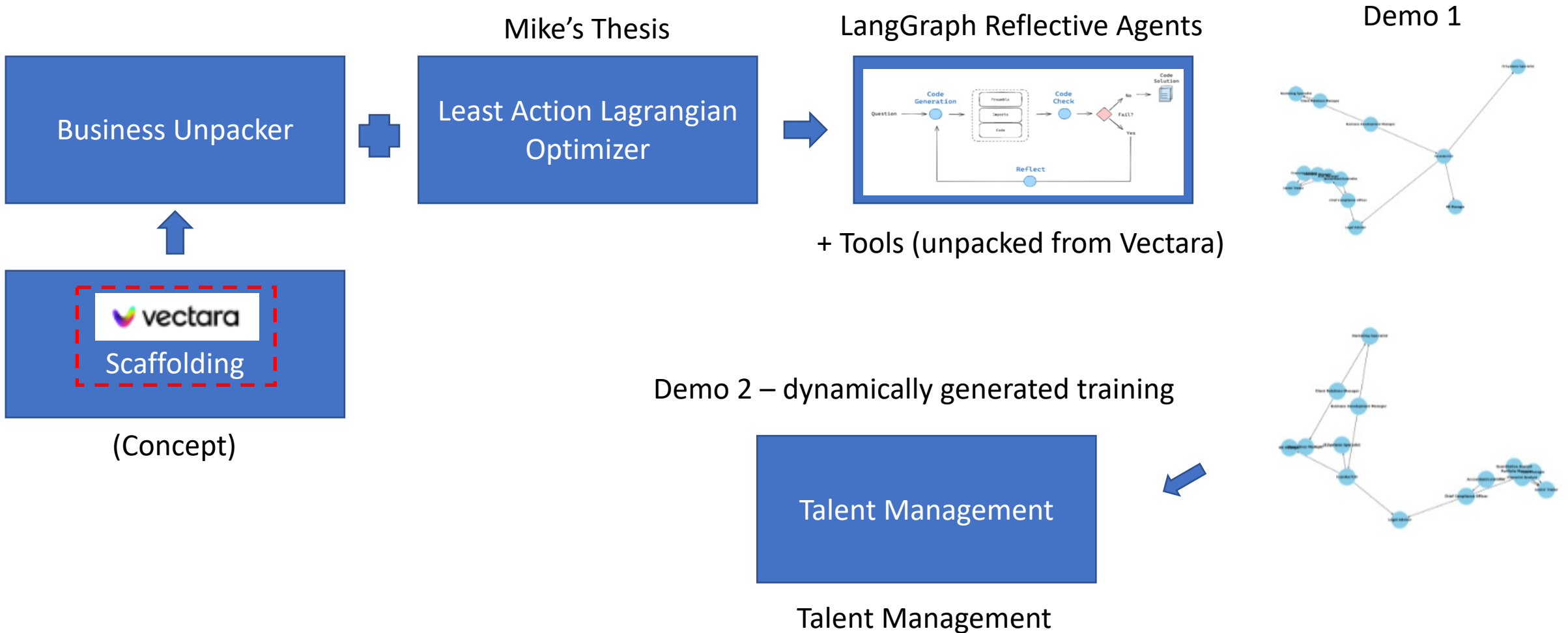
Unpacking your Business using Vectara

In this Hackathon, we explore the practicality of swiftly establishing web-based enterprises fully staffed by Vectara-supported agents, with the option to incorporate Human-in-the-Loop and offer ongoing training.

50-million-dollar business in 5 minutes

Michael Lively Team Lead

AHA Moment! → 50-million-dollar business in 5 minutes Using Agents & Tools



Business Advantages

This business model enhances efficiency and adaptability through dynamic structures and automation, significantly reducing dependency on manual processes and personnel, while providing a comprehensive, transparent view of operations and optimizing resource management and performance.

- Employer isn't held captive by a broken link
- No need for backup personnel
- Business structure is functional no hierarchical
- Elimination of silos (living organism)
- Business structure can dynamically change (based on need)
- ➔ • (demo) Behavior driven tree structure (1 to 15)
- Capacity is increased by increasing compute
- Less need for support personnel
- Transparent “play-by-play” of the organization (360 view)
- Ability to apply Lagrangian Optimization (least action)
- Inventory is efficiently track & documented
- ➔ • (demo) Dynamically generated training and talent management
- Enhances human-in-the-loop synergism
- Crank up or down as needed (usage based)
- (Key) Vectara RAG scaffolding

Demo 1 (Prompt Engineering)

- ➔ Define the key roles for a business that invests in stocks exchanges, gambling, bitcoin and related high-risk financial markets:

Result 20 roles - Founder/CIO, Chief Compliance Officer, Senior Trader, Financial Analyst, Operations Manager, Quantitative Analyst, Risk Manager, IT/Systems Administrator, Client Relations Manager, Additional Trader, Portfolio Manager, Data Scientist, Legal Advisor, Marketing Specialist, HR Manager, Compliance Specialist, Additional Financial Analyst, Business Development Manager, Technology Specialist, Accountant/Controller

- ➔ Let's consider our corporation of 20, study them and understand their interactions, now understand they are not people but AI agents. Are there positions that can be eliminated or modified since you are dealing with agents and not people:

Result 15 roles - 'Founder/CIO', 'Senior Trader', 'Financial Analyst', 'IT/Systems Specialist', 'Portfolio Manager', 'Risk Manager', 'Client Relations Manager', 'Chief Compliance Officer', 'Marketing Specialist', 'HR Manager', 'Legal Advisor', 'Business Development Manager', 'Accountant/Controller', 'Quantitative Analyst', 'Operations Manager'

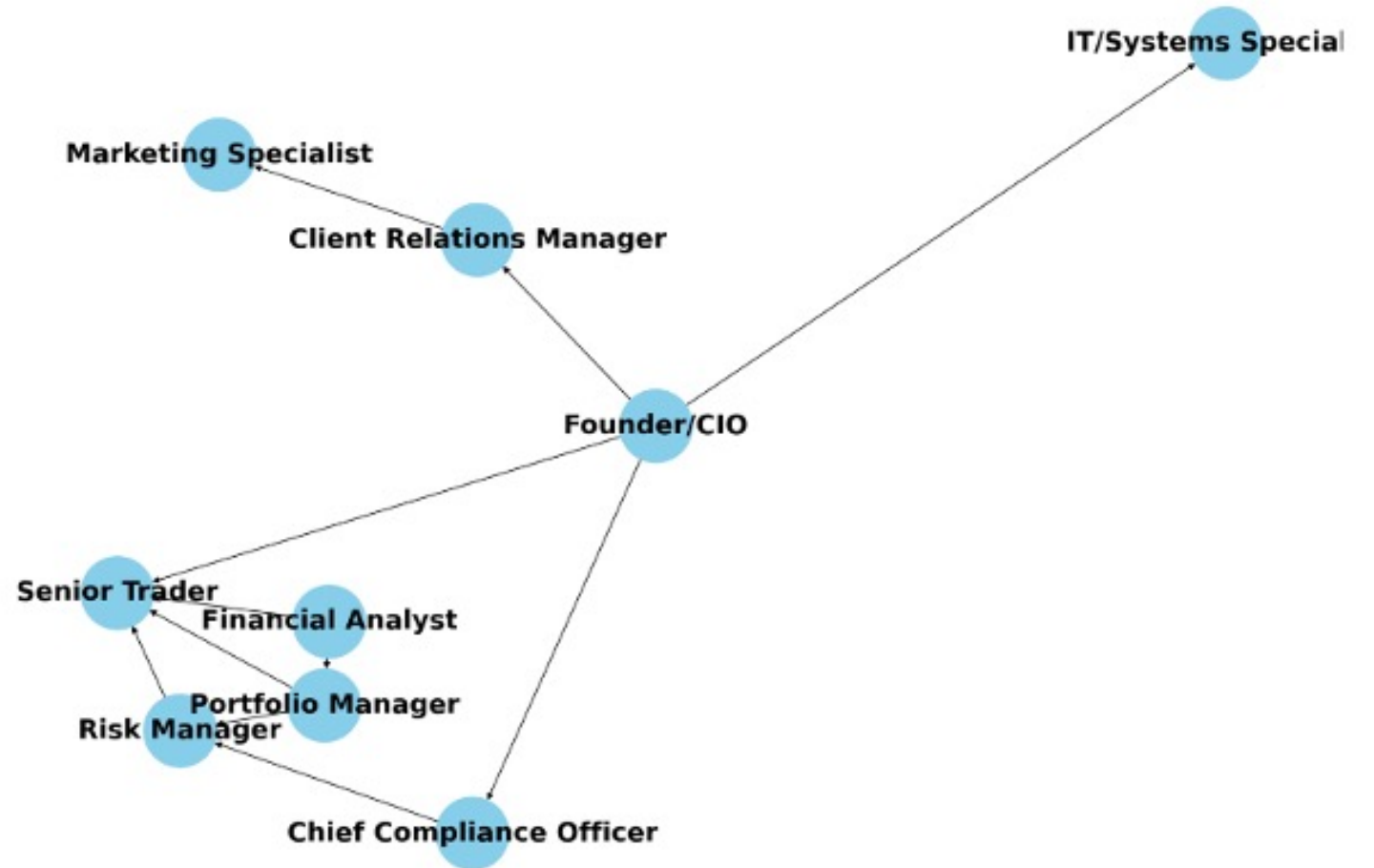
Demo 1 (Prompt Engineering)

➔ Now that the optimization has been done for the given 15 "above" give who they will directly interact with

- 1. Founder/CIO (Chief Information Officer) - Interacts with:** All roles for strategic direction, especially with the IT/Systems Administrator & Technology Specialist, Legal Advisor, Business Development Manager, and HR Manager.
- 2. Senior Trader - Interacts with:** Financial Analyst, Quantitative Analyst, Portfolio Manager, Risk Manager for trading strategies and risk assessment.
- 3. Financial Analyst - Interacts with:** Senior Trader, Portfolio Manager, Accountant/Controller for financial data analysis, forecasting, and financial strategy.
- 4. IT/Systems Administrator & Technology Specialist - Interacts with:** Founder/CIO, Operations Manager to ensure that all systems are running smoothly and securely.
- 5. Portfolio Manager - Interacts with:** Senior Trader, Financial Analyst, Risk Manager to manage and optimize investment portfolios.
- 6. Risk Manager - Interacts with:** Senior Trader, Portfolio Manager, Quantitative Analyst, and Chief Compliance Officer to identify and mitigate risks.
- 7. Client Relations Manager - Interacts with:** Marketing Specialist, Operations Manager to manage and enhance client relationships and satisfaction.
- 8. Chief Compliance Officer - Interacts with:** Risk Manager, Legal Advisor, Accountant/Controller to ensure compliance with laws and manage regulatory risks.
- 9. Marketing Specialist - Interacts with:** Client Relations Manager, Business Development Manager to develop marketing strategies and increase brand visibility.
- 10. HR Manager - Interacts with:** Founder/CIO, Operations Manager to manage AI agents' performance and align their operations with corporate goals.
- 11. Legal Advisor - Interacts with:** Founder/CIO, Chief Compliance Officer to provide legal counsel and manage contracts.
- 12. Business Development Manager - Interacts with:** Marketing Specialist, Founder/CIO to drive business opportunities and strategic partnerships.
- 13. Accountant/Controller - Interacts with:** Financial Analyst, Chief Compliance Officer to manage financial reporting and ensure financial controls.
- 14. Quantitative Analyst - Interacts with:** Senior Trader, Financial Analyst, Risk Manager to enhance financial models and strategies.
- 15. Operations Manager - Interacts with:** IT/Systems Administrator & Technology Specialist, Client Relations Manager, HR Manager to ensure operational efficiency and manage workflows.

Unpacking Your Business (from Vectara)

Key Roles Interaction in an Investment Firm
Value Add: \$3,826,584



Demo 1

20 Employee Curriculum (5 humans)

1. Founder/CIO

- Strategic Financial Management** (covers corporate strategy, financial policies, risk management)
- Advanced Investment Analysis** (focuses on portfolio theory, asset allocation, and risk assessment)
- Leadership in Financial Organizations** (explores executive leadership, organizational behavior, and change management)

2. Chief Compliance Officer

- Securities Regulation and Compliance** (detailed coursework on SEC regulations, compliance best practices)
- Ethical Standards in Finance** (examines ethical dilemmas and integrity in financial dealings)
- Corporate Governance** (focuses on frameworks and practices to govern corporate entities effectively)

3. Senior Trader

- Advanced Trading Strategies** (technical analysis, quantitative trading methods, and algorithmic trading)
- Market Microstructure** (understanding how trades are executed and the structure of financial markets)
- Behavioral Finance** (insights into psychological influences on the financial markets)

4. Financial Analyst

- Financial Modeling and Valuation** (building financial models, valuation techniques, Excel mastery)
- Equity and Fixed Income Analysis** (comprehensive analysis techniques for equities and bonds)
- Data Analysis with Python** (programming for financial analysis, focusing on Python and data libraries)

5. Operations Manager

- Operations Management in Financial Services** (efficiency and effectiveness in financial operations)
- Project Management for Professionals** (standard practices in managing time, scope, and resources)
- Technology Management** (integrating new technology solutions into business processes)

6. Quantitative Analyst

- Quantitative Methods for Finance** (statistical techniques and quantitative analytics in finance)
- Machine Learning and Artificial Intelligence in Finance** (using AI and machine learning models for financial predictions)
- Stochastic Calculus for Finance** (advanced mathematical techniques for modeling and decision making in finance)

7. Risk Manager

- Enterprise Risk Management** (strategies for managing risks across an organization)
- Financial Risk Modeling** (tools and techniques for assessing financial risks)
- Operational Risk in Financial Services** (identifying and mitigating risks in operations)

8. IT/Systems Administrator

- Information Technology Infrastructure Library (ITIL)** (best practices for IT service management)
- Network Security** (securing computer networks, cyber threat mitigation)
- Database Management** (fundamentals of database administration, focusing on security and performance)

9. Client Relations Manager

- Client Relationship Management** (strategies for building and maintaining client relationships)
- Effective Communication Skills** (developing interpersonal skills and negotiation techniques)
- Sales Strategies for Financial Markets** (tailored selling techniques for financial products and services)

10. Additional Trader

- Financial Markets and Instruments** (overview of global financial markets and instruments)
- Advanced Derivatives Trading** (in-depth strategies for options, futures, and swaps)
- Risk and Portfolio Management** (balancing portfolios to manage risk and return)

11. Portfolio Manager

- Portfolio Construction and Management** (designing and managing investment portfolios)
- Behavioral Portfolio Management** (cognitive biases and investor behavior)
- Asset Allocation and Portfolio Strategy** (strategies for asset mix and allocation)

12. Data Scientist

- Big Data Analytics in Finance** (using big data tools and techniques in financial analysis)
- Predictive Analytics and Data Mining** (methods for predictive modeling and data exploration)
- Statistical Learning for Big Data** (applying statistical methods to large datasets)

13. Legal Advisor

- Financial Services Regulation** (a detailed study of financial laws and regulations)
- Contract Law for Professionals** (understanding contract drafting, negotiation, and management)
- Corporate Law and Securities Regulation** (insights into corporate legal frameworks and securities laws)

14. Marketing Specialist

- Digital Marketing for Finance** (online marketing strategies tailored for financial services)
- Brand Management in Finance** (building and managing financial brands)
- Consumer Behavior and Market Research** (analyzing consumer behavior to inform marketing strategies)

15. HR Manager

- Human Resources Management in Financial Services** (HR practices specific to financial services)
- Organizational Development and Change** (managing change within financial organizations)
- Talent Management and Workforce Planning** (strategies for talent acquisition and development)

16. Compliance Specialist

- Compliance and Regulatory Affairs** (comprehensive compliance training specific to finance)
- Anti-Money Laundering (AML) and Fraud Prevention** (methods to detect and prevent financial crimes)
- Regulatory Technology (RegTech) Solutions** (technology solutions to aid compliance and monitoring)

17. Additional Financial Analyst

- Investment Theory and Practice** (foundation in investment theory and current investment practices)
- Corporate Finance** (examines capital structure, funding sources, and corporate valuation techniques)
- International Finance** (dealing with financial management in an international environment)

18. Business Development Manager

- Strategic Business Development** (identifying strategic opportunities and developing business plans)
- Negotiation Techniques** (mastering negotiation skills for business deals)
- Innovation Management** (managing innovation in business processes and offerings)

19. Technology Specialist

- Fintech Innovations** (latest developments in financial technologies)
- Blockchain for Finance Professionals** (how blockchain technology is used in the financial sector)
- Cybersecurity Fundamentals** (ensuring security of financial data and systems)

20. Accountant/Controller

- Advanced Financial Accounting** (complex accounting issues in business transactions)
- Forensic Accounting and Fraud Examination** (detecting and preventing fraud in financial statements)
- Tax Strategies for Businesses** (strategies to manage taxation effectively in business operations)

Demo 2



Week 1-2: Advanced Technical Analysis

- Review of basic technical indicators
- Advanced chart patterns and their significance
- Volume analysis and trading signals
- Integration of technical analysis with trading psychology



Week 1: Review and Introduction to Advanced Techniques

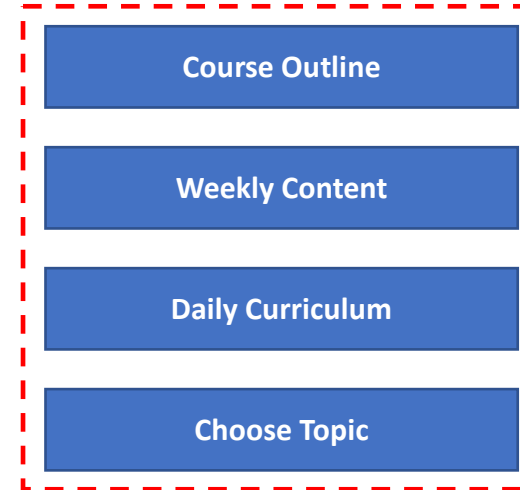
Day 1: Introduction to Advanced Technical Analysis

- Lecture: The importance and evolution of technical analysis in trading.
- Workshop: Review of basic technical indicators (Moving Averages, RSI, MACD).



Review of Basic Technical Indicators

- Moving Averages (Simple and Exponential):
 - Definitions and calculations.
 - How to interpret signals for trend following.



Moving Averages (Simple and Exponential)

Definitions and Calculations:

- **Simple Moving Average (SMA):** This indicator calculates the average price of a security over a specific number of periods. It is called "simple" because it gives equal weight to each price point.
Formula:

$$SMA = \frac{\text{Sum of prices over } n \text{ periods}}{n}$$

- **Exponential Moving Average (EMA):** Unlike the SMA, the EMA gives more weight to recent prices, which makes it more responsive to new information. Formula:

$$EMA \text{ today} = \left(\text{Value today} \times \frac{\text{smoothing}}{1 + n} \right) + EMA \text{ yesterday} \times \left(1 - \frac{\text{smoothing}}{1 + n} \right)$$

where n is the number of periods, and smoothing is typically set at $\frac{2}{n+1}$.

Demo 2 Dynamically Generated Training



<https://www.youtube.com/watch?v=uX-SXQZl6hM>

Conclusion

During this Hackathon, we delved into the feasibility of rapidly developing web-based businesses primarily powered by Vectara-supported agents. This innovative approach not only provides the flexibility to integrate Human-in-the-Loop systems but also supports continuous training opportunities.

Our exploratory findings demonstrate that such a business model can significantly enhance operational efficiency and adaptability. By leveraging dynamic structures and automation, there is a marked reduction in reliance on manual processes and personnel. Moreover, this model promotes a comprehensive and transparent view of business operations, optimizing resource management and improving overall performance.

Although this Hackathon served as an initial investigation into the feasibility of the Vectara solution—without full only conceptual implementation—our prior experience with Vectara Rag gave us confidence in the soundness of this approach.

We stand on the brink of a transformative era in data management and business operations. The continued exploration and development of these technologies will be crucial in realizing their full potential. As we move forward, it is clear that much work remains, yet the path ahead is promising and ripe with opportunities for innovation.

Thanks to the Team



**Hasnain
Mehmood**



**Muhammad Kashif
Javed Akhter**



Subhan Liaqat



**Muhammad
Asad Ishfaq**



**Ahmad Talha
Ansari**



Hello!

Thank you for joining me today.

Michael Lively

PMI.ACP, CPCU, LSSBB, PSM, ACS



23 Cloud Certifications: Azure - MCT, AZ-305, AZ-700, AZ-400, AZ-500, AZ-104, AZ-900, AI-102, AI-900, DP-203, DP-100, DP-900, DP-500, PL-300, AWS - DOP, ANS, DAS, MLS, SCS, SAP Google - CDL, ACE, PCA

Jobs: Military (USAF Captain), Government, Education & Industry

Avid Generative AI Hacker

BA Mathematics, BS Chemistry, BSEE in Electrical Engineering, MS in Physics, Ph.D. “ABD” Nuclear Physics, (pursuing) Ph.D. Generative AI, Donovan Scholar UK

LinkedIn: <https://www.linkedin.com/in/awsmulticloud/>

Multi-Cloud Meetup: <https://www.meetup.com/florence-aws-user-group-meetup/>

Hugging Face: <https://huggingface.co/eaglelandsonce>

Lablab.ai: <https://lablab.ai/u/@quantumai>

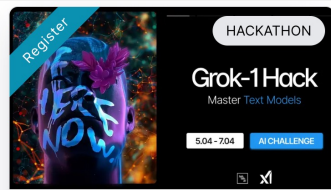
My LabLab.ai Projects



APR 12 - 19 460

Advanced RAG...

Explore Vectara, the trusted platform for building innovative AI...



APR 5 - 7 283

Grok-1 Micro Hack

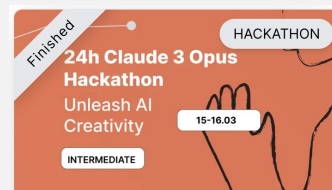
48 hours to complete the challenge
Create innovative apps with Grok...



MAR 22 - 25 1448

Gemini Ultra 1.0...

Embrace app creation with a game-changing mobile app from Google! ...



MAR 15 - 16 469

24h Claude...

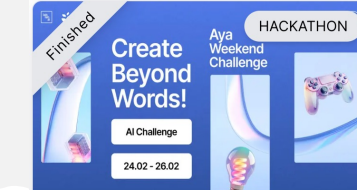
24 hours to complete the challenge
Create apps with enhanced visio...



MAR 4 - 7 4344

LEAP 2024...

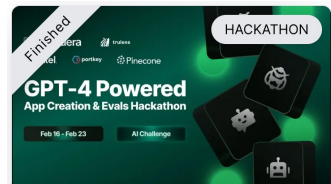
72 hours of intensive development online and onsite, with workshops...



FEB 24 - 26 232

Aya Weekend...

Build with Aya to accelerate multilingual AI progress! 48 hours...



FEB 16 - 23 1604

GPT-4 Powered Ap...

Tap into OpenAI's models for diverse app needs: text and image...



FEB 12 - 13 292

Unhallucinate...

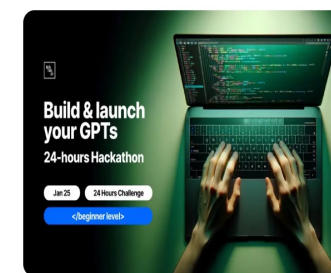
Build a flawless RAG based app w/o any hallucinations by using the...



Phi-2 Technology: 24 Hours Challenge | Certificate



Mixtral 8x7B: 24 Hours Challenge | Certificate



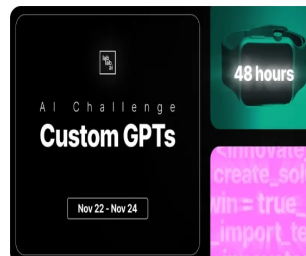
Build Your Custom GPTs: 24-hours Hackathon | Certificate



Accelerate & Innovate: 2023 Year-End Hackathon | ...



Gemini AI Hackathon | Certificate



Custom GPTs 48-hours Hackathon | Certificate



NextGen GPT AI Hackathon Certificate



Stable Video 24-hours Hackathon | Certificate

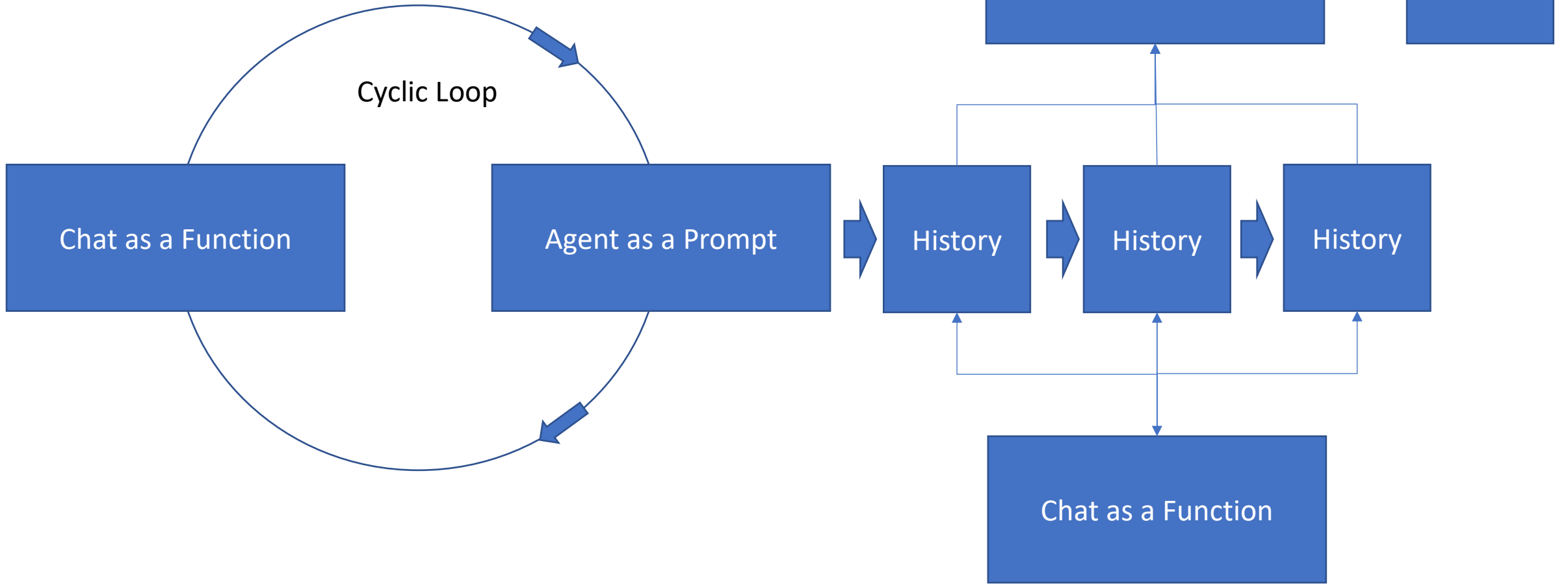


Twelve Labs Weekend... 78

Appendix



Grok Injector Flow (concept for MD)



Navigator - Agentic Portfolio Builder

Medium Risk

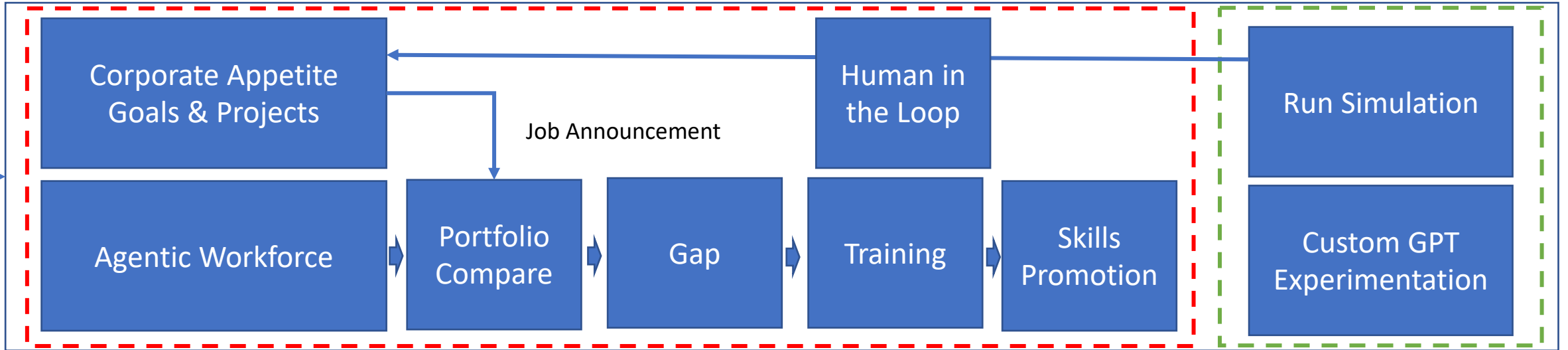
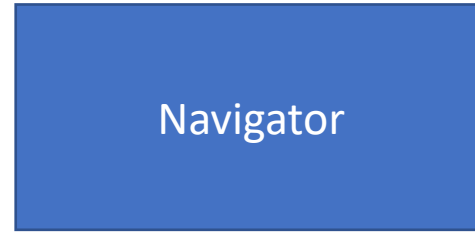
1. Complexity
2. LangGraph
3. Human in the Loop
4. Simulation

Business value

1. A job specific resume builder
2. Skills path builder for resume gaps & portfolios
3. Solves inequitable promotion practices
4. Job "real world" experience builder
5. Democratizes the workforce

MVP – Minimal Viable Product

Enhancements



LangGraph

Technology Components



MVP

System is built using LangGraph and Synthetic Data

MVP – Minimal Viable Product

