Emerging Technology's LRP

Summary:
Our 3-Year Strategic Plan is designed to support the 3-Year Strategic Product Plan for Credit (Randy F's) and BMM (Catherine's). Leveraging the technical opportunities provided by GPT Models and other emerging trends, the primary goal is to expand revenue in the Credit and Digital Banking sectors by focusing on these three technical pillars:

1. **Enhance Stability & Build Trust**: In conjunction with Jcard decomposition, we plan to streamline core Credit/BMM schemas (Account, Card, Ledger, etc), and implement a feasible migration path, all while complying with both standards and security protocols. We will ensure meeting defined SLOs for Credit and BMM. Our adherence to these standards and security measures will fortify our position against Large Financial Institutions and Legacy Technology Providers, enhancing our reputation for reliability and trust.
2. **Leverage AI for Innovation & Customer Experience**: Employ AI, including AI bots for onboarding to reduce TTV for customers, to achieve faster deliverables, add more innovative features, and enhance customer experience to compete effectively with both Mature Competitors (e.g., Stripe) and Emerging Competitors (like Unit).
3. **Optimize Architecture & Scale Efficiently**: Incorporate a metadata-based approach to further optimize the extensible, microservice based architecture with reusable components, speeding up banking integration. Ensure a scalability baseline that meets at least 10X required business needs, solidifying a leading edge in the market.

This plan transcends mere revenue growth, aiming to pioneer fintech innovation and resolve industry challenges. A key component is boosting internal engineering efficiency through AI. With generative AI in fintech forecasted to reach USD 6,256 million by 2032, with a CAGR of 22.5% from 2023-2032, capitalizing on this trend is vital. Thus, we will execute the 'Leverage AI for Innovation & Customer Experience' strategy in three interconnected stages:

1. **Boosting Productivity and Job Satisfaction:** Use AI to streamline processes, create reusable components, and assist in network certification and compliance, addressing operational inefficiencies and resource constraints.

2. **Developing Bots and Copilots:** Leveraging the reusable components from the productivity improvements, automate MxM and PxM card program tasks to cut costs and errors, and improve dispute handling, dispute cost, and Time to Value (TTV) for customers.
3. **Growing Revenue through Innovation**: Building on the experience learned from creating bots and copilots, introducing novel features such as predictive reward programs to drive growth and set new fintech standards, overcoming stagnant growth.

In committing to the three technical pillars of stability, innovation with AI, and efficient scaling, we are strategically positioned to transcend industry norms and pave the way for a new era of fintech excellence. Our plan to 'Leverage AI for Innovation & Customer Experience' harnesses the power of AI not merely as a tool but as a visionary guide, aligning our core values with the needs of our customers. Together, we will redefine the fintech landscape, meeting and exceeding our Credit and BMM objectives, solidifying our leadership role, and inspiring a future filled with innovation, growth, and unparalleled customer experiences.

1. *What is our winning aspiration?*

Our winning aspiration is to be the vanguards of fintech innovation, anchored by three pivotal technical pillars:

1. **Reliability Refined**: Achieving 99.999% uptime and accounting accuracy for unshakable stability.
2. **AI Amplification:** Harnessing AI, including GPT models, to enhance customer experiences, expedite value realization, and ignite growth prospects.
3. **Scalability Redefined**: Crafting an architecture primed for seamless expansion.

Our vision paints a tapestry where our ingenious algorithms collaborate with us, realizing our authentic vision. We're weaving technology and human traits—curiosity and emotional intelligence—into a harmonious symphony. AI isn't a substitute, but a means of empowerment, elevating us to innovate, craft, and lead in a tech-empowered era.

From establishing trust through Jcard decomposition to defining industry norms, our fusion of tech prowess and human innovation cements our leadership and fuels our future ingenuity. This is our triumphant ambition. As pioneers of emerging tech, we relish shaping the future, transforming the

unfamiliar into the customary, and making the extraordinary an everyday affair.

Our voyage isn't solely about reshaping the world; it's about reveling in the process.

2. Where are we going to play?

Our strategic direction is formed around three vital technological pillars, setting us apart from Large Financial Institutions (e.g, Visa DPS), Legacy Technology Providers (e.g, Fiserv), Mature Competitors (e.g., Stripe), and Emerging Competitors (e.g, Unit):

1. **Reliability Refined (99.999% uptime & account accuracy**): This focus on reliability is designed to attract Big Brands in consumer and commercial banking and credit, allowing us to directly compete with Large Financial Institutions and Legacy Technology Providers.
2. **AI Amplification (leveraging GPT models)**: We employ AI, such as GPT models, to redesign systems that empower employers in crafting dynamic and automated financial services in both consumer and commercial banking and credit sectors. This modern, technology-driven approach uniquely positions us against both Mature and Emerging Competitors in banking and credit.
3. **Scalability Redefined (10X beyond business needs):** By optimizing the current micro-service architecture to include an extensible meta-database design pattern, we can enable faster delivery and easier integration with banking and network partners, further solidifying our competitive advantage.

Our three technological pillars—reliability, AI amplification, and scalability—are more than strategic concepts; they are a concrete commitment to engineering brilliance. By aligning with Credit and BMM objectives, we solidify our competitive edge, uniquely positioning ourselves in both consumer and commercial banking and credit. These pillars aren't just about competing; they define our leadership in fintech, enabling us to transform complex technology into tangible everyday solutions. Our relentless innovation is advancing the frontier of banking and credit, redefining the industry landscape, and setting new benchmarks for excellence.

3. How will we win?

    a. How are we going to differentiate from our competitors?

Our differentiation is engineered through specific, innovative strategies in areas we have previously identified: reliability, AI amplification, and scalability. Here's how:

1. Reliability Refined (99.999% uptime and account accuracy):
   a. **Addressing Monolithic Challenges:** By decomposing Jcard components and creating reusable/extensible entities like account, card, user/customer, we reduce single point of failure at runtime, and also improve code reuse and quality.
   b. **Extensibility Beyond Database**: The extensibility is not limited to the database layer; we also add it to the business logic layer in both front-end and backend, allowing us to pivot with ever-changing business needs.
2. AI Amplification (including GPT models):
   a. Innovative strategies to **address the limitations of GPT Models**:
      i. Start small to avoid oversimplification.
      ii. Manage high computational costs with techniques like Embedding and OpenAI API.
      iii. Regularly update embedding data to address staleness.
      iv. Leverage GPT models' plugin techniques to overcome restrictiveness.
      v. Develop internal algorithms for content chunking.
      vi. Implement an MQ data security layer for trust and security
   b. **Add an AI layer to empower GPT applications**: Our platform-based AI engineering approach promotes reusability, consistency, and efficiency, which helps speed the application of AI. This enables personalized and enjoyable experiences within the company and increases Time to Value (TTV) for our customer
3. Scalability Redefined (10X beyond business needs):
   a. **Optimization of Micro-service Architecture**: By incorporating extensible meta-database design patterns

into our existing micro-service architecture, we enable faster delivery and easier integration

    b. **Scalability Assessment and Enhancement**: By creating a baseline of our current scalability, we can identify gaps and optimize the platform to achieve at least 10X beyond business needs across emerging technologies.

By merging reliability, AI mastery, and scalability, we're setting the industry standard, not just competing. Our pursuit of excellence aligns with Credit and BMM objectives, transforming the fintech landscape. Our strategies highlight our commitment to engineering brilliance, positioning us as leaders in consumer and commercial banking and credit solutions, and preparing us for future innovation
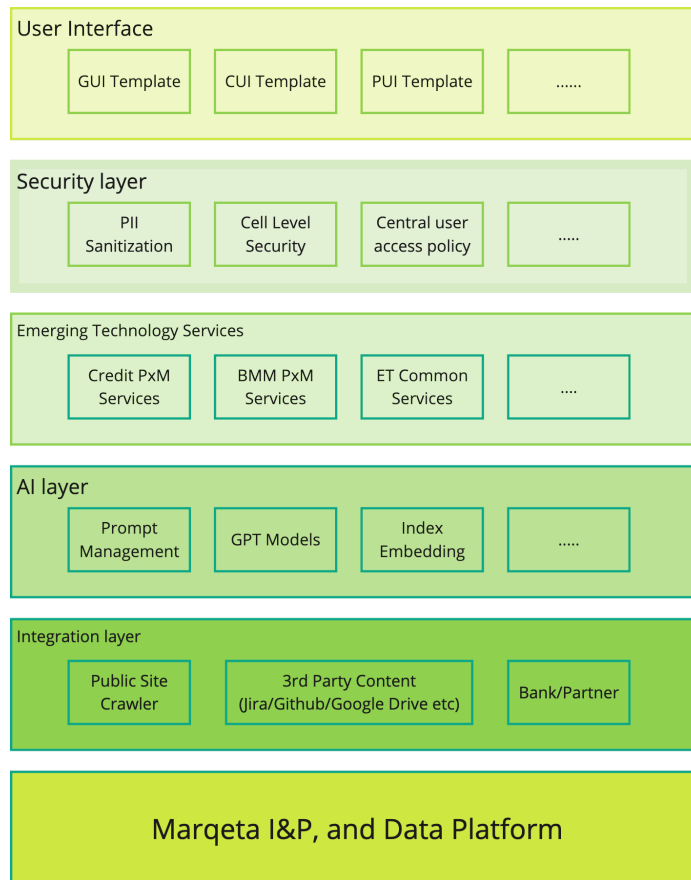
b. How will our platform/services enable us to excel at that differentiation? What *does our* northstar architecture look like?

Our platform, built around the "North Star" architecture, is designed to incorporate our technological pillars, creating a robust, flexible, and secure system that sets new standards in fintech engineering. Key components include:

1. **User Interface Layer**: This layer will provide reusable, AI-assisted interfaces that make banking and partner integrations easier and promote an efficient and enjoyable user experience.
2. **Security Layer**: This layer will enforce cell-based roles and permissions for indexing all types of content storage (GitHub, Slack, Google Drive, etc.) used for AI applications. This design is additive to the existing Marqeta security approach, ensuring the trust and security of our platform.
3. **Emerging Technology Services Layer:** This layer consists of features and infrastructure required for executing credit/BMM road, such as rewards, statements, integration with core ledger, etc. The goal is to promote reuse of entities, logic components, and avoid duplication, enhancing efficiency within our system
4. **AI Layer**: This layer will house our GPT Models, driving smart features like intelligent conversational agents, personalized financial advice, and smart pattern detection from transactions. It will also include techniques to manage high computational costs, such as Embedding and the OpenAI API, and mechanisms

to ensure data quality and availability, such as Bot/Copilot feedback loops.

5. **Integration Layer**: Seamlessly integrating with fintech APIs (e.g. FedNow or RTP for real-time transactions) or various banking services, or 3rd party services and capitalizing on the benefits of various ISO standards, such as ISO 20022, which increases data richness, enhances straight-through processing, and improves interoperability.

User Interface

| GUI Template | CUI Template | PUI Template | ...... |

Security layer

| PII Sanitization | Cell Level Security | Central user access policy | ..... |

Emerging Technology Services

| Credit PxM Services | BMM PxM Services | ET Common Services | .... |

AI layer

| Prompt Management | GPT Models | Index Embedding | ..... |

Integration layer

| Public Site Crawler | 3rd Party Content (Jira/Github/Google Drive etc) | Bank/Partner |

Marqeta I&P, and Data Platform

4. *What capabilities must be in place?*

a. What are our core capabilities?

Our core capabilities include expertise in fintech, scalable SaaS solutions, GPT Models-based AI innovation, GUI/CUI/PUI interface design, and financial technologies integration. Leveraging the benefits of various standards (e.g., ISO 20022), we plan to enhance payment processing efficiency and accuracy. Our understanding of GPT Models' limitations and the innovative strategies we've developed to address them set us apart.

b. What unique capabilities do we need to build to meet the needs of our future customer types?

To meet future customers' needs, we must introduce a streamlined schema and balance maintaining or migrating current services to ensure reliability and accounting accuracy. We will also introduce a metadata-based design pattern to various layers for faster delivery and integration. While AI-driven interactions and applications remain vital, our broader focus will encompass cost control and a security layer managing the indexing/embedding of various content storages, reinforcing trust in our platform.

c. What will we be building in 3 years? What is the scale?

In three years, our comprehensive Emerging Technology platform will encompass a suite of services necessary for achieving the business goals required for credit and BMM. It will include AI-powered tools such as bots and copilots, along with APIs and GUI/CUI/PUI interfaces. This platform will feature connectors that streamline credit and banking operations management, aligning with our 'North Star' architecture for robust integration and enhanced user experience.

Targeting a diverse customer base from individuals to enterprises, we'll support a 10X volume as specified in Randy F and Catherine's 3-year plan, ensuring multi-tenancy and multi-region redundancy. Our commitment to the continual expansion of features and capabilities will position us as leaders in fintech innovation."

d. What do we want our ==operating costs== to look like?

Our goal is to create a scalable, optimized infrastructure with controlled operating costs. We'll employ techniques such as Embedding and usage-based LLM API invoking to manage computational expenses. By internally utilizing our own AI tools, we'll reduce implementation costs. The effective use of AWS will enhance cost-effectiveness. By aligning our operations with innovation and quality, we aim to maintain a growth pattern where operational costs increase at a rate lower than our revenue growth.

e. How do we meet/address future security and resiliency requirements?

We'll address future security needs by leveraging the inherent security of AWS, existing Marqeta data protection, and our backup and disaster recovery solutions. Additionally, we'll develop internal AI tools to aid in implementing changes required for various certifications and compliance, along with real-time threat detection. The introduction of an MQ embedding data security layer for indexing content across different types of storage (including GitHub, Slack, Google Drive) will ensure consistent security across various AI applications

5. What management systems must be in place?

a. People/Process/Product

People: We need a team versed in fintech, SaaS, chat/prompt interface design, AI, and machine learning. Members must be adaptive, business-oriented, and keen on continual learning, with a clear understanding of GPT Models' limitations and various ISO standards (e.g., 20022) benefits. We need our engineers to dig deep in the business/product logic area (beyond engineering skills) and become domain experts. Their ability to grasp various Marqeta products, identify common technical needs, and create scalable, reusable solutions will promote efficiency and consistency across our offerings, setting us apart in the fintech space

Process: We need to establish efficient project management systems, adopt agile development methodologies, and enforce robust quality assurance procedures. Importantly, we aim to leverage AI to automate and streamline our processes wherever feasible. This includes managing high computational costs, preventing algorithm hallucination, improving state-keeping, and ensuring data quality and availability. We also plan to "drink our own champagne" by using our AI-based tools internally, which will help us reduce the internal implementation and operation costs an
.

Product: We need a technology roadmap that aligns with Credit (Randy F's) and BMM (Catherine's) product plans. This entails the faster delivery of a suite of MLP features for credit and BMM, streamlining existing schemas, and enhancing AI-powered tools, interfaces, and metadata-based integration, all within our 'North Star' architecture. Robust performance monitoring and continuous optimization will

ensure ongoing improvement and responsiveness to customer and market demands, fostering a unified strategy for growth and innovation