Whitepaper - LamdaX Project

Sarel Marais, CEO and Founder

EXECUTIVE SUMMARY

The **manufacturing industry** is the backbone of any nation's economy. Within the manufacturing industry lies a less known, but equally important industry (one of the three pillars of manufacturing excellence), Physical Asset Management. This industry involves all the activities related to physical assets with the goal of maximizing a business' achieved return on investment over the asset's operational life. Amongst others, these activities include Capital Development, Physical Asset Logistics Support, Maintenance and Asset Disposal, with the most CAPEX and OPEX intensive being Maintenance.

The LamdaX Project targets the **Maintenance and Repair** industry. Our goal is to develop an Enterprise Asset Management (EAM) or **Computerised Maintenance Management System (CMMS)** that differs from legacy CMMS currently in the market, a **CMMS** that is built on **Blockchain Technology**. LamdaX believes that a well-designed, quality CMMS product will gain a substantial share of the current global CMMS market, estimated at US$ 4 Billion.

Keywords: **Manufacturing, Maintenance and Repair, CMMS, Blockchain Technology**

1 PROJECT INTRODUCTION

The LamdaX project was initiated as an opportunity to lead the Digital Maintenance Management industrial by designing and delivering a CMMS that is built on reputable and secure blockchain technology.

The Maintenance and Repair industry has historically been neglected with technology advances, partly due to its association as a "necessary evil" in the manufacturing environment, but also due to the non-glamorous connotation associated with it in the next generation entering the workforce. The reality is that a manufacturing facility should consider its maintenance and repair function as an opportunity or profit centre.

Businesses that have realised and acknowledged this has taken steps to improve their maintenance function and now typically leads the market in product manufacturing cost and quality as a result. These improvements may be to transition from a reactive to preventive maintenance strategy and then moving from a preventative to condition-based maintenance program for example.

One of these maintenance and repair improvement activities is the adoption and utilisation of a CMMS system (Maintenance and Reliability Best Practices 2nd Edition, 2013).

This aids the maintenance function in formalising the manufacturer's physical asset maintenance strategy, purchasing, Maintenance Repair and Operations Store (MRO) inventory management and work order workflow process. In general, a quality CMMS also provides planning and scheduling functionality to improve maintenance work quality, effectiveness, and efficiency.

In his book, Ron Moore explored the impact of implementing a CMMS system in a manufacturing facility (Making Common Sense Common Practice 4th Edition, 2014) . He refers to a study where 300 business' maintenance and repair function was studied in which the aim was to identify the key factors that differentiate the world class manufacturers from the average. The study revealed that one of the common factors amongst the successful manufacturers was that they fully utilised a CMMS system in their maintenance processes which lead to increased plant productivity, less downtime and improved plant service life.

Although there is consensus that implementation or use of a CMMS or EAM systems do provide quantifiable benefits to a manufacturer, not all CMMS/EAM software packages are made equal.

1.1 Current State – CMMS/EAM

In general, any physical asset deployed to manufacture a product, moves through the generic asset life cycle. This life cycle can be broadly described as asset acquisition initiation, asset acquisition, establishment of logistics support, asset installation and commissioning, asset operation and maintenance and lastly; asset disposal (Physical Asset Management 2nd Edition, 2015).

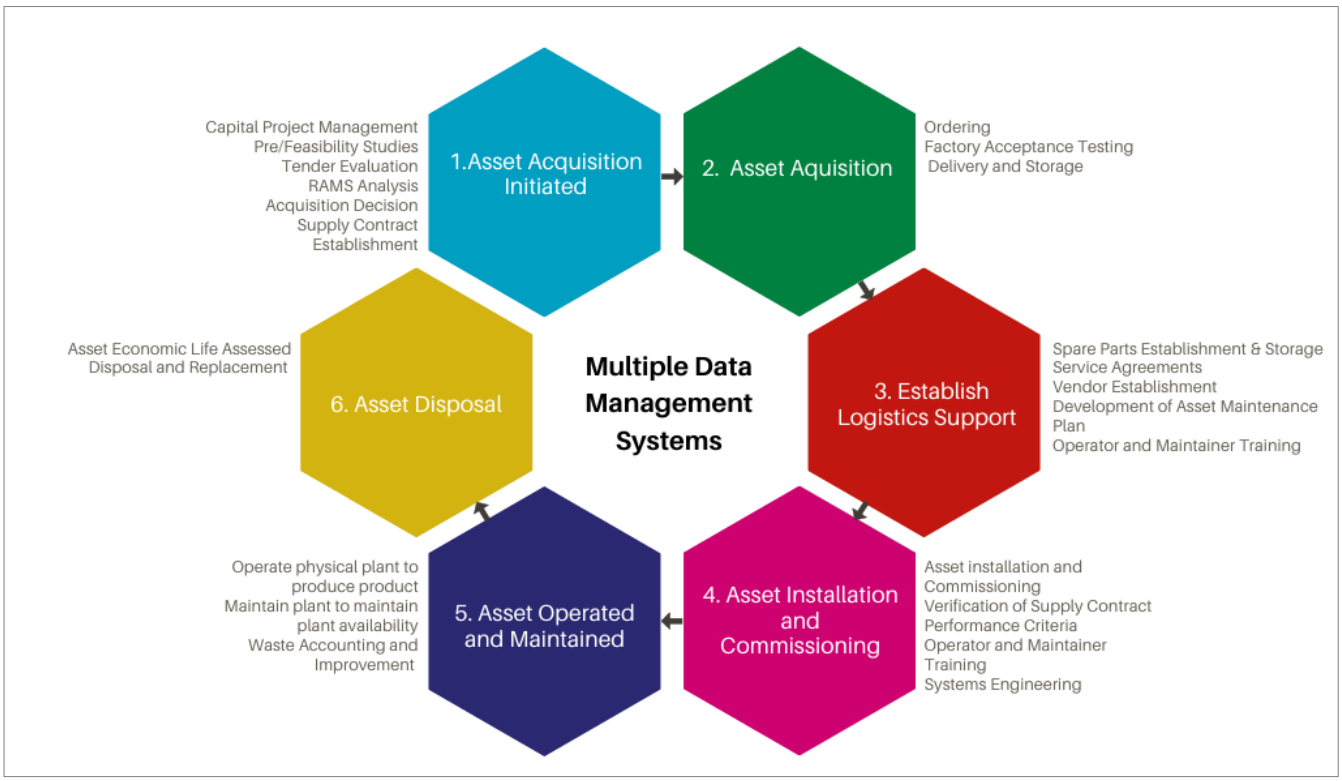


Figure 1: Physical Asset Life Cycle Phases and Activities/Transactions - Typical

As per Figure 1 above, each of the main asset life cycle phases incorporate a wide array of activities or transactions associated with the asset.

The main concern with most CMMS/EAM systems in the market is that they fail in recording all these transactions and data in a single inter-compatible way. This is due to their CMMS being unable to manage this data or that multiple software packages are deployed to address the various processes in manufacturing (purchasing, sales data, production data, inventory management etc.)

Therefore, business intelligence information lacks in both quality and quantity associated with physical assets. Consequently, poor business decisions are made on a regular basis. Example of these business decisions include; when physical assets need to be replaced (when asset maintenance costs exceed cost of ownership (Maintenance, Replacement, and Reliability 2nd Edition, 2013), or what the economic reorder quantity and min/max holding should be of MRO store stock.

Manufacturers can commonly provide the amount maintenance resources deployed to an asset (via CMMS data), but few can provide basic information like when the relevant asset was installed, why it was considered as part of the tender evaluations, purchase price nor what its expected Reliability or Mean Time Between Failure data at installation. In addition to this, traditional legacy CMMS/EAM systems have the following concerns:

- Various manufacturing data sets are captured and maintained via different software/hardware technologies.
- Poor interoperability between operational data sets and inputs to business intelligence.
- Data security and integrity problematic – data corruption or deletion
- Inability to incorporate asset lifecycle data into decision making and improvement processes.
- Data not transparent, difficult to audit and complexity problems.
- High cost (and ongoing support costs) associated with CMMS/EAM, especially for smaller businesses
- Current CMMS systems are not scalable, nor do they provide a level of technological future proofing to the owner.

These points provide LamdaX the premise and opportunity to offer a better alternative based on blockchain technology.

1.2 Future State – LamdaX CMMS

Our aim is to utilise blockchain technology to develop a fully operable CMMS/EAM system that incorporates all aspects of Physical Asset Management. The system is to provide all the functionality (and more) of the current products available in the market but offer customers the benefits that blockchain technology and smart contracts bring. Some key benefits:

- All data from the asset lifecycle phases captured and managed with a single blockchain CMMS system (figure 2).
- Data fully transparent, easily accessible, auditable, and secure.

- System infrastructure is scalable and provide technology future proofing and interoperability – Satisfy IOT Expectations.
- Business intelligence information incorporates all aspects of an asset's lifecycle activities or transactions.
- Custom features expandable with DApp design.
- System exceptionally reliable, high transaction speed and easy to use.

Our aim is to develop a quality product that delivers quantifiable benefits (Making Common Sense Common Practice 4th Edition, 2014) to a manufacturer at a reasonable cost, ensuring that the mid to smaller businesses are not priced out.

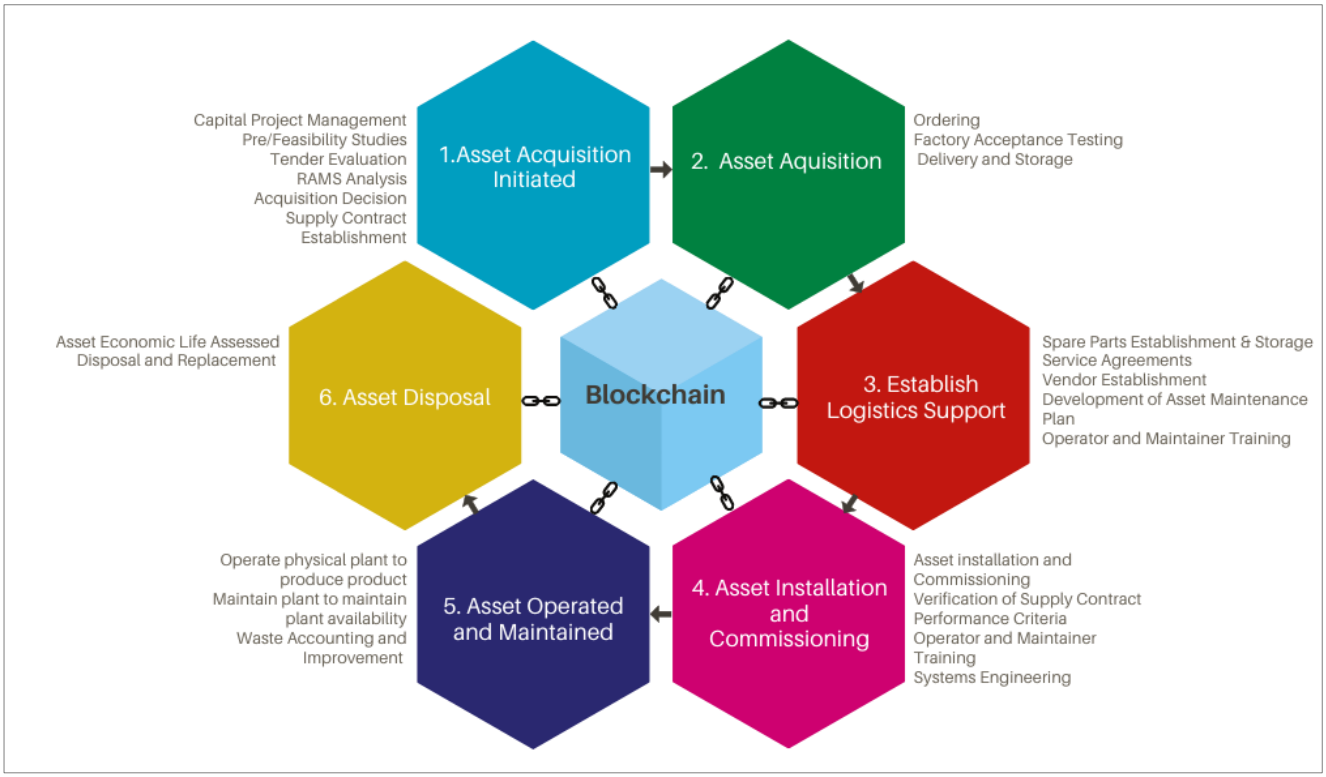


Figure 2: Physical Asset Life Cycle Phases and Activities/Transactions – LamdaX Solution

1.3 Brief Product Overview – Features

The envisaged product shall incorporate activities/transactions each of the asset life cycle phases as per figure 2. This shall be achieved through a modular approach utilising a privately developed scalable blockchain. The modules shall be designed for interoperability with each other, but also allow for local/global network connectivity.

The LamdaX CMMS product shall have the following capabilities as a minimum:

- Asset Register and Hierarchy
- Configuration Management

- Preventative, Condition and Corrective Based Maintenance Management
- Work Order Management
- Contractor Management
- Maintenance Planning and Scheduling
- Proactive Maintenance Management (FMEA, RAMS, RCA and Analysis)
- Drawing and Technical Document Management
- Maintenance Planning and Scheduling
- Asset Performance Reporting
    - MTBF, MTTR, Asset Replacement
- Engineering (MRO) Store Management
    - Spare Part Inventory Management
- Accounting Module
- Mobile Device Capable (allow remote execution of activities)

The design front end shall be user-centred, allowing ease of use and the user to customise the interface to a large degree. One of the key values add capabilities, the system shall boast a substantial data analysis and reporting module.

Data shall be drawn from all the various asset life cycles stages to develop data sets that provides a business invaluable guidance on major business capital decisions. These include major asset replacement, major asset overhaul and operational budgeting decisions.

The last key differentiator would be the price point of the product that shall be presented to prospective customers. As mentioned previously, product design, features and pricing shall primarily be catered and focussed at the Australian and Global manufactures that do not currently utilise a CMMS/EAM system.

2 Market Opportunity

The initial target market for the product will be the Australian manufacturing market, after which the business will extend its reach internationally.

Considering the Australian Manufacturing and Infrastructure Market, an approximate AUD 34 Billion are spend annually on Maintenance and Repair activity. The industry employs approximately 100,000 workers from 13,500 businesses ranging from small to multi-nationals. Amongst these businesses, statistically only 55% utilize a formal EAM or CMMS system, with the remainder deploying excel and paper-based systems (Maintenance Statistics, n.d.).

Thus, there is an estimate of 6,100 potential customers in Australia that do not deploy a CMMS/EAM system nor understand the potential benefits it can provide their business. As of 2021, the global CMMS or EAM market is valued at US$ 4 Billion and expected to grow at an annual rate of 8-10% (Maintenance Statistics, n.d.).

Considering that this only accounts for approximately 55% of industrial manufacturers/utility businesses (45% do not use CMMS/EAM systems), an additional market of US$ 3.2 billion potentially awaits as an opportunity.

Acquisition of even a small proportion of the market would be extremely lucrative as a typical CMMS package sell for approximately US$1,000 with an approximate 20% (of sale price) annual support fee. Subscription or licence based packaged are also common.

3 Project Timeline & Team

The LamdaX project feasibility study is near completion. Upon completion, the project shall commence by establishing project funding, creation of a formal product development plan, product specification and initiation of development. The project timeline with key milestones is presented below:

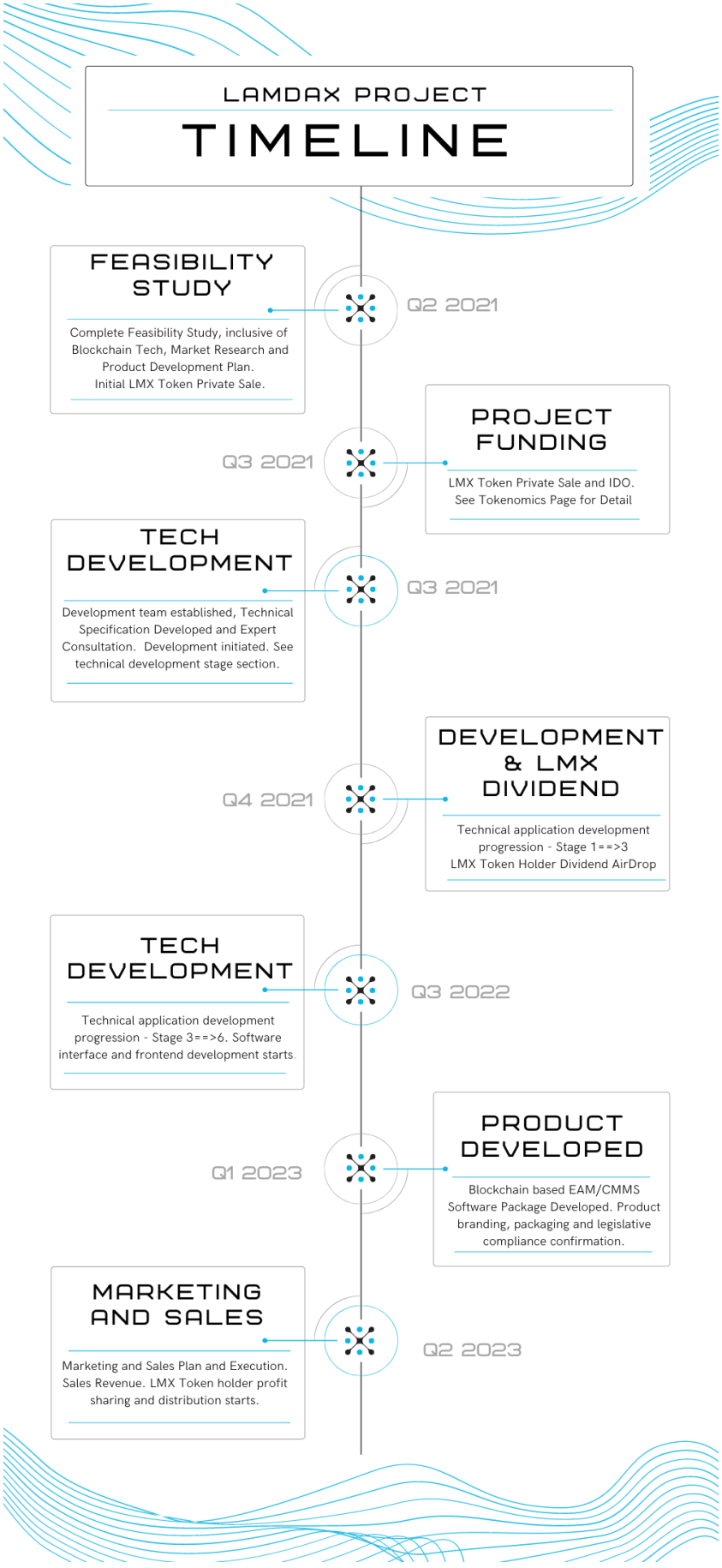
- Project Feasibility Study Complete – Q2 2021
- Initial Project Fundraising (Private Sale/IDO) – Q3 2021
- Project Development Team Established – Q3 2021
- LMX Token Reward Distribution to Holders – Q4 2021
- Technical Development Complete – Q4 2022
- Product Sales and Marketing Commence – Q1 2023
- Quarterly LamdaX Sales Profit Sharing to LMX Token Holders commence – LMX Token buy back and redistribution – Q1/Q2 2023

3.1 Project Team

The initial project management team has been established.

- Project Founder and CEO – Sarel Marais
- Strategic and Marketing Lead – Willem Marais
- Technical Lead – Andries Smuts
- Product Development Lead – Deon Kotze

Various advisory and subject matter experts have and shall be consulted throughout the project. The business team shall continuously adjust to account for the product development phases.


LAMDAX PROJECT
TIMELINE
FEASIBILITY STUDY
Complete Feasibility Study, inclusive of Blockchain Tech, Market Research and Product Development Plan.
Initial LMX Token Private Sale.
Q2 2021
PROJECT FUNDING
LMX Token Private Sale and IDO.
See Tokenomics Page for Detail
Q3 2021
TECH DEVELOPMENT
Development team established, Technical Specification Developed and Expert Consultation. Development initiated. See technical development stage section.
Q3 2021
DEVELOPMENT & LMX DIVIDEND
Technical application development progression - Stage 1==>3
LMX Token Holder Dividend AirDrop
Q4 2021
TECH DEVELOPMENT
Technical application development progression - Stage 3==>6. Software interface and frontend development starts.
Q3 2022
PRODUCT DEVELOPED
Blockchain based EAM/CMMS Software Package Developed. Product branding, packaging and legislative compliance confirmation.
Q1 2023
MARKETING AND SALES
Marketing and Sales Plan and Execution. Sales Revenue. LMX Token holder profit sharing and distribution starts.
Q2 2023

4 Tokenomics

The LMX token is the native token for the LamdaX project and the main funding mechanism. It operates and trades on the Binance Smart Chain.

- LamdaX (LMX) Token – Binance Smart Chain Contract Address - 0x720e02fda21c2d632a8747c70f5d9ea049521932
- Total & Max Supply – 20,000,000 (Max Supply Ever)
- Decimal Places – 18
- Token Standard – BEP20

4.1 Token Distribution

The LMX tokens have been distributed as indicated in Figure 3. Software product development projects are capital intensive, therefore 50% of all minted tokens will be made available to the public. The remainder shall be utilised to fund and resource product development and at a later stage, marketing and sales.

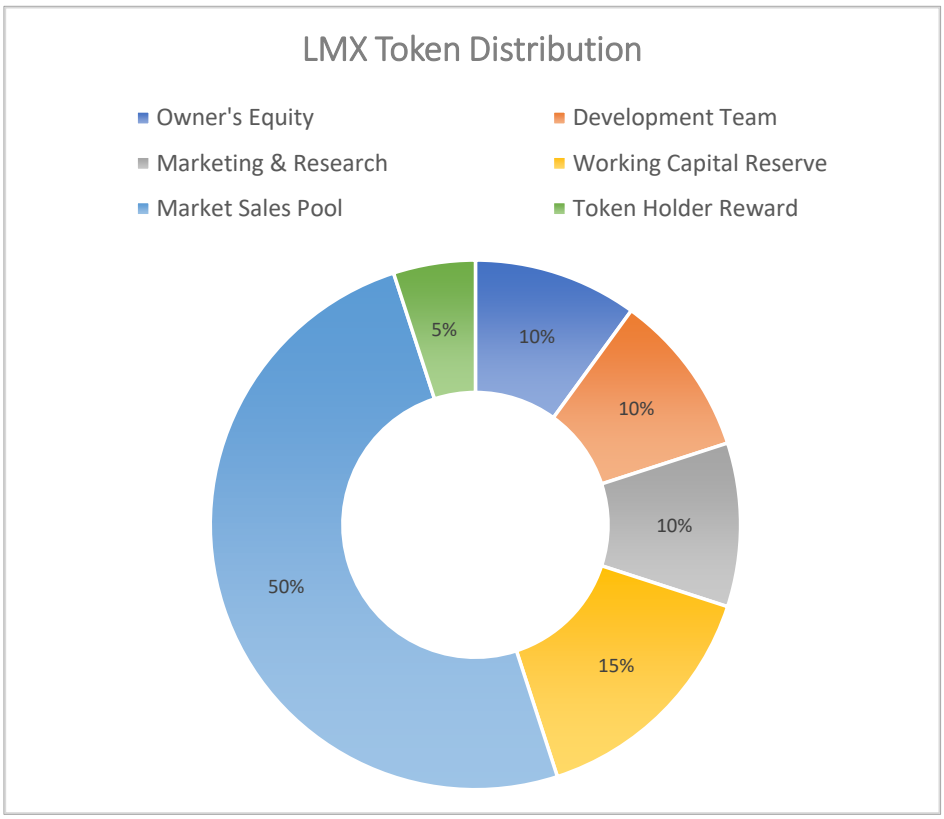


Figure 3: LMX Token Distribution

The token distribution area and their respective wallet addresses are provided below:

Development Team (10%)
The Project development team will be allocated 10% of the total supply of tokens. The funds shall primarily be utilized for remunerations and consultation fees.

Binance Smart Chain Holding Address:
0x849Bf6952D15D2AA0270e1eB8c2b5Eb343Bd26A8

Marketing and Research (10%)
A total of 10% of the total token supply shall be allocated to Research, Development and Marketing. The funds shall primarily be utilized to cover relevant project expenses.

Binance Smart Chain Holding Address:
0xfde7C3a44963c3815A563F7B7939E57f4dc63007

Working Capital Reserve (15%)
A total of 15% of the total token supply shall be allocated as reserve funding. The funds shall primarily be utilized to cover unexpected and relevant project expenses.

Binance Smart Chain Holding Address:
0x5BB2A322530edFbb2baF8A0A8388e2365d9c10b0

LMX Public Sales Supply (50%)
A total of 50% of the total token supply shall be allocated to the public. The allocation shall be utilized to raise funds through an initial coin offering and/or IDO.

Binance Smart Chain Holding Address:
0x5136a88a1C2dcd5E8403874F84365E2953565086

LMX Token Holders Reward (5%)
A total of 5% of the total token supply shall be held until the project has progressed to approximately 50% of product development. These tokens shall then be distributed to LMX holders in proportion to the volume of LMX held via an AirDrop.

Binance Smart Chain Holding Address:
0x6AF3F51C0b5f72BE608BE3FF2d5edcED60608Fd1

Owners' Equity (10%)
A total of 10% of the total token supply shall be allocated to the project owners and founders as incentive.

Binance Smart Chain Holding Address:
0xca5a50497868b941bb14d34eacc59555c5adbdd5
0xee386f1fe907f14a8ddbb02b5b2bf26448a89738
0x72f5aa3ca25636121c17680e43c3184864489cea

5 Token Holder Reward/Profit Sharing Program

The LamdaX project will eventually (post product development) share 20% its operational sales profit with its token holders. The profit share shall be in the form of an LMX token buy back (at the market rate) on a quarterly basis, after which the tokens shall be AirDropped to existing holders. The share of LMX received shall be proportional to the volume of LMX held by the holder at the time of AirDrop.

$$LMX\ Holder\ Quarterly\ AirDrop = LMX\ (Bought\ Back)\ x\ \frac{Holder\ Volume\ LMX}{Volume\ LMX\ in\ Circulation}$$

The exact date of each AirDrop shall not be made public, as the LMX token buy back is expected to create a temporary reduction of LMX token supply in the market. This is also to prevent planned LMX token purchases.

5.1 Business Earnings and Reward Example

Section 2 of the whitepaper provides insight into the potential that the CMMS market holds. LamdaX feels confident that a strong marketing campaign in Q1 2023 (post product development) would allow the acquisition of 0.5% of the global untapped CMMS market in the first year of operation. This accounts to EBIT US$ 16.0 m, with a 20% share profit component of US$ 3.2 m.

Thus, the quarterly LMX token holder AirDrop could potentially amount to US$ 800 k in LMX tokens in year 1. It is expected that LamdaX shall acquire a substantial larger portion of the market in year 2 (and beyond) as the brand becomes known and mould itself to the needs of the customers. It would be reasonable to estimate a growth and profit profile as indicated in table 1 below:

Table 1: LamdaX Estimate Earnings and Quarterly LMX Token Holder Reward

Operational Year	Growth % (on year)	Annual Profit US$	Annual AirDrop US$	Quarterly AirDrop US$
1	-	16.0 m	3.2 k	800 k
2	100%	32.0 m	6.4 m	1.6 m
3	80%	57.6 m	11.2 m	2.8 m
4	30%	74.8 m	14.5 m	3.7 m
5	15%	86.1 m	16.7 m	4.3 m

Note: Inflation and market size growth not included in the above estimates. The estimate considers a realistic 2.6% acquisition of the untapped market over a 5-year period.

6 Strategic Approach

An EAM/CMMS system has become a critical component in the bag of tools successful manufacturers deploy to gain a competitive edge on their rivals. A large percentage of manufactures still do not know the benefits these systems can provide. This presents a large opportunity to LamdaX; to introduce the benefits of EAM/CMMS systems build on blockchain technology.

We are fully aware that legacy EAM/CMMS systems are well established in many parts of the market and going head-to-head with these would represent a losing battle. LamdaX has conducted a market and competitor analysis and identified areas which are consistently lacking with legacy systems. The approach followed involve finding gaps that can be exploited. Some of the questions we asked:

- Untapped clients - are they truly untapped or what are the reasons CMMS are not deployed?
- Existing CMMS users – finding gaps or deficiencies in existing systems. Feedback from existing users?
- Geographical areas – does this restrict access to some clients?
- The identification of geographical areas where competition is low or non-existent?
- Blockchain technology – new technology welcomed or resistant to change?
- Any Legislative factors to consider in product development?
- Any Socio-Political Environment factors relevant?
- Is the Macro-Economic Environment conducive to the project?

7 Conclusion

LamdaX aims to develop a modular, scalable, quality and future proof CMMS/EAM product that adds significant value to our customers. The LamdaX management team have substantial experience and working knowledge of industrial asset management and believe that this in conjunction with experts in the field of blockchain technology can develop a product that far surpasses the products currently available in the market.

We also believe the project will pave the way for mass blockchain technology adoption in the manufacturing industry, opening a vast array of opportunities to decentralised application developers.

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(i) any kind of currency other than cryptocurrency;

(ii) debentures, stocks or shares issued by any person or entity (whether LamdaX and/or the Distributor)

(iii) rights, options or derivatives in respect of such debentures, stocks or shares; (iv) rights under a contract for differences or under any other contract the purpose or pretended purpose of which is to secure a profit or avoid a loss;

(iv) units in a collective investment scheme;

(v) derivatives of units in a business trust; or

(vi) any other security or class of securities.

(vii) you have a basic degree of understanding of the operation, functionality, usage, storage, transmission mechanisms and other material characteristics of cryptocurrencies, blockchain-based software systems, and smart contract technology;

(b) you are fully aware and understand that in the case where you wish to purchase any LMX tokens, there are risks associated with LMX and the Distributor and their respective business and operations, the LMX tokens, any LMX Token Sale (irrespective of sale mechanism);

(c) you agree and acknowledge that neither LMX nor the Distributor is liable for any indirect, special, incidental, consequential or other losses of any kind, in tort, contract or otherwise (including but not limited to loss of revenue, income or profits, and loss of use or data), arising out of or in connection with any acceptance of or reliance on this Whitepaper or any part thereof by you;

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This Whitepaper includes market and industry information and forecasts that have been obtained from market research reports, and publicly available information. Such sources and publications generally state that the information that they contain has been obtained from sources believed to be reliable, but there can be no assurance as to the accuracy or completeness of such included information.

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10 Project Risks

As with any major project, there is risks associated with the project execution. Some of these risks may include:

- Insufficient Funding Raised
- Technical Resourcing – High Team Turnover
- Technical Feasibility Barriers

Although LamdaX endeavour to prevent risk from realising, it is possible that, due to any number of reasons, including, but not limited to, a decrease in LMX Token's utility, the failure of commercial relationships, intellectual property ownership challenges, unfavourable market conditions and added compliance and regulatory obligations, LamdaX may need to and be dissolved.

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